Log Truck Liability Insurance in Georgia: Costs, Trends, and Solutions

Final Project Report Prepared for the Georgia Forestry Association

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Executive Summary

The vast majority of timber harvested in the southeastern U.S. is delivered to mills by log trucks. Log truck transportation can account for 25% or more of the delivered cost of pulpwood in Georgia. All log trucks operating on public roads in Georgia are required to have liability insurance. In recent years, many log trucking firms have experienced large increases in liability insurance premiums.

Prior to this study, minimal information was available on log truck liability insurance rate changes in Georgia. There were many anecdotal accounts of rates doubling or tripling in the past five years, but few reliable estimates of liability insurance costs for log trucks across Georgia. Therefore, the objectives of this study were to 1) document changes in log truck liability insurance rates in Georgia from 2007-present; 2) compare log truck liability insurance rate trends in Georgia to those in the competing states of Alabama and North Carolina; 3) identify the reasons for changes in log truck liability insurance rates; 4) recommend actions by loggers, forest industry, and/or legislators to slow, halt, or reverse log truck liability insurance rate increases; and 5) create video and print media highlighting specific instances of log truck liability insurance rate changes and the impact of the change on the business and/or community.

This study used four approaches to assess changes in log truck liability insurance rates and identify reasons for those changes. First, information from the 2017 Georgia logger survey was used to characterize Georgia's log trucking infrastructure. Second, liability insurance rate data was obtained from the Insurance Services Office (ISO) for log trucks and other heavy vehicles for the years 2007-2016. Third, Georgia Uniform Motor Vehicle Accident Reports were obtained for the years 2006-2016 to assess accident rates among log trucks and other heavy vehicles. Interviews were conducted with eighteen log truck owners including wood dealers, contract truckers, and logging businesses to assess the impact of insurance rate changes on individual businesses and identify possible solutions. Finally, contacts were made with representatives from the insurance industry, forest products industry, and the Southeastern Wood Producers Association to assess their experience with log truck insurance in recent years.

This study found that log truck liability insurance premiums increased by an average of 50% since 2011. Liability insurance premiums were similar in Georgia and Alabama over the past decade, but Georgia's average rate was 17% higher than Alabama's in 2016. Liability insurance premiums were consistently lower in North Carolina compared to Alabama and Georgia. In 2016, the average premium for log truck liability insurance in Georgia was nearly twice as expensive as the average premium in North Carolina. While each of these states had experienced liability insurance rate increases in recent years, Georgia's rates had increased at a faster rate than both Alabama and North Carolina. Log truck liability insurance premiums were more expensive in most years than comparable policies for other heavy vehicles. Over the past decade, liability insurance premiums were an average of 7%, 19%, and 32% higher for log trucks than other heavy trucks in North Carolina, Georgia, and Alabama, respectively.

In addition to increases in the average cost of liability insurance, the variation in rates paid between different log trucking companies has increased as well. Some log trucking companies

still pay rates near the ten-year average rate, but other companies have seen their rates rise by up to 300%. In 2012 and 2013, most of the log truck owners that were interviewed were paying a total premium (liability, collision, comprehensive, etc.) between $1,500 and $3,800 per truck. In 2017, some companies were paying a total premium of $4,000-$5,000 per truck, but others were paying premiums higher than $10,000 per truck.

Log truck accidents declined by 69% between 2006 and 2012. Since 2012, accidents increased by 24%. Accidents per million tons of timber delivered declined from 16.1 to 6.3 between 2006 and 2016. The severity of accidents, as measured by vehicle damage and injury severity, also declined since 2006, but increased in the past several years.

Log trucking fleets are generally smaller and consist of older trucks than fleets in other industries. The average logger owned five trucks in 2017, whereas the average fleet size in other industries exceeds 1,000 trucks. The average log truck was 10 years old in 2017, while the average age of trucks in other industries was 6 years. Log trucks involved in accidents were 14 years old on average in 2016, compared to 7 years for other heavy vehicles.

A nationwide shortage of truck drivers is a major problem for log truck owners. Most insurers require log truck drivers to be at least 25 years old and have 2-3 years of log truck driving experience. These requirements make it difficult for companies to find and hire qualified truck drivers.

The reason for insurance premium increases is simple: the cost of claims paid by insurers exceeded the value of premiums collected from log truck owners. The reasons for increases in claim costs are more complex. Nearly all stakeholders stated that litigation costs associated with frivolous lawsuits are to blame for a substantial portion of the increase. In addition, the cost of repairing vehicles involved in crashes has increased as has the cost of medical care provided to people injured in accidents. The Federal Motor Carrier Safety Administration's Compliance, Safety, and Accountability (CSA) program assigns scores and out-of-service rates to all trucking companies based on roadside inspections and accidents. The information provided by the CSA program, in conjunction with claims history, plays a major role in determining the insurance rates offered to individual log trucking companies. The CSA program allowed insurers to better identify risky trucking companies and charge them higher rates.

A number of possible solutions were identified from conversations with loggers, insurance industry representatives, and forest products industry foresters. First, tort reform that reduces the frequency and cost of frivolous lawsuits was recommend by nearly all stakeholders. Ideas such as a "loser pays" system, caps on non-medical awards, and regulation of attorney's fees are worthy of additional study. Formal training for log truck drivers at technical colleges should continue and potentially expand. Laws against cell phone use while driving should be enforced as insurance industry representatives blamed many accidents on cell phone use by drivers of personal automobiles. Better communication and relations between the Georgia Department of Public Safety and log truck owners would be helpful to increase timber transportation safety.

Several log truck owners that were interviewed for this study had invested in technology such as drive cameras and global positioning system (GPS) tracking for their trucks. Insurance industry

representatives suggested these systems were helpful in training drivers, monitoring driver behavior, and defending against frivolous lawsuits. Log truck owners should consider adding one or both of these systems to their fleet. Log truck owners should consider trucking a critical component of their business, employ a systematic truck maintenance program, and develop driver training programs to maintain good CSA scores. Increases in log transportation efficiency, such as increasing the percent of loaded miles and reducing turnaround times could reduce the number of log trucks on the road and reduce insurance costs per ton.

Companies should evaluate their haul rates to ensure they cover the full cost of safe and efficient timber transportation. While companies should not subsidize unsafe and inefficient trucking practices, haul rates that do not cover transportation costs incentivize truck owners to cut corners by overloading, shortchanging maintenance, and failing to maintain adequate insurance coverage. Mills should evaluate policies for trucks delivering to mills. For example, mills should monitor the insurance coverage of trucks delivering to their facilities. Finally, some mills struggle with consistently long turnaround times for log trucks. Long turnaround times often require loggers to operate more trucks than would otherwise be necessary, which increases costs.

1. Introduction

1.1 Background

Log trucks are a critical component of timber harvesting in Georgia. Nearly all timber is transported to mills by trucks in the southeastern U.S. and trucking can account for 25-45% of timber harvesting costs (Siry et al. 2006, TimberMart-South 2017). Increases in trucking costs hurt the competitiveness of Georgia's forest economy. In the short term (e.g. 6-12 months), increases in trucking costs are likely to reduce logging business and timber buyer profits. In the longer term (e.g. >6 months), some or all of these increases are likely to be passed to landowners in the form of reduced stumpage prices and/or to mills in the form of higher delivered prices.

Minimal research has been conducted on log truck insurance. Mason et al. (2008) conducted a thorough multi-year study of log trucking infrastructure and costs in the state of Washington. That study found truck insurance cost an average of $4,000 per year and was the sixth most expensive component of owning and operating a truck behind fuel, truck payments, wages, benefits, and maintenance and repair. The American Transportation Research Institute (ATRI) conducts annual surveys of trucking costs, but their survey does not analyze log trucks specifically. ATRI's most recent study found that insurance was the sixth most costly component of owning and operating trucks with an average cost of $0.092 per mile, or $7,439 per year (Torrey and Murray 2016). According to ATRI's research, the annual cost of truck insurance increased by $1,091, or 17.2% since 2008 (Trego and Murray 2009, Torrey and Murray 2016).

Most log transportation research has focused on increasing trucking efficiency by maximizing payloads, reducing unloaded miles driven, and reducing turnaround times in the woods and at mills. For example, in-woods scales have been demonstrated to increase average payloads, decrease payload variation, and often pay for themselves in less than one year (Shaffer et al. 1987, Gallagher et al. 2005, Reddish et al. 2011). Likewise, mill policies that discourage overweight trucks reduced load weight variability and increased average payloads (Conradie et al. 2004, Hamsley et al. 2007). Truck dispatching reduced unloaded miles driven and transportation costs (Mendell et al. 2006). There are also opportunities to reduce turnaround times in the woods and at mills. Dowling (2010) studied five Virginia logging crews and found an average truck turnaround time of 1.4 hours at harvest sites. Deckard (2003) found the average turnaround time at mills was 22 minutes, but 10% of loads took nearly one hour to unload.

Log truck safety is a critical component of log truck insurance costs, as insurance rates are based on the perceived risk of a claim. Longleaf Forestry Insurance (2017) stated the main factors that influence log truck insurance rates are the value of the truck(s) insured, driver records, distance travelled by trucks, and the value of the cargo. Greene et al. (1996) found that only 5.6% of heavy truck accidents in Georgia involved logging vehicles. After regulation and driver training were instituted in Georgia in 1991, the number of logging vehicle accidents caused by mechanical failure declined significantly (Greene et al. 1996). Nonetheless, total logging vehicle accidents increased from 11 to 19 accidents per million tons of wood delivered between 1991 and 2003 (Greene et al. 2007).

Roberts et al. (2005) found that 22% of logging injuries were to truck drivers, but only half of these injuries occurred while driving a truck. However, logging safety has improved since the time of the study and 86% of truck drivers in Washington recognized that traffic and roads were the greatest hazards to truck drivers (Mason et al. 2008).

Georgia's logging businesses and forest products industry must remain cost-competitive with other states, regions, and countries if it is to remain the #1 forestry state in the U.S. Internationally, Brazil's hauling costs have been lower than the South's, but the South has been competitive with Australia and Sweden, and incurred lower transportation costs than western Canada (Siry et al. 2006). Regionally, southern hauling costs are generally lower than competitors in the Northeast and the Lake States, and comparable to those in the Northwest (Gibeault et al. 2015).

Most log truck owners are required by contract with landowners, wood dealers, and/or mills to maintain $1 million of liability insurance. Additional coverage for collision and comprehensive insurance is typically purchased as well. Log truck owners purchase insurance through insurance agents (Baker and Tyson 2017). Agents act as intermediaries between insurance carriers and log truck owners. In some cases, wholesalers may act as intermediaries between insurance carriers and agents. Insurance carriers underwrite insurance policies and assume the risk of paying claims in the event of an accident. Insurance companies may purchase insurance on the policies they have underwritten, which is called reinsurance.

1.2 Project Objectives

There have been numerous anecdotal reports of major increases in insurance premiums for log trucks in Georgia. Given the absence of previous studies and publicly available data on this issue, new research on log truck insurance in Georgia was necessary.

Therefore, the objectives of this research were to:

1. Document changes in log truck liability insurance rates in Georgia from 2007-present,
2. Compare log truck liability insurance rate trends in Georgia to those in Alabama and North Carolina,
3. Identify the reasons for changes in log truck liability insurance rates,
4. Recommend actions by loggers, forest industry, and/or legislators to slow, halt, or reverse log truck liability insurance rate increases, and
5. Create video and print media highlighting specific instances of log truck liability insurance rate changes and the impact of the change on the business and/or community.

2. Methods

2.1 2017 Georgia Logger Survey

The University of Georgia has conducted surveys of logging businesses every five years since 1987 (e.g. Greene et al. 1988, Baker and Greene 2008, Greene et al. 2013). The survey collects data on production, harvest characteristics, equipment used, capital investment, and challenges facing the business. In terms of trucking, the survey collects data on the percent of loads delivered by contract trucks, average haul distance, number of trucks owned by the logging company, and age of the trucks owned. In 2017, at the suggestion of Tommy Carroll of the Southeastern Wood Producers Association, loggers were asked about changes in log truck insurance rates during the past five years.

Logging businesses were identified from the list of active Master Timber Harvesters at the end of 2016. The initial list included 1,574 names. After eliminating multiple representatives from the same firm and non-loggers (e.g. foresters, landscaping firms, etc.), the final mailing list included 684 loggers. A cover letter, questionnaire, and business-reply envelope were mailed to the 684 logging businesses during the first quarter of 2017. A second cover letter, questionnaire, and business reply envelope were sent to non-respondents four weeks after the initial mailing.

Four letters were undeliverable, which reduced the sample to 680 businesses. One hundred fifty-seven questionnaires were returned, yielding a response rate of 23%. Of the returned questionnaires, 133 were from logging business owners or managers and contained usable data. The 20% response rate for loggers was consistent with the previous six surveys (Baker and Greene 2008, Greene et al. 2013). Respondents collectively harvested 12.9 million tons of timber annually, one-third of the annual harvest volume in Georgia (Brandeis et al. 2016).

Miles driven per truck were estimated using survey responses from logging businesses that used their own trucks exclusively. We divided the number of loads delivered annually by the number of trucks owned by each company to determine the number of loads delivered per truck per year. The number of loads per year per truck was then combined with the average distance to the mill (50 miles) reported by respondents, assuming 48% of miles were loaded (Mendell et al. 2006, Baker et al. 2016). Average revenue per truck was estimated by multiplying estimated loaded miles driven by a rate of $0.14 per ton-mile (TimberMart-South 2017).

2.2 Liability Insurance Rate Data Collection

Liability insurance rate data for log trucks and other heavy vehicles was obtained from the Insurance Services Office (ISO). ISO reported the average annual liability insurance premiums for log trucks and heavy vehicles from 2007-2016 for the states of Alabama, Georgia, and North Carolina. Data provided by ISO is subject to copyright protection and may not be distributed outside of the Georgia Forestry Foundation.

