



National Organizations Opposing Truck Size & Weight Increases

International Association of Chiefs of Police
National Association of Police Organizations
National Sheriffs' Association
National Troopers Coalition
National Association of Emergency Medical Technicians
Towing and Recovery Association of America, Inc
Institute for Safer Trucking
AAA
Coalition Against Bigger Trucks
American Public Works Association
National Association of Counties
National Association of County Engineers
National Association of Towns and Townships
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General Federation of Women's Clubs
Owner-Operator Independent Drivers Association
International Brotherhood of Teamsters
SMART Transportation Division
American Short Line and Regional Railroad Association
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GoRail
National Railroad Construction and Maintenance Association
Railway Engineering-Maintenance Suppliers Association
Railway Supply Institute



January 25, 2017

Alaska's Motor Fuel Tax: A National and Historical Outlier

REPORT

Read this report in pdf.

Alaska Gov. Bill Walker recently proposed tripling his state's motor fuel tax rates.[1] Three-fourths (or \$60 million) of the revenue raised each year would come from higher taxes on gasoline and diesel fuel—sometimes referred to as highway fuels—purchased by Alaska motorists. Heating fuel would not be affected by the proposal but taxes would rise on marine, jet, and aviation fuel. This brief focuses specifically on Alaska's gasoline and diesel taxes.

Absent any national or historical context, tripling Alaska's gasoline and diesel fuel tax rates may sound like a radical policy change. But an adjustment of this size is necessary because Alaska lawmakers have not updated the state's basic highway fuel tax rate since May 1970—almost 47 years ago.[2] Because of this inaction, Alaska's highway fuel tax has become an outlier when compared to other states' tax rates, or when compared to Alaska's own history.

This brief discusses four ways in which Alaska's highway fuel tax on gasoline and diesel fuel is an outlier:

- **Alaska's tax rate on gasoline and diesel fuel is the lowest in the nation.**
- **Alaska has waited longer than any state since last updating its gasoline and diesel tax rate.**

- Adjusted for inflation, Alaska’s tax rate on gasoline and diesel fuel has reached its lowest level in history.
- Alaska households are spending a smaller share of their earnings on state gasoline and diesel taxes than at almost any time since Alaska became a state.

Lowest Rates in the Nation

Alaska’s base excise tax rate on gasoline and diesel fuel is 8 cents per gallon, with local sales taxes and the state’s spill

prevention tax bringing the statewide average rate to 12.25 cents for gasoline and 12.75

cents for diesel fuel. These rates are the lowest in the nation and are less than half the national average state and local tax rate of 31 cents per gallon.[3] If Gov. Walker’s proposed highway fuel tax increase were enacted, Alaska’s gasoline and diesel tax rates would remain below the national average and below the tax rates levied in most states (see Figure 1).

Figure 1: Alaska's Current and Proposed Highway Fuel Tax Rates

	Current Tax Rate*	Rank Among 50 States	Proposed Tax Rate*	Rank Among 50 States
Gasoline	12.25 cents	50th	28.25 cents	28th
Diesel	12.75 cents	50th	28.75 cents	26th

* While Alaska’s base fuel tax rate is 8 cents per gallon, there is also a 0.95 cent spill prevention tax and some local sales taxes on fuel. Gov. Bill Walker has proposed tripling only the base fuel tax rate.

Source: ITEP analysis using data from the American Petroleum Institute

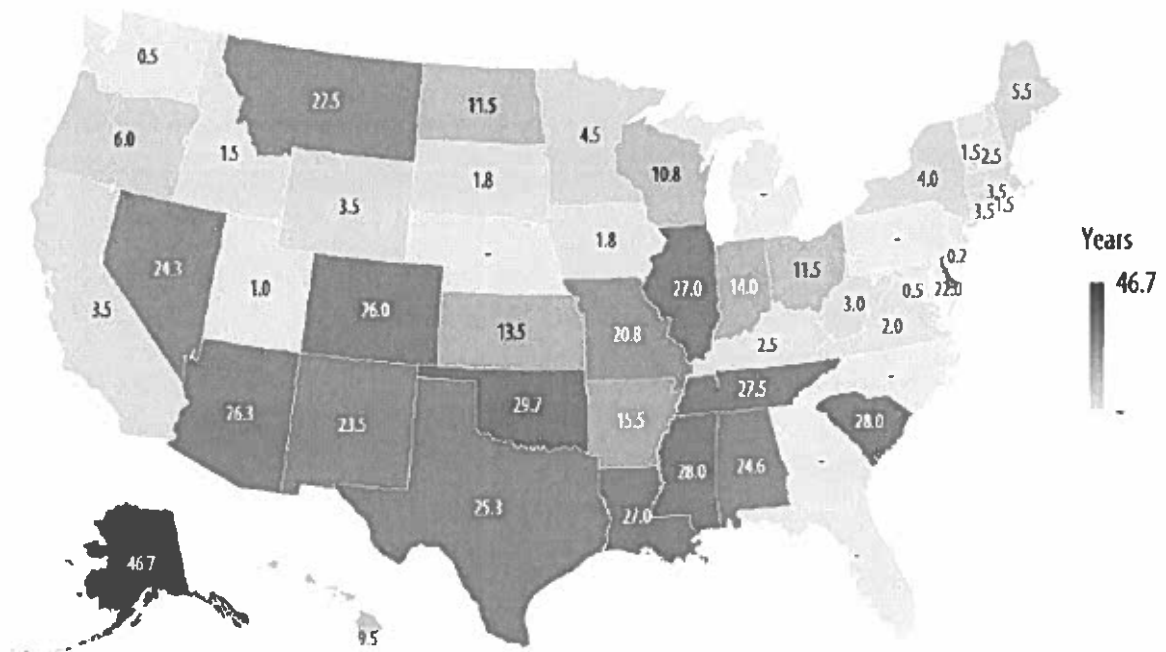
Most Outdated Rates in the Nation

Alaska’s highway fuel tax rate of eight cents per gallon was typical at the state level when it was enacted in 1970. Since then, however, every other state in the nation has opted to raise its gasoline and diesel tax rates while Alaska’s rate has stood still.

