

# An Analysis of the Operational Costs of Trucking: 2020 Update

---

November 2020



Prepared by the American Transportation Research Institute



# **An Analysis of the Operational Costs of Trucking: 2020 Update**

**November 2020**

**Nathan Williams**

Research Analyst

American Transportation Research Institute

Minneapolis, MN

**Dan Murray**

Senior Vice President

American Transportation Research Institute

Minneapolis, MN



950 N. Glebe Road, Suite 210

Arlington, Virginia 22203

[TruckingResearch.org](http://TruckingResearch.org)

## ATRI BOARD OF DIRECTORS

**Judy McReynolds**

Chairman of the ATRI Board  
Chairman, President and Chief  
Executive Officer  
ArcBest Corporation  
Fort Smith, AR

**Andrew Boyle**

Co-President  
Boyle Transportation  
Billerica, MA

**Hugh Ekberg**

President and CEO  
CRST International, Inc.  
Cedar Rapids, IA

**Darren D. Hawkins**

Chief Executive Officer  
YRC Worldwide  
Overland Park, KS

**Derek Leathers**

President and CEO  
Werner Enterprises  
Omaha, NE

**Robert E. Low**

President and Founder  
Prime Inc.  
Springfield, MO

**Rich McArdle**

President  
UPS Freight  
Richmond, VA

**Benjamin J. McLean**

Chief Executive Officer  
Ruan Transportation Management  
Systems  
Des Moines, IA

**Dennis Nash**

Executive Chairman of the Board  
Kenan Advantage Group  
North Canton, OH

**Brenda Neville**

President and CEO  
Iowa Motor Truck Association  
Des Moines, IA

**James D. Reed**

President and CEO  
USA Truck  
Van Buren, AR

**Annette Sandberg**

President and CEO  
Transsafe Consulting, LLC  
Davenport, WA

**John A. Smith**

President and CEO  
FedEx Freight  
Memphis, TN

**Rebecca Brewster**

President and COO  
ATRI  
Atlanta, GA

**Chris Spear**

President and CEO  
American Trucking Associations  
Arlington, VA

## ATRI RESEARCH ADVISORY COMMITTEE

**Karen Rasmussen, RAC  
Chairman**  
Executive Director  
Independent Carrier Safety  
Association

**Michael Ahart**  
VP, Regulatory Affairs  
Omnitracs LLC

**Thomas A. Balzer, CAE**  
President and CEO  
Ohio Trucking Association

**Shawn R. Brown**  
Vice President of Safety  
Cargo Transporters

**Kenneth Calhoun**  
Fleet Optimization Manager  
Altec Service Group

**Alison Conway, Ph.D.**  
Assistant Professor  
The City College of New York

**Robert P. Costello**  
Chief Economist and Senior  
Vice President,  
International Trade Policy and  
Cross-Border Operations  
American Trucking  
Associations

**Dan Drella**  
Director, Safety and Training  
Schneider National, Inc.

**James P. Fields**  
Chief Operating Officer  
Pitt-Ohio, LLC

**Victoria King**  
VP, Public Affairs  
UPS

**James Langley**  
President  
Trimble Transportation

**Stephen Laskowski**  
President  
Canadian Trucking Alliance

**Don Lefevé**  
President and CEO  
Commercial Vehicle Training  
Association

**Kevin Lhotak**  
President  
Reliable Transportation  
Specialists

**Mike Ludwick**  
Chief Administrative Officer  
Bison Transport

**Douglas B. Marcello, Esq**  
Transportation Attorney  
Marcello & Kivisto, LLC

**Jaime Maus**  
Vice President of Safety and  
Compliance  
Werner Enterprises, Inc.

**Caroline Mays**  
Director, Freight and  
International Trade Section  
Texas DOT

**Shannon Newton**  
President  
Arkansas Trucking Association

**Steve Olson**  
President and Chief  
Underwriting Officer  
Great West Casualty Company

**Holly Pixler**  
Senior Director of  
Transportation and Logistics  
Ardent Mills

**John Prewitt**  
President  
Tideport Distributing, Inc.

**Steven Raetz**  
Dir. Research & Market  
Intelligence  
C.H. Robinson Worldwide, Inc.

**Jeremy Reymer**  
Founder and CEO  
DriverReach

**Lee Sarratt**  
Director of Safety  
J.B. Hunt

**Mark Savage**  
Retired Deputy Chief  
Colorado State Patrol

**Kary Schaefer**  
General Manager of Marketing  
and Strategy for Freightliner  
and Detroit Brands  
Daimler Trucks North America,  
LLC

**Russ Simpson**  
America's Road Team Captain  
Holland

**Mike Stephens**  
Vice President of Finance  
USA Truck, Inc.

**Collin Stewart**  
President and CEO  
Stewart Transport, Inc.

**Sara Walfoort**  
Manager, Freight Planning  
Southwestern Pennsylvania  
Commission

**Tom Weakley**  
Director of Operations  
Owner-Operator Independent  
Drivers Association Foundation

**Shawn Yadon**  
Chief Executive Officer  
California Trucking Association

**TABLE OF CONTENTS**

**ACRONYMS** ..... 6

**INTRODUCTION** ..... 7

**RESEARCH OBJECTIVE**..... 7

**METHODOLOGY** ..... 7

**RESPONDENT DEMOGRAPHICS**..... 9

Size of Operation..... 9

Type of Operation..... 11

Equipment..... 12

Alternative Fuels..... 14

Fuel Efficiency..... 15

**MOTOR CARRIER COSTS** ..... 17

**FINDINGS**..... 18

Driver Compensation..... 23

*Driver Wages and Benefits* ..... 23

*Benefits* ..... 24

*Driver Bonuses*..... 25

Fuel Costs ..... 27

Equipment Costs ..... 29

*Lease and Purchase Costs*..... 30

*Repair and Maintenance*..... 30

*Truck Insurance Premiums*..... 32

*Tires* ..... 34

*Tolls*..... 35

*Permits and Special Licenses*..... 35

Regional Costs ..... 35

Driving the Trucking Industry: Small Carrier Spotlight..... 37

**CONCLUSION**..... 39

**APPENDIX – OPERATIONAL COSTS OF DATA COLLECTION FORM**..... 41

**FIGURES AND TABLES**

**Table 1: For-Hire Industry Sector Breakout ..... 9**

**Figure 1: Respondent Fleet Size.....10**

**Figure 2: Respondent Revenue.....10**

**Table 2: Respondent Trip Types, 2016 to 2019 .....11**

**Table 3: Respondent Truck VMT and National Truck Registrations by Region .....12**

**Table 4: Respondent Equipment Characteristics .....13**

**Table 5: Respondent Equipment Trade Cycle.....14**

**Table 6: Use of Alternative Fuel Vehicles.....15**

**Figure 3: Average MPG by Year .....16**

**Table 7: Respondent Reported Fuel Economy and Speed by Typical Operating Weight..17**

**Table 8: Average Marginal Costs per Mile, 2011-2019.....19**

**Table 9: Average Marginal Costs per Hour, 2011-2019 .....20**

**Table 10: Annual Change of Average Marginal Costs.....21**

**Table 11: Share of Total Average Marginal Cost, 2011-2019.....22**

**Table 12: Average Total Marginal Costs by Sector, 2011-2019.....22**

**Figure 4: Driver Wages and Benefits per Mile, 2010-2019.....24**

**Table 13: ATRI Ops Costs Respondent Driver Benefits Offered .....25**

**Table 14: Single Driver Bonus Pay by Type .....25**

**Figure 5: Diesel Prices and ATRI Fuel Cost per Mile Index, 2006-2019.....27**

**Figure 6: Monthly U.S. On-Highway Diesel Prices, 2016-2019.....28**

**Figure 7: Respondent Fuel Costs per Mile by Fleet Size.....29**

**Figure 8: Respondent Lease and Purchase Payments per Mile, 2010-2019 .....30**

**Figure 9: Repair and Maintenance Cost per Mile by Size of Fleet .....31**

**Figure 10: Respondent Truck Insurance Premium Costs per Mile by Size of Fleet .....33**

**Figure 11: ATRI Tire and Fuel Cost per Mile Indices, 2008-2019 .....34**

**Table 15: Average Marginal Cost per Mile by Region, 2019.....36**

**Table 16: Average Marginal Cost per Mile by Fleet Size .....37**

## ACRONYMS

AOBRD	Automatic On-Board Recording Device
ATRI	American Transportation Research Institute
ATA	American Trucking Associations
CFO	Chief Financial Officer
CNG	Compressed Natural Gas
CPM	Cost per Mile
CPH	Cost per Hour
EIA	U.S. Energy Information Administration
ELD	Electronic Logging Device
FPM	Freight Performance Measures
LNG	Liquefied Natural Gas
LPG	Liquefied Propane Gas
LTL	Less-than-Truckload
MPG	Miles per Gallon
MPH	Miles per Hour
NPTC	National Private Truck Council
OPEC	Organization of the Petroleum Exporting Countries
Ops Costs	Operational Costs of Trucking
OTR	Over-the-Road
QCEW	Quarterly Census of Employment and Wages
RAC	Research Advisory Committee
STA	State Trucking Associations
TL	Truckload
VMT	Vehicle Miles Traveled

---

## **INTRODUCTION**

The American Transportation Research Institute (ATRI) published the first iteration of *An Analysis of the Operational Costs of Trucking* in 2008 with the goal of providing accurate marginal cost data for the trucking industry. The need for this data in the trucking industry was originally identified by ATRI's Research Advisory Committee (RAC)<sup>1</sup> as a top priority in 2008, and ATRI has continued to publish an annual update, streamlining methodologies and updating the marginal costs of trucking on a yearly basis.

Working with industry finance subject matter experts, ATRI developed a comprehensive methodology to calculate key cost centers in the trucking industry. These cost centers are further disaggregated by fleet size, sector, and region of operation. This research provides a high-level benchmarking tool and serves as an information repository for freight planning activities. This report details marginal cost data from 2019.

## **RESEARCH OBJECTIVE**

ATRI's *Operational Costs of Trucking* (Ops Costs) research derives from the need for more accurate trucking industry operational cost data by motor carriers and government transportation planners. The primary metrics focus on marginal line-item costs associated with per-mile or per-hour operational costs. While previous outside studies have provided operational cost measurements, many relied on modeled data and subjective value-of-time metrics that were considered by industry experts to be inaccurate or subjective. ATRI's Ops Costs utilizes real-world data derived from industry operations.

## **METHODOLOGY**

The methodology for collecting and analyzing the data provided by for-hire motor carriers has largely remained consistent to ensure that year-to-year comparisons remain statistically salient. There were no new questions added to the 2020 Ops Costs data collection form, but questions were reformatted for ease of response.

The following changes were made to the data collection form for 2020:

- Question #16: Average loading/dwell time per trip was removed;
- Question #17: Listed benefits were changed from an open-ended response to check-boxes listing specific benefits;
- Question #23: Electronic Logging Devices (ELD) and Automatic On-Board Recording Device (AOBRD) adoption question was removed.

The 2020 data collection form can be found in the Appendix. Participating motor carriers were asked to provide a variety of data including fleet and driver demographic

---

<sup>1</sup> ATRI's Research Advisory Committee RAC is comprised of industry stakeholders representing motor carriers, trucking industry suppliers, federal government agencies, labor and driver groups, law enforcement, and academia. The RAC is charged with annually recommending a research agenda for the Institute.

information to line-item costs per mile. To ensure validity and reliability across sectors, the data collection form was confidentially tested with stakeholders from a variety of industry sectors.

As line-item costs and fleet financial data are largely proprietary, ATRI's data collection process ensures confidentiality. Where requested, ATRI provided a non-disclosure agreement to participating motor carriers. The underlying data is presented in aggregate form only.

Data collection commenced in May 2020 with initial solicitation of data from long-standing participants in ATRI's Ops Costs research representing truckload (TL), less-than-truckload (LTL) and specialized fleets. In addition, ATRI solicited further participation by leveraging a number of channels, including emails, news alerts, and coverage from industry trade press. Members of the 50 State Trucking Associations (STA) were also asked submit cost data to ATRI. Respondents were able to submit their data via mail, fax, or online submission, with a majority of carriers providing their data through a secure online portal. ATRI staff reviewed each submittal and followed-up with participants on any metrics that were in question. Responses were collected through the end of September 2020.

The primary measures of the Ops Costs report focus on weighted average marginal cost per mile (CPM) and weighted average marginal cost per hour (CPH). To understand how costs change over time, these metrics are compared year-over-year. The CPM metric was converted to the CPH metric through a speed metric derived from ATRI's Freight Performance Measures (FPM) program.<sup>2</sup> The most recent speed metric calculated was 39.42 miles per hour (MPH).

ATRI weights respondents based on industry sector to ensure that the cost per mile for the trucking industry as a whole represents its requisite parts. Different sectors of the trucking industry have radically different costs. Specialized carriers and LTL carriers report much higher costs per mile, especially in permit costs and pay per mile. To best represent the total cost per mile, these costs are weighted by their impact on the industry. Table 1 shows the sector breakout for the ATRI Ops Costs respondents as well as how industry employment is distributed in the Bureau of Labor Statistics Quarterly Census of Employment and Wages (QCEW). As shown in Table 1, ATRI's dataset is underrepresented by TL carriers, and overrepresented by Other/Specialized carriers. Weighting the data using the QCEW percentages generates more representative findings.

---

<sup>2</sup> ATRI derived this speed using data from the ATRI Freight Performance Measures (FPM) program. ATRI analyzed one full week of national FPM data in each of the four quarters in 2017 (February, May, August, October). This dataset consisted of nearly 500 million truck speed data points. The 39.42 MPH figure is an update to the 39.98 MPH figure used in previous iterations of this report, which was based on truck speed data from 2010. The average speed figure was also validated by multiple motor carriers from various sectors of the industry. This speed figure more accurately represents an average operational speed since it includes speeds in all types of operational conditions.

**Table 1: For-Hire Industry Sector Breakout**

	<b>ATRI Ops Costs Respondents</b>	<b>U.S Trucking Industry<sup>3</sup></b>
Truckload	40%	67%
Less-than-Truckload	10%	15%
Other/Specialized	50%	18%

Cost metrics were also weighted, as necessary, using fleet sector type, fleet size and region of operation. This process provides more accurate insight into subsets of the Ops Costs data, such as the cost of operations by region or by industry sector. As with all data reported in this study, these subsets were only presented in aggregated form to protect the confidential information submitted by individual carriers.

Thanks to an ongoing collaboration with the National Private Truck Council (NPTC), which produces a somewhat similar benchmarking report among private fleets, ATRI is able to juxtapose several of its for-hire cost metrics with those of private fleets (see [www.nptc.org](http://www.nptc.org) for more information). While private fleets utilize a very different business model, many of the externalities that affect for-hire truck costs create similar impacts and pressures on private fleets, although their strategies for mitigating impacts are often very different. In 2019, a slight majority of motor carriers (51.2%) were classified as for-hire carriers, and 44.1 percent of carriers were classified as private.<sup>4</sup> In all cases, where “2020 NPTC report data” is cited, it reflects truck data generated in 2019.

