

An Analysis of the Operational Costs of Trucking: 2021 Update

November 2021



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Alex Leslie, Ph.D.

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

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ACRONYMS

ATRI	American Transportation Research Institute
ATA	American Trucking Associations
CNG	Compressed Natural Gas
CPM	Cost per Mile
CPH	Cost per Hour
EIA	U.S. Energy Information Administration
ELD	Electronic Logging Device
FMI	Freight Mobility Initiative
IFTA	International Fuel Tax Association
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
OEM	Original Equipment Manufacturers
Ops Costs	Operational Costs of Trucking
QCEW	Quarterly Census of Employment and Wages
RAC	Research Advisory Committee
SIRs	Self-Insurance Retentions
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)¹ as a top priority in 2008. In conjunction with industry experts, ATRI developed a comprehensive methodology to calculate key cost centers in the trucking industry. ATRI has continued to publish an annual update, streamlining methodologies and promulgating the marginal costs of trucking on a yearly basis.

This year's report, based on marginal cost data from 2020, analyzes cost metrics by fleet size, sector, and region of operation to a greater degree than ever before. Though the COVID-19 pandemic made 2020 a historically unprecedented year in economic terms, ATRI's Operational Costs report (Ops Costs) documents consistent trends in many cost centers and provides interpretations for volatility in others. As such, this research continues to serve as a high-level benchmarking tool for motor carriers, and data-driven resource for freight planning.

RESEARCH OBJECTIVE

ATRI's *Operational Costs of Trucking* research addresses the ongoing need for accurate trucking industry operational cost data among motor carriers and government transportation agencies. 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 obtained directly 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 cost metrics remain comparable.

In an effort to be timely and accurate, ATRI adds and/or modifies annual queries. The following changes were made to the data collection form for 2021:

¹ 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.

- Average truck-tractor travel speed was no longer requested because speeds from ATRI's larger GPS database are used instead;
- All questions pertaining to straight trucks, straight truck costs, and straight truck drivers were removed;
- Questions about team driver pay and benefits were removed;
- A new question requesting out-of-pocket expenses below deductible or Self-Insurance Retention was added.

The 2021 data collection form can be found in the Appendix. Participating motor carriers were asked to provide a variety of data including fleet demographics, driver compensation and line-item costs per mile for numerous cost centers.

ATRI's data collection process ensures the confidentiality of sensitive cost information. The underlying data in this report is presented in aggregate form only. When requested, ATRI entered into non-disclosure agreements with participating motor carriers.

Data collection commenced in May 2021. ATRI solicited participation through emails, news alerts, and media coverage from industry trade press. Carrier members of the 50 State Trucking Associations (STA) were 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 ATRI's secure online portal. ATRI staff reviewed each submittal and followed-up with participants on any metrics that were in question. Responses were collected through September 2021.

The primary operational cost metrics are weighted average marginal cost per mile (CPM) and weighted average marginal cost per hour (CPH).² To understand how costs change over time, these metrics are compared year-over-year. CPM metrics were converted to CPH metrics through an average speed calculation derived from ATRI's Freight Mobility Initiative (FMI) program.³ The speed metric calculated for 2020 was 40.62 miles per hour (MPH). This figure is 1.2 MPH higher than the most recent previous speed metric due to dramatic decreases in traffic during the COVID-19 pandemic, which resulted in fewer slowdowns.

Different sectors of the trucking industry have significantly different business models and costs. For example, specialized carriers and LTL carriers report much higher costs per mile, especially in permit costs and driver compensation. Accordingly, ATRI weights

² To ensure reliability, individual data points were excluded as outliers if they were three times the interquartile range less than the first quartile or three times the interquartile range more than the third quartile of a cost center.

³ ATRI derived this speed using data from the ATRI program. ATRI analyzed one full week of national FMI data in each of the four quarters in 2020 (the 12th to the 18th of February, May, August, and October). This dataset consisted of nearly 400 million truck speed data points with non-zero speeds. The 40.62 MPH figure is an update to the 39.42 MPH figure used in previous iterations of this report, which was based on truck speed data from 2017. This speed figure represents an average operational speed since it includes speeds in all types of operational conditions, sectors, and locations.

respondent data based on sector to represent the industry market share of each sector. Table 1 shows the sector breakout for the ATRI Ops Costs respondents as compared to industry employment data provided by the Bureau of Labor Statistics Quarterly Census of Employment and Wages (QCEW). As shown in Table 1, ATRI’s dataset is underrepresented by truckload (TL) carriers and overrepresented by Other/Specialized carriers as well as less-than-truckload (LTL) carriers.

Table 1: For-Hire Industry Sector Breakout

	ATRI Respondents	U.S Trucking Industry⁴
Truckload	38.1%	56.6%
Less-than-Truckload	33.5%	28.9%
Other/Specialized	28.4%	14.5%

Cost metrics were also disaggregated by fleet sector type, size and region of operation to provide more detailed insights. 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.

Market share data shows that in 2020 a slight majority or 52.6 percent of motor carriers were classified as for-hire carriers while 43 percent of carriers were classified as private.⁵ Thanks to an ongoing collaboration with the National Private Truck Council (NPTC), ATRI is able to compare for-hire cost metrics with those of private fleets in the *NPTC Benchmarking Survey Report 2021* (see www.nptc.org for more information).

Private fleets utilize a very different business model than for-hire fleets: in 2020, 49.4 percent of NPTC respondents reported that customer service was the primary reason for operating their private fleet, and 77 percent reported operating as a cost center rather than a profit center. This fact is reflected in private fleets’ higher marginal costs for nearly every cost center. Nonetheless, private carriers are impacted by many of the same external factors as for-hire carriers even when their business strategies differ. In all cases, where 2021 NPTC data is cited, it reflects private fleet truck data generated in 2020.

⁴ Quarterly Census of Employment and Wages, 2021 First Quarter, U.S. Department of Transportation, Bureau of Labor Statistics, available online: <https://www.bls.gov/cew/>. SOC codes used were as follows: 484121 for truckload carriers, 484122 for less-than-truckload carriers, and 484230 for other/specialized carriers.

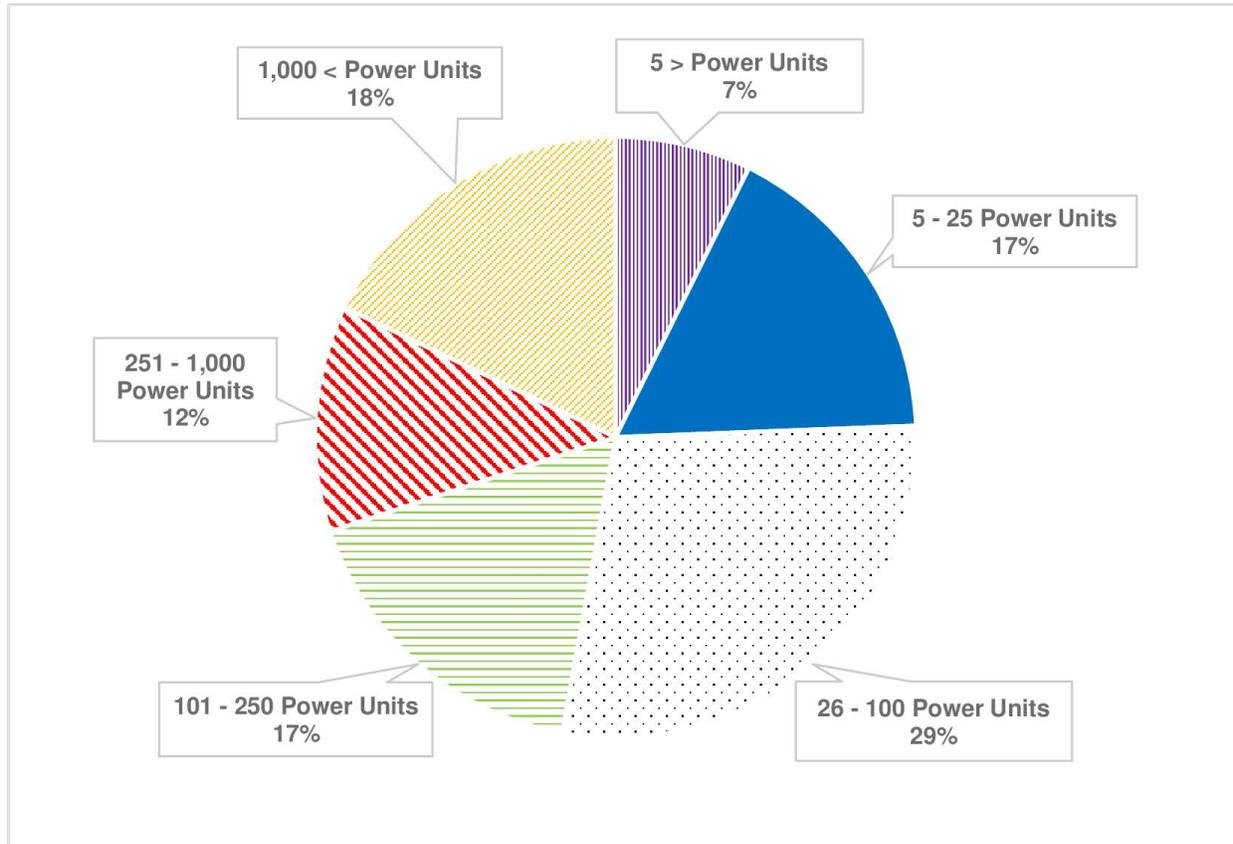
⁵ “American Trucking Trends – 2021,” American Trucking Associations, 2021.

RESPONDENT DEMOGRAPHICS

Size of Operation

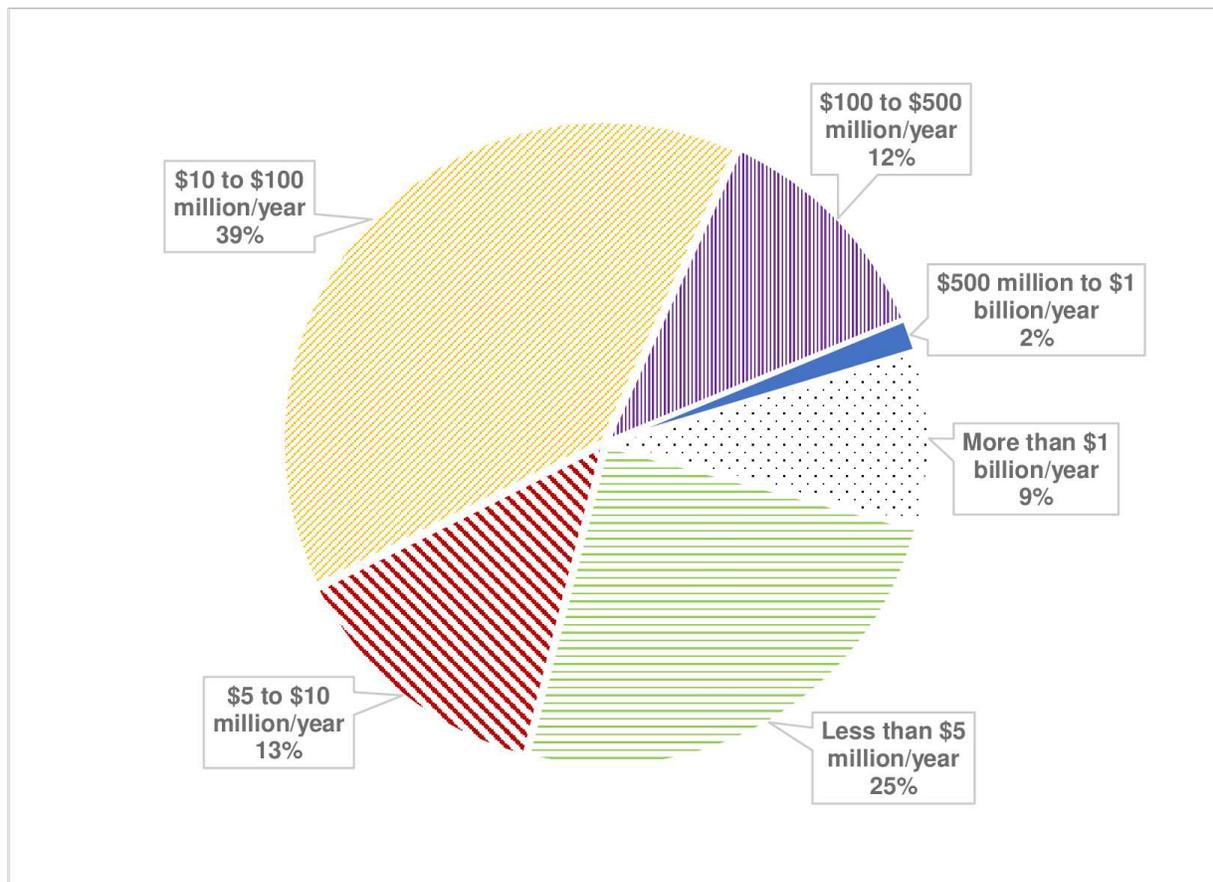
ATRI's 2021 Ops Costs data included 138,930 truck-tractors. Additionally, the data includes 418,520 trailers of varying types, and represents over 12 billion vehicle miles traveled. As shown in Figure 1, a plurality of the sample (29%) are from fleets of between 26 and 100 power units. The average fleet size in the sample was 1,130 power units. Fleets with 5 to 25 power units, 101 to 250 power units, and 1,000 or more power units were approximately equally represented. The ATRI average fleet size skews considerably larger than the NPTC respondent sample, which had an average private fleet size of 427 power units.

Figure 1: Respondent Fleet Size



Fleet revenue was also split into bins. A plurality of the carriers in the sample (39.2%) listed their 2020 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 “backhaul” or “deadhead” miles, place a serious strain on for-hire fleet efficiency, as these miles accrue operational costs without a direct customer revenue offset. Deadhead miles represented 20.6 percent of miles among all carriers, 17 percent of all miles on average for non-tanker carriers and 45.3 percent for tankers – where deadhead miles are much less avoidable due to the nature of the commodities transported.

