MOVE 2046

2046

Connecting Communities – Shaping Our Future

Existing Conditions Analysis

March 2022

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1.0 Introduction

This report identifies the conditions and characteristics of the existing transportation system in the Baton Rouge Metropolitan Planning Area (MPA) for 2020, where possible. As 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 Transportation Performance Management Report technical memorandum.

> 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.

88.3%

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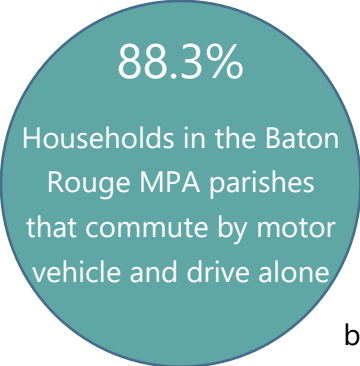
For households in urbanized areas, like the Baton Rouge region, traveling by motor vehicle is the primary means of transportation. The most recent American Community Survey (ACS) 5-year estimates show that commuting by motor vehicle without carpooling is the most common method of commuting within the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

2.2 The Roadway Network

Several federal and state highways serve the study area and constitute its main roadway network. The most significant of these facilities are shown below.

- •I-10 spans the width of Louisiana from Orange, Texas to east of Lake Charles, Lafayette, Baton Rouge, New Orleans and Slidell. It goes through the study area from west to southeast.

- •I-12 begins in Baton Rouge, LA at I-10 and travels through East Baton Rouge Parish to the Livingston Parish suburbs. It goes through the study area from west to east.

- •I-110 extends for nearly nine miles north from I-10, just east of the Horace Wilkinson Bridge approach to Baton Rouge Metropolitan Airport (BTR) and the Scotlandville community of north Baton Rouge. It goes through the study area from south to north.

- •US 61is a principal arterial that extends between New Orleans, LA and Wyoming, MN. US 61 runs from the south to the north of the study area.

- •US 190 travels the width of southern Louisiana between Merryville and Slidell. US 190 runs from west to east of the study area.

2.2.1 Roadways by Functional Classification

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

Interstates
- Divided highways with full control of access 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 land 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: residential, industrial, and commercial.

Within the arterial classification are principal and minor subclassifications. Within the collector classification are major 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. Major collectors are those collectors in rural/urban areas that carry low-medium traffic volumes and connect arterials, minor/major collectors, and local streets. These roadways typically carry more volume than rural minor collectors. Minor collectors perform the same function as major collectors, but they carry less volume.

Figure 2.1: Roadway Model Network Lane Mileage by Functional Class

Centerline Miles for Entire Study Area

- Interstate, 327, 4.7%
- Principal Arterial, 564, 8.2%
- Minor Arterial, 385, 5.6%
- Major Collector, 585, 8.5%
- Minor Collector, 338, 4.9%
- Local, 4707, 68.2%

Lane Miles for Entire Study Area

- Interstate, 670, 8.6%
- Principal Arterial, 943, 12.0%
- Minor Arterial, 523, 6.7%
- Major Collector, 611, 7.8%
- Minor Collector, 360, 4.6%
- Local, 4725, 60.3%

Centerline Miles for Ascension Parish Limits

- Interstate, 93, 6.9%
- Principal Arterial, 130, 9.5%
- Minor Arterial, 62, 4.6%
- Major Collector, 103, 7.6%
- Minor Collector, 61, 4.5%
- Local, 910, 67.0%

Lane Miles Ascension Parish Limits

- Interstate, 191, 11.9%
- Principal Arterial, 247, 15.4%
- Minor Arterial, 88, 5.5%
- Major Collector, 105, 6.5%
- Minor Collector, 61, 3.8%
- Local, 912, 56.9%

Centerline Miles for East Baton Rouge Parish Limits

- Interstate, 141, 4.6%
- Principal Arterial, 273, 8.9%
- Minor Arterial, 230, 7.5%
- Major Collector, 216, 7.0%
- Minor Collector, 76, 2.5%
- Local, 2143, 69.6%
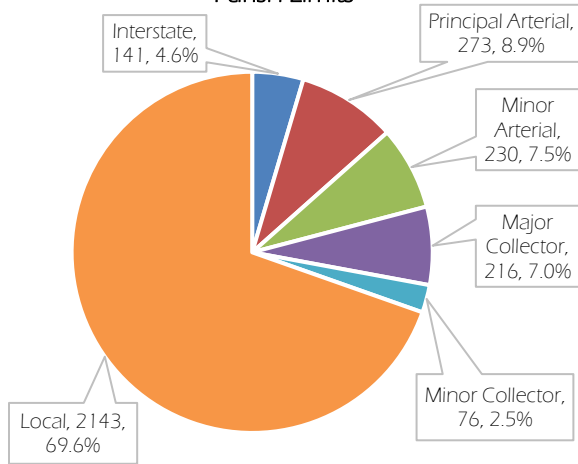
Lane Miles East Baton Rouge Parish Limits

- Interstate, 670, 8.6%
- Principal Arterial, 943, 12.0%
- Minor Arterial, 523, 6.7%
- Major Collector, 611, 7.8%
- Minor Collector, 360, 4.6%
- Local, 4725, 60.3%
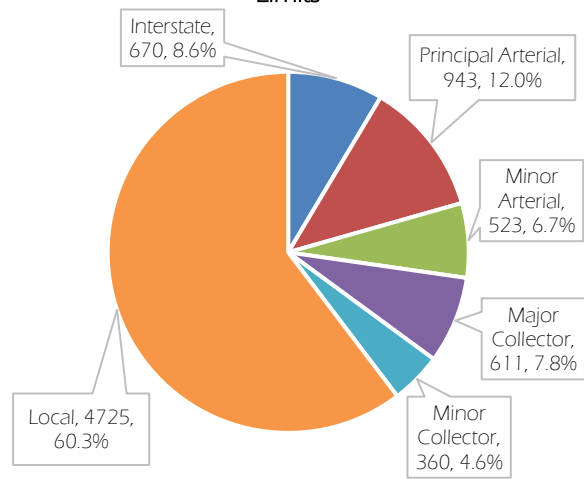
Centerline Miles for Iberville Parish Limits

- Interstate, 0, 0.0%
- Principal Arterial, 46, 9.1%
- Minor Arterial, 2, 0.4%
- Major Collector, 45, 8.8%
- Minor Collector, 74, 14.6%
- Local, 342, 67.1%
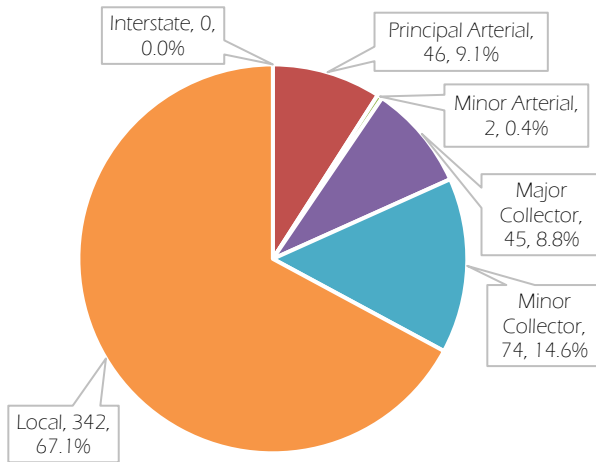
Lane Miles Iberville Parish Limits

- Interstate, 0, 0.0%
- Principal Arterial, 92, 16.4%
- Minor Arterial, 2, 0.4%
- Major Collector, 45, 8.0%
- Minor Collector, 81, 14.5%
- Local, 342, 60.8%

Centerline Miles for West Baton Rouge Parish Limits

Interstate, 34, 5.5%
Principal Arterial, 87, 14.3%
Minor Arterial, 0, 0.0%
Major Collector, 65, 10.7%
Minor Collector, 54, 8.9%
Local, 369, 60.6%

Lane Miles West Baton Rouge Parish Limits

Interstate, 61, 8.6%
Principal Arterial, 150, 21.0%
Minor Arterial, 0, 0.0%
Major Collector, 75, 10.5%
Minor Collector, 58, 8.2%
Local, 369, 51.7%

Centerline Miles for Livingston Parish Limits

Interstate, 59, 4.4%
Principal Arterial, 28, 2.1%
Minor Arterial, 91, 6.7%
Major Collector, 157, 11.6%
Minor Collector, 73, 5.4%
Local, 944, 69.8%

Lane Miles Livingston Parish Limits

Interstate, 182, 12.2%
Principal Arterial, 32, 2.1%
Minor Arterial, 105, 7.0%
Major Collector, 157, 10.5%
Minor Collector, 73, 4.9%
Local, 944, 63.3%

Note: Centerline miles exclude ramps

Source: Louisiana Department of Transportation and Development (LADOTD)

Figure 2.2: Functional Classification of Roadways

DOWNTOWN BATON ROUGE

Functional Classification
- Interstate
- Principal Arterial
- Minor Arterial
- Collector
- Local
- Metropolitan Planning Area
- Remaining 5-Parish Area

Data Sources: LADOTD

Disclaimer: This map is for planning purposes only.

2.3 Traffic and Congestion

The number of daily trips estimated by the Travel Demand Model in 2020, by trip purpose, is summarized in the graph below. Note that the model encompasses the entirety of the five (5) Parishes that comprise the MPA. Approximately one (1) percent of vehicle trips pass through the MPA. The majority of vehicle trips in the MPA, 57 percent, begin or end at home.

3,191,173

Daily trips within the MPA
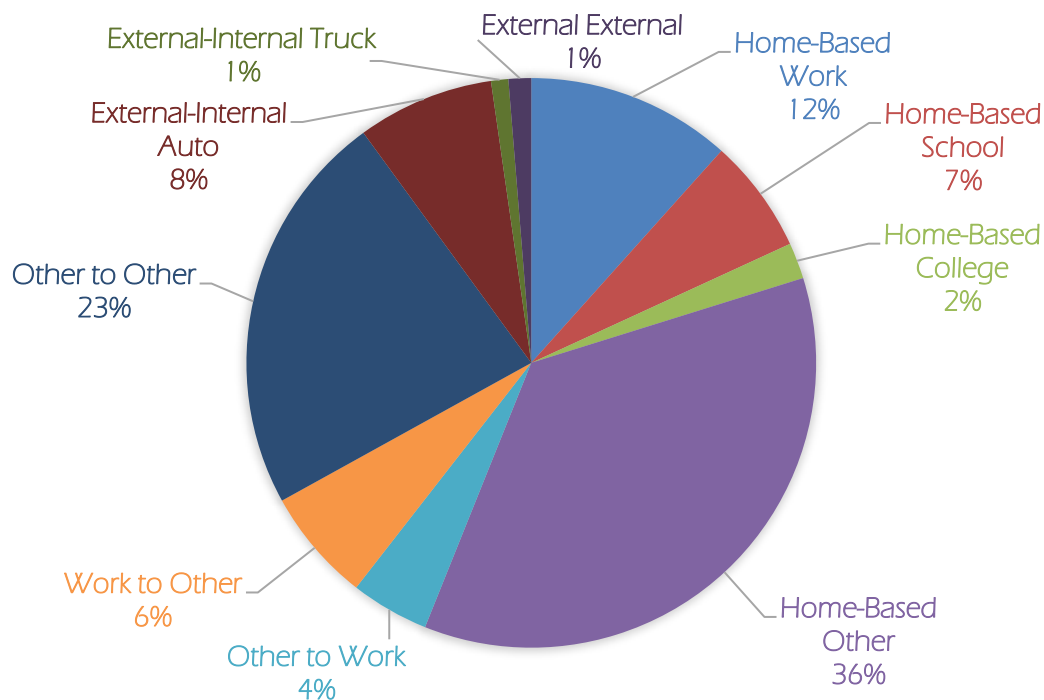
Table 2.1 displays how these trips are distributed onto the modeled transportation network. The Interstates experience the most delay, nearly 44 percent. There is comparatively little delay estimated to occur on major and minor collectors. This is in large part due to travel on these roadways accounting for only about 12 percent of vehicle miles traveled and just over 11 percent of vehicle hours traveled.

Table 2.1: Roadway System Travel Characteristics, 2020

Functional Class	Daily Vehicle Miles Traveled (VMT)		Daily Vehicle Hours Traveled (VHT)		Daily Vehicle Hours of Delay (VHD)	
	Number	Percent	Number	Percent	Number	Percent
Interstate	7,657,068	34.7%	161,577	26.7%	45,339	44.2%
Principal Arterial	6,294,971	28.6%	169,693	28.0%	34,801	33.9%
Minor Arterial	3,623,334	16.4%	96,301	15.9%	14,662	14.3%
Major Collector	2,077,518	9.4%	53,344	8.8%	6,515	6.4%
Minor Collector	569,008	2.6%	14,416	2.4%	750	0.7%
Connector	1,503,467	6.8%	100,231	16.6%	0	0.0%
Local	321,835	1.5%	9,752	1.6%	497	0.5%
Total	22,047,200	100.0%	605,314	100.0%	102,564	100.0%
Ascension Parish						
Interstate	1,425,842	35.5%	27,357	26.3%	7,302	40.4%
Principal Arterial	1,095,662	27.3%	27,284	26.2%	5,762	31.9%
Minor Arterial	460,629	11.5%	11,599	11.1%	2,495	13.8%
Major Collector	520,377	13.0%	12,867	12.3%	2,176	12.0%
Minor Collector	130,680	3.3%	3,066	2.9%	195	1.1%
Connector	296,833	7.4%	19,789	19.0%	0	0.0%
Local	81,868	2.0%	2,255	2.2%	130	0.7%
Total	4,011,892	100.0%	104,218	100.0%	18,063	100.0%
East Baton Rouge Parish						
Interstate	3,142,872	27.9%	69,434	20.9%	19,040	34.4%
Principal Arterial	3,774,020	33.5%	108,119	32.5%	23,516	42.5%
Minor Arterial	2,364,077	21.0%	65,138	19.6%	9,344	16.9%
Major Collector	784,289	7.0%	22,390	6.7%	2,852	5.2%
Minor Collector	171,761	1.5%	4,780	1.4%	312	0.6%
Connector	871,916	7.7%	58,128	17.5%	0	0.0%
Local	156,131	1.4%	4,980	1.5%	276	0.5%
Total	11,265,066	100.0%	332,969	100.0%	55,340	100.0%

Functional Class	Daily Vehicle Miles Traveled (VMT)		Daily Vehicle Hours Traveled (VHT)		Daily Vehicle Hours of Delay (VHD)	
	Number	Percent	Number	Percent	Number	Percent
Iberville Parish						
Interstate	0	0.0%	0	0.0%	0	0.0%
Principal Arterial	298,100	53.5%	6,693	44.7%	743	78.3%
Minor Arterial	16,462	3.0%	392	2.6%	13	1.4%
Major Collector	105,741	19.0%	2,383	15.9%	147	15.5%
Minor Collector	70,567	12.7%	1,578	10.5%	43	4.5%
Connector	54,265	9.7%	3,618	24.2%	0	0.0%
Local	12,507	2.2%	302	2.0%	3	0.3%
Total	557,642	100.0%	14,966	100.0%	949	100.0%
Livingston Parish						
Interstate	2,128,970	49.1%	44,904	40.8%	13,302	66.1%
Principal Arterial	436,410	10.1%	12,279	11.1%	2,550	12.7%
Minor Arterial	782,166	18.0%	19,171	17.4%	2,810	14.0%
Major Collector	560,522	12.9%	13,506	12.3%	1,272	6.3%
Minor Collector	144,044	3.3%	3,476	3.2%	133	0.7%
Connector	227,412	5.2%	15,161	13.8%	0	0.0%
Local	55,428	1.3%	1,680	1.5%	45	0.2%
Total	4,334,951	100.0%	110,178	100.0%	20,111	100.0%
West Baton Rouge Parish						
Interstate	959,384	51.1%	19,881	46.3%	5,695	70.3%
Principal Arterial	690,779	36.8%	15,317	35.6%	2,230	27.5%
Minor Arterial	0	0.0%	0	0.0%	0	0.0%
Major Collector	106,588	5.7%	2,198	5.1%	67	0.8%
Minor Collector	51,956	2.8%	1,516	3.5%	66	0.8%
Connector	53,040	2.8%	3,536	8.2%	0	0.0%
Local	15,901	0.8%	534	1.2%	44	0.5%
Total	1,877,649	100.0%	42,983	100.0%	8,102	100.0%

Source: CRPC MPO Travel Demand Model

Figure 2.3: Average Daily Traffic on Roadways, 2020
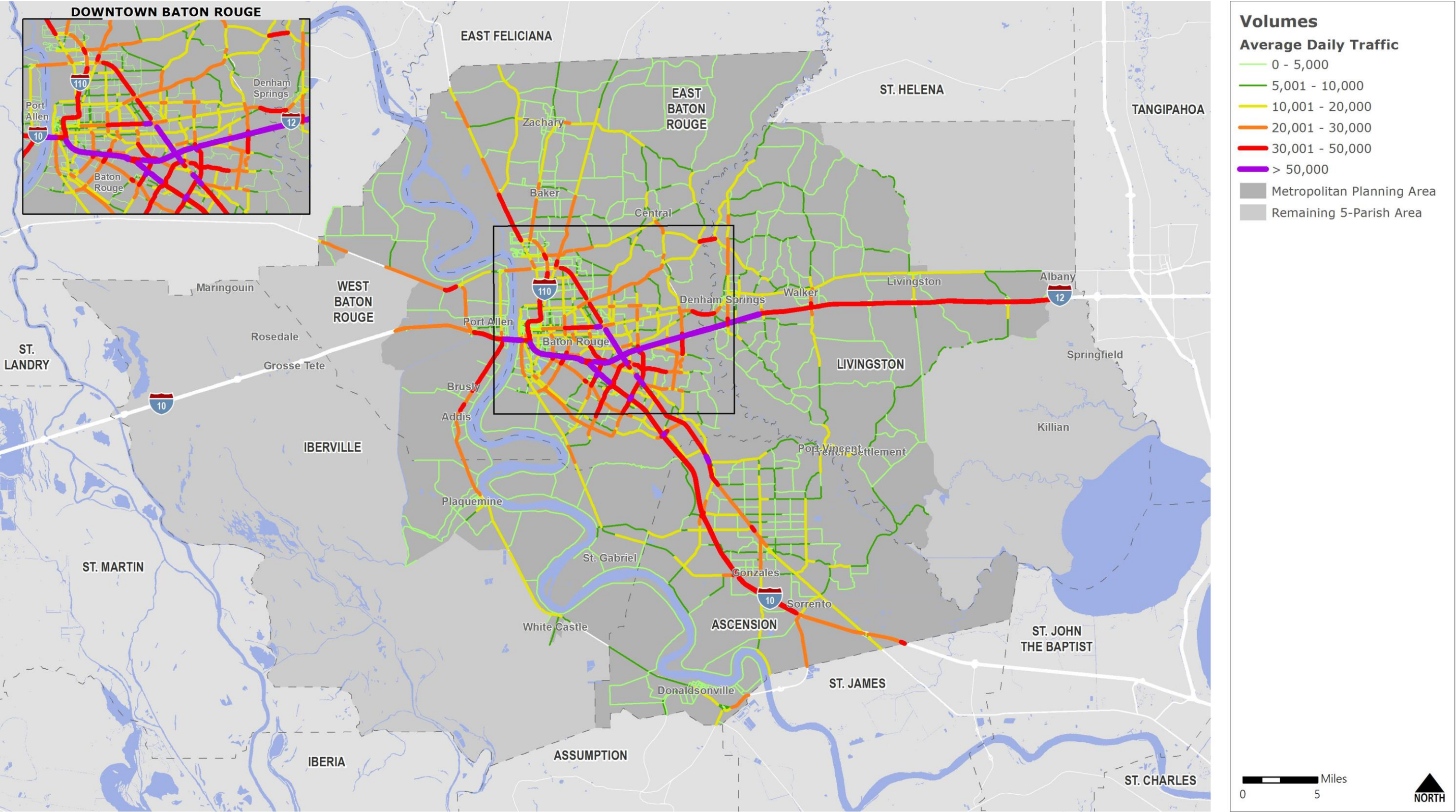
DOWNTOWN BATON ROUGE

Volumes

Average Daily Traffic

— 0 - 5,000
— 5,001 - 10,000
— 10,001 - 20,000
— 20,001 - 30,000
— 30,001 - 50,000
— > 50,000

■ Metropolitan Planning Area
■ Remaining 5-Parish Area

Data Sources: Travel Demand Model

Disclaimer: This map is for planning purposes only.

Figure 2.4: Existing Roadway Congestion, 2020

Volume / Capacity
- 0.00 - 0.25
- 0.26 - 0.50
- 0.51 - 0.75
- 0.76 - 1.00
- 1.01 - 1.20
- 1.21 - 1.38
- Metropolitan Planning Area
- Remaining 5-Parish Area

DOWNTOWN BATON ROUGE
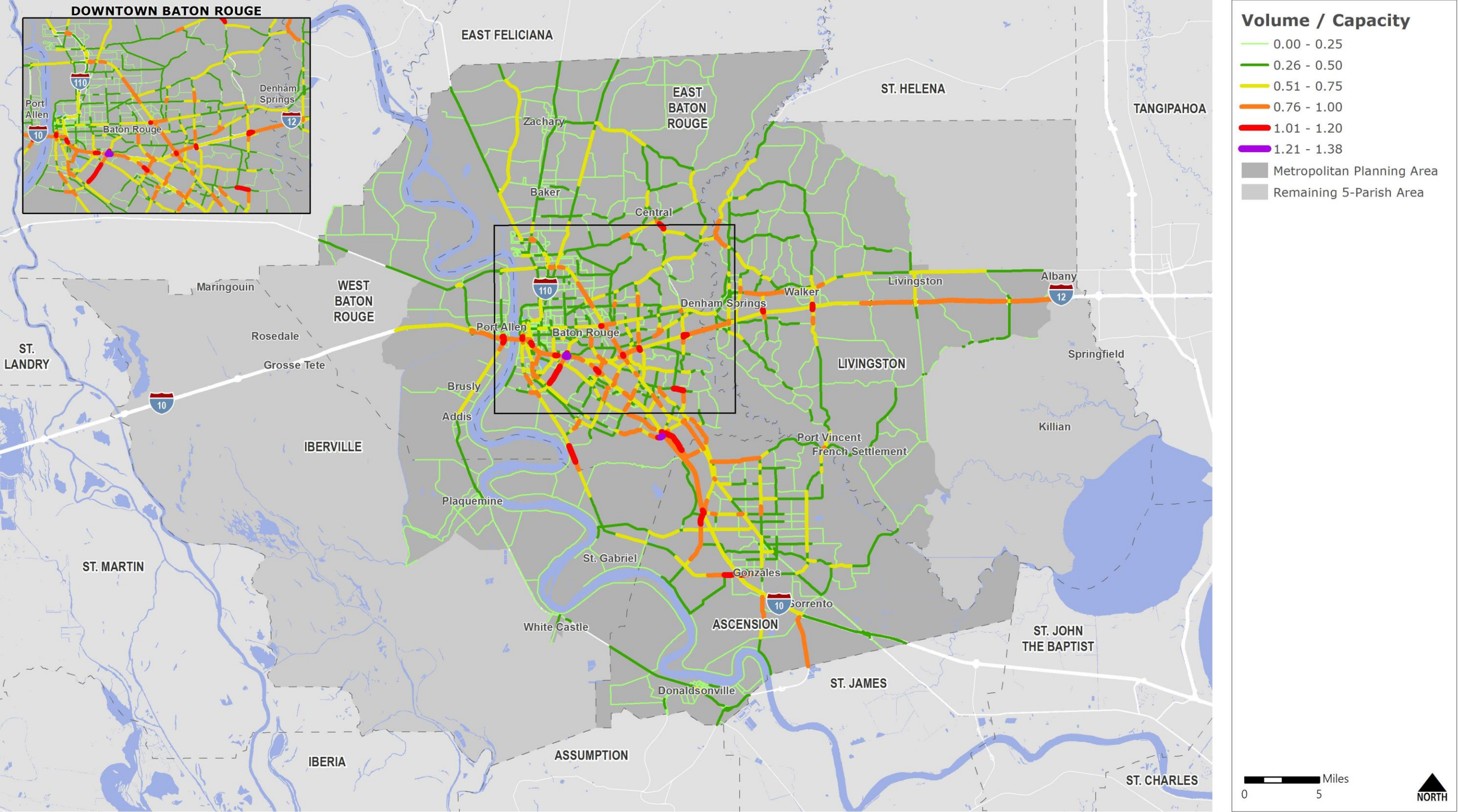
Data Sources: Travel Demand Model

Disclaimer: This map is for planning purposes only.

Table 2.2: Top 10 Roadway Corridors with Volumes Exceeding Capacity, 2020

Roadway	Location	Length (miles)
I-10 WB Off-Ramp at College Drive	I-10 WB to College Drive	0.17
I-10 EB On-Ramp at College Drive	College Drive to I-10	0.18
Highland Road	Perkins Road to W. Greens Avenue	0.14
I-10 WB On-Ramp at Highland Road	Highland Road to I-10	0.24
Airline Highway	I-12 Interchange	0.09
Nicholson Drive	Between St. Landry Road and Isom Sanders Road	0.27
Sullivan Road	Between Wax Road and Bon Dickey Drive	0.40
Lee Drive	Between Hyacinth Avenue and Whitehaven Street	0.13
I-10 EB On-Ramp at Acadian Thruway	Acadian Thruway to I-10	0.19
College Drive	I-10 Interchange	0.12
I-10 WB Off-Ramp at College Drive	I-10 WB to College Drive	0.17

Source: CRPC 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 (4) time periods (including AM and PM peaks), with the worst LOTTR being used to determine segment reliability. The most recent LOTTR data available, year 2020, was obtained from the Federal Highway Administration's (FHWA) National Performance Management Research Dataset (NPMRDS). Roadway segments with an LOTTR less than 1.5 are defined by the FHWA as reliable. Figures 2.5 and 2.6 display the LOTTR of the monitored segments within the MPA.

It should be noted that the current NPMRDS for the Baton Rouge MPA does not meet the full Enhanced National Highway System (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 Metropolitan Planning Organization (MPO) is only responsible for reporting what the NPMRDS displays.

The NPMRDS data shows that the Interstate and Non-Interstate NHS systems within the MPA are reliable; as greater than 92 percent of both systems have an LOTTR less than 1.5.

92.9%

Interstate NPMRDS reported NHS person-miles traveled are reliable

92.8%

Non-Interstate NPMRDS reported NHS person-miles traveled are reliable
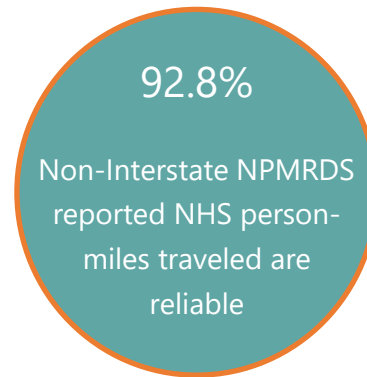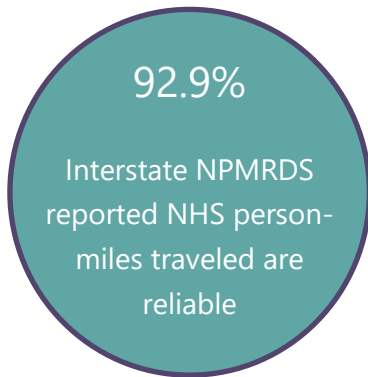
Figure 2.5: 2020 Level of Travel Time Reliability (LOTTR) on Interstate National Highway System (NHS) Routes
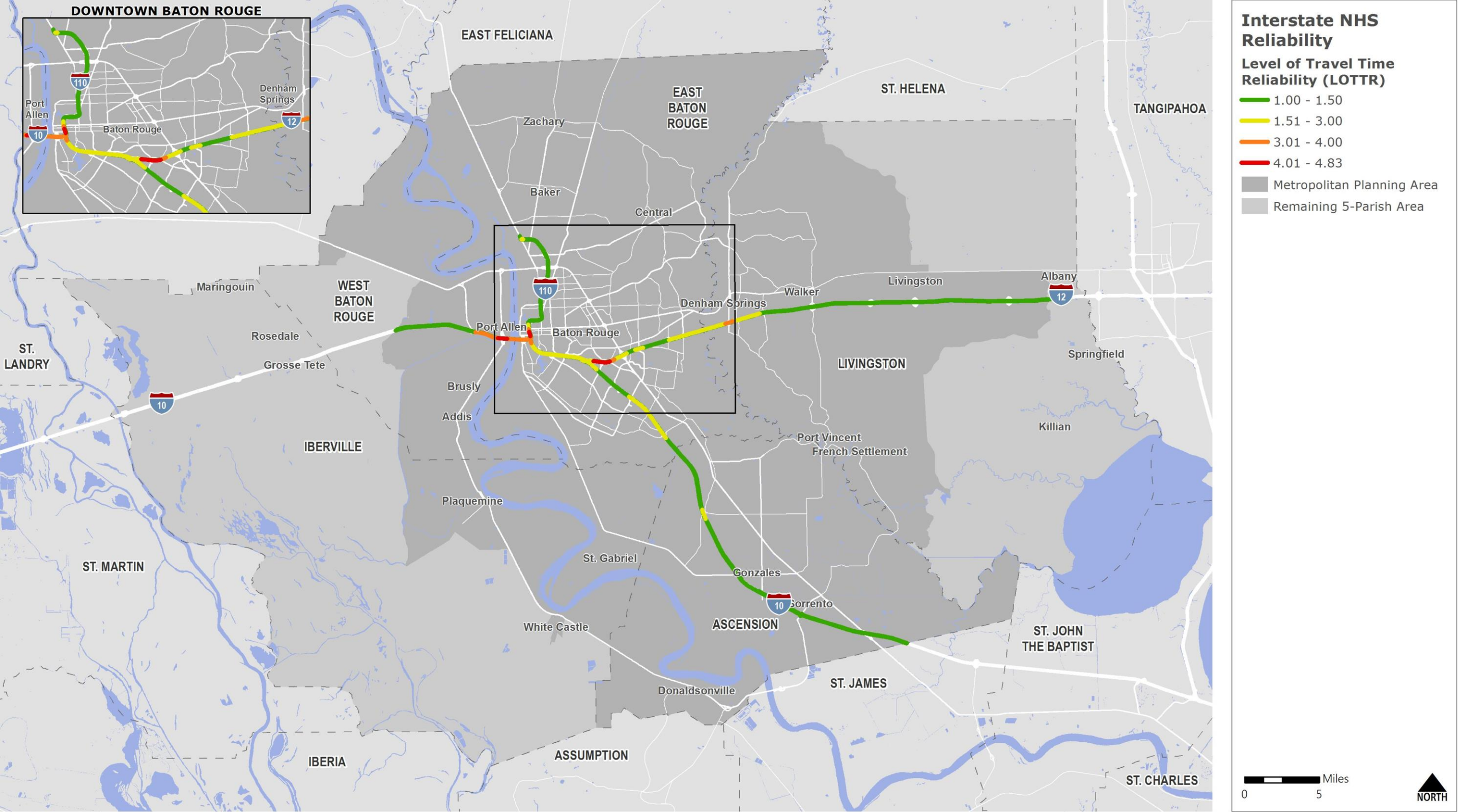
Data Sources: NPMRDS

Disclaimer: This map is for planning purposes only.

Figure 2.6: 2020 Level of Travel Time Reliability (LOTTR) on Non-Interstate National Highway System (NHS) Routes

Non-Interstate NHS Reliability

Level of Travel Time Reliability (LOTTR)

— 1.00 - 1.50
— 1.51 - 3.00
— 3.01 - 4.00
— 4.01 - 5.50

Metropolitan Planning Area
Remaining 5-Parish Area
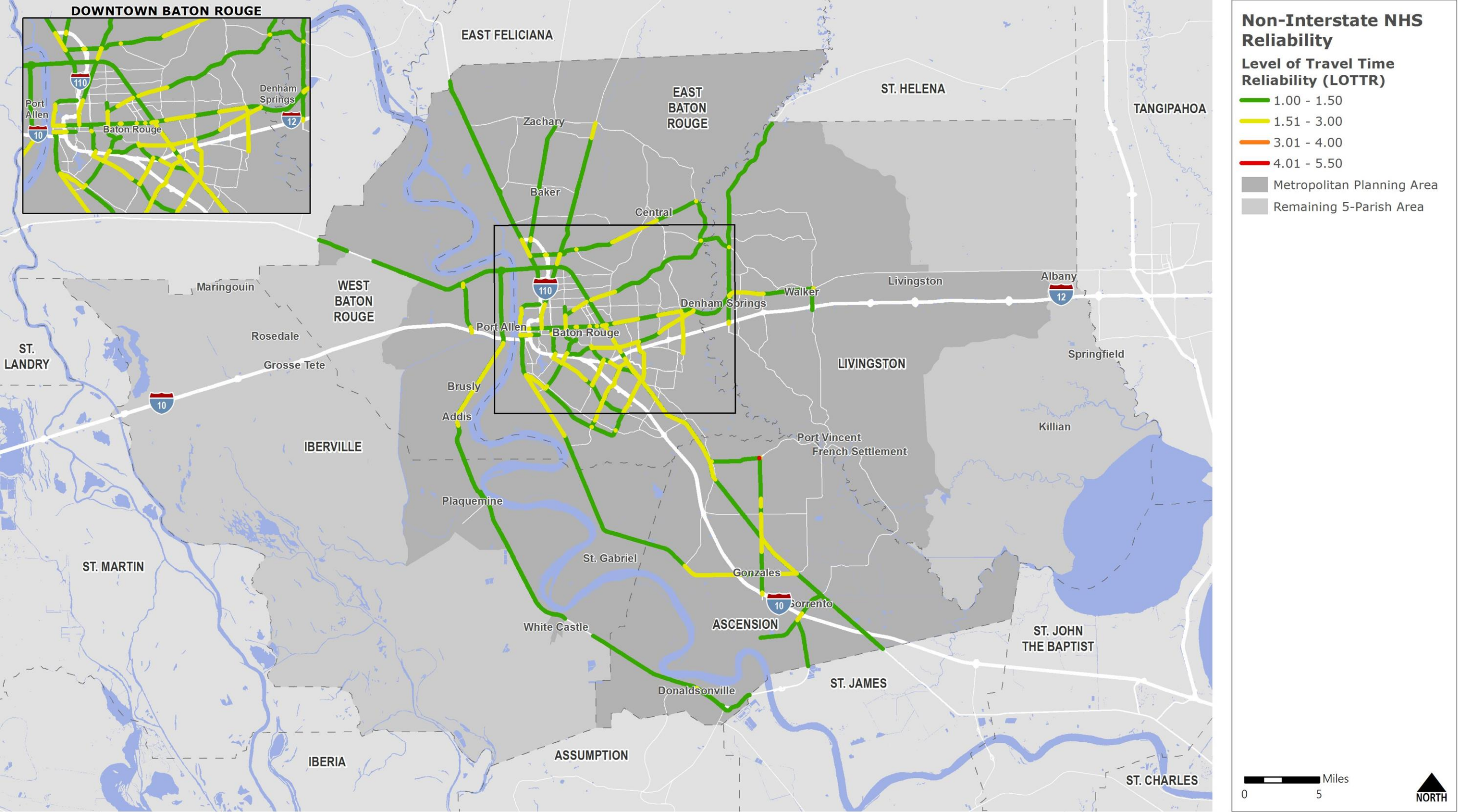
Data Sources: NPMRDS

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 roadway users with safe, comfortable travel experiences, while minimizing vehicle wear and tear.

Results from the public participation survey showed that maintaining roadways and bridges were the public's top priority. In a funding allocation exercise where the public was asked to allocate future transportation dollars by improvement type, the public allocated 15 percent of all funding to maintaining roads and bridges through regular maintenance or due to safety concerns with the current roadway surfaces.

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

- extent,
- condition,
- performance, and
- use and operating characteristics 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.

INTERSTATE PAVEMENT CONDITION

33.8%

43.4%

22.8%

■ POOR ■ FAIR ■ GOOD
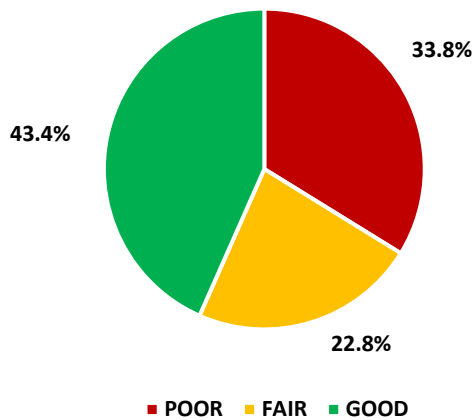
NON-INTERSTATE NHS PAVEMENT CONDITION

26.4%

50.6%

23.0%

■ POOR ■ FAIR ■ GOOD
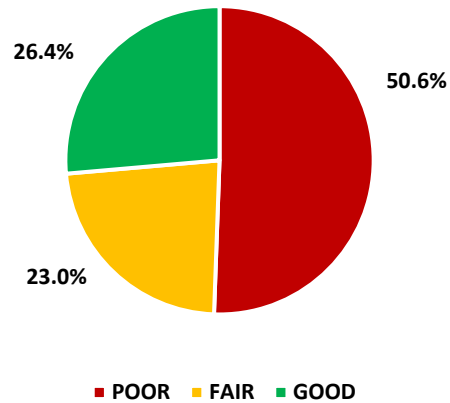
Using the NPMRDS data, within the MPA, less than half of the Interstate corridors (I-10, I-12, and I-110) were labeled as their pavement being in "Good" condition. More than a third of the Interstate pavement within the MPA is in "Poor" condition. Regarding Non-Interstate NHS pavements, just over a quarter of those pavements are in "Good" condition while more than half of them are in "Poor" condition.

Figures 2.7 and 2.8 illustrate the most recent NPMRDS pavement condition data available for the MPA. The Interstate locations most in need of pavement rehabilitation are:

- I-110 from I-10 to US 61,

- I-10 from LA 1 to I-110,

- I-10 from Perkins Rd to College Dr,

- I-12 from US 61 to S Range Ave, and

- I-12 from South Forest Rd to South Satsuma Rd.

Non-Interstate NHS pavements within the MPA that are in "Poor" condition are extensive and the majority of pavements within the MPA need rehabilitation as shown in Figure 2.8.

