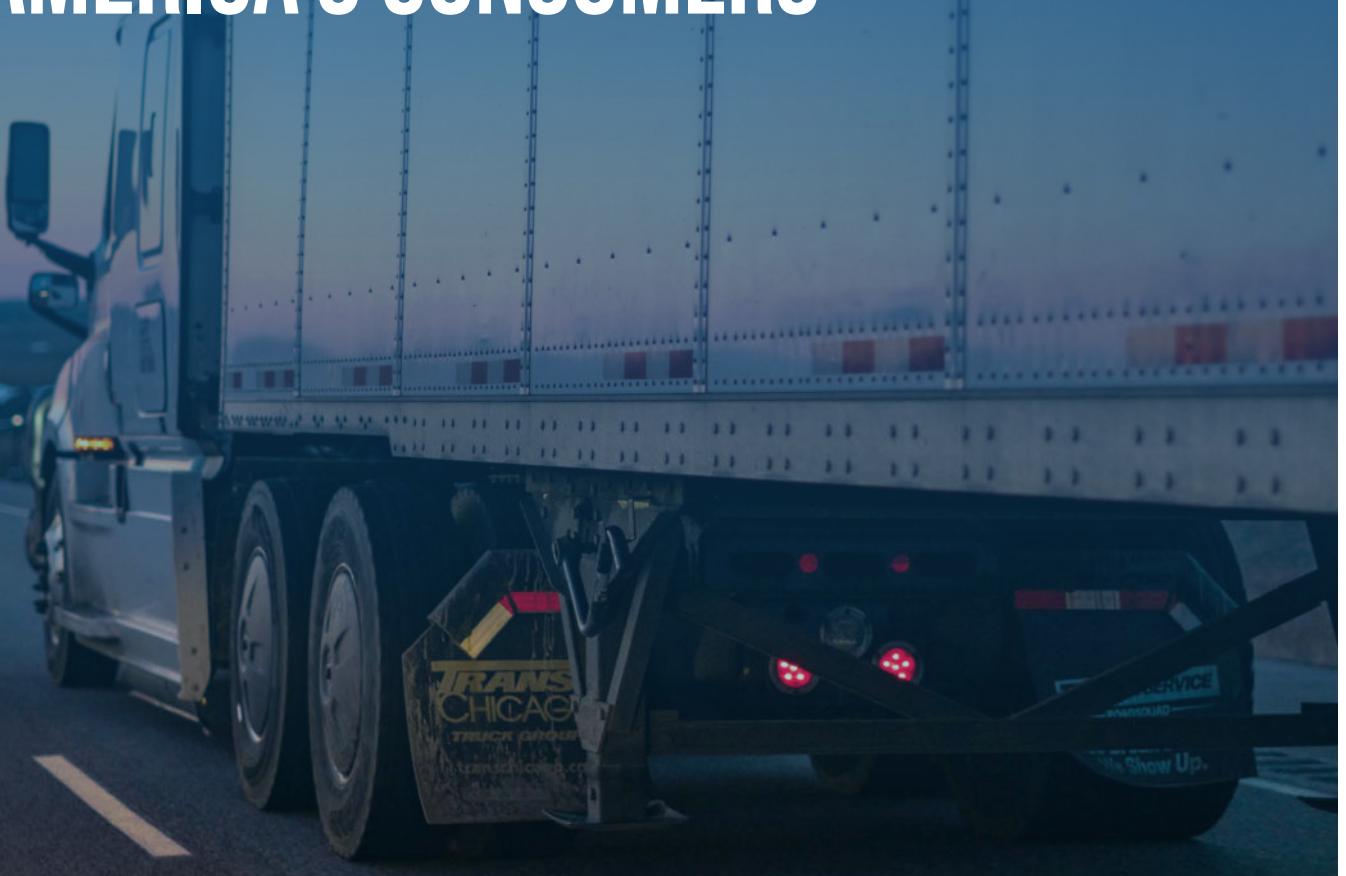


# EXAMINING THE SAFETY, ENVIRONMENTAL, AND ECONOMIC IMPACT OF LARGER AND HEAVIER COMMERCIAL TRUCKS ON AMERICA'S CONSUMERS



