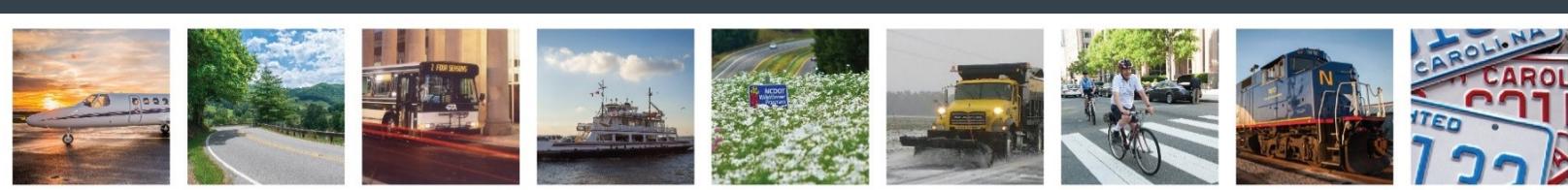




NCDOT is a part of your supply chain.

28 SEPTEMBER 2020



The *NCDOT Logistics + Freight Bulletin* is created and distributed by the NCDOT Office of Logistics + Freight. This update is dedicated to the internal NCDOT audience, as well as those closely engaged with NCDOT. The *Bulletin* will share current issues, trends, data, and analyses on freight + logistics across every mode while expanding awareness and understanding of the larger supply chain ecosystem in which multimodal freight transportation is an active and important player. If there are topics you'd like us to address, please feel free to email us and offer your ideas, suggestions, or questions. If you would like to share this with your group or colleagues, please do. Email us to sign up for future *Bulletins*.

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TOP 10 STATEWIDE TRUCKING FREIGHT BOTTLENECKS—AUGUST 2020

Each month we analyze freight bottlenecks on the North Carolina Priority Highway Freight Network. Bottlenecks as defined by the FHWA includes “any highway segment identified by a State DOT to have constraints that significantly affect freight mobility and reliability.” This can be as straightforward a situation as friction between volume and capacity, but freight bottlenecks can also represent a challenge of reconciling the functionality of a highway system with the behavior of the economy. Shifts in manufacturing and distribution patterns may be a factor while incidents and crashes, both passenger and commercial vehicles, can significantly slow the fluidity of freight on the network. Here’s a quick review of the top 10 freight bottlenecks on the NCPHFN for August. Our top 5 are all returners this past month while new arrivals are driven up the rankings from incident impacts.

| Rank | Previous Rank | August 2020 Bottleneck Location | Average Daily Delay* | Events or Incidents | Division |
|------|---------------|--|----------------------|---------------------|----------|
| 1 | 1 | US-421 South at US-17/US-74 in Wilmington | 22 h 45 m | 0 | 3 |
| 2 | 2 | I-40 East at US-70 Exit 306 between Garner and Clayton | 1 h 31 m | 18 | 5 |
| 3 | 4 | US-19 and I-240/US-75 in Asheville | 9 h 59 m | 1 | 13 |
| 4 | 5 | I-26 at New Airport Road near the Asheville Regional Airport | 43 m | 24 | 14 |
| 5 | 8 | US-70/US-29 Business at Center Street in Lexington, NC | 16 h 10 m | 0 | 12 |
| 6 | * | I-40 West at US-15/US-501 Exit 270 near Durham | 8 m | 4 | 5 |
| 7 | * | I-40 East at Harrison Avenue Exit 287 in Cary | 8 m | 9 | 5 |
| 8 | * | I-85 North at NC-7 Exit 19 in Gastonia | 12 m | 2 | 12 |
| 9 | * | I-85 North at N. Graham Street Exit 40 in Charlotte | 9 m | 8 | 10 |
| 10 | * | I-77 South at I-40 Exit 51 in Statesville | 29 m | 4 | 12 |

* Average amount of time per day that congestion is identified at this location

ABOUT THE NCDOT OFFICE OF LOGISTICS + FREIGHT

The NCDOT Office of Logistics + Freight is supply chain management professionals at NCDOT dedicated to supporting and providing resources to NCDOT stakeholders at every stage of project delivery from planning through construction, ensuring infrastructure investment is connected to industry + commerce. We are dedicated to driving North Carolina’s development as the preeminent environment for freight transportation and logistics services. The Office of Logistics + Freight is also focused on promoting the understanding and facilitate freight + logistics development and activities throughout the state. We are available to provide relevant data, research, insight, and analysis for NCDOT project managers, planners, or stakeholders on freight activity and behavior across every mode of transportation.



