

## THE US LONG-HAUL TRUCKING INDUSTRY IN NEED OF TRANSFORMATION TO ADDRESS DRIVER SHORTAGE

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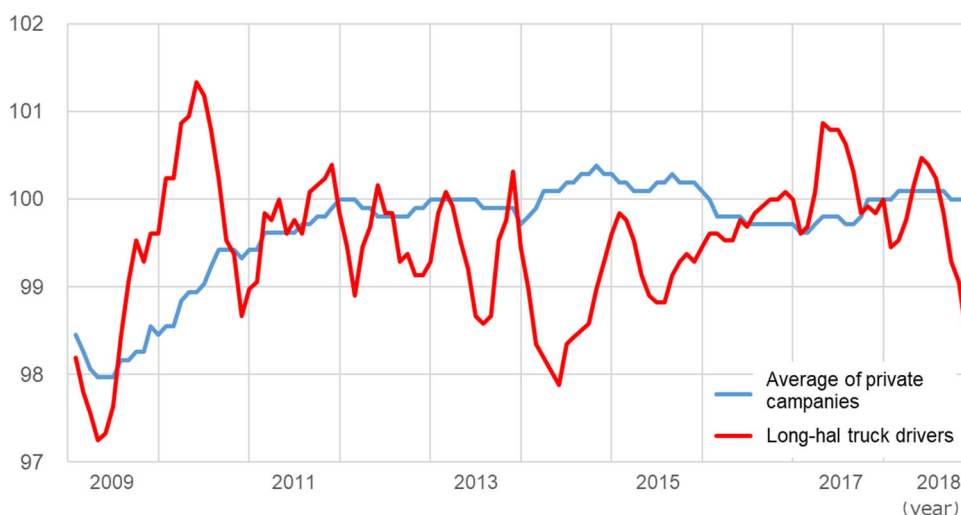
### SUMMARY

- A shortage of long-haul truck drivers in the US has been pointed out in recent years. Truck drivers' excessive working hours have resulted in traffic accidents, which has become a social issue that requires policy intervention at the federal level.
- Since the trucking industry has many independent or small business operators, it has become difficult for them to secure enough drivers. The issue is likely to have a negative impact on their management.
- There are high expectations for autonomous trucks and platooning trucks to mitigate the driver shortage, but it still takes time for them to be commercialized. Meanwhile, the focus will be on improving the efficiency of transportation and optimization of driver resources. The market expects entry from other industries.

### A SERIES OF UNDERLYING ISSUES BEHIND THE TRUCK DRIVER SHORTAGE

A shortage of long-haul truck drivers has been pointed out as a concern in the US in recent years. For example, the American Trucking Associations (ATA) estimated in 2018 that the industry would be understaffed by about 63,000 drivers. However, an increase in working hours and wages, which is considered to be a necessary outcome of the driver shortage, has not been observed (Figure 1). Behind this is believed to be the fact that the working hours of truck drivers have been underreported and this has distorted the official statistics. For example, loading and unloading times, which should be included in working hours, are often reported as rest times. In other cases, a shorter rest time is allowed when a delivery may not be completed within statutory working hours.

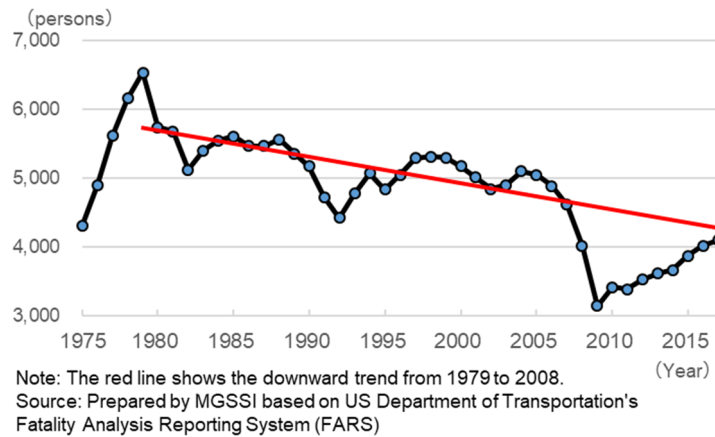
**Figure 1: Trend in weekly working hours** (3 month moving average, Jan 2018= 100)