Figure 2.7: 2019 Interstate NHS Roadway Pavement Conditions

Interstate NHS Roadways
Pavement Condition
- Good
- Fair
- Poor

Metropolitan Planning Area
Remaining 5-Parish Area
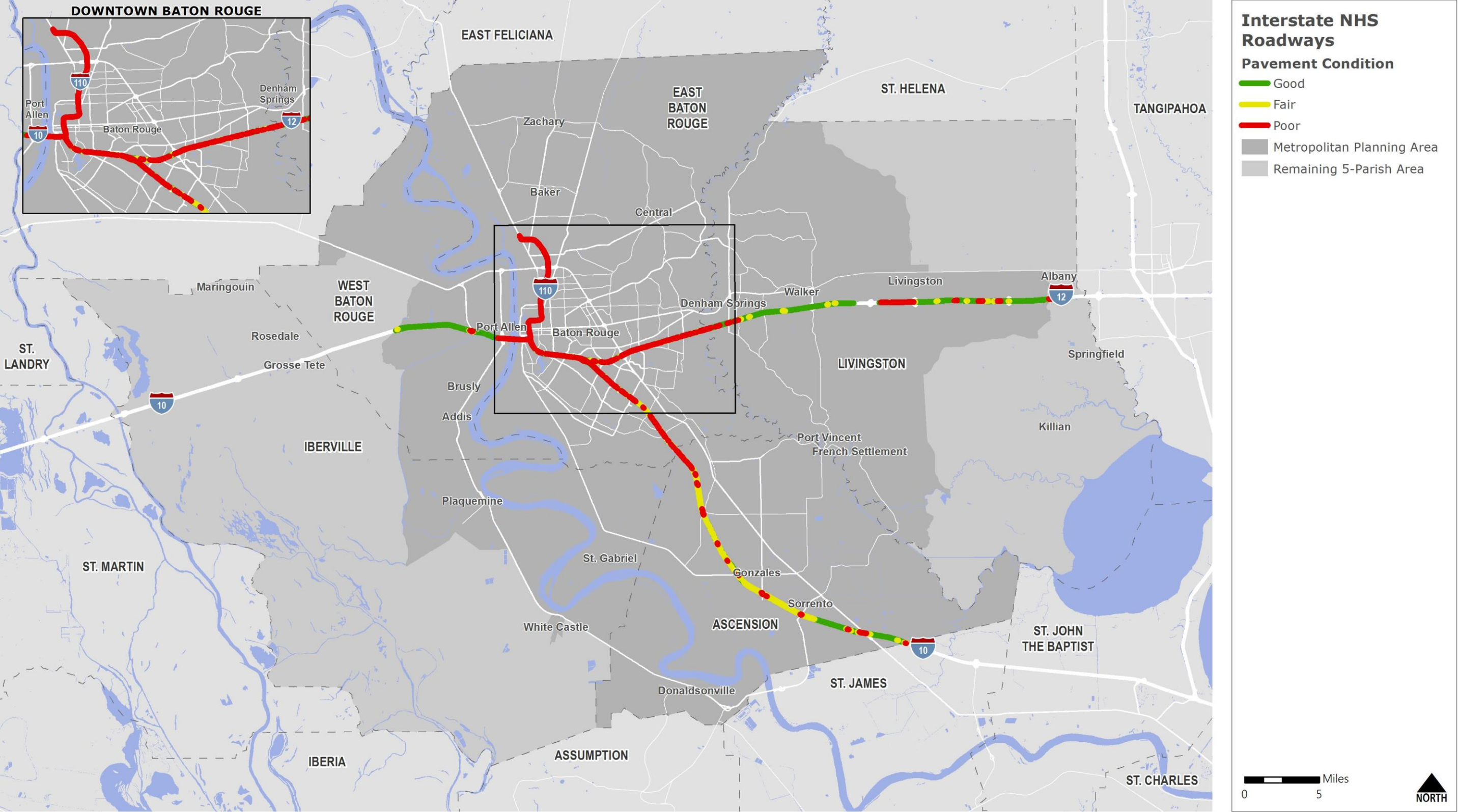
Data Sources: LADOTD

Disclaimer: This map is for planning purposes only.

Figure 2.8: 2019 Non-Interstate NHS Roadway Pavement Conditions

DOWNTOWN BATON ROUGE

Non-Interstate NHS Roadways

Pavement Condition
- Good
- Fair
- Poor
- Metropolitan Planning Area
- Remaining 5-Parish Area
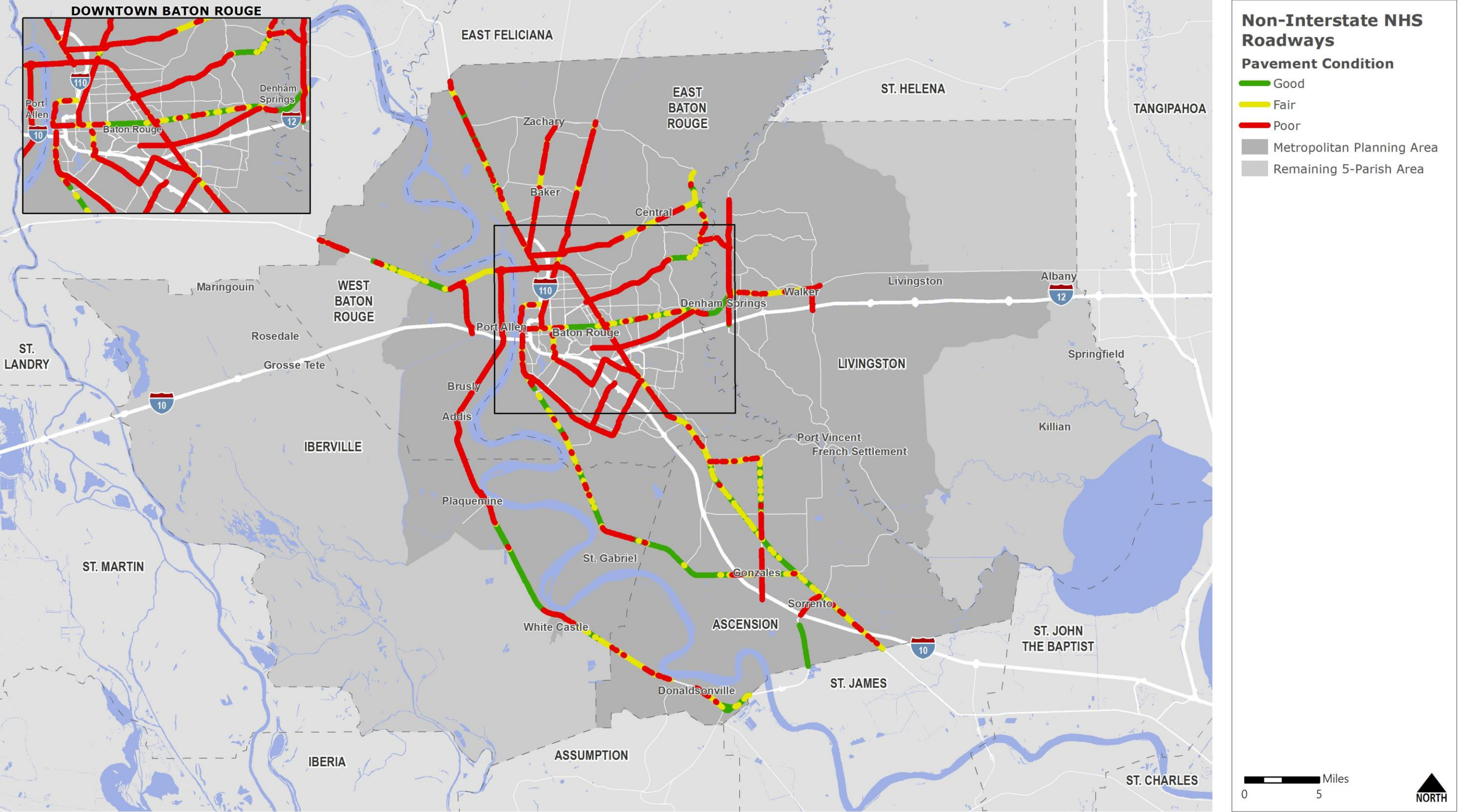
Data Sources: LADOTD

Disclaimer: This map is for planning purposes only.

2.6 Bridge Conditions

Maintaining and improving the bridge conditions are critical as they are an essential part of the overall transportation network. Bridges need to be properly maintained and upgraded as needed to ensure safety without showing any sign of 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.

As previously mentioned, results from the public outreach survey showed that the public places a high priority on maintaining the existing transportation system and increasing its safety.

There are over a thousand bridges or bridge-like structures within, or in close proximity to, the Baton Rouge MPA. Most of these cross waterways. However, bridges can also be structures that cross over other roadways and railroads.

2.6.1 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 a 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 being in "Good" condition. If the score of the bridge is less than or equal to four (4), the classification is "Poor" condition. The MTP analyzes the 2019 NBI data, which is the most recent year available.

53.6%

Bridges in Good Condition

Figure 2.9 displays the conditions of the bridges on the Interstate routes while Figure 2.10 displays the conditions of the bridges on the Non-Interstate NHS routes.

4.4%

Bridges in Poor Condition
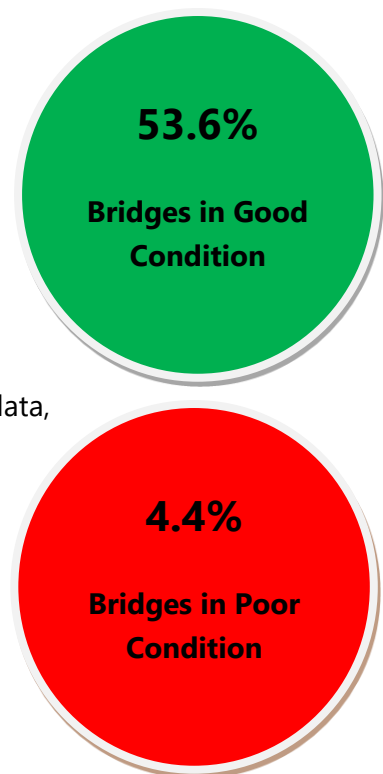
Figure 2.9: 2019 NHS Interstate Bridge Conditions in the Baton Rouge MPA
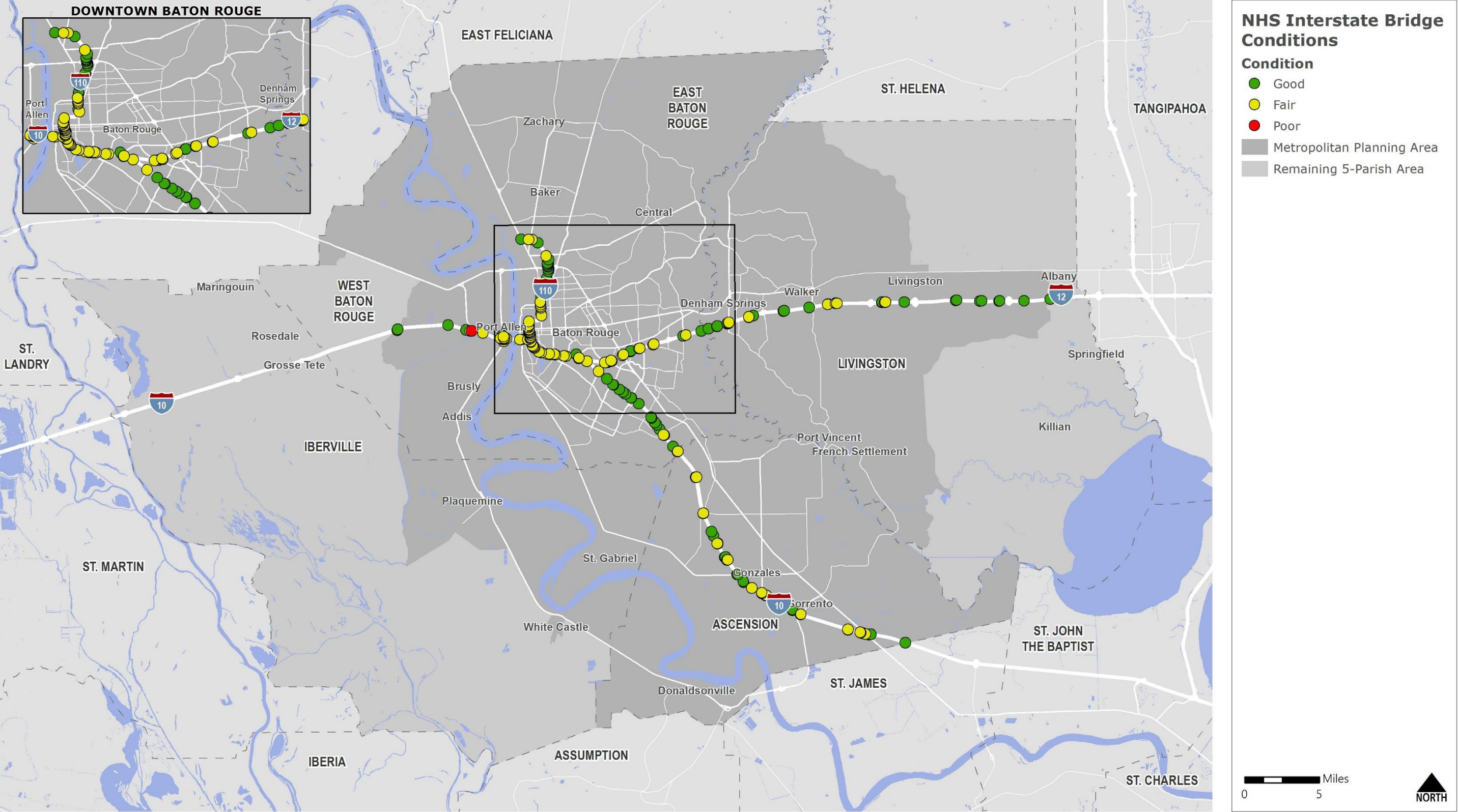
Data Sources: National Bridge Inventory

Disclaimer: This map is for planning purposes only.

Figure 2.10: 2019 NHS Non-Interstate Bridge Conditions in the Baton Rouge MPA
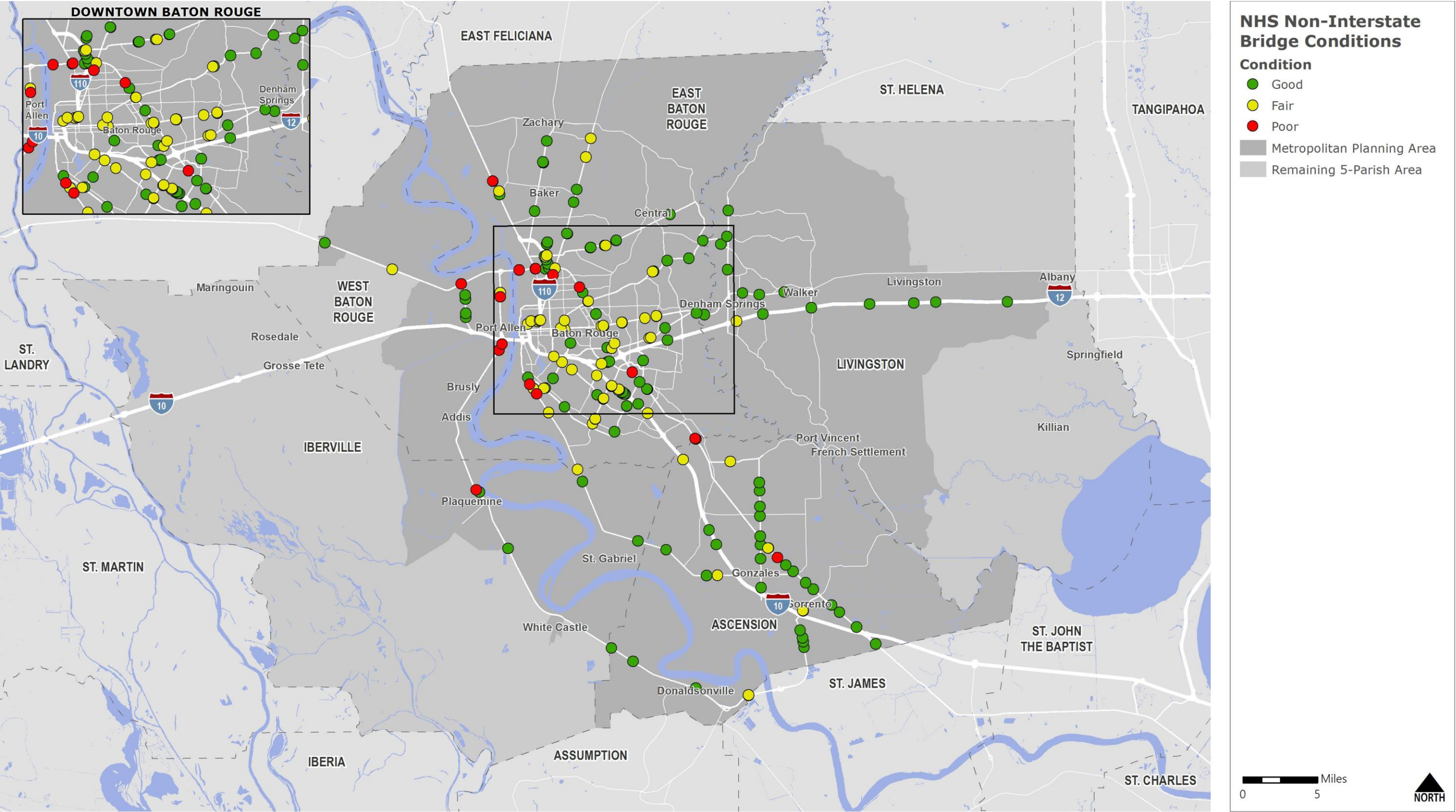
DOWNTOWN BATON ROUGE

NHS Non-Interstate Bridge Conditions

Condition
- Good
- Fair
- Poor

Metropolitan Planning Area
Remaining 5-Parish Area

Data Sources: National Bridge Inventory

Disclaimer: This map is for planning purposes only.

2.6.2 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 previously described. Within the MPA there are 174 structurally deficient bridges. Nineteen (19) of those bridges 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."

2.7.1 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).

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 state's SHSP[1] was developed by Louisiana Highway Safety Commission (LAHSC) and was most recently updated in 2017. The SHSP also identifies strategies and emphasis areas for analysis and investment. The current SHSP emphasis areas are shown in Figure 2.11.

Figure 2.11: 2017 SHSP Emphasis Areas

Impaired Driving	**Reduce fatalities and severe injuries involving young drivers by 50 percent by 2030**
Occupant Protection	**Decrease unbelted severe injuries and fatalities by 50 percent by 2030 and increase the safety belt usage rate**
Infrastructure & Operations	**Reduce roadway departure, intersection, and non-motorized user fatalities and severe injuries by 50 percent by 2030**
Crashes Involving Young Drivers	**Reduce fatalities and severe injuries involving young drivers by 50 percent by 2030**
Distracted Driving	**Reduce fatalities and injuries involving young drivers by 50 percent by 2030**

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

2.7.2 Crash Impacts

According to the most recent Fatal Accident Reporting System (FARS) data, an average of nearly 34,000 people in the United States were killed annually from 2015 through 2019. Every crash, regardless of the severity, costs money and time in damages, emergency services, and delays. These costs affect both government 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.

The crash records used in the analysis were obtained from LADOTD from 2015 through 2019; 2020 data was not available at the time of the analysis.

The crash records include the following:

- Severity
- Location
- DUI involvement
- Vehicle type
- Intersection-Related
- Time of day

- Driver Inattentiveness
- 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 2015 through 2019, there were a total of 157,360 crashes within the MPA. Figure 2.12 displays the total number of crashes within the MPA by year and Parish.

Figure 2.12: MPA Crashes by Year and Parish; 2015-2019

Figure 2.12: MPA Crashes by Year and Parish; 2015-2019

Legend: Ascension, East Baton Rouge, Iberville, Livingston, West Baton Rouge

Year	Ascension	East Baton Rouge	Iberville	Livingston	West Baton Rouge
2015	4,204	22,245	665	3,148	1,402
2016	4,397	23,375	708	3,387	1,404
2017	4,389	21,021	728	3,435	1,390
2018	4,318	21,668	740	3,005	1,364
2019	4,315	21,032	597	3,221	1,202
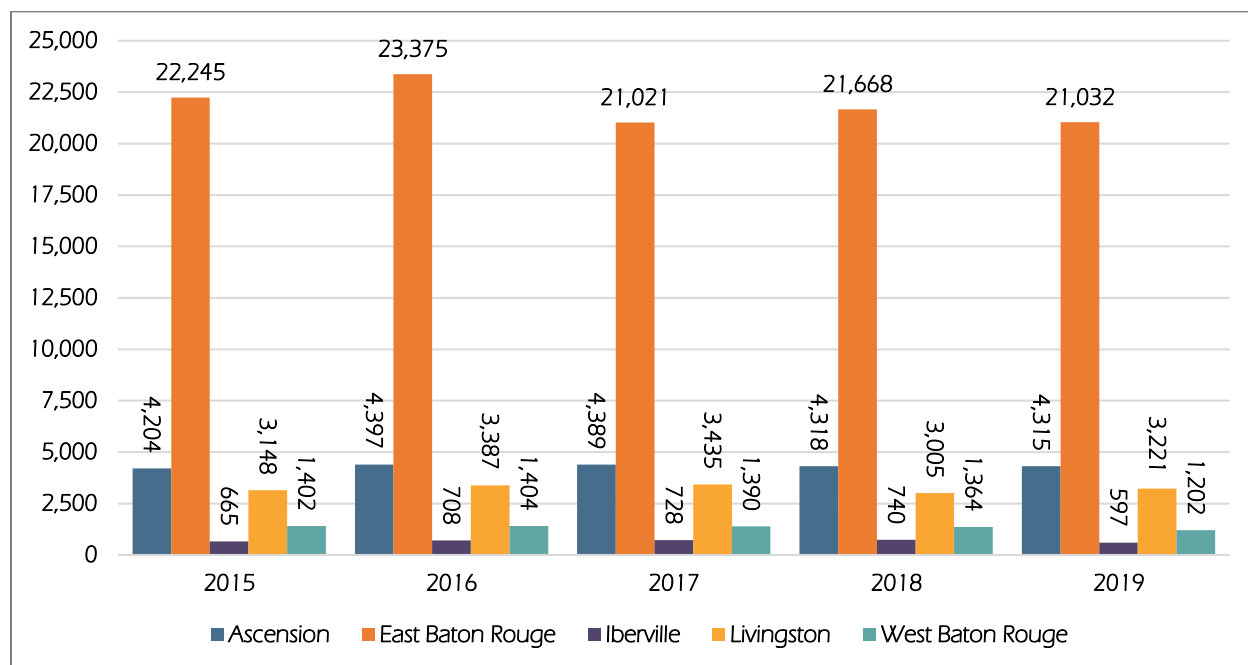
Crash Severity

Crash severity reveals the extent to which crashes in the region pose a safety risk to roadway users. Within the MPA, there were 498 fatal crashes and 918 life-threatening (severe injury) crashes during the analysis period. Nearly one (1) percent of the total crashes resulted in a fatality or severe injury. Figure 2.13 displays the severity of the fatal/injury crashes within the MPA by Parish.

Figure 2.13: Severity of Fatal/Injury Crashes; 2015-2019
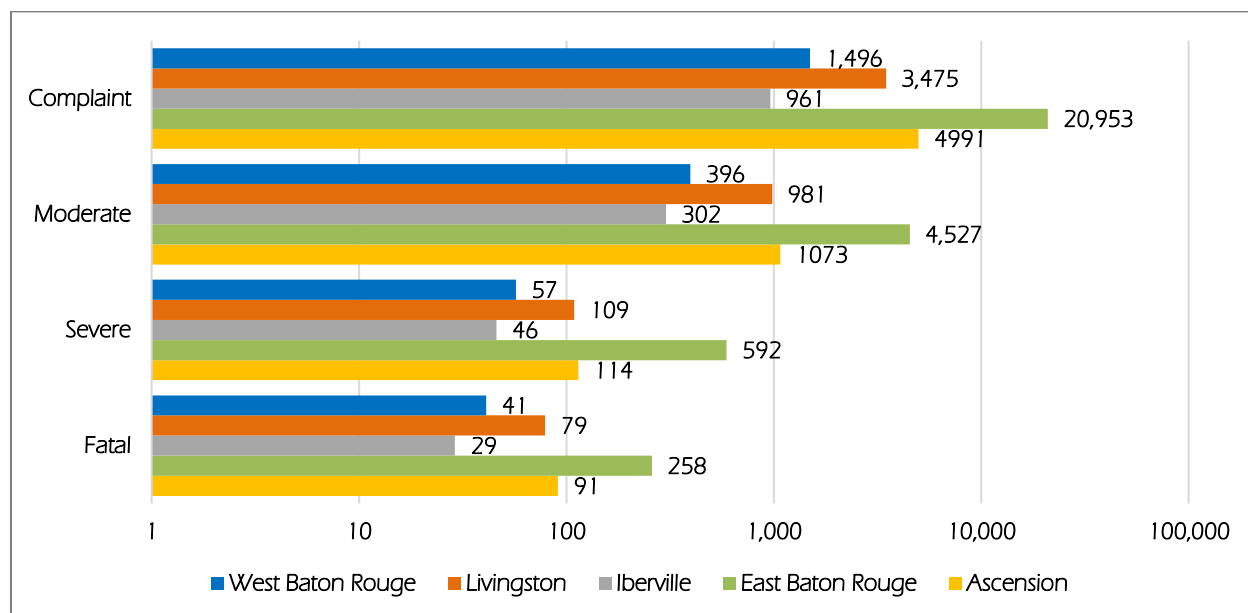
From 2015 through 2019, the fatal and life-threatening crashes resulted in 526 deaths and 1,088 severe injuries according to the DOTD crash data. However, the Fatality Analysis Reporting System (FARS) reported 570 deaths from 2015 through 2019 within the MPA area, which could be a result of georeferenced crash data being slightly different. The total fatalities and severe injuries, by year, during this time period are shown in Figure 2.14.

Figure 2.14: Fatalities and Severe Injuries; 2015-2019
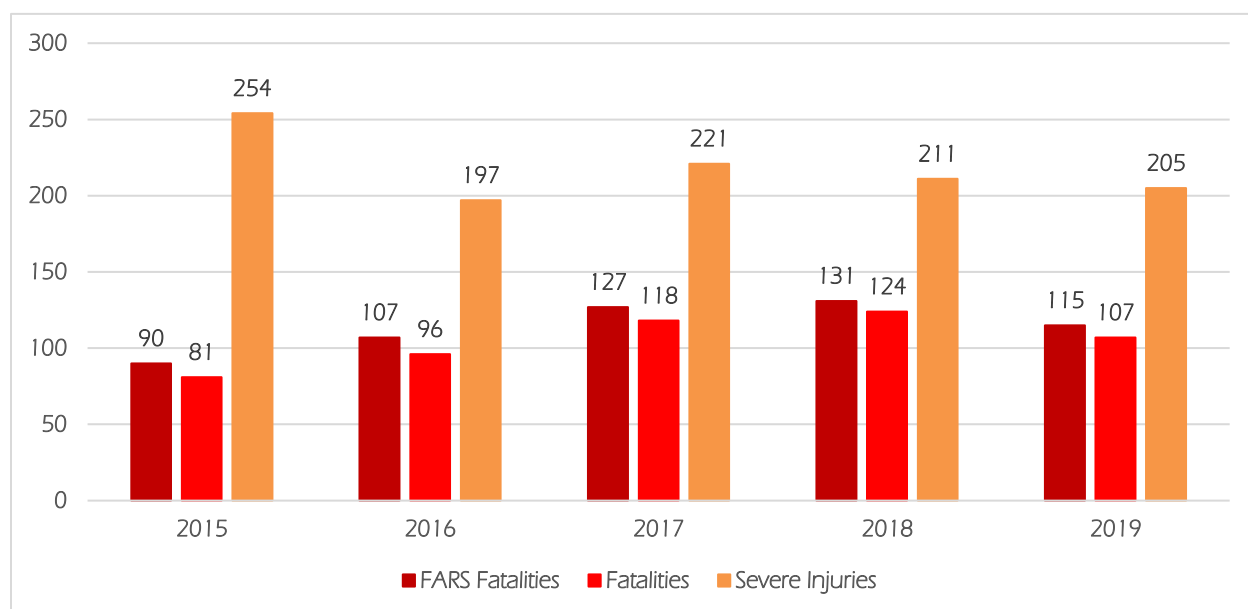
Driving Under the Influence (DUI) Crashes

From 2015 through 2019, there were 4,035 crashes involving drivers under the influence of a substance (alcohol, drugs, etc.). This means approximately three (3) percent of the crashes in the MPA were related to DUI. A total of 258 fatalities resulted from these DUI crashes.

258

Fatalities from DUI crashes.
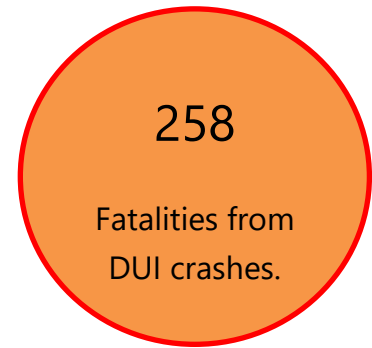
Crash Times

Identifying when crashes occur can assist with developing countermeasures for crashes affected by lighting, congestion, or other factors. Within the MPA, just under 13 percent of the crashes occurred during hours with limited/low daylights (9 PM to 6 AM). Additionally, just over 27 percent of the MPA's crashes occur from 3 PM to 6 PM. This is likely the result of high traffic volumes when children are released from school or people return home from work. The hour in which the crashes occurred is displayed in Figure 2.15.

Figure 2.15: Crashes by Hour, 2015-2019
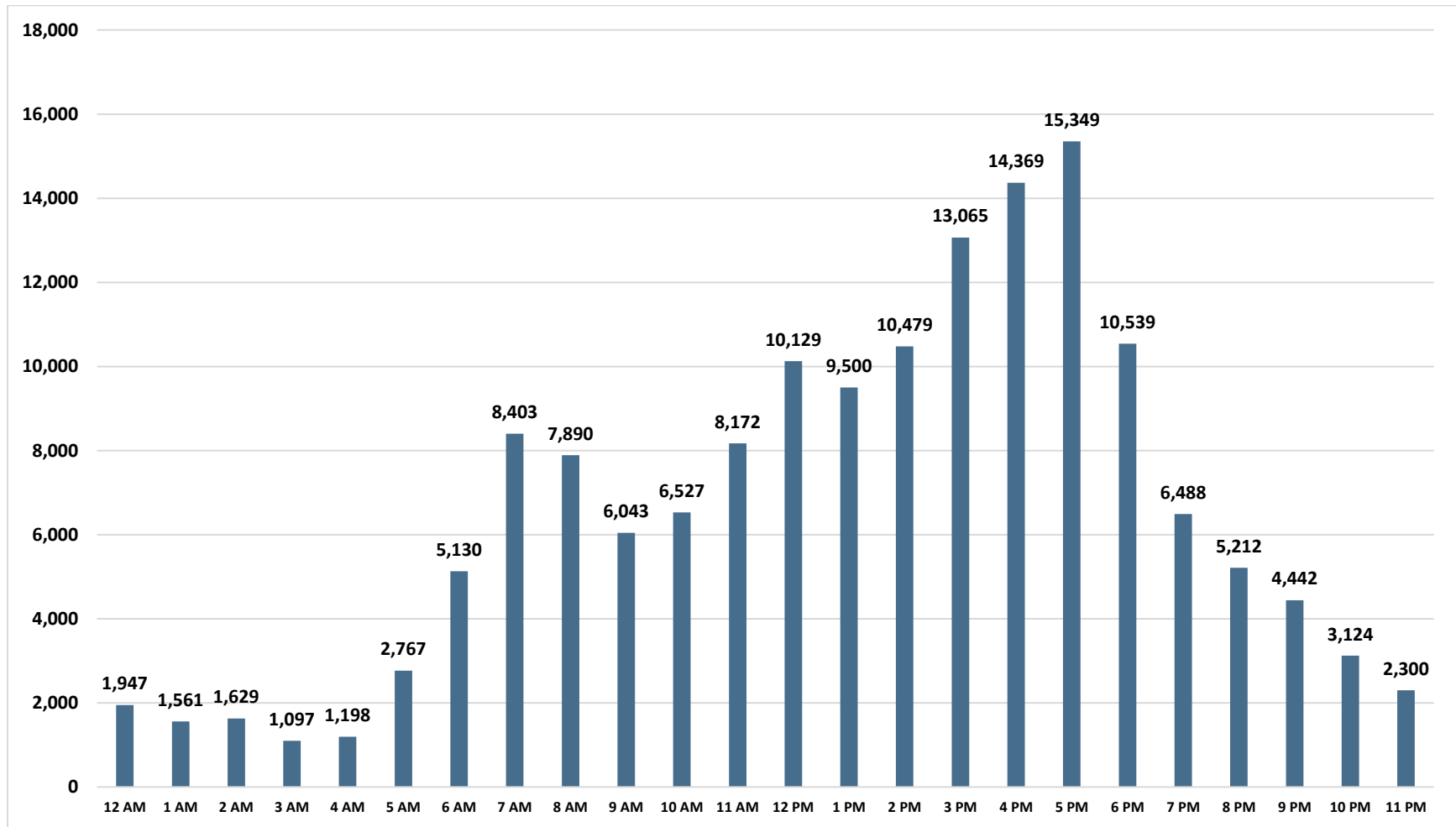
Roadway Surface Condition

The roadway surface can also contribute to a crash through adverse conditions such as rain, oil, debris, or other sources. These conditions temporarily reduce the safety of the roadway and can lead to a crash. However, more than 84 percent of the crashes occurred during dry conditions; meaning roadway surface condition is not a contributing factor in the vast majority of crashes. The distribution of crashes during different surface conditions is displayed in Figure 2.16.

Figure 2.16: Crashes by Roadway Surface Condition, 2015-2019

Contaminant, 67 , 0.04%
Wet, 24,381 , 15.49%
Not Reported, 334 , 0.21%
Ice, 246 , 0.16%
Snow/Slush, 105 , 0.07%
Dry, 132,227 , 84.03%
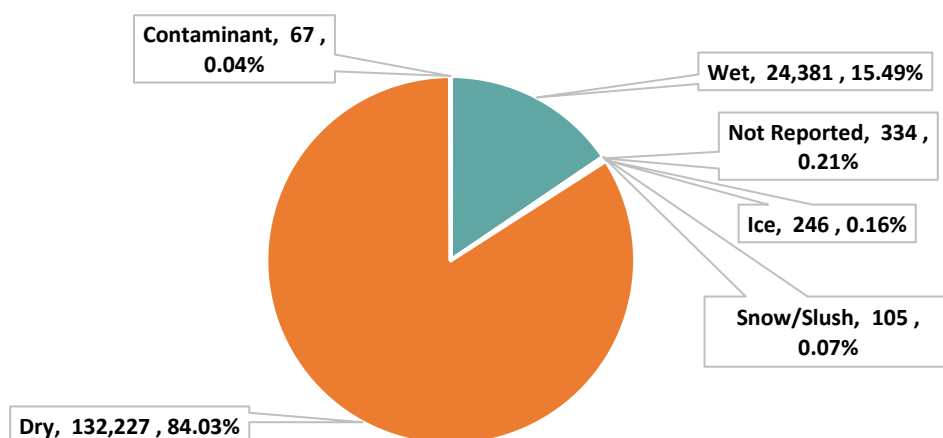
Collision Type

This study also considers collision types that occurred. Table 2.3 displays the crashes by collision type and Parish.

Rear End

Most common collision type

71.0%

Crashes that are Angle, Sideswipe, or Rear End

Table 2.3: Crashes by Collision Type, 2015-2019

Collision Type	Ascension	East Baton Rouge	Iberville	Livingston	West Baton Rouge	Total
Non-Collision with Motor Vehicle	3,477	8,694	526	3,339	850	16,886
Rear End	9,303	46,240	966	6,327	3,092	65,928
Head-On	294	1,292	71	283	61	2,001
Right Angle	2,659	14,471	547	1,680	642	19,999
Left Turn - Angle	302	2,047	140	360	81	2,930
Left Turn – Opposite Direction	1,137	5,447	118	730	198	7,630
Left Turn – Same Direction	464	1,961	89	345	116	2,975
Right Turn – Same Direction	349	1,853	53	270	88	2,613
Right Turn – Opposite Direction	124	496	33	99	38	790
Sideswipe – Same Direction	1,667	16,029	322	1,540	889	20,447
Sideswipe – Opposite Direction	470	1,365	63	447	93	2,438
Other	1,377	9,446	510	776	614	12,723

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 number 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

The total crash frequency for a roadway segment is the number of reported crashes between 2015 and 2019 that were not within 150 feet of an intersection. Table 2.4 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 2.17.

Crash Rates

Crash rates for the study area were based on the model network layer and existing (2019) volumes obtained from the 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 2.5 displays the roadway segments in the MPA that have the highest crash rates. These locations are shown in Figure 2.18.