2.3 Log Truck Accident Analysis

Increases in accident frequency and/or cost could explain increases in insurance premiums. I obtained Georgia Uniform Motor Vehicle Accident Reports (DOT-523) (Georgia Department of Transportation [GDOT] 2003) for the years 2006-present. Whenever an accident occurs on public roads in Georgia, law enforcement completes a DOT-523 form and submits it to GDOT. When an accident results in a fatality, injury, or a tow-away, the information is submitted to the United States Department of Transportation as well. Law enforcement records a variety of information on the DOT-523 forms such as vehicle type, factors contributing to the accident, vehicle condition, and other information. The DOT-523 form is filled out by law enforcement when the accident occurs and must be submitted to GDOT within four days (GDOT 2003). The purpose of the reports is to collect data in a standardized format and communicate that data to the appropriate parties quickly and accurately. The DOT-523 form does not assign fault to one party or another and this determination may take days, months, or even one year or more to decide. Therefore, answering questions about the percentage of accidents in which log trucks are at fault is outside the scope of this study.

DOT-523 forms were requested for all accidents involving heavy vehicles, which includes truck tractors (bobtail), tractor/trailers, logging trucks, logging tractor/trailers, single unit trucks, and panel trucks for all accidents occurring between January 1, 2006 and July 21, 2017. Logging trucks and logging tractor/trailers were combined in the analysis and referred to as "log trucks" or "logging vehicles" in this report.

2.4 Interviews with Log Truck Owners

In-person interviews were conducted with log truck owners to gather first-hand accounts of changes in log truck liability insurance, document the impact of changes in insurance premiums on log trucking companies, and put a human face on the changes in insurance premiums. During the interviews, data was collected on the overall costs of owning and operating a log trucking firm so that changes in insurance costs could be placed in the proper context. Eighteen interviews were conducted with log truck owners. Seventeen of the companies were headquartered in Georgia and one was based in northern Florida, but regularly hauled timber in Georgia. Interview participants were identified through consultation with insurance representatives and Tommy Carroll of the Southeastern Wood Producers Association.

The interviews were divided into two components. The first component was video-recorded and consisted of questions regarding business background, the regulatory environment for log trucking companies, insurance premium costs, and responses to changes in insurance costs. Responses to these questions were combined into a 5-10 minute video that accompanies this report. Two participants declined to participate in the on-camera portion of the interview, and so the video consisted of responses from 16 of the 18 participants. The second component of the interviews was conducted off-camera and the answers provided were confidential with summary data provided in this report. During the confidential portion of the interviews, data was collected on fleet characteristics, haul characteristics, costs of owning and operating log trucks, and future plans for the business.

Many of the participants in interviews provided their total cost for insurance for their log trucks and trailers. This cost includes both liability insurance as well as comprehensive and other coverage. Insurance for the trailer and for comprehensive and collision coverage for the log truck often costs between $1,000 and $1,400. These values can be subtracted from the total premium costs provided in section 4 and to approximate liability insurance premium costs.

Finally, contacts were made with insurance industry representatives, forest products industry personnel, and the Southeastern Wood Producers Association. These contacts were made to determine whether the findings from the interviews and accident reports were consistent with the experience of practitioners. Contacts were assured anonymity, and so when information from these sources is used in this report, it is attributed to a personal communication with a representative from the relevant stakeholder.

3. Georgia Timber Transportation in 2017

3.1 Log Trucking Strategies

Georgia loggers employ diverse timber transportation strategies. Sixty-one percent of Georgia logging businesses owned at least one truck in 2017 (Table 3-1). Most loggers (78%) used contract hauling for at least some of their loads, and 30% relied on contract hauling exclusively. The percentage of loggers using contract hauling was unchanged since 2012 (Greene et al. 2013); however, our interviews and other contacts made during this study indicated a reduction in availability of contract truckers. Ten percent did not use contract hauling or own their own trucks; these companies appeared to harvest for a wood dealer or other entity that arranged for trucking.

Table 3-1: Hauling strategies employed by Georgia loggers in 2017.

Trucking Strategy	Percent Using Strategy
Use contract trucking	78%
Own at least one truck	61%
Use company trucks exclusively	22%
Use contract trucking exclusively	30%
Other[a]	10%

[a]The other category may include loggers that harvest TIMO/REIT land or harvest timber for a wood dealer that controls hauling.

3.2 Age and Size of Georgia's Log Trucking Fleet

The average age of the trucking fleet was 9.5 years with a median age of eight years. Approximately one-quarter of log trucks were less than three years old and 46% were less than six years old (Figure 3-1). However, there were a number of exceptionally old trucks still in use. One-third of log trucks in use were older than ten years, and 12% were older than twenty years.

Relative to trucking firms in general, Georgia loggers operate small fleets. The American Transportation Research Institute's survey (Torrey and Murray 2016) found a mean fleet size of

1,259 trucks and a median fleet size of 76 trucks. The largest fleet owned by Georgia loggers was 24 trucks, with an average of five trucks per firm (Table 3-2). There are larger contract fleets, but many of them haul other types of cargo in addition to timber.

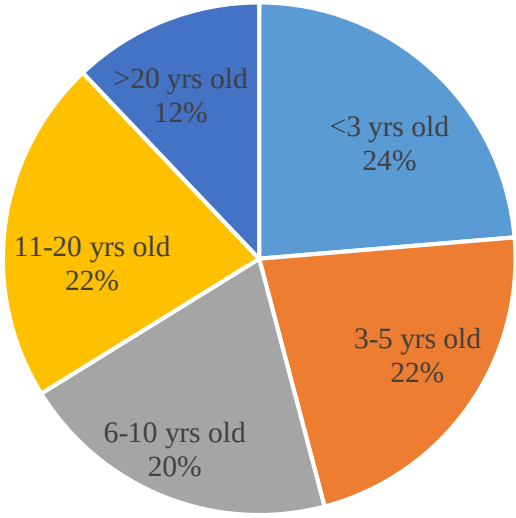

Figure 3-1: Age of log trucks owned by Georgia logging businesses according to the 2017 Georgia logger survey.

Georgia log trucks were generally older than trucks from other industries. Torrey and Murray (2016) found an average age of 5.5 years for all trucks, whereas the average Georgia log truck was almost ten years old (Figure 3-1, Table 3-2). The average age of log trucks has changed little in the past twenty years. Greene et al. (1996) found the average age of log trucks involved in accidents was 10 years during the early 1990s and was approximately two years older than other heavy trucks.

Greene et al. (1996) hypothesized that the old age of log trucks contributed to their higher mechanical failure rate compared to other heavy trucks in Georgia during the 1980s and 1990s. Analysis of federal data from 2011-2015 found the average age of log trucks involved in fatal accidents was over 13 years, which was four years older than the average age of all heavy trucks involved in fatal accidents (Cole et al. 2017). Old trucks are subject to more years and miles of wear than newer trucks, and if not maintained properly, can become unsafe. In addition to wear, old trucks may have fewer safety features. For example, antilock braking systems have been required on tractors since 1997 and on semi-trailers with air brakes since 1998. ABS was estimated to reduce the number of accidents for air-braked tractor-trailers by 3%, with a 6% reduction in the types of accidents in which ABS would be most helpful (Allen 2010). Electronic Stability Control (ESC) was available from many manufacturers within the past decade and was mandated for three-axle truck tractors manufactured after August 1, 2017 (49 CFR § 571, 2015).

Table 3-2: Fleet characteristics of Georgia loggers, Washington loggers (Mason et al. 2008) and trucking firms from the American Transportation Research Institute survey (Torrey and Murray 2016).

Characteristic	Georgia Loggers 2017	Washington Loggers 2006	Trucking Industry 2015
Median fleet size (# trucks)	4	1	76
Mean fleet size (# trucks)	5	3	1,259
Mean vehicle age (yr)	9.5	12.0	5.5
Mean miles driven per year	57,292[a]	66,122	80,868
Mean annual revenue per truck	$96,252[b]	$157,650[c]	$286,414
Percent loaded miles	48%[d]	50%	79%

[a]Estimated assuming an average one-way haul distance of 50 miles and 25 tons per load
[b]Calculated assuming $0.14 per ton per loaded mile (TimberMart-South 2017)
[c]Adjusted to 2017 dollars using the producer price index for general freight trucking, local (BLS 2017a)
[d]Estimate from Mendell et al. (2006) and Baker et al. (2016)

4. Log Truck Insurance Rates

4.1 Average Liability Insurance Rate Changes 2007-2016

The cost of log truck insurance premiums in Georgia declined by 15% between 2007 and 2010. Simultaneously, the cost of insurance for other heavy vehicles increased by 16%. In 2007, it cost 38% more to insure log trucks than other heavy trucks, but by 2010, the difference was less than 1%.

The positive trends observed between 2007 and 2010 reversed themselves beginning in 2011. Between 2011 and 2016, the average insurance premium for log trucks increased by 53%. Premiums increased by 12% for other heavy vehicles during this period. In 2010, log truck insurance cost 0.9% more than insurance for other heavy vehicles, but by 2016, this differential had increased to 37%, the same differential observed in 2007.

It is important to compare log truck insurance rates not only over time, but between states as well. Georgia harvests more timber volume than any other state in the South (and the U.S.). Alabama and North Carolina rank second and third, respectively in annual timber harvest volume in the South, and so the decision was made to compare these three states.

Log truck insurance premium costs in Alabama and Georgia were similar for most of the past decade, with Georgia's rates an average of 6.8% lower than Alabama's between 2007 and 2013. However, since 2013, Alabama's log truck insurance rates increased by 7%, while Georgia's increased by 32%. Therefore, in 2016, it cost 17% more to insure the average log truck in Georgia compared to Alabama.

For other heavy vehicles, Alabama's insurance rates were lower than Georgia's for nine of the past ten years, with Georgia's rates higher by an average of 8.3%. In Alabama, the gap between the cost of insuring log trucks and other heavy vehicles remained relatively consistent. On

average, it cost an additional 32% per year to insure log trucks compared to other heavy vehicles in Alabama from 2007-2016.

While Georgia's log truck insurance premium rates have been competitive with Alabama's until recently, Georgia's rates have been consistently and substantially higher than North Carolina's. In 2007, it cost 73% more to insure the average log truck in Georgia compared to North Carolina. In 2016, in cost 94% more to insure a log truck in Georgia than North Carolina, on average. Furthermore, while the average log truck insurance premium increased by 53% in Georgia between 2011 and 2016, North Carolina's average rate increased by only 17%.

4.2 Insurance Rate Changes Experienced by Loggers 2012-2017

The ISO data presented a thorough and comprehensive sense of the average cost of liability insurance for Georgia log trucks. However, it is also important to look at the cost of insurance for individual log truck owners. From the interviews with log truck owners, the 2017 Georgia logger survey, and discussions with insurance industry representatives, it is obvious that not only have average premiums increased substantially, but the variation in rates paid by different log truck owners has increased as well.

Georgia loggers reported an average increase in insurance premiums of 50% over the past five years (Figure 4-1). The percentage increase reported by Georgia loggers was more than triple the increase reported by the trucking industry as a whole (Fender and Pierce 2013, Torrey and Murray 2016). Loggers' experience with truck insurance was highly variable. One-quarter of respondents reported increases of 10% or less, meaning their costs closely tracked the rate of inflation (Figure 4-1). On the other hand, nearly 25% of loggers experienced >50% increases in truck insurance costs over the five year period, and 6% saw costs more than double during this period. The cost of truck insurance for all trucking industries increased by $959, or 15% since 2012 (Fender and Pierce 2013, Torrey and Murray 2016).

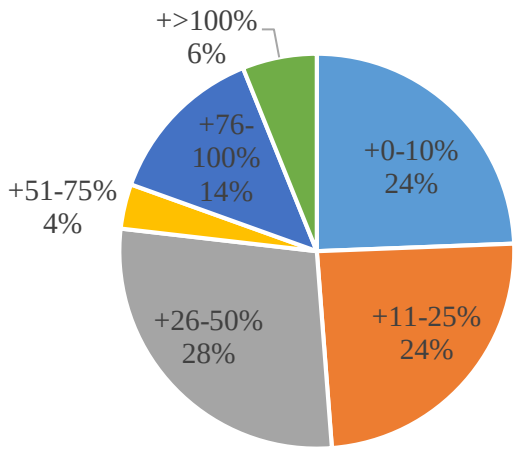

Figure 4-1: Increases in truck insurance rates from 2012-2017 as reported by Georgia loggers on the 2017 Georgia logger survey.

4.3 Challenges Faced by Georgia Loggers

The most pressing challenge identified by loggers participating in the 2017 Georgia logger survey was mill quotas. Forty-two percent of responding loggers listed quotas as their biggest challenge. The second and third most commonly identified challenges were trucking (27%) and insurance (22%). Loggers did not always provide details regarding the exact problem they faced with "trucking" and "insurance", but a large number of loggers did identify truck insurance specifically and finding qualified truck drivers.

The American Trucking Association expected a shortage of nearly 100,000 drivers in 2017 and the shortage was expected to grow to 175,000 by 2024 (Costello and Suarez 2015). Loggers must compete with other trucking industries for drivers. Unfortunately, wages for log truck drivers are often lower than for drivers in other industries, especially when medical and other benefits are considered (Baker and Mendell 2016). Driving a log truck does not require extended trips away from home, however, and wages for log truck drivers are comparable to competing industries that do not require long-distance travel. The shortage of truck drivers is likely to put pressure on wages; indeed, truck driver wages increased by an average of 15% in the South between 2012 and 2015 (Baker and Mendell 2016).

To some extent, the problems of quotas, insurance costs, and finding qualified truck drivers exacerbate one another. Restrictive mill quotas have been a problem for southern loggers for many years (Greene et al. 2004, Ulmer et al. 2004), but have been particularly problematic during 2016 and 2017 (RISI 2017). Quotas reduce revenue, making it difficult for loggers to cover increased costs for insurance and wage increases. In addition, quotas reduce truck utilization, which increases the per-ton value of fixed costs such as truck insurance. Furthermore, inconsistent work schedules make attracting and retaining qualified truck drivers difficult.

