Scientific Research Publishing

Open Journal of Forestry, 2026, 16(3), 276-289
https://www.scirp.org/journal/ojf
ISSN Online: 2163-0437
ISSN Print: 2163-0429

Impacts of Diesel and Insurance Costs on Owner-Operator Log Truck Drivers in Mississippi, USA

Curtis L. Vander Schaaf

Central Mississippi Research and Extension Center, Mississippi State University, Raymond, MS, USA
Email: clv127@msstate.edu

How to cite this paper: Vander Schaaf, C. L. (2026). Impacts of Diesel and Insurance Costs on Owner-Operator Log Truck Drivers in Mississippi, USA. *Open Journal of Forestry, 16,* 276-289.
https://doi.org/10.4236/ojf.2026.163017

Received: May 13, 2026
Accepted: July 4, 2026
Published: July 7, 2026

Abstract

Forest harvesting allows landowners to manage their forests and to receive financial compensation for their capital investment. After felling, skidding, delimbing and often topping, and merchandizing of trees, logs must be loaded onto a truck for the hauling of that raw woody resource to a mill. Mills commonly pay for hauling with a haul rate that is calculated per ton per loaded km ($/ton/loaded km). This analysis is focused on owner-operator truck drivers. These self-employed drivers pay for the truck and trailer and associated insurance, licensing, maintenance, diesel, mandatory training, salary, fringe benefits such as health insurance, retirement, etc. This analysis looks at the impacts of costs per liter of diesel ($0.79, $1.06, $1.32, and $1.59 per liter), different log truck annual insurance rates ($10,000, $15,000, and $22,000), along with basic assumptions about hauling conditions and maintenance costs, and varying haul rates received per load of $0.106, $0.112, $0.118, $0.124, $0.130, and $0.137 dollars per ton per loaded km ($/ton/loaded mile of $0.17 to $0.22 by one cent), on the net annual revenue of an average log truck driver. Here, no costs related to purchasing the truck and trailer were included. For a common rate of $0.124/ton/loaded km ($0.20/ton/loaded mile), and two assumed log truck routes, diesel per liter increases from $0.79 to $1.06, $1.32, and $1.59 reduced net annual revenues by up to 14.9, 29.7, and 44.6%, respectively, in all cases the greatest reductions were seen when annual insurance costs were $22,000. We all should be extremely concerned about adequate salaries to log truck drivers; without these drivers, forest management options become minimal.

Keywords

Forest Harvesting, Fuel, Log Trailers

1. Introduction

Forestry is a large business in the southeastern United States of America (USA) and a vital component of that business is regular harvesting to capture the growth, yield, and value of the trees. Forest harvesting, or logging, is extremely important to the fiber supply chain, allowing landowners to conduct management on their property and to receive financial compensation for their capital investment, while providing fiber to processing facilities that convert the raw woody resource into wood products.

After the felling, skidding, delimbing and often topping, and merchandizing of trees, the logs must be loaded onto a truck for the hauling or transport of that raw woody re-source to a mill. The hauling and transport component, or the trucking component, is vital to the forest harvesting process (Conrad, 2018, 2021). Many loggers will tell you the most costly component of harvesting operations is trucking. Several assessments and studies have also shown this to be true (e.g., Conrad, 2018; Conrad et al., 2018; Conrad, 2021; McConnell, 2020; Conrad & Blinn, 2024; Knight et al., 2024). This is particularly true in recent years as truck insurance and diesel fuel costs were rising at rapid rates. Additionally, the financial difficulties associated with trucking can increase with lower value wood products (e.g., hauling pulpwood versus hauling sawlogs) (e.g., Grebner et al., 2005).

Mills commonly pay for hauling with a haul rate that is calculated per ton per loaded km ($/ton/loaded km). Typically, there is a minimum haul distance, often 64.4 km (TimberMart-South, 2025; VanderSchaaf et al., 2023; Zhang et al., 2025), and the log truck owner is paid this rate for deliveries at distances up to the minimum haul distance. The minimum haul distance does vary depending on local market conditions; here in the Gulf region of the southern USA, at the current time, common minimum haul distances are 64.4 km and 80.5 km.

The minimum haul distance is used to compensate the log truck owner for the dis-proportionate amount of time spent loading and unloading on short hauls. On longer hauls, the log truck owner receives the minimum haul rate multiplied by the minimum haul distance, plus an incremental haul rate multiplied by the incremental haul distance (Equation (1)). The incremental haul rate may be the same, higher than, or less than the minimum haul rate.

$$P = T_D \times HD_M \times HR_M \times T_D \times HD_I \times HR_I \quad (1)$$

where:

P—mill payment for timber transportation ($), $/ton/loaded km,

T_D—tons of payload delivered,

HD_M—minimum haul distance (loaded km),

HR_M—minimum haul rate ($/ton/loaded km),

HD_I—incremental haul distance (loaded km), and

HR_I—incremental haul rate ($/ton/loaded km).