Among private fleets, deadhead miles are more common because private fleets primarily move goods one way, from manufacturers to retailers, especially when rapid product movement makes the swift return of power units more valuable than procuring backhauls for those units. As such, 26 percent of all private truck miles were empty in 2020. Private fleets are further constrained by the need to place product movement over optimization: 81 percent of private fleets trips operated at less than full capacity in 2020. To combat these under-efficiencies, 61 percent of private fleets acquired for-hire authority in 2020 – up from 54 percent in 2019 but down from 78 percent in 2017 and 64 percent in 2018. Of private fleets that acquired for-hire authority, 94 percent prioritized their own company’s freight over for-hire freight.

Type of Operation

For-hire carriers continue to shorten trip lengths. The majority of trips for the majority of carriers (69.3%) in 2020 were less than 500 miles in length. All other trip lengths declined in frequency for a majority of carriers. Table 2 details the shift in respondents' trip length breakdowns from 2016 to 2020. Trips over 1,000 miles have decreased by 4.6 percent over this five-year period. Regional trips between 100 and 500 miles remain the most common for carriers on average, but even this category represents a declining share of most carriers' trips.

While the COVID-19 pandemic may have contributed to carriers' declining trip lengths, it did not significantly change the ongoing trend. If the current pace of change persists, local trips will become the primary trip length for a majority of carriers by 2022. As documented in ATRI's report *E-Commerce Impacts on the Trucking Industry*, intra-regional and last-mile truck trips helped decrease the overall average trip length by 37 percent from 2000 to 2018, a trend that continued in 2020.⁶ The emerging preference among drivers for short hauls, especially amid the ongoing driver shortage, is another key factor driving down the average trip length.⁷

Table 2: Respondent Trip Types, 2016 to 2020

	2016	2018	2020
Local pick-ups and deliveries (less than 100 miles)	21%	26%	32%
Regional pick-ups and deliveries (100-500 miles)	40%	37%	37%
Inter-regional pick -ups and deliveries (500-1,000 miles)	23%	21%	19%
National (over 1,000 miles)	16%	16%	12%

Trends in trip length varied by fleet size, however. Fleets with 5 to 100 power units had more local trips on average – 43 percent of their total trips – compared to fleets with more than 100 power units, among which only 23 percent of total trips were local. This divergence in average trip length may reflect smaller fleets' market strategies for avoiding head-to-head competition with larger fleets.

⁶ Alan Hooper and Dan Murray, *E-Commerce Impacts on the Trucking Industry*, American Transportation Research Institute, February, 2019.

⁷ S. L. Fuller and Shefali Kapadia, "Labor lags in long-distance freight as truck drivers prioritize home time," *Transport Dive*, Jan. 19, 2021, available online: <https://www.transportdive.com/news/trucking-employment-labor-drivers-bls/593487/>.

Private fleets generally experienced the same trends in trip length. In the NPTC benchmarking report, average private truck trip lengths declined 31 miles to 194 miles in 2020; this is the fourth consecutive annual decrease in trip lengths for private fleets.

To compare the composition of ATRI’s 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 were underrepresented in the Midwest and West and overrepresented in the Southeast and Northeast.

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

Region	Respondent Percent of Miles Traveled	Share of U.S. Truck-Tractor Registrations ⁸
Midwest	30.8%	40.2%
Northeast	15.3%	7.4%
Southeast	28.5%	19.4%
Southwest	9.7%	12.2%
West	11.7%	20.8%
Canada	3.8%	

Equipment

In 2019, the trucking industry hauled 10.23 billion tons of freight representing 72.5 percent of the total domestic tonnage in the U.S.⁹ The trucking industry hauled 10 percent fewer tons of freight in 2020 than in 2019 and 2018, yet it retained the same share of the total domestic tonnage across modes.¹⁰

On average, respondents’ truck-tractors were 5.3 years old, marking the second year in a row that average truck-tractor age increased after falling from a high of 5.5 years in 2017. Class 8 sales fell significantly during the spring and summer months of 2020 as carriers retrenched during the pandemic.¹¹

The average number of miles driven per year per truck-tractor declined by almost 5 percent, from 93,955 in 2019 to 89,358 in 2020. The full breakdown of equipment type is shown in Table 4.¹²

⁸ “Table MV-9: Truck and Truck-Tractor Registration – 2019.” 2019 Highway Statistics Series, Office of Highway Policy Information, Federal Highway Administration, United States Department of Transportation, Nov. 2020, available online: <https://www.fhwa.dot.gov/policyinformation/statistics/2019/pdf/mv9.pdf>.

⁹ *American Trucking Trends 2021*, American Trucking Associations, 2021.

¹⁰ *American Trucking Trends 2020*, American Trucking Associations, 2020.

¹¹ “August Class 8 Retail Sales Rise 2.8% Year-Over-Year,” *Transport Topics*, Sept. 13, 2021, available online: <https://www.ttnews.com/articles/august-class-8-retail-sales-rise-28-year-over-year>.

¹² Averages in Table 4, Table 5, and the Equipment section as a whole are weighted by the number of each unit type for each carrier.

Table 4: Respondent Equipment Characteristics

Equipment Type	Number of Trucks/ Trailers	Average Age (Years)	Average Miles Driven per Year per Truck
Truck-Tractors	138,930	5.3	89,358
28' Trailers	160,380	8.5	
33' Trailers	905	7.4	
45' Trailers	4,859	7.7	
48' Trailers	23,906	9.1	
53' Trailers	165,691	6.7	
Tank Trailer	20,828	16.4	
Flatbed Trailer	9,797	7.0	
Refrigerated Trailer	21,127	4.0	
Intermodal Trailers	4,413	5.5	
Auto Transporters	106	4.6	
Other Trailers	9,753	11.0	
Total Trailers	348,088		

Private truck annual miles followed a similar pattern, with heavy-duty trucks averaging 91,500 miles in 2020. This average is down from a high of 100,768 miles in 2017.

In addition to average equipment age, the data collection form also asked for the average trade cycle for both trucks and trailers. Table 5 details the trade cycle for truck-tractors and trailers.

Table 5: Respondent Equipment Trade Cycle

Equipment Type	Average Number of Years Until Replacement	Average Miles Driven Until Replacement
Truck-Tractors	8.7	669,903
Trailers	12.3	

ATRI's average truck-tractor trade cycle in 2020 was 8.7 years or 669,903 miles, an increase in both years and miles from the 2019 averages of 6.8 years or 585,294 miles. The average trade cycle for trailers was 12.3 years, but responses varied widely based on the type of trailer and size of fleet. The trade cycle for trailers has shortened since 2018, when the average number of years before replacement was 13.3.

The number of trailers per truck among carriers also increased to 2.9 in 2020 after several years in the 2.7 range. An increase in the trailer-to-truck ratio may have

resulted from either the limited availability of new trucks or increased trailer purchases. The increase in trailers per truck may have several explanations, including the need for greater logistical flexibility within the industry as carriers attempt to mitigate the impact of detention and driver shortages with increased trailer capacity. The for-hire trailer-to-truck ratio is still smaller than the private trailer-to-truck ratio of 3.3.

Table 6: Trailer-to-Truck Ratio

Year	Average Number of Trailers per Truck
2020	2.90
2019	2.55
2018	2.70
2017	2.76
2016	2.78

For-hire carriers were able to keep trucks for longer periods than their private counterparts. Even private fleets that conduct their own maintenance in-house – which report longer truck lifespans than private fleets who outsource maintenance – had a shorter trade cycle of 6.5 years or 634,000 miles in 2020.

Alternative Fuels

In 2020, approximately 10 percent of Ops Costs respondents indicated that their fleets used some form of alternative fuel, down from 15 percent in 2019. Compressed natural gas (CNG) continued to have the highest adoption among Ops Costs carriers in 2020, albeit at a lower proportion than in 2019, with 6.1 percent of carriers having at least one truck which utilizes CNG (Table 7). According to ACT Research, natural gas-fueled truck sales fell by 9 percent from 2019 to 2020.¹³ The second highest alternative fuel type was battery electric power, with 3.8 percent of carriers reporting at least one battery-powered truck in their fleet. Liquefied natural gas (LNG) usage fell from 5 percent in 2019 to 2.3 percent of carriers in 2020.

¹³ McNealy, Jennifer. "ACT Research: Class 8 Natural Gas Truck Retail Sales Contracted 9% YTD 2020 through November." ACT Research, Jan. 29, 2021. Available online: <https://content.actresearch.net/blog/act-research-afq-class-8-natural-gas-truck-retail-sales-contracted-9-ytd-2020-through-november/>.

Table 7: Use of Alternative Fuel Vehicles

Alternative Fuel Type	Percent of ATRI Ops Costs Respondents Using Alternative Fuels
CNG	6.1%
LNG	2.3%
LPG	0.8%
Battery	3.8%
Hybrid	0.8%

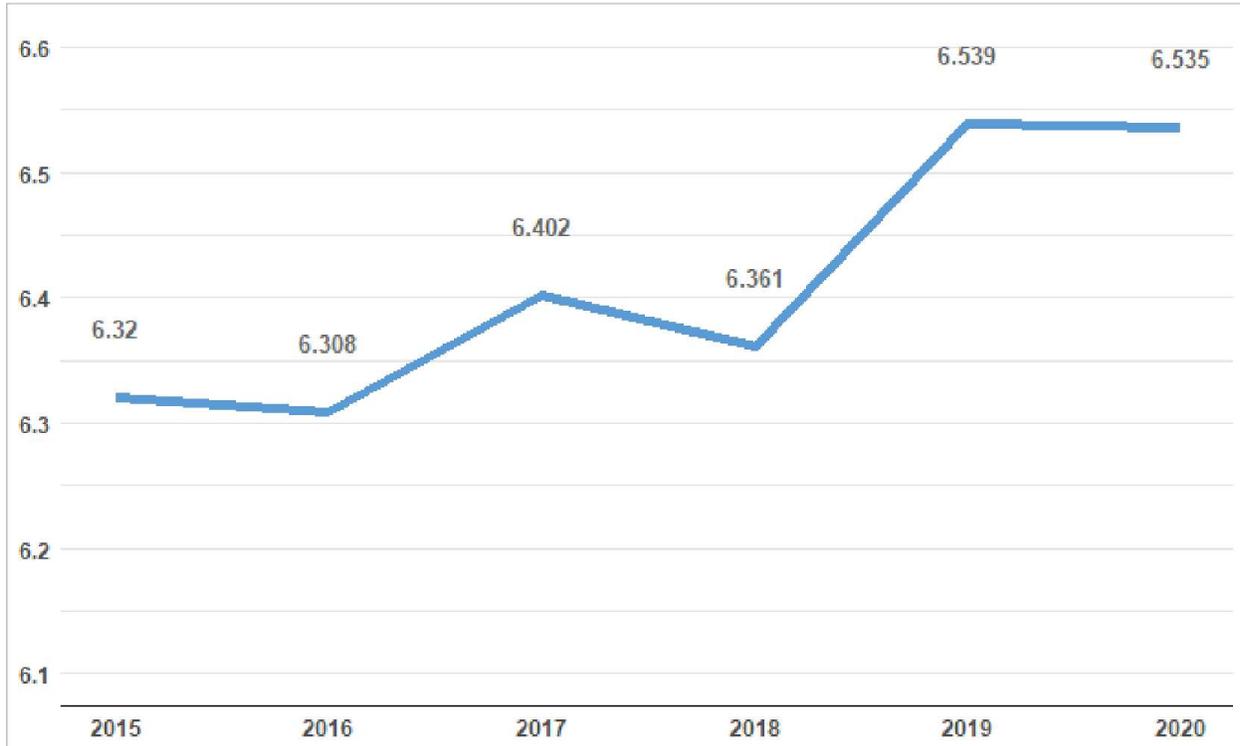
The percentage of trucks actually using alternative fuels, however, is much lower than the percentage of carriers that own one or more. Only 0.4 percent of all trucks operated by ATRI respondents use any kind of alternative fuel, a figure which has remained consistent over the past 5 years. This low 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, all of which were exacerbated by the 2020 COVID-19 pandemic.

While 89 percent of NPTC’s private fleets invested in “green technologies,” only 6 percent indicated that they use alternative energy trucks. As with for-hire carriers, CNG powers the majority of private fleet vehicles.

Fuel Efficiency

Truck-tractors in the sample experienced a negligible decrease in miles per gallon (MPG) from 2019 to 2020, and remained well above MPG figures for the preceding four years. The increase in MPG in Ops Costs sample is indicated in Figure 3.

Figure 3: Average MPG by Year



In addition to improvements in engines, speed governors also play a role in recent increases in fuel efficiency. In 2020, 81 percent of respondents used speed governors, and of these fleets 84 percent had speed governors on every single truck. Speed governors were also one of the top strategies for improving fuel economy and environmental impacts among private fleets.

Speed governor adoption varies widely by fleet size (though not by carrier sector). Over 95 percent of carriers with more than 100 power units use governors. Speed governor adoption drops to 82 percent for carriers with 26 to 100 power units; 50 percent of carriers with 25 power units or fewer use governors. Speed governor adoption follows a similar pattern to safety technology adoption: as fleet sizes decrease, speed governor adoption decreases. In general, smaller fleets seem less inclined to utilize governors (and safety technologies); possibly believing that driver issues and concerns will be reduced. If unaddressed, however, this divergence in technology use could lead to divergence in safety and efficiency between small and large fleets.

The price of diesel appears to be a key determinant for speed governor usage. Figure 4 shows that a greater percentage of carriers utilized speed governors during years in which the average diesel price per gallon was high, such as 2011-2014. When diesel

prices are low, as they were in 2020, more carriers raise governed speeds or forgo speed governors altogether.

Figure 4: Annual Speed Governor Usage by Diesel Price



MOTOR CARRIER COSTS

Numerous factors influence motor carrier operational costs, including direct and indirect relationships between line-item costs. Lease and purchase costs can vary dramatically based on year of purchase and type of equipment purchased. Driver compensation costs represent a variety of different wage models, hiring or retention priorities, and wage-to-benefit ratios. Similarly, insurance premium rates are highly variable due to differences in safety and risk management strategies across carriers. As such, ATRI worked with industry experts to corroborate and interpret marginal costs.