At almost 47 years of age, Alaska's base fuel tax rate of eight cents per gallon is now far more outdated than any other state's (see Figure 2 below as well as Figure 5 at the end of this brief). As of this writing only sixteen states have waited more than twenty years since last updating their fuel tax rates and no state other than Alaska has waited more than thirty years.[4]

Gov. Walker's proposed fuel tax increase comes at a time when many states are contemplating similar increases. In just the last four years, nineteen states have either updated or reformed their motor fuel taxes.[5] Many of the states currently levying decades-old fuel tax rates—including Louisiana, Oklahoma, South Carolina, and Tennessee—will be debating their own increases during their 2017 legislative sessions.

Figure 2: Years Since Last Gasoline Tax Increase
As of January 1, 2017



Source: Institute on Taxation and Economic Policy (ITEP)

Lowest Rates in Alaska's History

While Alaska's eight cent fuel tax rate may appear to have held steady in recent decades, the economic reality is that its real value has declined significantly. After adjusting for inflation, an 8 cent fuel tax rate in 1970 was the equivalent of what would be a 49.5 cent tax today. In other words, Alaska's fuel tax rate has lost 81 percent of its purchasing power since 1970.

Looking back further to the tax's creation in 1945, Figure 3 shows that the eight cent rate in effect today is the lowest in Alaska's history. In inflation-adjusted terms, the one cent per gallon tax initially enacted in 1945 would have been the equivalent of 13.3 cents today. Sixteen years later in 1961, Alaska's highway fuel tax reached a peak value of 64.2 cents per gallon (adjusted for inflation) before beginning the long decline to its current eight cent rate.

Throughout its 72-year history, Alaska's real highway fuel tax rate has averaged 24.9 cents per gallon, when expressed at 2016 levels. Gov. Bill Walker's proposal to triple the state's 8 cent rate to 24 cents per gallon would bring the state's tax rate in rough alignment with this historic average.

Figure 3: Alaska's Highway Fuel Tax Rate Has Reached an All-Time Low
Cents per gallon tax rate, adjusted for inflation

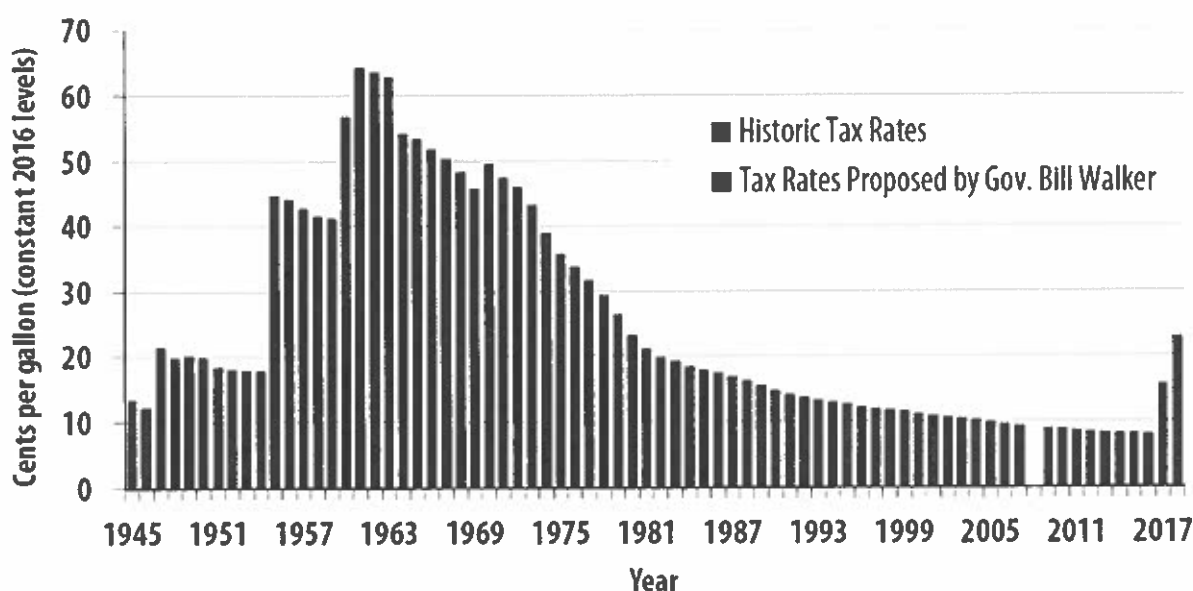


Chart does not include the spill prevention tax, local sales taxes, or federal taxes. Note that Alaska's fuel tax was suspended from September 2008 through August 2009.

Source: Institute on Taxation and Economic Policy, January 2017

A Smaller Share of Personal Income

Alaska households are spending less of what they earn on state highway fuel taxes than at almost any time since Alaska became a state. In 1959 Alaska's highway fuel tax of 5 cents per gallon collected revenues equal to 0.48 percent of the state's personal income. After peaking at 0.71 percent of personal income in 1962, the state's highway fuel tax revenues underwent a long decline to just 0.08 percent of personal income today.

Put another way, Alaska households are spending less than one-tenth of a percent of their earnings on state highway fuel taxes. This is the lowest level on record aside from fiscal years 2009 and 2010, when revenue collections were impacted by the temporary suspension of the state's fuel taxes. Gov. Bill Walker's proposal to triple the state's base highway fuel tax rate would likely raise the share of income Alaskans are spending on fuel taxes to 0.24 percent, or less. This would remain below the levels paid by Alaska households in the 1960s and 1970s while also helping to bring about meaningful improvements in the state's ability to fund transportation maintenance, and in its general fiscal health.