## **RESPONDENT DEMOGRAPHICS**

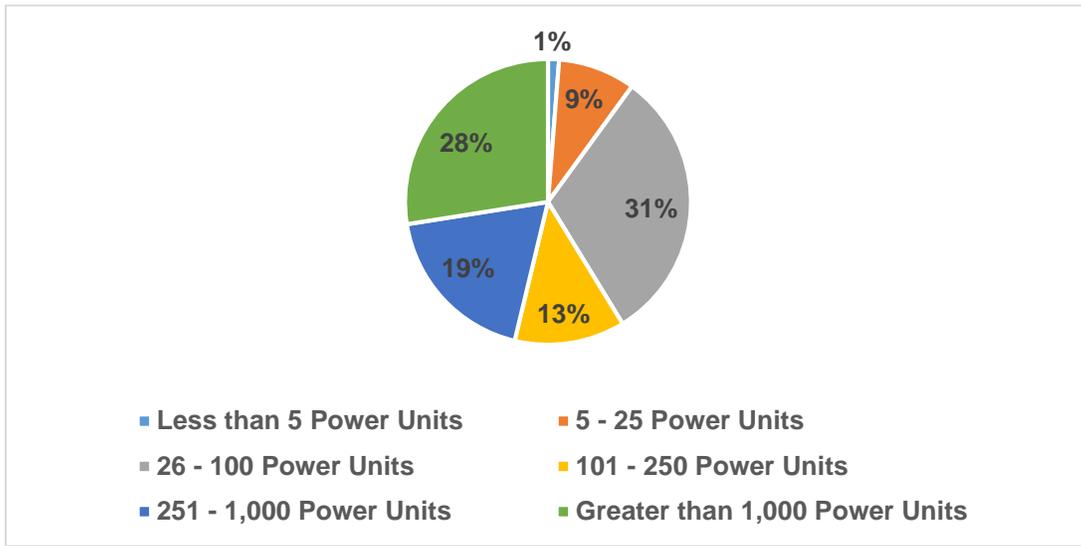
### **Size of Operation**

ATRI’s 2020 Ops Costs data included 188,029 trucks, consisting of 181,906 truck-tractors, and 6,123 straight trucks. Additionally, the data includes 348,088 trailers of varying types, and represents over 17 billion vehicle miles traveled. As shown in Figure 1, a plurality of the sample (31%) are from fleets of between 26 and 100 power units. The average fleet size in the sample was 2,350 power units. In contrast to previous years’ reports, 28 percent of this year’s sample came from fleets with over 1,000 power units, an increase of 10 percentage points from the 2019 report. The ATRI average fleet size skews considerably larger than the NPTC respondent sample, which had an average private fleet size of 438 power units.

<sup>3</sup> Quarterly Census of Employment and Wages. U.S. Department of Transportation. Bureau of Labor Statistics. Available online: <https://www.bls.gov/cew/>

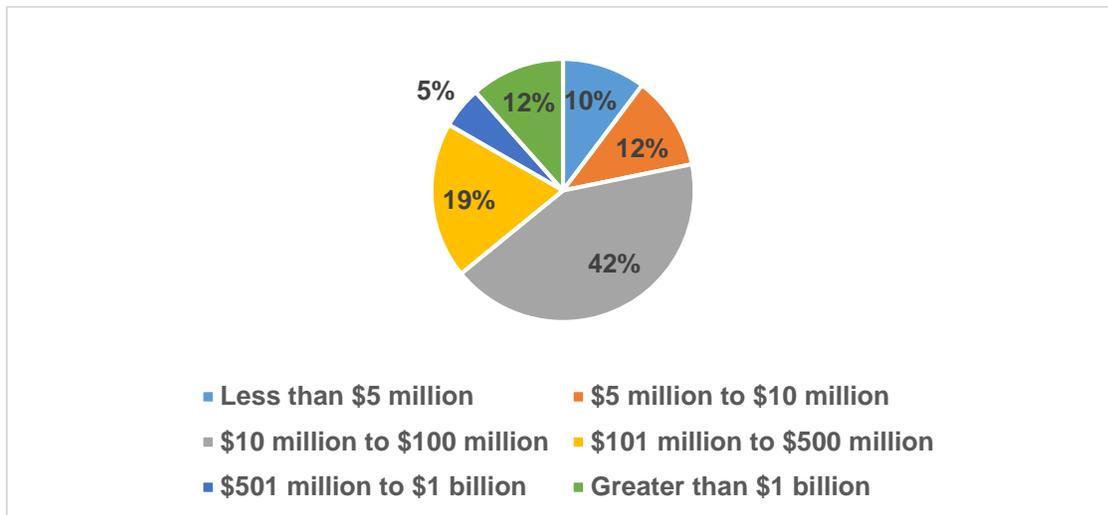
<sup>4</sup> “American Trucking Trends – 2020.” American Trucking Associations. Arlington, VA.

**Figure 1: Respondent Fleet Size**



Fleet revenue was split into bins to aid in the analysis. A plurality of the carriers in the sample (42%) listed their 2019 revenue as between \$10 million and \$100 million. The full fleet revenue breakdown is shown in Figure 2.

**Figure 2: Respondent Revenue**



Empty miles, also known as “back haul” or “dead head” miles, place a serious strain on for-hire fleet efficiency, as these miles accrue considerable operational costs without the requisite customer revenue stream. The percent of deadhead miles in 2019 increased, rising from 16.6 percent of total miles in 2018 to 20.1 percent in 2019, which may be indicative of the freight slowdown in late 2019. Since it is easier to fill dead head capacity on longer hauls (i.e. more shipper options in a larger geography), the general

trend toward shorter truck trip lengths may reflect an unfortunate reality for future increases in dead head miles.

Among private fleets, dead head miles are standard operating procedure in that private fleets typically move goods one way: from manufacturers to buyers. Hence, 33 percent of all private truck miles were empty in 2019. Private fleets have attempted to offset this reality by obtaining for-hire operating authorities and selling the excess capacity to interested shippers. Consequently, in the 2019 data, 56 percent of private fleets had obtained their own operating authority, although two years earlier, 78 percent of private fleets had their own operating authority. Again due to growing e-commerce and shorter truck trips, it is questionable whether private fleets will be successful in filling empty miles: in 2017 empty miles represented 26 percent of all miles, but that figure increased to 33 percent just two years later.

### Type of Operation

The for-hire trucking industry has experienced a dramatic shift in average trip lengths with the rise of e-commerce, with average trip lengths shifting from approximately 800 miles per trip to approximately 500 miles per trip.<sup>5</sup> Similarly, a majority of the for-hire trips (66%) in this year’s analysis were less than 500 miles in length. Table 2 details the shift in trip types from 2016 to 2019. Trips under 500 miles increased in the sample by 4 percent, while trips over 1,000 miles have decreased by 3 percent. As documented in ATRI’s report, “*E-Commerce Impacts on the Trucking Industry*,” intra-regional and last-mile truck trips have decreased the overall average trip length by 37 percent from 2000 to 2018, and these trip lengths have continued to decrease in 2019.<sup>6</sup>

**Table 2: Respondent Trip Types, 2016 to 2019**

	2016	2019
Local pick-ups and deliveries (less than 100 miles)	21%	26%
Regional pick-ups and deliveries (100-500 miles)	40%	39%
Inter-regional pick -ups and deliveries (500-1,000 miles)	23%	22%
National (over 1,000 miles)	16%	13%

<sup>5</sup> “How E-Commerce Continues to Reshape Trucking Industry Operations.” Security Business Capital. February 2020. Available online: <https://www.mysbcapital.com/how-e-commerce-continues-to-reshape-trucking-industry-operations/>

<sup>6</sup> Hooper, Alan, and Murray, Dan. “E-Commerce Impacts on the Trucking Industry.” The American Transportation Research Institute. February, 2019. Arlington, VA.

These same trip length changes were experienced by private fleets as well. In the 2020 NPTC report, average private truck trip lengths declined 10 miles from the previous year to 225 miles; this is the third consecutive annual decrease in trip lengths for private fleets. As previously noted, explanations included e-commerce impacts, traffic congestion and re-engineering of supply chains and distribution hubs.

To compare the composition of ATRI’s Ops Costs sample to the larger U.S. trucking industry, the participants’ percent of vehicle miles traveled (VMT) was compared to the percent of U.S. truck registrations. In the sample, VMT indicates underrepresentation of the Midwest and an overrepresentation of VMT in the Southeast.

**Table 3: Respondent Truck VMT and National Truck Registrations by Region**

Region	Ops Costs Respondent Percent of Miles Traveled	Share of U.S. Truck Registrations <sup>7</sup>
Midwest	29%	40%
Northeast	14%	7%
Southeast	30%	19%
Southwest	10%	12%
West	14%	21%
Canada	3%	
Total	100%	100%

## Equipment

In 2019, the trucking industry hauled 11.84 billion tons of freight representing 72.5 percent of the total domestic tonnage in the U.S.<sup>8</sup> The percent of tonnage hauled by trucks increased by 1.1 percentage points from 2018, where trucks accounted for 71.4 percent of total domestic tonnage shipped.<sup>9</sup> While 2018 had record freight demand, 2019 saw a rapid softening in freight due to the impacts of Chinese and American tariffs on the U.S. trucking industry.<sup>10</sup>

To ship freight across the U.S., the predominate vehicle used in the Ops Costs sample was the truck-tractor, with approximately 182,000 in the sample. The heavy reliance of truck-trailer combinations aligns with data that shows that combination trucks are responsible for moving more than 75 percent of freight tonnage.<sup>11</sup> On average, these truck tractors were 5.1 years old, a 0.7 year increase from last year’s Ops Costs report.

<sup>7</sup> “Table MV-9: Truck and Truck-Tractor Registration – 2018.” 2018 Highway Statistics Series. Office of Highway Policy Information, Federal Highway Administration, United States Department of Transportation. December 2019. Available online: <https://www.fhwa.dot.gov/policyinformation/statistics/2018/pdf/mv9.pdf>

<sup>8</sup> “American Trucking Trends 2020.” American Trucking Associations. Arlington, VA. 2020.

<sup>9</sup> “American Trucking Trends 2019.” American Trucking Associations. Arlington, VA. 2019.

<sup>10</sup> Adler, Alan. “Trucking Industry Threatened by Escalating U.S.-China Trade War.” Trucks.com. May 2019. Available online: <https://www.trucks.com/2019/05/15/trucking-industry-threatened-us-china-trade-war>

<sup>11</sup> “U.S. Freight Transportation Forecast to 2023.” American Trucking Associations. Arlington, VA. 2012.

The average number of miles driven per year for truck-tractors increased from 91,506 miles per year per truck in 2018 to 93,955 miles per year per truck in 2019, a 2.7 percent increase. Private truck annual miles are extremely similar in that their heavy-duty truck miles averaged 91,600 miles, but their trend line decreased from the previous year's average of 96,000 miles.

In addition to truck-tractors, 6,123 straight trucks were also included in the ATRI sample. Again, among these medium duty trucks, average trip lengths between ATRI's for-hire straight trucks and NPTC's straight trucks were nearly identical: for-hire straight trucks averaged 35,096 miles per year versus private fleet straight trucks at 33,000 miles annually. The full breakdown of equipment is shown in Table 4.

**Table 4: Respondent Equipment Characteristics**

Equipment Type	Number of Trucks/ Trailers	Average Age (Years)	Average Miles Driven per Year per Truck
Straight Trucks	6,123	8.4	35,096
Truck-Tractors	181,906	5.1	93,955
<b>Total Trucks</b>	<b>188,029</b>		
28' Trailers	126,686	8.1	
33' Trailers	649	5.0	
45' Trailers	1,811	9.2	
48' Trailers	22,320	7.9	
53' Trailers	143,736	6.2	
Tank Trailer	16,505	16.7	
Flatbed Trailer	5,395	5.3	
Refrigerated Trailer	20,122	4.0	
Intermodal Trailers	1,111	4.7	
Other Trailers	9,753	11.0	
<b>Total Trailers</b>	<b>348,088</b>		

The average age of these trucks increased from 4.4 years in 2018 to 5.1 years in 2019, indicative of the dramatic fall in truck orders from 2018 to 2019.<sup>12</sup> By November of 2019, truck orders had fallen to their lowest monthly level since 2015. In addition to average age, the data collection form also asked for the average trade cycle for both trucks and trailers. Table 5 details the trade cycle for straight trucks, truck-tractors, and trailers.

<sup>12</sup> Stinson, Jim. "2019: Freight Market Slowdown, Tariffs Diminished Trucking Industry's Performance." December, 2019. Transport Topics. Available online: <https://www.ttnews.com/articles/2019-freight-market-slowdown-tariffs-diminished-trucking-industrys-performance>

**Table 5: Respondent Equipment Trade Cycle**

Equipment Type	Average Number of Years Until Replacement	Average Miles Driven Until Replacement
Straight Trucks	10.2	
Truck-Tractors	6.8	585,294
Trailers	12.8	

In 2019, straight trucks had an average trade cycle of 10.2 years, while truck-tractors had an average trade cycle of 6.8 years, or approximately 585,000 miles.

The average trade cycle in ATRI’s Ops Costs decreased in both years and miles for truck-tractors, decreasing from the 2019 report average of 7 years or 700,000 miles. The average trade cycle for trailers was 12.8 years, which varies based on the type of trailer. The trade cycle for trailers is a slight decrease from last year’s Ops Cost report, which showed an average of 13.3 years before trade. The average number of years before replacing of truck-tractors in the sample decreased slightly from 2018, going from 7 years on average to 6.8 years on average. This decrease in the trade cycle may be due to the increase in truck sales in 2018.<sup>13</sup>

Alternatively, private truck fleets that had their own in-house maintenance – as is the case for most for-hire fleets – held their trucks slightly longer than for-hire fleets, with a mean trade cycle for private trucks of 7.0 years or 738,000 miles in 2019.

### Alternative Fuels

In 2019, approximately 15 percent of the respondents indicated that their fleets used some form of alternative fuel. This is a 2.0 percentage point increase over 2018. Compressed natural gas (CNG) continued to have the highest rate of adoption among Ops Costs carriers in 2019, with 8.8 percent of carriers having at least one truck which utilizes CNG (Table 6). Liquid natural gas (LNG) had the second highest percentage of adoption among carriers, with 6.3 percent of carriers reporting at least one truck which utilizes LNG. Surprisingly, 5 percent of carriers indicated that they had at least one battery-powered truck. However, only 8 trucks total in the sample utilized battery power, indicating low overall adoption.

