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CARRIER SAFETY IMPROVEMENT
PROGRAMS**

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ABSTRACT

This study characterized the descriptive attributes of motor carriers that were involved in combination-unit truck fatal crashes in North Carolina and Virginia from 2005-2009. In both states, there were more fatal crashes off Interstate highways than on the Interstates and the characteristics of the carriers involved in crashes on the two types of roads were markedly different.

Off the Interstates, the fleet size of the carriers was smaller, more of them were domiciled in the state in which the crash occurred, more private and exempt carriers were involved and, in many cases, the crash occurred very close to the carrier's place of business. For crashes on the Interstates, the carriers tended to be larger, were more likely to be a for-hire carrier located in other states, and had traveled greater distances from their business location before the crash occurred. The crash pattern differences of small carriers (10 or fewer vehicles operated) were the same but more pronounced compared to the patterns associated with carriers of all fleet sizes. In both states, crash patterns reflected mileage accumulation patterns on the two road types.

The results suggest that small local/regional carriers face higher risks and safety challenges due to the highway environments in which they operate and that new ways to assist them be explored. Recommendations are offered to address the findings.

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ACRONYMS

| Term | Acronym |
|---|---------------------|
| Combination-Unit Truck | CUT |
| Commercial Driver's License | CDL |
| Federal Motor Carrier Safety Administration | FMCSA |
| Fatality Analysis Reporting System Encyclopedia | FARS |
| Freight Analysis Framework | FAF |
| National Highway Traffic Safety Administration | NHTSA |
| Gross Vehicle Weight Rating | GVWR |
| Motor Carrier Management Information System | MCMIS |
| North Carolina | NC |
| North Carolina Department of Transportation | NCDOT |
| North Carolina State Highway Patrol | NCSHP |
| Passenger cars, light trucks, vans and sport utility vehicles | Light duty vehicles |
| Property-damage-only (crashes) | PDO |
| Roadway Network System | RNS |
| Single-Unit Truck | SUT |
| Traffic Engineering Accident and Analysis System | TEAAS |
| U.S. Department of Transportation | USDOT |
| Vehicle Miles Traveled | VMT |
| Virginia | VA |
| Virginia Department of Motor Vehicles | VDMV |
| Virginia Department of Transportation | VDOT |
| Virginia State Police | VSP |

EXECUTIVE SUMMARY

Separate, but parallel, analyses were conducted of fatal crashes involving combination-unit trucks (CUTs) in Virginia and North Carolina for the period, 2005-2009. The Virginia analyses were conducted by the Virginia Tech Transportation Institute (VTTI); the North Carolina analyses by the North Carolina State University (NCSU) Institute for Transportation Research and Education (ITRE). R.M. Clarke Consulting provided the comparison and integration of findings.

In both states, more CUT fatal crashes occurred on non-Interstate highways than on Interstates. In North Carolina, 51% of the total mileage accumulated in the state by CUTs occurred on the 1,168 route miles of Interstate highways in the states, whereas 49% of the CUT mileage was accumulated on the 73,659 route miles of primary and secondary roads in the state. In Virginia, 65% of the total mileage accumulated in the state by CUTs occurred on the 1,120 route miles of Interstate highways in the state, while 35% of the CUT mileage was accumulated on the 56,656 miles of primary and secondary roads in the state. , but Virginia had an appreciably higher proportion of CUT fatal crashes on Interstates as well as a higher proportion of involvements among non-Virginia-domiciled carriers than North Carolina experienced among non-North Carolina-domiciled carriers. State-level economic and overall CUT mileage accumulation data explain the greater number of CUT-involved crashes in North Carolina. More overnight and nighttime crashes on Virginia roads (especially Interstates), as well as an analysis of the posted speeds where fatal crashes occurred, suggest that much of the CUT traffic in Virginia is long-haul through-traffic. Fatal CUT crashes in North Carolina, on the other hand, appear to involve more local movements by locally domiciled carriers.

Off the Interstates, the fleet sizes of the carriers were smaller, more of them tended to be domiciled in the state in which the crash occurred, more private and exempt carriers were involved and, in many cases, the crash occurred very close to the carrier's place of business. For crashes on the Interstates, the carriers tended to be larger, were more likely to be for-hire carriers located in other states, and they had traveled greater distances from the carrier's business location before the crash occurred. Off the Interstates, more of the cargoes hauled tended to be logs/lumber, agriculture-related, or gases/liquids – cargoes that are typically loaded in flatbed or tank trailers. On the Interstates, the predominant cargo was general freight, which is typically hauled in van semitrailers. Both off and on the Interstates, the majority of crash-involved truck drivers were either licensed in the state in which the crash occurred or in a state that was very nearby. There were not significant numbers of young, potentially inexperienced truck drivers involved in the crashes in either state.

When considering the subset of small carriers (10 or fewer vehicles operated) the crash pattern differences were the same but more pronounced compared to the patterns associated with carriers of all fleet sizes.

The findings highlight the need to find new ways to assist and connect with in-state-domiciled and small carriers beyond the methods now being employed. Recommendations are offered in that regard.

INTRODUCTION

BACKGROUND

This study used North Carolina and Virginia as pilot cases to explore a set of issues and questions that are believed to be national in scope. It focused on fatal crashes because data availability and completeness are generally much better for these types of crashes than for injury and property-damage-only (PDO) crashes. The study was further limited to combination-unit truck (CUT) fatal crashes because they account for the majority of commercial truck fatal crashes and because CUT and single-unit-truck (SUT) operational use patterns – and, as a result, crash patterns – are also very different.

Fatal crashes are a relatively small portion of the overall number of police-reported crashes that occur each year (Table 1 and Figure 1). However, because of their tragic nature and high societal cost, they are the principal metric for assessing motor vehicle and highway safety performance.

Table 1. Numbers of U.S. Crashes as a Function of Severity Outcomes, All Vehicle Types and All Roadway Function Classes, 2005 – 2009

| Fatal | Injury | PDO | Total |
|---------|-----------|------------|------------|
| 179,839 | 8,420,000 | 20,871,000 | 29,470,839 |
| 0.6% | 28.6% | 70.8% | 100% |

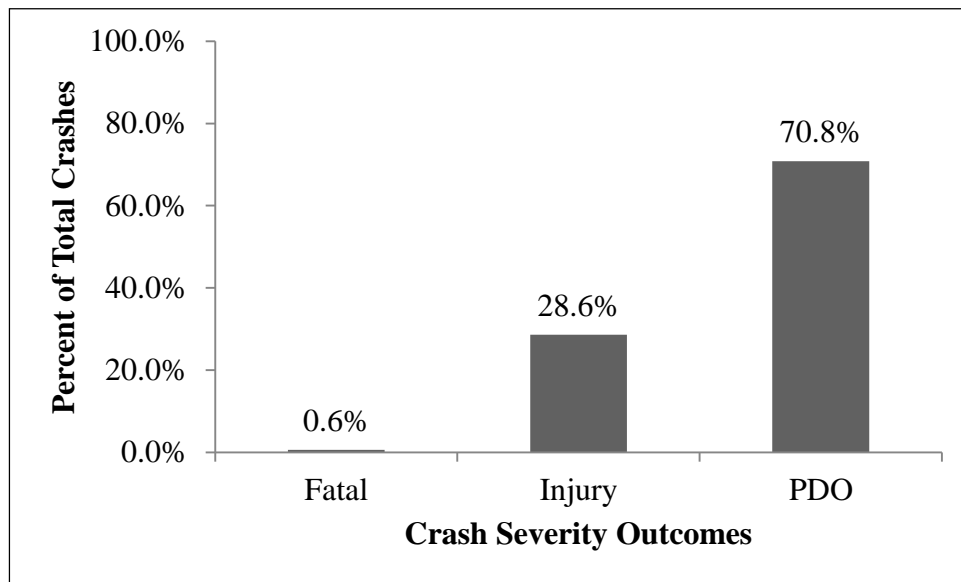


Figure 1. U.S. crash severity outcomes, all vehicle types, all roadway function classes, 2005 – 2009. (1)

Large trucks comprise a relatively small proportion of the overall number of motor vehicles operating in the United States, with CUTs being an even smaller subset. In 2009, there were 254,212,610 registered motor vehicles in the United States, 10,973,215 (4.3%) of which were large trucks. CUTs totaled 2,617,118 that year, making them only 1.0% of the total U.S. vehicle population. (2) Fatal crashes involving large trucks are a small but significant subset of the

overall number of fatal crashes that occur each year, typically comprising about 12% of the total (Figure 2); CUTs are involved in the majority (70%) of large-truck crashes.

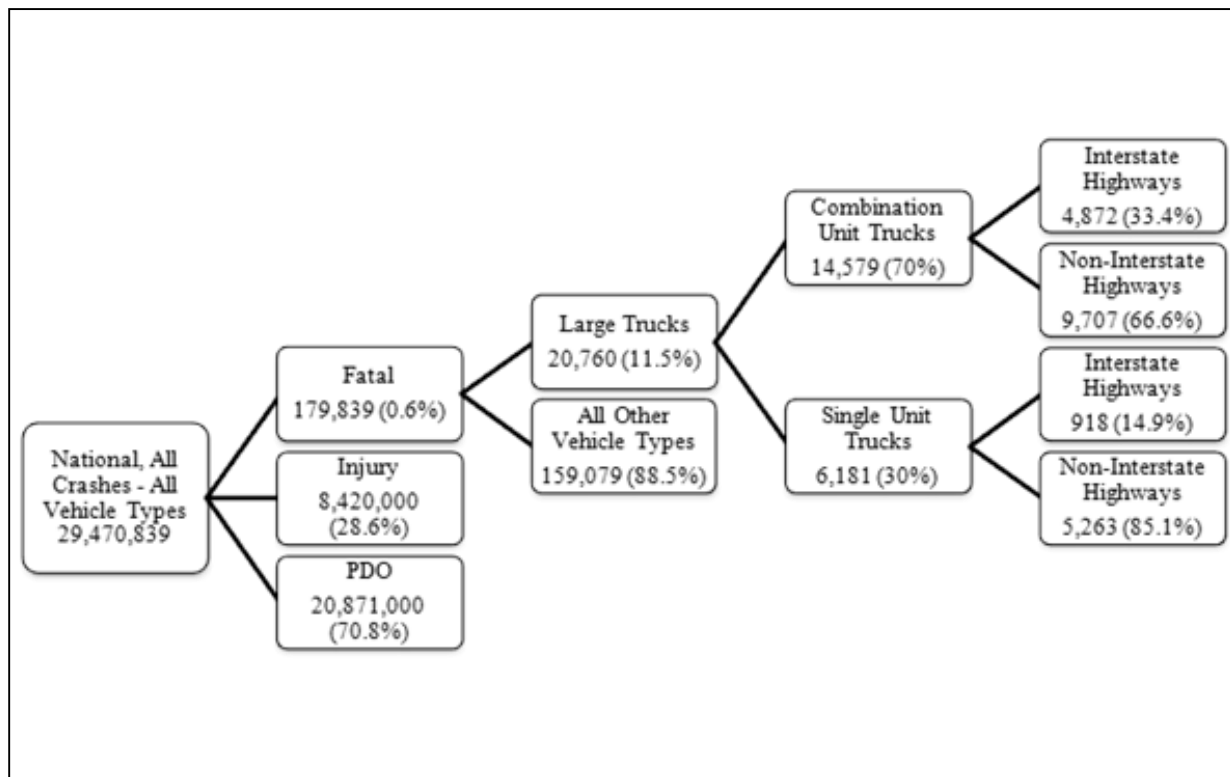


Figure 2. U.S. large-truck fatal crashes, by truck type and roadway function class for 2005 – 2009. (2)

The majority of CUT fatal crashes do not occur on Interstate highways, despite the comparatively high amount of CUT travel that occurs on these roads. CUT fatal crashes are more likely to occur in rural environments on U.S. and state routes and other secondary roads, many with undivided traffic-ways, un-signalized intersections, driveways, and other entrances, left turns across traffic, vehicle speed differentials – all of which create opportunities for conflicts with other vehicles. Interstate highways have separated/divided traffic-ways, and no at-grade intersections, significantly reducing these types of conflict opportunities, thereby making them inherently much safer facilities on which to travel. This finding is not new. Over 20 years ago, Oliver Carsten wrote:

In examining the contribution of the various types of road to the overall number and rate of fatal accident involvements by large trucks, accidents on rural undivided or non-interstate roads emerge as constituting a large share of the problem. While in the public perception the most common type of fatal accident involving a large truck is probably an accident on a rural interstate, such roads account for only 13 percent of the fatal accident involvements of large trucks. On the other hand rural non-interstate roads account for 54 percent of the involvements, and rural undivided roads account for 48 percent. If exposure is taken into account, rural non-interstate roads appear to have higher fatal accident involvement rates for combination trucks than any other class of

road at 0.86 involvements per 10 million VMT [vehicle miles traveled]; rural interstates have the lowest rate at 0.29 involvements per 10 million VMT. (3, p.25) (Table 2)

The overall safety picture has improved considerably since the Carsten report, as can be seen when comparing the data in Table 2 and Table 3.

Table 2. CUT Fatal Crash Involvements and Vehicle Miles Traveled by Rural/Urban and Interstate/Non-Interstate, TIFA, 1980-82 and FHWA Highway Statistics 1980-1982 (3)

| Road Type | Number of Fatal Crash Involvements | Percent of Involvements | Total VMT (millions) | Percent VMT | Involvement Rate (per 10 million VMT) |
|----------------------|------------------------------------|-------------------------|----------------------|-------------|---------------------------------------|
| Urban Interstate | 917 | 8.7% | 25,551 | 14.2% | 0.36 |
| Urban Non-Interstate | 1,979 | 18.7% | 27,164 | 15.1% | 0.73 |
| Rural Interstate | 1,750 | 16.5% | 60,554 | 33.8% | 0.29 |
| Rural Non-Interstate | 5,678 | 53.6% | 66,078 | 36.8% | 0.86 |
| Unknown | 276 | 2.6% | -- | -- | -- |
| Total | 10,600 | 100% | 179,347 | 100% | 0.59 |

Table 3. Comparison of National/U.S. Combination-Unit Truck, Single-Unit Truck, and Light-Duty Vehicle Mileage Accumulation and Crash Patterns, 2005 – 2009. (4)

| Metric | Combination-Unit Trucks (CUTs) | Single-Unit Trucks (SUTs) | Light-Duty Vehicles ¹ (LDVs) |
|---|--------------------------------|---------------------------|---|
| Vehicle-Miles Traveled ² on Interstate Highways | 438,493 | 136,418 | 3,025,678 |
| Vehicle-Miles Traveled ³ on Non-Interstate Highways | 449,823 | 463,630 | 10,284,087 |
| Fatal Crashes on Interstate Highways ⁴ | 4,872 | 918 | 26,376 |
| Fatal Crashes on Non-Interstate Highways ⁵ | 9,707 | 5,263 | 186,696 |
| Fatal Crash Rate, ⁶ Interstate Highways | 0.111 | 0.067 | 0.087 |
| Fatal Crash Rate, ⁷ Non-Interstate | 0.216 | 0.114 | 0.182 |
| Overall Fatal Crash Rate | 0.164 | 0.103 | 0.160 |
| Average Number of Vehicles in Use per Year over the Time Period | 2,575,757 | 7,987,618 | 234,021,253 |
| Average Vehicle-Miles Traveled per Vehicle over the Time Period | 68,975 | 15,024 | 11,375 |

¹ Light-Duty Vehicles refer to passenger cars, light trucks, vans and sport utility vehicles.

²VMT in millions

³ ibid

⁴ (1)

⁵ ibid

⁶Crash Rate = Crashes per 10 million miles traveled

⁷ ibid

Traditional crash prevention efforts focus heavily on driver skills and behaviors and vehicle maintenance, yet exposure to crash risk has the biggest influence on crash likelihood. The more miles a driver drives and a vehicle travels, the higher the likelihood that vehicle and driver will be involved in a crash. On average, CUTs travel five to six times more mileage per year than do SUTs and light-duty vehicles. Nationally, as can be seen in Table 3, CUTs accumulate mileage

in almost equal proportions on the Interstate highways (49%) compared to all other non-Interstate highways (51%), despite the fact that Interstate highways comprise only 1.1% of the 4 million route miles of highways in the U.S. (Table 4). In addition, as can be seen in Table 2 and Table 3, crash rates on non-Interstate¹ roads are significantly higher than crash rates on Interstates for all types of vehicles.

Table 4. Route Miles of Highways in the U.S., NC, and VA, 2009 (5, 6)

| Highway Type | National/U.S (Route Miles) | NC (Route Miles) | VA (Route Miles) |
|-------------------------|---------------------------------------|-----------------------------|-----------------------------|
| Interstate Highways | 46,720 (1.1%) | 1,168 (1.6%) | 1,120 (2.0%) |
| Non-Interstate Highways | 4,003,997 (98.9%) | 72,491 (98.4%) | 55,536 (98%) |
| Total Route Miles | 4,050,717 (100%) | 73,659 (100%) | 56,656 (100%) |

Trucks are business tools. They are used to transport freight. Their travel patterns are highly predictable but dynamic and reflect the nature of the businesses that use them. Use patterns dictate the degree to which any given truck, on any given trip, is exposed to the risk of a crash, notwithstanding a driver’s skill/behavior or the condition and performance of the vehicle he/she drives. Carriers that travel primarily on Interstate highways, compared to those that travel primarily on non-Interstate highways, can be expected to be involved in fewer crashes overall as well as fewer fatal crashes.

With this as background, this study has focused on comparing and contrasting the characteristics of CUT fatal crashes that occur on the two broad classifications of Interstate and non-Interstate roadway types; using as another filter, the descriptive attributes of the motor carriers involved in those crashes.

NORTH CAROLINA AND VIRGINIA COMPARISONS WITH NATIONAL CUT FATAL CRASH PATTERNS

As can be seen in Table 5 and Figure 3, the absolute numbers and relative proportions of CUT fatal crashes occurring on Interstate highways versus non-Interstate highways in both North Carolina and Virginia differ from the same overall proportions seen at the national level, as well as from each other. This variation can be explained by a number of factors. Compared to Virginia, North Carolina has approximately twice the amount of manufacturing activity in the state (Table 6) than does Virginia and, as result, about 50% more absolute miles of CUT travel to support that activity (Table 7). Additionally, NC has about 50% more route miles of primary and secondary roads than does VA. Thus, CUT exposure to crash risks is higher in North Carolina than in Virginia, simply because more trucks travel more miles over more miles of highways in North Carolina than they do in Virginia. This factor accounts for the higher absolute number of CUT fatal crashes in North Carolina compared to Virginia. However, when crash rates are

¹ In the context of this study, the term “non-Interstate highway(s)” or “non-Interstate road(s)” means all road types other than designated Interstate highways.

computed, the fatal crash rates on non-Interstate highways are higher in Virginia than in North Carolina.

Table 5. Number of CUT Fatal Crashes in the U.S., North Carolina, and Virginia that Occurred on Interstate versus Non-Interstate Highways, 2005 – 2009

| Road Type | National/U.S. | NC | VA |
|---|---------------|------------|------------|
| Crash Occurred on Interstate Highways | 5,111 (34%) | 108 (28%) | 120 (41%) |
| Crash Occurred on Non-Interstate Highways | 9,827 (66%) | 281 (72%) | 172 (59%) |
| Total | 14,938 (100%) | 389 (100%) | 292 (100%) |

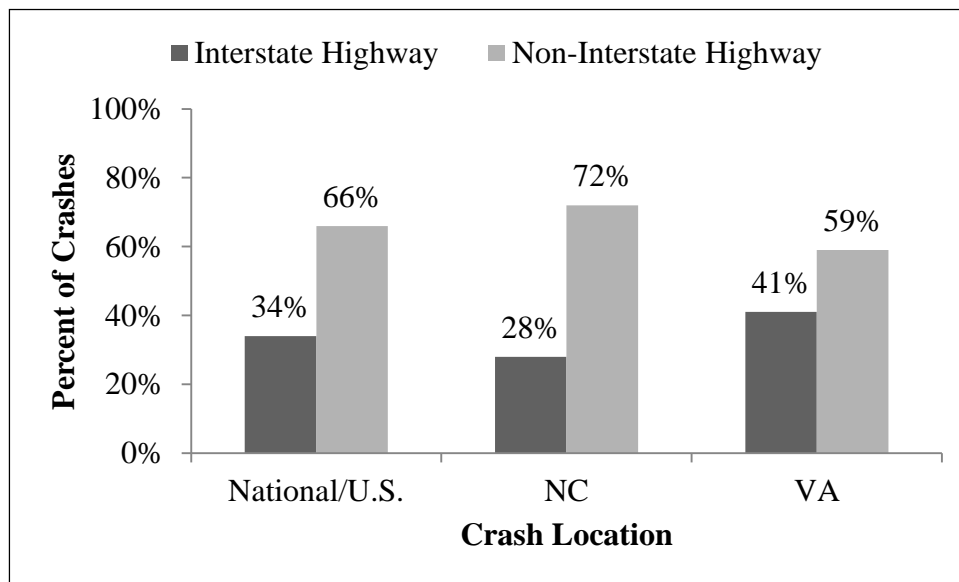


Figure 3. CUT fatal crashes in the U.S., North Carolina, and Virginia that occurred on Interstate versus non-Interstate highways, 2005 – 2009.

