CAMBRIDGE SYSTEMATICS

CORE MPO REGIONAL FREIGHT TRANSPORTATION PLAN UPDATE

Economic Development & Freight Advisory Committee (EDFAC) Meeting

presented to

Coastal Region Metropolitan Planning Organization (CORE MPO)

presented by

Cambridge Systematics, Inc.

with AECOM and Symbioscity

October 20, 2022

AGENDA

- *Introductions*
- *Study Overview*
- *Needs Assessment*
- *Stakeholder Outreach*
- *Next Steps*

PURPOSE

- Purpose of today's meeting
  - » Provide an update on the Needs Assessment, Stakeholder Outreach, and other key technical tasks
  - » Gather feedback on draft results
  - » Outline next steps and remaining tasks

STUDY OVERVIEW

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KEY TECHNICAL TASKS

- Project Management & Coordination/ Stakeholder Outreach
- Land Use Assessment
- Environmental and Community Impact Scan and Analysis
- Final Recommendations
- Freight Needs Assessment and Analysis
- Economic Development and Market Assessment
- Recommendations for Future Land Uses
- Final Report

FREIGHT NEEDS ASSESSMENT AND ANALYSIS

- REGIONAL FREIGHT PROFILES AND ASSESSMENT
- TRUCK PARKING INVENTORY AND TRUCK RESTRICTIONS
- FREIGHT RESILIENCY
- EXISTING/FUTURE FREIGHT AND GOODS MOVEMENT ASSESSMENT
- FREIGHT PERFORMANCE MEASURES
- FORECAST FUTURE FREIGHT GROWTH
- FREIGHT NETWORK CONGESTION, BOTTLENECKS, AND SAFETY AND SECURITY

NEEDS ASSESSMENT: FREIGHT PROFILES, TRUCK PARKING, & RESILIENCY

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FREIGHT PROFILES AND ASSESSMENT

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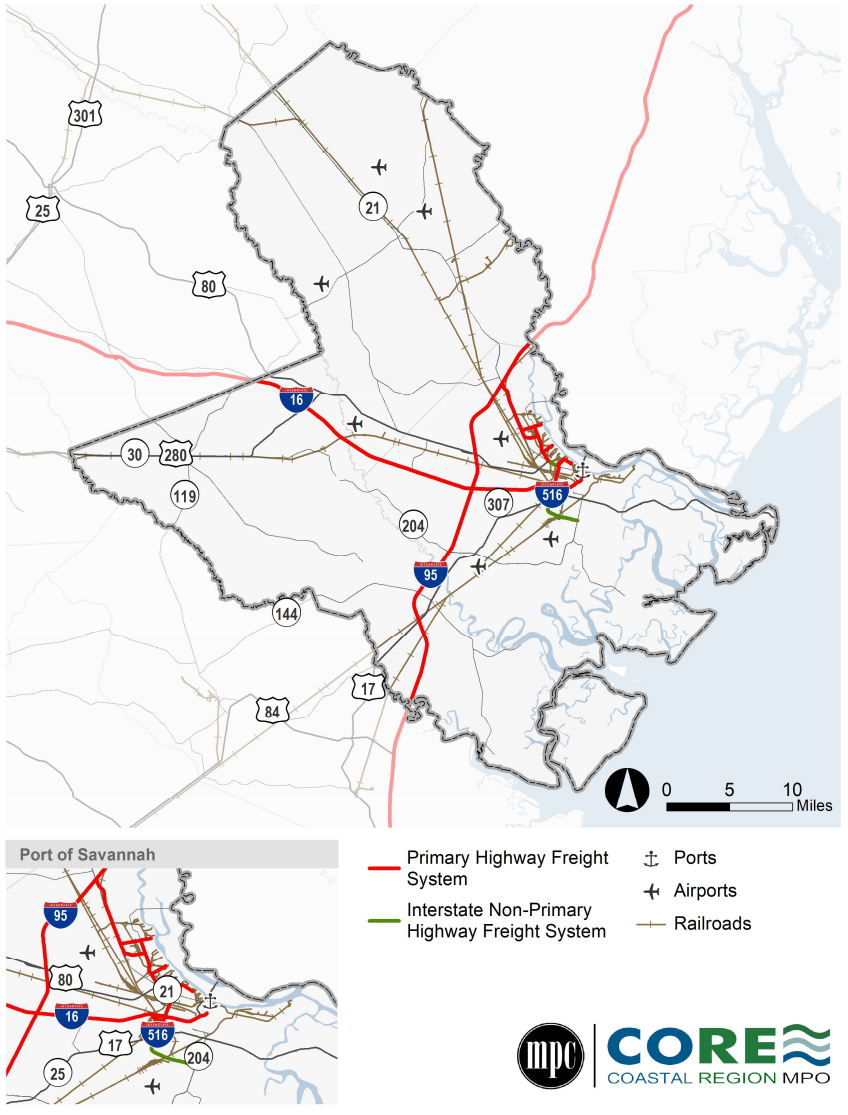
OVERVIEW OF THE NETWORK ELEMENTS

- **Marine** – Port of Savannah and the Savannah River
- **Aviation** - 1 commercial service airport that serves freight; 6 privately owned airports that do not handle cargo.
- **Roadway** - 8,700 miles and connects multimodal and intermodal facilities while providing truck access.
- **Rail** - Spans 279 miles with 2 Class I and 7 Class III railroads, 3 intermodal rail terminals including the Mason Mega Rail Terminal, several bulk and other rail terminals



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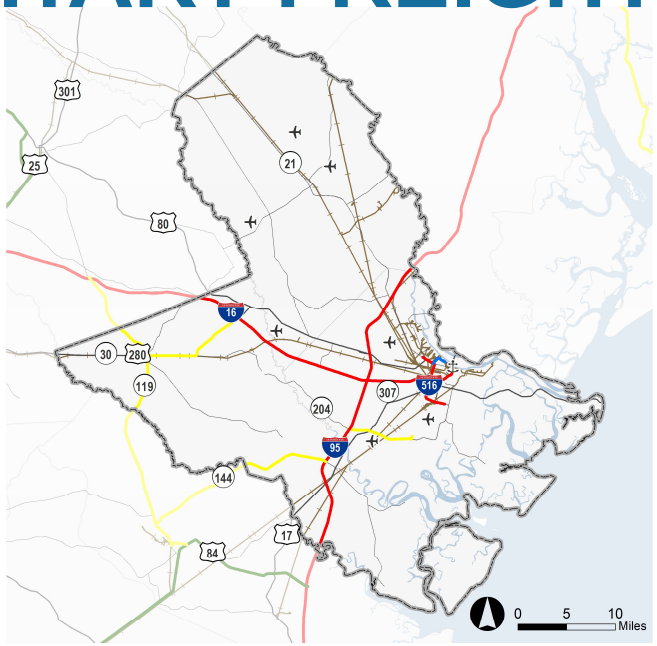
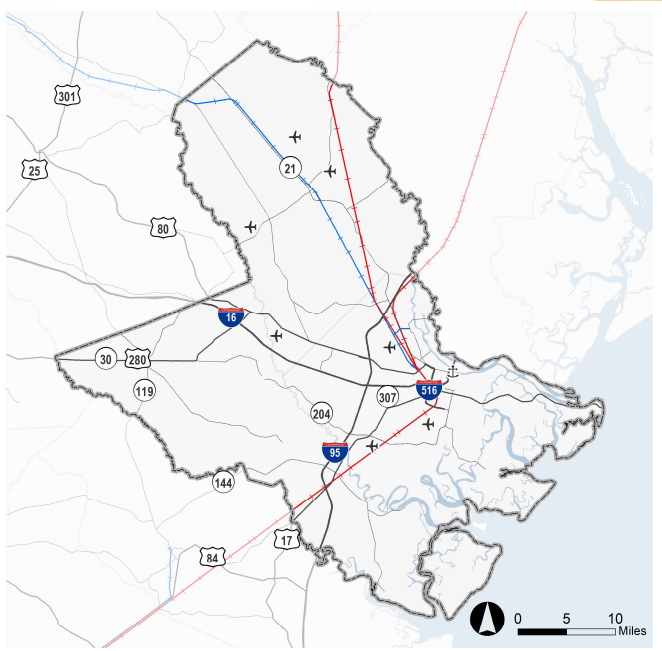
OVERVIEW OF THE NETWORK ELEMENTS: MILITARY FREIGHT





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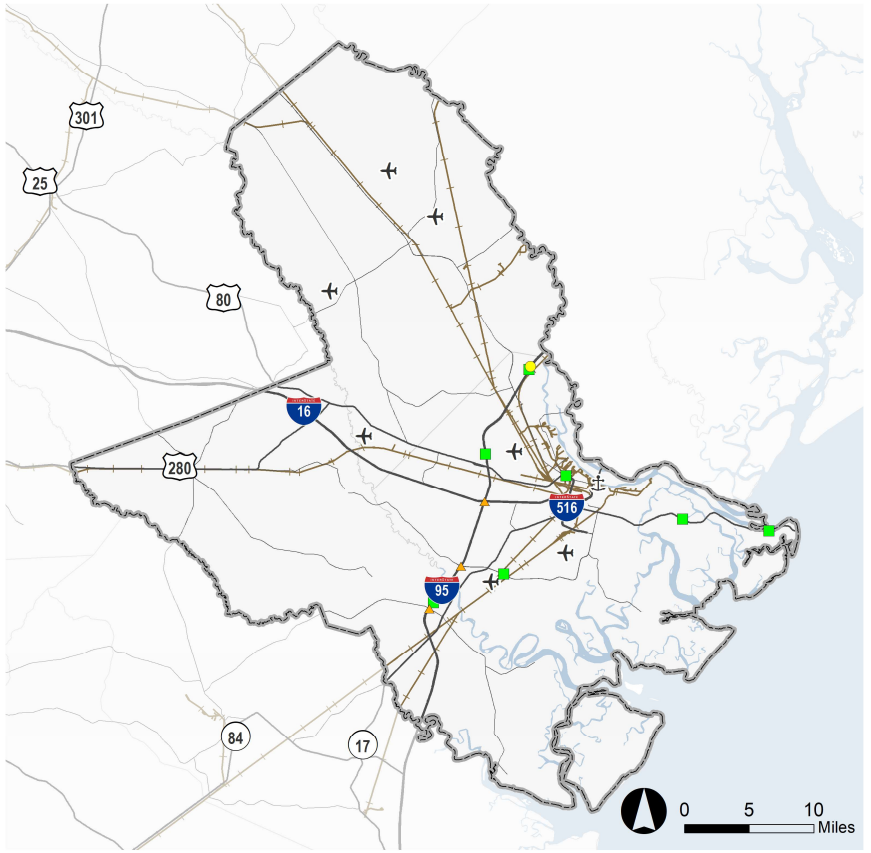
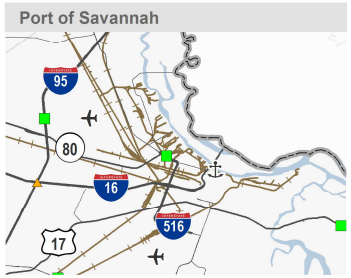
INTELLIGENT TRANSPORTATION SYSTEM (ITS) ASSETS

Device	Description	Count
Closed-Circuit Television (CCTV) Camera	CCTV cameras provide coverage on high-traffic corridors and allow for quick response times to incidents on the road network.	77
Dynamic Message Signs (DMS)	Dynamic message signs display important messages to drivers on key corridors.	7
Weigh in Motion Stations (WIM)	WIM stations capture and record truck axle weights and gross vehicle weights as they drive over a sensor.	6
Classification Count Stations (CCS)	Classification count stations provide information on both the volume and type of vehicles traversing a section of roadway.	15
Radar Detection System (RDS)	Radar detection systems provide information on traffic conditions such as volume and speed.	3
Environmental Sensor Stations (ESS)	Environmental sensor stations are fixed roadway locations with one or more sensors measuring atmospheric, surface (i.e., pavement and soil), and/or hydrologic (i.e., water level) conditions.	1





ITS Field Device

- Dynamic Message Sign (DMS)
- Environmental Sensor Station (ESS)
- Radar Detection System (RDS)
- Ports
- Airports
- Railroads