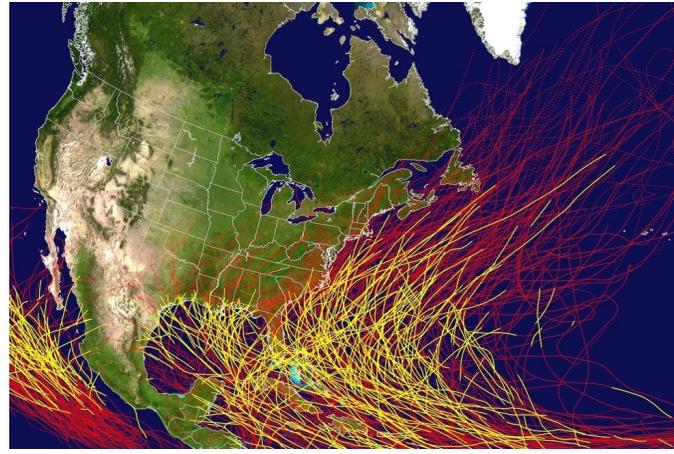
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Supply Chain Disruptions + Resiliency

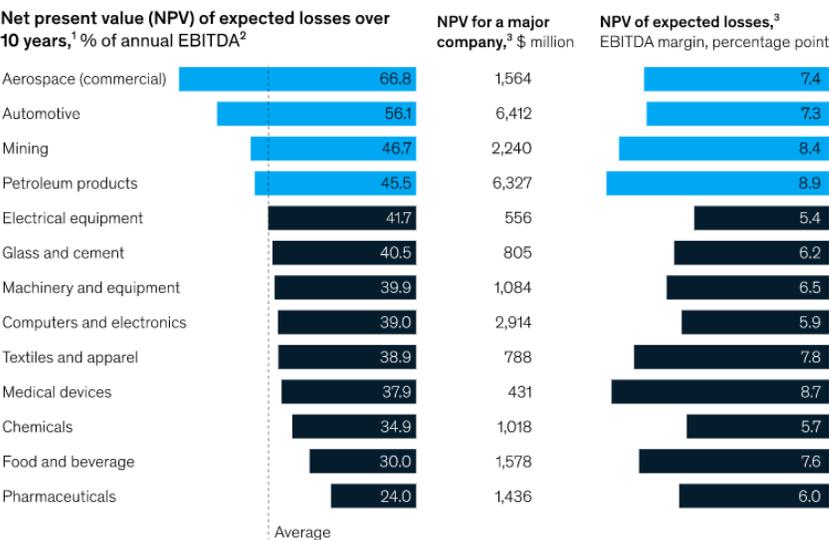
For many consumers, exposure to supply chain disruption means a scarcity of bread, milk or toilet paper (too soon?), but for companies in both services and manufacturing the impact of disruption to the transportation network creates major issues. With delay or deferment, manufacturers may have to stop production, a very costly exercise. For hospitals, restaurants, and other service-related sectors, weekly or even daily deliveries keep them supplied and operating.



As the summer fades into the pumpkin spice time of year, this means it's also hurricane season. For many in North Carolina, weather disasters are the most palpable examples of a supply chain disruption and NCDOT is no stranger to dealing with hurricane or tropical storm damages and disruptions. During Hurricanes Florence and Dorian most recently, the agency collectively showed our best, getting the important multimodal transportation system back online, allowing communities to return, regroup and recover, as well as getting freight flowing again.

