



An Analysis of Changing the Federal Age Requirement for a Commercial Driver's License

THESIS

Matthew L. Mangen

AFIT-ENS-MS-19-J-038

**DEPARTMENT OF THE AIR FORCE
AIR UNIVERSITY**

AIR FORCE INSTITUTE OF TECHNOLOGY

Wright-Patterson Air Force Base, Ohio

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AFIT-ENS-MS-19-J-038

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DRIVER'S LICENSE

THESIS

Presented to the Faculty

Department of Logistics Management

Graduate School of Engineering and Management

Air Force Institute of Technology

Air University

Air Education and Training Command

In Partial Fulfillment of the Requirements for the
Degree of Master of Science in Logistics & Supply Chain Management

Matthew L. Mangen

June 2019

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**AN ANALYSIS OF CHANGING THE FEDERAL AGE REQUIREMENT FOR A
COMMERCIAL DRIVER'S LICENSE**

Matthew L. Mangen, B.S.B.A.

Committee Membership:

Dr. William Cunningham, Ph.D.
Advisor

Dr. Seong-Jong Joo, Ph.D.
Reader

Abstract

The United States trucking industry has been struggling with a driver shortage for decades (Mittal et al., 2018). Trucks are one of the most important modes of transportation in getting domestic freight from one point to another. The current shortage is expected to continue to grow at an alarming rate if nothing is done to change it (American Trucking Associations, 2017). Having a shortage of drivers will increase transportation costs and lead to delayed shipments. There has been a push to change the public policy to lower the age requirement for a Commercial Driver's License to 18. This research explores how lowering the federal age requirement can help alleviate some of the truck driver shortage and add economic value to the 18-20 age group. Data was collected from the Bureau of Labor Statistics and the United States Census Bureau to identify the number of truck drivers that would be added to the profession and benefits to the 18-20-year-old age group. The results from this research can be used to make recommendations for implementing a program or law to lower the age requirement for a commercial driver's license.

Acknowledgments

I want to express my gratitude to my faculty advisor, Dr. William Cunningham for his guidance and expertise throughout this research effort. I would also like to thank my reader, Dr. Seong-Jong Joo for his help and support during this endeavor. Lastly, I would like to thank my wife and my family for their outstanding encouragement throughout this process. I am so thankful to have such a strong support system.

Matthew L. Mangen

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An Analysis of Changing the Federal Age Requirement for a Commercial Driver's License

I. Introduction

Background

The United States economy depends on the trucking industry to deliver products of all different uses safely across the country. Ever since World War I, trucks have been used to ensure that things get to where they need to be (Burks and others, 2017). There is a saying around the country that trucking is the backbone of the economy. In 1980, the federal government passed the Motor Carrier Act which deregulated the trucking industry (Public Law 96-296). Since deregulation, the trucking industry has had no shortage of demand. Trucking is one of the most substantial modes of transportation used to move cargo from one point to another. In 2015, the American Trucking Associations (ATA) showed in a report that trucks moved 68.9% of all freight tonnage in the United States (American Trucking Associations, 2015). In their most recent report, the ATA estimates that the tonnage hauled by trucks has increased from 2015 to 2017 by 1.7% to a total of 70.6% of all tonnage (American Trucking Associations, 2017). In today's world, both companies and individuals expect shipments to be made as quickly as possible ensuring that the items are delivered on-time. Researchers have predicted that if trucks stopped shipping within 48 hours gasoline would dwindle, food shortages would start after three days, and cash access would become very scarce from banks (Slavo, 2012). The truck driving shortage is putting all these necessities in jeopardy.

One of the most prominent issues in the trucking industry is the insufficient pool of truck drivers' from which companies can hire. In their 2017 report, the ATA estimates that the current driver shortage is around 50,000 workers (American Trucking Associations, 2017). This shortage is only expected to rise over the next few years. However, having a truck driver shortage is not new to the industry. In a 2018 report done by The American Transportation Research Institute (ATRI), they show that the truck driver shortage has been the most critical issue in the industry in each of the last two years (McReynolds et al., 2018). Other researchers have suggested that the industry has struggled to keep up with its demand for a few decades (Mittal et al., 2018) The increasing growth of online retail sales and an improving economy has only created more pressure on truck drivers to ensure safe and on-time delivery. Truck driving organizations, trucking companies, and the United States' economy could benefit from this research as an approach to decrease the truck driver shortage over time.

Motivation

Having a shortage of truck drivers can lengthen the amount of time it takes to deliver an item because trucking companies must prioritize which deliveries are the most essential. As mentioned before, the truck driving shortage is not a new problem to surface. In the American Trucking Association's 2017 Truck Driver Shortage Analysis, they indicate that the lack of drivers has existed over the past 15 years (American Trucking Associations, 2017). Some truck driver shortage articles date back to the 1980s when the federal government decided to deregulate interstate trucking. If the shortage continues to grow, shipments might be delayed, shipping rates could rise, and products

could become more expensive. It is important to the trucking industry can fulfill the shortage of drivers to ensure all cargo gets to its intended destination.

Problem Statement

This research will focus on how lowering the age requirement for a commercial driver's license (CDL) in the United States can help the growing truck driver shortage and add job opportunities for the 18-21-year-old age group. By lowering the age requirement, individuals that just graduated high school and are age 18 or older will be eligible to obtain a commercial driver's license. This age reduction will help increase the number of potential individuals eligible to drive a semi-truck and will also add several benefits to the age group. This research is relevant because as seen in Figure 1 from the ATA, the truck driver shortage is expected to continue to grow over the next seven years.

The American Trucking Associations along with other major industry organizations have forecasted the shortage of truck drivers to grow to over 174,000 drivers by 2026 (American Trucking Associations, 2017). Also, the truck driver shortage was identified by ATRI as the most important issue in their 2018 report (McReynolds et al., 2018). By exploring the opportunity to lower the age requirement for a CDL, trucking companies would have a larger pool of potential employees to hire.

