Emergent Issues related to Freight Systems Impacted by the COVID-19 Pandemic

SCAN Supply Chain Analysis Network

As of 1800 Hours (Eastern) on Friday, May 1, 2020

This is the sixth Ecosystem Assessment focused on national freight systems. Previous versions were produced on March 27 and April 4, 10, 17, and 24. This document assesses the national freight systems that connect demand and supply networks for many critical commodities in order to understand strategic risk and, potentially, offer recommendations.

Consensus Assessment: Both contract and spot market volume have remained stable and consistent with last week's bottom, however spot market rates have continued to reach new lows. While contract rates seem to be stable, the limited volume is forcing carriers to seek spot market loads and continues to drive down rates. **The trucking spot market rates are at, if not below, a breakeven point and are no longer profitable for smaller carriers.** There are indications that some smaller carriers have ceased operations. Ocean rates are stable and shippers are absorbing the cost to reposition empty containers. Even though May and June import volumes are expected to decline, close observation will be required to identify potential bottlenecks before they occur. As states start to re-open and implement the lifting of various restrictions, the operating environment continues to be in a state of flux and confusion. **Demand for protective equipment will increase, due to both businesses re-opening and state-level mandates, and traffic congestion will return, putting further strain on carrier profitability.** To date, **federal guidance has been reactive, leaving industry associations to take more initiative.** Continued monitoring along with proactive safety guidance from the public sector for all businesses will help to strengthen the supply chain as states begin to step away from restrictions.

Force on Target: Transmission of COVID-19 poses a direct risk to all, including essential supply chain workers and soon to be non-essential workers as states lift restrictions. Unprecedented shifts in shipper demand among essential and non-essential businesses will continue to challenge freight system agility.

Geography Targeted: This document focuses on supply chains in the Contiguous United States (CONUS). It is difficult to assess risks spanning national demand and supply networks for an economic sector. Instead, this document assesses national-level risks for freight services that connect network nodes for any supply chain.

Population Targeted: The entire CONUS population of over 300 million is a potential host for COVID-19.

*The assessment begins with a synthesis of **"sentinel indicators"** regarding freight movement. Sentinels are individuals with experience and insight regarding flow, operating context, and system performance.*

Demand and Supply Networks: April may have been the ugliest month for the economy and especially for the trucking industry; according to the Federal Bureau of Economic Analysis, the GDP for Q1 dropped by 4.8% and is estimated to drop an additional 26.5% in Q2. However, consumer spending remains strong in grocery (up 24% YoY), discount (52%+), and home improvement sector (49%+). **Trucking contract volume has been flat for the last 10 days.** Commercial truck travel is down 3% nationwide since last week; down 13% overall since March 14. Regional differences in freight travel **range from a six to 17% reduction, which may indicate the varied level of restrictions across the country. As non-essential businesses start to open up in some states, the volume impact for the trucking industry is expected to be minimal if these businesses are service-related.** However, US car makers penciled in May 18 to restart manufacturing, which may provide a boost. Both the Empire State Manufacturing Index and the Purchasing Managers Index (PMI) posted their lowest reading in history for April. The PMI decline supports a continued reduction in imports. **While the US Customs Maritime Import Shipments Index is up 9% from last week, May and June import volumes are expected to decline.** This is in part due to the expectation that the back-to-school season, the second-busiest shipping period, will take a hit. Meanwhile, on the domestic front, the government has set up a center to assist with the depopulation and disposal of animals. An Executive Order was issued that classifies meat processing plants as critical infrastructure. Restaurants brace for increased prices due to reductions in supply and increases in demand at grocery stores (40% in red meat). **Food**

loss is expected to occur if fruit and vegetable producers are not able to find new customers, although data (see below) indicates that reefer volume in food supply markets may be picking up.