In order to facilitate year-to-year operational cost comparisons, the same categories are used each year:

- Vehicle-based
 - Fuel
 - Truck/Trailer Lease or Purchase Payments
 - Repair and Maintenance Costs

- Truck Insurance Premiums
- Permits and Special Licenses, only if a carrier paid for permits or licenses
- Tolls, only if a carrier paid tolls
- Driver-based
 - Wages
 - Benefits, only if a carrier paid benefits

FINDINGS

Despite increased expenses in a majority of line-items, the average cost per mile for motor carriers decreased in 2020 due to reductions in two key cost centers: fuel and driver benefits.

In 2020, trucking's cost per mile for ATRI's respondents contracted from \$1.699 to \$1.646, a decrease of 3.1 percent. Based on DAT's published rate data, the average contract rate was down in 2020 due to several especially low-rate months at the start of the COVID-19 pandemic (despite dramatic price improvements at the end of the year). This year's total marginal costs per mile amounted to 76.6 percent of the average contract van rate per mile – though this percentage does not include additional carrier expenses such as fixed cost centers.¹⁴ Dividing marginal costs by the average rate provides a benchmark for how much room carriers have for fixed costs, overhead and profit, and it gives a general measure of the strength and profitability of the trucking industry. Despite the many unique challenges posed by the COVID-19 pandemic, marginal costs in 2020 represented a slightly smaller percentage of the average contract rate than in 2019 (77.9%).

Costs per hour were approximately \$66.87, down slightly from \$66.94 in last year's report. The percent change in costs per hour (-0.1%) is significantly smaller because the average operating speed of trucks in 2020 was 1.2 MPH higher. Both marginal cost figures are down from a decade high in 2018 – a year of record-setting demand and tonnage – but are comparable to figures from the middle of the last decade. Tables 8 and 9 show these two metrics for the past ten years.

During this same time period, private truck costs increased from \$2.80 in 2019 to \$2.90 in 2020. It should be noted that NPTC cost metrics include “administrative” as well as “other” costs, which increased by 6 cents and 5 cents, respectively: without these two added cost components, private carriers' total marginal costs would have declined as well. As in previous years, the cost differential between for-hire and private fleets

¹⁴ Contract rates data drawn from DAT Trendlines, available online: <https://www.dat.com/industry-trends/trendlines/van/national-rates>.

continues to widen. If this differential can be leveraged in for-hire rates, it may lead to continued increases in for-hire carrier market share.

Table 8: Average Marginal Costs per Mile, 2011-2020

Motor Carrier Costs	2011	2012	2013	2014	2015	2016	2017	2018	2019¹⁵	2020
<i>Vehicle-based</i>										
Fuel Costs	\$0.590	\$0.641	\$0.645	\$0.583	\$0.403	\$0.336	\$0.368	\$0.433	\$0.384	\$0.308
Truck/Trailer Lease or Purchase Payments	\$0.189	\$0.174	\$0.163	\$0.215	\$0.230	\$0.255	\$0.264	\$0.265	\$0.256	\$0.271
Repair & Maintenance	\$0.152	\$0.138	\$0.148	\$0.158	\$0.156	\$0.166	\$0.167	\$0.171	\$0.149	\$0.148
Truck Insurance Premiums	\$0.067	\$0.063	\$0.064	\$0.071	\$0.074	\$0.075	\$0.075	\$0.084	\$0.071	\$0.087
Permits & Licenses	\$0.038	\$0.022	\$0.026	\$0.019	\$0.019	\$0.022	\$0.023	\$0.024	\$0.020	\$0.016
Tires	\$0.042	\$0.044	\$0.041	\$0.044	\$0.043	\$0.035	\$0.038	\$0.038	\$0.039	\$0.043
Tolls	\$0.017	\$0.019	\$0.019	\$0.023	\$0.020	\$0.024	\$0.027	\$0.030	\$0.035	\$0.037
<i>Driver-based</i>										
Driver Wages	\$0.460	\$0.417	\$0.440	\$0.462	\$0.499	\$0.523	\$0.557	\$0.596	\$0.554	\$0.566
Driver Benefits	\$0.151	\$0.116	\$0.129	\$0.129	\$0.131	\$0.155	\$0.172	\$0.180	\$0.190	\$0.171
TOTAL	\$1.706	\$1.633	\$1.676	\$1.703	\$1.575	\$1.592	\$1.691	\$1.821	\$1.699	\$1.646

¹⁵ Cost metrics for 2019 have been adjusted for continuity of weighting method.

Table 9: Average Marginal Costs per Hour, 2011-2020

Motor Carrier Costs	2011	2012	2013	2014	2015	2016	2017	2018	2019¹⁶	2020
<i>Vehicle-based</i>										
Fuel Costs	\$23.58	\$25.63	\$25.78	\$23.29	\$16.13	\$13.45	\$14.50	\$17.07	\$15.14	\$12.52
Truck/Trailer Lease or Purchase Payments	\$7.55	\$6.94	\$6.52	\$8.59	\$9.20	\$10.20	\$10.39	\$10.45	\$10.09	\$11.00
Repair & Maintenance	\$6.07	\$5.52	\$5.92	\$6.31	\$6.23	\$6.65	\$6.58	\$6.72	\$5.87	\$6.00
Truck Insurance Premiums	\$2.67	\$2.51	\$2.57	\$2.86	\$2.98	\$3.00	\$2.95	\$3.32	\$2.80	\$3.55
Permits & Licenses	\$1.53	\$0.88	\$1.04	\$0.76	\$0.78	\$0.88	\$0.92	\$0.95	\$0.79	\$0.67
Tires	\$1.67	\$1.76	\$1.65	\$1.76	\$1.72	\$1.41	\$1.50	\$1.50	\$1.54	\$1.73
Tolls	\$0.69	\$0.74	\$0.77	\$0.90	\$0.79	\$0.97	\$1.05	\$1.17	\$1.38	\$1.49
<i>Driver-based</i>										
Driver Wages	\$18.39	\$16.67	\$17.60	\$18.46	\$19.95	\$20.91	\$21.97	\$23.50	\$21.84	\$22.97
Driver Benefits	\$6.05	\$4.64	\$5.16	\$5.15	\$5.22	\$6.18	\$6.78	\$7.10	\$7.49	\$6.94
TOTAL	\$68.21	\$65.29	\$67.00	\$68.09	\$62.98	\$63.66	\$66.65	\$71.78	\$66.94	\$66.87

¹⁶ Cost metrics for 2019 have been adjusted for continuity of weighting method.

As shown in Table 10, there was no uniform trend across all line-item costs between 2019 and 2020. Annual costs associated with insurance premiums and equipment lease or purchase payments each increased by more than a cent per mile (or by 22.5 and 5.6 percent, respectively) while tire and toll costs increased slightly. The single most important center for lower expenses came in fuel costs, which decreased by 19.8 percent, reflecting the national COVID-related drop in average diesel fuel prices detailed below.¹⁷

Driver wages increased from 2019 to 2020, but driver benefits declined by a greater amount, with the result that overall driver compensation declined slightly from 74.4 cents to 73.7 cents (Table 10). Due to the decrease in overall marginal costs, driver compensation nonetheless made up the highest-ever share of the total, at 44 percent (see Table 11). Driver bonuses, which are not calculated as part of the CPM data in Tables 8 and 9, once again showed increases this year.

Truck speeds were up in 2020 due to low traffic congestion during the COVID-19 pandemic.¹⁸ Therefore, drivers were able to cover more miles in each hour. The result is that per-hour marginal costs are disproportionately higher than per-mile marginal costs, as more miles get pushed into an hourly cost, compared to previous years. Carriers that were able to capitalize on these faster speeds – by covering more miles – will have generated more revenue but also had relatively higher marginal costs. But mileage was down for many carriers during the pandemic despite faster speeds: 55.4 percent of ATRI’s repeat respondents reported fewer IFTA miles in 2020 than in 2019. Carriers that were not able to operate more miles in 2020 will have had relatively lower marginal costs.

Trends in NPTC’s benchmarking report for private carriers were consistent with ATRI’s for-hire findings in five of the eight cost centers included in both reports. Table 10 compares the annual change in for-hire and private carriers’ marginal costs.

¹⁷ 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.

¹⁸ “GPS Data Shows Critical Truck Deliveries Continue Despite COVID-19,” American Transportation Research Institute, March 24, 2020, available online: <https://truckingresearch.org/2020/03/20/gps-data-shows-critical-truck-deliveries-continue-despite-covid-19-analysis-of-data-finds-unprecedented-performance-year-over-year/>.

Table 10: 2019-2020 Annual Change of Average Marginal Costs per Mile Among For-Hire and Private Fleets

Motor Carrier Costs	ATRI For-Hire Carriers	NPTC Private Carriers
<i>Vehicle-based</i>		
Fuel Costs	- 19.8%	- 20.0%
Truck/Trailer Lease or Purchase Payments	5.6%	- 9.1%
Repair & Maintenance	- 0.01%	7.4%
Truck Insurance Premiums	22.5%	22.2%
Permits & Licenses	- 20.0%	0.0% ¹⁹
Tires	10.3%	33.3%
Tolls	5.7%	(Not reported)
<i>Driver-based</i>		
Driver Wages	2.2%	0.0%
Driver Benefits	- 10.0%	- 10.3%
TOTAL	- 3.1%	3.6%

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. The largest single line-item cost continued to be driver wages, representing 34 percent of operating costs per mile. These results are shown in Table 11.

Table 11: Share of Total Average Marginal Cost, 2012-2020

Motor Carrier Costs	2012	2013	2014	2015	2016	2017	2018	2019	2020
<i>Vehicle-based</i>									
Fuel Costs	39%	38%	34%	26%	21%	22%	24%	24%	19%
Truck/Trailer Lease or Purchase Payments	11%	10%	13%	15%	16%	16%	15%	16%	17%
Repair & Maintenance	8%	9%	9%	10%	10%	10%	9%	9%	9%
Truck Insurance Premiums	4%	4%	4%	5%	5%	4%	5%	4%	5%
Permits & Licenses	1%	2%	1%	1%	1%	1%	1%	1%	1%
Tires	3%	2%	3%	3%	2%	2%	2%	2%	3%
Tolls	1%	1%	1%	1%	2%	2%	2%	2%	2%
<i>Driver-based</i>									
Driver Wages	26%	26%	27%	32%	33%	33%	33%	32%	34%
Driver Benefits	7%	8%	8%	8%	10%	10%	10%	10%	10%
TOTAL	100%								

¹⁹ The NPTC report rounds by cents rather than tenths of a cent, as in ATRI's Ops Costs, which is responsible for the larger divergence in percent change for permits and licenses costs.

Table 12 breaks down total marginal costs per mile by sector. Truckload carriers experienced a slight increase in costs per mile from 2019 to 2020 while other sectors experienced decreases. Specialized carriers spent 1.6 percent less per mile in 2020 than in 2019. Less-than-truckload carriers had the greatest decline in costs with a reported 7 percent decrease, but less-than-truckload respondents, as expected, skewed towards the largest fleet sizes and thus had lower marginal costs (see Table 14).

Table 12: Average Total Marginal Costs by Sector, 2011-2020

Sector	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
LTL	\$1.93	\$1.79	\$1.84	\$1.83	\$1.60	\$1.74	\$1.84	\$1.92	\$1.85	\$1.72
Specialized	\$1.79	\$1.73	\$1.67	\$1.85	\$1.72	\$1.83	\$1.95	\$2.02	\$1.85	\$1.82
TL	\$1.57	\$1.51	\$1.60	\$1.58	\$1.50	\$1.42	\$1.49	\$1.71	\$1.55	\$1.56

While the NPTC report segmented the industry by trailer type, rather than sector, comparisons can still be drawn between for-hire and private fleet trends. Bulk/Tank operations had the highest costs for private fleets at \$3.19 per mile, and Van operations (TL) were on the low end at \$2.52 per mile. Flatbeds had the lowest cost per mile among private fleets at \$2.33.

Regional Costs

Operating regions impact line-item costs differently, as Table 13 depicts. The Northeast once again had the highest marginal costs, at \$1.835 per mile. Costs decreased between 2019 and 2020 in every region except the Southeast. Some regional divergences in marginal costs, such as fuel and tolls, directly reflect differences in policy and infrastructure. Other divergences reflect more indirect or social differences between regions. Driver compensation, for example, is over 7 cents higher in the Northeast than in the Southwest. Individual line items tended to vary consistently with overall marginal costs in each region, so the line-item analyses above are applicable equivalently across regions.

Table 13: Average Marginal Cost per Mile by Region, 2020

Motor Carrier Costs	Midwest	Northeast	Southeast	Southwest	West
<i>Vehicle-based</i>					
Fuel Costs	\$0.305	\$0.341	\$0.298	\$0.305	\$0.297
Truck/Trailer Lease or Purchase Payments	\$0.265	\$0.300	\$0.271	\$0.248	\$0.280
Repair & Maintenance	\$0.155	\$0.196	\$0.129	\$0.118	\$0.119
Truck Insurance Premiums	\$0.078	\$0.115	\$0.078	\$0.083	\$0.087
Permits & Licenses	\$0.019	\$0.016	\$0.014	\$0.017	\$0.015
Tires	\$0.038	\$0.043	\$0.040	\$0.039	\$0.034
Tolls	\$0.039	\$0.055	\$0.033	\$0.032	\$0.024
<i>Driver-based</i>					
Driver Wages	\$0.581	\$0.603	\$0.545	\$0.549	\$0.530
Driver Benefits	\$0.179	\$0.166	\$0.196	\$0.141	\$0.189
TOTAL	\$1.659	\$1.835	\$1.604	\$1.532	\$1.575

Fleet Size

Based on U.S. DOT truck registrations, small carriers comprise the vast majority of fleets, with 97.5 percent of carriers having 20 or fewer power units.²⁰ The scale of these companies and their relatively lower bargaining power result in far higher costs per mile

²⁰ 2021 American Trucking Trends, American Trucking Associations, 2021.

for smaller fleets. Table 14 compares expenses for small carriers (100 or fewer power units) and large carriers (more than 100 power units) in 2020 and 2019.