Table 6. Comparison of Manufacturing Activity in North Carolina and Virginia (5)

| Indicator | NC | VA |
|---|---------|---------|
| Total Manufacturing Output (\$billions, 2009) | \$72.9 | \$30.9 |
| Manufacturing's Share of Total Gross State Product (2009) | 18.3% | 7.6% |
| Manufacturing Establishments in the State (2007) | 10,150 | 5,777 |
| Manufacturing's Share of State's Exports (2010) | 92% | 83% |
| Total Employment Related to Manufactured Exports (2008) | 208,600 | 108,800 |
| Manufacturing Employment (2010) | 431,400 | 230,600 |
| Manufacturing Employment (% of Overall Non-Farm)(2010) | 11.2% | 6.4% |

Table 7. Comparison of Total VMT (millions) Traveled by All Vehicles and CUTs in the U.S., North Carolina, and Virginia, 2007-2009 (7)

| | | Location | | |
|---------------------|---|---------------|---------|---------|
| | | National/U.S. | NC | VA |
| All Vehicles | Total Interstate (VMT in millions) | 2,175,924 | 61,659 | 72,139 |
| | Interstate VMT as a % of Total | 32% | 20% | 29% |
| | Total Non-Interstate (VMT in millions) | 6,875,229 | 247,910 | 173,143 |
| | Total (VMT in millions) | 8,961,153 | 309,570 | 245,282 |
| CUTs | Total Interstate (VMT in millions) | 256,812 | 8,941 | 7,767 |
| | Interstate VMT as a % of Total | 48% | 51% | 65% |
| | Total Non-Interstate (VMT in millions) | 279,054 | 8,631 | 4,186 |
| | Total (VMT in millions) | 535,867 | 17,572 | 11,954 |
| | % of All VMT on Interstates Accumulated by CUTs | 12% | 15% | 11% |

It is also likely that the additional amount of in-state manufacturing activity accounts for the significantly higher proportion of CUT fatal crashes that occur on non-Interstate roads (72%) in North Carolina when compared to Virginia (57%). Manufacturing facilities are typically situated appreciable distances off the Interstates, making it necessary to travel non-Interstate roads to bring materials to them and to haul finished products from them. When coupled with the fact that more of the overall traffic accumulated by all vehicles in North Carolina occurs on non-Interstate roads (80%) compared to Virginia (71%), there are proportionally more opportunities for vehicle-to-vehicle conflicts and crashes in North Carolina as compared to Virginia.

In addition, both states have significant amounts of commercial transit traffic on Interstates 40, 77, 81, 85, and 95. The commercial Interstate traffic is characterized by traffic movements through the state from origins and destinations outside the state. Virginia likely has more transit traffic as evidenced by the fact that 65% of CUT travel in the state is accumulated on Interstate highways, compared to 51% in North Carolina (Table 8).

Table 8. CUT Crash Rates – U.S., North Carolina, and Virginia, 2005-2009

| Highway Type | Metric | Location | | |
|---|-------------------------------|---------------|--------|--------|
| | | U.S./National | NC | VA |
| Interstate Highway | VMT ¹ (millions) | 438,493 | 14,902 | 12,945 |
| | Fatal Crashes ² | 4,872 | 108 | 120 |
| | Fatal Crash Rate ³ | 0.111 | 0.072 | 0.093 |
| Non-Interstate Highway | VMT ¹ (millions) | 449,823 | 14,385 | 6,977 |
| | Fatal Crashes ² | 9,707 | 281 | 172 |
| | Fatal Crash Rate ³ | 0.216 | 0.195 | 0.247 |
| Overall Crash Rate, All Road Types | | 0.164 | 0.133 | 0.147 |
| Ratio of Non-Interstate Crash Rate to Interstate Crash Rate | | 1.96 | 2.71 | 2.66 |

¹Five-year VMT data for North Carolina and Virginia were extrapolated from available 2007-09 VM-1 data for the two states. Five-year National/U.S. data are VM-1 data from Highway Statistics, FHWA(4-6)

² FARS Data Query System (2)

³Crash Rate = Crashes per 10 million miles traveled.

Both states had better overall CUT crash rates and crash rates on their Interstate highways compared to the National/U.S. crash rate, but the two states' CUT crash rates on non-Interstate highways were 2 ½ times higher than on Interstate highways, highlighting the risks that carriers face on non-Interstate highways in the two states .

Compared to National/U.S. and North Carolina patterns, Virginia carriers experienced proportionally more nighttime crashes (Table 9). As noted, Virginia has significantly more CUT travel on Interstates, much of which is likely to be commercial transit traffic, and much of which occurs at night.

Table 9. Number of CUT Fatal Crashes in the U.S., North Carolina, and Virginia in Various Lighting Conditions, 2005 – 2009

| Lighting Conditions | National/U.S. | NC | VA |
|---------------------|---------------|------------|------------|
| Daylight | 12,669 (64%) | 236 (61%) | 151 (52%) |
| Dark, Not Lighted | 4,598 (23%) | 113 (29%) | 108 (37%) |
| Dark But Lighted | 1,704 (9%) | 17 (4%) | 19 (7%) |
| Dawn | 529 (3%) | 12 (3%) | 7 (2%) |
| Dusk | 239 (1%) | 11 (3%) | 5 (2%) |
| Unknown | 25 (0%) | 0 (0%) | 2 (1%) |
| Total | 19,764 (100%) | 389 (100%) | 292 (100%) |

There were no significant differences in the posted speed limit patterns of crashes in North Carolina and Virginia (Table 10) as compared to each other or the National/U.S. pattern.

Table 10. Number of CUT Fatal Crashes in the U.S., North Carolina, and Virginia by Posted Speed Limit, 2005 – 2009

| Posted Speed Limit mph | National/U.S. | NC | VA |
|------------------------|---------------|------------|---------------------|
| 25 or less | 419 (2%) | 1 (~0%) | 4 (1%) |
| 30-35 | 1,446 (7%) | 11 (3%) | 21 (7%) |
| 40-45 | 2,876 (15%) | 60 (15%) | 30 (10%) |
| 50-55 | 7,361 (37%) | 197 (51%) | 115 (39%) |
| 60-65 | 4,691 (24%) | 90 (23%) | 114 (39%) |
| 70-75 | 2,599 (13%) | 30 (8%) | 3 (1%) ² |
| 80-85 | 21 (0%) | 0 (0%) | 0 (0%) |
| No Statutory Limit | 18 (0%) | 0 (0%) | 0 (0%) |
| Unknown | 333 (2%) | 0 (0%) | 5 (2%) |
| Total | 19,764 (100%) | 389 (100%) | 292 (100%) |

Similarly, there were no significant differences in the weather-condition-related patterns of crashes in North Carolina and Virginia as compared to each other or the National/U.S. pattern (Table 11). The time-of-day patterns shown in Table 12 reflect and are the same as the time-of-day patterns in Table 9.

² Posted speed limits on Interstate Highways in VA were 65 mph for most of the time period covered in this study, hence the low proportions of crashes in this segment.

Table 11. Number of CUT Fatal Crashes in the U.S., North Carolina, and Virginia by Weather Conditions, 2005 – 2009

| Weather Condition | National/U.S. | NC | VA |
|---|---------------|------------|------------|
| Normal | 17,061 (86%) | 348 (88%) | 250 (86%) |
| Rain | 1,560 (8%) | 30 (8%) | 34 (12%) |
| Sleet, Hail | 108 (1%) | 0 (0%) | 1 (~0%) |
| Snow, Blowing Snow | 533 (3%) | 2 (1%) | 2 (1%) |
| Fog, Smog, Smoke, Wind, Blowing Sand, Soil, Dirt, Other | 416 (2%) | 9 (2%) | 4 (0%) |
| Unknown | 86 (0%) | 0 (0%) | 1 (~0%) |
| Total | 19,764 (100%) | 389 (100%) | 292 (100%) |

Table 12. Number of CUT Fatal Crashes in the U.S., North Carolina, and Virginia by Time of Day, 2005 – 2009

| Time of Day | National/U.S. | NC | VA |
|-----------------------|---------------|------------|------------|
| 12am - 3am | 1,552 (8%) | 37 (10%) | 35 (12%) |
| 3am - 6am | 1,802 (9%) | 35 (9%) | 33 (11%) |
| 6am - 9am | 3,047 (15%) | 61 (16%) | 28 (10%) |
| 9am - 12pm | 3,356 (17%) | 74 (19%) | 47 (16%) |
| 12pm - 3pm | 3,675 (19%) | 48 (12%) | 48 (16%) |
| 3pm - 6pm | 3,077 (16%) | 60 (15%) | 32 (11%) |
| 6pm - 9pm | 1,740 (9%) | 36 (9%) | 40 (14%) |
| 9pm - 12am | 1,486 (8%) | 38 (10%) | 29 (10%) |
| Unknown | 29 (0%) | 0 (0%) | 0 (0%) |
| Daytime (6am - 6pm) | 13,155 (67%) | 243 (62%) | 155 (53%) |
| Nighttime (6pm - 6am) | 6,609 (33%) | 146 (38%) | 137 (47%) |
| Total | 19,764 (100%) | 389 (100%) | 292 (100%) |

The spatial distribution of CUT fatal crashes on NC Interstate highways can be seen in Figure 4 while the distribution on NC non-Interstate highways can be seen in Figure 5. Similarly, the spatial distribution of CUT fatal crashes on VA Interstate highways can be seen in Figure 6, and the distribution on VA non-Interstate highways can be seen in Figure 7. In both states, fatal accidents on non-Interstate highways are widely dispersed throughout the state, making these types of accidents challenging to address on this network of roads.

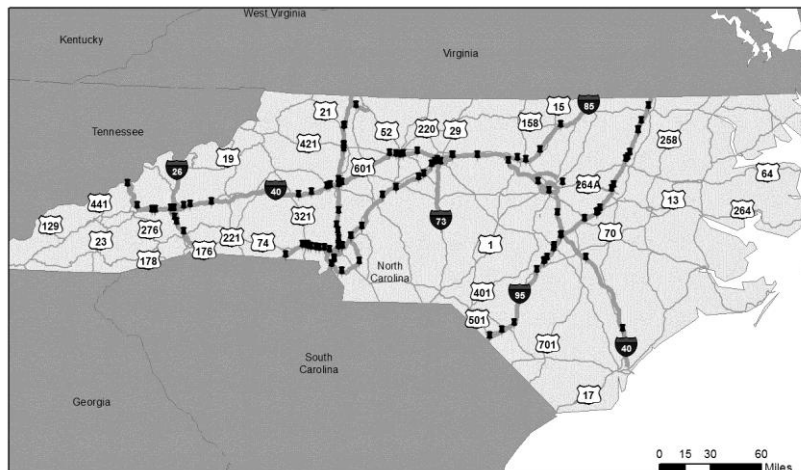


Figure 4. CUT fatal crashes on NC Interstate highways, 2005-2009.

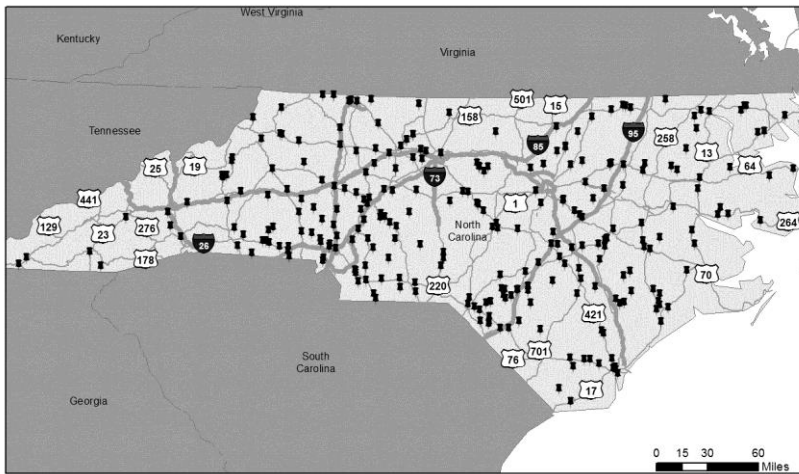


Figure 5. CUT fatal crashes on NC non-Interstate highways, 2005-2009.

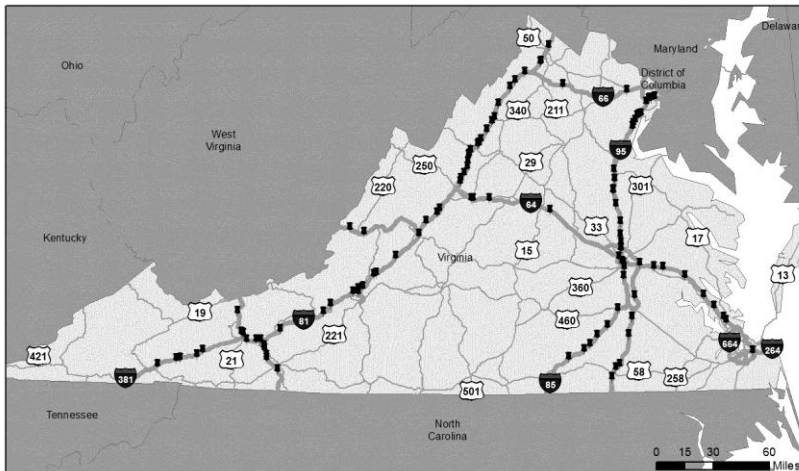


Figure 6. CUT fatal crashes on VA Interstate highways, 2005-2009.

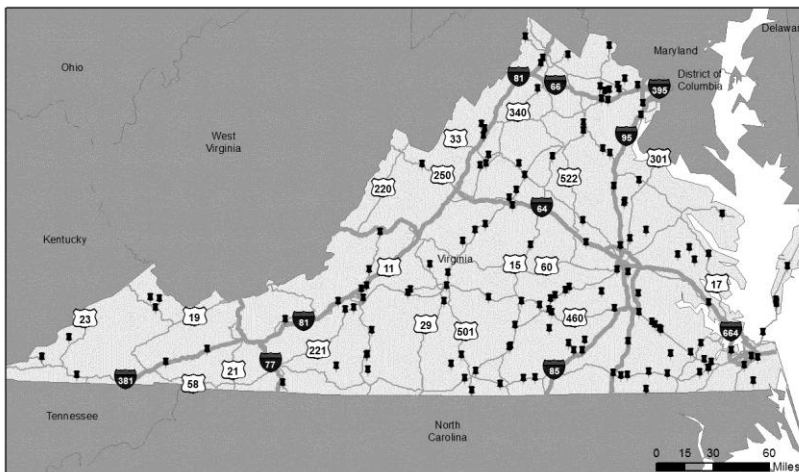


Figure 7. CUT fatal crashes on VA non-Interstate highways, 2005-2009.

PURPOSE AND SCOPE

The proximal cause of the vast majority of all motor vehicle crashes, including those involving commercial heavy trucks, is some type of unintentional human error, usually a lapse in judgment or attention or a failure to detect, perceive, or respond adequately to a threat. (8)

Underlying crash risks differ from proximal causes (some call these trigger events) and involve latent propensities that increase the likelihood that crashes can occur. Historically, the classic paradigm for studying underlying crash causes has been to focus on driver, vehicle, and highway- and environment-related factors to identify reoccurring or prevalent patterns.

There is another, untapped data source, however: the Federal Motor Carrier Safety Administration's (FMCSA) Motor Carrier Identification Report, MCS-150. All motor carriers that register with FMCSA are required to complete this form to be able to operate in interstate commerce and obtain a United States Department of Transportation (USDOT) number. This study has linked MCS-150 data with crash data files to add carrier attribute/descriptive information to the list of underlying risk factors that can be studied. Principal among these are:

- Carrier's business address from which the carrier's domicile state and distance from the carrier's place of business to the crash site can be determined.
- Number of vehicles operated by the carrier, which is a direct measure of the size of the carrier's fleet.
- Type of operation (e.g., for-hire, private, exempt³).
- Type of cargo or commodity typically hauled, which is an indirect indicator of the type of business or the industry in which the carrier is involved.

It was the original intent to study both SUTs and CUTs. While the FMCSA's definition of a commercial vehicle includes all vehicles operating in interstate commerce with a Gross Vehicle Weight Rating (GVWR) of 10,001 lbs. or more, the final target of the present study was limited to CUTs, virtually all of which have a GVWR over 26,000 lbs. This decision thus omitted SUTs, including those that may have satisfied the FMCSA requirement of being involved in interstate commerce and with a GVWR exceeding 10,000 lbs. It also excluded a large population of crash-involved SUTs operating solely in the intrastate movement of goods. SUTs clearly have very different VMT accumulation patterns (Table 3) and resultant crash patterns (Figure 2); therefore, SUTs warrant a separate analysis.

³ For-hire carriers transport cargo for compensation and are either common carriers providing service to the general public or contract carriers providing service to specific, individual shippers based on contracts. Private carriers operate motor vehicles that transport their own cargo, usually as a part of a business that produces, uses, sells, and/or buys the cargo that is being hauled (e.g. grocery stores and retailer stores). Exempt carriers operate motor vehicles carrying ordinary livestock, fish, and unmanufactured agricultural commodities including, fish or shellfish product that is not intended for human consumption and livestock feed, poultry feed, agricultural seeds, or plants that are transported to a site of agricultural production or to a business enterprise engaged in the sale to agricultural producers of goods used in agricultural production.

Another rationale for targeting fatal CUT-involved crashes was that, because of their GVWRs, all CUT drivers must have a Commercial Driver's License (CDL). On the other hand, nearly 70% of SUTs (9) have GVWRs of less than 26,000 lbs.⁴ CDLs are not required in order to operate a vehicle with a GVWR under 26,000 lbs. and, as mentioned above, neither Virginia nor North Carolina presently require intrastate operators or vehicles under 26,000 lbs. GVWR to register with FMCSA.

Additionally, the original plan for this project was to make a major differentiation between carriers operating as intrastate versus interstate carriers. This is primarily a legal differentiation based on whether the shipper and consignee of the freight being hauled on a given trip are in different states, or are part of a continuous movement from one state to another. In many states (including North Carolina and Virginia), intrastate carriers (i.e., those that haul freight solely within the state) are not required to register with FMCSA, whereas interstate carriers are. Also, in some states, including North Carolina and Virginia, safety program requirements do not apply to carriers that operate exclusively in intrastate commerce, solely within the state. The result is that comparable levels of enforcement and oversight do not extend to intrastate carrier operations in these states. One of the original hypotheses was that because of this jurisdictional distinction, intrastate carriers would have different crash patterns and proportionally higher involvements in crashes as compared to interstate carriers.

For a number of reasons, the research team was not able to match crash records with carrier registration/descriptive information for all fatal crashes that occurred in the two states. These reasons include the following:

- There was simply no information identifying the carrier on the crash report.
- The DOT number in the FMCSA MCS-150 data file that linked with the carrier name on the crash report was missing.
- There were conflicts between the carrier name and/or DOT number on the crash report and the MCS-150 record.
- The carrier may have been a purely intrastate carrier for which no record would be available.

Although these instances were few, it could not be concluded that all the fatal crashes involving carriers without DOT numbers were carriers engaged solely in intrastate commerce. Given that the majority fatal CUT crashes in the two states involved carriers with DOT numbers, it seems that most carriers operating CUTs register with FMCSA regardless of how frequently they operate in interstate or intrastate commerce. Also, many small private carriers or lease operations that operate wholly intrastate may be a subsidiary operation or distributor of a larger corporation that has operations in many states and registers the entire operation. As a result, the team could not determine the number of cases that involved purely intrastate carriers and movements. Therefore, this line of investigation was abandoned and the research team focused instead on carriers domiciled in the state versus those domiciled out-of-state, looking at the crash

⁴ These most recent available data show that 68% of all U.S. registered single-unit trucks with GVWRs greater than 10,000 lbs. had GVWRs of less than 26,000 lbs.

patterns and descriptive characteristics of these two carrier groups as a function of the major types of roadway on which they were traveling when they were involved in crashes.

Believing that the two major carrier groups (those domiciled in-state and those domiciled out-of-state) likely had distinctly different use patterns and operational characteristics, it was hypothesized that significant differences would be found in crash patterns and carrier descriptive attributes in each of the four data cells presented in Table 13. The hypotheses explored are presented in Table 14.