Figure 4: Alaska Motor Fuel Tax Collections as a Share of Personal Income

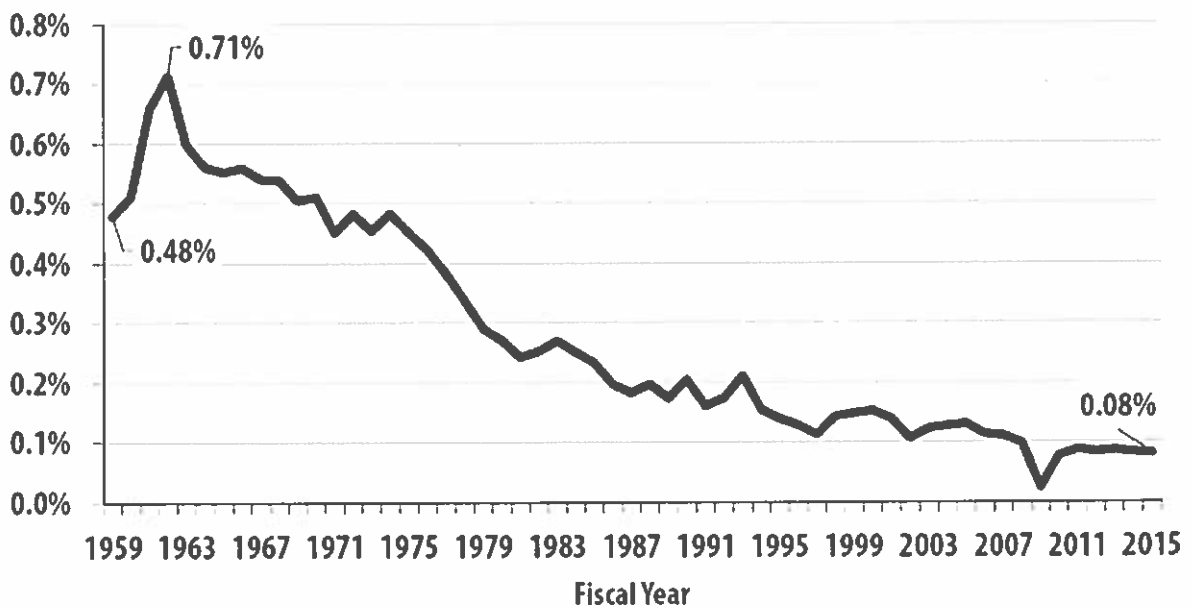


Chart does not include the spill prevention tax, local sales taxes, or federal taxes. Note that Alaska's fuel tax was suspended from September 2008 through August 2009.

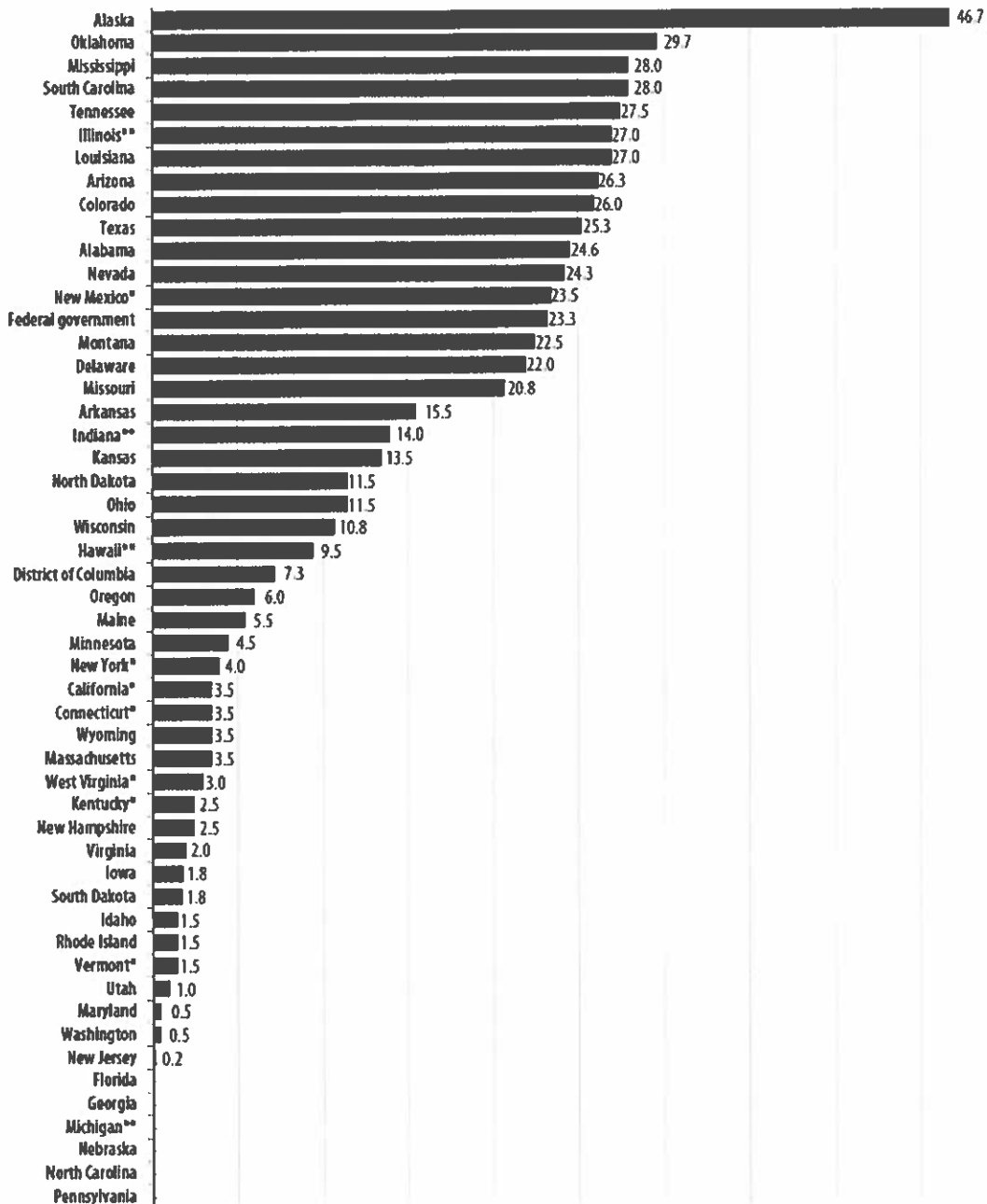
Source: Institute on Taxation and Economic Policy, January 2017

Conclusion

Alaska's highway fuel tax rates are badly outdated. Because they have not been updated for almost 47 years, the state's gasoline and diesel tax rates are now the lowest in the nation and have seen most of their purchasing power disappear in the face of inflation. Updating the state's fuel tax rates in the manner that Gov. Bill Walker has proposed would undo much of the decline witnessed in recent decades while making a meaningful contribution toward improving the state's fiscal health.