<sup>13</sup> Ibid.

**Table 6: Use of Alternative Fuel Vehicles**

Alternative Fuel Type	Percent of ATRI Ops Costs Respondents Using Alternative Fuels
CNG	8.8%
LNG	6.3%
LPG	1.3%
Battery	5.0%
Hybrid	1.3%

According to ACT Research, after falling 15 percent in 2018, 2019 saw a 20 percent increase in natural gas-fueled trucks.<sup>14</sup> While adoption stays low, the number of trucks utilizing alternative fuels is increasing. This relatively low adoption rate can be attributed to a number of factors, including the lack of adequate fueling/charging stations and high switching cost associated with alternative fuels.<sup>15</sup> Due to a strong 2018, as well as the increased investment in trucks, the percent of carriers utilizing alternative fuels increased by 2 percentage points.

While 85 percent of NPTC’s private fleets invested in “green technologies,” only 5 percent indicated that they use alternative energy trucks – indicating that alt fuels are three times more common among for-hire carriers.

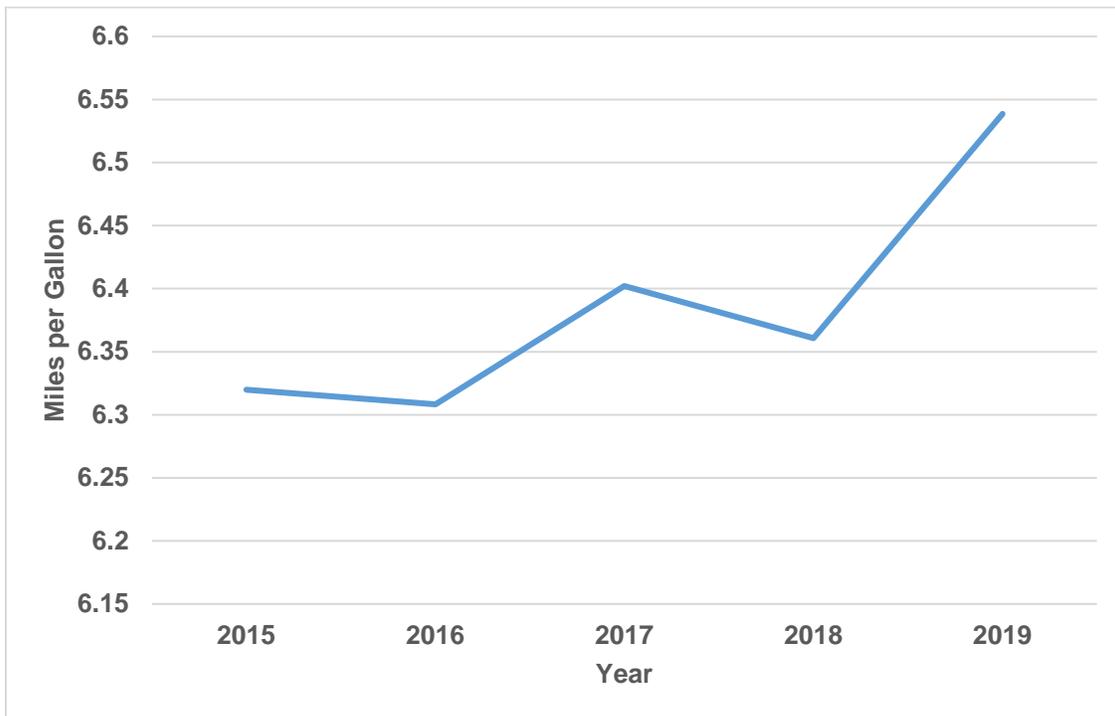
**Fuel Efficiency**

Truck-tractors in the sample experienced an increase in miles per gallon (MPG) from 2018 to 2019, from 6.4 MPG to 6.5 MPG. Technology plays a significant role in greater fuel economy, and speed limiter use and updated engines both lead to greater fuel efficiency. The increase in MPG in Ops Costs sample is indicated in Figure 3.

<sup>14</sup> McNealy, Jennifer. “ACT Research: Class 8 Natural Gas Truck Retail Sales Rose 20% YTD 2019 through November.” ACT Research. Available online: <https://content.actresearch.net/blog/act-research-afq-class-8-natural-gas-truck-retail-sales-rose-20-ytd-2019-through-november>

<sup>15</sup> Gilroy, Roger. “Trucking to Turn to More Alternative Fuels, Experts Say.” Transport Topics. October 2018. Available online: <https://www.ttnews.com/articles/trucking-turn-more-alternative-fuels-experts-say>

**Figure 3: Average MPG by Year**



Speed limiters also play a role in the increased fuel efficiency present in the sample. From 2018 to 2019, the percent of fleets which utilized speed limiters increased from 90 percent to 91 percent. The increase in speed limiter use also was mirrored in terms of percent of adoption rate of speed limiters. In 2018, 88 percent of fleets which used speed limiters reported that all of their trucks had speed limiters, and that number increased to 90 percent in 2019. Private fleets ranked speed governors as their number one strategy for managing fuel economy and environmental impacts.

In conjunction with the increase in speed limiter adoption, the average operating speed of the sample decreased from 50.8 MPH in 2018 to 49.3 MPH in 2019. These factors would further explain the increase in MPG, as speed plays a major factor fuel efficiency.

The surge of new truck purchases in 2018 may have played a substantial role in the increase in gas mileage, as newer trucks tend to have significantly better gas mileage than older Class 8 trucks.<sup>16</sup>

In Table 7, truck MPG and speed are broken out across the gross vehicle weight of the sample. The average operating weight in 2019 was approximately 63,000 pounds. Generally, as truck weights increase, fuel MPG decreases, with some mild variation as truck weights increase

<sup>16</sup> Ibid

**Table 7: Respondent Reported Fuel Economy and Speed by Typical Operating Weight**

Typical Operating Weight	MPG	Average Moving Speed (MPH)
Less than 20,000 lbs.	6.8	49
20,001 - 40,000 lbs.	6.4	49
40,001 - 60,000 lbs.	7.0	42
60,001 - 80,000 lbs.	6.6	51
Greater than 80,000 lbs.	5.1	47

### **MOTOR CARRIER COSTS**

Line-item cost trends are difficult to interpret, as the external factors which impact them are diverse and dynamic. Lease and purchase costs can vary dramatically based on year of purchase and type of equipment purchased. Repair and maintenance costs can vary based on type of service required and type of truck purchased. With this in mind, ATRI worked closely with industry experts to identify which areas of marginal cost are most pertinent and statistically salient.

To retain the ability to compare Ops Costs data over time, the same cost centers and data collection methodologies analyzed in this report have been utilized over the 13-year time period that the Ops Costs report has been published. Divided into two general cost centers of interest, these are vehicle-based costs and driver-based costs. These costs are listed below.

- Vehicle-based
  - Fuel
  - Truck/Trailer Lease or Purchase Payments
  - Repair and Maintenance Costs
  - Truck Insurance Premiums
  - Permits and Special Licenses
  - Tolls
- Driver-based
  - Wages
  - Benefits

## **FINDINGS**

In 2019, the average cost per mile for fleets decreased dramatically due to the reduction of a number of line-item costs, including fuel, repair and maintenance, and wages and benefits. In 2018, trucking encountered record demand and the highest tonnage in the last 20 years.<sup>17</sup> In the contraction that followed in 2019, a number of independent factors were at play to lower the operational costs of trucking, which are explained in greater detail in the following sections. In 2019, the costs of trucking contracted significantly from \$1.821 to \$1.652, a decrease of 9 percent. In addition, the cost per hour was approximately \$65.11, down from \$71.78 in last year's report. These two metrics are shown in Tables 8 and 9.

During this same time period, private truck costs (all trucks) increased from \$2.73 in 2018 to \$2.80 in 2019. While NPTC cost metrics include fixed "administrative" costs, it should be noted that those administrative costs decreased from 29 cents per mile in 2018 to 24 cents per mile in 2019. The growing cost differential between for-hire and private fleets may move more private fleet trips to for-hire carriers in the future.

---

<sup>17</sup> Adler, Alan. "Freight Growth to Slow in New Year After Smashing Records in 2018." January 2019. Trucks.com. Available online: <https://www.trucks.com/2019/01/02/freight-growth-slow-after-smashing-records-2018/>

**Table 8: Average Marginal Costs per Mile, 2011-2019<sup>18</sup>**

<b>Motor Carrier Costs</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>
<i>Vehicle-based</i>									
Fuel Costs	\$0.590	\$0.641	\$0.645	\$0.583	\$0.403	\$0.336	\$0.368	\$0.433	\$0.396
Truck/Trailer Lease or Purchase Payments	\$0.189	\$0.174	\$0.163	\$0.215	\$0.230	\$0.255	\$0.264	\$0.265	\$0.259
Repair & Maintenance	\$0.152	\$0.138	\$0.148	\$0.158	\$0.156	\$0.166	\$0.167	\$0.171	\$0.143
Truck Insurance Premiums	\$0.067	\$0.063	\$0.064	\$0.071	\$0.074	\$0.075	\$0.075	\$0.084	\$0.068
Permits and Licenses	\$0.038	\$0.022	\$0.026	\$0.019	\$0.019	\$0.022	\$0.023	\$0.024	\$0.023
Tires	\$0.042	\$0.044	\$0.041	\$0.044	\$0.043	\$0.035	\$0.038	\$0.038	\$0.036
Tolls	\$0.017	\$0.019	\$0.019	\$0.023	\$0.020	\$0.024	\$0.027	\$0.030	\$0.034
<i>Driver-based</i>									
Driver Wages	\$0.460	\$0.417	\$0.440	\$0.462	\$0.499	\$0.523	\$0.557	\$0.596	\$0.533
Driver Benefits	\$0.151	\$0.116	\$0.129	\$0.129	\$0.131	\$0.155	\$0.172	\$0.180	\$0.160
<b>TOTAL</b>	<b>\$1.706</b>	<b>\$1.633</b>	<b>\$1.676</b>	<b>\$1.703</b>	<b>\$1.575</b>	<b>\$1.592</b>	<b>\$1.691</b>	<b>\$1.821</b>	<b>\$1.652</b>

<sup>18</sup> To ensure data quality standards on highly volatile cost metrics, some of the tables in the analysis used a sample of data from multi-year carrier participants only. This ensures that data collection procedures, formulas and business models are replicated, and hence comparable, year-to-year – thus eliminating potential anomalies and outliers.

**Table 9: Average Marginal Costs per Hour, 2011-2019**

<b>Motor Carrier Costs</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>
<i>Vehicle-based</i>									
Fuel Costs	\$23.58	\$25.63	\$25.78	\$23.29	\$16.13	\$13.45	\$14.50	\$17.07	\$15.62
Truck/Trailer Lease or Purchase Payments	\$7.55	\$6.94	\$6.52	\$8.59	\$9.20	\$10.20	\$10.39	\$10.45	\$10.21
Repair & Maintenance	\$6.07	\$5.52	\$5.92	\$6.31	\$6.23	\$6.65	\$6.58	\$6.72	\$5.62
Truck Insurance Premiums	\$2.67	\$2.51	\$2.57	\$2.86	\$2.98	\$3.00	\$2.95	\$3.32	\$2.68
Permits and Licenses	\$1.53	\$0.88	\$1.04	\$0.76	\$0.78	\$0.88	\$0.92	\$0.95	\$0.90
Tires	\$1.67	\$1.76	\$1.65	\$1.76	\$1.72	\$1.41	\$1.50	\$1.50	\$1.42
Tolls	\$0.69	\$0.74	\$0.77	\$0.90	\$0.79	\$0.97	\$1.05	\$1.17	\$1.34
<i>Driver-based</i>									
Driver Wages	\$18.39	\$16.67	\$17.60	\$18.46	\$19.95	\$20.91	\$21.97	\$23.50	\$21.01
Driver Benefits	\$6.05	\$4.64	\$5.16	\$5.15	\$5.22	\$6.18	\$6.78	\$7.10	\$6.31
<b>TOTAL</b>	<b>\$68.21</b>	<b>\$65.29</b>	<b>\$67.00</b>	<b>\$68.09</b>	<b>\$62.98</b>	<b>\$63.66</b>	<b>\$66.65</b>	<b>\$71.78</b>	<b>\$65.11</b>

As shown in Table 10, between 2018 and 2019, most line-item metrics decreased for both cost per mile and cost per hour. The two largest percentage decreases came from repair and maintenance costs and truck insurance premiums. In addition, fuel costs decreased by 9 percent, reflecting the national decrease in average diesel fuel prices of \$0.12 from 2018 to 2019.<sup>19</sup> While wages and benefits decreased from 2018 to 2019, wages still remained at one of their highest levels in ATRI's Ops Costs data collection. Furthermore, as detailed below, driver bonuses showed large increases this year, costs which are not calculated as part of the CPM data in Tables 8 and 9.

**Table 10: Annual Change of Average Marginal Costs**

<b>Motor Carrier Costs</b>	<b>2018-2019 Change</b>
<i>Vehicle-based</i>	
Fuel Costs	-9%
Truck/Trailer Lease or Purchase Payments	-2%
Repair & Maintenance	-16%
Truck Insurance Premiums	-19%
Permits and Licenses	-5%
Tires	-5%
Tolls	15%
<i>Driver-based</i>	
Driver Wages	-11%
Driver Benefits	-11%
<b>TOTAL</b>	<b>-9%</b>

Despite the decrease in overall cost per mile, the relative share – indicated as a percentage of total cost – for each line-item remained fairly constant, with little fluctuation between 2018 and 2019. The largest single line-item cost continued to be driver wages, representing 32 percent of the operating cost per mile. However, the combined percentage of driver wages and benefits fell slightly, from 43 percent in 2018 to 42 percent in 2019. Percent share of lease and purchase payments increased by 1 percentage point from 2018. These results are shown in Table 11.