Table 13. Data Classifications Used for Analyses

| | |
|---|---|
| Carrier Domiciled In-State Crash on Interstate Highway | Carrier Domiciled In-State Crash on Non-Interstate Highway |
| Carrier Not Domiciled In-State Crash on Interstate Highway | Carrier Not Domiciled In-State Crash on Non-Interstate Highway |

Table 14. Hypotheses Explored

| Hypothesis Number | Hypothesis |
|-------------------|--|
| Hypothesis One | Crash-involved carriers, both those domiciled in the state and not domiciled in the state, would predominantly be involved in collisions with other motor vehicles, but single-vehicle crashes would be more prevalent on Interstates and among out-of-state carriers – possibly indicating that this is where run-off-road/struck fixed object, fatigue-related crashes mostly occur. |
| Hypothesis Two | Crash-involved carriers domiciled in the state would be involved in proportionally more crashes on non-Interstate roads than carriers not domiciled in the state – because that is where their operations dictate they travel. |
| Hypothesis Three | Crash-involved carriers domiciled in the state would tend to operate smaller size fleets. |
| Hypothesis Four | Crash-involved carriers not domiciled in the state would be larger and more likely to experience crashes on Interstate highways. |
| Hypothesis Five | Crash-involved small carriers domiciled in the state would likely be involved in crashes much closer to the carrier’s place of business than larger fleets and carriers not domiciled in the state. |
| Hypothesis Six | Crash-involved private carriers, versus for-hire carriers, would more likely be small operations domiciled in the state and are more likely to experience crashes close to their places of business. |
| Hypothesis Seven | Crash-involved carriers involved in farm-to-market/agricultural commodity operations are more likely to be domiciled in the state and to be involved in crashes off the Interstates. |
| Hypothesis Eight | Crash-involved carriers not domiciled in the state are more likely to be for-hire, general freight haulers, whereas carriers domiciled in the state would be more likely to have higher proportions of tank, flatbed, and other cargo body type/commodities operations. |
| Hypothesis Nine | Crash-involved carriers domiciled in the state and smaller carriers would be more likely to operate older trucks. |
| Hypothesis Ten | Crash-involved carriers domiciled in the state would be more likely to have younger drivers. |
| Hypothesis Eleven | Crash-involved carriers in both states would not experience classic time-of-day, day-of-week, weather, and roadway condition crash patterns that differed significantly from national patterns. |

METHOD AND MATERIALS

There were two types of data used in this study; the CUT crash data and the CUT carrier attribute data. The crash data were obtained from the state-specific databases. Carrier attribute data for 2005-2009 were obtained from the FMCSA Carrier Identification Report, Form MCS-150. The CUT crash data for both states were gathered and have been combined into a single North Carolina and Virginia CUT fatal crash database for the period 2005 – 2009.

CUT CRASH DATA SOURCES

North Carolina Crash Data Sources

North Carolina crash data for 2005 – 2009 were obtained directly from the North Carolina Department of Transportation's (NCDOT) Traffic Engineering Accident and Analysis System (TEAAS). TEAAS is a crash database maintained by the Traffic Engineering, Safety, and Mobility section of the NCDOT based upon crash data collected by the NCDOT Division of Motor Vehicles (NCDMV). TEAAS is primarily used as an analytical tool for highway design and traffic operations engineers making improvements to the highway infrastructure system. It provides a level of database functionality over and above that contained in the raw crash data. The TEAAS data set includes only data for fatal crashes involving one or more CUTs.

Virginia Crash Data Sources

The Virginia crash data for 2005-2009 were obtained from the Virginia Department of Motor Vehicles (VDMV) and Virginia Department of Transportation (VDOT). The Virginia Highway Safety Office (VAHSO), through its Traffic Records Management, Reporting and Analysis Division of the VAHSO, manages the state's highway safety traffic records information system which houses millions of traffic crash records. These data are housed in the Traffic Records Electronic Data System (TREDS). The VDOT maintains the VDOT Roadway Network System (RNS) database. As a result of a modification to the police accident report form FR 300, existing database fields were deleted or consolidated and new record fields were created. To eliminate inaccuracies, the team compared the TREDS and the RNS database records to create a unique final data set for fatal CUT crashes in Virginia.

CUT CARRIER ATTRIBUTE DATA

FMCSA Motor Carrier Identification Report (MCS-150) Data

A copy of the MCS-150 form and instructions for carriers is provided in Appendix A. Collection of information contained on the MCS-150 is mandatory and is required by 49 CFR Part 385 and authorized by 49 C.F.R. 505 (1982 & Supp. III 1985). The Form MCS-150, Motor Carrier Identification Report must be filed by all motor carriers operating in interstate or foreign commerce. A new motor carrier must file Form MCS-150 before beginning operations.

MCS-150 information is available online for authorized users (including the carrier) via the FMCSA Safety and Fitness Electronic Records (SAFER) System. *A Company Snapshot*

provides a concise electronic record of a company’s identification, size, commodity information, and safety record, and includes the safety rating (if any), a roadside out-of-service inspection summary, and crash information. The company snapshot is available via an ad-hoc query (one carrier at a time) free of charge. A typical company snapshot for an established carrier is provided in Figure 8.

| | | | |
|--|--|--|--|
| Entity Type: | Carrier | | |
| Operating Status: | REGISTERED | Out of Service Date: | None |
| Legal Name: | [REDACTED] | | |
| DBA Name: | [REDACTED] | | |
| Physical Address: | [REDACTED] | | |
| Phone: | [REDACTED] | | |
| Mailing Address: | [REDACTED] | | |
| USDOT Number: | [REDACTED] | State Carrier ID Number: | [REDACTED] |
| MC or MX Number: | [REDACTED] | DUNS Number: | [REDACTED] |
| Power Units: | 5,855 | Drivers: | 6,061 |
| MCS-150 Form Date: | 09/17/2010 | MCS-150 Mileage (Year): | 378,934,979 (2009) |
| Operation Classification: | | | |
| | <input checked="" type="checkbox"/> Auth. For Hire Exempt For Hire Private(Property) Priv. Pass. (Business) | <input type="checkbox"/> Priv. Pass.(Non-business) Migrant U.S. Mail Fed. Gov't | <input type="checkbox"/> State Gov't Local Gov't Indian Nation |
| Carrier Operation: | | | |
| | <input checked="" type="checkbox"/> Interstate | <input type="checkbox"/> Intrastate Only (HM) | <input type="checkbox"/> Intrastate Only (Non-HM) |
| Cargo Carried: | | | |
| <input checked="" type="checkbox"/> General Freight Household Goods Metal: sheets, coils, rolls Motor Vehicles Drive/Tow away Logs, Poles, Beams, Lumber <input checked="" type="checkbox"/> Building Materials Mobile Homes <input checked="" type="checkbox"/> Machinery, Large Objects Fresh Produce | <input checked="" type="checkbox"/> Liquids/Gases <input checked="" type="checkbox"/> Intermodal Cont. Passengers Oilfield Equipment Livestock Grain, Feed, Hay Coal/Coke Garbage/Refuse US Mail | <input checked="" type="checkbox"/> Chemicals Commodities Dry Bulk Refrigerated Food <input checked="" type="checkbox"/> Beverages <input checked="" type="checkbox"/> Paper Products Utilities <input checked="" type="checkbox"/> Agricultural/Farm Supplies <input checked="" type="checkbox"/> Construction Water Well | |

Figure 8. Representative company snapshot from the SAFER system.

In instances where the individual completing the MCS-150 listed more than one type of carrier operation on the MCS-150, the operation listed first was associated with the carrier. Likewise, where the individual completing the MCS-150 listed multiple commodity types, the commodity listed first was associated with the carrier, even though the raw data set retained all commodities listed.

Initial SAFER system searches of the MCS-150 data were conducted using Virginia carrier records. The team searched by carrier name and, where available, USDOT number. The team compared the resulting MCS-150 data with the data provided as part of the police accident report. When searching by name, the team verified that the location of the carrier was consistent with the state records. For example, if a carrier SAFER system address did not match the state-reported address, an Internet search was conducted to determine if the carrier had more than one location. The team was able to identify carrier attribute data for all carriers except those with incomplete police accident report information or those with inaccurate or inactive USDOT numbers.

After the initial Virginia carrier record search was completed, the team met with FMCSA representatives via teleconference. FMCSA representatives noted that the SAFER system was maintained by a third party. However, FMCSA representatives offered to complete a manual check of a limited number of records. Based on that discussion, the North Carolina CUT fatal crash records were submitted to FMCSA for review. The MCS-150 data for North Carolina CUT fatal-crash-involved carriers were obtained directly from FMCSA. Only the carrier attribute data (i.e., excluding the carrier performance data) were requested and used in the analysis. MCS-150 data were returned for all North Carolina CUT fatal-crash-involved carriers for which USDOT numbers were available in the TEAAS database.

DATA ASSUMPTIONS

For the purpose of the present study, a CUT was considered to be one of the following: (a) tractor and semi-trailer, (b) tractor and trailer, (c) bobtail, or (d) double trailer. Neither state permitted triple trailers during this timeframe. All analyses of the data were based upon fatal *crashes* as the basic unit of analysis, as opposed to the number of CUTs involved in fatal crashes. In those instances where carrier attributes were the primary focus of the analysis, only the first CUT listed on the police accident report as having been involved in a crash was included in the analysis.

Analysis of the crash data was also conducted without respect to the number of fatalities (persons killed) in CUT-involved fatal crashes. The number of CUTs involved in fatal crashes (a number greater than the number of fatal CUT-involved crashes) was analyzed separately as a function of whether those multiple CUT-involved crashes occurred on Interstate or non-Interstate roadways.

In terms of the types of roadways where fatal CUT crashes took place, the analysis separated roadway types into Interstate by designation (without respect to urban or rural) and non-Interstate.

It is important to point out that while FMCSA's criterion for a commercial vehicle includes all vehicles in commerce with a GVWR of 10,001 lbs. or greater, only vehicles generally greater than 26,001 lbs. GVWR, for which drivers are required to possess a CDL, were included in the present analysis. The analysis thus excluded SUTs, generally defined as a "straight truck" having 3 or more axles, as well as the class of vehicles referred to as being characterized as "2 Axles, 6 Tires." The present analysis results should therefore not be interpreted as pointing only to the heavier CUTs as the sole source of fatal truck-involved crashes at the State level; in fact in NC, 29% large truck fatal crashes involve SUTs, while in VA the comparable figure is 40% (10). The exclusive focus on CUTs in the present study was felt to be justified from the standpoint of obtaining a consistent focus on (a) heavy (greater than 26,000 lbs. GVWR) commercial vehicles, (b) a driver population limited to those required to have a CDL, and (c) and more homogeneity in terms of the types of business operations.

RESULTS OF COMBINED DATA SET ANALYSES

This section of the report describes the most relevant attributes of the motor carriers that were involved in CUT fatal crashes in North Carolina and Virginia between 2005 and 2009.

SUMMARY OF CARRIER CHARACTERISTICS FOR CUT FATAL CRASHES

In this study all the tables and figures are based on tallies of *crashes* in which CUTs were involved, not tallies of the *number of CUTs* involved in crashes. This is an important distinction. As noted in the following sections, most CUT fatal crashes involved collisions between vehicles; the majority of these were two-vehicle collisions. Most often, a single CUT and a passenger vehicle (a car, light truck, or sport utility truck) were involved in the collision. There were instances, however, in which more than one CUT was involved in the same crash. In these cases, to enable comparisons with national data and to simplify the analysis process, MCS-150 data for the second involved truck/carrier were not included in tallies and tables shown throughout the report.

In order to account for these instances in North Carolina, a separate analysis of these cases was performed and it was found that there were 20 fatal crashes that involved more than one CUT. Most of these other CUTs were involved in collisions on Interstate highways. In North Carolina, an equal number were operated by North Carolina-domiciled carriers as were operated by non-North Carolina-domiciled carriers (Table 15). In Virginia, the majority of accidents occurred on Interstate highways and involved non-Virginia-domiciled carriers (Table 16). Since the number of these cases is small and their descriptive characteristics generally matched those of the included carriers, and to enable comparisons with national data tallying numbers of crashes rather than numbers of vehicles involved in crashes, the remainder of the analyses performed for this report do not include tallies of these additional carriers.

Table 15. CUT Fatal Crashes in North Carolina that Involved More than One CUT, 2005 – 2009

| Road Type | NC-Domiciled | Non-NC-Domiciled | Total |
|------------------------|--------------|------------------|-------|
| Interstate Highway | 6 | 9 | 15 |
| Non-Interstate Highway | 4 | 1 | 5 |
| Total | 10 | 10 | 20 |
| Missing Data | 0 | 0 | 0 |

Table 16. CUT Fatal Crashes in Virginia that Involved More than One CUT, 2005 – 2009

| Road Type | VA-Domiciled | Non-VA-Domiciled | Total |
|------------------------|--------------|------------------|-------|
| Interstate Highway | 3 | 18 | 21 |
| Non-Interstate Highway | 3 | 7 | 10 |
| Total | 6 | 25 | 31 |
| Missing Data | 1 | | 1 |

Road Type and State of Carrier Domicile of Carriers Involved in CUT Fatal Crashes

North Carolina Road Type and State of Carrier Domicile Summary

The majority of the CUT fatal crashes that occurred in North Carolina between 2005 and 2009 occurred on non-Interstate highways (72%), primarily U.S. and state routes, and involved carriers that were domiciled in the state (53%). As noted in Table 4, these roads, some of which have level of access control, constitute 98.4% of the state's highway network. The largest proportion of all crashes involved North Carolina-domiciled carriers on non-Interstate highways (46%) (Table 17, Figure 9). The majority (87%) of fatal crashes in North Carolina in which North Carolina-domiciled carriers were involved occurred on non-Interstate highways

Table 17. Number of CUT Fatal Crashes in North Carolina by Road Type and State of Carrier Domicile, 2005 – 2009

| Road Type | NC-Domiciled Carriers | Non-NC-Domiciled Carriers | Total |
|--|-----------------------|---------------------------|------------|
| Crash Occurred on Interstate Highway | 27 (13%) | 81 (56%) | 108 (28%) |
| Crash Occurred on Non-Interstate Highway | 179 (87%) | 102 (44%) | 281 (72%) |
| Total | 206 (100%) | 183 (100%) | 389 (100%) |

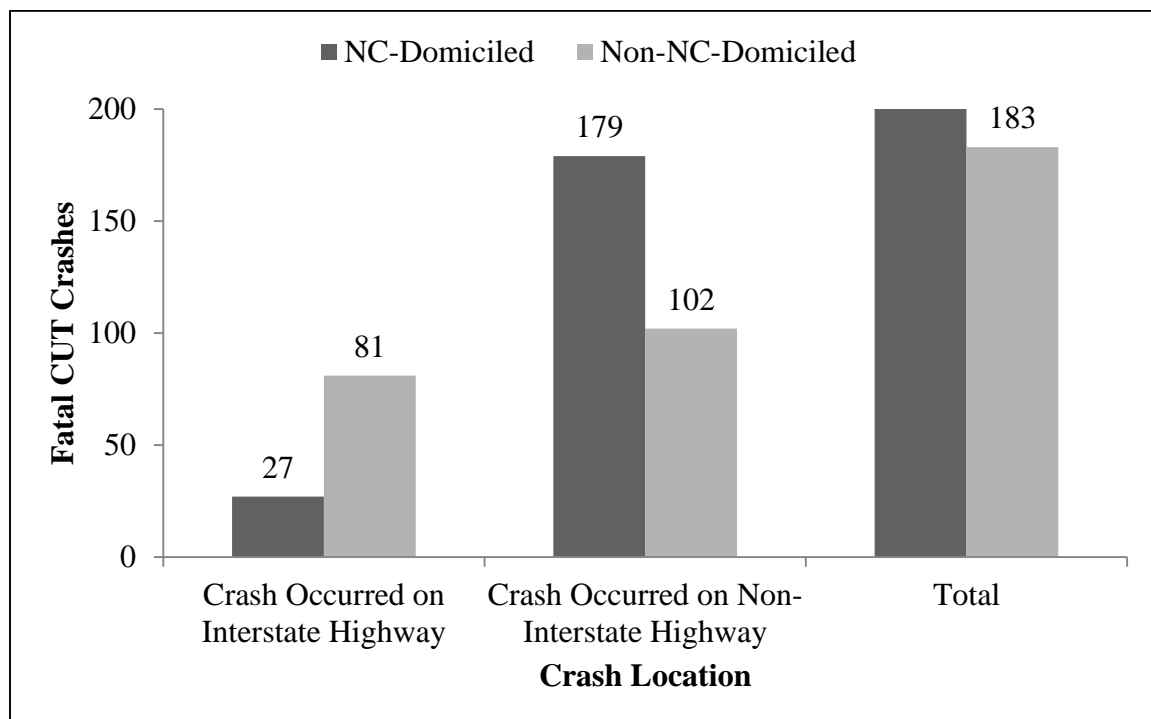


Figure 9. Number of CUT fatal crashes in North Carolina by road type and state of carrier domicile, 2005 – 2009.

Virginia Road Type and Carrier State of Domicile Summary

As in North Carolina, but not to as great an extent, the majority of CUT fatal crashes that occurred in Virginia between 2005 and 2009 occurred on non-Interstate highways (59%) compared to Interstate highways (41%) (Table 18, Figure 10). Like North Carolina, these roads, some of which have some level of access control, constitute 98% of the state's highway network

(Table 4). Unlike North Carolina, the majority of Virginia CUT fatal crashes involved non-Virginia-domiciled carriers (62%) compared to carriers domiciled in the state (38%). However, 11% of the CUT fatal crashes in Virginia involved carriers domiciled in North Carolina, an immediately adjacent state.

Table 18. Number of CUT Fatal Crashes in Virginia by Road Type and State of Carrier Domicile, 2005 – 2009

| Road Type | VA-Domiciled Carriers | Non-VA-Domiciled Carriers | Missing | Total |
|--|-----------------------|---------------------------|---------|------------|
| Crash Occurred on Interstate Highway | 24 (26%) | 93 (51%) | 3 | 120 (41%) |
| Crash Occurred on Non-Interstate Highway | 70 (74%) | 88 (49%) | 14 | 172 (59%) |
| Total | 94 (100%) | 181 (100%) | 17 | 292 (100%) |

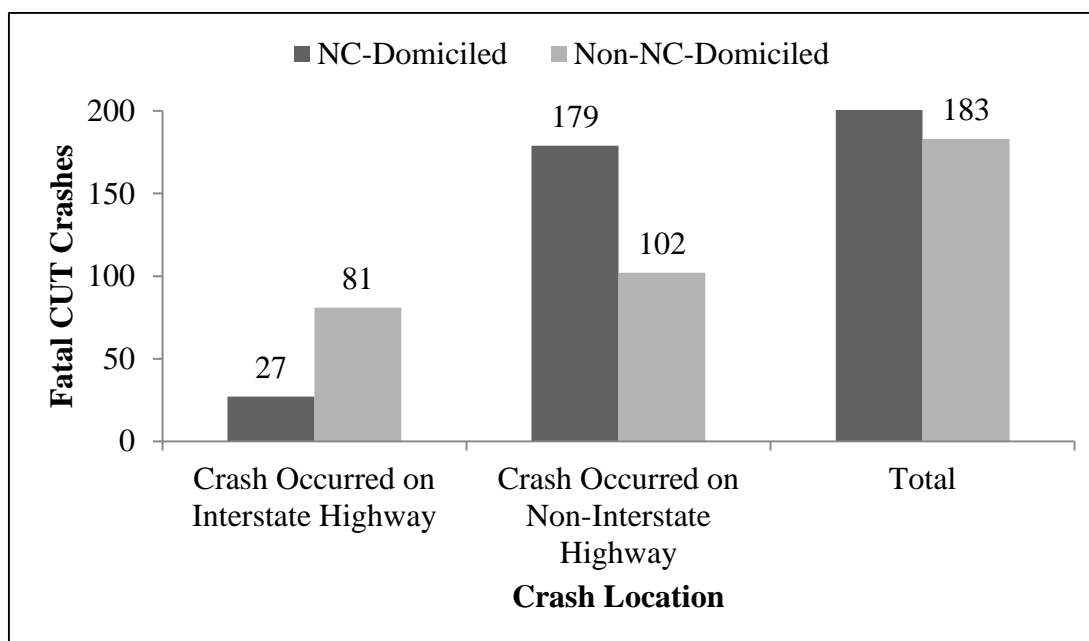


Figure 10. Number of CUT fatal crashes in Virginia by road type and state of carrier domicile, 2005 – 2009.

Type of Collision for Carriers Involved in CUT Fatal Crashes

North Carolina Collision Type Summary

Overwhelmingly, the majority of CUT fatal crashes in North Carolina involve a collision with another motor vehicle – predominantly passenger cars and light trucks (80% for North Carolina-domiciled carriers and 70% for non-North Carolina-domiciled carriers; Table 19). This pattern is generally the same everywhere in the United States. Collisions with other motor vehicles on non-Interstate highways were the most frequent portion (84%) of CUT fatal crashes involving North Carolina-domiciled carriers (Table 20).

