

An Analysis of the Operational Costs of Trucking: 2016 Update

September 2016



Prepared by the American Transportation Research Institute



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LIST OF ACRONYMS

ATA	American Trucking Associations
ATRI	American Transportation Research Institute
BLS	Bureau of Labor Statistics
CFO	Chief Financial Officer
CNG	Compressed Natural Gas
CPH	Cost per Hour
CPM	Cost per Mile
CSA	Compliance, Safety, Accountability
EIA	Energy Information Administration
ELD	Electronic Logging Device
FHWA	Federal Highway Administration
FMCSA	Federal Motor Carrier Safety Administration
FPM	Freight Performance Measures
HOS	Hours-of-Service
LNG	Liquefied Natural Gas
LTL	Less-than-Truckload
MC	Marginal Cost
MPH	Miles per Hour
NDA	Non-Disclosure Agreement
P&D	Pick-up and Delivery
RAC	Research Advisory Committee
R&M	Repair and Maintenance
TL	Truckload
VMT	Vehicle Miles Traveled

INTRODUCTION

Since 2008 the American Transportation Research Institute (ATRI) has annually published the report, *An Analysis of the Operational Costs of Trucking*, to provide more accurate marginal cost data on motor carrier operations. In the literature review for the inaugural study in 2008, ATRI identified previous research that reported cost calculation findings ranging from \$22 per hour to over \$370 per hour¹; figures which were considered unreasonably high or low by many in the trucking industry. Additionally, some of these studies calculated costs using highly subjective “value-of-time” calculations that may subjectively extend far beyond direct costs – resulting in dramatic variability for industry costs depending on the metrics used.

Consequently, ATRI undertook research to document and quantify motor carriers’ key operational costs, stratified by fleet size, sector, and region of the country. The goal of the research was to accurately identify and promulgate current operational costs based on real-world data provided directly from motor carriers. The resulting analyses could then be used by both motor carriers as a high-level benchmarking tool, and by public sector agencies for various transportation impact assessments.

This research was initially identified as a top research priority by ATRI’s Research Advisory Committee (RAC).² The RAC sought to better inform policymakers on the impact that new and potentially inefficient transportation funding strategies could have on freight movement. The trucking industry, which is heavily reliant on the 4 million miles of public roadway in the United States³, has a vested interest in efficient, effective, and equitable funding and maintenance of the nation’s transportation system.

Since its original publication in 2008, ATRI has received over 10,000 requests for the *Analysis of the Operational Cost of Trucking* reports. Based on this continual high demand for the research, ATRI updates the “ops cost” data on an annual basis, making minor adjustments and improvements to the data collection methodology as needed. Over the years, these improvements have led to a more streamlined process for annually obtaining sensitive and proprietary fleet cost data. This report includes the most recent 2015 cost data.

¹Trego, Todd. *An Analysis of the Operational Costs of Trucking*. American Transportation Research Institute. Arlington, VA. (2008)

² The American Transportation Research Institute (ATRI) Research Advisory Committee (RAC) is comprised of industry stakeholders representing motor carriers, trucking industry suppliers, labor and driver groups, law enforcement, federal government, and academics. The RAC is charged with annually recommending a research agenda for the Institute.

³ Table HM-20 *Public Road Length – Miles by Functional Class*. Highway Statistics Series 2014. Federal Highway Administration, United States Department of Transportation. Available online: <http://www.fhwa.dot.gov/policyinformation/statistics/2014/pdf/hm20.pdf>

RESEARCH OBJECTIVE

This research is predicated on the need for current and accurate trucking industry operational cost data. Previous iterations of this research by ATRI ranging from 2008 through 2015⁴ have resulted in more precise cost metrics over the years. Although previous studies conducted by consultants and academic entities have attempted to quantify these costs, the use of highly subjective value-of-time metrics produced immensely inconsistent results that were considered inaccurate or political by industry stakeholders. These disparate results can be detrimental to both the trucking industry and public sector transportation planners seeking objective, standardized data. For instance, lower operational cost estimates have been used to downplay the value or significance of certain transportation investments, while unreasonably high figures have been used to minimize the financial impact that innovative financing initiatives have on trucking companies and drivers.

The result of this research is a standardized survey methodology that captures and analyzes sensitive motor carrier operational costs. The data presented in this report reflects 2015 cost data collected from a wide range of motor carriers. With the addition of this 2015 data, ATRI now has eight complete years (2008 – 2015) of detailed operational cost data, providing an invaluable presentation of changing industry costs over time.

⁴ Torrey, W. Ford and Dan Murray. *An Analysis of the Operational Costs of Trucking: A 2015 Update*. American Transportation Research Institute. Arlington, VA. (2015). Previous year reports are available from ATRI online at www.atri-online.org

METHODOLOGY

This year's analysis utilized a nearly identical data collection methodology to previous years, although three new questions were added that solicit motor carrier input on fleet-wide fuel economy, typical operating weights, and fleet-wide average travel speeds (Figure 1).

Figure 1: New Survey Questions

Based on your fleet's IFTA data, what is your fleet-wide fuel economy in miles per gallon (MPG) for 2015 (i.e. real miles driven divided by gallons of fuel purchased)?

_____ MPG

For your fleet, what is your typical per-truck operating weight in pounds?

_____ LBS

While your vehicles are in motion, what is your fleet-wide average travel speed in miles per hour (MPH)?

_____ MPH

In addition to a host of demographic queries, the data collection form solicited common industry operational and financial metrics, and was beta-tested with motor carriers. Specifically, the research team solicited technical guidance and review from industry financial officers or those with working knowledge of motor carrier cost structures.

Due to the highly competitive nature of the trucking industry and the extreme sensitivity associated with corporate financials and expenditures, the operational cost information was collected confidentially from motor carriers at the per-mile level, and the data is presented in aggregate form only. ATRI also provided survey respondents with non-disclosure agreements (NDA) as requested.

Data collection efforts commenced in April 2016, with data request forms being sent electronically to a representative group of for-hire carriers which included truckload (TL), less-than-truckload (LTL), and specialized fleets. ATRI also solicited carrier participation through targeted industry mailings and emails, news alerts, and coverage in major industry news outlets. The 50 State Trucking Associations also solicited carrier participation from their respective memberships. Participants were provided several options for submitting data to ATRI: utilizing the online response form, or transmitting

the data to ATRI via email or fax. All responses were carefully reviewed by the research team for clarity and the research team contacted respondents to clarify any ambiguous responses as needed. Responses were collected through early-September 2016.

The survey’s composition was primarily focused on components and sub-components of carrier marginal costs per mile (CPM), which allows for comparative analyses across the different industry business models. In order to convert line-item CPM figures into a total marginal cost per hour (CPH) figure, a GIS-generated, industry-vetted average operational speed of 39.98 miles per hour (MPH) was used in these calculations. It should be noted that this speed relates to moving trucks only, and includes all roadway speeds rather than solely highway speeds.⁵

To ensure representativeness, ATRI then weighted survey responses to reflect share percentages of the major for-hire trucking industry sectors. Compared to national averages, TL carriers were slightly over-represented in the survey sample while LTL and Specialized carriers were slightly under-represented (Table 1). As noted, responses were weighted to national industry averages to yield more representative results.

Table 1: For-Hire Industry Sector Breakout

Industry Sector	ATRI Survey Respondents	U.S. Trucking Industry ⁶
Truckload	69%	52%
Less-than-Truckload	21%	24%
Specialized	10%	24%

Where applicable, cost data were cross-tabulated by factors such as fleet size, operating sector, and operating region. Again, the data collected are presented in aggregate form in order to protect proprietary carrier information.

⁵ ATRI derived this speed using several datasets from the ATRI/Federal Highway Administration (FHWA) Freight Performance Measures (FPM) program. ATRI analyzed one full week of national FPM data in each of the four seasons in 2010 (February, May, August, October). This dataset consisted of over 110 million truck speed data points. The average speed figure was also validated by multiple motor carriers from various sectors of the industry. The 39.98 mph figure more accurately represents an average operational speed since it includes speeds in all types of operational conditions.

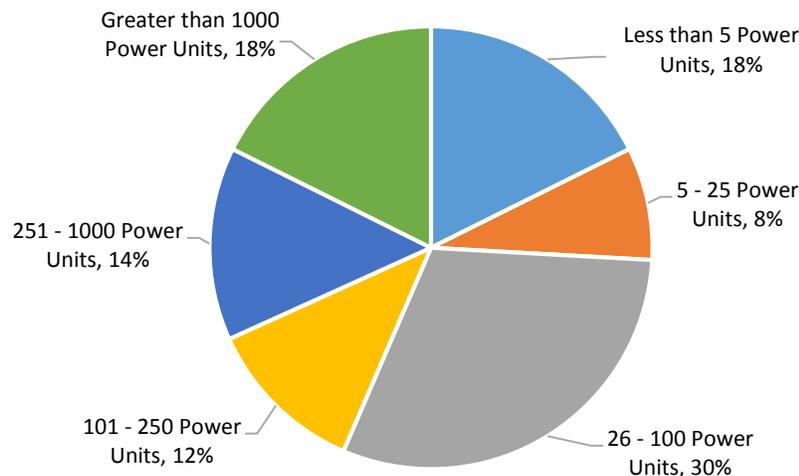
⁶ 2002 Vehicle Inventory and Use Survey. United States Department of Commerce, Economics and Statistics Administration, United States Census Bureau. Available online: <https://www.census.gov/svsd/www/vius/2002.html>

RESPONDENT DEMOGRAPHIC ANALYSIS

Size of Operation

Survey respondents operated a total of 107,028 tractors and/or trucks, and utilized 199,943 total trailers across a variety of fleet sizes. Additionally, these power units accumulated more than 6.5 billion miles in 2015. Detailed in Figure 2 below, the majority of respondents (68.2%) operated small- to mid-sized fleets (less than 250 power units), with 31.8 percent operating large to very large fleets.