To further explain the increase in private truck costs during this same time period, the NPTC report shows that the following cost centers all saw increases:

- Equipment purchases
- Repair & maintenance
- Fuel (slightly)
- Driver wages & benefits
- Permits & licenses

<sup>19</sup> Average Diesel Price calculated from Weekly Retail Gas and Diesel Prices. U.S. Energy Information Administration. Available online: [https://www.eia.gov/dnav/pet/pet\\_pri\\_gnd\\_dcus\\_nus\\_w.htm](https://www.eia.gov/dnav/pet/pet_pri_gnd_dcus_nus_w.htm)

**Table 11: Share of Total Average Marginal Cost, 2011-2019**

Motor Carrier Costs	2011	2012	2013	2014	2015	2016	2017	2018	2019
<i>Vehicle-based</i>									
Fuel Costs	35%	39%	38%	34%	26%	21%	22%	24%	24%
Truck/Trailer Lease or Purchase Payments	11%	11%	10%	13%	15%	16%	16%	15%	16%
Repair & Maintenance	9%	8%	9%	9%	10%	10%	10%	9%	9%
Truck Insurance Premiums	4%	4%	4%	4%	5%	5%	4%	5%	4%
Permits and Licenses	2%	1%	2%	1%	1%	1%	1%	1%	1%
Tires	2%	3%	2%	3%	3%	2%	2%	2%	2%
Tolls	1%	1%	1%	1%	1%	2%	2%	2%	2%
<i>Driver-based</i>									
Driver Wages	27%	26%	26%	27%	32%	33%	33%	33%	32%
Driver Benefits	9%	7%	8%	8%	8%	10%	10%	10%	10%
<b>TOTAL</b>	<b>100%</b>								

All for-hire industry sectors experienced a decrease in the cost per mile from 2018 to 2019 (Table 12). The largest percentage decrease came from truckload carriers, where the cost per mile decreased by over 9 percent. Specialized/Other carrier cost per mile was \$1.85, representing a decrease of over 8 percent. Less-than-truckload carriers reported the smallest decrease in costs, only 3.5 percent in 2019.

While the NPTC report segmented the industry by trailer type, rather than sector, analogies can still be drawn between for-hire and private fleets. Within the private fleets, Bulk/Tank operations were the highest grouping at \$3.16 per mile and Van operations (TL) were on the low end at \$2.45 per mile. NPTC flatbeds had the lowest private fleet cost per mile at \$2.31, while ATRI’s flatbed cost per mile was second lowest at \$1.74.

**Table 12: Average Total Marginal Costs by Sector, 2011-2019**

Sector	2011	2012	2013	2014	2015	2016	2017	2018	2019
LTL	\$1.93	\$1.79	\$1.84	\$1.83	\$1.60	\$1.74	\$1.84	\$1.92	\$1.85
Specialized / Other	\$1.79	\$1.73	\$1.67	\$1.85	\$1.72	\$1.83	\$1.95	\$2.02	\$1.85
TL	\$1.57	\$1.51	\$1.60	\$1.58	\$1.50	\$1.42	\$1.49	\$1.71	\$1.55

---

## Line Item Costs

### Driver Compensation

Driver compensation has consistently represented the highest percentage of the cost per mile, with just three years in ATRI's Ops Costs analyses where fuel represented a higher percentage of the overall cost per mile. Despite the decrease in wage and benefit costs from 2018 to 2019, wages and benefits are higher than in 2016, the last time that freight demand experienced a softening similar to 2019. Even with freight demand softening in 2019, the driver shortage continued to persist throughout the year, and is expected to worsen in the coming decade. Current projections have the shortage topping 160,000 drivers by 2028.<sup>20</sup> The driver shortage is due to multiple factors including the lack of young people choosing a career in driving and a rapidly aging workforce,<sup>21</sup> in addition to more recent COVID-19-related impacts on the industry's workforce.<sup>22</sup>

### *Driver Wages and Benefits*

In 2019, 42 percent of the total line-item cost, 69.3 cents per mile, went toward driver pay and benefits. This is down from an all-time high of 77.6 cents per mile in 2018. Wages and benefits are still higher than in previous years, with a 1.6 cent increase over the last freight softening which took place in 2016.<sup>23</sup> From 2010 to 2019, the wages and benefits cost per mile is approximately 10 cents higher. Figure 4 details wages and benefits from the last 10 years of Ops Costs data collection.

---

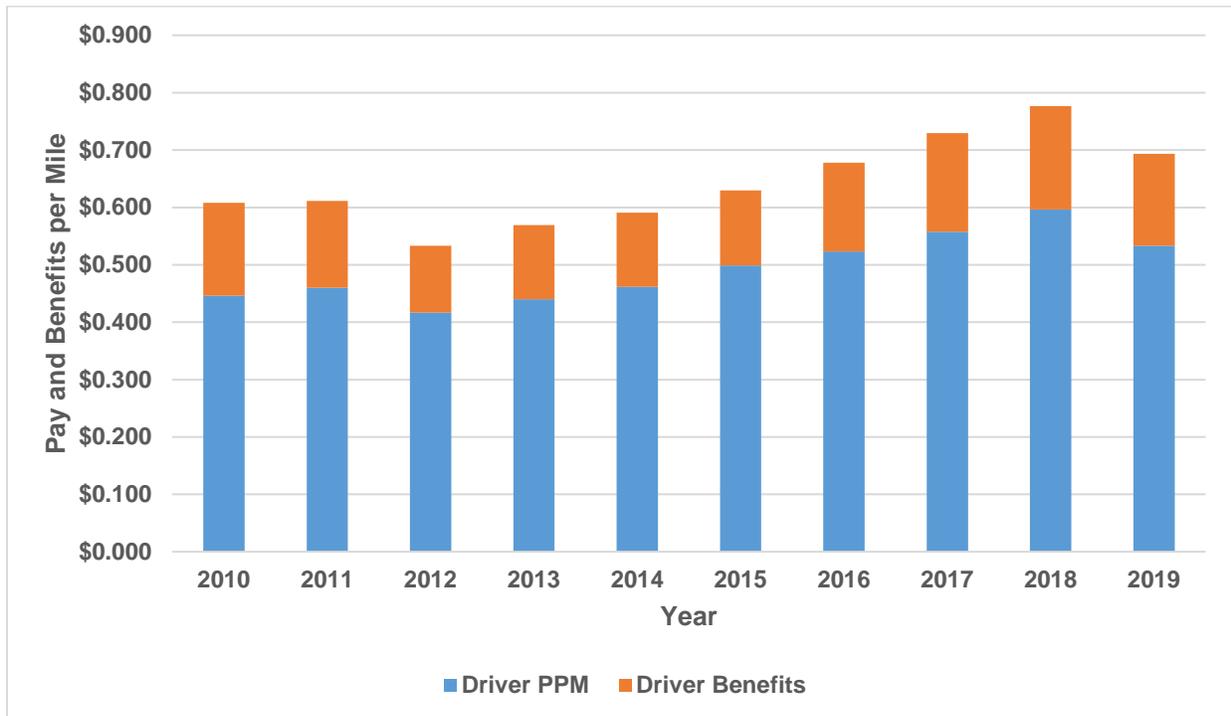
<sup>20</sup> Costello, Bob and Alan Karickhoff. "Truck Driver Shortage Analysis: 2019." American Trucking Associations.

<sup>21</sup> Short, Jeffrey. "Analysis of Truck Driver Age Demographics Across Two Decades." American Transportation Research Institute. Arlington, VA. December 2014.

<sup>22</sup> "Critical Issues in the Trucking Industry – 2020." The American Transportation Research Institute. Arlington VA. October 2020.

<sup>23</sup> Bays, Josh. "Signs of Softening in US Truck Demand." Site Selection Group Blog. July 22, 2016. Available online: <https://info.siteselectiongroup.com/blog/which-manufacturers-sectors-are-looking-to-hire-0>

**Figure 4: Driver Wages and Benefits per Mile, 2010-2019**



It is well understood that private fleet drivers receive higher compensation than for-hire drivers. In 2019, private fleet drivers (all trucks) were paid approximately \$1.35 per mile in combined wages, benefits and bonuses. ATRI’s for-hire combined driver wages and benefits in 2019 was 69.3 cents per mile. It is interesting to note that, among private fleets that provide “guaranteed minimum compensation,” the maximum cost-per-mile provided was 52.5 cents – closely mirroring for-hire driver wages of 53.3 cents per mile.

### *Benefits*

Benefits offered to drivers varied across trucking fleets and industry sectors. Respondents were asked to choose which benefits they offered, including:

- health insurance;
- paid vacation;
- 401K;
- dental insurance;
- paid sick leave;
- vision insurance;
- per diems;
- “other benefits.”

Motor carriers use these benefits as another way to attract and retain drivers. According to the American Trucking Associations’ latest Driver Compensation report, 95

percent of carriers provide health insurance and 92 percent of carriers offered paid leave.<sup>24</sup> ATRI’s Ops Costs respondents similarly provided health insurance, paid leave, and other benefits to their drivers as shown in Table 13.

**Table 13: ATRI Ops Costs Respondent Driver Benefits Offered**

	Percent Offered
Health Insurance	91%
Paid Vacation	88%
Dental Insurance	71%
401K	70%
Vision Insurance	58%
Paid Sick Leave	44%
Per Diem	39%
Other Benefits	25%

The most prevalent type of benefit offered to drivers was health insurance, with 91 percent of respondents indicating that their fleet offered health insurance to their drivers. In contrast, only 39 percent of respondents reported that per diems were offered. The relatively small percentage of per diems is due to two factors; tax code changes in per diems and shortening trip length (Table 2). It is expected that the percent of companies offering per diems may increase, as the tax savings for drivers can be significant if structured correctly.<sup>25</sup>

#### *Driver Bonuses*

In addition to pay and benefits, many of ATRI’s Ops Costs respondents offered additional financial incentives to their drivers. These “performance” bonuses were awarded for a number of reasons, including starting/new hire, safety, and retention. On average, all bonuses increased from 2018, indicating that while driver wages fell, other incentives for drivers increased. The average annual amount for each of the bonuses is listed in Table 14.

**Table 14: Single Driver Bonus Pay by Type**

Bonus Type	2018	2019	Annual Change (%)
Safety	\$1,238	\$1,373	10.9%
Starting	\$1,562	\$1,846	18.2%
Retention	\$672	\$1,218	81.3%

<sup>24</sup> Karickhoff, Alan and Bob Costello. “ATA 2020 Driver Compensation Study.” American Trucking Associations. Arlington, VA. May 2020.

<sup>25</sup> Straight, Brian. “Ending the Confusion over Per Diem.” Freightwaves. January 2018. Available online: <https://www.freightwaves.com/news/2018/1/16/ending-the-confusion-over-per-diem>

Safety bonuses saw an increase of approximately 11 percent from 2018 to 2019, from \$1,238 to \$1,373. Companies are incentivized to invest in safety, as large verdicts due to crashes have been increasing over time and putting strain on businesses.<sup>26</sup> This average safety bonus amount represents the highest safety bonus in the last three years. This may be an attempt to combat an increase in large truck crashes by offering larger incentives to the safest drivers.

The average starting bonus increased as well from 2018, from \$1,562 in 2018 to \$1,846 in 2019 – an increase of 18 percent. This increase further represents the competition present among fleets for recruiting high-quality drivers. As the driver shortage worsens, higher starting bonuses are likely to become commonplace, with annual increases likely.

Average retention bonuses increased by over 80 percent from 2018 to 2019. In 2018, retention bonuses dropped almost 20 percent, from \$836 in 2017 to \$672 in 2018. The average retention bonus in 2019 was \$1,235. The increase in retention bonuses coincides with the increase in driver starting bonuses, as recruiting and retaining qualified drivers is a top priority for fleets. According to ATRI's "Critical Issues in the Trucking Industry – 2020," driver retention was the 6<sup>th</sup> most critical issue in the trucking industry this year.<sup>27</sup> Despite the decrease in wages and benefits per mile for drivers, the increase in bonuses still indicates that the driver shortage is at the forefront of carriers' priorities.

### *Looking Forward*

Despite the dip in driver wages and benefits in 2019, driver compensation is expected to surge back in 2020 due to COVID-19. As more Americans sheltered and worked from home, consumer demand increased for delivered goods and e-commerce. According to J.P Morgan, the U.S. spent \$211.5 billion on e-commerce in the second quarter of 2020, an increase of almost 32 percent quarter over quarter.<sup>28</sup> While trucking demand increased for many carriers in 2020, some fleets did not have the excess capacity to meet that demand. As a result, that capacity transferred to the spot market.<sup>29</sup> In September 2020, DAT Freight and Analytics reported that spot load posts doubled from 2019, and van rates increased by 28.9 percent year over year in September.<sup>30</sup>

As the pandemic continues to surge across the U.S. in 2020, demand for trucking has placed greater strain on capacity. With increasing demand and stagnating capacity,

---

<sup>26</sup> Murray, Dan, Williams, Nathan, and Speltz, Erin. "The Impact of Nuclear Verdicts on the Trucking Industry." American Transportation Research Institute. Arlington, VA. June 2020.

<sup>27</sup> "Critical Issues in the Trucking Industry – 2020." The American Transportation Research Institute. October, 2020.

<sup>28</sup> "How COVID-19 Has Transformed Consumer Spending Habits." J.P. Morgan. September, 2020. Available online: <https://www.jpmorgan.com/solutions/cib/research/covid-spending-habits>

<sup>29</sup> Shultz, John D. "Fall trucking levels surprisingly high as industry rebounds from COVID-19 shutdown." Logistics Management. September 2020. Available online:

<https://www.logisticsmgmt.com/article/fall-trucking-levels-surprisingly-high-as-industry-rebounds-from-covid-19-s>

<sup>30</sup>Hitch, John. "Spot rates 'unseasonably strong' for September 2020." October 2020. American Trucker. Available online: <https://www.trucker.com/equipment/trucks/article/21144399/spot-rates-unseasonably-strong-for-september-2020>

spot rates will continue to increase. With this in mind, trucking wages will continue to follow trends in the spot rates, which have remained strong throughout 2020.<sup>31</sup>

### Fuel Costs

Fuel costs remained the second-highest line-item cost in 2019, despite dropping considerably from 2018. In 2019, fuel costs per mile were 39.6 cents per mile, decreasing from 43.3 cents per mile in last year’s report. Dropping almost 9 percent from 2018 to 2019, most of the fuel cost decrease can be attributed to substantially lower diesel costs in 2019. The average diesel price in 2019 was \$3.06.

Among private fleets, fuel costs were the third highest cost center after labor and equipment investment, and remained stagnant from 2018 to 2019 at 45 cents per mile.

The ATRI-developed fuel cost index (Figure 5) closely tracks with the average price of diesel fuel in 2019, further validating the accuracy of the Ops Costs dataset.

