2018-2019 Vertical Market Series

Road Transportation

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Established in 1989, the Equipment Leasing & Finance Foundation is a 501c3 non-profit organization dedicated to inspiring thoughtful innovation and contributing to the betterment of the equipment leasing and finance industry. The Foundation accomplishes its mission through development of future-focused studies and reports identifying critical issues that could impact the industry.

Foundation research is independent, predictive, and peer-reviewed by industry experts. It is funded solely through contributions. Contributions to the Foundation are tax-deductible. Support the Foundation by making a 100% tax-deductible gift today at www.LeaseFoundation.org.

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Preface

Purpose of This Study

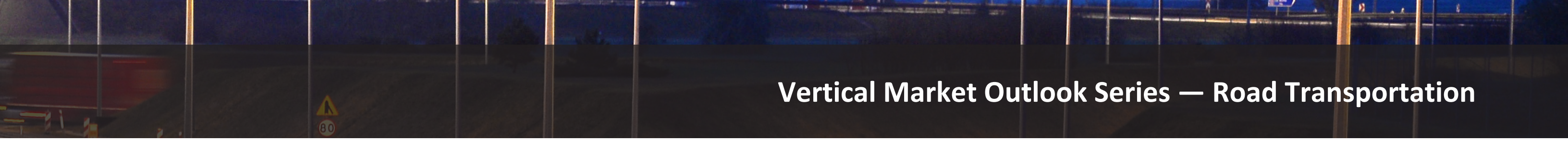
The Equipment Leasing & Finance Foundation commissioned this forward-looking report on the U.S. road transportation sector. ORC International was selected to conduct the research. This, the second of these reports, provides an outlook on U.S. road transportation, sector confidence, anticipated spending, key developments, and trends impacting this sector over the next 1-2 years.

In preparing this report, ORC International utilized its pre-existing expertise, coupled with inputs from a number of outside industry experts and consultants, in analyzing and forecasting U.S. road transportation trends. In addition, broad knowledge of the U.S. macroeconomic environment and of the transportation sector provided a foundation for the report.

Primary and Secondary Information Sources

Information used in this outlook comes from several sources:

- Various industry trade publications and newsletters including *JP Morgan's Transportation & Logistics 2018 Outlook, Transport Topics, Fleet Owner, Logistics Management, Freight Waves, Automotive Fleet*.
- Reports and analysis from diverse media sources and transportation industry research firms such as ACT Research and TechNavio.
- Interviews with ELFA members



Introduction

The U.S. over-the-road transportation/trucking industry is undergoing its best period of growth in years and is predicted by numerous industry participants and analysts to remain strong for the next 12 to 18 months before softening. And the U.S. trucking industry moves more than 70 percent of the nation's freight by volume and earns more than $676.2 billion in revenue annually, according to American Trucking Associations (ATA) estimates.[1]

Truck transport is a "derived demand" industry, where demand for truckers depends on the demand for the products that those trucks eventually haul. As such, the over-the-road transportation/trucking sector serves as a barometer of the U.S. economy. According to ATA, trucking revenues are likely to grow 5.4% annually between 2018 and 2023 and are expected to reach $1 trillion by 2024.[2]

Specific issues working in favor of the industry at this time include low unemployment, booming U.S. housing starts, and strong online sales growth, driving freight volumes to record levels.[3]

Tax reform and economic growth could also provide a lift to truck equipment suppliers in 2018, explained Steve Latin-Kasper, director of market data and research for the National Truck Equipment Association. Latin-Kasper expects economic growth in 2018 to exceed 2017 levels, providing a boost to the trucking industry.[4] "Consumers are expected to spend more and businesses are expected to spend more on structures and equipment. That means more freight will likely have to be moved, which will be good for the industry."[5]

Additional positive elements include the ongoing surge in Class 8 orders coupled with higher spot rates, and equity analysts and industry participants are very bullish on trucking carriers' 2018 performance.[6]

However, with new regulations, a long-haul trucker shortage, and the climbing price of oil, the trucking industry is facing significant changes. And core issues remain – primarily with regard to the advanced average age of U.S. truck drivers and frequent employee turnover.

Some noteworthy obstacles include a growing lack of truck drivers, which is putting upward pressure on driver pay and keeping some companies from expanding their fleets and instead focusing on replacing trucks over the past two quarters; the ongoing wrangling over the electronic logging device (ELD) mandate and Hours of Service (HOS) regulations, which is causing trouble in several trucking niches; and, alongside all of that, fears of a trade war with China and other nations.[7]

Macroeconomic Environment

Over-The-Road Transportation Sector Set To Grow With U.S. Economic Expansion

As the U.S. economy continues to grow, demand for over-the-road truck transportation is also increasing, and this momentum is anticipated to continue through 2018 and into 2019. Consequently, companies offering equipment financing and leasing, logistics, and supply chain management services to transporters have also rebounded in 2018.[8]

Recently President Trump's pro-growth agenda in the form of significant corporate tax cuts and deregulation have been positive catalysts to the over-the-road transportation sector. These tax cuts stand to increase cash flow among companies in the transportation sector and a growing economy also implies that more goods are being transported across the United States, further bolstering the prospects of those companies involved in trucking. Moreover, according to reporting from *Zacks.com*, "the Trump administration intends to spend a whopping $1.5 trillion on several infrastructure projects like constructing new roads, bridges, highways, railways, and waterways across the country over a period of 10 years. This project will generate significant demand for the manufacturing sector, which in turn will raise demand for freight, benefiting the transportation sector."[9]