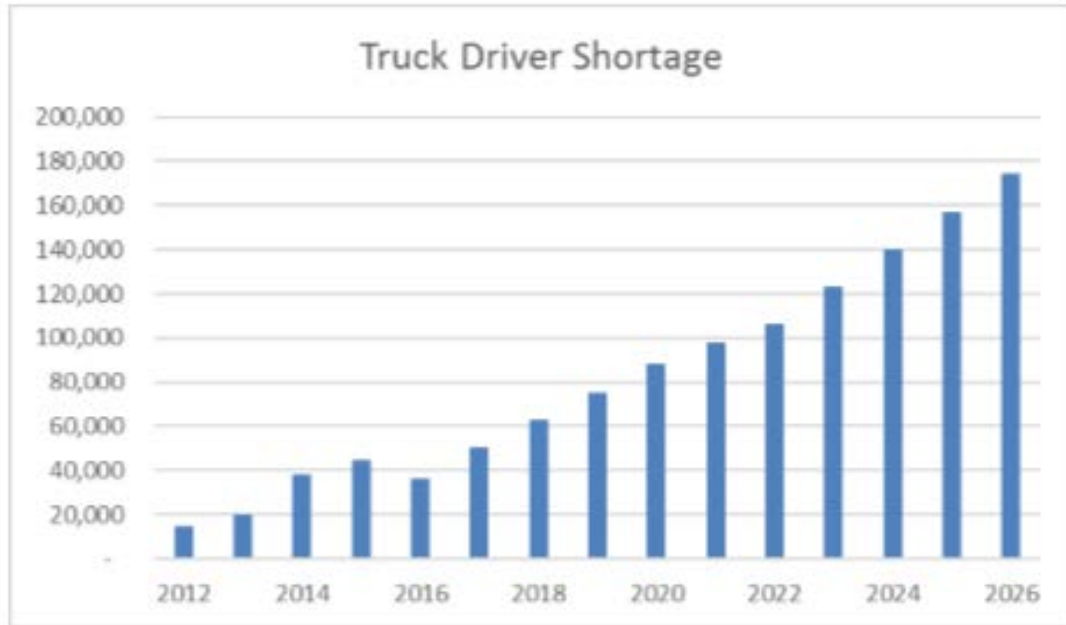


Figure 1: Truck Driver Shortage Projections (American Trucking Associations, 2017)

Purpose Statement

This study will address how a change in public policy to lower the age to obtain a CDL will help alleviate the current and growing truck driver shortage and add opportunities to an age group that suffers higher than average unemployment. In this study, data will be collected from the Bureau of Labor Statistics (BLS) to identify the percentage of the workforce that are truck drivers and unemployment percentages for the 18-20-year-old population. Data from the United States Census Bureau will be explored to obtain the current population that is in the interested age range. This study will also examine the potential economic benefits to the 18-20-year-old age group if the federal age requirement for a CDL were reduced to 18.

Research Question

The research question is: *What will be the impact to the trucking industry and to the 18-20-year-old age group if the Federal Government lowers the age requirement to earn a commercial driver's license to 18?*

Investigative Questions

Three investigative questions derive off the research question. They are:

- A) *What will be the impact to the truck driver shortage if the age to obtain a CDL is lowered to 18?*
- B) *What percentage of the 18-20-year-old population will enter the truck driving profession?*
- C) *What will be the benefits to the 18-20-year-old population if the age requirement to obtain a CDL is lowered to 18?*

Assumptions/ Limitations

The following assumption are made for this study: the percentage workforce currently in the truck driving occupation is an indication of how 18-20-year-olds will enter the profession.

Several delimitations will not be explored to keep the research valid. This research is limited by the following: only looking at how lowering the age requirement would impact the truck driver shortage and the impacts to the 18-20-year-old age group, not exploring the potential loss of truck drivers from retirement, role stressors, role conflict, role ambiguity, and burnout, not looking at decisions of companies to hire

18-20-year-old drivers after they have obtained a commercial driver's license, and not looking at driver retention/ turnover. This study does not explore all aspects of the truck driver shortage and is only limited to how a change in public policy would impact both the shortage and impacts on the 18-20-year-old individuals.

Outcomes and Implications

Because of this research, trucking companies, the Federal Motor Carrier Safety Administration, and the trucking industry will have gained an understanding of how lowering the age requirement for a commercial driver's license can help alleviate the current and future truck driver shortage. This research will provide examples of how lowering the age requirement will add several benefits to the 18-21-year-old age group. This knowledge will allow individuals to have an answer for how big of an impact lowering the age requirement will be in regard to alleviating the shortage and adding economic growth. Also, this study can help increase buy-in from those who do not currently support the decision to lower the age requirement for a CDL to 18.

Chapter Summary

In this chapter, an overview of the trucking industry and the shortage of truck drivers is discussed. Then the motivation of this research and the problem statement are explained. Next, the relevance of coming up with a solution to the truck driver shortage is described. After that, the research focus is laid out as a potential solution that should be explored to help alleviate the truck driver shortage that is happening in the United States. Chapter Two presents the research that was explored to gain an

understanding of the trucking industry, the current shortage in the United States, and bills and legislation about the trucking industry. After a review of the literature is presented, Chapter Three will discuss the methodology and databases utilized for the research. Chapter Four will discuss the analysis of the research. Finally, Chapter Five will provide benefits of the research, ideas for future research, and a summary of conclusions made by this research.

II. Literature Review

Chapter Overview

This chapter provides an overview of the current trucking industry, driver shortage in the United States, and legislation proposed for lowering the age requirement. It is important to have knowledge of the current trucking industry in order to make an accurate analysis. Understanding the current truck driver shortage is required to gain perspective about why a solution needs to be implemented. The third section of the literature review will be used to describe a pilot study being done and a current bill in legislation that was proposed to try to alleviate some of the current truck driver shortage. The present review is limited to investigating the current truck driver shortage and only briefly identifies potential solutions to solving the issue. This thesis will build off the current research and do a thorough investigation of how lowering the age requirement for a commercial driver's license would impact the truck driver shortage.

Current Trucking Industry

The trucking industry is crucial for the United States economy. Without the support of the trucking industry, countless amounts of products would not be delivered daily. Trucks are the most common form of transportation used in the transfer of goods. According to the American Trucking Associations, the trucking industry was responsible for moving over 10 billion tons of freight which equated to around 700 billion dollars of goods (American Trucking Associations, 2015). The next highest mode of transportation

is pipeline that transports a little over 3 billion tons. *Figure 2* below produced by the U.S. Department of Transportation, Bureau of Transportation Statistics and Federal Highway Administration shows that trucking carried over half of all domestic weight transported in 2017 (Department of Transportation, 2017). Trucks deliver more weight of shipments than all the other modes combined. This shows that trucks are extremely important to keep the economy running. The food industry, healthcare, the retail sector, and manufacturing are just a few of the major industries that rely on trucks for delivery (American Trucking Associations, 2015).