These storms were major supply chain disruptions, and recovery demanded significant investment of time and resources. Smaller disruptions are also costly and more regular. This is one key reason many industrial sectors would choose travel time reliability over speed because business logistics planning thrives on predictability and regularity. Consider the Chinese New Year as an example of a *regular* global supply chain disruption. Celebrating the beginning of a new year on the traditional Chinese lunar calendar, much of the China takes holiday and most manufacturing facilities close or slow production during this time. As the center of global manufacturing, this would be a disaster if companies and their supply chains, manufacturing schedules, and inventory were not adjusted to take into account the disruption.

Supply-chain-disruption losses equal 42 percent of one year's earnings before interest, taxes, depreciation, and amortization on average over a decade.



Supply chain disruption is costly to industry and commerce.

Source: McKinsey & Co.

Now comparatively, think about the impact of a tsunami in Asia as factories are shuttered or slowed to a near halt by an unpredictable natural disaster. This situation will challenge most supply chains in the U.S. that rely on Asian imports to support their operations. Some companies plan for disruptions and establish relationships with domestic suppliers or set up their supply chains in areas less prone to natural disaster. Others will be left scrambling to find suppliers locally, often unsuccessfully. The company that mitigates risk by planning for disruption, proactively diversifies their supply chain, and relies on strong, cultivated existing relationships will survive.

In transportation these lessons are relevant and applicable. If we examine projects, infrastructure investment, and other agency activities in terms of disruption risk, we can identify potential issues in advance. We can also look specifically at the risk and exposure to disruption that our communities face to inform planning and response strategy. This approach is bolstered by establishing formal response plans, and practicing through drills and trainings.

Similar to diversifying one's supply chain, transportation agencies like NCDOT maintain multimodal networks which provide a nimble platform for both passengers and freight. Alternative passenger routing, interconnected freight routes, and proactive communication helps mitigate disruptions and keeps people and important disaster relief supplies moving. The last piece of the puzzle is leveraging strong relationships. Being active in communities locally and regionally, NCDOT can rely on connections with local planning and government officials, law enforcement, emergency health services, as well as local industrial stakeholders to ensure a coordinated and effective response to disruption. Continuing to invest time into planning, training, expanding the capabilities of the multimodal network, and growing relationships are some of NCDOT's best tools to prevent or reduce the impact of disruptions, big and small.

For a more in-depth discussion of supply chain disruption and resiliency, read the recent report "[Risk, resilience, and rebalancing in global value chains](#)" from McKinsey & Company consulting.

MULTIMODAL LOGISTICS + FREIGHT SECTOR BRIEFINGS



NCDOT Rail secures \$47.5M CRISI Grant: NCDOT's Rail Division has a strong track record of securing federal grant funding to support network development, maintenance, and safety improvements. In the most recent round of *Consolidated Rail Infrastructure & Safety Improvements* (CRISI) grants announced by the U.S. DOT, NCDOT Rail received a \$47.5M grant which will be used to purchase right-of-way along the CSX S-line rail corridor between Raleigh and Ridgeway, NC just south of the Virginia line. Part of the strategic [Southeast Corridor](#), this investment will help connect North Carolina communities to points north including Virginia and Washington, DC. Activation of the S-line will improve freight opportunities on the CSX network. NCDOT Rail Division has secured more than \$269M in federal and private grants over the past two years. [Here's more](#) on this great news.



TRUCKING

“Unclear” federal requirements challenge U.S. trucking sector: Beyond the engine bay, modern trucks rely on a wide range of advanced technologies including data, communications, and navigation platforms. As the U.S. trade war with China escalates, motor carriers who do business with the Department of Defense and U.S. Federal government face a September 30th deadline under Sec. 889 of the fiscal 2019 Defense Authorization bill to identify and purge all technologies from specific Chinese manufacturers Huawei Technologies Co., ZTE Corp., Hytera, Hikvision and Dahua Technology, as well as their subsidiaries. For many the cost of compliance with these requirements outweighs the benefits gained from their federal customers, which may negatively impact trucking capacity available to serve federal needs. Failure to comply puts motor carriers at risk of civil or criminal penalties. The requirement which critics pan as too vague or lacking clarity is strongly opposed by the American Trucking Association which says that compliance with these regulations could take months if not more than a year. After an August extension, some hope the pending September deadline will be extended while others continue to seek clarity and direction from federal regulators. For more on this important situation, visit [this recent Transport Topics article](#).



