SCRCOG

Freight Study

2025

REGIONAL FREIGHT STUDY

South Central Regional Council of Governments

SCRCOG Regional Freight Study

Prepared For

SCR COG | South Central Regional Council of Governments

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Executive Summary

The *SCRCOG Regional Freight Study* presents a comprehensive evaluation of the South Central region*'s* freight transportation system, assessing existing modes of freight movement, offering data-driven analysis, and providing actionable recommendations to ensure the efficient, safe, and sustainable movement of goods within the regional network. Developed in collaboration and coordination with key stakeholders and freight transportation leadership, this report aims to guide future actions and policies that will strengthen the South Central region of Connecticut's role as a critical link within the national freight network. Freight transportation plays a vital role in Connecticut's economy, facilitating the delivery of raw materials, consumer products, food, fuel, and other essential goods. Connecticut's strategic location in the Northeast between the larger metropolitan areas of Boston and New York City strengthens and solidifies its growing significance. The increasing demand for freight deliveries, reduced traffic congestion, availability of truck parking, and sustainability concerns necessitate a targeted solution. This report will address and evaluate multimodal freight movement and its implications, challenges, and assets to deliver a comprehensive analysis on ways to strengthen the regional network, serving as a strategic planning tool for SCRCOG, local municipalities, and policy makers to implement evidence-based recommendations to improve and maintain Connecticut's extensive freight network across modes.

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List of Acronyms

Acronym	Definition
CMV	Commercial Motor Vehicle
CPA	Connecticut Port Authority
COG	Council of Government
CNG	Compressed Natural Gas
CTDOT	Connecticut Department of Transportation
FAF	Freight Analysis Framework
FAST Act	Fixing America's Surface Transportation Act
FMCSA	Federal Motor Carrier Safety Administration
IIJA	Infrastructure Investment and Jobs Act
INFRA	Infrastructure for Rebuilding America
MCSAP	Motor Carrier Safety Assistance Program
Mega	National Infrastructure Project Assistance Plan
MPO	Metropolitan Planning Organization
NHFP	National Highway Freight Program
NHFN	National Highway Freight Network
NHS	National Highway System
NSFHP	Nationally Significant Freight Highway Projects
ROM	Rough Order of Magnitude
RSTG	Rural Surface Transportation Grant
SCRCOG	South Central Regional Council of Governments
STBG	Surface Transportation Block Grant Program
TAC	Technical Advisory Committee
USDOT	United States Department of Transportation

Background

Background

Connecticut's multimodal freight network plays a vital role in meeting the diverse needs of various communities and businesses. These freight-related deliveries keep food shelves stocked, manufacturer facilities operational, and gasoline ready for our vehicles. In Connecticut, freight transportation is comprised of a vast network of interconnected roads, highways, and waterways that connect the region with the rest of the state, the nation, and the world. Millions of tons and billions of dollars' worth of goods traverse Connecticut's multimodal freight network, forming a significant part of the state's economy**.**

Connecticut is home to more than 21,577 miles of public roadways, 20% of which are owned and maintained by the Connecticut Department of Transportation (CTDOT).[1] Although the National Highway System (NHS) makes up merely 7% of the state's roadways, over 80% of truck freight movement utilizes the Interstate System.[2] As of 2024, truck freight forms the majority of the state's freight movement. In 2019, 110.5 billion in direct outbound, inbound, and intraregional freight was moved on Connecticut's network, associated with 451,000 regional jobs, almost 20% of the state's economy, per the Connecticut Statewide Freight Plan. These freight-related jobs earned 36.5 billion dollars in income.[3]

In Connecticut, as well as the South Central Region, highways form the most significant component of the freight network, accounting for 93.7% of the statewide tonnage. The junction of Interstate Highways I-95 and I-91 make SCRCOG a significant region within the state, as it offers direct access to the New York metropolitan area and the rest of New England. I-95 is a critical segment of the National Highway Freight Network, subject to increased traffic volumes and heavy congestion, especially during peak travel times when heavy-duty vehicles compete with personal automobile traffic. In Connecticut, there are over 628 miles of freight railroad, made of both public and privately owned properties [4]. Freight rail operations frequently rely on shared use agreements between commuter rail operators and freight rail companies.

Regarding maritime modes, Connecticut is home to three deep-water commercial ports located in New London, Bridgeport, and the South Central Region's Port of New Haven. The Port of New Haven remains the most active maritime port in the state, falling shortly behind New York City and Boston.

Location

The South Central Region is located between the two larger metropolitan cities of New York and Boston. **Figure 1** describes the 30, 60, and 90-mile radii around the geographic center of the South Central Region.[5] Bridgeport, Hartford, New Haven, and Waterbury are located within a 30-mile radius of the South Central Region. The eastern edge of Connecticut, Springfield, MA, Providence, RI and Westchester County, NY, are located within a 60-mile radius. The 90-mile radius of the South Central Region includes all of Connecticut, Rhode Island, New York, and all five boroughs of New York City.[6]

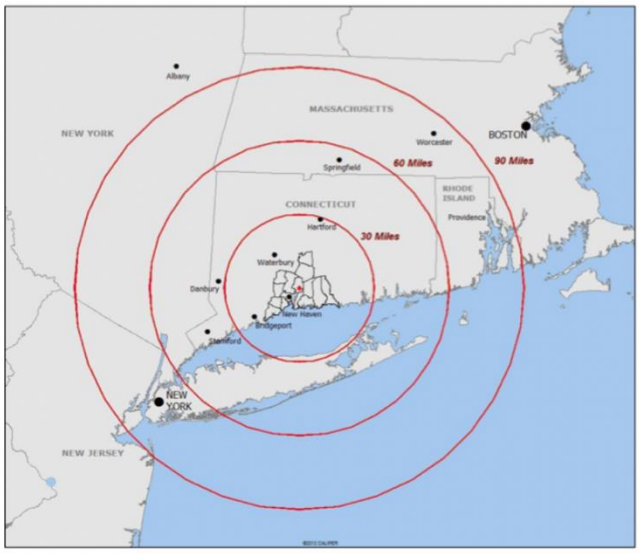


Figure 1: SCRCOG Location (Source: TransCAD)

Figure 2 provides related freight statistics.

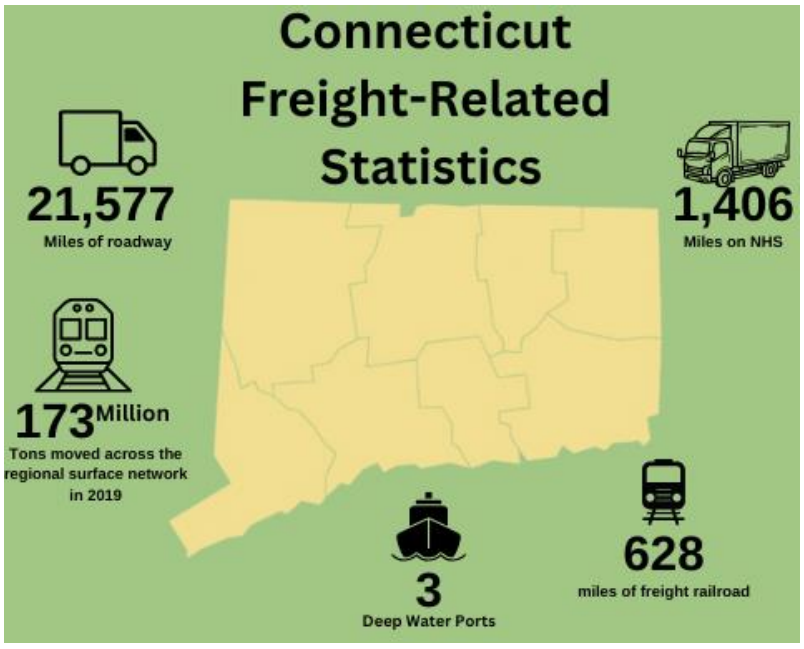


Figure 2: Freight Statistics (Source: BTS.gov)

Public Involvement

Public Involvement

In collaboration with primary regional stakeholders, the SCRCOG Freight Study project team conducted a public outreach campaign to involve freight operators, industry workers, and administration in the study's progress. Throughout this initiative, the project team attended multiple events and freight-relevant locations to gather feedback from local industries while creating a Technical Advisory Committee to guide the study's progress. Throughout the public outreach campaign, the perspectives of local freight stakeholders were directly included in the study's findings. The success of the SCRCOG Freight Study has been heavily contingent on continued coordination with key stakeholders and partners in the region.

Visit to the Port of New Haven

On June 25, VN Engineers' project team visited the Port of New Haven to meet Sally Kruze, Director of the New Haven Port Authority. Throughout this visit, Kruse gave our team a detailed tour of the Port to share the state of condition of local roads and infrastructure while simultaneously identifying the location of key port operators and their respective facilities. This visit was the start of extensive collaboration with Sally Kruze of the New Haven Port Authority. **Figures 3, 4,** and **5** show the Port of New Haven.

Figure 3: Port of New Haven Facilities

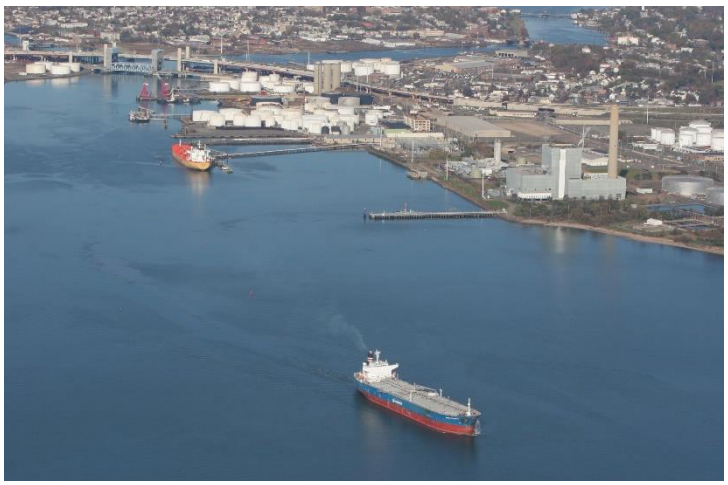


Figure 4: Port of New Haven Channel

Figure 5: Field Visit to the Port of New Haven

Port of New Haven Co-Op Committee

On August 14, the project team attended the Port of New Haven's Co-Op Operations Committee Meeting as guest speakers. At this event, the project team shared key details regarding the SCRCOG Freight Study goals, objectives, and components, answering questions and encouraging freight operators to provide feedback on their experiences.

Freight Study TAC Meeting

A fundamental initiative of the SCRCOG Freight Study's public involvement efforts was the creation of a Technical Advisory Committee, comprising of key stakeholders from diverse backgrounds within the region's multimodal freight network. In addition to the SCRCOG staff members, the Technical Advisory Committee included representatives from the Port of New Haven's Port Authority, Connecticut Department of Transportation (CTDOT), and University of Connecticut T2 Center. There were several TAC meetings, both in-person and virtual, that involved discussions on relevant data sources pertaining to freight movement, petroleum movement, CTDOT freight traffic incident command structures, and common concerns across the industry. The first TAC meeting was held on October 16th, 2024. The second was held on April 24th, 2025.

Stakeholder Interviews

Detailed stakeholder interviews were conducted as a part of this study's research process. Designed to identify specific aspects of Connecticut's freight network, these interviews allowed us to incorporate the experiences, perspectives, and knowledge into the study's findings. Additionally, detailed interviews were conducted with the New Haven Port Authority, the University of Connecticut, and CTDOT.

Freight Funding and Policy

Freight Funding and Policy

Transportation policy initiatives, legislation, and funding programs are essential to the operational success and economic vitality of the national and state freight networks. More specifically, freight-related funding and policy support the development, maintenance, and modernization of critical infrastructure, including highways, railroads, bridges, and ports. Proper funding ensures the implementation of technology and safety measures, while policies streamline operations, reduce costs, and promote environmental sustainability. Additionally, freight-related policies improve economic competitiveness in the regional, state, national, and international economies. Well-targeted funding and transparent government policies are critical factors in maintaining an efficient, safe, and sustainable freight network. This chapter provides an overview of significant federal, state, and regional policies and funding programs related to freight transportation in Connecticut's South Central region.

Federal Programs and Funding

Infrastructure Investment and Jobs Act (IIJA)

This federal statute, enacted in 2021, provides extensive funding for transportation infrastructure spending and investment to improve public safety, create jobs, stimulate the economy, and modernize America's infrastructure. The IIJA provides 350 billion over a five year period.[7]

National Infrastructure Project Assistance (Mega)

As a fundamental initiative of the IIJA, the Mega Program was created to finance major projects that are too large for traditional funding programs but have the potential to generate significant national or regional economic, mobility, or safety benefits. The United States Department of Transportation has combined this highly competitive program with the Nationally Significant Multimodal Freight and Highway Projects Program (INFRA) and the Rural Surface Transportation grant program, providing two fiscal years of funding into a single multimodal discretionary funding program. This program offers an annual

funding amount of $ 1.7 billion.[8] All Mega cost-benefit analysis. Eligible applicants include state governments, local governments, federally recognized tribes, and planning organizations.

Infrastructure for Rebuilding America Grants (INFRA)

The INFRA grant program is a competitive program that provides federal funding for transportation infrastructure projects of national and regional significance in the United States. This comprehensive funding program aims to improve safety, reliability, economic vitality, and the condition of freight-related infrastructure. This program facilitates various eligible activities categorized by project type and cost. INFRA grants may be awarded to highway, bridge, or multimodal freight projects. Eligible projects must meet a number of criteria, including the following: [9]

- Improve the safety, reliability, and efficiency of the movement of freight and people.
- Generate national or regional economic benefits, increasing global economic competitiveness.
- Reduce highway congestion and bottlenecks.
- Enhance freight-related infrastructure.
- Improve roadways critical to national energy security.
- Address and mitigate the negative impacts of population growth on people and freight.

This program facilitates various eligible activities, categorized by project type and costs. INFRA grants may be awarded to projects that improve highway freight movements on the National Highway Freight Network, involve highway or bridge infrastructure on the National Highway System, or support intermodal freight facilities located within public or private rail, water, or other freight hubs. Eligible applicants must be:[10]

- A state or group of states.
- A metropolitan planning organization serving an urbanized area with a population above 200,000.
- A unit of local government or a group of local governments.

applicants must undergo a comprehensive

- A political subdivision of a State or local government.
- A special purpose district or public authority with a transportation function.
- A federal land management agency.
- A tribal government.
- A multistate group of entities.

Selection requirements establish that eligible applicants must meet specific criteria, including the generation of national or regional economic benefits, cost-effectiveness, and the inability to complete a project without federal funding or financial assistance.[11] Each fiscal year, INFRA reserves 10% of its grants for projects that do not meet the stated criteria. These projects are referred to as "small projects."[12]

National Highway Freight Program (NHFP)

The National Highway Freight Program (NHFP) aims to enhance the condition and performance of roadways to facilitate the movement of goods across the United States. Established through the FAST Act, the NHFP provides funds for various projects, including infrastructure improvements, operational enhancements, and intermodal freight projects. **Figure 6** provides this program's goals**.**

Figure 6: National Highway Freight Program (Source: FHWA)

National Freight Strategic Plan

The National Freight Strategic Plan outlines the United States Department of Transportation's vision for the nation's multimodal freight network, providing specific strategies and goals. This plan was developed through collaboration with multiple federal agencies and extensive consultation with key stakeholders. This plan aims to increase economic competitiveness to connect producers, shippers, and consumers in the domestic and foreign markets. Its goals focus on improving safety, developing and augmenting freight infrastructure, and innovating the freight system by developing and implementing data, technology, and workforce capabilities.[13]

Motor Carrier Safety Assistance Program (MCSAP)

The Motor Carrier Safety Assistance Program provides formula grants to state and local law enforcement agencies to increase CMV-related enforcement and safety activities within the United States. Eligibility for this funding is exclusive to MCSAP lead agencies designated by the state governor. MCSAP is the Federal Motor Carrier Safety Administration's most extensive grant program, providing $480 million in funding to state and local law enforcement agencies in FY 2024.[14]

Surface Transportation Block Grant Program (STBG)

The Surface Transportation Block Grant (STBG) program provides significant funding to states and localities for projects that aim to preserve and improve the conditions and performance on any Federal-aid highway, bridge, and tunnel on public roads, pedestrian and bicycle infrastructure, and transit capital projects. STBG is an apportioned (formula-based) program, meaning the funds are allocated to states according to a formula set by law, unlike a discretionary grant program where eligible applicants compete for funding through a Notice of Funding Opportunity (NOFO).[15]

Jason's Law

Jason's Law, enacted in 2012, prioritizes the safety of heavy vehicle operators while at rest areas and truck parking facilities. This safety-focused legislation funds projects related to the construction of safe rest areas with truck parking, expanding truck parking facilities, promoting the availability of publicly or

privately-owned truck parking on the NHS, and capital improvement projects.[16] A full overview of Jason's Law is included in this report, "Truck Parking" chapter.

State Programs and Funding

Given that most of Connecticut's freight movement occurs on federal highways, most freight-related regulations occur at the federal level. However, Connecticut's state government has enacted legislation impacting its freight system in recent years. Public Act No. 22-25, passed in early 2022, establishes emission standards modeled after the State of California and mandates future requirements of zero-emission or reduced-emission vehicles.[17] House Bill No. 6688 created a highway use fee system for trucks traveling in Connecticut. In addition to state legislation, freight operators in Connecticut must adhere to regulations designed to ensure safety, protect the environment, and maintain the quality of Connecticut's transportation infrastructure.