Table 14: Average Marginal Cost per Mile by Fleet Size

Motor Carrier Costs	Small Carriers 2019	Small Carriers 2020	Large Carriers 2019	Large Carriers 2020
<i>Vehicle-based</i>				
Fuel Costs	\$0.439	\$0.326	\$0.370	\$0.293
Truck/Trailer Lease or Purchase Payments	\$0.278	\$0.307	\$0.262	\$0.248
Repair & Maintenance	\$0.195	\$0.174	\$0.133	\$0.128
Truck Insurance Premiums	\$0.107	\$0.122	\$0.060	\$0.068
Permits and Licenses	\$0.024	\$0.020	\$0.016	\$0.015
Tires	\$0.043	\$0.055	\$0.036	\$0.035
Tolls	\$0.037	\$0.037	\$0.032	\$0.036
<i>Driver-based</i>				
Driver Wages	\$0.534	\$0.580	\$0.543	\$0.556
Driver Benefits	\$0.138	\$0.117	\$0.166	\$0.196
TOTAL	\$1.794	\$1.738	\$1.618	\$1.575

As shown in Table 14, total marginal costs were 16.3 cents higher for small fleets than for larger fleets, with the largest differences in truck or trailer lease or purchase payments and driver benefits. Most industry trends in operational costs were consistent across small and large carriers. Fuel was the single largest source of lower costs for carriers of all sizes. Small and large carriers both increased wages for an overall increase in driver compensation. Large carriers increased benefits on average even though benefit costs in the sample declined overall, as explored further below. There were numerous individual exceptions in this category, however: 36 percent of the large carriers that reported operational costs for both 2019 and 2020 decreased benefits spending (compared with 50 percent of small carriers that reported operational costs for both years).

For the first time since Ops Costs data collection began, the average driver wages per mile for small fleets exceeded that for large fleets. Table 15 records the difference in wages between small and large fleets over the past six years. The only line-item for which large fleets paid more than small fleets was benefits per mile. At a difference of 8 cents, benefits constituted the greatest net disparity in operational costs. As a result, the overall compensation gap between small and large carriers grew: small carriers increased overall compensation by 3.7 percent while large carriers increased compensation by 6.1 percent.

Table 15: Company Driver Wages per Mile by Fleet Size

	2015	2016	2017	2018	2019	2020	Percent Change, 2015-2020
Small Carriers (<100 Power Units)	\$0.44	\$0.48	\$0.48	\$0.39	\$0.534	\$0.580	31.8%
Large Carriers (100+ Power Units)	\$0.47	\$0.53	\$0.54	\$0.42	\$0.543	\$0.556	18.3%
Difference	- \$0.03	- \$0.05	- \$0.06	- \$0.03	- \$0.01	+ \$0.02	

More detailed analyses of line items reveal crucial variations across fleet sizes by carrier type that are not captured by fleet size or carrier type alone.

Line-Item Analyses

Driver Compensation

As noted, 73.7 cents per mile – 44 percent of the total line-item cost – went toward driver pay and benefits in 2020. This total is down from an all-time high of 77.6 cents per mile in 2018, though it now represents the highest-ever share of marginal costs.

Total driver compensation was 22 percent higher among specialized carriers, which paid 81.2 cents per mile on average, than among truckload carriers, which paid 66.4 cents per mile on average.

Private fleet drivers have received higher compensation than for-hire drivers historically. In 2020, private fleet drivers were paid approximately \$1.42 per mile in combined wages and benefits. This figure is approximately twice that of ATRI’s for-hire combined driver wages and benefits. Private fleets that offered “guaranteed minimum compensation”

paid a maximum of 54.0 cents per mile – below the average for-hire driver wage of 56.6 cents per mile.

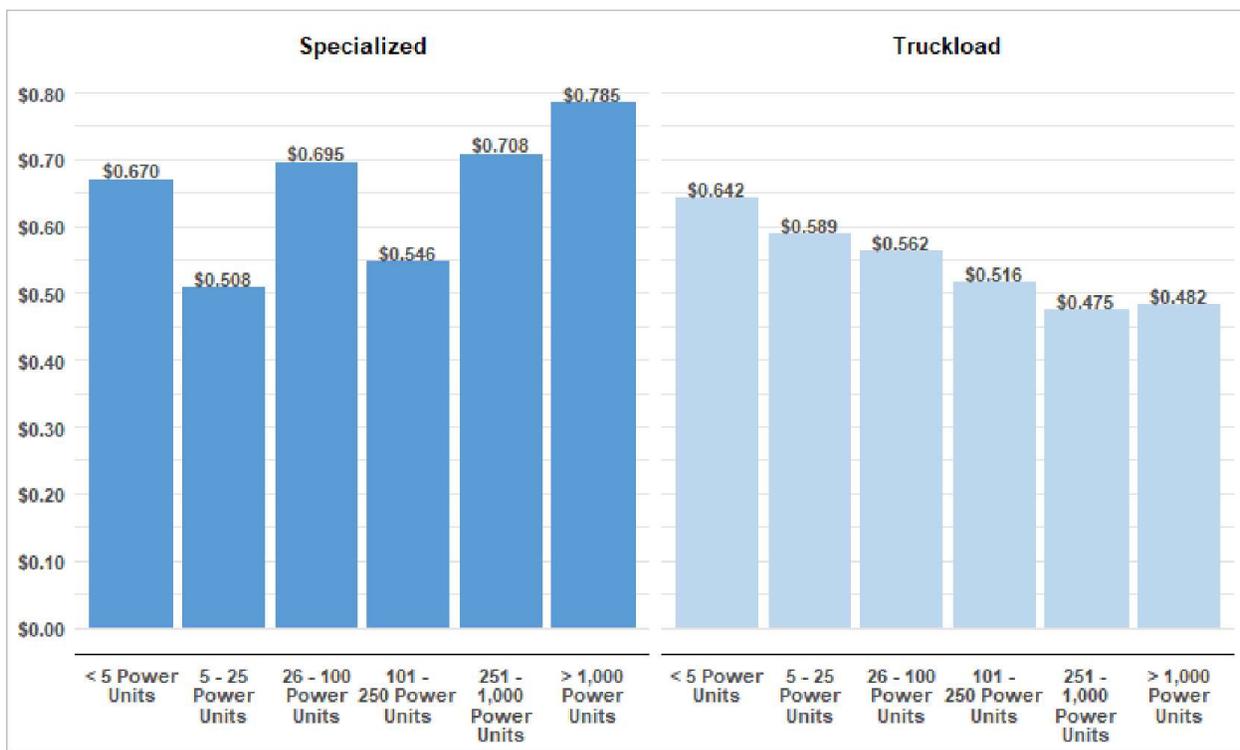
The more detailed breakdowns of wages and benefits that follow provide a more granular account of sector and fleet size impacts.

Driver Wages

Figure 5 details company driver wages per mile by sector and fleet size. On average, wages decreased with increasing fleet size among truckload carriers.

Specialized carriers’ wages varied more but trended slightly higher among the largest specialized carriers.

Figure 5: Driver Wages per Mile by Fleet Sector and Size



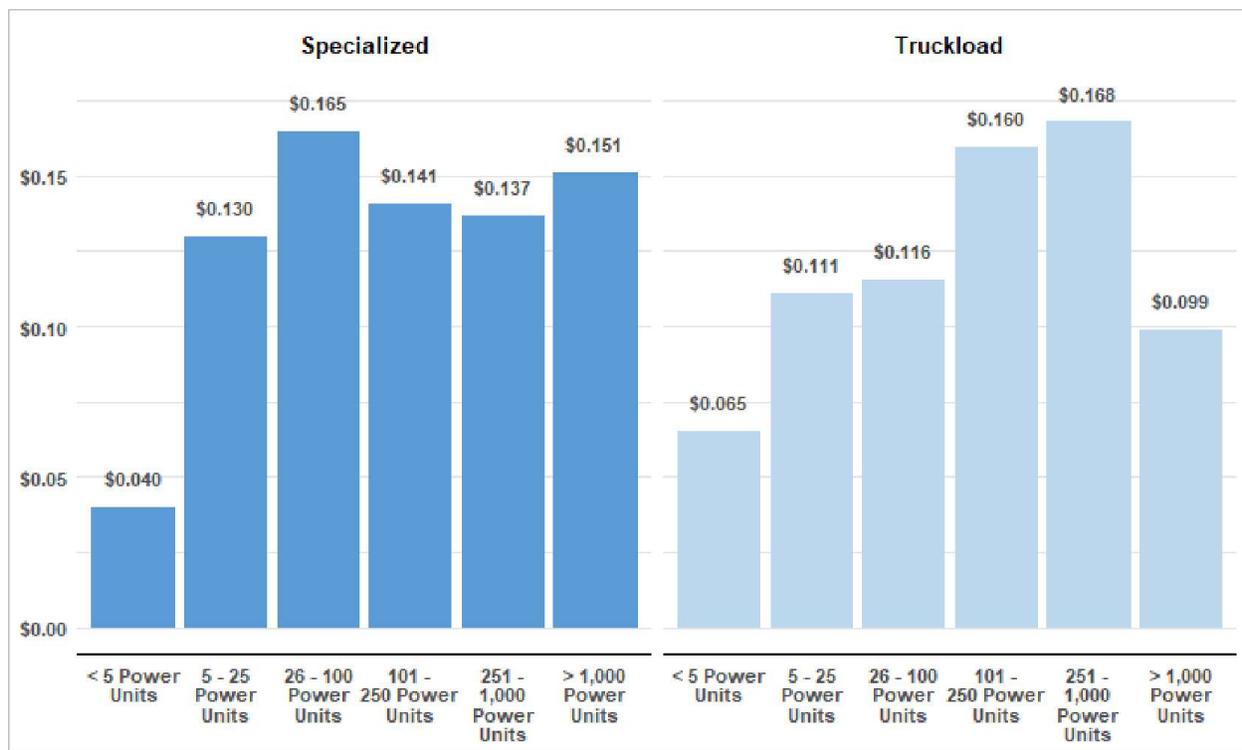
Less-than-truckload carriers are not included in this report’s fleet size breakdowns because ATRI did not receive sufficient responses from small and medium LTL carriers. LTL carriers with more than 100 power units paid 62.2 cents in driver wages per mile, falling midway between truckload and specialized carrier wages.

Driver Benefits

As Figure 6 shows, benefits in the truckload sector generally increase with fleet size among those carriers that offered benefits. Truckload carriers with more than 100 power units spent 39 percent more on benefits per mile than carriers with 100 or fewer power units did. Much of this difference, however, derives from fleets with fewer than 5 power units, meaning that many fleets of 5 to 100 power units offer benefits more comparable to large fleets.

Specialized carrier respondents spent more than truckload carriers on benefits per mile. It is also common for small fleets in the specialized sector to offer more in benefits when compared to truckload fleets of similar size. Specialized carriers with 5 to 25 power units approached benefits spending levels that truckload carriers only reached when exceeding 100 power units.

Figure 6: Driver Benefits per Mile by Fleet Sector and Size



LTL fleets with more than 100 power units paid 30.5 cents per mile in driver benefits, the highest of all respondent categories. Due to this benefits differential, LTL carriers had the highest total driver compensation costs per mile at 92.7 cents.

Smaller carriers of all sectors were also less likely than larger carriers to offer benefits. The benefits per mile figures in this report do not include carriers that did not offer

benefits. As with benefit spending, benefits are less common among fleets of fewer than 5 power units than the other two small fleet groupings.

Combined Wages and Benefits Analysis

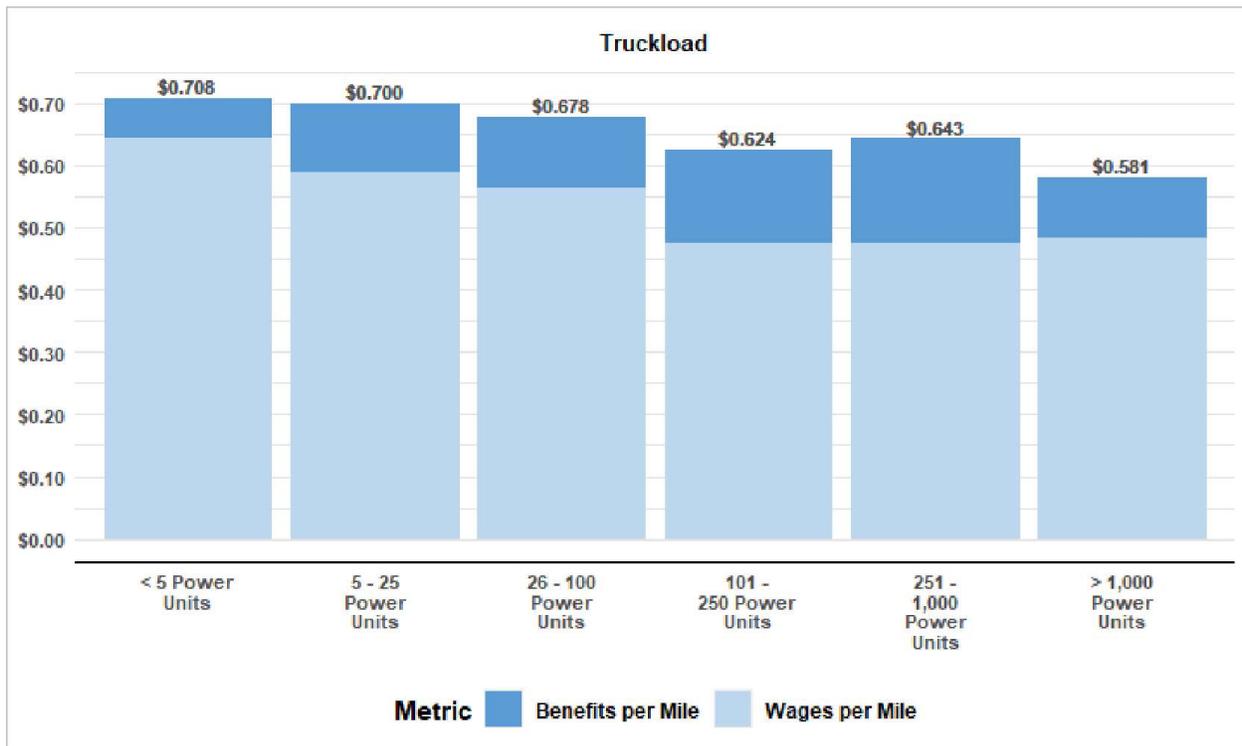
Under typical conditions, driver wage and benefit costs typically increase, or decrease, in tandem. In 2020, Ops Costs carriers spent less on benefits while spending more on wages. Overall driver compensation costs declined because the wage costs increase was less than the benefits costs decrease. And yet, driver compensation reached its highest-ever percentage share of total operational costs due to lower costs among the other line-items, especially fuel. Furthermore, driver compensation costs per hour increased due to the higher-than-usual 2020 average speed.