Source: Prepared by MGSSI based on data from US Bureau of Labor Statistics (BLS)

Under these circumstances, a shortage of long-haul truck drivers has gained increasing attention as a social issue as a cause of excessive working hours leading to drowsy driving and lack of concentration, which resulted in an increase in traffic accidents. Fatalities involving long-haul trucks have been gradually decreasing over the long term. Although fatalities decreased sharply after 2004 due to the proper installation of safety equipment in vehicles, speed restrictions, and tighter regulations on drunk driving, the number has been on the rise since 2010 (Figure 2). This may be partly due to the increase in logistics volume accompanying the economic recovery, but even without that impact, the trend whereby traffic fatalities start increasing after some decades of decline remains the same.

**Figure 2: Fatalities involving long-haul trucks**

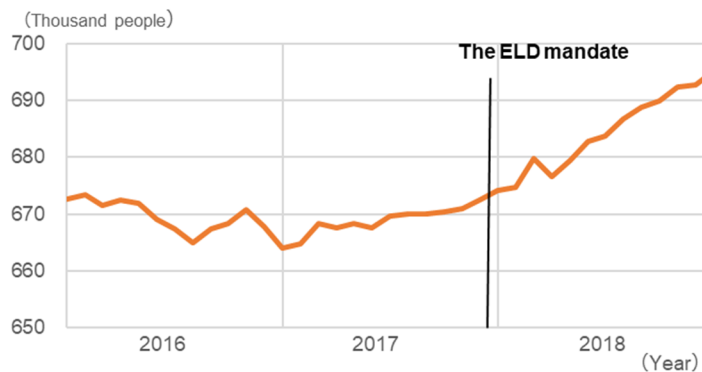


## ISSUES THAT HAVE SURFACED SINCE THE ELD MANDATE

The increase in fatalities involving long-haul trucks was highlighted as a social issue that requires policy intervention at the federal level. To address the issue of underreporting, the federal government mandate for electronic logging device (ELD), which automatically records a truck drivers' log, took effect in December 2017<sup>1</sup>. An ELD is a device that logs a driver's record of duty status, including date and location, engine status (idling, rapid acceleration and hard braking, etc.), driving distance and other data. Installation of a similar device is mandatory in Japan as well. In the US, drivers' hours of service, in addition to the weight of the vehicles they drive, are verified at highway weigh stations.

ELD is expected to help reduce excessive working hours of drivers and traffic accidents caused by fatigue. On the other hand, trucking companies need to increase employment to compensate for the work that had been covered by long working hours. In fact, the number of long-haul truck drivers, which had not been growing until 2017, began to increase around January 2018 after the ELD mandate took effect (Figure 3). As a result, the unemployment rate in the transportation industry, which was showing signs of bottoming out after declining in a recovery phase following the Lehman shock, started to decline again and reached its lowest level in the past 20 years (Figure 4).

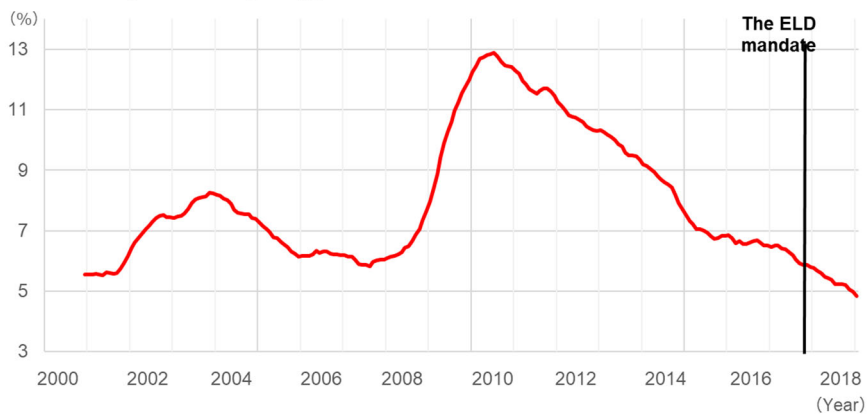
**Figure 3: Number of long-haul truck drivers employed**



Source: Prepared by MGSSI based on data from US Bureau of Labor Statistics (BLS)

<sup>1</sup> ELDs are mandatory for all trucks over 10,001 lbs (4.5 tons) and for buses with nine passengers or more (including the driver).