Local Programs and Funding

Metropolitan Planning Organizations (MPOs) and Councils of Government (COGs) are essential to freight planning efforts. Councils of Government are governing entities that represent and serve local municipal governments, whereas Metropolitan Planning Organizations may develop and coordinate transportation plans.[18] In compliance with governmental standards, MPOs and COGS may develop and pursue freight-related plans and studies for their respective region. These freight-related plans, such as this report, guide statewide efforts on a regional level, addressing local issues that could have broader statewide impacts regarding freight movement.

Freight Mode Profle

Connecticut's Freight Profile

Highway Mode Profile

The majority of freight movement in the State of Connecticut utilize trucks or highway modes. Nearly 94% of the freight transported to, from, or through Connecticut does so with trucks.[19] The success of this freight movement is contingent on freight-related infrastructure, integration of roadways, and meticulous logistical planning. The millions of tons and billions of dollars moved through Connecticut's extensive freight network are closely associated with the physical roadway system traveled on. Over 80% of truck movement utilizes the Interstate System despite only making up 7% of the state's overall roadways.[20] In the South Central Region, the two interstate highways, I-91 and I-95, handle a large portion of overall truck movement. While highway modes may remain the most utilized in the state, freight trucks must adhere to limitations, categorized by vehicle size, weight, hours of service, and a lack of available parking. See this report's appendix for a full list of private freight operators.

Rail Mode Profile

Connecticut's freight rail system involves the operation of several private rail companies, Amtrak, and the Connecticut Department of Transportation. Several privately owned freight railroad companies operate in Connecticut, receiving significant financial assistance from state rail program funding. The Capital Planning Process and the Federal Rail Program Funding are transit-focused programs but can support freight rail if improvements are made on freight/passenger lines. Connecticut's private railroad operators own and operate most of the rail freight infrastructure and all necessary rail freight equipment within the state. Connecticut has over 628 miles of freight railroad right-of-way, comprising both public and privately owned property.[21] Private freight rail operators and commuter rail lines frequently share track through shared use agreements.

Maritime Mode Profile

Throughout the past century, the Port of New Haven has remained Connecticut's most active maritime port, falling slightly behind Boston in cargo handled annually. Within Connecticut, the

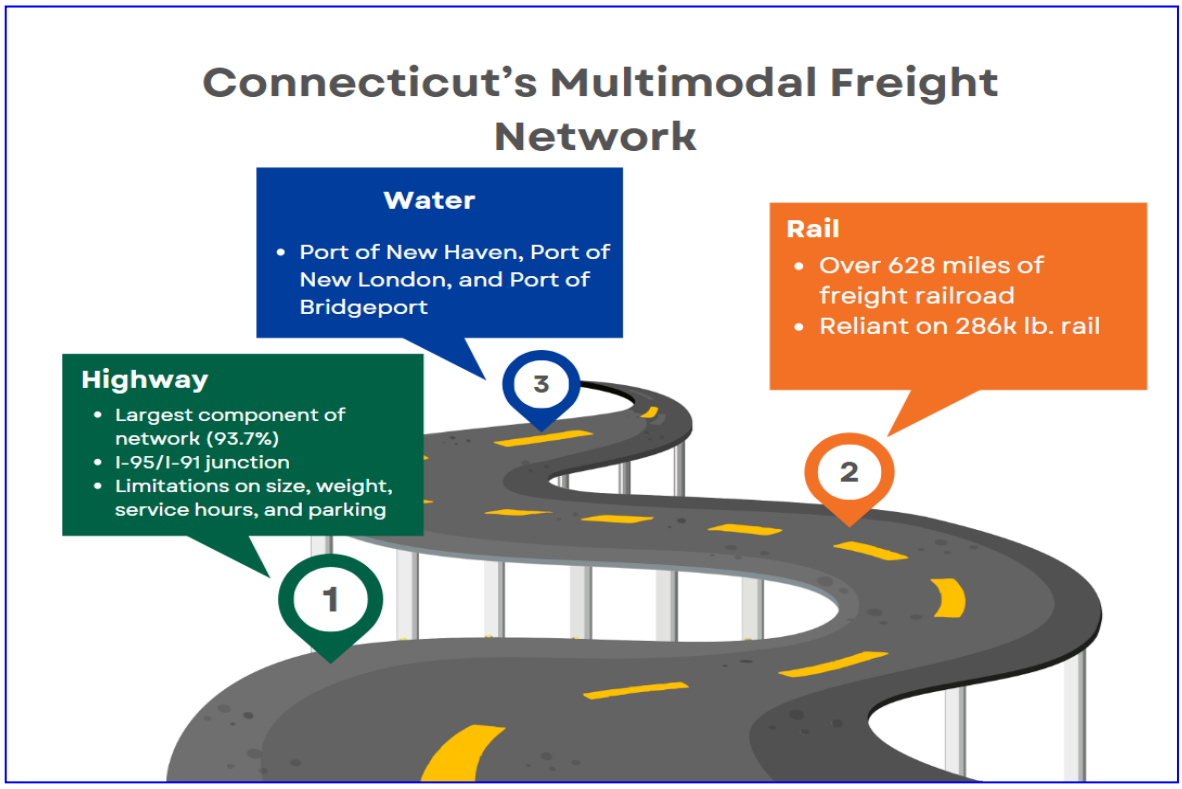


Figure 7: Connecticut's Freight Network (Source: CT Statewide Freight Plan)

Port of New Haven is the highest volume port on Long Island Sound and is considered the busiest port between Boston and New York City.

The Port of New Haven is located south of the head of the Harbor and is comprised of several privately owned facilities. All facilities are collectively administered by the New Haven Port Authority on the harbor's east side, near the Interstate 95 highway. Petroleum products compose most of the Port's tonnage, with the remaining cargo comprised of commodities such as scrap metal, steel, and minerals.[22] Additionally, New Haven fuel facilities are a part of the larger federal government's Strategic Petroleum Reserve. Pipeline connections from the Port of New Haven transport jet fuel for Bradley International Airport and the Massachusetts Air National Guard Base in Westover, Massachusetts. The Port of New Haven benefits from its proximity to the existing highway and rail freight networks within Connecticut and the New England region. **Figure 8,** provided below, illustrates the region's freight network. **Figure 5** provides an overview of CT's freight network by mode.

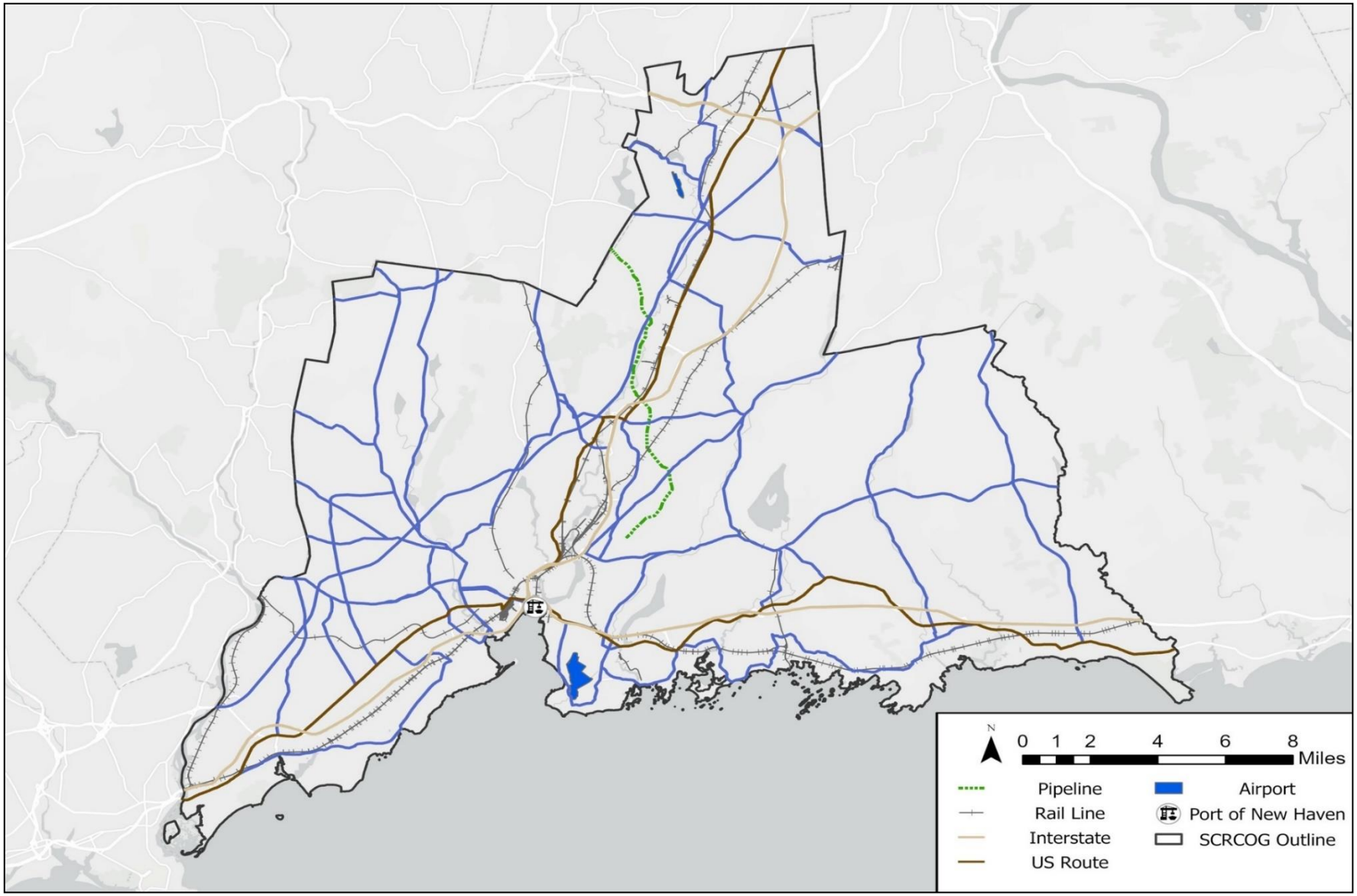


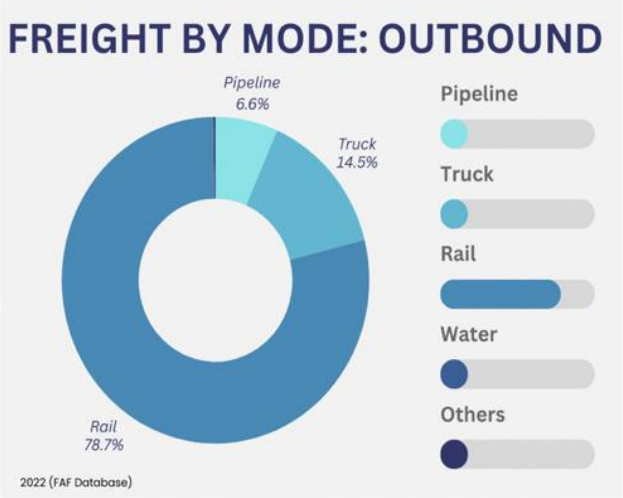
Figure 8: Map of SCRCOG Freight Network

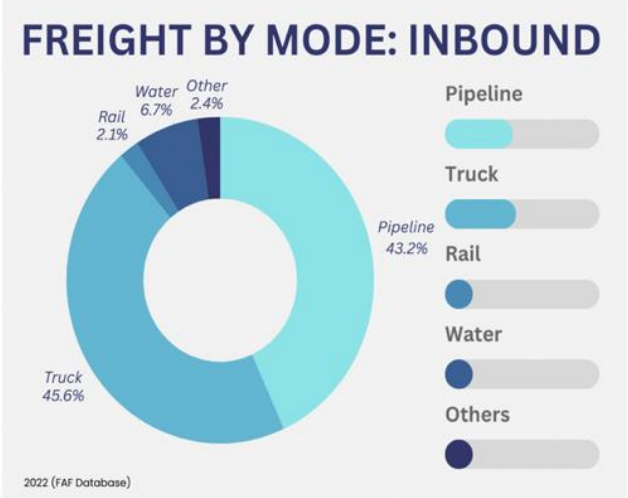
Freight Flow by Mode and Top Commodity

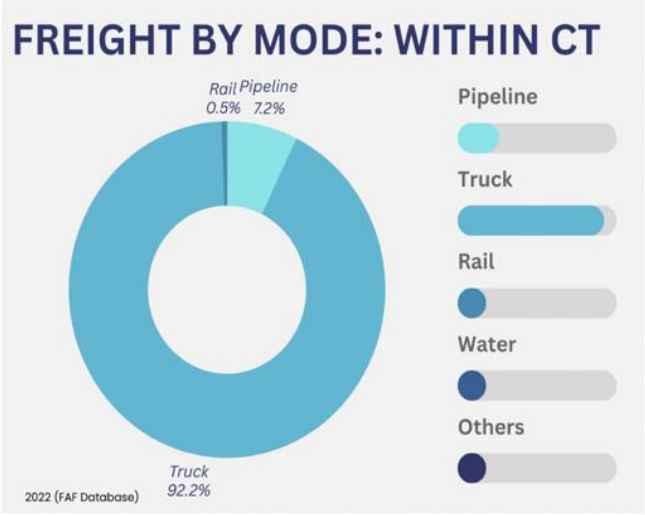
The data analysis originating from the Freight Analysis Framework (FAF) database provides relevant information on commodity flows within the Connecticut multimodal freight network and the prevalence of specific freight modes that are most frequently used, categorized by inbound, outbound, and within the State.[23] Note that these charts provided in **Figure 9** only depict the most popular commodities moved on Connecticut's freight network.

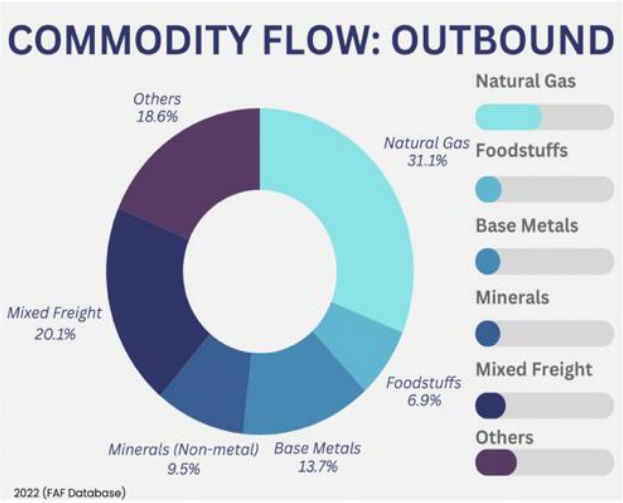
As depicted in **Figure 9**, freight movement outbound from Connecticut primarily utilizes rail modes. Approximately 78% of the goods moved out of the state rely on the region's extensive rail network. Inbound movement in the region primarily uses pipeline and highway/truck modes, whereas an overwhelming majority of freight movement within Connecticut mainly relies on highway modes. The most widely utilized freight transportation mode within Connecticut and its South Central Region is variable. It has fluctuated over time, as demonstrated in the Freight Analysis Framework (FAF) database records of previous years.

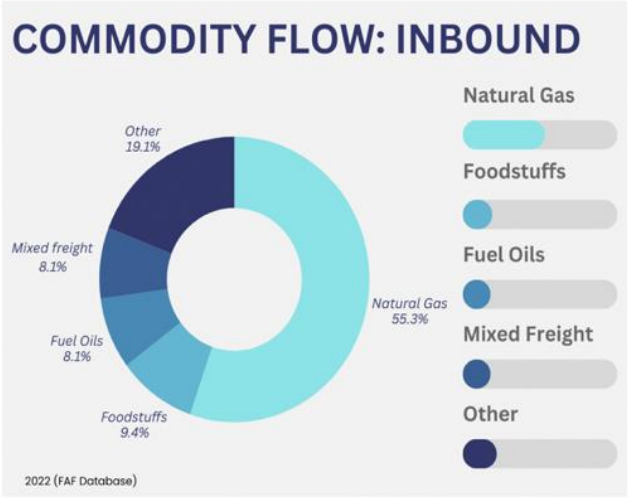
A wide range of commodities are transported through Connecticut's freight transportation network and that of the South Central Region. The prevalence of popular commodities varies with freight movement categorized by inbound, outbound, and within Connecticut. Within the most common freight movement categories, natural gas is the most widely moved commodity, followed closely by gravel, which is frequently moved within the State. Other popular commodities include assorted fuel oils, foodstuffs, base metals, minerals, waste/scraps, and mixed freight.











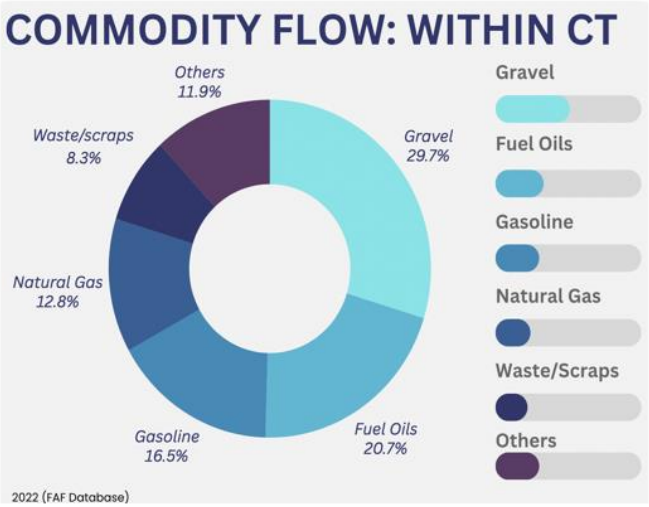


Figure 9: FAF Connecticut: Commodity Flow and Mode (Source: FAF Database)

Freight in the SCRCOG Region

There are numerous freight-related industries and operators within the South Central Region of Connecticut that significantly contribute to local, state, and regional freight movement and its associated impacts on the more extensive national and statewide freight networks and economies.