The pattern was different, however, when considering fatal crashes on Interstate highways versus non-Interstate highways (Figure 11 and Figure 12). On Interstate highways, there were

appreciably more collisions with fixed objects, possibly indicating single-vehicle run-off-road crashes involving fatigued drivers, than is the case on non-Interstate highways, which require more attention to drive. Also, collisions with objects not fixed (animals, pedestrians, etc.) were more prevalent on Interstates. The differences between the two road types reflect the higher design standards applied to Interstate highways that reduce the likelihood and consequences of driver errors and collisions. Off the Interstates there are at-grade intersections, driveways, etc., and undivided traffic-ways that increase the opportunity for conflicts and collisions between vehicles.

Table 19. Type of Collision in CUT Fatal Crashes in North Carolina on All Road Types, by Carrier Domicile, 2005 – 2009

| Collision Type | NC-Domiciled Carriers | Non-NC-Domiciled Carriers |
|--|-----------------------|---------------------------|
| Non-Collision | 10 (5%) | 12 (7%) |
| Collision w/ Other Motor Vehicle | 165 (80%) | 127 (70%) |
| Collision w/ Stopped or Parked Motor Vehicle | 5 (3%) | 2 (1%) |
| Collision w/ Fixed Object | 13 (6%) | 18 (9%) |
| Collision w/Object Not Fixed | 13 (6%) | 24 (13%) |
| Total | 206 (100%) | 183 (100%) |

Table 20. Type of Collision in CUT Fatal Crashes in North Carolina by Carrier Domicile and Road Type, 2005 – 2009

| Collision Type | Crash Occurred on Interstate Highway | | | Crash Occurred on Non-Interstate Highway | | |
|--|--------------------------------------|---------------------------|------------|--|---------------------------|------------|
| | NC-Domiciled Carriers | Non-NC-Domiciled Carriers | Total | NC-Domiciled Carriers | Non-NC-Domiciled Carriers | Total |
| Non-Collision | 2 (7%) | 5 (6%) | 7 (6%) | 8 (4%) | 7 (7%) | 15 (5%) |
| Collision w/ Other Motor Vehicle | 13 (48%) | 47 (58%) | 60 (56%) | 152 (85%) | 80 (78%) | 232 (83%) |
| Collision w/ Stopped or Parked Motor Vehicle | 2 (7%) | 2 (3%) | 4 (4%) | 3 (2%) | 0 (0%) | 3 (1%) |
| Collision w/ Fixed Object | 6 (23%) | 10 (12%) | 16 (15%) | 7 (4%) | 8 (8%) | 15 (5%) |
| Collision w/Object Not Fixed | 4 (15%) | 17 (21%) | 21 (19%) | 9 (5%) | 7 (7%) | 16 (6%) |
| Total | 27 (100%) | 81 (100%) | 108 (100%) | 179 (100%) | 102 (100%) | 281 (100%) |

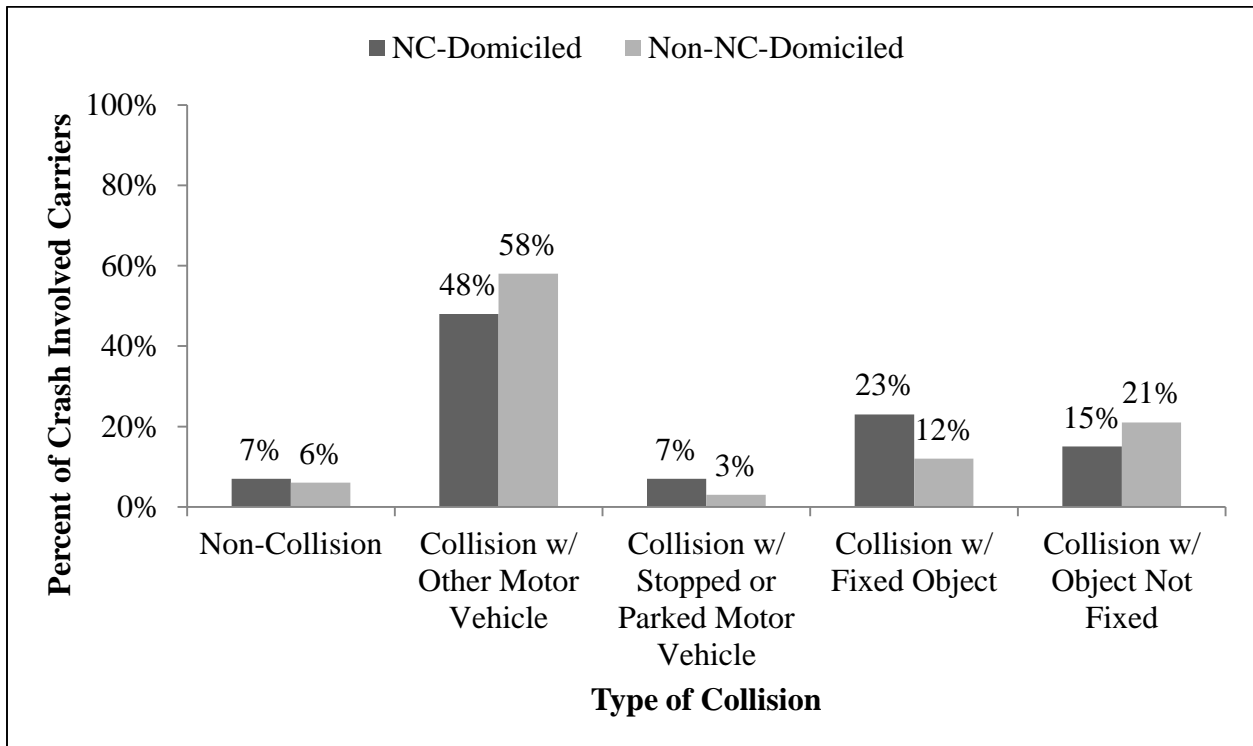


Figure 11. Type of collision in CUT fatal crashes on Interstate highways in North Carolina by carrier domicile, 2005 – 2009.

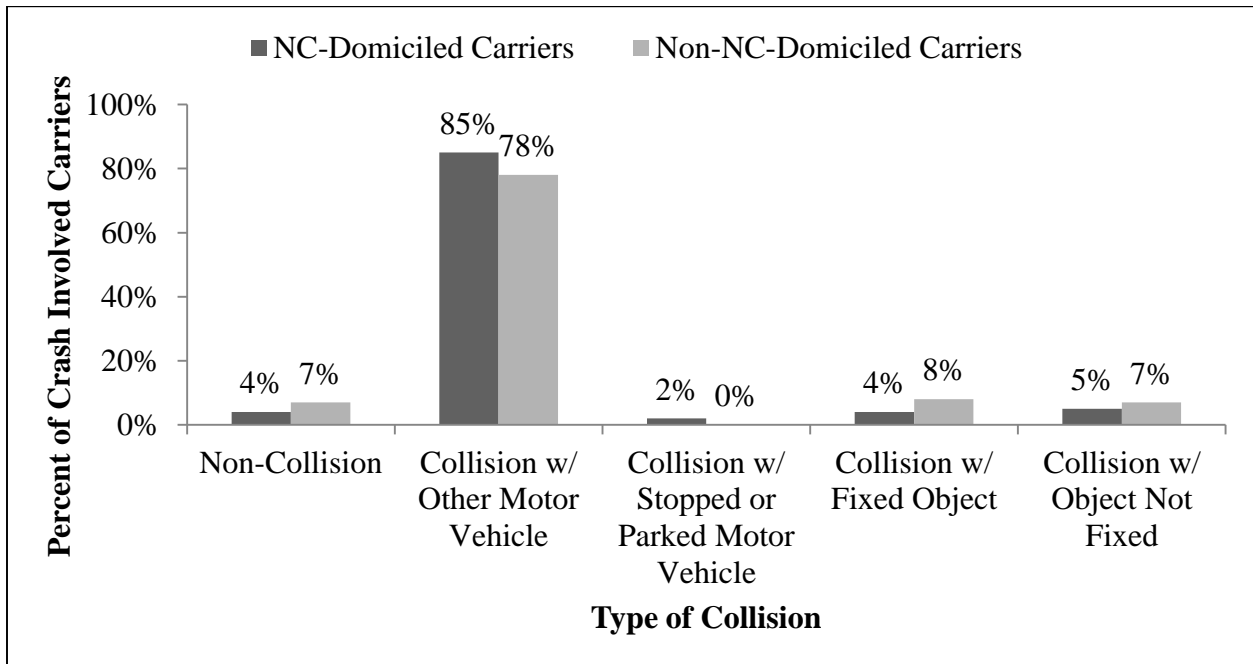


Figure 12. Type of collision in CUT fatal crashes on non-Interstate highways in North Carolina by carrier domicile, 2005 – 2009.

Virginia Collision Type Summary

As in North Carolina and all other states, collisions with other motor vehicles comprised the highest proportion of collision types for both Virginia-domiciled carriers (66%) and non-Virginia-domiciled carriers (64%) in CUT fatal crashes in Virginia (Table 21). On non-Interstate highways, the respective proportions are even higher, 74% and 71%, respectively (Table 22, Figure 13 and Figure 14).

Collisions with roadside fixed objects, which are often associated with loss-of control or fatigue-related crashes, occurred predominantly on Interstate highways, and accounted for 38% of Virginia-domiciled carriers' and 22% of non-Virginia-domiciled carriers' crashes on Interstates.

Non-collisions (rollovers, fires, jackknives, cargo shifts, etc.) were more prevalent on non-Interstate highways and occurred equally (14%) among non-Virginia-domiciled carriers and Virginia-domiciled carriers (13%) on non-Interstate highways.

The proportion of collisions with objects not fixed (pedestrians, trains, live animals, etc.) was highest (21%) among Virginia-domiciled carriers involved in CUT fatal crashes on Interstates.

Table 21. Types of Collisions in CUT Fatal Crashes in Virginia on all Road Types, by State of Carrier Domicile, 2005 – 2009

| Collision Type | VA-Domiciled Carriers | Non-VA-Domiciled Carriers |
|----------------------------------|-----------------------|---------------------------|
| Non-Collision | 9 (10%) | 26 (14%) |
| Collision w/ Other Motor Vehicle | 62 (66%) | 115 (64%) |
| Collision w/ Fixed Object | 16 (17%) | 31 (17%) |
| Collision with Object Not Fixed | 7 (7%) | 8 (4%) |
| Total | 94 (100%) | 180 (100%) |
| Missing Data | 18 | |

Table 22. Type of Collision in CUT Fatal Crashes in Virginia by State of Carrier Domicile and Road Type, 2005 – 2009

| Collision Type | VA Interstate Highway Crashes | | | VA Non-Interstate Highway Crashes | | |
|----------------------------------|-------------------------------|---------------------------|------------|-----------------------------------|---------------------------|------------|
| | VA-Domiciled Carriers | Non-VA-Domiciled Carriers | Total | VA-Domiciled Carriers | Non-VA-Domiciled Carriers | Total |
| Non-Collision | 0 (0%) | 14 (15%) | 14 (12%) | 9 (13%) | 12 (14%) | 21 (13%) |
| Collision w/ Other Motor Vehicle | 10 (42%) | 53 (57%) | 63 (54%) | 52 (74%) | 62 (71%) | 114 (73%) |
| Collision w/ Fixed Object | 9 (38%) | 24 (22%) | 31 (26%) | 7 (10%) | 9 (10%) | 16 (10%) |
| Collision with Object Not Fixed | 5 (21%) | 4 (4%) | 9 (8%) | 2 (3%) | 4 (5%) | 6 (4%) |
| Total | 24 (100%) | 93 (100%) | 117 (100%) | 70 (100%) | 87 (100%) | 157 (100%) |
| Missing Data | | | 3 | | | 15 |

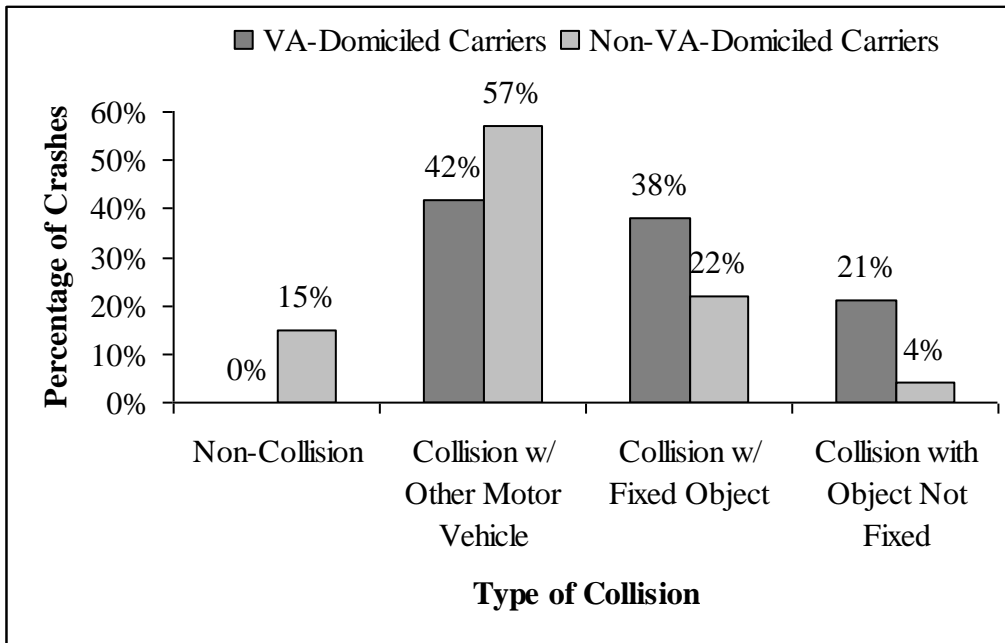


Figure 13. Type of collision in CUT fatal crashes on Interstate highways in Virginia by carrier domicile, 2005 – 2009.

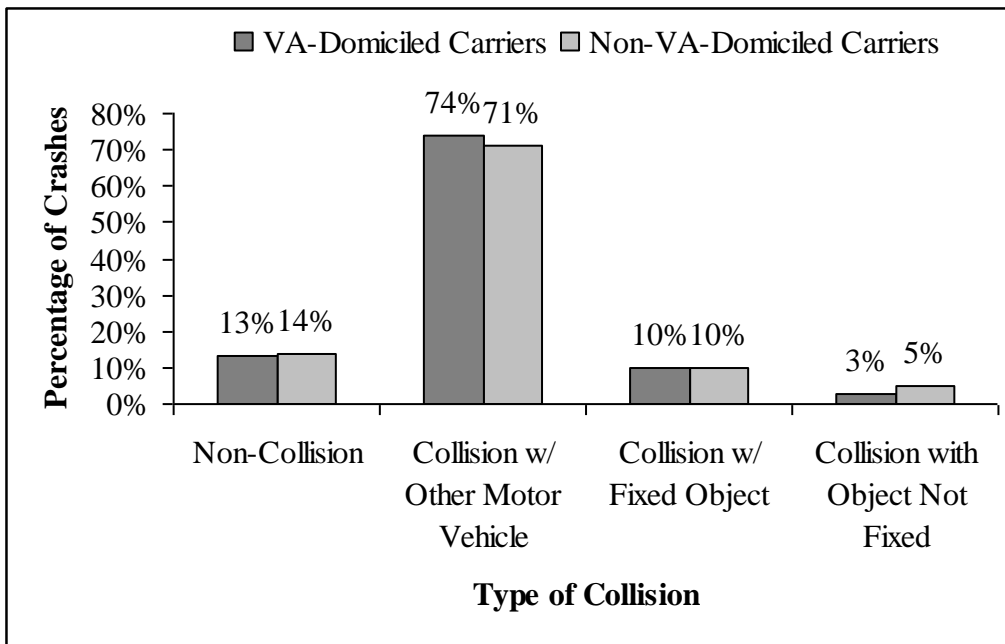


Figure 14. Type of collision in CUT fatal crashes on non-Interstate highways in Virginia by carrier domicile, 2005 – 2009.

Type of Operation of Carriers Involved in CUT Fatal Crashes

North Carolina Carrier Operation Summary

For-hire carriers (both common and contract) comprised the largest portion of carrier types involved in CUT fatal crashes in North Carolina for both North Carolina-domiciled carriers (47%) and non-North Carolina-domiciled carriers (80%), (Table 23 and Table 24). Part of this difference can be attributed to the fact that private carrier CUT fatal crash involvement was more prevalent among North Carolina-domiciled carriers (28%), with about equal proportional involvement on non-Interstate highways (28%) and Interstate highways (26%; Figure 15). By comparison, non-North Carolina-domiciled private carrier involvements on non-Interstate highways comprised 16% of the total, while on Interstate highways it was 8% (Figure 16).

Table 23. Type of Operation of Carriers Involved in CUT Fatal Crashes in North Carolina on All Road Types, by Carrier Domicile, 2005 – 2009

| Type of Carrier Operation | NC-Domiciled Carriers | Non-NC-Domiciled Carriers |
|---------------------------|-----------------------|---------------------------|
| For-Hire | 95 (47%) | 140 (80%) |
| Private | 59 (29%) | 21 (12%) |
| Exempt | 31 (15%) | 4 (2%) |
| Other | 19 (9%) | 11 (6%) |
| Total | 204 (100%) | 176 (100%) |
| Missing Data | 2 | 7 |

Table 24. Type of Operation of Carriers Involved in CUT Fatal Crashes in North Carolina by Carrier Domicile and Road Type, 2005 – 2009

| Type of Carrier Operation | Crash Occurred on Interstate Highway | | | Crash Occurred on Non-Interstate Highway | | |
|---------------------------|--------------------------------------|---------------------------|------------|--|---------------------------|------------|
| | NC-Domiciled Carriers | Non-NC-Domiciled Carriers | Total | NC-Domiciled Carriers | Non-NC-Domiciled Carriers | Total |
| For-Hire | 17 (63%) | 68 (86%) | 85 (80%) | 78 (44%) | 72 (74%) | 150 (55%) |
| Private | 7 (26%) | 7 (9%) | 14 (13%) | 52 (29%) | 14 (15%) | 66 (24%) |
| Exempt | 2 (7%) | 0 (0%) | 2 (2%) | 29 (17%) | 4 (4%) | 33 (12%) |
| Other | 1 (4%) | 4 (5%) | 5 (5%) | 18 (10%) | 7 (7%) | 25 (9%) |
| Total | 27 (100%) | 79 (100%) | 106 (100%) | 177 (100%) | 97 (100%) | 274 (100%) |
| Missing Data | 0 | 2 | 2 | 2 | 5 | 7 |

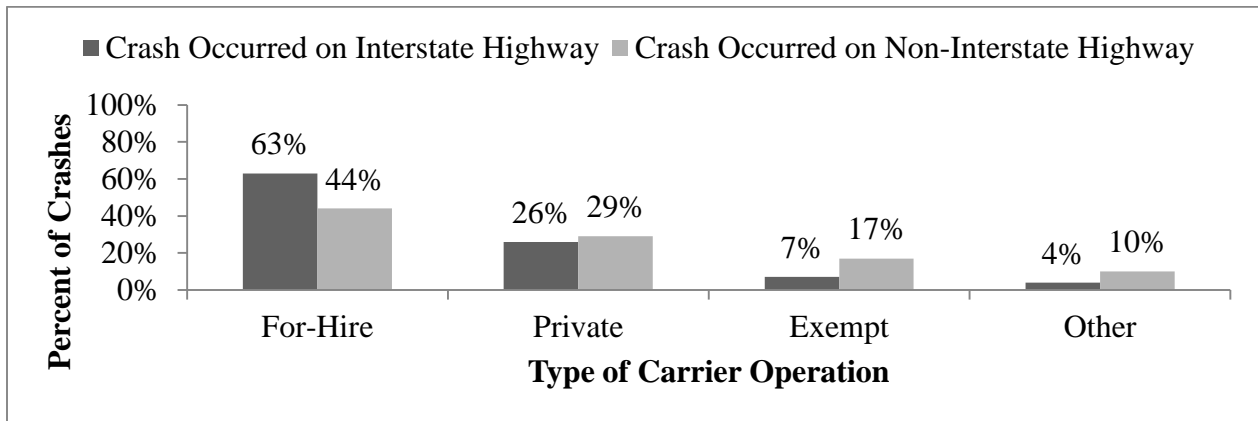


Figure 15. Type of operation in CUT fatal crashes in North Carolina involving North Carolina-domiciled carriers by highway type, 2005 – 2009.