These things are reflected in data from established freight-based data providers like FTR and Cass Information Services, whose recent monthly data reads continue to reinforce the current era of good times in the over-the-road transportation sector.[10]

Industry analysts and media outlets pointed out that protectionist disruptions to international trade flows were the main threat on the horizon as possible risk factors to continued growth, with a failed renegotiation of NAFTA specifically something that could take the United States off its projected 2.8% GDP growth in 2018.[11]

U.S. Road Transportation Industry Confidence

The trucking industry is undergoing its best period of growth in years and should remain strong for the next 18 months before softening. The industry is benefitting from low unemployment, booming housing starts, and strong online sales growth, according to Bob Costello, the American Trucking Associations' chief economist.[12]

And a good portion of freight transportation and logistics industry stakeholders, including shippers, motor carriers, 3PLs, brokers, and others, continue to marvel at the overall state of conditions in the trucking sector, including tight over-the-road capacity, carrier pricing power, and stable demand patterns. "This is the strongest market I have seen in my 27-year career, especially with the market this strong this early in the year," commented Derek Leathers, president and CEO of Werner Enterprises. "So when you think about the strength of the market, you have to think about seasonality, with January through March usually being a slower period, and it has been anything but that this year. It really started around mid-year last year and has just continued to build. We saw virtually no drop-off at all from the fourth quarter to the first quarter, with freight activity remaining strong through the year thus far. We are very bullish on what we are seeing and very excited."[13]

Additionally, FTR COO Jonathan Starks pointed out: "We are approaching record level spot rates, freight demand remains elevated, and the economy continues to grow at a good pace. If there is any frustration, it is having to turn away loads due to a shortage of drivers. We have had record levels of trucks and trailers ordered in the first quarter of 2018 and, as that equipment is delivered, we may see some of the capacity pressures relieved. More likely is that freight demand will gradually slow over the course of the year. This can be a challenging time for carriers as they try to balance the short-term and long-term needs of the business. This freight environment won't stay around forever, and both carriers and shippers will be striving to balance those competing requirements."[14]

U.S. Freight Volumes Continues To Rise

After essentially seeing no growth in loads in 2016, the industry snapped back and finished strong in the fourth quarter of 2017 with total loads up 6 percent year–over. So far in 2018, the total number of loads is up 5.4 percent compared with the same period a year ago.

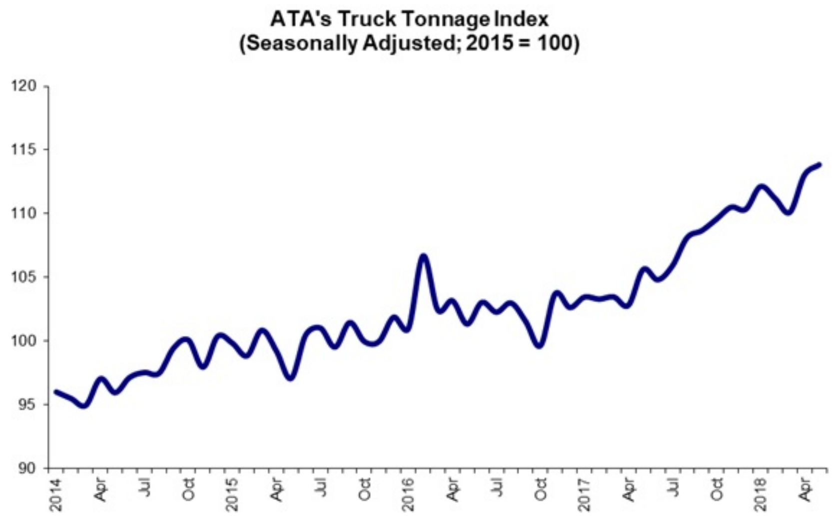
The number of miles driven per load continues to decrease for full truckload carriers. The average miles driven per haul fell 34 percent last year to 524 miles, down from nearly 800 miles about 15 years ago.

A changing supply chain is behind the decline, Costello said. Online and big box retailers have increased their number of distribution centers across the country, shortening distances for deliveries. The number of miles truckers are driving annually also has fallen and now stands at about 100,000, roughly 35,000 miles less than 15 years ago.

Sales of trucks in the heaviest Class 8 weight segment continue to be strong as demand grows from both leasing companies and motor carriers. ACT Research estimates that manufacturers will receive orders for 305,000 Class 8 trucks this year, a 19 percent gain from 296,440 vehicles in 2017.

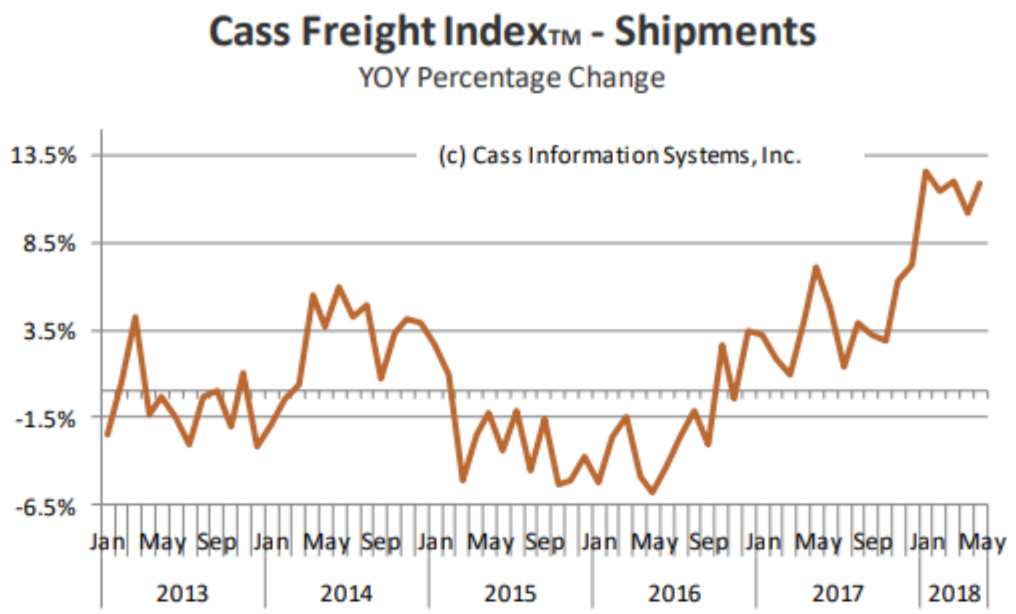
Contract and spot freight rates continue to soar. The contract rate average revenue per mile rose 3.5 percent in 2017. Through the first two months of this year, contract freight rates have jumped 15 percent per mile. "We've never seen numbers like this," Costello said.[15]