1 **I. INTRODUCTION**

2 **II. CURRENT TRUCKING LANDSCAPE IN THE U.S.**

2 a. Increasing number of trucks and not enough truck drivers

3 **III. PROPOSED LEGISLATION TO INCREASE SIZE AND WEIGHT RESTRICTIONS ON TRUCKS**

3 a. Proposed federal legislation  
4 b. Potential state legislation

4 **IV. IMPACT ON CONSUMERS**

4 a. Road safety  
6 b. Environmental impact  
7 c. Infrastructure and the economy

7 **V. POLICY RECOMMENDATIONS**

7 a. Vehicle Miles Traveled and Weight Tax  
8 b. Licensing requirements for larger trucks  
9 c. Keep autonomous trucks off the road  
9 d. Shift weight limit penalties onto carriers

10 **VI. CONCLUSION**

# TABLE OF CONTENTS

# EXECUTIVE SUMMARY

From the time the first trucks hit the road, lawmakers recognized the importance of setting weight limits. Dating all the way back to 1913, when four states implemented weight limits on trucks, policymakers understood that there must be a balance between moving freight and protecting roads, bridges, and other drivers.

In the 120 years since those first weight limits were enacted, more trucks are hitting the road each year, and those trucks are only getting bigger and heavier. At the same time as the number of trucks is increasing, our country is experiencing a shortage of truck drivers. The long hours, low pay, poor working conditions, and lack of union representation are driving an already aging workforce out of the industry. Long-haul carriers have seen a near 100 percent turnover rate year over year for the past three decades. This is leading to more inexperienced truck drivers behind the wheel of bigger, heavier trucks, on more crowded and run down roadways. Despite this, lawmakers are pushing legislation that would increase weight limits for trucks. These proposals ignore numerous studies and reports that show increasing truck weight will put drivers in danger and further wear down the nation's already overstressed infrastructure.

Instead of increasing the number of heavier trucks on the road, policymakers should be looking to reduce it. There are a number of steps that can be taken to achieve this goal and protect consumers. Enacting a Vehicle Miles Traveled Tax (VMT), that is also tied to vehicle weight, would be a fairer way of raising revenue to maintain roads and bridges, given which vehicles cause the most damage.

Enhancing the licensing procedure for issuing Consumer Drivers Licenses (CDL) to include a new class of CDL for trucks above a weight limit established by auto safety advocates and law enforcement would ensure that the heaviest trucks are driven by the most qualified drivers, while also raising additional revenue.

States should also take steps to prevent the use of autonomous vehicles of all kinds, but especially in commercial trucking. There are numerous safety issues relating to putting driverless vehicles on the roads.

Finally, states should shift the burden of enforcement for weight limit violations onto

carriers, instead of drivers. The current policy in most states punishes drivers, even though they often are not the ones who load the truck or lay out the route to ensure compliance with weight limits. Drivers already face numerous difficulties in their job. They should not have to also face financial penalties, and in some cases, jail time, when the burden should fall on the large companies for which they work.

Shifting the burden to carriers would allow for larger penalties for significant violations, as well as create incentives for those companies to ensure compliance with weight limit rules throughout the entire process of hauling freight.



# I. INTRODUCTION

Around the turn of the 20th century, the first commercial semi-truck's hit the road.<sup>1</sup> It did not take long for states to recognize the need for weight limits on commercial trucks. In 1913, four states limited truck weights, from a low of 18,000 pounds in Maine to a high of 28,000 pounds in Massachusetts.<sup>2</sup> By 1920, there were more than one million trucks on the road in the U.S. and by the mid-1930s all 48 states had placed weight limits on trucks.