Significant Highway Mode Operators

The majority of highway-modal freight movement passes through Connecticut on Interstate Highways rather than having an origin or destination in the state. Within the region, multiple highway freight operators transport goods and commodities via truck, inbound, outbound, and within Connecticut. Appendix A provides a list of operators within SCRCOG region.

Significant Rail Mode Operators

Several rail operators are located in the South Central Region of Connecticut and must adhere to established limitations and restrictions. Many local freight rail operators rely on the Amtrak-owned New Haven-Hartford-Springfield line, which cannot accommodate the industry standard 286,000-pound rail cars but is instead limited to 263,000-pound rail cars, per the Connecticut Statewide Freight Plan. The inability to operate heavier rail cars is a disadvantage to shippers who use this infrastructure. **Table 1** provides a list of relevant rail operators in SCRCOG.

Table 1: Rail Operators

Rail Operator	Overview
Connecticut Southern Railroad	Operates a 90-mile-long short-line railroad in Connecticut and Massachusetts. This rail line connects with CSX Transportation in West Springfield MA and North Haven CT. Most of Connecticut Southern Railroad's traffic comes from imports to Connecticut, including lumber, steel, and carbon dioxide. As of 2022, Connecticut Southern Railroad carries roughly 18,500 carloads annually.
CSX Transportation	Operates and maintains more than 220 miles of track, as well as six public and private grade rail crossings. CSX carries a wide array of commodities including consumer products, automobiles, food and agriculture products, coal, limestone, lumber, and panel products. CSX currently has a TRANSFLO terminal in North Haven.
Providence and Worcester Railroad	Operates 612 miles of track in Connecticut, Rhode Island, and Massachusetts, interchanging with CSX in New Haven and Connecticut Southern Railroad in Hartford.

Significant Maritime Mode Operators

Port of New Haven

The Port of New Haven is the second most active port in New England. Within the Port of New Haven, the Port District consists of 366 acres, not all of which is used for maritime commerce. The Port is comprised of ten birthing facilities and can currently accommodate ships ranging from 20,000 to 40,000 deadweight tons. The Port primarily handles petroleum products, chemicals scrap metal, metallic products, cement, sand, stone, salt, and breakbulk cargo. The Port's fuel facilities are a part of the government's strategic heating oil reserve. In recent years, there has been an increase in rail traffic associated with the Port, indicating a pattern of growth. To further stimulate growth, 72 million dollars have been appropriated to deepen the federal navigation channel in New Haven Harbor. The Port of New Haven is comprised of several terminals that are privately owned and operated or are leased to freight operators through the New Haven Port Authority. **Table 2** reviews significant maritime freight operators located at the Port of New Haven. These operators include New Haven Terminal, Gateway Terminal, Gulf Terminal, Magellan Terminal, and Motiva Terminal.

Table 2: Maritime Operators

Maritime Operator	Description
New Haven Terminal	New Haven Terminal is the oldest privately-owned marine terminal in Connecticut, strategically located on Interstate Highways I-91 and I-95. This terminal focuses on bulk petroleum movement via vessel, barge, railcar, truck, and the Buckeye Pipeline. New Haven Terminal owns two bulk liquid storage terminals and warehouses for dry cargo operators. The terminal's extensive biofuel plant is recognized as one of the largest in the Northeast.
Gateway Terminal	Located in New Haven, Gateway Terminal has earned a reputation as a fully licensed and bonded deep-water terminal specializing in dry and liquid bulk and break cargo shipments. This terminal includes eight acres of land at the Port of New Haven with over 50 acres of storage facilities.
Gulf Terminal	Gulf Oil Limited Partnership is a prominent supplier of motor fuels in the United State and is the region's largest wholesaler of refined petroleum products. Gulf Terminal connects the New Haven Harbor with an extensive network of over two

	thousand gasoline locations, 12 proprietary oil terminals, and over 70 supply terminals. Gulf Oil Limited Partnership provides Connecticut and the New England Region with heating oil, gasoline, jet fuel, and kerosene through its extensive network.
Magellan Terminal	Magellan Midstream Partners, L.P. focused on the transportation, storage, and distribution of refined petroleum products.[24] Magellan was a publicly traded partnership created to oversee a wide range of energy-based assets. As of September 25, 2023, Magellan Midstream Partners was acquired by ONEOK, starting a new chapter for both companies specializing in energy infrastructure.
Motiva Terminal	Motiva Enterprises LLC operates throughout the eastern and southeastern United States, with its operations spanning nearly 7700 Shell-branded gasoline station, multiple refineries, with a capacity of 740,000 barrels a date.[25] Motiva owns 41 refined product storage terminals with an overall storage capacity of roughly 19.8 million barrels.

New Haven Port Authority and the Board of Commissioners

The New Haven Port Authority was created by the New Haven Board of Alders in 2003, used to stimulate the shipment of freight and commerce through the Port and to develop and promote facilities within the Port. The New Haven Port Authority is a state agency that enhances the economic competitiveness of the greater New Haven region through waterborne traffic at the Port of New Haven. White the Port Authority is not a regulatory agency, it is responsible for "stimulating the shipment of freight and commerce through New Haven's port, developing and promoting the facilities in the Port District, creating jobs and increasing the tax base of the City of New Haven, working with the City of New Haven to maximize the usefulness of available public funding by consolidating and coordinating efforts to assist the waterfront of the City of New Haven, and cooperating with state and federal agencies in connection with the maintenance, development, and improvement of the facilities at the Port District."

Additionally, the New Haven Port Authority prioritizes funding for security, air quality, and infrastructure improvements. The Port Authority also works with private terminal operators to support their business operations and extend the Port's economic advantage. The Board of Commissioners of New Haven's Port

Authority is comprised of seven voting members, appointed by the Mayor of New Haven, and approved by the Board of Alders. The term of each member is three years and may be renewed twice.

Connecticut Port Authority

Established in 2014, the Connecticut Port Authority oversees the state's three deep-water ports of New London, New Haven, and Bridgeport. This quasi-public authority has power over issues regarding each port, striving to grow maritime commerce in Connecticut by making strategic improvements to the infrastructure at the ports and small harbors by strategically investing in growth areas.

Freight Related Facilities and Locations

This report recognizes multiple categories of freight facilities. These facilities range in size but serve several essential functions within a larger freight network, each of which has its own degree of significance. These functions are fabrication, storage, and distribution. Fabrication refers to assembling a good from smaller parts or altering the physical characteristics of a good. Storage involves holding goods for an extended time. Lastly, distribution involves consolidating, deconsolidating, and sorting of goods.[26] Freight facilities can be categorized into distinct groups based on these functions. These groups include manufacturing, storage, terminal, distribution, and parcel freight facilities. Examples of these freight facilities can be found in the South Central Region of Connecticut**.** **Figure 10** reviews the types of freight facilities found in the South Central Region. **Figure 11** illustrates the location of notable freight locations.

Freight Related Land Use

Land use and freight movement are interconnected. The location of freight facilities such as warehouses, ports, and distribution centers directly impact the operational success of regional and intraregional freight movement. Strategic placement to highways, ports, and rail lines improve efficiency and reduce costs. **Figure 12** depicts freight related land use in the South Central Region.

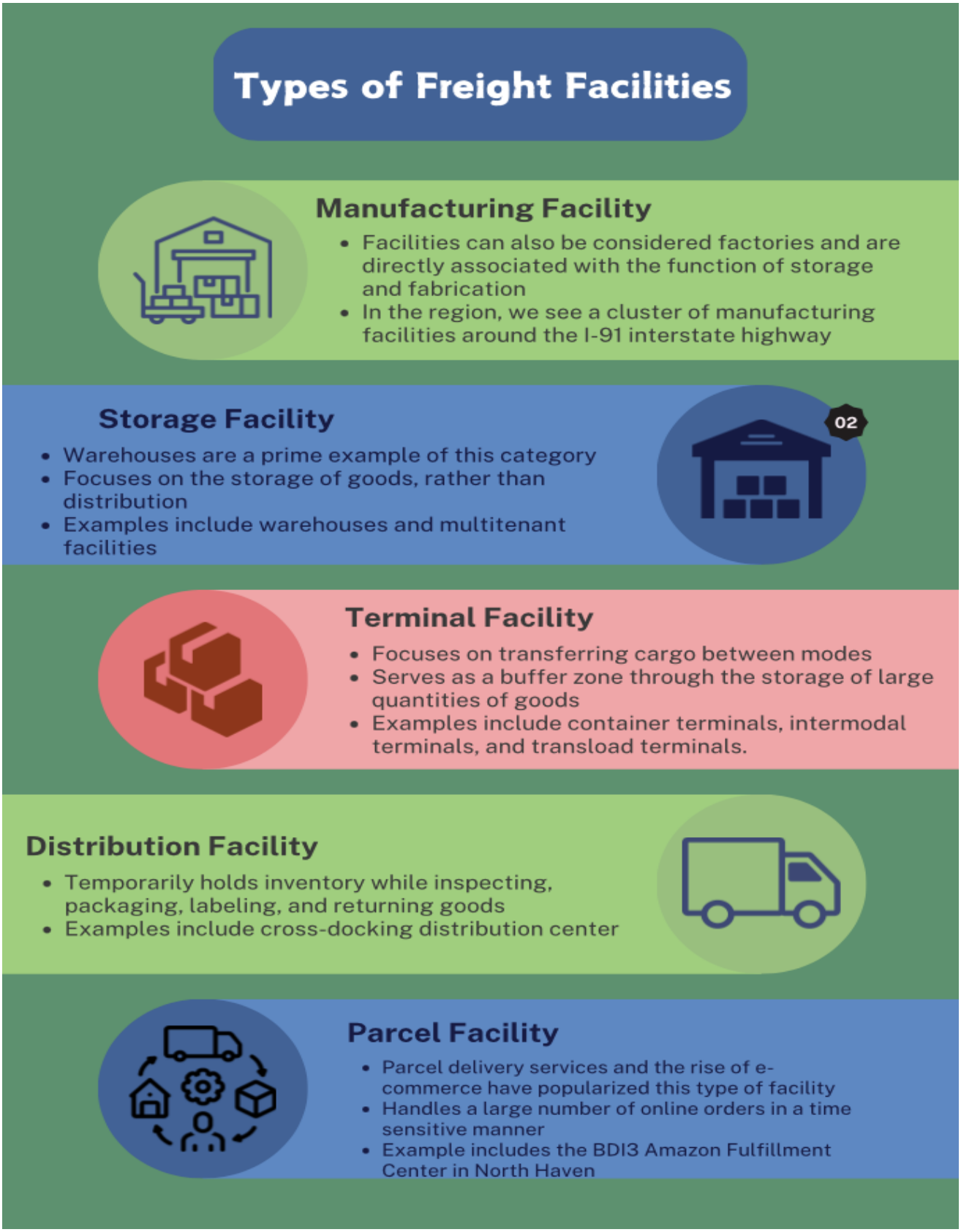


Figure 10: Types of Freight Facilities (Source: Transport Geography)

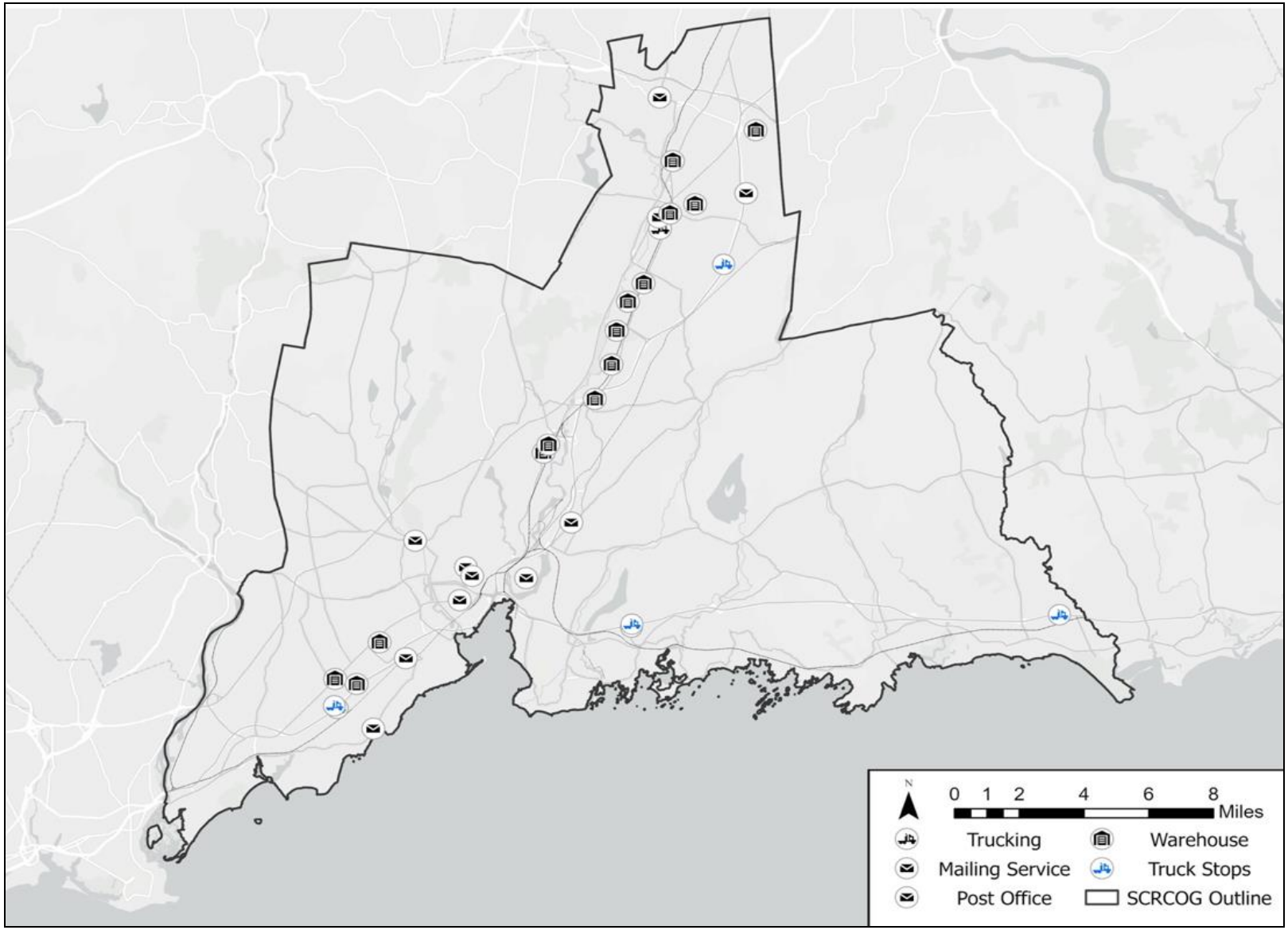


Figure 11: Key Freight Locations

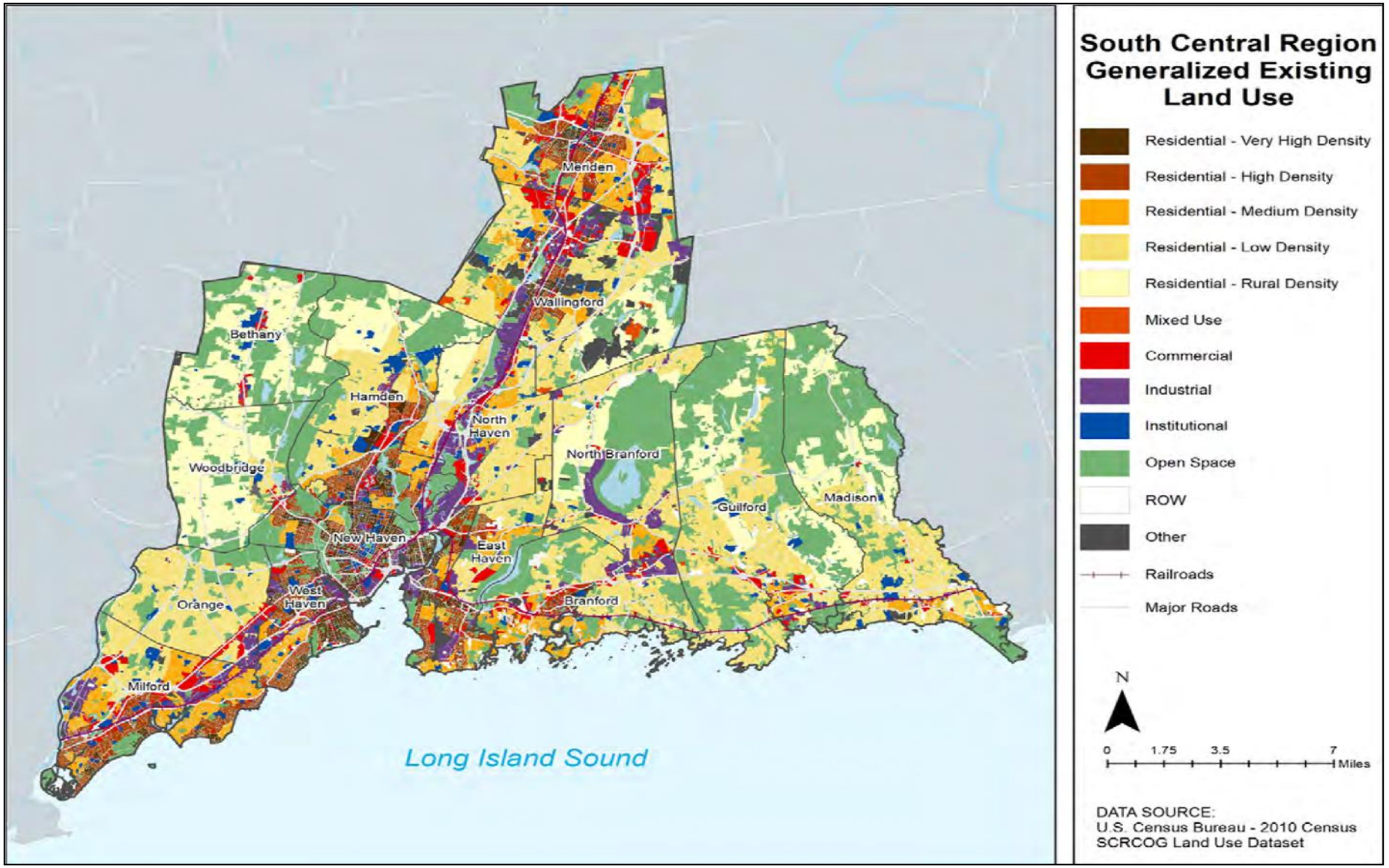


Figure 12: Land Use Map (Source: US Census Bureau)

Truck Parking

Truck Parking

The safety, efficiency, and economic vitality of truck freight movement in the South Central Region of Connecticut are closely associated with the ability to find reliable parking spaces. Truck drivers must decide to stop their route early to take an available parking spot or continue driving with the possibility of not finding available parking afterward. This dilemma results in freight truck operators parking in undesignated locations such as shoulders, ramps, roadsides, and parking lots designed for personal vehicles. In 2019, roughly 92% of the estimated truck parking demand in Connecticut was concentrated on I-95, I-84, I-91, and I-395 corridors.[27] Two of these highways, I-95 and I-91, directly traverse the South Central Region. Segments of these highways lack adequate truck parking facilities to meet regional demand, making it difficult for drivers to meet their hours of service regulations on the statewide network. In addition to a lack of parking spaces, private and public truck stops often lack essential amenities.

