



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

As of 1800 Hours (Eastern) on Friday, May 15, 2020

This is the eighth Ecosystem Assessment focused on national freight systems. This document assesses the national freight systems that connect demand and supply networks for many critical commodities and incorporates a local snapshot with a national lens to understand strategic risk and, potentially, offer recommendations.

Consensus Assessment: [Loss of small businesses](#) is accelerating [shifts in the retail industry](#) towards e-commerce and will leave some rural and fringe urban communities with less accessibility to not only food but other retail items in general. This will slow economic recovery by creating food and retail deserts. In addition, grocery prices are increasing due to shifts in demand and supply chain disruptions, which will make it more difficult for low-income families to purchase food. **Despite a dismal Q1, freight systems have been able to adapt as a new normal takes shape, but shifts in demand are faster than can be accommodated by all supply chains.** This will spawn additional capacity loss, as food supplies that are in demand are left untapped. [Recovery](#) will be a slow walk back up the [staircase](#), with fewer players and higher prices awaiting at the top. **If a [resurgence of the virus](#) pushes non-essential businesses back into closure, more businesses will fold, including many who managed to survive the ongoing disaster.**

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: [Intermodal volume is down 18%](#) over the past three weeks. In order to bolster rates, similar to ocean carriers, rail carriers are idling capacity and reducing the number of trains. A [shift in how consumers are eating](#) has also had an impact on Cold Connect, Union Pacific’s logistics service that moves refrigerated products from the West Coast to the East Coast, which [stopped taking inbound orders last week](#). **The [CASS Index for U.S. rail and trucking shipments](#) fell by 22.7% in April compared to last year, on par with 2009 levels.** However, both the trucking contract and spot market have continued to see some week-over-week improvements. [DAT’s Market Condition Index](#) (see data below) indicates high demand in the produce regions of California, Texas and the Southeast. Not only does this benefit reefer carriers, but it also boosts the dry van market by reducing competition that dry van faces when refrigerated freight volume is low. [Grocery stores and supermarket sales](#) are up 40% from last year. Wholesale Clubs and Discount Stores have also seen yearly increases, which are up 49% and 70% respectively. Restaurant sales continue to be down (39% YoY), while Fast Food saw a slight increase (2% YoY). Overall, **[U.S. retail sales](#) fell 16.4% in April**, marking the biggest two-month decline on record. **Small businesses may be feeling this the most, as economists project more than [100,000 have closed](#).** This may accelerate volume [shifts](#) even more to e-commerce, and in doing so create access issues for rural and fringe communities that lack access to the internet and/or delivery services. Some organizations like [DeliveryTLC](#) (NYC) and [Growing Home](#) (Chicago) have been donating food to those in need or those located in food deserts, although Growing Home has lost \$20,000 in revenue by doing so. **There was a 1.5% surge in the [cost of food last month](#), which was the largest gain since January 1990.** Wholesale beef and pork [prices doubled](#) in April, according to USDA. [Inflated grocery prices](#) are being attributed to a shift in where consumers are purchasing their food

and supply chain disruptions due to COVID-19 outbreaks in food production facilities as well as slowdowns related to social distancing and sheltering-in-place. The pandemic is changing the way people eat, which is having downstream and [upstream](#) impacts on the supply chain. [Farmers](#), food manufacturers, and freight systems are working hard to adapt as disruptions continue to create waves.

Operating Environment: The [auto industry has slowly begun to reopen](#) factories despite the demand uncertainty and a leery workforce. Some carmakers, like [Ford](#), are slowly reopening their sites to mitigate these risks. [Logistics automation incentives](#) are now less about productivity gains and **more about creating an adaptive operating environment as the “new normal” means learning to live with the virus.** The Federal Motor Carrier Safety Administration (FMCSA) [extended the suspension of driving-time limitations](#) for truckers moving emergency supplies or personnel in response to the coronavirus pandemic through June 14. Trucks have been able to take advantage of such waivers as well as empty highways during the shutdowns, but now with eased state restrictions increases in traffic are to be expected. [Lessons learned from the healthcare worker regimen at Mass General Brigham, which has seen only a few workplace transmissions occur among 75,000 employees, may benefit non-healthcare work settings. This regimen consists of hygiene measures, screening, distancing, masks, and culture shifts.](#) Fleetworthy Solutions released [guidance](#) for “Trucking Cleaning & Safety Tips for Fleets Dealing with the COVID-19 Pandemic”, adding to the list of non-government workplace safety practices being published. The [CDC and OSHA released safety guidance](#) on May 14 for businesses and communities that are reopening, after more than half of states have lifted restrictions. **Port workforce shortages have been reported.** Nineteen percent of [ports worldwide](#) are experiencing dock worker shortages, and sixteen percent are facing port authority worker shortages. [Seafarers with expiring contracts](#) are currently stranded on ships due to country lockdowns across the globe. If repatriation issues are not resolved soon, **ships may be sidelined due to stranded crew members without contracts.** Heavy global PPE demands have elevated cargo rates due to [competition for limited air freight](#) capacity. This demand is expected to ease in May as governments and companies build up stockpiles.