Operating Environment: The operating environment may become even more challenging as states start to open up (i.e. increased traffic, increased absenteeism as drivers come into contact with more people, and increased scarcity of PPE). Truck drivers have been experiencing reduced traffic congestion, and as a result are able to meet on-time pickup/delivery goals. **But a "new normal" that involves a "socially distanced supply chain" is expected to impact productivity and throughput of companies across the board.** Safety for most facilities will mean adjusting workflows and shift changes. However, the Department of Agriculture issued a waiver earlier this month that allows meat processing plants to experiment with improved processes. Companies with the means, or who had already started pre-pandemic, are accelerating plans to automate processes where possible. Procurement and distribution of PPE remains a concern. "Touchless" delivery processes meant to enable safe interaction with drivers are not perfect and require compliance and PPE. The Federal Motor Carrier Safety Administration (FMCSA) is working to distribute 1 million masks, procured by FEMA, to truckers. Additionally, the American Trucking Associations (ATA) is working to get masks to smaller carriers for free and larger carriers at cost to help alleviate the financial burden that face covering procurement places on essential businesses. **There is a need for proactive guidance for non-essential businesses as states begin to re-open their economies.** The CDC and OSHA guidance for meat and poultry processing workers released on April 26 is the most detailed, non-healthcare setting related guidance that has come down from the federal level. Other alerts released by OSHA over the past two weeks, while not as detailed as the meat and poultry processing guidance, address the manufacturing, delivery, and retail workforce. **An abundance of work has been done by industry associations (more and more) to provide businesses with safety guidelines**. However, it has not been enough to prevent worker demonstrations and walkouts across Amazon, Target, Whole Foods, FedEx, Walmart, and Instacart. **Collaboration on safety standards and guidance across the public and private sector is needed going forward to address operational settings for the "new normal".**

Freight Systems: A second wave of blank sailings, which will reduce capacity on the Asia-Europe trade lane by 17%, could disrupt European exports. Blank sailings will also reduce capacity by about 25% (64 blank sailings) to the West Coast and 20% (34) to the East Coast. **Issues with empty equipment remain, and shippers are absorbing the cost to reposition containers which is also adding delays.** However, container ship operators – specifically the 2M Alliance - have been adapting quickly to prevent imbalances and bottlenecks by upsizing vessels at west coast ports to remove empty containers. **On the flip side, truckload carriers' adaptability may be running its course. Excess capacity and low fuel prices have driven rates below the point of profitability.** Even large companies are reporting a reduction in revenue YoY. Carriers that rely more on the spot market or carry specialized freight (i.e. manufacturing, construction) have been hit hard. **Most notably, small carrier profitability has been impacted by disruptions to freight movements, in part due to utilization and lane volume changes.** Positive effects of the businesses reopening may appear in the next few weeks, but spot market rates are predicted to fall until then. **Contract rates seem to be more stable but started out lower this year due to high competition in 2019.** Some shippers are holding on to contracts instead of taking advantage of low spot rates in order to maintain relationships with carriers. March is typically a time for shippers to negotiate contracts, but due to current uncertainty those negotiations have been stalled. **Either way, experienced drivers are looking to be hired by larger carriers, implying that some owner-operators have already closed up shop.** While shippers currently have a comparative advantage in setting prices, the impending contraction in carrier capacity will prompt a painful role reversal.

*The assessment continues with **"data indicators"** regarding freight movement based on indices that draw on an array of industry data feeds and aggregate data provided by individual companies.*

In order to understand the current impact that low volumes and rates (see Figure 4) are having on carrier profitability, we turned to the most recent American Transportation Research Institute (ATRI) report, *An Analysis of the Operational Costs of Trucking: 2019 Update,* which builds off of its 2008 predecessor. This report provides real world documentation of for-hire carrier costs, represented by all sectors of trucking, including truckload (TL), less-than-truckload (LTL) and specialized fleets. Carriers that responded collectively make up ~12% of total equipment (truck tractors + trailers) in the market and over 10 billion total operating miles.