This analysis is focused exclusively on owner-operator truck drivers, or independent contract drivers, and hence drivers that are self-employed. In most cases,

these drivers pay for the truck and trailer (and other necessary accessories such as straps or chains, etc.), insurance for the truck and trailer, licensing, maintenance, fuel, mandatory professional training, salary, fringe benefits such as health insurance, retirement, etc. However, in some cases the owner-operator only owns the truck (or cab or tractor), and thus the contractor (the driver) uses the contractee's (e.g., logger's) trailer. Here, we are going to concentrate on the situations where the owner-operator (the driver/contractor) owns both the truck and trailer. Additionally, we are not going to concentrate on log truck drivers who are employed directly by a logging company (e.g. a fleet truck), and hence are generally not directly financially responsible for the purchase, maintenance, licensing, and fuel of the truck and trailer. Both types of drivers (owner-operator and employed) are common in the southeastern USA. For instance, Conrad (2023) reported that 36% of timber harvested across much of the southeastern USA was hauled by contract owner-operator log truck drivers. Conrad et al. (2024) reported that 72% and 82% of Georgia and Florida, USA logging businesses used contract hauling to deliver at least some of their timber while Bowman et al. (2023) reported that 72% of logging businesses in Alabama, USA indicated they used contract hauling to some extent. Shannon et al. (2025) reported that 25% of logging production in Mississippi, USA was transported by contract trucking.

VanderSchaaf et al. (2023) described several ways in which log truck drivers receive compensation. This analysis is only going to concentrate on those cases where a driver is paid using the per ton-loaded km approach (their Approach Two). Basically, this type of compensation only applies when the trailer is loaded with raw woody unprocessed products and heading to the mill (e.g. loaded km in Equation (1)), hence the driver is not directly compensated for the return trip from the mill. With this approach, a driver receives payment not only for the weight (i.e., the tons), but also the distance (km). Thus, more payment is received for heavier loads transported greater distances.

This compensation approach has several advantages for the log truck driver. For in-stance, the number of daily loads is not an exclusive factor, longer hauls do not penalize the driver. If a driver is paid exclusively by the number of daily loads, longer hauls will reduce payment to the driver unless the pay rate is adjusted accordingly. For the most part, the value of the timber (e.g., pulpwood versus sawtimber) doesn't impact driver compensation. Owner-operators (who own both the truck and trailer) typically receive the entire haul rate paid by the mill and must use the haul rate to cover fuel, maintenance, truck payments, in addition to a personal salary and fringe.

When using the ($/ton/loaded km) payment approach, the driver is paid for driving 64.4 km or 80.5 km (or another minimum haul distance) even if the haul distance is shorter than 64.4 km or 80.5 km, respectively. If the actual haul distance exceeds the minimum haul distance (e.g., 64.4 km or perhaps 80.5 km), then the driver is paid an incremental haul rate for the distance traveled beyond that minimum haul distance (Conrad, 2021; VanderSchaaf et al., 2023), such as 64.4 km,

or perhaps 80.5 km, or any other minimum haul distance (see Equation (1)). For owner-operators, going rates near the end of 2025 likely varied from around $0.106 to $0.137 dollars per ton per loaded km.

This analysis looks at the impacts of different rates of diesel per liter ($0.79, $1.06, $1.32, and $1.59 per liter), different log truck annual insurance rates ($10,000, $15,000, and $22,000), and two haul distances (64.4 km and 96.6 km, given a 64.4 km minimum haul distance—HD_M in Equation (1)), along with basic assumptions about hauling conditions and maintenance costs, and varying haul rates received per load of $0.106, $0.112, $0.118, $0.124, $0.130, and $0.137 dollars per ton per loaded km ($/ton/loaded mile of $0.17 to $0.22 dollars by one cent), on the net annual revenues of an average log truck driver who already owns both the truck and trailer. Haul distances ranging from 64.4 km to 96.6 km are common in the southeastern USA (Conrad et al., 2024; Shannon et al., 2025; TimberMart-South, 2025). Conrad et al. (2024) reported that log truck insurance costs and fuel costs were commonly identified to be two very important factors of logging businesses in the southeastern US. Others have reported similarly (Bowman et al., 2023; Conrad & Blinn, 2024; Shannon et al., 2025; Zhang et al., 2025).

2. Methods

2.1. Hauling Conditions

Many factors beyond those examined (cost of diesel and insurance, haul distance, and haul rate) can impact net annual revenues of owner-operators. These factors include legal gross vehicle weights (GVW) and tare weights of the truck and trailer; for example, what is the weight of the trailer when empty and has no payload. Load height and even load length restrictions can occasionally impact payloads and log truck routing (e.g. underpass heights may limit the ability of a truck to pass under when loaded). Other factors include type of trailer (four-bolster versus pole trailer), whether payments are still being made on the truck and trailer, mechanic hourly rates, type of road condition and type of road maintenance (log truck route); such as unpaved woods roads, county or parish roads, four-lane state roads, interstates, among other types. Additional concerns are title and licensing fees, and number of weeks, days, and hours per day worked. Weather is another important factor in terms of travel speed, but also weather frequently limits access to logging sites; however, this analysis will not address the impacts of weather directly.