Freight Systems: [U.S. freight volume recovery may take years.](#) **Overall capacity losses across ocean, air and trucking will leave shippers with fewer options at higher prices when the economy begins to recover.** [European ports](#) are getting hit harder by blank sailings than others, which could impact [New York/New Jersey import volumes](#). Of the 76 ports surveyed by the [World Ports Sustainability Program](#), all reported between a 5-25% decline in container vessel calls. On an industrywide basis, [Maersk estimated that global demand fell](#) 4.7% YoY in Q1, with east-west trades down 5.7%. **The Port of Los Angeles loses \$400,000 in revenue for every blanked sailing** and are anticipating an additional 15% of import reductions over time (some of which is due to trade shifts that were underway prior to the pandemic). [Overall trucking spot market rates and volume](#) **have continued to come up over the last two weeks** for reefer, dry van, and flatbed, but truckers are still rallying outside of the White House for rate assistance. **Small trucking companies may reduce capacity** by "cannibalizing" a portion of their fleets for spare parts to avoid the cost of purchasing parts and repairs, a practice seen in the 2008-2009 recession. [More than 88,000 jobs disappeared](#) in the truck transportation sector in April, a 5.8% drop from March, **both the steepest drops on record.** This loss equates to approximately all the trucking jobs that were added in the last four years. [DeliveryTLC](#) is providing \$53 per route for taxi drivers and gig service drivers to deliver food, but the amount of available work is still not enough to satisfy the mile-long line of drivers waiting to get work. While the situation still remains worse for smaller carriers, YRC, a Less-Than-Truckload carrier and the [fifth largest U.S. trucker](#), has had to **lay off 12% of its drivers and 14% of its terminal workers in order to cut costs.** Meanwhile, the [Small Business Reorganization Act](#) (SBRA) that went into effect in February, in addition to the CARES Act, [may provide better options](#) for carriers considering filing for bankruptcy.

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.

Due to volume improvements, spot market rates have also started to come up. Dry van rates have increased; a knock-on effect of refrigerated volume increases causing less competition for dry van loads as well as the reopening of businesses across states. Reefer rates have seen the most improvement overall, but only saw a 1.8% increase WoW. Rates across the board are still down compared to last year: dry van (-\$0.18), flatbed (-\$0.44), and reefer (-\$0.02).