4.4 Insurance Rate Changes Experienced by Individual Log Truck Owners 2012-2017

It is important to note that the data from ISO and from the 2017 Georgia logger survey address increases observed through 2016, and the first quarter of 2017 in the case of the logger survey. To assess the impact of insurance rate changes on individual log truck owners, interviews were conducted with 18 log truck owners hauling timber in Georgia. The interviews were conducted throughout the major timber producing regions of the state (Table 4-1) and included contract truckers, wood dealers, and logging business owners. The size of interviewees' trucking fleets ranged from zero to over 50 log trucks.

The interviews with log truck owners uncovered significant increases when log truck owners renewed their insurance coverage in 2017. For example, truck owner G's truck insurance premium increased from $3,200 to $7,000 per truck, a 119% increase (Figure 4-2). Truck owner M's per-truck premium increased from $5,595 to $12,657 per truck, a 126% increase.

Two log truck owners experienced reduced premiums when they renewed their insurance policy in 2017. Truck owner D experienced a premium reduction from $23,333 to $13,333 per truck, a 43% decline. Likewise, truck owner L's premium was reduced from $13,333 to $9,200 per truck, a 31% reduction. Log truck owners experiencing a reduction in premiums had switched insurance companies and/or lowered their risk profile from the previous year.

In 2012 and 2013, most log truck owners paid an annual premium between $1,500 and $3,800 per truck for insurance, a difference of $2,300 (Figure 4-2). A new log truck owner paid a rate of $5,500 in 2012. Owners with the lowest rates were paying $4,000-$5,000 per truck for insurance in 2017. However, five owners were paying $7,000 or more per truck in 2017 and the difference between the least expensive policy in 2017 ($3,000) and the most expensive policy ($13,333) was over $10,000. In summary, the average cost of insurance has increased and the variation in rates charged increased as well.

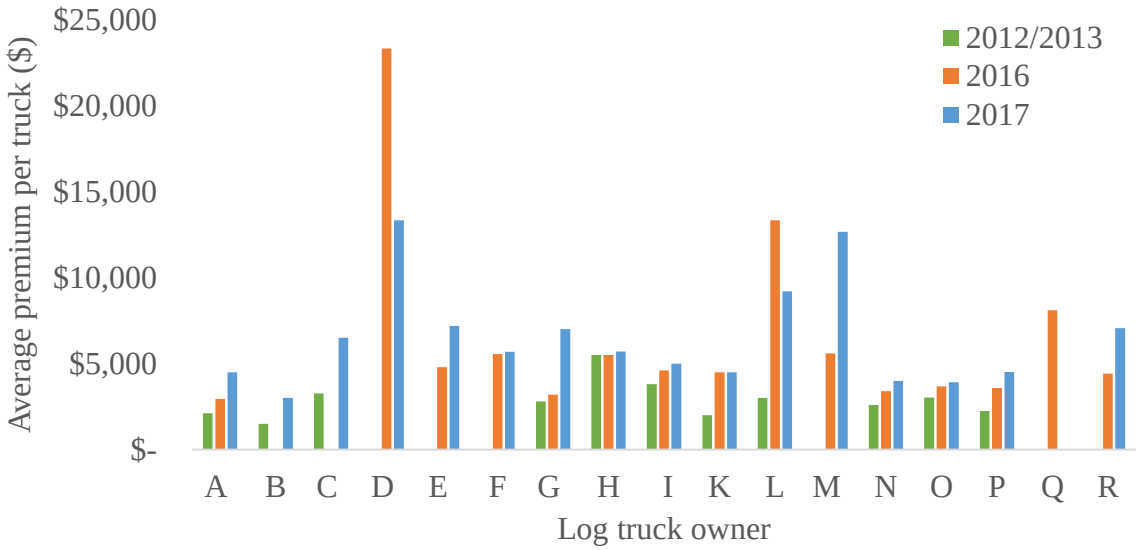

Figure 4-2: Average per-truck premiums for the interviewed log truck owners in 2012/2013, 2016, and 2017. The values provided are for the entire cost of insurance, including both liability and other types of insurance. Not all truck owners provided data for each period of interest.

Table 4-1: Profile of eighteen log truck owners that were interviewed during July and August 2017. Numbers in columns may not sum to 100 because of rounding error.

Item		Percent of participants
Region		
	Northwest GA[1]	22
	Central GA[2]	33
	Southeast GA[3]	17
	Southwest GA[4]	28
Business type		
	Logging and hauling	56
	Wood dealer, logging, and hauling	17
	Contract hauling	11
	Large diversified trucking company	11
	Logging only	6
Fleet size (log trucks)		
	>25	17
	21-25	11
	16-20	6
	11-15	11
	6-10	22
	1-5	28
	0	6

[1]Northwest: North of I-85, west of Atlanta
[2]Central: South of I-85, north of Hwy 280
[3]Southeast: South of Hwy 280, east of I-75
[4]Southwest: South of Hwy 280, west of I-75

4.6 Proactive Steps to Counteract Insurance Rate Increases

A number of log truck owners were proactive in improving safety and reducing their insurance risk profile. For example, three truck owners had installed drive cameras on their trucks (Figure 4-3). There are a variety of different camera options available, but one proactive company employed a camera system that is activated by a gyroscope. When there is an "event" such as heavy braking, sudden change in direction, or a collision, the camera records for a predetermined number of seconds before and after the event. The camera systems were used to coach drivers and to demonstrate who was at fault in accidents. One owner stated that his drivers' average following distance had doubled since the installation of the cameras two years ago and he had already avoided multiple citations by sharing video evidence with law enforcement.

Several log truck owners had invested in new trucks in an effort to reduce citations for mechanical problems. These owners concluded the time and expense of maintaining old trucks was sufficiently high that they would benefit by replacing trucks before their warranty expired and allowing the manufacturer to perform covered repairs. In addition, the owners suggested that late model trucks that comply with the most recent emissions regulations are costly to repair and they benefit by keeping trucks under warranty.

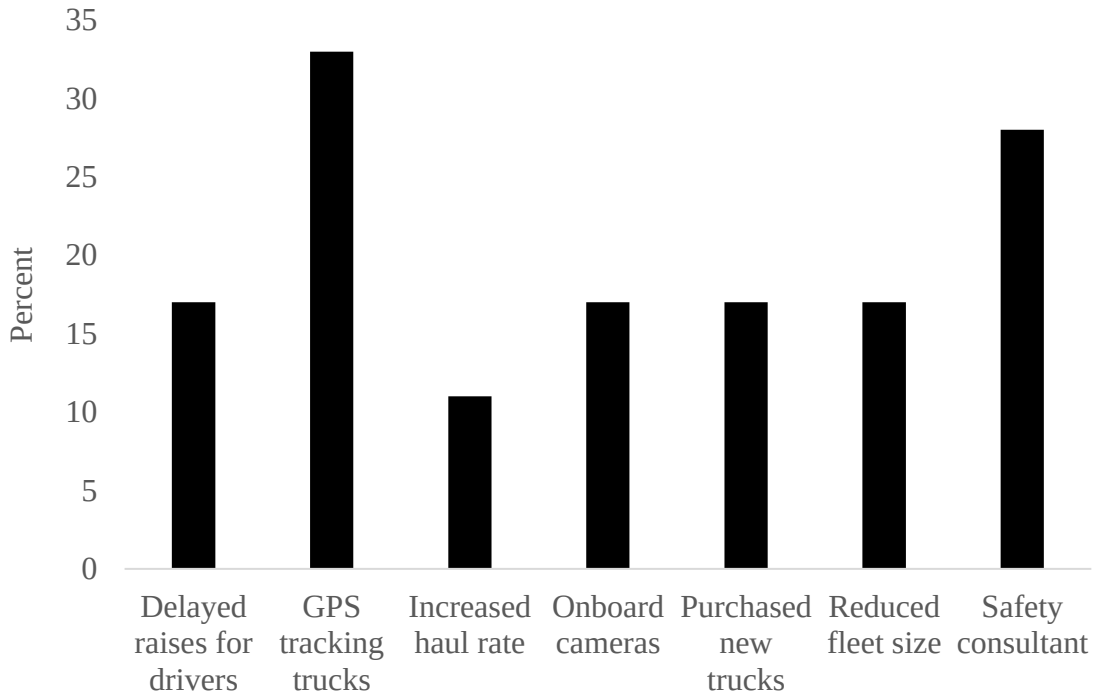

Figure 4-3: Response of interviewees to increases in insurance premiums.

4.7 Insurance in the Context of Hauling Costs

During the interviews with log truck owners, information was collected on the cost of owning and operating log trucks in Georgia. The purpose of collecting this information was to place insurance costs in the proper context of the overall cost of hauling timber.

Cost estimates were developed assuming that a log truck owner purchased a new truck every five years. Many log truck owners purchase new trucks and operate them for longer than five years; however, repair costs are much higher on these vehicles. Maintenance and repair costs were collected during interviews, but most firms had trucks of multiple ages and it was difficult to measure repair costs for old trucks exclusively.

Log truck owners reported an average purchase price for a new log truck of $136,091 (Table 4-2). Of course, there are many different models available and purchase prices vary based on make, model, and options selected. Trade-in value was assumed to be 20% of the new purchase price. Trailers were reported to cost an average of $22,850, although this will vary based on make, model, and features. Trailers generally last much longer than trucks and so half of the purchase price of the trailer was assigned to the purchase price of the truck and trailer combination (Mason et al. 2008).

Average tare weight was reported to be 14 tons, which allows a maximum legal payload of 28 tons (Table 4-3). The average log truck was driven 76,943 miles per year and average fuel economy was 5.4 miles per gallon.

Table 4-2: Assumptions for purchase of new truck and trailer.

Item	Value
Purchase price of truck	$136,091
Purchase price trailer	$22,850
Net purchase price of truck and trailer after trade-in and taxes	$127,919
Finance period	5 yr
Interest rate	5.6%

Table 4-3: Truck usage averages from interviews with Georgia log truck owners.

Item	Value
Tare weight (tons)	14
Average payload (tons)	28
Miles driven per year	76,943
Fuel economy (miles per gallon)	5.4
Days per week	5
Weeks per year	51
Hours per day	11

The average total insurance premium among the loggers interviewed for this study was $6,458 in 2017 (Table 4-4). At this price, insurance would rank as the sixth most expensive component behind driver costs, fuel, truck payments, maintenance and repair, and tires. However, an owner of a fleet viewed as risky by insurance companies could pay $20,000 per year or more to insure a single truck. At that price, insurance is the fourth most expensive component.

Many log truck owners choose to own and operate trucks manufactured in the mid-2000s to avoid some of the emissions-reduction technology on newer trucks that often makes them unreliable. A log truck owner that purchased a 2005 model for $20,000-$30,000 on a three-year loan would pay approximately $9,000 per year in truck payments. Three of the truck owners that were interviewed paid annual insurance premiums exceeding $9,000 in 2017 (Figure 4-2). In addition, while truck payments are usually paid monthly, most log truck owners pay their insurance premiums annually, meaning the full amount is due at once.

Table 4-4: Annual estimates of common costs associated with owning and operating a log truck in Georgia. Estimates were developed from data provided by log truck owners during interviews.

Category	Cost per truck ($)
Driver labor (wages, benefits, FICA, etc.)[1]	$57,008
Fuel[2]	$35,603
Truck payments	$29,368
Maintenance and repair	$13,587
Tires	$7,469
Insurance (full coverage)	$6,458
Shop	$3,000
Support personnel	$2,872
Licenses, tags, etc.	$1,569
Employment screening (physicals, drug tests, etc.)	$202

[1]Calculated using the approach by Baker and Mendell (2016) with data from BLS (2017c)
[2]On-road diesel cost of $2.50 per gallon (EIA 2017)

While truck payments and many of the other costs are somewhat predictable based on experience, increases in insurance rates are not predictable for many log truck owners. Several log truck owners encountered insurance premium increases of more than 100% when their insurance renewed in 2017. For owners of multiple trucks, an increase in premiums of $3,000 per truck can leave an owner short of funds when his insurance renewal payment is due. One log truck owner was forced to take out a $50,000 loan to cover the increased cost of log truck insurance from one year to the next.

Like insurance costs, fuel prices are volatile (Figure 4-4). Fuel costs are generally the second largest cost of owning and operating a truck (Table 4-4) (Torrey and Murray 2016). A $0.50 per gallon increase in diesel prices would increase the cost of owning and operating a truck by approximately $7,000 using the assumptions given in Table 4-3. There is an important difference between fuel prices and insurance costs, however. Fuel prices increase for all truck owners more or less equally, whereas insurance rates differ significantly between log trucking companies. Among the log truck owners interviewed for this study, premiums ranged from as low as $3,000-$4,000 to as high as $13,000 in 2017 (Figure 4-2). Furthermore, because fuel price information is readily available, it is relatively easy to determine how much haul rates should increase when fuel prices rise. In 2012, approximately 25% of loggers were granted rate adjustments based on

fuel costs (Greene et al. 2013). Only 11% of the log truck owners interviewed were successful in negotiating an increase in their haul rate because of insurance rate increases.

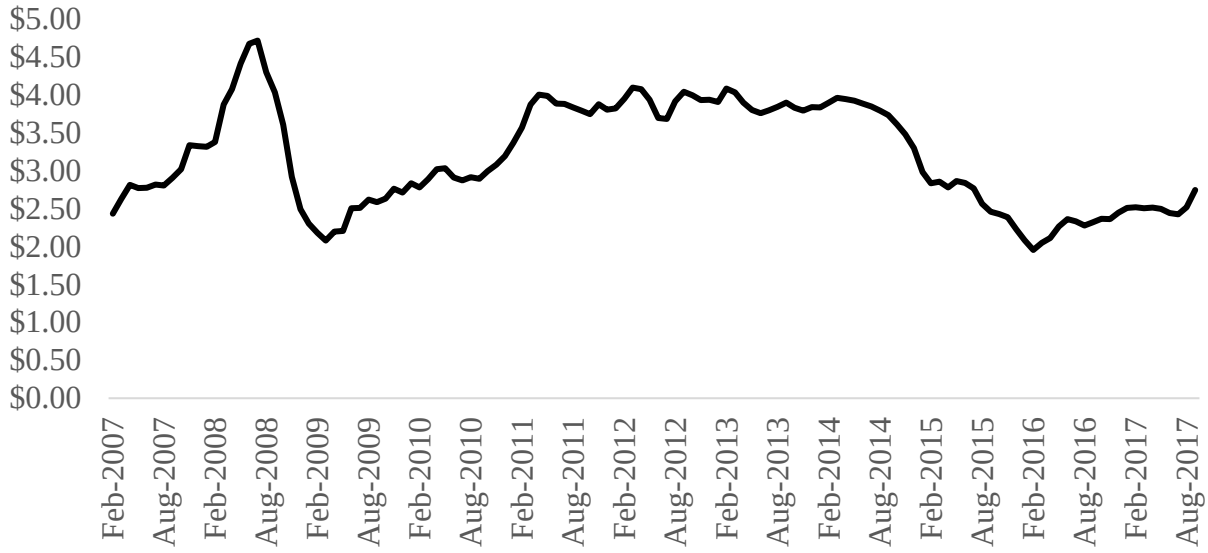

Figure 4-4: Monthly average on-road diesel prices in the Lower Atlantic region February 2007-September 2017. Source: EIA (2017).