Figure 2: Respondent Fleet Size



Examining fleet size statistics can offer additional detail into the broad continuum of respondents' operations. With a median fleet size of 76 power units, and an average fleet size of 1,259 power units it becomes readily apparent that while the majority of respondents operate smaller fleets, very large operations in the respondent pool can skew metric means toward larger numbers (Table 2).

Table 2: Respondent Fleet Size Statistics

Percentile	Fleet Size
75th Percentile	383
50th Percentile (Median)	76
25th Percentile	24
Average (Mean)	1,259

These findings are further corroborated as a similar trend emerges when analyzing the reported revenues of respondents (Table 3).

Table 3: Respondent Revenue Statistics

Percentile	Revenue
75th Percentile	\$113,937,671
50th Percentile (Median)	\$17,140,188
25th Percentile	\$4,944,295
Average (Mean)	\$360,595,651

Type of Operation

As shown in Table 4, average haul lengths were generally less than 500 miles per trip, with regional trips and local trips being the most common (35% and 27%, respectively), and lengths of greater than 500 miles accounting for 38 percent of reported trips.

Table 4: Survey Respondent Trip Types

Trip Type	Survey Respondent Percent of Trips
Local pick-ups and deliveries (less than 100 miles)	27%
Regional pick-ups and deliveries (100-500 miles)	35%
Inter-regional pick -ups and deliveries (500-1,000 miles)	24%
National (over 1,000 miles)	15%

Table 5 compares respondents' 2015 percentage of U.S. vehicle miles traveled (VMT) by region to commercial truck registrations in the U.S. As can be seen, the Northeast and Southeast were slightly over-represented in the ATRI sample while the Midwest and Southwest were slightly under-represented. This finding may highlight the common occurrence of base-stating fleets in certain areas for cost-saving purposes, independent of where the truck operates.

Table 5: Survey Respondent Truck VMT and National Truck Registrations by Region

Region	Survey Respondent Percent of Miles Traveled	U.S. Percent of Truck Registrations ⁷
Midwest	26%	40%
Northeast	13%	8%
Southeast	29%	19%
Southwest	10%	13%
West	21%	21%

Additionally, a small percentage of the total VMT reported by survey respondents (1%) was in Canada (data not included in Table 5), and a reported 20.9 percent of VMT were non-revenue or “empty” miles.

When asked to identify the primary commodities hauled in respondents’ operations, a third (34%) of respondents indicated general freight, followed by manufactured goods and refrigerated foods (11.4% each).

Equipment

Similar to the previous year’s analysis, the majority of fleets operated tractors as their primary type of power unit in 2015, however there were a significant number of other power unit types in this year’s respondent pool. As expected, 28- and 53-foot trailers were the most prevalent among respondents’ fleets (Table 6).

⁷ Table MV-9: Truck and Truck-Tractor Registration. 2014 Highway Statistics Series. Office of Highway Policy Information, Federal Highway Administration, United States Department of Transportation. February 2016. Available online: <http://www.fhwa.dot.gov/policyinformation/statistics/2014/mv9.cfm>

Table 6: Survey Respondent Truck/Trailer Type, Average Truck Age, and Average Miles Driven per Year per Truck

Equipment Type	Number of Trucks/ Trailers	Average Age (Years)	Average Miles Driven per Year per Truck
Straight Trucks	3,199	11.2	21,821
Truck-Tractors	65,569	5.5	80,868
Other Trucks	38,260	9.5	30,876
Total Trucks	107,028		
28' Trailers	98,327	9.2	
45' Trailers	1,928	10.1	
48' Trailers	16,149	10.0	
53' Trailers	73,946	5.7	
Other Trailers	9,593	8.8	
Total Trailers	199,943		

Further insight into the equipment characteristics of survey respondents can be seen when analyzing reported trade cycles. In terms of equipment age, respondents reported holding all equipment for slightly longer compared to the previous year’s analysis (Table 7). Straight trucks were held for 10.3 years compared to 9.5 years previously; tractors were held an average of 7.0 years compared to 6.7 years; and trailers were held for 12.4 years compared to 11.8 years before replacement. However, respondents reported an average of over 720,000 miles before replacing tractor, and an average of 225,000 miles before replacing straight trucks, which are both decreases from the previous year’s figures (over 730,000 and over 430,000 miles respectively). The phenomenon of motor carriers holding their equipment for a longer period of time, but not logging as many miles over that time period reflects the softening economic conditions that were occurring during the 2015 time period (and continue into 2016). This can also be corroborated by reviewing 2016 tractor and trailer sales which have, as of August, dropped 26.1 percent from the previous year indicating this trend may continue in 2016.⁸

Table 7: Survey Respondent Equipment Trade Cycle

Equipment Type	Average Number of Years Until Replacement	Average Miles Driven Until Replacement
Straight Trucks	10.3	225,000
Truck-Tractors	7.0	724,374
Trailers	12.4	

⁸ “August Class 8 Sales Drop 26.1% in 9th Straight Monthly Decline”. Transport Topics. 9 September 2016. Available Online: <http://www.ttnews.com/gateclient/premiumstorylogin.aspx?storyid=43206>

When asked to provide the number of vehicles that ran on an alternative fuel source (i.e. a fuel other than diesel or bio-diesel blend), approximately 11 percent of respondents reported fleets using at least some alternative fuel vehicles – representing a three percentage point increase from the previous year. While these vehicles only accounted for less than half a percent of the total trucks in the sample, they ran on a myriad of fuel types including compressed natural gas (CNG), liquefied natural gas (LNG), electric, hybrid, and propane. With medium- and heavy-duty vehicles projected to become the largest consumers of CNG and LNG by 2040⁹, the percentage of carriers operating alternative fuel vehicles will likely increase, albeit slowly, in subsequent years. Ultimately, diesel fuel prices will play a substantial role in future adoption rates of alt-fuel trucks. Based on the high cost of such vehicles – \$50,000 more than the price of a traditional diesel truck¹⁰ – and September 2016 average diesel fuel prices of \$2.21¹¹ per gallon, the existing and near-term market demand for “alt-fuel vehicles” will likely stay low.

Relating to fuel, the survey asked respondents to report on speed limiter use within their fleet. A large majority of respondents (85.1%) reported use of speed limiters, with 85 percent utilizing speed limiters on 100 percent of their trucks while another seven percent (of the 85.1%) utilize the devices on 70 to 99 percent of their fleet. Similar to last year’s results, the most common maximum speed setting was 65 MPH, although this figure sometimes varies within fleets based on operations and driver performance. Additionally, speed limiter usage has remained consistently high among survey respondents across the years this information was solicited (Table 8).

Table 8: Survey Respondent Speed Limiter Usage

Year	Percent
2015	85.1%
2014	91.8%
2013	86.8%
2012	86.0%
2011	93.2%

Due to the addition of the question soliciting information on fleet-wide fuel efficiency, it became possible this year to ascertain the benefits of speed limiter usage in managing fuel economy. The overall fuel economy of the respondent sample came to an average of 6.3 MPG. This figure is corroborated by research done by the ATA Technology and Maintenance Council (TMC) which documented an average MPG figure of 6.2 for model

⁹ *Annual Energy Outlook 2015 with Projections to 2040*. U.S. Energy Information Administration, Office of Integrated and International Energy Analysis, U.S. Department of Energy. Washington D.C. (April 2015) Available online: [http://www.eia.gov/forecasts/aeo/pdf/0383\(2015\).pdf](http://www.eia.gov/forecasts/aeo/pdf/0383(2015).pdf)

¹⁰ Tita, Bob. “Slow Going for Natural-Gas Powered Trucks.” *The Wall Street Journal*. 25 August 2014. Available online: <http://www.wsj.com/articles/natural-gas-trucks-struggle-to-gain-traction-1408995745>

¹¹ Gasoline and Diesel Fuel Update. U.S. Energy Information Administration. Available Online: <http://www.eia.gov/petroleum/gasdiesel>

year (MY) 2011 tractors, and 6.5 average MPG for MY 2014/15 tractors.¹² Cross-referencing these MPG figures with whether or not a carrier indicated speed limiter usage yielded an average of 6.4 MPG for those that did, and 6.0 MPG for those fleets that did not.

These MPG figures were also cross-referenced with a fleet’s reported typical operating weight to uncover how operating weight affects fuel economy. Detailed in Table 9, fleets operating between 20,001 and 40,000 pounds reported the highest fuel economy at an average of 6.5 MPG, while fleets typically operating greater than 80,000 pounds reported the lowest average of 5.6 MPG. Further, these differences in fuel economy may be due to a fleet’s ability to maintain a more optimal speed for fuel economy purposes at certain operating weights. Also detailed in Table 9, fleets operating in the 20,000 - 40,000 pound range additionally reported the fastest average operating speed of 55 MPH.