**Figure 5: Diesel Prices and ATRI Fuel Cost per Mile Index, 2006-2019**

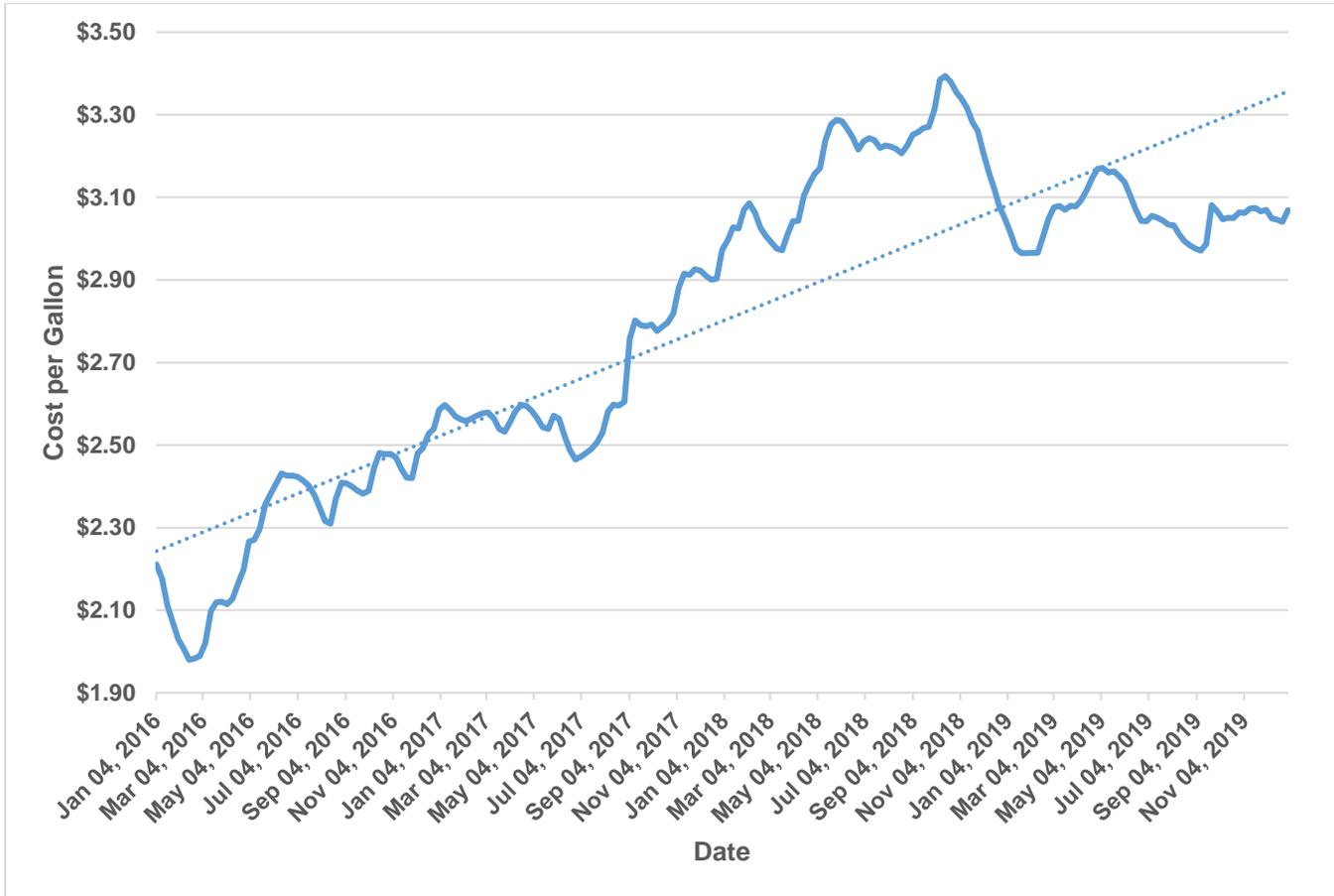


Fuel prices experienced a precipitous drop in at the beginning of 2019, falling from \$3.34 in early November 2018 to \$2.97 in early February 2019. The price of diesel stagnated the rest of the year, fluctuating around \$3.00 per gallon for diesel. The

<sup>31</sup> Ibid.

fluctuations are shown in Figure 6. Even with fuel price stagnation throughout 2019, prices were markedly higher than the low point in 2016.<sup>32</sup>

**Figure 6: Monthly U.S. On-Highway Diesel Prices, 2016-2019<sup>33</sup>**

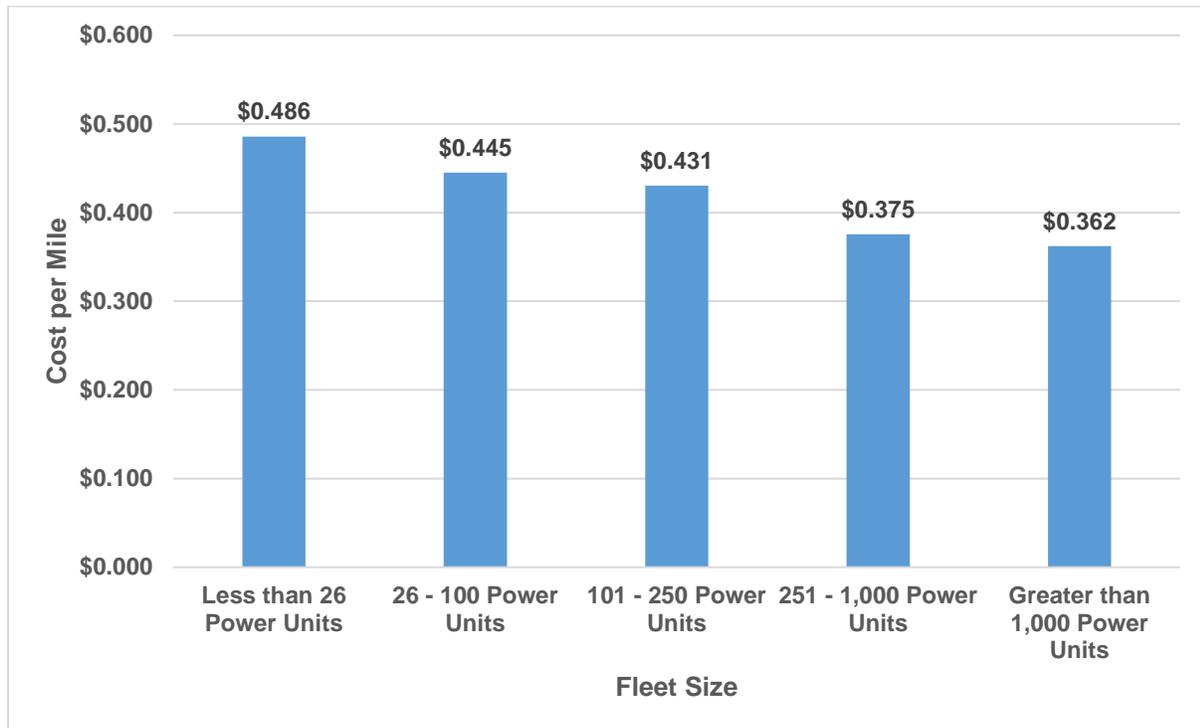


Fuel costs are dependent on a number of complex factors beyond simple oil market economics. For example, fleet size can be an important factor in fuel expenses, as firms with more market power can negotiate better pricing contracts with petroleum suppliers. Larger fleets also tend to operate newer, more fuel efficient trucks, further decreasing the cost of the fuel per mile. As expected, the cost per mile for diesel has an inverse relationship with the size of the respective fleet (Figure 7).

<sup>32</sup> Average Diesel Price calculated from Weekly Retail Gas and Diesel Prices. U.S. Energy Information Administration. Available online: [https://www.eia.gov/dnav/pet/pet\\_pri\\_gnd\\_dcus\\_nus\\_w.htm](https://www.eia.gov/dnav/pet/pet_pri_gnd_dcus_nus_w.htm)

<sup>33</sup> Average Diesel Price calculated from Weekly Retail Gas and Diesel Prices. U.S. Energy Information Administration. Available online: [https://www.eia.gov/dnav/pet/pet\\_pri\\_gnd\\_dcus\\_nus\\_w.htm](https://www.eia.gov/dnav/pet/pet_pri_gnd_dcus_nus_w.htm)

**Figure 7: Respondent Fuel Costs per Mile by Fleet Size**



### *Looking Forward*

The lack of car travel due to COVID-19 has severely decreased the demand for gasoline and diesel – resulting in one of the steepest decreases in fuel prices in recent times. Both the U.S. Energy Information Administration (EIA) and Organization of the Petroleum Exporting Countries (OPEC) project that world petroleum demand will continue to fall throughout 2020 and 2021.<sup>34</sup> With the pandemic currently at record levels in the U.S., the holiday travel season may generate markedly less fuel demand than previous years, keeping oil prices low throughout the rest of 2020. It is expected that fuel prices will continue to decrease in 2020, and the cost per mile for fuel in the Ops Costs data sample will decrease as well.

### Equipment Costs

Equipment-related purchases, including lease and purchase costs, have a large bearing on other costs. For example, the age of the truck has a direct effect on repair and maintenance, fuel costs, and other line items. Newer trucks may also impact insurance costs; newer trucks with better safety equipment may have fewer crashes, but they also cost more to repair.

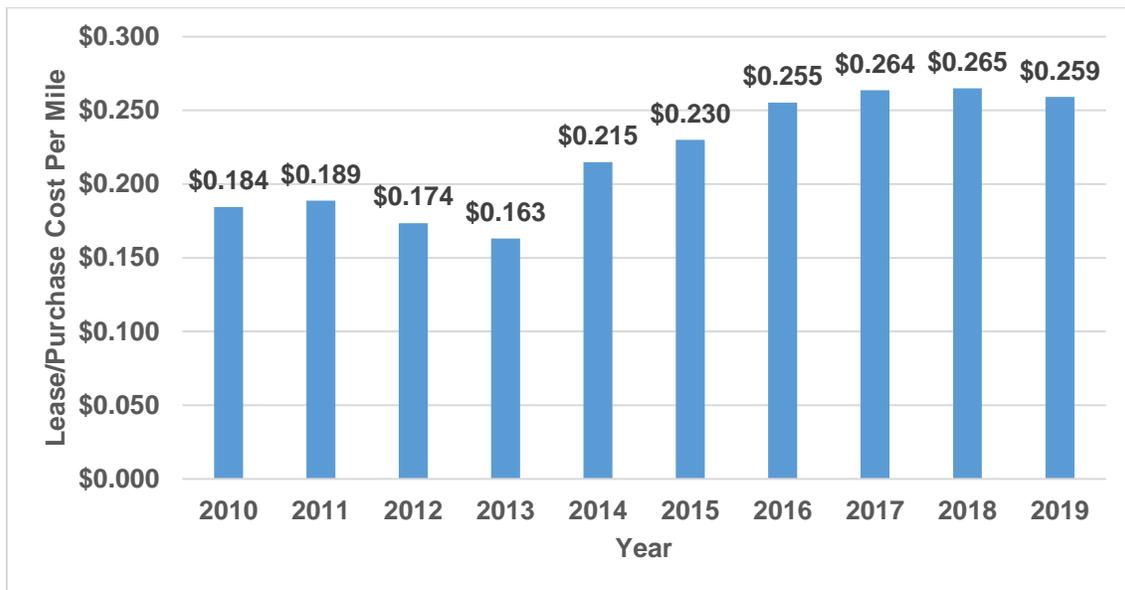
<sup>34</sup> “From the barrel to the pump: the impact of the COVID-19 pandemic on prices for petroleum products.” U.S Bureau of Labor Statistics. October 2020. Available online: <https://www.bls.gov/opub/mlr/2020/article/from-the-barrel-to-the-pump.htm>

### Lease and Purchase Costs

Lease and purchase costs averaged 25.9 cents in 2019, representing a 2.3 percent decrease from last year's report. This slight decrease is most likely due to the impacts of the backlog of trucking purchases which occurred in 2019, as a direct result of the record truck purchases in 2018. With year-over-year trucking orders decreasing and softening freight demand, the supply of trucks met the demand of trucks by the end of 2019.<sup>35</sup> Figure 8 details lease and purchase costs for the Ops Costs sample from 2010 to 2019. Lease and purchase costs, despite decreasing slightly in 2019, are up significantly since 2010, with an overall increase of 40.5 percent.

TL carriers reported the highest lease and purchase costs of 26.9 cents per mile, while LTL carriers reported the lowest lease and purchase costs of 22.8 cents per mile. Private fleets had a combined tractor-trailer investment cost (likely calculated differently from ATRI's for-hire formula) of 48 cents per mile.

**Figure 8: Respondent Lease and Purchase Payments per Mile, 2010-2019**



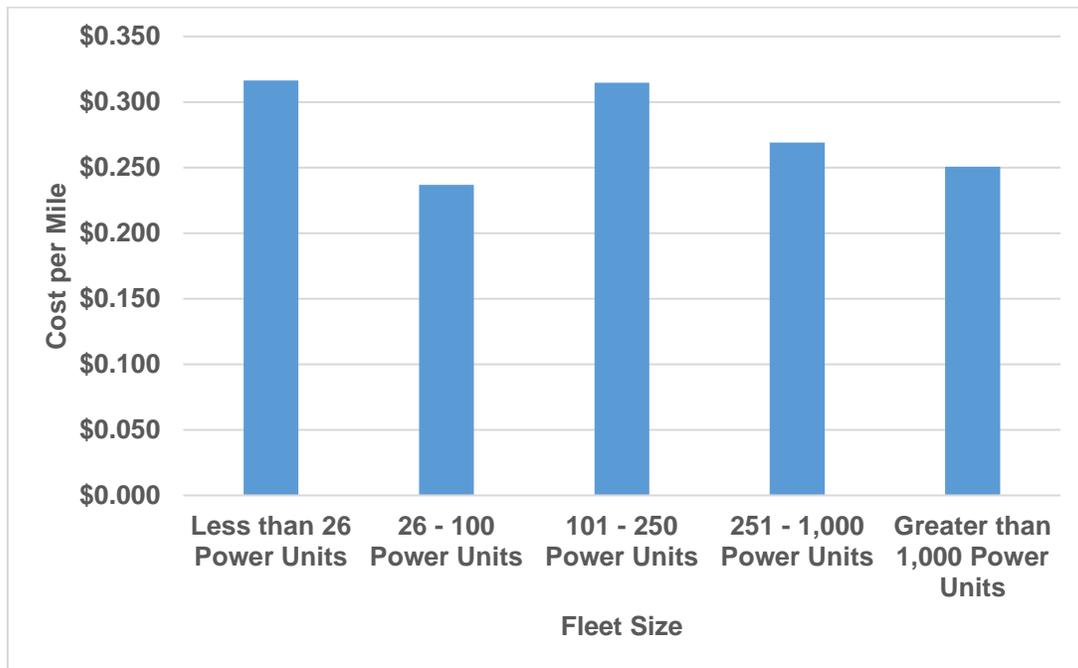
### Repair and Maintenance

Repair and maintenance costs decreased considerably in 2019, moving from 17.1 cents per mile in 2018 to 14.3 cents per mile in 2019. Since 2008, the cost per mile for repair and maintenance has increased by 39 percent due to more advanced technology in trucks. Repair and maintenance costs remained higher for specialized fleets than other fleets in 2019 at 18.7 cents per mile. TL carriers reported the lowest line-item repair cost at 12.8 cents per mile on average.