Table 2.5: Top 20 Crash Frequency Segments and Severity, 2015-2019

Route	Location	Total Crashes	Average Annual Crash Frequency	Fatal	Life-Threatening	Moderate Injury	Complaint of Pain	Property Damage Only
Devall Rd	LA 932 to Tigery E Stone Ave	7,277	690	0	2	7	88	593
I-10	I-12 Interchange to College Dr	2,077	509	1	1	24	99	384
I-10	LA 427 to Dalrymple Dr	1,188	397	0	2	14	55	326
College Dr	LA 427 to I-10	1,267	373	0	1	8	36	328
Sherwood Forest Blvd	Mead Rd To I-12	1,596	372	0	0	7	70	295
W Lee Dr	LA 30 to Etta St	1,248	364	0	2	7	39	316
Siegen Ln	Kinglet Dr to I-10	2,137	363	0	0	2	63	298
LA 3002	Rushing Rd to I-12	3,031	358	0	2	8	56	292
Siegen In	Riegar Rd to I-10	2,134	355	0	0	11	69	275
College Dr	Corporate Blvd to Bankre Ave	1,339	318	0	0	8	53	257
Walker South Rd	Vera McGowan Rd to I-12	3,841	314	0	1	10	82	221
College Dr	Constantine Ave to I-10	12,677	300	0	0	8	32	260
Juban Rd	I-12 Frontage Rd South to I-12 Frontage Rd North	12,685	295	0	0	17	49	229
I-10	LA 1 to Nicholson Dr	2,953	294	0	2	11	73	208
O'Neal Rd	I-12 Frontage Rd South to I-12 Frontage Rd North	2,111	280	0	4	6	73	197
Perkins Rd	LA 3064 to Camelia Trace Dr	1,222	273	1	1	3	40	228
E Brittany Hwy	S Tanger Blvd to I-10	3,503	270	0	0	8	52	210
Perkins Rd	YMCA Plaza Dr to Siegen Ln	1,569	263	0	0	3	50	210
I-10	LA 1 to Nicholson Dr	2,055	259	2	0	12	43	202
Old Hammond Hwy	US 61 to Marilyn Dr	1,482	257	0	2	6	43	206
Total		6,904	1,380.8	4	20	180	1,165	5,535

Table 2.6: Top 20 Crash Rate Segments, 2015-2019

Route	Location	Total Crashes	Average Annual Crash Frequency	ADT	Length (mi)	Crash Rate
Pass Bro Blvd	Sac-au-Lait Ln to S Range Ave	29	5.8	890	0.30	59.1
Daradele Ave	Dawandele Ave to I-12 Interchange	101	20.2	710	0.26	304.9
Alvin Dark Ave	Bright Side Dr to Bob Petit Blvd	52	10.4	1029	0.39	70.8
E Industrial Ave	S Choctaw Dr to Greenway Spring Rd	24	4.8	835	0.33	47.2
Essen Park Ave	Essen Ln to One Calais Ave	70	14	709	0.36	151.7
Palaza Americana Dr	Emmend Bourgeois Rd to US 61	74	14.8	1190	0.31	110.3
N 38th St	Choctaw Dr to Brady St	22	4.4	637	0.30	62.9
Green Oak Dr	US 190 to Rad Oak Dr	159	31.8	1912	0.25	180.5
Devall Rd	Joe Sevario Rd to Timberstone Dr	690	138	4693	0.65	123.2
Pembroke St	75th Ave to Hardin Blvd	18	3.6	696	0.30	47.5
I-12 Frontage Rd WB (Off-Ramp)	I-12 to Walker South Rd	212	42.4	8746	0.31	43.4
I-10 Frontage Rd EB (On-Ramp)	S Burnside Ave to I-10	120	24	5919	0.28	40.1
I-10 Frontage Rd WB (Off-Ramp)	I-10 to John Lebianc Blvd	84	16.8	2161	0.32	66.2
Main St	Gottieb St To N Arcadian Thwy	18	3.6	714	0.25	54.8
Rodeo Dr	Marylin St to Petes Hwy	19	3.8	585	0.33	54.1
Bradock St SB ON-Ramp	Bradock St to I-10 SB	132	26.4	4482	0.27	59.2
Fountainbkeau	Old Hammond Rd to S Bolivar Dr	15	3	501	0.40	41.5
Renoir Ave	N Ardenwood Dr to Rodin Dr	112	22.4	3121	0.32	61.3
Broussard St	Richard Ave to S Arcadian Thwy	53	10.6	1879	0.26	58.9
Hyacinth Ave	Stanford Ave to Stephen Ave	68	13.6	554	0.33	202.7
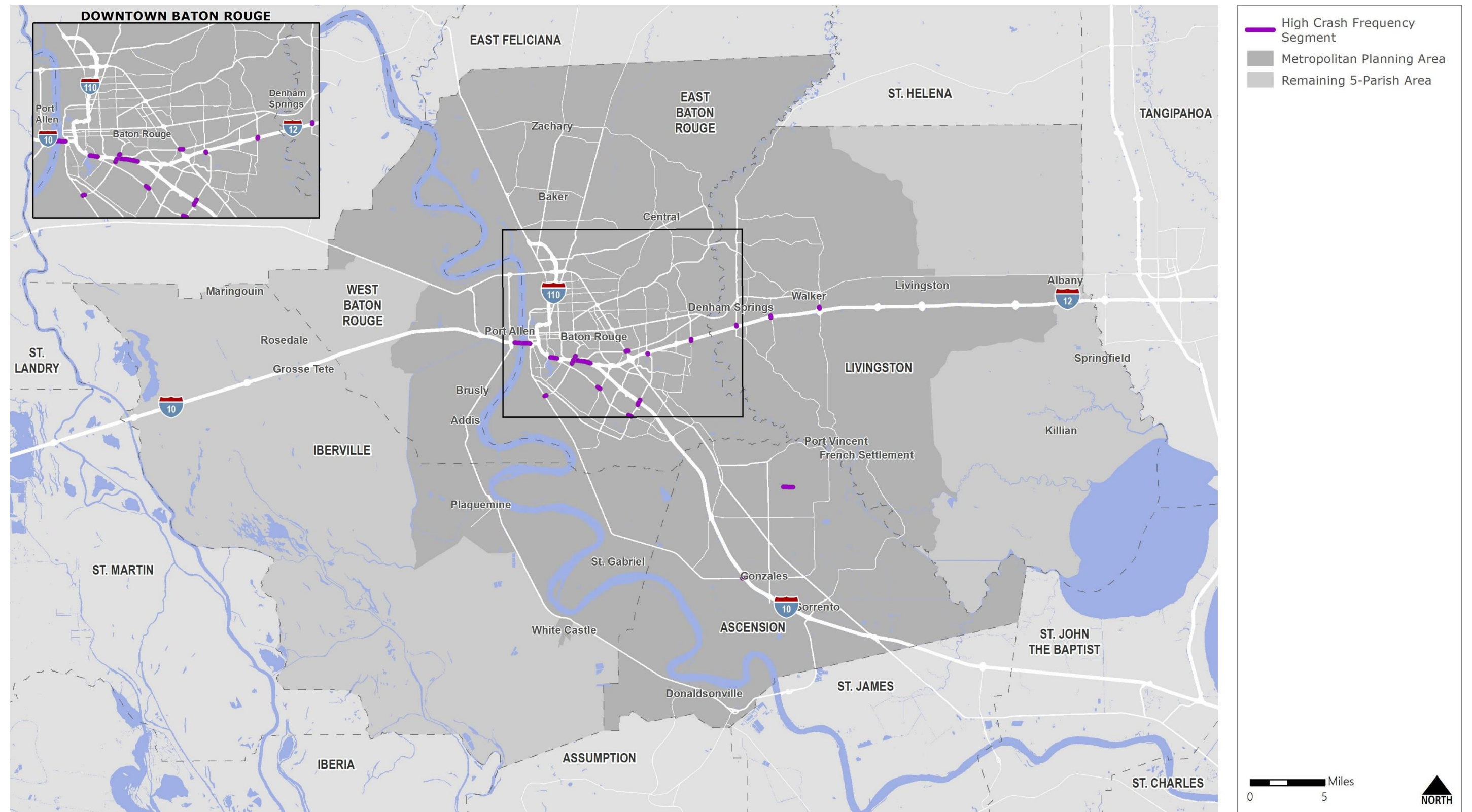
Data Sources: LADOTD

Disclaimer: This map is for planning purposes only.

Figure 2.18: High Crash Rate Areas, 2015-2019
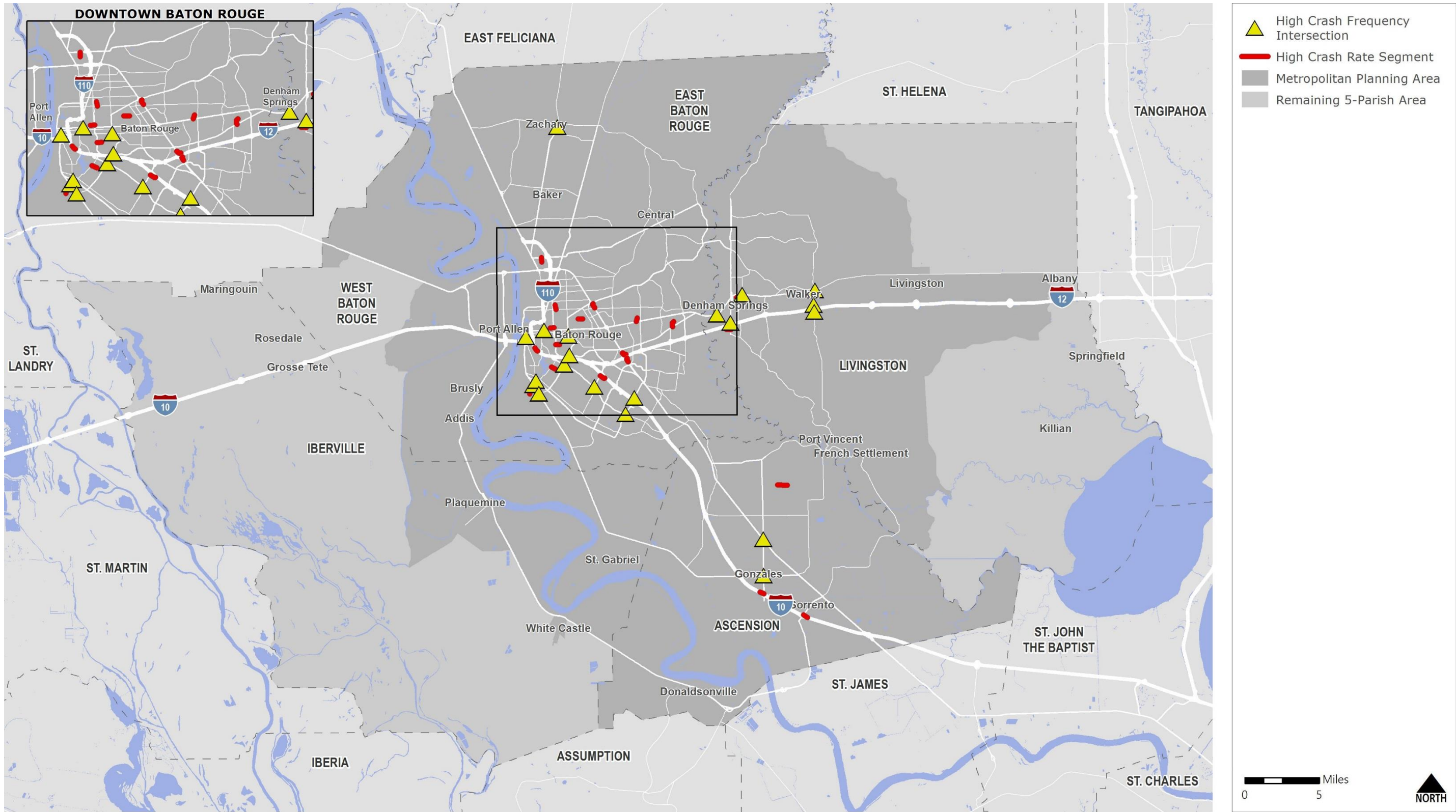
Data Sources: LADOTD

Disclaimer: This map is for planning purposes only.

Intersection Crashes

There were over 6,000 intersection crashes in the MPA from 2015 to 2019, comprising nearly 19 percent of MPA crashes.

Crash Frequencies

Table 2.7 shows the 20 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 2.17.

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 twenty (20) intersections with the highest crash frequencies in the study area and their corresponding crash rates. Figure 2.18 displays the location of the high-crash (top 20) intersections across the study area.

18.9%

of crashes in the MPA occur at intersections
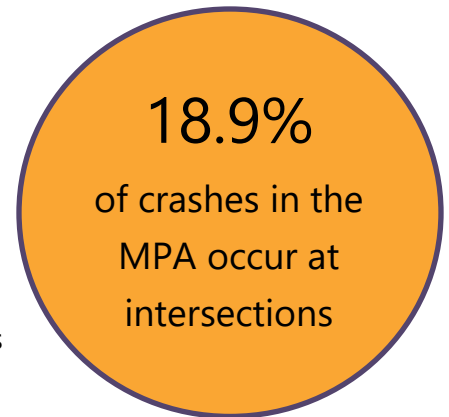
Table 2.7: Top 20 Intersections with High Crash Frequency by Severity, 2015-2019

Intersection	Total	Average Annual Crash Frequency	Fatal	Severe Injury	Moderate Injury	Injury Complaint	Property Damage only
US 190 at LA 447	221	44.2	1	3	11	50	156
LA 30 at Brightside Ln	187	37.4	0	1	4	19	163
LA 3002 at LA 3003	185	37	0	1	2	27	155
LA 3246 at Rieger Rd	175	35	0	0	8	40	127
LA 447 at I-12	166	33.2	0	0	2	37	127
LA 30 at LA4 4	135	27	0	0	2	27	106
I-10 at Bazaar Rd	134	26.8	0	0	3	25	106
US 61 at LA67	122	24.4	1	1	8	44	68
US 190 at LA 16	122	24.4	0	0	10	32	80
LA 30 at Bob Petit Rd	121	24.2	2	1	5	16	97
LA 447 at Pendarvis Ln	118	23.6	0	1	4	36	77
US 61 at LA 44	115	23	0	1	4	26	84
LA 427 at LA 3064	114	22.8	1	1	1	22	89
LA 427 at College Dr	109	21.8	0	1	2	9	97
LA 73 at St. Ferdinand Rd	107	21.4	0	0	3	15	89
LA 42 at Boyd St	102	20.4	0	0	1	10	91
LA 19 at LA 64	102	20.4	0	0	3	9	90
US 190 at LA 1032	101	20.2	1	0	7	16	77
LA 73 at Foster Dr	99	19.8	0	0	8	16	75
LA 427 at LA 3246	98	19.6	0	0	2	19	77
Total	2,633	526.6	6	11	90	495	2,031

Source: LADOTD, 2019

Table 2.8: Top 20 Intersections with High Crash Frequency by Collision Type, 2015-2019

Intersection	Non-Collision With Motor Vehicle	Rear End	Head-On	Right Angle	Left Turn - Angle	Left Turn - Opposite Direction	Left Turn - Same Direction	Right Turn - Same Direction	Right Turn - Opposite Direction	Sideswipe - Same Direction	Sideswipe - Opposite Direction	Other
US 190 at LA 447	2	130	4	9	6	42	3	4	1	16	1	3
LA 30 at Brightside Ln	2	64	1	57	7	17	11	1	1	17	4	5
LA 3002 at LA 3003	4	91	0	12	1	5	12	5	2	38	3	12
LA 3246 at Rieger Rd	1	60	0	31	7	49	1	2	0	16	1	7
LA 447 at I-12	10	70	1	14	5	13	9	5	0	30	2	7
LA 30 at LA4 4	0	89	3	12	1	9	1	2	0	10	2	6
I-10 at Bazaar Rd	4	56	1	11	2	9	0	5	0	38	0	8
US 61 at LA67	6	28	3	21	6	26	0	0	1	21	1	9
US 190 at LA 16	2	46	3	18	3	26	0	5	1	12	1	5
LA 30 at Bob Petit Rd	7	57	2	11	0	13	3	3	3	11	2	9
LA 447 at Pendarvis Ln	1	26	1	20	2	29	9	3	0	18	0	9
US 61 at LA 44	1	73	0	13	4	0	0	7	0	15	0	2
LA 427 at LA 3064	3	49	1	18	4	12	1	0	1	15	1	9
LA 427 at College Dr	1	48	2	15	1	6	1	1	0	24	0	10
LA 73 at St. Ferdinand Rd	3	38	1	19	2	15	1	2	1	17	0	8
LA 42 at Boyd St	1	38	0	37	1	7	2	2	0	7	0	7
LA 19 at LA 64	2	52	0	10	1	1	6	3	1	17	1	8
US 190 at LA 1032	2	44	3	6	0	15	2	4	1	19	1	4
LA 73 at Foster Dr	2	46	1	8	2	9	2	2	0	17	0	10
LA 427 at LA 3246	3	55	2	3	1	8	3	7	0	13	0	3
Total	57	1,160	29	345	56	311	67	63	13	371	20	141

Source: LADOTD, 2019

Table 2.9: Top 10 High Crash Frequency Intersections and Crash Rates, 2015-2019

Intersection	Total Crashes	Average Annual Crash Frequency	ADT	Crash Rate
LA 42 at Boyd Rd	102	20.4	34,295	1.63
LA 30 at Bob Petit Rd	121	24.2	41,252	1.61
US 190 at LA447	221	44.2	76,261	1.59
LA 30 at Brightside Dr	187	37.4	64,681	1.58
LA 447 at I-12	166	33.2	58,674	1.55
LA 3002 at LA 3003	185	37	86,277	1.17
LA 30 at LA 44	135	27	64,565	1.15
LA 73 at St. Ferdinand Rd	107	21.4	53,413	1.10
US 61X at LA 67	122	24.4	61,384	1.09
US1 90 at LA 16	122	24.4	63,412	1.05

Source: LADOTD, 2019

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.

2.8.1 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.

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 assist in responding to security risks.

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 each Parish in the MPA has its own emergency management body and hazard mitigation plan. More information can be found on each Parish's website at:

Ascension Parish Office of Homeland Security and Emergency Preparedness

http://www.ascensionparish.net/departments/homeland-security/

East Baton Rouge Parish Emergency Operations Plan

https://www.brla.gov/1353/East-Baton-Rouge-Parish-Emergency-Operat

Iberville Parish Emergency Preparedness

http://ibervilleparish.com/Departments/Emergency-Preparedness

Livingston Parish Office of Homeland Security and Emergency Preparedness

http://www.lohsep.org/

West Baton Rouge Parish Local Emergency Planning Committee

http://www.wbrlepc.net/

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.

<u>State and Local Governments</u>

DODT's Emergency Operations Section is under the Office of Enforcement. The section oversees and administers DODT's emergency services which include:

- Emergency plan development and maintenance,
- Coordination of emergency response operations,

- Coordination of state and federal emergency preparedness and response programs, and

- Coordination of Homeland Security initiatives.

Information on the LADOTD's emergency services can be found at:

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

Louisiana Emergency Preparedness Association (LEPA)

An additional provider for emergency management in the state is LEPA. LEPA defines its mission as:

"...promote the exchange of ideas and best practices, improve working relationships and advance the profession of emergency management and preparedness."

The LEPA website (https://lepa.org/) provides information and planning to the public and the emergency management communities. This site focuses on continuous development and timely and accurate data.

Local Colleges and Universities

Security threats have necessitated documents and emergency plans for several types of emergencies, including hurricanes, tornadoes, earthquakes, and more.

The MPA is home to multiple college and universities and information about their emergency plans can be obtained from their websites or administrative staff.

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 Baton Rouge 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://gisweb.dotd.la.gov/evacuationroute/desktop.html

2.8.2 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 62,000 miles long and links military installations with roadways that provide for the mobility of strategic military assets. All Interstate highways, including I-10, I-12, and I-110 within the MPA, are included as part of the STRAHNET. The MPA contains no other STRAHNET facilities.

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.

2.9 Non-Recurring Congestion Analysis

The methodology used to determine the roadway segments experiencing nonrecurring congestion was to:

- Group speed data into one-hour periods for a full calendar year and calculate the annual average speed and the annual standard deviation by hour for each segment.

- Group speed data into one-hour periods by hour and day and calculate the average speeds by hour.

- Tabulate the average speeds calculated in the previous steps, side by side, for all the speeds collected over 2019 year, for a specific time period (hour and day).

- Calculate the Standard Normal Deviate (SND) for each time period (hour and day) using the below formula:

$$(SND)_{ij} = \frac{((Speed)_{ij} - (Annual\ Average\ Speed)_i)}{(Annual\ Standard\ Deviation)_i}$$

Where: SND = Standard Normal Deviate

i = Hour

j = Day

Negative SND values that are greater than a selected threshold would indicate congestion beyond average levels. This indicates a high likelihood of non-recurring congestion. For this effort, a threshold value of -1.5 was selected based on the research's sensitivity analysis. SND values which deviated by more than -1.5 (i.e., less than -1.5) were indicative of non-recurring congestion speeds. Additionally, the delays for time period (hour and day) where the SND deviated by more than -1.5 were calculated using the below formula:

$$Time\ Delay = \frac{(Segment\ Length)}{(Segment\ Speed)_i} - \frac{(Segment\ Length)}{(Segment\ Annual\ Average\ Speed)_i}$$

Where: Segment length is in miles

Segment speeds are in MPH

Time Delay is in hours

i = Hour

2.9.1 Non-Recurring Congestion Segments

With the methodology established, the following process was used to locate segments that experienced excessive non-recurring congestion in 2019:

- Calculate the SND and the time delay (in hours) for each segment.
  - The top 20 percent of the Segments based on the calculated maximum delay in 2019 were considered to experience excessive non-recurring congestion.

- Calculate the five-year crash trends using the 2015-2019 LDOT crash data for both total and fatality/life-threatening crash frequencies.
  - The average yearly crash frequency was used to prioritize the segments experiencing excessive non-recurring congestion.

Figure 2.19 displays the segments that experienced excessive non-recurring congestion in the year 2019. The non-recurring congestion trends for the top 10 segments, based on crash frequency, are shown in Table 2.10.

Limitations

To develop a reliable methodology that identifies non-recurring congestion, a consistent and reliable travel time database is necessary. Speed data and travel times for each time interval (5-minute, 10-minute, 15-minute, or 1-hour) throughout an entire year is essential. However, the RITIS database contains several time intervals where speed and travel time data is unavailable or missing, making it difficult to perform an accurate and reliable non-recurring congestion analysis.

Additionally, the RITIS database travel time data is not available for each individual travel lane for multilane highways. However, with minor incidents, there is a chance that the impacts from the incident would negatively impact only the travel lane experiencing the incident and not the other travel lanes. This indicates that the incident would not be reflected in the RITIS database even though an incident had occurred.

2.9.2 Segment Prioritization

The segments displayed in Figure 2.19 were ranked based on the five-year average crash frequency. Table 2.10 shows the following:

- Frequency of non-recurring congestion incidents
- The maximum delay for a non-recurring congestion incident
- The 5-year trends for total crash frequency and fatal and life-threatening injury crash frequency for each segment.

Table 2.10 Non-Recurring Congestion Trends: Top 10 Segments based on Crash Frequency

Roadway	Segment	Length (miles)	2019 Non-Recurring Incidents	2019 Maximum Delay (Hours)	5-Year Average Crash Frequency	5-Year Average Fatal/Life Threatening Crash Frequency	5-Year Total Crash Trend	5-Year Fatal/Life Threatening Crash Trend
LA-1	LA-1 at Addis ln to LA-1 at I-10	6.44	459	0.33	179.8	1.8	Decrease	Stable
LA-302	LA-302 at US-190 to La-302 at I-12	1.71	430	0.12	143.0	0.6	Stable	Stable
LA-30	LA-30 at LA-44 to LA-30 at I-10	1.47	345	0.10	140.6	0.6	Stable	Stable
LA-44	LA-44 at LA-3038 to LA-44 at LA-30	1.51	257	0.13	138.6	0.2	Stable	Stable
US-61	US-61 at US-190 to US-61 at I-12	1.94	401	0.20	119.8	0.6	Stable	Stable
LA-1	LA-1 at I-10 to LA-1 at Addis ln	6.44	424	0.19	113.0	2.0	Decrease	Stable
Sherwood Forest Blvd	I-12 to Coursey Blvd	1.37	374	0.10	112.4	0.4	Decrease	Decrease
US-190	US-190 at LA-67 to US-190 at Evangeline St	1.81	378	0.12	111.6	1.6	Stable	Stable
US-61	US-61 at I-12 to US-61 at US-190	1.90	355	0.12	111.2	0.8	Stable	Decrease
Lee Dr	Lee Dr at LA-427 to Lee Dr at Highland Rd	1.81	266	0.15	110.8	0.4	Decrease	Stable

Figure 2.19: Segments Experiencing Excessive Non-Recurring Congestion
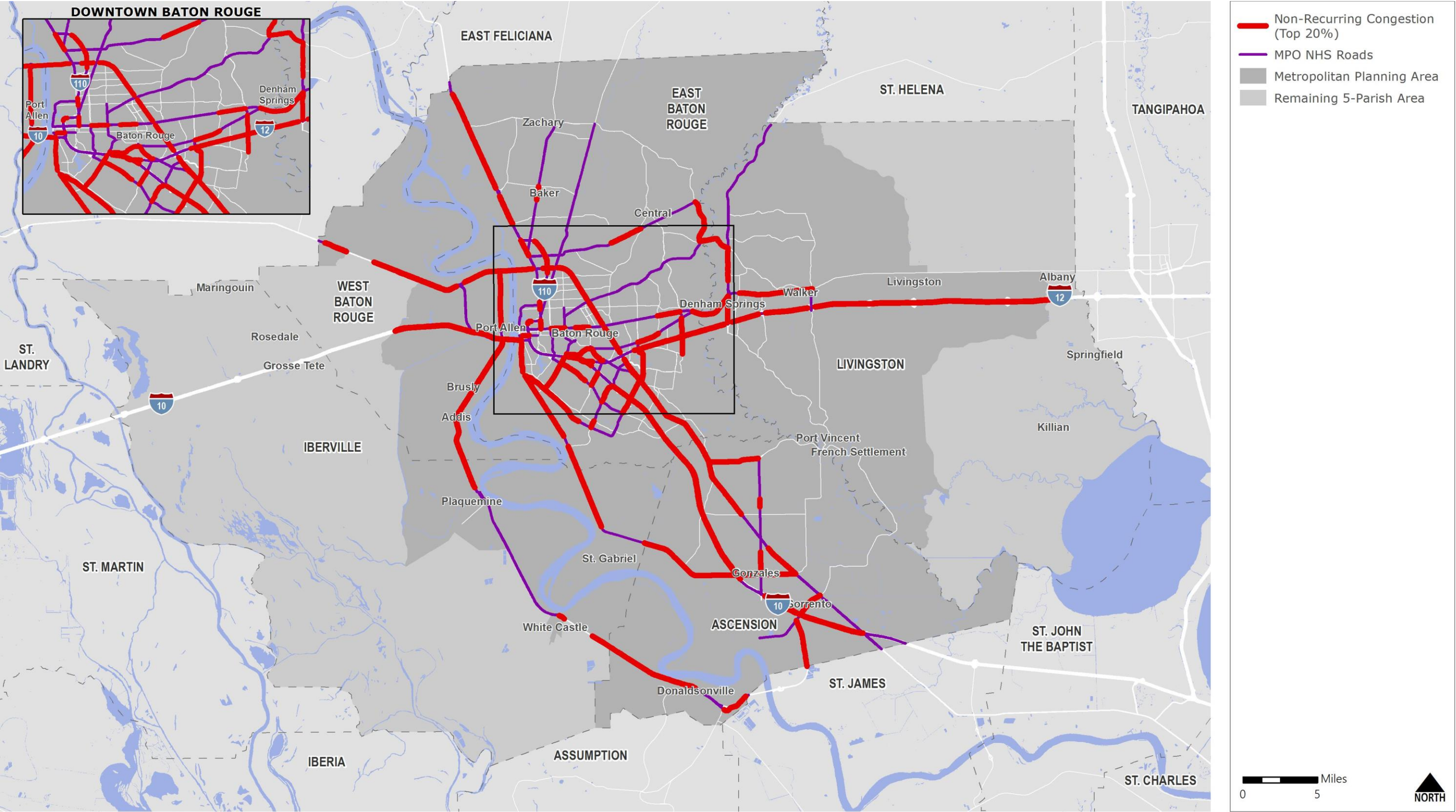
Data Sources: LADOTD; NPMRDS

Disclaimer: This map is for planning purposes only.

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 Trucking

Inventory

The MPA contains several roadways that serve freight. However, it does not contain any active intermodal terminal facilities designated as intermodal connectors. Within the MPA, I-10 and I-12 are part of the Primary Highway Freight System (PHFS) routes in the National Highway Freight Network (NHFN)[2]. The LADOTD's identified freight network within the MPA is shown in Figure 3.1.

Table 3.1 displays the intermodal terminal facilities in the MPA. The region also contains several trucking establishments which provide local and long-distance trucking services. The intermodal facilities and major trucking establishments in the MPA are shown in Figure 3.1.

Table 3.1: Intermodal Terminal Facilities for Trucks

Name	Modes Served	City
Port of Greater Baton Rouge	Port & Truck	Port Allen
Innovative Waste System, Inc.	Rail & Truck	Baton Rouge
ACME Transfer	Rail & Truck	Baton Rouge
Agway Systems, Inc.	Rail & Truck	Baton Rouge
Miller Transporters, Inc.	Rail & Truck	Baton Rouge
USPS-P and DC-P and DF	Truck & Truck	Baton Rouge

Source: Bureau of Transportation Statistics, 2015 National Transportation Atlas

Volumes

To better understand the MPA's freight needs, the 2020 Travel Demand Model's daily truck volumes were used, illustrated in Figure 3.2.

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[2] https://ops.fhwa.dot.gov/freight/infrastructure/ismt/state_maps/states/louisiana.htm

The estimated freight truck volumes suggest the following trends:

- Freight truck traffic is highest on I-10, I-12, I-110, US 190, US 61 and LA 1.

- Freight truck traffic is also relatively high on LA 30, LA 427, LA 426, LA 42, LA 408, and LA 3246.

Figure 3.1: Regional Freight Network and Facilities - Trucking

Legend:
- Primary Highway Freight System (PHFS) route
- Non-Primary Highway Freight System (PHFS) route
- Railroad
- Port / Truck Intermodal Facility
- Rail / Truck Intermodal Facility
- Truck / Truck Intermodal Facility
- Airport
- Metropolitan Planning Area
- Remaining 5-Parish Area
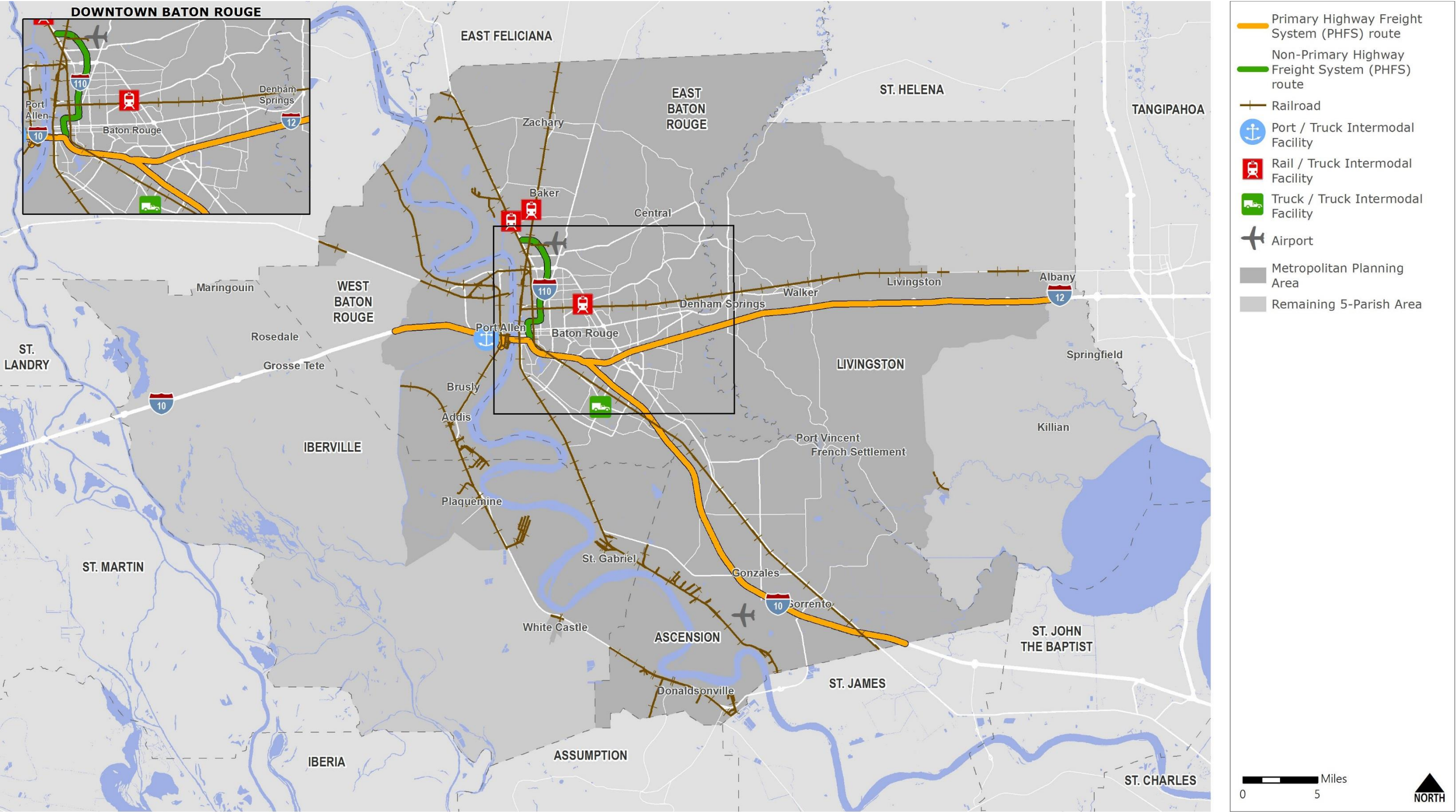
Data Sources: 2015 National Transportation Atlas

Disclaimer: This map is for planning purposes only.

Figure 3.2: Modeled Regional Freight Truck Traffic
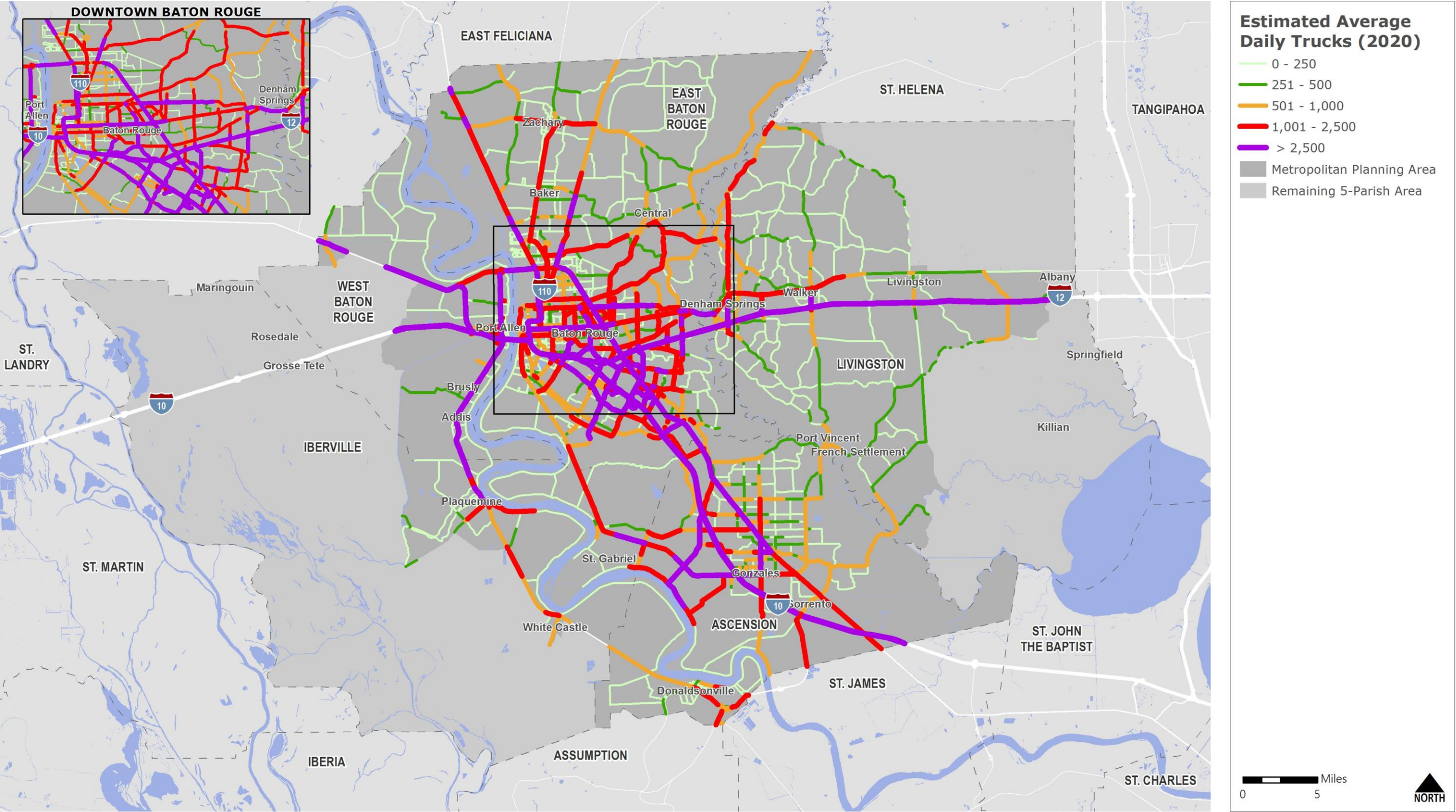
DOWNTOWN BATON ROUGE

Estimated Average Daily Trucks (2020)

- 0 - 250
- 251 - 500
- 501 - 1,000
- 1,001 - 2,500
- > 2,500

Metropolitan Planning Area

Remaining 5-Parish Area

Data Sources: Travel Demand Model

Disclaimer: This map is for planning purposes only.

Commodity Flows

Using data obtained from the FHWA's most recent Freight Analysis Framework (FAF), general trends in freight movement within the MPA can be observed. The freight truck movements for the MPA Parishes, and their statewide rankings, are summarized below.

Pipeline move the majority of goods in the MPA among all transportation modes; owing largely to the petroleum-based industries within the region. As shown in Figure 3.3, pipelines account for 38 percent of total tonnage and 32 percent of total value moved into, out of, and within the MPA. Water is second at 23 percent of total tonnage, though the total value of freight moved by water is only 15 percent. Truck is third at 21 percent of total tonnage and a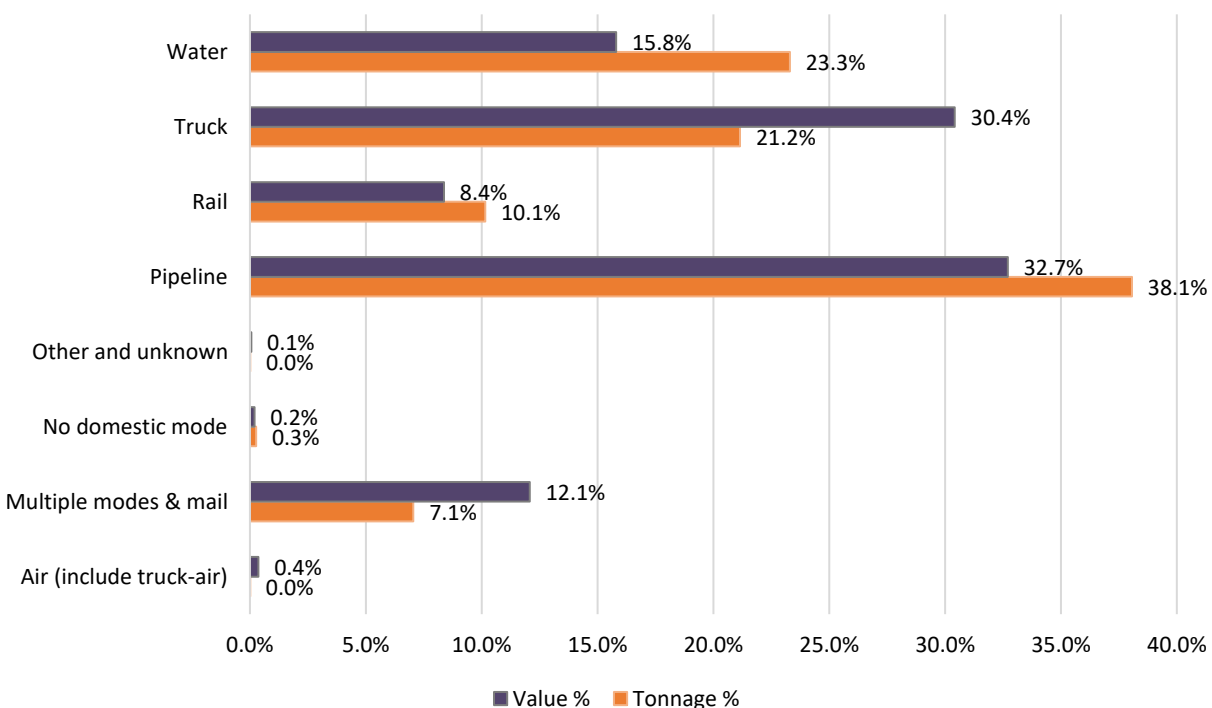 total value of freight moved of 30 percent. The remaining modes account for approximately 17 percent of total tonnage and 21 percent of total value.