ATRI reported that the average cost in 2018 (Figure 1) across all carriers was $1.82 per mile ($1.39 excluding fuel). Carriers with less than five trucks came in at $2.03 per mile ($1.52 excluding fuel). **Current DAT rates (Figure 3) for dry van, which averaged ~$1.33 per mile (excluding fuel) over the past week, are below the total average 2018 costs.** While diesel prices are currently $0.70 lower than the average in 2018, insurance premiums, which made up 5% of carrier's costs in 2018, have gone up. Figure 1 also highlights the regional effects on carrier costs.

Motor Carrier Costs	Midwest	Northeast	Southeast	Southwest	West	Total US
Vehicle-based						
Fuel Costs	$0.40	$0.46	$0.39	$0.41	$0.47	$0.433
Truck/Trailer Lease or Purchase Payments	$0.27	$0.29	$0.24	$0.26	$0.27	$0.265
Repair & Maintenance	$0.15	$0.19	$0.16	$0.14	$0.20	$0.171
Truck Insurance Premiums	$0.07	$0.08	$0.07	$0.08	$0.09	$0.084
Licenses	$0.03	$0.03	$0.02	$0.03	$0.03	$0.024
Tires	$0.03	$0.04	$0.04	$0.04	$0.04	$0.038
Tolls	$0.03	$0.05	$0.03	$0.03	$0.03	$0.030
Driver-based						
Driver Wages	$0.57	$0.60	$0.55	$0.47	$0.50	$0.596
Driver Benefits	$0.17	$0.23	$0.23	$0.13	$0.19	$0.180
TOTAL	**$1.73**	**$1.96**	**$1.68**	**$1.58**	**$1.81**	**$1.821**

Figure 1: Average Marginal Cost per Mile by Region, 2018; Source ATRI

DAT's Load-To-Truck ratio (Figure 2) for dry van in the spot market has been stable for the last few weeks thanks to a decline in truck load posts and steady load posts, further supporting that volume has reached a bottom. However, Figure 4 shows that rates continue to drop. Truckstop.com data supports this as well. Historically, the spot market share goes down in a downturn because contracts provide an easier outlet for freight movement. Regardless, the continued decline of spot market rates indicates that carriers are starved for volume and are accepting loads irrespective of the rate.