Throughout the 20th century, Congress grappled with the impact inconsistent weight limits across the states had on interstate commerce. The Federal-Aid Highway Act of 1956 authorized the construction of the Interstate Highway System and also authorized the first federal maximum gross vehicle weight (GVW) limits for trucks. The weight limit set in 1956 was 73,280 pounds.

By 1970, there were over 18 million trucks traveling on roads across the United States. The federal GVW was increased to 80,000 pounds by the Federal-Aid Highway Amendments of 1974, which also codified a "bridge formula" to establish weight limits based on axle lengths, instead of a static upper limit. The formula, recommended to Congress in 1964, was the result of extensive tests to determine how traffic contributed to the deterioration of pavement materials.<sup>3</sup> Currently, federal limits established by the bridge formula, are 80,000 pounds GVW, 20,000 pounds on a single axle, and 34,000 pounds on a tandem axle group.<sup>4</sup>

Despite more than a century of policymakers and regulators understanding the importance of using science and engineering to establish limits on truck weight and size, some of the most powerful companies in the trucking and shipping industries, as well as and their allies in Congress and state legislatures, are attempting to increase these limits. Allowing that to happen would have devastating consequences for consumers. It would make our roads less safe, our air less clean, and place an enormous strain on our already aging infrastructure.

## THIS PAPER WILL EXAMINE

- The increasing number of commercial trucks on our roads and the working conditions of the drivers who operate them
- Efforts to increase truck weight and size at both the federal and state level
- The impact that would have on vehicle safety, infrastructure, and the economy
- Potential solutions for policymakers to prevent truck weight and length from reaching dangerous levels

## II. CURRENT TRUCKING LANDSCAPE IN THE U.S.

### A. INCREASING NUMBER OF TRUCKS AND NOT ENOUGH DRIVERS

Since 1970, the number of commercial trucks on the road has more than doubled. There are now nearly 40 million trucks registered in the U.S.<sup>5</sup> These trucks travel a total of more than 175 billion miles in a year.<sup>6</sup>

The increase in the number of trucks is not being matched by an increase in truck drivers. In fact, there is a persistent shortage of truck drivers. The American Trucking Association estimates that, even after trucking companies increased pay, there is still a shortage of nearly 80,000 truck drivers.<sup>7</sup>

Much of the truck driver shortage is created by high turnover because of terrible working conditions. In fact, at large carriers, annual turnover rates averaged 94 percent between 1995 and 2017, according to a Bureau of Labor Statistics (BLS) report.<sup>8</sup> The median annual pay for big-rig drivers was \$48,310 in 2021, according to BLS.<sup>9</sup> That comes out to about \$23 an hour. Many of them work 60-70 hours a week, though a good deal of that time is spent waiting for goods to be loaded or unloaded, and they're only paid for driving time. Many are not compensated for overtime, don't have health care benefits, are paying their own fuel costs and spend days or weeks away from home.

Often, a truck carrier will cover the cost of training new recruits to obtain a Commercial Driver's License (CDL). The training at some private driving schools costs up to \$10,000. The carrier will then hire the newly licensed driver at near minimum wage or at a per-mile rate, as independent contractors who have to pay all his/her own expenses. Some companies lock new drivers into exclusive contracts, for two years or longer, and if they quit during the interim, bill them to recoup the training costs.

Another issue that contributes to the poor working conditions is the lack of union representation. According to BLS, only 17 percent of truck drivers working for private carriers are unionized.<sup>10</sup> According to a report issued by the Joint Economic Committee, workers represented by labor unions earn 10.2 percent higher wages than their non-union peers.<sup>11</sup>

The high turnover rate leads to an increase in the number of inexperienced truck drivers on the road, which increases the risk for other drivers. A 2018 Department of Transportation report showed that a driver with under five years of experience driving trucks weighing between 35,000 and 80,000 pounds are 41 percent more likely to cause an accident than a more experienced driver.