<sup>35</sup> Gilroy, Roger. "Class 8 Orders Slump for Weakest November Since 2015." Transport Topics. December 2019. Available online: <https://www.ttnews.com/articles/class-8-orders-slump-weakest-november-2015>

Repair and maintenance costs are also dependent on fleet size. Large fleets typically have their own maintenance facilities which can mean lower costs as opposed to using outside providers for repair and maintenance. Figure 9 details repair and maintenance costs by fleet size.

**Figure 9: Repair and Maintenance Cost per Mile by Size of Fleet**



Private fleets spent 27 cents a mile on combined tractor-trailer repair and maintenance. While this is considerably higher than for-hire carrier costs, it is important to note that average fleet size of the NPTC respondents was considerably lower than ATRI’s respondent population. Based on Figure 9, it is likely that the repair and maintenance line-items are equitable when fleet size is considered.

### *Looking Forward*

As a result of fluctuating demand and uncertainty in the market due to COVID-19, truck sales declined 24.6 percent from August 2019 to August 2020.<sup>36</sup> However, sales have continued to rise through October, with a 26 percent increase from September according to FTR.<sup>37</sup> As a result of this tumultuous buying period, truck lease and purchase costs are expected to remain constant over the coming year. As trucking demand stayed strong in 2020, repair and maintenance costs may increase due to more miles being driven per truck.

<sup>36</sup> Gilroy, Roger. “August Class 8 Sales Hit Highest Mark of 2020.” Transport Topics. September 2020. Available online: <https://www.ttnews.com/articles/august-class-8-sales-highest-2020>

<sup>37</sup> “Class 8 Orders Rise Again in October 2020.” OEM Off-Highway. November 2020. Available online: <https://www.oemoffhighway.com/market-analysis/industry-news/on-highway/press-release/21201405/class-8-orders-rise-again-in-october-2020>

## *Truck Insurance Premiums*

Within the ATRI database, truck insurance premiums experienced their first decline since 2012, decreasing from an all-time high of 8.4 cents per mile in 2018 to 6.8 cents per mile in 2019. Based on additional research with the commercial insurance industry, insurance cost volatility – and the slight insurance cost decrease in the 2019 data – is related to numerous factors. Recent ATRI research documented that the size of truck-involved litigation verdicts is increasing dramatically over time, directly impacting insurance costs.<sup>38</sup> While the 2019 insurance costs show a per-mile decrease, insurance companies report that trucking fleets are assuming higher risk levels through higher deductibles, self-insurance, expanding use of insurance captives, and lower levels of excess liability coverage. Given the substantial insurance cost increases over the last several years, it appears that the industry has reached a ceiling in its ability to continuously cover annual double-digit increases in insurance premiums.

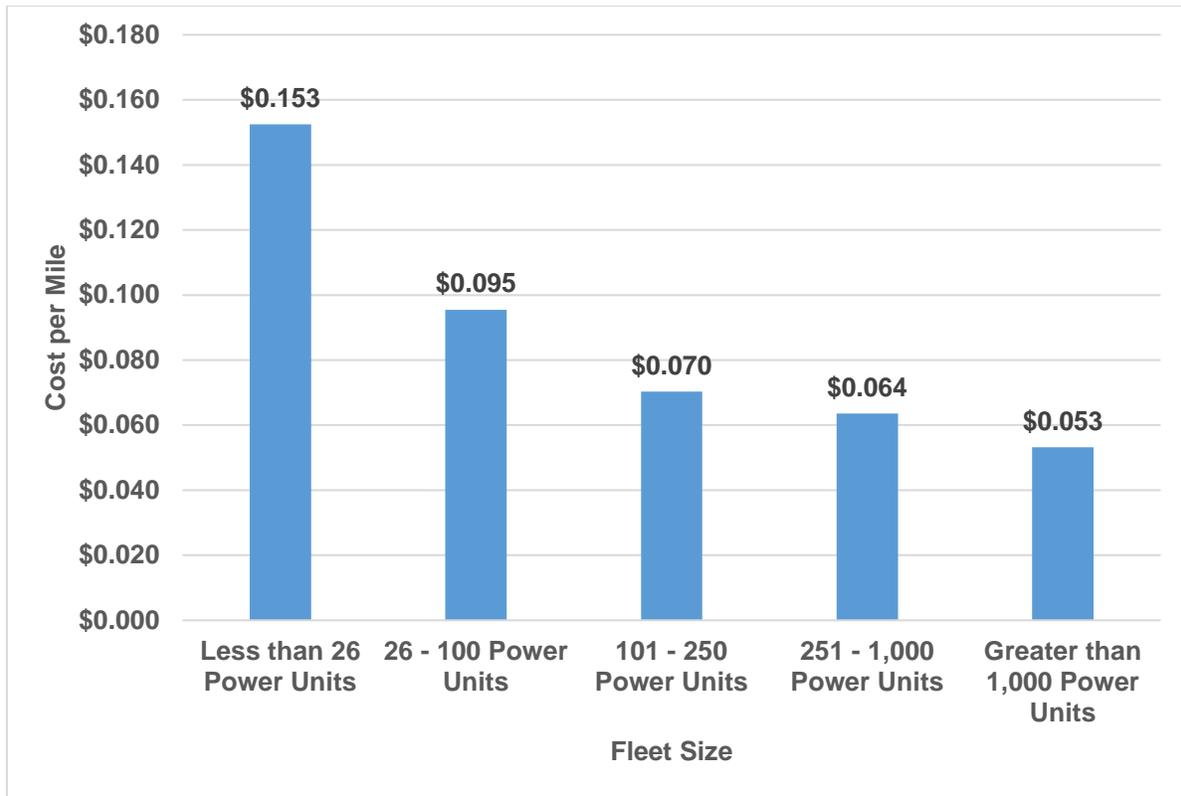
Fleet size also plays a substantial role in how insurance costs and risk are managed. Breaking down the insurance cost per mile by fleet size, it is clear that the smallest fleets, those with fewer than 26 power units, reported insurance costs of over 15 cents per mile in 2019. In comparison, fleets with over 1,000 power units reported insurance costs of 5.3 cents per mile (Figure 10). Not surprisingly, specialized fleets reported the highest insurance costs per mile with 7.5 cents per mile. These carriers oftentimes haul more dangerous freight, and their insurance costs reflect that.

Among private fleets, insurance and claims decreased every year from 2017, and stabilized at 9 cents per mile in the 2019 data. Private fleets, as units of larger, non-trucking companies, have many more tools and strategies for hedging insurance cost increases.

---

<sup>38</sup> Murray, Daniel, Nathan Williams and Erin Speltz. “Understanding the Impact of Nuclear Verdicts on the Trucking Industry.” American Transportation Research Institute. Arlington, VA. June 2020.

**Figure 10: Respondent Truck Insurance Premium Costs per Mile by Size of Fleet**



### *Looking Forward*

Based on input from insurance industry experts, insurance costs will continue to increase in the near future, although at a somewhat lower rate of growth. This moderating effect will likely be associated with increased adoption of active safety systems as well as positive changes associated with state-level tort reform. For example, in Louisiana, the Civil Justice Reform Act of 2020 was passed, which removed the “seatbelt gag order” as well as limited the discussion of a party’s insurance coverage.<sup>39</sup> Iowa enacted legislation to combat phantom damages, and Missouri enacted putative damage reforms.<sup>40</sup> In addition, carriers will continue to manipulate risk management strategies in an effort to stabilize, even reduce, these escalating insurance costs. That said, smaller fleets will continue to bear the largest impact of insurance cost increases, and with fewer risk management strategies at their disposal, financial viability may become a serious issue for small fleets.

<sup>39</sup> Reid, Devin C., Sirera, Sara Grace, and McMillin, Brady. “Louisiana Governor Signs 2020 Tort Reform Legislation.” The Energy Law Blog: Liskow & Lewis. July 2020. Available online: <https://www.theenergylawblog.com/2020/07/articles/civil-procedure/louisianan-governor-signs-2020-tort-reform-legislation/>

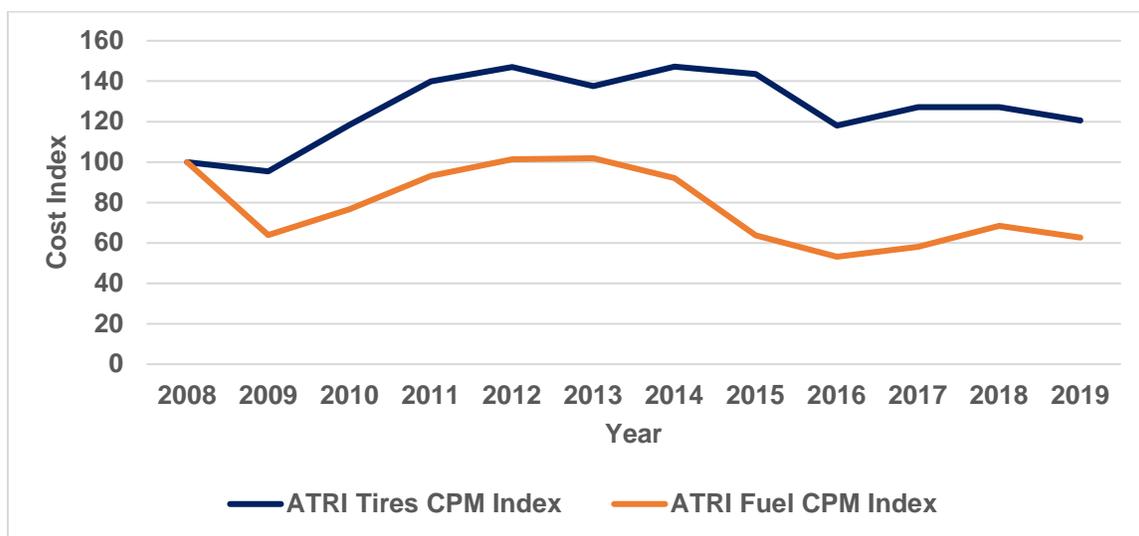
<sup>40</sup> “2020 State Tort Reform Enactments.” American Tort Reform Association. October 2020. Available online: [https://www.atra.org/reform\\_enactments/2020-state-tort-reform-enactments/](https://www.atra.org/reform_enactments/2020-state-tort-reform-enactments/)

## Tires

Tire supply and demand, and hence pricing, are associated with the state of the economy as well as petroleum costs. The decrease in fuel cost per mile was mirrored by a decrease in the cost of tires as both are derived from petroleum, and these costs often move in tandem. Specialized carriers reported the highest tire costs at 5.0 cents per mile, whereas TL carriers reported only 3.1 cents per mile. Private fleets also saw a decrease from 2018 to 2019, dropping from 3.5 cents to 3.0 cents per mile.

The parallel movement of tire cost and fuel cost is evidenced in Figure 11, where ATRI's tire index and fuel index both decreased in 2019.

**Figure 11: ATRI Tire and Fuel Cost per Mile Indices, 2008-2019**



## Looking Forward

While tires and fuel will continue to move in tandem throughout the pandemic, the economic improvements in latter 2020 generated increased truck orders and sales. Truck sales began increasing over a 5-month period, and that trend is expected to persist throughout 2020 and into 2021.<sup>41</sup> As an example, in Michelin's half-year results, tire demand was down between 15 and 20 percent for the first half of 2020 due to COVID-19.<sup>42</sup> However, tire demand will reflect economic activity, and early indications are that tire costs will increase over the next 12 months, as demand for original truck and bus tires rebounded in September for Europe and South America.<sup>43</sup> In addition, the

<sup>41</sup> "Class 8 Orders Rise Again in October 2020." OEM Off-Highway. November 2020. Available online: <https://www.oemoffhighway.com/market-analysis/industry-news/on-highway/press-release/21201405/class-8-orders-rise-again-in-october-2020>

<sup>42</sup> "Automotive Tire Demand to Fall 15-20 percent in 2020." July 2020. S&P Global: Platts. London, U.K. Available online: <https://www.spglobal.com/platts/en/market-insights/latest-news/agriculture/072720-automotive-tire-demand-to-fall-15-20-in-2020-michelin>

<sup>43</sup> "Michelin Market Trends." Michelin. October 2020. Available online: <https://www.michelin.com/en/finance/key-figures-and-indicators/markets/>

demand for replacement tires has begun to grow in North America, which is indicative of the increase in freight activity. Under the assumption that the U.S. begins to control the COVID-19 pandemic, the market and price for tires is expected to rebound in 2020.

### *Tolls*

The toll cost per mile increased from 3 cents to 3.4 cents per mile in 2019. This is likely reflective of continually increasing truck toll rates; as an example the Pennsylvania Turnpike increased their tolls by 6 percent in 2019.<sup>44</sup> Tolls are highly concentrated in the Northeast, and account for 5.6 cents per mile for fleets operating in that region (Table 15).

### *Permits and Special Licenses*

The permits and special licenses cost per mile was generally stable in 2019, decreasing only \$0.1 from last year's analysis. These costs, compared to all-time highs in 2010 and 2011, are substantially lower. Specialized carriers reported the highest permit and special licenses costs at 3.9 cents per mile while truckload fleets reported the lowest permit and special licenses costs at 1.8 cents per mile. It is expected that specialized carriers would have the highest costs for permits and special licenses, as this sector hauls hazardous material, as well as oversize and overweight materials, requiring permits and special licenses.

### Regional Costs

Costs per mile varied dramatically from region to region, with the highest costs not surprisingly coming out of the Northeast. With a marginal cost per mile of \$1.844, costs in the Northeast were substantially higher, with the highest cost centers being tolls and repair and maintenance. With major traffic congestion, mediocre infrastructure, as well as the most concentrated tolling systems in the country, trucking costs in the Northeast remain consistently high (Table 15).

---

<sup>44</sup> Short, Jeffery and Johnathan Peters. "A Financial Analysis of Toll System Revenue: Who Pays and Who Benefits." The American Transportation Research Institute. Arlington, VA. January 2020.

**Table 15: Average Marginal Cost per Mile by Region, 2019**

<b>Motor Carrier Costs</b>	<b>Midwest</b>	<b>Northeast</b>	<b>Southeast</b>	<b>Southwest</b>	<b>West</b>
<i>Vehicle-based</i>					
Repair and Maintenance	\$0.150	\$0.179	\$0.124	\$0.123	\$0.137
Tires	\$0.037	\$0.035	\$0.036	\$0.036	\$0.041
Fuel	\$0.372	\$0.419	\$0.373	\$0.357	\$0.398
Insurance	\$0.072	\$0.095	\$0.061	\$0.062	\$0.077
Truck/Trailer Lease or Purchase Payments	\$0.284	\$0.287	\$0.242	\$0.244	\$0.236
Tolls	\$0.037	\$0.056	\$0.029	\$0.028	\$0.020
Permits and Special Licenses	\$0.023	\$0.020	\$0.022	\$0.025	\$0.013
<i>Driver-based</i>					
Pay	\$0.556	\$0.575	\$0.522	\$0.512	\$0.514
Benefits	\$0.166	\$0.179	\$0.155	\$0.164	\$0.182
<b>TOTAL</b>	<b>\$1.697</b>	<b>\$1.844</b>	<b>\$1.564</b>	<b>\$1.550</b>	<b>\$1.619</b>

## Driving the Trucking Industry: Small Carrier Spotlight

Based on U.S. DOT truck registrations, small carriers comprise the vast majority of fleets, with 97.4 percent of carriers having fewer than 20 power units.<sup>45</sup> These smaller fleets serve as the backbone of the trucking industry, delivering freight across the U.S. However, due to the scale of these companies and their relatively lower bargaining power, they also encounter far higher costs per mile. Table 16 juxtaposes the cost per mile for small carriers (carriers with 100 or less power units) and large carriers (greater than 100 power units).