Figure 3.3: Percent of Total Tonnage and Value by Mode, 2017

Source: Freight Analysis Framework Version 5

As shown in Table 3.2, most of the truck freight in the MPA originates outside the MPA. By tonnage, approximately 37 percent originates outside the MPA ("inbound" movements) and 35 percent originates in the MPA ("outbound" movements). In addition, 28 percent of freight tonnage stays within the MPA. Additionally, nearly 52 percent of the total truck freight tonnage is intrastate.

By value, inbound movements represent approximately 39 percent and outbound movements represent more than 38 percent. Nearly 23 percent of freight, by value, stays within the MPA. Although more than half (52 percent) of the truck freight tonnage within the MPA is intrastate, it makes up less than a third of the region's intrastate value of goods moved by truck.

Table 3.2: Commodity Flows by Truck, 2017

Direction	Tons (Thousands)	Percent of Total	Value ($ Million)	Percent of Total
Inbound (Interstate)	6,152.93	8.2%	11,513.77	24.3%
Inbound (Intrastate)	21,379.51	28.4%	7,063.67	14.9%
Outbound (Interstate)	9,149.48	12.1%	11,302.97	23.9%
Outbound (Intrastate)	17,626.39	23.4%	6,788.45	14.3%
Within MPA	21,075.45	28.0%	10,638.33	22.5%
Total	75,383.76	100%	47,307.19	100%

Source: Freight Analysis Framework 5

Figure 3.4 and Figure 3.5 show the top 10 inbound and outbound trading partners for the MPA, respectively. The top 10 trading partners are located within Louisiana, the southern United States, North from MPA and West from MPA. Louisiana FAF zones outside of the MPA account for three (3) of the top inbound and outbound trading partners. The "Rest of Louisiana FAF" zone represents the largest trading partner for inbound freight movements and New Orleans Louisiana-Mississippi (Louisiana Part) is the largest trading partner for outbound freight movements.

Other regions that are top trading partners for both inbound and outbound freight movements in the MPA include:

- Columbus, Ohio
- Dallas-Fort Worth Texas-Oklahoma (Texas Part)
- Lake Charles, Louisiana
- Rest of Texas
- Cincinnati Ohio-Kentucky-Indiana (Ohio Part)
- Houston, Texas
- Mississippi
- New Orleans Louisiana-Mississippi (Louisiana Part)
- Rest of Louisiana
- Arkansas

Figure 3.4: Top Inbound Trading Partners by Total Truck Tonnage
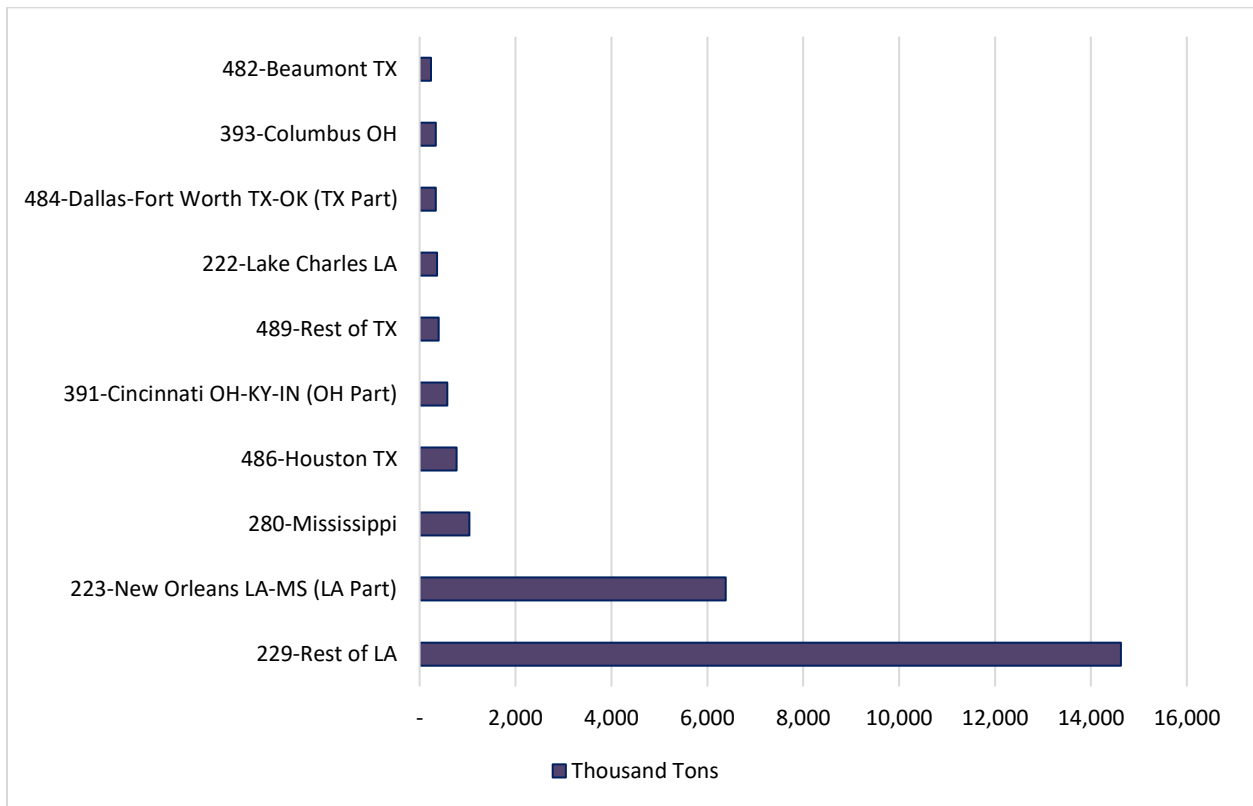
Source: Freight Analysis Framework version 5

Figure 3.5: Top Outbound Trading Partners by Total Truck Tonnage
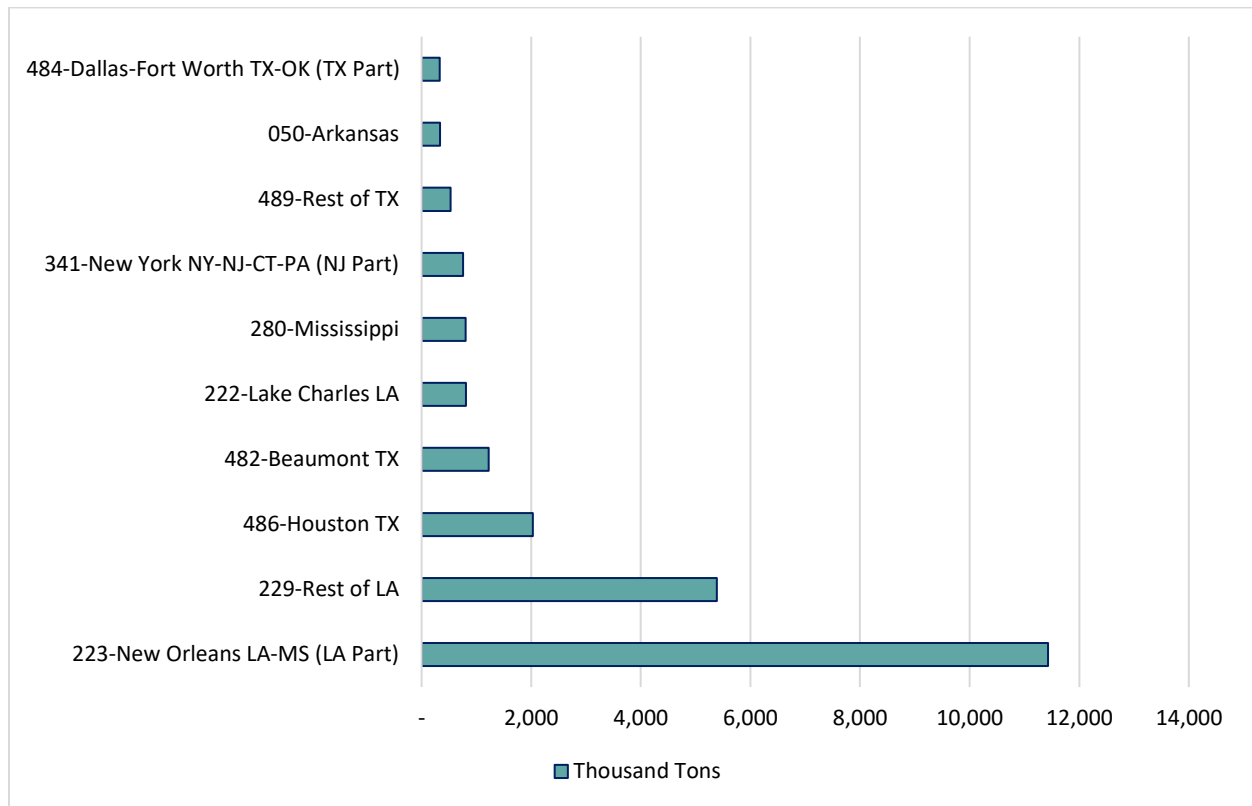
Source: Freight Analysis Framework version 5

Figure 3.6 and Figure 3.7 show the top commodities shipped via truck by total tonnage and value, respectively. Other Agriculture products is the top commodity by tonnage, followed by Basic Chemicals and then by Gasoline. Basic Chemicals, Pharmaceuticals, and Gasoline are the top three (3) commodities by value.

Figure 3.6: Top 10 Commodities by Truck Tonnage, 2017
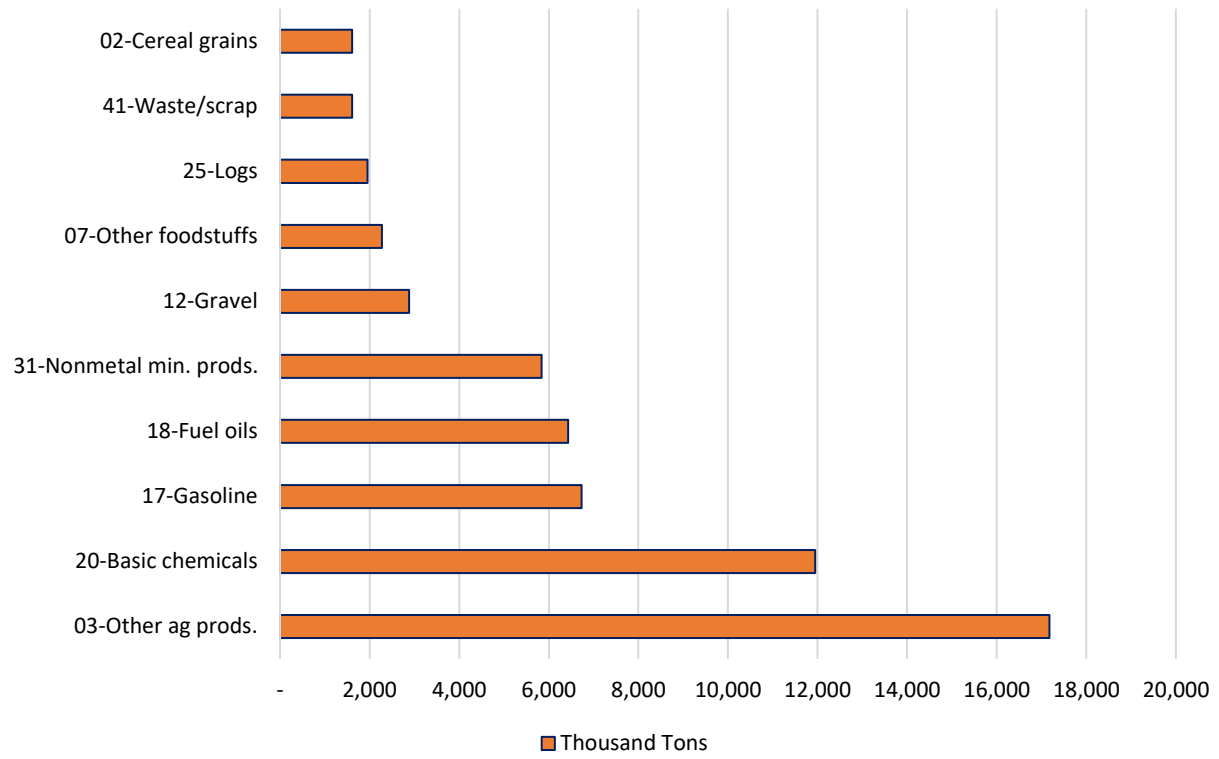
Source: Freight Analysis Framework version 5

Figure 3.7: Top Truck Commodities by Value, 2017
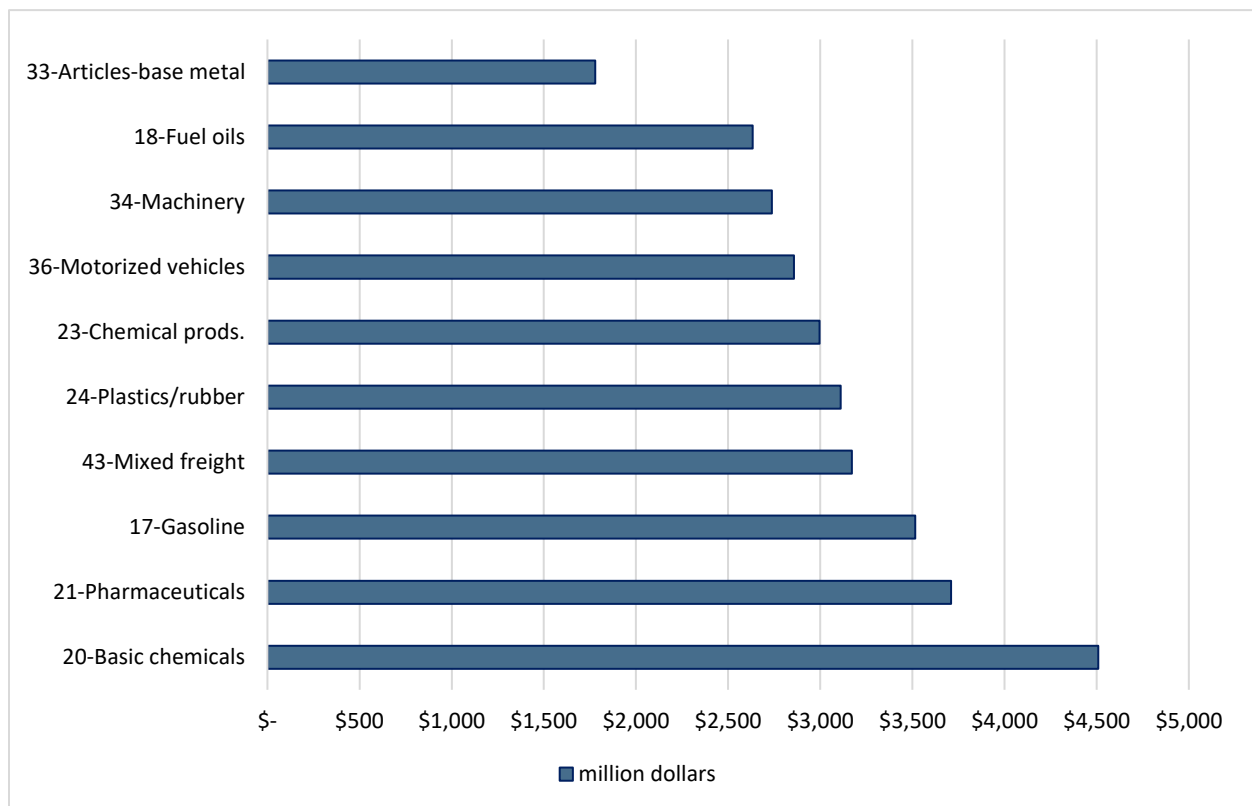
Source: Freight Analysis Framework version 5

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[3].

The 2020 NPMRDS data indicates the following about the Interstates in the Baton Rouge MPA:

- I-10 has an overall TTTR of 1.61;

- I-110 has an overall TTTR of 1.61; and

- I-12 has an overall TTTR of 1.42.

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

The 2020 TTTR of each Interstate segment is shown in Figure 3.8. The state's freight performance measures, and the MPO's progress towards them, are discussed in the Transportation Performance Management report.

Figure 3.8: Congested Freight Corridors (Truck Travel Time Reliability), 2020

DOWNTOWN BATON ROUGE

TTTR (2020)
- ▬ 1.00 - 2.50
- ▬ 2.51 - 4.00
- ▬ 4.01 - 6.00
- ▬ 6.01 - 11.00
- Metropolitan Planning Area
- Remaining 5-Parish Area
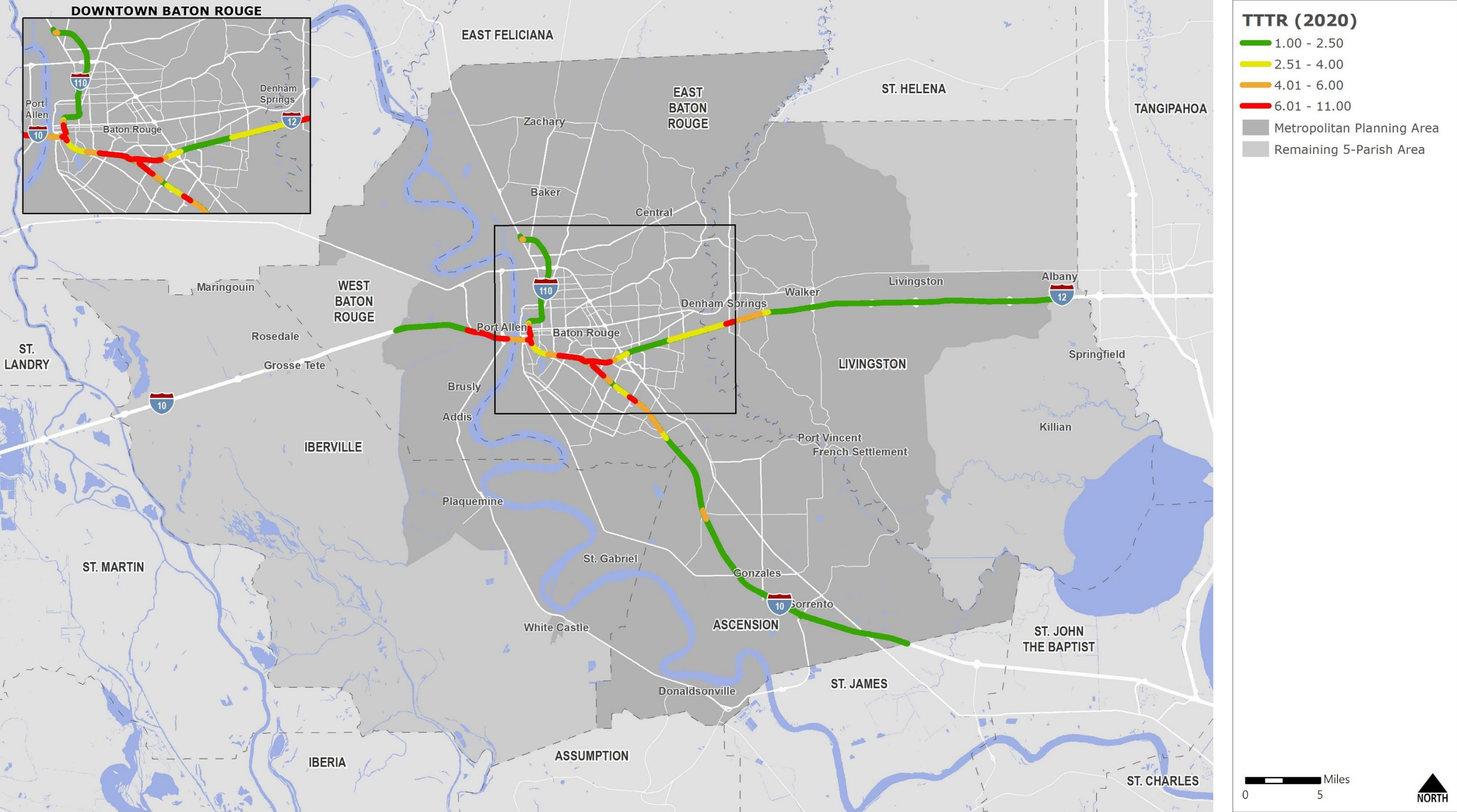
Data Sources: NPMRDS

Disclaimer: This map is for planning purposes only.

Safety

Crashes involving heavy vehicles were analyzed using crash records from 2015 to 2019 obtained from LADOTD. A total of 5,138 crashes involving heavy vehicles occurred within the Baton Rouge MPA during the five-year study period. Figure 3.9 shows the number of heavy vehicle crashes by Parish during the study period.

Figure 3.9: Heavy Vehicle Crashes by Year by County, 2015 - 2019
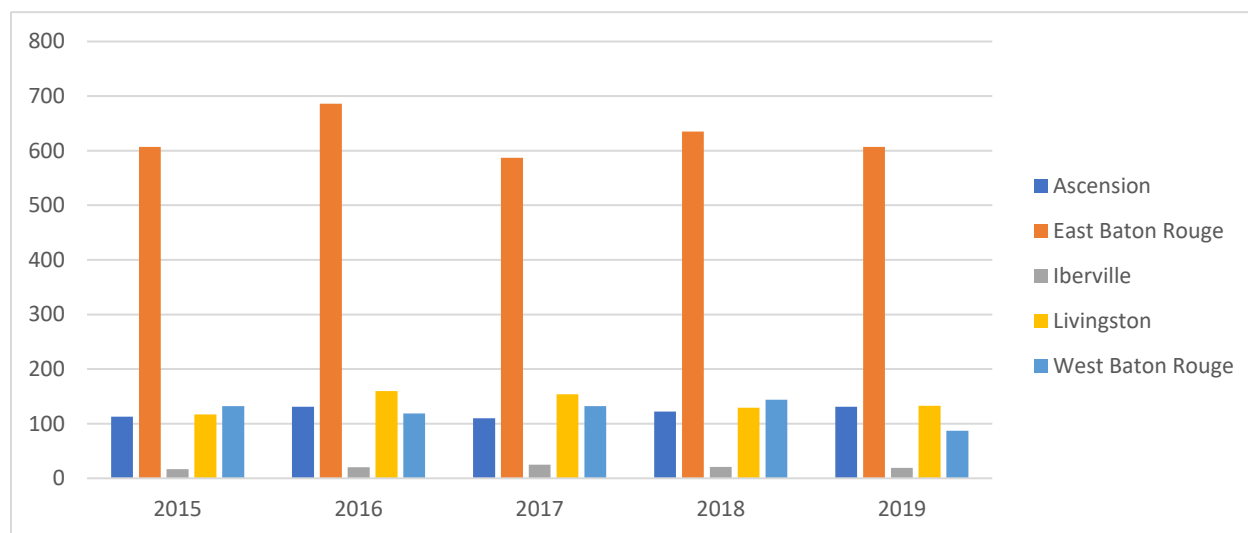
Source: LADOTD

Between 2015 and 2019, fatal crashes involving heavy vehicles comprised less than one (1) percent of the total number of heavy vehicle crashes. However, three (3) percent of all fatal crashes in the study area involved a heavy vehicle.

Since heavy vehicle crashes represented a small percentage of the total crashes during the study period, many locations experienced little to no heavy vehicle crashes. However, the following intersections in the study area experienced more than ten (10) heavy vehicle crashes between 2015 and 2019:

19
Fatal crashes involving heavy vehicles

- I-10 at College Dr
- LA 1 at Avenue G
- I-10 at Washington St
- LA 67 at LA 408

- US 61 at Choctaw Dr
- LA 415 at I-10
- I-10 at River Road
- LA 427 at I-10

Furthermore, the roadway segments in the MPA that experienced the majority of heavy vehicle crashes between 2015 and 2019 were:

- I-10 from the western study area boundary to the I-10/I-110 interchange
- US 190 from Florida Blvd to Greenwell Springs Rd
- LA 1 from I-10 to Addis Ln
- I-12 from Frost Rd to LA 441
- Airline Hwy from Plank Rd to Evangeline St

3.3 Railways

Inventory

The MPA has approximately 220 miles of railroads. Figure 3.10 displays the MPA's railroads and MPA corridors. The following railroads in the MPA are part of the MFN:

- The Kansas City Southern Railroad, running alongside the I-10 and US-61 corridors

- The Canadian Northern Railroad, running alongside the US-190 and Choktaw Street.

- The Canadian Northern Railroad, running North/South alongside the Missisipi River (East Side)

- The Unition Pacific Railroad, running North/South alongside the Missisipi River (West Side)

- The Royal Gorge Route Railroad, running North alongside LA-19 North of Baton Rouge

- The Acadiana Railway Co runs on a short segment south of the MPO connecting to the Union Pacific Railways

The Canadian Northern railroad connects Hammond to Baton Rouge. However, it is a key connector for the MPA's rail freight network, with several key users. Figure 3.10 displays the MPA's railroads and MFN corridors.

The intermodal facilities within the MPA that serve railroads are shown in Table 3.3. There are also several line-haul railroad establishments within the MPA. These establishments provide intercity movement of trains between the terminals and stations on main and branch lines of a long-distance rail network. Figure 3.10 shows the location of the intermodal facilities and line-haul establishments within the MPA.

Table 3.3: Intermodal Terminal Facilities for Rail, 2019

Name	Modes	City
Innovative Waste Systems, Inc-Baton Rouge-La	Rail	Rail & Truck
Acme Transfer-Baton Rouge-La	Rail	Rail & Truck
Agway Systems Inc.	Rail	Rail & Truck
Miller Transporters, Inc.-Baton Rouge-La	Truck	Rail & Truck

Source: Bureau of Transportation Statistics, 2015 National Transportation Atlas

Figure 3.10: Regional Freight Network and Facilities by Railroad Owner

Railroad Owner
- AKDN
- CN
- GOGR
- KCS
- UP
- Metropolitan Planning Area
- Remaining 5-Parish Area
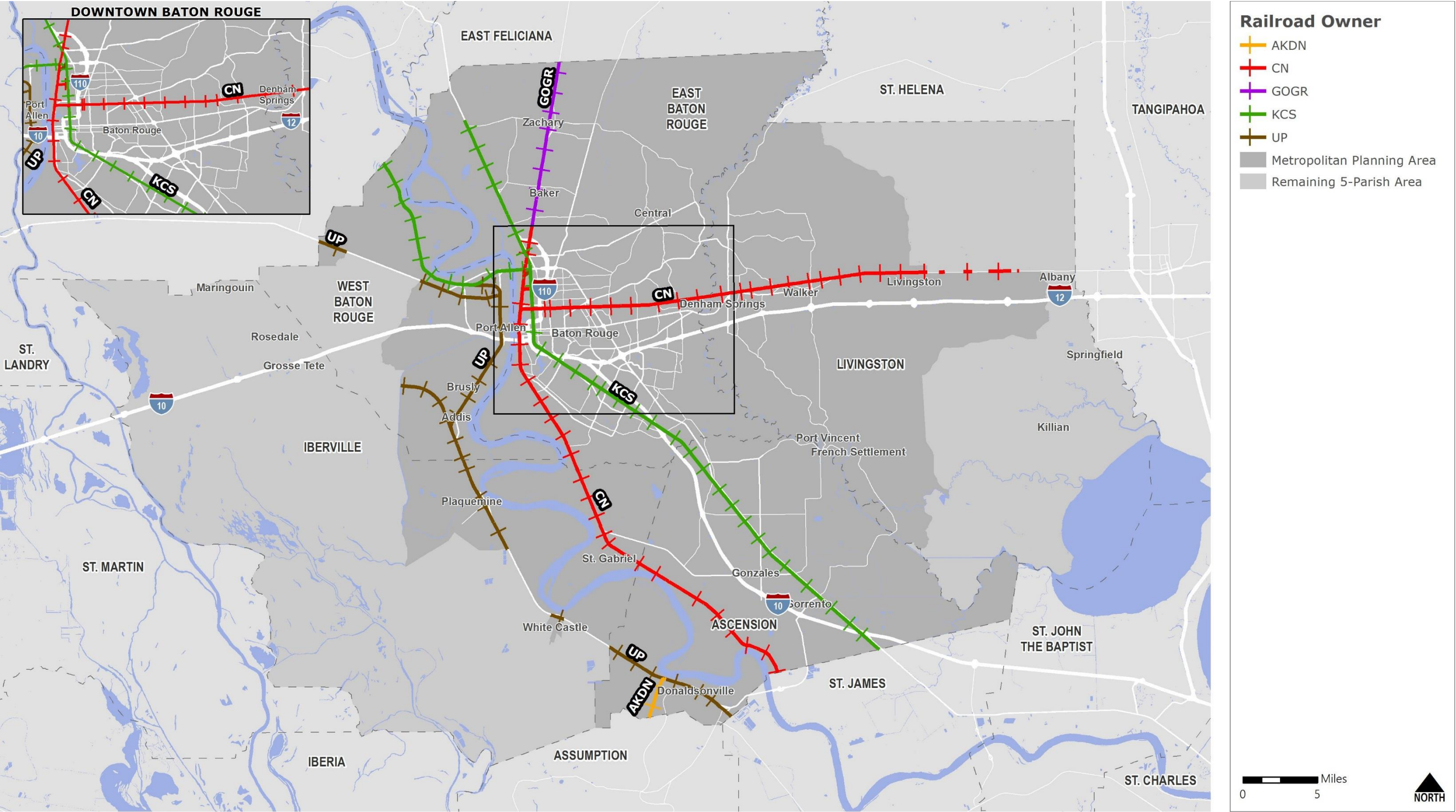
Data Sources: USDOT; LADOTD

Disclaimer: This map is for planning purposes only.

Commodity Flows

As shown in Table 3.4, most of the rail freight in the MPA originates outside the MPA. By tonnage, approximately 62 percent originates outside the MPA ("Inbound" movements), 20 percent originates in the MPA ("Outbound" movements), and approximately 18 percent of total rail freight tonnage remains in the MPA. Nearly 41 percent of the total rail freight tonnage is either interstate or intrastate.

By value, inbound movements represent approximately 17 percent and outbound movements represent nearly 38 percent. Approximately 45 percent of total rail freight value remains in the MPA. Nearly 50 percent of the total rail freight value is interstate.

Table 3.4: Commodity Flows by Rail, 2017

Direction	Tons (Thousands)	Percent of Total	Value ($ Million)	Percent of Total
Inbound (Interstate)	7,760.71	21.5%	1,804.22	13.9%
Inbound (Intrastate)	14,607.47	40.4%	385.41	3.0%
Outbound (Interstate)	7,128.22	19.7%	4,676.80	35.9%
Outbound (Intrastate)	233.08	0.6%	312.70	2.4%
Within MPA	6,437.94	17.8%	5,838.24	44.8%
Total	36,167.42	100%	13,017.37	100%

Source: Freight Analysis Framework 5

Figure 3.11 and Figure 3.12 show the top 10 inbound and outbound trading partners for the MPA, respectively. Louisiana FAF zones outside of the MPA account for two (2) of the top inbound trading partners only. The New Orleans Louisiana-Mississippi (Louisiana Part) FAF zone represents the largest trading partner for inbound freight movements and Houston, Texas FAF zone for outbound freight movements. Other regions that are top trading partners for both inbound and outbound freight movements in the MPA include:

- Kansas City Missouri-Kansas (Kansas Part)
- Rest of Texas
- Lake Charles, Louisiana
- Houston, Texas
- Cleveland, Ohio
- North Dakota
- Rest of Minnesota
- New Orleans Louisiana-Mississippi (Louisiana Part)
- Wyoming
- Rest of Oklahoma

Figure 3.11: Top Inbound Trading Partners by Rail Tonnage
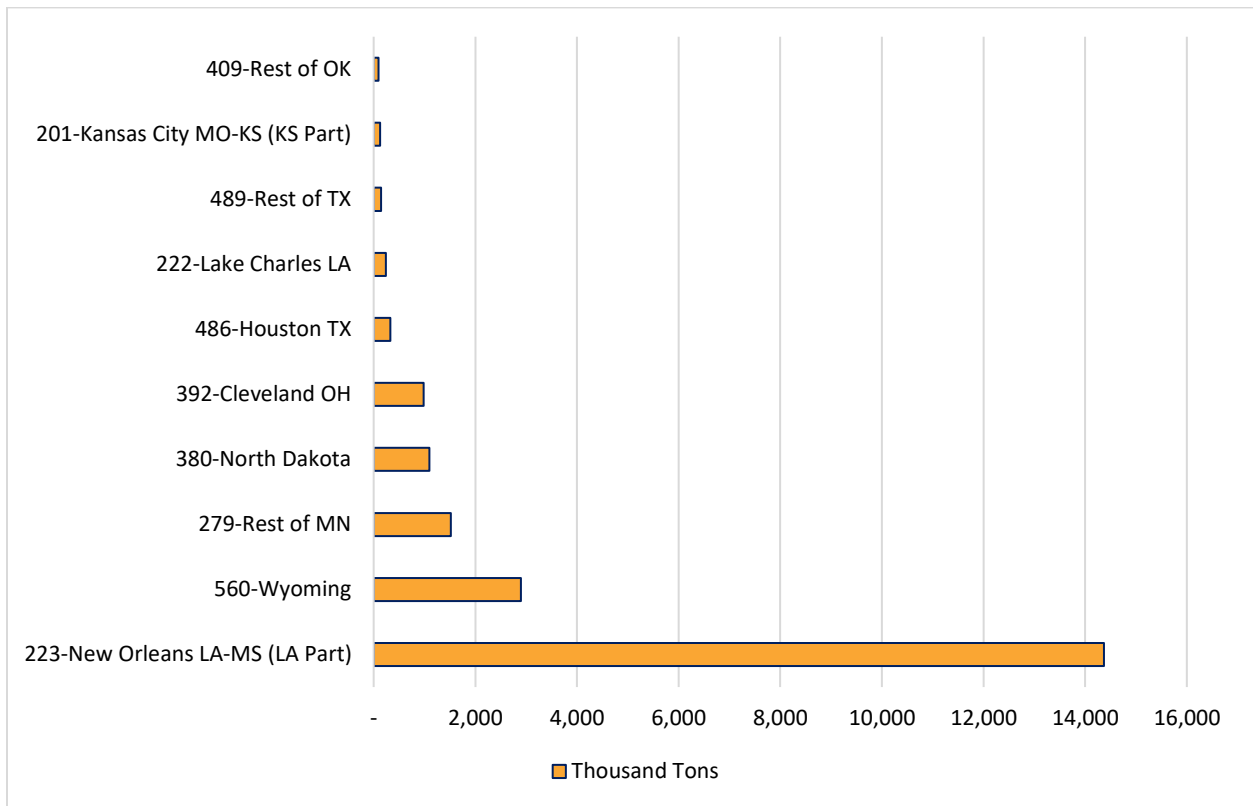
Source: Freight Analysis Framework version 5

Figure 3.12: Top Outbound Trading Partners by Rail Tonnage
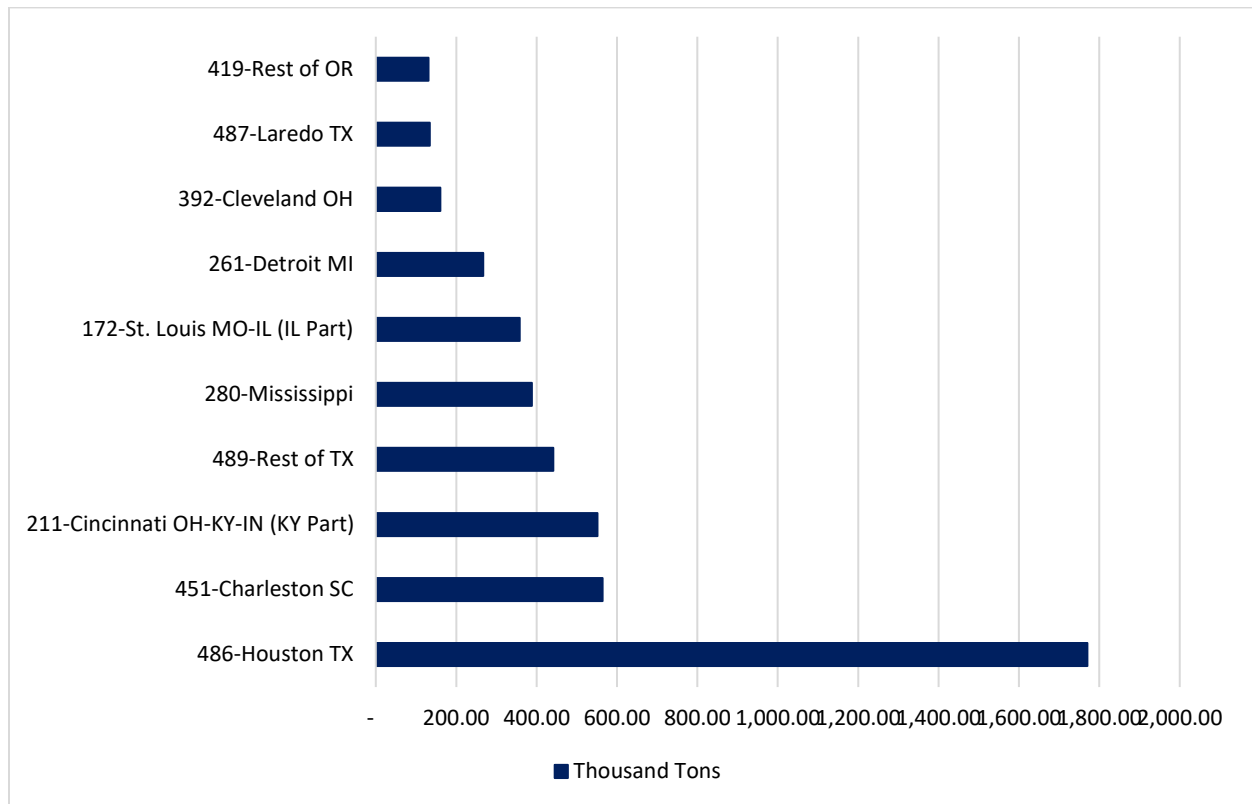
Source: Freight Analysis Framework version 4

Figure 3.13 and Figure 3.14 show the top commodities by total tonnage and value, respectively, for rail. Gravel is the top commodity by tonnage, followed by Plastic/Rubber and then by Basic Chemicals. Plastic/Rubber, Basic Chemicals, and Chemical Products are the top three (3) commodities by value.