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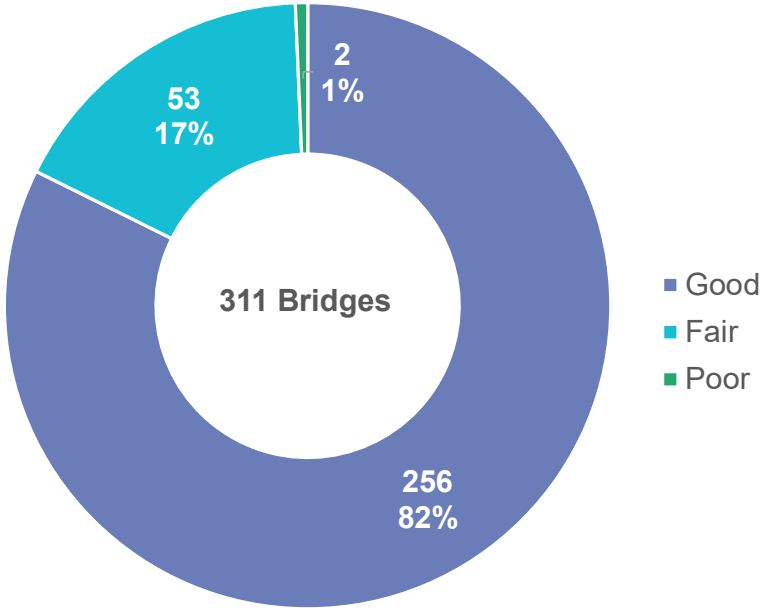
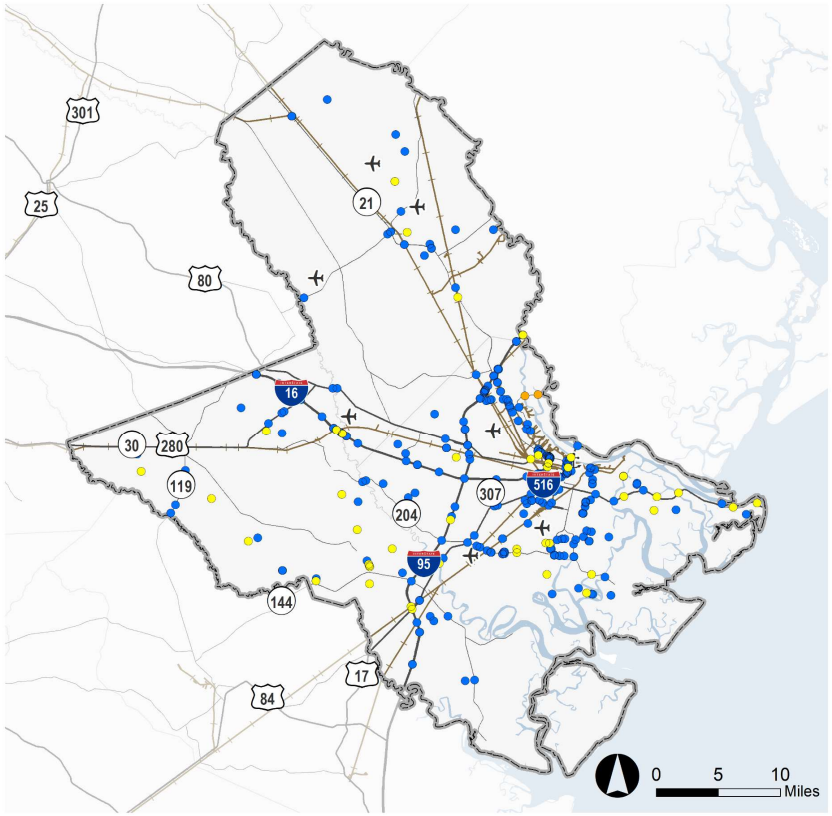
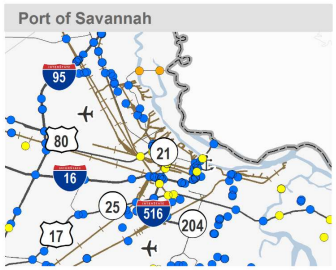
BRIDGES







Bridge Condition
- Good
- Fair
- Poor

- Ports
- Airports
- Railroads

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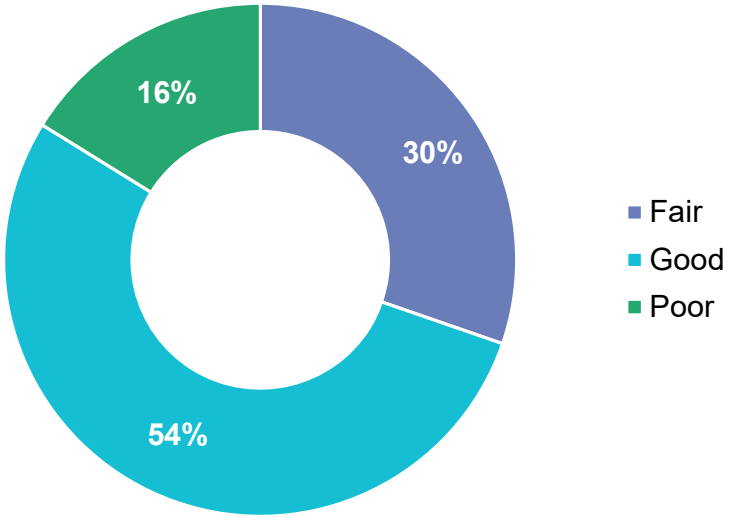
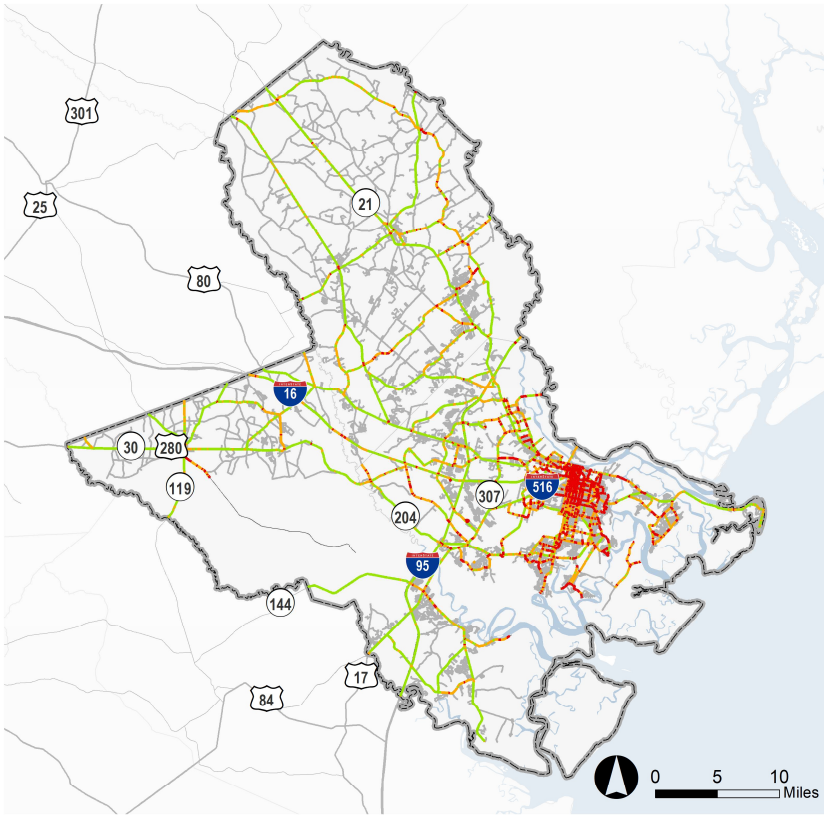
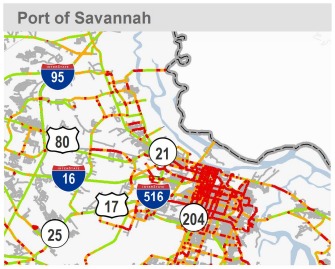
PAVEMENT CONDITIONS

Percent of Lane-Miles by Condition



Roadway Type	Minor Collector	Major Collector	Minor Arterial	Principal Arterial	Interstate
Good	49.6%	39.0%	46.0%	56.1%	84.7%
Fair	38.0%	38.9%	29.9%	32.3%	12.9%
Poor	12.5%	22.1%	24.1%	11.5%	2.4%
Total	100.0%	100.0%	100.0%	100.0%	100.0%





Pavement Conditions

- Not Reported
- Good
- Fair
- Poor

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TRUCK TRAVEL TIME RELIABILITY

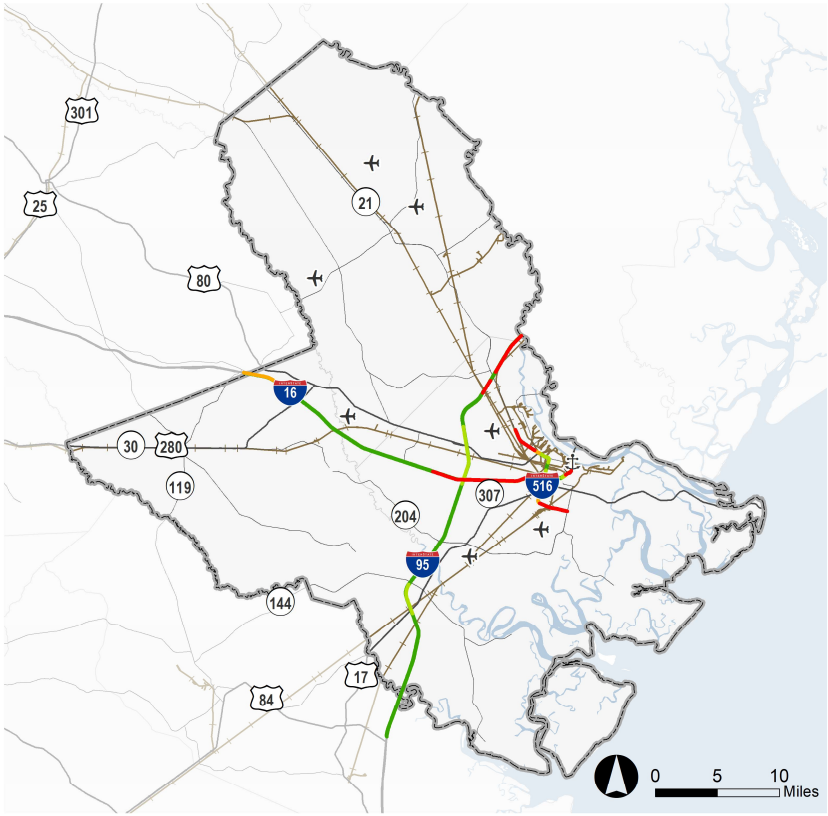
- Reliability is captured by the Truck Travel Time Reliability (TTTR) metric.
  - » High TTTR values indicate unreliable truck travel times; low values indicate reliable travel times.