# III. PROPOSED LEGISLATION TO INCREASE SIZE AND WEIGHT RESTRICTIONS ON TRUCKS

Despite an increase in the number of trucks on the road and a lack of experienced drivers, the trucking industry continues to push for larger and heavier trucks to be allowed on the road. This push has led to proposed legislation in Congress and at the state level.

## A. PROPOSED FEDERAL LEGISLATION

Earlier this year, Reps. Dusty Johnson (R-S.D.) and Jim Costa (D-CA) introduced the Safer Highways and Increased Performance for Interstate Trucking (SHIP IT) Act in the House of Representatives.<sup>12</sup> The bill sponsors boast that the bill is a “sweeping overhaul of the interstate trucking supply chain system.” The bill language makes clear that the bill is an effort to increase the current limits on truck size and weight.

There are key provisions in the bill dealing with increasing these limits. First, the bill would create a pilot program allowing the operation of trucks weighing up to 91,000 pounds. The provision would allow heavier trucks to operate for up to 10 years in an unlimited number of states to track if these heavier trucks cause more road fatalities. This would result in putting drivers at risk in order to collect safety data that the trucking industry would almost certainly attempt to use to justify permanently increasing weight limits.

Another provision would authorize the Secretary of Transportation to unilaterally allow states to set their own interstate weight limits for extended periods of time.

Under current law, a Presidentially declared emergency allows states to increase interstate weights for a 120-day period. This bill would transfer that power from the President to the Secretary of Transportation. It also includes vague language that could allow an emergency to be invoked if supply chains are functioning in a “suboptimal manner.” Since there is no benchmark for what constitutes a suboptimal manner, this authority could allow the administration to circumvent Congress’s power to regulate interstate commerce.



## **B. PROPOSED STATE LEGISLATION**

Current truck size and weight standards are a blend of Federal and State regulations and laws. Federal law controls maximum gross vehicle weights and axle loads on the Interstate System. States have laws in place to ensure compliance with Federal size and weight requirements, but states could have laws that allow sizes and weights on non-Interstate highways in excess of the current Federal truck size and weight limits.<sup>13</sup>

This opens the door for state legislatures to raise these vehicle limits on state and local roads. For example, legislation was introduced in the Georgia General Assembly that would raise weight limits from 80,000 pounds to 90,000 pounds for all five-axle trucks.<sup>14</sup> The bill, HB 189, passed the Georgia House Transportation Committee on February 9, despite State Transportation Commissioner Russell McMurry testifying that if the bill passed, 1,400 bridges across Georgia would immediately have to be weight restricted.<sup>15</sup> Other states could follow suit, which would expand the number of roads and bridges around the country that would be affected by an increasing number of larger and heavier trucks.

# **IV. IMPACT ON CONSUMERS**

If efforts to increase the limits on truck size and weight are successful, the consequences will be felt by consumers. This will make roads they drive on more dangerous, the air they breathe dirtier, and damage the roads and bridges they rely on every day.

## **A. ROAD SAFETY**

The increase in the number of large trucks on the road, combined with the increasing lack of experienced truck drivers behind the wheel is already creating a dangerous situation for America's drivers. According to a report from the Federal Motor Carrier Safety Administration (FMCSA), accidents involving large trucks increased 15 percent from 2016 to 2019. Over that same span, accidents involving all types of vehicles declined.<sup>16</sup> The same report showed that over that same time, fatal accidents involving large trucks increased 7 percent, while fatal accidents involving all vehicle types also declined.<sup>17</sup>

Despite these glaring statistics, the federal government is attempting to increase the number of truck drivers by attracting younger drivers to the profession. Federal law requires that drivers of commercial vehicles to be at least 21 years old to cross state lines. However, when Congress passed the Infrastructure Investment and Jobs Act in 2021, it included the Safe Driver Apprenticeship Pilot Program in the law.<sup>18</sup> The three-year program seeks to make commercial truck driving more appealing to younger drivers by allowing 18–20-year-old truckers to drive commercial vehicles on interstate routes. Interstate truck runs typically pay significantly more than those that are limited to staying within state lines.