Figure 5: Years Since Last Gasoline Tax Increase

As of January 1, 2017



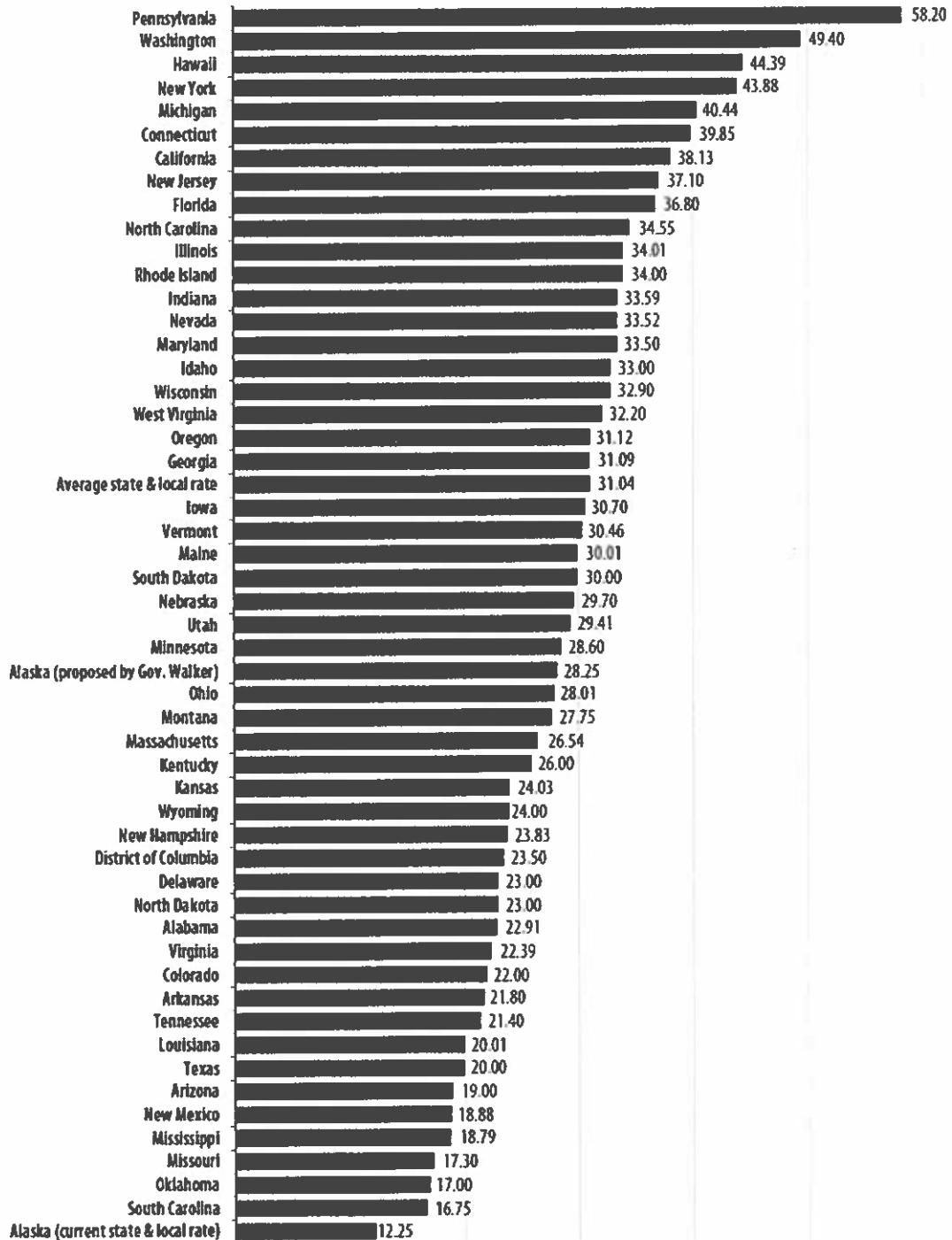
* These states have experienced gas tax rate cuts since their last increases were enacted. This typically occurs when the tax rate is tied to fluctuations in the price of fuel.

** Hawaii, Illinois, Indiana, and Michigan apply their general sales taxes to gasoline and thus see ongoing changes in their overall gas tax rates based on changes in the price of gas. This chart excludes these price-based fluctuations and instead looks only at these states' excise taxes on gasoline.

Source: Institute on Taxation and Economic Policy (ITEP)