5. Analysis of Log Truck Accidents in Georgia

5.1 Accident Frequency

Log truck accidents have a major influence on the insurance rates paid by individual businesses and by log truck owners generally. If accident rates were increasing in Georgia, that might explain the rapid increase in insurance premiums. Past research found log trucks involved in accidents tended to be older than other heavy vehicles and were more likely to experience mechanical failure than other trucks (Greene et al. 1996). From the 1980s to the 2000s, mechanical failure rates declined, but accidents per million tons of wood transported increased until 2003 before declining through 2008 (Greene et al. 2007, Baker et al. 2012). Motor vehicle accident reports were obtained from GDOT to update the dataset compiled by the University of Georgia (Greene et al. 1996, Greene et al. 2007, Baker et al. 2012) and determine whether increasing accident rates explain increases in log truck insurance costs. GDOT separates logging vehicles into "Log Trucks" and "Log Tractor/Trailers"; for this analysis, these two categories are combined and referred to as "log trucks" or "logging vehicles."

According to accident reports from GDOT, total log truck accidents declined by 69% from 2006-2012 (Figure 5-1). Since 2012, log truck accidents increased by 24%, but even after this increase there were still fewer than half as many log truck accidents in 2016 as there were in 2006. Accidents involving other heavy vehicles also declined sharply from 2006-2010 because less freight was hauled during the Great Recession. As the economy improved from 2010-2016, other heavy vehicle accidents increased and are at their highest level in at least a decade.

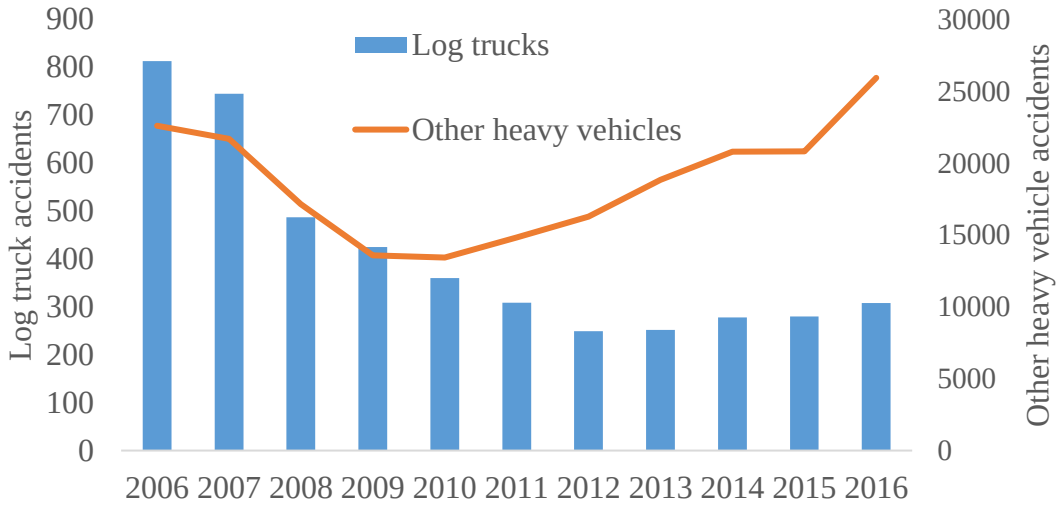

Figure 5-1: Log truck accidents (left axis) and other heavy vehicle accidents (right axis) per year in Georgia 2006-2016. Source: GDOT vehicle accident reports.

It is important to put the values in Figure 5-1 in context. A decline in log truck accidents from 2006-2012 may not indicate safer transportation if fewer miles were driven and less wood delivered as a result of the Great Recession. Therefore, it is necessary to examine the accident rate as well as the total number of accidents. The accident rate is usually measured in number of accidents per million vehicle miles traveled. This information is not available for log trucks, and so past studies have measured the number of accidents per million tons of wood delivered.

The accident rate declined from 16.1 to 5.1 accidents per million tons hauled between 2006 and 2012 (Figure 5-2). The accident rate increased slightly to 6.3 per million tons hauled in 2016. Log truck owners and drivers have been successful in reducing accidents over the past thirty years. In 1989, there were 10 accidents per million tons hauled and this rate increased steadily before peaking at 19 in 2003 (Greene et al. 2007). There are now half as many accidents per million tons hauled compared to 1989 and 33% as many as in 2003.

There are a number of possible explanations for the sharp decline in total log truck accidents and the accident rate over the past decade. First, log trucks manufactured during the 1970s, 1980s, and 1990s were replaced with trucks manufactured during the 2000s and 2010s. Therefore, the percentage of trucks equipped with safety features such as antilock brakes, electronic stability control, and better braking power has increased over time. Second, Georgia lost 16% of its logging businesses between 2006 and 2013 (BLS 2017c) and probably a much larger percentage of its contract truckers. Some of the log truck owners that were interviewed suggested that many of the loggers and log truck owners that left the industry between 2006 and 2013 cut corners on safety, operated poorly maintained equipment, and contributed to high accident rates. This theory suggests the percentage of unsafe, poorly maintained log trucks probably declined because of attrition. Third, the Federal Motor Carrier Safety Administration's (FMCSA) Compliance,

Safety, Accountability (CSA) program was implemented in phases from 2010-2011 and was fully implemented in 2012 (Lanos 2010). A number of log truck owners updated their trucks and/or maintenance practices in response to the CSA program. The CSA program is discussed further in the next section. Finally, it is possible that improved reporting by GDOT may have reduced the apparent accident rate for log trucks since 2010. In 2010, the GDOT implemented the Georgia Electronic Accident Reporting System (GEARS) (GDOT 2011). It appears that the data provided from 2010-2017 had fewer vehicles misclassified as log trucks compared to the data from 2006-2009. The author attempted to remove improper classifications from the dataset, but there is no guarantee that every incorrect identification was found.

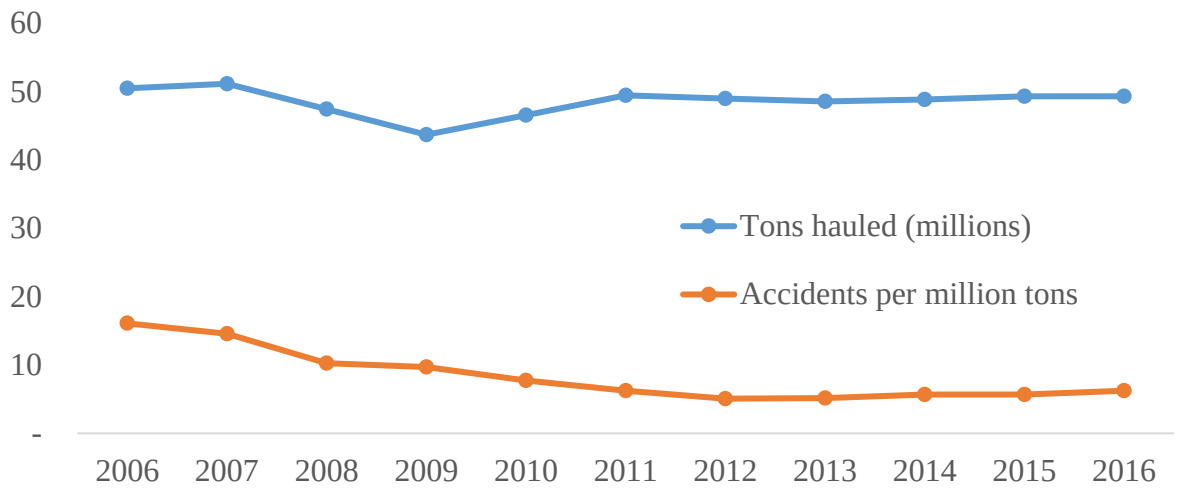

Figure 5-2: Log truck accidents per million tons and estimated volume hauled in Georgia from 2006-2016. Sources: GDOT vehicle accident reports, USDA Forest Service (2013), and Brandeis et al. (2016).

5.2 Accident Severity

The severity of log truck accidents can affect log truck insurance rates because severe accidents generally result in costly insurance claims. The Federal Motor Carrier Safety Administration (FMCSA) tracks the frequency of severe accidents occurring nationwide. Since 2007, they have reported the number of severe accidents involving log trucks. In order for FMCSA to report an accident, it must result in a fatality, injury, or tow-away. Therefore, a subset of the accidents recorded by GDOT and analyzed in Figures 5-1 and 5-2 would not be included in the FMCSA reports.

It is important to note that there are multiple definitions of "severity." Insurers measure severity based on the cost of claims associated with an accident. FMCSA measures accident severity by the number and seriousness of injuries and degree of damage to vehicles. This report will measure severity based on severity of injuries and amount of damage to vehicles. Accidents resulting in extensive vehicle damage and visible injuries often result in high insurance company payouts, in which case both the insurance industry and the FMCSA would consider the accidents

severe. However, there are accidents that FMCSA considers severe that result in small insurance claims. Likewise, some accidents the FMCSA does not consider severe result in large claims.

Nationwide, the number of severe log truck crashes increased steadily from 2010-2015 (Figure 5-3). The number of fatal, injury, and tow-away crashes increased by 46%, 85%, and 117%, respectively during the past six years. It is not surprising that accidents increased as timber markets recovered following the recession; however, increases in severe accidents far outpaced increases in timber harvest volume.

The number of severe log truck crashes in Georgia declined significantly since 2006. Between 2006 and 2008, Georgia averaged nearly 13 fatal log truck accidents per year (Figure 5-4). Since 2009, Georgia has averaged just three fatal accidents per year. From 2012-2014, there were only two fatal log truck accidents. The number of injury crashes declined significantly between 2006 and 2012, but increased by 72% since then.

More than 80% of the people involved in log truck accidents, including the log truck driver as well as other drivers and passengers, were not injured (Figure 5-5). Since 2006, an average of 1.5% of people involved in log truck accidents died or suffered a serious injury. Another 4% suffered visible injuries and 10% complained of an injury. Since 2006, the percent of people involved in accidents that were injured or killed in other heavy truck accidents has been similar to the percent of people killed or injured in log truck accidents (Figure 5-6). The percent of people injured or killed has fluctuated more from year to year for log truck accidents than for other heavy vehicles, which makes sense because other heavy vehicles are involved in far more accidents than log trucks. On average, other heavy vehicle accidents have resulted in a greater percentage of serious injuries to people than log truck accidents (1.89% vs. 0.97%). Log truck accidents, on average, resulted in a greater percentage of injury complaints than other heavy vehicle crashes (9.74% vs 6.89%).

Another metric of accident severity is the degree of damage done to the log truck or other heavy vehicle during an accident. The percent of log trucks experiencing high levels of damage in accidents declined from 2006-2016. The percent of log trucks experiencing at least moderate damage was reduced from 39% in 2006 to 23% in 2016 while the percent of log trucks experiencing no damage during crashes increased from 11% in 2006 to 39% in 2016 (Figure 5-7). The reduction in the percent of vehicles with significant damage combined with the reduction in fatalities and injuries (Figure 5-5) suggests the severity of log truck accidents in Georgia declined over the past decade.

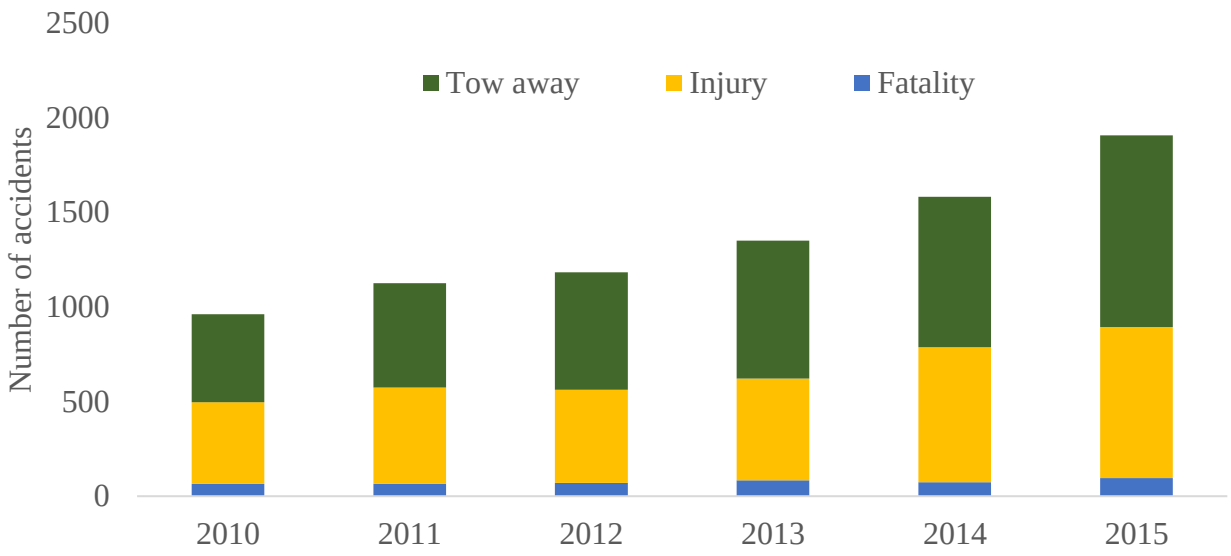

Figure 5-3: Number of fatal, injury, and tow-away accidents involving log trucks in the U.S. from 2010-2015. Accidents that do not result in a fatality, injury, or tow-away are not included in FMCSA reports. Source FMCSA 2011-2016.