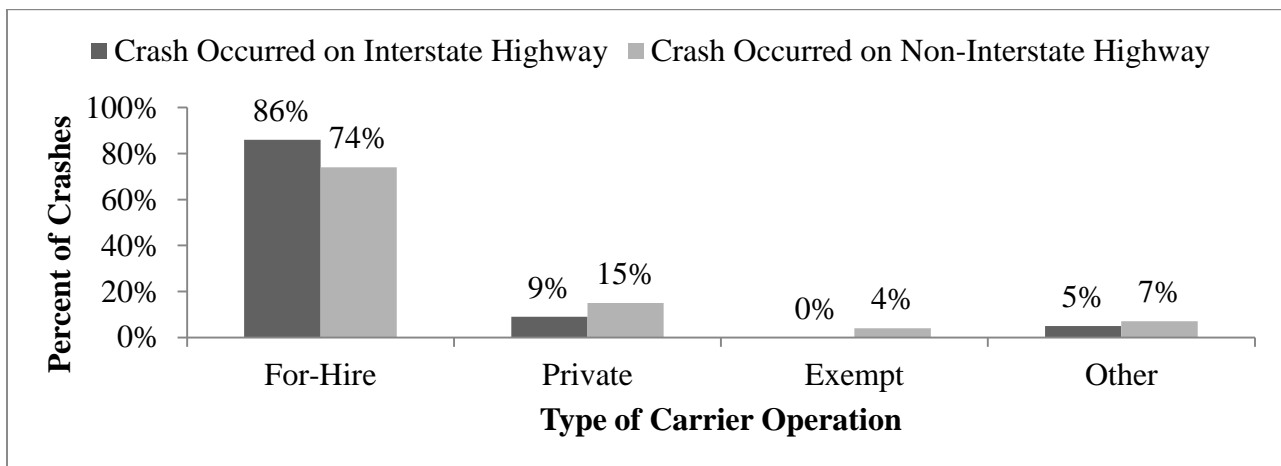


Figure 16. Type of operation in CUT fatal crashes in North Carolina involving non-North Carolina-domiciled carriers by highway type, 2005 – 2009.

Virginia Carrier Operation Summary

As in North Carolina, authorized, for-hire carriers (both common and contract) comprised the majority of carriers, for both Virginia-domiciled (64%) and non-Virginia-domiciled (92%; Table 25) carriers that were involved in CUT fatal crashes in Virginia (Table 26). The respective proportions were even higher (73% and 96%, respectively) when the crash occurred on an Interstate highway (Figure 17). Also similar to North Carolina, the highest proportion of private carrier involvement (22%), as well as exempt carrier involvement (11%), was among Virginia-domiciled carriers involved in crashes on non-Interstate highways (Figure 18).

Table 25. Type of Operation of Carriers Involved in CUT Fatal Crashes in Virginia on all Road Types, by Carrier Domicile, 2005 – 2009

| Carrier Type | VA-Domiciled Carriers | Non-VA-Domiciled Carriers |
|--------------|-----------------------|---------------------------|
| For-Hire | 49 (64%) | 133 (92%) |
| Private | 13 (17%) | 8 (6%) |
| Exempt | 8 (11%) | 4 (3%) |
| Other | 6 (8%) | 0 (0%) |

| | | |
|--|-----------|------------|
| Total | 76 (100%) | 145 (100%) |
| Missing Data | 18 | 36 |
| Does not include 17 additional cases for which no domicile information was available | | |

Table 26. Type of Operation of Carriers Involved in CUT Fatal Crashes in Virginia by Carrier Domicile and Road Type, 2005 – 2009

| Carrier Type | VA Interstate Highway Crashes | | | VA Non-Interstate Highway Crashes | | |
|--------------|-------------------------------|---------------------------|------------|-----------------------------------|---------------------------|------------|
| | VA-Domiciled Carriers | Non-VA-Domiciled Carriers | Total | VA-Domiciled Carriers | Non-VA-Domiciled Carriers | Total |
| For-Hire | 16 (73%) | 75 (96%) | 91 (91%) | 33(61%) | 58 (87%) | 91 (75%) |
| Private | 1 (5%) | 2 (3%) | 3 (3%) | 12 (22%) | 6 (9%) | 18 (15%) |
| Exempt | 2 (9%) | 1 (1%) | 3 (3%) | 6 (11%) | 3 (4%) | 9 (7%) |
| Other | 3 (14%) | 0 (0%) | 3 (3%) | 3 (6%) | 0 (0%) | 3 (2%) |
| Total | 22 (100%) | 78 (100%) | 100 (100%) | 54 (100%) | 67 (100%) | 121 (100%) |
| Missing Data | 2 | 15 | 20 | 16 | 21 | 51 |

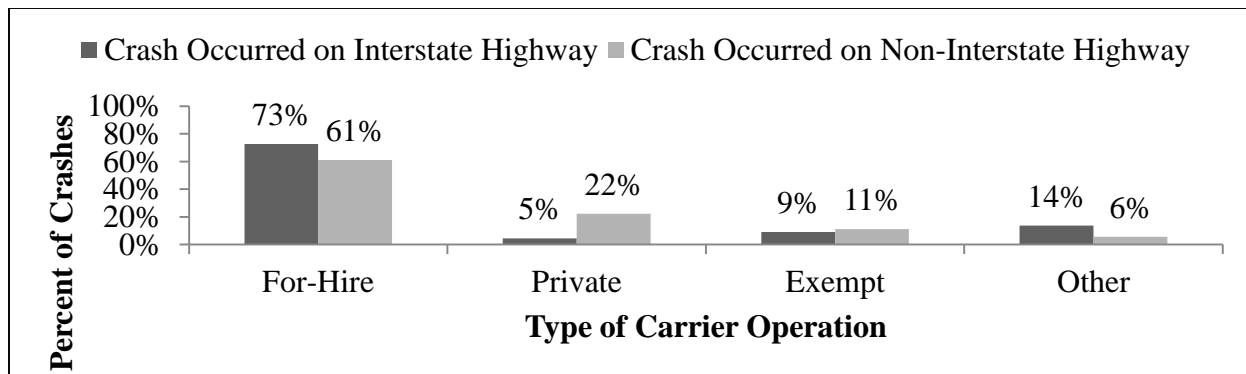


Figure 17. Type of operation in CUT fatal crashes in Virginia involving Virginia-domiciled carriers by highway type, 2005 – 2009.

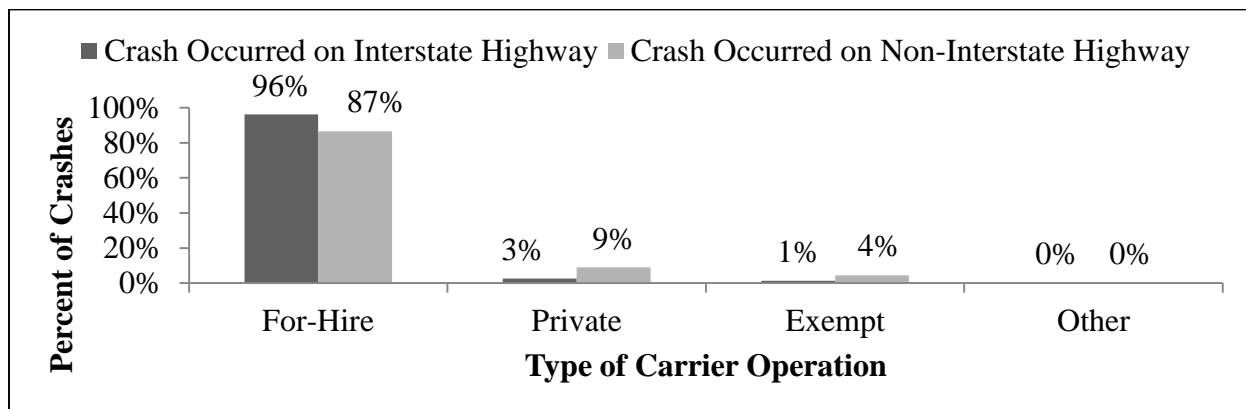


Figure 18. Type of operation in CUT fatal crashes in Virginia involving non-Virginia-domiciled carriers by highway type, 2005 – 2009.

Fleet Size of Carriers Involved in CUT Fatal Crashes

North Carolina Fleet Size Summary

The fleet sizes (i.e., number of vehicles operated) of North Carolina-domiciled carriers were distinctly different than for non-North Carolina-domiciled carriers; the median fleet size of non-North Carolina-domiciled carriers was over 10 times larger than North Carolina-domiciled carriers (Table 27). In 42% of the CUT fatal crashes involving North Carolina-domiciled carriers, the carrier operated 10 or fewer trucks; the comparable figure for non-North Carolina-domiciled carriers was 17%. Conversely, in only 30% of the crashes involving North Carolina-domiciled carriers did the carrier operate more than 100 trucks, whereas the comparable figure for non-North Carolina-domiciled carriers was 58% (Table 28; Figure 19).

Table 27. Fleet Size of Carriers Involved in CUT Fatal Crashes in North Carolina on all Road Types, by Carrier Domicile, 2005 – 2009

| Fleet Size (Number of Vehicles Operated) | NC-Domiciled Carriers | Non-NC-Domiciled Carriers |
|--|-----------------------|---------------------------|
| 1 to 5 | 66 (34%) | 19 (11%) |
| 6 to 10 | 16 (8%) | 11 (6%) |
| 11 to 50 | 32 (17%) | 23 (13%) |
| 51 to 100 | 22 (11%) | 20 (12%) |
| 101 to 500 | 36 (19%) | 29 (17%) |
| 501 to 1000 | 6 (3%) | 24 (14%) |
| > 1000 | 14 (8%) | 47 (27%) |
| Total | 192 (100%) | 173 (100%) |
| Median | 22 | 251 |
| Missing Data | 14 | 10 |

Table 28. Fleet Size of Carriers Involved in CUT Fatal Crashes in North Carolina by Carrier Domicile and Road Type, 2005 – 2009

| Fleet Size (Number of Vehicles Operated) | Crash Occurred on Interstate Highway | | | Crash Occurred on Non-Interstate Highway | | |
|--|--------------------------------------|---------------------------|------------|--|---------------------------|------------|
| | NC-Domiciled Carriers | Non-NC-Domiciled Carriers | Total | NC-Domiciled Carriers | Non-NC-Domiciled Carriers | Total |
| 1 to 5 | 8 (31%) | 7 (9%) | 15 (14%) | 58 (35%) | 12 (13%) | 70 (28%) |
| 6 to 10 | 1 (4%) | 2 (3%) | 3 (3%) | 15 (9%) | 9 (10%) | 24 (9%) |
| 11 to 50 | 6 (23%) | 12(15%) | 18 (17%) | 26 (16%) | 11 (12%) | 37 (14%) |
| 51 to 100 | 4 (15%) | 11 (14%) | 15 (14%) | 18 (11%) | 9 (10%) | 27 (10%) |
| 101 to 500 | 3 (11%) | 11 (14%) | 14 (13%) | 33 (20%) | 18 (19%) | 51 (20%) |
| 501 to 1,000 | 2 (8%) | 11 (14%) | 13 (13%) | 4 (2%) | 13 (14%) | 17 (6%) |
| >1,000 | 2 (8%) | 24 (31%) | 26 (25%) | 12 (8%) | 23 (24%) | 35 (13%) |
| Total | 26 (100%) | 78 (100%) | 104 (100%) | 166 (100%) | 95 (100%) | 261 (100%) |
| Median | 30 | 280 | 108 | 21 | 233 | 45 |
| Missing Data | 1 | 3 | 4 | 13 | 7 | 20 |

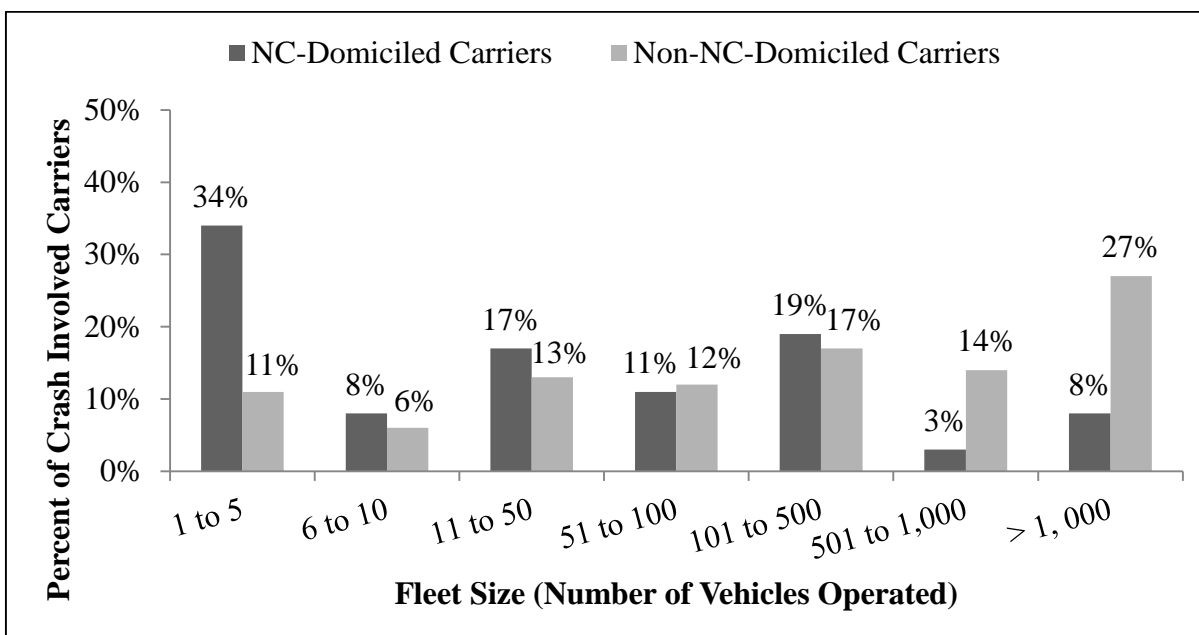


Figure 19. Fleet size of carriers involved in CUT fatal crashes in North Carolina on all road types, by carrier domicile, 2005 – 2009.

Virginia Fleet Size Summary

Exactly like North Carolina, the disparity in fleet sizes between non-Virginia-domiciled carriers and Virginia-domiciled carriers was 10 to 1; the median fleet size of Virginia-domiciled carriers involved in CUT fatal crashes was 15 while the median fleet size of non-Virginia-domiciled carriers was 155. Forty-five percent (45%) of the Virginia-domiciled carriers involved in Virginia CUT fatal crashes operated 10 or fewer trucks compared to 23% of non-Virginia-domiciled carriers (Table 29 and Figure 20). Similar to North Carolina, 58% of the non-Virginia-domiciled carriers operated more than 100 trucks compared to 30% of Virginia-domiciled carriers. As previously noted, Virginia-domiciled carriers were three times more likely (74% vs. 26%) to be involved in crashes on non-Interstate highways as compared to Interstate highways, while non-Virginia-domiciled carriers experienced a more nearly equal distribution of non-Interstate (49%) and Interstate (51%) crashes. Fully 51% of Virginia-domiciled carriers involved in crashes on non-Interstate Virginia highways operated 10 or fewer trucks (Table 30), whereas 57% of the non-Virginia-domiciled carriers involved in crashes on the same roads operated 101 trucks or more. The pattern is essentially the same, but less pronounced, for crashes on Interstate highways; that is, 30% of Virginia-domiciled carriers involved in crashes on Interstate Virginia highways operated 10 or fewer trucks, whereas 52% of the non-Virginia-domiciled carriers involved in crashes on the same roads operated 101 trucks or more.

Table 29. Summary of Fleet Sizes of Carriers Involved in CUT Fatal Crashes in Virginia on all Road Types, by Carrier Domicile, 2005 – 2009

| Fleet Size (Number of Vehicles Operated) | VA-Domiciled Carriers | Non-VA-Domiciled Carriers |
|---|-----------------------|---------------------------|
| 1-5 | 27 (36%) | 25 (17%) |
| 6-10 | 7 (9%) | 9 (6%) |
| 11-50 | 19 (25%) | 20 (14%) |
| 51-100 | 8 (11%) | 13 (9%) |
| 101-500 | 7 (9%) | 22 (15%) |
| 501-1000 | 2 (3%) | 13 (9%) |
| >1000 | 6 (8%) | 44 (30%) |
| Total | 76 (100%) | 146 (100%) |
| Median | 15 | 155 |
| Missing Data | 18 | 35 |
| Does not include 17 additional cases for which no domicile information was available. | | |

Table 30. Fleet Size of Carriers Involved in CUT Fatal Crashes in Virginia by Carrier Domicile and Road Type, 2005 – 2009

| Fleet Size (Number of Vehicles Operated) | Crash Occurred on Interstate Highway | | | Crash Occurred on Non-Interstate Highway | | |
|--|--------------------------------------|---------------------------|------------|--|---------------------------|------------|
| | VA-Domiciled Carriers | Non-VA-Domiciled Carriers | Total | VA-Domiciled Carriers | Non-VA-Domiciled Carriers | Total |
| 1-5 | 6 (26%) | 15 (19%) | 21 (21%) | 21 (40%) | 10 (15%) | 31 (26%) |
| 6-10 | 1 (4%) | 3 (4%) | 4 (4%) | 6 (11%) | 6 (9%) | 12 (10%) |
| 11-50 | 6 (26%) | 14 (18%) | 20 (20%) | 13 (25%) | 6 (9%) | 19 (16%) |
| 51-100 | 4 (17%) | 6 (8%) | 10 (10%) | 4 (8%) | 7 (10%) | 11 (9%) |
| 101-500 | 3 (13%) | 12 (15%) | 15 (15%) | 4 (8%) | 10 (15%) | 14 (12%) |
| 501-1000 | 0 (0%) | 7 (9%) | 7 (7%) | 2 (4%) | 6 (9%) | 8 (7%) |
| >1000 | 3 (13%) | 22 (28%) | 25 (25%) | 3 (6%) | 22 (33%) | 25 (21%) |
| Total | 23 (100%) | 79 (100%) | 102 (100%) | 53 (100%) | 67 (100%) | 120 (100%) |
| Median | 31 | 128 | 94 | 8 | 207 | 42 |
| Missing Data | 1 | 14 | 18 | 17 | 21 | 52 |

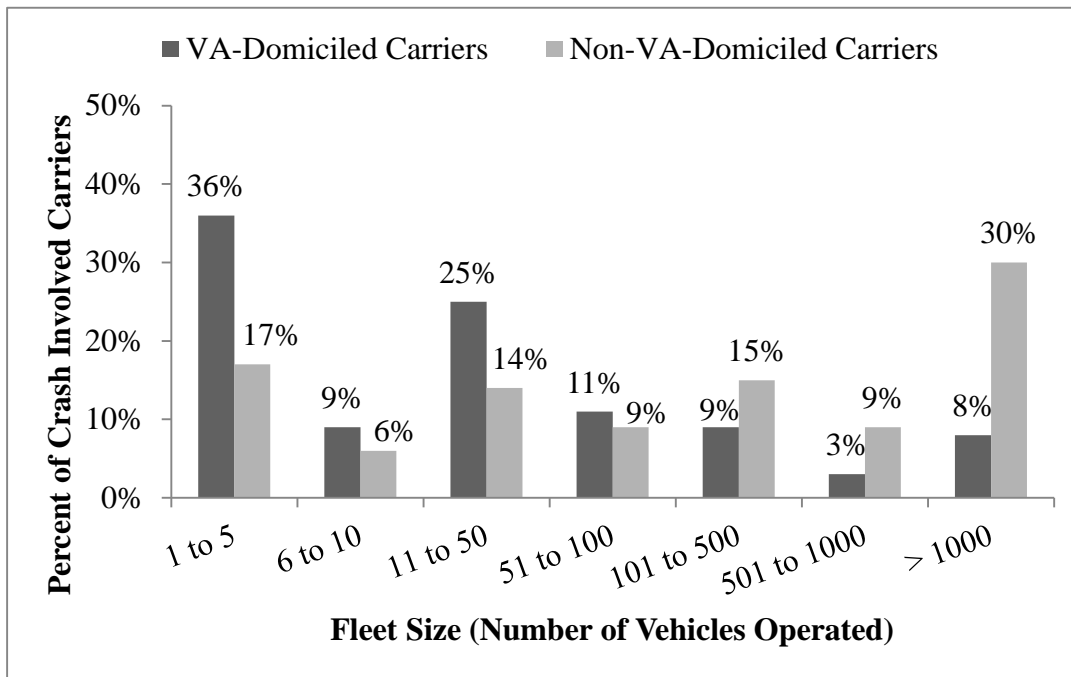


Figure 20. Fleet size of carriers involved in CUT fatal crashes on all road types in Virginia, by carrier domicile, 2005 – 2009.

Distance from Carriers’ Business Location to Crash Site for Carriers Involved in CUT Fatal Crashes

North Carolina Distance from Business Location Summary

When examining the distance from carriers’ business location to the crash site for carriers involved in CUT fatal crashes in North Carolina, the results show very different patterns among North Carolina-domiciled carriers as compared to non-North Carolina-domiciled carriers. The median distance between the crash site and the carrier’s place of business was only 30 miles for North Carolina-domiciled carriers, compared to 477 miles for non-North Carolina-domiciled carriers – a sixteen-fold difference (Table 31 and Table 32). These differences reflect the different spatial characteristics of the operating environments of the North Carolina-domiciled and non-North Carolina-domiciled carriers. In 72% of the crashes on Interstate highways, and 45% of the crashes that occurred on non-Interstate highways in which North Carolina-domiciled carriers were involved, the crash site was only 50 miles or less from the carrier’s place of business (Figure 21). Conversely, in over 70% of the crashes on both Interstate and non-Interstate highways in which non-North Carolina-domiciled carriers were involved, the crash site was more than 250 miles from the carrier’s place of business (Figure 22). These differences are a further indication that North Carolina-domiciled carriers are uniquely different than non-North Carolina-domiciled carriers in terms of their operational and crash exposure patterns.