Figure 6: State & Local Gasoline Tax Rates

Cents per gallon as of January 1, 2017

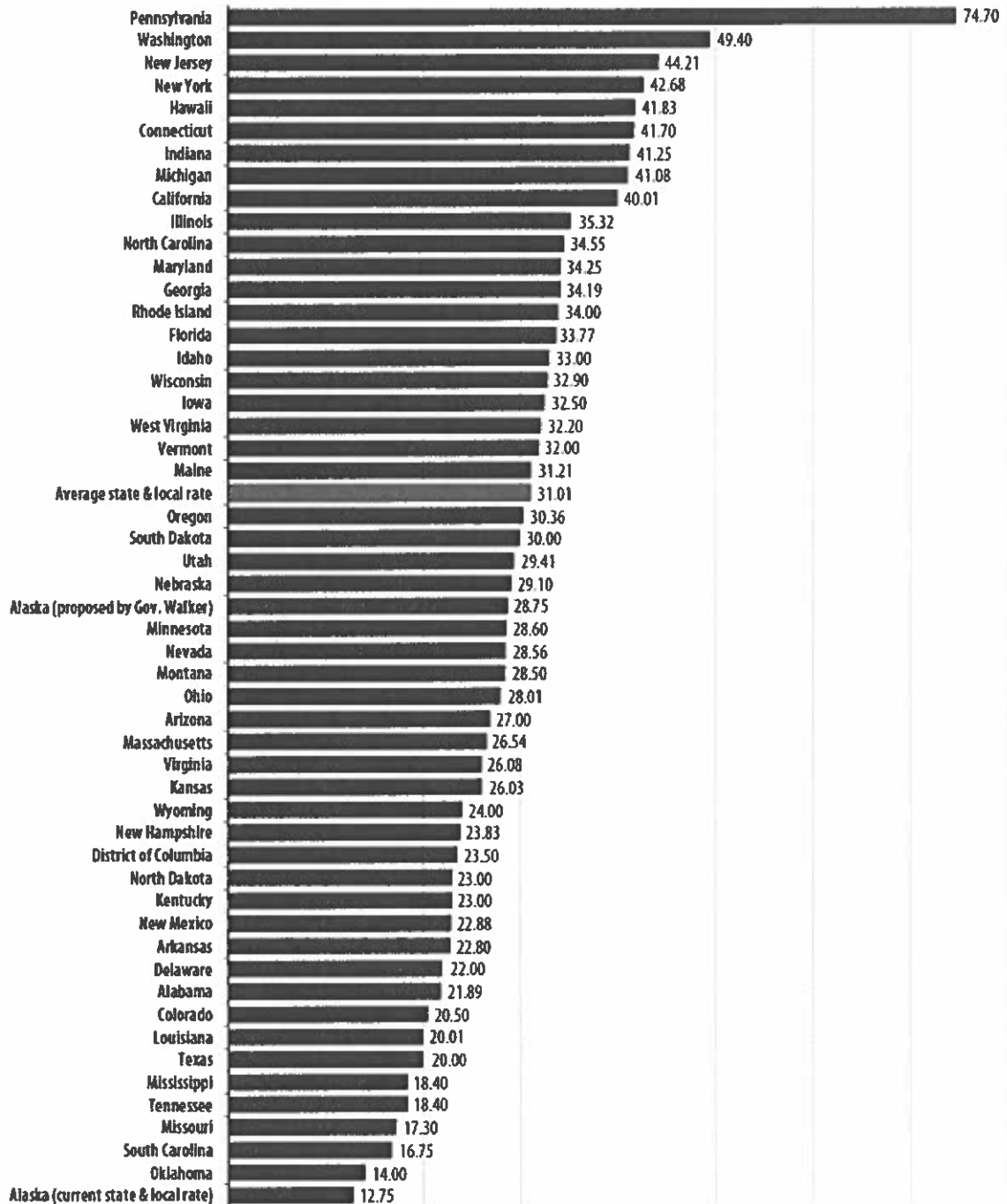


Includes state taxes and fees plus the statewide average of local taxes and fees. The nationwide average state and local tax rate is a volume-weighted average.

Source: Institute on Taxation and Economic Policy (ITEP) analysis of data from the American Petroleum Institute (API)

Figure 7: State & Local Diesel Fuel Tax Rates

Cents per gallon as of January 1, 2017



Includes state taxes and fees plus the statewide average of local taxes and fees. The nationwide average state and local tax rate is a volume-weighted average.
 Source: Institute on Taxation and Economic Policy (ITEP) analysis of data from the American Petroleum Institute (API)

[1] Governor Bill Walker. Letter to the Honorable Pete Kelly. Available at:
https://www.omb.alaska.gov/ombfiles/18_budget/PDFs/12-15-16_Motor_Fuel_Tax_House_Senate.pdf

[2] ITEP. "How Long Has It Been Since Your State Raised Its Gas Tax?" January 2017. Available at: https://itep.org/itep_reports/2017/01/how-long-has-it-been-since-your-state-raised-its-gas-tax-3.php

[3] American Petroleum Institute. "Motor Fuel Taxes." January 2017. Available at: <http://www.api.org/oil-and-natural-gas/consumer-information/motor-fuel-taxes>

[4] See note 2.

[5] Davis, Carl. "Looking Back at Four Years of Gas Tax Reforms." Tax Justice Blog. October 2016. Available at: http://www.taxjusticeblog.org/archive/2016/10/looking_back_at_four_years_of.php

Facts and Research

Home > Facts and Research

HIGHWAY SAFETY

Higher Crash Rates and Longer Stopping Distances

In its 2016 Final Report to Congress, the U.S. Department of Transportation (USDOT) confirmed its 2015 findings that heavier trucks have 47 to 400% higher crash rates in limited state testing ([USDOT MAP-21 Comprehensive Truck Size and Weight Limits Highway Safety and Truck Crash Comparative Analysis Technical Report, 2015; pg. 26, Table 8](#)).

USDOT also found in the report that longer double-trailer trucks take 22 feet longer to stop than twin-trailer trucks on the road today ([June 2015 Highway Safety and Truck Crash Comparative Analysis Technical Report, Table 26, pg. 65](#)).

In the report's conclusion, USDOT recommended that Congress make no changes to current truck size and weight laws and regulations ([USDOT MAP-21 Comprehensive Truck Size and Weight Limits Final Report to Congress, 2016; pg. 21](#)).

USDOT also had previously found that multi-trailer trucks—doubles and triple-trailer trucks—“could be expected to experience an 11% higher overall fatal crash rate than single-trailer combinations” ([USDOT Comprehensive Truck Size and Weight Study, 2000; Vol. 3, Chapter 8, pg. VIII-5](#)).



Bigger Subsidies

Our highways and bridges are in rough shape because we don't have the resources to keep them in good condition. Allowing even bigger trucks would only make this problem even worse because they damage our nation's infrastructure.

Bigger Deficits

Bigger trucks mean bigger spending, bigger deficits.

The most recent federal study to look at the issue showed that allowing 97,000-pound single-trailer trucks would result in trucks only paying for 50% of the damage they cause. Also, 110,000-pound triple-trailer trucks would only pay for 70% of their damage.

+ Further Research on Underpayment

TRAFFIC CONGESTION

History Reveals A Pattern

Congress last increased the federal weight limit in 1982. Then, as now, those pushing for bigger trucks said it would result in fewer trucks on the road, but that never happened. In fact, the number of trucks registered in the U.S. and the mileage of trucks traveled has steadily increased.

Nearly 8 Million More Trucks

A June 2020 study, commissioned by the Coalition Against Bigger Trucks, shows major diversion of freight traffic from rail to truck if longer and heavier trucks are allowed by Congress.