Connecticut Truck Parking Study

The Connecticut Truck Parking Study, published in 2023, identified 30 truck parking sites with 1,226 parking spaces.[28] Of the 30, 10 are private sites that supply 70% of the total truck parking within the state with 863 spaces, averaging 86 spaces per site.[29] The 20 public sites provide approximately 30% of the total parking supply in Connecticut, averaging 18 spaces per site.[30] The majority of truck parking facilities are located along I-95 and I-91 Interstate highways. In the South Central Region, several truck parking locations can be located. **Table 3** identifies the names of truck parking locations and the facility's total number of parking spaces in the state's South Central Region. These parking sites range in size, with some parking facilities possessing as few as three parking spaces and as many as 75.

Truck Parking and Inclement Weather

Inclement weather poses a significant challenge for freight truck operators. Icy roads, heavy snowfall, and wet pavement conditions contribute to parking bans and delays. These events often result in statewide highway closure that further complicates the truck parking situation.

Table 3: Truck Parking Facilities (Source: UCONN)

Truck Stop Name	Municipality	Total Number of Parking Spaces
I-91 SB Wallingford Rest Area	Wallingford	40
I-95 NB Madison Service Plaza	Madison	10
I-95 SB Madison Service Plaza	Madison	20
I-95 NB Milford Service Plaza	Milford	25
I-95 SB Milford Service Plaza	Milford	25
TA Express New Haven #171	Branford	75
Gulf Truck Stop	North Haven	3
I-95 NB Branford Service Plaza	Branford	10
Wheels Citco #365	Milford	50

Truck Parking Inventory and Analysis

Several truck parking facilities exist in the South Central Region of Connecticut, including private and public truck stop locations**. Figure 13** depicts the location of all truck parking locations within the region, including the number of available parking spots in each facility. **Figure 14** also depicts key truck stops in the South Central Region with amenities provided at the respective location.

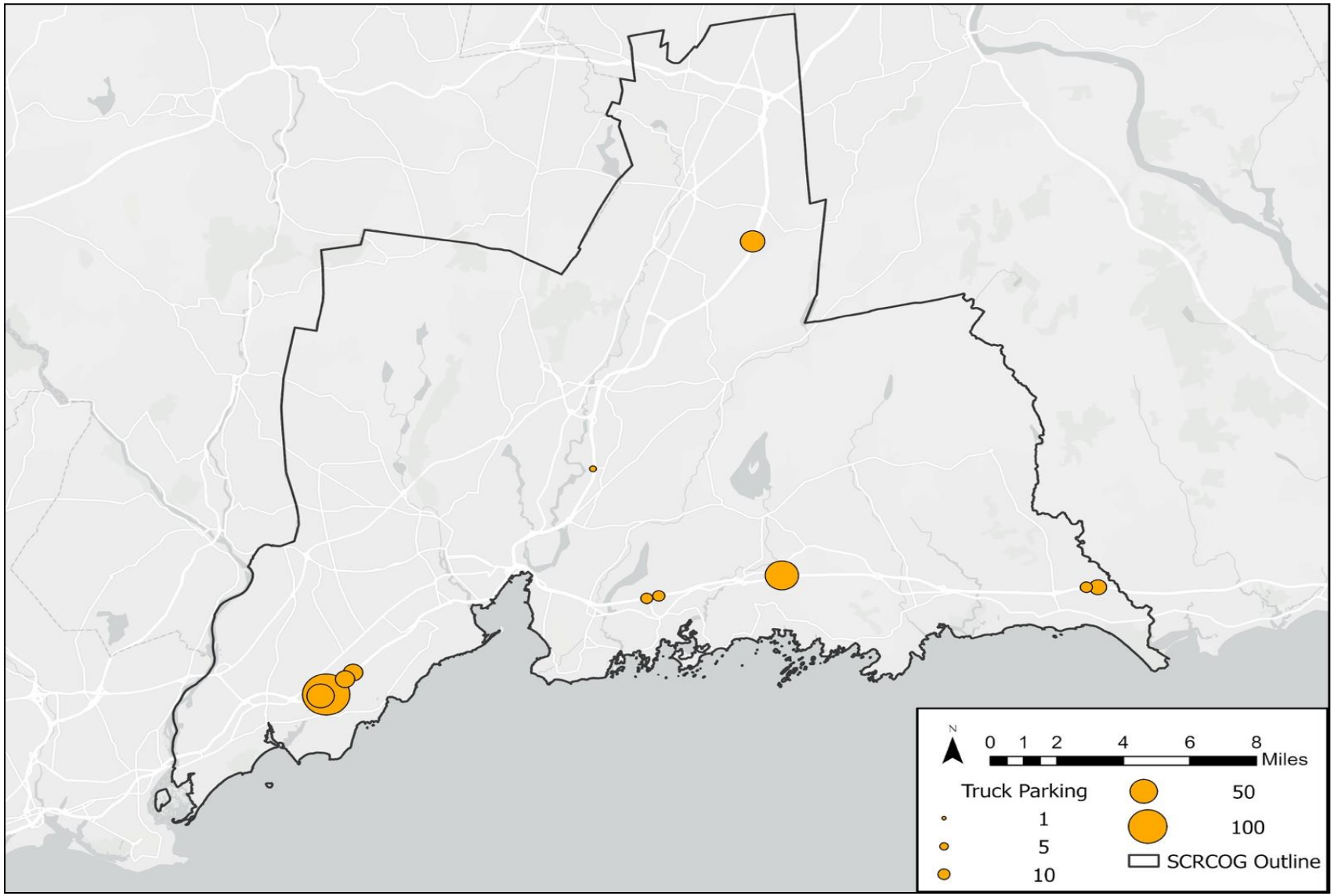


Figure 13: Truck Parking in SCRCOG

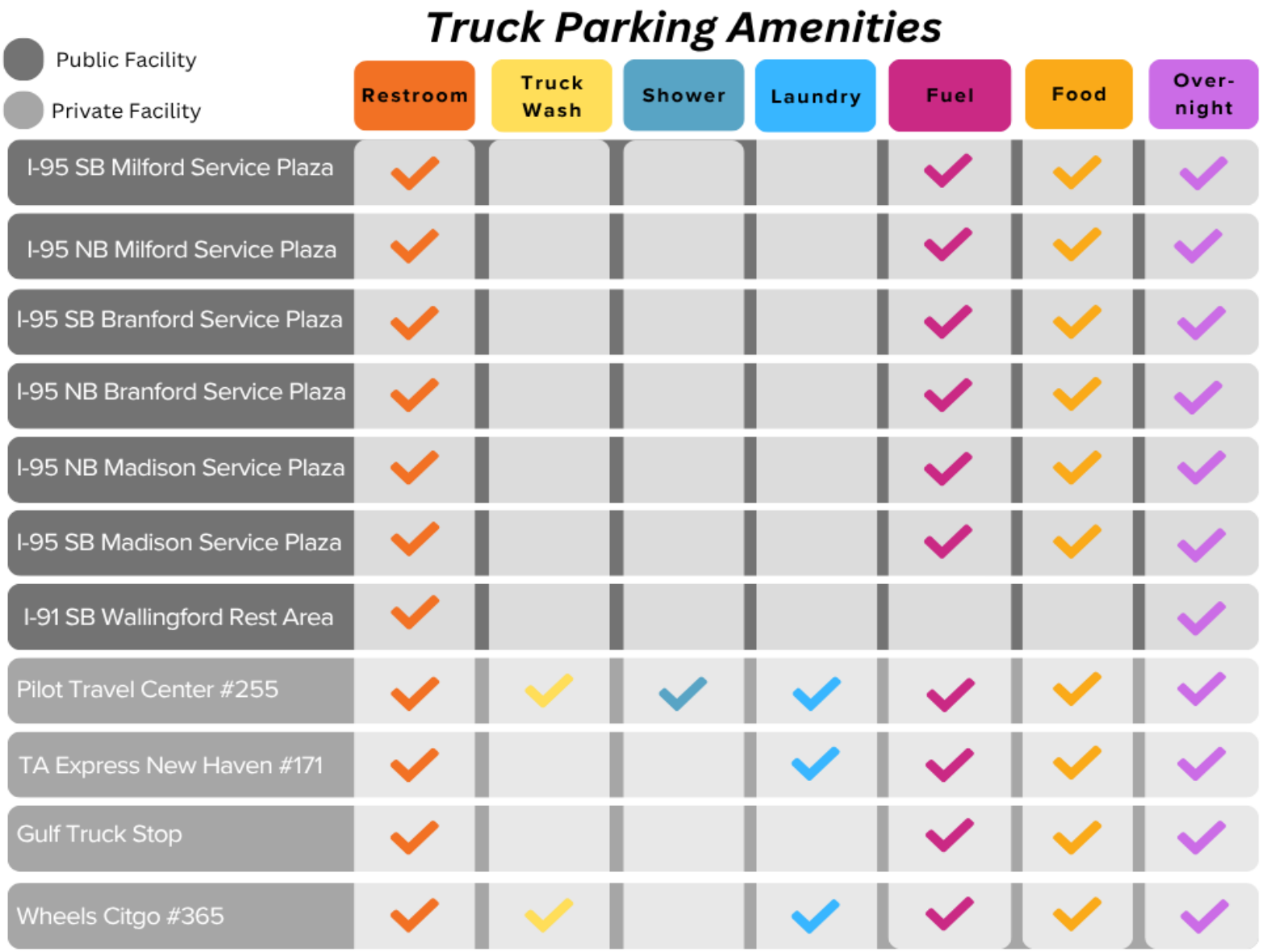


Figure 14: Truck Parking Amenities (Source: UCONN)

As depicted above, public and private truck parking locations offer an array of amenities and services, including restrooms, showers, food, fuel, and laundry, among others. However, these amenities vary significantly from site to site. In the region, all truck parking facilities include restrooms and overnight parking. The majority of truck parking locations, including both public and private facilities, offer food and fuel amenities for drivers and their heavy vehicles. A minority of the truck parking locations in the region offer truck washing services, showers, and laundry facilities. The convenience of the wide range of amenities offered at private locations is offset by the location's parking fee, which varies from location to location. **Figure 15** depicts a private truck stop in Milford, CT.

Figure 15: Pilot Travel Center #255, Milford

Truck Parking Demand

The need for adequate truck parking stems from multiple distinct factors. **Table 4** reviews contributing factors related to truck parking demand in the region.

Table 4: Truck Parking Demand

Cause for Demand	Overview
Hours of Service	To mitigate concerns stemming from fatigue-related crashes, the Federal Motor Carrier Safety Administration (FMCSA) established hours-of-service regulations. To comply with these regulations, truck operators must stop at truck parking sites throughout the national and regional transportation network.
Reducing Emissions	Freight trucks produce significant carbon emissions. Sufficient truck parking reduces the need for trucks to remain idling unnecessarily.
Overnight Parking	Truck operators who travel long distances require locations to park overnight.
Size of Truck	Heavy vehicles with five or more axles are too large to park on the streets, posing safety concerns for other road users. Moving these trucks to a designated parking site will reduce safety concerns.
Amenities	Truck operators require essential amenities, including restrooms, fuel, food, showers, and laundry. The availability of such amenities remains inconsistent across regional truck parking facilities.

Undesignated Truck Parking

Undesignated truck parking has become a significant issue within the South Central Region, Connecticut, and the United States. Truck drivers need safe places to rest before continuing to operate on American highways. Inadequate supply of truck parking results in two adverse outcomes: first, tired drivers may continue to drive because they have difficulty finding a place to park and rest, and second, truck drivers may then choose to park at unsafe locations. There are multiple benefits to ensuring access to safe truck parking. Increased safety for drivers and motor vehicles is an immediate benefit of adequate truck parking, as drivers do not have to park on highway shoulders, exit/entrance ramps, and automobile parking lots. Adequate truck parking also improves the safety of those who share roadways with truck freight drivers, as heavy-duty vehicles will not obstruct the roadways, thereby reducing the risk of collision or personal injury.

Jason's Law

The adoption of "Jason's Law" has guided states to further understand the significance and public benefits of accessible

and reliable truck parking. Jason's Law is a requirement of the Moving Ahead for Progress in the 21st century legislation that became effective on October 1, 2012. Jason's Law was established to provide "a national priority on addressing the shortage of long-term parking for commercial motor vehicles on the National Highway System (NHS) to improve the safety of motorized and non-motorized users and for commercial motor vehicle operators."[xxxi] Jason's Law requires the U.S. Department of Transportation to conduct a survey and comparative assessment with state motor carrier representatives to:[xxxii]

1. Evaluate the capability of each state to provide adequate parking and rest facilities for commercial motor vehicles engaged in interstate transportation.
2. Assess the volume of commercial motor vehicle traffic in each state.
3. Develop a system of metrics to measure the adequacy of commercial motor vehicle parking facilities in each state.

Regional municipal programs could be developed to encourage partnerships to utilize unused parking spaces during off-peak hours. Additional efforts could be made to document and share information about these locations with commercial drivers. This strategy would reduce the negative impacts of truck-related accidents, as there is a well-established correlation between a lack of available truck parking and increased traffic hazards, risks, and injuries.

University of Connecticut Truck Parking Study

UConn's Connecticut Transportation Safety Research Center and the CTDOT are actively studying truck parking and its implications throughout the State of Connecticut. To improve the safety, security, and availability of regional truck parking, UConn's team is creating an inventory of public and private truck parking facilities, documenting factors like number of available parking spaces and the presence of amenities at these stops. A key component of this initiative is establishing real-time parking monitoring to assess how many parking spaces exist at a given time through technology such as cameras and detectors. As this study progresses, valuable insights into truck parking in the State of Connecticut will help address the ongoing shortage.

Freight Congestion

Freight Congestion

SCRCOG is home to major distribution centers, successful biotech and health industries, a functioning regional port, and a well-connected freight rail system. Any congestion and operational inefficiencies on these roadways have severe impact for the freight industry because of the type of goods they carry and the distances they cover. The reliability of a route is a crucial piece of information for the logistics community.

I-95 and I-91 are the two major Interstate routes in SCRCOG. A portion of I-691 also passes through this region. I 95 runs east-west through the region and connects to New York to the west and to I-91 to the east. I 91 is a primary north-south route through Connecticut. To the south, it connects to I-95 in New Haven. To the north, it connects to the I-90 in Springfield, Massachusetts. It is also a primary route to destinations further north in Vermont and New Hampshire. Together, these interstates carry a large volume of long-distance traffic.

This chapter and associated analysis are based on the data derived from the National Performance Management Research Data Set (NPMRDS). The NPMRDS is a FHWA procured and sponsored archived speed and travel time data set, and it covers the roadways in the National Highway System (NHS). The NHS is a network of major roads that connect population centers, ports, airports, and other transportation facilities. Overview of the data used in this report is described below.