American Trucking Associations' advanced seasonally adjusted (SA) For-Hire Truck Tonnage Index rose 0.7% in May 2018 after rising 2.7% in April 2018. In May, the index equaled 113.8 (2015=100), up from 113 in April. Compared with May 2017, the SA index increased 7.8%, down from April's 9.9% year-over-year increase. Year-to-date, compared with the same five months last year, tonnage increased 8%, far outpacing the annual gain of 3.8% in 2017.[16]



Source: **http://www.trucking.org/article/ATA-Truck-Tonnage-Index-Rose-0.7-Percent-in-May**

The ATA has projected that from 2018 to 2023, the freight volume growth rate will be 3.4% per annum. For 2017, ATA estimated that 15.18 billion tons of freight was moved by all modes. The figure will rise 36.6% to 20.73 billion tons in 2028. Goods hauled by both truckload and less-than-truckload (LTL) operators will rise by an average 3% per annum over the next five days.



U.S. Small Business Default Rates – Transportation Sector

Small business lending climbed to an all-time high in May 2018, according to recent research by PayNet, a provider of small business credit data and analysis. "Times are unusually good for Main Street businesses and their lenders now," explained William Phelan, president of PayNet, Inc. "The combination of record-high credit demand and low credit risk for main street businesses signals that higher profitability is in store for commercial lenders — especially those with technology systems currently in place that can minimize costs."[17]

Small business lending saw broad-based growth in May 2018, as nearly every state saw lending increases on an annual basis. Of the ten largest states, growth was led by Texas (+12.9% Y/Y) and North Carolina (+12.3% Y/Y). The majority of industries also experienced growth in May, led by Transportation & Warehousing (+15.0% Y/Y), Mining (+9.4% Y/Y), and Construction (+7.5% Y/Y).[18]

Anticipated Over-The-Road Transportation Equipment Sales & Purchases

Sales of Class 8 tractors are expected to grow as much as 20% in 2018 as big-fleet truck buyers begin spending again after having reduced their capital expenditures dramatically in 2016 and 2017, executives explained at the National Truck Equipment Association's (NTEA) annual Work Truck Show.[19]

"We expect to see a significant bounce for tractor sales in 2018 as big fleets [more than 500 trucks] return to the market," explained Steven Latin-Kasper, director of market data and research for NTEA. That bounce may be short-lived, however, as Class 8 sales may fall off again slightly in 2019 due to saturation, Latin-Kasper added.[20]

In 2018, FTR Transportation Intelligence expects 60,000 more trucks will enter the market than are needed to replace retiring trucks. What's not clear is if these strong truck sales forecasts will add capacity or primarily serve as replacement capacity. Incentives for carriers to purchase new trucks include better fuel economy, lower maintenance costs, higher reliability, and improved driver recruitment and retention. While larger and medium-sized carriers most commonly purchase new equipment, they may not be able to hire a new driver for each new truck, limiting the actual incremental growth to the fleet. Smaller carriers purchasing used trucks may be able to recruit friends and family members to join the business during these strong economic times.[21]

New housing construction across the U.S., another driver of vehicle sales, albeit in the light- and medium-duty weight classes, is expected to grow about 4.5%, according to the National Association of Home Builders.[22]

Trucking companies ordered 35,600 trucks in May 2018, more than double the orders from the same month a year ago, according to preliminary figures by ACT Research. That leaves manufacturers with an order backlog of more than 200,000 trucks, or 8.4 months of production," reported the *Wall Street Journal* in early June 2018.[23] And research group FTR recently estimated May 2018 orders of Class 8 trucks, reached 35,200 units. Truckers have averaged over 40,000 orders over the past six months, the strongest pace the group has seen.[24]

About 60% of Class 8 new-vehicle registrations over the past two years has been coming from smaller fleets — those with fewer than 500 trucks, reported Andrej Divis, director of Medium and Heavy Commercial Vehicle Research with IHS. "We see signs that the big buyers are coming back in 2018, but we're not sure how long that will last."[25] Peterbilt is forecasting that sales in the industry's heaviest weight class will be in the range of 235,000 to 265,000 vehicles in the U.S. and Canada this year. That would be the third-best year ever for sales of trucks in the heaviest Class 8 weight segment.