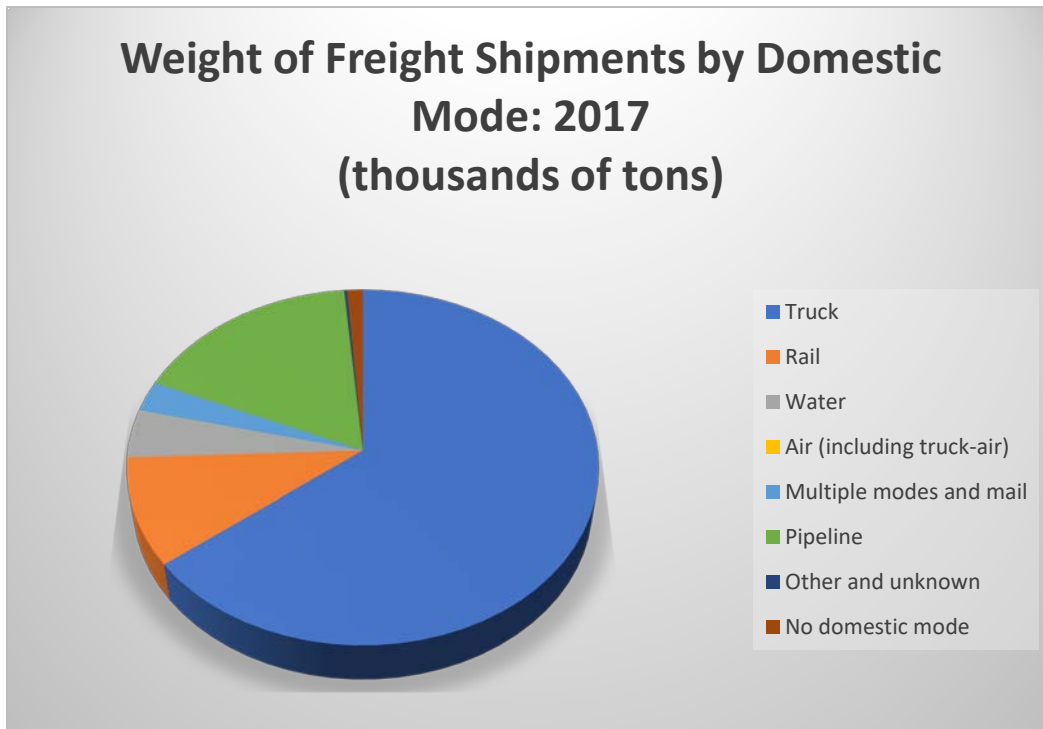


Figure 2: Weight of Freight Shipments by Domestic Mode: 2017 (Department of Transportation, 2017)

According to the United States Bureau of Labor Statistics, the long-haul trucking industry currently employs around 1,871,700 drivers (Bureau of the Labor Statistics, 2019). The demographics of the industry are concerning to researchers because of the trend of older drivers. The American Transportation Research Institute did a study in 2014 that showed more than 30% of trucking employees were born between the years 1959 and 1968 (Short, 2014). The industry is facing a problem because there are more drivers on the brink of retirement than drivers entering the industry. Figure 3 shows a breakdown of the age demographics for the trucking industry compared to the total workforce in the United States. As seen in the graph, the trucking industry has a smaller percentage of the workforce in ages 20-34 years old and a larger percent of workforce ages 35-64. ATRI researchers point out that these numbers could mean trouble for the

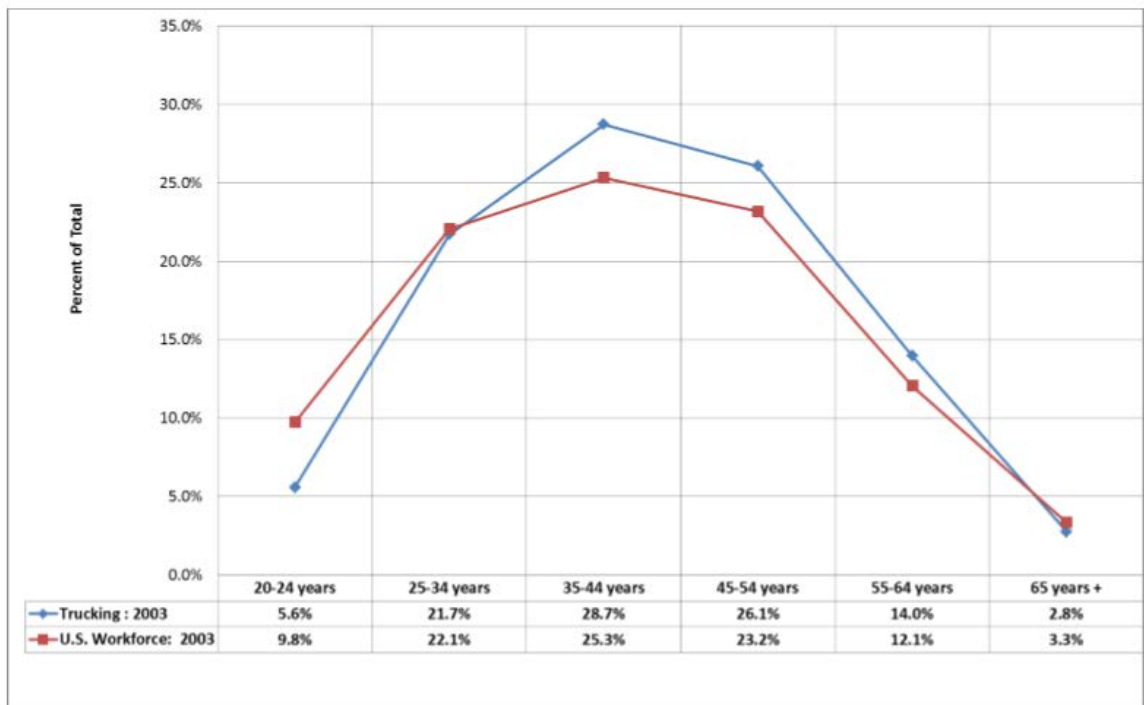


Figure 3: Distribution of 2003 Labor Force by Age (Short, 2014)

industry in 10-20 years when the older generation starts to retire. With the average age of an over-the-road truck driver being 49 years old, one of the major concerns is if there will be enough young truck drivers to support the industry in the next decade (Short, 2014).

Truck driving as a profession pays a good wage for an individual who does not want to go to college or trade schools. According to the Bureau of Economic Analysis, truck transportation wages for full-time equivalent employees were around \$54,634 in 2017 (Bureau of the Economic Analysis, 2018). This number is only expected to grow in the next few years as the need for truck drivers continues to rise. To further this point, PLG Consulting mentions that trucking wages salary is projected to grow 3-5% in the year 2019 (Muhich and Robinson, 2019).

As with all other industries, trucking has several issues that it is currently facing. ATRI publishes an annual report that identifies the most critical issues in the trucking industry for each given year. In 2018, the report determined that driver shortage was the most critical issue in the industry. Driver shortage has been the top concern for the last two years and has been a top-ten concern in each of the previous nine years. Figure 4 shows a breakdown of the ranks of issues in the industry since 2009. This figure shows that driver shortage is not a new issue in the industry and has been a significant concern in twelve of the last eighteen years. Some other major issues outlined in the study are hours-of-service, electronic log device (ELD) mandates, and truck parking (McReynolds et al., 2018).