Figure 3.13: Top Commodities by Freight Rail Tonnage, 2017
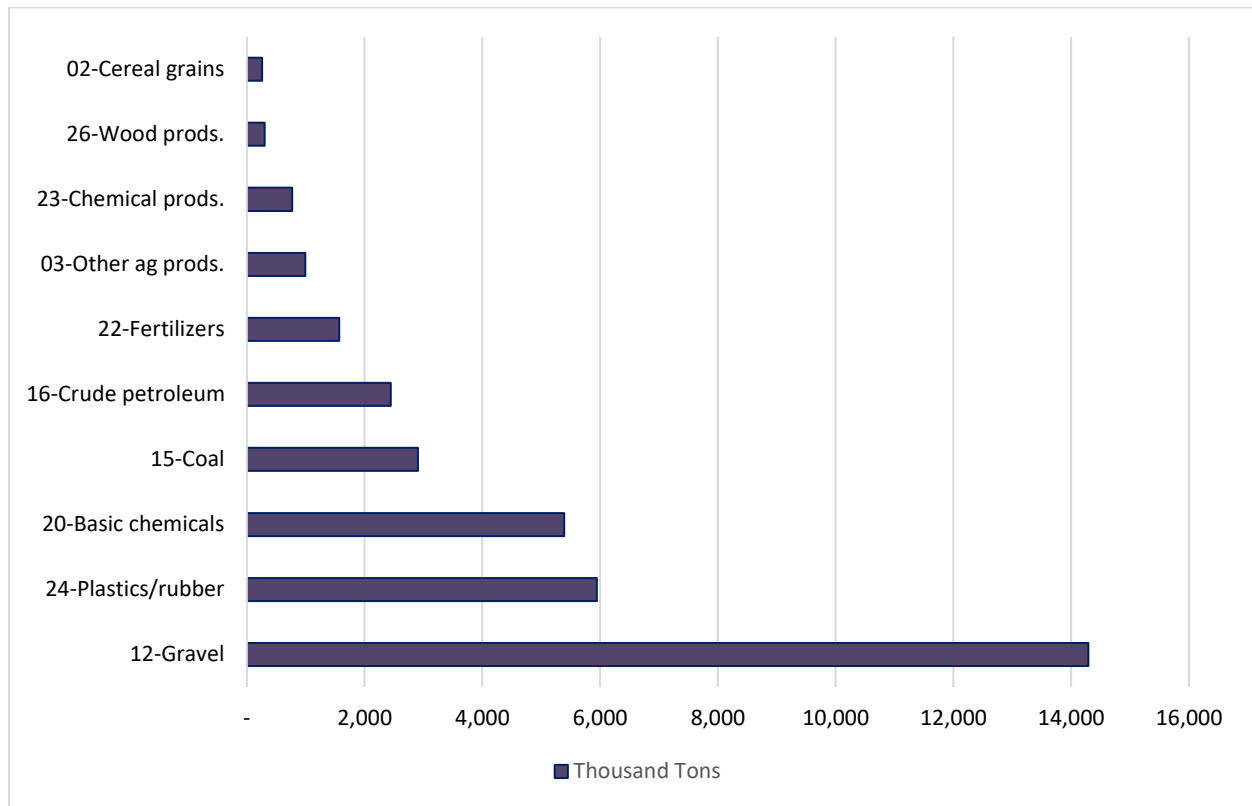
Source: Freight Analysis Framework version 5

Figure 3.14: Top Rail Commodities by Value, 2017
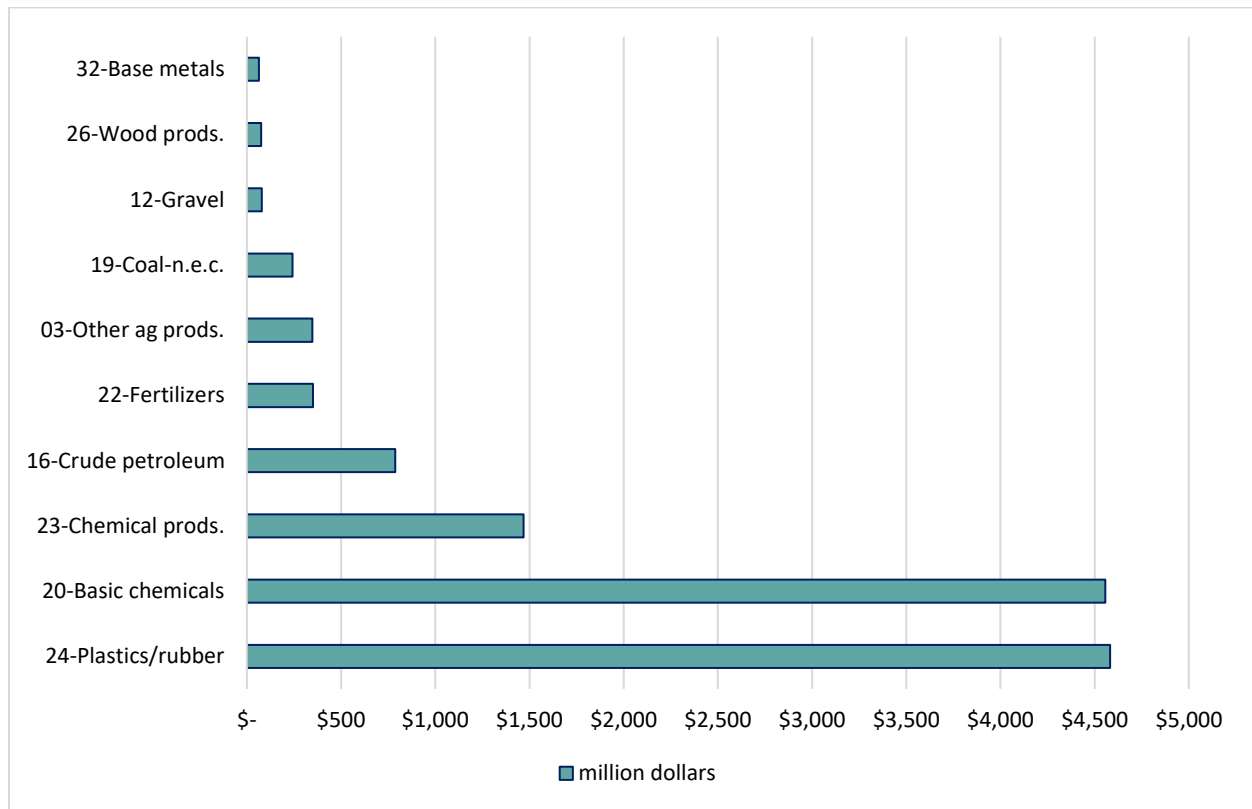
Source: Freight Analysis Framework version 5

Rail - Automobile Collisions

From 2015 through 2019, there were 78 crashes involving an automobile and a train. Figure 3.15 shows the breakdown of these crashes by severity.

Figure 3.15: Freight Rail Crashes by Year by Severity, 2015-2019
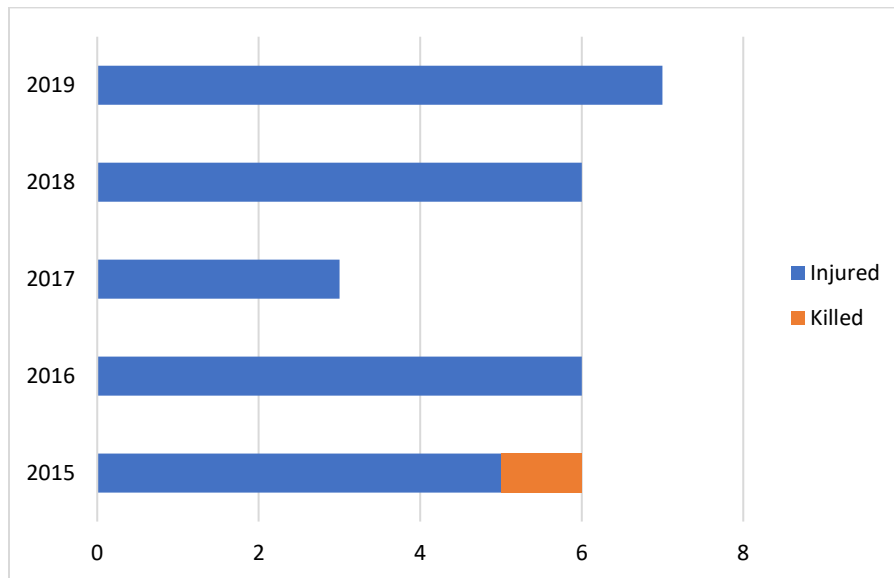
Source: FRA 2015-2019

Only one (1) fatal freight rail crash was observed in the MPO, while twenty-seven (27) injuries were reported. Of the 78 train crashes that occurred in the MPA there were:
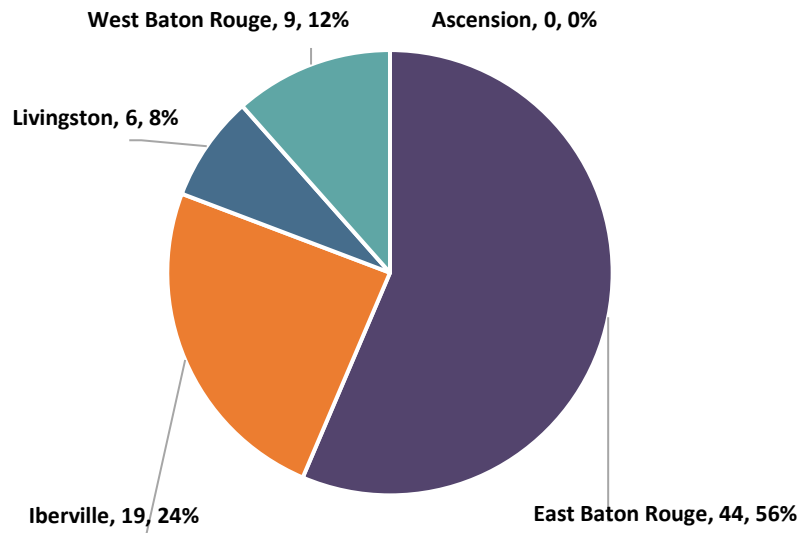
The roadway-railroad crossings in the MPA that experienced more than one (1) automobile freight-train collision between 2015 and 2019 were:

- Government St at KCS Railroad in East Baton Rouge Parish,

- N Foster Drive at ICRC Railroad in East Baton Rouge Parish,

- Airline Highway at ICRC Railroad in East Baton Rouge Parish,

- College Drive at ICRC Railroad in East Baton Rouge Parish,

- Scenic Hwy at ICRC Railroad in East Baton Rouge Parish, and

- Leisure Rd at ICRC Railroad in East Baton Rouge Parish

- Canal Dr at UP Railroad in Ibervile Parish,

- Plank Dr at ICRC Railroad in Ibervile Parish, and

- Homestead Dr at UP Railroad in Ibervile Parish

Derailments

According to the Federal Rail Administration, from 2015 to 2019, 33 freight train derailments occurred within the MPA. Information about the derailments is detailed in Table 3.5.

Table 3.5: Derailments in the MPA from 2015 - 2019

Date	Railroad	Parish	Cause	Injury
5/19/2015	UP	West Baton Rouge	Side bearing clearance insufficient	No
3/29/2016	BRS	East Baton Rouge	Switch previously run through	No
9/30/2016	BRS	East Baton Rouge	Switch improperly lined	No
11/11/2016	IC	East Baton Rouge	Switch point gapped (between switch point and stock rail)	No
6/1/2017	KCS	East Baton Rouge	Flangeway clogged	No
6/5/2017	IC	Ascension	Wide gage (due to defective or missing crossties)	No
6/7/2017	UP	West Baton Rouge	Wide gage (due to worn rails)	No
6/7/2017	PGBX	West Baton Rouge	Wide gage (due to worn rails)	No
6/19/2017	PGBX	West Baton Rouge	Switch point worn or broken	No

Date	Railroad	Parish	Cause	Injury
7/18/2017	BRS	East Baton Rouge	Switch not latched or locked	No
10/3/2017	BRS	East Baton Rouge	Truck bolster stiff, improper swiveling	No
11/2/2017	BRS	East Baton Rouge	Switch previously run through	No
6/20/2018	UP	West Baton Rouge	Wide gage (due to defective or missing spikes or other rail fasteners)	No
6/25/2018	IC	Ascension	Turnout frog (spring) worn, or broken	No
7/25/2018	KCS	Ascension	Miscellaneous loading procedures	Yes
8/2/2018	UP	West Baton Rouge	Track alignment irregular (other than buckled/sunkink)	No
9/1/2018	BRS	East Baton Rouge	Portable derail, improperly applied	No
11/15/2018	UP	West Baton Rouge	Broken Rail - Vertical split head	No
1/6/2019	IC	East Baton Rouge	Shoving movement, absence of man on or at leading end of movement	No
3/2/2019	KCS	East Baton Rouge	Shoving movement, man on or at leading end of movement, failure to control	No
3/2/2019	KCS	East Baton Rouge	Shoving movement, man on or at leading end of movement, failure to control	No
3/2/2019	IC	East Baton Rouge	Shoving movement, man on or at leading end of movement, failure to control	No
4/27/2019	IC	Ascension	Shoving movement, absence of man on or at leading end of movement	No
4/27/2019	IC	Ascension	Shoving movement, absence of man on or at leading end of movement	No
7/4/2019	KCS	East Baton Rouge	Shoving movement, absence of man on or at leading end of movement	No
7/4/2019	KCS	East Baton Rouge	Shoving movement, absence of man on or at leading end of movement	No
7/8/2019	UP	West Baton Rouge	Switch improperly lined	No
7/19/2019	IC	Ascension	Human Factor - track	No
8/5/2019	IC	Ascension	Other miscellaneous causes	No
8/26/2019	IC	East Baton Rouge	Failure to couple	No
10/4/2019	IC	East Baton Rouge	Superelevation runoff improper	No
10/5/2019	IC	East Baton Rouge	Interaction of lateral/vertical forces (includes harmonic rock off)	No
12/13/2019	IC	Ascension	Broken Rail - Transverse/compound fissure	No

Source: Federal Railroad Administration

Railroad Crossings with Active Warning Control Devices

To avoid collisions, warning/control devices are required at highway-railroad grade crossings. Aside from passive warning devices, such as yield and stop signs, many highway-railroad grade crossings have active warning devices. Active warning devices include devices and controls such as bells, flashing lights, and gates, in addition to passive warning devices.

Highway-railroad crossings between a road that is functionally classified as a Collector or above (i.e. excluding local roads) and railroad based on active warning devices are shown in Figure 3.16.

Figure 3.16: Highway-Railroad Crossings Based on Active Warning Devices Within the MPA

DOWNTOWN BATON ROUGE

Advance Warning Signs
- ● Yes
- ● No
- Metropolitan Planning Area
- Remaining 5-Parish Area
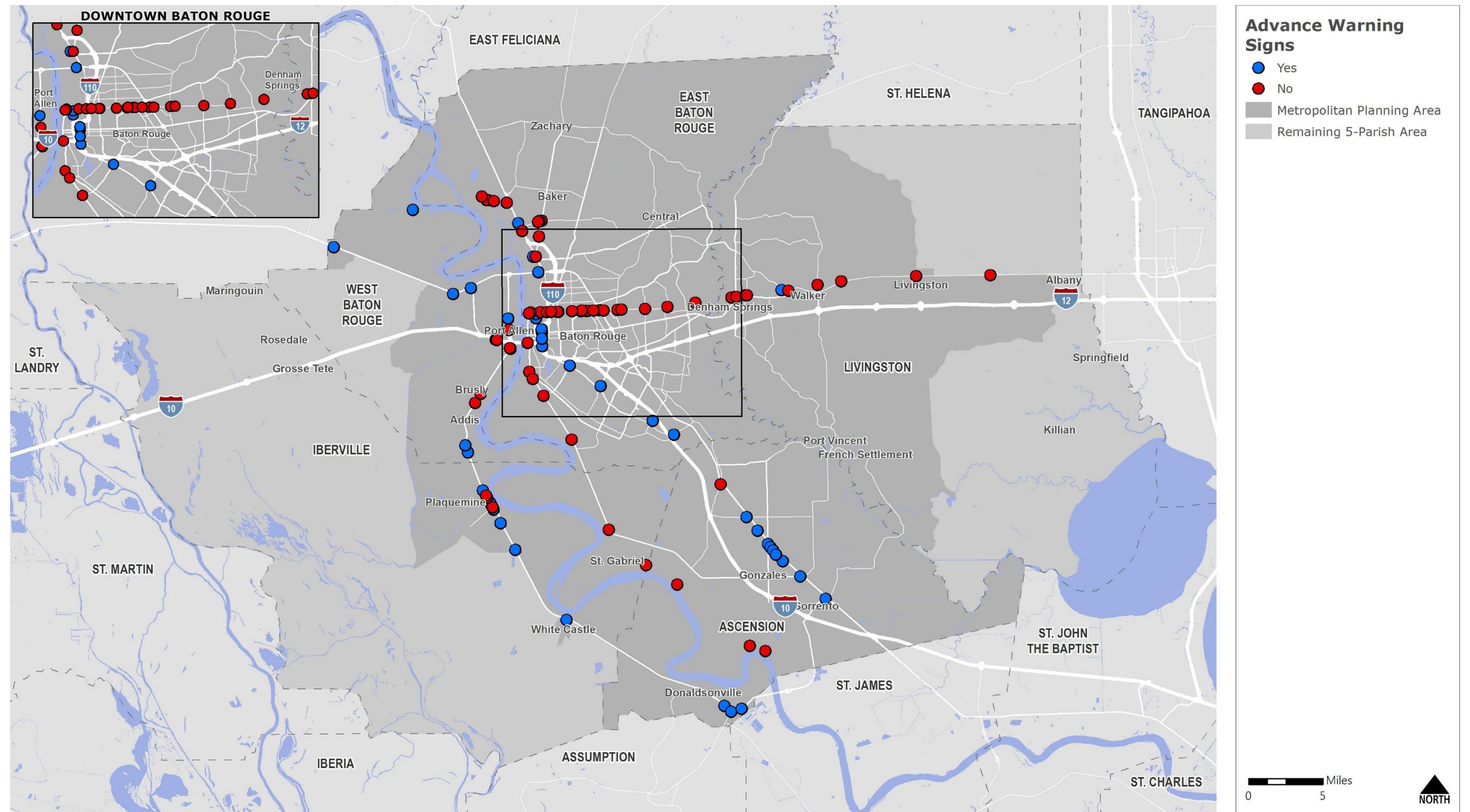
Data Sources: Federal Railroad Administration

Disclaimer: This map is for planning purposes only.

3.4 Air Cargo

Inventory

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

> The Baton Rouge MPA has two (2) public airports:
>
> • Baton Rouge Metropolitan Airport;
>
> • Louisiana Regional Airport;

The Baton Rouge MPA contains two (2) intermodal facilities: Baton Rouge Metropolitan Airport and Louisiana Regional Airport, both of which service air and truck modes. Baton Rouge Metropolitan Airport has over 68,000 square feet of existing air cargo building space.

The total number of aircraft based is shown in Table 3.7. The daily aircraft operations Baton Rouge Metropolitan Airport is provided in Table 3.8.

Table 3.7: Based Aircraft for Public Airports in Baton Rouge Metropolitan

Airport	Based Aircraft
Baton Rouge Metropolitan Airport	240
Louisiana Regional Airport	92

Source: Federal Aviation Administration

Table 3.8: Total Operations in Baton Rouge Metropolitan Airport 2015-2019

Year	Total Operations
2015	83,655
2016	68,912
2017	54,157
2018	55,747
2019	55,507
Total:	317,978

Commodity Flows

As mentioned earlier, goods that are shipped by air tend to be high-value and time-sensitive. Goods that are shipped via air are transported either by all-cargo carriers, such as Federal Express (FedEx) or United Parcel Service (UPS), or by passenger airlines in empty space either in the belly-holds of their aircraft or through a separate fleet of dedicated freight aircraft. According to the FAF, air travel accounted for less than one (1) percent of the total freight by tonnage and by value in the MPA FAF zone.

The top five (5) origins for air freight in the MPA FAF zone by tonnage and by value are:

Tonnage

1. Houston, Texas
2. Memphis Tennessee-Mississippi-Arkansas (Tennessee Part)
3. Dallas-Fort Worth Texas-Oklahoma (Texas Part)
4. Atlanta, Georgia
5. Louisville Kentucky-Indiana (Kentucky Part)

Value

1. Houston, Texas
2. Memphis Tennessee-Mississippi-Arkansas (Tennessee Part)
3. New York, New York-New Jersey-Connecticut-Pennsylvania (New York Part)
4. Louisville Kentucky-Indiana (Kentucky Part)
5. Atlanta, Georgia

The top five (5) destinations for air freight in the MPA FAF zone by tonnage and by value are:

Tonnage

1. Houston, Texas
2. Dallas-Fort Worth Texas-Oklahoma (Texas Part)
3. Miami, Florida
4. Memphis Tennessee-Mississippi-Arkansas (Tennessee Part)
5. Louisville Kentucky-Indiana (Kentucky Part)

Value

1. Houston, Texas
2. Honolulu, Hawaii
3. Dallas-Fort Worth Texas-Oklahoma (Texas Part)
4. Miami, Florida
5. Memphis Tennessee-Mississippi-Arkansas (Tennessee Part)

Figure 3.17 and Figure 3.18 show the top ten (10) commodities shipped via air by tonnage and by value, respectively. Machinery is the top commodity by tonnage, followed by Precision Instruments and then by Plastic/Rubber. Machinery, Precision Instruments, and Transport Equipment are the top three (3) commodities by value.

Figure 3.17: Top Air Commodities by Tonnage, 2017
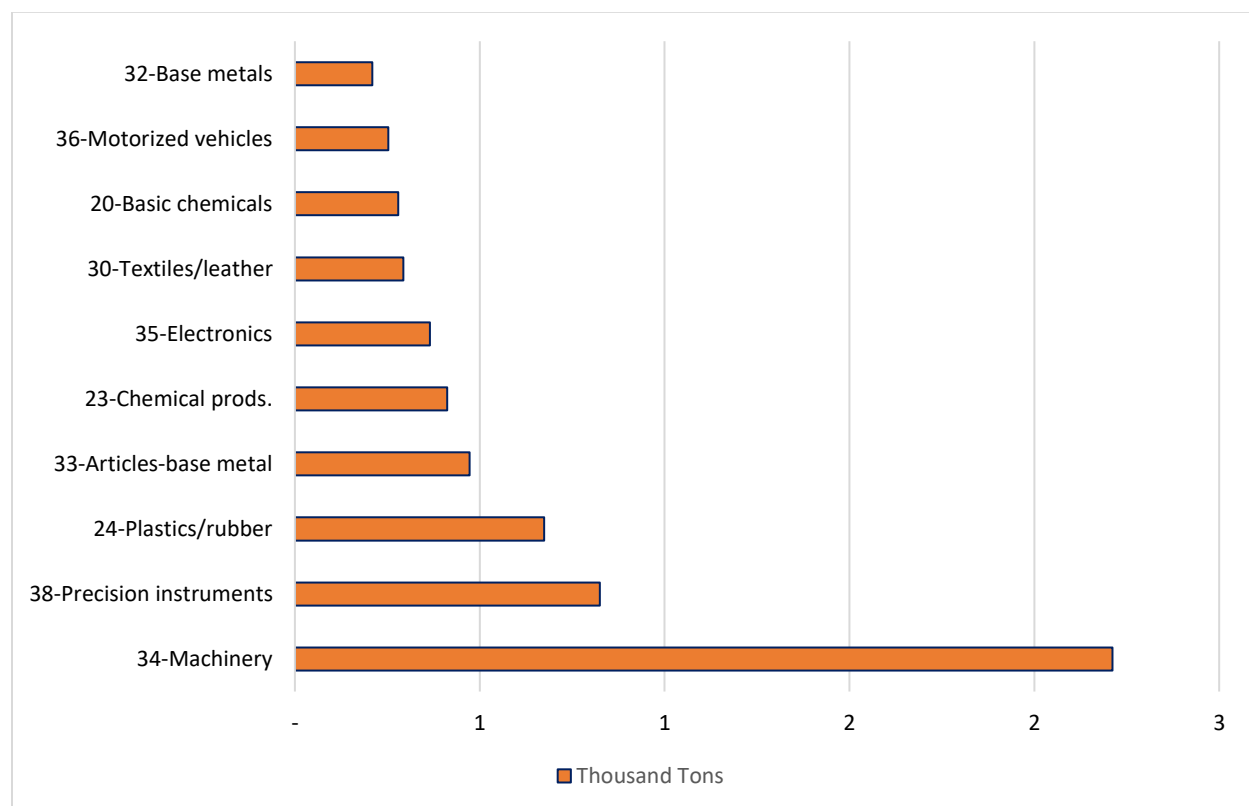
Source: Freight Analysis Framework version 5

Figure 3.18: Top Air Commodities by Value, 2017
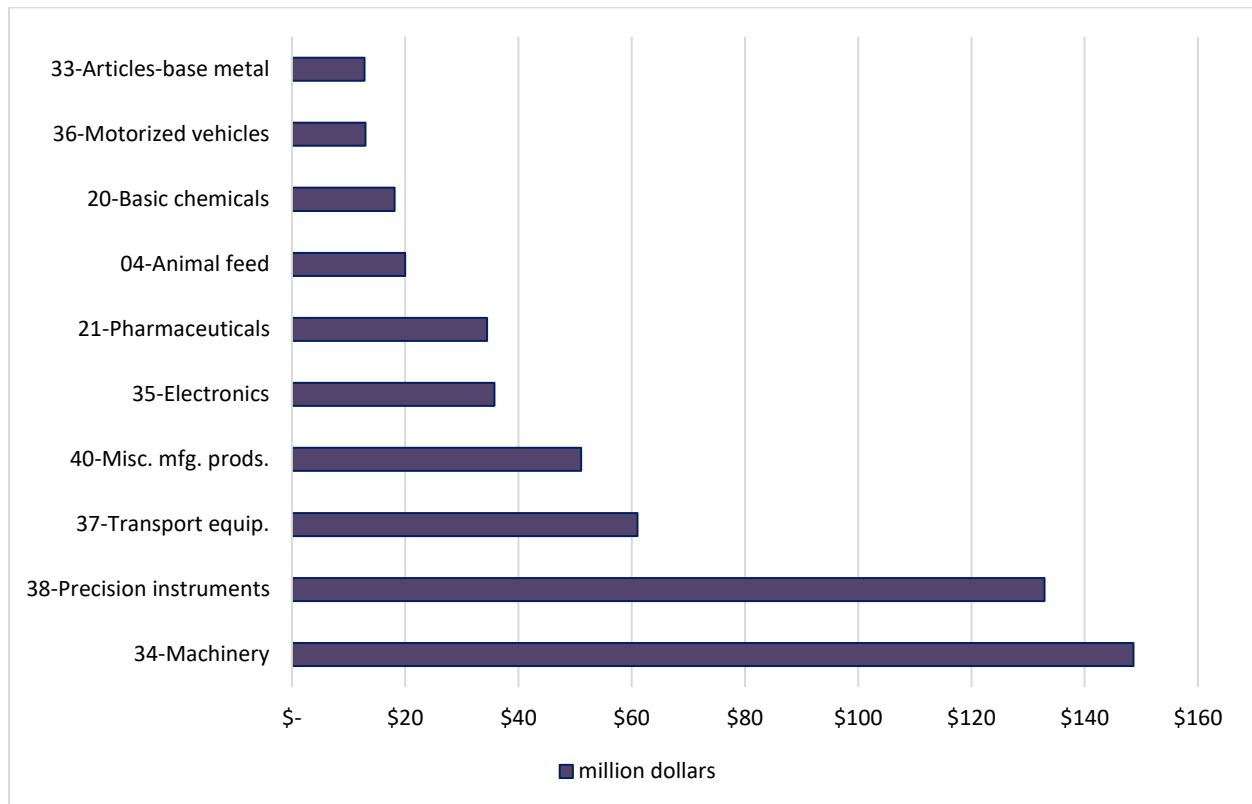
Source: Freight Analysis Framework version 5

3.5 Waterways and Ports

Inventory

The Port of Baton Rouge is the only port within the MPA. There are six (6) major waterways in the MPA:

- Mississippi River
- Gulf Intracoastal Waterway
- Morgan City-Port Allen Route
- Bayou Grosse Tete
- Bayou Lafourche Waterway
- Amite River and Bayou Manchac

Outside of the MPA, the Yazoo Parish Port is the port nearest the MPA; however, it is a small river port located in Yazoo City and does not serve as part of the MPA's waterway network. Figure 3.19 displays the Ports and Waterways within the MPA.

Ports and Waterways

- 🏯 Port
- —— Waterway
- ▓ Metropolitan Planning Area
- ░ Remaining 5-Parish Area
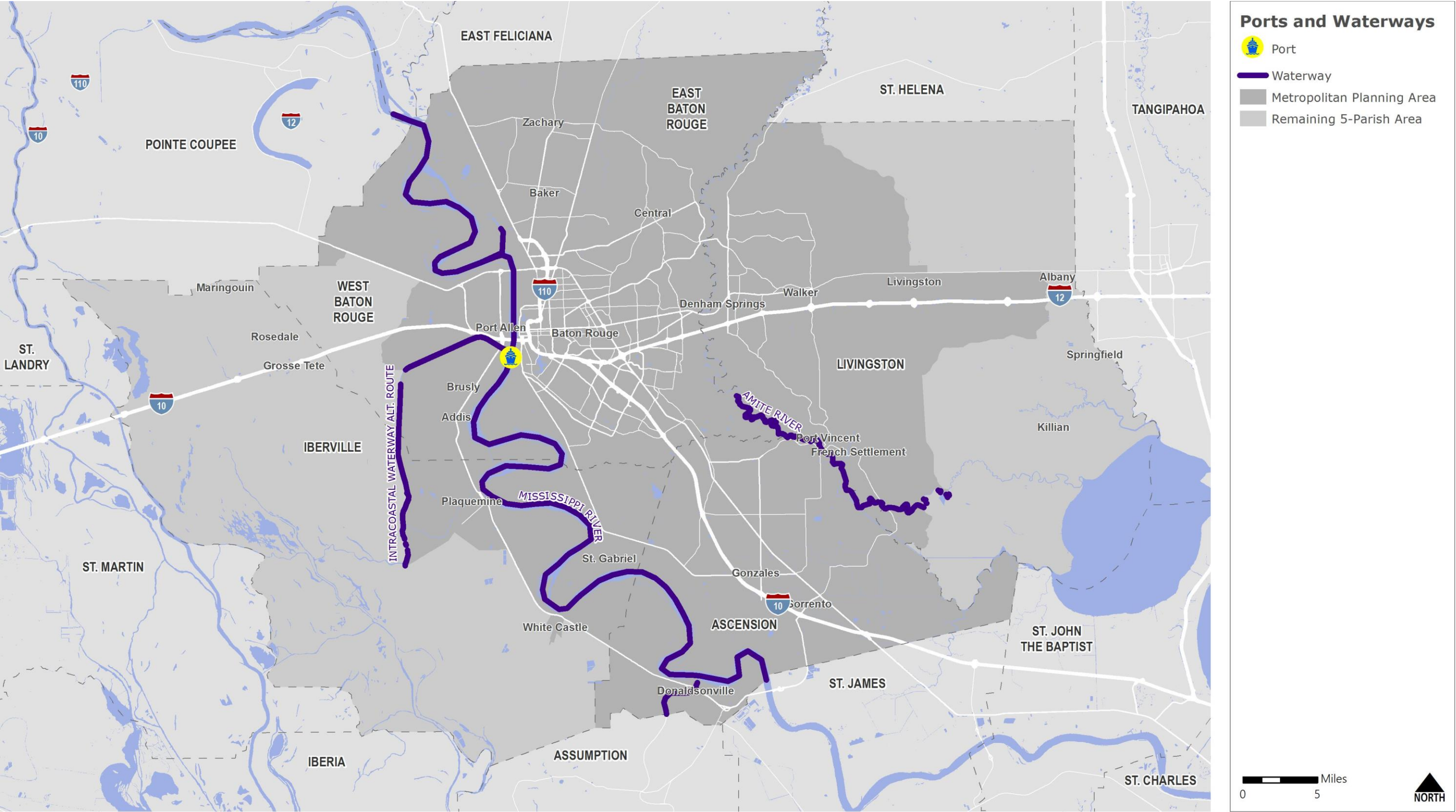
Data Sources: USACE

Disclaimer: This map is for planning purposes only.

Commodity Flows

As shown in Table 3.8, most of the water freight in the MPA originates inside the MPA. By tonnage, approximately 44 percent originates outside the MPA ("Inbound" movements) and 50 percent originates in the MPA ("Outbound" movements). Approximately five (5) percent of total water freight tonnage remains in the MPA. Nearly 55 percent of the total water freight tonnage is intrastate.

By value, inbound movements represent approximately 43 percent and outbound movements represent nearly 50 percent. Approximately seven (7) percent of total water freight value remains in the MPA. Nearly 51 percent of the total water freight value is intrastate.

Table 3.8: Commodity Flows by Water, 2017

Direction	Tons (Thousands)	Percent of Total	Value ($ Million)	Percent of Total
Inbound (Interstate)	19,944.84	24.0%	5,995.44	24.4%
Inbound (Intrastate)	17,047.30	20.5%	4,584.43	18.7%
Outbound (Interstate)	13,031.14	15.7%	4,475.53	18.2%
Outbound (Intrastate)	28,460.03	34.3%	7,891.02	32.1%
Within MPA	4,537.64	5.5%	1,631.29	6.6%
Total	83,020.95	100%	24,577.72	100%

Source: Freight Analysis Framework 5

Figure 3.20 and Figure 3.21 show the top 10 inbound and outbound trading partners for the MPA, respectively. Louisiana FAF zones outside of the MPA account for three (3) of the top inbound and outbound trading partners. New Orleans Louisiana-Mississippi (Louisiana Part) FAF zone represents the largest trading partner for inbound and outbound freight movements. Other regions that are top trading partners for both inbound and outbound freight movements in the MPA include:

- New Orleans Louisiana-Mississippi (Louisiana Part)
- Rest of Illinois
- Rest of Louisiana
- St. Louis Missouri -Illinois (Missouri Part)
- Lake Charles, Louisiana
- Rest of Texas
- Tulsa, Oklahoma
- St. Louis Missouri -Illinois (Illinois Part)
- Rest of Indiana
- Rest of Kentucky

Figure 3.20: Top Inbound Trading Partners by Water Tonnage
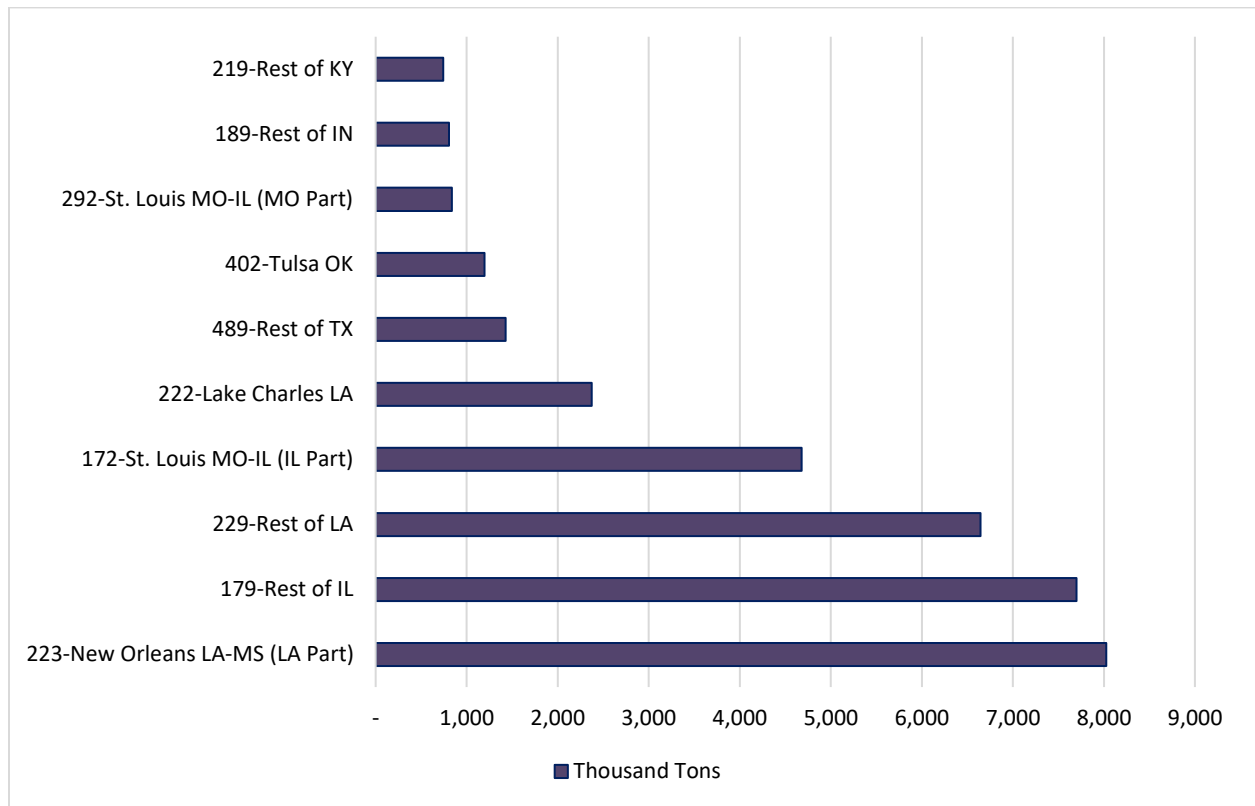
Source: Freight Analysis Framework version 5

Figure 3.21: Top Outbound Trading Partners by Water Tonnage
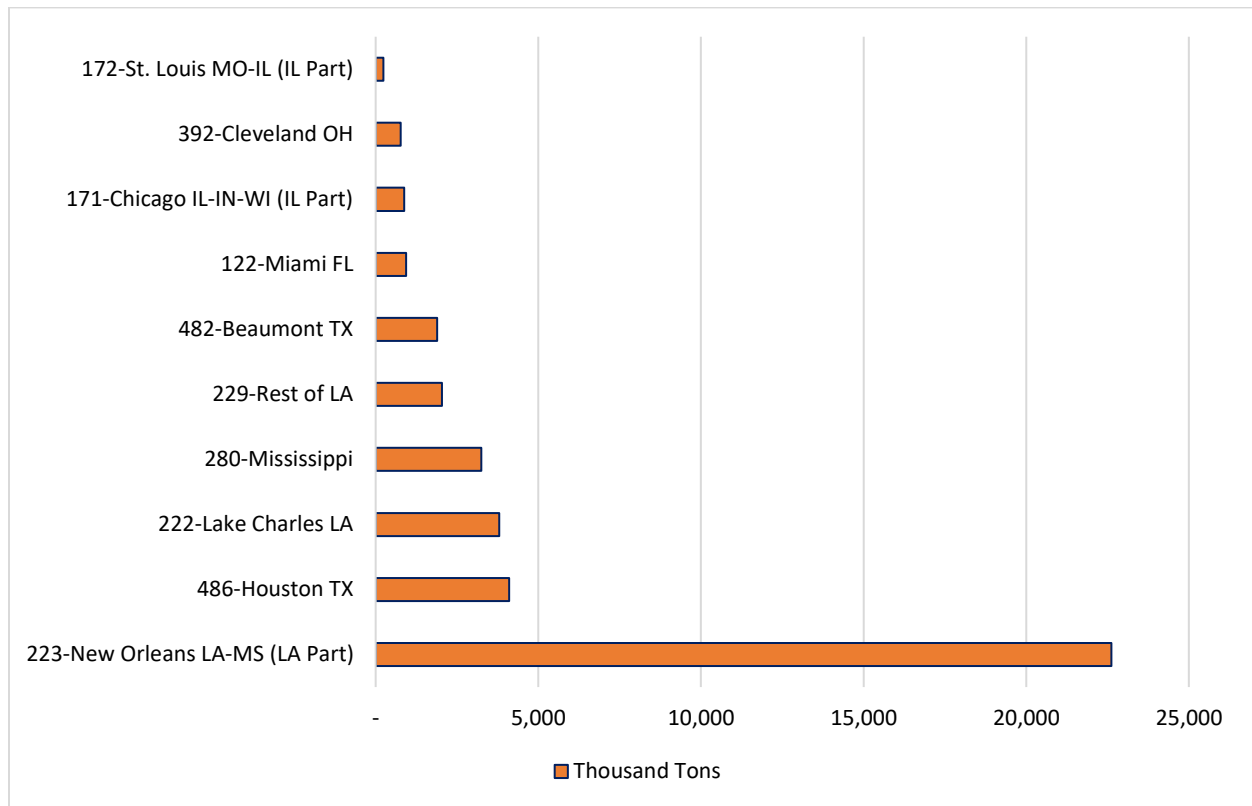
Source: Freight Analysis Framework version 5

Figure 3.22 and Figure 3.23 show the top commodities by total tonnage and value, respectively, for water. Cereal Grains is the top commodity by tonnage, followed by Basic Chemicals and then by Coal, n.e.c. Basic Chemicals, Other Agriculture Products and Fuel Oils are the top three (3) commodities by value.