For this analysis, it is assumed the owner-operator owns both the truck and trailer outright and hence no payments are made for these vehicles. However, licensing and taxes is assumed to cost $5,550 annually. Further, it is assumed the driver has purchased a harvest permit and thus a constant maximum GVW of 39,916 kg (88,000 pounds) is assumed, which is the legal maximum GVW for a combination vehicle (e.g. truck and trailer) in Mississippi (Section 63-5-33). We will assume a day cab truck, thus a weight of 8,618 kg, and the use of a drop-

center four-bolster trailer that weighs 4,536 kg. Hence, the tare weight of the truck and trailer is 13,154 kg (Conrad, 2021; Conrad et al., 2024; Zhang et al., 2025) and for simplicity we can assume each haul will contain a payload of 26,762 kg (29.5 tons). For simplicity, it is assumed no overloading or underloading at the logging site will occur and thus the legal maximum payload of 26,762 kg will always be hauled.

2.2. Loading, Unloading, in Route Delays, and Daily Routine Service

The amount of time required to be loaded at the logging site and the amount of time required to be unloaded at wood processing facilities can greatly impact annual revenues (Conrad, 2021; Bowman et al., 2023; Conrad, 2023). In both instances, there could be time spent waiting behind other trucks. The Woods Wait and Mill Wait are both assumed to be 30 minutes, thus 60 minutes in total per haul trip. Delays for various reasons are another consideration, 30 minutes in total per haul trip is assumed for both in route delays and daily routine service. Thus, in total, 90 minutes is needed per haul trip for loading/unloading and delays and daily service. These times are based on Grebner et al. (2005), Conrad (2021), and VanderSchaaf et al. (2023).

2.3. Log Truck Routes, Fuel Costs, Repair & Maintenance Costs, Insurance Costs, and Licensing and Taxes

Table 1 contains the amount of time spent on each category of road type during the Log Truck Route, the time required depends on the average km per hour (KPH) and distance traveled per category of road type. Based on a combination of personal observation and others (McConnell, 2020; Conrad, 2021; Conrad et al., 2024; Derochers et al., 2025; Shannon et al., 2025; TimberMart-South, 2025), the haul distances used in this analysis of 64.4-km and 96.6-km are reasonable for Mississippi. Km per liter (km/L) differs by road condition and is based largely on Grebner et al. (2005) but verified to some extent by McConnell (2020), Conrad (2021), Derochers et al. (2025), and Zhang et al. (2025). Travel speeds are based on Grebner et al. (2005) and personal observation of log truck speeds on various road types. An approach described in Grebner et al. (2005) was used to estimate annual repair and maintenance costs (**Table 2**), however, costs and rates have been updated for the current economic situation and inflation based on amounts reported in Leslie and Murray (2025). A constant rate per km is assumed for four categories on the truck and trailer; Brakes, Tires, Normal Maintenance, and Minor Repair. Relative rates of damage and need for repair were assigned to each category of road type. Then, a final estimate of repair and maintenance costs per haul trip is obtained by taking into account the number of km a truck travels in each category of road type (**Table 1**) and the associated repair and maintenance costs per km per trip (**Table 2** and **Table 3**). Additional maintenance costs could include such things as DEF, or diesel exhaust fluid.

Table 1. Number of km per Road Type, average travel speed (km per hour), amount of minutes spent traveling on each road type, and km per liter of diesel when fully loaded and unloaded (unladen). There are two distinct routes of different distances from the harvest site to the mill; 64.4 km (Log Truck Route 1) and 96.6 km (Log Truck Route 2). Limited Access Highway is a four-lane, non-interstate highway.

	Fully Loaded, to the mill				**Unloaded, return to the harvest site**			
Log Truck Route 1		Speed	Travel	Fuel		Speed	Travel	Fuel
Road Type	km	KPH	Time	km/L	km	KPH	Time	km/L
Forest Road	0.80	12.87	3.8	0.85	0.80	14.16	3.4	0.94
Gravelled County Road	0.00	48.28	0.0	1.19	0.00	53.11	0.0	1.28
Paved County Road	3.22	64.37	3.0	1.53	3.22	70.81	2.7	1.53
State or Federal 2 Lane Highway	1.61	80.47	1.2	2.13	1.61	88.51	1.1	2.55
Limited Access Highway	4.83	96.56	3.0	2.13	4.83	106.22	2.7	2.55
Federal Interstate	49.08	104.61	28.2	2.55	49.08	112.65	26.1	2.55
Urban Streets	4.83	32.19	9.0	0.98	4.83	35.41	8.2	1.06
Total Travel Distance	64.37	94.81	48.10	2.13	64.37	102.45	44.28	2.20
	Fully Loaded, to the mill				**Unloaded, return to the harvest site**			
Log Truck Route 2		Speed	Travel	Fuel		Speed	Travel	Fuel
Road Type	km	KPH	Time	km/L	km	KPH	Time	km/L
Forest Road	0.80	12.87	3.8	0.85	0.80	14.16	3.4	0.94
Gravelled County Road	5.63	48.28	7.0	1.19	5.63	53.11	6.4	1.28
Paved County Road	1.61	64.37	1.5	1.53	1.61	70.81	1.4	1.53
State or Federal 2 Lane Highway	0.00	80.47	0.0	2.13	0.00	88.51	0.0	2.55
Limited Access Highway	74.03	96.56	46.0	2.13	74.03	106.22	41.8	2.55
Federal Interstate	0.00	104.61	0.0	2.55	0.00	112.65	0.0	2.55
Urban Streets	14.48	32.19	27.0	0.98	14.48	35.41	24.5	1.06
Total Travel Distance	96.56	82.85	85.25	1.71	96.56	91.14	77.50	1.97

Table 2. Maintenance costs per km by category and road type. Based on Grebner et al. (2005) and Leslie and Murray (2025).