While this might be good news for trucking companies and young people looking to get an earlier start on a career in truck driving, it is terrible for other drivers on the road. The National Transportation Safety Bureau expressed concerns with this program by citing the fact that teenage drivers can be easily distracted, have higher crash rates, and are more likely to underestimate dangers.

As Advocates for Highway and Auto Safety points out, attempts to lower the age requirement have been consistently rejected by government regulatory agencies, industry, drivers, law enforcement, safety groups and others because of substantial safety concerns associated with young drivers operating commercial motor vehicles across state lines.<sup>19</sup>

Another danger large trucks pose to other drivers is that they often carry hazardous materials. More than 60 percent of hazardous materials transported in the U.S. are carried by truck.<sup>20</sup> Last year, there were more than 20,000 hazardous material incidents involving trucks, according to the Bureau of Transportation Statistics.<sup>21</sup>

The increasing danger posed by trucks on our roads would be exacerbated by making them longer and heavier. The Department of Transportation (DOT) found in a 2015 study that heavier trucks have higher crash rates.<sup>22</sup> This was confirmed again in a 2016 report to Congress.<sup>23</sup> DOT also found that longer double-trailer trucks take 22 feet longer to stop than twin-trailer trucks on the road today.

FMCSA laid out many of the reasons why larger trucks are more dangerous:<sup>24</sup>

- Trucks are often 20 to 30 times heavier than passenger vehicles.
- The huge mass of a truck or bus increases the risk of more severe crash damage, injuries and fatalities.
- Large size and weight increases driving challenges, including acceleration, braking and handling (maneuverability).
- Trucks and buses accelerate more slowly uphill and may gain speed quickly downhill.
- Tall vehicles have a higher center of gravity, roll over more easily than smaller vehicles and must go much slower on curves and ramps.
- Large vehicles generate wind gusts that can push smaller vehicles into other lanes.
- Smaller vehicles can be pushed or pulled under a commercial vehicle with high ground clearance.

Another major safety issue is the proliferation of autonomous vehicle technology in the trucking industry and the push to expand it to larger and heavier trucks. One example is California, where lawmakers are trying to prevent the Department of Motor Vehicles from allowing trucks weighing more than 10,000 pounds to operate without a driver. California currently allows some driverless light-duty vehicles.

Other states are pushing the boundaries of driverless trucks even further. Kentucky and Mississippi are advancing legislation this year that would not only pave the way for driverless vehicles, it would also allow for truck platooning, where one truck leads another via wireless communication.<sup>25</sup> In Tennessee, lawmakers have proposed legislation that would eliminate the requirement that a human driver be physically present in each vehicle of a truck platoon and instead, would only require a human operator in the lead vehicle, with fully driverless semi-trucks following.<sup>26</sup>

An independent assessment conducted by United States Department of Transportation raised numerous safety concerns about the use of platooning in commercial trucking. Among the concerns were platoon trucks not being able to swiftly adapt to changing traffic conditions due to vehicle mechanics, such as the brake performance of trucks following behind the leading truck, reduced visibility of following truck drivers, drivers becoming over reliant on truck platoon system, and the impact of truck platoons on the safe behavior of other drivers trying to get around a large caravan of trucks.