Commercial truck retail sales forecast
Annual percent change

Data is in units (000s)

U.S.	2017	2018	2019
Classes 3–5	397.0	414.1	423.9
Classes 6–7	116.0	126.2	141.9
Class 8	189.5	217.9	244.0
Classes 3–8	702.5	758.2	809.8
Classes 3–7	513.0	540.3	565.8
Dec 2017 3–8%	0.9%	7.9%	6.8%
Dec 2017 3–7%	1.8%	5.3%	4.7%
July 2017 3–8%	–0.8%	10.6%	5.9%
July 2017 3–7%	2.2%	7.8%	3.7%

Source IHS Markit

Source: **https://www.ntea.com/NTEA/Member_benefits/Industry_leading_news/NTEANewsarticles/Commercial_truck_chassis_sales_forecast_improves_at_end_of_year.aspx**

"Carriers continue to add trailers as a way to increase total productivity," added Don Ake, vice president of commercial vehicles of FTR. "Overall business confidence is surging due to tax reform, and it's making a hot market even hotter."[26]

Demand for Used Equipment

A surge in freight is fueling robust sales of used trucks, according to industry data and truck dealers. According to preliminary North America Class 8 net order data released by ACT Research in early July 2018, the over-the-road transportation industry booked 42,200 units in June 2018, exceeding 40,000 units for the fourth time in six months. "Preliminary net order data indicate that demand for Class 8 trucks continued to be strong in June, improving 133% compared to year-ago June orders," explained Kenny Vieth, ACT's President and Senior Analyst. He added, "As June is typically a weak order month, the robust actual order volume boosts June's seasonally adjusted volume to the best of the cycle and second best of all time at 48,200 units. Through year-to-date June, Class 8 orders have been booked at a 492k seasonally adjusted annual rate."

About medium duty orders, Vieth commented, "Solid medium duty activity continued in June, if below levels seen through Q1. For the month, preliminary NA Classes 5-7 net orders rose 23% y/y, to 26,400 units. With a favorable boost from seasonality, June's seasonally adjusted order volume jumped to 29,100 units, bringing Classes 5-7 orders booked through the first half of 2018 to a 320k SAAR."[27]

Demand for used trucks is not uniform across the United States. A recent survey of dealers selling Paccar Inc. brands, Kenworth Truck Co. and Peterbilt Motors Co. found 63% of dealers reported demand increased at their dealership in the first quarter compared with the previous fourth quarter, and 37% of dealers indicated used-truck demand was flat at their dealership.[28]

One thing that is helping support sales of used trucks is the booming demand for new trucks and trucks coming off leases are freshening the used-truck market. In addition, when it comes to trucks that are 3 to 5 years old, "So far, the incoming supply of used trucks is slower than predicted," explained Chris Visser, senior analyst for commercial vehicles at J.D. Power. "Based on historical deliveries, we should be seeing more 3- to 5-year-old trucks hitting the market. Demand has picked up, which is helping move inventory. I still expect to see an acceleration in the rate of trade-ins any time now," Visser added.[29]

Demand for Refrigerated Trucks and Trailers

Demand for transportation refrigeration systems is projected to increase 4.2% per year through 2022 to $2.7 billion, according to a recent study from The Freedonia Group. The study, *Commercial Refrigeration Equipment in the US, 14th Edition*, concluded that growth opportunities will stem largely from the ongoing need for refrigerated transport of food and beverages.

Most demand for transportation refrigeration systems in the United States is met by domestic production. However, competition from imports has increased in recent years driven by rising imports from Mexico and China due to lower production costs. Transportation refrigeration systems are among the most expensive types of commercial refrigeration equipment, and some manufacturing capacity has been relocated to help curb production costs.

Kyle Peters, Capital Goods project director, added some context, stating: “Transportation refrigeration systems will outpace all other commercial refrigeration product segments.” Demand for commercial refrigeration equipment in the US is projected to rise 2.9% per year through 2022.[30]

The growing demand for online grocery shopping has driven the market for multi-temperature refrigerated trucks and trailers. Manufacturers are increasingly integrating refrigerated trucks and trailers with multi-temperature systems to increase the operational efficiency of the delivery process and offer high-quality products. Also, the growing demand for frozen foods has propelled suppliers to equip their refrigerated units with thermal liners, computer controls, and multi-temperature systems to keep the food at the adequate temperature during transportation. One of the latest developments in the market is the rapid move towards sustainable refrigeration units to reduce environmental impact and carbon footprint refrigeration, which will be another major growth driver for the overall market in the coming years.

In addition, some manufacturers have started installing temperature monitoring systems in their refrigerated units. Such systems enable monitoring through a fleet management software or intelligent alarm units and send messages to the drivers in case of any equipment failure. They also minimize the response time to refrigeration equipment failures by almost 70%, as the problem is immediately fixed or the goods are transferred to another truck, subsequently saving the goods from spoilage. Also, the supplier also equipping their trucks with GPS tracking systems to stay on schedule for deliveries.[31]

Pricing

On the pricing side, across the over-the-road transportation/trucking sector, pricing in the first quarter increased annually roughly in the 8% range. While that is a large number, it puts pricing back on par, or slightly ahead, of where pricing was back in 2013 and 2014. “Carriers are getting back to where they were, with a little bit of progress,” reported Derek Leathers, president and chief executive officer of Werner Enterprises. “That is evident when looking at the publicly traded truckload group, whose margins have only improved by 1-2% at a time when rates improved by 8%. That is because carriers need that equity to pay drivers, invest in fleets, and invest in infrastructure that supports our shippers.”[32]

Over-The-Road Transportation / Trucking Equipment Financing Volumes

Many organizations across the United States have begun to lease more of their trucks, whereby a shorter asset management lifecycle helps reduce costs significantly. Indeed, there has been a recent influx of equipment-as-a-service deals in the trucking sector, where this situation is referred to as “pay by the drip.” Operators rent a truck for a project or other length of time to avoid the large upfront cost and preserve cash.[33]