Table 9: Survey Respondent Reported Fuel Economy Compared to Typical Operating Weight and Average Operating Speed

Typical Operating Weight	MPG	Average Operating Speed (MPH)
Less than 20,000 lbs	6.2	42
20,001 - 40,000 lbs	6.5	55
40,001 - 60,000 lbs	6.3	52
60,001 - 80,000 lbs	6.3	53
Greater than 80,000 lbs	5.6	49

In advance of the Federal Motor Carrier Safety Administration (FMCSA) mandate on the use of Electronic Logging Devices (ELDs), survey respondents were asked whether or not their fleets utilized ELDs to manage driver hours-of-service (HOS). The percentage responding in the affirmative to ELD use remained constant at 63 percent compared to last year’s response. It is assumed that this figure will increase toward 100 percent as the industry responds to the FMCSA final ruling requiring motor carriers to come into compliance by December 2017.¹³ As of September 16, 2016 the OOIDA legal challenge to the ELD mandate had not yet been decided, although a decision was expected by 2017.¹⁴

¹² *Official Fuel Economy Survey*. Technology and Maintenance Council, American Trucking Associations. Arlington, VA. May 2015.

¹³ *Summary of FMCSA’s Final Rule to Mandate Electronic Logging Devices*. American Trucking Associations. Arlington, VA. December 2015. Available online: <http://www.trucking.org/ATA%20Docs/What%20We%20Do/Trucking%20Issues/Documents/Policy/Summary%20of%20ELD%20Final%20Rule%202015.pdf>

¹⁴ “Trucking Attorney Thinks ELD Mandate Will Survive OOIDA’s Legal Challenge”. Overdrive Online. 17 June 2016. Available Online: <http://www.overdriveonline.com/trucking-attorney-thinks-eld-mandate-will-survive-oidas-legal-challenge/>

Representativeness

The “ops cost” surveys were generally completed by high-level managers and executives who have extensive knowledge of the financial workings of the organizations; namely presidents, chief financial officers (CFOs), general managers and fleet owners. The fleets represent long-haul to local pick-up and delivery, carrying a vast assortment of different commodities and operating across the U.S. Additionally, the fleets cover the continuum of fleet size and revenue levels. As such, ATRI considers the data to be an adequately representative sample of the industry population from which to draw current operational cost data.

COST CENTERS

Motor carrier operational costs can be impacted by a number of underlying influences and externalities. As a result, some line-item costs are more easily measured than others. These may include fuel and tire costs. Alternatively, costs such as those related to labor, can be impacted by driver experience, performance and differing compensation models. Finally, in several instances ATRI worked closely with carriers to refine certain costs that straddle both fixed and marginal metrics. For example, insurance is often considered a fixed-cost, but is typically based on truck VMT as a measure of risk or exposure.

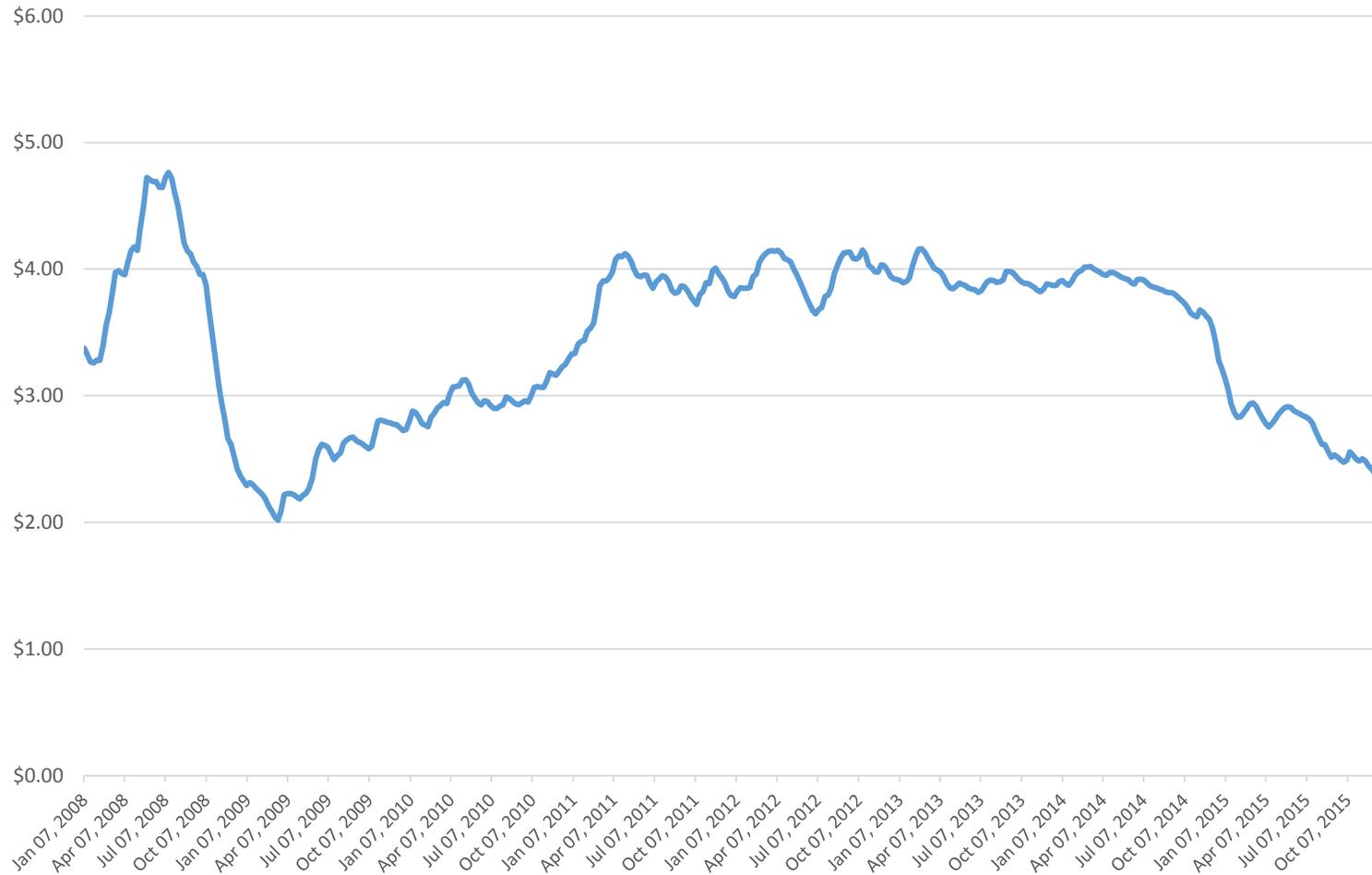
ATRI chose to document and analyze those cost centers most closely associated with driver and vehicle operations, effectively representing a motor carrier’s marginal costs (MC).

Fuel

Fuel prices have fluctuated drastically over the years since the inception of this study. July of 2008 saw the highest per-barrel fuel prices of more than \$145 before falling dramatically throughout 2008 – reaching a low of just over \$36 dollars a barrel in January of 2009. This translated to average U.S. diesel prices of over \$4.70 a gallon during the summer of 2008 which had fallen to just over \$2.00 a gallon by March of 2009. As the economy recovered in early 2010, diesel prices steadily rose through 2010 before stabilizing in 2011. At the beginning of 2014 prices began falling again in response to domestic oil production, and fell steadily throughout the year.¹⁵

¹⁵ Gasoline and Diesel Fuel Update. U.S. Energy Information Administration. Available Online: <http://www.eia.gov/petroleum/gasdiesel>

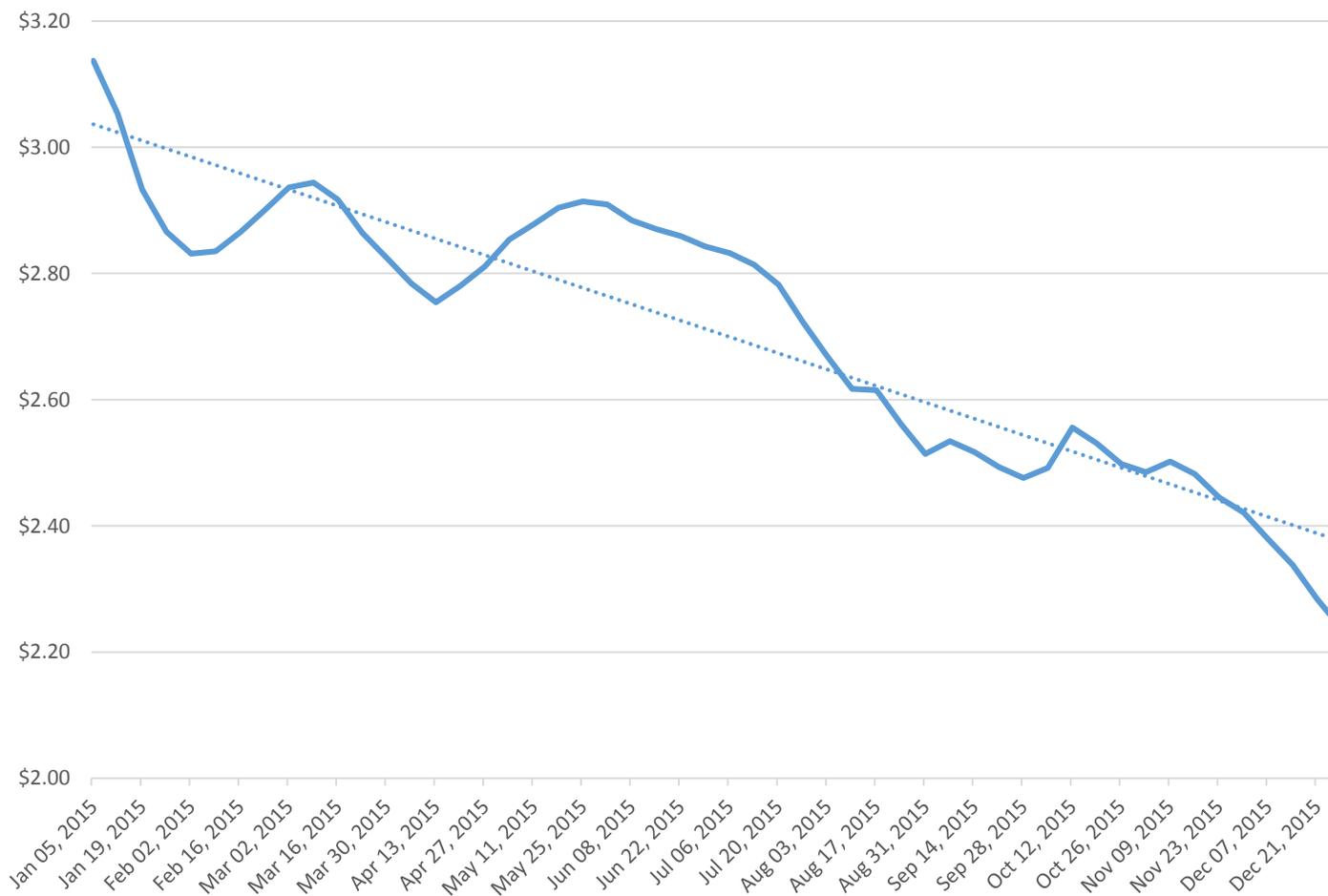
Figure 3: Average U.S. On-Highway Diesel Prices, 2008 – 2015¹⁶