## B. ENVIRONMENTAL IMPACT

Numerous studies have concluded that vehicle traffic on our roads contributes to air pollution. Recent studies make it clear that it isn't just the volume of vehicles on the road. It is also what kind of vehicles they are. A 2018 study by the University of Toronto Faculty of Applied Science & Engineering found that large diesel trucks are the greatest contributors to harmful black carbon emissions close to major roadways.<sup>27</sup>

The Centers for Disease Control (CDC) found that the highest concentrations and risk of exposure to air pollution occurs near roads. The CDC also found that air pollution increases the risk of childhood asthma, non-asthma respiratory symptoms, and impaired lung function. Given that more than 11 million Americans live within 150 meters of a major roadway, putting heavier trucks on the road has the potential to be a major health hazard.<sup>28</sup>

While proponents of trucking point to the rollout of electric trucks, widespread electrification of trucks remains a long way off. Last year's BloombergNEF's Electric Vehicle Outlook found that because of the challenges and cost of building large enough batteries to power bigger and heavier trucks, adoption of heavy-duty electric trucks is falling way behind that of smaller and lighter vehicles.<sup>29</sup>



## C. INFRASTRUCTURE AND THE ECONOMY

It is no secret that America's infrastructure is under a heavy strain and the wear and tear is taking its toll. According to the Federal Highway Administration, more than half the bridges on the National Highway System are more than 40 years old, and nearly 25 percent are already either structurally deficient or functionally obsolete.<sup>30</sup> Subjecting roads and bridges to longer and heavier trucks will only make things worse. The Department of Transportation found that increasing the weight limit for trucks would have a significant impact on nearly 5,000 bridges across the country.<sup>31</sup> DOT also found that allowing double trailer trucks would damage an additional 2500 interstate highway bridges unless they were immediately reinforced.

Cesar Quiroga, senior research engineer with the Texas A&M Transportation Institute (TTI), said that "many farm-to-market roads, which were designed to handle the occasional combine or 18-wheeler. But now you have a massive influx of heavy loads, and many of these roads have been destroyed pretty quickly."<sup>32</sup>

Quiroga also pointed out that "if you double the weight of a vehicle, the impact on the pavement is not double; it is exponentially higher than that. A lot of people do not realize how critical this is." He continued on to say that even a 5 percent increase in weight would be a significant strain on roads because "the impact is not linear, that ratio does not go up by 5 percent. It's more like 25 percent."<sup>33</sup>

Aside from the obvious cost to taxpayers of having to pave roads and repair bridges more frequently, there are deeper costs for consumers. These construction projects cause massive traffic delays. Time spent in traffic is time not spent being able to work or be with family and friends. Time spent idling on the road increases fuel costs for drivers. This is also true for commercial drivers. The constant road repairs increase shipping times and fuel costs, as well as clog up the supply chain. The end result of this ripple effect is that goods become more expensive for consumers.

## V. POLICY RECOMMENDATIONS

Given the number of studies and reports that clearly lay out the consequences of flooding America's roads with longer and heavier trucks, policymakers need to take steps to protect consumers.

### A. VEHICLE MILES TRAVELED AND WEIGHT TAX

The idea of a Vehicle Miles Traveled Tax (VMT) is not new. It has been proposed in numerous states as an alternative to a fuel tax. The idea is that the more miles you drive, the more of a burden you are putting on the country's already strained infrastructure. This would shift the burden of maintaining roads and bridges onto commercial vehicles that log significantly more miles than personal vehicles. A 2017 study in the Journal of Public Economics found that a VMT is more effective than a gas tax, precisely because it is targeted at drivers who have the most impact on roads and bridges.<sup>34</sup>

Adding the additional factor of vehicle weight would make a VMT even more targeted at the culprits that are placing increased strain on our infrastructure. If the VMT rate increases with the weight of the vehicle, it will better account for the fact that heavy long-haul trucks are responsible for much of the wear and tear on roads. It may also serve as a deterrent for carriers who might be more reluctant to put heavier trucks on the road if they have to pay higher taxes.

## B. LICENSING REQUIREMENTS FOR LARGER TRUCKS

Currently, there are three classes of Commercial Drivers Licenses (CDL).