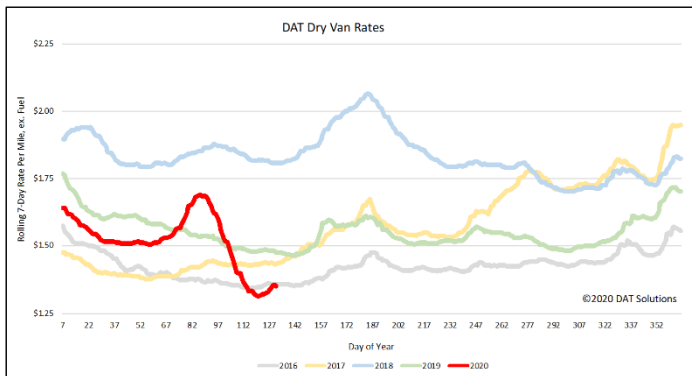


Figure 1: Dry Van Spot Market Rates

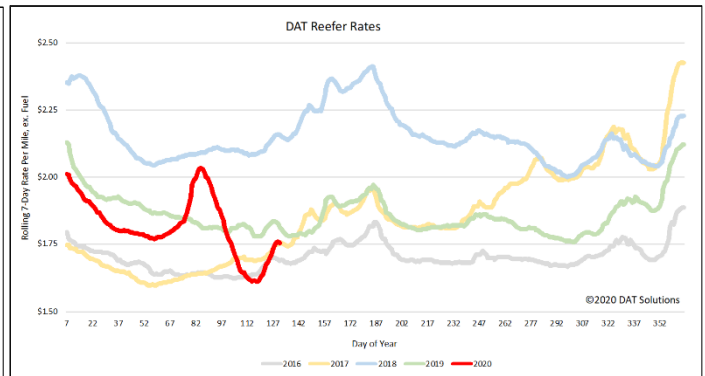


Figure 2: Reefer Spot Market Rates

Figures 3, 4, 5, and 6 below show changes in DAT’s Dry Van and Reefer [Market Condition Index \(MCI\)](#) by region and compares May 5 conditions to May 12. The MCI considers several factors including: Load-to-truck ratio, historical trends, load searches, truck searches, and overposting detection. ‘Hot or Tight Markets’ (higher index value) indicates that trucks are in demand and rates are higher. ‘Cool or Loose Markets’ (lower index value) indicates lower demand and rates. The improvements over the past week to dry van market conditions are most notable. Produce season has been pulling through, and is providing some relief for carriers who have been experiencing load availability shortages since last month. The USDA just launched ‘[Farmers to Families Food Box](#)’, a program aimed at subsidizing farmers and supplying food banks, which may continue to boost future produce-related freight flows.

Figure 3: Reefer Market Condition Index, May 5, 2020

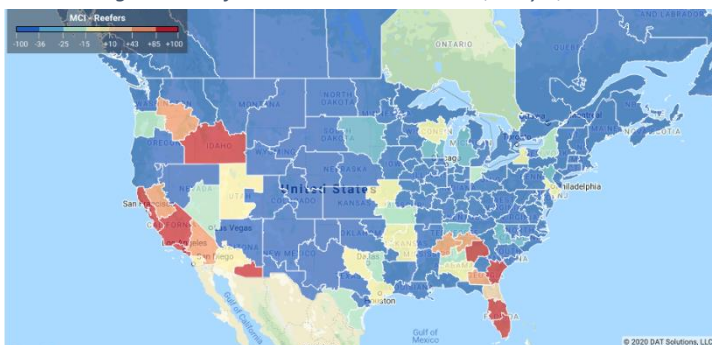


Figure 4: Dry Van Market Condition Index, May 5, 2020

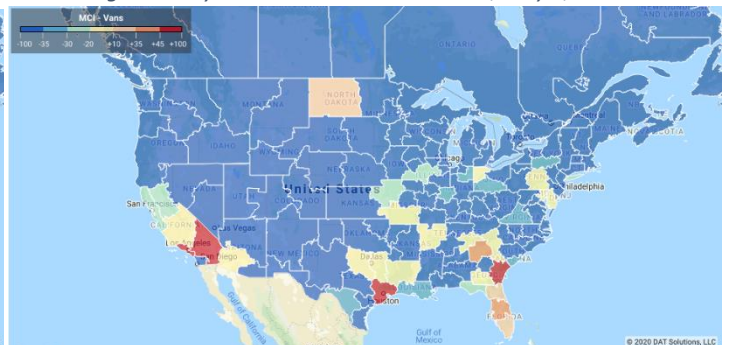


Figure 5: Reefer Market Condition Index, May 12, 2020

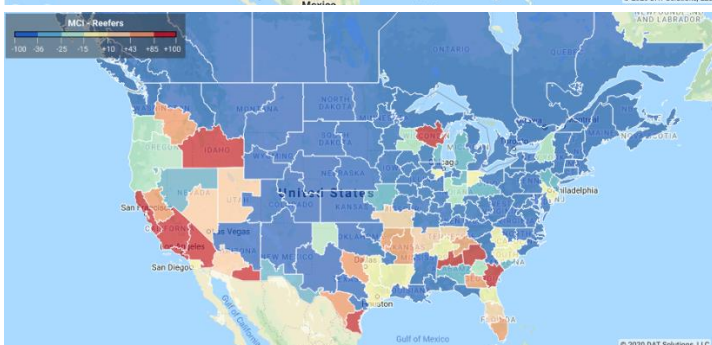
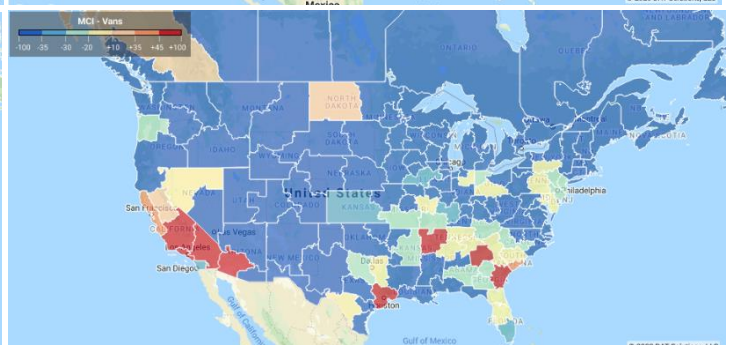