¹⁶ Gasoline and Diesel Fuel Update. U.S. Energy Information Administration. Available Online: <http://www.eia.gov/petroleum/gasdiesel>

Fuel prices continued to fall steadily throughout 2015. Early in the year the average diesel price was \$3.14 per gallon, but by year-end it was only \$2.24 per gallon¹⁷ (Figure 4).

Figure 4: Average U.S. On-Highway Diesel Prices, 2015¹⁸



¹⁷ Ibid.

¹⁸ Gasoline and Diesel Fuel Update. U.S. Energy Information Administration. Available Online: <http://www.eia.gov/petroleum/gasdiesel>

Fuel costs have consistently been the biggest MC line-item expense across all of the years ATRI has conducted this research, and generally account for approximately 30 – 40 percent of a motor carrier’s CPM.¹⁹ However, due to the continual steady decline of fuel prices throughout 2015, fuel’s share of a carrier’s MC could be lower than historically experienced. Additionally, diesel prices are projected by the Energy Information Administration (EIA) to slightly increase throughout 2016, which would likely result in increased marginal fuel costs for carriers in the coming year.²⁰

Equipment

The age, type, and turnover of a motor carrier’s equipment can affect a number of operating costs including lease and purchase payments, repair and maintenance, insurance premiums, permits and special licensure, and tire costs. This year’s survey respondents accounted for approximately 107,000 trucks, 200,000 trailers, and over 6.5 billion vehicle miles traveled in 2015. As previously detailed, respondents reported holding all equipment types for slightly longer than was documented in 2014 which may result in a slight increase in repair and maintenance costs.

Class 8 truck sales peaked in July of 2015, and steadily declined through the remainder of the year totaling nearly 249,000 sales, which is reported to be the third-highest total since 2000.²¹ The new equipment purchases seen in 2015 resulted in increased lease and purchase payment costs, although the effect was clearly tapering off later in the year.

Driver Pay

The trucking industry continues to experience a severe and growing shortage of qualified drivers. While the 2015 economy began to weaken, the American Trucking Associations (ATA) still estimated a shortage of 48,000 drivers in 2015, with projections that the shortage could increase to 175,000 by 2025.²²

One of the challenges facing the industry is the aging workforce. A 2014 ATRI study identified alarming demographic trends facing the industry, with 55.5 percent of its workforce 45 and older, and less than five percent of its workforce in the 20 to 24 year old age bracket.²³ Additionally, the driver population is likely being impacted by strong housing and commercial real estate growth²⁴, which provide an alternative higher-paying job opportunity, although these jobs are very sensitive to economic factors. For instance, many thousands of truck drivers originally lost to oil-drilling in North Dakota,

¹⁹ Torrey, W. Ford and Dan Murray. *An Analysis of the Operational Costs of Trucking: A 2015 Update*. American Transportation Research Institute. Arlington, VA. (2015)

²⁰ Short-Term Energy Outlook. U.S Energy Information Administration. Available Online: <http://www.eia.gov/forecasts/steo/>

²¹ Gilroy, Roger W. “May Truck Sales Fall 19.5%”. Transport Topics. 20 June 2016. Available online: <https://www.ttnews.com/articles/printopt.aspx?storyid=42303>

²² Costello, Bob. “ATA’s Trucking Economic Review”. Volume 17, Issue 4. 23 December 2015.

²³ Short, Jeffery. *Analysis of Truck Driver Age Demographics Across Two Decades*. American Transportation Research Institute. Arlington, VA. (2014)

²⁴ Costello, Bob. “ATA’s Trucking Economic Review”. Volume 17, Issue 4. 23 December 2015.

have returned to for-hire trucking industry jobs now that a large percentage of wells have been capped.²⁵

Another challenge for the driver population was the changes made in July 2013 to the federal Hours-of-Service (HOS) rules, which had a documented impact on carrier productivity and driver earnings.²⁶ In response, some carriers reported having to increase driver wages to offset the lost productivity experienced by drivers due to the more restrictive HOS rule provisions which often forced truck drivers into morning and evening rush hour driving.²⁷

The combined impact of these forces in the industry will likely continue to result in increased driver wage and benefit costs as fleets strive to keep their experienced workforce and recruit additional drivers.

FINDINGS

Average Marginal Costs

In order to remain consistent with the previous operational cost analyses, marginal costs were once again divided into two general categories, vehicle- and driver-based, which included the following line items:

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

- Driver-based
 - Wages
 - Benefits

Table 10 displays the average cost per mile for all sectors based on the survey data. The analysis found that the average CPM was \$1.593 for 2015. This equates to an approximate 11 cent decrease from the \$1.703 found in 2014, and was driven almost entirely by the decline in fuel prices. The average cost per hour, established by utilizing the average 39.98 miles per hour speed, amounted to a total of \$63.70 per hour, a decrease of \$4.39 from the 2014 figure of \$68.09 (Table 11). These figures represent the third lowest total cost since this study was initiated.

²⁵ Chinglinsky, Katherine. "Trucking Firms With 35,000 Openings Seek Jobless Oil Workers." *Transport Topics*. 23 February 2015. Available online: <http://www.ttnews.com/articles/basetemplate.aspx?storyid=37469>

²⁶ Short, Jeffery. *Assessing the Impacts of the 34-Hour Restart Provisions*. American Transportation Research Institute. Arlington, VA. (2013)

²⁷ Short, Jeffery. *Operational and Economic Impacts of the New Hours-of-Service*. American Transportation Research Institute. Arlington, VA. (2013)

Table 10: Average Marginal Costs per Mile, 2008-2015

Motor Carrier Costs	2008	2009	2010	2011	2012	2013	2014	2015
<i>Vehicle-based</i>								
Fuel Costs	\$0.633	\$0.405	\$0.486	\$0.590	\$0.641	\$0.645	\$0.583	\$0.403
Truck/Trailer Lease or Purchase Payments	\$0.213	\$0.257	\$0.184	\$0.189	\$0.174	\$0.163	\$0.215	\$0.230
Repair & Maintenance	\$0.103	\$0.123	\$0.124	\$0.152	\$0.138	\$0.148	\$0.158	\$0.156
Truck Insurance Premiums	\$0.055	\$0.054	\$0.059	\$0.067	\$0.063	\$0.064	\$0.071	\$0.092
Permits and Licenses	\$0.016	\$0.029	\$0.040	\$0.038	\$0.022	\$0.026	\$0.019	\$0.019
Tires	\$0.030	\$0.029	\$0.035	\$0.042	\$0.044	\$0.041	\$0.044	\$0.043
Tolls	\$0.024	\$0.024	\$0.012	\$0.017	\$0.019	\$0.019	\$0.023	\$0.020
<i>Driver-based</i>								
Driver Wages	\$0.435	\$0.403	\$0.446	\$0.460	\$0.417	\$0.440	\$0.462	\$0.499
Driver Benefits	\$0.144	\$0.128	\$0.162	\$0.151	\$0.116	\$0.129	\$0.129	\$0.131
TOTAL	\$1.653	\$1.451	\$1.548	\$1.706	\$1.633	\$1.676	\$1.703	\$1.593

Table 11: Average Marginal Costs per Hour, 2008-2015

Motor Carrier Costs	2008	2009	2010	2011	2012	2013	2014	2015
<i>Vehicle-based</i>								
Fuel Costs	\$25.30	\$16.17	\$19.41	\$23.58	\$25.63	\$25.78	\$23.29	\$16.13
Truck/Trailer Lease or Purchase Payments	\$8.52	\$10.28	\$7.37	\$7.55	\$6.94	\$6.52	\$8.59	\$9.20
Repair & Maintenance	\$4.11	\$4.90	\$4.97	\$6.07	\$5.52	\$5.92	\$6.31	\$6.23
Truck Insurance Premiums	\$2.22	\$2.15	\$2.35	\$2.67	\$2.51	\$2.57	\$2.89	\$3.70
Permits and Licenses	\$0.62	\$1.15	\$1.60	\$1.53	\$0.88	\$1.04	\$0.76	\$0.78
Tires	\$1.20	\$1.14	\$1.42	\$1.67	\$1.76	\$1.65	\$1.76	\$1.72
Tolls	\$0.95	\$0.98	\$0.49	\$0.69	\$0.74	\$0.77	\$0.90	\$0.79
<i>Driver-based</i>								
Driver Wages	\$17.38	\$16.12	\$17.83	\$18.39	\$16.67	\$17.60	\$18.46	\$19.95
Driver Benefits	\$5.77	\$5.11	\$6.47	\$6.05	\$4.64	\$5.16	\$5.15	\$5.22
TOTAL	\$66.07	\$58.00	\$61.90	\$68.21	\$65.29	\$67.00	\$68.09	\$63.70

Contrary to historical trends established in this analysis where the cost-share ratio of each line item cost tended to remain relatively stable from year-to-year, the 2015 analysis saw some shifting in the major cost shares. While fuel costs were historically the largest share of total cost, driver wages surpassed fuel as the largest share at 31 percent of total cost in 2015, and fuel now accounts for 25 percent – its lowest share since the inception of this study (Table 12). Fuel was followed by equipment lease or purchase payments at 14 percent, with repair and maintenance, insurance premiums, permits and license, tires, toll costs, and driver benefits each representing 10 percent or less of average total marginal costs.