Table 31. Distance from Carriers' Business Location to Crash Site for Carriers Involved in CUT Fatal Crashes in North Carolina on all Road Types, by Carrier Domicile, 2005 – 2009

| Distance from Business Location to Crash Site (Miles) | NC-Domiciled Carriers | Non-NC-Domiciled Carriers |
|---|-----------------------|---------------------------|
| 1 to 50 | 141 (68%) | 5 (2%) |
| 51-100 | 36 (17%) | 15 (8%) |
| 101 – 250 | 28 (15%) | 33 (18%) |
| 251 – 500 | 1 (0%) | 47 (26%) |
| 501 – 750 | 0 (0%) | 49 (27%) |
| > 750 | 0 (0%) | 34 (19%) |
| Total | 206 (100%) | 183 (100%) |
| Median | 30 | 477 |

Table 32. Distance From Carriers' Business Location to Crash Site for Carriers Involved in CUT Fatal Crashes in North Carolina by Carrier Domicile and Road Type, 2005 – 2009

| Distance from Business Location to Crash Site (Miles) | Crash Occurred on Interstate Highway | | | Crash Occurred on Non-Interstate Highway | | |
|---|--------------------------------------|---------------------------|------------|--|---------------------------|------------|
| | NC-Domiciled Carriers | Non-NC-Domiciled Carriers | Total | NC-Domiciled Carriers | Non-NC-Domiciled Carriers | Total |
| 1 - 50 | 12 (45%) | 0 (0%) | 12 (11%) | 129 (72%) | 5 (5%) | 134 (48%) |
| 51 - 100 | 9 (33%) | 6 (7%) | 15 (14%) | 27 (15%) | 9 (9%) | 36 (13%) |
| 101 - 250 | 6 (22%) | 17 (21%) | 23 (21%) | 22 (12%) | 16 (15%) | 38 (13%) |
| 251 - 500 | 0 (0%) | 21 (26%) | 21 (20%) | 1 (1%) | 26 (25%) | 27 (10%) |
| 501- 750 | 0 (0%) | 25 (31%) | 25 (23%) | 0 (0%) | 24 (24%) | 24 (8%) |
| > 750 | 0 (0%) | 12 (15%) | 12 (11%) | 0 (0%) | 22 (22%) | 22 (8%) |
| Total | 27 (100%) | 81 (100%) | 108 (100%) | 179 (100%) | 102 (100%) | 281 (100%) |
| Median | 57 | 482 | 323 | 27 | 459 | 58 |

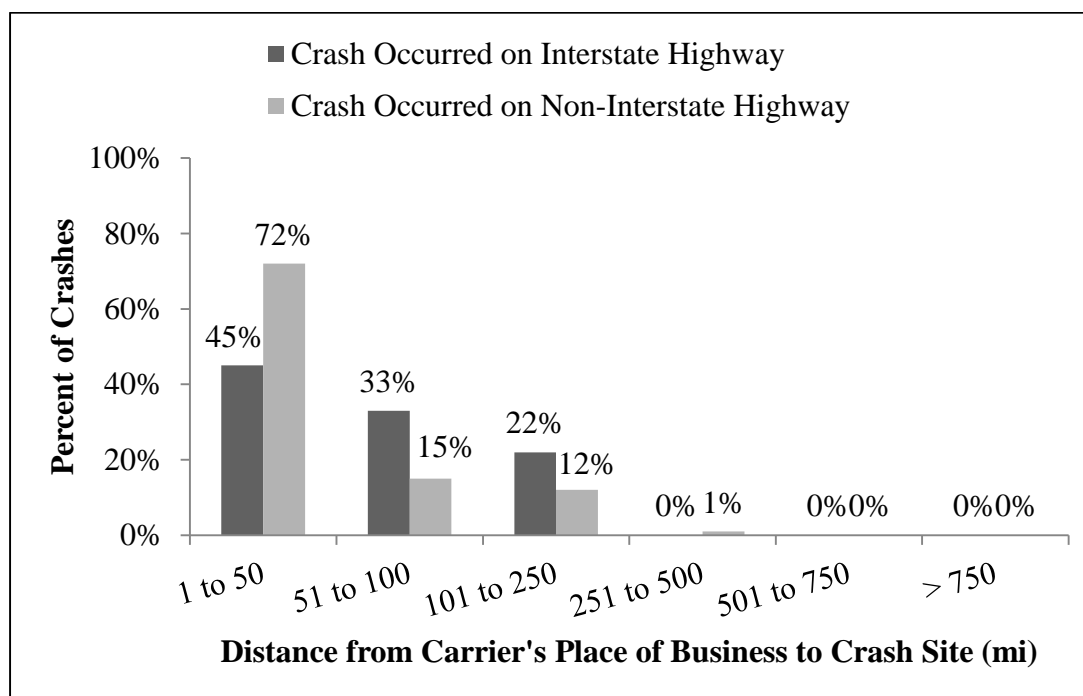


Figure 21. Distance from carriers' business location to crash site for North Carolina-domiciled carriers involved in CUT fatal crashes in North Carolina, by road type, 2005 – 2009.

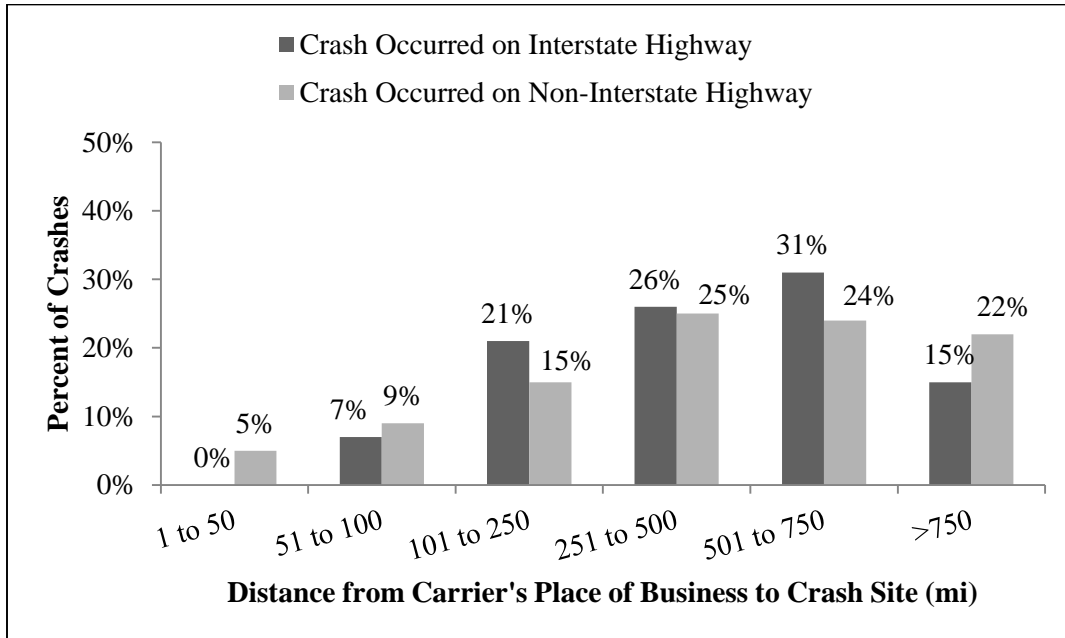


Figure 22. Distance from carriers' business location to crash site for non-North Carolina-domiciled carriers involved in CUT fatal crashes in North Carolina by road type, 2005 – 2009.

Virginia Distance from Business Location Summary

Similar to what was found in North Carolina, the distance from the carriers' business location to the crash site was very different for Virginia-domiciled carriers as compared to non-Virginia-domiciled carriers (Table 33). The median distance between the crash site and the carrier's place of business was 47 miles for Virginia-domiciled carriers, compared to 536 miles for non-Virginia-domiciled carriers, a tenfold difference.

Table 33. Distance from Carriers' Business Location to Crash Site for Carriers Involved in CUT Fatal Crashes in Virginia on all Road Types, by Carrier Domicile, 2005 – 2009

| Distance from Business Location to Crash Site (Miles) | VA-Domiciled Carriers | Non-VA-Domiciled Carriers |
|---|-----------------------|---------------------------|
| 1-50 | 48 (51%) | 4 (2%) |
| 51-100 | 21 (22%) | 12 (7%) |
| 101-250 | 22 (23%) | 23 (13%) |
| 251-500 | 2 (2%) | 45(25%) |
| 501-750 | 1 (1%) | 35 (20%) |
| >750 | 0 (0%) | 60 (34%) |
| Total | 94 (100%) | 179 (100%) |
| Median | 47 | 536 |
| Missing Data | | 19 |

In 51% of the crashes involving Virginia-domiciled carriers, the crash site was only 50 miles or less from the carrier's place of business. Also similar to North Carolina, in 72% of the crashes involving non-Virginia-domiciled carriers, the crash site was more than 250 miles from the carrier's place of business. These differences in the distance from the business location to the

crash site are clearly shown in Table 34 and Figure 23. These patterns are nearly identical to those found in North Carolina and suggest that, as in North Carolina, Virginia-domiciled carriers face crash risks relatively close to their place of business, which are very different than the risks faced by non-Virginia-domiciled carriers (Figure 24).

Table 34. Distance From Carriers' Business Location to Crash Site for Carriers Involved in CUT Fatal Crashes in Virginia by Carrier Domicile and Road Type, 2005 – 2009

| Distance from Business Location to Crash Site (Miles) | Crash Occurred on Interstate Highway | | | Crash Occurred on Non-Interstate Highway | | |
|---|--------------------------------------|---------------------------|------------|--|---------------------------|------------|
| | VA-Domiciled Carriers | Non-VA-Domiciled Carriers | Total | VA-Domiciled Carriers | Non-VA-Domiciled Carriers | Total |
| 1-50 | 10 (42%) | 1 (1%) | 11 (9%) | 38 (54%) | 3 (3%) | 41 (26%) |
| 51-100 | 6 (25%) | 4 (4%) | 10 (9%) | 15 (21%) | 8 (9%) | 23 (15%) |
| 101-250 | 6 (25%) | 6 (7%) | 12 (10%) | 16 (23%) | 17 (20%) | 33 (21%) |
| 251-500 | 1 (4%) | 24 (26%) | 25 (22%) | 1 (1%) | 21 (24%) | 22 (14%) |
| 501-750 | 1 (4%) | 20 (22%) | 21 (18%) | 0 (0%) | 15 (17%) | 15 (10%) |
| >750 | 0 (0%) | 37 (40%) | 37 (32%) | 0 (0%) | 23 (26%) | 23 (15%) |
| Total | 24 (100%) | 92 (100%) | 116 (100%) | 70 (100%) | 87 (100%) | 157 (100%) |
| Median | 58 | 580 | 501 | 43 | 372 | 137 |
| Missing Data | | | 4 | | | 15 |

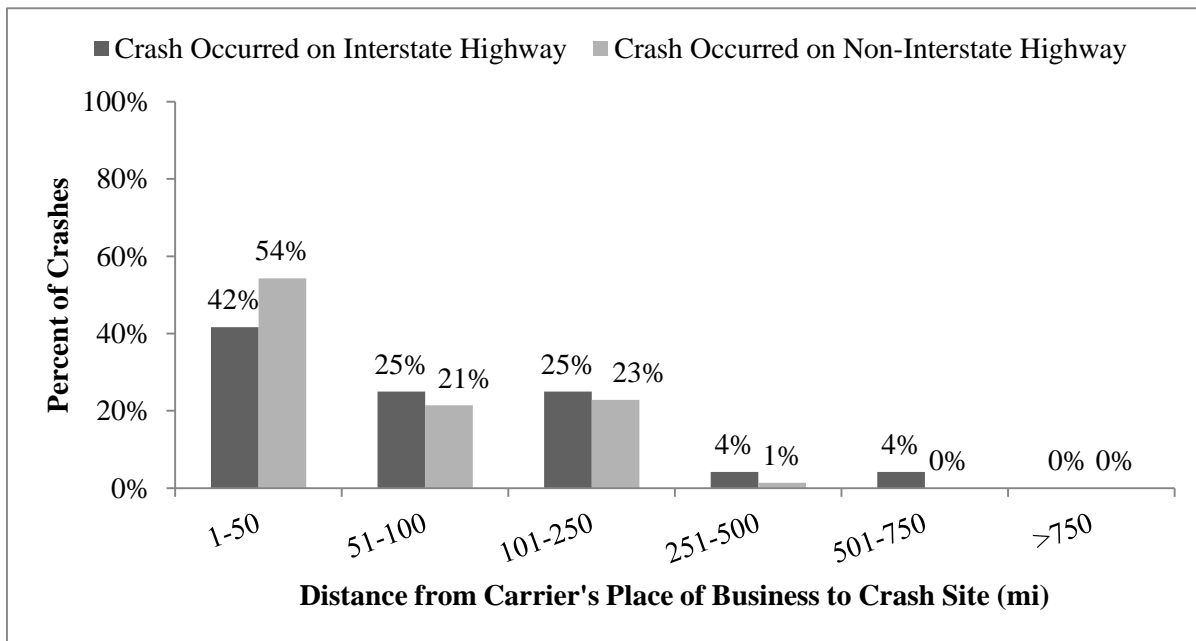


Figure 23. Distance from carriers' business location to crash site for Virginia-domiciled carriers involved in CUT fatal crashes in Virginia, by road type, 2005 – 2009.

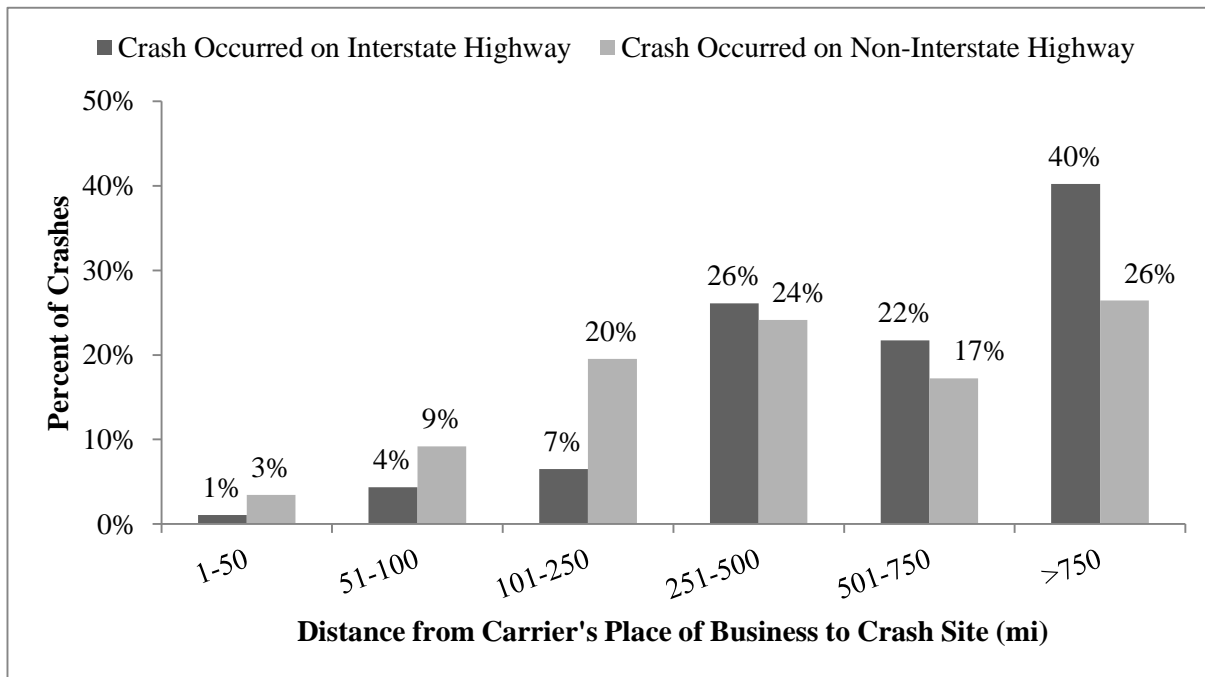


Figure 24. Distance from carriers' business location to crash site for non-Virginia-domiciled carriers involved in CUT fatal crashes in Virginia by road type, 2005 – 2009.

Age of CUTs Involved in Fatal Crashes

North Carolina CUT Age Summary

There was a significant amount of missing data for the CUT age variable, thus compromising the validity of comparisons of the remaining data (Table 35). Nevertheless, the age of CUTs involved in fatal crashes in North Carolina, for which data were available, was somewhat older for North Carolina-domiciled carriers (mean age of 7 years) compared to non-North Carolina-domiciled carriers (mean age of 5 years; Table 36). The CUT age distribution pattern of North Carolina-domiciled carriers was also slightly more skewed toward the older end of the vehicle age spectrum – particularly for CUTs less than 10 years old (Figure 25), than was the case for non-North Carolina-domiciled carriers (Figure 26). Older vehicles are less likely to be equipped with advanced technology safety systems that have since been introduced and can be expected to be more prone to defects if maintenance is not diligently performed.

Table 35. Age of CUTs Involved in Fatal Crashes in North Carolina on all Road Types, by Carrier Domicile, 2005 – 2009

| Vehicle Age at Time of Crash (Years Old) | NC-Domiciled Carriers | Non-NC-Domiciled Carriers |
|--|-----------------------|---------------------------|
| <1 | 12(14%) | 7 (9%) |
| 1-2 | 7 (8%) | 19 (25%) |
| 3-4 | 11(13%) | 10 (13%) |
| 5-6 | 17(19%) | 15 (20%) |
| 7-10 | 21 (24%) | 20 (27%) |
| >10 | 19 (22%) | 4 (6%) |
| Total | 87 (100%) | 75 (100%) |
| Mean | 7 | 5 |
| Missing Data | 119 | 108 |

Table 36. Age of CUTs Involved in Fatal Crashes in North Carolina by Carrier Domicile and Road Type, 2005 – 2009

| Vehicle Age at Time of Crash (Years Old) | Crash Occurred On Interstate Highway | | | Crash Occurred on Non-Interstate Highway | | |
|--|--------------------------------------|---------------------------|----------|--|---------------------------|-----------|
| | NC-Domiciled Carriers | Non-NC-Domiciled Carriers | Total | NC-Domiciled Carriers | Non-NC-Domiciled Carriers | Total |
| <1 | 2 (14%) | 2 (6%) | 4 (8%) | 10 (14%) | 5 (12%) | 15 (13%) |
| 1-2 | 0 (0%) | 10 (29%) | 10(21%) | 7 (9%) | 9 (22%) | 16 (14%) |
| 3-4 | 3 (22%) | 6 (18%) | 9(19%) | 8 (11%) | 4 (10%) | 12(11%) |
| 5-6 | 4 (29%) | 6(18%) | 10 (21%) | 13 (18%) | 9 (22%) | 22 (19%) |
| 7-10 | 2 (14%) | 9 (26%) | 11 (23%) | 19(26%) | 11 (27%) | 30 (26%) |
| >10 | 3 (21%) | 1 (3%) | 4 (8%) | 16 (22%) | 3 (7%) | 19(17%) |
| Total | 14(100%) | 34 (100%) | 48(100%) | 73 (100%) | 41 (100%) | 114(100%) |
| Mean | 7 | 4 | 5 | 7 | 5 | 6 |
| Missing Data | 13 | 47 | 60 | 106 | 61 | 167 |

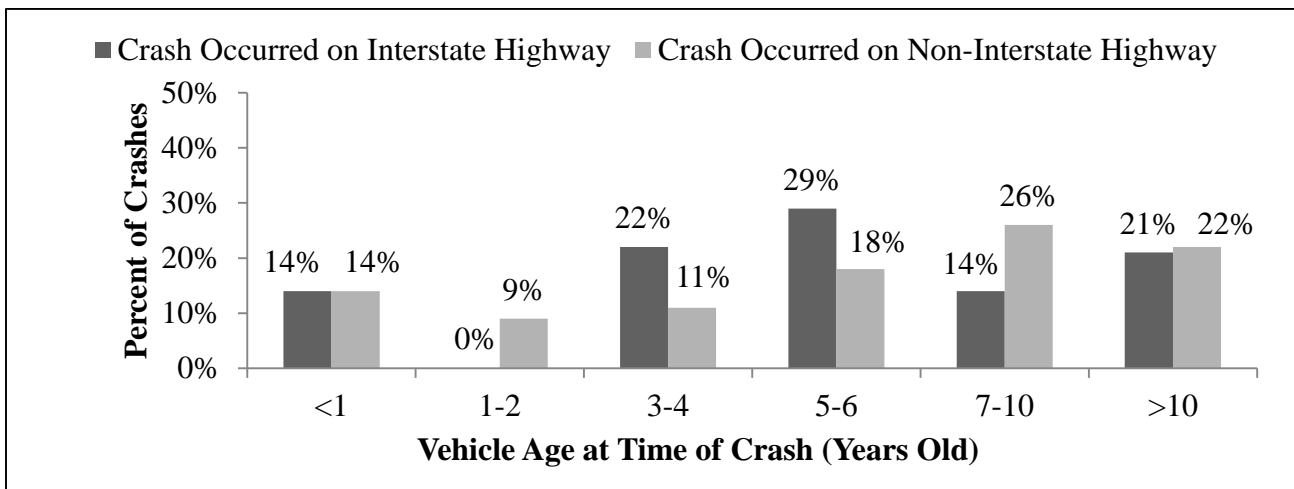


Figure 25. Age of CUTs of North Carolina-domiciled carriers involved in fatal crashes in North Carolina by road type, 2005 – 2009.