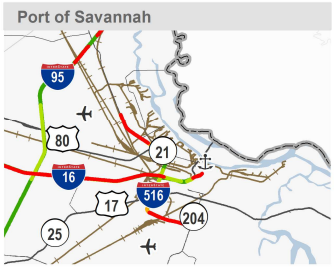
Weighted Avg. TTTR by Interstate

Interstate	AM Peak TTTR	Midday TTTR	PM Peak TTTR
I-16	1.37	1.63	1.32
I-95	1.06	1.13	1.15
I-516	1.46	1.45	1.73

TTTR by Interstate by Share of Interstate Directional Miles

Analysis Period	1.0 - 1.3	1.3 - 1.6	1.6 - 2.0	>= 2.0	Total
	Percent of Interstate Highway Directional Miles				
AM Peak	85.7%	4.1%	3.6%	6.7%	**100.0%**
Midday	76.7%	5.2%	8.2%	10.0%	**100.0%**
PM Peak	78.4%	7.1%	5.7%	8.8%	**100.0%**





Maximum TTTR
- 1.0 - 1.3
- 1.3 - 1.6
- 1.6 - 2.0
- 2.0 or Greater

Ports
Airports
Railroads

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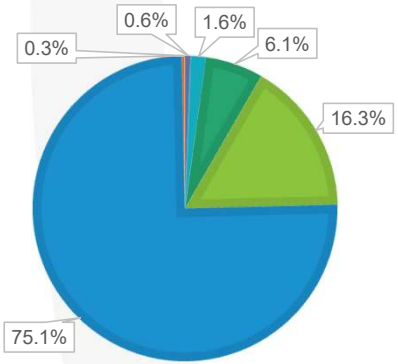
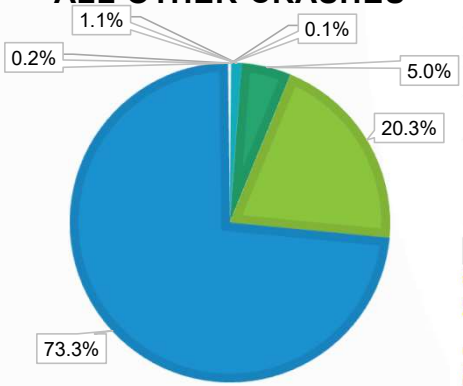
TRUCK CRASHES

- From 2016-2020, there were 3,716 truck crashes – about 6.5% of all crashes
- About 2.2% truck crashes resulted in a serious injury or fatality compared to 1.2% of all other crashes

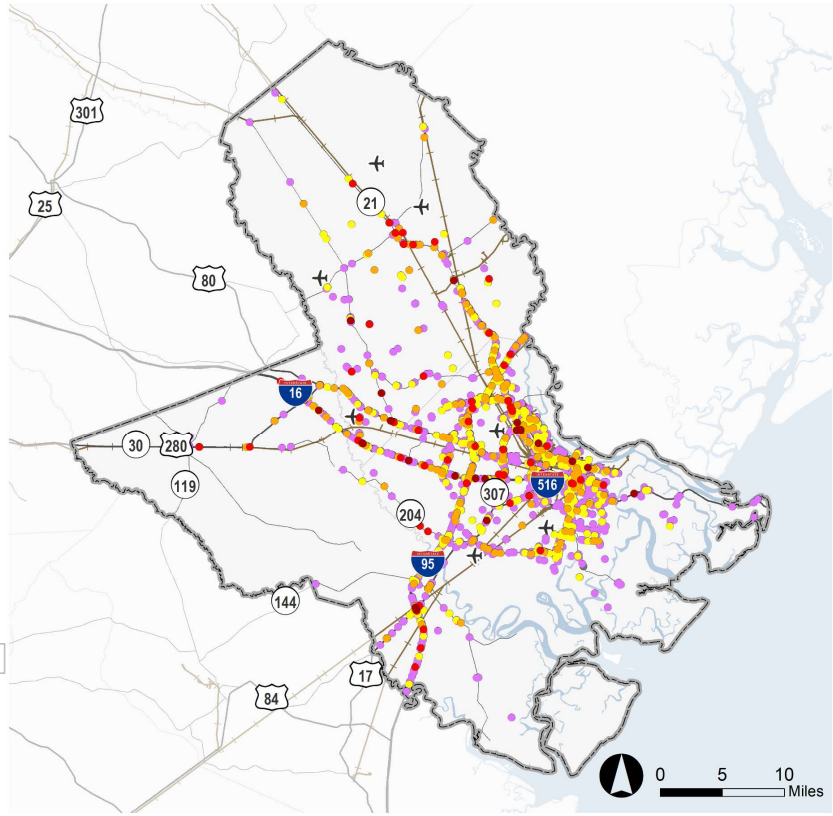
TRUCK-INVOLVED CRASHES

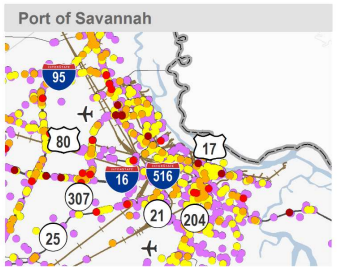


ALL OTHER CRASHES



- (K) Fatal Injury
- (A) Suspected Serious Injury
- (B) Suspected Minor/Visible Injury
- (C) Possible Injury / Complaint
- (O) No Injury
- Unknown





Crash Severity

- (K) Fatal Injury
- (A) Suspected Serious Injury
- (B) Suspected Minor/Visible Injury
- (C) Possible Injury / Complaint
- (O) No Injury
- Unknown

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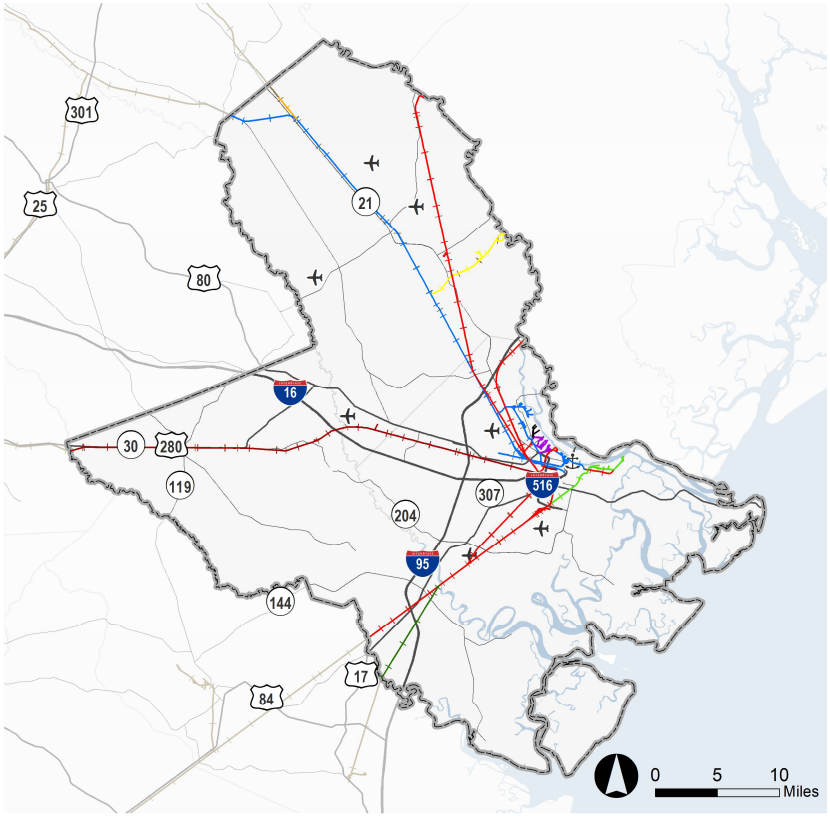
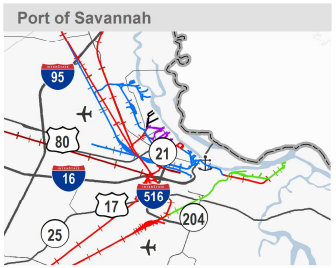
FREIGHT RAIL

- Class I Railroads
  - » Largest carriers operating over longer distances
- Class III Railroads
  - » Short-line carriers providing direct, last-mile connections

Railroad	Miles
Class I Railroads	
CSXT Transportation (CSXT)	104.0
Norfolk Southern Railway Company (NS)	80.5
Class III Railroads	
Georgia Central Railway (GC)	42.9
Savannah Port Terminal Railroad (SAPT)	15.3
PVTX	11.0
Savannah & Old Fort Railroad (SVHO)	10.3
Riceboro Southern Railway (RSOR)	8.8
Ogeechee Railroad Company (ORC)	2.3
Allegheny & Western Railway Company (AWRY)	3.6
Total	**278.9**





Railroad
CSXT
NS
AWRY
GC
ORC
PVTX
RSOR
SAPT
SVHO

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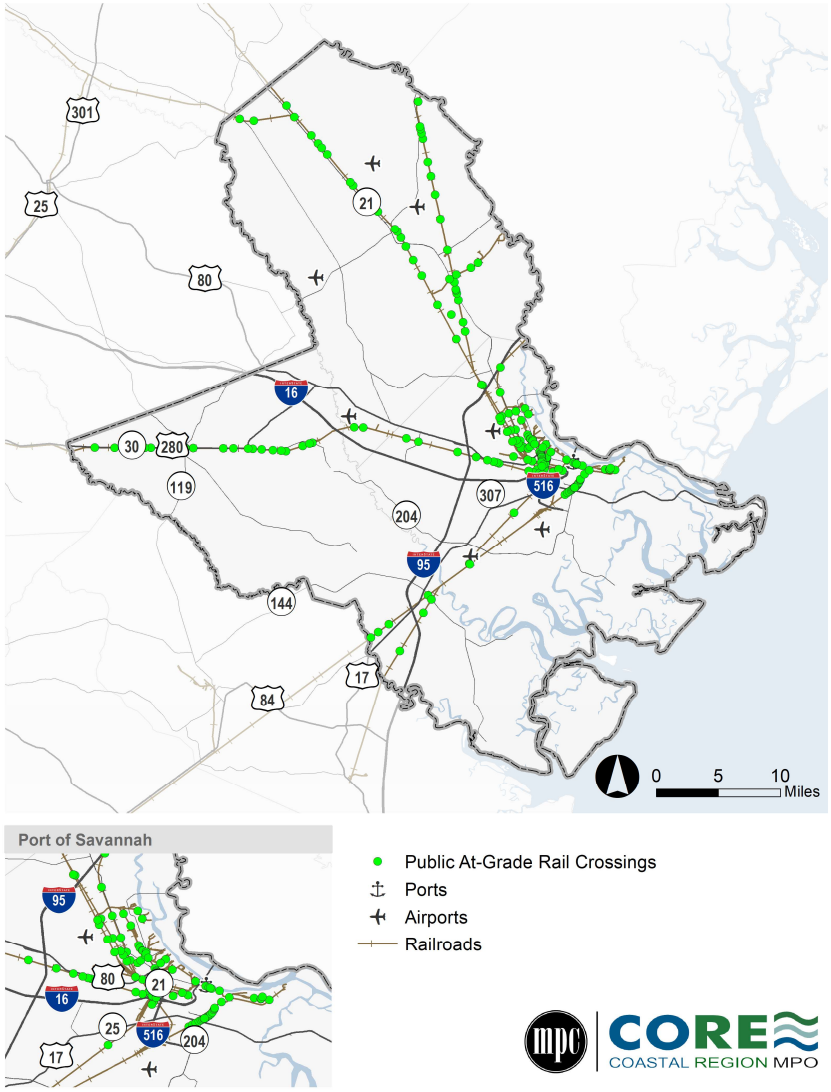
AT-GRADE RAIL CROSSINGS

- Points where the highway and rail systems interact, and have the potential for conflicts
- Challenges of at-grade crossings
  - **Delays** to trucks and other vehicles
  - **Emissions** from vehicles idling at crossings
  - **Safety** as trains may collide with vehicles, pedestrians, or other roadway users
- 192 public at-grade rail crossings in the region



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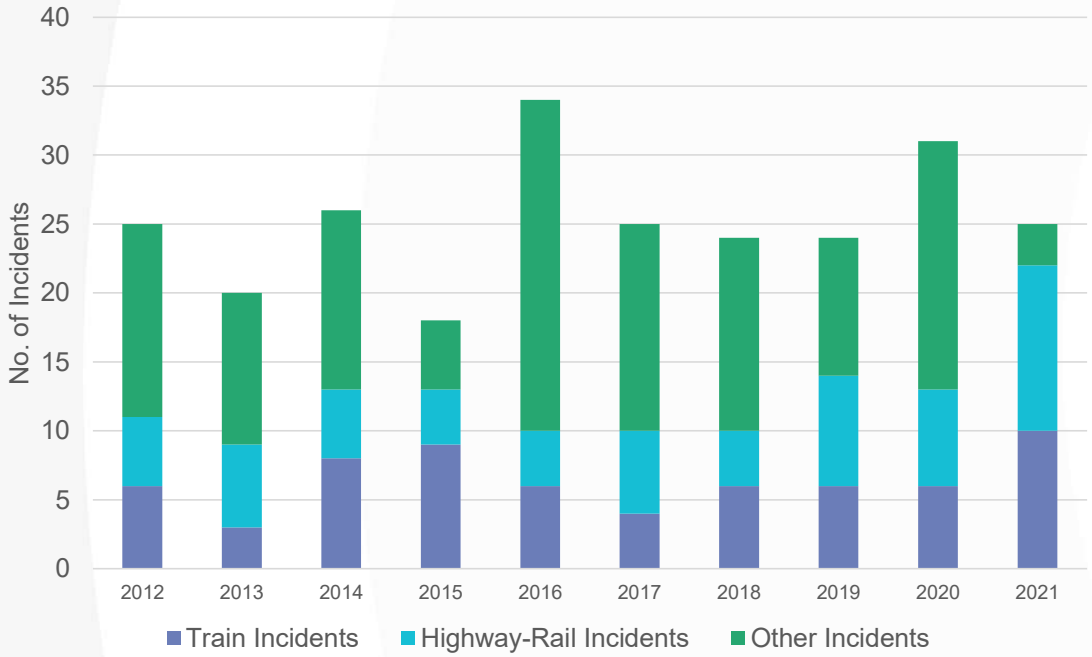
RAIL SAFETY



- Train Incident = Train collisions, derailments, etc.
- Highway-Rail Incident = Trains hit or are struck by cars, bicycles, or pedestrians at highway-rail grade crossings.
- Other Incident = Employee work-related injuries and trespasser injuries.