### A Class A CDL allows you to drive:

- Tractor-trailers
- Truck and trailer combinations
- Tank vehicles
- Livestock carriers
- Flatbeds

### A Class B CDL allows you to drive:

- Straight trucks
- Large passenger buses
- Segmented buses
- Box trucks
- Dump trucks with small trailers
- Tractor-trailers

### A Class C CDL allows you to carry:

- Small HazMat vehicles
- Passenger vans
- Combination vehicles not covered by Classes A or B



The problem with these classifications is that weight is not a factor. Each of these classes covers vehicles weighing more than 26,000 pounds. The licensing requirements should reflect the difficulty of driving heavier trucks. It should require specialized training at certified training centers in order to obtain a CDL certifying drivers for trucks at a weight determined by highway safety advocates and law enforcement. This training would include rigorous driving tests with heavy trucks to ensure drivers are well-schooled in how to handle trucks that take longer to stop and are more prone to jackknifing. The costs of the training should be covered by carriers which could then go into a fund to pay for road and bridge maintenance projects.

## **C. KEEP AUTONOMOUS TRUCKS OFF THE ROAD**

With a number of states looking at expanding driverless commercial trucks, lawmakers should take a hard look at the safety implications and ensure that drivers sharing the road with trucks are not put in more danger than they already are. One way to do this is outlawing autonomous vehicles, including the practice of platooning. Currently, the auto and trucking industries have not demonstrated they have the culture of safety to be trusted, and more evidence is needed to prove that driverless vehicles can be deployed safely.

## **D. SHIFT WEIGHT LIMIT PENALTIES ONTO CARRIERS**

In most states, once a truck leaves the yard, the driver is responsible for any violations levied on the truck. This includes driving a truck over the weight limit. This makes little sense. Often times, the driver of the truck is relying on co-workers to load the truck within the legal weight and properly secure the load. They also rely on a route given to them by corporate logistics that should keep them on roads approved for the weight the truck is carrying. If any of those things are done improperly, why should the driver of the truck be the one to incur fines, court fees, and even possible jail time? Truck driving is already a job that carries significant safety risks, unpaid time spent on the job, and long, difficult hours. Shifting the burden of compliance away from the giant corporations and onto these drivers is a misplaced punishment.



These penalties should be levied on truck carriers, instead. Placing the burden onto carriers will allow fee increases with more teeth. If the company fails to pay the fees, trucks can be stopped and forced to park until the carrier complies. Repeated violations by the same carrier could result in the state refusing to register the company's trucks or even taking civil action.

Facing this kind of enforcement would incentivize companies to ensure its employees are complying with the law, which will reduce the number of overweight vehicles creating a safety hazard and wearing down roads and bridges.

## VI. CONCLUSION

With an increase in the number of trucks on the road and a shortage of experienced truck drivers, now is not the time to put larger and heavier trucks on the road. Numerous studies make clear that doing so would make roads less safe and cause further damage to our nation's infrastructure. Consumers would have to pay the price. To serve the best interest of consumers, policies should be enacted that:

- Shift the burden of taxes to fund road and bridge maintenance onto large long-haul commercial trucks
- Enhance licensing procedures to ensure the most qualified drivers are driving the heaviest trucks
- Hold carriers accountable for complying with truck size and weight limits

NCL believes the goal of policymakers should be to protect consumers by reducing the number of heavy trucks on the road, not increasing it.