Table 12: Share of Total Average Marginal Cost, 2008-2015

Motor Carrier Costs	2008	2009	2010	2011	2012	2013	2014	2015
<i>Vehicle-based</i>								
Fuel Costs	38%	28%	31%	35%	39%	38%	34%	25%
Truck/Trailer Lease or Purchase Payments	13%	18%	12%	11%	11%	10%	13%	14%
Repair & Maintenance	6%	8%	8%	9%	8%	9%	9%	10%
Truck Insurance Premiums	3%	4%	4%	4%	4%	4%	4%	6%
Permits and Licenses	1%	2%	3%	2%	1%	2%	1%	1%
Tires	2%	2%	2%	2%	3%	2%	3%	3%
Tolls	1%	2%	1%	1%	1%	1%	1%	1%
<i>Driver-based</i>								
Driver Wages	26%	28%	29%	27%	26%	26%	27%	31%
Driver Benefits	9%	9%	10%	9%	7%	8%	8%	8%
TOTAL	100%							

As previously noted, the analysis stratified motor carrier responses by operating sector where applicable. Given the different operating conditions and models for each sector, the total average marginal costs varied considerably, however all sectors experienced a decrease in CPM (Table 13). For the second year in a row Specialized carriers reported the highest CPM figure driven mainly by a higher driver pay rate than the other sectors of the industry. TL carriers, receiving the greatest benefit from declining fuel costs per mile, had the lowest CPM of the sectors. While LTL carriers experienced the largest decrease in CPM of the sectors, the higher reported driver pay rates and higher fuel cost put LTL ahead of the TL sector with the second highest CPM.

Table 13: Average Total Marginal Costs by Sector, 2008-2015

Sector	2008	2009	2010	2011	2012	2013	2014	2015
LTL	\$1.81	\$1.43	\$1.76	\$1.93	\$1.79	\$1.84	\$1.83	\$1.60
Specialized	\$1.87	\$1.67	\$1.61	\$1.79	\$1.73	\$1.67	\$1.85	\$1.79
TL	\$1.48	\$1.36	\$1.43	\$1.57	\$1.51	\$1.60	\$1.58	\$1.50

Line-Item Cost Centers

Fuel Costs

In order to standardize the collection of fuel costs, respondents were asked to provide fuel cost data that excluded any revenue from fuel surcharges. Since fuel surcharges are negotiated as a fuel “subsidy” between two parties, excluding fuel surcharge reveals the actual dollar amount spent directly on fuel.

As previously discussed, petroleum prices rose to an unprecedented level in July 2008, reaching over \$145 per barrel before decreasing dramatically in late 2008. During the summer of 2008 on-highway diesel prices averaged more than \$4.50 per gallon nationally but by March 2009, prices had dropped to \$2.02 per gallon.²⁸ Fuel prices steadily increased since then, averaging \$2.47 per gallon in 2009, \$2.99 in 2010, \$3.84 in 2011, \$3.97 in 2012. Primarily with the advent of massive domestic oil production, fuel prices began to slowly decline, reaching an average of \$3.95 in 2013, \$3.82 in 2014, and finally \$2.70 in 2015.²⁹

Consistent with the EIA data, survey respondents indicated that fuel costs fell significantly from 63.3 cents per mile in 2008 to 40.5 cents per mile in 2009; they were once again on the rise from 2010 to 2013. Calculated on an annualized basis, the average fuel CPM was 48.6 cents in 2010, 59.0 cents in 2011, 64.1 cents in 2012, 64.5 cents in 2013, and 58.4 cents in 2014.

The 2015 fuel CPM of 40.3 cents is the lowest reported figure since the inception of this study. Furthermore, fuel costs now account for 25 percent of total annual carrier costs – the lowest of the years studied, and the first time that it dropped from the highest place in the cost-share table. Analyzed by sector, LTL carriers had the highest fuel CPM of 42.3 cents, followed by Specialized carriers at 40.5 cents, and TL carriers at 39.4 cents.

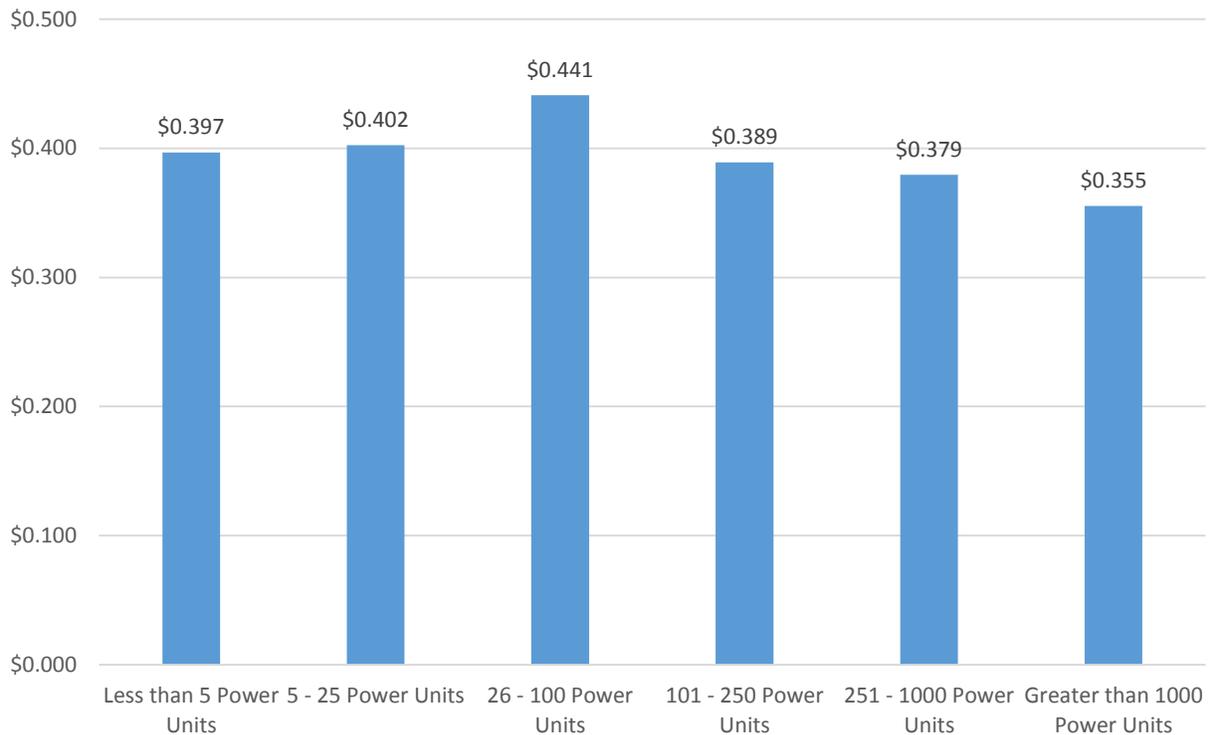
While fuel cost varies based on equipment age, operating sector and trip lengths, fleet size also can affect fuel costs. Detailed in Figure 5 below, larger fleets reported lower fuel costs per mile on average than smaller fleets. This is due, in part, to larger companies having more diesel buying power, and more sophisticated price hedging strategies.

²⁸ Gasoline and Diesel Fuel Update. U.S. Energy Information Administration. Available online: <http://www.eia.gov/petroleum/gasdiesel>

²⁹ Ibid.

These for-hire fuel costs trend very closely with the National Private Truck Council’s 2016 Benchmarking Report of private fleet data. In the 2016 report, private fleets reported per-mile fuel costs of 42 cents, down from 61 cents in the 2015 report.³⁰

Figure 5: Respondent Fuel Cost per Mile by Fleet Size



While it is difficult to predict future trends in fuel prices, primarily due to international political volatility, the EIA has indicated that fuel prices in the U.S. should increase slightly through 2016.³¹ The ability to quickly uncap oil wells in the Bakken Field and elsewhere creates a tempering effect on oil price volatility.

Equipment Lease or Purchase Payments

Truck and trailer payments were classified as a quasi-operational cost since many motor carriers purchase additional trucks and trailers in response to capacity constraints in strong economic periods, and those payments continue whether the truck is operated or not. Survey respondents indicated that truck/trailer lease or purchase payments rose in 2015 to 23.0 cents per mile despite an overall decrease in CPM. Specialized carriers reported the highest lease or purchase CPM of 28.6 cents likely due the extra expense associated with specialized equipment. Truckload carriers reported the second highest

³⁰ *Benchmarking Survey Report 2016*, p.42. National Private Truck Council. Arlington, VA. August 2016. Available only to NPTC members.

³¹ Short-Term Energy Outlook (STEO). U.S. Energy Information Administration. Available online: <http://www.eia.gov/forecasts/steo/>

lease or purchase CPM at 23.1 cents, followed by LTL carriers at 17.2 cents. Additionally, all sectors experienced an increase in lease or purchase payment from the 2014 figures.