This study shows some "... scenarios will reduce intermodal traffic by 20-25 percent and railroad carload traffic by as much as 20 percent. More disruptive scenarios could reduce both intermodal and certain carload traffic by nearly 60%." [Click here to read the full study.](#)

A previous study conducted in 2010 concluded that an increase from the current 80,000-pound weight limit to the proposed 97,000-pound weight limit could reduce overall rail traffic by 19% ([Martland, 2010](#);

Heavier Trucks Endanger Motorists and Damage Infrastructure

Prepared by CABT, January 2024

Certain business interests are lobbying Congress to raise federal truck weight limits from 80,000 pounds to as much as 97,000 pounds. Congress has consistently rejected any increase in national truck weight limits because of concerns for public safety and infrastructure damage. In 2015, the House voted on a bipartisan basis to maintain the federal limits.¹ In addition to a bill introduced to increase the nationwide weight limit to 97,000 pounds in recent years, heavier truck proponents are yet again lobbying for a 91,000-pound heavier-truck pilot project. Both proposals have the same objective: nationwide operation of heavier trucks.

In 2016, the U.S. Department of Transportation (USDOT) delivered its three-year Comprehensive Truck Size and Weight Limits Study Report requested by Congress. That report found that heavier trucks had serious safety problems and would impose additional costs to our highway infrastructure. The Department recommended that Congress not approve any heavier trucks.²

Heavier Trucks Have Dramatically Higher Crash Rates

The 2016 USDOT study found that heavier trucks with six axles—both 91,000-pound and 97,000-pound configurations—had higher crash rates in the three states where there was sufficient data³:

Washington	-	47 percent higher crash rates for six-axle trucks up to 91,000 pounds
Idaho	-	99 percent higher crash rates for six-axle trucks up to 97,000 pounds
Michigan	-	400 percent higher crash rates for six-axle trucks up to 97,000 pounds

The Problems with Heavier Trucks

More severe crashes. The severity of a crash is determined by the velocity and mass of a vehicle. If its weight increases, so does the potential severity of a crash. Any increase in crash severity increases the likelihood of injuries becoming more serious or resulting in fatalities.

More likely to roll over. Heavier trucks tend to have a higher center of gravity because the additional weight is often stacked vertically. Raising the center of gravity increases the risk of rollovers.⁴

Increased wear and tear. Increasing the weight of trucks causes additional wear and tear on key safety components. The 2016 USDOT study found that trucks weighing over 80,000 pounds had higher overall out-of-service (OOS) rates and **18 percent higher brake violation rates** compared to those at or below 80,000 pounds.⁵ This is especially important because a 2016 study by the Insurance Institute for Highway Safety found that trucks with any out-of-service violation are **362 percent more likely to be involved in a crash.**⁶

¹ On Nov. 3, 2015, an amendment offered by Rep. Reid Ribble (R-Wis.) to the Transportation Reauthorization Act was defeated on a bipartisan vote, 236 to 187

² USDOT; 2016. *Comprehensive Truck Size and Weight Limits Study, Final Report to Congress*

³ Ibid.

⁴ USDOT; 2000. *Comprehensive Truck Size and Weight Study*

⁵ USDOT; 2016. *Comprehensive Truck Size and Weight Limits Study, Final Report to Congress*

⁶ Insurance Institute for Highway Safety; 2016. *Crash Risk Factors for Interstate Large Trucks in North Carolina*

Longer Double-Trailer Trucks Endanger Motorists and Damage Infrastructure

Prepared by CABT, January 2024

A few large trucking companies are pushing Congress to force states to allow longer double-trailer trucks, or “Double 33s.” These longer double-trailer trucks would replace not only today’s shorter, 28-foot double-trailer trucks, but also many 53-foot single-trailer trucks that commonly operate on the road today. Longer double-trailer trucks would add new dangers for motorists and damage our infrastructure.

Double 33s are 91 feet in length—that is 10 feet longer than the current doubles they are intended to replace and 17 feet longer than current single-trailer trucks. In 2015, Congress rejected these longer double-trailer trucks,¹ and the United States Department of Transportation (USDOT), in its 2016 Comprehensive Truck Size and Weight Limits Study, recommended that Congress not approve these or any other longer or heavier trucks.²

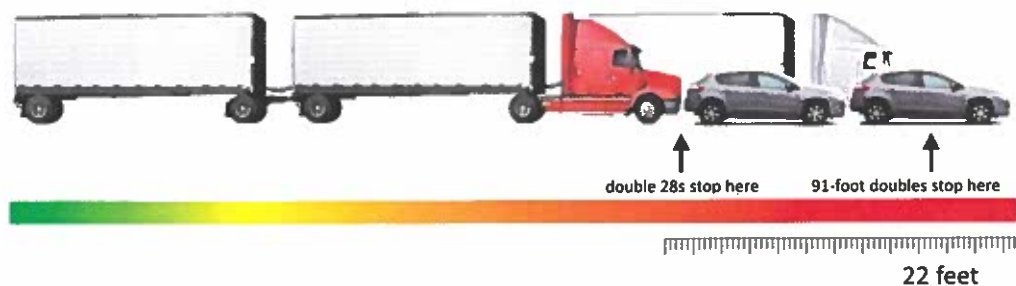
Double 33s Would Replace Single-Trailer Trucks

Double-trailer trucks represent a relatively small percentage of trucks operating on our roads today. The majority of combination trucks in operation are 53 foot single-trailer trucks. If Congress requires states to allow the longer doubles, today’s truck traffic would change dramatically. Since Double 33s have 24 percent more capacity than 53 foot trailers, market forces would push companies currently operating single-trailer trucks to replace their fleets with Double 33s. According to a 2015 analysis, this would incur a massive shift from single-trailer trucks to Double 33s, resulting in approximately 42 to 101 billion additional miles of double-trailer truck travel on our nation’s highways.³

Longer Double-Trailer Trucks Would Add New Dangers to the Highways

An influx of double-trailer trucks on the highway would have severe safety implications for motorists. Studies have consistently shown that multi-trailer trucks—doubles and triple-trailer trucks—are more dangerous than single-trailer trucks. A 2013 Marshall University-led study⁴ found that double-trailer trucks have an **11 percent higher fatality rate** than single-trailer trucks. This result is consistent with findings made by USDOT in a 2000 study.⁵ Below are several reasons these trucks are more dangerous:

1. Longer stopping distances. Double 33s take 252 feet to stop—that is a 17-foot longer stopping distance than today’s single-trailer trucks and 22 feet longer than today’s twin-trailer trucks.⁶



¹ On Nov. 10, 2015, the Senate rejected increasing the length of double-trailer trucks as part of the surface transportation reauthorization bill on a 56-31 floor vote; and on Nov. 18, 2015, the U.S. Senate rejected increasing the length of double-trailer trucks on the omnibus spending bill on a voice vote.