Data Providers	NPMRDS, CTDOT
Year	2023
Road Network	Interstates within SCRCOG
Time Period	
Weekday	• Morning (6AM -10AM) • Midday (10AM – 3PM) • Evening (3PM-7PM)
Weekend	• Morning (6AM -10AM) • Midday (10AM – 3PM) • Evening (3PM-7PM)

Truck Travel Time Reliability (TTRI)

The Truck Travel Time Reliability (TTRI) Index is a type of travel time-based freight performance measure and is the only freight-specific measure required by federal mandate. The TTTR ratio is calculated by dividing the 95th percentile truck travel time by the 50th percentile travel time for each segment. The TTTR Index is calculated by multiplying each segment's highest ratio by its length, then dividing the sum of all length-weighted segments by the total length of Interstate. Higher values of the TTTR Index indicate less reliable truck travel while lower values indicate more reliable truck travel. CTDOT calculates the TTRI for all COGS and reports annually. TTRI of 1.5 has been established as a threshold and any value above this is considered unreliable. As shown in **Figure 16,** the truck travel time has been consistently unreliable in the region (except for 2020 due to the pandemic).

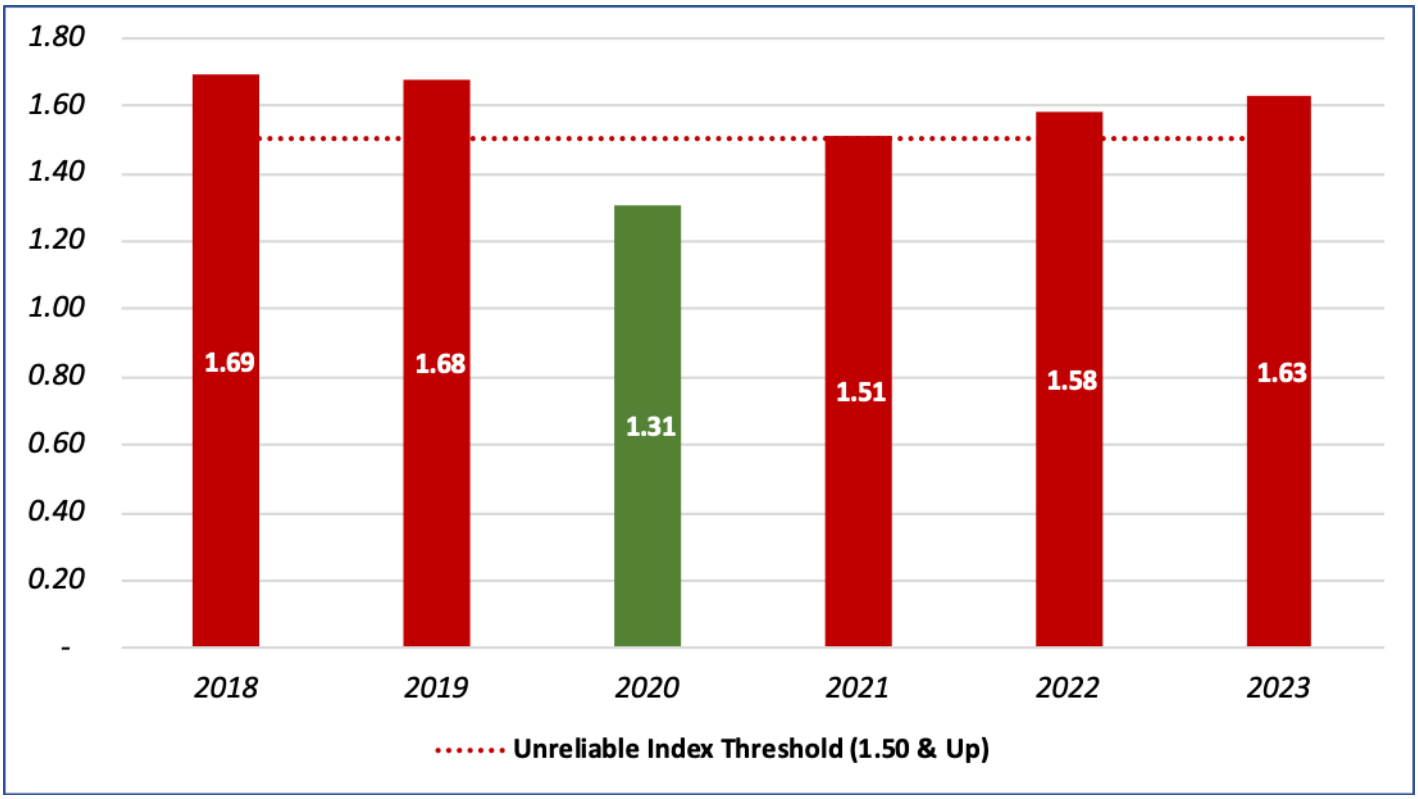


Figure 16: SCRCOG Truck Travel Time Reliability by Year (Source: CTDOT)

Average Speed

Analysis of average truck speeds during peak periods provides an in-depth understanding of the highway system's performance in serving truck travel demands. **Table 5** and **Table 6** show how the average speed for freight vehicles differs from the free flow speed along I-91, I-95 and I- 691 within SCRCOG. As the tables show, average truck speed is significantly lower than the free flow speed during weekday evening and for both midday and evening time period during the weekend. The higher the difference from free flow speed, the severe the congestion is for that segment.

The I-691 within SCRCOG seems to be operating efficiently for freight traffic. For I-91, congestion has been observed near the US-5 interchange in New Haven during weekdays. Congestion was also observed along I-91 near the Meriden Town Line during both weekdays and weekends. Significant congestion has been seen along the whole stretch of I-95. During weekday evening, the CT-10 (Ella T Grasso Blvd.) interchange in New Haven, US-1 (Boston Post Rd.) interchange in Milford and US-1 (E Main St.) interchange in Branford experienced the slowest speed for trucks. For weekends, the congestion is relatively equally distributed along the corridor.

Table 5: Weekday Average Truck Speed

Road	From	To	Length (Mile)	Direction	Average Travel Speed (mph)			Difference from Free Flow Speed (mph)		
					AM	Midday	PM	AM	Midday	PM
I-691	CT-71 (Chamberlin Hwy)	US-5 (Broad St.)	3.20	EB	60	61	61	7	5	5
				WB	62	62	60	4	4	6
	US-5 (Broad St.)	CT-15 (Willbur Cross Parkway)	0.94	EB	54	56	55	10	8	9
				WB	61	60	59	5	6	7
	CT-15 (Willbur Cross Parkway)	I-91	0.44	EB	53	53	52	8	7	9
				WB	59	60	59	7	6	7
I-91	Grand Ave	US-5 (State St.)	1.10	NB	57	56	54	9	9	11
				SB	55	55	45	11	11	21
	US-5 (State St.)	CT-80 (Foxon Blvd.)	0.97	NB	58	57	56	9	10	11
				SB	58	60	57	11	9	12
	CT-80 (Foxon Blvd.)	Montowese Ave	2.37	NB	63	64	64	7	7	7
				SB	64	65	64	8	8	8
	Montowese Ave	CT-40 (Mt. Carmel Connector)	1.91	NB	65	65	65	7	7	7
				SB	65	65	65	7	7	7
	CT-40 (Mt. Carmel Connector)	CT-22 (Clintonville Rd.)	0.81	NB	64	64	65	7	7	6
				SB	65	65	65	8	8	8
	CT-22 (Clintonville Rd.)	US-5(Washington Ave)	1.15	NB	65	65	65	6	6	6
				SB	65	65	65	8	8	8
	US-5(Washington Ave)	Wharton brook Connector	2.30	NB	65	65	65	8	8	7
				SB	67	66	67	7	7	7
	Wharton brook Connector	CT-68 (Barnes Rd.)	5.00	NB	62	64	64	9	8	7
				SB	66	66	66	8	8	7
	CT-68 (Barnes Rd.)	SCRCOG Border	4.58	NB	60	61	60	8	9	10
				SB	63	60	54	9	12	18
I-95	SCRCOG Border	Milford Parkway	2.98	NB	59	57	55	10	12	14
				SB	61	59	58	9	10	11
	Milford Parkway	US-1 (Boston Post Rd.)	1.72	NB	59	57	54	11	12	15
				SB	59	56	50	10	13	19
	US-1 (Boston Post Rd.)	Marsh Hill Rd.	2.70	NB	58	57	51	11	12	18
				SB	62	59	52	9	12	19
	Marsh Hill Rd.	CT-10 (Ella T Grasso Blvd.)	4.01	NB	57	55	51	11	12	16
				SB	56	52	41	11	16	26
	CT-10 (Ella T Grasso Blvd.)	CT-337 (Townsend Ave.)	3.04	NB	58	57	56	9	10	11
				SB	57	54	44	11	14	25
	CT-337(Townsend Ave.)	N High St.	1.54	NB	61	61	60	9	10	11
				SB	61	60	59	10	11	11
	N High St.	Branford Connector	1.53	NB	62	60	59	10	10	12
				SB	65	63	61	7	9	11
	Branford Connector	US-1 (E Main St.)	3.20	NB	63	60	58	9	11	13
				SB	64	60	53	9	12	20
	US-1 (E Main St.)	CT-77 (Church St.)	4.90	NB	64	62	64	10	12	11
				SB	66	62	55	8	12	19
	CT-77 (Church St.)	CT-79 (Durham Rd.)	4.60	NB	65	64	65	10	11	10
				SB	67	64	63	7	10	12
	CT-79 (Durham Rd.)	Hammonasset Connector	1.60	NB	65	63	65	9	11	9
				SB	65	62	62	9	11	12

Table 6: Weekend Average Truck Speed

Road	From	To	Length (Mile)	Direction	Average Travel Speed (mph)			Difference from Free Flow Speed (mph)		
					AM	Midday	PM	AM	Midday	PM
I-691	CT-71 (Chamberlin Hwy)	US-5 (Broad St.)	3.20	EB	64	63	63	3	4	4
				WB	63	63	63	3	3	3
	US-5 (Broad St.)	CT-15 (Willbur Cross Parkway)	0.94	EB	59	58	56	5	6	8
				WB	62	61	61	5	5	5
	CT-15 (Willbur Cross Parkway)	I-91	0.44	EB	55	55	53	5	6	8
				WB	59	61	61	7	5	5
I-91	Grand Ave	US-5 (State St.)	1.10	NB	59	58	57	6	8	8
				SB	60	57	57	6	9	9
	US-5 (State St.)	CT-80 (Foxon Blvd.)	0.97	NB	61	60	60	7	8	8
				SB	63	61	61	6	7	8
	CT-80 (Foxon Blvd.)	Montowese Ave	2.37	NB	65	65	65	6	6	6
				SB	67	66	66	6	6	7
	Montowese Ave	CT-40 (Mt. Carmel Connector)	1.91	NB	67	66	66	5	6	6
				SB	67	67	67	5	5	6
	CT-40 (Mt. Carmel Connector)	CT-22 (Clintonville Rd.)	0.81	NB	66	66	66	5	6	5
				SB	67	66	66	6	6	7
	CT-22 (Clintonville Rd.)	US-5 (Washington Ave)	1.15	NB	66	66	66	5	5	5
				SB	67	66	66	6	7	7
	US-5(Washington Ave)	Wharton brook Connector	2.30	NB	66	66	66	6	6	6
				SB	68	67	67	6	6	6
	Wharton brook Connector	CT-68 (Barnes Rd.)	5.00	NB	65	65	65	7	7	7
				SB	67	68	68	6	6	6
	CT-68 (Barnes Rd.)	SCRCOG Border	4.58	NB	63	61	62	6	9	8
				SB	64	54	55	8	17	17
I-95	SCRCOG Border	Milford Parkway	2.98	NB	62	55	59	6	14	10
				SB	64	61	60	6	9	10
	Milford Parkway	US-1 (Boston Post Rd.)	1.72	NB	62	56	59	7	14	11
				SB	63	56	60	6	13	17
	US-1 (Boston Post Rd.)	Marsh Hill Rd.	2.70	NB	62	55	56	7	14	13
				SB	64	60	57	7	11	14
	Marsh Hill Rd.	CT-10 (Ella T Grasso Blvd.)	4.01	NB	62	53	55	6	15	13
				SB	61	50	49	7	17	19
	CT-10 (Ella T Grasso Blvd.)	CT-337 (Townsend Ave.)	3.04	NB	60	58	58	7	10	9
				SB	60	53	53	9	15	15
	CT-337(Townsend Ave.)	N High St.	1.54	NB	62	60	61	8	10	9
				SB	63	62	61	8	9	10
	N High St.	Branford Connector	1.53	NB	64	58	62	8	13	10
				SB	66	64	63	6	8	9
	Branford Connector	US-1 (E Main St.)	3.20	NB	65	56	61	6	16	11
				SB	66	60	58	7	13	14
	US-1 (E Main St.)	CT-77 (Church St.)	4.90	NB	66	61	64	8	14	11
				SB	67	61	58	7	13	15
	CT-77 (Church St.)	CT-79 (Durham Rd.)	4.60	NB	66	62	64	8	13	11
				SB	67	64	62	7	11	13
	CT-79 (Durham Rd.)	Hammonasset Connector	1.60	NB	66	64	64	8	10	10
				SB	65	62	61	9	11	13

Truck Travel Time Index (TTTI)

The Travel Time Index (TTI) is a dimensionless quantity that compares travel conditions in the peak period to travel conditions during free-flow or posted speed limit conditions. It is a measure of travel time reliability. For example, a TTI of 1.20 indicates that a trip that takes 20 minutes in the off-peak period will take 24 minutes in the peak period or 20 percent longer.

The Freight Travel Time Index (TTI) is a measure that compares freight travel time during peak hours to the time it would take to complete the same trip under free-flow conditions. It essentially quantifies how much longer a freight trip takes during congested conditions compared to a trip with light traffic.

Consistent with the average speed results, the most unreliable truck travel times were observed during weekday evening and during both midday and evening during weekend. The highest PTI was observed for I-95 between CT-10 (Ella T Grasso Blvd.) and CT-337(Townsend Ave.) in New Haven. This 3-mile segment had a TTTI of 2.4 during the weekday evening period, meaning that travel time for trucks were more than double the usual condition for this stretch.

Figure 17, Figure 18, and Figure 19 shows the Truck travel time index in SCRCOG for the most unreliable time periods.