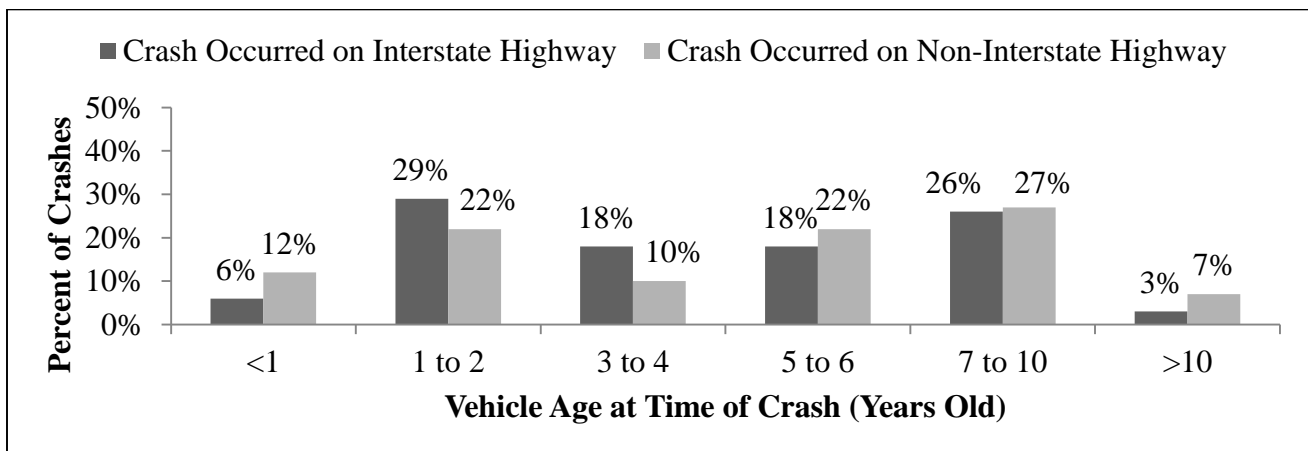


Figure 26. Age of CUTs of non-North Carolina-domiciled carriers involved in fatal crashes in North Carolina by road type, 2005 – 2009.

Virginia CUT Age Summary

The age patterns of CUTs involved in fatal crashes in Virginia were nearly identical to those found in North Carolina; mean age of 7 years for Virginia-domiciled carriers compared to mean age of 5 years for non-Virginia-domiciled carriers (Table 37 and Table 38). As in North Carolina, the CUT age distribution pattern of Virginia-domiciled carriers was slightly more skewed toward the older end of the vehicle age spectrum than was the case for non-Virginia-domiciled carriers (Figure 27 and Figure 28).

Table 37. Age of CUTs Involved in Fatal Crashes in Virginia on all Road Types, by Carrier Domicile, 2005 – 2009

| Vehicle Age at Time of Crash (Years Old) | VA-Domiciled Carriers | Non-VA-Domiciled Carriers |
|--|-----------------------|---------------------------|
| < 1 | 7 (8%) | 17 (10%) |
| 1-2 | 19 (21%) | 40 (23%) |
| 3-4 | 12 (13%) | 35 (20%) |
| 5-6 | 13 (14%) | 16 (9%) |
| 7-10 | 21 (23%) | 46 (26%) |
| >10 | 19 (21%) | 22 (13%) |
| Total | 91 (100%) | 176 (100%) |
| Mean | 7 | 5 |
| Missing Data | | 17 |

Table 38. Age of CUTs Involved in Fatal Crashes in Virginia by Carrier Domicile and Road Type, 2005 – 2009

| Vehicle Age at Time of Crash (Years Old) | Crash Occurred On Interstate Highway | | | Crash Occurred on Non-Interstate Highway | | |
|--|--------------------------------------|---------------------------|------------|--|---------------------------|------------|
| | VA-Domiciled Carriers | Non-VA-Domiciled Carriers | Total | VA-Domiciled Carriers | Non-VA-Domiciled Carriers | Total |
| < 1 | 3 (13%) | 12 (13%) | 15 (13%) | 4 (6%) | 18 (21%) | 22 (14%) |
| 1-2 | 3 (13%) | 22 (24%) | 25 (22%) | 16 (24%) | 18 (21%) | 34 (22%) |
| 3-4 | 3 (13%) | 17 (19%) | 20 (18%) | 9 (13%) | 8(9%) | 17 (11%) |
| 5-6 | 4 (17%) | 8 (9%) | 12 (11%) | 9 (13%) | 21 (24%) | 30 (19%) |
| 7-10 | 6 (26%) | 25 (28%) | 31 (27%) | 15 (22%) | 16 (19%) | 31 (20%) |
| >10 | 4 (17%) | 6 (7%) | 10 (9%) | 15 (22%) | 5 (6%) | 20 (13%) |
| Total | 23 (100%) | 90 (100%) | 113 (100%) | 68 (100%) | 86 (100%) | 154 (100%) |
| Mean | 6 | 4 | 5 | 7 | 6 | 7 |
| Missing Data | 1 | 3 | 7 | 2 | 2 | 18 |

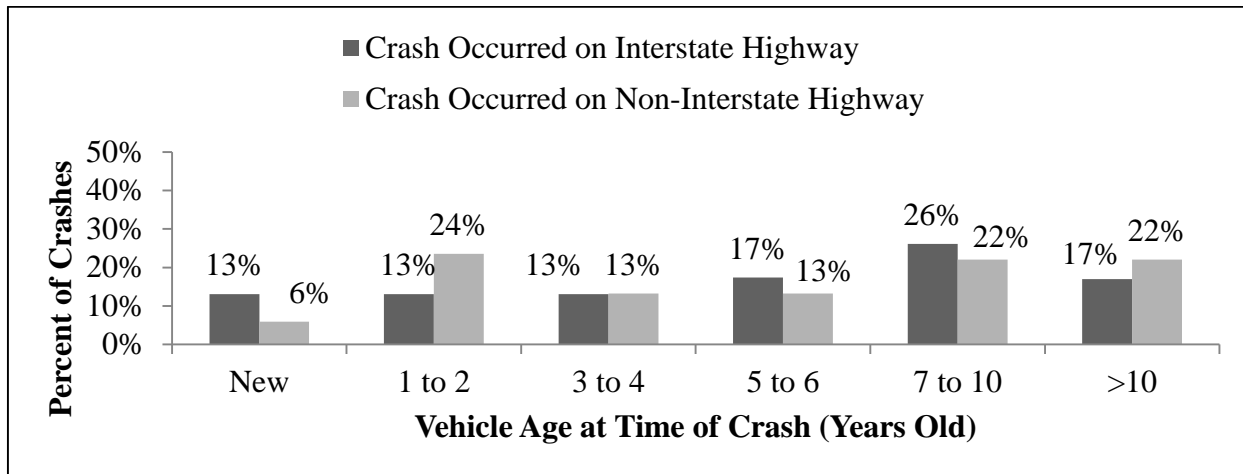


Figure 27. Age of CUTs of Virginia-domiciled carriers involved in fatal crashes in Virginia by road type, 2005 – 2009.

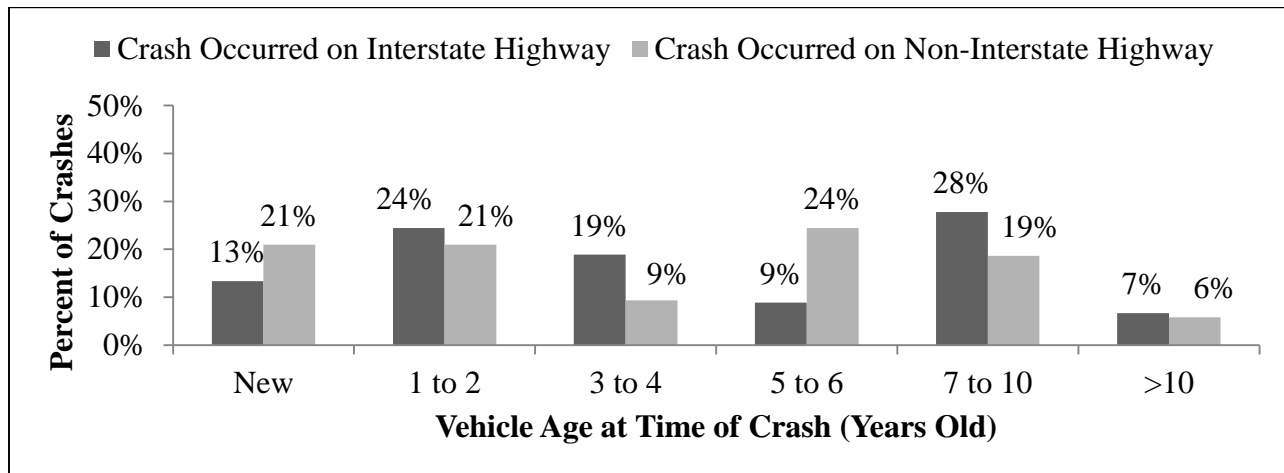


Figure 28. Age of CUTs of non-Virginia-domiciled carriers involved in fatal crashes in Virginia by road type, 2005 – 2009.

Type of Commodity Hauled by Carriers Involved in CUT Fatal Crashes

North Carolina Commodity Hauled Summary

General freight was the most prevalent commodity hauled by both North Carolina-domiciled carriers (30%) and non-North Carolina-domiciled carriers (58%) involved in CUT fatal crashes in North Carolina. It is interesting to note, however, that in more than one-quarter of all crashes involving North Carolina-domiciled carriers, logs (13%) and agriculture-related⁵ commodities (15%), which are typically associated with intrastate movements, were being hauled. The all

⁵ Agriculture-related refers to fresh produce, livestock, grain, farm supplies, and agricultural products.

other⁶ category included a large variety of commodities, each accounting for small proportions, and comprised approximately one-third of the cargoes being hauled by both North Carolina-domiciled and non-North Carolina-domiciled carriers (Table 39 and Figure 29).

Most of the CUT fatal crashes in North Carolina that involved the transport of logs occurred on non-Interstate highways (97%) and involved North Carolina-domiciled carriers (84%; Table 40). The majority of CUT fatal crashes in North Carolina involving the transport of general freight involved non-North Carolina-domiciled carriers (63%) on non-Interstate highways (63%). Carriers transporting gas or liquids (Hazardous Materials) were somewhat more likely (6% vs. 4%) to be involved in CUT fatal crashes on non-Interstate roads. On non-Interstate highways, the HazMat CUT fatal crashes were about twice as likely (7% compared to 4%) to involve a North Carolina-domiciled carrier.

Table 39. Type of Commodity Hauled by Carriers Involved in CUT Fatal Crashes in North Carolina on all Road Types, by Carrier Domicile, 2005 – 2009

| Commodity Hauled | NC-Domiciled Carriers | Non-NC-Domiciled Carriers |
|---------------------|-----------------------|---------------------------|
| General Freight | 61 (30%) | 106 (58%) |
| Logs | 26 (13%) | 5 (2%) |
| Gas/Liquids | 13 (6%) | 8 (5%) |
| Agriculture-related | 31 (15%) | 7 (4%) |
| All Other | 75 (36%) | 57 (31%) |
| Total | 206 (100%) | 183 (100%) |

Table 40. Type of Commodity Hauled by Carriers Involved in CUT Fatal Crashes in North Carolina by Carrier Domicile and Road Type, 2005 – 2009

| Commodity Hauled | Crash Occurred on Interstate Highway | | | Crash Occurred on Non-Interstate Highway | | |
|---------------------|--------------------------------------|---------------------------|------------|--|---------------------------|------------|
| | NC-Domiciled Carriers | Non-NC-Domiciled Carriers | Total | NC-Domiciled Carriers | Non-NC-Domiciled Carriers | Total |
| General Freight | 12 (44%) | 50 (62%) | 62 (57%) | 49 (27%) | 56 (55%) | 105 (37%) |
| Logs | 0 (0%) | 1 (1%) | 1 (1%) | 26 (15%) | 4 (4%) | 30 (11%) |
| Gas/Liquids | 0 (0%) | 4 (5%) | 4 (4%) | 13 (7%) | 4 (4%) | 17 (6%) |
| Agriculture-related | 6 (22%) | 3 (4%) | 9 (8%) | 25 (14%) | 4 (2%) | 29 (10%) |
| All Other | 9 (34%) | 23 (28%) | 32 (30%) | 66 (29%) | 34 (35%) | 100 (36%) |
| Total | 27 (100%) | 81 (100%) | 108 (100%) | 179 (100%) | 102 (100%) | 281 (100%) |

⁶ The all other category includes the following commodities: Building Materials, Garbage/Refuse/Trash, Paper Products, Household Goods, Mobile Homes, Oilfield Equipment, U.S. Mail, Utility, Metal: Sheets/Coils/Rolls, Machinery/Large Objects, Chemicals, Motor Vehicles, Dry Bulk Commodities, Construction, Drive Away/Tow Away, Coal/Coke, Refrigerated Food, Water Well, Intermodal Container, Meat, and Beverages.

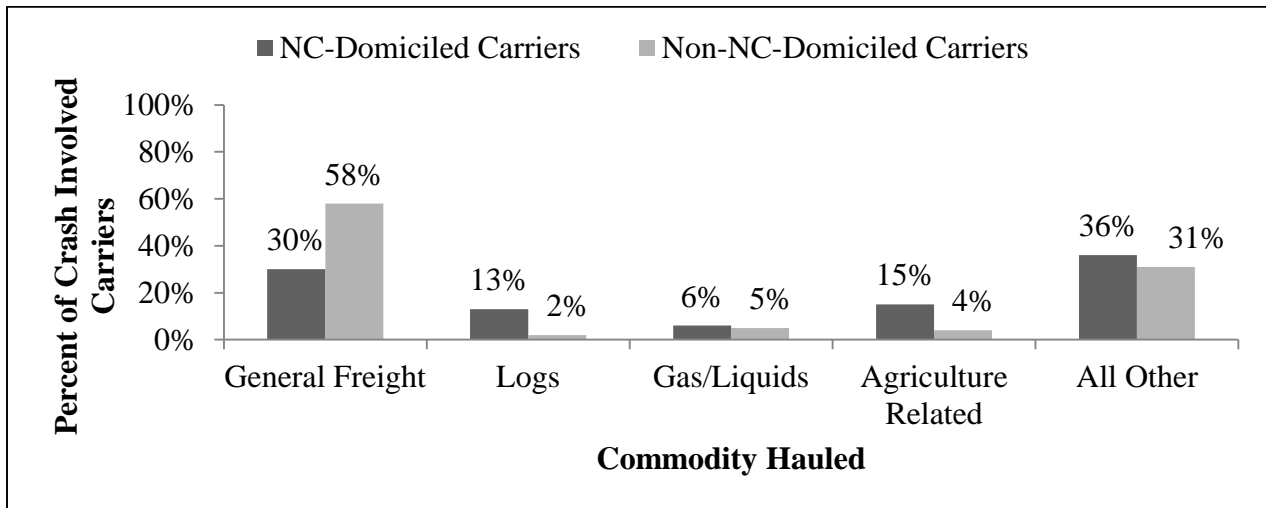


Figure 29. Type of commodity hauled by carriers involved in CUT fatal crashes in North Carolina on all road types, by carrier domicile, 2005 – 2009.

Virginia Commodity Hauled Summary

As was true in North Carolina, non-Virginia-domiciled carriers were predominantly hauling general freight (73%) when involved in a CUT fatal crash in Virginia. The proportion is even higher (77%) for these non-Virginia-domiciled carriers when involved in CUT fatal crashes on Interstate highways. Logs and liquids/gases each comprised 3% of the total for non-Virginia-domiciled carriers, while agriculture-related cargoes accounted for another 3% of the total. The remaining 19% of the commodities hauled were spread among the other categories (Table 41).

While general freight was still the predominant commodity being hauled by Virginia-domiciled carriers, this cargo type only comprised 39% of the total. Logs comprised 19% of the total, while agriculture-related products accounted for 15% of the total. Crashes involving Virginia-domiciled carriers hauling logs were a higher proportion of the total on non-Interstate roads (23%) than on Interstate roads (9%). On the other hand, crashes involving Virginia-domiciled carriers hauling agriculture-related cargoes were proportionally involved only slightly more on non-Interstate roads (15%) than on Interstate roads (13%). A large portion of crashes (25%) for Virginia-domiciled carriers was spread among the “All Other” cargo category, which is another indication of the localized nature of transporting these commodities (Table 40, Table 42, and Figure 30).

Table 41. Type of Commodity Hauled by Carriers Involved in CUT Fatal Crashes in Virginia on all Road Types, by Carrier Domicile, 2005 – 2009.

| Commodity Hauled | Total VA-Domiciled Carriers | Total Non-VA-Domiciled Carriers |
|---------------------|-----------------------------|---------------------------------|
| General Freight | 29 (39%) | 108 (73%) |
| Logs | 14 (19%) | 4 (3%) |
| Gas/Liquids | 2 (3%) | 4 (3%) |
| Agriculture-related | 11 (15%) | 4 (3%) |
| All Other | 19 (25%) | 28 (19%) |
| Total | 75 (100%) | 148 (100%) |
| Missing Data | | 69 |

Table 42. Type of Commodity Hauled by Carriers Involved in CUT Fatal Crashes in Virginia by Carrier Domicile and Road Type, 2005 – 2009.

| Commodity Hauled | Crash Occurred on Interstate Highway | | | Crash Occurred on Non-Interstate Highway | | |
|---------------------|--------------------------------------|---------------------------|------------|--|---------------------------|------------|
| | VA-Domiciled Carriers | Non-VA-Domiciled Carriers | Total | VA-Domiciled Carriers | Non-VA-Domiciled Carriers | Total |
| General Freight | 12 (52%) | 61 (77%) | 73 (72%) | 17 (33%) | 47 (68%) | 64 (53%) |
| Logs | 2 (9%) | 1 (1%) | 3 (3%) | 12 (23%) | 3 (4%) | 15 (12%) |
| Gas/Liquids | 1 (4%) | 4 (5%) | 5 (5%) | 1 (2%) | 0 (0%) | 1 (1%) |
| Agriculture-related | 3 (13%) | 2 (3%) | 5 (5%) | 8 (15%) | 2 (3%) | 10 (8%) |
| All Other | 5 (22%) | 11 (14%) | 16 (16%) | 14 (27%) | 17 (25%) | 31 (26%) |
| Total | 23 (100%) | 79 (100%) | 102 (100%) | 52 (100%) | 69 (100%) | 121 (100%) |
| Missing Data | 0 | 0 | 18 | 0 | 0 | 51 |

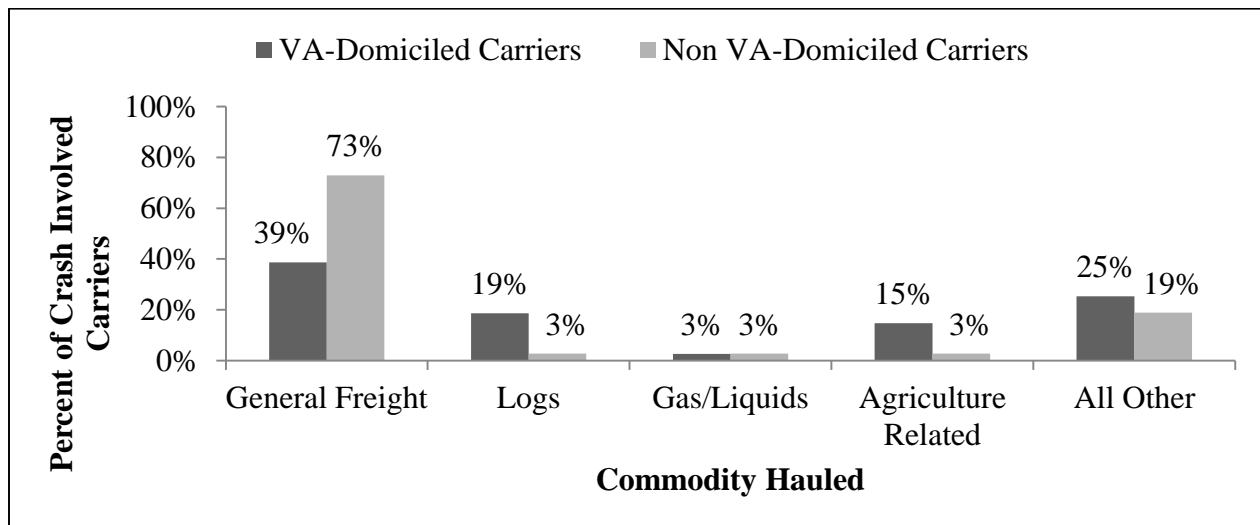


Figure 30. Type of commodity hauled by carriers involved in CUT fatal crashes in Virginia on all road types, by carrier domicile, 2005 – 2009.