Part of this complex driver compensation phenomenon can be attributed to the truly extraordinary conditions in 2020. Driver layoffs at the beginning of the COVID-19 pandemic briefly created an employers' wage market by creating an artificial driver surplus that increased retention and depressed driver compensation.²¹ While hiring and compensation bounced back as the year progressed, the decline in driver benefits and in driver wages per mile (but not per hour) reflects this brief reversal.

As Table 16 shows, however, part of the behavior of driver wages and benefits in 2020 can be attributed to the emergence of two distinct trends for driver compensation among ATRI's respondents: large carriers tended to spend less on wages and more on benefits while small carriers tended to spend less on benefits and more on wages. Both trends have potential strengths in an ever-more-competitive labor market. Higher benefits offer drivers some financial security during unstable times and could secure higher retention given the gradual pay-out of benefits over time. Higher wages, by contrast, offer drivers greater immediate compensation, which could secure higher recruitment by appealing to a different motivator.

²¹ Oliver Feakins, "One Year Later: Covid 19 Causes Desperation in The Trucking Industry," Trucks.com, August 26, 2021, available online: <https://www.trucks.com/2021/08/26/truck-driver-recruiting-whiplash/>; Jim Stinson, "Driver turnover loses stability in hot trucking market," *Transport Dive*, Aug. 20, 2021, available online: <https://www.transportdive.com/news/staymetrics-tenstreet-truck-driver-turnover-retention/605218/>.

Figure 7: Truckload Driver Wages and Benefits per Mile by Fleet Size



Driver Benefits Breakdown

Respondents were asked to select which benefits they offered drivers from the following list:

- Health insurance
- Paid vacation
- 401K
- Dental insurance
- Paid sick leave
- Vision insurance
- Per diems
- Other benefits

Benefits offered to drivers varied among all carriers. According to the American Trucking Associations’ latest Driver Compensation report (based on pre-COVID-19 data), 95 percent of carriers offered health insurance while 92 percent of carriers offered

paid leave.²² ATRI’s respondents, as outlined in Table 16, mirrored these findings. Despite the decline in ATRI Ops Costs benefit cost per mile from 2019 to 2020, all benefit types were more commonly offered in 2020 than in 2019.

Table 16: ATRI Ops Costs Respondent Driver Benefits Offered

Benefit	Percent Offered
Health Insurance	93.3%
Paid Vacation	92.3%
Dental Insurance	78.8%
401K	76.9%
Vision Insurance	71.2%
Paid Sick Leave	47.1%
Per Diem	45.2%

Among companies that offered benefits to their drivers, 93.3 percent offered health insurance and 92.3 percent offered paid vacation. In contrast, only 45.2 percent of respondents reported offering per diems to drivers. Though the proportion of companies that offer this benefit increased from 39 percent in 2019, the relatively small percentage of per diems may be due to shorter trip lengths (Table 2) or less interest in this benefit. Per Diem has potential drawbacks. Despite providing drivers with tax savings, a lower taxable income may decrease retirement savings and a driver’s eligibility for home and car loans. Drivers may prefer benefits such as health insurance and retirement accounts over the larger paycheck that per diems provide. Changes in per diem rates implemented in 2020 did not seem to impact carriers’ willingness to offer the benefit since the proportion of carriers offering per diems increased from 2019 to 2020.²³

Contracted Drivers

Approximately 15.5 percent of the drivers utilized by ATRI respondents were contracted owner-operators. This percentage is two times higher than in 2018. Carriers not only utilized more owner-operators: under the pressures of high demand and limited capacity, they also paid owner-operators more. Table 17 shows the average paid per mile paid by carriers to owner-operators for each of the last six years.

²² Alan Karickhoff and Bob Costello, *ATA 2020 Driver Compensation Study*, American Trucking Associations, May 2020.

²³ Sally P. Schreiber, “IRS issues 2020-2021 per-diem rates,” *Journal of Accountancy*, Sept. 11, 2020, available online: <https://www.journalofaccountancy.com/news/2020/sep/irs-2020-2021-per-diem-rates.html>.

Table 17: Contracted Owner-Operator Pay per Mile

2020	2019	2018	2017	2016	2015
\$1.65	\$1.36	\$0.99	\$1.31	\$1.37	\$1.52

Driver Bonuses

In addition to pay and benefits, many carrier respondents offered bonuses to drivers. Carriers use performance bonuses to recruit new drivers, encourage safe driver practices and reduce driver turnover. The average annual amount for each bonus type from 2018 to 2020 is listed in Table 18.

Table 18: Single Driver Bonus Pay by Type

Bonus Type	2018	2019	2020	Annual Change (2019-2020)
Safety	\$1,238	\$1,373	\$1,597	16.3%
Starting	\$1,562	\$1,846	\$1,662	-10.0%
Retention	\$672	\$1,218	\$1,391	14.2%

The average starting bonus decreased from 2019 to 2020, but it is still higher than that of 2018. Carriers may be led to prioritize safety and retention bonuses over starting bonuses in response to the high and volatile turnover rates for new drivers over 2020 and 2021.²⁴ Additionally, safety and retention are performance-based whereas starting drivers are an unknown quantity in terms of safety and loyalty. Both safety and retention bonuses increased by greater percentages than starting bonuses decreased.

Average retention bonuses increased by 14.2 percent from 2019 to 2020, in keeping with the fact that the trucking industry ranked driver retention as the second-most critical issue in 2021 according to ATRI’s “Critical Issues in the Trucking Industry – 2021” report.²⁵ Retention bonuses dropped almost 20 percent from 2017 (\$836) to 2018 (\$672). The average retention bonus in 2019 was \$1,218, and it increased to \$1,391 in 2020. The increase in retention bonuses coincides with the general increase in driver starting bonuses, as recruiting and retaining qualified drivers is a top priority for fleets.

²⁴ Jim Stinson, “Driver turnover loses stability in hot trucking market,” *Transport Dive*, Aug. 20, 2021, available online: <https://www.transportdive.com/news/staymetrics-tenstreet-truck-driver-turnover-retention/605218/>.

²⁵ “Critical Issues in the Trucking Industry,” American Transportation Research Institute, Oct. 2021.

Safety bonuses increased 16.3 percent on average from 2019 to 2020. Companies are incentivized to invest in safety because crashes lead to increased insurance premiums, litigation costs and payouts to plaintiffs.²⁶ The average safety bonus amount for 2021 is the highest in the last three years, reflecting continued prioritization of safety in fleets of all sizes.

It is worth noting that safety bonuses, unlike starting bonuses, are recurring rather than one-time payouts. Recurring bonuses may be more attractive and better incentives for drivers. As recent surveys show, however, bonuses can backfire against carriers if drivers do not receive recurring bonus payments that they have come to expect as part of their compensation.²⁷ The shift to retention and safety bonuses nonetheless indicates that – despite the negative impacts of driver shortages – many carriers are shifting priority to reliable and safe drivers over short-term staffing fixes.

Looking Forward

Even though total tonnage hauled declined in 2020 due to COVID-19, driver and technician shortages persisted, and recent ATA estimates project that the driver shortage could exceed 160,000 drivers by 2030.²⁸ Recruiters worry that layoffs at the start of the pandemic may have lasting negative impacts on the driver shortage by dissuading potential drivers or making them more selective when choosing employers.²⁹ Dozens of carriers announced additional compensation increases in the first half of 2021, making it likely that average compensation will continue to rise.³⁰

Commercial drivers ranked compensation as their top industry concern in 2021, but as wages continue to rise it has become increasingly clear that other lifestyle or quality of life issues also play a significant role in attracting and retaining drivers.³¹ Recent surveys suggest that women drivers, a critically under-recruited segment of the industry workforce, consider work/life balance and family time even more important.³² The popularity of recreational drug use may also represent a growing deterrent to young

²⁶ Dan Murray, Nathan Williams, and Erin Speltz, *The Impact of Nuclear Verdicts on the Trucking Industry*, American Transportation Research Institute, June 2020.

²⁷ Jim Stinson, "What truckers want: Good pay, bonuses, hot showers," *Transport Dive*, Jan. 28, 2021, available online: <https://www.transportdive.com/news/WorkHound-Pay-Amenities-Truck-Drivers-2020/593827/>.

²⁸ "Driver Shortage Update 2021," American Trucking Associations, available online: https://www.trucking.org/sites/default/files/2021-10/ATA%20Driver%20Shortage%20Report%202021%20Executive%20Summary.FINAL_.pdf.

²⁹ Ibid.

³⁰ Truckers New Staff, "Driver Pay Roundup: Which carriers have increased compensation," *Truckers News*, Jun 28, 2021, available online: <https://www.truckersnews.com/jobs/article/15066010/driver-pay-roundup-which-carriers-have-increased-compensation>.

³¹ "Critical Issues in the Trucking Industry," American Transportation Research Institute, Oct. 2021.

³² "Stay Metrics Data Shows Top Driver Retention Issues Differ For Women and Men," Tenstreet, available online: <https://www.tenstreet.com/blog/driver-retention/stay-metrics-data-for-women-and-men>.

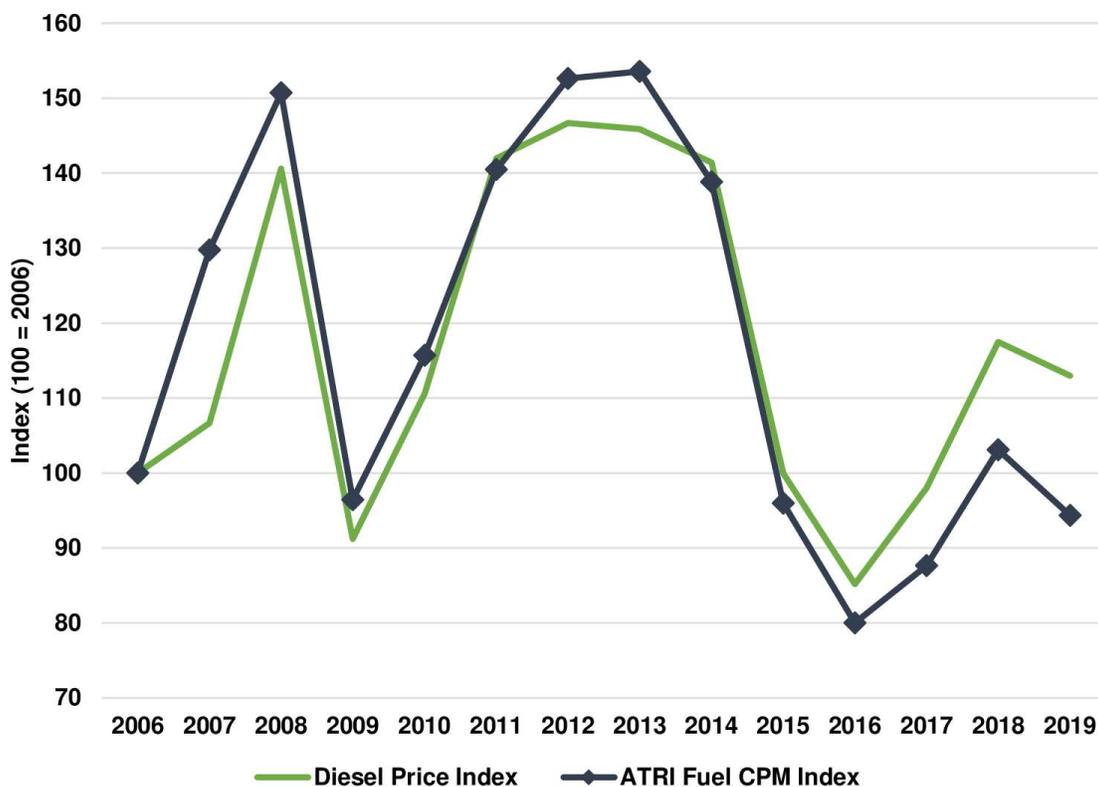
employees entering the industry.³³ In light of these various related concerns, renewed expansion of driver benefits – in addition to shifts in trip length and initiatives to improve driver amenities – may prove necessary to improve recruitment.

Fuel Costs

Fuel costs dropped dramatically – by 19.8 percent – from 2019 to 2020. While fuel remained the second highest line-item, this average decrease of almost 8 cents per mile was a crucial source of overall cost reduction: it allowed carriers to spend more in nearly every other cost center while keeping total per-mile marginal costs lower than in 2018 and 2019 (by 5 cents).

Declines in fuel line-item costs can be attributed to substantially lower diesel prices in 2020, which averaged approximately \$2.55 per gallon. ATRI’s fuel cost index, first published in the 2018 Ops Costs report, closely tracks with the average price of diesel fuel between 2008 and 2020 (Figure 8).