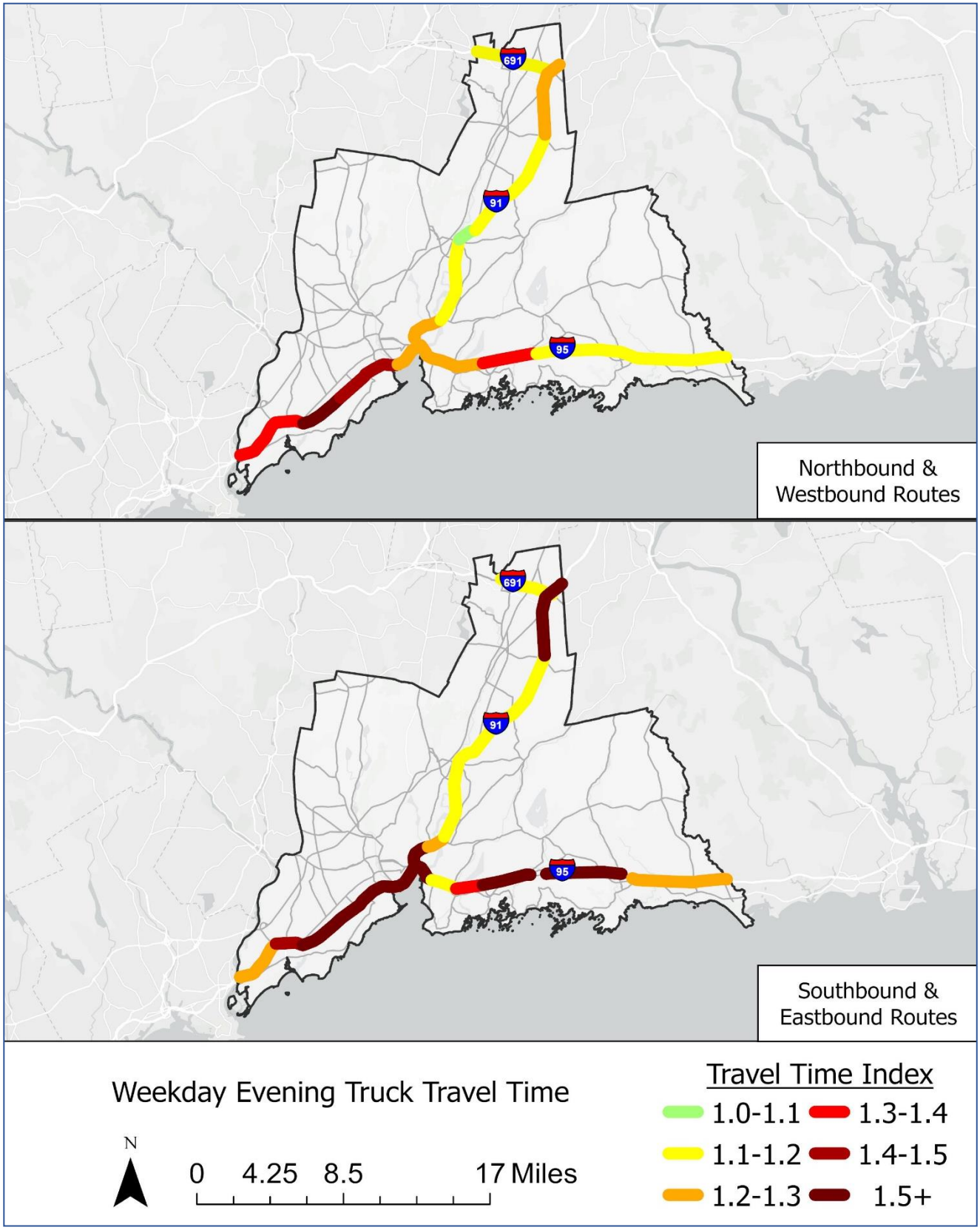


Figure 17: Weekday Evening Truck Travel Time Index

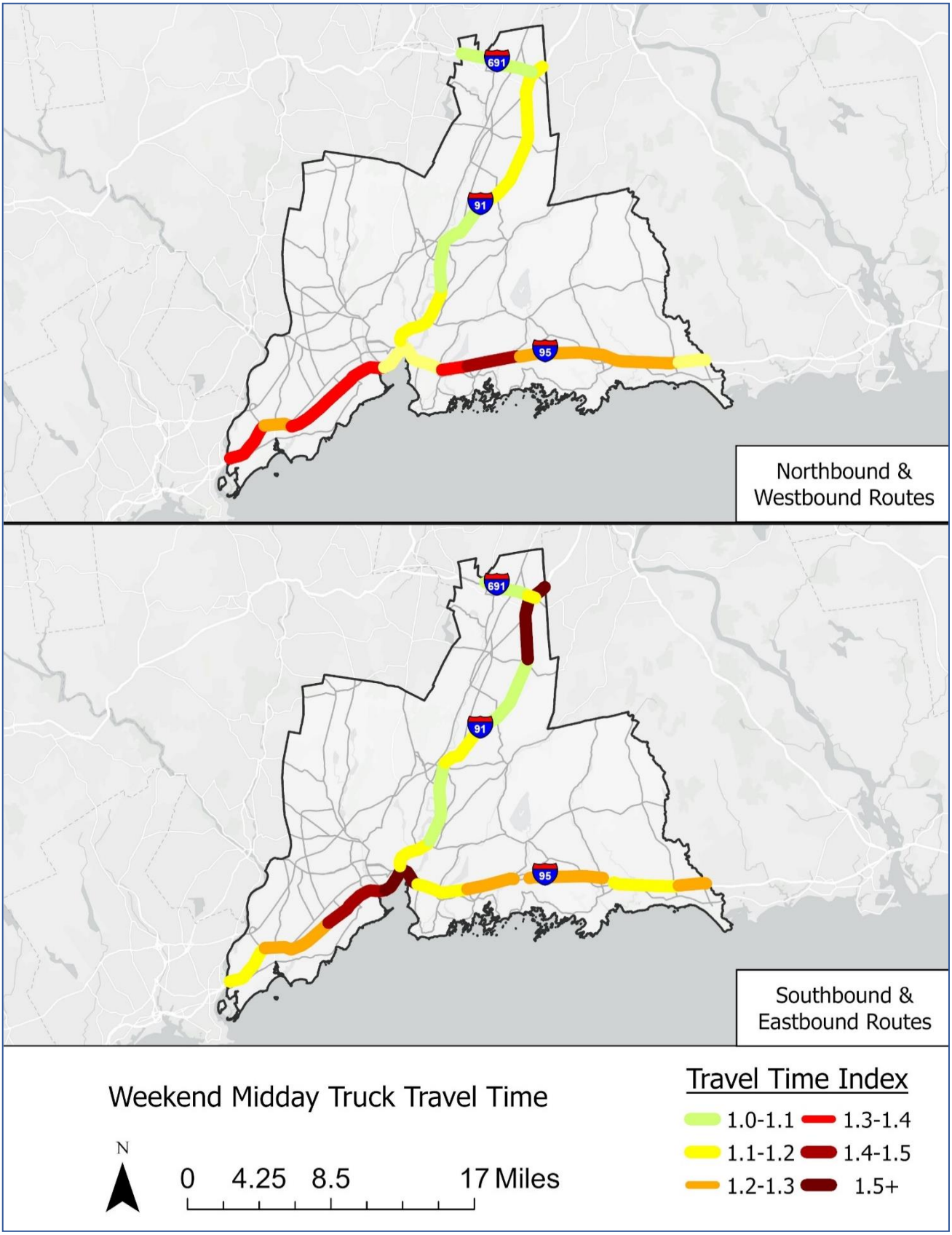


Figure 18: Weekend Midday Truck Travel Time Index

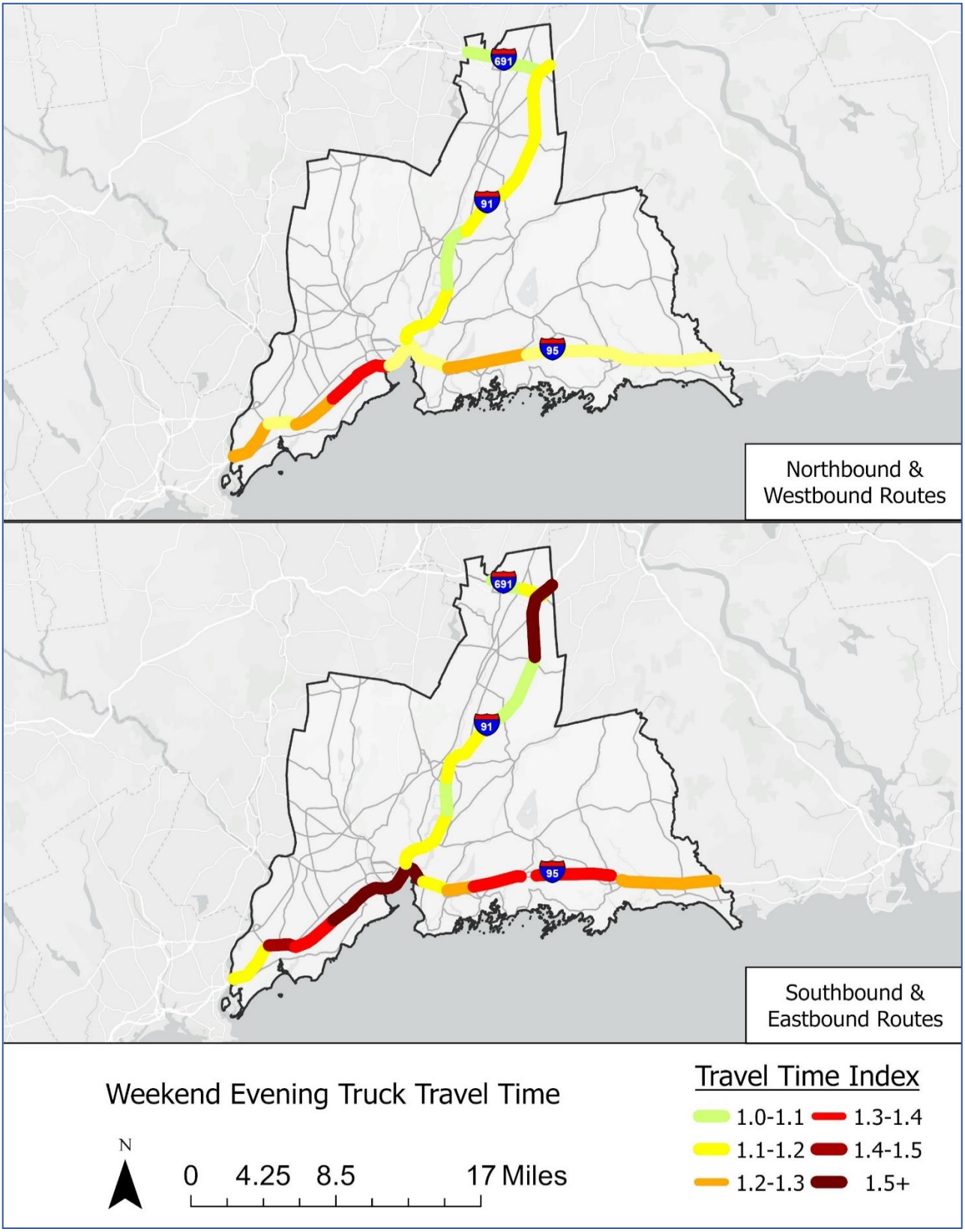


Figure 19: Weekend Evening Truck Travel Time Index

Freight Safety

Safety Analysis

The crash data was collected from the University of Connecticut's Crash Data Repository (CTCDR) website for the years 2019 – 2023. CTCDR data is based on the information from the crash report recorded by the law enforcement officer. The total number of crashes dropped from 1725 in 2019 to 1334 in 2020 due to the pandemic. In 2021, even though normal travel patterns hadn't resumed completely, freight crashes increased to 1692 within SCRCOG. It further increased to 1717 in 2022 before dropping to 1659 in 2023.

This chapter provides an overview of key information gathered through the analysis of this crash data.

Crashes by Municipalities

Among the 15 municipalities within SCRCOG, New Haven had the highest number of freight related crashes, followed by Meriden and Milford. The high crash numbers in New Haven are not unexpected since both I-91 and I-95 has some major interchanges in this area and also the presence of the Port of New Haven is a likely contributor to these numbers.

Crashes by Levels of Injury

Of the 8,127 crashes between 2019 and 2023, 30 (0.37%) resulted in a fatality, 82 (1.01%) in a suspected serious injury, 622 (7.65%) in suspected minor injuries, 892 (10.98%) in a possible injury, and 6,501 (79.99%) in no apparent injuries.

Crashes by Types

The two most common crash types were rear-ended and same direction sideswipe crashes, both accounting for about 33% of all crashes. Rear-ended crashes can occur when a driver fails to react in time to a vehicle slowing or stopping ahead, while sideswipes happen when vehicles in the same lane or changing lanes collide with each other.

Crashes by Time of Day

Majority of freight related crashes occurred between 10 AM and 2 PM (30%), followed by the time span between 2PM and 6 PM (29%). Within CT, restrictions on oversized trucks limit travelling between 9 AM and 4 PM. Since most freight vehicles under the legal limit can move during the day, it creates more potential to get involved in a crash during rush hour.

Vehicle and Road Data Related Crashes

Most of the freight related crashes involved medium and heavy trucks (more than 10,000 lbs. in weight). These types of vehicle were involved in 53% of the freight crashes. Cargo vans and other light trucks account for 26.27% and 20.69% of these crashes respectively. **Figure 20** documents the freight crash trends in South Central CT. **Figure 21** illustrates all freight crashes in the region.

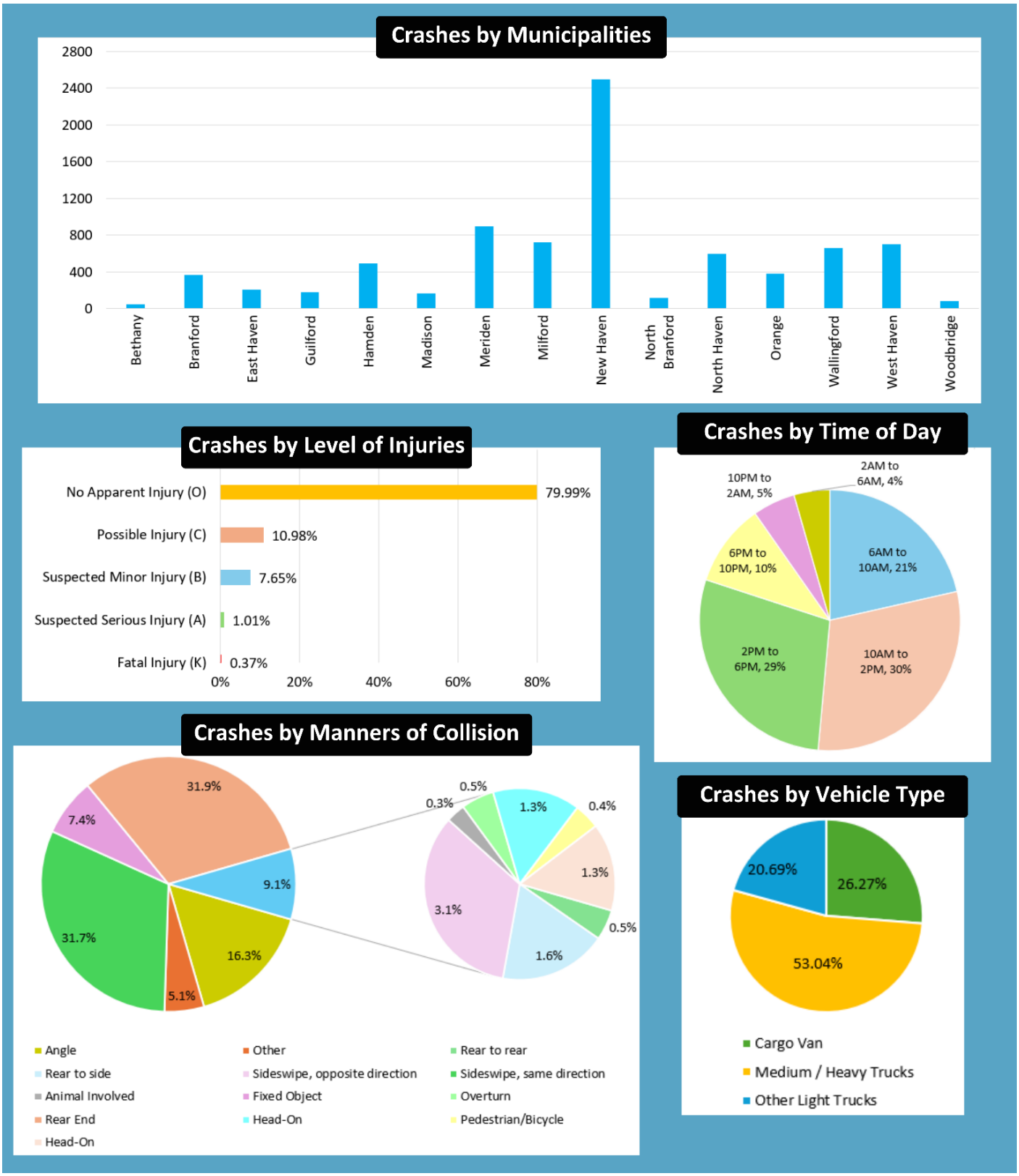


Figure 20: Freight Crash Trends in SCRCOG

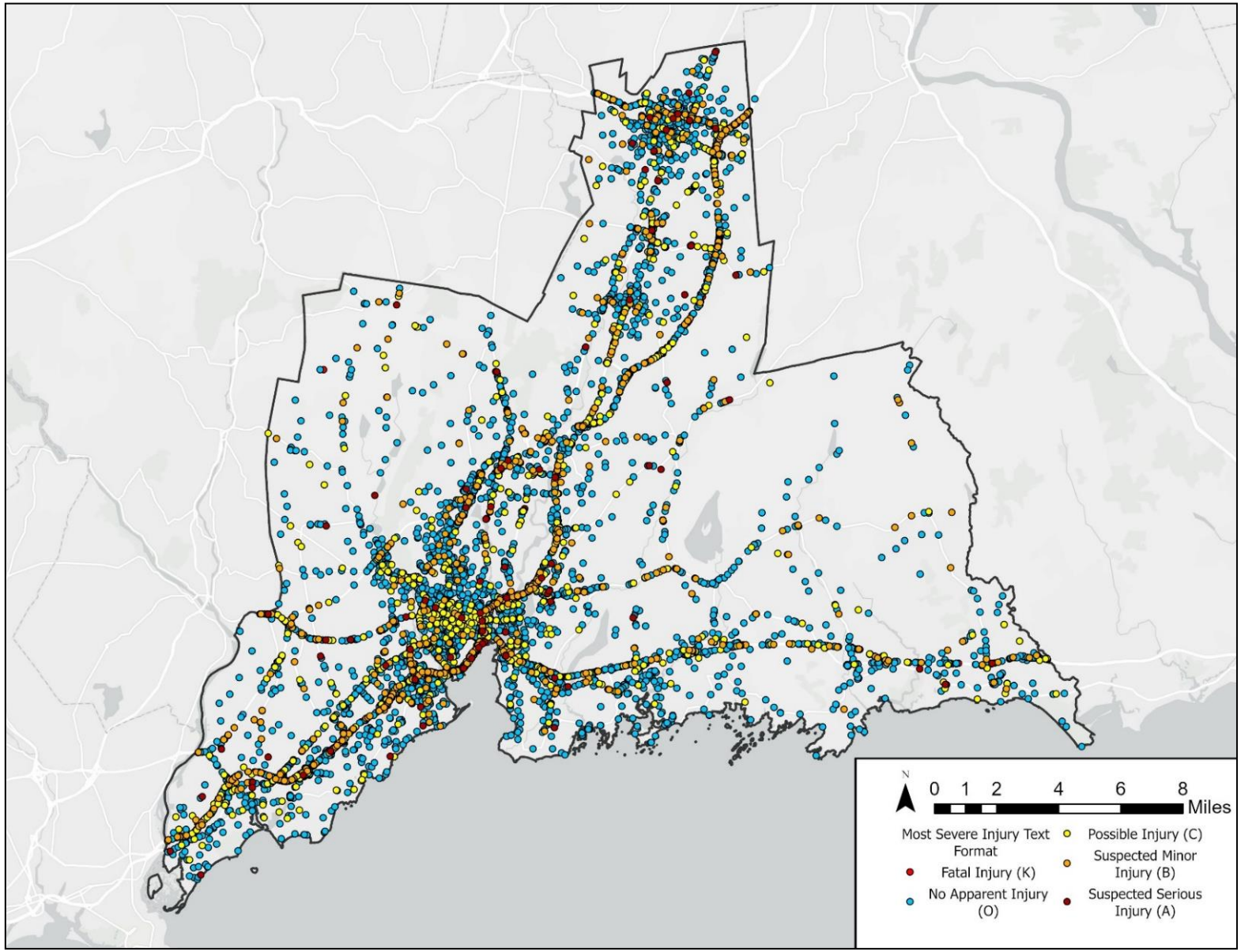


Figure 21: Freight Crashes in SCRCOG

Diagnosis of Fatal Crashes

From 2019 to 2023, a total of 30 freight crashes occurred in SCRCOG that ended in a fatality. In 2019, there were a total of 7 freight related fatal crashes followed by 4 fatal crashes in 2020. In 2021, the fatalities increased to 7 again. In 2022, the fatalities decreased marginally to 6 and stayed the same in 2023.