Figure 6: Dry Van Market Condition Index, May 12, 2020



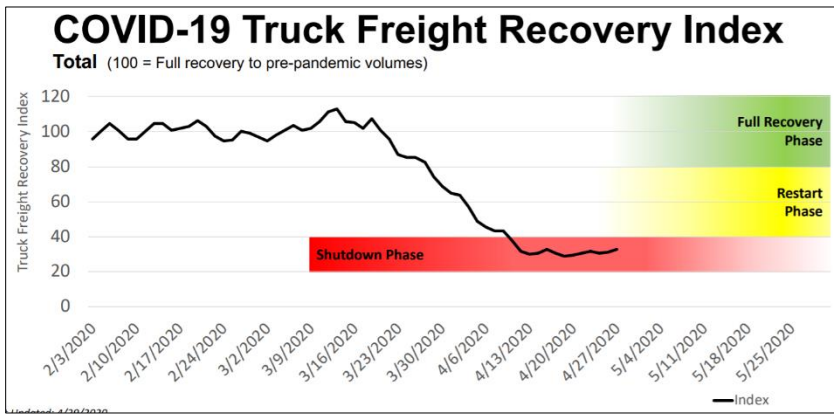


Figure 7: Truck Freight Recovery Index, FTR

FTR Transportation Intelligence and Truckstop.com recently developed a [Truck Freight Recovery Index](#) to monitor the spot freight market’s recovery to pre-pandemic volumes. The Truck Freight Recovery Index, currently hovering around 30, is a measure of trucking’s response and recovery due to the COVID-19 pandemic. (100 = Full recovery to seasonally-adjusted pre-pandemic volume levels.) The index includes Dry Van, Refrigerated, and Flatbed and starts in February 2020. It

measures the changes in volumes compared to the historical 5-year pattern and is adjusted by February 2020 results.

The [Society for Human Resource Management](#) conducted a survey regarding the impact COVID-19 has had on small businesses. Twenty percent (75/375) of small business owners said they could be gone in less than three months (Figure 8). Half of small businesses have retained their employees. **Twenty-one percent were unfamiliar with the Payroll Protection Program (PPP), but half of those that knew about it say it has influenced their decision to keep or rehire employees.**

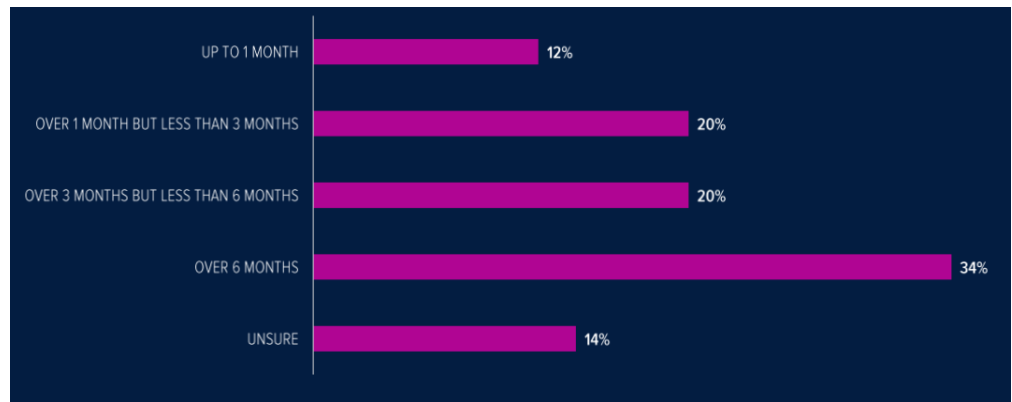
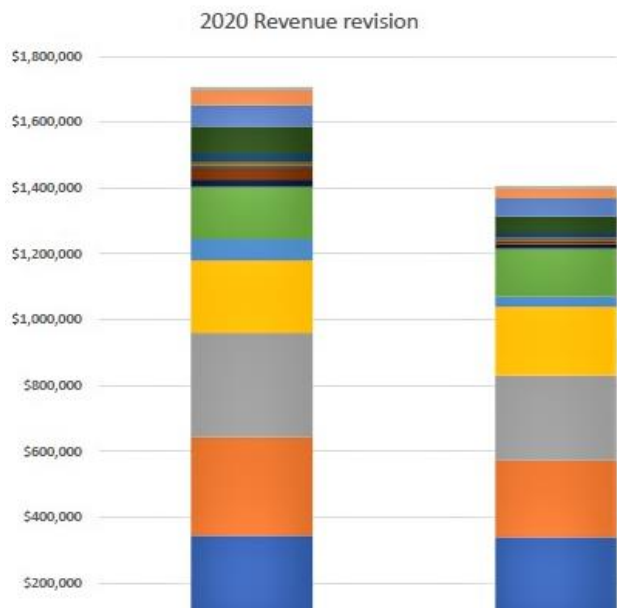


Figure 8: Operations Timeline for Small Businesses due to COVID-19, Source SHMR

The assessment continues with a “local snapshot” regarding how nationally trending characteristics of demand and supply networks are being experienced in a particular locality.