		Limited	Forest	Gravelled	Paved	State	Urban	Federal
	Per km	Access	Road	County	County	2 Lane	Streets	Interstate
Brakes	0.049	100%	200%	150%	150%	125%	150%	100%
Tires	0.121	100%	200%	150%	175%	100%	100%	100%
Normal Maintenance	0.016	100%	200%	175%	150%	125%	125%	125%
Minor Repair	0.024	100%	200%	150%	150%	100%	125%	100%

Table 3 contains various estimates of driver performance, total fuel cost, and maintenance costs for each truckload and annually for each of the two Log Truck Routes. The total maintenance costs (when loaded and unloaded) given market conditions in 2025 are within the range of those reported by Leslie and Murray

(2025). Three rates of annual insurance costs were assumed ($10,000, $15,000, and $22,000), based in part on Conrad (2023) and Shannon and McConnell (2024). The $10,000 annual cost could be considered representative for drivers with 3 or more years experience while the $22,000 annual cost could be considered representative of a new authority, or a new driver with limited or no experience. These costs are comparable to those reported in Conrad (2023) for trucks within fleets of logging businesses. However, often insurance premiums are higher for owner-operators. Thus, currently, depending on the situation, annual tractor-trailer insurance costs for owner-operators may actually exceed $22,000. As mentioned earlier, costs of $1,600, $3,500, and $450 were assumed annually for licensing, ad valorem taxes, and heavy use tax, respectively (Grebner et al., 2005). If anything, these costs are likely conservative for the current time.

Table 3. Individual load and annual summary values by log truck route. Log Truck Route 1 is the 64.4 km haul while Log Truck Route 2 is the 96.6 km haul.

Per Load	Route 1	Route 2	Annually	Route 1	Route 2
km	64.4	96.6	km	54,002	58,452
Hours driving loaded	0.80	1.42	Hours driving loaded	673	860
Hours driving unloaded	0.74	1.29	Hours driving unloaded	619	782
Average KPH loaded	94.81	82.85	-	-	-
Average KPH unloaded	102.45	91.14	-	-	-
Hours spent not driving	1.50	1.50	Hours spent not driving	1,209	908
Hours spent driving	1.54	2.71	Hours spent driving	1,341	1,642
Total time per trip	3.04	4.21	-	2,550	2,550
Trips per day worked	3.29	2.37	Number of trips	839	605
Trips per week worked	16.45	11.87	-	-	-
Maintenance costs loaded	$14.53	$21.80	Maintenance costs loaded	$12,188.82	$13,197.05
Maintenance costs unloaded	$14.53	$21.80	Maintenance costs unloaded	$12,188.82	$13,197.05
Diesel at $0.79/liter	$47.18	$83.49	Diesel at $0.79/liter	$39,577.49	$50,538.50
Diesel at $1.06/liter	$62.90	$111.32	Diesel at $1.06/liter	$52,769.99	$67,384.66
Diesel at $1.32/liter	$78.63	$139.15	Diesel at $1.32/liter	$65,962.48	$84,230.83
Diesel at $1.59/liter	$94.36	$166.98	Diesel at $1.59/liter	$79,154.98	$101,076.99
% km on woods road	1.25%	0.83%	-	-	-

2.4. Hours Worked Annually and Minimum Haul Distance

It is assumed the driver works 51 weeks per year (Shannon et al., 2025), 5 days a week, and 10 hours per day. A minimum haul distance of 64.4 km is assumed (HD_M in Equation (1)), and two haul distances will be examined. Haul distances of 64.4 (Log Truck Route 1) km and 96.6 (Log Truck Route 2) km. Thus, 64.4 km is equal to the minimum haul distance and 96.6 km is greater than the minimum haul distance. For the haul distance of 96.6 km, the incremental haul rate

($/ton/loaded km), HR_l in equation [1], is one cent more than the minimum haul rate, HR_M in equation [1]. Table 3 contains estimates of the number of haul trips per day and annually for each of the two Log Truck Routes. Table 4 presents total costs per load and annually for each Log Truck Route.

Table 4. Total costs per load and annually for each distinct route (either 64.4 km or 96.6 km) and by cost of diesel per liter and annual insurance costs ($10,000, $15,000, and $22,000).