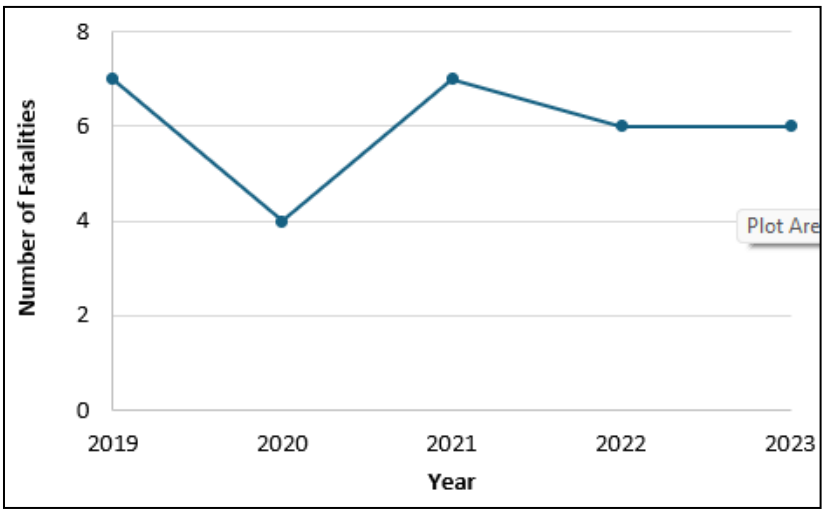


Figure 22: Fatal Crashes by Year

Weather conditions during crashes were mainly clear (86%). Additionally, 45% of fatal crashes occurred during daylight conditions and 41% during dark-lighted conditions. About 53% of these fatal crashes happened on Interstates, 30% on State/US routes, and the remainder happened on local roadways.

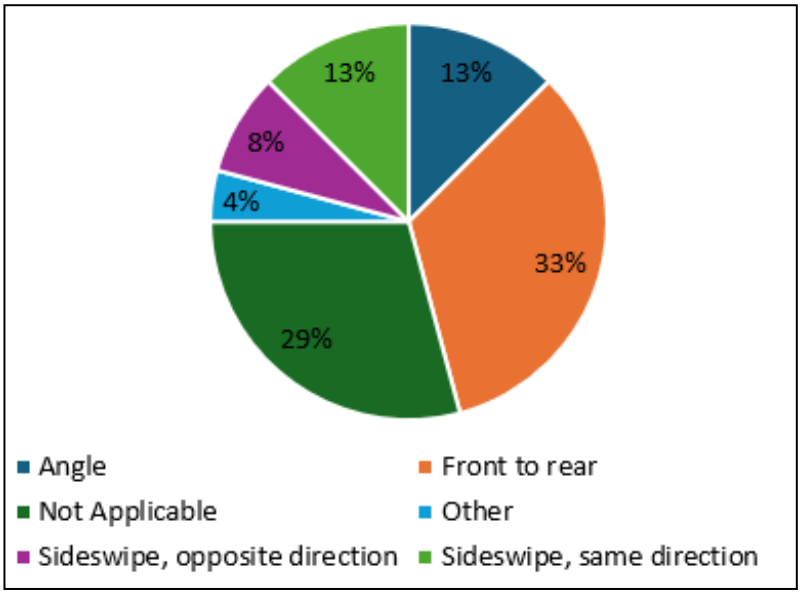


Figure 23: Fatal Crashes by Manner of Collision

Most of these crashes were rear ended crashes (34%). Trucks, due to their large size, typically need more time to slow their speed of travel as traffic speeds. When there is a sudden stop, trucks following too closely to the vehicle ahead often end up rear ending the other vehicle. There were five fatal crashes within the study period that involved pedestrians or cyclists. Due to the comparatively heavy nature of the vehicle, interactions among freight vehicles and non-motorized road users are more dangerous. **Figure 22** and **Figure 23** provides insight into the fatal crash trends in SCRCOG. **Figure 24** shows the locations of the fatal crashes in the region.

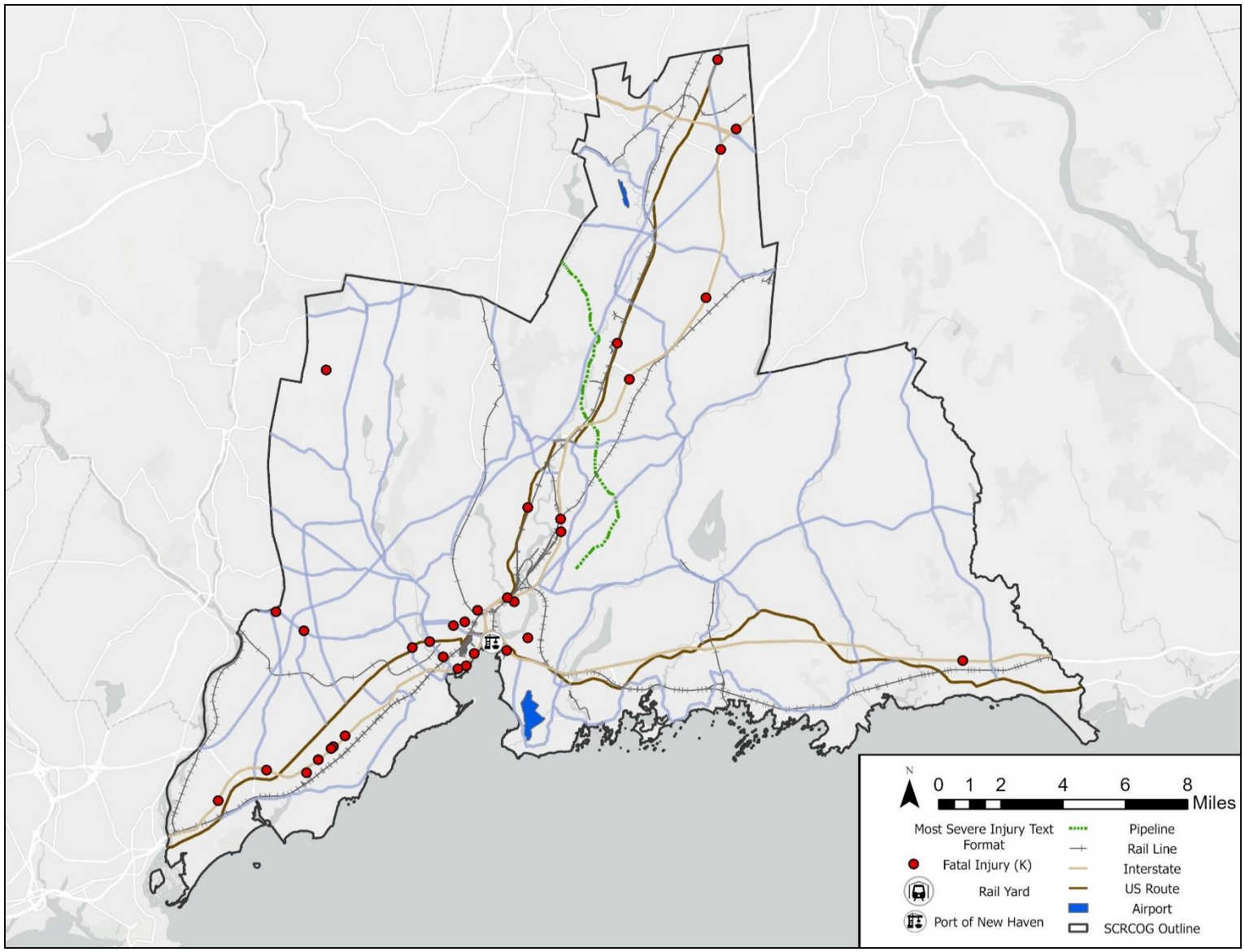


Figure 24: Fatal Freight Crash Locations in SCRCOG

Failure to keep in the proper lane was identified as the top action (30%). This is often associated with speeding and improper lane change, both of which are aggressive driving behaviors. Operating motor vehicle in an inattentive manner contributed to 17% crashes. This category indicated distractive driving. Operating a motor vehicle in an aggressive manner and following too closely also contributed to 13% of crashes, respectively. Both actions qualify as aggressive driving. In general, aggressive driving and distracted driving were identified as the top two contributing factors. **Figure 25** shows the driver's actions that contributed to the fatal crashes.

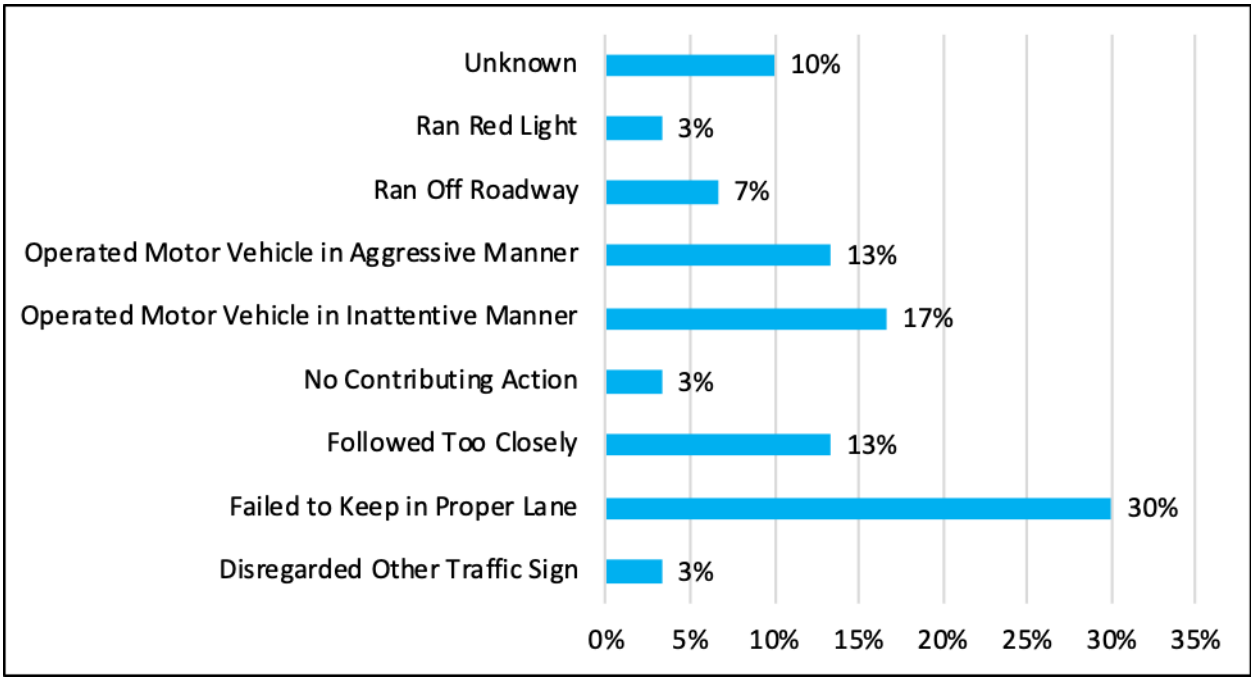


Figure 25: Contributing Factors Behind Fatalities Involving Freight

Challenges within the Freight Network

Freight Network Challenges

Connecticut's multimodal freight network is an interconnected system of roadways, waterways, and rail lines designed to move goods within and through the state in a time-sensitive manner, adhering to strict schedules while transporting a wide array of goods and commodities. Within the regional freight transportation network, several challenges have the potential to impact the system's operational success and economic vitality.

Highway Mode Challenges

Most freight movement in Connecticut and its South Central Region utilizes highway modes, resulting in the strategic movement of millions of tons and billions of dollars' worth of goods. Despite this mode's significance in the regional freight network, several challenges emerge.

Congestion

A significant challenge within the regional freight network stems from freight bottlenecks and traffic congestion. These bottlenecks occur when slow speeds delay trucks due to traffic congestion or restrictions and have the potential to disrupt supply chain logistics, leading to complications with delivery schedules.

Truck Parking

The growing regional demand for adequate and available truck parking has surpassed the existing supply of parking sites. As highway modes of freight movement continue to become more prominent, government agencies must plan ahead to ensure the safety, security, and operational success of the regional network.

Government Regulations

Highway mode freight operators must adhere to established restrictions and limitations. Examples of these restrictions include oversize and overweight vehicles, as well as designated service hours.

Safety

Due to the increased size and limited braking ability of heavy-duty vehicles, freight trucks pose considerable safety concerns. Ensuring the safety of truck operators, as well as those who share the roadways must be a focus for transportation policy makers.

Compromised and Substandard Roadway Infrastructure

Bridges and pavements in inadequate condition result in cargo

damage and increase distance and delivery times. Freight trucks frequently operate on rough pavements with tight turning radii, lane restrictions, and smaller lane width.

Modal/Intermodal Connectivity

The regional freight network would benefit from more cohesive intermodal connections to facilitate the efficient movement of goods across travel modes.

Engaging with Regional Freight Operators

This report recognizes that ensuring that private freight operators stay informed and involved in freight transportation planning is a notable challenge. Freight operators have demonstrated reluctance with involvement in regional freight plans, such as this report. This reluctance can be attributed to the fear of government audits and the identification of weaknesses in their operations in public documents.

Maritime Mode Challenges

The Port of New Haven is the largest of three deepwater ports in Connecticut and is considered the busiest port between New York City and Boston.

Challenges with the Growth of Port and Land Use Concerns

Effective land allocation has been a prerequisite to the economic development and overall success of the Port of New Haven. The Port includes 12 berths with over 6,000 feet of quay length, covering 366 acres of land.[33] Of the 366 acres, 116 are currently used for port-related purposes.[34] Land use is a significant concern since the Port lacks available land in the surrounding vicinity. This leads to difficulty in expanding the Port of New Haven's spatial footprint. Currently, multiple terminals are being rented or purchased at the Port of New Haven.

Analysis originating from the Port's Strategic Land Use Plan demonstrates that the Port Authority has placed a particular emphasis on land use issues to be included in the planning and management of the Port's growth. Success in practical land usage will depend on meticulous coordination between the Port Authority and the Port terminals. While land for future expansion is limited within the Port District, the Port Authority recognizes that the efficient use of the current land owned by the New Haven Port Authority is essential to its operations and revenues. A plan for purposeful land acquisition, strengthening the Port's infrastructure and operational capacity, may involve

consolidating storage areas and using specific sites outside the Port District.[35] The Port of New Haven's Strategic Land Use Plan describes the demand for land within the Port District, focusing on acquiring land to expand the Port's operations.

Challenges with Expanding the Port of New Haven's Channel

Expanding the channel at the Port of New Haven is a significant challenge within the regional freight network. The Port of New Haven's central channel depth is approximately 35 feet during low tide.[36] Most vessels require 4 feet of water depth below the vessel, and any vessel that draws more than 31 feet must wait for high tide before entering the New Haven Channel. Due to tides being 6 feet at New Haven, larger vessels oftentimes remain tide-waiting in Long Island Sound when unable to enter the 35-foot channel.[37] Most traffic moves within a few hours of high tide, given that few vessels draw 31 feet or less. If the channel is not deepened, shippers will rely on larger vessels even though they cannot fill them due to related channel restrictions.[38] The Connecticut Port Authority has recognized that deepening the channel improves the flow of goods across modes. Expanding the central channel at the Port of New Haven will result in increased freight movement, strengthening the freight transportation network in Connecticut and its South Central Region.

State of Condition at the Port of New haven

Primary data gathered from field research and a comprehensive interview with the director of the New Haven Port Authority identified significant areas of concern regarding the Port of New Haven. Continued illegal overnight truck parking, dumping, and idling were identified as problems hindering the state of condition at the Port. Other complications lie with fuel pipelines at the Port. Multiple pipelines connect Global Partners Terminal, Gateway Terminal, the Buckeye Pipeline, and New Haven Terminals; however, the existing rail connection fails to adequately connect these facilities. Gateway Terminal, the Port of New Haven, and the Connecticut Port Authority (CPA) have applied for government funding for rail expansion under the Port Infrastructure Development Program. A more comprehensive rail network would facilitate more efficient movement of goods, boosting connectivity. A final challenge lies with salt pile locations.

The Port of New Haven is responsible for providing salt for many municipalities in Connecticut, as the Ports of New London and Bridgeport cannot accommodate the increased regional demand. The movement of salt directly results in increased traffic volumes, especially at the waterfront and Forbes Street. A salt pile on East Street across from the river has proven to be a common location for idling trucks.