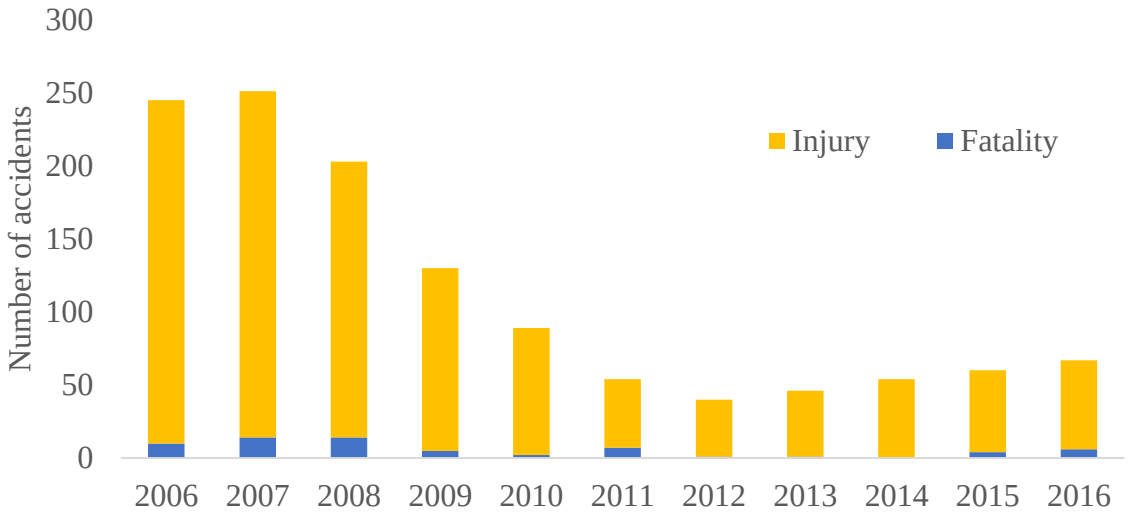

Figure 5-4: Number of fatal and injury accidents involving log trucks in Georgia 2006-2016. Source: GDOT vehicle accident reports.

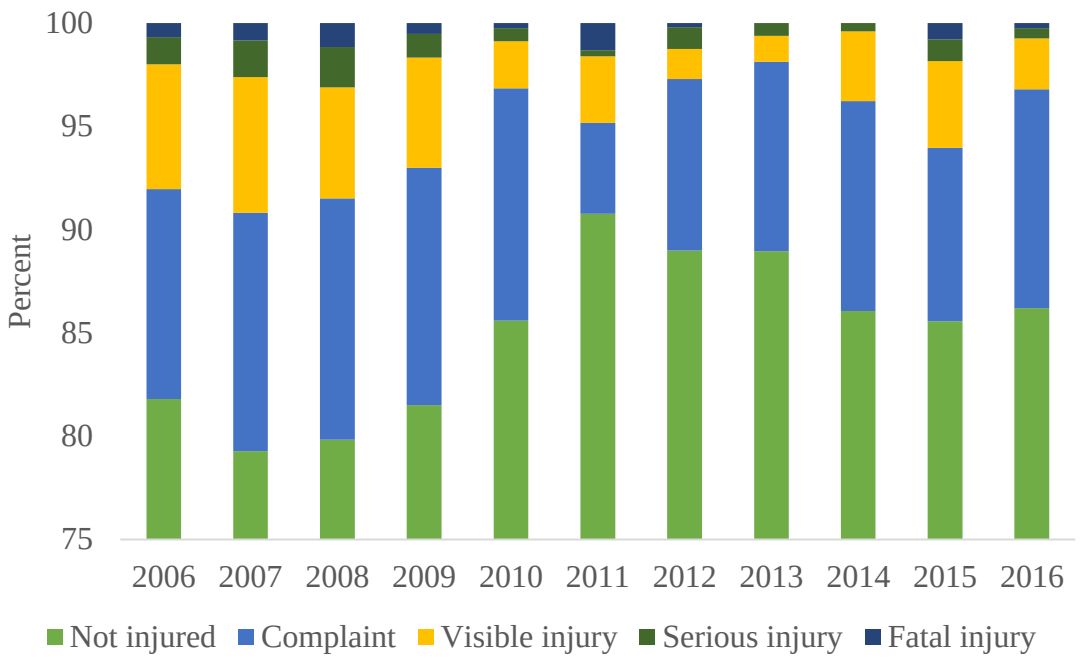

Figure 5-5: Percent of people involved in log truck accidents that were not injured, complained of an injury, exhibited a visible injury, sustained a serious injury or were killed 2006-2016. Source: GDOT vehicle accident reports.

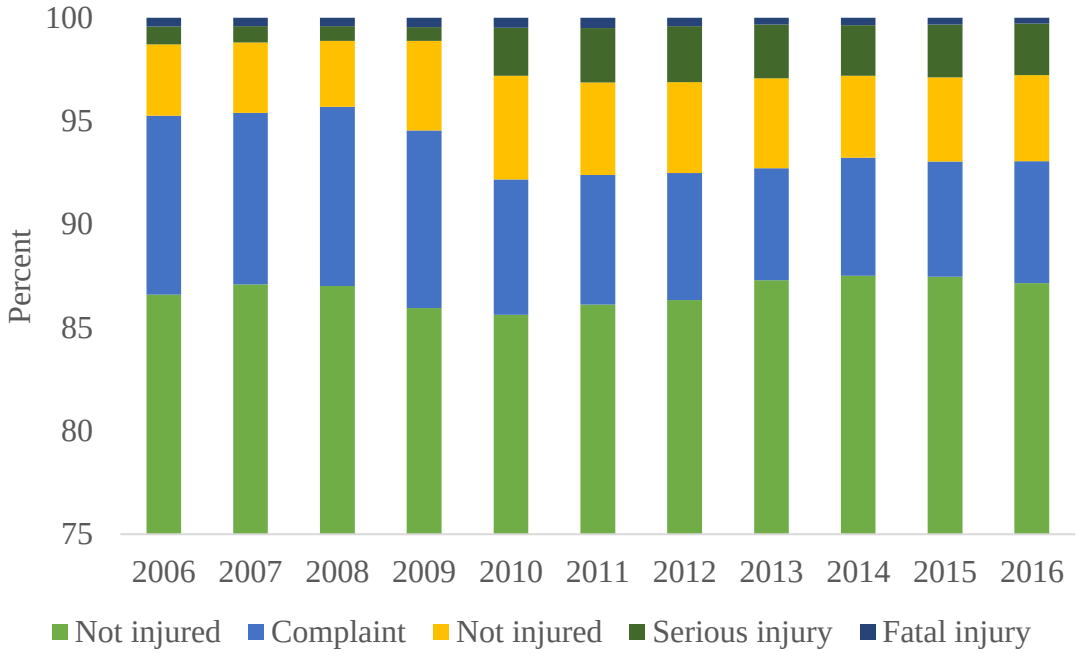

Figure 5-6: Percent of people involved in other heavy truck accidents (not log trucks) that were not injured, complained of an injury, exhibited a visible injury, sustained a serious injury, or were killed 2006-2016. Source: GDOT vehicle accident reports.

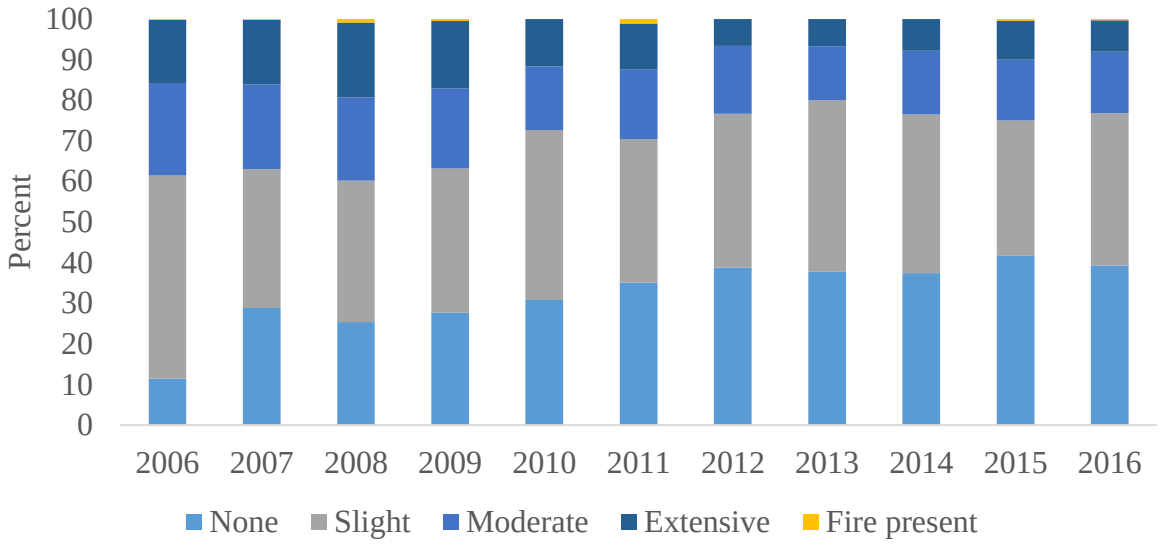

Figure 5-7: Percent of log trucks experiencing no damage (none), slight damage, moderate damage, extensive damage, or fire present during accidents in Georgia from 2006-2016. Source: GDOT vehicle accident reports.

5.3 Contributing Factors and Vehicle Condition

When there is an accident, the responding officer chooses from a list of 28 factors on the accident report that he or she thinks contributed to the accident. The most common factors contributing to log truck and other heavy vehicle accidents were “following too close”, “misjudged clearance”, and “changed lanes improperly” (Table 5-1). In contrast to the 1980s and 1990s (Greene et al. 1996), the ranking of contributing factors was very similar between log trucks and other heavy vehicles.

Driving too fast for conditions was more often a contributing factor in log truck accidents (2.1%) compared to other heavy vehicles (0.7%). On the other hand, D.U.I. was much more common in other heavy vehicle accidents (1.2%). D.U.I. was the 23rd most common factor contributing to log truck accidents and was identified in just 0.1% of accidents.

From 1988-1991, mechanical failure was the most commonly identified factor and contributed to more than 10% of log truck accidents (Greene et al. 1996). From 2006-2016, mechanical failure was identified in 3.3% of accidents and was the eighth most commonly identified contributing factor (Table 5-1). The ranking was similar for other heavy vehicle accidents, but occurred in a smaller percentage of cases (2.1%). While significant progress has been made in reducing the incidence of mechanical failure on log trucks through roadside inspections and other efforts (Greene et al. 1996, Greene et al. 2007), log trucks still experience mechanical failure at a higher rate than other heavy vehicles.

Table 5-1: Top ten contributing factors to accidents involving log trucks and other heavy vehicles in Georgia 2006-2016 (1 is most commonly cited factor). “No contributing factors” and “Other” were excluded from the ranking. Source: GDOT vehicle accident reports.

Contributing factor	Log truck rank	Other heavy vehicle rank	Log truck % of accidents	Other heavy vehicle % of accidents
Following too close	1	1	9.9%	9.1%
Misjudged clearance	2	2	9.8%	7.1%
Changed lanes improperly	3	3	6.6%	6.6%
Improper turn	4	6	4.9%	2.8%
Driver lost control	5	8	3.7%	1.8%
Improper backing	6	4	3.5%	4.9%
Failed to yield	7	5	3.5%	3.5%
Mechanical or vehicle failure	8	7	3.3%	2.1%
Too fast for conditions	9		2.1%	0.7%
Object or animal	10	10	1.9%	1.2%
D.U.I.		9	0.1%	1.2%

When an accident occurs, the responding officer assesses the condition of the vehicles involved in the accident. The majority (>90%) of log trucks and other heavy vehicles have no apparent defect (Table 5-2). The percent of log trucks with defects in each category has declined significantly since the 1990s (Greene et al. 2007). Specifically, the percent of log trucks experiencing brake failure declined from more than 6% in 1988-1991 to 1.4% in 2013-2016. The percent of log trucks with slick tires or tire failure declined from more than 4% in the 1990s to under 2% in 2013-2016.

Despite measurable progress in log truck roadworthiness over the past thirty years, log trucks are still in worse condition, on average, than other heavy vehicles involved in accidents (Table 5-2). Specifically, brake failure still occurs twice as frequently on log trucks as it does for other heavy vehicles. Tire failure and slick tires combined are more common on log trucks than other heavy vehicles. However, the incidence of slick tires was identified on just 0.4% of log trucks during the most recent period, perhaps indicating increased attention to visual inspections. Finally, the “other” category has generally been much higher for log trucks than other heavy vehicles. The percent of trucks with “other” problems has exceeded 2% since the 1980s and exceeded 3% from 2013-2016 (Greene et al. 2007).

The harsh working conditions under which log trucks operate probably explains some of the incidences of mechanical failure generally and brake failure specifically (Tables 5-1, 5-2). Vehicle age may play an important role as well. The average age of log trucks involved in accidents has exceeded the average age of log trucks for the past decade (Table 3-2) (Figure 5-8). In 2016, the average age of log trucks involved in accidents was 14 years, which was 4 years older than the average log truck according to the 2017 Georgia logger survey. In addition, log trucks involved in accidents were nearly seven years older than heavy trucks involved in accidents.

Table 5-2: Condition of log trucks and other heavy vehicles involved in accidents in Georgia from 2006-2016. Columns may not sum to 100% due to rounding error. Source: GDOT vehicle accident reports.