Per Load Costs						
	64.4 km - Route 1			96.6 km - Route 2		
Diesel/liter	$10,000	$15,000	$22,000	$10,000	$15,000	$22,000
$0.79	94.77	100.73	109.08	152.78	161.04	172.60
$1.06	110.50	116.46	124.80	180.61	188.87	200.43
$1.32	126.23	132.19	140.53	208.44	216.70	228.26
$1.59	141.95	147.91	156.26	236.27	244.53	256.09
Annual Costs						
	64.4 km - Route 1			96.6 km - Route 2		
Diesel/liter	$10,000	$15,000	$22,000	$10,000	$15,000	$22,000
$0.79	79,505.13	84,505.13	91,505.13	92,482.59	97,482.59	104,482.59
$1.06	92,697.63	97,697.63	104,697.63	109,328.76	114,328.76	121,328.76
$1.32	105,890.13	110,890.13	117,890.13	126,174.92	131,174.92	138,174.92
$1.59	119,082.62	124,082.62	131,082.62	143,021.09	148,021.09	155,021.09

2.5. Haul Rate

For the 64.4 km minimum haul distance (HD_M in Equation (1)), compensation to the log truck driver, HR_M, were $0.106, $0.112, $0.118, $0.124, $0.130, and $0.137 dollars per ton per loaded km (ranging from $0.17 to $0.22 dollars per ton/loaded mile [$/ton/loaded mile], by one cent increments). For the 96.6 km route, the additional 32.2 km (HD_l) beyond the minimum haul distance of 64.4 km (HD_M), received an additional $0.06 dollars, per ton per loaded km ($/ton/loaded mile). Hence, the incremental haul rates (HR_l) were $0.112, $0.118, $0.124, $0.130, $0.137, and $0.143 dollars per ton per loaded km (ranging from $0.18 to $0.23 dollars per ton/loaded mile ($/ton/loaded mile), by one cent increments).

This analysis compares net annual revenues for varying haul rates, prices of diesel per liter, and annual log truck insurance costs. Revenues obtained depend on the haul rate ($0.106, $0.112, $0.118, $0.124, $0.130, and $0.137 dollars per ton per loaded km) and km traveled (Log Truck Route 1 (64.4 km) versus Log Truck Route 2 (96.6 km)). Costs, on the other hand, include varying diesel prices per liter ($0.79, $1.06, $1.32, and $1.59) and the distance traveled which depends on the log truck route, different log truck annual insurance rates ($10,000, $15,000, and $22,000), maintenance costs which vary between the two log truck routes, and

annual licensing costs which are fixed.

3. Results and Discussion

Figure 1 and Figure 2 provide relative comparisons of net annual revenues that could be received given assumptions utilized during this assessment. Remember that the net annual revenues assume the truck (tractor or cab) and trailer are owned. These net revenues would be greatly reduced if the price of a new truck and trailer were included. The impact would depend on the manufacturer, whether a day cab or sleeper cab was purchased, four-bolster trailer or pole trailer, financing, down payment, time since purchase, tax depreciation provisions, etc. Net annual revenues would also be reduced if the purchase price of used vehicles were included, but of course to a lesser extent. Similarly, the costs for the used truck and trailer would depend on the manufacturer, age, km driven, condition of the vehicle, time since purchase and any down payment, etc.

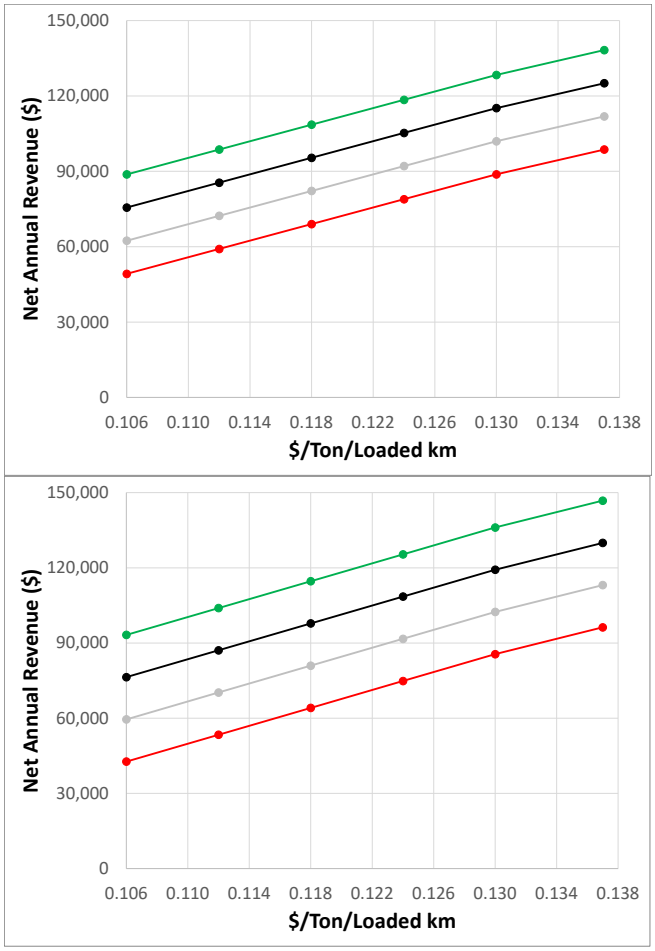

Figure 1. Log truck driver net annual revenue by $/ton/loaded km revenue and cost of diesel per liter ($0.79—green, $1.06—black, $1.32—gray, and $1.59—red). The upper figure is for Log Truck Route One (64.4 km haul*) and the lower figure is for Log Truck Route Two (96.6-km haul). Annual insurance costs of $10,000. *Loaded km equals the minimum haul distance of 64.4 km.