	Issue Rank									
	1	2	3	4	5	6	7	8	9	10
2018	Driver Shortage	Hours-of-Service	Driver Retention	ELD Mandate	Truck Parking	CSA	Driver Distraction	Infrastr./ Congestion/ Funding	Driver Health/ Wellness	Economy
2017	Driver Shortage	ELD Mandate	Hours-of-Service	Truck Parking	Driver Retention	CSA	Cumulative Impacts of Regs.	Driver Distraction	Infrastr./ Congestion/ Funding	Driver Health/ Wellness
2016	ELD Mandate	Hours-of-Service	Cumulative Impacts of Regs.	Truck Parking	Economy	CSA	Driver Shortage	Driver Retention	Infrastr./ Congestion/ Funding	Driver Distraction
2015	Hours-of-Service	CSA	Driver Shortage	Driver Retention	Truck Parking	ELD Mandate	Driver Health/ Wellness	Economy	Infrastr./ Congestion/ Funding	Driver Distraction
2014	Hours-of-Service	Driver Shortage	CSA	Driver Retention	ELD Mandate	Truck Parking	Infrastr./ Congestion/ Funding	Driver Health/ Wellness	Economy	Driver Distraction
2013	Hours-of-Service	CSA	Driver Shortage	Economy	ELD Mandate	Truck Parking	Driver Retention	Fuel Supply/ Fuel Prices	Infrastr./ Congestion/ Funding	Driver Health/ Wellness
2012	CSA	Hours-of-Service	Economy	Driver Shortage	Fuel Supply/ Fuel Prices	ELD Mandate	Driver Retention	Truck Parking	Driver Health/ Wellness	Congestion/ Truck Bottlenecks
2011	Economy	Hours-of-Service	Driver Shortage	CSA	Fuel Issues	Congestion	Transportation Funding	Tort Reform	Onboard Truck Technology	Truck Size and Weight
2010	Economy	CSA	Government Regulation	Hours-of-Service	Driver Shortage	Fuel Issues	Transportation Funding/ Infrastr.	Onboard Truck Technology	Environmental Issues	Truck Size and Weight
2009	Economy	Government Regulation	Fuel Issues	Congestion/ Highway Infrastr.	Hours-of-Service	Commercial Driver Issues	Environmental Issues	Tolls/ Highway Funding	Truck Size and Weight	Onboard Truck Technology

Figure 4: Top Industry Issue Rankings, 2009 – 2018 (McReynolds et al., 2018).

Truck Driver Shortage

The trucking industry has been facing a truck driver shortage for decades (Mittal et al., 2018). The American Trucking Associations published an article in 2017 that addressed the driver shortage and tried to predict the future years of the shortage. The truck driver shortage has forced trucking companies to think long and hard about ways to attract new drivers to their companies. One of the most significant problems the industry faces is that there is a shortage in the number of young qualified drivers.

Researchers have pointed out that young drivers between 18-25 are lacking in the industry (Boris and Luciana, 2017)

In their 2017 report, the American Trucking Associations predicted that the truck driver shortage had reached almost 51,000 drivers. This number is the highest recorded shortage since 2015. Further, the analysis predicts that with an improving economy, the use of electronic logging devices, and hours-of-service regulations, the shortage will continue to grow at an alarming rate. Researches have predicted that if nothing changes in the industry, the shortage could explode to 174,000 drivers (American Trucking Associations, 2017). Other researchers further the truck driver shortage argument by indicating that the industry is moving towards 100% utilization (Chao, 2015).

There are multiple factors that industry experts have identified that is adding to the current truck driver shortage. One of the major factors is a barrier to entry for people to be qualified as a truck driver that can haul over 35,000 pounds. To be eligible to apply for a commercial driver's license, an individual must be 21 years old. The Federal Motor Carrier Safety Administration (FMCSA) enforces this requirement. However, it is important to mention that this applies to drivers who are traveling interstate and across state lines. Each state government has the authority to set the age limit for drivers to obtain a CDL and only drive within the state lines. Currently, in Main and South Dakota a truck driver can operate a commercial vehicle inside the state lines at the age of 16. Mississippi requires that truck drivers be at least 17 years old to operate within the state lines. Currently, 45 states allow individuals to operate a commercial vehicle at 18.

Hawaii is the only state that does not allow an individual to become a truck driver of any kind until they are 21. Because it is only state law, these truck drivers cannot cross state lines, or they would violate the federal law set by FMCSA.

Trucking industry researchers have identified several reasons that the industry will need more qualified truck drivers to enter the market over the next decade. The graph below presented by the ATA shows a synopsis of the reasons. Retirement accounts for over 400,000 total drivers that will be leaving the industry by 2026 (American Trucking Associations, 2017). The higher median age of current truck drivers can explain some of this large number. Another reason that researchers identify as a cause of the truck driver shortage is industry growth. Factors like the increase of online sales have increased the number of items that need to be shipped on trucks. Drivers being pushed out of the industry and drivers leaving before retirement factors are

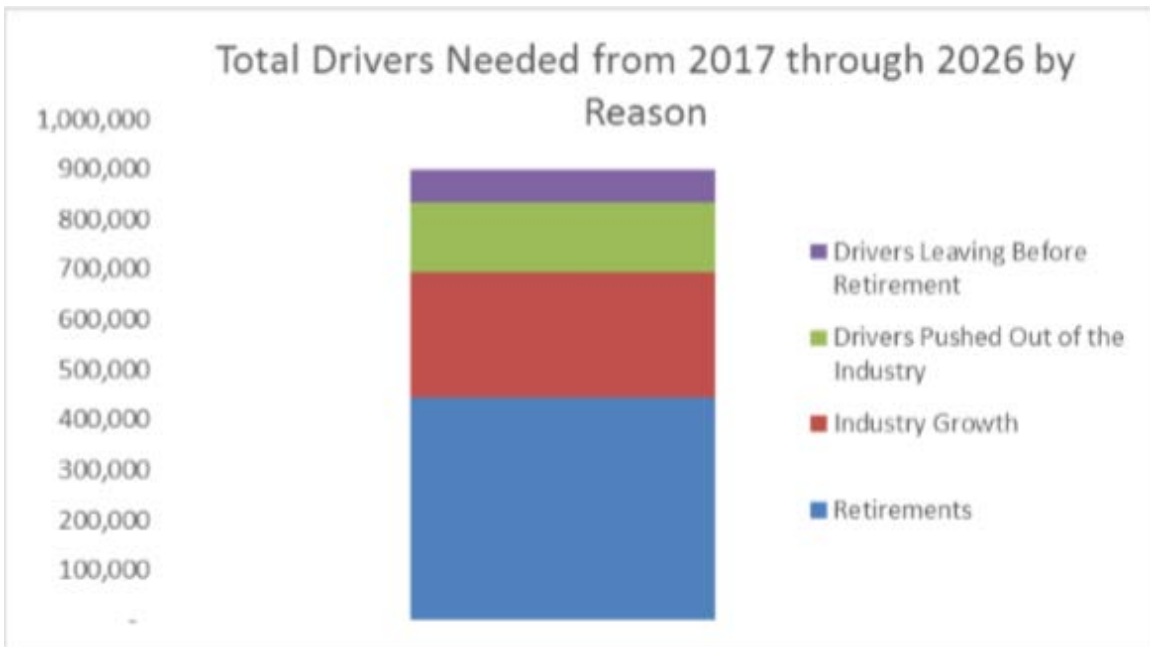


Figure 5: Total Drivers Needed from 2017 through 2026 by Reason (American Trucking Associations, 2017)