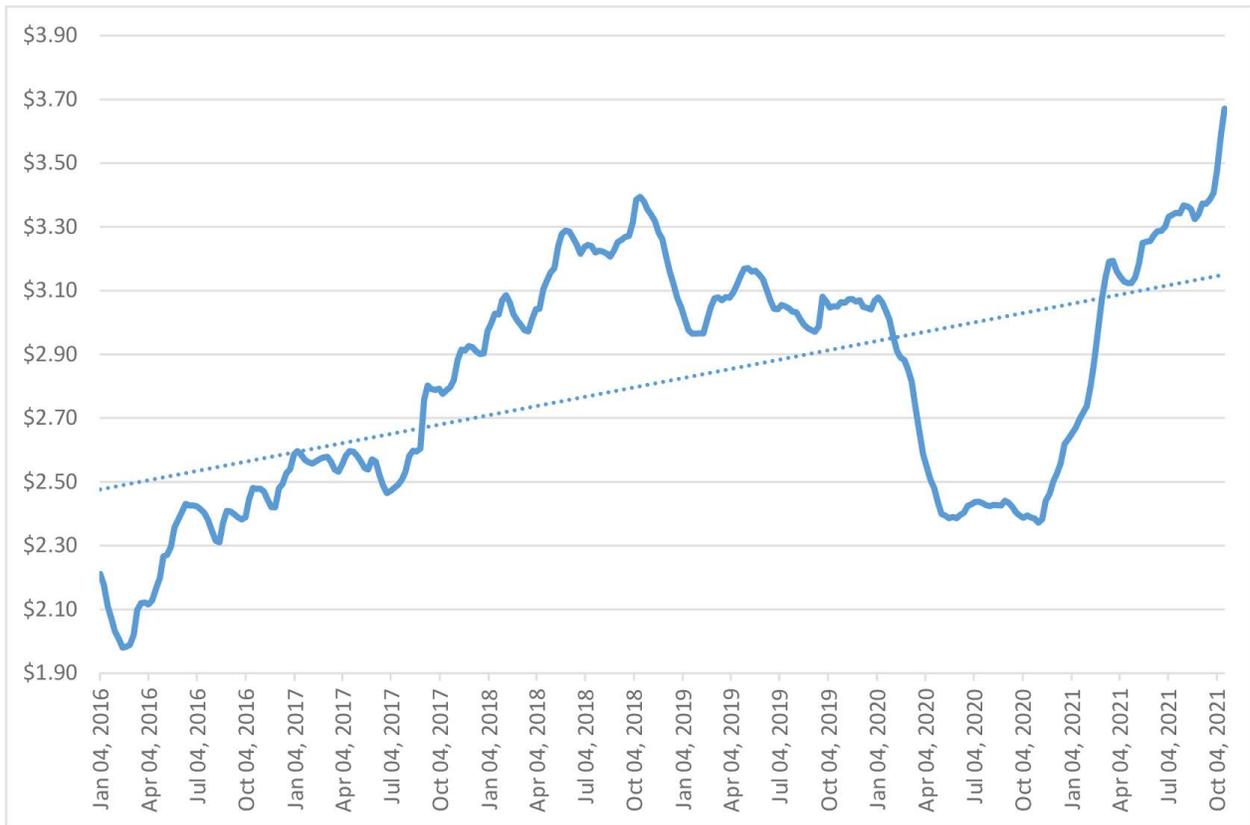
Figure 8: Diesel Prices and ATRI Fuel Cost per Mile Index, 2008-2020



³³ Joe Howard, “New Challenges, Familiar Issues Combine to Increase Driver Shortage, Costello Says,” *Transport Topics*, Oct. 25, 2021, available online: <https://www.ttnews.com/articles/new-challenges-familiar-issues-combine-increase-driver-shortage-costello-says>.

After remaining relatively stable around \$3.00 per gallon for much of 2019, fuel prices dropped rapidly at the start of the COVID-19 pandemic in spring 2020 and reached their lowest point of \$2.37 per gallon in November 2020. Figure 9 tracks this movement.³⁴ Prices rebounded during the remainder of 2020 and into 2021, which has seen consistently rising diesel prices so far.

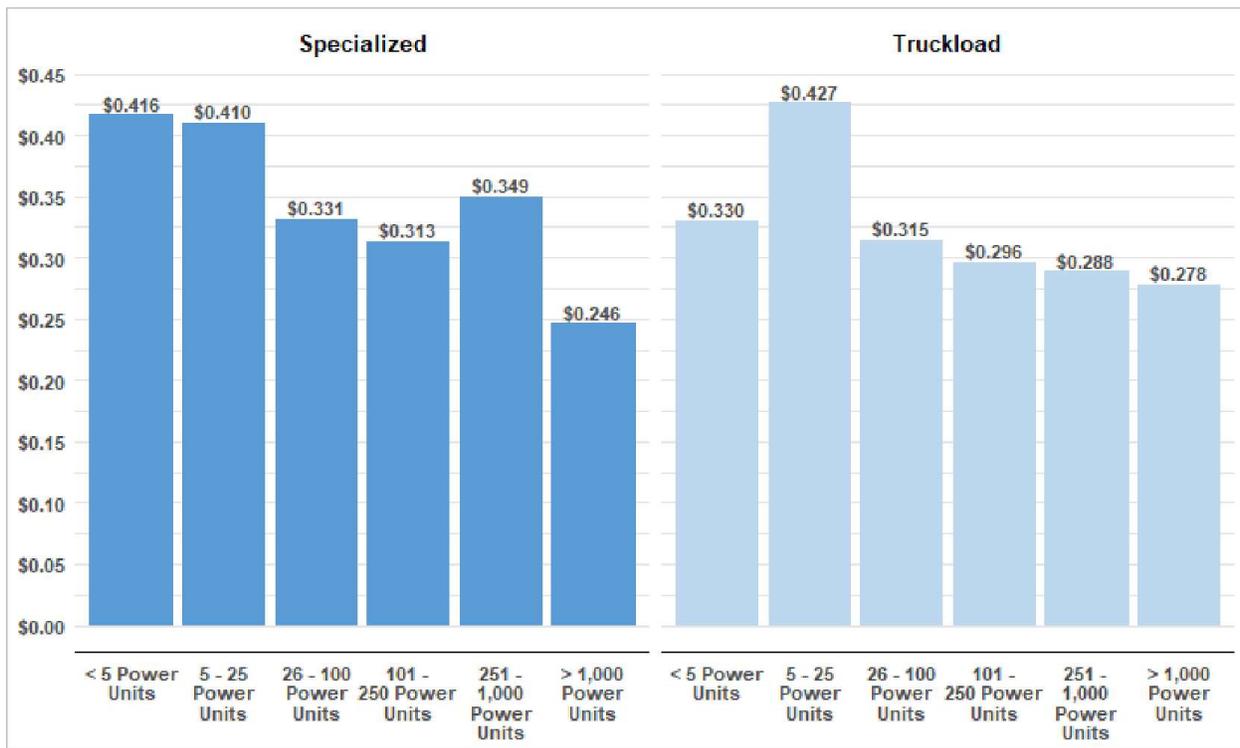
Figure 9: Monthly U.S. On-Highway Diesel Prices, 2016-2021



Several factors outside the oil market itself impact motor carrier fuel costs. As Figure 10 shows, large carriers spend less on fuel per mile in general. This economy of scale – a decline in costs in proportion to fleet size – is partly owed to the fact that large fleets are able to negotiate better pricing contracts with suppliers and partly owing to the fact that large fleets often operate newer, more fuel-efficient trucks than their smaller competitors.

³⁴ 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.

Figure 10: Respondent Fuel Costs per Mile by Fleet Sector and Size



Looking Forward

Diesel prices began to climb during the 2020 holiday season and continued to do so throughout 2021. At the time of printing, they exceeded 5-year highs. Industry experts expect crude oil and diesel prices to stabilize from late 2021 highs, with the prediction that 2022 overall averages will be consistent with 2021.³⁵ It is safe to conclude that cheap diesel fuel prices are a thing of the past, and carriers will need rebalance line-item priorities if they wish to keep marginal costs from jumping.

Equipment Costs

Equipment-related costs are directly related to many other line-item costs. Higher truck and trailer purchasing costs can lead to improved fuel economy per mile. New safety technologies can contribute significantly to equipment costs, but they may decrease crashes and thus prevent higher litigation and insurance costs. Newer trucks ostensibly would decrease maintenance costs by lowering maintenance frequency and parts costs, but the historical Ops Cost data shows that newer trucks are expensive to maintain and repair; diagnostics, parts and diesel technician labor costs are all increasing. Some

³⁵ "Short-Term Energy Outlook," U.S. Energy Information Administration, Oct. 13, 2021, available online: <https://www.eia.gov/outlooks/steo/>.

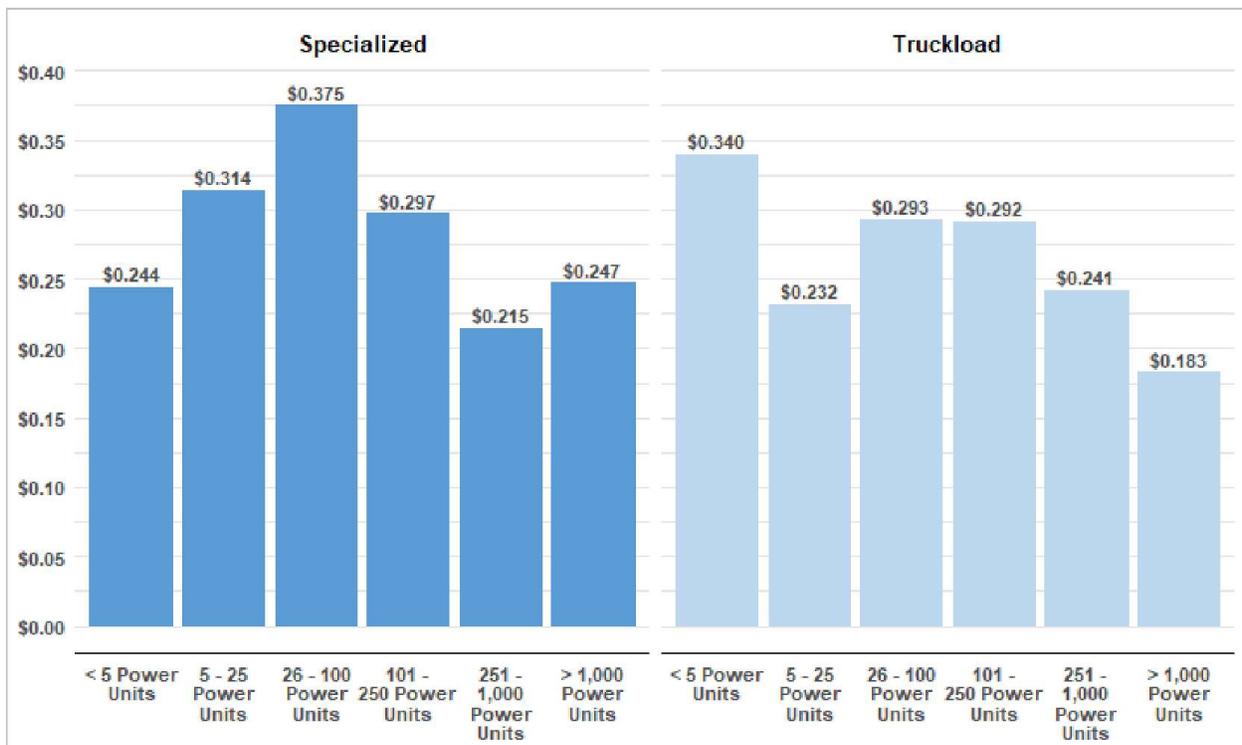
experts believe that the diesel technician shortage may ultimately surpass the truck driver shortage over time – particularly when autonomous and advanced safety technologies become pervasive.

Lease and Purchase Costs

With one exception, truck and trailer lease and purchase costs have risen every year of ATRI’s Ops Costs report; they now represent 17 percent of total marginal costs. Lease and purchase costs averaged 27.1 cents in 2020 across all carriers, a 5.6 percent increase from last year’s report. Equipment lease and purchase costs came within four cents of fuel costs, the second highest cost center, for the first time since the inception of ATRI’s Ops Costs report.

Figure 11 provides a more detailed account of respondent lease and purchase payment costs in 2020 by fleet size and sector. Specialized and truckload carriers differed in this cost center but not in any single consistent direction. Some fleet size averages were higher for specialized carriers but some fleet size averages were higher for truckload carriers, perhaps due to the fact that specialized carriers reported truck lifespans that are on average over a year longer than those of truckload carriers in 2020. Costs generally declined with fleet size.

Figure 11: Lease and Purchase Payment Costs per Mile by Fleet Sector and Size



Whereas small carriers paid almost three cents more per mile on lease and purchase payment costs than in 2019, however, large carriers paid approximately one cent less per mile than in 2019 (Table 14).

Repair and Maintenance

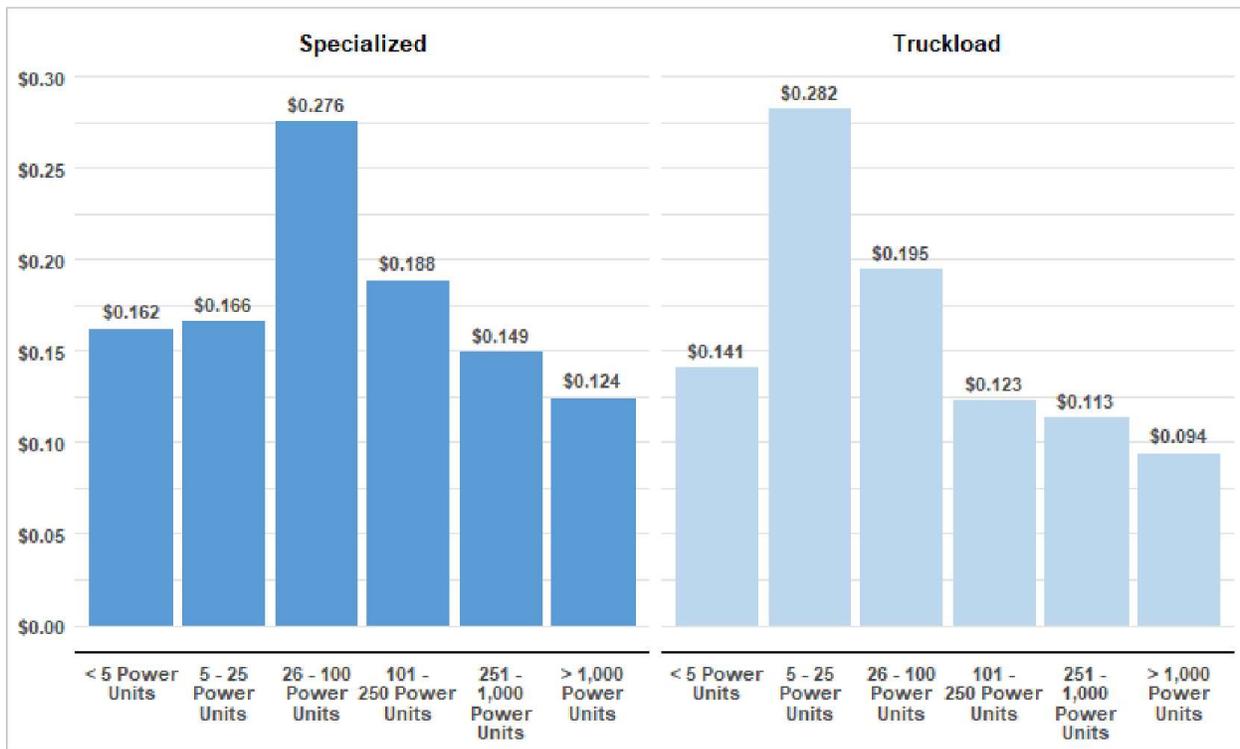
Average repair and maintenance costs declined slightly in 2020 to 14.8 cents per mile, their lowest level since 2013. This decrease may partly result from decreases in engine rebuilds and other maintenance activities typically associated with higher mileage or from increased truck and trailer purchase costs (which increased at a greater rate: see Table 10).