**Table 16: Average Marginal Cost per Mile by Fleet Size**

<b>Motor Carrier Costs</b>	<b>Small Carriers ≤ 100 Power Units</b>	<b>Large Carriers &gt;100 Power Units</b>
<i>Vehicle-based</i>		
Fuel Costs	\$0.439	\$0.370
Truck/Trailer Lease or Purchase Payments	\$0.278	\$0.262
Repair & Maintenance	\$0.195	\$0.133
Truck Insurance Premiums	\$0.107	\$0.060
Permits and Licenses	\$0.024	\$0.016
Tires	\$0.043	\$0.036
Tolls	\$0.037	\$0.032
<i>Driver-based</i>		
Driver Wages	\$0.534	\$0.543
Driver Benefits	\$0.138	\$0.166
<b>TOTAL</b>	<b>\$1.794</b>	<b>\$1.618</b>

As shown in Table 16, the majority of line-item costs were higher for small truck fleets as compared to larger fleets. The only cost for which large fleets paid more was pay

<sup>45</sup> "2020 American Trucking Trends." The American Trucking Associations. September 2020.

and benefits per mile – reflecting a compensation strategy to offset their higher driver turnover rates.<sup>46</sup>

As noted, small fleets experience higher costs in repair and maintenance, tires, fuel, and insurance. Large fleets often have their own maintenance shops, as well as contracts with suppliers for discounted fuel, trucks, tires and onboard technologies. In addition, large fleets have more available risk management strategies than small fleets – thus the delta in insurance costs between large and small fleets. It is important to note that for either fleet size, managing insurance costs by expanding financial safety risks can dramatically, even catastrophically, increase operating costs in the long term.

Overall, when the freight market softens, smaller carriers are affected more negatively than large carriers, related to numerous factors such as heavy reliance on spot markets, less negotiating power, and less available capital. While the overall cost per mile decreased, small firms experienced higher line-item costs. Small carriers experienced 17.6 additional cents per mile total.

According to FTR Transportation Intelligence, fleets with less than 100 trucks have added significantly more drivers from 2012 to 2018 than fleets with greater than 100 trucks.<sup>47</sup> Fleets with less than 100 trucks have employed 322,000 new drivers between 2012 and 2018, while fleets of greater than 500 trucks have employed 152,000 new drivers between 2012 and 2018. In addition, small trucking fleets grew 4 percent in 2018, whereas large trucking fleets grew by 2 percent. This disparity is indicative that small carriers are growing, despite increased costs.

The growth of small carriers is likely due to a number of factors including specialization, different safety management models, and different customer service models...among other reasons. Some small carriers have cited their ability to operate within a defined niche as the key to success.<sup>48</sup> Other carriers cited their ability to provide more personalized service and accountability, as well as lower driver turnover. While the margins for the trucking industry continue to be thin, these small trucking companies are carving out niches by leveraging services and strategies that are unique to small fleets.

---

<sup>46</sup> “Fleet success depends on smarts, not the number of trucks.” FleetOwner. October 2014. Available online: <https://www.fleetowner.com/news/article/21689038/fleet-success-depends-on-smarts-not-the-number-of-trucks>

<sup>47</sup> Adler, Alan. “Small Trucking Fleets Grow as Bigger Firms Struggle to Find Drivers.” Trucks.com. September, 2018. Available online: <https://www.trucks.com/2018/09/14/small-trucking-fleets-grow-bigger-firms-struggle/>

<sup>48</sup> “Fleet success depends on smarts, not the number of trucks.” FleetOwner. October 2014. Available online: <https://www.fleetowner.com/news/article/21689038/fleet-success-depends-on-smarts-not-the-number-of-trucks>

## **CONCLUSION**

While the first half of 2019 rode in on the coattails of an unparalleled year of economic growth in 2018, the latter half of 2019 softened economically; many economists described the last two quarters as recessionary. The overall outcome was considerable volatility in trucking operations and the requisite costs.

Most cost center trend lines dropped as would be expected:

- Fuel costs dropped 4 cents from 2018 to 39.6 cents per mile in 2019, as truck capacity demand slackened;
- Repair & maintenance costs fell almost 3 cents to 14.3 cents per mile, reflecting a slower maintenance schedule;
- Wages and benefits both fell in 2019, however bonuses increased, indicating that fleets were hesitant to lose drivers should the economy come roaring back in the near future;
- Other cost centers dropping from 2018 levels were equipment lease and purchase payments, tires, and permits.

Arguably, the most surprising cost center decrease was truck insurance premiums, which had increased nearly every year since 2012, with some years experiencing double-digit increases. And yet 2019 saw a 1.6 cent per mile drop from the previous year. While a small decrease in “truck miles traveled” occurred – a key denominator in calculating exposure and risk – the market situation relating to insurance losses and excessive litigation generated a high expectation for another costly year in insurance. After mining the data and reviewing it with insurance industry experts, the conclusion was clear: trucking fleets are maxed out on their ability to absorb another year of higher insurance premiums, and have responded by dramatically increasing deductibles, reducing excess insurance coverage and moving to “captive insurance programs.” While these short-term approaches to manage cost increases appear to be stabilizing insurance costs, the long-term result is a potentially catastrophic increase in accrued carrier risk.

Private fleet data provided by NPTC corroborates many of the trends and findings in this ATRI for-hire cost report, although private fleets' overall costs increased in 2019. So, it is generally safe to conclude that the private fleet industry is experiencing similar impacts from economic and non-economic issues.

Looking forward, 2020 data will certainly reflect the most impactful year of social, medical and economic change seen in many generations. Until a full year of 2020 data is collected and analyzed, only anecdotal analyses are available. Given the increasing freight demand and the pressures of the driver shortage, it is likely that driver wages in 2020 will increase.

Domestic oil production was capped in 2020 – thanks to “shelter at home” orders throughout the country that ground vehicle travel to a halt. However, domestic oil production can easily be tapped in 2021, ensuring that a pending hot economy does not drive diesel fuel prices up excessively. If the pent-up demand from 2020 is realized, the trucking industry can expect a banner year in 2021 – maybe on par with 2018. However, political turmoil created through changing tax and energy policies could dampen manufacturing, consumer spending and overall economic growth.

Over the last several years, most cost centers in trucking have been higher among owner-operators and small fleets, leading to speculation that small fleet capacity would be absorbed by larger fleets – driving many thousands of firms out of business. In addition, small fleets pay more in fuel, tires and insurance – as they lack the buying power of larger fleets.

In reality, the opposite phenomenon has come true. Small fleet registrations are up considerably over the last few years, and these fleets are seeing meaningful growth. Industry experts speculate that higher small-fleet costs are being mitigated by their ability to be more responsive, dynamic and customer service-oriented. Small fleets are also able to pay slightly lower driver wages, and still experience considerably lower truck driver turnover. Finally, small fleets are heavily reliant on spot-market rates, which have generally been favorable over the last several years of solid growth and tight capacity. Those conditions are expected to return in 2021.

As always, the trucking industry’s ability to respond quickly to long-term economic trends, such as e-commerce growth, favors an increase in trucking’s market share. In addition, trucking is seen as resilient in short-term downturns as seen in late 2019, and responsive in times of crisis, such as the COVID-19 pandemic. Overall, the trucking industry’s economic health, while tied to many externalities including national policy shifts, appears to be strong far into the future.

## APPENDIX



### OPERATIONAL COSTS OF TRUCKING DATA COLLECTION

The American Transportation Research Institute (ATRI) is again conducting its annual **for-hire** motor carrier data collection initiative to obtain updated trucking industry operational costs for ATRI's ongoing *Operational Costs of Trucking* report. ATRI is seeking cost data **from 2019** associated with operating a truck. The final report will support studies related to industry productivity, driver issues, and fuel efficiency. Please note that the questions below are focused on TRUCK-TRACTORS. If your fleet also operates STRAIGHT TRUCKS, you will have an opportunity at the end of the form to submit separate cost information for the straight trucks in your fleet.

The data collected will be kept completely **confidential**. Personal, organizational, or financial information will never be released for public use under any circumstance, and will only be used internally for research analyses. The final report will only be presented in an aggregated, non-identifying format. As needed, ATRI will sign a Non-Disclosure Agreement.

**For this form to function properly as an interactive form, it is very important that you download the form to your computer and reopen it using Adobe Acrobat from your computer. If you do not have Adobe Acrobat on your computer, you may download a free version at <https://get.adobe.com/reader/>.**

As you are working through the form, you can save it to your computer using a file name of your choice and come back to it at a later time to finish. Once you have completed the form, you may choose one of three ways to submit the data to ATRI:

1. Attach the PDF form to an email with the Subject "Operational Costs" and send it to Nathan Williams at [nwilliams@trucking.org](mailto:nwilliams@trucking.org).
2. Fax it to (651) 631-9500.
3. Mail it to ATRI, 2060 Franklin Way, SE, Suite 201, Marietta, GA 30067.

All respondents submitting a completed, usable data collection form will receive an advance copy of the 2020 Operational Costs of Trucking report.

For-hire motor carriers are encouraged to provide operational cost data to ATRI by **Friday, August 21, 2020**.

If you have any questions please contact Nathan Williams at [nwilliams@trucking.org](mailto:nwilliams@trucking.org) or 651-641-6162 ext. 1.

#### **CONTACT INFORMATION**

Please enter your contact information below. Occasionally ATRI will follow up with respondents to clarify answers. Your information will be kept strictly confidential. **All respondents will receive an advance copy of the report.**

Company	Contact First Name	Contact Last Name
Street Address	Position/Title	
City	State	Zip Code
Phone	Email	

**DEMOGRAPHIC DATA**

**1) What was your fleet's IFTA mileage in 2019?** *(Include Owner-Operator miles reported for IFTA purposes)*

\_\_\_\_\_

**2) Please indicate your company's annual trucking-related revenue in 2019.** *(Check one. Exclude brokerage/logistics revenue)*

- Less than \$5 million/year
- \$5 million to \$10 million/year
- \$10 million to \$100 million/year
- \$101 million to \$500 million/year
- \$501 million to \$1 billion/year
- More than \$1 billion/year

**3) What is your primary for-hire business operation type?** *(Check only one)*

- |   |   |
|---|---|
| <input type="radio"/> Truckload Dry Van                 | <input type="radio"/> Express/Parcel Service    |
| <input type="radio"/> Less-Than-Truckload               | <input type="radio"/> Intermodal Drayage        |
| <input type="radio"/> Refrigerated Van                  | <input type="radio"/> Automotive Transportation |
| <input type="radio"/> Tanker                            | <input type="radio"/> Household Goods Mover     |
| <input type="radio"/> Flatbed                           | <input type="radio"/> Other (please specify):   |
| <input type="radio"/> Specialized – Oversize/Overweight |   |

**4) What are the three primary types of commodities that your company hauls?** *(While your company may haul multiple commodities, select only the top 3 most frequently hauled commodities.)*

- |  |   |
|--|---|
| <input type="checkbox"/> Agricultural Products           | <input type="checkbox"/> Livestock                        |
| <input type="checkbox"/> Automotive Parts                | <input type="checkbox"/> Manufactured Goods               |
| <input type="checkbox"/> Construction/Building Materials | <input type="checkbox"/> Mine Ores                        |
| <input type="checkbox"/> Finished Vehicles               | <input type="checkbox"/> Modular/Mobile Homes             |
| <input type="checkbox"/> Forest Products                 | <input type="checkbox"/> Paper Products                   |
| <input type="checkbox"/> Garbage or Sanitation           | <input type="checkbox"/> Petroleum Products               |
| <input type="checkbox"/> General Freight                 | <input type="checkbox"/> Refrigerated Food                |
| <input type="checkbox"/> Hazardous Materials             | <input type="checkbox"/> Retail Store/General Merchandise |
| <input type="checkbox"/> Heavy Machinery/Equipment       | <input type="checkbox"/> U.S. Mail/Parcel Service         |
| <input type="checkbox"/> Household Goods                 | <input type="checkbox"/> Don't Know                       |
| <input type="checkbox"/> Industrial Gases                | <input type="checkbox"/> Other (please specify):          |
| <input type="checkbox"/> Intermodal Containers           |   |

5) Are any of the trucks in your fleet speed limited or governed?

- Yes     
  No     
  Don't Know

If you answered yest to question 5, please provide the maximum speed setting and the percent of your fleet governed at that speed.

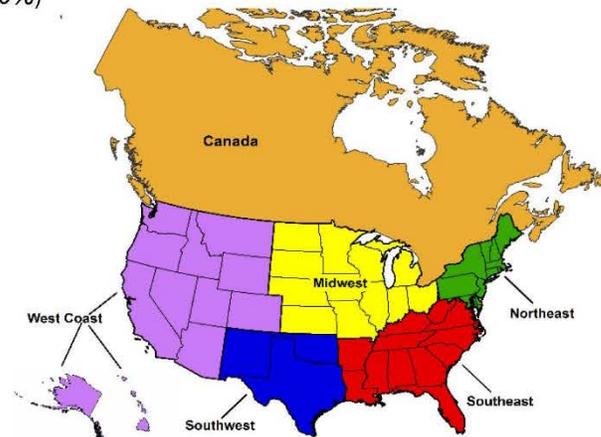
Maximum Speed (MPH)	Percent of Trucks

6) Based on your fleet's IFTA miles, what percentage of your drivers' trips were in the following categories in 2019? (Total must sum to 100%)

Local pickups and deliveries (less than 100 miles)	
Regional pickups and deliveries (100 – 500 miles)	
Inter-regional pickups and deliveries (500 – 1,000 miles)	
National (greater than 1,000 miles)	
<b>Total</b>	0.0

7) Please estimate the percentage of miles traveled by your fleet (include Owner-Operator miles) in the following regions during 2019. (Total must sum to 100%)

Region	% of Total Miles
Midwest	
Northeast	
Southeast	
Southwest	
West	
Canada	
<b>Total</b>	0



8) How many drivers did your company utilize in 2019 for each type of equipment?