relatively small in comparison to the other factors just mentioned, but they are still relatively important to point out (American Trucking Associations, 2017). Researchers have also pointed out that having a lack of drivers may come from a time of low unemployment. In an article published in the *Transportation Journal*, it mentioned that low unemployment in the mid to late 1990s led to companies having a harder time finding drivers (Min & Lambert, 2002). The unemployment rate is very similar today in comparison to that time period and that could be a factor adding to the shortage. The shortage of truck drivers is beginning to have a trickling impact on consumers. With products and companies relying heavily on the trucking industry to get to their destination, the shortage is making this more challenging. Because of the shortage, trucking costs are continuing to rise. According to a Proctor and Gamble spokesperson, the increasing trucking costs are causing household goods are becoming pricier (Gnau, 2019). To further this point an article published about Hershey's describe that the lack of drivers and higher fuel costs are cutting profit margins for companies. The article mentions that because companies are forced to raise their prices to combat the expensive freight costs (Fried, 2018)

Current Legislation

The truck driving shortage has elected government officials along with other organizations exploring ideas about how to help alleviate the shortage. There are two efforts in particular that have been introduced recently. The first is a bill introduced in the house by Representative Duncan Hunter in March of 2018 and later introduced in the Senate by Senator Todd Young. The bill titled the Developing Responsible Individuals

for a Vibrant Economy Act (DRIVE-Safe Act) is the most recent effort from committees to try to lower the age requirement to obtain a commercial driver’s license. The bill introduces a two-part program where an individual that is over the age of 18 with a CDL can take part in to be able to deliver interstate commerce. The first part of the bill suggests a 120-hour probationary period. During this stage, the bill states, “The apprentice shall complete 120-Hour Probationary Period, of which at least 80 hours are driving time in a commercial motor vehicle (H.R.5358, 2017-2018.)” The following benchmarks should be met for an individual to complete this stage (H.R.5358, 2017-2018.):

1. Interstate, light city traffic, rural two-lane, and evening driving
2. Safety awareness
3. Speed and space management
4. Lane control
5. Mirror scanning
6. Right and left turns
7. Logging and complying with rules concerning hours of service.

After the first stage is complete, an individual will move on to the second stage titled the 280-Hour Probationary Period. For this stage, the bill states, “After completion of the requirements of paragraph (1), the apprentice shall complete 280 hours of on-duty time, of which at least 160 hours are driving time in a commercial motor vehicle (H.R.5358, 2017-2018.)” The following benchmarks are listed as needed to be satisfied to complete the stage (H.R.5358, 2017-2018.):

1. Backing and maneuvering in close quarters

2. Pre-trip inspections
3. Fueling procedures
4. Weighing loads, weight distribution, and sliding tandems
5. Coupling and uncoupling procedures
6. Trip planning, truck routes, map reading, navigation, and permits
7. Transporting hazardous materials, if properly endorsed.

Once a driver has successfully passed both stages, the individual would be eligible to obtain a federal commercial driver's license.

Another attempt by government officials to try to alleviate the truck driver shortage is a pilot study being done by the Federal Motor Carrier Safety Administration. In this pilot study, a small number of individuals that meet a criterion will be eligible to operate commercial motor vehicles in interstate commerce. This three-year study will be an attempt for FMCSA to observe the feasibility, benefits, and safety impacts of allowing truck drivers under 21 to operate in interstate commerce. The program states eligible drivers must be an individual, "between 18 and 21, who is a member of the armed forces or reserves, and qualified in a Military Occupational Specialty to operate a commercial motor vehicle or similar vehicle (Public Law 114-94)." The Department of Transportation (DOT) will look at crash data and evaluate the pilot program. By introducing this study, the Federal Motor Carrier Safety Administration shows that they are open to having a limited amount of truck drivers under 21 drive and deliver interstate commerce (Public Law 114-94).

Chapter Summary

This chapter explored and highlighted the relevant literature concerned with the trucking industry, the truck driver shortage, and current legislative efforts to try to help alleviate the truck driver shortage. By examining the research, it is clear that the trucking industry is important to the United States economy. Also, the literature review shows the current shortage of drivers which is affecting both the industry and the economy. Elected officials, trucking organizations, and government agencies all have explored the option of letting truck drivers under the age of 21 take part in delivering interstate commerce. The need for truck drivers has been showcased throughout the literature review and reinforces the importance of this study to be done by exploring a way to try to mitigate the current shortage.

III. Methodology

Chapter Overview

This chapter will discuss and define the methodology used to collect and analyze the data that will be used in the next chapter. This chapter will also give an overview of the research design and discuss the importance of the data that was observed.

Data Collection

To be able to perform an accurate analysis of the research problem presented, the first step was to find and identify accurate data. The data needed to be from a reliable and credible source to ensure that it would add credibility to the results.

The first step in data collection was to find the number of people who reside in the United States in the desired age group. Because the proposed statement is to lower the age requirement for a CDL to 18, the desired age group is identified as individuals who fall in the age of 18-20. Through careful searching through different databases, a dataset from the United States Census Bureau (Bureau of the Census, 2017) had the data of interest for this study. In this set of data, the U.S Census Bureau identifies the projected number of people ages newborn to over 100 until the year 2060 (Bureau of the Census, 2017). As seen in *Table 1*, this study broke down the expected number of individuals from each age group. *Table 1* shows the breakdown for the 18-20-year-old population. Because this study contained the population of the three age groups of interest, it could be used in the study.