As Figure 12 details, specialized carriers pay more in repair and maintenance per mile at nearly every fleet size. In the specialized sectors, fleets with 26 to 100 power units have the highest repair and maintenance costs.

In the truckload sector, fleets with 5 to 25 power units have the highest maintenance costs.

Sector had less of an impact on maintenance costs than fleet size. In both truckload and specialized sectors, large carriers have the lowest repair and maintenance costs while mid-sized carriers encounter diseconomies of scale: costs that are higher in proportion to fleet size. These parallel cost curves indicate that carriers must outlay disproportionately more funds toward repair and maintenance before benefiting from economies of scale.

Figure 12: Repair and Maintenance Cost per Mile by Fleet Sector and Size



Small fleets experience higher costs in repair and maintenance, tires, fuel, and permits. Large fleets are typically able to secure lower marginal costs by operating their own maintenance shops. They are also able to take advantage of economies of scale through supplier contracts for discounted fuel, trucks, tires and onboard technologies – all of which allows them to decrease maintenance costs over time.

LTL fleets with more than 100 power units paid 25.6 cents per mile in equipment leases and purchases and 14.7 cents per mile in maintenance. In both cases, LTL costs were greater than those of truckload carriers but less than those of specialized carriers of equivalent sizes.

Private fleets spent 29 cents per mile on combined tractor-trailer repair and maintenance in 2020, slightly more than the for-hire weighted average of 27.1 cents. This difference may simply be due to the fact that the average fleet size of NPTC respondents was considerably smaller than that of ATRI respondents, skewing private carriers closer to the small for-hire carrier average of 30.7 cents per mile.

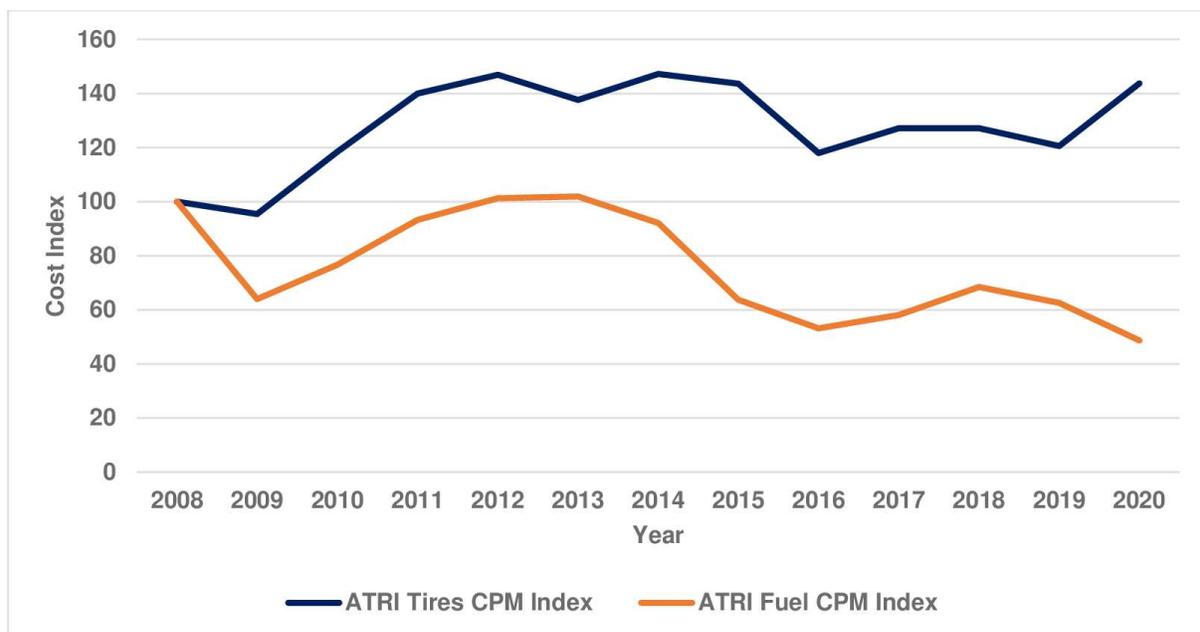
Tires

Tire prices are often related to fuel costs because oil is one of the key materials used to make tires. Figure 13 tracks this historical parallel. Even though oil prices declined in 2020, tire prices in 2020 increased to 4.3 cents from 3.9 cents in 2019. Many of the same logistical factors that contributed to higher prices for other equipment types also impacted tires.³⁶ Overall tire demand decreased as quarantine orders kept many Americans at home, but the commercial tire market did not experience such retraction as the trucking industry continued to deliver goods with regularity. Higher average truck speeds during the COVID-19 pandemic also affected tire replacement rates. Trade issues with southeast Asia also compounded supply chain issues and tire availability.

Differences in cargo weight and route type between sectors also impacted tire costs. On average, specialized carriers paid 6.5 cents per mile for tires, truckload carriers paid 5.5 cents, and less-than-truckload carriers paid 4.9 cents.

Fleets with more than 100 power units were able to secure better bulk pricing on tires, spending two cents less per mile than fleets with fewer than 100 power units.

Figure 13: ATRI Tire and Fuel Cost per Mile Indices, 2008-2020



³⁶ Mike Antich, "Forecast of Tire Prices in 2021," *Automotive Fleet*, Nov. 3, 2020, available online: <https://www.automotive-fleet.com/10129474/forecast-of-tire-prices-in-2021>.

Looking Forward

Ongoing parts shortages and heavy machinery supply chain issues have made it impossible for OEMs to keep up with high demand for trucks that were ordered in the latter half of 2020, and into 2021.³⁷ Prices for new Class 8 trucks have been on the rise through Fall 2021, as have the prices and average truck age in the used Class 8 market.³⁸ As such, marginal lease and purchase costs increased in 2021 among carriers that were able to make them. With no improvement to supply in sight, these costs are likely to increase again in 2022 even as manufacturers ramp-up manufacturing.

The average truck-tractor age is also likely to increase again in 2021 as demand continues to outpace new equipment supply. While repair and maintenance costs declined slightly in 2020, this cost center will likely see increases in 2021 and 2022 as carriers struggle to manage aging fleets and a shortage of technicians. If truck-tractor availability remains limited, it is possible that two separate trends may emerge within the industry: 1) carriers willing and able to secure new trucks will pay comparatively more for them versus 2) carriers that pay more in maintenance and repair because they either cannot or choose not to purchase new trucks. Maintenance costs will also likely increase as more traffic returns to the roads in 2021 and 2022. ATRI's FMI data shows that the average truck speed in 2021, while still higher than pre-pandemic years, decreased by 0.4 MPH from 40.62 to 40.24.

Commercial tire replacements continued to grow over 2021, with demand beginning to pressure supply.³⁹ Meanwhile, tire manufacturers are bracing for potential natural rubber shortages and continuing increases in oil prices for the remainder of 2021 and 2022.⁴⁰ Another potential source of higher tire costs is the reported growth of the specialized tire sector: carriers may look to offset rising diesel costs by turning to tires and equipment with better fuel economy. For these reasons, carriers should expect to expend more per mile on tires in the coming year once again, and they may wish to purchase tires further in advance.

³⁷ "Class 8 Sales Drop 10.4% in September," *Transport Topics*, Oct. 12, 2021, available online: <https://www.ttnews.com/articles/class-8-sales-drop-104-september>.

³⁸ "August Used Class 8 Average Price Soars, Sets Record," *Transport Topics*, Sept. 17, 2021, available online: <https://www.ttnews.com/articles/august-used-class-8-average-price-soars-sets-record>.

³⁹ Mike Manges, "Truck Tire Market Shifts Into High Gear – But Challenges Remain," *Modern Tire Dealer*, June 8, 2021, available online: <https://www.moderntiredealer.com/articles/31975-truck-tire-market-shifts-into-high-gear-but-challenges-remain>.

⁴⁰ Sebastian Blanco, "Up Next, a Possible Tire Shortage," *Card and Driver*, May 2, 2021, available online: <https://www.caranddriver.com/news/a36312124/tire-shortage-possible/>.

Truck Insurance

Truck insurance premiums reached 8.7 cents per mile in 2020, a new all-time high in ATRI's Ops Costs report. Recent ATRI research has shown that nuclear verdicts in the trucking industry are increasing dramatically over time and that the accumulation of smaller verdicts can be equally costly.⁴¹ As forthcoming ATRI research on "The Impacts of Rising Insurance Costs on the Trucking Industry" shows, insurance premiums continue to go up for carriers of all sectors, fleet sizes, and locations despite the fact that most carriers are increasing liability exposure by raising deductibles and lowering excess coverage levels.⁴²

Insurance premium costs per mile remain almost twice as high for smaller carriers at 12.2 cents per mile versus larger carriers at 6.8 cents, and the insurance cost disparity between large and smaller carriers increased slightly from 2019. Large fleets have access to more risk management strategies than small fleets. These strategies include insurance captives and Self-Insurance Retentions (SIRs), which ATRI's forthcoming "The Impacts of Rising Insurance Costs on the Trucking Industry" report suggests may be growing in response to high insurance premiums.⁴³

The cost of truck insurance premiums and claims also increased for private carriers in 2020 to 11 cents per mile. This figure falls between the averages for small and large for-hire fleets, consistent with the fact that NPTC's respondents were smaller on average than ATRI's. Private fleets, as units of larger companies, have umbrella policies and other strategies for hedging insurance costs; conversely, private fleets often have access to more capital, allowing them to maintain higher coverage levels, especially since private fleets are not expected to be a profit center and the avoidance of large lawsuits takes precedence over cost-cutting.

Insurance premiums represent only one component of a carrier's total cost of risk. Expenses related to litigation, safety technology, safety training, out-of-pocket costs, and even driver compensation are all significant components of the total costs of risk as well. Carriers can decrease the total cost of risk by increasing outlays in some cost centers in order to avoid subsequent, higher expenses in others. Carriers pay for incidents in two ways: premiums and out-of-pocket costs. These two line-items are particularly closely related because lower premiums generally come with higher deductibles and/or lower total coverage, which translates to both higher risk and out-of-pocket expenses. Since these two line-items are a trade-off, they should be compared

⁴¹ Claire Evans and Alex Leslie, *The Impact of Small Verdicts and Settlements on the Trucking Industry*, American Transportation Research Institute, November 2021; Dan Murray, Nathan Williams and Erin Speltz. *Understanding the Impact of Nuclear Verdicts on the Trucking Industry*, American Transportation Research Institute, June 2020.

⁴² Claire Evans and Alex Leslie, *The Impacts of Rising Insurance Costs on the Trucking Industry*, American Transportation Research Institute, expected release February 2022.

⁴³ Ibid.

together. Figure 14 shows average combined premium and out-of-pocket costs per mile by fleet size.

Figure 14: Insurance Premium and Out-of-Pocket Costs per Mile by Fleet Size



The smallest carriers – with fewer than five power units – pay less in insurance premiums per mile than carriers with 5 to 25 power units, potentially because their fleets are so small that crashes are rare. Only a small minority of ATRI respondents in this category reported any out-of-pocket incident costs in 2020.

Carriers with 251 or more power units paid twice as much in out-of-pocket incident costs per mile on average than carriers with 250 or fewer power units.

Respondent fleets with 5 to 25 power units paid the highest combined insurance premium and out-of-pocket costs per mile, in large part because they paid the highest premium costs per mile.

Fleets with 251 to 1,000 power units spent approximately the same amount per mile on combined premium and out-of-pocket costs as fleets with 26 to 100 and 101 to 250 power units. This was because even though fleets with 251 to 1,000 power units had 25 percent lower premiums on average than fleets with 26 to 250 power units, they had over 50 percent higher out-of-pocket costs than fleets with 26 to 250 power units.

Fleets with more than 1,000 power units spent approximately the same amount on out-of-pocket costs per mile as fleets with 251 to 1,000 power units (4.2 versus 4.1 cents respectively), but they were able to secure premiums that amounted to 34 percent lower costs per mile.

Looking Forward

Insurance industry experts interviewed by ATRI expressed cautious hope that rate increases might moderate over the coming year. These hopes stem in part from the fact that positive changes continue, albeit gradually, in the field of tort reform. In the last year, some of the most litigious states in the country passed tort reform legislation. These included laws that mitigate “phantom damages” in Iowa and Montana, punitive damages in Missouri, recoverable past medical expenses in Louisiana, the “seatbelt gag rule” in West Virginia, and lawsuits without findings of liability in Texas.⁴⁴ The litigation landscape remains uneven, however, and carriers operating in the Northeast and West encounter markedly higher insurance costs per mile (see Table 13).