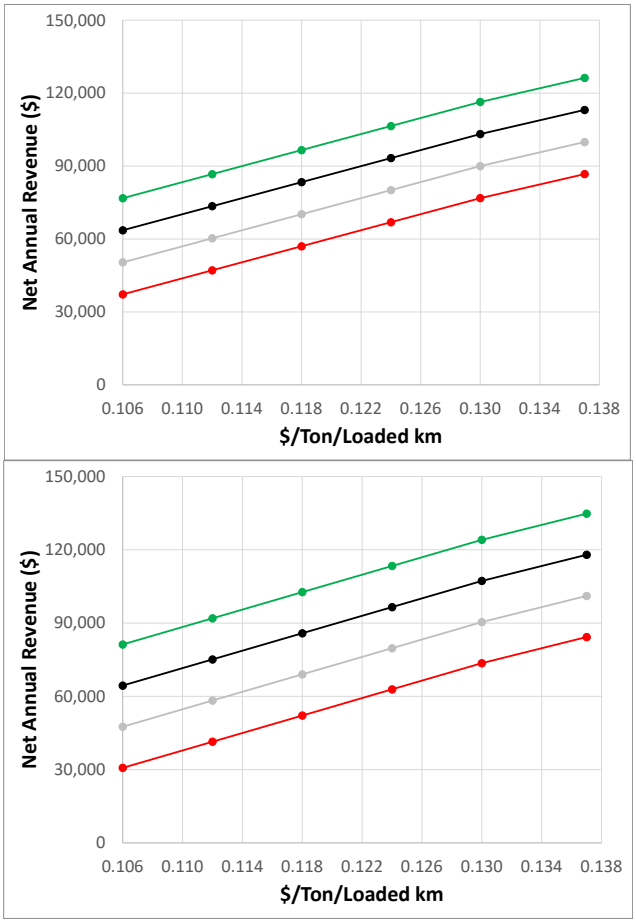

Figure 2. Log truck driver net annual revenue by $/ton/loaded km revenue and cost of diesel per liter ($0.79—green, $1.06—black, $1.32—gray, and $1.59—red). The upper figure is for Log Truck Route One (64.4-km haul*) and the lower figure is for Log Truck Route Two (96.6-km haul). Annual insurance costs of $22,000. *Loaded km equals the minimum haul distance of 64.4 km.

For instance, if we assumed a new day cab truck costs $170,000 and a new four-bolster trailer costs $30,000, depending on financing options and tax options (assuming 6% APR for 5 years), costs during the first year could be as much as $46,400. At the current time, common rates of $/ton/loaded km are probably $0.118 and $0.124 dollars. In April 2026, average diesel prices in Mississippi, Alabama, Louisiana, and Georgia were reported to be $1.39, $1.43, $1.39, and $1.39 per liter, respectively (AAA, 2026). However, in April 2025, diesel in Mississippi, Alabama, Louisiana, and Georgia was reported to be $0.85, $0.89, $0.85, and $0.93 per liter, respectively. Thus, diesel prices can be highly variable. At current diesel prices, which are exceeding $1.32 a liter, particularly for higher annual insurance costs (e.g. Figures 1-3), it would be hard for owner-operators to drive new vehicles. If diesel prices return to around $0.86 a liter, obviously operating new vehicles would be more economically feasible. It should be realized that net annual revenue estimates must also "pay" for fringe benefits such as health and dental insurance, retirement, social security payments, etc. Hence, the net annual reve-

nues could be reduced by 33% or more to account for such factors.