A final challenge lies in the physical condition of the Port. The Port of New Haven, specifically Connecticut Avenue from Fulton Terrace, suffers from large potholes scattered throughout the road. This has created difficulty for vehicles to utilize these roadways safely. Furthermore, this hinders the efficient flow of freight traffic in and out of the Port. Interviews with the New Haven Port Authority also identified increased interest in signage improvements, fencing, and security as potential projects identified in this report. Regarding Port growth, the Port Authority recognizes that land use is crucial to its development, recently acquiring several parcels. The Port Authority has announced that it is selling one parcel to Gateway Terminal and is looking to lease the remaining parcels to other port operators. Some parcels are privately owned, with the remainder being actively pursued by the Port Authority. While economic and spatial growth remains a high priority, the Port has not progressed significantly. The Port states that it is updating its land use plan as a master plan for its growth-related operations. Stakeholder interviews noted that the project was set to start in September 2024 and should take 8-9 months to execute.

Rail Mode Challenges

Compared to highway and maritime modes, Connecticut's freight rail network tends to be both more reliable and efficient. However, several challenges exist, limiting the operational success of the existing network.

Infrastructure Maintenance and Investment

Rail infrastructure requires substantial investment to maintain and upgrade. Tracks and bridges require periodic maintenance, which can be costly and time-consuming. In some cases, outdated infrastructure can cause delays and reliability issues on the network.

Congestion and Capacity Constraints

Rail networks, particularly in more populated regions, can face congestion due to limited track capacity. In the case of the South Central Region, rail lines are frequently shared between private freight rail operators and passenger rail operators such as Amtrak. As demand for freight increases, freight bottlenecks can be anticipated at key rail locations and terminals, contributing to increased delivery times.

Intermodal Connectivity and Compatibility

The process of integrating rail with other modes of freight transportation is an especially challenging one. Ensuring smooth transfers between modes is vital to maintaining timely deliveries.

Labor and Workforce Concerns

Freight rail transportation frequently experiences labor shortages or disputes with workers, particularly regarding issues like wages, working conditions, and variations with operating procedures. Furthermore, potential strikes or labor shutdowns have the potential to adversely impact the movement of goods on the regional freight network.

Environmental Concerns

While recognizing that rail modes of freight transportation are more energy-efficient than highway modes, freight rail still results in significant carbon emissions and pollutions through the use of non-renewable resources. Addressing the environmental impact of freight movement will involve reducing emissions and improving sustainability while ensuring the success of the system.

Perception of Freight Transportation

Stakeholder input has identified that the public perception of freight has changed with the introduction of e-commerce and digital marketplaces. Smaller trucks, like those of Amazon.com have resulted in increasing numbers of deliveries, shifting the regional freight network. These vehicles are licensed commercially, but do not face the same size or weight restrictions of other heavy vehicles, using residential road networks freely, resulting in a change of what society considers freight and how we collect freight data.

Recommendations

Recommendations

This chapter outlines strategic recommendations designed to enhance the efficiency, resilience, and sustainability of Connecticut's multimodal freight network. Developed through rigorous data analysis, stakeholder input, and best practices from other jurisdictions, the recommendations presented in this chapter directly address significant challenges and opportunities across all freight modes, including road, rail, and maritime transport. These goals support the network's economic vitality, enhance supply chain resilience, and mitigate environmental concerns, while ensuring that the regional freight network adapts to future demands and changes. Each recommendation is designed to uphold and support state and federal goals, providing a foundation for future coordination and action within Connecticut's South Central Region.

Modernize Ports and Terminals

This recommendation, focused mainly on the Port of New Haven, encourages upgrading port facilities and widening/deepening the channel to accommodate larger vessels, improve cargo processing, and reduce congestion at and around the Port. This would involve improving, repairing, and rehabilitating essential infrastructure at the Port and throughout its vicinity to maximize the efficiency of freight movement, particularly truck and rail modes. The acquisition and development of new parcels of land at the Port have been identified as critical to expanding the Port's spatial footprint. Therefore, strategic land acquisition and development will be essential to the growth and modernization of the Port of New Haven. This report encourages the City of New Haven to use its own resources to improve the condition of the roads around the Port. To increase the potential impact, this report encourages the City of New Haven to procure funding for infrastructure improvement projects at the Port of New Haven.

Adopt Digital Freight Platforms and Leverage New Technology

The increasing complexity of freight related technology has opened doors to a more efficient freight network. This report encourages the implementation of digital freight platforms that connect shippers, carriers, and logistical service providers, facilitating real-time tracking, enhanced

load matching, and reducing wasted miles. Examples of such technology include Drivewyze[39] and PrePass.[40] Both platforms use real-time monitoring systems to track and manage shipments, bypass weight stations, and provide updates on the road. These technologies also keep track of miles of service regulations, alerting freight operators when they will need to pull over, how far away the next rest stop is, and any relevant safety information such as closed shoulders, lane closures, or car accidents on the road. While Drivewyze and PrePass offer varying features, both have been proven to enhance freight movement on highway modes. Both technologies are available within the State of Connecticut and its South Central Region. Their utilization presents a wide array of benefits to efficient freight movement.

Encourage Mode Shifts

Freight mode shifting involves the process of changing the mode of freight transportation used to move goods and commodities from one location to another. This process involves different transportation modes, such as road, rail, and maritime, with the goal of optimizing efficiency, environmental impact, cost-effectiveness, and service reliability. According to the *Inventory of U.S. Greenhouse Gas Emissions and Sinks 1990-2022*, transportation accounted for the most crucial portion of total emissions, approximately 28%.[41] To mitigate these concerns, goods can be transferred from high-emission modes such as trucks to lower-emission modes like rail and waterways, contributing to a more environmentally friendly network. Freight mode shifting is a critical strategy in modern logistics and supply chain management, driven by the need for greater efficiency, cost savings, and environmental sustainability. Freight logistics also need to consider potential additional costs associated with infrastructure investments, handling fees, and longer transit times through less time-efficient modes, including rail and maritime.

As the global economy continues to evolve, it is likely that the demand for multimodal transportation solutions will increase, with businesses leveraging technology, regulation, and infrastructure improvements to make freight mode shifting a key part of their operations. By making informed, data-driven decisions on

how to move goods, freight companies and operators can not only optimize their operations but also contribute to a more sustainable and efficient transportation system.

Incentivize Alternative Fuels

This report encourages federal and state incentives for the adoption and implementation of alternative fuels such as biodiesel, liquefied natural gas (LNG), compressed natural gas (CNG), liquid propane, and hydrogen. Research has proven that these alternative fuels reduce greenhouse gas emissions and improve fuel efficiency.[42] Furthermore, this report encourages further inquiry into electric heavy vehicle technologies in the future as these zero-emission platforms continue to develop and become more widespread within the United States.

Foster Public-Private Partnerships

To maximize federal, state, and private funding for freight related projects, this report encourages the formation of public-private partnerships to encourage investment in essential freight infrastructure, particularly in areas where government funding may be scarce. A public private partnership is a contractual agreement between a public agency and a private entity that allows greater private participation in the delivery of projects.[43] In the context of the regional freight network, this participation brings innovation, efficiency, and capital to address complex transportation problems. These partnerships can help fund major infrastructure projects and improve freight movement capabilities.

Continuing Training for Freight Operators to Ensure Safety

This report recommends continuous training for truck operators to ensure safety on the road and at designated truck stops. Examples of this training include defensive driving courses, road safety awareness training, and education opportunities on implementing freight technology that involves safety. Additionally, this report focuses on physical and mental fitness through health monitoring, fatigue awareness training, and stress management supports. Furthermore, this study emphasizes that freight operator management implement incentivized safety training to ensure the responsible operation of freight trucks and other heavy vehicles.

Improve Truck Parking for Private/Public Facilities

Given the findings from this report's Truck Parking chapter, the need for reliable and accessible truck parking is essential to the operational success of the regional freight network, particularly for truck drivers. This report encourages increasing the availability of truck parking at public/private stops. To achieve this, coordination with Connecticut's Department of Transportation must be facilitated to implement new truck parking facilities. Action steps to achieve this goal include increasing the availability of overnight truck parking stops along key freight corridors, as well as the variety of amenities offered at public and private truck stops to address the ongoing truck parking shortage. Methods to achieve this goal include the utilization of underused land in the vicinity of highways, the development of real-time parking information to guide drivers, and pilot projects to test the success of truck stops before the development of a full size public or private facility.

Prioritize Safety

This report emphasizes the significance of prioritizing safety for highway freight operators, as well as others who utilize the same roadways. To achieve this goal, methods include training and education, vehicle maintenance, improving the condition of key freight infrastructure, compliance with freight regulations, and the development/improvement of emergency response procedures in the instance of an accident involving heavy vehicles.

Infrastructure Improvements

Maintaining and upgrading roadways, rail lines, and port-related infrastructure is critical to the development of the regional freight network. These improvements include repairing potholes, resurfacing roads, improving the condition of bridges, and addressing congestion issues. Furthermore, upgrading and modernizing rail systems to accommodate larger loads and faster speeds has the ability to reduce travel time and increase efficiency. As stated previously, improving intermodal connections, particularly at the Port of New Haven, can also generate substantial benefits.

Involving Freight Operators in the Planning Process

Outreach with regional freight operators has demonstrated their reluctance to participate in transportation planning initiatives. This recommendation emphasizes the significance of stakeholder participation from freight operators to inform and guide the planning process. To involve freight operators in freight planning, two methods are provided. To gather feedback, this report suggests implementing QR codes at truck stops throughout the region, allowing operators to provide immediate feedback on their experiences, including topics such as congestion, parking availability, and concerns about the network's conditions. Secondly, rather than having a consultant contact freight operators, such as this report's project team, this report encourages government entities to facilitate communication to ensure that freight operators feel comfortable providing essential feedback to guide future planning reports.

Improve How We Define and Collect Freight Related Data

To improve how we define and gather freight-related data, this report recognizes several methods. The first strategy involves standardization of data in terms of definitions, categories of goods, and units of measurement to ensure that shared data can be easily transferred and utilized across operators and government agencies. Next, this report encourages the adoption of real time data collecting technologies to streamline operations and gather relevant freight-related data. Lastly, this report encourages data-driven decision making through collaboration between public and private freight industries, facilitated by shared and standardized data. With the growing status of e-commerce, delivery trucks should also be reflected in freight related data and incorporated in the data collection process.

Commercial Motor Vehicle Safety Audits

A Commercial Motor Vehicle (CMV) Safety Audit is used to evaluate the safety compliance of commercial motor carriers, operators, and vehicles. The goal of a CMV safety audit is to ensure that a freight

company adheres to federal, state, and local regulations designed to reduce the likelihood of accidents and improve the overall safety of the road. In collaboration with CTDOT and statewide law enforcement, this report encourages frequent CMV Safety Audits at select locations prone to freight vehicle crashes. To ensure the operational safety of the regional freight network, CMV safety audits are a powerful tool to be utilized.

Create a Formal Structure for Freight Related Incidents

This report recommends the development of an incident command structure designed specifically for freight related accidents. According to CTDOT, there is no existing command structure for freight related incidents and all highway incidents are handled on a case-by-case basis. Current procedure involves documentation of the crash, a coordinated response to dispatch, communication with leadership and first responders, and the completion of Traffic Incident Management (TIM) and After Action Reviews (AAR). Due to the differences between personal vehicle crashes and CMV crashes, a designated procedure for addressing crashes involving freight trucks presents significant safety benefits for truck operators and those who share the road. Crashes involving CMVs are typically more dangerous than personal vehicles. Truck crashes require more time to clear due to the increased size of the vehicle and the range of products being transported. Extending the existing incident command structure to meet the needs of CMV crashes will mitigate safety concerns regarding accidents with freight trucks.

Port of New Haven Infrastructure Improvements

Stakeholder interviews with the New Haven Port Authority, as well as a field visit to the Port of New Haven have identified the inadequate condition of essential infrastructure. The Port of New Haven, as well as the municipal roads in its vicinity, are damaged and pose concerns for safety and the ability to effectively utilize select roadways. This report encourages infrastructure improvements like improved signage, repair of damaged roadways, and increased connectivity to the Port area.

Conclusion

Conclusion

The *SCRCOG Regional Freight Study* acknowledges the crucial role freight transportation plays in supporting the state and region's economic objectives, enhancing the quality of life for its residents, and improving regional and interregional connectivity. The growing demand for freight shipments, evolving supply chains, and the need for environmental preservation present notable challenges and unique opportunities. This study has evaluated modal profiles, analyzed commodity flows, identified key freight corridors and operators, assessed safety and truck parking, and addressed gaps and barriers through actionable, data-driven recommendations. By assessing and evaluating freight planning at the regional level, this report encourages continued collaboration among state agencies, local municipalities, and transportation stakeholders to further advance the study's recommendations and strengthen freight movement. Continued investment, innovation, and collaboration will be key to meeting Connecticut's future demands.

Appendix A

Truck Freight Operators in SCRCOG

Name	Address
R&R Freight Services	49 Fowler Rd, North Branford, CT 06471
Anthony Augliera Moving, Storage, and Theatrical Transfer	158 Commerce St, East Haven, CT 06512
CCI Logistics LLC	718 N Colony Rd, Wallingford, CT 06492
Andeucci Trucking, Inc	77 Sackett Point Rd, North Haven, CT 06473
J P Express Services	1007 Middletown Ave, Northford, CT 06472
New Haven Transport LLC	35 Edgemere Rd, New Haven, CT 06512
A2 Global Shipping	25 Laura St #181a, New Haven, CT 06512
Central CT Transportation Movers and Storage	956 Old Colony Rd #7921, Meriden, CT 06451
ALC Freight, Inc.	475B Washington Ave, North Haven, CT 06473
J R Christoni	430 N Cherry St Ext, Wallingford, CT 06492
Moran Shipping Agency Inc.	1 1st Ave, West Haven, CT 06516
Old Dominion Freight Line	250 Research Dr, Milford, CT 06460
Sun runner Transport Services	400 Sackett Point Rd, North Haven, CT 0647
North Haven Transportation	332 Old Maple Ave, North Haven, CT 06473
AIT Home Delivery	15 Commerce Dr, North Branford, CT 06471
ABF Freight	62 Carlson Rd, Orange, CT 06477
AJ's Transport	171 Curtis Dr, New Haven, CT 06515
Palumbo Trucking	1 Foxon Rd, North Branford, CT 06471
LMZ Transport, Inc.	252 Quinnipiac Ave, North Haven, CT 06473
National Auto Transport	683 State St #205, New Haven, CT 06511
Cottrell Truck Lines	6 Horton Pl, West Haven, CT 06516
UPS Freight	130 N Plains Industrial Rd, Wallingford, CT 06492
Severance Trucking Co Inc	126 Quinnipiac Ave, North Haven, CT 06473
StratChem Logistics LLC	67 Welton St, New Haven, CT 06511
Island Transportation Company	1070 Universal Dr N, North Haven, CT 06473
Anastasio Group	80 Middletown Ave, New Haven, CT 06513
Krb Trucking LLC	150 Powdered Metal Dr rd, East Haven, CT 06513
Island Transportation Corporation	1070 Universal Dr N, North Haven, CT 06473
TRC Logistics, LLC	46 Sunrise Hl, Meriden, CT 06451
Perez Family Logistics LLC	29 Putnam St, Meriden, CT 06450
Fenichey LLC	20 N Plains Industrial Rd Ste 4, Wallingford, CT 06492
Paramount Transportation Systems	90 N Plains Industrial Rd, Wallingford, CT 06492
AMA Transportation	210 E Johnson Ave, Cheshire, CT 06410
Dosdick Fulfillment Corp	26 Barnes Industrial Park Rd, Wallingford, CT 06492
Challenger Freightways LLC	718 N Colony Rd, Wallingford, Ct 06492
Saia LTL Freight	148 Boston Post Rd, Orange, CT 06477
Pullen Trucking Inc	270 Bassett St, New Haven, Ct 06511
Unlimited1 Transport	7 Paul Ave, West Haven, Ct 06516
Anastasio Group	80 Middletown Ave, New Haven, CT 06513

Almighty Logistics	164 Park St, West Haven, CT 06516
Gallicchio Trucking Corp	97 Hyde St, New Haven, CT 06512
Santiago Trucking LLC	107 High St, East Haven, CT 06512
R Cerilli Trucking	83 N Hill Rd, North Haven, Ct 06473
Atlantic Trucking Inc.	15 Coachman Dr, Branford, CT 06405
S&S Trucking	41 Rose Hill Rd, Branford, CT 06405
VDI Freight Transportation Services	7 Eaton Woods Rd, Hamden, CT 06518
N&N Services Inc.	321 Indian River Rd, Orange, CT 06477
New England Warehousing	82 W Clark St, West Haven, CT 06516
Turpin Transportation Company	775 Washington Ave, West Haven, CT 06516
FedEx Freight	161 Marsh Hill Rd, Orange, CT 06477
Moshe Cohen Cargo and Freight LLC	364 Putnam Ave, Apt 10, Hamden, CT 06517, USA.
Bowens Freight LLC	152 Country Hills Road, Hamden, CT 06514
TFORCE freight Inc.	130 N Plains Industrial Rd, Wallingford, CT 06492-2388
Nova Transportation Inc.	45 Ciro Rd, North Branford, Ct 06471
Olsen Transportation LLC	625 E Main St Ste 3, Branford, Ct 06405
Farace Industries LLC	21 Ciro Rd, North Branford, CT 06471
SC Ballard LLC	2450 Foxon Rd, North Branford, CT 06471-1513
Amazon Fulfillment	409 Washington Ave, North Haven, CT 06473-1307

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