Steve Goodale, vice president for Daimler Truck Financial pointed out that for smaller fleets a full-service lease can be attractive because it provides a large network of service points. However, he added that “The customer is paying a premium for bundling products and services together for convenience.”[34] And Chris Sample, area operations manager for PacLease, the leasing arm of Paccar Inc., parent company of Kenworth Truck Co. and Peterbilt Motors Co., added that leasing — from an asset-management standpoint — reduces the risk of obsolescence. “As the price of trucks continues to rise, so does the demand for a leasing solution,” Sample explained. Instead of spending more than $100,000 to purchase a depreciating asset, many businesses see the value of having money for acquisitions, adding a location, or “any other investment with a positive ROI,” Sample said, noting that leasing shifts the risk of a truck’s residual value to the lessor.[35]

And James C. Griffin Jr., COO & CTO of Fleet Advantage, explained back in April 2018 that his company has launched new flexible leasing programs as a response to the Trump tax changes, aimed at helping fleets achieve more balance-sheet benefits.[36]

Over-The-Road Transportation / Trucking Equipment Lease & Rental Trends

Industry experts and participants pointed out that dealers have recently been expressing an interest in expanding their leasing company fleets. This is not a tendency toward rental, but rather a full-service lease situation. Dealers are curious about this move as they consider efforts to bolster parts and service connectivity. And while leasing has historically been the preference of larger fleets running standard equipment on shorter trade cycles, full-service and finance lessors have reported that such distinctions are more nebulous now, with many fleets taking a second look at all their various options.

Touching on truck leasing, Steve Goodale, vice president of Daimler Truck Financial, which provides services for customers of Freightliner, Western Star, and other Daimler Trucks North America brands, explained that “typically, larger fleets, driven by an interest in tax benefits and the company’s cash flow, choose a leasing model. For example, a larger fleet may not need the depreciation benefit that comes with financing by loan and will decide to take advantage of finance leasing’s lower payments, which allows them to simply expense the monthly lease payment. This also offers them shorter equipment life cycles and allows them to adopt the newest technology as it becomes available.”[37]

In addition, analysis from JPMorgan Chase in late 2017 stressed additional benefits associated with truck rental and leasing options, pointing out that “having the flexibility to upgrade sooner to newer, more fuel-efficient truck models is an attractive advantage of rental and lease, given that fuel consumption accounts for roughly 70 percent of a fleet’s annual operating costs. The fuel efficiency of new models will continue to improve over the next decade as the Environmental Protection Agency and National Highway Traffic Safety Administration implement new requirements for medium- and heavy-duty vehicles as part of their greenhouse gas standards.”[38]

Over-The-Road Transportation & Trucking Sector-Specific Trends & Key Developments

Capacity Crunch

Currently, the U.S. over-the-road transportation sector is experiencing a situation with low truck supply and high freight demand. One of the reasons for tightened capacity is the ongoing driver shortage. Year after year, older drivers are retiring with fewer younger drivers taking their places. As the work in the trucking sector can involve working long hours, driving long distances, being away from family for long periods of time, and less-than-ideal pay, the industry is facing challenges bringing in new drivers. And fewer drivers mean fewer trucks on the road to haul this increase in freight, which, in turn, drives up the rates because of the premium placed on securing a truck. It was a good year for the U.S. economy, and this additional freight volume combined with two major hurricanes diverting resources also greatly impacted the ability to secure trucks.[39]

Another factor that is impacting capacity is increased government regulations such as the electronic logging devices (ELD) mandate which began on December 18, 2017. The ELD mandate essentially requires all motor carriers to install electronic devices in their trucks that will automatically track drivers' hours of service. By law, drivers are only allowed to drive for 11 hours with a mandatory, continuous rest period of 10 hours, daily. Prior to the mandate, most (but definitely not all) drivers kept manual log books to track their hours of service, while some of the larger carriers already had ELDs.

Many smaller carriers have become compliant with ELD now, but some are having issues with the cost of installing the devices and even more dislike the automatic tracking of their movements. Regulations such as these are implemented with the intention of creating safer roads. However, they are also perceived by drivers as an infringement on their personal space—as many consider their trucks to be a home away from home in addition to a workspace.[40]

Truckers Will Respond as the ELD Is Now in Effect

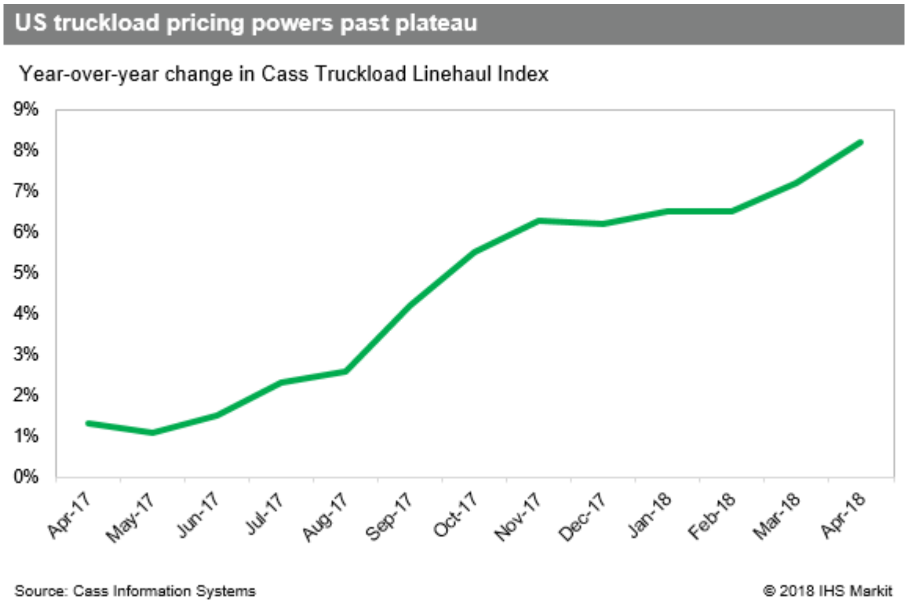
The Trump administration implemented new safety regulations in December 2017 that require commercial truck drivers to use electronic logging devices to record their hours. Electronic Log Devices (ELDs) may have a significant impact on the transportation industry in 2018. Aimed at holding drivers to the maximum fifty hours of service (HOS) per week, with two days off, these devices can make roads safer by encouraging drivers to rest enough.[41]