	Company Driver/ Company Truck	Leased Driver/ Company Truck	Owner-Operator
Truck-Tractor – Single Driver			
Truck-Tractor – Team Drivers			
Straight Truck			
If other (please specify):			

**TRUCK-TRACTOR DATA ONLY** (Straight Truck questions begin on page 9)

9) What was your fleet size, average age and average number of miles traveled (including Owner-Operators) in 2019?

	Number of Truck-Tractors	Average Age (in years)	Average Miles per Year per Unit
Truck-Tractor			

Trailer Type	Number of Assets	Average Age (in years)
28' Trailer		
33' Trailer		
45' Trailer		
48' Trailer		
53' Trailer		
Tank		
Flatbed		
Auto Transporter		
Refrigerated Trailer		
Intermodal Chassis		
Other (please specify):		
Other (please specify):		
Other (please specify):		

10) For your fleet of **TRUCK-TRACTORS**, what is the average loaded weight of a tractor-trailer combination in pounds?

\_\_\_\_\_ LBS

11) While your vehicles were in motion, what was your average **TRUCK-TRACTOR** travel speed in miles per hour (MPH)?

\_\_\_\_\_ MPH

12) How long do you typically keep your equipment? (Please check years or miles)

Equipment Type	Avg. Trade Cycle	Years or Miles?
Truck-Tractors		
Trailers		

13) Are any of the **TRUCK-TRACTORS** in your fleet powered by an alternative fuel? Do not include diesel, gasoline or biodiesel fuel.

Yes     
  No     
  Don't Know

If you answered yes to question 12, please indicate the number of **TRUCK-TRACTORS** in your fleet that use each of the alternative fuels listed below.

Alternative Fuel Type	Number of Trucks
Compressed Natural Gas (CNG)	
Liquefied Natural Gas (LNG)	
Liquefied Petroleum Gas (LPG)	
Battery - Electric	
Hybrid Engine	
Other (please specify):	

14) Based on your fleet's IFTA data for **TRUCK-TRACTORS**, what was your average fuel economy in miles per gallon (MPG) for 2019 (i.e. real miles driven divided by gallons of fuel purchased)?

\_\_\_\_\_ MPG

15) What percent of your total annual **TRUCK-TRACTORS** miles were non-revenue/dead-head miles in 2019?

\_\_\_\_\_ % of total 2019 miles

16) Please list the average pay and benefits per mile (\$/mile) or the average pay and benefits per hour (\$/hour) for **TRUCK-TRACTOR NON-TEAM** drivers in 2019. (If there are multiple pay and benefit rates for the same type of driver please use the average pay and benefits rates. If you use a different compensation method, e.g. percent of load or salary, please list it here.)

	Company Driver/ Company Truck	Leased Driver/ Company Truck	Owner-Operator
Pay per Mile <sup>1</sup>			
Benefits per Mile <sup>2</sup>			
Pay per Hour <sup>1</sup>			
Benefits per Hour <sup>2</sup>			
Other Pay (please specify):			
Other Benefits (please specify):			

<sup>1</sup> Pay – Include only base pay. Do not include benefits, incentives and bonuses.

<sup>2</sup> Benefits – Include employer contributions to medical insurance, per diem and other financial benefits to the driver that are a standard part of employment. Do not include incentives and bonuses.

**Please check the benefits you provide to drivers that were included in Question 16:**

- |   |  |  |
|---|--|--|
| <input type="checkbox"/> Health Insurance | <input type="checkbox"/> Paid Vacation   | <input type="checkbox"/> 401k                            |
| <input type="checkbox"/> Dental Insurance | <input type="checkbox"/> Paid Sick Leave | <input type="checkbox"/> Other – please specify          |
| <input type="checkbox"/> Vision Insurance | <input type="checkbox"/> Per Diem        | <input style="width: 200px; height: 15px;" type="text"/> |

**17) Do you provide any additional financial incentives and/or bonus pay for SINGLE TRUCK-TRACTOR drivers that are not part of their regular wages?**

- Yes     
  No     
  Don't Know

**If yes, what was the average incentive and/or bonus pay paid per driver who received the bonus in 2019?**  
*(Please report as an annual average paid per driver. Please only include drivers who received bonuses in 2019.)*

Type of Bonus	Company Driver/ Company Truck	Leased Driver/ Company Truck	Owner-Operator
Safety Bonus			
On-Time Delivery Bonus			
New/Starting Driver Bonus			
Retention Bonus			
Fuel Economy Bonus			
Other (please specify):			
Other (please specify):			

**18) Do you utilize team drivers?**

- Yes     
  No     
  Don't Know

**IF YOU ANSWERED NO TO QUESTION #18, PLEASE SKIP TO QUESTION #21. THE REMAINING QUESTIONS ON THIS PAGE RELATE TO TEAM DRIVERS ONLY.**

**19) Please list the average pay per mile (\$/mile)\* or the average pay per hour (\$/hour) rates for the following types of TRUCK-TRACTOR drivers who drove as part of a TEAM in 2019. (Please use the pay rate for each individual driver, not the team rate. If there are multiple pay rates for the same type of driver, please use the average pay rate. If you use a different compensation method, e.g. percent of load or salary, please list it here.)**

	Company Driver / Company Truck	Leased Driver / Company Truck	Owner-Operator
Pay per Mile <sup>1</sup>			
Benefits per Mile <sup>2</sup>			
Pay per Hour <sup>1</sup>			
Benefits per Hour <sup>2</sup>			
Other Pay (please specify):			
Other Benefits (please specify):			

<sup>1</sup> Pay – Include only base pay. Do not include benefits, incentives and bonuses.

<sup>2</sup> Benefits – Include employer contributions to medical insurance, per diem and other financial benefits to the driver that are a standard part of employment. Do not include incentives and bonuses.

**Please check the benefits you provide to drivers that were included in Question 19:**

- |   |  |  |
|---|--|--|
| <input type="checkbox"/> Health Insurance | <input type="checkbox"/> Paid Vacation   | <input type="checkbox"/> 401k                            |
| <input type="checkbox"/> Dental Insurance | <input type="checkbox"/> Paid Sick Leave | <input type="checkbox"/> Other – please specify          |
| <input type="checkbox"/> Vision Insurance | <input type="checkbox"/> Per Diem        | <input style="width: 150px; height: 15px;" type="text"/> |

**20) Do you provide any additional financial incentives and/or bonus pay for TEAM TRUCK-TRACTOR drivers that are not part of their regular wages?**

- Yes     
  No     
  Don't Know

**If yes, what was the average incentive and/or bonus pay paid per individual driver who received the bonus in 2019? (Please report as an annual average paid per driver. Please only include drivers who received bonuses in 2019.)**

Type of Bonus	Company Driver / Company Truck	Leased Driver / Company Truck	Owner-Operator
Safety Bonus			
On-Time Delivery Bonus			
New/Starting Driver Bonus			
Retention Bonus			
Fuel Economy Bonus			
Other (please specify):			
Other (please specify):			

21) Please list your 2019 average TRUCK-TRACTOR cost per mile for the following key cost centers, calculated using IFTA miles. (If the line-item does not apply to your operation, please leave blank.)

Expense Type	2019 Cost per Mile
Repair & Maintenance <ul style="list-style-type: none"> <li>• Include R&amp;M costs, including R&amp;M labor, for all trucks and trailers; do not include tire-related expenses.</li> </ul>	\$
Tires <ul style="list-style-type: none"> <li>• Include all purchase, maintenance, re-treading, and replacement costs.</li> </ul>	\$
Fuel Costs <ul style="list-style-type: none"> <li>• Include all transportation fuel. <u>Do not</u> include fuel surcharge revenue.</li> </ul>	\$
Truck Insurance Premiums <ul style="list-style-type: none"> <li>• Include all liability, cargo, and excess liability policy premiums related to insuring the truck. <u>Do not</u> include workers compensation costs/insurance, physical damage, jury awards, or out-of-court settlements.</li> </ul>	\$
Truck and Trailer Lease or Purchase Costs <ul style="list-style-type: none"> <li>• Include all payment costs, and interest and fees associated with the payments. <u>Do not</u> include depreciation tax benefits.</li> </ul>	\$
Tolls <ul style="list-style-type: none"> <li>• If you paid tolls in 2019, what were your costs per mile (total annual toll costs/annual IFTA miles)? If you had no toll costs in 2019, please enter 0.</li> </ul>	\$
Permits & Special Licenses <ul style="list-style-type: none"> <li>• Include permits for oversize/overweight, HazMat, etc. <b>DO NOT</b> include truck registration or CDL costs.</li> </ul>	\$
Other <ul style="list-style-type: none"> <li>• Please specify: _____</li> </ul>	\$
<b>Total</b>	<b>\$ 0.000</b>

**STRAIGHT TRUCK DATA ONLY**

22) Does your fleet operate **STRAIGHT TRUCKS**?

Yes       No

**IF YOU ANSWERED NO TO QUESTION 22, YOU HAVE COMPLETED THE SURVEY. THE REMAINING QUESTIONS RELATE TO STRAIGHT TRUCK OPERATIONS ONLY. THANK YOU FOR YOUR PARTICIPATION!**

23) What was the number, average age and average number of miles traveled in 2019 for **STRAIGHT TRUCKS** in your fleet?

	Number of Straight Trucks	Average Age (in years)	Average Miles per Year per Unit
Straight Truck			

24) How long do you typically keep **STRAIGHT TRUCKS**? (Please check years or miles)

Equipment Type	Avg. Trade Cycle	Years or Miles?
Straight Truck		

25) For your fleet of **STRAIGHT TRUCKS**, what is the average loaded weight of a straight truck in pounds?

\_\_\_\_\_ LBS

26) While your vehicles were in motion, what was your average **STRAIGHT TRUCK** travel speed in miles per hour (MPH)?

\_\_\_\_\_ MPH

27) Are any of the **STRAIGHT TRUCKS** in your fleet powered by an alternative fuel? Do not include diesel, gasoline or biodiesel fuels.

Yes       No       Don't Know

**If yes, please indicate the number of STRAIGHT TRUCKS in your fleet that use each of the alternative fuels listed below.**

Alternative Fuel Type	Number of Trucks
Compressed Natural Gas (CNG)	
Liquefied Natural Gas (LNG)	
Liquefied Petroleum Gas (LPG)	
Battery - Electric	
Hybrid Engine	
Other (please specify):	

28) Based on your fleet's IFTA data for **STRAIGHT TRUCKS**, what was your average fuel economy in miles per gallon (MPG) for 2019 (i.e. real miles driven divided by gallons of fuel purchased)?

\_\_\_\_\_MPG

29) What percent of your total annual **STRAIGHT TRUCK** miles were **non-revenue/dead-head miles** in 2019?

\_\_\_\_\_ % of total 2019 miles

30) Please list the average pay and benefits per mile (\$/mile)\* or the average pay and benefits per hour (\$/hour) for **STRAIGHT TRUCK** drivers in 2019. (If there are multiple pay rates for the same type of driver please use the average pay rate. If you use a different compensation method, e.g. percent of load or salary, please list it here.)

	Company Driver/ Company Truck	Leased Driver/ Company Truck	Owner-Operator
Pay per Mile <sup>1</sup>			
Benefits per Mile <sup>2</sup>			
Pay per Hour <sup>1</sup>			
Benefits per Hour <sup>2</sup>			
Other Pay (please specify):			
Other Benefits (please specify):			

<sup>1</sup> Pay – Include only base pay. Do not include benefits, incentives and bonuses.

<sup>2</sup> Benefits – Include employer contributions to medical insurance, per diem and other financial benefits to the driver that are a standard part of employment. Do not include incentives and bonuses.

Please check the benefits you provide to drivers that were included in Question 30:

- |   |  |   |
|---|--|---|
| <input type="checkbox"/> Health Insurance | <input type="checkbox"/> Paid Vacation   | <input type="checkbox"/> 401k                   |
| <input type="checkbox"/> Dental Insurance | <input type="checkbox"/> Paid Sick Leave | <input type="checkbox"/> Other – please specify |
| <input type="checkbox"/> Vision Insurance | <input type="checkbox"/> Per Diem        |   |

31) Do you provide any additional financial incentives and/or bonus pay for **STRAIGHT TRUCK** drivers that are not part of their regular wages?

- Yes       No       Don't Know

If yes, what was the average incentive and/or bonus pay paid per driver who received the bonus in 2019? (Please report as an annual average paid per driver. Please only include drivers who received bonuses in 2019.)

Type of Bonus	Company Driver/ Company Truck	Leased Driver/ Company Truck	Owner-Operator
Safety Bonus			
On-Time Delivery Bonus			
New / Starting Driver Bonus			
Retention Bonus			
Fuel Economy Bonus			

32) Please list your 2019 average **STRAIGHT TRUCK** cost per mile for the following key cost centers, calculated using IFTA miles. (If the amount equals zero, please enter 0. If the line-item does not apply to your operation, please leave blank.)

Expense Type	2019 Cost per Mile
Repair & Maintenance <ul style="list-style-type: none"> <li>• Include R&amp;M costs, including R&amp;M labor, for all trucks and trailers; do not include tire-related expenses.</li> </ul>	
Tires <ul style="list-style-type: none"> <li>• Include all purchase, maintenance, re-treading, and replacement costs.</li> </ul>	
Fuel Costs <ul style="list-style-type: none"> <li>• Include all transportation fuel. <u>Do not</u> include fuel surcharge revenue.</li> </ul>	
Truck Insurance Premiums <ul style="list-style-type: none"> <li>• Include all liability, cargo, and excess liability policy premiums related to insuring the truck. <u>Do not</u> include workers compensation costs/insurance, physical damage, jury awards, or out-of-court settlements.</li> </ul>	
Truck and Trailer Lease or Purchase Costs <ul style="list-style-type: none"> <li>• Include all payment costs, and interest and fees associated with the payments. <u>Do not</u> include depreciation tax benefits.</li> </ul>	
Tolls <ul style="list-style-type: none"> <li>• If you paid tolls in 2019, what were your costs per mile (total annual toll costs/annual IFTA miles)? If you had no toll costs in 2019, please enter 0.</li> </ul>	
Permits & Special Licenses <ul style="list-style-type: none"> <li>• Include permits for oversize/overweight, HazMat, etc. <b>DO NOT</b> include truck registration or CDL costs.</li> </ul>	
Other <ul style="list-style-type: none"> <li>• Please specify: _____</li> </ul>	
<b>Total</b>	\$ 0.000

**Thank you! We greatly appreciate your participation.**

You may return the completed data collection form to ATRI via fax at **770-432-0638**, email to [nwilliams@trucking.org](mailto:nwilliams@trucking.org), or mail to **ATRI, 2060 Franklin Way SE Suite 201, Marietta, GA 30067.**



950 N. Glebe Road  
Arlington, VA  
(703) 838-1966  
[atri@trucking.org](mailto:atri@trucking.org)  
[TruckingResearch.org](http://TruckingResearch.org)