Repair and Maintenance

Several factors impact a carrier’s repair and maintenance (R&M) costs, such as the age of the trucks and trailers, the vehicle configurations used, and the technologies that are installed on the trucks. In addition, it is also well understood that the diesel technician shortage is driving up R&M costs. Average R&M costs for survey respondents remained essentially constant from 2014 to 2015 decreasing by only two-tenths of a cent from 15.8 to 15.6. This decrease is likely a short-term consequence of the softening economy in 2015 (and 2016).

While the overall average fleet age increased in 2015 to 8.7 years compared to 7.4 years in 2014, average miles driven per truck per year decreased in each equipment type category from 2014 to 2015. The large decrease in mileage in the “Other Trucks” category is due to the addition of fleets with large pick and delivery operations who subsequently put less yearly miles on this type of equipment (Table 14).

Table 14: Change in Annual VMT per Truck

Equipment Type	Average Miles Driven Per Year Per Truck		Percentage Change in Miles Driven Per Year Per Truck
	2015	2014	
Straight Trucks	21,821	30,055	-27.4%
Truck-Tractors	80,868	97,566	-17.1%
Other Trucks	30,876	133,095	-76.8%

This trend corroborates the earlier finding that carriers are holding their equipment for longer while logging fewer miles per year, and likely explains the repair and maintenance CPM figure remaining constant despite an older overall fleet age in years. This trend was reversed in NPTC’s private fleet data, where the average class 8 tractor age decreased from 7.4 years to 6.7 years in the same time period.³²

Contrary to the historical trend of LTL carriers reporting the highest R&M CPM due to extra wear and tear associated with pick-up and delivery operations, specialized carriers now report the highest CPM in 2015 at 17.4 cents. LTL carriers reported the second highest R&M costs at 16.8, followed by TL at 14.2 cents – the only increase in R&M costs experienced among the sectors (Table 15).

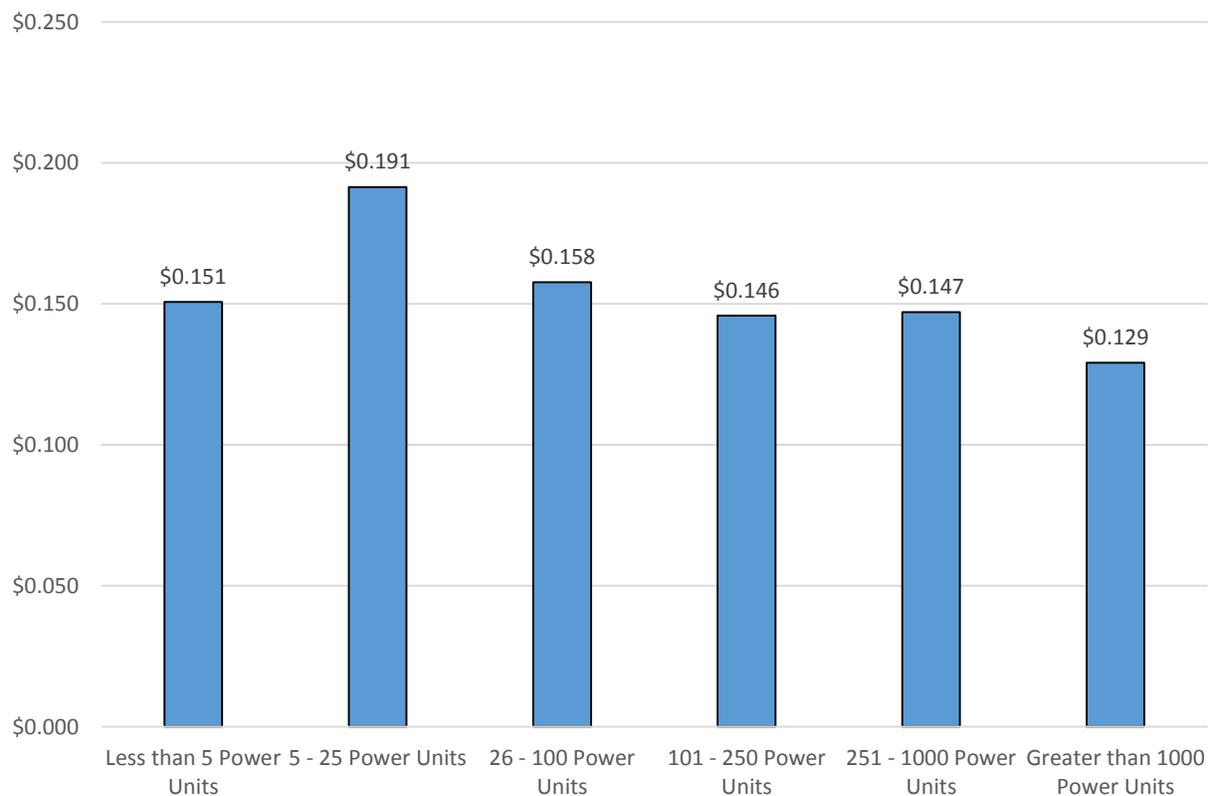
³² *Benchmarking Survey Report 2016*, p.30. National Private Truck Council. Arlington, VA. August 2016. Available only to NPTC members.

Table 15: Repair and Maintenance Costs by Sector

Sector	2008	2009	2010	2011	2012	2013	2014	2015
LTL	\$0.09	\$0.16	\$0.15	\$0.18	\$0.18	\$0.18	\$0.19	\$0.17
Specialized	\$0.12	\$0.14	\$0.14	\$0.16	\$0.14	\$0.13	\$0.18	\$0.17
TL	\$0.10	\$0.10	\$0.11	\$0.14	\$0.11	\$0.14	\$0.13	\$0.14

While industry sector of operation can contribute to R&M costs due to differences in equipment used and the various costs associated with maintaining certain types of equipment, fleet size also has an impact on the variability in carrier R&M costs. Fleets operating 5-25 power units reported having the highest reported R&M CPM of 19.1 cents while fleets operating greater than 1,000 power units reported the lowest of 12.9 cents (Figure 6). This is likely due to smaller fleets having older equipment and needing to pay higher costs for outside R&M services. In addition, larger fleets do not need to use the entirety of the trucks at their disposal given the decline in freight demand experienced in 2015.³³

Figure 6: Respondent Repair and Maintenance Cost per Mile by Fleet Size



³³ Costello, Bob. "ATA's Trucking Economic Review". Volume 17, Issue 4. 23 December 2015.

Truck Insurance Premiums

Another quasi-operational cost, truck insurance premiums can vary widely between carriers – particularly based on miles-traveled exposure. Many larger fleets self-insure, utilize higher deductibles or rely on umbrella policies which do not readily equate to per-truck unit costs. Additionally, property and liability insurance costs still apply while a truck is unoccupied and stationary.

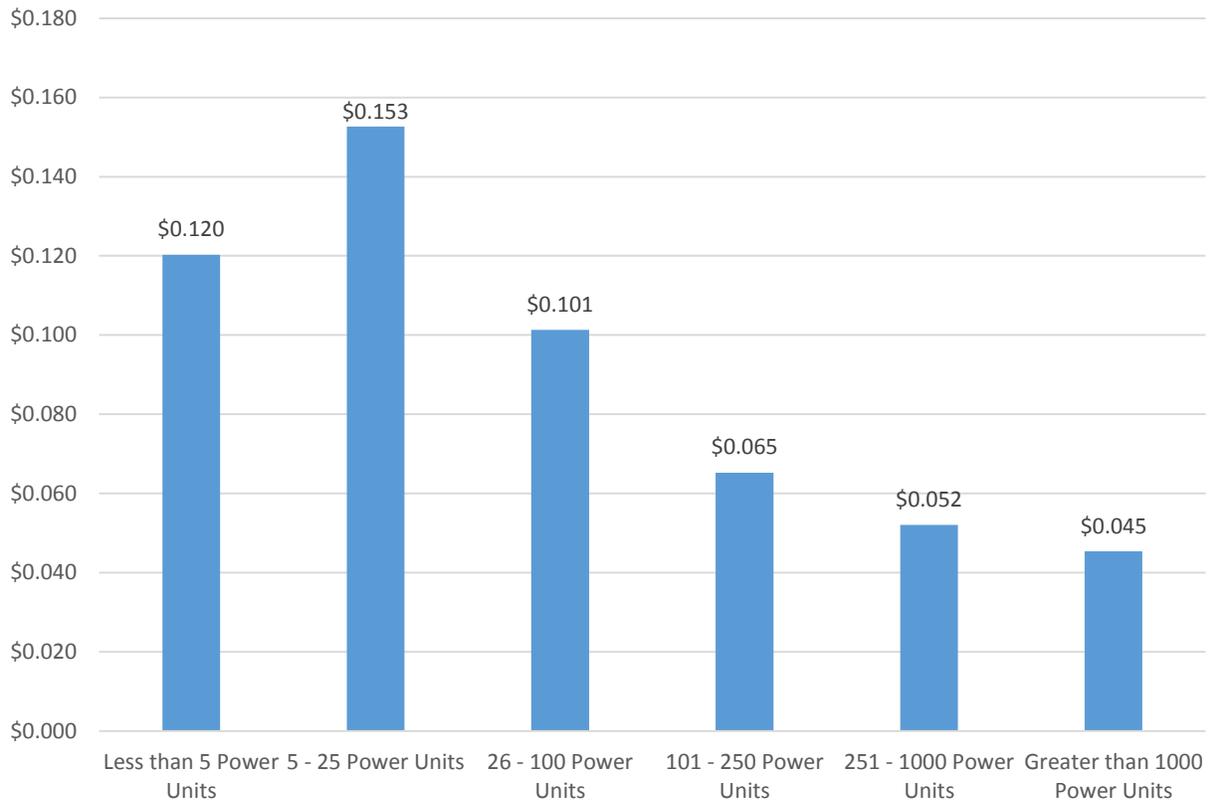
Working with industry experts, ATRI ultimately determined that including insurance costs as a line-item in this analysis is appropriate since most insurance risk assessments are based on mileage exposure and vehicle replacement costs. Carriers often pay liability and cargo premiums by the mile (except for excess coverage). Since physical damage coverage is calculated by tractor/trailer value, the premium can be divided by the total miles traveled to obtain the cost per mile.