# REFERENCES

- 1 <https://www.gwtrans.com/the-history-of-semi-trailer-trucks/#:~:text=What%20was%20Semi%20Truck%20invented,be%20known%20as%20a%20carmaker>
- 2 <https://www.freightwaves.com/news/economics/flashback-friday-gross-vehicle-weight>
- 3 <https://hvtforum.org/wp-content/uploads/2019/11/The-United-States-Bridge-Formula-Napier-.pdf>
- 4 [https://ops.fhwa.dot.gov/freight/policy/rpt\\_congress/truck\\_sw\\_laws/index.htm](https://ops.fhwa.dot.gov/freight/policy/rpt_congress/truck_sw_laws/index.htm)
- 5 <https://www.trucking.org/economics-and-industry-data>
- 6 <https://www.bts.gov/browse-statistical-products-and-data/freight-facts-and-figures/vehicle-miles-traveled-highway>
- 7 <https://www.transportdive.com/news/truck-driver-shortage-eases-slightly-in-2022-chief-economist-Bob-Costello-ATA-MCE-2022/634854/>
- 8 <https://www.bls.gov/opub/mlr/2019/article/pdf/is-the-us-labor-market-for-truck-drivers-broken.pdf>
- 9 <https://www.bls.gov/ooh/transportation-and-material-moving/heavy-and-tractor-trailer-truck-drivers.htm#tab->
- 10 <https://www.bls.gov/opub/mlr/2019/article/is-the-us-labor-market-for-truck-drivers-broken.htm>
- 11 <https://www.jec.senate.gov/public/index.cfm/democrats/issue-briefs?ID=A608604E-AAF6-4867-A080-648B29198E24>
- 12 <http://dustyjohnson.house.gov/sites/evo-subsites/dustyjohnson.house.gov/files/evo-media-document/ship-it-act.pdf>
- 13 [https://ops.fhwa.dot.gov/freight/policy/rpt\\_congress/truck\\_sw\\_laws/index.htm](https://ops.fhwa.dot.gov/freight/policy/rpt_congress/truck_sw_laws/index.htm)
- 14 <https://legiscan.com/GA/bill/HB189/2023>
- 15 <https://www.timesfreepress.com/news/2023/feb/19/northwest-georgia-officials-criticize-truck/>
- 16 <https://www.fmcsa.dot.gov/sites/fmcsa.dot.gov/files/2022-01/ FMCSA%20Pocket%20Guide%202021.pdf>
- 17 <https://www.fmcsa.dot.gov/sites/fmcsa.dot.gov/files/2022-01/ FMCSA%20Pocket%20Guide%202021.pdf>
- 18 <https://www.fmcsa.dot.gov/safedriver#:~:text=On%20January%202014%2C%202022%2C%20FMCSA,details%20about%20the%20pilot%20program.>
- 19 <https://saferoads.org/wp-content/uploads/2022/09/Large-Truck-Fact-Sheet-FINAL-9-16-22.pdf>
- 20 <https://www.bts.gov/content/us-hazardous-materials-shipments-transportation-mode-2007>
- 21 <https://www.bts.gov/content/hazardous-materials-fatalities-injuries-accidents-and-property-damage-data>
- 22 <http://ca-bt-s3z6.squarespace.com/s/2015-USDOT-Technical-Reports-Safety.pdf>
- 23 <http://ca-bt-s3z6.squarespace.com/s/2015-USDOT-Technical-Reports-Safety.pdf>
- 24 <https://www.fmcsa.dot.gov/ourroads/cmv-safety-challenges>
- 25 <https://landline.media/eight-states-pursue-truck-platooning-rule-changes/>

- 26 <https://wapp.capitol.tn.gov/apps/BillInfo/Default.aspx?BillNumber=SB0083&GA=113>
- 27 <https://www.sciencedaily.com/releases/2018/09/180910111237.htm>
- 28 <https://www.cdc.gov/mmwr/preview/mmwrhtml/su6203a8.htm>
- 29 <https://about.bnef.com/electric-vehicle-outlook/>
- 30 <http://www.fhwa.dot.gov/bridge/nbi/no10/defbr15.cfm>
- 31 <http://ca-bt-s3z6.squarespace.com/s/2016-CTSLWS-Report-to-Congress-FINAL.pdf>
- 32 <https://www.freightwaves.com/news/drivers/increasing-us-truck-weight-limits>
- 33 <https://www.freightwaves.com/news/drivers/increasing-us-truck-weight-limits>
- 34 <https://www.sciencedirect.com/science/article/abs/pii/S0047272717300798?via%3Dihub>