MARITIME

Container ship sets records on U.S. east coast: A container ship with more than 15,000 TEU capacity is setting records in calls to several U.S. east coast ports including the Port of New York & New Jersey, Halifax (CA), Charleston, and Norfolk. The *CMA CGM Brazil*, a 1,200 ft. long, 167 ft. wide container vessel is the latest record-setting vessel to call U.S. east coast ports reflective of the shift in trade from the west coast eastward—and with it an increase in vessel size. The Port of Wilmington welcomed its largest visitor in May of this year with the inaugural call of the *MV Hyundai Hope*, a 14,000 TEU vessel. Infrastructure requirements such as bridge clearances and harbor depths are key factors in determining the size of vessels capable of calling a port terminal. Many of the ports called by the *Brazil* highlight recent investments as enablers for them to welcome vessels of this size. For more on this including [a video](#) of the *Brazil* passing (barely) under the Bayonne Bridge, visit [this Freightwaves update](#).



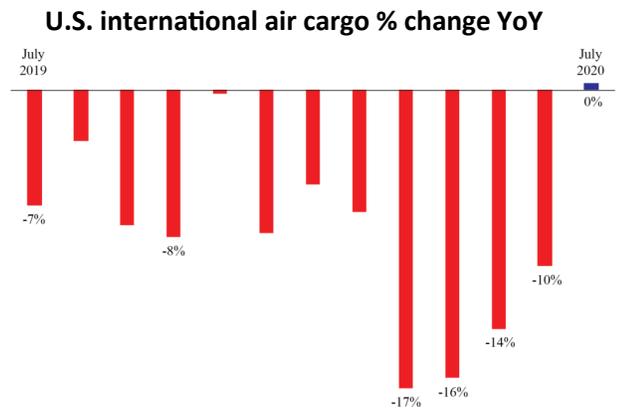
Photo Source: Port of NY/NJ

Port of Morehead City weathers pandemic challenges: In an update provided to Carteret County officials on September 16, 2020, port operations director Chip Killmeier highlighted steady and stable volumes for cargo at the Morehead City facility, a dedicated bulk and break-bulk port operation. With purchased inventory and cargo on the water at the start of the pandemic, the port did not see a downturn in volumes until late June while projections for FY2021 are more conservative. A key supply chain sector for NC, building materials and wood products are strong and growing while the aerospace and aggregates sectors are lagging. Following a completed harbor deepening and maintenance dredging project during the summer, the port is preparing for additional dredging in the fall. Read [more here](#).



AIR CARGO

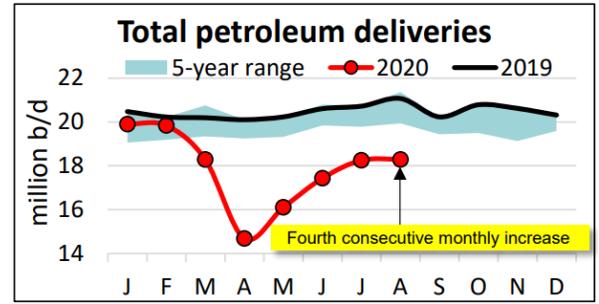
July 2020 U.S. international air cargo shows slight increase over July 2019: Air cargo volumes between the U.S. and international points increased slightly during July, the first such increase YoY since October 2018. Asian trade lanes including China, as well as Canadian markets drove overall weight figures in July as most other regions experienced a decrease in overall air freight volumes by weight. Annual declines in air cargo between the U.S. and Europe (-23.2%) and the U.S. and Latin America (-4.4%) were less severe than the previous quarter. BTS has more on air cargo trends from July 2020 [here](#).



Freighter conversions support global air cargo recovery: Driven by reduced passenger capacity, the aviation sector continues to adapt to the COVID landscape with some manufacturers converting passenger planes to carry cargo. Boeing’s freighter conversion program has orders for more than 130 Boeing 737-800s and have completed conversion on 34 planes to date. Firms such as DHL are actively adding converted freighters to their network including an order for 4 Boeing 767-300s. For more on this development, visit [this recap](#).