According to the motor carriers surveyed, commercial truck insurance premiums continued the long-term increase in 2015, averaging 9.1 cents per mile, an increase of 2.1 cents from the 7.1 cent per mile found in 2014. Consistent with Specialized carriers reporting the highest truck/trailer lease or purchase payment CPM, Specialized carriers also reported the highest insurance CPM of 13.8 cents, while LTL and TL carriers followed the same trends at 8.4 and 6.5 cent per mile, respectively.

As previously mentioned, truck insurance premiums can vary widely between carriers with the size of the carrier potentially playing a large factor due to the different types of insurance policies used. These insurance increases, often occurring at the same time that truck-involved crashes declined, are due to numerous and complex factors, including market/economic corrections, losses in the reinsurance industry, and escalating legal/jury/settlement costs.

As can be seen in Figure 7, analyzing insurance premium CPM by fleet size does in fact show that fleet size plays a large role in the cost incurred by the carrier with costs varying from as much as 15.3 cents per mile for carriers operating 5-25 power units all the way down to 4.5 cents per mile for carriers operating greater than 1,000 power units.

Figure 7: Respondent Truck Insurance Premium Costs per Mile by Fleet Size



Permits and Special Licenses

The average permitting and licensing CPM for all carrier respondents was 1.94 cents per mile in 2015, which was a slight three percent increase over the 1.89 cents found in 2014. Historically, permit and licensing expenses have been the most volatile cost center for carriers over the past eight years of this research. Since these costs are highly dependent on state budget conditions, type of carrier operation and geographic coverage, a portion of these year-over-year fluctuations may be due to variability in survey respondent populations each year. As previously noted, it is assumed that government agencies can, and do, turn to these “user fees” as a revenue-generation tool when political forces preclude raising “taxes.”

LTL carriers reported the highest permit and licensing costs at an average of 2.6 cents per mile, followed by TL carriers with an average of 1.9 cents per mile. Specialized carriers reported an average CPM of 1.4 cents.

Tires

Since tires are a petroleum-based product, tire costs generally respond to oil prices. However due to processing and production time, tire costs will likely lag behind

increases or decreases in oil prices. In addition, the high demand for new equipment drove tire prices up after the Great Recession – even while oil prices declined.

In response to the softening economy and decreases in oil prices, tire costs fell slightly by two percent from 4.4 cents per mile in 2014 to 4.3 cents per mile in 2015. Specialized carriers report the highest, and only increase, in tire CPM of 5.7 cents per mile. TL carriers reported the second highest at 4.0 cents per mile, followed by LTL reporting a tire CPM of 3.6 cents per mile.

Tolls

Tolls can be a significant cost to motor carriers, and toll costs are highly dependent on a carrier's region of operation. Many carriers and drivers attempt to avoid tolls whenever possible since shippers rarely reimburse carriers or drivers for toll-related expenses. This year saw a 13 percent decrease in average toll costs; moving from 2.3 cents per mile in 2014 to 2.0 cents per mile in 2015. Not surprisingly, motor carriers that operated in the Northeast had the highest average toll costs (4.1 cents per mile) while carriers that operated in the West had the lowest toll costs (1.5 cents per mile).

Driver Wages and Benefits

Most over-the-road or long-haul truck drivers are paid on a per-mile basis while LTL P&D drivers are generally paid by the hour. Survey respondents indicated that average truck driver pay per mile was 49.9 cents in 2015, which is an eight percent increase over the 46.2 cents reported in 2014. In terms of hourly wages, the 2015 CPM figure translated to \$19.95.

In response to the growing driver shortage and to offset lost productivity associated with regulations and traffic congestion, driver wages have steadily increased since the 2012 iteration of this study. Coupled with the decrease in fuel prices in 2015, driver pay was the highest share of carrier's total CPM at 31 percent in 2015. Driver benefits per mile also increased from 2014 to 2015 from 12.9 to 13.1 cents per miles – a one percentage increase. As an additional method of retaining and recruiting drivers, 65 percent of survey respondents reported providing additional bonus incentives to drivers at an average of \$1,970 per year, per driver.

The number of carriers utilizing team drivers, who alternate driving the same truck during a trip, increased to 29 percent in 2015 from the 2014 figure of 25 percent. Of those respondents, the average wage per mile for a company team driver was 39.9 cents in 2015 – an increase from 34.8 cents in 2014.

Across the three major industry sectors, driver wages mimicked sector trends in total costs for 2015; Specialized carriers reported the highest driver wages (59.2 cents per mile), followed by LTL carriers (49.0 cents per mile) – the only sector to report a decrease in average pay per mile. TL carriers reported the lowest driver pay per mile of 46.0 cents per mile.

In juxtaposing this for-hire data with NPTC’s private fleet driver wage data, private fleet drivers are paid approximately 60 percent more than for-hire drivers, and experienced similar wage rate increases between 2014 and 2015 (8% vs 10%). One factor in the wage difference is the large percentage of private fleet drivers who are both hourly workers and often unionized.³⁴

Cost Trends

After increasing by three percent from 2013 to 2014, total average marginal costs in the trucking industry decreased by six percent from 2014 to 2015 – driven almost entirely by the decline in U.S. diesel prices. While driver pay and benefits, lease and purchase payments, insurance premiums, and permit and licensing cost all rose in 2015 it was not enough to outweigh the dramatic fall in fuel costs (Table 16).

Table 16: Average Marginal Cost Trends

Motor Carrier Cost Centers	'08-'09 Change	'09-'10 Change	'10-'11 Change	'11-'12 Change	'12-'13 Change	'13-'14 Change	'14-'15 Change
<i>Vehicle-based</i>							
Fuel Costs	-36%	20%	21%	9%	1%	-10%	-31%
Truck/Trailer Lease or Purchase Payments	21%	-28%	2%	-8%	-6%	32%	7%
Repair & Maintenance	19%	1%	22%	-9%	7%	7%	-1%
Truck Insurance Premiums	-3%	9%	14%	-6%	2%	11%	29%
Permits and Licenses	84%	39%	-4%	-43%	18%	-27%	3%
Tires	-5%	24%	18%	5%	-6%	7%	-2%
Tolls	3%	-49%	39%	8%	3%	18%	-13%
<i>Driver-based</i>							
Driver Wages	-7%	11%	3%	-9%	6%	5%	8%
Driver Benefits	-11%	26%	-6%	-23%	11%	0%	1%
TOTAL	-12%	7%	10%	-4%	3%	2%	-6%

Table 17 shows the cost trends broken out by sector. As previously mentioned, carriers in all sectors reported a decrease in cost from 2014 to 2015 led by the decline in fuel

³⁴ *Benchmarking Survey Report 2016*, p.42. National Private Truck Council. Arlington, VA. August 2016. Available only to NPTC members.

costs. LTL carriers reported the largest decrease from 2014, followed by TL and Specialized carriers.

Table 17: Average Marginal Cost Trends by Sector

Sector	'08-'09 Change	'09-'10 Change	'10-'11 Change	'11-'12 Change	'12-'13 Change	'13-'14 Change	'14-'15 Change
LTL	-8%	5%	10%	-3%	3%	-1%	-13%
Specialized	-21%	23%	10%	-7%	-4%	11%	-3%
TL	-11%	-4%	11%	-3%	6%	-1%	-5%

Cost by Region

Average marginal costs were also calculated by region of operation in the U.S. (Table 18).³⁵ Carriers operating predominantly in the Midwest reported the lowest average cost (\$1.489), while carriers operating predominantly in the Northeast reported the highest average (\$2.331).

Table 18: Average Marginal Cost per Mile by Region, 2015

Motor Carrier Cost Centers	Midwest	Northeast	Southeast	Southwest	West
<i>Vehicle-based</i>					
Fuel Costs	\$0.420	\$0.547	\$0.401	\$0.481	\$0.407
Truck/Trailer Lease or Purchase Payments	\$0.317	\$0.346	\$0.247	\$0.251	\$0.192
Repair & Maintenance	\$0.181	\$0.261	\$0.151	\$0.134	\$0.148
Truck Insurance Premiums	\$0.063	\$0.119	\$0.065	\$0.144	\$0.055
Permits and Licenses	\$0.023	\$0.026	\$0.017	\$0.021	\$0.036
Tires	\$0.044	\$0.071	\$0.042	\$0.046	\$0.043
Tolls	\$0.033	\$0.041	\$0.025	\$0.023	\$0.015
<i>Driver-based</i>					
Driver Wages	\$0.553	\$0.784	\$0.591	\$0.528	\$0.446
Driver Benefits	\$0.149	\$0.137	\$0.129	\$0.144	\$0.137
TOTAL	\$1.782	\$2.331	\$1.670	\$1.773	\$1.480

³⁵ See survey in Appendix A for regions; Canada was excluded from this analysis.