The ELD mandate will dramatically reduce the number of hours truckers can drive. Although truckers have been advised for years to reduce driving hours and take frequent breaks, the ELD mandate effectively eliminates the "missing entries" in the tracking log. Failure to adhere to hours of service regulations, as exhibited within each truck's ELD, could result in stiff penalties and fines against the trucker, carrier and even shippers. Similarly, this equates to lower wages for truckers, so they will demand higher wages or look for alternative employers, added Michael Levans of *Logistics Management*.[42]

But many truckers say the federal mandate does not provide the flexibility they need. "Federal regulators simply don't have a clue," Todd Spencer, executive vice president of the Owner Operator Independent Drivers Association, a trade group, explained. "They don't have a clue what truckers do, how they go about doing it, the environment that they live in, the schedules and things like that, the demands of the job."[43]

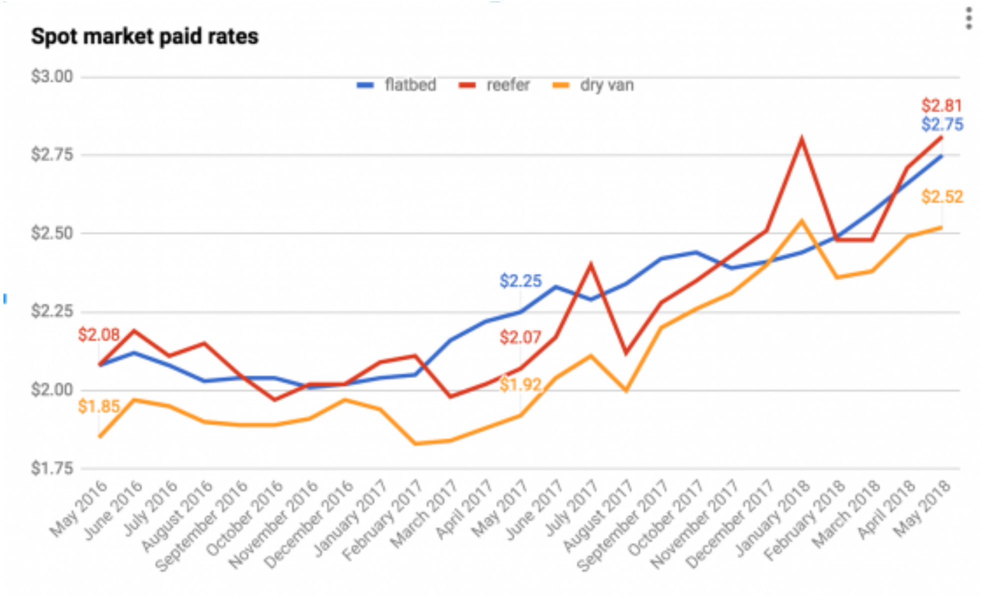
Spot Market Rates And Contract Rates

U.S. truck prices to transport fruits and vegetables from Mexico and California are up 20 to 30 percent compared with a year ago, mirroring the rates in other modes too. Even so, the purchasers of transportation are opening their wallets and riding out the inflation until the macroeconomic environment changes.[44]



Source: **https://www.joc.com/sites/default/files/u1390826/Cass%20Truckload%20Linehaul%20Index%20hits%20historic%20high.PNG**

Some of the largest US shippers acknowledged higher freight costs pinched their budgets and profits in the first quarter.[45]



Source: **https://www.overdriveonline.com/spot-rates-surge-to-record-highs/?utm_medium=single_article&utm_campaign=site_click&utm_source=in_story_promotion**

Freight marketplace DAT keeps track of supply and demand in the freight industry through a bulletin board that matches companies with loads to be delivered to the vehicles that will take the goods to the marketplace. The measures are in the spot market, where vendors that don't contract their deliveries find drivers for their products.