- Incidents resulting in fatalities have decreased
  - » No fatal highway-rail crossing incidents since 2016
- Despite the reduction in the severe crashes, the overall rate of incidents remains relatively steady.

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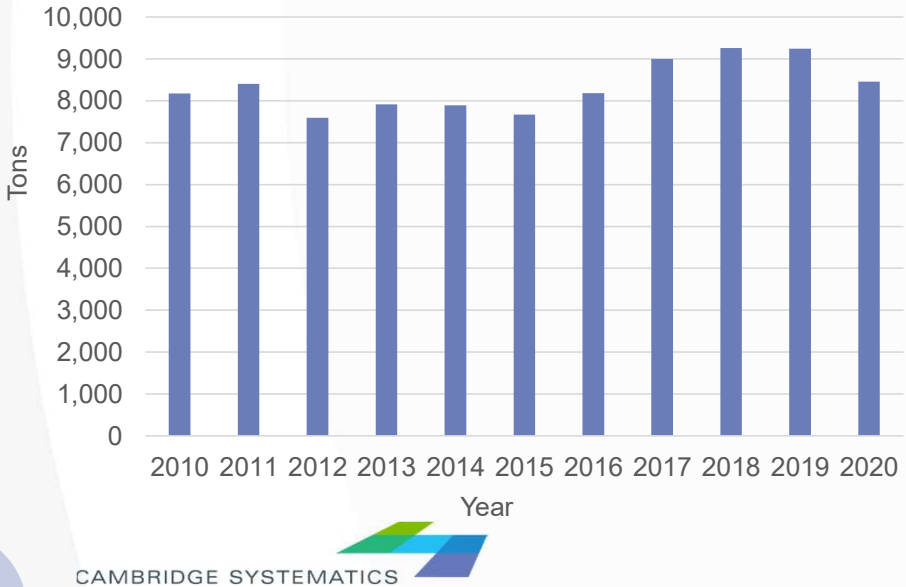
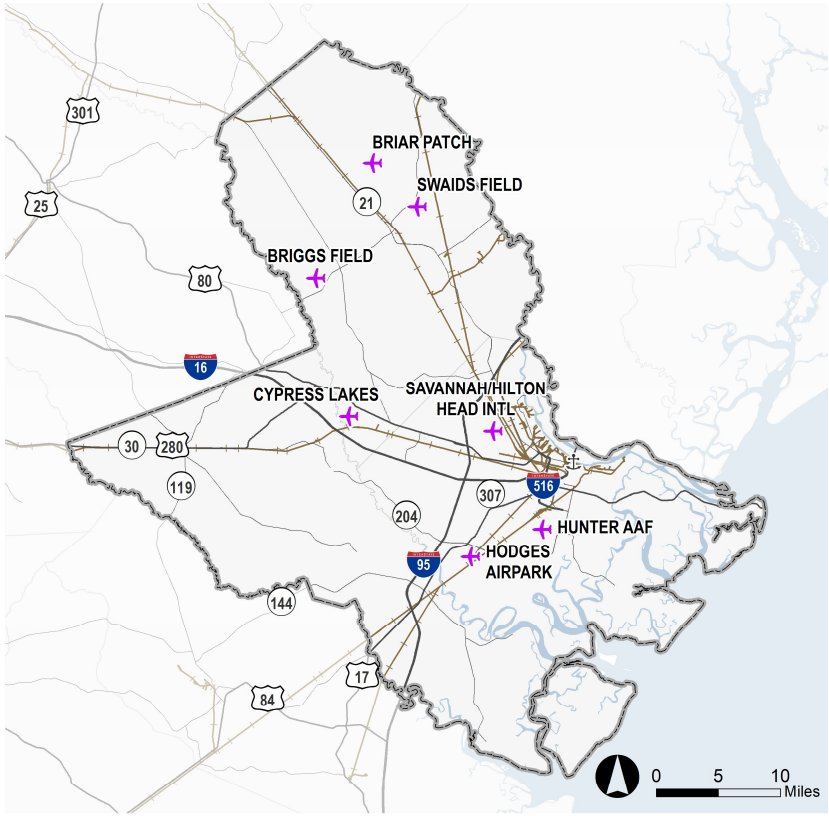
AIR

- The region has seven airports, but only the Savannah-Hilton Head Intl. Airport (SAV) serves cargo.
- There is about 138,000 SF of air cargo warehouse space at SAV.
  - 80,000-SF general cargo building
  - 58,000-SF air cargo facility dedicated to a single tenant.





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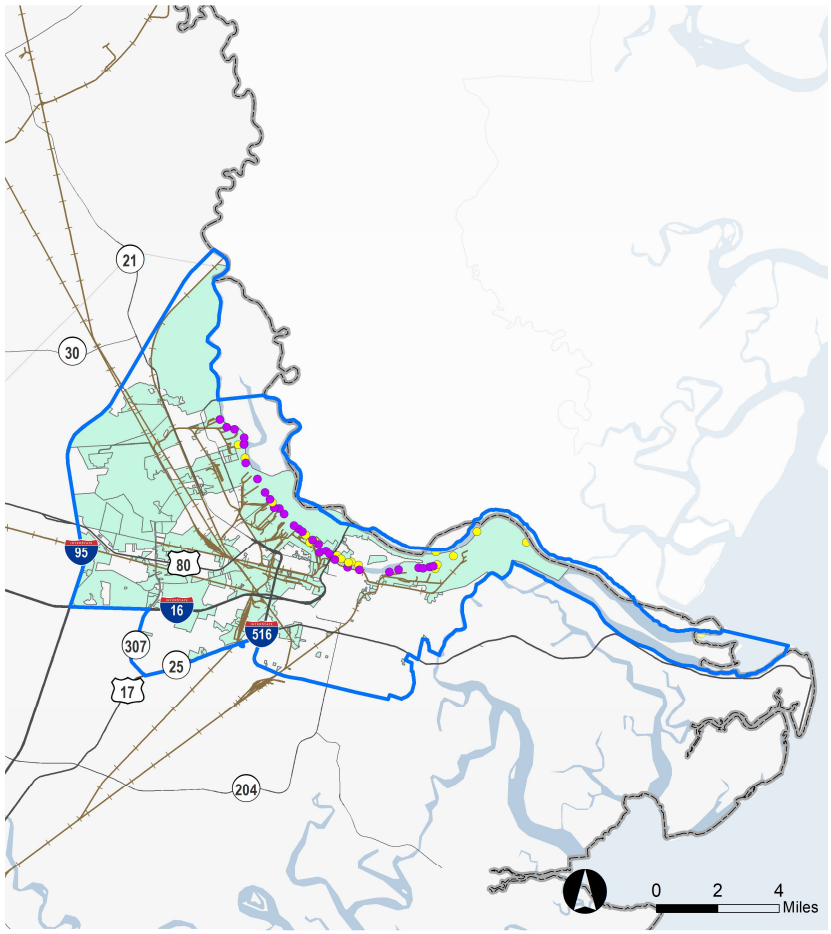
MARINE

- The Savannah River and the Port of Savannah provide a valuable waterborne connection to national and international markets.
- The Port is the largest and fastest growing container terminal in America and the 3rd busiest container port complex in the nation.
- It is the largest gateway for agricultural exports.



Source: Georgia Ports Authority, https://gaports.com/facilities/port-of-savannah/.

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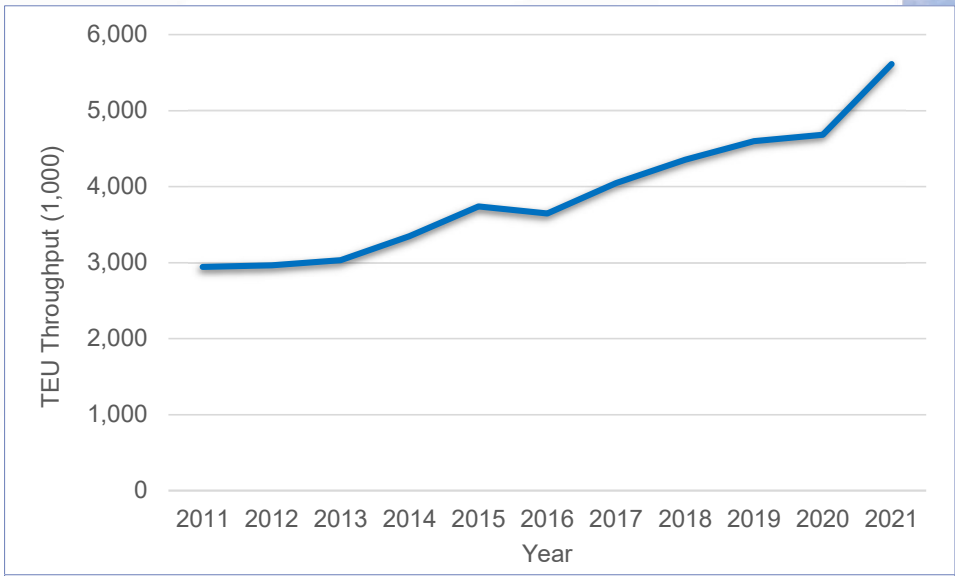
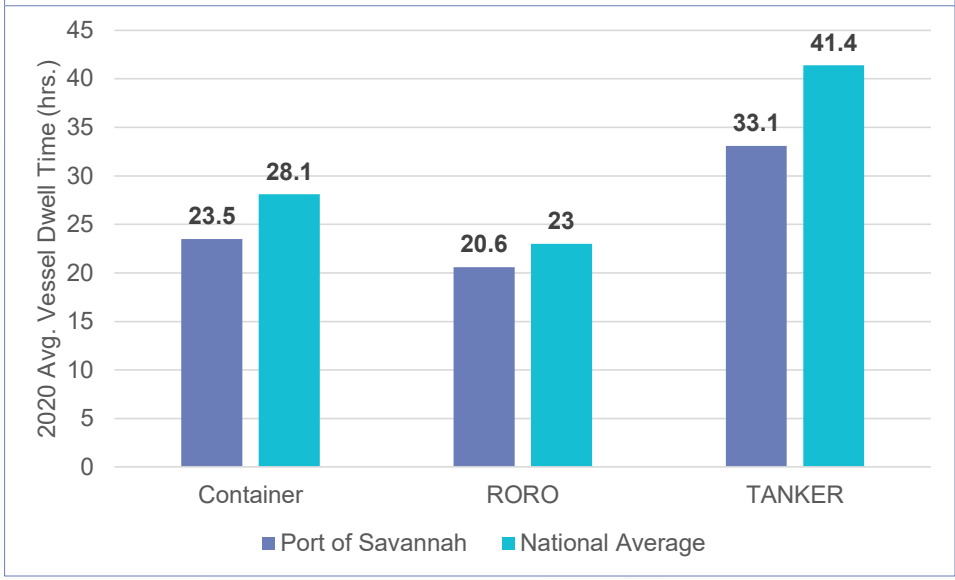
MARINE PERFORMANCE: THROUGHPUT & VESSEL DWELL TIMES

- Throughput
  - Measured in the number of import, export, and empty containers (TEUs) processed
  - Throughput has steadily increased about 90% over the 2011-2021 time period
- Vessel Dwell Times
  - Dwell time is the amount of time a vessel spends in a port and is a major factor contributing to cargo throughput and performance.
  - The Port of Savannah outperforms the national average for top U.S. ports

Source: Bureau of Transportation Statistics, Port Performance Freight Statistics Program.