		Percent of Vehicles		
Vehicle Condition	Vehicle type	2006-2008	2009-2012	2013-2016
No known defects	Log truck	92.0	93.6	93.2
	Other heavy truck	96.6	95.8	96.3
Tire failure	Log truck	0.93	0.97	1.28
	Other heavy truck	0.81	0.77	0.42
Slick tires	Log truck	0.95	0.81	0.37
	Other heavy truck	0.13	0.49	0.60
Brake failure	Log truck	2.18	1.61	1.40
	Other heavy truck	0.72	0.73	0.61
Improper lights	Log truck	0.26	0.35	0.10
	Other heavy truck	0.08	0.07	0.07
Steering failure	Log truck	0.19	0.26	0.08
	Other heavy truck	0.11	0.12	0.09
Other	Log truck	3.54	2.41	3.54
	Other heavy truck	1.55	2.01	1.92

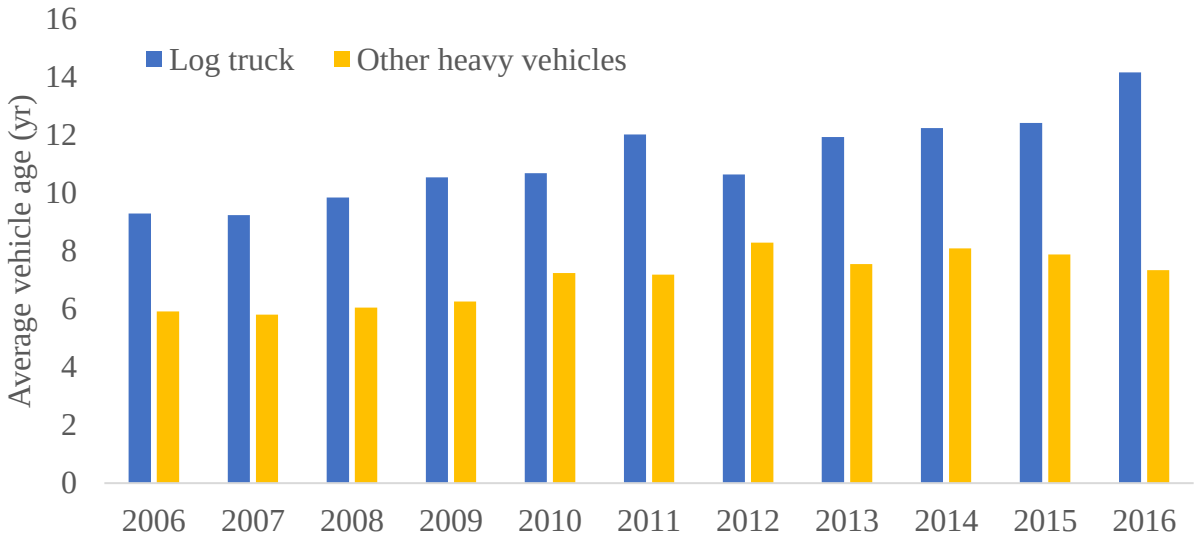

Figure 5-8: Average age of log trucks and other heavy vehicles involved in accidents in Georgia 2006-2016. Source: GDOT vehicle accident reports.

6. Underlying Causes of Increasing Log Truck Liability Insurance Premiums in Georgia

6.1 Losses in Commercial Auto Insurance

The primary cause of insurance rate increases is simple: insurance claim costs exceeded insurance premiums collected, resulting in insurance company losses. Some insurers responded by exiting the log truck insurance market. Remaining log truck insurers increased their log truck insurance premiums and/or became more selective in the companies and drivers they were willing to cover. There are a number of factors that contributed to increases in claim costs and another set of factors that led to insurance rate increases for specific log trucking companies.

Commercial auto liability insurance was one of the worst performing lines of insurance in recent years. A.M. Best (2017) reported that commercial auto insurance has been an unprofitable segment for insurers since 2011 and is projected to remain unprofitable through at least 2017. Nationwide, commercial auto insurers suffered losses equivalent to 2.9% of premiums earned in 2015 (NAIC 2017). In Georgia, insurers collected $700.4 million of premiums from commercial auto liability insurance policies and suffered losses of 15.5% in 2015 (Figure 6-1). In Alabama, insurers collected $322.8 million in premiums and suffered losses of 11.2%. In North Carolina, insurers collected $542.6 million in premiums and earned a profit of 2.6%.

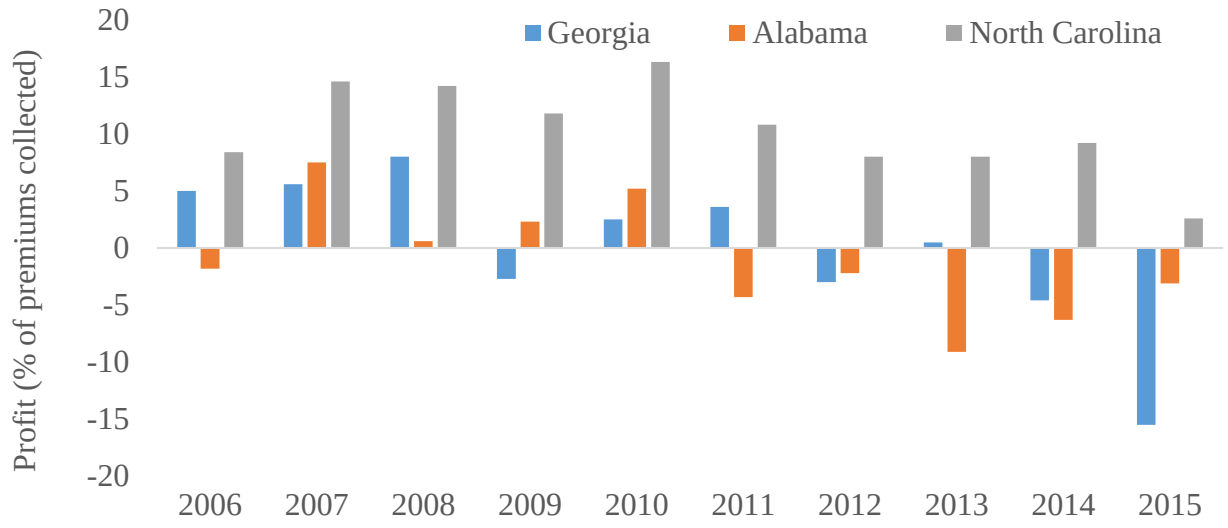

Figure 6-1: Profit as a percent of premiums collected on commercial auto liability policies in Georgia, Alabama, and North Carolina. Source: NAIC (2017).

Log trucks represent a very small percentage of commercial auto insurance, but log truck insurance is more risky than other commercial auto lines. Log trucks are riskier than average because log trucks tend to have higher accident rates and have more mechanical defects than other heavy vehicles. Therefore, most insurers do not cover log trucks. Higher insurance premiums for log trucks compared to other heavy vehicles indicate insurers in Georgia, Alabama, and North Carolina consider log trucks a higher risk (Figures 4-1, 4-2, 4-3).

Insurance industry sources report that after the 2007-2009 recession there were 10-12 insurance carriers that covered log trucks in Georgia. Insurance carriers were under pressure to attract customers and generate a return on investment. Stiff competition among carriers led to reduced insurance rates for log trucking companies. When rates declined and claims increased, insurance companies suffered losses. These losses caused as many as half of the insurance carriers to temporarily or permanently cease offering log truck insurance in Georgia. Several of the log truck owners that were interviewed stated that at the time of their most recent renewal, there were only one or two companies willing to offer them insurance.

The presence of a large number of insurance carriers in the early 2010s kept log truck insurance premiums artificially low for several years. After insurers suffered losses and companies left the market, remaining insurance carriers aggressively raised rates, particularly for log trucking companies they regarded as high-risk.

6.2 Increases in the Cost of Claims

The analysis of Georgia Motor Vehicle Accident Reports suggested that accidents declined in Georgia through 2012 and increased by 24% since then (Figures 5-1, 5-2). Accident severity, as measured by vehicle damage and severity of injuries declined in recent years (Figures 5-6, 5-7). Therefore, accident rate and accident severity do not fully explain increases in claim costs.

For auto insurance generally, increasing claims are a result of increasing accident frequency and increased costs per accident (Cantwell and Kelly 2016). Between 2011 and 2015, the average cost of claims per accident increased at an annual rate of 3.1%, nearly double the rate of inflation. Baker and Tyson (2017) estimated that the average cost per claim increased by approximately 40% since 2008 for a subset of carriers that offer log truck insurance.

The cost of providing medical care to people injured in accidents and the cost to repair and replace vehicles has increased in recent years, which raises insurers' cost per accident. An insurance industry representative stated that high-cost medical procedures such as spinal fusion surgery have become more common. New automobiles cost more today and the high-tech features of many new vehicles cost more to repair than similar repairs from past years (Cantwell and Kelly 2016, Mortimer 2017). Likewise, the price of heavy trucks has increased by 27% over the past decade (BLS 2017b).

Cell phone use by automobile drivers is a likely culprit as well. Cell phone use is responsible for at least 25% of accidents in the U.S. and this is probably a conservative estimate (National Safety Council 2013, National Safety Council 2015). Fortunately, cell phone use on the part of log truck drivers contributed to only two accidents since 2006. Nonetheless, one insurance industry representative stated that cell phone use by automobile drivers is a major cause of log truck accidents. Erratic driving by automobile drivers can cause log truck accidents and insurance claims against log trucks, even if the log truck is not at fault.

By far, the most commonly cited factor for increased costs per insurance claim in log truck accidents is litigation (Locklear 2014). Insurance industry representatives and log truck owners alike suggested that a much larger percentage of accidents result in lawsuits today compared to

ten years ago. For many years, insurance companies found it less expensive to settle most lawsuits rather than fight them in court. The practice of settling lawsuits encouraged additional lawsuits and the result has been increased payouts by insurance companies. In response, insurers pass these costs to log truck owners in the form of increased premiums. Log truck owners and insurance industry representatives recognized the need for payouts when their driver was at fault; however, they expressed frustration with large payouts for accidents in which another party was at fault. All 18 log truck owners interviewed stated that lawsuits are a major problem for log trucking companies.

Unfortunately, there is minimal publicly available data on the impact of frivolous lawsuits on log truck liability insurance rates. Further study is needed to assess the impact of unwarranted litigation on log truck insurance costs and to evaluate remedies to reduce these costs.

The combination of litigation, increases in medical costs, and increases in vehicle repair costs result in far more accidents being "policy limit" claims. Most truck owners are required to carry $1 million of liability coverage on their trucks, meaning the insurer's liability is capped at $1 million. Therefore, insurers must collect premiums from many log trucks to cover just one policy limit claim. In recent years, premiums collected from safe trucks have not been sufficient to cover the claims from accidents.

6.3 Explanations for Differences in Rates between States

While Georgia and Alabama's log truck liability insurance rates have been similar over the past decade, North Carolina's rates have been consistently lower than those in both Georgia and Alabama (Figures 4-1, 4-2, 4-3). Despite lower rates, commercial auto liability insurance has been more profitable for insurers in North Carolina than for insurers in Georgia (NAIC 2017). Multiple factors likely contribute to these differences such as claims history in each state, regulatory environment, number of carriers underwriting log truck insurance, etc. However, insurance industry representatives suggested that the North Carolina Reinsurance Facility (NCRF) contributed to its low rates, both for log trucks and for other heavy vehicles.

NCRF became operational in 1973 and allows insurance companies to cede bodily injury and property damage liability, medical payments, uninsured and combined uninsured/underinsured motorists coverage to NCRF (NCRF 2017). Under North Carolina law, carriers and agents must "accept and insure any eligible applicant for coverages and limits which may be ceded to the Facility [NCRF]." In simple terms, NCRF requires companies to extend coverage to all eligible parties, but allows them to transfer the risk to NCRF. Once a company transfers a risk to NCRF, it forfeits the opportunity to make a profit on the policy. NCRF sets rates so that it is self-supporting, accumulating neither profits nor losses over the long term. Any losses that occur are shared among member companies in proportion to their insurance underwriting in the state. While other states have assigned risk pools that act as insurers of last resort, the percentage of policies ceded to NCRF is much higher than the percentage of policies in other states' high risk pools (Hartwig 2012).

The location of forest products mills in North Carolina and Georgia might also explain differences in claims and insurance rates. The majority of North Carolina's large forest products mills are located in eastern North Carolina in relatively small towns such as Plymouth, Riegelwood, Roanoke Rapids, and New Bern. Therefore, North Carolina's log trucks are probably exposed to less traffic than log trucks in Georgia. Georgia has large mills near large cities like Augusta, Savannah, Macon, and Valdosta. Because fully loaded log trucks are not allowed on interstate highways, they must navigate through crowded streets in these areas and collisions are almost inevitable.

6.4 Explanations for Increases in Rate Variation

This study found that not only had average liability premiums increased, but the variability in rates between different log trucking companies increased as well. Firms that employ experienced drivers with clean driving records and that have not been involved in accidents enjoy relatively low premiums. In contrast, log trucking firms that have a history of costly claims pay much higher premiums than their counterparts with better claims histories.

Perhaps the most important factor that influences a company's claims history is the drivers it employs. In Georgia and nationwide, a truck driver shortage has made it difficult to attract and retain qualified drivers (Locklear 2014, Costello and Suarez 2015). The top two challenges identified by log truck owners during interviews were recruiting qualified drivers and log truck insurance rate increases. Historically, log truck drivers have been poorly compensated compared to drivers in other industries; however, wages have increased by more than 10% in the past five years and are generally competitive with other local trucking industries (Baker and Mendell 2016). Wages are lower for log truck drivers than over-the-road truckers (Torrey and Murray 2016), but log truck drivers are able to return home every day, which should make the occupation more attractive to some drivers.

Insurers generally require that drivers pass a drug test, be at least 25 years of age, have 2-3 years of log truck driving experience, and have a satisfactory driving record. It is very difficult to find drivers with these qualifications that are willing to drive a log truck according to log truck owners, procurement foresters, and insurance industry representatives. One truck owner reported that only 20% of applicants could be hired, while another log truck owner expressed frustration that most of his applicants either failed a drug test or had a poor driving record. All 18 log truck owners interviewed stated that it was difficult to find qualified truck drivers in their area and that it was harder to find qualified truck drivers in 2017 than in 2012.