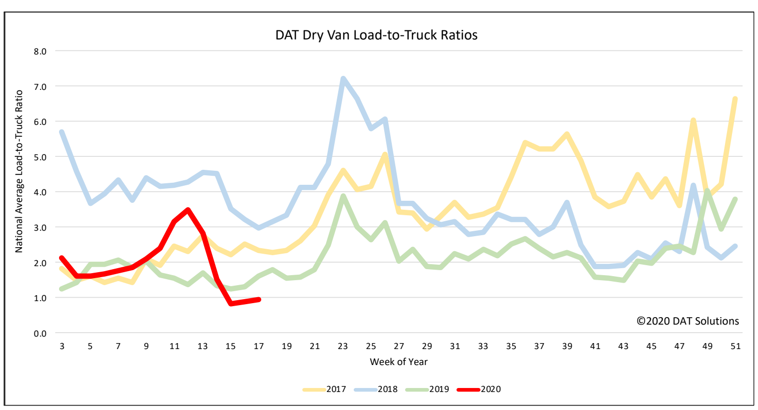

Figure 2: DAT Dry Van Load-to-Truck Ratio; Source DAT Solutions

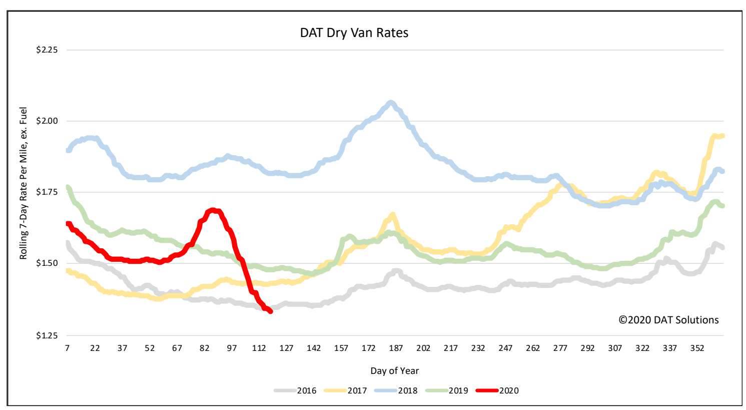

Figure 3: DAT Dry Van Spot Market Rates; Source DAT Solutions

Figure 4 displays DAT's Reefer Market Condition Index (MCI) by region on April 28. The MCI considers several factors including: Load-to-truck ratio, historical trends, load searches, truck searches, and overposting detection. Heavy searching in an area is an indicator of how 'hot' the market is there. 'Hot or Tight Markets' (higher index value) indicates that trucks are in demand, higher rates, and tends to favor carriers. 'Cool or Loose Markets' (lower index value) indicates lower demand for trucks, lower rates, and tends to favor brokers. The map below displays that the upstream food supply chain remains active and is heating up according to typical seasonal trends. The FreightWaves Outbound Tender Volume Index tells a similar story for most contract markets, although seasonal commodities tend to have a heavier reliance on the spot market due to the unpredictability.

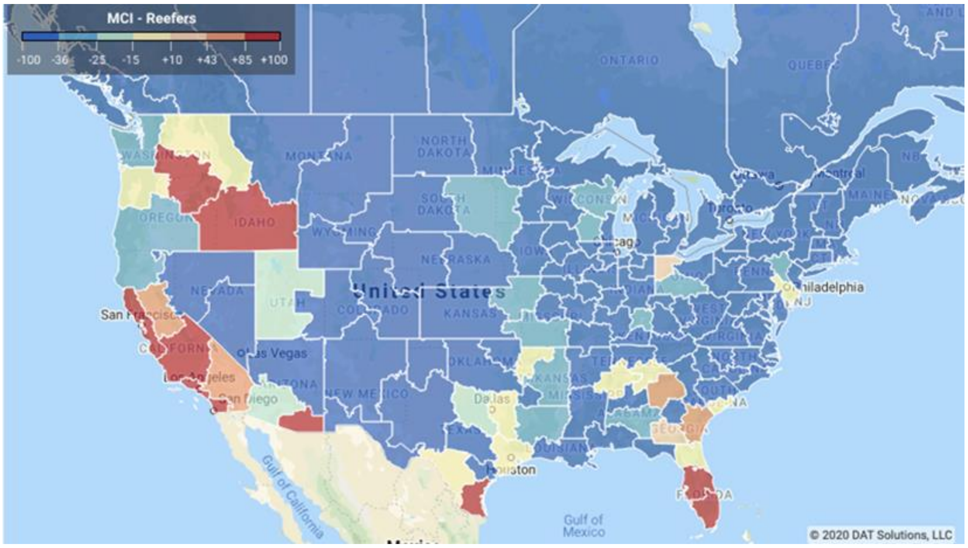

Figure 4: Reefer Market Condition Index; Source DAT Solutions

SCAN is intended to answer two questions:

1. Are key demand and supply networks failing?
2. If so, when, where, why, and with whom can FEMA engage to be most effective in reversing failure?

Data continue to indicate that **demand and supply networks are not failing** while further revealing that **smaller carriers are at risk due to low volume and even lower rates**. In the April 17 National Ecosystem Assessment, the SCAN team reported that, "**Loss of smaller carriers reduces diversity, agility, adaptability, and overall resilience of the freight system".** Due to the current state of the economy and freight market, while current demand and supply networks are not failing, the freight system of the very near future may not paint this same picture. The current anticipation is that as states start to ease restrictions, the economy, and therefore the freight market, will start to improve, albeit slowly. However, given that we are on the virus's timeline, continued market oscillations will increase operating environment complexity. To date, **federal guidance has been reactive as we learn more about this virus together. The time is now for proactive guidance – focused on second and third waves, as well as future pandemics - that can provide confidence in the workforce across the nation. This can only be done through strong collaboration with the private sector.** The full impact to the freight system has yet to be seen, and may not be revealed until later this year. **Until then, the supply chain will require continued monitoring that will enable swift action where needed.**