Table 1: Population in the United States According to Age (Bureau of the Census, 2017)

Year	18-year-olds	19-year-olds	20-year-olds	Total 18-20 Population
2016	4,219,303.00	4,243,480.00	4,286,221.00	12,749,004.00
2017	4,233,261.00	4,251,108.00	4,277,774.00	12,762,143.00
2018	4,316,526.00	4,265,709.00	4,285,871.00	12,868,106.00
2019	4,267,52.00	4,349,076.00	4,301,156.00	12,917,684.00
2020	4,180,135.00	4,300,527.00	4,384,632.00	12,865,294.00
2021	4,209,336.00	4,213,861.00	4,336,645.00	12,759,842.00
2022	4,251,751.00	4,243,518.00	4,250,687.00	12,745,956.00
2023	4,255,496.00	4,286,407.00	4,280,796.00	12,822,699.00
2024	4,280,674.00	4,290,546.00	4,324,168.00	12,895,388.00

The second phase of data collection for this study was to find a data source that identified employment in the trucking industry. This piece of data is crucial to gain an understanding of the current number of drivers in the United States. This information was found using a database from the United States Bureau of Labor Statistics (U.S Bureau of Labor Statistics). As seen in Table 2, the U.S Bureau of Labor Statistics showed data for the employment of Heavy and Tractor-Trailer Truck Drivers for 2016 (Bureau of the Labor Statistics, 2019). The study also identified the percentage of the workforce that was considered truck drivers. The study went on to give a breakdown of the employment of each of the subcategories that fell under the umbrella of the heavy and tractor-trailer truck driving industry. The most valuable piece of information identified in

this study was the current employment number and percentage of the workforce that identifies as truck drivers. The 1.2% identified from Table 2 can answer the second investigative question of how many 18-20-year-old individuals will enter the trucking profession.

Table 2: Employment for Long-Haul Truck Driving Industry (Bureau of the Labor Statistics, 2017)

Employment	Percent of Workforce
1,871,700.0	1.2%

Chapter Summary

This chapter identified that Government agencies like the United State Census Bureau and the Bureau of Labor Statistics provided the pertinent data for this research. In 2019, there were around 12,917,684 individuals that were 18-20 years old. The Bureau of Labor statistics identified that 1.2% of the current workforce are truck drivers. The data explained in this chapter will be used in the next chapter to show how lowering the age requirement for truck drivers will help alleviate the truck driver shortage and add additional opportunities for the 18-20 age group.

IV. Analysis and Findings

Chapter Overview

The purpose of this chapter is to discover the impacts of lowering the federal age requirement for a commercial driver's license. The investigative questions of the research are to determine if reducing the age to 18 will eliminate the truck driver shortage, and by showing what percentage of the 18-20 population will enter the truck driving profession. This chapter will continue by explaining the financial impacts the truck driver profession can have on the 18-20-year-old age group. The section will conclude by discussing some of the different impacts this analysis can have.

Results of the Analysis

This study utilized the datasets from the Bureau of Labor Statistics and the United States Census Bureau to come up with the number of individuals that could enter the truck driving profession if the law was changed. This study will focus on the current year of 2019, but the equation can be applied to any year. From the data in the United States Census Bureau population, it can be concluded that in the year 2019, there are around 12,917,684 individuals that are 18-20-years-old in the United States population. This number accounts for the number of individuals who would fit the interest of this study.

The last step in the equation was to find out how many of these individuals would become long-haul truck drivers. In the United States Bureau of Labor Statistics dataset, it was identified that the long-haul truck driving profession represents about

1.2% of the current workforce. From this data, it can be estimated that 1.2% of the 12,917,684 individuals will become truck drivers. *Table 3* shows the numbers for potential truck drivers that could enter the industry over the next four years. The calculation shows that based on the data used for this research if the Federal Motor Carrier Safety Administration reduced the driving age to 18 in 2019, there would be roughly 155,012 new individuals that would be eligible to become long-haul truck drivers.

Table 3: Analysis of the Number of Truck Drivers 18-20

Year	Population (18-20)	Number of Truck Drivers
2019	12,917,684.00	155,012.21
2020	12,865,294.00	154,383.53
2021	12,759,842.00	153,118.10
2022	12,745,956.00	152,951.47

It is important to note that the 155,012 number of added truck drivers is the best estimate the researcher could identify by using the data that is available. The researcher had to make the assumption that 18-20-year-old individuals would enter the market at the same rate as the current workforce for long-haul truck drivers. There was no study identified in the review of the literature that estimated the number of people who would be willing to join the profession. However, this study gives a general idea of how impactful lowering the age requirement for a CDL could be to the industry. Even if the number calculated was off by half, it would still mean that 77,506 individuals would

become long-haul truck drivers for the year 2019. This number will also be dependent on how well both the truck driving industry and truck driving companies recruit the age group. Truck driving companies and organizations would want to take the time to visit local high schools to spark interest in students about truck driving. By offering these individuals all the benefits and incentives to become a long-haul truck driver, individuals will be more likely to join the profession. Things like home time, comfortable equipment, reward and recognition programs, and support from senior management can help increase buy-in from young individuals (Kemp, 2013). These companies and organizations will also want to take advantage of marketing tactics that will target the 18-20-year-old individuals. Once a company gets an individual to join their fleet, they will have to try to ensure to retain that employee. In year 2018, truck driver turnover was around 89% for large fleets (PR Newswire, 2019). Companies will want to ensure their employees are happy to try to mitigate that turnover. If companies put a big emphasis on recruiting this age group, it should help attract more young truck drivers.

Table 4: Number of Truck Drivers if Analysis is Half Correct

Year	Population (18-20)	Number of Truck Drivers
2019	12,917,684.00	77,506.10
2020	12,865,294.00	77,191.76
2021	12,759,842.00	76,559.05
2022	12,745,956.00	76,475.74

Financial Analysis

The truck driving profession would offer individuals 18-20 a job where they can earn a higher wage than they are accustomed to. As shown by the data in

Table 5 from Don't Quit Your Day Job, the average income of the 18-20-year-old age group is \$8,641.52 - \$16,955.07 (Flood and others, 2018). Truck drivers have the ability to earn a substantially larger income than these averages. As mentioned before, the U.S. Bureau of Economic Analysis identified that full-time truck drivers' wages were around \$54,634 in 2017. This shows that this profession can offer the ability for a young individual to earn pay that is greater than the 75th percentile of their age group. In fact, if an 18-year-old becomes a truck driver, he/she would make over six times the amount of the average income of 18-year-old individuals. Similarly, a 20-year-old would be making over three times his/her peers. Additionally, the truck driving profession earnings equate to the average salary of a 34-year-old worker. These numbers show that the trucking industry offers individuals the ability to earn a very good wage right out of high school.

Table 5: Average Income by Age (Flood and others, 2018)

Age	Average Income	Median	25th Percentile	75th Percentile	99th percentile
18	\$8,641.52	\$4,693.00	\$1,002.00	\$11,200.00	\$60,288.00
19	\$13,690.02	\$10,000.00	\$3,900.00	\$18,500.00	\$71,802.00
20	\$16,955.07	\$12,000.00	\$5,000.00	\$21,755.00	\$76,020.00

Impacts of the Analysis

An increase of drivers from this age group would have multiple economic advantages for both the United States, trucking companies, and the individuals in the 18-20-age group. The first benefit is an answer to the first investigative question. As stated earlier in the research, the shortage of truck drivers is projected to rapidly grow over the coming years. This study shows that by changing the age requirement for a commercial driver’s license, the trucking industry could gain around 155 drivers in 2019. As shown in **Error! Reference source not found.**, this research indicates that lowering the age requirement would have a huge impact on the shortage. **Error! Reference source not found.** shows a breakdown of how changing the law would impact the shortage just for the year listed. This change in public policy would allow trucking companies to expand their current fleets and handle the increasing demand for their

services. This increase will also increase the amount of truck drivers that the trucking companies can hire. This will help ensure that the trucking companies will be able to ensure the transportation of items without having to worry about not having a driver to deliver.