When log trucking companies have difficulty finding drivers, some companies are forced to hire mediocre drivers because they are the only ones available that meet their insurer's minimum requirements. The driver shortage can thereby exacerbate insurance rate increases because the mediocre drivers are more likely to have accidents, which leads to further increases in insurance premiums. When premiums increase, companies must cover that cost. For many loggers, hauling is already unprofitable and is subsidized by the profits from the logging crew. Therefore, insurance cost increases amplify losses from hauling timber and make it difficult to pay competitive wages to truck drivers, which means the company will find it difficult to attract safe

and efficient drivers. Continued employment of mediocre drivers will lead to additional accidents, additional premium increases, further pressure on wages, and greater losses in timber transportation.

Some log truck owners have been proactive in attracting and retaining quality drivers and paying them competitive wages. These companies generally pay lower insurance rates than their competitors. Some logging business owners are driving their own trucks more than they have in the past because they cannot find qualified drivers to fill the seat. While some logging business owners can handle this, there is a significant risk that other owners will find it difficult to manage their trucking fleet and logging crew(s) efficiently while spending significant time driving a log truck.

Insurers, log truck owners, and forest industry personnel all stated that contract haulers are experiencing the greatest increases in insurance rates and many are leaving the industry. This change reduces contract trucking availability and puts upward pressure on contract hauling rates. Reduced contract hauling availability and high contract hauling rates incentivize logging businesses to start their own trucking company. These logging business owners may have limited experience managing trucking fleets. Consequently, new log truck owners are likely to be charged high insurance premiums initially, and rates may increase further if the fleet is poorly maintained or involved in an accident.

Another explanation for the increased variability in cost and availability of log truck insurance is the Federal Motor Carrier Safety Administration's (FMCSA) Compliance, Safety, and Accountability (CSA) program. The CSA program attempts to identify fleets with safety problems and prioritize them for interventions such as warning letters and investigations (FMCSA 2016). CSA was developed between 2005-2007, tested from 2008-2010, implemented in phases from 2010-2011, and fully implemented in 2012 (Lanos 2010).

As part of the CSA program, The FMCSA collects data on each motor carrier from roadside inspections, crash reports, and investigation results (FMCSA 2016). The data appear online in the FMCSA's Safety Measurement System (SMS). The SMS considers factors such as safety violations, inspections, severity of crashes and safety violations, and other factors. This data is placed into seven Behavior Analysis and Safety Improvement Categories (BASICs): unsafe driving, crash indicator, hours of service compliance, vehicle maintenance, controlled substances/alcohol, hazardous materials compliance, and driver fitness. Finally, carriers are assigned a score (percentile) from 0 (best) to 100 (worst) in each category based on their safety record compared to other, similar carriers. While FMCSA does not use this terminology, many in the trucking industry refer to the percentile score as a "CSA Score" or a "CSA BASIC Score" and this terminology will be used in this report to refer to the percentile scores, out-of-service percentages, and other information provided through SMS.

Of particular importance to log trucks is the impact of roadside inspections on CSA scores. Recent inspections are weighed more heavily by CSA score than less recent events, and so the score can be improved by the passage of time and roadside inspections that show no violations. After two years, violations are removed from the CSA score.

The CSA program gave regulators a metric to identify unsafe carriers and target them for interventions. It appears CSA also gave the insurers another tool to identify risky log truck fleets. Multiple insurance industry representatives stated that insurers weigh CSA scores heavily in determining which companies they will insure and at what premium. CSA scores may be the second most important factor in determining insurance premiums, behind claims history. Of particular importance is the percent of roadside inspections that found out-of-service violations.

Unfortunately, it appears that log trucking firms often have poor CSA scores. Heavy loads, muddy woods roads, wash-boarded county dirt roads, and old trucks mean that log truck and trailer fleets exhibit greater wear compared to other heavy vehicles. Thus, they are subject to citations during inspections for items such as malfunctioning lights, inadequate reflective tape, brakes out-of-adjustment, etc. In addition, because loggers operate small fleets, their fleets may be inspected only a few times each year. A small number of inspections amplifies the impact of each inspection. Therefore, one or two out-of-service violations have a disproportionate impact on a small company's safety record, and consequently their insurance premium when they renew their policy. Of course, insurers can and do exercise discretion in interpreting CSA scores, and so a small number of poor inspection results does not guarantee a substantial premium increase.

Because of the impact of roadside inspections on CSA scores, the judgment of Department of Public Safety (DPS) officers has a major impact on log truck insurance rates. While most log truck owners that were interviewed expressed satisfaction with the enforcement of truck safety rules, some complained that there were a large number of new hires at DPS and some of these officers needed additional training on the mechanics of large trucks. Some interviewees stated that that they had been incorrectly cited for out-of-service violations and then had difficulty navigating the appeals process.

Several log truck owners suggested additional collaboration was necessary between DPS and log truck owners. They expressed a desire for better communication between DPS and log truck owners and a greater emphasis on helping log truck owners operate safe fleets as opposed to looking for opportunities to write tickets. One log truck owner that was interviewed invited DPS officials to speak to his drivers regularly to update them on changes in laws and discuss problems that were identified during inspections. Additional collaboration such as this may help log truck owners operate safer fleets and enjoy a better relationship with DPS.

7. Solutions to Slow, Halt, or Reverse Log Truck Insurance Rate Increases

7.1 Goal: Reduce Claim Costs

The solution to bring down the cost of log truck insurance premiums is to reduce the total cost of claims. There are two ways of achieving this goal: 1) reduce the number of claims (accidents) and 2) reduce the cost per claim. In addition, improvements in log transportation efficiency may reduce the insurance cost per ton of timber delivered.

The solutions described below were identified during interviews with log truck owners; conversations with insurance industry, forest products industry, and trade association representatives; and a review of relevant publications. Not every solution indicated will be

applicable to every log truck owner, forest products company, or other entity. However, each solution identified below has the potential to contribute to reduced insurance costs and/or reduced timber transportation costs. Solutions are categorized by the entity responsible for taking action: lawmakers and law enforcement, log truck owners, and the forest products industry.

7.2 Legislative and Law Enforcement Remedies

7.2.1 Tort Reform

Every insurance industry representative and log truck owner included in this study stated that frivolous lawsuits were responsible for a significant portion of the increase in premiums documented in this report. Frivolous lawsuits are not the only cause of the increase, but they play an important role. It is beyond the scope of this study to determine how much of the increase in insurance premiums is a result of frivolous litigation.

Log truck accident frequency declined by nearly 70% between 2006-2012 and increased by 24% since then (Figure 5-1). Meanwhile, the severity of log truck accidents appears to have declined in recent years (Figures 5-5, 5-7). The increasing cost of repairing personal vehicles and heavy trucks explains some of the increased costs per accident (Cantwell and Kelly 2015, Mortimer 2017); however, it seems implausible that accident frequency, severity, and cost of repairs explain all of the premium increases. Additional study is necessary to quantify how much the cost of litigation adds to truck insurance premiums.

A number of ideas for tort reform were advanced by log truck owners, insurance industry representatives, and forest products industry foresters. One of the most commonly cited ideas was a "loser pays" system. Under a loser pays system, the party that loses in litigation is responsible for reimbursing the winning party's legal expenses, including attorneys' fees. This system is in place in the majority of the developed world. In countries such as Germany, France, and the United Kingdom that have loser pays systems, the cost of tort litigation as a percentage of gross domestic product has been one-half to one-third of the cost in the U.S. (Gryphon 2008). Log truck owners and others advocating loser pays suggested it would discourage lawsuits for accidents in which the log truck was not at fault, which would reduce legal expenses and claim costs. Other tort reform ideas included reducing the statute of limitations for filing a lawsuit following an accident; reducing the amount of time that a log truck owner must preserve evidence, such as a damaged truck or trailer; placing limits on non-medical awards; and capping attorney fees to reduce this cost component and allow greater compensation to the injured.

7.2.2 Insurance Coverage Reform

Several participants in this study suggested that the current minimum property damage liability coverage of $25,000 for automobiles (Georgia Department of Insurance 2017) is insufficient. In some accidents, a personal automobile is at fault in a collision with a log truck, meaning that the insurer of the personal automobile should pay for repairs/replacement of the damaged log truck. Unfortunately, $25,000 is not enough money to repair or replace a new log truck. Therefore, the accident results in a claim on the log truck's insurance, although not a liability insurance claim, and may result in a rate increase. Given that the average new car costs over $30,000 (Kelley Blue

Book 2017) and new log trucks can cost over $150,000, it may be wise to raise minimum property damage liability limits. However, Georgia's property damage liability limits are comparable to those in other states (AAA 2017) and raising these limits would raise insurance premiums for drivers of personal automobiles who are already encountering rate increases that lead the nation (Salzer 2017).

7.2.3 Maintain and Expand Log Truck Driver Training Programs at Technical Colleges

Log truck-specific training is already taking place at Southwest Georgia Technical College (SGTC). One of the loggers interviewed has cooperated with SGTC for truck driver training. As part of this training, drivers operate simulators and receive training specific to driving a log truck. In addition, Coastal Pines Technical College (CPTC) offers a Timber Harvesting Operations (THOP) program that includes commercial driver's license and log truck-specific training (Peagler 2016).

Log truck owners identified insurance and finding qualified truck drivers as their top two challenges. The U.S. faces a nationwide shortage of truck drivers (Costello and Suarez 2015). Insurers often require 2-3 years of log truck driving experience as a prerequisite for coverage. It is vital to increase the number of safe and qualified log truck drivers. One idea worth considering is recruiting military veterans with experience driving heavy vehicles to participate in a technical college training program, after which they would be eligible to drive a log truck. Of course, in order for these programs to increase the number of safe and qualified log truck drivers, insurance companies must recognize that these programs train safe drivers.

7.2.4 Vigorously Enforce Laws against Cell Phone Use While Driving

One of the insurance industry representatives that I spoke with suggested that a major contributor to recent increases in accidents is cell phone use (especially text messaging) by automobile drivers. Accident data revealed only two instances in which a log truck driver's cell phone use contributed to an accident. However, erratic driving on the part of other vehicles resulting from cell phone use can contribute to accidents and insurance claims. For example, a distracted driver may rear-end a log truck and suffer major injuries or death. That driver's family may file suit against the log trucking company and the truck's insurer will have to defend the suit or settle. In other cases, erratic driving by someone on a cell phone may cause a log truck to rear-end another vehicle. The log truck would be considered at fault if it crashes into the rear of another vehicle, even if erratic driving by the cell phone user was the ultimate cause of the accident. Insurance industry representatives stated that these types of accidents are becoming more common and contribute to higher insurance premiums.

The National Safety Council (2015) estimated that 27% of accidents in the U.S. involved cell phone use. In 2015, 3,477 people were killed and 391,000 injured in accidents involving cell phone use (CDC 2017), although these estimates probably understate the true extent of the problem because of underreporting (National Safety Council 2013). Research suggests drivers using cell phones are more accident prone than drunk drivers (Strayer et al. 2006). Perhaps drivers using cell phones should face similar penalties and social stigma as drunk drivers.

7.2.5 Improve Relations between Log Truck Owners and Department of Public Safety

A number of log truck owners were frustrated with one or more aspects of DPS. There were a relatively small number of complaints about the safety laws that log trucks were required to follow. The majority of complaints involved the amount of time spent in roadside inspections, the choice of vehicles to inspect, and judgement calls on the part of officers that went against the log truck. Of course, the job of DPS is to enforce the law and not to satisfy truck owners. It is also the responsibility of log truck owners to operate safe and legal trucks on public roads, which all the log truck owners recognized and agreed with.

There was, however, a perception among some that log trucks were targeted for inspections more frequently than other industries in rural areas. Some log truck owners perceived that DPS officers did not adequately target unsafe vehicles for inspections. Log truck owners that had invested in new trucks complained that brand new trucks lost valuable time during roadside inspections while older trucks with visible problems were not stopped for inspection. Some log truck owners complained that recent DPS hires did not understand the mechanics of log trucks and sometimes made incorrect judgement calls that resulted in citations. Finally, several log truck owners complained that the appeals process for roadside inspections was cumbersome. These are perceptions that cannot be confirmed by this study; however, better communication may change some of the negative perceptions among log truck owners.

Some helpful communication is already occurring between log truck owners and DPS. One log truck owner hosted DPS twice per year to train his drivers and other employees on changes in laws and to address common problems that officers encountered during inspections. DPS officers also speak at Georgia Master Timber Harvester workshops (Chase Cook, Georgia Master Timber Harvester Coordinator, personal communication, September 20, 2017). These are positive examples of outreach by DPS that should continue and possibly be expanded.

7.3 Log Truck Owner Remedies

7.3.1 Consider Investing in Technology to Prevent Accidents and Defend against Lawsuits

Several log truck owners had invested in drive cameras on some or all of their log trucks. The video evidence collected from drive cameras can be used to demonstrate that the log truck was not at fault in an accident. The footage of incidents can also be used to train drivers. For example, truck drivers and a trainer can review video footage of events and identify practices to improve. One log trucking company was able to double average following distance after installing the cameras and instituting training sessions with the video evidence. “Following too close” was the most common contributing factors in accidents involving log trucks over the past decade (Table 5-1), and so this technology should be valuable in reducing accidents as well as avoiding costly litigation.

Insurance industry representatives were very supportive of drive cameras. They stated the evidence from the cameras is highly valuable in defending against frivolous lawsuits and also encourages better driving. One of the truck owners that was interviewed avoided an insurance rate increase following camera installation after several years of rate increases before the

cameras were installed. The systems cost between $300 and $1,000 for the cameras plus the cost of monitoring, which one user estimated to be $30 per month.

Research suggests drive camera systems accompanied by training are effective in reducing accidents in public transit (Litschi and Haas 2014). Likewise, the number of unsafe events were reduced in motor coaches, trucks (Hickman et al. 2009, Boyle et al. 2016), and ambulances (Myers et al. 2012). Soccolich and Hickman (2014) estimated that drive camera systems combined with coaching could reduce fatal and injury crashes by 20% and 35%, respectively. Within the first several months of operating onboard video camera systems on log trucks, Wall (2015) was able to avoid two false claims against their insurance.