Figure 3.22: Top Commodities by Freight Water Tonnage, 2017
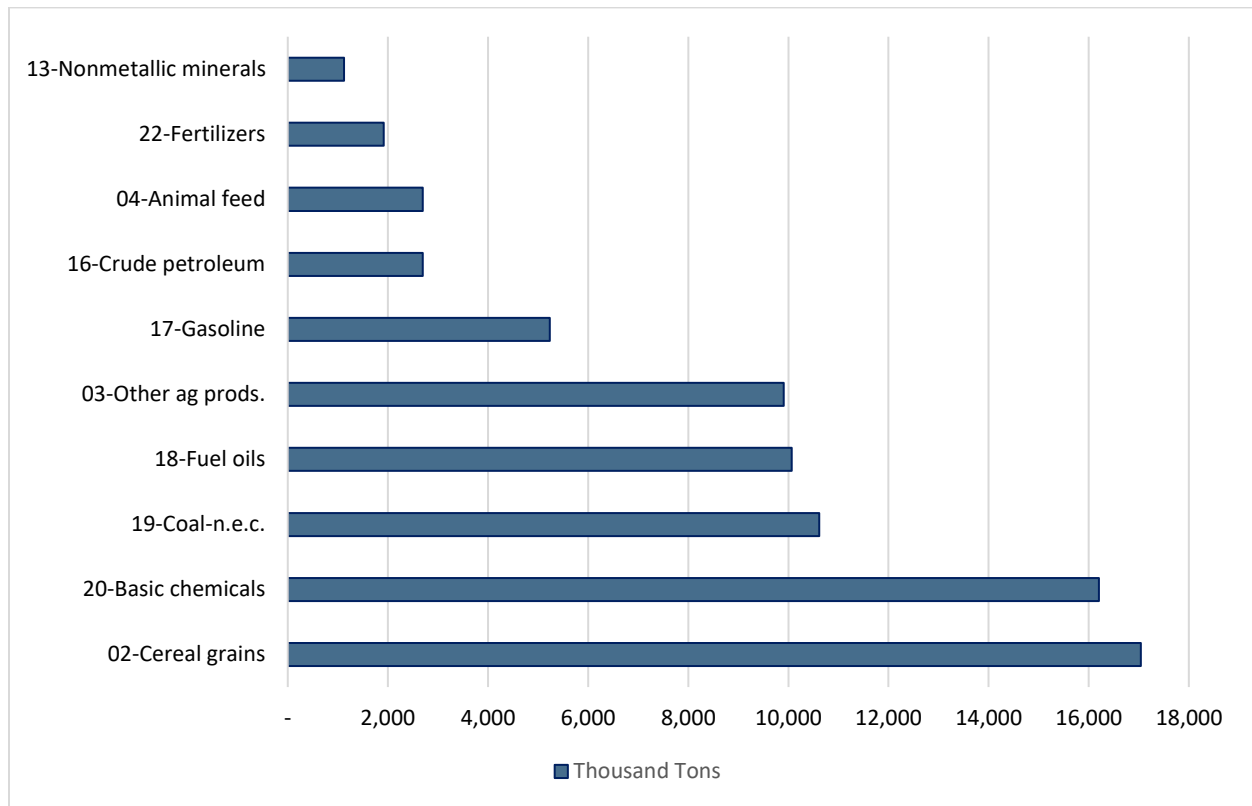
Source: Freight Analysis Framework version 5

Figure 3.23: Top Water Commodities by Value, 2017
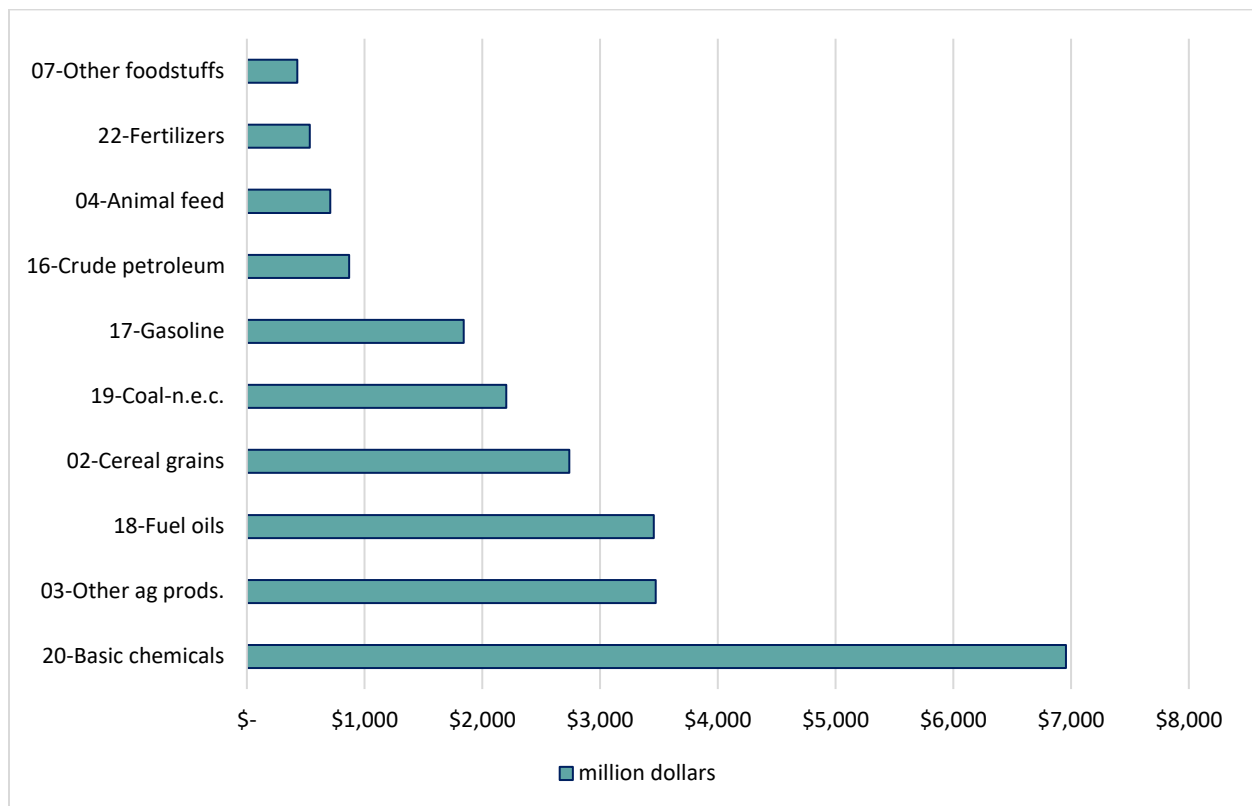
Source: Freight Analysis Framework version 5

3.6 Pipelines

Inventory

The MPA's pipeline network consists of approximately 946 miles of natural gas, crude oil, and petroleum products pipelines. As of 2018, by length, most pipelines in the MPA are natural gas pipelines. Figure 3.24 details the pipeline length (in miles) by commodity carried. Figure 3.25 shows the MPA's pipeline network.

Figure 3.24: Pipeline Commodity by Length (miles), 2021

90.3

165.9

690

■ Crude Oil   ■ Petroleum Product   ■ Natural Gas

Source: Energy Information Administration

Figure 3.25: 2021 MPO Pipeline Network

Pipeline Network
- — Petroleum Product
- ···· Natural Gas
- — Crude Oil
- Metropolitan Planning Area
- Remaining 5-Parish Area
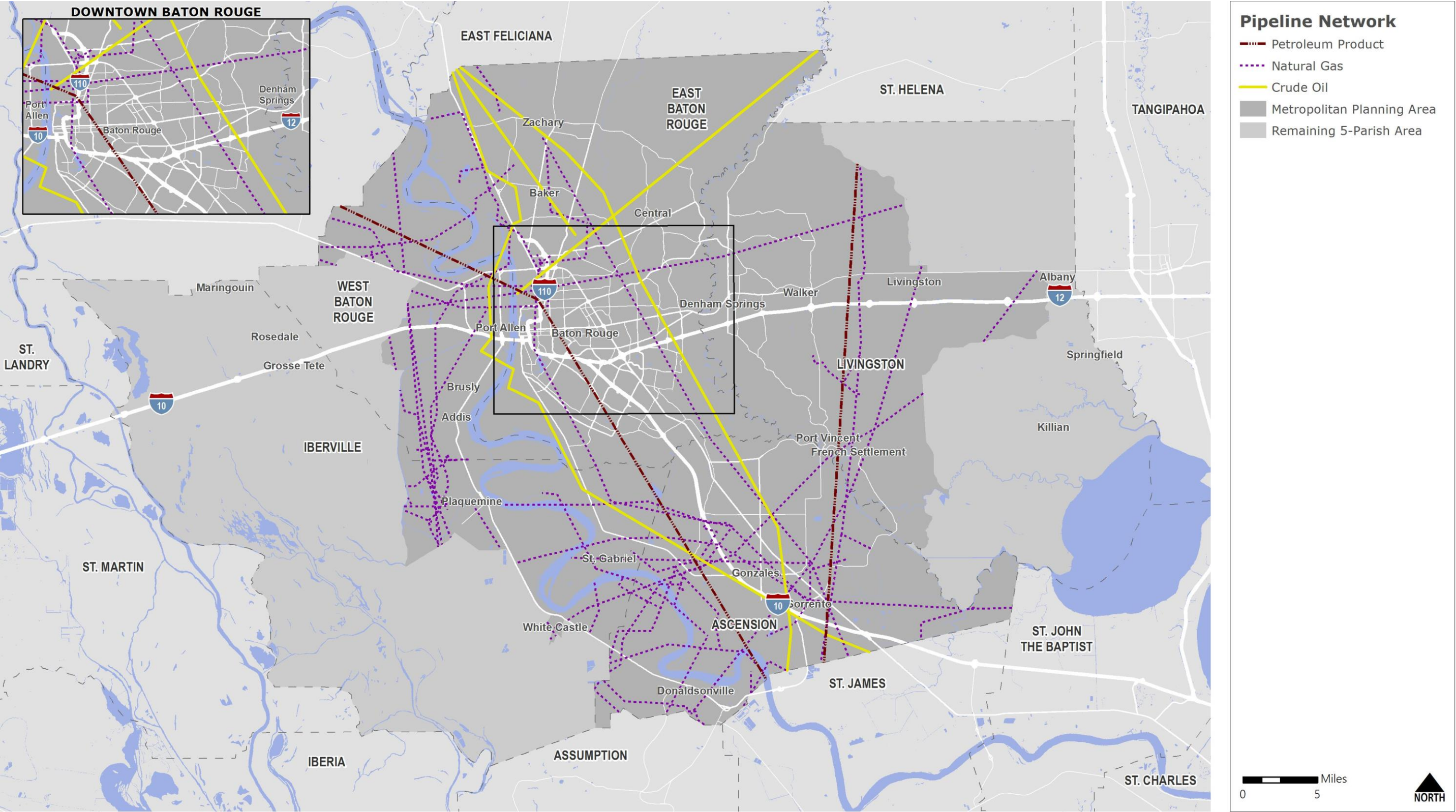
Data Sources: Energy Information Administration

Disclaimer: This map is for planning purposes only.

Commodity Flows

According to the FAF, the pipeline mode ranked first in tonnage and value in the MPA. By tonnage, pipelines carry more than 38 percent of all freight in the MPA. In addition, the pipeline's value share was more than 32 percent.

Four (4) of the top five (5) origins are located on the Gulf Coast. The top five (5) origins by tonnage and value are:

Tonnage   Value

1. New Orleans Louisiana-Mississippi   1. New Orleans Louisiana-Mississippi
   (Louisiana Part)   (Louisiana Part)

2. Rest of Texas   2. Rest of Texas
3. Rest of Louisiana   3. Rest of Louisiana
4. Mississippi   4. North Dakota
5. North Dakota   5. Mississippi

Two (2) of the top five (5) destinations are located on the Gulf Coast. The top five destinations by tonnage and by value are:

Tonnage   Value

1. Mississippi   1. Dallas-Fort Worth Texas-Oklahoma
2. Dallas-Fort Worth Texas-Oklahoma   (Texas Part)
   (Texas Part)   2. Mississippi
3. Rest of Tennessee   3. Rest of Tennessee
4. Houston, Texas   4. Houston, Texas
5. Washington DC-Virginia-Maryland-   5. Knoxville, Tennessee
   West Virginia (Virginia Part)

Figure 3.26 and Figure 3.27 show the five (5) commodities carried by pipeline within the MPA FAF zone by tonnage and by value, respectively. By weight and by value, Gasoline is the top commodity, accounting for 30 percent of the total tonnage and 41 percent of freight value carried by pipeline.

Figure 3.26: Pipeline Commodities by Tonnage, 2017
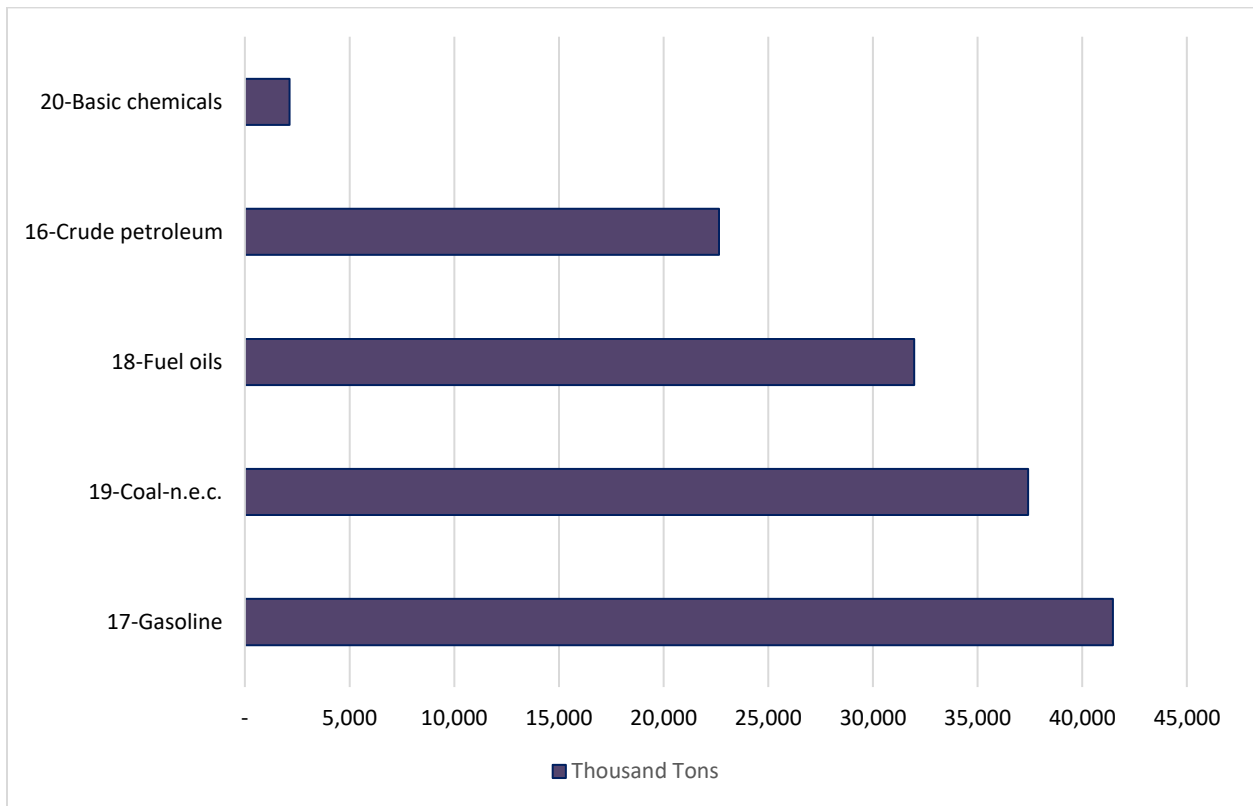
Source: Freight Analysis Framework version 5

Figure 3.27: Pipeline Commodities by Value, 2017
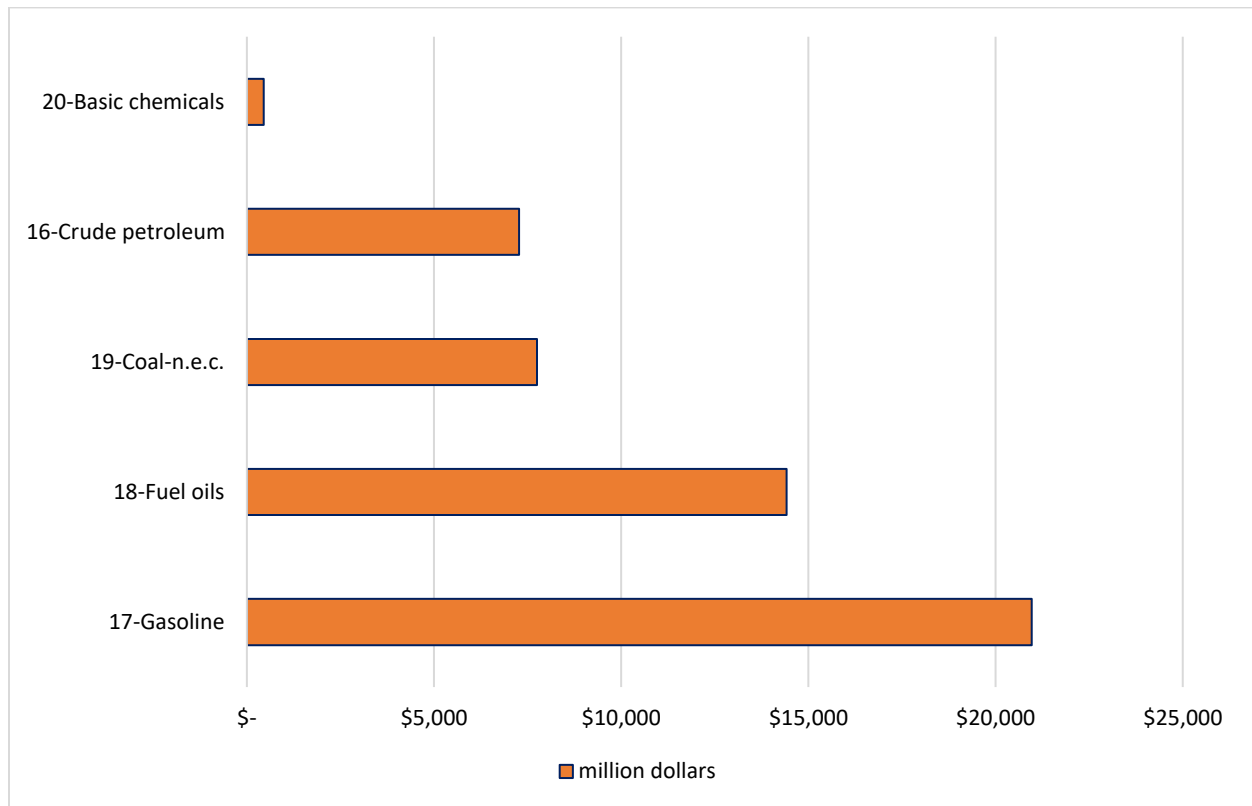
Source: Freight Analysis Framework version 5

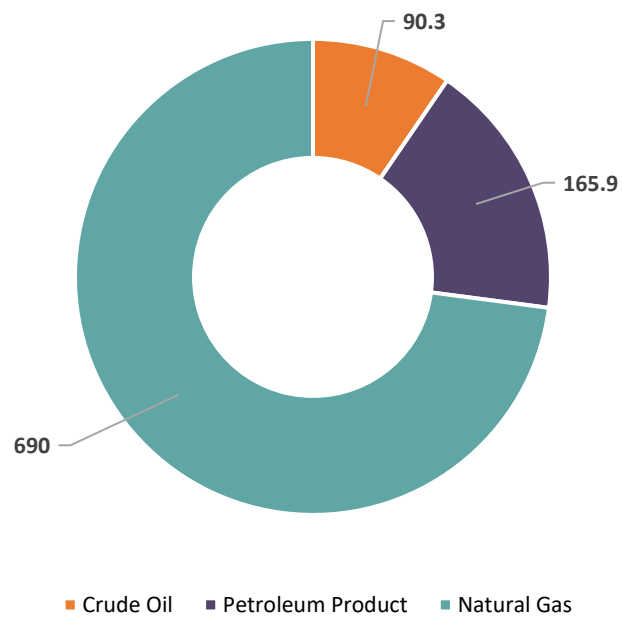# 4.0 Bicycle and Pedestrian

4.1 Classification of Bicycle and Pedestrian Facilities

The bicycle and pedestrian facilities in the Baton Rouge MPA are grouped into five (5) classifications which include:

- Shared Use/Bike Paths
- Bike Lanes
- Bikeable Shoulders
- Bike Routes
- Sidewalks

Figure 4.1 provides a brief explanation of the different types of bicycle and pedestrian facility classifications.

While each facility type is used to improve accessibility for the travelling public, there is no single bicycle and/or pedestrian facility that suits every user's needs. For example, sidewalks and shared use paths can be found along many roadways throughout the MPA; however, shared use paths and sidewalks do not provide the same functionality and thus should not be confused with one another. Sidewalks are narrower, designed with pedestrians in mind, and should be located along both sides of a roadway. Shared use paths are wider, designed for use by both bicyclists and pedestrians, and are commonly located only on one side of a roadway.

A shared use facility is typically ten (10) feet in width which allows for bicyclists and/or pedestrians to easily pass one another. Sidewalks are typically five (5) feet in width which does not provide enough space for bicyclists and pedestrians to easily pass one another without conflict or potential collision. It typically is not deemed acceptable to allow bicycles on sidewalks; however, there are occasionally extenuating circumstances that merit the need to share the facility. Though five (5) feet is recommended by the American Association of State Highway and Transportation Officials (AASHTO) and the Federal Highway Administration (FHWA), the MPO recommends sidewalks be a minimum of six (6) feet in width to make it easier for pedestrians to easily pass one another.

Figure 4.1: Bicycle and Pedestrian Facility Types

Shared Use Path/ Bike Path
- Physically separated from motorized vehicular traffic by open space, buffer or barrier.
- Typically between 8 to 10 feet wide.
- Used by bicyclists, pedestrians, skaters, users of wheeled mobility devices and other non-motorized device users.

Bike Lane
- Portion of a roadway designated by striping, pavement markings and signage for the exclusive use of bicyclists.
- Located on both sides of a roadway and typically between 4 to 6 feet in width.
- Each lane is one way. Bicyclists travel in the same direction as motor vehicles.
- Lanes may be delineated between a travel lane and on street parking, curbs or the edge of pavement.
- Though they may be used by pedestrians, bike lanes are designed for the preferential use of bicyclists.

Bikeable Shoulder
- Functions similarly to bike lanes. Bikeable shoulders are delineated by using existing striping from the outermost vehicle lane to the edge of the shoulder.
- Located on both sides of a roadway. Should provide a minimum of four (4) feet of space for bicyclists from the outermost travel lane to the edge of the pavement.
- Each shoulder is one way with bicyclists traveling in the same direction as motor vehicles.
- Though they may be used by pedestrians, bikeable shoulders are designed for the preferential use of bicyclists

Bike Route
- Both bicyclists and motorists use a roadways travel lanes.
- No striping delineating a portion of the roadway is set aside for bicyclists.
- Identified with appropriate directional and informational markers which read "Bike Route" or "Share the Road."
- It is recommended that any roadway classified as a bike route should have a minimum width of 14 feet, but be less than 16 feet, from striped center line.
- Routes are used by bicyclists. Pedestrians may use bike routes if there are no other alternatives; however, it is not recommended due to safety concerns.

Sidewalk
- Physically separated from motorized vehicular traffic by open space, buffer or barrier.
- Typically located within public right of way.
- Minimmum width recommended by AASHTO and FHWA is five (5) feet. Preferred width, to improve pedestrian mobility, is six (6) feet.
- Should be continuous, unobstructed and located on both sides of a roadway.
- Mainly used by pedestrians. Bicycle usage should be kept to a minimum.

4.2 Existing Inventory

The MPO's existing bicycle and pedestrian facilities network consists of over 1,000 miles of:

- shared use/bike paths,
- bicycle lanes,
- bikeable shoulders,
- bicycle routes, and
- sidewalks.

These facilities are primarily located along or connected to roadways in the Baton Rouge MPA which are functionally classified. The location of these facilities along functionally classified corridors provides system users with increased options for accessing daily needs as these areas are typically located near:

- retail shopping centers
- recreation areas
- hospitals or medical clinics
- pharmacies
- major employment centers
- schools
- universities
- transit routes

An inventory of existing bicycle and pedestrian facilities can be seen in Figures 4.2 and 4.3. Figure 4.3 provides an inventory of sidewalks in the Baton Rouge MPA.

Figure 4.2: Existing Bicycle Facilities
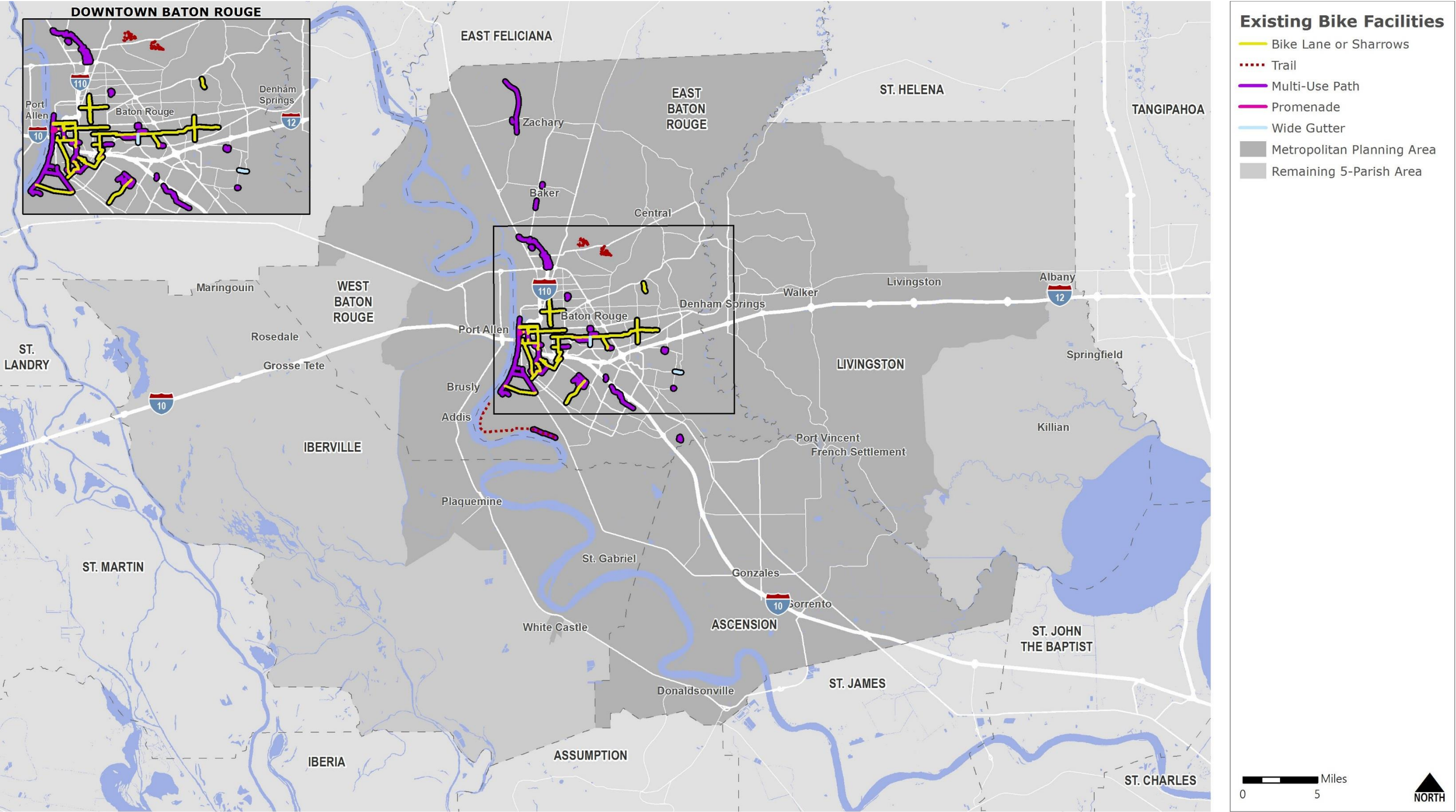
DOWNTOWN BATON ROUGE

Existing Bike Facilities
- Bike Lane or Sharrows
- Trail
- Multi-Use Path
- Promenade
- Wide Gutter
- Metropolitan Planning Area
- Remaining 5-Parish Area

Data Sources: CRPC

Disclaimer: This map is for planning purposes only.

Existing Sidewalks
— Single Side of Roadway
— Both Sides of Roadway
Metropolitan Planning Area
Remaining 5-Parish Area

ST. HELENA

EAST BATON ROUGE

Zachary

Baker

Central

WEST BATON ROUGE

Livingston

Walker

Port Allen

Denham Springs

Baton Rouge

LIVINGSTON

Tete

Brusly

Addis

Port Vincent

French Settlement

IBERVILLE

Miles
0   2

NORTH
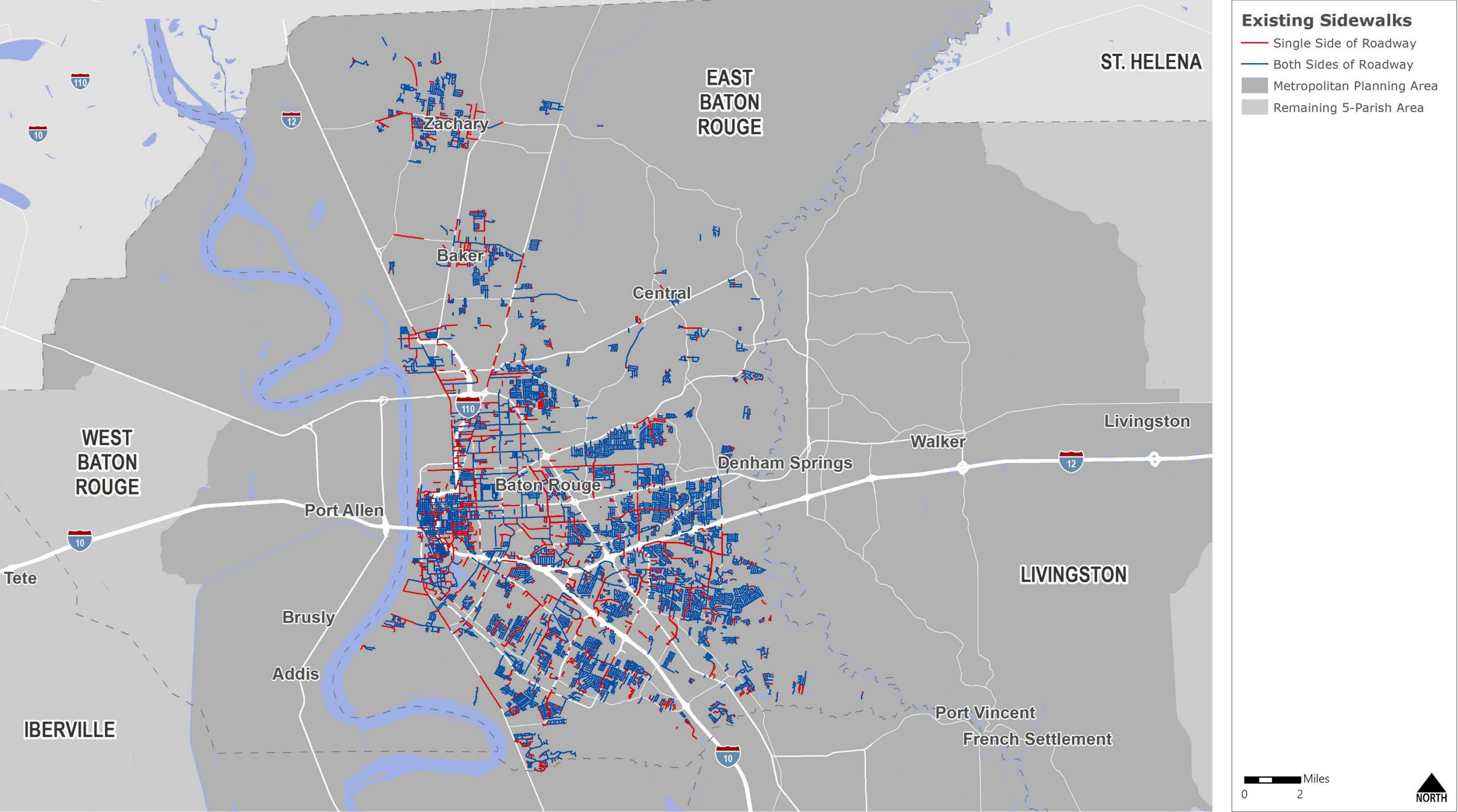
Data Sources: CRPC

Disclaimer: This map is for planning purposes only.

A comparison between bicycle and pedestrian related projects planned in the 2042 Metropolitan Transportation Plan (MTP) and the existing bicycle and pedestrian facilities was not able to be conducted since the list of planned projects was not able to be identified.

In addition to the projects that have been completed since adoption of the previous plan, Table 4.1 lists the Requested Pedestrian and Bicycle Transportation Projects in the CRPC Capital Region Planning Commission.

Table 4.1: Requested Pedestrian and Bicycle Transportation Projects

East Baton Rouge	
Windborne Ave to Brightside Lane via Foster Dr., College Ave, and Lee Dr.	Windborne Ave. to Highland Rd. via Acadian Thruway, and Stanford Ave.
Prescott and Airline to Joor Rd. in Baton Rouge	Brightside Lane to Jefferson Hwy via Lee Dr., College Dr. and Jefferson Hwy.
Gourier Ave to Nicholson Dr	Gourier Ave to Burbank Dr.
Government St to Goodwood Blvd. Via Lobdell Blvd	Government St. to Jefferson Hwy. via Lobdell Ave
Government St. to Essen via Jefferson Hwy.	Jefferson Hwy to Old Hammond Hwy.
Burbank to Siegen	Burbank to Perkins via Siegen
Highland Rd. to Coursey Blvd. via Bluebonnet Blvd.	Siegen Lane to Greenwell Springs Rd. via Sherwood Forrest Blvd.
From Downtown to GSRI Ave via Nicholson Dr.	From Government St to Lee Dr. Via Dalrymple, East Lakeshore, Stanford Ave., and Hyancith
From Government St. to Highland and Perkins Rd.; From Government St. to Lee Dr. via Dalrymple to Perkins; From Government St. to Bluebonnet via Dalrymple and Perkins; From Government St. to Essen/ Starring Lane via Dalrymple and Perkins; From Government St. to Siegen Lane via Dalrymple and Perkins;	From River Rd. to Highland and Perkins via Jefferson Hwy.; From River Rd. to Old Hammond Hwy. via Government St. and Jefferson Hwy; From Government St. to Essen Lane via Jefferson Hwy.; From River Rd. to Bluebonnet via Government St. via Jefferson Hwy.; From River Rd. to Siegen Lane via Government St. to Jefferson Hwy;
From Downtown Baton Rouge to North Baton Rouge via River Rd. to North 3rd St., From River Rd. to Chippewa Ave. via North 3rd St. ; From Downtown BR. to Choctaw via River Rd. and North 3rd St.;	From Government St. to Greenwell Springs Rd. via Foster Dr.; From Government St. to Windborne Ave. via Foster Dr.; From Government St. to Glen Oaks Dr. via Foster Dr.
From Brightside Lane at LSU to the East Baton Rouge Livingston Parish line	From River Rd. to Highland and Perkins Rd. via Nicholson Dr. to Burbank Dr to Highland Rd.
From River Rd. to Goodwood via Government St;	Nicholson Dr. Extd/ LA 30 and Manchac Rd. to LA 3115

West Baton Rouge Parish	
Choctaw Rd. to East St. Francis St	LA -1 Corridor from Beaulieu Lane in Port Allen to 1st St. in Addis, LA
River RD. Corridor in West Baton Rouge, LA	Levee top trail in West Baton Rouge to the Iberville Parish Line
Iberville Parish	
Belleview DR. Corridor to River Rd. at the Sunshine Ferry landing	River Rd from the Iberville Parish line to the Ascension Parish line
Ascension Parish	
From Burnside Ave and Airline Hwy. to River Rd. in Ascension Parish	From North Burnside Ave and East Riverview St . to Churchpoint Rd. to Stringer Bridge Rd
From I-10 exit at la 30 TO Brittany Tower Dr.	Extension of the Mississippi Levee Trail from the East Baton Rouge Parish Line through Ascension Parish
Livingston Parish	
Range Ave. at Cockerham Rd. to I-12	River Rd. at Range Ave. to Florida Blvd
Petes Hwy. at Hatchell Lane to Cokerham Rd.	Florida Blvd to Juban Rd.