Recent readings show demand for vehicles skyrocketing, a sign that generally points to inflationary pressures building up in the supply chain. “It’s an indication that there’s capacity pressure in the marketplace, that brokers are searching more and posting more in order to find a truck,” said Peggy Dorf, market analyst at DAT. “This is an indicator that pressure is much higher than it was a year ago.”[46]

Driver Shortages

The trucking industry is facing a growing shortage of drivers that is pushing some retailers to delay non-essential shipments or pay high prices to get their goods delivered on time. The U.S. trucking industry was short about 50,000 drivers in 2017, and that number could rise to 175,000 by 2026, according to Bob Costello, the American Trucking Associations’ chief economist.[47] This problem is compounded by the fact that the average age of U.S. truck drivers is now around 55, as the industry employs a greater percentage of persons 65 or older (6.1 percent) than 20-to-24-year-olds (4.9 percent).[48]

“In addition to the sheer lack of drivers, fleets are also suffering from a lack of qualified drivers, which amplifies the effects of the shortage on carriers,” explained ATA Chief Economist Bob Costello. “This means that even as the shortage numbers fluctuate, it remains a serious concern for our industry, for the supply chain and for the economy at large.”[49]

According to an industry analysis by DAT Solutions, just one truck was available for every 12 loads needing to be shipped at the start of 2018, which is the lowest ratio since 2005.[50]

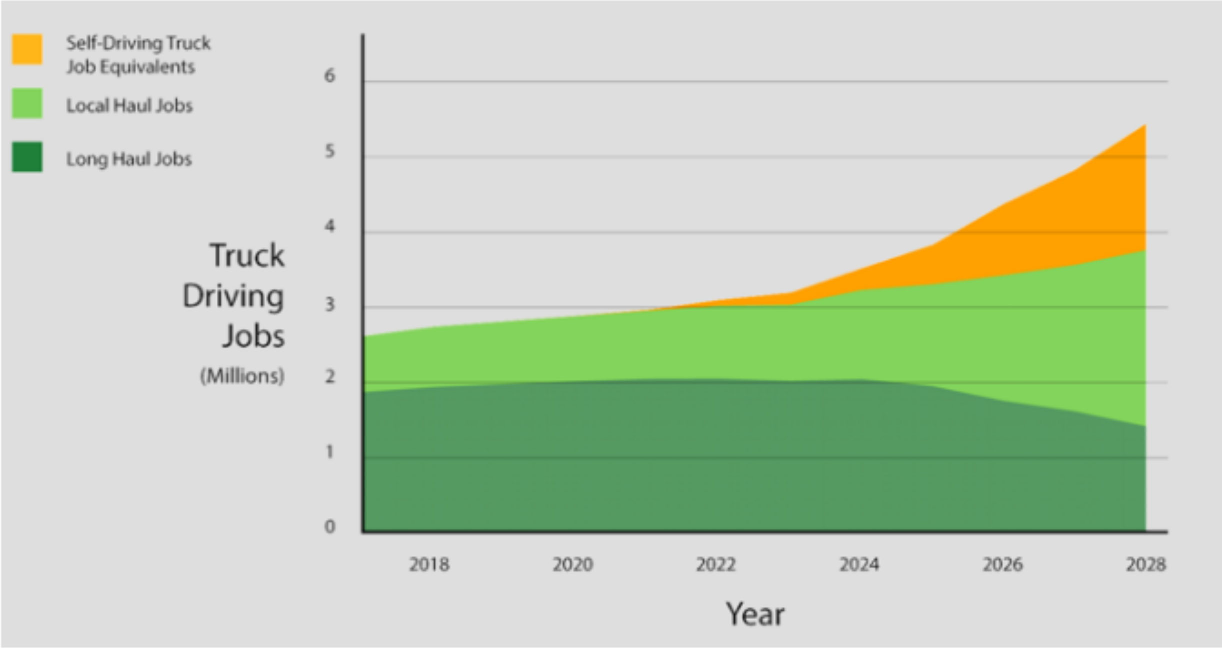
Indeed, large carriers are having trouble seating their trucks and trucking as a whole has become more fragmented and less consolidated since 2012. The number of ‘very small’ trucking fleets (1-6 trucks) grew 89.9% from March 2012 to March 2018, from 94,648 to 179,769. The number of ‘small’ fleets (7-19 trucks) grew 46.6%; the number of ‘medium’ fleets (20-100 trucks) grew 34.6%; the number of ‘large’ fleets (101-500 trucks) grew 20.2%; and finally the number of ‘very large’ fleets (501 trucks and up) grew 20.5%, from 316 fleets to 381 fleets. This demonstrates that much of the growth in trucking employment is happening at the very small and small fleet level. The trucking industry can experience healthy employment growth at the same time that large carriers complain of a ‘driver shortage.’[51]

Self-Driving Trucks

Self-driving trucks share the same anticipated benefits of self-driving cars—improved safety, better fuel efficiency, lower carbon footprint. Plus, they also have a tremendous influence on the US economy and workforce. And in a political climate where many are afraid of the possibility of jobs destruction, self-driving trucks, several reports and basic logic have suggested, are going to wipe out truckers. Trucking is going to be the next great automation bloodbath, reported a piece in *The Atlantic* in February 2018.[52]

However, a counter-narrative is emerging: No, skeptics in the industry, government, academia are saying, trucking jobs will not be endangered by autonomous driving, and in the brightest scenarios, as in new research by Uber’s Advanced Technologies Group, there may be an increase in trucking jobs as more self-driving vehicles are introduced.

“We’ve been disappointed over the last year to see a lot of stories about how self-driving trucks are going to be this huge problem for truck drivers,” says Alden Woodrow, the product lead for self-driving trucks at Uber. “That’s not at all what we think the outcome is going to be.”



