Estimating Log Haul Costs

BUREAU OF BUSINESS AND ECONOMIC RESEARCH
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FOREST INDUSTRY RESEARCH PROGRAM
UNIVERSITY OF MONTANA

Introduction

The Bureau of Business and Economic Research at the University of Montana-Missoula is conducting an ongoing log haul cost study to characterize Montana and Idaho log hauling costs.

Objectives

The goal of this project was to develop updated estimates of USDA, Forest Service, Northern Region (R1) log hauling costs and better understanding of key variables and factors impacting hauling costs. The objective was to develop a simple method for estimating the cost of hauling logs various distances. This poster provides results of the 2023 log hauling cost survey in Montana and North Idaho.

Methods

The Bureau of Business and Economic Research (BBER) has collected log hauling costs in Montana and North Idaho since 2010. The early surveys were fairly complex. Following discussion with several individuals knowledgeable in the trucking and logging industry, BBER researchers developed a postcard approach to collect the basic information needed to estimate log hauling costs over a range of distances and cost of diesel fuel.

Assumptions Used for 2023 Analysis (Tables 2, 3, and Figure 1):

- Load and unload time is 60 minutes (Expert opinion).
- The first 10 miles of haul distance occur on gravel roads (Expert opinion).
- The remaining haul distance occurs on secondary roads (Expert opinion).
- Average miles per hour on gravel roads is 10 mph (Expert opinion).
- Average miles per hour on secondary roads is 55 mph (Expert opinion).
- Mean truck cost hourly rate was $129.50 (Surveys).
- Mean tons per load was 27.1 (Surveys).
- Mean miles per gallon was 5.4 (Surveys).
- Mean diesel cost per gallon was $4.36 (EIA.gov).

Photo by Micah Scudder

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Table 1: (Hourly and daily rates in nominal dollars)

2023 Descriptive statistics				2021	
Variable	Min.	Max.	Mean	2021 Mean	Percent change
Miles per Gallon	4.5	6.1	5.4	5.2	4.0%
Number of days worked per year (#)	90	300	187	162	15.4%
Hours Worked per Day (#)	8	15	12	12	-0.4%
Tons per Load (tons)	20	30	27	28	-1.5%
Loads per Day (#)	1	5	3	2	17.5%
Hourly Rate ($)	$110	$145	$130	$138	-5.5%
Daily Rate ($)	$900	$1,800	$1,217	$1,300	-6.4%
One Way Haul Distance (miles)	50	175	103	75	37.5%

Table 2:

2023 Conventional Truck Cost per Delivered Ton						
	Haul Distance (Miles)					
Diesel Price	30	50	75	110	160	250
High ($6/gallon)	$12.80	$17.19	$22.69	$30.38	$41.37	$61.14
Average ($4.36/gallon)	$12.12	$16.07	$21.01	$27.91	$37.78	$55.54
Low ($4/gallon)	$11.98	$15.83	$20.64	$27.37	$37.00	$54.32

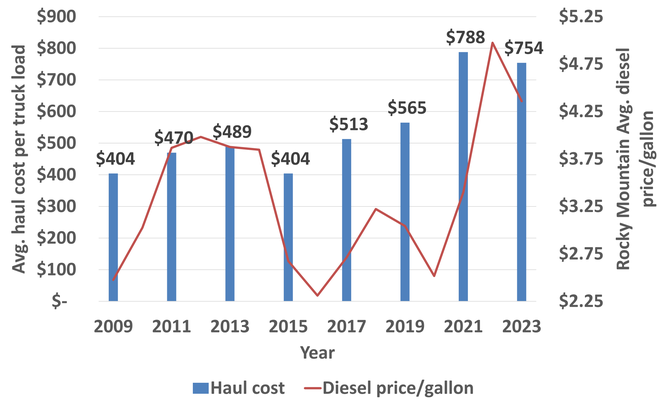
Table 3: (All costs in 2023 dollars)

Historical average Haul Cost per/ton								
Miles	2009	2011	2013	2015	2017	2019	2021	2023
30	$9.53	$10.16	$10.19	$8.67	$11.62	$12.31	$13.88	$12.12
50	$12.03	$13.55	$13.46	$10.94	$15.49	$16.41	$18.50	$16.07
75	$14.51	$17.32	$17.43	$13.20	$18.59	$19.70	$24.30	$21.01
110	$20.68	$23.27	$23.38	$18.82	$23.23	$24.62	$32.40	$27.91
160	$27.99	$31.98	$32.09	$25.47	$30.98	$32.83	$43.97	$37.00
250	$41.50	$48.63	$48.92	$37.77	$46.48	$49.25	$64.80	$54.32

(Assumes the average diesel fuel price/gallon for the Rocky Mountain Region for specified year as reported by the U.S. Energy Information Administration)
(All costs in 2023 dollars)

Figure 1:

Historical comparison of average haul cost per/truck load & average Rocky Mountain cost of diesel/gallon



(Assumes 27 tons/load and haul distance of 110 miles)
(All costs in nominal dollars)

RESULTS

- The mean hourly rate has declined by 5.5% to $130/hour since 2021. Contributing factors to the decline in hourly rate are likely:
  1. A decline in the mean Rocky Mountain diesel price by 12.4% to $4.36/gallon since 2022.
  2. A decline in the Producer Price Index for general freight trucking by 16.9% since 2022.
- When the average diesel cost per gallon is $4.36, the truck cost per hour excluding fuel is $98.92.
- Proportion of diesel fuel to total cost is: 24%.
- The above proportion was the same in the previous 2021 survey, despite changes in fuel cost.
- Average gallons of diesel consumed per trip is 36.7 (assuming a haul distance of 105 miles).

SURVEY RESPONSE COMMENTS

- New regulations and rising fuel costs are making it harder to make a profit.
- Fuel rates continue to hammer us, but our bigger expenses include workers compensation insurance. Montana State fund continues to raise rates, meanwhile other states have reduced their rates. Its making things extremely difficult.
- The Department of Transportation regulations have taken good drivers and companies and made them do other things. We have six log trucks sitting with no drivers.
- Cost challenges - Inflation, prices, tires, insurance, health.
- When the hourly rate is greater than $125, customers unable to meet this threshold with low log price. Fuel is absurd.