4.3 Existing Traffic and Usage Patterns

For the last several years, the number of transportation system users bicycling or walking to their destination gradually declined. Several factors can be attributed to this shift; however, suburbanization has had the most significant impact. Suburbanization is a population shift from core urban areas into the suburbs surrounding those areas. This population shift to suburban areas increases the distance one must travel to get to his or her destination, resulting in users of the system finding active transportation modes less appealing and practical. This is not unique to the MPA, but can be seen in many metropolitan areas across the country.

Though this decrease in the use of active transportation modes has been trending for decades, and currently bicycling and walking account for a relatively small portion of commuting patterns in Louisiana, developing infrastructure that supports active transportation modes will provide commuter's with alternative transportation options and when developed appropriately, has the potential to supplement gaps in the multi-modal transportation network and once again present bicycling and walking as viable alternatives to motorized transportation modes.

Typically, when referencing biking or walking, the two are mentioned together as though they were synonymous with one another. While both are modes of active transportation, their roles within the transportation system vary somewhat. Nationally, according to the 2017 National

Household Travel Survey (NHTS), walking accounts for 10.5 percent of all household trips while bicycling accounts for only 1.0 percent.

Nationally five (5) percent of people commuting to work bike or walk. That number is significantly lower in Louisiana and the MPA as only 2.2 and 1.7 percent of people commuting to work bike or walk, respectively, in 2019.

While data indicates a significant difference in the amount of household trips between people walking and biking, Figure 4.4 illustrates the difference in trip purposes between the two. The highest percentage of trip purposes in small to mid-size metropolitan areas for walking is for home and social/recreational purposes at 37.5 and 16.7 percent, respectively. Similarly, the highest percentage of trip purposes in small to mid-size metropolitan areas for biking is for home and social/recreational purposes at 49.6 and 16.0 percent, respectively. Shopping/errands and school are the next two highest trip purpose categories for walking category at 15.1 and 11.5 percent, respectively. For bicycling, school and medical/dental services are the next highest trip purpose categories for walking category at 12.0 and 8.0 percent, respectively. For biking, the top three trip purposes account for 77.6 percent of all trips, and for walking they account for 70.1 percent.

Figure 4.4: Walking and Bicycling Trip Purposes
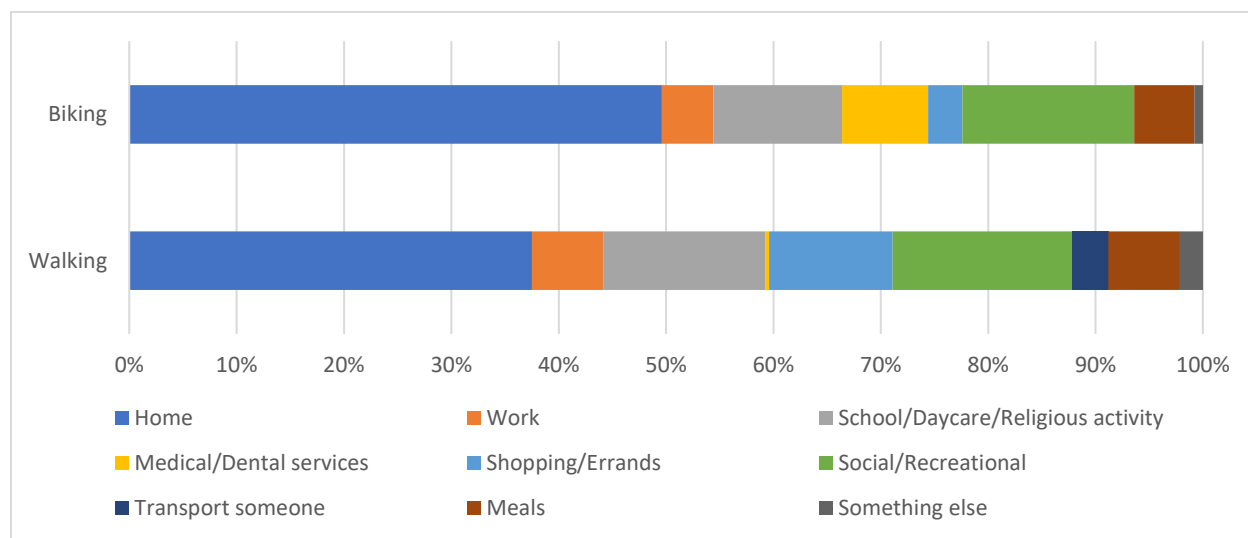
Note: Data is for metro areas with less than 1,000,000 residents

Source: National Household Travel Survey, 2017

Figure 4.4 shows travel pattern averages from multiple small to mid-size metropolitan areas from across the country. While this data may be somewhat representative of travel patterns in the MPA, it is not absolute, as travel behavior differs from region to region. For example, in some urban areas, biking or walking to work may be more prevalent than others due to the area having a comprehensive bicycle and pedestrian network and access to reliable transit services.

Table 4.2 shows that an overwhelming majority of workers in the Unites States, the State of Louisiana, and the MPA drive alone or carpool to work. Within the MPA, 96.4 percent of workers drive alone or commute to work which is in line with the state average of 95.3 percent. However, this is five (5) percent higher than the U.S. average of 90.7 percent. In contrast, less than two (2) percent of all work trips in the MPA and the State involve commuters walking or biking to work, with biking being the least used of each represented mode.

Table 4.2: Means of Transportation to Work

Mode	United States	Louisiana	MPA
Drove Alone	70.3%	74.6%	74.8%
Carpooled	20.4%	20.7%	21.6%
Transit	4.4%	1.3%	1.0%
Walked	3.0%	1.6%	1.5%
Bike and Other	1.9%	1.8%	1.2%

Note: Excludes those who worked from home

Source: ACS 2015-2019

Figure 4.5 below shows from 1970 to 2019 just how large of a decline there has been over the years in the amount of people walking to work. One of the considerable decreases for all three (3) listed areas occurring between 1980 and 1990. From 2010 to 2015, the MPA experienced an increase in the number of people walking to work from 1.2 to 2.7 percent, and it was followed by a sharp decrease (2.7 to 0.5 percent) from 2015 to 2019.

Figure 4.5: Percentage of People Walking to Work, 1970 - 2015
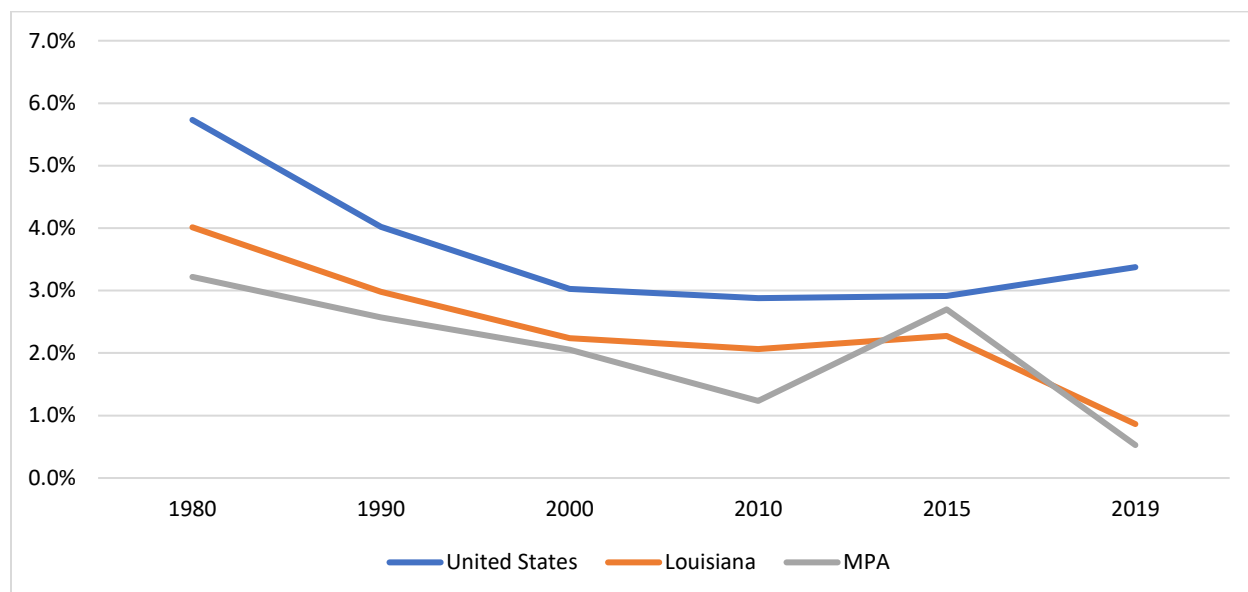
Source: National Historic Geographic Information Systems; ACS Estimates

In addition to the substantial decrease in the amount of people walking to work, the number of children walking to school has also seen a sharp decline. According to the travel patterns reported in 2016 by the National Center, walking to and from school increased from less than 14 percent to more than 17 percent of all school trips between 2007-08 and 2014. This can be attributed to several reasons; however, distance to school seems to play the most significant role.

60.8%

Of children are driven to school in a private vehicle (Car, SUV, or Pickup)
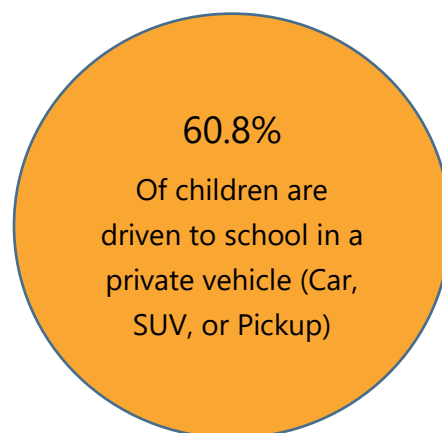
The 2017 National Household Travel Survey found that 62.9 percent of students who lived a quarter mile or closer to school walked or biked, while less than one percent of students walked or biked if they lived more than two-and-a-half miles from school.

4.4 Maintenance

Maintenance is a major concern as it relates to the bicycle and pedestrian network in the MPA. With each new facility added to the overall bicycle and pedestrian facility network, comes an additional demand for increased funding for maintenance of those facilities. While additional facilities are needed to improve connectivity of the network throughout the MPA to improve mobility, there is a present need to maintain and improve the existing infrastructure. Failure of jurisdictions to budget for maintenance of existing infrastructure can result in degradation of facilities to the point of rendering them unusable and thus useless to the traveling public who

depend on them as a means of accessing everyday needs. Within the MPA there are several facilities in need of immediate repair.

Most municipal and parish jurisdictions have maintenance schedules in place for other infrastructure maintenance needs, such as scheduled grass cutting/trimming of overgrown vegetation, debris removal, roadway restriping and repainting of municipal buildings and facilities. However, not all jurisdictions have similar schedules for maintenance of existing bicycle and pedestrian facilities. This differs from jurisdiction to jurisdiction as establishing maintenance schedules are deemed unnecessary in certain areas either due to a lack of significant bicycle and pedestrian infrastructure or if the type of facilities each jurisdiction is responsible for is being maintained as part of an existing roadway maintenance schedule.

4.5 Safety

The FAST Act requires MPOs and State DOTs to work collectively to examine performance data and establish targets for seven (7) national performance goals focused on improving the overall transportation system, the first of which is safety. This goal requires State DOTs and MPOs to set targets for five (5) safety-related performance measures and report progress toward their achievement annually. Each of the measures focus on achieving a significant reduction in traffic fatalities and serious injuries on all public roads. The fifth safety performance measure focuses on reducing fatalities and serious injuries for non-motorized users of the transportation system.

Federal Safety Measures

1. Number of Fatalities: the total number of persons suffering fatal injuries in a motor vehicle crash during a calendar year.

2. Rate of Fatalities: the ratio of total number of fatalities to the number of vehicle miles traveled (in 100 million VMT) in a calendar year.

3. Number of Serious Injuries: the total number of persons suffering at least one serious injury in a motor vehicle crash during a calendar year.

4. Rate of Serious Injuries: the ratio of total number of serious injuries to the number of VMT (in 100 million VMT) in a calendar year.

5. Number of Non-Motorized Fatalities and Non-Motorized Serious Injuries: the combined total number of non-motorized fatalities and non-motorized serious

As shown in Figures 4.6 and 4.7, between 2014 and 2018, there were 103 pedestrians and 19 bicyclists killed as a result of a crash involving a motor vehicle in the MPA. During that same span, there were 216 pedestrians and 44 bicyclists involved in crashes that resulted in serious injuries. Figure 4.6 shows the amount of fatal and serious injury crashes involving pedestrian has remained high and inconsistent over the five-year period. Figure 4.7 shows the number of fatal crashes involving bicyclist has remained constant over the five-year period. However, the serious injury crashes involving bicyclist has seen an increase in the last 3 years as shown in Figure 4.7.

Figure 4.6: Pedestrian Fatalities and Serious Injuries
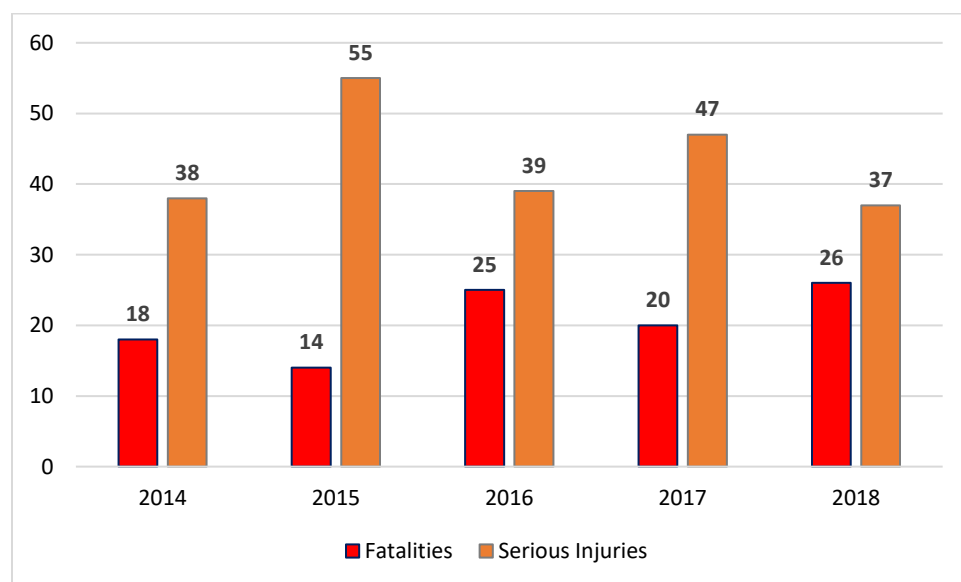
Source: LADOTD

Figure 4.7: Bicyclist Fatalities and Serious Injuries
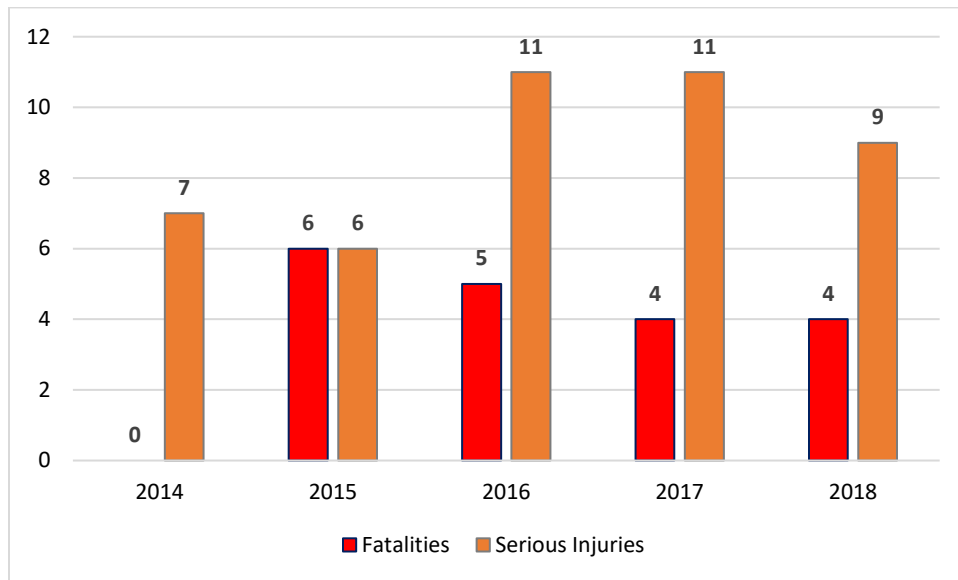
Source: LADOTD

5.0 Public Transit

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.

However, even in urban areas with population between 500,000 - 999,99 persons like the Baton Rouge 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 home or shopping/errands. People using demand response services are overwhelmingly traveling for home, medical, or shopping/errands. However, trip purpose patterns will ultimately depend on the quality of public transit in the region.

Figure 5.1: Trip Purposes for Transit Riders in Urban Size between 500,000 - 999,999
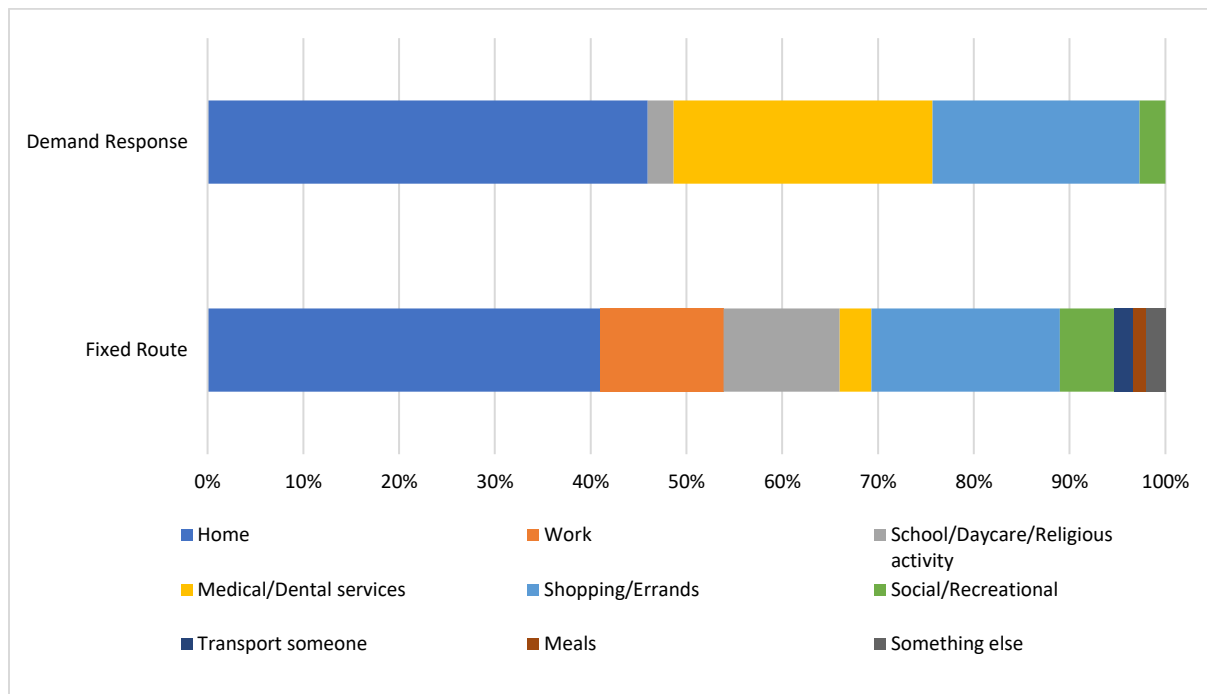
Note: Urban Area Size = between 500,000 – 999,9999
Source: 2017 National Household Travel Survey

5.1 CATS

Services Provided

The City of Baton Rouge, operating as CATS, is the primary public transit provider in the region; offering both fixed route bus service and complementary paratransit service within the City limits.

Fixed Route (Bus) Service

CATS operates 25 bus routes in the city from Monday through Sunday, excluding major holidays. On weekdays, service begins around 5:00 a.m. and ends around 11:00 p.m.; and on weekends, service begins around 6:00 a.m. and ends around 9:00 p.m. Frequencies vary by route, ranging from every 20 minutes to every 60 minutes. Routes are timed and coordinated to make transferring easy, with most routes terminating at CATS terminal in Downtown Baton Rouge or at a few other major transfer locations.

Figure 5.2 shows the current bus routes provided by CATS and Table 5.1 shows the frequencies of these routes.

The fare for buses is:

- Base $1.75 (adults)
- $0.35 for kids 5-18
- $0.35 for seniors at least 62
- $0.35 forpeople with disabilities
- Kids 4 and younger is free with a paying adult

Daily, weekly, and monthly passes are available as are special passes for everyone. Transfers are $0.25.

Table 5.1: CATS Bus Routes and Frequencies

Route	Monday-Friday	Saturday-Sunday
8 – Gus Young	60 minutes	60 minutes
10 – Scenic Highway	60 minutes	60 minutes
11 – Northside Circulator	30 minutes	60 minutes
12 – Government St/ Jefferson Hwy	45 minutes	45 minutes
14 – Thomas Delpit Dr	45 minutes	60 minutes
15 – Blount Rd	60 minutes	60 minutes
16- Capitol Park	No Service due COVID-19	No Service due COVID-19
17 – Perkins Rd	45 minutes	45 minutes
18 – Cortana Transit Center/ Tigerland	60 minutes	60 minutes
20 – North Acadian Thwy	45 minutes	60 minutes
21 – Fairfield Ave	45 minutes	60 minutes
22 – Winbourne Ave	60 minutes	60 minutes
23 – Foster Dr	60 minutes	60 minutes
41 – Plank Rd	30 minutes	30 minutes/45 minutes
44 – Florida Blvd	20 minutes	30 minutes/45 minutes
46 – Cortana Transit Center	60 minutes	60 minutes
47 – Highland Rd / LSU	30 minutes	45 minutes
54 – Airline Hwy	60 minutes	60 minutes
57 – Sherwood Forest Blvd	45 minutes	60 minutes
58 – Coursey Blvd	60 minutes	60 minutes

59 – East Florida Blvd	60 minutes	60 minutes
60 – Medical Circulator	45 minutes	45 minutes
70 – Baker	60 minutes	60 minutes
72 – Florida Blvd Limited	20 minutes	30 minutes/45 minutes
80 – Southern University	No Service due COVID-19	No Service due COVID-19

Source: CATS

CATS on Demand (Paratransit) Service

For qualified individuals with mobility impairments that are unable to use the system's bus service, CATS provides a paratransit service called CATS on Demand within the City of Baton Rouge. This advance reservation, door to door service, is provided at the same time as bus service at a cost of $1.75 per trip.

Figure 5.2: CATS Fixed Route System

CATS Fixed Route System

- 8 - Gus Young Ave/BRCC
- 10 - Scenic Hwy/Southern University
- 11 - Northside Circulator
- 12 - Government St/Jefferson Hwy
- 14 - Thomas Delpit Dr
- 15 - Blount Rd
- 16 - Capitol Park Shuttle
- 17 - Perkins Rd/Mall of Louisiana
- 18 - LSU/Cortana Mall
- 20 - N Acadian Thwy
- 21 - Fairfields Ave/Cortana Mall
- 22 - Winbourne Ave/Walmart
- 23 - Foster Dr
- 41 - Plank Rd
- 44 - Florida Blvd/Cortana Mall
- 46 - Gardere/OLOL/L'Auberge
- 47 - Highland Rd
- 54 - Airline Hwy North/Southern University
- 57 - Sherwood Forest Blvd
- 58 - Coursey Blvd/O'Neal Ln/Cortana Mall
- 59 - East Florida Blvd/O'Neal Ln
- 60 - Medical Circulator
- 70 - Baker/Southern University/CATS Terminal
- 72 - Florida Blvd Limited
- 80 - Southern Shuttle Circulator
- Metropolitan Planning Area
- Remaining 5-Parish Area

Data Sources: CATS

Disclaimer: This map is for planning purposes only.

Ridership Trends

After a steep decline in fixed route ridership from 2015 to 2016, ridership rebounded gradually in 2017 and 2018. At the same time, since 2014, paratransit ridership has declined steadily until 2017. The decline in fixed route ridership is due to many factors; including poor reliability in recent years and trends like a strong economy and low automobile loan rates. However, after 2017, the demand responsive ridership has gradually increased for 2018 and 2019.

"Route 44 - Florida Street" has the highest average monthly ridership of all CATS routes, with nearly 25,000 monthly boardings on average in 2018. The next highest ranked routs for transit ridership were Plank Rd and Highland Rd/LSU.

Table 5.2: CATS Annual Ridership by Mode, 2015-2019

Mode/Year	2015	2016	2017	2018	2019
Demand Response	91,949	90,014	84,271	87,464	94,814
Articulated Buses	3,990,011	3,722,146	3,728,427	3,875,024	3,709,045

Source: National Transit Database

### Table 5.3: Capital Area Transit System Average Monthly Ridership by Route/Service in 2018 and 2019

Route #	Route	2018 Ridership	2019 Ridership
8	Gus Young Ave / BRCC	2,799	3,024
10	Scenic Hwy / Southern University	6,119	6,276
11	Northside Circulator / 72nd Ave / Scotlandville	4,025	3,735
12	Government St / Jefferson Hwy	8,408	7,567
14	Thomas Delpit Dr / Roosevelt St	4,166	4,932
15	Blount Rd / Crestworth (began service 02/24/2019)	-	2,190
17	Perkins Rd	10,491	10,741
16	Capitol Park Shuttle	2	129
18	Tigerland / Cortana Mall	7,403	7,424
20	North Acadian Thwy	8,697	8,884
21	Fairfields Ave	5,652	7,440
22	Winbourne Ave	7,392	8,709
23	Foster Dr	5,725	4,356

41	Plank Rd	18,837	19,502
44	Florida Blvd	30,593	24,988
46	Gardere / OLOL / L'auberge (ended service 02/23/2019)	4,833	-
46	Cortana / Gardere / L'auberge (began service 02/24/2019)	-	7,306
47	Highland Rd / LSU	21,568	23,351
50	Glen Oaks Circulator (ended service 02/23/2019)	2,721	-
52	Baker Circulator (ended service 02/23/2019)	1,244	-
54	Airline Hwy North / Southern University / Metro Airport	11,535	11,034
55	East Florida Blvd / SF BREC (ended service 02/23/2019)	3,215	-
56	Mall to Mall / Drusilla Ln / Tara Blvd (ended service 02/23/2019)	5,765	-
57	Sherwood Forest Blvd / Greenwell Springs Rd	12,069	15,701
58	Coursey Blvd / O'Neal Ln / Ochsner	4,985	4,688
59	East Florida Blvd / O'Neal Ln / Ochsner	4,557	5,504
60	Medical Circulator	768	1,102
70	CATS Terminal / Southern University / Baker	3,812	4,504
72	Florida Blvd Limited Stops	5,260	5,486
80	Southern University Shuttle	870	205
103	Airport / Downtown Express (ended service 02/23/2019)	116	-

Note: Monthly Ridership.
Source: CATS

Figure 5.3: Ridership by Month CATS in 2019
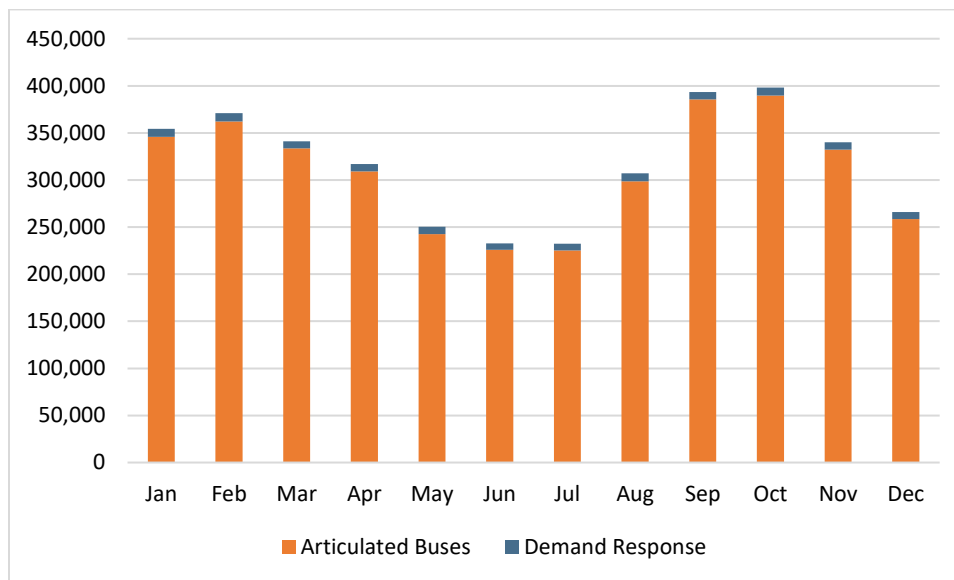
Source: National Transit Database, 2019

Operating Trends

The level of service for CATS fixed route service has been decreasing for the last five (5) years, with major decreases of almost ten (10) percent in vehicle revenue hours or miles. In addition, the productivity and the farebox recovery rate have declined during this time. Lastly, the operating costs have increased significantly since 2015.

For paratransit, the level of service for CATS has been increasing for the last five (5) years, as much as sixteen (16) percent in vehicle revenue miles. However, the productivity has declined during this time and an increase in the farebox recovery rate has occurred. Lastly, the operating costs have decreased significantly since 2015.

Table 5.4: CATS Fixed Route Trends, 2015-2019

Indicator	2015	2016	2017	2018	2019	Change (2015 - 2019)	Indicator
General System Statistics							
Urbanized Area Population	594,309	594,309	594,309	594,309	594,309	0.0%	--
Urbanized Area Square Miles	367	367	367	367	367	0.0%	--
Urbanized Area Population Density	1,620	1,620	1,620	1,620	1,620	0.0%	--
Vehicles Operated in Maximum Service	59	60	56	59	63	6.8%	▲
Vehicle Revenue Miles	3,312,831	3,187,782	3,335,066	3,236,056	3,047,510	-8.0%	▼
Vehicle Revenue Hours	261,762	244,192	251,150	250,788	237,212	-9.4%	▼
Boardings	3,990,011	3,722,146	3,728,427	3,875,024	3,709,045	-7.0%	▼
Fare Revenue	$1,847,943	$1,782,187	$1,842,507	$2,060,169	$1,813,095	-1.9%	▼
Annual Operating Expense	$12,793,303	$12,961,130	$12,998,006	$12,111,868	$13,584,351	6.2%	▲
Level of Service							
Vehicle Revenue Miles per Capita	5.6	5.4	5.6	5.4	5.1	-8.0%	▼
Vehicle Revenue Hours per Capita	0.4	0.4	0.4	0.4	0.4	-9.4%	▼
Productivity							
Boardings per Revenue Mile	1.2	1.2	1.1	1.2	1.2	1.1%	▲
Boardings per Revenue Hour	15.2	15.2	14.8	15.5	15.6	2.6%	▲
Boardings per Capita	6.7	6.3	6.3	6.5	6.2	-7.0%	▼
Cost Efficiency							
Operating Expense per Vehicle Revenue Mile	$3.86	$4.07	$3.90	$3.74	$4.46	15.4%	▲
Operating Expense per Vehicle Revenue Hour	$48.87	$53.08	$51.75	$48.30	$57.27	17.2%	▲
Operating Expense per Boarding	$3.21	$3.48	$3.49	$3.13	$3.66	14.2%	▲
Farebox							
Average Fare	$0.46	$0.48	$0.49	$0.53	$0.49	5.5%	▲
Farebox Recovery Rate	14.4%	13.8%	14.2%	17.0%	13.3%	-7.6%	▼

Source: National Transit Database

Table 5.5: CATS Paratransit Trends, 2015-2019

Indicator	2015	2016	2017	2018	2019	Change (2015 – 2019)	Indicator
General System Statistics							
Urbanized Area Population	594,309	594,309	594,309	594,309	594,309	0.0%	--
Urbanized Area Square Miles	367	367	367	367	367	0.0%	--
Urbanized Area Population Density	1,620	1,620	1,620	1,620	1,620	0.0%	--
Vehicles Operated in Maximum Service	18	18	18	19	19	5.6%	▲
Vehicle Revenue Miles	734,127	729,536	710,747	694,198	855,120	16.5%	▲
Vehicle Revenue Hours	48,919	48,946	47,254	46,564	53,653	9.7%	▲
Boardings	91,949	90,014	84,271	87,464	94,814	3.1%	▲
Fare Revenue	$100,462	$117,578	$101,583	$98,373	$105,628	5.1%	▲
Annual Operating Expense	$1,551,732	$1,554,934	$1,613,409	$1,668,481	$1,551,931	0.0%	--
Level of Service							
Vehicle Revenue Miles per Capita	1.2	1.2	1.2	1.2	1.4	16.5%	▲
Vehicle Revenue Hours per Capita	0.1	0.1	0.1	0.1	0.1	9.7%	▲
Productivity							
Boardings per Revenue Mile	0.1	0.1	0.1	0.1	0.1	-11.5%	▼
Boardings per Revenue Hour	1.9	1.8	1.8	1.9	1.8	-6.0%	▼
Boardings per Capita	0.2	0.2	0.1	0.1	0.2	3.1%	▲
Cost Efficiency							
Operating Expense per Vehicle Revenue Mile	$2.11	$2.13	$2.27	$2.40	$1.81	-14.1%	▼
Operating Expense per Vehicle Revenue Hour	$31.72	$31.77	$34.14	$35.83	$28.93	-8.8%	▼
`Operating Expense per Boarding	$16.88	$17.27	$19.15	$19.08	$16.37	-3.0%	▼
Farebox							
Average Fare	$1.09	$1.31	$1.21	$1.12	$1.11	2.0%	▲
Farebox Recovery Rate	6.5%	7.6%	6.3%	5.9%	6.8%	5.1%	▲

Source: National Transit Database

Safety and Security Trends

As a recipient of federal transportation funds, CATS is 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.

Table 5.6 shows CATS reported safety and security events from the last five (5) years of available data and compares its incidence rates to the national and state averages of other urbanized area providers. While CATS had a high prevalence of safety and security events over the last five (5) years compared to state and national averages, it had no reported incidents involved with a fatality. However, its high incidence rate and high injury rate merit attention.

Table 5.6: CATS Safety and Security Events, 2016-2020

	2016	2017	2018	2019	2020	Total
All Events	18	15	21	16	28	98
Fatalities	0	0	0	0	0	0
Injuries	17	27	28	18	20	110

Source: National Transit Database

Table 5.7: Safety and Security Events per 100,000 Vehicle Revenue Miles, 2016-2020

	CATS	Louisiana	U.S.
All Events	0.61	0.41	0.79
Fatalities	0.00	0.00	0.01
Injuries	0.55	0.58	0.95

Source: National Transit Database

Transit Asset Management

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. CATS is responsible for submitting this information and recently developed a TAM plan.

Federal TAM regulations require transit agencies to address the four (4) asset categories shown in Table 5.8, as applicable to the agency. For CATS, only the rolling stock, equipment, and facilities asset categories are applicable.

As of 2019, CATS had 103 vehicles in its rolling stock fleet, 21 vehicles in its equipment fleet, and 4 facilities (see Tables 5.10-5.12). During the development of its TAM Plan, CATS set

performance targets for all asset categories in its rolling stock, equipment, and facility inventory. For rolling stock and equipment, this performance measure is simply the percentage of vehicles whose age exceeds the Useful Life Benchmark (ULB). 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).

As shown in Tables 5.9 through 5.11, in 2019, CATS did not meet performance targets for some asset categories for its rolling stock and equipment. Using its TAM Plan, CATS will continue to improve its performance and build towards a good state of repair for all of its assets.

> 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 5.8: Transit Asset Management Performance Measures

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

Note: ULB = Useful Life Benchmark; TERM is software used to rate facility conditions
Source: Federal Transit Administration

Table 5.9: CATS Rolling Stock Inventory and Performance

Vehicle Type	Total	ULB (years)	% Exceeding ULB	CRPC Target	Status
Buses	66	12-14	2%	0%	Target Not Met
Cutaway Buses	37	5-12	19%	9%	Target Not Met
Overall	103	n/a	8%	n/a	n/a

Source: CATS Transit Asset Management Plan, 2019

Table 5.10: CATS Equipment Inventory and Performance

Vehicle Type	Total	ULB (years)	% Exceeding ULB	CRPC Target	Status
Truck and other Rubber Tire Vehicles	21	5-14	62%	5%	Target Not Met
Overall	21	N/A	62%	N/A	N/A

Source: CATS Transit Asset Management Plan, 2019

Table 5.11: CATS Facility Inventory and Performance

Asset Category	Total	Average TERM Scale Rating	% Under 3.0 on TERM Scale	CRPC Target	Status
Administrative Buildings	1	3	0%	0%	Target Met
Maintenance	1	3	0%	0%	Target Met
Service Building	1	3	0%	0%	Target Met
Passenger Facility	1	3	0%	0%	Target Met
Overall	4	N/A	0%	N/A	N/A

Source: CATS Transit Asset Management Plan, 2019

However, it should be noted that CATS has been significantly upgrading its fleet the last few years. Older buses have been replaced with newer, more efficient, and cleaner-running buses, and those that exceed the ULB have been phased out. As of March 2022, the CATS inventory contains:

- 54 35' diesel buses

- 6 35' electric buses

- Plans to receive an additional 3 35' electric buses

- 25 cutaways for ADA/CATS On Demand use only

- Removal/sale of the 4 trolley busses and cutaway vans on fixed route service

- An average fleet age of 6.15 years

- ADA fleet average age of 8.84 years

5.2 Fixed Route Regional Peer Comparison

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.

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. The focus is on the urbanized areas of Baton Rouge versus the service area of a particular agency.

Peer Selection Methodology

The Urban Integrated National Transit Database (iNTD) uses data from the National Transit Database (NTD) and the 2019 American Community Survey, to identify urban transit systems across the United States which are most like one another. Criteria used to identify peer systems are:

- The presence of rail, presence of heavy rail;
- urban area population;
- total revenue miles;
- total operating budget;
- population density;
- state capital;
- percent college students;
- population growth rate;
- percent low income;
- annual delay (hours) per traveler, freeway lane miles per capita;
- percent of service that is demand response

<u>Peer Selection Methodology</u>

Based upon the above criteria, Table 5.12 shows the three (3) U.S. urban transit systems most similar to CATS.