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PORT OF SAVANNAH PLANNED CAPACITY INVESTMENTS

Ship-to-Shore Cranes

- The Garden City Terminal will receive 8 additional ship-to-shore cranes.

Garden City Terminal West Expansion

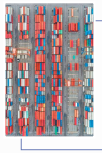
- Garden City Terminal West will be expanded to include a container yard with a capacity of 750,000 TEUs.

SR 21 Chassis Yard

- A 25-acre chassis yard is along SR 21.

Cross Dock Facility

- The Port will add a transloading facility on a 90-acre parcel upriver from Garden City Terminal.



Peak Capacity Project

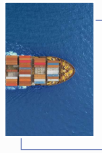
- This project is located along SR 25 and will add 1.2 million TEUs of annual capacity. It includes three new rubber-tired gantry crane rows and 2,100 container slots.

Berth 1 Improvements

- This project will add a new dock which will provide a new big ship berth and allow the Port to simultaneously serve four 16,000-TEU vessels and three additional ships.

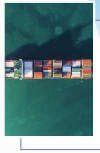
Northeast Georgia Inland Port

- This project will develop an inland rail yard in Hall County, providing a rail alternative for shippers in and near northeast Georgia.



Savannah Container Terminal

- A new facility on Hutchinson Island that will provide an additional 2.7 million TEUs of capacity.



Jasper Ocean Terminal

- A new facility in Jasper County, SC that would include a marine container terminal on an approximately 1,500-acre site about 8 miles upriver from the Garden City Terminal.

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TRUCK PARKING INVENTORY AND FREIGHT RESTRICTIONS

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TRUCK PARKING

10-hour Federally Mandated Rest Break

Long-haul drivers are on the road days and sometimes weeks at a time traveling across the country. They need safe places to rest for their federally mandated 10-hour breaks.

2+ Hour Staging

Truck drivers picking up and delivering freight at manufacturing plants, warehouses and distributions centers, border crossings, and seaports/airport "drayage" need a place to park to await the window of time to pick up, deliver, or cross the border.

30-minute Federally Mandated Break

As part of the federally mandated 30-minute breaks, the driver must be off-duty, meaning that they are relieved of all responsibilities and will not have to move the truck for any reason.

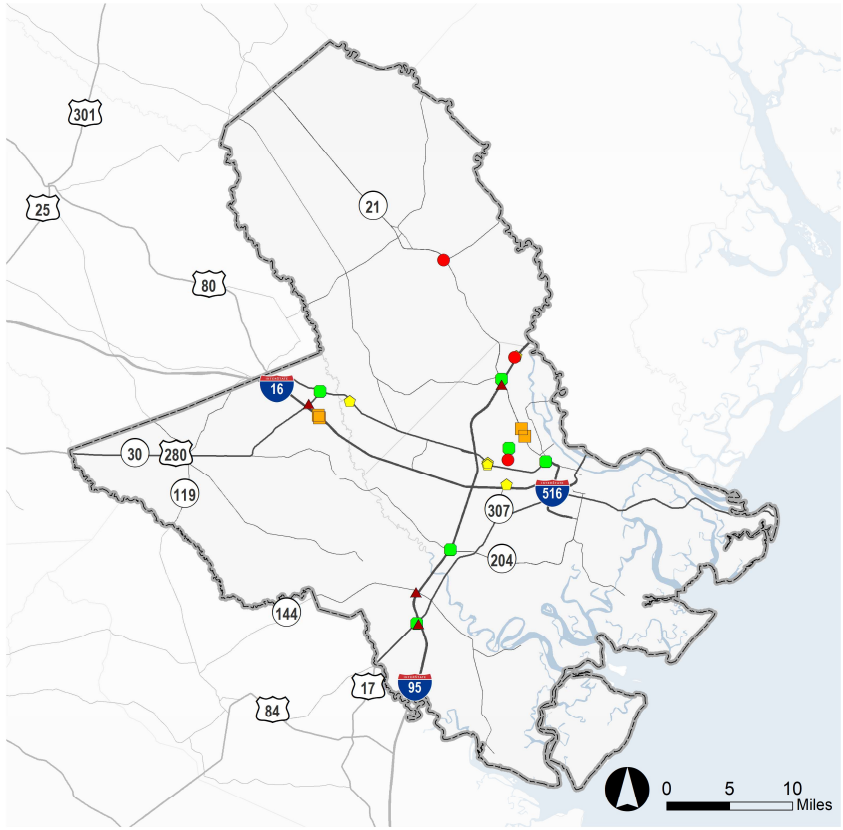
Emergency Road Closures

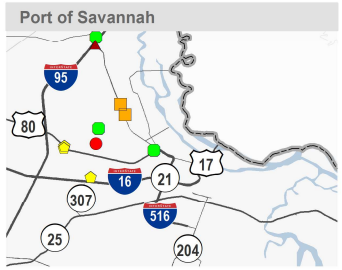
Drivers may be impacted by an incident that has either closed or severely congested the roadway, and they need a place to park.

Time off

Independent drivers don't have a company facility to provide parking during time off. They are done with their work week and need a place to park their truck while off-duty.

County	No. of Facilities	% of Total Facilities	No. of Spaces	% of Total Spaces
Bryan	7	31.8%	590	50.7%
Chatham	13	59.1%	474	40.8%
Effingham	2	9.1%	99	8.5%
Total	**22**	**100.0%**	**1,163**	**100.0%**





No. of Truck Parking Spaces

- 10 or Less
- 11 - 25
- 26 - 50
- 51 - 100
- 101 or More

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LOCAL REGULATIONS IMPACTING FREIGHT

- Local ordinances impacting freight include:
  - Trucks to operate only on designated routes or are generally restricted from local routes.
  - Prohibition of commercial vehicle parking within public right of way.
  - Prohibition on parking commercial vehicles carrying hazardous cargo within public right of way.
  - Engine brakes prohibited.
  - Blocking or obstruction of streets by trains prohibited.

Broad Restrictions
- Blanket restrictions on public right-of-way
- Blanket restrictions in residential zones

Weight
- Restrictions by vehicle capacity
- Restrictions by vehicle gross weight

Time
- Restrictions on overnight parking
- Parking duration limits

Other
- Restrictions by roadway speed limit
- Restrictions by number of vehicle axles

City or County	Prohibition on truck parking in public ROW	Designated truck routes or local restrictions	Trucks with hazardous cargo are restricted from parking on public ROW	Engine/jake brake prohibited	Trains stopping at at-grade crossings prohibited
Bryan County					●
Chatham County	●	●			●
Effingham County	●	●			●
Bloomingdale	●	●			●
Garden City	●	●			●
Pooler	●	●		●	●
Port Wentworth	●	●	●		●
Richmond Hill	●	●			●
Rincon	●	●	●		●
Savannah	●	●			●
Springfield	●	●			●
Thunderbolt	●	●			●

FREIGHT RESILIENCY

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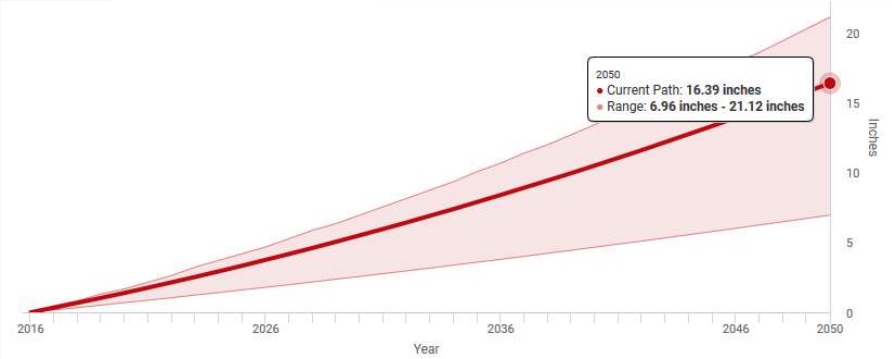
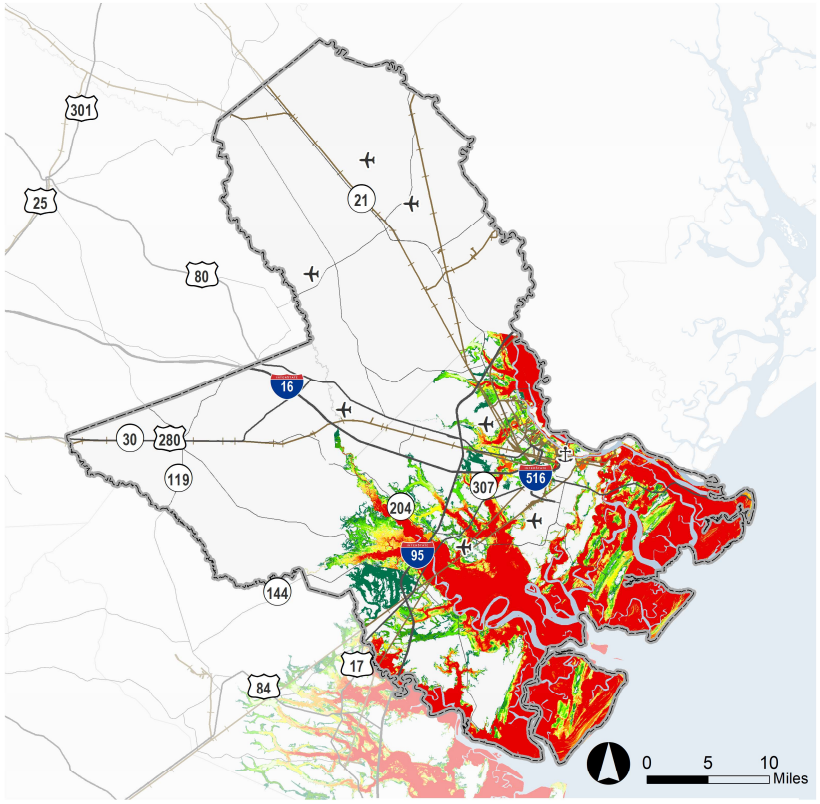
FREIGHT RESILIENCY

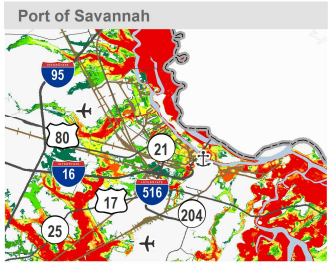
- Freight resiliency is the ability of the multimodal freight network to withstand disruptions with minimal impacts to safety and the economy.
  - » Identify 2-3 relevant hazards/risks for the CORE MPO region.
    - Sea Level Rise/ Coastal Flooding
    - Riverine Flooding
    - Hurricanes
  - » Assess the vulnerability of critical freight assets to those risks.
  - » Identify strategies to mitigate those risks

SEA LEVEL RISE / COASTAL FLOODING



- US Army Corps of Engineers high forecast curve (darkest red line) projects that the sea level around Georgia will increase over 16 inches between 2016 and 2050.
- Only 1 ft. of additional sea level rise is enough to inundate large portions of the region





Sea Level Rise Exposure

Inundation by 1ft	Inundation by 6ft
Inundation by 2ft	Inundation by 7ft
Inundation by 3ft	Inundation by 8ft
Inundation by 4ft	Inundation by 9ft
Inundation by 5ft	Inundation by 10ft

mpc | CORE COASTAL REGION MPO

Source: NOAA.