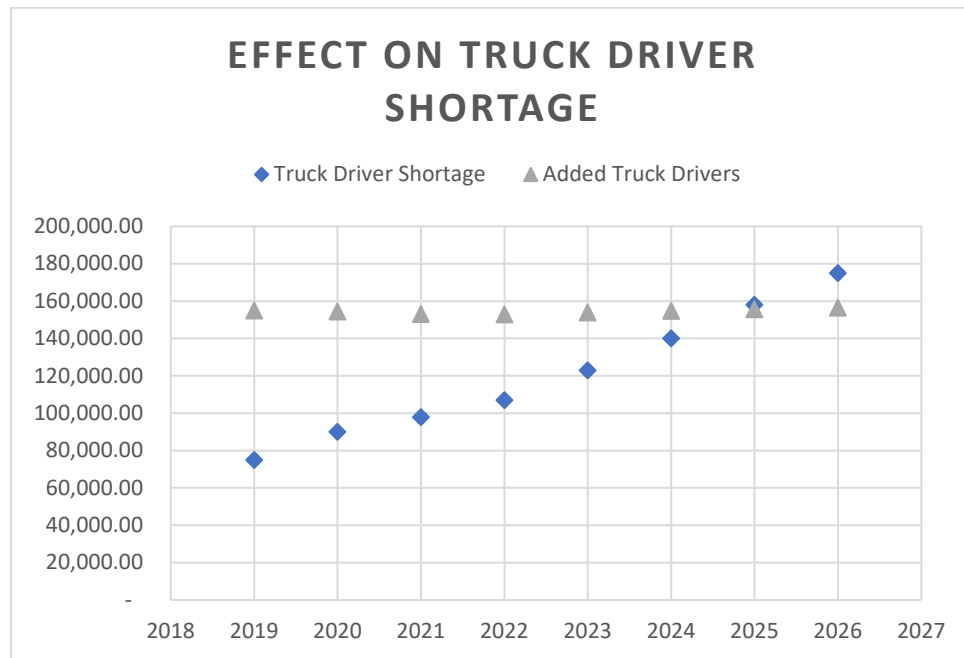


Figure 6: Effect on the Truck Driver Shortage

The second advantage is that it will be offering another career field for the age group that has one of the highest rates of unemployment. The Bureau of Labor Statistics updates a dataset every month that computes the unemployment rate for the age range of 18-19-year-old individuals. Even though this dataset does not include individuals that are 20 years old, this unemployment rate was identified as being the most accurate percentage available for comparison. After an extensive search, there was no dataset available that showed a percentage of unemployment for the three age groups collectively. As seen in **Error! Reference source not found.**, the unemployment rate for

the 18-19 age group tends to stay around 12% each month (Bureau of the Labor Statistics, 2018). After computing the mean from unemployment percentages from 2018 and January of 2019, the average unemployment comes out to equal 12.365%.

Error! Reference source not found. below shows that individuals age 18-19 have the second highest rate in terms of age group. This table shows that this age group has almost three times the amount of unemployment compared to the national average. The trucking profession would allow individuals in this age group to get a job in a field that severely needs workers. Adding a new industry for this age group would help lower the high unemployment rates that it currently has.

Table 6: Unemployment Rates for age 18-19 in 2018 and 2019 (Bureau of the Labor Statistics, 2018)

2018												2019
Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.
13.3	13.7	12.4	12.5	11.9	11.5	12.6	12.0	12.1	12.9	11.5	12.1	12.2

Long-haul trucking serves as a stable job for an individual who just graduated high school. As mentioned in the literature review, the industry is only expected to grow in the coming years. There are very few barriers to being able to earn a CDL. Currently, the Federal Motor Carrier Safety Administration requires that an individual get a

Commercial Learners Permit (CLP). Once an individual has their CLP for 14 days, they can take the skills test. If the individual passes the skills test, they will be eligible to get their CDL. Some states require that individuals sit through an educational training or truck driving course before they are eligible (Federal Motor Carrier Safety Administration, 2017). Overall, the truck driving profession offers a way to help employ an age group that has a significant unemployment rate.

Table 7: Unemployment Rates by Age (Bureau of the Labor Statistics, 2018)

	2018												2019
	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.
Total, 16 years and over	4.1	4.1	4.0	3.9	3.8	4.0	3.9	3.8	3.7	3.8	3.7	3.9	4.0
16 to 19 years	13.9	14.4	13.4	13.0	12.7	12.6	13.1	12.7	12.6	12.0	12.0	12.5	12.9
16 to 17 years	14.7	15.4	14.9	13.9	14.6	14.2	13.4	13.3	13.8	10.6	13.2	13.8	14.4
18 to 19 years	13.3	13.7	12.4	12.5	11.9	11.5	12.6	12.0	12.1	12.9	11.5	12.1	12.2
20 years and over	3.7	3.7	3.7	3.6	3.5	3.7	3.5	3.5	3.4	3.4	3.4	3.5	3.7
20 to 24 years	7.4	6.8	6.7	6.7	7.1	7.4	6.9	6.8	6.9	6.8	6.6	7.2	7.6
25 years and over	3.4	3.4	3.3	3.3	3.1	3.3	3.1	3.2	3.0	3.1	3.0	3.1	3.3
25 to 34 years	3.5	3.5	3.4	3.4	3.1	3.3	3.2	3.2	3.1	3.1	3.1	3.2	3.3
25 to 34 years	4.3	4.3	4.1	4.4	3.8	3.9	3.5	4.1	3.5	3.7	3.7	3.9	3.9
35 to 44 years	3.1	3.1	3.2	3.0	2.8	3.1	3.1	2.9	2.9	3.0	2.9	2.8	2.9
45 to 54 years	3.0	2.9	2.9	2.8	2.7	3.0	2.9	2.6	2.7	2.8	2.6	2.9	2.9
55 years and over	3.0	3.2	3.2	3.0	2.8	3.1	3.1	3.0	2.8	2.9	2.9	2.9	3.2

Another economic advantage is that the 18-20 age group will be able to join a field where they are earning a good salary. In 2019 report done by the Bureau of Labor Statistics, they identified that for the fourth quarter in 2018 16-24-year-old individuals that worked a full-time wage or salary made an average of \$609 a week (Bureau of the Labor Statistics, 2019). This weekly earning indicates that this age group earns a yearly salary of around \$31,688. As identified earlier in the research, the average long-haul truck driver makes \$1050 a week which equates to an annual salary of \$54,634. This salary difference shows that the truck driving industry offers an excellent career for

individuals who are looking to make a competitive wage for their age. Several industry experts expect that the salary of truck drivers will continue to rise. According to an article published by Walmart, they are paying their truck drivers an average salary of \$87,500 (Walmart, 2019). This article shows that there are companies that are willing to pay individuals a high wage to get truck drivers to work for them.