Seattle—place of origin for the [Amazon-effect](#) and the so-called [retail apocalypse](#)—has also been a forerunner in [adapting to the rise of e-commerce](#). Just one year ago, [Seattle Business](#) magazine opened a cover story with, “Seattle’s soaring retail sector just keeps growing, even though nationally many retailers continue to struggle.” In many ways this strength reflected strong consumer demand in a city with [median household incomes](#) roughly one-third higher than the U.S. average.

But with some [exceptions](#), eight weeks ago [Non-Pharmaceutical Interventions \(NPI\)](#) closed or seriously constrained much of Seattle’s retail sector and related upstream suppliers. Slowdowns and shutdowns eventually encompassed significant elements of manufacturing, healthcare, and other sectors. According to [Google mobility analyses](#), since mid-March visits to Seattle area retail and recreation venues have declined over 55 percent. Seattle’s April sales tax revenues are expected to fall by up to one-fifth ([more](#) and [more](#) and [more](#)). May is unlikely to be much better. (Washington State does not collect sales taxes on groceries.) Charts on the next page reflect Seattle’s projected lost tax revenues. Seattle is certainly not alone. The [Cleveland Federal Reserve Bank](#) estimates that state and local tax revenue will decline by more than \$50 billion in 2020. A [survey and analysis](#) by the National League of Cities anticipates even deeper losses.



School zone camera fund	\$9,666	\$7,440
Commercial parking tax	\$45,596	\$30,321
Trans. Benefit district	\$63,726	\$54,960
REET	\$82,958	\$48,313
Sweetened beverage tax	\$24,329	\$16,876
Short-term rental tax	\$10,500	\$5,600
Admission tax	\$11,691	\$3,462
Parks & Recreation revs	\$33,474	\$10,474
Seattle Center revs	\$22,033	\$12,881
Everything else	\$156,775	\$145,567
Court fines + parking	\$65,705	\$31,459
Utility taxes	\$220,557	\$207,286
B&O Taxes	\$315,537	\$257,531
Sales taxes	\$298,842	\$233,423
Property taxes	\$345,085	\$340,888

Figure 9: Projected revenue reductions for City of Seattle, source Mayor's office and SSCInsight

Even as Washington state and Seattle begin to reverse NPIs, retail will reopen into a dramatically altered economic and social context. The [hospitality and travel industry](#) has cratered. In Seattle this has seriously impacted Boeing, the region's single largest employer. [Boeing recorded no new sales in April](#). Restaurants will [reopen dining rooms](#) with fewer tables and, probably, increased [customer anxiety](#) ([more](#) and [more](#) and [more](#)). There is the possibility that NPI shut-downs have locked-in long-term changes [in online retail behavior](#) ([more](#)). Pre-pandemic nearly 160,000 people were [employed by food service and drinking places](#) in the Seattle metropolitan statistical area. Surveys conducted by [OpenTable](#) indicate that one-quarter of pre-pandemic restaurants will not reopen ([more](#)). Nearly 240,000 Seattle area residents were [employed by retail establishments](#). Another 200,000 plus were [employed in leisure and hospitality](#). Since mid-March roughly one-fifth of Washington's workforce has applied for [unemployment insurance](#). Many estimate [unemployment rates](#) in the "double digits" persisting into 2021 ([more](#)).

"Temporary" slowdowns and shutdowns of retail and related flows to disrupt transmission of the coronavirus and manage a potentially unsustainable demand for hospital care are generating shifts in consumer demand, employment, and other structural aspects of economic activity. It is not yet clear how stubborn these growth-suppressing – even value shedding – changes will be, but the more rigorous and lengthier the Non-Pharmaceutical Interventions, the less likely pre-pandemic structures, employment, and flows will be fully recovered.

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 but are increasingly strained due to shifts in demand**. These shifts are advancing food and retail concentrations that may hinder future demand signals for certain communities. While a near right-sized freight market may be able to adapt to the shifts in freight flows and volume caused by the disappearance of small businesses, consumers with increasingly limited options might not be as resilient. The full impact of the reversal of Non-Pharmaceutical Interventions may take a few weeks to witness, and without a culture that lends to safely reopening, viral resurgence seems imminent. **Future shutdowns may cripple the dispersed demand and supply network we know today as well as those who depend on them.**