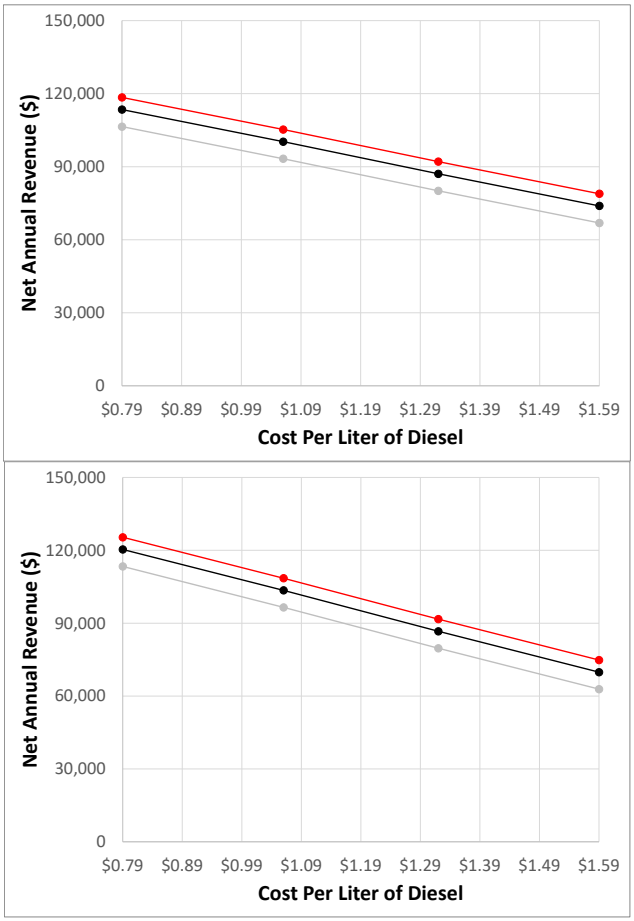

Figure 3. Log truck driver net annual revenue by cost of diesel per liter ($0.79, $1.06, $1.32, and $1.59) for three rates of annual insurance cost ($10,000—red, $15,000—black, and $22,000—gray) when $/ton/loaded km revenue is $0.124. The upper figure is for Log Truck Route One (64.4 km*) and the lower figure is for Log Truck Route Two (96.6 km). *Loaded km equals the minimum haul distance of 64.4 km.

If assuming an owner-operator purchases older equipment (Conrad & Blinn, 2024; Conrad et al., 2024; Derochers et al., 2025; Shannon et al., 2025), a reasonable cost would be $60,000 for the truck and $12,500 for the trailer. For these purchase costs (assuming 6% APR for 5 years), costs during the first year could be as much as $17,000. Given current common rates of $/ton/loaded km are probably $0.118 and $0.124 dollars and that in April 2026 average diesel prices in Mississippi, Alabama, Louisiana, and Georgia were reported to be $1.39, $1.43, $1.39, and $1.39, respectively (AAA, 2026), operating used older vehicles would be more economically feasible.

An important consideration, when using the $/ton/loaded km compensation approach, is the loading time and waiting time at the mill, or turn-times (Conrad, 2021; Conrad, 2023). Notice in Equation (1) that there is no direct consideration for time. If a driver perpetually waits for extended times at the harvesting site

and/or at the mill, net annual revenues can be reduced by meaningful amounts. For instance, for the 64.4 km haul, if a driver waits an extra 30 minutes both at the harvesting site and the mill (one more hour in total per load), and they still only want to work 10 hours a day, essentially one trip is lost per day (2.48 loads per day rather than 3.29 as in Table 3). The time per load is increased from 3.04 hours to 4.04 hours. In order to get back to 3.29 trips per day, the driver would need to work 13.5 hours per day. Activities that can reduce waiting times are very beneficial to owner-operator drivers when they are paid using the $/ton/loaded km approach; more driving time means more revenue.

For a common rate of $0.124 dollars/ton/loaded km, when assuming no direct payments for the vehicles themselves, and for the 96.6 km haul (Log Truck Route 2), diesel per liter increases from $0.79 per liter to $1.06, $1.32, and $1.59 dollars per liter reduced net annual revenues by up to 14.9, 29.7, and 44.6%, respectively (Figure 1 and Figure 2). For the 64.4-km haul (Log Truck Route 1), diesel per liter increases from $0.79 dollars per liter to $1.06, $1.32, and $1.59 per liter reduced salaries by up to 12.4, 24.8, and 37.2%, respectively. When using a rate of $0.130 dollars/ton/loaded km (Figure 1 and Figure 2), when assuming no direct payments for the vehicles themselves, for the 96.6-km haul, diesel per liter increases from $0.79 dollars per liter to $1.06, $1.32, and $1.59 per liter reduced salaries by up to 13.6, 27.2, and 40.7%, respectively. For the 64.4-km haul, diesel per liter increases from $0.79 dollars per liter to $1.06, $1.32, and $1.59 per liter reduced salaries by up to 11.3, 22.7, and 34.0%, respectively. In all cases the greatest reductions were seen when annual insurance costs were $22,000. Higher insurance rates exacerbate the problem of higher diesel prices since they increase overall costs.

This assessment is an initial attempt to gain knowledge about optimal haul rates for log truck owner-operators in Mississippi given current market conditions. At the current time, common rates of $/ton/loaded km are probably $0.118 and $0.124 dollars. When fuel costs increase, in particular, but other expenses as well, often logging businesses and mills will temporarily adjust their contract owner-operator haul rates. However, adjustment response times often vary across the businesses and mills, and hence this can be detrimental to owner-operator log truck drivers; perhaps leading them to or causing them to find employment elsewhere. Given the reliance on owner-operator log truck drivers to haul wood in the southeastern US (Conrad, 2023; Conrad et al., 2024; Bowman et al., 2023; Shannon et al., 2025), temporary haul rate adjustments ($/ton/loaded km) can be extremely important.

4. Conclusions

These results show that the cost of diesel can have substantial impacts on log truck driver net annual revenue, and the problem is exacerbated by increasing annual vehicle insurance costs as well as the impact of inflation on all aspects of operating a log truck. It should be noted that these results depend on the selected parame-

ters. Different maximum GVWs, incremental haul distances, hours worked per week, and the inclusion of truck and trailer payments would likely alter results.