CONCLUSION

Using financial data provided directly by motor carriers throughout the country, ATRI has once again documented and updated the marginal operational costs that carriers experienced in 2015. This research continues to be an important benchmarking tool for carriers to discern their performance against others nationally, regionally and within their sector. Additionally, carriers can compare select line-item costs to fleets of similar sizes. Beyond strictly serving as a motor carrier benchmarking tool, an additional objective of this research is to ensure that accurate, real-world data inputs are available for transportation planning and investment models in order to generate realistic costs and benefits that accrue to commercial vehicle operators on the nation's transportation system.

Based on data collected from motor carrier survey respondents, the average marginal cost per mile in 2015 was \$1.593 for the for-hire sector of the trucking industry, an 11.0 cent decrease from the average cost per mile of \$1.703 found in 2014. This decrease in average cost per mile was due entirely to the steady decline of fuel prices experienced throughout 2015 as carriers saw many other line item costs increase from 2014. While fuel costs were historically the largest share of total cost, driver wages surpassed fuel as the largest share at 31 percent of total cost in 2015, and fuel now accounts for 25 percent, which is the lowest share since the inception of this study.

Despite an overall decline in 2015 of six percent in a carrier's cost per mile, it is highly likely that this trend will not continue. Fuel prices are projected to increase slightly throughout 2016, and the driver shortage is expected to continue to grow in the face of an aging workforce and increased demand for freight. Given the potential increase in fuel prices coupled with continuing increases in driver pay and benefits, carriers are likely to see increases in operational costs in the coming year.

APPENDIX A
OPERATIONAL COSTS OF TRUCKING SURVEY



OPERATIONAL COSTS OF TRUCKING SURVEY

The American Transportation Research Institute (ATRI) is conducting a strategic survey of **for-hire** motor carriers to update its previous reports on truck operational costs. ATRI is seeking those marginal costs associated with operating a truck in **2015**. The findings of this survey will be used in various research studies relating to industry productivity, driver issues and fuel efficiency.

In addition, ATRI will send all respondents an advance copy of the report.

Your survey responses will be kept completely CONFIDENTIAL. Due to the sensitivity of this research, under NO circumstances will we release any of your personal or organizational information. As needed, ATRI will sign a Non-Disclosure Agreement.

Please return the completed survey via fax (770-432-0638), email (ftorrey@trucking.org) or click [here](#) to submit your responses online.

If you have any questions, please contact Ford Torrey at ftorrey@trucking.org or 347-365-7114.

Please enter your contact information below. Occasionally ATRI will follow up with survey respondents to clarify answers. Your information will be kept strictly confidential.

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

2015 Demographics

1) **What was your company's annual trucking-related revenue in 2015?** *(Exclude brokerage/logistics revenue)*

\$ _____

2) **What is your primary for-hire business type?** *(Select one)*

Truckload	<input type="checkbox"/>
Less-Than-Truckload	<input type="checkbox"/>
Specialized	<input type="checkbox"/>
Other (please specify):	<input type="checkbox"/>

3) What is the **primary** type of commodity that your company hauls? (While your company may haul multiple commodities, select only the most frequent type hauled)

- | | |
|---|--|
| <input type="checkbox"/> Agricultural Products
<input type="checkbox"/> Automotive Parts or Vehicles
<input type="checkbox"/> Construction/Building Materials
<input type="checkbox"/> Forest Products
<input type="checkbox"/> Garbage or Sanitation
<input type="checkbox"/> General Freight
<input type="checkbox"/> Hazardous Materials
<input type="checkbox"/> Heavy Machinery/Equipment
<input type="checkbox"/> Household Goods
<input type="checkbox"/> Industrial Gases
<input type="checkbox"/> Intermodal Containers
<input type="checkbox"/> Livestock
<input type="checkbox"/> Manufactured Goods | <input type="checkbox"/> Mine Ores
<input type="checkbox"/> Modular/Mobile Homes
<input type="checkbox"/> Paper Products
<input type="checkbox"/> Petroleum Products
<input type="checkbox"/> Refrigerated Food
<input type="checkbox"/> Retail Store/General Merchandise
<input type="checkbox"/> U.S. Mail/Parcel Service
<input type="checkbox"/> Other (please specify):
<hr style="width: 200px; margin-left: 0;"/> <input type="checkbox"/> Don't Know |
|---|--|

4) What is your company's fleet size, average age and average number of miles (including owner operators) traveled in a year for each equipment type?

Equipment Type	Number of Assets	Average Age (in years)	Average Miles Per Year Per Unit
Straight Trucks			
Truck-Tractors			
28' Trailers			
45' Trailers			
48' Trailers			
53' Trailers			
Other (please specify):			

5) How long do you typically keep your equipment? (Specify years or miles)

Equipment Type	Avg. Trade Cycle	Years	Miles
Straight Trucks		<input type="checkbox"/>	<input type="checkbox"/>
Truck-Tractors		<input type="checkbox"/>	<input type="checkbox"/>
Trailers		<input type="checkbox"/>	<input type="checkbox"/>

6) Are any of the trucks in your fleet powered by an alternative fuel (i.e. do not run exclusively on diesel or gasoline)?

Yes No Don't Know

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

Alternative Fuel	Number of Trucks
Compressed Natural Gas (CNG)	
Liquefied Natural Gas (LNG)	
Electricity	
Hybrid engine	
Other (please specify):	

7) Based on your fleet's IFTA data, what is your fleet-wide fuel economy in miles per gallon

Yes No Don't Know

(MPG) for 2015 (i.e. real miles driven divided by gallons of fuel purchased)?

_____MPG

Yes No Don't Know

8) For your fleet, what is your typical operating weight in pounds?

_____ LBS

9) While your vehicles are in motion, what is your fleet-wide average travel speed in miles per hour (MPH)?

_____ MPH

10) Does your company currently use Electronic Logging Devices (ELDs) for Hours-of-Service recordkeeping (also known as Electronic On-board Recorders, or EOBRs)?

If yes, what percentage of your company's trucks used ELDs in 2015?

_____ % of trucks

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

If yes, please provide the maximum speed setting and the percent of your fleet governed at that speed.

Maximum Speed (mph)	Percent of Trucks

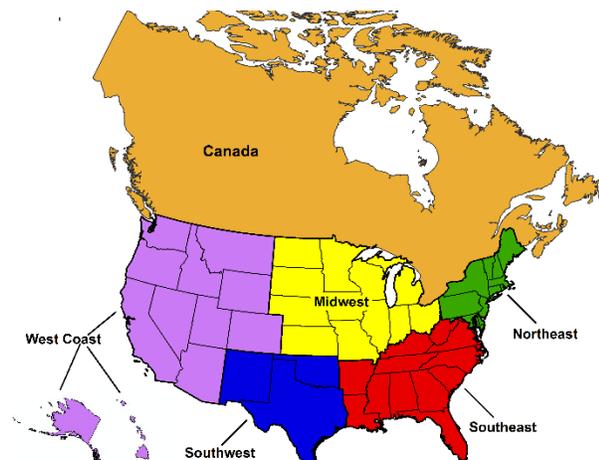
12) Based on your fleet's IFTA miles, what percentage of your drivers' trips are in the following categories in 2015?

(Total must sum to 100%)

Local pickups and deliveries (less than 100 miles)	
Regional pickups and deliveries (more than 100 miles, less than 500 miles)	
Inter-regional pickups and deliveries (more than 500 miles, less than 1,000 miles)	
National (greater than 1,000 miles)	
Total:	100%

13) Please estimate the percentage of miles traveled by your fleet (include owner operator miles) in the following regions during 2015. (Total must sum to 100%)

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



2015 Operational Costs

14) Please list the pay per mile (\$/mile) or pay per hour (\$/hour) for SINGLE drivers in 2015. (If there are multiple pay rates for the same type of driver please use the average pay rate.)

Type of Pay	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	\$	\$	\$

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.

15) Do you provide any additional financial incentives and/or bonus pay for SINGLE 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 in 2015? (Please report as an annual average paid per driver.)

\$ / Average per Driver in 2015

13) Do you employ team drivers?

Yes No

If yes, please list the pay per mile (\$/mile) or pay per hour (\$/hour) rates for the following types of drivers who drove as part of a TEAM in 2015. (Please use the pay rate for each individual driver, not the team rate. If there are multiple pay rates for the same type of driver, please use the average pay rate.)

Type of Pay	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	\$	\$	\$

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.

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

Yes No Don't Know

If yes, what was the average incentive and/or bonus pay paid per individual driver in 2015? (Please report as an annual average paid per driver.)

\$ / Average per Driver in 2015

15) Please list your 2015 costs per mile for the following key cost centers, calculated using IFTA miles: (If the amount equals zero, please enter 0. If the line item does not apply to your operation, please enter N/A.)

Expense Type	2015 Cost per Mile
Repair & Maintenance (Include R&M costs for all trucks and trailers; do not include tire-related expenses.)	\$
Tires (Include all purchase, maintenance, re-treading and replacement costs.)	\$
Fuel Costs (Include all transportation fuel; do not include fuel surcharge revenue.)	\$
Truck Insurance Premiums (Include all liability, cargo and umbrella policy premiums.)	\$
Truck and Trailer Lease or Purchase Payments (Include all interest/fees associated with the payments; do not include depreciation tax benefits.)	\$
Tolls	\$
Permits & Special Licenses (Include oversize/overweight permits, HazMat, etc.)	\$
Other (please specify): _____	\$
Total	\$

16) What percent of your total annual miles were non-revenue/dead-head miles in 2015?

% of total 2015 miles

Thank you! We greatly appreciate your participation.

Please return completed survey to ATRI via
fax (770-432-0638) or email (ftorrey@trucking.org)



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