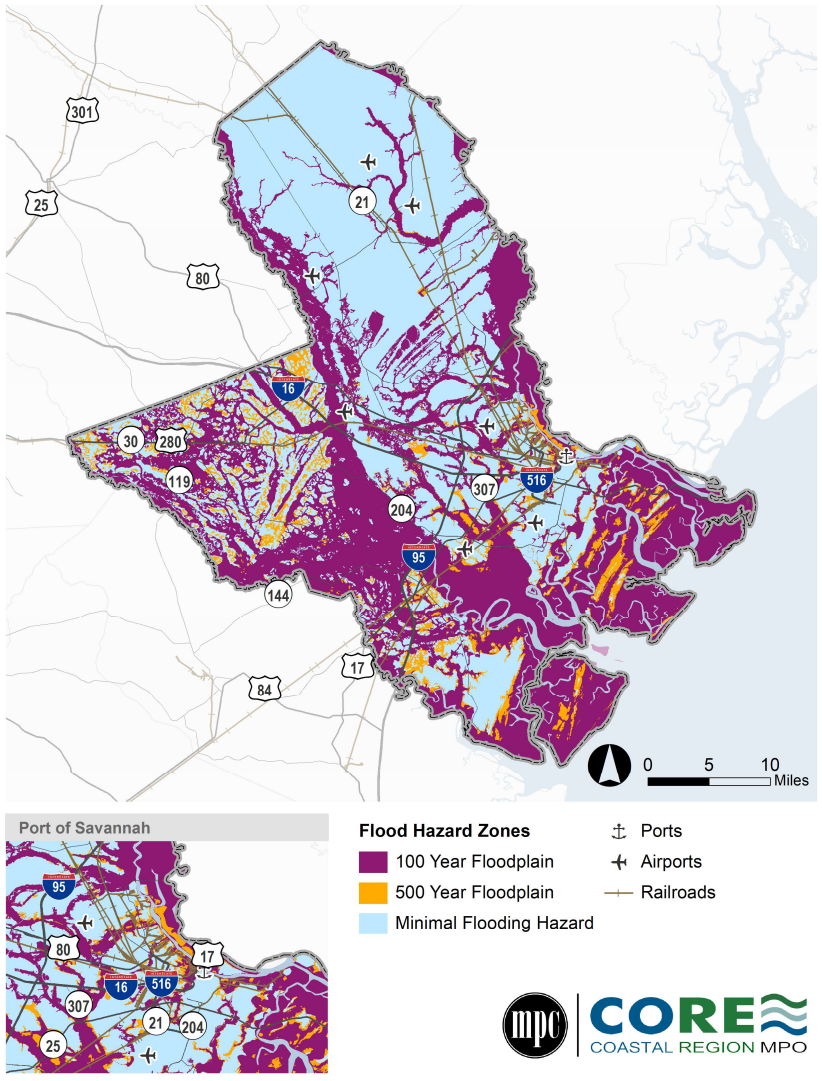
CAMBRIDGE SYSTEMATICS

RIVERINE FLOODING

Notable Flood Events in Georgia

Year	Area Affected	Recurrence Interval	Remarks
1881	Savannah Area	>100 years	335 deaths; $1.5 million in damages
1893	Savannah Area	>100 years	2,500 deaths; $10 million in damages
1929	Savannah, Ogeechee, and Altamaha Rivers	25 to >100 years	6–10 inches of rain; $3 million in damages
1940	Ogeechee and Savannah Rivers	10 to 75 years	25 deaths; $850,000 in damages; hurricane
1990	Savannah, Ogeechee, and Ohoopee Rivers	>100 years	FEMA Disaster 880; $7.6 million in damages, tropical storm
1991	Altahama, Apalachicola, Ochlockonee, Ogeechee, Satilla, and Savannah Rivers	25 to 50 years	FEMA Disaster 897; $3.4 million in damages
1994	Savannah area	25 to >100 years	FEMA Disaster 1042; 15 inches of rain $10.5 million in damages

Source: Georgia Statewide Transportation Plan; SHELDUS.



Source: Federal Emergency Management Agency.

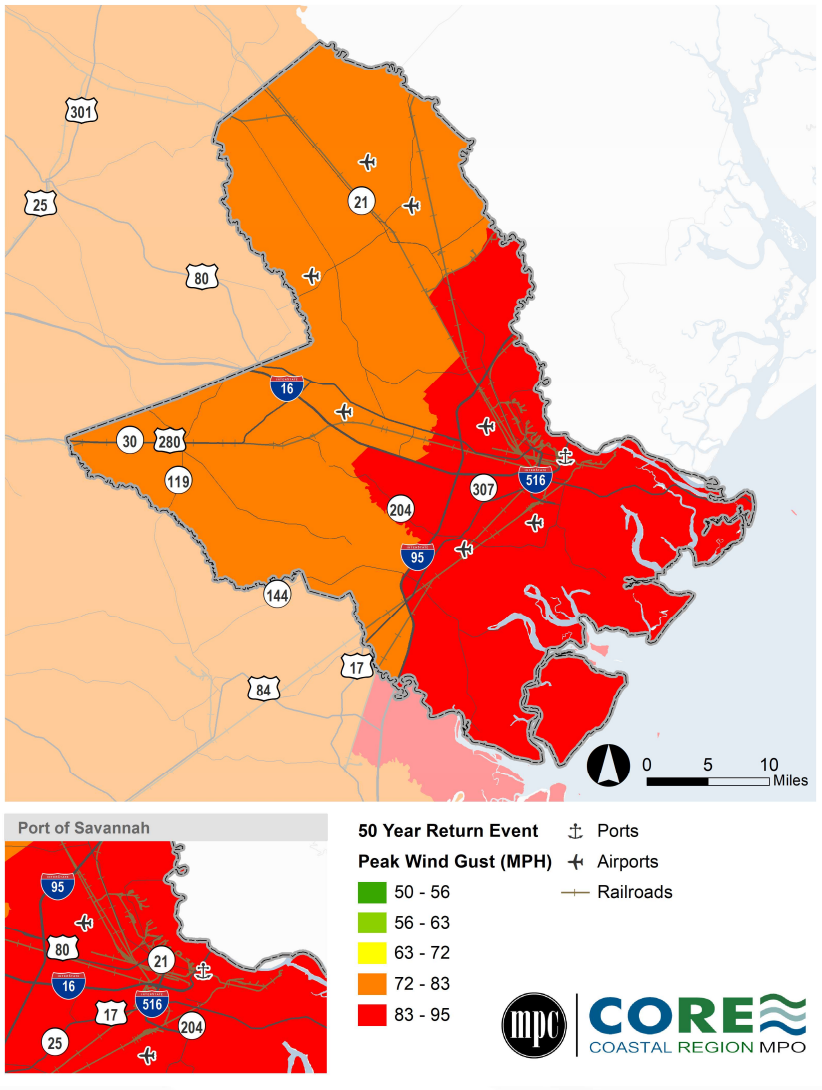
CAMBRIDGE SYSTEMATICS

HURRICANES

Notable Tropical Cyclone Events in Georgia

Year	Name	Area Affected	Details
1804	N/A	Savannah Area	Hutchison Island inundated; 3 deaths
1813	N/A	Coastal Georgia	28 deaths
1881	N/A	Savannah Area	$1.5 million in damages; 335 deaths
1893	N/A	Savannah Area	$10 million in damages; 1,000 deaths
1898	N/A	Coastal Georgia	Category 4; 120 deaths
1911	N/A	Coastal Georgia	18” of rain in 24 hours
1928	N/A	Savannah Area	11” of rain
1940	N/A	Coastal Georgia	>$1 million in damages
1947	N/A	Savannah Area	>$2 million in damages
1959	Gracie	Coastal Georgia	$5 million in damages
1964	Dora	Coastal Georgia	Death Rate 177; $8 million in damages
1979	David	Coastal Georgia	2 deaths
1994	Alberto	Statewide	FEMA Disaster1033; Extreme flooding on Flint and Ocmulgee Rivers; >$400 million in damages
2004	Frances, Ivan, and Jeanne	Statewide	FEMA Disaster 1554 and 1560; Wind/rain damage in 107 counties
2005	Dennis	Statewide	Wind/rain damage; Flooding
2016	Matthew	Coastal Georgia	FEMA Disaster 4284; Wind/rain/coastal flooding in 20 Southeast Georgia counties; $175 million in damages
2017	Irma	Statewide	FEMA Disaster 4338; Wind/rain/coastal flooding affecting all 159 Georgia counties; 1.5 million out of power; 5 fatalities; est. $150 million in uninsured damages

Source: Georgia Statewide Transportation Plan; SHELDUS.



CAMBRIDGE SYSTEMATICS

DRAFT APPROACH: QUANTIFYING RISK FOR THE CORE MPO REGION

1

Federal Emergency Management Agency (FEMA) National Risk Data

- FEMA produced a comprehensive national risk assessment across 18 hazards
- It defines a National Risk Index (NRI) which is the risk weighted by sociodemographic factors

2

Define Georgia Specific Risk Thresholds

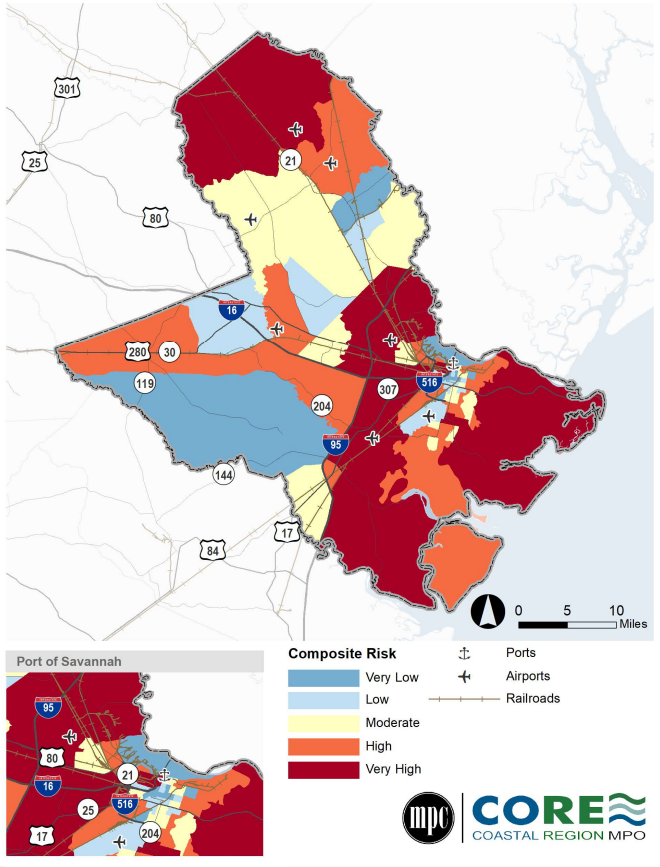
- Re-scale the risk component of NRI (i.e., “Expected Annual Loss”) to be specific to Georgia
- “Expected Annual Loss” is the average economic loss in dollars resulting from natural hazards each year

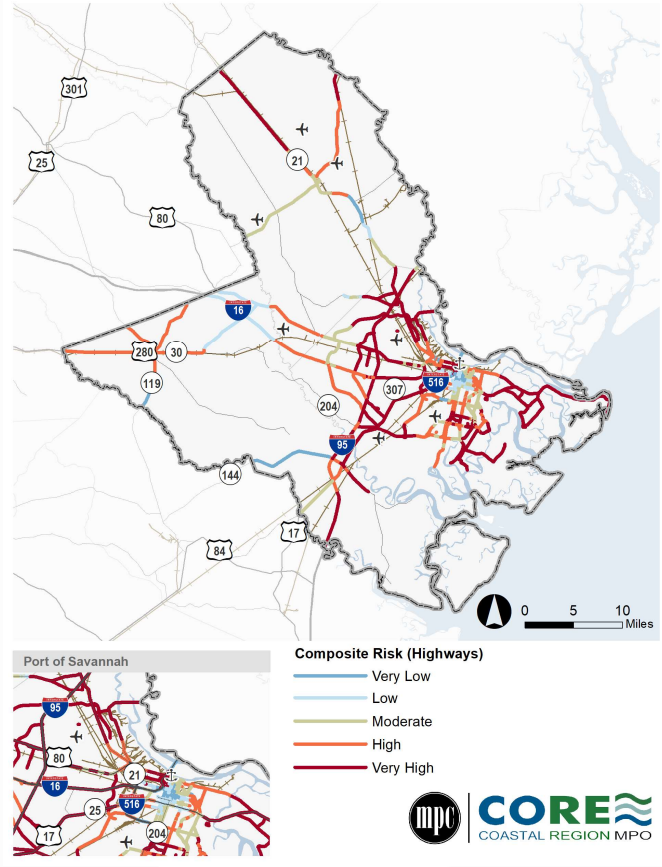
3

Calculate Composite Risk for CORE MPO

- With Georgia-specific thresholds, we can calculate a composite risk
- The composite risk is the summation of risk across all hazards