Conditions in the insurance industry cast uncertainty on any optimistic projections. Commercial auto insurers experienced significant improvement in profitability during 2020, but carrier access to higher coverage levels became much more challenging as insurers’ “net written premiums” declined.⁴⁵ While traffic and truck mileage decreased in 2020, premiums could continue to increase at rates unfavorable to carriers in 2021 and 2022 as traffic, crashes and thus insurance claims return to normal levels. While 2021 is currently on pace to have more crashes than 2020, it is also on pace to have fewer crashes than 2018 and 2019.⁴⁶

Carriers are faced with increasingly difficult decisions for mitigating costs without risking overexposure as insurance rates continue to increase. Under these circumstances, carriers are showing more and more willingness to stake their own risk on safety technology investments and driver development programs. As such, carriers that can

⁴⁴ “2020 State Tort Reform Enactments,” American Tort Reform Association, Oct. 2020, available online: <https://www.atra.org/wp-content/uploads/2020/10/2020-State-Tort-Reform-Enactments.pdf>. Jim Stinson, “Texas trucking officials score tort reform win,” *Transport Dive*, June 18, 2021, available online: <https://www.transportdive.com/news/Texas-trucking-HB-19-tort-reform-ATA-nuclear-verdict/601996/>. “West Virginia Legislative Session Produces Batch of Legal Reform Bills Signed by Gov,” American Tort Reform Association, April 21, 2021, available online: <https://www.atra.org/2021/04/21/west-virginia-legislative-session-produces-batch-of-legal-reform-bills-signed-by-gov/>. “Liability Reform Bills Prioritized and Signed in Montana,” American Tort Reform Association, May 7, 2021, available online: <https://www.atra.org/2021/05/07/liability-reform-bills-prioritized-and-signed-in-montana/>.

⁴⁵ “Commercial Auto Results Aided by Rising Rates, Reduction in Driving,” Fitch Ratings, May 12, 2021, available online: <https://www.fitchratings.com/research/insurance/commercial-auto-results-aided-by-rising-rates-reduction-in-driving-12-05-2021>.

⁴⁶ FMCSA Crash Summary Report, Sept. 24, 2021, available online: <https://ai.fmcsa.dot.gov/CrashStatistics/rptSummary.aspx>.

afford to do so will transfer more of their total cost of risk to equipment and compensation cost centers.

Other Marginal Costs

Tolls

The toll cost per mile increased from 3.5 cents to 3.7 cents per mile in 2020. Given that most respondents reported lower or stable IFTA mileage in 2020 compared to 2019, this increase is likely reflective of continually increasing truck toll rates.⁴⁷ Tolls are highly concentrated in the Northeast, and account for 5.5 cents per mile for fleets operating in that region (Table 13). Unique among line-item costs, tolls have an equal impact on small and large carriers (Table 14).

Permits and Special Licenses

Carriers that obtained permits and special licenses in 2020 paid 1.6 cents per mile for them. These costs are down from 2019 and considerably lower than the highs observed in the early 2010s. Specialized carriers, which often haul oversized, hazardous or otherwise specialized materials, requested the majority of permits and spent the most on them, at 3.8 cents per mile.⁴⁸ Given that specialized carriers on average spent less on permit and special license costs in 2020, it is likely that some of these fees were waived under exceptional COVID conditions.

CONCLUSION

The COVID-19 pandemic made 2020 a historically unprecedented year for the global economy. Despite encountering numerous logistical difficulties, the trucking industry performed with admirable consistency, and so did its marginal costs. Carriers were able to take advantage of some unexpected windfalls, such as unusually low fuel costs and highway traffic, to offset heightened expenses in other areas.

- Fuel costs dropped 7.6 cents from 38.4 cents in 2019 to 30.8 cents per mile in 2020, a critical source of lower costs as carriers expended more on other cost centers.
- Wages increased while the benefits costs per mile decreased; average compensation was slightly lower than 2019 but represented a greater share of overall marginal costs.
- Truck and trailer lease or purchase payments increased to an all-time high of 27.1 cents per mile – over 40 percent higher than 10 years ago, while repair and maintenance costs decreased for the first time in three years.

⁴⁷ Jeffery Short and Johnathan Peters. *A Financial Analysis of Toll System Revenue: Who Pays and Who Benefits*, American Transportation Research Institute, Jan. 2020.

⁴⁸ This average includes outliers, as several specialized carriers pay significantly more per mile than the industry average on permits and licenses.

- Insurance premiums reached an all-time high cost of 8.7 cents per mile.

This year's Ops Costs report highlighted cost differentials between fleet sizes and sectors to a greater degree than ever before. The results show that fleets with 5 to 100 power units often encountered diseconomies of scale in cost centers like repair and maintenance as well as combined premiums and out-of-pocket costs that increased their expenses relative to larger carriers and owner-operators alike. Though fleets with fewer than 5 power units have less purchasing power, they offset this disadvantage by spending less in several cost centers, such as insurance premiums and repair and maintenance, than fleets with 5 to 100 power units. Small fleets in general also benefitted from an unusually strong spot market as demand exceeded larger fleets' capacity.

When it came to driver compensation, carriers pursued two distinct strategies for navigating a competitive labor market: small fleets offered comparatively higher wages while large fleets offered comparatively higher benefits.

With costs increasing in diesel fuel, driver compensation and equipment purchase/leasing, carriers are likely to face higher operational costs in 2021 and 2022. Ongoing shortages and supply chain issues will present new challenges to the industry. Meanwhile, rising traffic levels and the decline in average truck speed from 40.62 in 2020 to 40.24 in 2021 MPH mark the gradual return of less desirable pre-pandemic conditions.

Nevertheless, ATRI's 2020 Operational Costs findings indicate several reasons for optimism. Due to the COVID-19 pandemic, 55.4 percent of ATRI's repeat respondents experienced an unanticipated decline in IFTA mileage. Costs based on long-term contracts set prior to the pandemic – such as locked-in insurance rates and truck purchasing agreements – may have been slightly inflated in 2020 as a result. As such, the increase in marginal costs in 2021 and 2022 may be less severe than anticipated. By contrast, some long-term contracts made during 2020 will result in below-market expenses in 2021, and carriers will have the opportunity to build on low incident costs in 2020 by implementing new safety technologies and procedures.

Carriers also have strong opportunities to increase net revenues in 2021 and 2022 as capacity-related pricing rates exceed cost rates. After summer declines, truck tonnage increased in August and September of 2021.⁴⁹ Spot rates and contract rates have continued to climb steadily throughout 2021 across all sectors.⁵⁰ Research from Deloitte and McKinsey both suggest that consumer spending on services will continue to recover over Q4 of 2021 and 2022 and that consumer spending on goods will remain

⁴⁹ "ATA Truck Tonnage Index Increased 2.4% in September," American Trucking Associations, Oct. 19, 2021, available online: <https://www.trucking.org/news-insights/ata-truck-tonnage-index-increased-24-september>.

⁵⁰ Rate data drawn from DAT, available online: <https://www.dat.com/industry-trends/trendlines>.

high.⁵¹ The National Retail Federation calculated that sales were up 14.5 percent in the first 9 months of 2020 and projects record-high holiday spending.⁵²

⁵¹ Jaana Remes, James Manyika, Sven Smit, Sajal Kohli, Victor Fabius, Sundiatu Dixon-Fyle, and Anton Nakaliuzhnyi, "The consumer demand recovery and lasting effects of COVID-19," McKinsey & Company, March 17, 2021, available online: <https://www.mckinsey.com/industries/consumer-packaged-goods/our-insights/the-consumer-demand-recovery-and-lasting-effects-of-covid-19>; Akrur Barua, Lester Gunnion, and Daniel Bachman, "Consumer spending forecasts: Services find their way back after a forgettable 2020," Deloitte Insights, Oct. 27, 2021, available online: <https://www2.deloitte.com/us/en/insights/economy/spotlight/consumer-spending-forecast-2021.html>.

⁵² "September Retail Sales Grew as Delta Variant Favored Spending on Goods Over Services," National Retail Federation, Oct. 15, 2021, available online: <https://nrf.com/media-center/press-releases/september-retail-sales-grew-delta-variant-favored-spending-goods-over>.

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 2020** 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 only.

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 any costs that were equal to zero in 2020, please explicitly enter "0" in the submission box.

The data collection form can be completed online at: <https://www.research.net/r/ATRI-2021-Ops-Cost> or by completing this form and returning it via email to dmurray@trucking.org or via fax to 770-432-0638.

All respondents submitting a completed, usable data collection form will receive an *advance* copy of the 2021 *Operational Costs of Trucking* report.

If you have any questions please contact Dan Murray at dmurray@trucking.org or 651-641-6162 ext. 3.

CONTACT INFORMATION

- 1) 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 Name
Street Address	Position/Title
City, State	Zip
Phone	Email

DEMOGRAPHIC DATA

2) What was your fleet’s IFTA mileage in 2020? (Include Owner-Operator miles reported for IFTA purposes)

3) Please indicate your company’s annual trucking-related revenue in 2020. (Check one. Exclude brokerage/logistics revenue)

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

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

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

5) 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"/> Industrial Gases |
| <input type="checkbox"/> Automotive Parts | <input type="checkbox"/> Intermodal Containers |
| <input type="checkbox"/> Construction/Building Materials | <input type="checkbox"/> Livestock |
| <input type="checkbox"/> Finished Vehicles | <input type="checkbox"/> Manufactured Goods |
| <input type="checkbox"/> Food Products – Refrigerated | <input type="checkbox"/> Mine Ores |
| <input type="checkbox"/> Food Products – Non-Refrigerated | <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"/> Other (please specify): _____ |

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

- Yes No Don't Know

7) If you answered yes to previous question, please provide the maximum speed setting and the percent of your fleet governed at that speed.

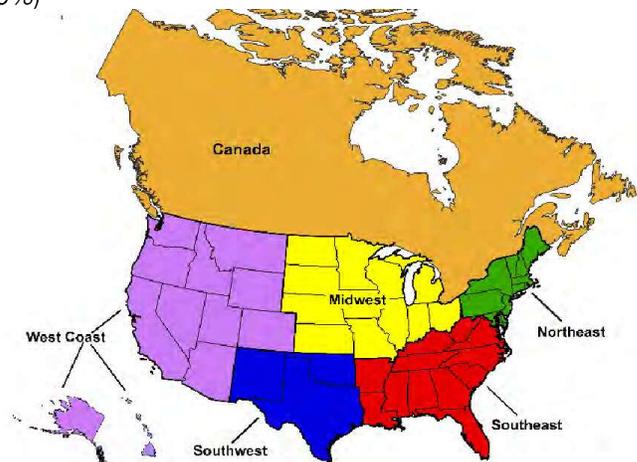
Maximum Speed (MPH)	Percent of Trucks

8) Based on your fleet's IFTA miles, what percentage of your drivers' trips were in the following categories in 2020? (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)	
Total	100%

9) Please estimate the percentage of miles traveled by your fleet (include Owner-Operator miles) in the following regions during 2020. (Total must sum to 100%)

Region	% of Total Miles
Midwest	
Northeast	
Southeast	
Southwest	
West	
Canada	
Total	100%



10) How many drivers did your company utilize in 2020 for each type of equipment?

	Company Driver / Company Truck	Leased Driver / Company Truck	Owner-Operator
Truck-Tractor – Solo Driver			
Truck-Tractor – Team Drivers			

TRUCK-TRACTOR DATA ONLY

11) What was your fleet size, average age and average number of miles traveled (including Owner-Operators) in 2020?

	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):		

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

_____ LBS

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

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

14) 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 previous question, 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):	

15) Based on your fleet's IFTA data for **TRUCK-TRACTORS**, what was your average fuel economy in miles per gallon (MPG) for 2020 (i.e. real miles driven divided by gallons of fuel purchased)?

_____ MPG

16) What percent of your total annual **TRUCK-TRACTORS** miles were non-revenue/dead-head miles in 2020?

_____ % of total 2020 miles

17) What was your total out-of-pocket expense for incident costs below your deductible or Self-Insurance Retention (S.I.R.) in 2020?

18) Please list the average pay and benefits per mile (\$/mile) or the average pay and benefits per hour (\$/hour) for **TRUCK-TRACTOR SOLO** drivers in 2020. (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 ¹			
Benefits per Mile ²			
Pay per Hour ¹			
Benefits per Hour ²			
Other Compensation Method (please specify):			

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

² 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 previous question:

- | | | |
|---|--|---|
| <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 | _____ |

19) Do you provide any additional financial incentives and/or bonus pay for **TRUCK-TRACTOR SOLO** 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 2020? (i.e. Safety Bonus: \$2,000. Please report as an annual average paid per driver. Please only include drivers who received bonuses in 2020.)

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):			

20) Please list your 2020 **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 enter N/A.)*

Expense Type	2020 Cost per Mile
Repair & Maintenance <ul style="list-style-type: none"> • Include R&M costs, including R&M labor and roadside repairs, for all trucks and trailers; do not include tire-related expenses. 	\$
Tires <ul style="list-style-type: none"> • Include all purchase, maintenance, re-treading, and replacement costs. 	\$
Fuel Costs <ul style="list-style-type: none"> • Include all transportation fuel. <u>Do not</u> include fuel surcharge revenue. 	\$
Truck Insurance Premiums <ul style="list-style-type: none"> • 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. 	\$
Truck and Trailer Lease or Purchase Costs <ul style="list-style-type: none"> • Include all payment costs, and interest and fees associated with the payments. <u>Do not</u> include depreciation tax benefits. 	\$
Tolls <ul style="list-style-type: none"> • If you paid tolls in 2020, what were your costs per mile (total annual toll costs/annual IFTA miles)? If you had no toll costs in 2020, please enter 0. 	\$
Permits & Special Licenses <ul style="list-style-type: none"> • Include permits for oversize/overweight, HazMat, etc. DO NOT include truck registration or CDL costs. 	\$
Other <ul style="list-style-type: none"> • Please specify: _____ 	\$
Total	\$

Thank you! We greatly appreciate your participation.

Please return completed data collection forms to ATRI via fax **770-432-0638** or email DMurray@trucking.org.



950 N. Glebe Road
Arlington, VA
(703) 838-1966
atri@trucking.org
TruckingResearch.org