**Figure 4: Trend in unemployment rate in the transportation industry**  
(12 month moving average)



Source: Prepared by MGSSI based on data from US Bureau of Labor Statistics (BLS)

If the supply and demand for truck drivers become even tighter, it may have a negative impact on business because many small trucking companies, including independent truckers, find it difficult to secure drivers. Moreover, the trucking industry may not be able to meet the growing demand of transportation due to the shortage of drivers, which could create a bottleneck to economic activities in the US.

This situation recalls the growing labor shortage in the transportation industry that Japan has experienced in recent years. In Japan, however, the shortage is due to the complex operation processes of the home-delivery business, which leaves little room for labor saving. On the other hand, the shortage in the US is occurring in long-haul trucking business. This shortage is expected to be relieved by the introduction of new technologies or upgrading of machines and equipment. US truck transportation volume is estimated to be five times that of Japan on a ton-kilometer basis<sup>2</sup>, which is larger than when compared by population (3 times) and by GDP (4 times). It means that energy and labor saving in long-haul truck transportation would bring about a significant benefit in the US.

## EXPECTED ADVANCEMENT IN ENERGY AND LABOR SAVING

For energy and labor saving in long-haul truck transportation, autonomous driving technologies have been tested. Both Alphabet and Amazon, which are leading the technological development of autonomous driving, are intensifying their efforts toward autonomous trucking and actively conducting pilot programs.

Waymo, the Alphabet-owned autonomous car company, began testing autonomous driving of heavy trucks in March 2018. Retail giant Walmart, which is involved in transportation and delivery, as well as being a major long-haul transportation user itself, is testing customer pick-up and delivery with autonomous vehicles developed by Waymo. It is widely believed that Walmart will partner with Waymo in long-haul transportation as well. Meanwhile, Amazon, as an AI technology developer and long-haul transportation user, have tested autonomous vehicles for mainly home-delivery business. However, autonomous trucking startup Embark was spotted hauling an Amazon trailer in January 2019 and it was widely covered by the news. Daimler, which has the largest share in the US trucking market, is also stepping up its efforts in autonomous driving technology development.

The US startup TuSimple, founded in 2015, launched a two-week pilot program in May 2019, to test long-haul autonomous deliveries for the United States Postal Service (USPS), transporting mail and packages<sup>3</sup>. TuSimple has established itself as a pioneer among autonomous truck developers. The company has raised over USD 170 million in total, including USD 95 million from Chinese internet giant Sina, famed for its Weibo microblogging service (February 2019). Ike Robotics, founded in 2018 by former Uber engineers, which is developing

<sup>2</sup> Intermodal Logistics Policies in the EU, the U. S. and Japan: Burkhard E.Horn, Toshinori Nemoto (Transport Policy Studies' Review: Winter 2005)

<sup>3</sup> During the 1,600 km trips between Phoenix and Dallas, the autonomous trucks had a driver and safety engineer on board to ensure safety.

autonomous driving technologies focused on running long-haul trucks on highways, raised USD 52 million in February 2019.

As thus far described, digital giants and startups, retailers, truck manufacturers and other related industry players are stepping up their efforts for autonomous trucking technology development and pilot programs. However, regulations have not been relaxed for the practical use of such technologies. Under these circumstances, legislation for truck platooning is progressing. Although not fully automated, platooning trucks can drastically save labor, because the second and third vehicles following the first vehicle manned by a driver do not need a driver. Fully autonomous unmanned trucks have not been observed yet, but semi-autonomous truck platooning at a short inter-vehicle distance was allowed on highways in 17 states as of December 2018, and pilot programs and trials are underway in seven other states.