Chapter Summary

This chapter detailed the number of individuals that would join the long-haul trucking profession if the federal age requirement was lowered to 18. According to the data collected, the truck driving industry could add as many as 155,012 drivers to the market in 2019. It was also mentioned in this chapter that the number of individuals identified is the best number that the researcher could come up with given the data available. However, as the researcher pointed out even if the analysis was off by half, there would still be around 77,506 drivers who would enter the profession. This chapter continued by explaining how the truck driving industry can offer young individuals the opportunity to make a good wage. The average earnings of a truck driver is well above the average wage for all three age categories. The final remarks of this section highlighted the impacts of this analysis. If the age requirement were lowered to 18, it would help decrease the shortage of drivers. Lowering the age requirement would also allow individuals in to be able to join a profession where they would be making a good wage. This can help decrease the high unemployment percentage the age group currently has. The next chapter will conclude the research and offer future research opportunities on this subject.

V. Conclusions and Recommendations

Chapter Overview

This chapter discusses future research opportunities that can further develop this research. This section continues by offering the recommendations the researcher has. Finally, the chapter concludes with a summary of the research.

Future Research Opportunities

In order to gain a better understanding of the full impact of lowering the federal age requirement for a CDL, more research is needed. This research used current data that was available and would benefit from having a better idea of how many 18-20-year-old individuals would enter into the market. A study could be done where a survey would be sent out to current high schools that questions if they would be interested in joining the truck driving profession. By collecting the results from a sample size, a researcher would be able to have a better understanding of how many individuals would join to profession.

This research can also be furthered by doing a study involving the unemployment of individuals who are in the 18-20 age group. This study had to use unemployment data that only covered individuals age 18-19. By collecting the data on 18-20-year-old individuals, this research could identify a more accurate number of individuals who are currently in the workforce for that age group.

Recommendations

Based on the results of this analysis, the researcher believes that it mathematically makes sense to lower the age requirement to obtain a CDL. As shown throughout this research, the truck driver shortage is only expected to rise in the coming years. By lowering the age requirement, trucking companies and organizations will have a larger pool of individuals to recruit. In just one year, over 150,000 potential drivers could be added to the career field. This can help alleviate the shortage. Also, lowering the age requirement allows a stable job for individuals in one of the highest unemployment rates. Truck demand will only continue to rise with the increase in online sales and good economic conditions. Trucking offers individuals a good earning without having to go through the education required for a college degree.

Summary

Based on this study, trucking organizations, trucking employers and the Federal Motor Carrier Safety Administration will be able to explore the impacts of reducing the age required for a truck driver to obtain a commercial driver's license. This study uncovers a method of using data produced by the government agencies can help identify the number of individuals that can be added to the trucking industry. This research also identifies how beneficial lowering the age requirement for a CDL can be for the 18-20-year-old age group. The American Trucking Associations can use this research when trying to convince individuals the advantages of lowering the CDL age requirement.

This research explores a gap in the current literature regarding the truck driver shortage. Current literature is focused on the high turnover rates and deficits that the industry is facing. There was no research identified that discussed how lowering age requirement for a commercial driver's license would help add to the pool of truck drivers in the industry. The findings will help truck driving organizations, companies, and the Federal Motor Carrier Safety Administrations be able to identify how lowering the age requirement to 18 can help alleviate the truck driver shortage and add economic value to the country. By implementing this philosophy, the trucking industry will have a larger pool of potential employees, individuals 18-20 will have another job opportunity, and commerce can continue to be delivered to its destination.

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1. REPORT DATE (DD-MM-YYYY) 05-13-2019		2. REPORT TYPE Master's Thesis		3. DATES COVERED (From – To) December 2017 – June 2019	
TITLE AND SUBTITLE An Analysis of Changing the Federal Age Requirement for a Commercial Driver's License				5a. CONTRACT NUMBER	
				5b. GRANT NUMBER	
6. AUTHOR(S) Mangen, Matthew L.				5c. PROGRAM ELEMENT NUMBER	
				5d. PROJECT NUMBER	
7. PERFORMING ORGANIZATION NAMES(S) AND ADDRESS(S) Air Force Institute of Technology Graduate School of Engineering and Management (AFIT/ENS) 2950 Hobson Way, Building 640 WPAFB OH 45433-8865				5e. TASK NUMBER	
				5f. WORK UNIT NUMBER	
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)				8. PERFORMING ORGANIZATION REPORT NUMBER AFIT-ENS-MS-19-J-038	
				10. SPONSOR/MONITOR'S ACRONYM(S)	
12. DISTRIBUTION/AVAILABILITY STATEMENT DISTRIBUTION STATEMENT A. APPROVED FOR PUBLIC RELEASE; DISTRIBUTION UNLIMITED.				11. SPONSOR/MONITOR'S REPORT NUMBER(S)	
13. SUPPLEMENTARY NOTES This material is declared a work of the U.S. Government and is not subject to copyright protection in the United States.					
14. ABSTRACT The United States trucking industry has been struggling with a driver shortage for decades (Mittal et al., 2018). Trucks are one of the most important modes of transportation in getting domestic freight from one point to another. The current shortage is expected to continue to grow at an alarming rate if nothing is done to change it (American Trucking Associations, 2017). Having a shortage of drivers will increase transportation costs and lead to delayed shipments. There has been a push to change the public policy to lower the age requirement for a Commercial Driver's License to 18. This research explores how lowering the federal age requirement can help alleviate some of the truck driver shortage and add economic value to the 18-20 age group. Data was collected from the Bureau of Labor Statistics and United States Census Bureau to identify the number of truck drivers that would be added to the profession and benefits to the 18-20-year-old age group. The results from this research can be used to make recommendations for implementing a program or law to lower the age requirement for a commercial driver's license.					
15. SUBJECT TERMS Truck Driver Shortage, Truck Driver Training, Trucking Industry					
16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT UU	18. NUMBER OF PAGES 48	19a. NAME OF RESPONSIBLE PERSON Mr. William Cunningham, AFIT/ENS
a. REPORT U	b. ABSTRACT U	c. THIS PAGE U			19b. TELEPHONE NUMBER (Include area code) (312) 785-3636, ext 4319 William.cunningham@afit.edu