DRAFT COMPOSITE RISK LEVELS





CAMBRIDGE SYSTEMATICS

NEEDS ASSESSMENT: NEXT STEPS & ONGOING TASKS

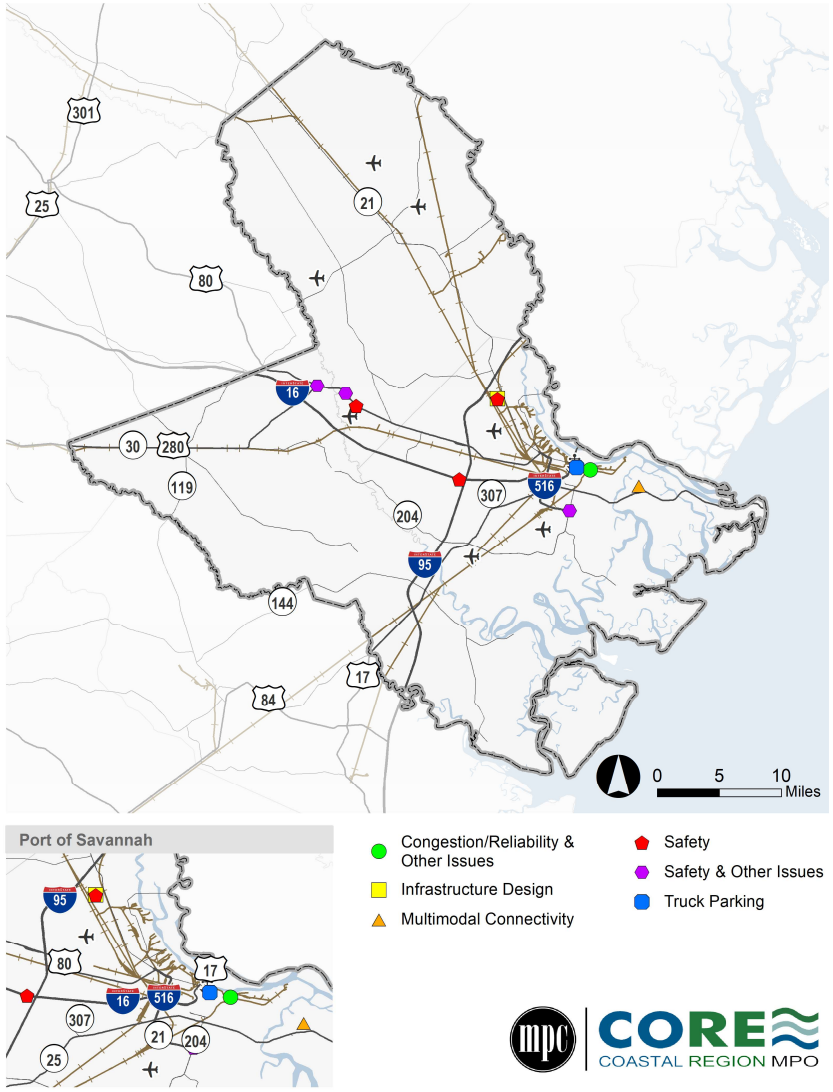
- Existing and Future Goods Movement Assessment
  - » Base year and forecast year commodity flows
- Future Freight Growth
  - » Forecast flows, other growth trends
- Freight Resiliency
  - » Supply chain analysis
- Freight Network Congestion, Bottlenecks, and Safety and Security
  - » Freight bottlenecks, crash rates

STAKEHOLDER OUTREACH

CAMBRIDGE SYSTEMATICS

CURRENT OUTREACH ACTIVITIES

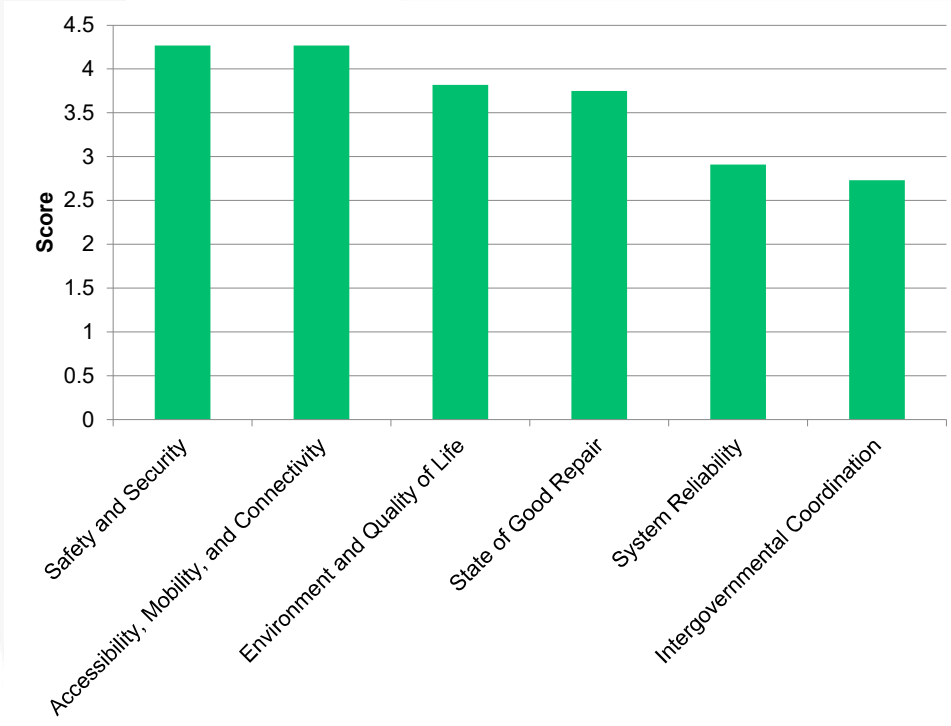
- Stakeholder Interviews
  - 5 one-on-one interviews conducted to date with more planned
  - Common themes
    - Freight-oriented growth along I-16 to the west, SR 21 to the north, and President St. to the east
      - Hyundai will accelerate western growth
    - Need for east-west connectivity across Savannah and Effingham County (e.g., SR 21 to I-16)
    - At-grade crossings remain an issue – Garden City and President St.
    - Multiple ongoing state and regional initiatives to address bottlenecks and safety concerns
    - Land use conflicts to the north due to warehousing developments
    - Important to leverage success in logistics to attract manufacturing
- Online Surveys
  - Stakeholder Survey
  - Public Survey



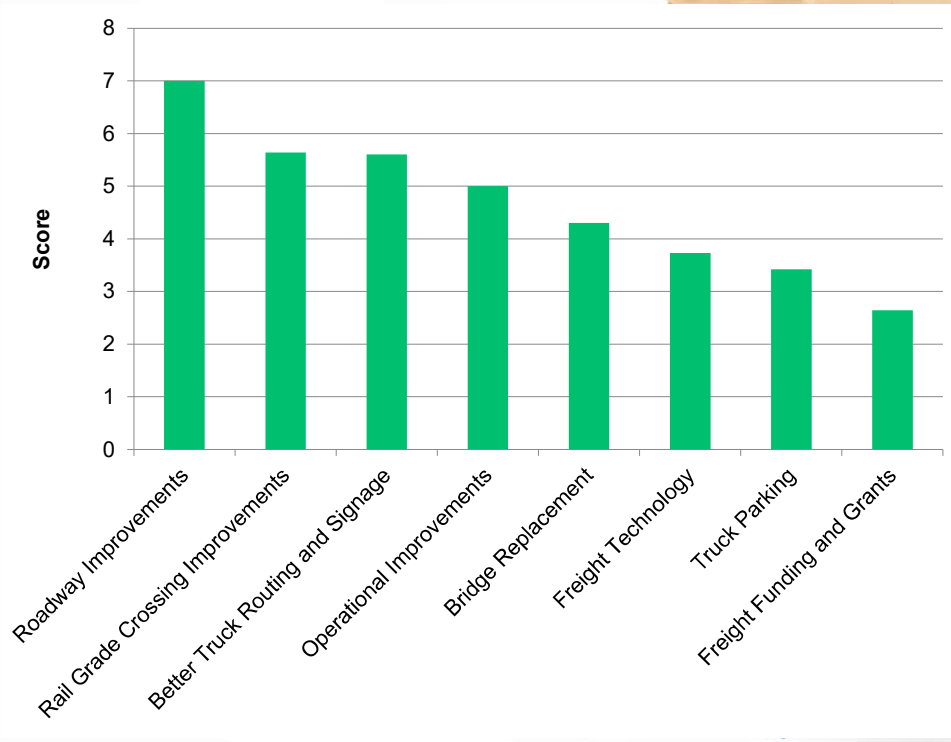
CAMBRIDGE SYSTEMATICS

PUBLIC SURVEY RESULTS

What is the biggest transportation priority for the region?



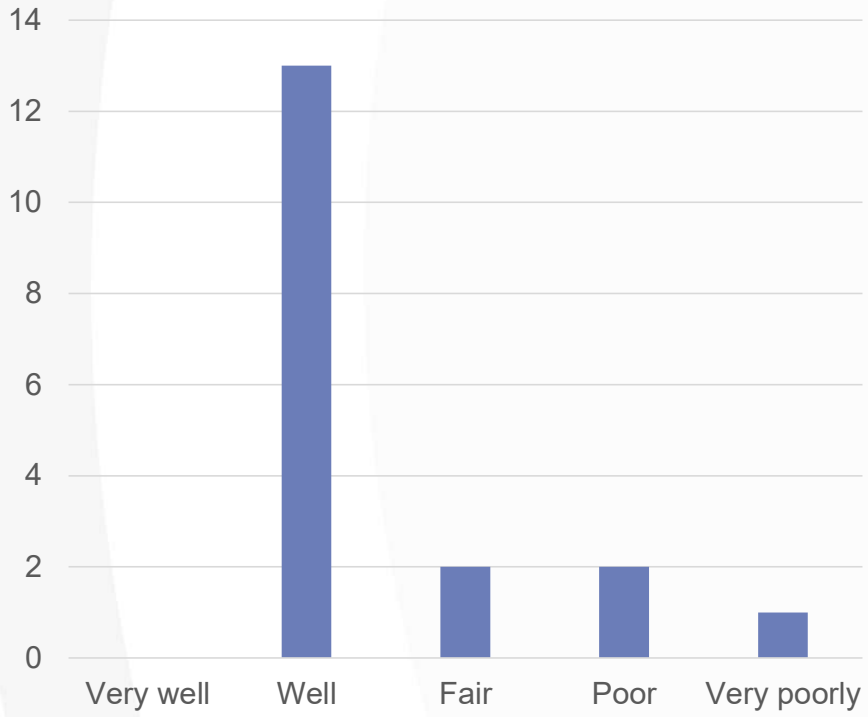
Which freight improvements would you most like to see?



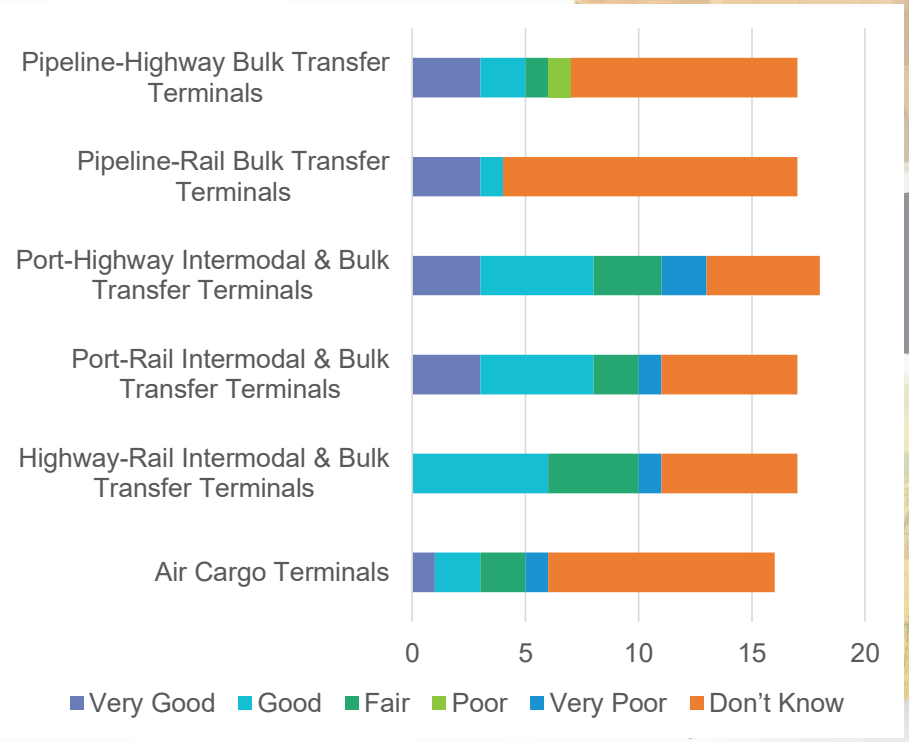
CAMBRIDGE SYSTEMATICS

FREIGHT SYSTEM PERFORMANCE: PRELIMINARY RESULTS

How well does the freight transportation system meet your needs?