Some log truck owners invested in global position system (GPS) tracking systems on their trucks. These systems can allow the owner to track the location of their trucks on a smart phone. The systems may send alerts to the owner if the driver is speeding and the owner can monitor unwanted stops or inefficient routes. One owner even stated that he was able to avoid a lawsuit by proving that his truck was not present at an accident scene. The GPS tracking system can allow log truck owners to improve both the safety and efficiency of their operations. Insurance industry representatives favored the use of GPS tracking, but considered it less effective in defending against lawsuits compared to onboard cameras.

Technology currently exists to disable cell phone use while someone is driving. Several safety experts and insurance industry recommended that log truck owners adopt this technology to prevent accidents.

Insurance industry representatives suggested that other trucking industries are ahead of the log trucking industry in the adoption of technology such as onboard cameras. Previous research suggests small firms adopt safety technologies more slowly than larger firms (Cantor et al. 2006). Most log trucking firms operate small fleets (Table 3-2), which might explain the relatively slow adoption of this technology. Nonetheless, every log truck owner that participated in the study stated that lawsuits were a major problem for their industry and many suggested that insurance companies needed to fight frivolous lawsuits rather than settle. Onboard cameras and other technology can provide important evidence to defend against lawsuits and avoid false claims (Wall 2015).

7.3.2 Timber Transportation Should be Viewed as a Critical Line of Business Rather than a "Necessary Evil"

Most logging firm owners' expertise is in timber harvesting. It is their livelihood, their passion, and they are very good at harvesting timber. Some owners have little interest in and knowledge of twenty-first century fleet management. In the past, such owners could rely on contract truckers to deliver timber, which allowed the owner to focus on his core business: harvesting timber.

Log truck owners and procurement foresters stated that contract trucking capacity has declined significantly. Many contract truckers left the industry ten years ago when fuel prices rose and many have departed recently because of log truck insurance rates, the CSA program, or opportunities in other industries. Reduced contract hauling capacity and higher contract hauling

rates have incentivized a number of logging firms to add or expand their own trucking fleets. In many cases, the logging business owner retained the same timber harvesting responsibilities as before, but now must manage a fleet in an industry that is heavily regulated at the state and federal levels. In some cases, the trucking fleet does not receive the attention that it deserves. Unfortunately, not all loggers are good fleet managers (Baker and Tyson 2017).

Fleets of poorly maintained log trucks with minimal attention to driver training are likely to be cited for poor vehicle maintenance and are more likely to be involved in accidents than other fleets. These companies pay higher premiums themselves because of their loss history and CSA scores. Unfortunately, these companies reflect poorly on the entire log trucking industry and contribute to across-the-board insurance rate increases.

Many loggers are excellent fleet managers. Several of the loggers that were interviewed managed small fleets effectively, invested in new trucks, implemented GPS tracking and drive cameras, paid relatively low insurance premiums, and were exemplary in all respects. Other loggers have been very proactive, invested in their fleets, but have been involved in accidents that were not their fault and now face elevated insurance premiums. These loggers expressed frustration that their competitors undercut them by operating trucks without proper insurance coverage, putting poorly maintained trucks on the road, and employing unsafe drivers. The logging and forest products industries need to prioritize safe and efficient timber transportation and disincentivize unsafe practices.

Part of being proactive and prioritizing safe and efficient log transportation is log truck driver training. Log truck owners should provide regular training to drivers. A number of the log truck owners that participated in this study hired a safety consultant to provide regular training sessions to drivers; some had regular coaching sessions based on results from drive cameras, and another worked with Southwest Georgia Technical College for training. Driving log trucks is more difficult than driving other heavy vehicles because of travel on woods roads, hauling on narrow two-lane highways, and because timber shifts more during transport and has a higher center of gravity than other types of cargo.

The analysis of accident reports identified several areas that log truck owners and fleet managers could target for improvement. “Following too close” contributes to nearly 10% of log truck accidents (Table 5-1) and additional training, perhaps with the aid of drive cameras, may prevent some of these accidents. Mechanical failure is still more common among log trucks than for other heavy vehicles; specifically, brake failure is more than twice as common among log trucks as other heavy vehicles. Tire problems (failure or slick) is more common among log trucks than other heavy vehicles. Accidents and insurance claims can be avoided if all log truck owners and fleet managers proactively managed their fleet to reduce these problems.

Finally, log truck owners and fleet managers should actively monitor their CSA scores, roadside inspection results, and vehicle maintenance. Insurance industry representatives stated that CSA scores are one of the most important factors in determining insurance rates. Log truck owners who fail to monitor this metric do so at their own peril. DPS officers are human beings that sometimes make mistakes during inspections. Each error or close call should be appealed

because each inspection has an impact on CSA scores, and therefore on the company's future insurance premium.

7.3.3 Increase Log Transportation Efficiency

In other trucking industries, trucks are loaded for more than 75% of miles traveled (Torrey and Murray 2016). In contrast, log trucks are loaded for fewer than half of all miles travelled. Log truck owners in this study reported an average of 48% loaded miles. While it is probably impossible for log trucks to achieve 75% loaded miles, increasing the percent of loaded miles would reduce transportation costs and reduce the number of log trucks necessary to haul timber in Georgia. Increasing the percent of loaded miles would not reduce the cost of log truck insurance per truck, but would likely reduce the cost of log truck insurance per ton of wood delivered.

It is impossible for a logging firm with one crew and several trucks to achieve better than 50% loaded miles. However, wood dealers and loggers with multiple crews and large truck fleets can share trucking resources and take advantage of backhauls to increase the percent of loaded miles. A simulation study in central Georgia found that central dispatching and sharing trucking resources between crews could increase loaded miles from 48.4% to 52.8% (Mendell et al. 2006).

Several of the interviewed log truck owners had made progress in increasing loaded miles. One log truck owner stated that he had achieved 60% loaded miles by sharing trucks between multiple crews and staging trailers at a centrally located shop. Several wood dealers had also prioritized backhauls and increased their percent loaded miles, although most did not achieve 60% loaded miles.

Fewer than 25% of loggers have invested in in-woods scales (Greene et al. 2013) despite demonstrated gains in average payloads, reduced hauling costs, and average payback periods of less than one year (Shaffer et al. 1987, Gallagher et al. 2005, Reddish et al. 2011). Overweight violations count against log truck owners' CSA scores and may put the truck out of service depending on the severity of the violation. In-woods scales would allow the logger to accurately monitor truck weight, reduce hauling costs, minimize costly tickets, and avoid out-of-service violations because of overloads.

Improving turnaround times of log trucks should be a priority for both mills and loggers. A truck waiting to be unloaded at a mill or at a landing costs the log truck owner, and often the driver, money. A Virginia study measured turnaround times for 1,268 truck turns for five logging crews. The average turnaround time at harvests sites was 1.4 hours (Dowling 2010). Most Georgia loggers achieve much shorter turnaround times than observed by Dowling (2010), but there may be room for improvement in some cases. Given the shortage of truck drivers and the increasing cost of insurance, reducing turnaround times at harvest sites and at mills should be a priority.

7.3.4 Improve the Image of Log Trucks, Drivers, and Loggers

Log trucks have a public relations problem. One insurance industry representative stated that log trucks have a poor image in many jurisdictions and several log truck owners expressed this sentiment as well. Many log truck owners wanted their insurance company to fight frivolous claims in court, but one of the reasons insurance companies avoid court cases is that juries are unsympathetic to log trucks, drivers, and loggers. This image is unfair and ignores the contributions that loggers and the forest industry make to local communities in rural Georgia. Unfortunately, this is the reality in some areas. A concerted effort by individual companies, professional associations, and the forest industry is necessary to change public perceptions of loggers, log trucks, and drivers.

7.4 Forest Products Industry and Wood Dealer Remedies

7.4.1 Ensure Haul Rates Cover the Entire Cost of Safe and Efficient Timber Transportation

Companies should not be expected to subsidize unsafe and inefficient timber transportation. However, paying rates that do not cover the full cost of log transportation incentivizes log truck owners to cut corners by overloading trucks, shortchanging maintenance, failing to maintain adequate insurance, hiring unqualified drivers, and taking other shortcuts that may compromise safety. Many loggers subsidize trucking with revenues from their timber harvesting crews. With escalating insurance costs, the losses on timber transportation are increasing for many businesses. The southwide average haul rate was $0.14 per ton-mile up to 40 miles and $0.13 per ton-mile after 40 miles (Timber Mart-South 2017), but there are entities that pay less and others that pay more. This report is not advocating an increase (or decrease) in rates; rather, it is suggesting that companies make sure that their haul rates incentivize behavior that is consistent with their values.

7.4.2 Evaluate Policies for Trucks Delivering to Mills

Insurance industry representatives and procurement foresters stated that forest products companies have been named in lawsuits involving trucks delivering to their mill, even though an independent contractor was responsible for hauling. Mills should evaluate overweight policies, insurance requirements, and other relevant policies. Mills should regularly monitor the trucks delivering to their mills to make sure all of them are properly insured. Insurance carriers stated that unscrupulous log trucking firms will provide a certificate of insurance to a mill with appropriate coverage and then either drop their insurance coverage entirely or reduce coverage below agreed upon limits. Allowing trucks without proper insurance to deliver timber places other log truck owners at a disadvantage because they must pay the full cost of insurance and may open the mill to liability in the event of an accident.

7.4.3 Reduce Turn Times for Log Trucks

Log truck owners suggested that the majority of mills do a good job of unloading trucks in a timely manner, but a few mills regularly hold trucks for 2-3 hours. Long wait times at mills reduce the number of loads that a truck hauls per day, per week, and per year, meaning that more

log trucks and truck drivers are on the road than necessary. Every extra truck requires an additional $4,000+ insurance policy, each additional driver costs $30,000+ in wages, and each truck requires maintenance and repairs each year. Reducing turn times at mills may reduce the number of trucks necessary and reduce the cost of insurance per ton of wood delivered.

7.4.4 Avoid Quota Systems that Incentivize Unsafe Driving Behavior

One insurance industry representative stated that he had observed accident patterns that he attributed to mill quota policies. Specifically, mid-week cut-offs of deliveries can cause loggers to work long hours prior to the cut-off, resulting in long days for drivers and driving at both dawn and dusk, which increases the risk of accidents. In other cases, abrupt cut-offs can cause drivers to drive recklessly in an attempt to deliver as many loads as possible before the mill stops accepting deliveries. Obviously, mills must regulate the number and timing of deliveries, but they should be careful that the methods used to control timber deliveries do not incentivize unsafe practices.

8. Conclusion

Log trucks are an essential component of Georgia's wood supply chain. Landowners, loggers, and forest products mills rely on log trucks for their livelihoods. Currently, this vital component of the wood supply chain is struggling. The nationwide truck driver shortage (Costello and Suarez 2015) makes it challenging for log truck owners to hire qualified truck drivers. Most insurers require 2-3 years of log truck driving experience as a condition of insurance, which makes it difficult to increase the number of qualified log truck drivers. This study found that the average liability insurance premium for log trucks increased by approximately 50% in the past five years, while some log truck owners experienced increases as high as 300% and others were denied coverage.

The struggles of the log trucking sector necessitate proactive measures by log truck owners, forest products companies, insurers, policymakers, and law enforcement. Log truck owners should be proactive in maintaining safe log trucks; investing in technology such as GPS tracking and/or drive cameras; continuously training their drivers; and improving the image of log trucks, owners, and drivers. Forest products companies and others should evaluate haul rates paid for timber transportation, work to reduce truck turnaround times, and make sure their policies incentivize safe transportation and shield them from liability when accidents occur. Policymakers should study tort laws with the goal of reducing frivolous lawsuits, protecting innocent log truck owners, and ensuring legitimate accident victims are compensated appropriately. Finally, additional communication between DPS and log truck owners should improve the safety of log trucks, reduce citations, and enable log truck owners to maintain good CSA scores.

To date, the effects of the driver shortage and rising insurance premiums have been absorbed primarily by loggers, contract truckers, and other log truck owners. Many contract truckers have already left the industry. Several loggers stated during interviews that they would downsize or leave the industry if conditions worsened. Sooner rather than later, the problems identified in this report will affect landowners and the forest products industry. Timber buyers may respond to

increased insurance costs by attempting to lower stumpage prices paid for wood. In recent years, southern mills have enjoyed low wood costs, low harvesting costs, and enough logging capacity to require restrictive quotas. Increasing transportation costs will eventually put pressure on delivered wood costs as additional log truck owners leave the industry and loggers struggle to move timber from the harvest site to mills.

Rapidly rising insurance costs are an immediate problem for the wood supply chain. In the long term, recruiting new log truck drivers is likely a bigger problem. New log truck drivers must be trained to drive log trucks safely and it must be demonstrated to insurance companies that the new drivers are safe enough to insure. Training programs at Southwest Georgia Technical College and Coastal Pines Technical College are promising, but it must be demonstrated to insurance carriers that graduates of these training programs are safe log truck drivers. Other ideas such as recruiting military veterans with heavy truck driving experience show promise as well, but again, log-truck specific training acceptable to insurance companies is a prerequisite.

Finally, landowners, loggers, foresters, professional and trade associations, and the forest products industry must work together to improve our collective image. Forestry, timber harvesting, and the forest products industry make a tremendous contribution to Georgia's economy and way of life. Log trucks are our public relations representative to many Georgians. Many Georgians encounter more log trucks than foresters, forest landowners, or loggers. Unfortunately, log trucks as well as their owners and drivers do not have a good public image today. It is incumbent on all of us to improve our public image.

There are reasons for optimism. First, log trucking accidents have declined and safety improved significantly since the 1980s, and even compared to 2008 (Figures 5-1, 5-2) (Greene et al. 1996, Greene et al. 2007). Second, Georgia's wood supply chain is strong with many different markets, abundant timber supply, and innovative and productive loggers. Log truck insurance does not have to increase in perpetuity. Indeed, rates declined from 2007-2010. Proactive measures that reduce claim costs and encourage more insurance carriers to underwrite log truck insurance can reduce premiums again.

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