U.S. regains positive energy export balance in August: Modest economic recovery and supply/demand dynamics position U.S. energy sector as a net energy exporter. According to the American Petroleum Institute (API) increased demand led by motor gasoline and increased trucking activity drove crude oil prices up while most other economic indicators improved, as well. Reductions in supply were a factor as the Gulf Coast adjusted operations in response to hurricanes. U.S. petroleum demand was 18.3 million barrels a day, a slight increase over July (+0.2%), but an overall YoY decrease of more than 13% over August 2019. August's increase represents the fourth consecutive month in which domestic petroleum demand has increased. For more details, visit the API August [statistical report here](#).



Source: API



UPS receives local approval for \$262M facility in Alamance County: In their September meeting, the Mebane City Council approved a \$4.6M incentive package including \$3.9M in incentive grants and up to \$150K in utility waivers. The facility slated to after final construction to be 525,000 square feet will be a high volume sorting center with significant automation. The Mebane/Graham facility will expanding cargo handling capacity in the UPS network and represents yet another significant investment by the Atlanta-based shipping and logistics provider in North Carolina. UPS has a large sorting facility in Greensboro, and the company's drone/UAS operations have been active in NC with the first-ever commercial drone delivery completed at Wake Med Hospital in Raleigh in 2019. For more on the Alamance County facility, visit [this article](#).

GET TO KNOW A SUPPLY CHAIN SECTOR: : *Pharmaceutical, Biologics & Medical Products*

Did you know pharmaceutical manufacturing is a legacy industry in North Carolina? Indeed the *Old North State* was home to medical compound manufacturing at Lincolnton Laboratory along the banks of the Catawba River as early as 1863. Yet, today's biotechnology sector has little in common with these apothecary origins. Today's Pharmaceutical, Biologics & Medical Products manufacturing industries represent the leading edge of science, innovation, and technology. Representing more than 6% of the state's manufacturing workforce, it also has one of the highest average wages of any sector in NC. These diverse life sciences industries deliver nearly \$20B in direct contributions to State GDP with staggering productivity exceeding \$1.25M for every employee. The sector is a major contributor to state, local, and federal revenues with a total tax contribution of more than \$2.3B.

TOTAL ECONOMIC IMPACT OF THE SECTOR

| Employment | Labor Income | Value Added | Output | Taxes |
|------------------------------|-------------------------------|-------------------------------|--------------------------------|--------------------------|
| 26,750 Direct | \$3.15B Direct | \$19.54B Direct | \$33.57B Direct | \$1.16B State & Local |
| 97,880 Indirect & Induced | \$5.45B Indirect & Induced | \$9.03B Indirect & Induced | \$15.61B Indirect & Induced | \$2.97B Federal |
| 124,630 | \$8.60B | \$28.57B | \$49.18B | \$4.13B |

Source: NC Supply Chain: Conduit for Economic Connectivity (2016)

Three driving factors for the success of this sector in NC include: a highly-skilled workforce; outstanding education, research and development resources; and a low cost business environment. Pharmaceutical, Biologics & Medical Products manufacturing also benefits from generous investment from public and private sectors. From 1998 until 2008, the state allocated more than \$970M to research facilities, \$135M to workforce training, and an additional \$102M towards infrastructure through direct incentives.



Biogen's facility in RTP is one of the largest biotechnology manufacturing sites in the world.

The commitment to the sector paid dividends with employment in the sector growing at 4 times the national average. Today, North Carolina is home to more than 600 companies, including more than 350 research and development firms, 120+ contract research and testing companies, and more than 100 production and manufacturing operations.

With an active regulatory landscape, both international and domestic including healthcare policy changes at state and federal levels, these life sciences industries value flexibility and nimbleness to remain sustainable. Trade pressures are also relevant with import penetration or competition from low-cost manufacturing areas. Active and ongoing consolidations allow firms to bolster product pipelines, as more established companies often buy firms with promising products, intellectual property, or clinical outcomes.