² USDOT; 2016. *Comprehensive Truck Size and Weight Limits Study, Final Report to Congress.*

³ Mingo, Roger D., and Mark L. Burton, Mark L.; 2015. *Mandated Twin 33 Trailers Produce Costly Shifts in Freight Movement.*




⁴ Marshall University, 2013. *An Analysis of Truck Size and Weight: Phase I – Safety.*

⁵ USDOT; 2000. *Comprehensive Truck Size and Weight Study.*

⁶ USDOT; 2015. *Comprehensive Truck Size and Weight Limits Study, Highway Safety and Truck Crash Comparative Analysis Technical Report.*



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How Much Damage Do Heavy Trucks Do to Our Roads?

A simple equation based on a series of experiments from the 1950s still serves as the rule of thumb for estimating road damage.



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TECHNOLOGY (TECHNOLOGY)

Monday, October 12, 2020 - 09:54

Yuen Yiu, Staff Writer



(Inside Science) -- It may be obvious that heavy semitrucks stress and damage roads more than the average commuter sedan does. But by how much?

Since the 1960s, the Generalized Fourth Power Law has been used as a rule of thumb when considering the relative damage done to the pavement depending on a vehicle's weight. The big picture is more complex, but the simplified, and perhaps elegant, equation, serves as a good starting point for this discussion.

A "power"-ful function

The AASHO Road Test was a multiyear experiment conducted by the American Association of State Highway Officials (AASHO) during the 1950s and is still perhaps the most comprehensive test on trucks and pavement damage. During the tests, trucks with different weights and configurations were driven around a loop until the road was damaged to a certain point. The tests ultimately resulted in 141 crashes and two fatalities.



Truck crash during the AASHO Road Test.

Media credits: *Transportation Research Board*

The report produced an extensive list of equations for describing the data collected from the tests, and from those equations was born the Generalized Fourth Power Law. It's a rule of thumb for comparing the amount of pavement damage caused by vehicles with different weights, in terms of axle loads:

$$\left(\frac{W_1}{W_2}\right)^4$$

In the equation, W_1 is the weight of an axle on vehicle 1, which we would compare to W_2 , the weight of an axle on vehicle 2.

Let's look at some numbers for comparison.

Consider a standard sedan with two axles and a total weight of 2 tons. Assuming an even distribution, each of its axles would bear the weight of 1 ton. Now consider a semitruck with eight axles and a weight of 40 tons -- each of its axles would weigh 5 tons. The relative damage done by each axle of the truck can be calculated with the following equation, and comes out to 625 times the damage done by each axel of the sedan.

$$\left(\frac{5 \text{ tons}}{1 \text{ ton}}\right)^4 = 625$$

Considering that the truck has eight axles and the sedan has two, the relative damage caused by the entire semitruck would be $625 \times (8/2)$ -- 2,500 times that of the sedan.

“The damage due to cars, for practical purposes, when we are designing pavements, is basically zero. It’s not actually zero, but it’s so much smaller -- orders of magnitude smaller -- that we don’t even bother with them,” said Karim Chatti, a civil engineer from Michigan State University in East Lansing.

The limitation of the equation

In theory, you can add axles to the truck to lighten the load of each axle. For example, if the same 40-ton truck had 10 axles instead of eight, each of the axles would now weigh 4 tons instead of 5, and the relative damage would become:

$$\left(\frac{4 \text{ tons}}{1 \text{ ton}}\right)^4 = 256$$

Even when considering the extra axles, the relative damage would still be lower, i.e., 256 x (10/2), or 1,280 times the damage from the sedan, roughly half of that from the eight-axle truck.

In reality, the relationship is more complicated. For instance, adding extra axles increases the total weight of the vehicle, making it more damaging, especially to bridges, where the total weight instead of axle weight is the main concern.

Other factors in play are the vehicle speed, the number of wheels on each axle, the design and composition of the pavement itself, etc.

“It depends on a lot of things,” said Chatti, about the generalized law. “There’s a range. The [exponent] is not always four, it could range anywhere from three to six.”

However, as a generalized rule, the equation has been seen as adequate for serving as a guideline for regulations and policies.