Platooning technology is already close to practical use. While Daimler and another major truck manufacturer, Volvo, have been developing platooning technology and conducting pilot programs, it is the US-based technology startup Peloton Technology which specializes in platooning that has been attracting attention in recent years. The company demonstrated its driver-assist truck platooning system (under the current legislation, a driver is onboard the lead truck and the following truck to monitor driving or take the wheel in an emergency) on highways and successfully ran the trucks at the shortest inter-vehicle distance of 40-60 feet (approximately 13-20 meter). Many companies have high hopes for the technology, and Peloton Technology has raised a total of USD 16 million from Denso, Intel, Volvo, USP and others in April 2015, and USD 60 million from more companies in April 2017, representing high expectations from investors. Peloton Technology announced that some companies had already made advanced orders to purchase the system when it is commercialized.

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## **AN INCREASED FOCUS ON IMPROVING TRANSPORTATION EFFICIENCY AND HUMAN RESOURCING**

To achieve practical use of autonomous long-haul trucks and platooning trucks, technology development and legislation progress are necessary. As the truck driver shortage has become increasingly evident, it is possible that autonomous trucks and platooning trucks will be allowed under limited conditions, such as highways, but it is likely to take a certain amount of time for them to help mitigate the shortage. Taking this into consideration, two possible measures that can be taken immediately and are considered promising are improving transportation efficiency through freight management, and finding potential labor forces.

Toward improving the efficiency of transportation, the freight management business that provides matching between freight companies and freight loads is becoming active. The freight management business quickly responds to the ELD mandate, and offers services that follow the regulations, such as ELD installation and driver behavior management. KeepTrucking, founded in 2013, provides a system connected to smartphone apps, video cameras and ELDs that streamlines freight management by visualizing drivers' performance and logs. The company has raised a total of more than USD 210 million, attracting market attention. Convoy, founded in 2015, has developed a smartphone app that connects shippers with truck drivers to streamline the process of ordering, and has raised over USD 260 million so far. Uber launched its Uber Freight trucking management company in May 2017, and is expanding its services.

To find potential labor forces in other industries, Commercial Driver's License (CDL<sup>4</sup>) holders are targeted. The aforementioned ATA estimates that out of approximately 10 million CDL holders in the US, only 3.5 million

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<sup>4</sup> A CDL is necessary to be a truck driver or bus driver. There are three classes of CDLs. A Class A is required to operate a towed vehicle that is heavier than 12 tons, and a Class B is required to operate a single vehicle that is heavier than 12 tons. Class C is required if the vehicle does not meet the criteria for either a Class A or Class B license, or the vehicle is meant to transport passengers (e.g. bus) or hazardous material. According to US Department of Transport (DOT), the minimum age to apply for a CDL is 21, but some states allow drivers aged 18 to 20 to apply for a CDL that is valid only within the driver's state of residence. The CDL automatically converts to a 50 state CDL at the age of 21. Different types of trucks fall into each class of CDL. A long-haul heavy truck is usually over 15 tons (Class 8 truck), which requires a Class B to operate a single vehicle. However, Class A is required to operate combination vehicles including tractor-trailers.

drivers, including 1.8 million long-haul truck drivers and other 1.7 drivers are using the license. It means that the other 6.5 CDL holders are either working in other professions or not seeking a job as a long-haul driver. The Netherlands-based staffing company Randstad and US-based TrueBlue are hiring potential human resources for long-haul truck drivers. Although it may help mitigate the driver shortage, the number of drivers found through the traditional staffing business model is limited, and it is not likely to produce a significant effect. Staffing companies need to transform their business model from one of simply dispatching drivers to one of matching jobs for drivers with various needs, such as CDL holders who cannot work full-time or drivers who do not own a truck, so that they can work on demand under good working conditions. It is expected that staffing companies, who provide matching between drivers and freight companies, control the working hours of drivers and maximize human resource management under the official regulations. This will increase the flexibility of labor, which is a fixed cost for freight companies. The key here is also digital technology that enables effective matching. Companies from various industries other than the trucking industry are expected to enter this market.