It is important that legislation is passed and that policies are implemented that maintain reasonable diesel costs. As diesel increases to $1.32 or $1.59 a liter, net annual revenues become extremely marginal and this will likely lead to the use of older vehicles, less routine maintenance, and potentially for the hauling of payloads in excess of what would be legal given the 39,916 kg GVW maximum. These situations are not only dangerous for the driver themselves, but also for the general public. In addition to safety concerns, we should all be concerned about log truck driver net annual revenues because without the log truck component of the wood supply chain, landowners will likely have very limited forest management options and abilities to generate revenues from their capital investments. Although not directly addressed in this paper, due to less harvesting, tax revenues to the federal government and to state and local governments will likely decrease. Further yet, the wood supply for mills that produce wood products demanded by society will be substantially decreased or even eliminated.

Acknowledgements

Helpful comments were received from a reviewer.

Conflicts of Interest

The author declares no conflicts of interest regarding the publication of this paper.

References

AAA (2026). *Fuel Prices*. https://gasprices.aaa.com/

Bowman, T., Jeffers, S., & Naka, K. (2023). Characteristics and Concerns of Logging Businesses in the Southeastern United States: Results from a State-Wide Survey from Alabama. *Forests, 14,* Article 1695. https://doi.org/10.3390/f14091695

Conrad, J. L. (2018). Costs and Challenges of Log Truck Transportation in Georgia, USA. *Forests, 9,* Article 650. https://doi.org/10.3390/f9100650

Conrad, J. L. (2021). Evaluating Profitability of Individual Timber Deliveries in the US South. *Forests, 12,* Article 437. https://doi.org/10.3390/f12040437

Conrad, J. L. (2023). Log Truck Insurance Premiums, Claims, and Safety Practices among Logging Businesses in the US South. *International Journal of Forest Engineering, 34,* 204-215. https://doi.org/10.1080/14942119.2022.2124704

Conrad, J. L., & Blinn, C. R. (2024). Logging Business Challenges in the US South and Lake States. *Journal of Forestry, 122,* 493-504. https://doi.org/10.1093/jofore/fvae016

Conrad, J. L., Greene, W. D., & Hiesl, P. (2024). Georgia and Florida Logging Businesses Persevere through Pandemic, Rising Costs, and Uncertainty. *Journal of Forestry, 122,* 493-504.

Conrad, J. L., Greene, W.D., & Hiesl, P. (2018). The Evolution of Logging Businesses in Georgia 1987-2017 and South Carolina 2012-2017. *Forest Science, 64,* 671-681. https://doi.org/10.1093/forsci/fxy020

Derochers, J., Conrad, J. L., Bolding, M. C., Smidt, M., & Da Silva, B. (2025). Trucks-to-

Trucks: A Comparison of the Raw Forest Products Transportation Industry and Other Forms of Commercial Trucking in the US South. *International Journal of Forest Engineering, 36,* 167-177. https://doi.org/10.1080/14942119.2024.2448936

Grebner, D. L., Grace, L. A., Stuart, W., & Gilliland, D. P. (2005). A Practical Framework for Evaluating Hauling Costs. *International Journal of Forest Engineering, 16,* 115-128. https://doi.org/10.1080/14942119.2005.10702520

Knight, C. R. D., Bolding, M. C., Conrad, J. L., & Barrett, S. M. (2024). Log Truck Transportation Challenges and Innovative Solutions: Evaluating the Perspectives of Truck Drivers, Logging Business Owners, and Foresters. *International Journal of Forest Engineering, 35,* 113-121. https://doi.org/10.1080/14942119.2023.2273123

Leslie, A., & Murray, D. (2025). *An Analysis of the Operational Costs of Trucking: 2025 Update*. American Transportation Research Institute. 67p.

McConnell, T. E. (2020). Unit Costs and Trends within Louisiana's Logging Contract Rate. *Forest Products Journal, 70,* 50-59. https://doi.org/10.13073/fpj-d-19-00036

Shannon, J. T., & McConnell, T. E. (2024). Mississippi Log Trucking Liability Insurance Premiums: A Hedonic Analysis. *Forest Products Journal, 75,* 8-15. https://doi.org/10.13073/fpj-d-24-00039

Shannon, J. T., McConnell, T. E., Auel, J. B., Tanger, S. M., Grebner, D. L., & Grala, R. K. (2025). *Current Status of Mississippi's Log Trucking Industry*. Forest and Wildlife Research Center, Mississippi State University. https://www.fwrc.msstate.edu/pubs/FO475.pdf

TimberMart-South (2025). *Biomass, Logging Rates, & Species Detail 4th Quarter 2025*. Norris Foundation.

VanderSchaaf, C. L., Conrad, J., Withers, W., & Livingston, D. (2023). *How Do Log Truck Drivers Receive Payment?* Mississippi State University Extension.

Zhang, X., Chhetri, P., Stottlemyer, A., O'Brien, F., & McConnell, E. (2025). Weighing Trade-Offs: Economic and Environmental Impacts of Increasing Log Truck Weight Limits in Texas. *Forests, 16,* Article 1021. https://doi.org/10.3390/f16061021