Converting the equation to tax dollars

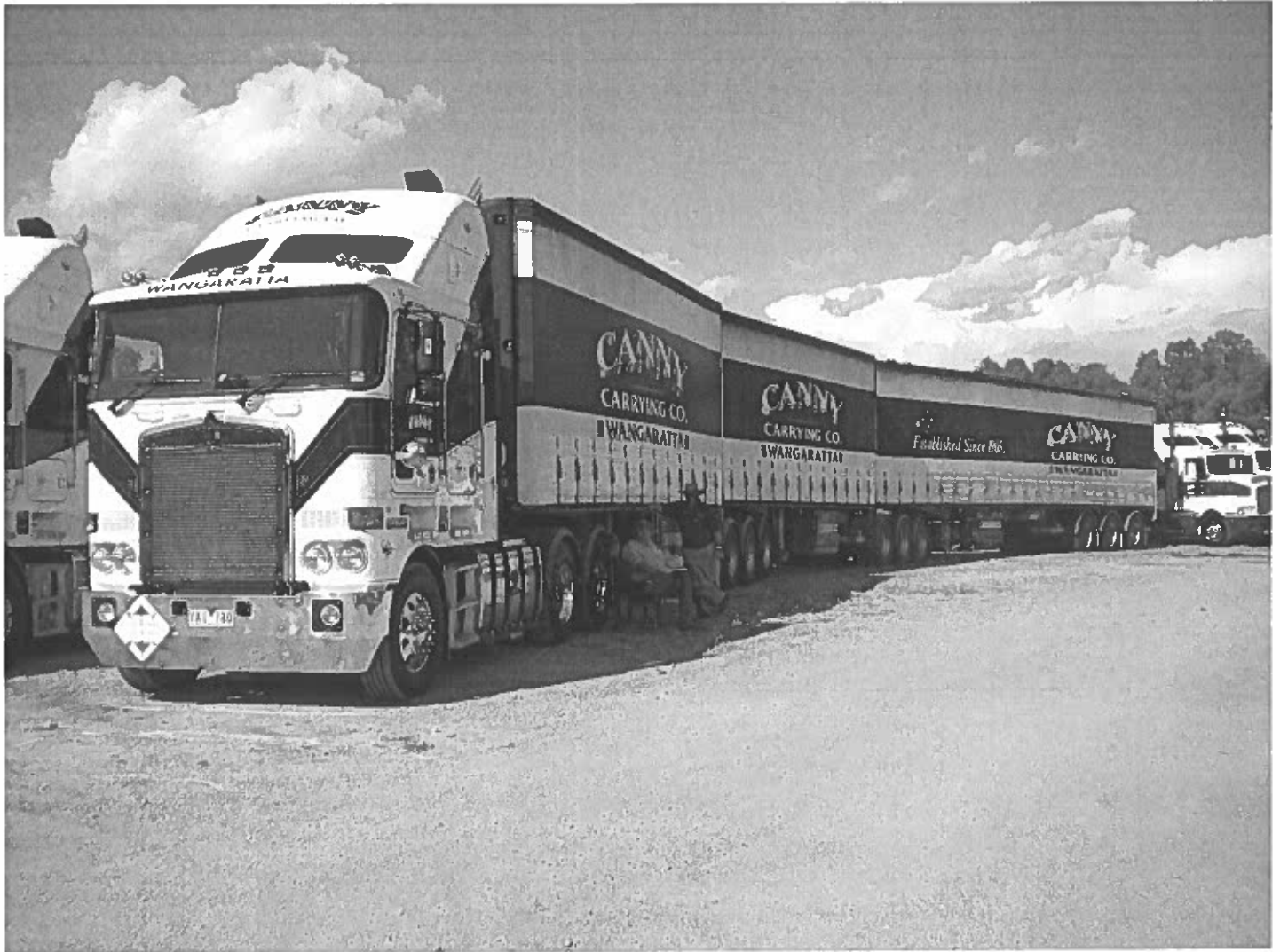
According to a [report](https://www.urban.org/policy-centers/cross-center-initiatives/state-and-local-finance-initiative/state-and-local-backgrounders/highway-and-road-expenditures) (<https://www.urban.org/policy-centers/cross-center-initiatives/state-and-local-finance-initiative/state-and-local-backgrounders/highway-and-road-expenditures>) published by the Urban Institute, the annual expenditure on highways and roads in the U.S. was \$181 billion in 2017, with roughly three-quarters of the budget coming from state and local governments, and a quarter coming from federal funding. When divvied up by the population, the amount was about \$560 per capita.

While engineers seek to make pavements cheaper and more durable, interest groups such as the trucking industry and the railway industry, and even advocacy groups for bicycling, have been debating the question of who should pay what to use the road.

“Congress has done studies over the years, allocating which groups should pay more in terms of road user taxes,” said Joe Mahoney, a civil engineer from the University of Washington in Seattle. “Trucks do pay more in terms of road user taxes. They pay a fuel tax, particularly for diesel, and they also have other weight-related taxes that most other vehicles don't have.”

“I'm not going to say that they're fairly allocated. That's kind of like saying that income taxes for individuals are fairly allocated in the United States. I think you could probably debate that with some vigor, and you could do the same here,” he said.

While the debate about specific tax policies goes beyond the scope of this article, the rapid growth in lightweight cargo from online shopping has opened up a different conversation. This time, it is not about the weight of the trucks, but their sizes.



A three-trailer road train in Australia.

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“There was always pressure for longer trucks without adding weight, which has gotten louder since we all seem to buy small light things delivered in big boxes full of padding in this century,” wrote Steven Karamihas, a mechanical engineer from the University of Michigan in Ann Arbor, in an email to *Inside Science*.

Regulations about the maximum length of vehicles are often specific to state and local jurisdictions and depend on the vehicle type and trailer configuration. In general, most states limit truck length to two standard 28-foot trailers, with a handful allowing three trailers.

In 2015, Congress struck down two pieces of proposed legislation to allow [heavier](https://www.congress.gov/bill/114th-congress/house-bill/3488/text) (<https://www.congress.gov/bill/114th-congress/house-bill/3488/text>) and [longer](https://www.ttnews.com/articles/senate-votes-delay-twin-33s-approval-transportation-) (<https://www.ttnews.com/articles/senate-votes-delay-twin-33s-approval-transportation->

[funding_bill](#)) trucks, but the idea still is actively being lobbied for and against by opposing interest groups, such as [Americans for Modern Transportation](https://americansformoderntransportation.org/) (<https://americansformoderntransportation.org/>), and [Coalition Against Bigger Trucks](http://www.cabt.org/) (<http://www.cabt.org/>).

“If the cargoes are getting lighter, [trucking companies] will want to be able to carry more volume, obviously,” said Chatti. “But the concern here isn’t the deterioration of the pavement, it’s about safety and regulations.”

Editor's Note (5/24/2021): An older version of this article overestimated the weight of a standard sedan to be 4 tons instead of the much lighter weight of 2 tons. We would like to thank the commenter from Reddit who noticed the inaccuracy.

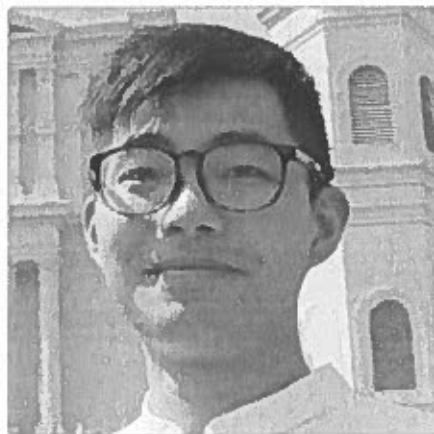
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Yuen Yiu (/authors/yuen-yiu)

Yuen Yiu is a former staff writer for Inside Science. He's a Ph.D. physicist and fluent in Cantonese and Mandarin. Follow Yuen on Twitter: [@fromyiutoyou](https://twitter.com/fromyiutoyou) (<http://twitter.com/fromyiutoyou>).