Table 5.12: Selected Peer Regions

| Region	Urban Fixed Route Systems
Harrisburg, PA	Cumberland Dauphin-Harrisburg Transit Authority
Birmingham, AL	Birmingham-Jefferson Parish Transit Authority
Tulsa, OK	Metropolitan Tulsa Transit Authority
Baton Rouge, LA	Capital Area Transit System

Table 5.13: Peer Fixed Route System Trends, 2019

| Indicator	Harrisburg	Birmingham	Tulsa	Peer Average	Baton Rouge
General System Statistics					
Urbanized Area Population	444,474	749,495	655,479	616,483	594,309
Urbanized Area Square Miles	260	530	336	375	367
Urbanized Area Population	1,712	1,414	1,951	1,692	1,620
Vehicles Operated in Maximum	71	70	64	68	63
Vehicle Revenue Miles	1,734,605	3,022,019	2,868,462	2,541,695	3,047,510
Vehicle Revenue Hours	115,704	230,707	195,748	180,720	237,212
Boardings	1,985,147	3,120,707	2,613,078	2,572,977	3,709,045
Fare Revenue	$2,665,112	$1,827,042	$2,482,788	$2,324,981	$1,813,095
Annual Operating Expense	$16,359,677	$27,661,077	$15,185,720	$19,735,491	$26,296,970
Level of Service					
Vehicle Revenue Miles per Capita	3.9	4.0	4.4	4.1	5.1
Vehicle Revenue Hours per Capita	0.3	0.3	0.3	0.3	0.4
Productivity					
Boardings per Revenue Mile	1.1	1.0	0.9	1.0	1.2
Boardings per Revenue Hour	17.2	13.5	13.3	14.7	15.6
Boardings per Capita	4.5	4.2	4.0	4.2	6.2
Cost Efficiency					
Operating Expense per Vehicle	$9.43	$9.15	$5.29	$7.96	$8.63
Operating Expense per Vehicle	$141.39	$119.90	$77.58	$112.96	$110.86
Operating Expense per Boarding	$8.24	$8.86	$5.81	$7.64	$7.09
Farebox					
Average Fare	$1.34	$0.59	$0.95	$0.96	$0.49
Farebox Recovery Rate	16.3%	6.6%	16.3%	13.1%	6.9%

Source: National Transit Database

Level of Service Indicators

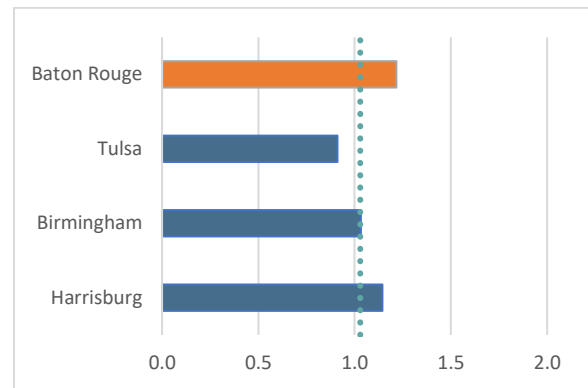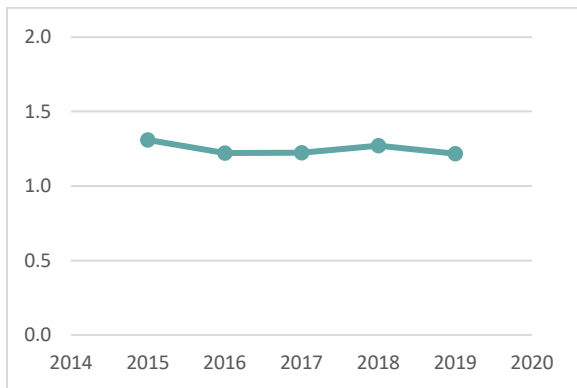### Vehicle Revenue Miles per Capita
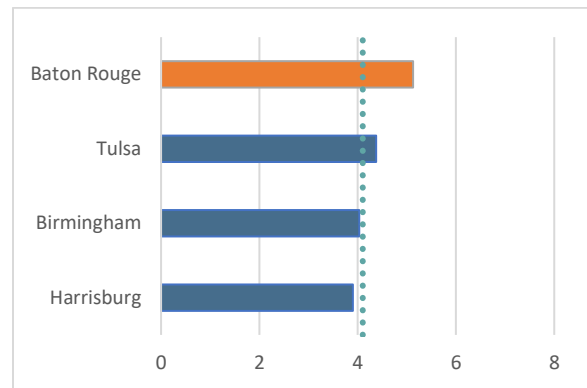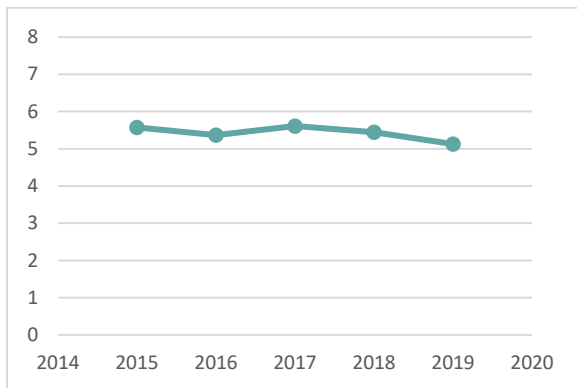
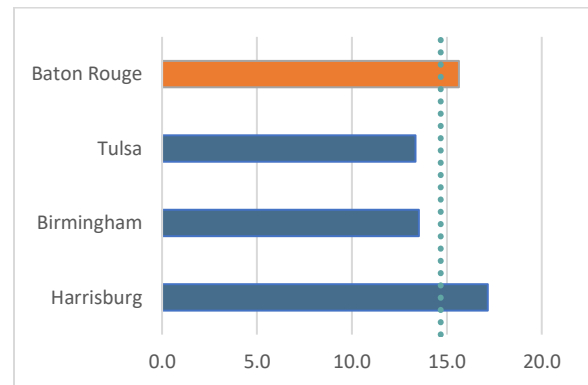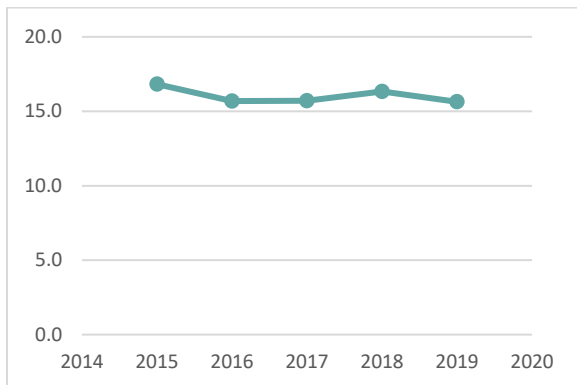### Vehicle Revenue Hours per Capita
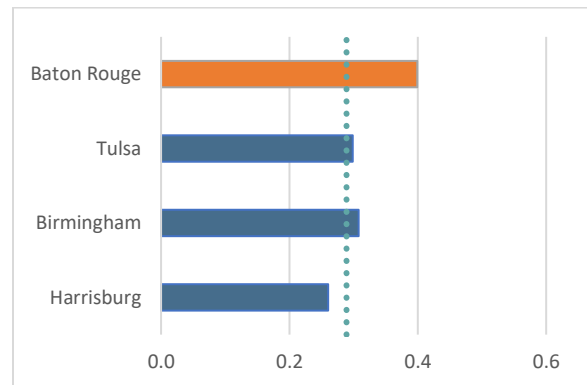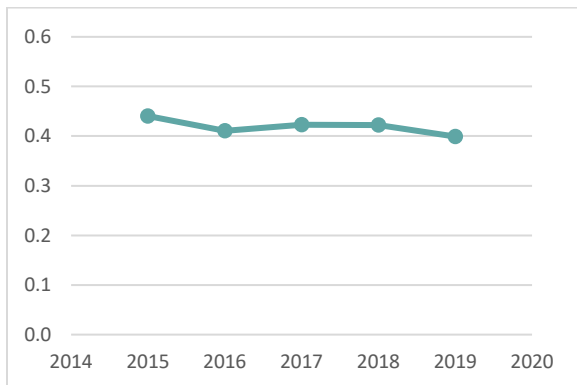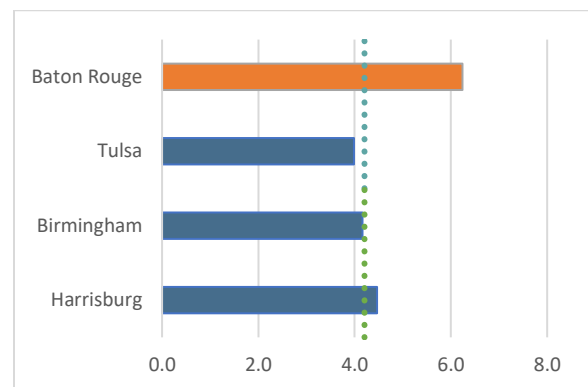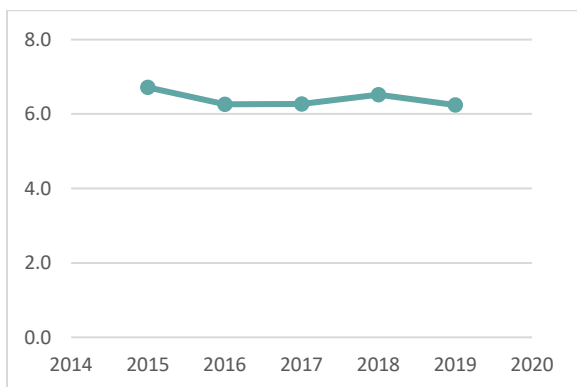

••• Peer Average

Productivity Indicators

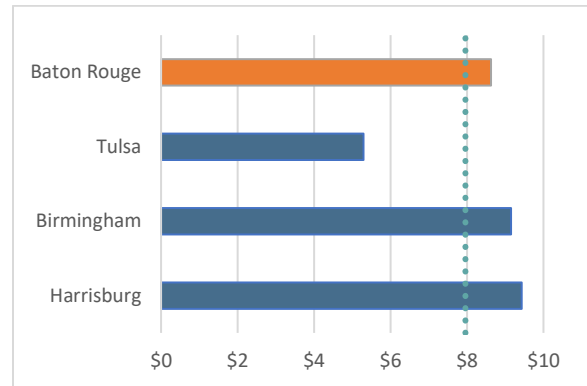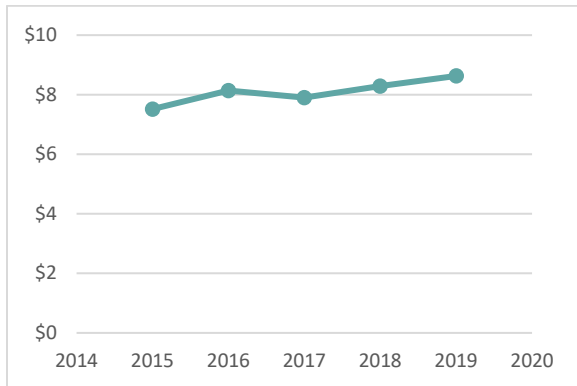## Boardings per Revenue Mile

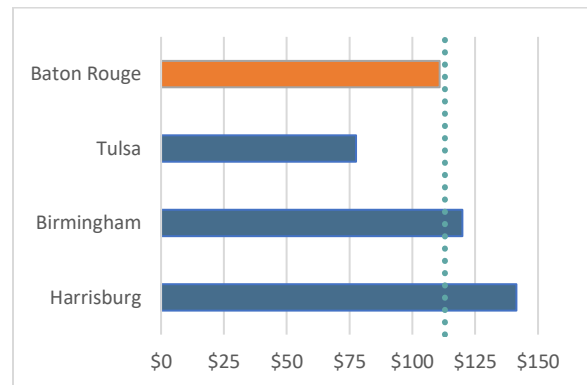
Boardings per Revenue Hour
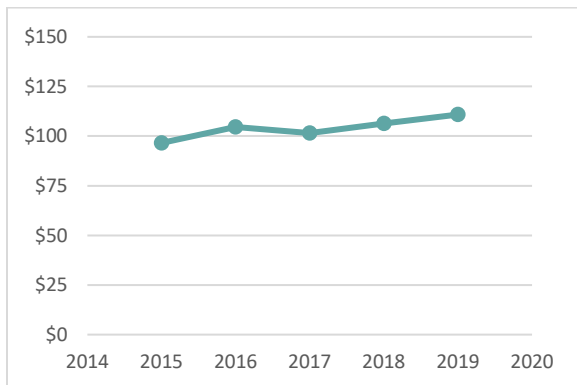

Boardings per Capita

••• Peer Average
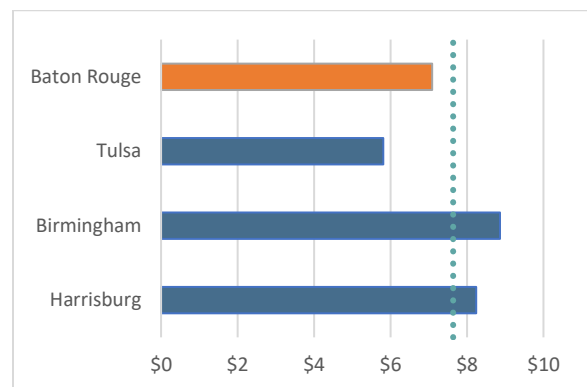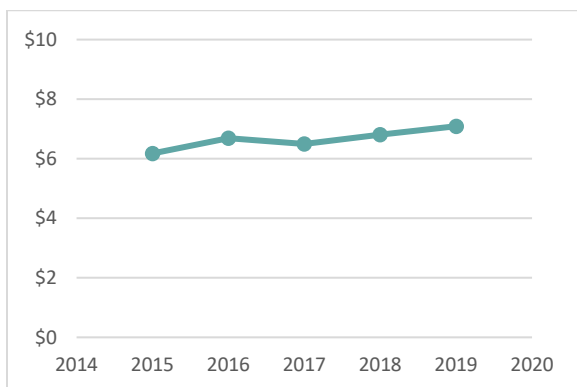
Cost Efficiency Indicators

Operating Expense per Vehicle Revenue Mile

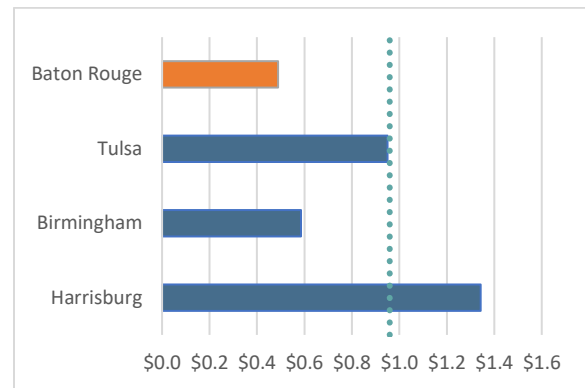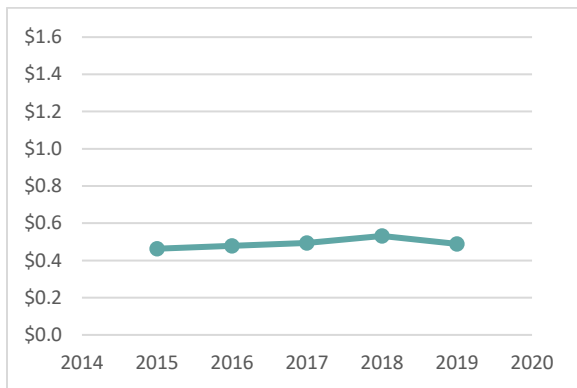## Operating Expense per Vehicle Revenue Hour

Operating Expense per Passenger Trip
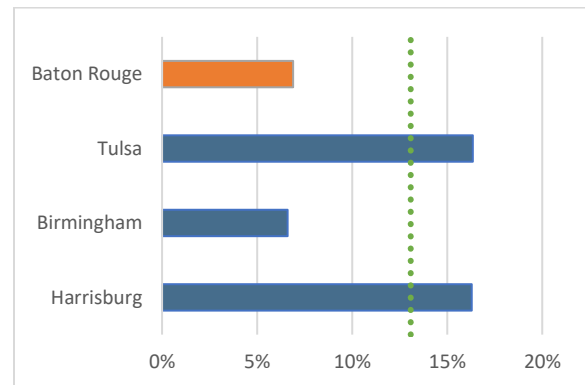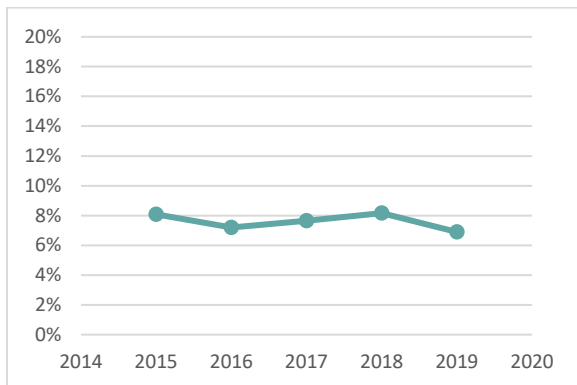

••• Peer Average

Farebox Indicators

Average Fare

Farebox Recovery Rate

••• Peer Average

Fixed Route Regional Peer Comparison Findings

Table 5.13 provides relevant transit operations information for all fixed route, urban transit services operating in the selected peer regions. The following trends can be gleaned from this information:

- Level of Service
  - CATS provides significantly more transit service than most of its peers. This is true for both vehicle revenue hours and miles provided per capita.
- Productivity
  - CATS is more productive in Boardings per Revenue Mile and in Boardings per Capita compared to its peers.
- Cost Efficiency
  - CATS has high costs for all measures with its peers Birmingham and Harrisburg. Tulsa is the most cost-efficient for all measures.
- Farebox recovery
  - CATS reports a much lower average fare compared to its peers.
  - CATS farebox recovery rate, or the share of operating costs covered by fares, is in the lower half of its peers.

Overall, when compared to the selected peer regions, CATS provides much more extensive transit service and is considerably more productive in attracting riders. However, CATS is less cost-efficient when compared to its peers and is on the lower half in terms of its farebox recovery rate.

5.3 Coordination with Other Transit Providers and Stakeholders

In addition to coordination with CATS, the MPO directly coordinates with other transit providers and stakeholders. Outside of CATS, other major transit providers in the region are:

- **Iberville Parish Public** - provides demand-response to the general public, on a Monday through Friday schedule. This transit provider utilizes the 5311 funding.

- **Livingston Council on Aging (LCOA)** - primarily serves its target senior clientele, but also utilizes 5311 grant funding to provide demand-response to the general public.

The following agencies, which relies upon the 5310 grant program, provides specialized transportation to the elderly and the disabled:

- The ARC Iberville
- Ascension Council on Aging
- The Center Baton Rouge
- Community Opportunities of East Ascension
- Donaldson Area ARC Foundation Industries
- Franciscan PACE
- Gulf Coast Teaching Family Services
- Greater King David Baptist Church
- Iberville Council on Aging
- Livingston Activity Center
- West Baton Rouge Council on Aging

5.4 Intercity Public Transit

The Baton Rouge MPA is served by two intercity transportation providers: Amtrak and Greyhound.

Megabus – provides daily intercity bus service at the Northeast corner of the intersection of Convention Street and N 22nd Street in Downtown Baton Rouge with destinations to Houston, TX and New Orleans, LA. Fares vary depending upon accommodations and travel itinerary. For more information, go to www.us.megabus.com

Greyhound – provides intercity bus service at the Baton Rouge Station in Downtown Baton Rouge, offering connections throughout the Southeast and beyond. Fares vary depending upon accommodations and travel itinerary. For more information, go to www.greyhound.com

5.5 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, with Uber and Lyft being the largest of these service providers. Currently, both Uber and Lyft serve the Baton Rouge MPA.

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.

5.6 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 Baton Rouge 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 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. This is especially true of very dense areas, where other factors, such as parking availability or congestion, may further influence demand. 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 Traffic Analysis Zone in the MPA, these criteria were applied and a level of service tier was assigned. Figures 5.4 and 5.5 illustrate the results of this analysis and the distribution of transit demand throughout the region.

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, dorm units, and hotel rooms per acre[1]	0 to 1	1 to 2	2 to 4	4 to 7	7+
	Households using food stamps, dorm units, and budget hotel rooms per acre	0 to 0.33	0.33 to 0.66	0.66 to 1.33	1.33 to 2.33	2.33+
	Households without vehicle, dorm units, and budget hotel rooms per acre	0 to 0.25	0.25 to 0.5	0.5 to 1	1 to 1.75	1.75+
Employment Density	Jobs and college enrollment per acre	0 to 5	5 to 10	10 to 25	25 to 50	50+
	Jobs per acre for industries with high percentage of workers riding transit[2]	0 to 2.5	2.5 to 5	5 to 12.5	12.5 to 25	25+
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+
	Sum of low-income residential and transit-supportive employment density values	0 to 1.5	1.5 to 3	3 to 7.5	7.5 to 15	15+
	Sum of no vehicle residential and transit-supportive employment density values	0 to 1.25	1.25 to 2.5	2.5 to 6.25	6.25 to 12	12+

[1] Dorms were converted to households assuming an average of 2.5 people per dorm and a hotel occupancy rate of 65% was assumed.
[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.
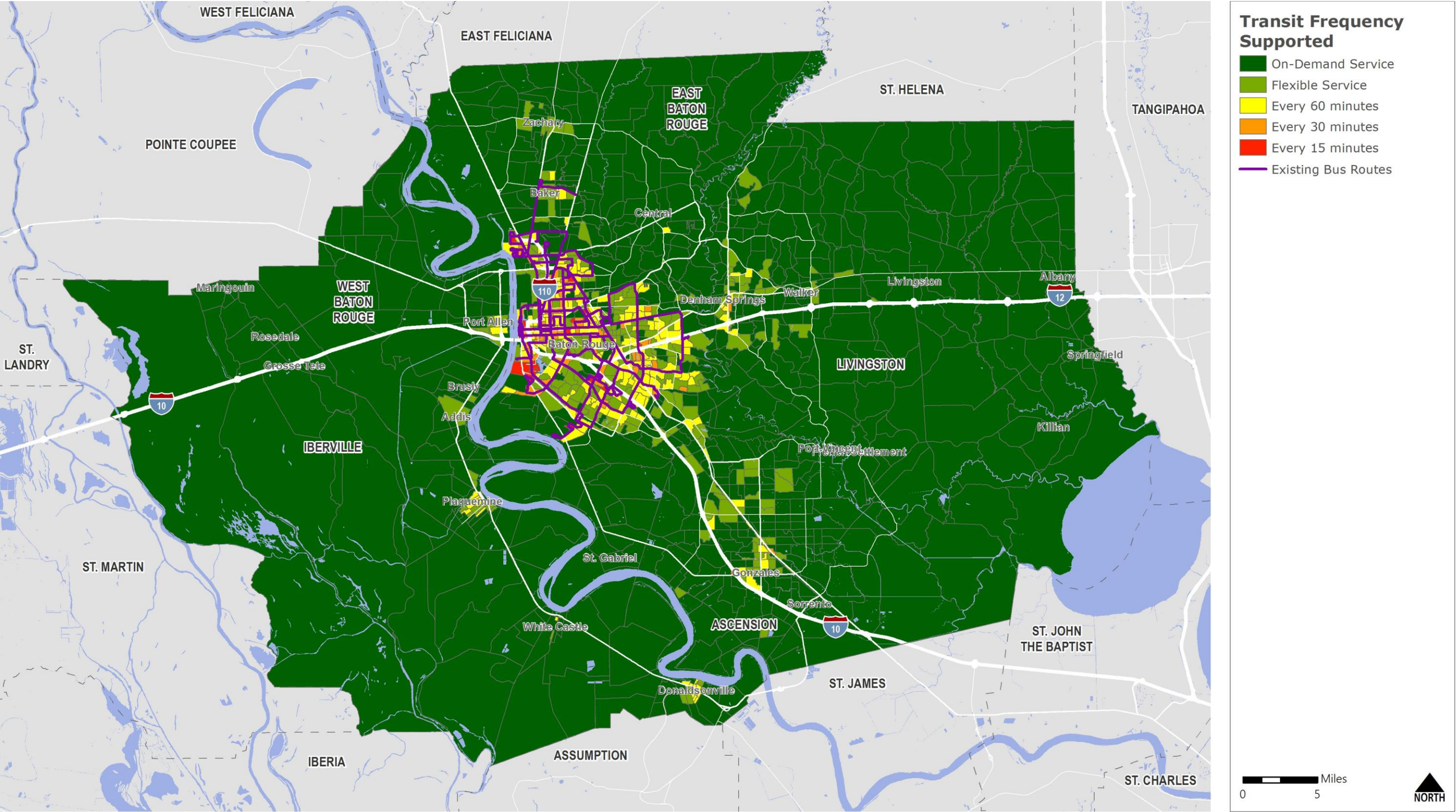
Figure 5.6 illustrates the concentration of households without regular access to a vehicle.

Figure 5.7 depicts the concentration of low-income households. These households may have access to a car, but due to economic reasons, are more likely to rely on transit.

Figure 5.8 shows the concentration of households that include people with disabilities. People living in these households may rely on transit because of physical or mental limitations.

Figure 5.9 shows the concentration of persons aged 65 or older. Similar to people with disabilities, this population is more likely to rely on transit because of physical or mental limitations.

Figure 5.4: Regional Transit Demand Analysis

Transit Frequency Supported
- On-Demand Service
- Flexible Service
- Every 60 minutes
- Every 30 minutes
- Every 15 minutes
- Existing Bus Routes

Data Sources: CATS; Neel-Schaffer, Inc.

Disclaimer: This map is for planning purposes only.

Figure 5.5 (Urban Core): Regional Transit Demand Analysis
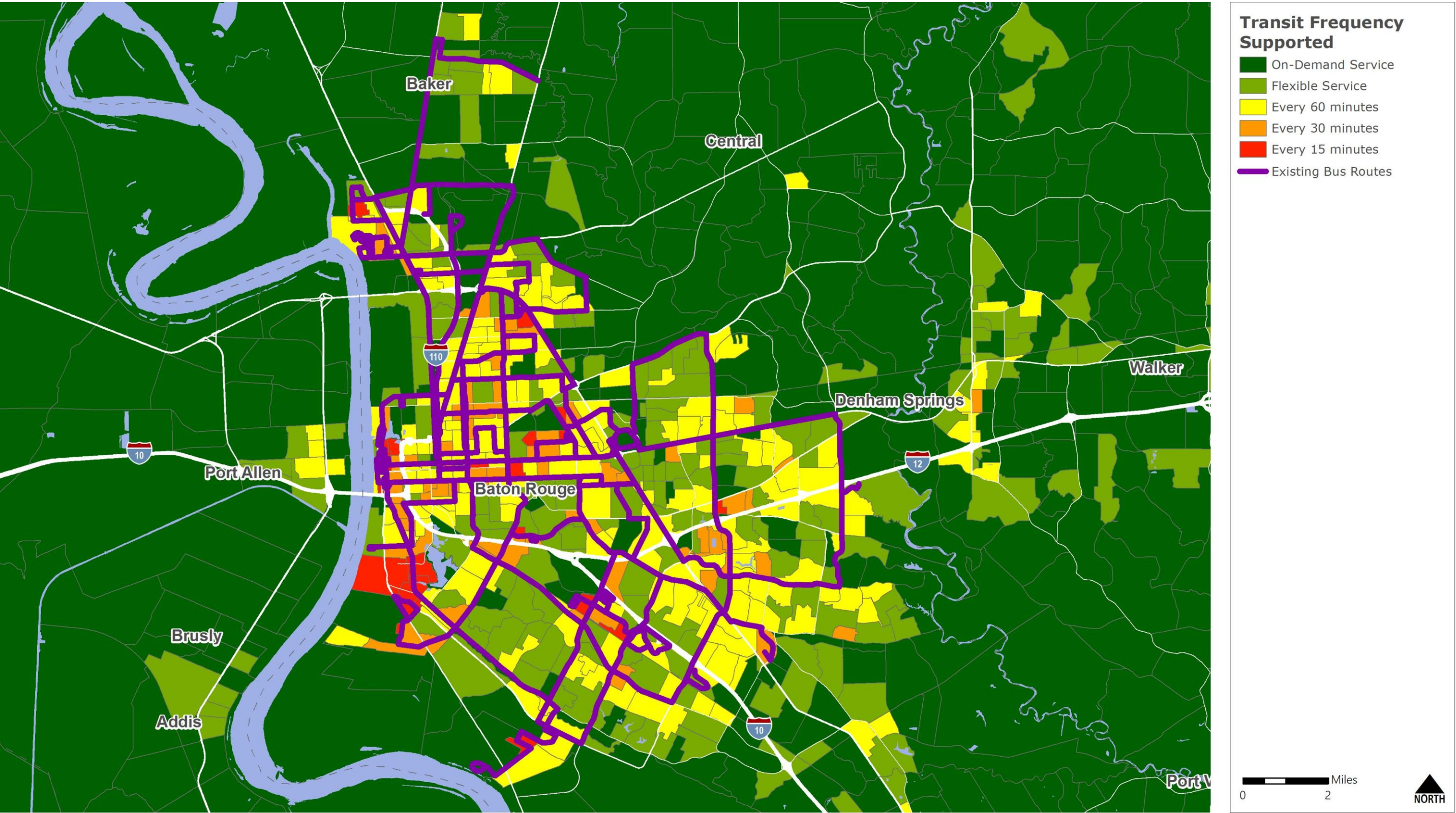
Figure 5.5 (Urban Core): Regional Transit Demand Analysis

Transit Frequency Supported
- On-Demand Service
- Flexible Service
- Every 60 minutes
- Every 30 minutes
- Every 15 minutes
- Existing Bus Routes

Baker
Central
Walker
Denham Springs
Port Allen
Baton Rouge
Brusly
Addis
Port W

Data Sources: CATS; Neel-Schaffer, Inc.

Disclaimer: This map is for planning purposes only.

Figure 5.6: Concentration of Households with No Vehicle

Legend:

Block Groups:

Households with No Vehicle per Acre
- 0.00 - 0.25
- 0.26 - 0.50
- 0.51 - 0.75
- 0.76 - 4.70
- Metropolitan Planning
- Remaining 5-Parish

Data Sources: Census Bureau, American Community Survey (2015-2019)

Disclaimer: This map is for planning purposes only.

WEST FELICIANA

EAST FELICIANA

POINTE COUPEE

ST. LANDRY

WEST BATON ROUGE

Maringouin

Rosedale

Grosse Tete

IBERVILLE

St. MARTIN

IBERIA

EAST BATON ROUGE

Zachary

Baker

Central

Port Allen

Baton Rouge

Brusly

Addis

St. Gabriel

Plaquemine

White Castle

Denham Springs

Walker

Livingston

Albany

ST. HELENA

TANGIPAHOA

LIVINGSTON

Springfield

Killian

Port Vincent
French Settlement

Gonzales

Sorrento

ASCENSION

Donaldsonville

ST. JAMES

ASSUMPTION

ST. JOHN THE BAPTIST

ST. CHARLES

Block Groups:

Households Living in Poverty per Acre

- 0.00 - 0.25
- 0.26 - 0.50
- 0.51 - 0.75
- 0.76 - 3.41
- Metropolitan Planning
- Remaining 5-Parish

Miles
0   5

NORTH

Data Sources: Census Bureau, American Community Survey (2015-2019)

Disclaimer: This map is for planning purposes only.

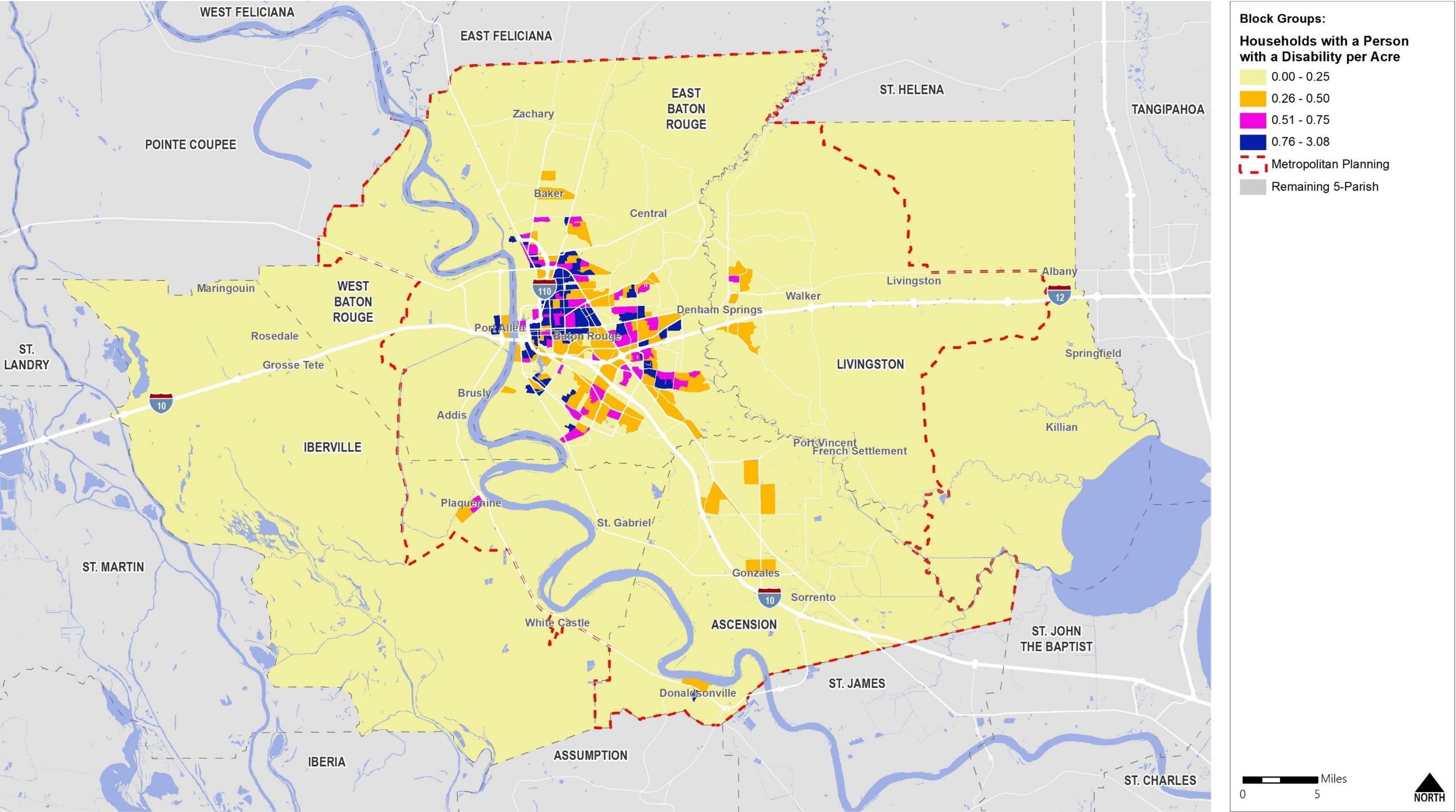Figure 5.8: Concentrations of People with Disabilities

Block Groups:

Households with a Person with a Disability per Acre

- 0.00 - 0.25
- 0.26 - 0.50
- 0.51 - 0.75
- 0.76 - 3.08
- Metropolitan Planning
- Remaining 5-Parish

Data Sources: Census Bureau, American Community Survey (2015-2019)

Disclaimer: This map is for planning purposes only.

Figure 5.9: Concentrations of Senior Population
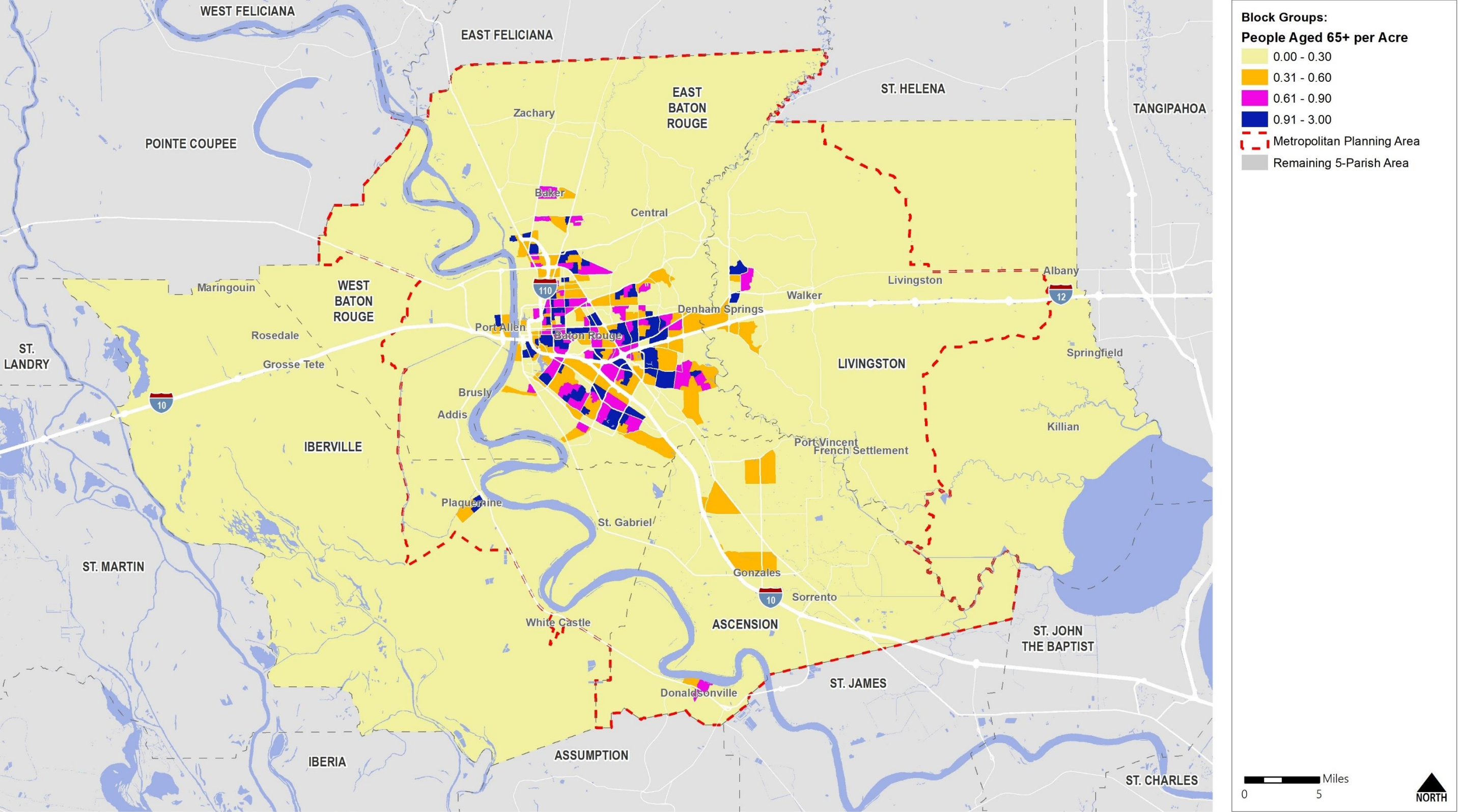
Block Groups:
People Aged 65+ per Acre
- 0.00 - 0.30
- 0.31 - 0.60
- 0.61 - 0.90
- 0.91 - 3.00
- Metropolitan Planning Area
- Remaining 5-Parish Area

Data Sources: Census Bureau, American Community Survey (2015-2019)

Disclaimer: This map is for planning purposes only.