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Self-Driving Trucks: What's in Store for Truck Drivers?

Introduction

In 1811, stocking-makers saw their jobs being replaced by knitting frames. Their reaction was to revolt and destroy the frames they believed were responsible for taking away their livelihood. This group of previously skilled and crucial workers were indiscriminately replaced with the simple mechanization of a task. A cataclysmic series of events ensued. They continued to destroy private property and revolted against the arrival of this machinery that threatened their livelihood. These workers were the original Luddites, which is now a term used to define a person who is unfamiliar with technology [6].

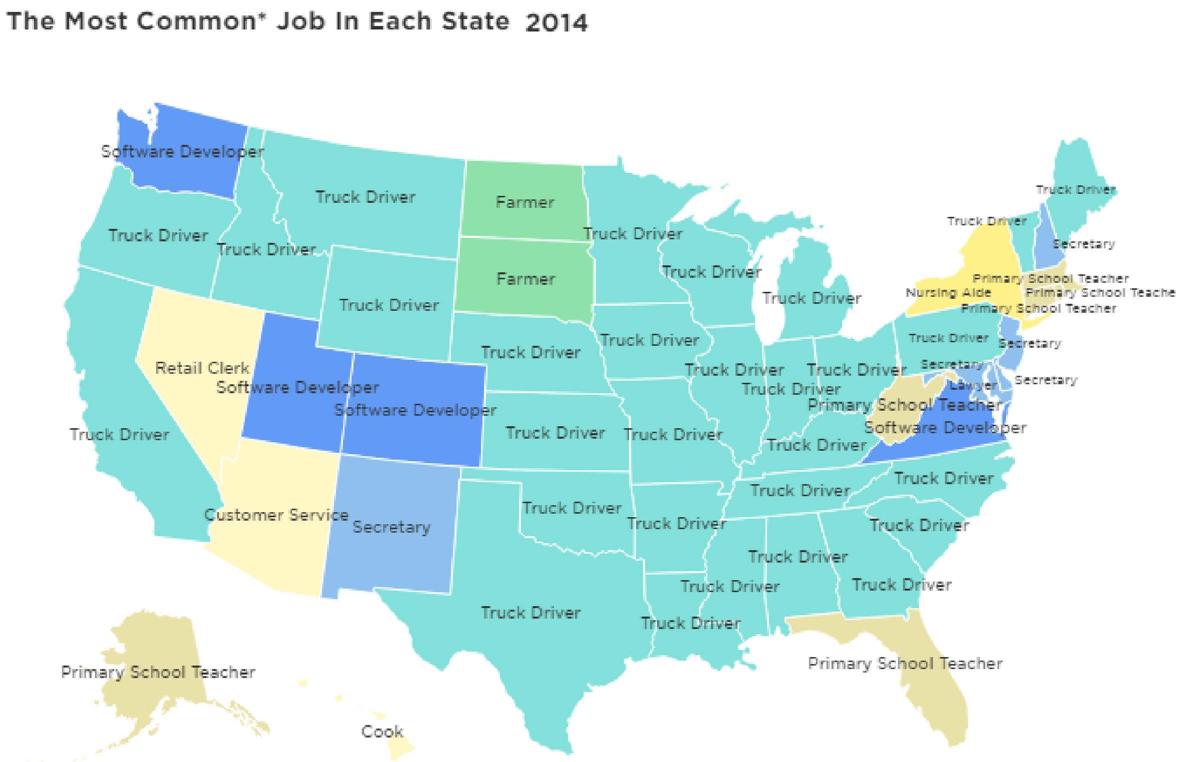
A parallel can be drawn with the inevitable automation of transportation and the occupations that are threatened by this emerging technology. Specifically, statistics illuminate the potential destruction self-driving vehicles have on the trucking industry. Technological leaders are pushing a less nefarious narrative, though their best interest resides in the success of this technology. In fact, the only legislation currently considering the implications of fully implementing autonomous cars and vehicles admits it's' largest influence for current legislation is derived from interested stakeholders [13]. Will todays truckers be yesteryears Luddites?