How adequate are the region's multimodal connections?



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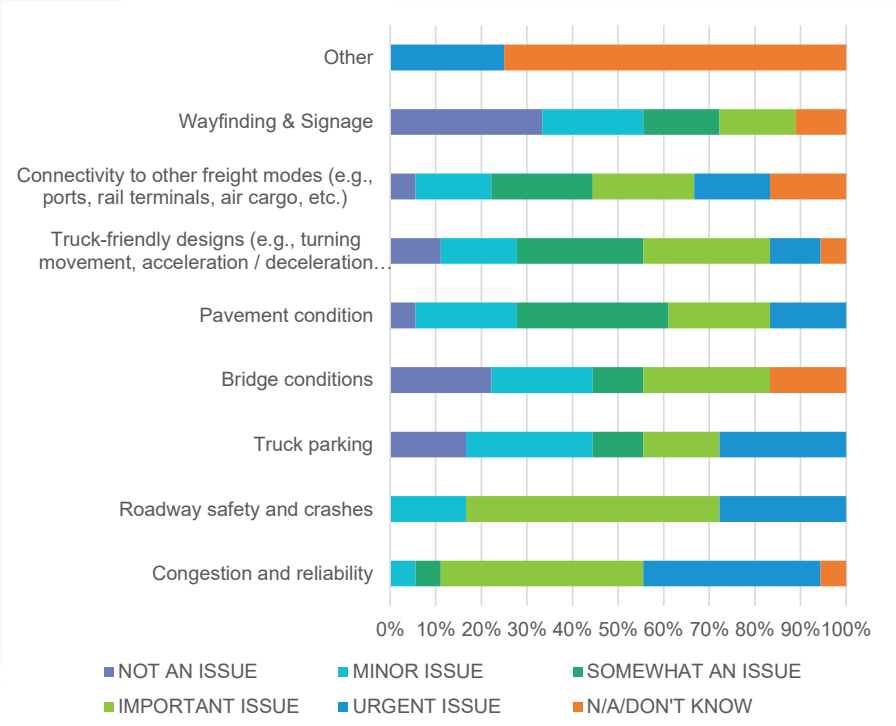
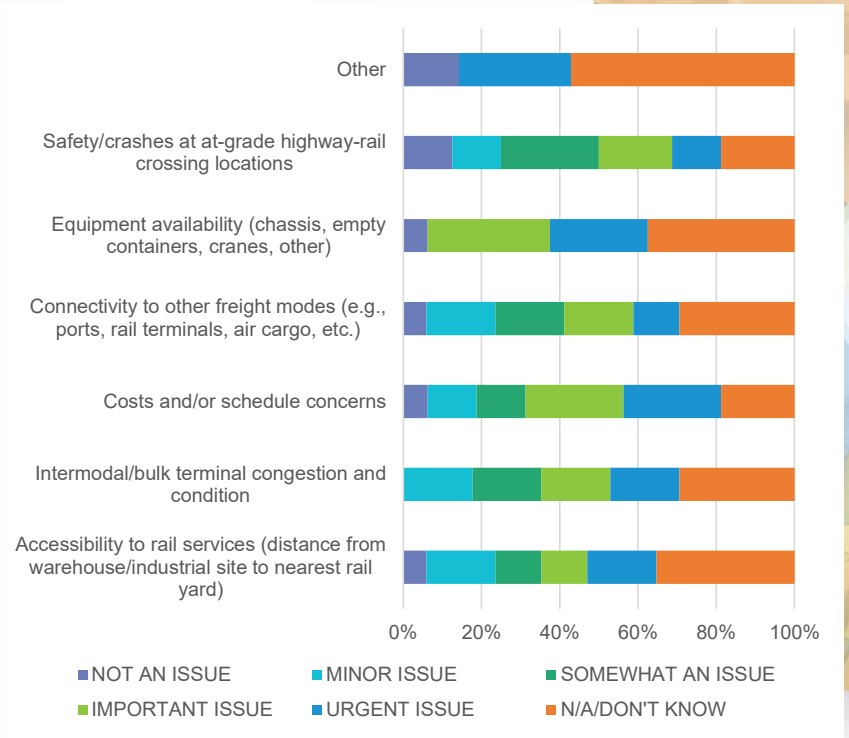
MOST PRESSING CHALLENGES: PRELIMINARY RESULTS

What highway freight challenges are most pressing?



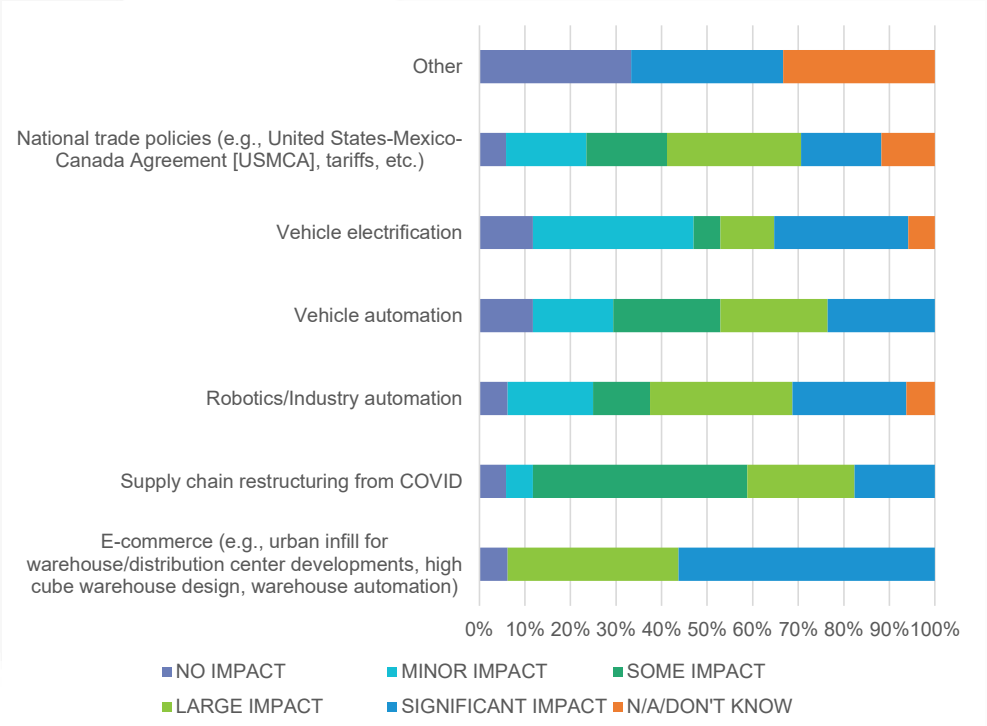
What rail freight challenges are most challenging?



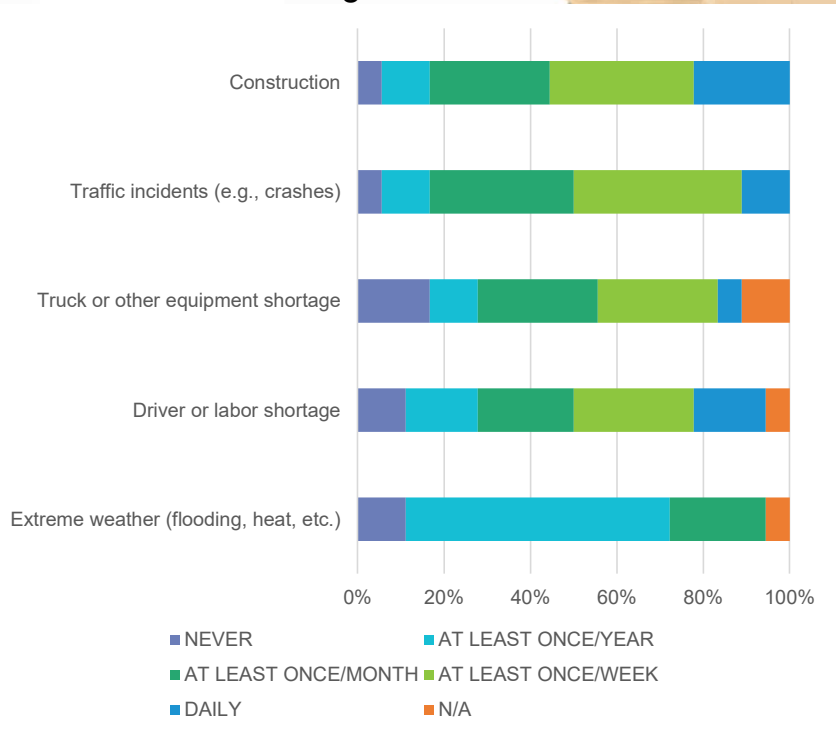
CAMBRIDGE SYSTEMATICS

TRENDS & DISRUPTIONS : PRELIMINARY RESULTS

What current trends will have a lasting impact on the region's freight system?



How frequently do the following issues disrupt your business or freight movement?

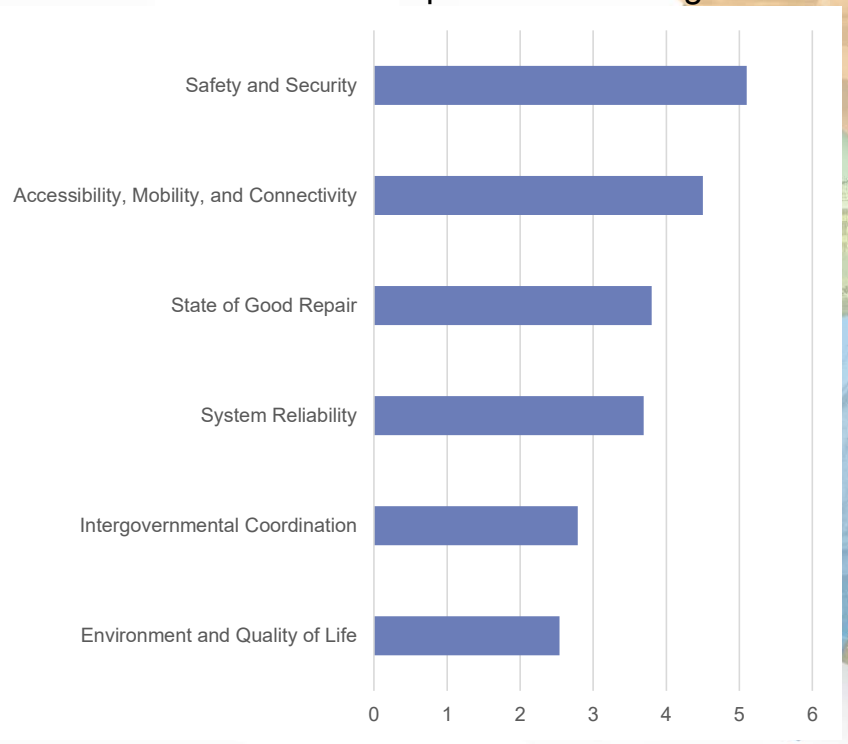


CAMBRIDGE SYSTEMATICS

FREIGHT PRIORITIES: PRELIMINARY RESULTS

- Safety and Security
  - Reducing crashes, improving safety at rail crossings and on roadways that carry truck traffic
  - Providing safe spaces for truck drivers so that they do not park on roadway shoulders, on-/off-ramps, side streets or other unauthorized locations.
- Accessibility, Mobility, and Connectivity
  - Reducing congestion and travel times on roadways with substantial truck volumes or rail crossings through capital improvements such as road widenings, new facilities, etc.

What is the biggest priority for addressing the region's freight transportation challenges?



CAMBRIDGE SYSTEMATICS

NEXT STEPS

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NEXT STEPS

- Stakeholder Outreach
  - » Stakeholder Interviews
  - » Virtual Forums
- Technical Tasks
  - » Freight Needs Assessment
  - » Land Use Assessment
  - » Economic Development and Market Assessment
- Provide update to EDFAC at February 2023 meeting