One of Uber's scenarios of self-driving trucks stimulating growth in trucking jobs (Uber)

Source: **https://www.theatlantic.com/technology/archive/2018/02/uber-says-its-self-driving-trucks-will-be-good-for-truckers/551879/**

For one, Uber does not believe that self-driving trucks will be doing "dock to dock" runs for a very long time. They see a future in which self-driving trucks drive highway miles between what they call transfer hubs, where human drivers will take over for the last miles through complex urban and industrial terrain.[53]

Many industry analysts and reporters believe that automated technology is unlikely to replace truckers anytime soon— but they concede that this shift will alter the nature of the job. "We're not trying to get rid of drivers," says trucking executive Robert Haag, vice president of operations for Perfect Transportation. "We're trying to enhance the safety, allow drivers to be more productive, create a better return for the company, and supply a better service for our customers. Drivers will be less involved with physically driving the truck, and more with monitoring the truck and establishing and maintain customer relationships." They are likely to become the highway equivalent of an airline pilot.[54]

Electric Trucks

Shippers want electric vehicles that will reduce transportation costs and help meet emissions reduction targets set by various corporate sustainability programs. And carriers are seeking relief from volatile diesel fuel costs and the possibility of rising costs associated with heavy-duty trucks as diesel emissions regulations get stricter.[55]

Industry analysts and experts expect electric commercial vehicles to prove themselves first in localized applications, such as drayage and local delivery markets. "They are really going to play well in yard tractor situations, at ports, for pick up and distribution in the city, and delivery drivers going out and coming back to their home base," explained Paul Rosa, senior vice president of procurement and fleet planning at Penske Truck Leasing. "Long-distance trucking is going to be last" as charging infrastructure expands.[56]

Indeed, many electric truck makers have been recently focusing on the local delivery market, with the understanding that trucks and vans with short daily routes are a good fit for electrification. These vehicles will host batteries that won't need to be recharged until they are retired for the night and charging can be done at the vehicle operators' central depots, eliminating the need for expensive roadside charging stations. Others are developing vehicles for local hauling operations, such as to supply restaurants and supermarkets.[57] "The writing is on the wall" for alternative powered vehicles in last-mile delivery, according to Mike Hasinec of Penske Truck Leasing. "When you look at the routes, at the stop density, the infrastructure is very feasible."[58]

Yet a persistent concern remains around electric trucks and battery capacity degradation over time. Industry experts have warned that battery capacity starts to decline after years of use and that yard duty trucks could see a 20% reduction in battery capacity within 7-10 years. Additionally, extremely cold temperatures impact battery life more than extreme heat. And, companies will need to anticipate and plan for how they will dispose of these eventual degraded batteries when they reach the end of their utility.[59]

Last Mile Delivery is Quickly Rising in the Ranks of Trends in Trucking and Freight

Long-haul trucking traditionally was a pickup and then offload at a distribution center or customer location, but increasing pressure for more last-mile deliveries will put pressure on carriers to offer more services beyond traditional pickup and offload practices. Indeed, more and more retailers, direct-to-consumer manufacturers and others are pursuing combinations of last mile actions to gain a sustainable share in their respective marketplaces.

Additionally, Amazon is launching a program that will help entrepreneurs build their own companies delivering Amazon packages.[60] The program will include access to Amazon's delivery technology, hands-on training, and discounts on a suite of assets and services, including the vehicle leasing and insurance. "We have great partners in our traditional carriers, and it's exciting to continue to see the logistics industry grow," added Dave Clark, Amazon's senior vice president of worldwide operations. "Customer demand is higher than ever, and we have a need to build more capacity. As we evaluated how to support our growth, we went back to our roots to share the opportunity with small-and-medium-sized businesses. We are going to empower new, small businesses to form in order to take advantage of the growing opportunity in e-commerce package delivery."[61]

Unfortunately, as carriers retool their services to face the evolving industry, they must also face the pressures of the driver shortage, ELD compliance, and increase demand. How will carriers offer these services to keep up with a changing market? Many will partner with last mile carriers who specialize in this service.[62]

The Uberization of Freight Will Redefine Vendor Freight Management

The Uberization of freight will have additional impacts on tracking for vendors, too. Vendors can no longer rely on shippers for carrier selection, preferences, and pricing, yet shippers will still require adherence to the inbound freight routing guide. Vendors that have not previously considered Uber-like technologies for freight transportation will need to explore and select truck-sharing providers within the coming year. Meanwhile, platooning technology, turning a series of trucks into a train like snake on the road, reducing the space between drivers and maximizing fuel efficiency, is already on the horizon, according to analysis by Dan Goodwill & Associates.[63]

Blockchain For Logistics

In its most basic form, blockchain technology is viewed as "an incorruptible digital ledger of economic transactions that can be programmed to record not just financial transactions but virtually everything of value" according to Don Tapscott, co-founder and executive director at the Blockchain Research Institute.[64]

Due to the complexity and lack of transparency in many current supply chains, there is growing interest in how blockchain technology might transform the supply chain and logistics industry. Indeed, blockchain promises efficiency gains and improved transparency of supply chains and could positively impact everything from warehousing to delivery to payment. The effect of greater efficiencies around logistics will develop productivity lifts across the industry and bolster the financial condition of trucking companies committed to the process, with potentially positive implications for lenders.

Evidence of the growing interest in this technology includes analysis by DHL, released in March of 2018, touting blockchain technology's potential to transform the logistics industry. The report noted that "global supply chains are notoriously complex, with a diverse set of stakeholders, varying interests, and many third-party intermediaries—challenges that blockchain is well suited to address. The report includes initial findings on a working prototype developed by DHL and Accenture, which tracks pharmaceuticals from the point of origin to the consumer, preventing tampering and errors."[65]

In addition, media outlets have reported that a new consortium called the Blockchain in Transport Alliance (BiTA) is now working to apply blockchain to solve some of the most intransigent problems in trucking. Companies across many areas of the trucking supply chain have joined BiTA, including UPS, Salesforce, McCleod Software, DAT, Don Hummer Trucking, and about 1,000 more applicants.[66]

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