Truck Driving Stats

Jobs are constantly replaced by automation. When one industry is eliminated another emerges in its place. The economy is normally able to adjust with the influx of displaced workers, but what happens if that influx is a sizeable part of the population such as truck drivers? Below are some statistics and aggregated data to put into context the scale in which self-driving truck will impact the workforce and the economy.

The trucking industry is massive with 1,797,700 drivers on the road in the year 2014 [3]. The total population of the United States in 2014 was 318,586,495 [4] meaning more than 1 out of every 200 people drove trucks for a living. We can also consider the unemployment rate in July of 2014 was 6.2% [5] that is around 12,586,495 people without work. Also, the working age is considered to be between 16 and 64 reducing the working population to a total of 203,004,000 [4]. We can also take into account those not participating in the workforce and those over 65 and still employed for accuracy 92030 and 8360, respectively [10]. Leaving us with 190,333,835 working population in 2014. That is just under approximately 1% of the United States population. In other words, 1 out of 100 people will be directly affected by the transition to automated vehicles.

The image on the next page displays that the most common job in 2014 in the United States is a truck driver. This reiterates the potential devastation that self-driving commercial trucks will have on the working class and the number of Americans that could rapidly become displaced in the workforce.



[8]

Will small business be phased out completely?

Approximately, 35% of truck drivers are owner-operators and drive their own truck [14]. According to Taylor, drivers that own their truck earn a typical mean gross income of $135,540 with a net profit of only $38,400. [9] This number is extremely low in view of how close it is to the median pay for the average truck driver [3].

So, are these owner-operator truck drivers going to be able to keep up with emerging technology? According to Otto, a leader in commercial trucking automation, they plan to release a kit that will be available in 2020 for $30,000 [1]. Considering this is almost a year's salary for independent truck drivers, technology will ostensibly leave them behind.

How long do we have?

The consensus is not completely in on when we will see driverless trucks. There will undoubtedly be a progression from human-driven cars to a completely autonomous network of self-driving cars. The United States Highway Traffic Safety Administration classifies six levels of self-driving cars that is expected to occur during this transition period;

> "• At SAE Level 0, the human driver does everything;
>
> • At SAE Level 1, an automated system on the vehicle can sometimes assist the human driver conduct some parts of the driving task; • At SAE Level 2, an automated system on the vehicle can actually conduct some parts of the driving task, while the human continues to monitor the driving environment and performs the rest of the driving task;
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> • At SAE Level 3, an automated system can both actually conduct some parts of the driving task and monitor the driving environment in some instances, but the human driver must be ready to take back control when the automated system requests;
>
> • At SAE Level 4, an automated system can conduct the driving task and monitor the driving environment, and the human need not take back control, but the automated system can operate only in certain environments and under certain conditions; and
>
> • At SAE Level 5, the automated system can perform all driving tasks, under all conditions that a human driver could perform them [13]. "

Fleets of self-driving trucks have already successfully been tested in Norway [2]. And Ford projects that level three autonomy will be available by 2021, which would eliminate the need for breaks or steering wheels in certain environments [12]. Although, some don't believe true autonomous vehicles will begin hitting the roads until 2030 [1]. There is plenty of time to consider what to do with the massive amounts of displaced workers.

Getting ahead of ourselves?

Despite the incredible number of people within the trucking industry, there remains a shortage of truck drivers and the number of truck drivers entering the occupation has reportedly been dwindling over the past few years. Young people aren't entering the industry as often and the average age of a truck driver is over 40 [7]. The transition to autonomous vehicles might attract Millennials; if they were able to safely use the internet for extended periods of time while chaperoning a level 3 or 4 self-driving vehicle.

Concomitantly, autonomous trucking removes the arduous task of concentration; attracting more of the younger generation. Fully self-driving vehicles are projected to arrive around 2030, but roads will not be completely inundated with level five self-driving cars for many years to follow. If the average age of a truck driver is over 40, the majority of truck drivers in 2030 may already be looking into retirement. The jobs we stand to lose technically have not been created yet.

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