SUMMARY OF DRIVER-RELATED CHARACTERISTICS FOR CUT FATAL CRASHES

This section of the report describes the most relevant attributes of the truck drivers employed by motor carriers that were involved in CUT fatal crashes in North Carolina and Virginia during the years 2005 – 2009.

Drivers' State of Licensure Summary

North Carolina Drivers' State of Licensure Summary

Truck drivers involved in CUT fatal crashes in North Carolina were predominantly licensed in the state or in a state immediately adjacent to North Carolina (Table 43, Table 44, and Figure 31). As could be expected, this was particularly true for drivers employed by North Carolina-domiciled carriers (98%). Surprisingly, the majority of drivers (82%) employed by non-North Carolina-domiciled carriers were also licensed in North Carolina or adjacent states.

Table 43. Drivers' State of Licensure for Drivers Involved in CUT Fatal Crashes in North Carolina on all Road Types, by Carrier State of Domicile, 2005 – 2009

| Driver's State of Licensure | NC-Domiciled Carriers | Non-NC-Domiciled Carriers |
|-----------------------------|-----------------------|---------------------------|
| North Carolina | 186 (93%) | 103 (63%) |
| Virginia | 3 (1%) | 8 (5%) |
| Tennessee | 1 (1%) | 3 (2%) |
| Georgia | 0 | 9 (5%) |
| South Carolina | 6 (3%) | 12 (7%) |
| Other | 5 (2%) | 29 (18%) |
| Total | 201 (100%) | 164 (100%) |
| Missing Data | 5 | 19 |

Table 44. Drivers' State of Licensure for Drivers Involved in CUT Fatal Crashes in North Carolina by Road Type and Carrier State of Domicile, 2005 – 2009

| Driver's State of Licensure | NC Interstate Highway Crashes | | | NC Non-Interstate Highway Crashes | | |
|-----------------------------|-------------------------------|---------------------------|-----------|-----------------------------------|---------------------------|------------|
| | NC-Domiciled Carriers | Non-NC-Domiciled Carriers | Total | NC-Domiciled Carriers | Non-NC-Domiciled Carriers | Total |
| North Carolina | 19 (79%) | 45 (70%) | 64 (73%) | 167 (93%) | 58 (58%) | 225 (81%) |
| Virginia | 0 (0%) | 3 (5%) | 3 (3%) | 3 (2%) | 5 (5%) | 8 (3%) |
| Tennessee | 1 (4%) | 1 (2%) | 2 (2%) | 0 (0%) | 2 (2%) | 2 (1%) |
| Georgia | 0 (0%) | 2 (3%) | 2 (2%) | 0 (0%) | 7 (7%) | 7 (3%) |
| South Carolina | 1 (4%) | 2 (3%) | 3 (3%) | 5 (3%) | 10 (10%) | 15 (5%) |
| Other | 3 (13%) | 11 (17%) | 14 (16%) | 2 (2%) | 18 (18%) | 20 (7%) |
| Total | 24 (100%) | 64 (100%) | 88 (100%) | 177 (100%) | 100 (100%) | 277 (100%) |
| Missing Data | 3 | 17 | 20 | 2 | 2 | 4 |

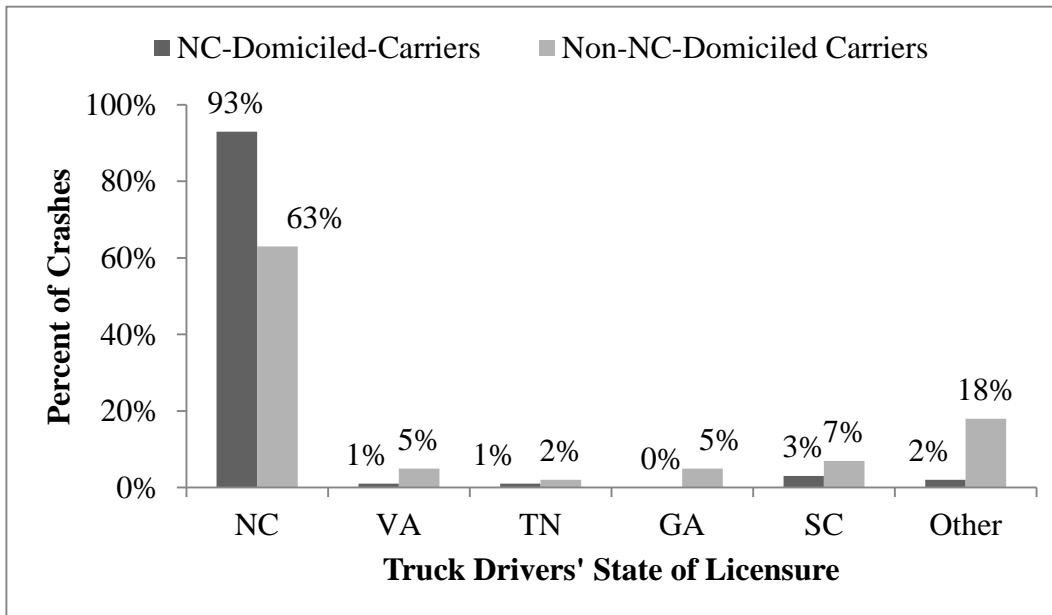


Figure 31. State of licensure for drivers involved in CUT fatal crashes in North Carolina on all road types, by carrier state of domicile, 2005 – 2009.

Virginia Drivers' State of Licensure Summary

In CUT fatal crashes that occurred in Virginia and involved Virginia-domiciled carriers, the majority of involved truck drivers were licensed in Virginia (88%) or the adjacent states of North Carolina, Tennessee, West Virginia, Kentucky, or Maryland (another 6% of the total). In the case of non-Virginia-domiciled carriers, the largest portion (32%) of crash-involved truck drivers were not licensed in Virginia or states adjacent to it. However, 27% were licensed in Virginia, with another 41% being licensed in the adjacent states and the District of Columbia. Thus, in Virginia, as in North Carolina, the vast majority of CUT fatal crash-involved truck drivers are from the state or very nearby (Table 45, Table 46, and Figure 32).

Table 45. State of Licensure for Drivers Involved in CUT Fatal Crashes in Virginia on all Road Types, by Carrier State of Domicile, 2005 – 2009

| Driver's State of Licensure | VA-Domiciled Carriers | Non-VA-Domiciled Carriers |
|---|-----------------------|---------------------------|
| Virginia | 82 (88%) | 47 (27%) |
| North Carolina | 2 (2%) | 31 (18%) |
| District of Columbia | 0 (0%) | 1 (1%) |
| Tennessee | 1 (1%) | 5 (3%) |
| Maryland | 3 (3%) | 15 (9%) |
| Pennsylvania | 1 (1%) | 10 (6%) |
| West Virginia | 1 (1%) | 6 (3%) |
| Kentucky | 0 (0%) | 3 (2%) |
| Other | 3 (3%) | 55 (32%) |
| Total | 93 (100%) | 173 (100%) |
| Missing Data | 1 | 7 |
| Does not include 18 additional cases for which domicile information was unavailable | | |

Table 46. State of Licensure for Drivers Involved in CUT Fatal Crashes in Virginia by Road Type and Carrier State of Domicile, 2005 – 2009

| Driver's State of Licensure | VA Interstate Highway Crashes | | | VA Non-Interstate Highway Crashes | | |
|-----------------------------|-------------------------------|---------------------------|------------|-----------------------------------|---------------------------|------------|
| | VA-Domiciled Carriers | Non-VA-Domiciled Carriers | Total | VA-Domiciled Carriers | Non-VA-Domiciled Carriers | Total |
| Virginia | 16 (70%) | 13 (15%) | 29 (26%) | 66 (94%) | 34 (40%) | 100 |
| North Carolina | 1 (4%) | 17 (20%) | 18 (16%) | 1 (1%) | 14 (16%) | 15 |
| District of Columbia | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | 1 | 1 |
| Tennessee | 1 (4%) | 4 (5%) | 5 (5%) | 0 (0%) | 1 | 1 |
| Maryland | 2 (9%) | 6 (7%) | 8 (7%) | 1 (1%) | 9 | 10 |
| Pennsylvania | 1 (4%) | 6 (7%) | 7 (6%) | 0 (0%) | 4 | 4 |
| West Virginia | 0 (0%) | 3 (3%) | 3 (3%) | 1 (1%) | 3 | 4 |
| Kentucky | 0 (0%) | 1 (1%) | 1 (1%) | 0 (0%) | 2 | 2 |
| Other | 2 (9%) | 37 (43%) | 39 (35%) | 1 (1%) | 18 | 19 |
| Total | 23 (100%) | 87 (100%) | 110 (100%) | 70 (100%) | 86 (100%) | 156 (100%) |
| Missing Data | 1 | 6 | 7 | 0 | 1 | 1 |

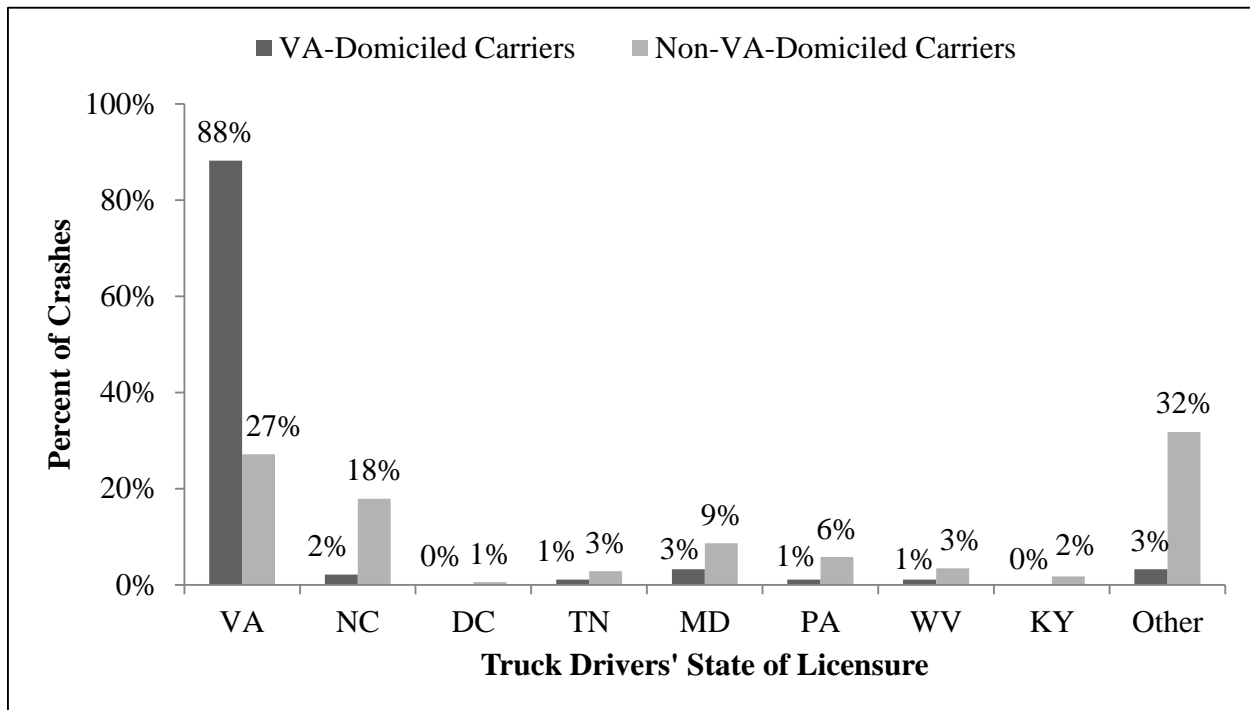


Figure 32. State of licensure for drivers involved in CUT fatal crashes in Virginia on all road types, by carrier state of domicile, 2005 – 2009.

Drivers' Age Summary

North Carolina Drivers' Age Summary

It was hypothesized that drivers working for domiciled carriers would be more likely to be younger. However, the mean ages for both North Carolina-domiciled and non-North Carolina-domiciled carriers were not especially young (Table 47 and Table 48). As can be seen in Figure 33, the distribution of drivers' ages is skewed towards the older end of the spectrum and is not a significant issue.

Table 47. Ages of Drivers Involved in CUT Fatal Crashes in North Carolina by Carrier State of Domicile, 2005 – 2009

| Driver's Age | NC-Domiciled Carriers | Non-NC-Domiciled Carriers |
|--------------|-----------------------|---------------------------|
| 20 and Under | 0 (0%) | 0 (0%) |
| 21 to 25 | 2 (1%) | 1 (1%) |
| 26 to 34 | 24 (11%) | 20 (11%) |
| 35 to 44 | 70 (34%) | 50 (27%) |
| 45 to 54 | 53 (26%) | 63 (34%) |
| 55 to 64 | 43 (21%) | 35 (19%) |
| 65 and Over | 10 (5%) | 12 (7%) |
| Total | 206 (100%) | 183 (100%) |
| Mean | 46 | 48 |
| Missing Data | 4 (2%) | 2 (1%) |

Table 48. Ages of Drivers Involved in CUT Fatal Crashes in North Carolina by Road Type and Carrier State of Domicile, 2005 – 2009

| Driver's Age | NC Interstate Highway Crashes | | | NC Non-Interstate Highway Crashes | | |
|--------------|-------------------------------|---------------------------|------------|-----------------------------------|---------------------------|------------|
| | NC-Domiciled Carriers | Non-NC-Domiciled Carriers | Total | NC-Domiciled Carriers | Non-NC-Domiciled Carriers | Total |
| 20 and Under | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) |
| 21 to 25 | 0 (0%) | 1 (1%) | 1 (1%) | 2 (1%) | 0 (0%) | 2 (1%) |
| 26 to 34 | 3 (11%) | 8 (10%) | 11 (10%) | 21 (12%) | 12 (12%) | 33 (12%) |
| 35 to 44 | 5 (19%) | 22 (27%) | 27 (25%) | 65 (36%) | 28 (27%) | 83 (30%) |
| 45 to 54 | 10 (37%) | 30 (37%) | 40 (37%) | 43 (24%) | 33 (32%) | 76 (27%) |
| 55 to 64 | 5 (19%) | 14 (17%) | 19 (18%) | 38 (21%) | 21 (21%) | 59 (21%) |
| 65 and Over | 1 (3%) | 6 (8%) | 7 (6%) | 9 (5%) | 6 (6%) | 15 (6%) |
| Total | 27 (100%) | 81 (100%) | 108 (100%) | 179 (100%) | 102 (100%) | 281 (100%) |
| Mean | 49 | 48 | 48 | 46 | 47 | 47 |
| Missing Data | 3 (11%) | 0 (0%) | 3 (3%) | 1 (1%) | 2 (2%) | 3 (1%) |

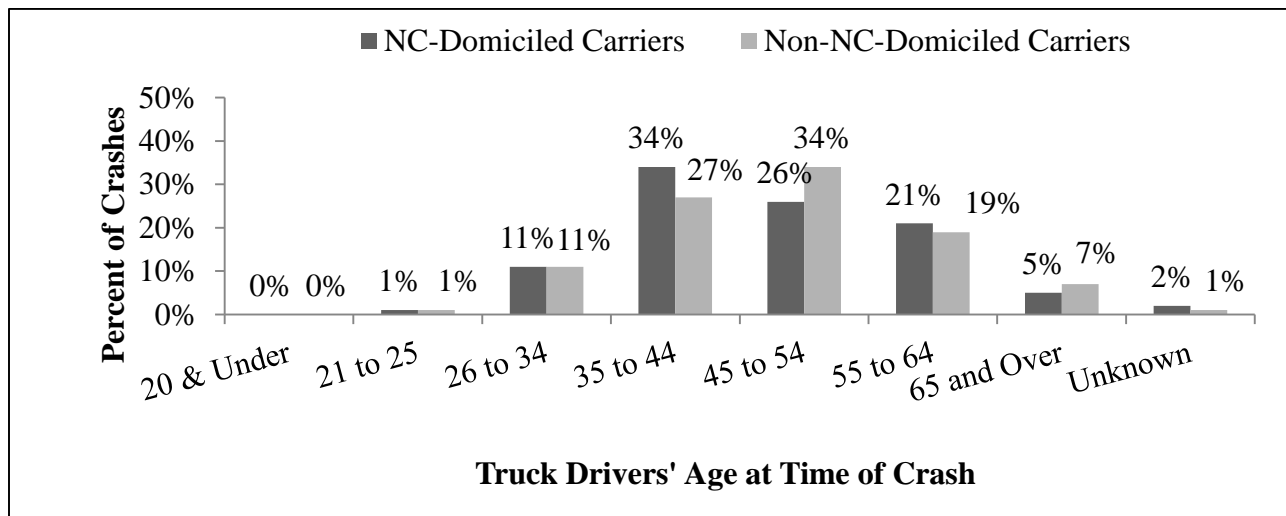


Figure 33. Ages of drivers involved in CUT fatal crashes in North Carolina by carrier state of domicile, 2005 – 2009.

Virginia Drivers' Age Summary

Both the mean ages and age distribution patterns of CUT fatal-crash-involved truck drivers in Virginia were not distinctly different for the Virginia-domiciled and non-Virginia-domiciled carriers. As was the case in North Carolina, in Virginia drivers were not particularly young, thus refuting the hypothesis that the Virginia-domiciled carriers would have younger drivers. This seems to indicate that truck driver age is not a significant differentiating factor in North Carolina or Virginia in the context of this study (Table 49, Table 50, and Figure 34).

Table 49. Ages of Drivers Involved in CUT Fatal Crashes in Virginia on all Road Types, by Carrier State of Domicile, 2005 – 2009

| Driver's Age | VA-Domiciled Carriers | Non-VA-Domiciled Carriers |
|--------------|-----------------------|---------------------------|
| 20 and Under | 1 (1%) | 1 (1%) |
| 21 to 25 | 0 (0%) | 6 (3%) |
| 26 to 34 | 17 (18%) | 20 (11%) |
| 35 to 44 | 20 (21%) | 53 (29%) |
| 45 to 54 | 27(29%) | 55 30%) |
| 55 to 64 | 23 (24%) | 29 (16%) |
| 65 and Over | 6 (6%) | 17 (9%) |
| Total | 94 (100%) | 181 (100%) |
| Mean | 48 | 47 |
| Missing Data | 17 | |

Table 50. Ages of Drivers Involved in CUT Fatal Crashes in Virginia by Road Type and Carrier State of Domicile, 2005 – 2009

| Driver's Age | VA Interstate Highway Crashes | | | VA Non-Interstate Highway Crashes | | |
|--------------|-------------------------------|---------------------------|------------|-----------------------------------|---------------------------|------------|
| | VA-Domiciled Carriers | Non-VA-Domiciled Carriers | Total | VA-Domiciled Carriers | Non-VA-Domiciled Carriers | Total |
| 20 and Under | 0 (0%) | 1 (1%) | 1 (1%) | 1 (1%) | 0 (0%) | 1 (1%) |
| 21 to 25 | 0 (0%) | 2 (2%) | 2 (2%) | 0 (0%) | 4 (5%) | 4 (3%) |
| 26 to 34 | 1 (4%) | 14 (15%) | 15 (13%) | 16 (23%) | 6 (7%) | 22 (14%) |
| 35 to 44 | 6 (25%) | 27 (29%) | 33 (28%) | 14 (20%) | 26 (30%) | 40 (25%) |
| 45 to 54 | 7 (29%) | 29 (31%) | 36 (31%) | 20 (29%) | 26 (30%) | 46 (29%) |
| 55 to 64 | 7 (29%) | 10 (11%) | 17 (15%) | 16 (23%) | 19 (22%) | 35 (22%) |
| 65 and Over | 3 (13%) | 10 (11%) | 13 (11%) | 3 (4%) | 7 (8%) | 10 (6%) |
| Total | 24 (100%) | 93 (100%) | 117 (100%) | 70 (100%) | 88 (100%) | 158 (100%) |
| Mean | 54 | 46 | 48 | 45 | 48 | 47 |
| Missing Data | 0 | 0 | 3 | 0 | 0 | 14 |

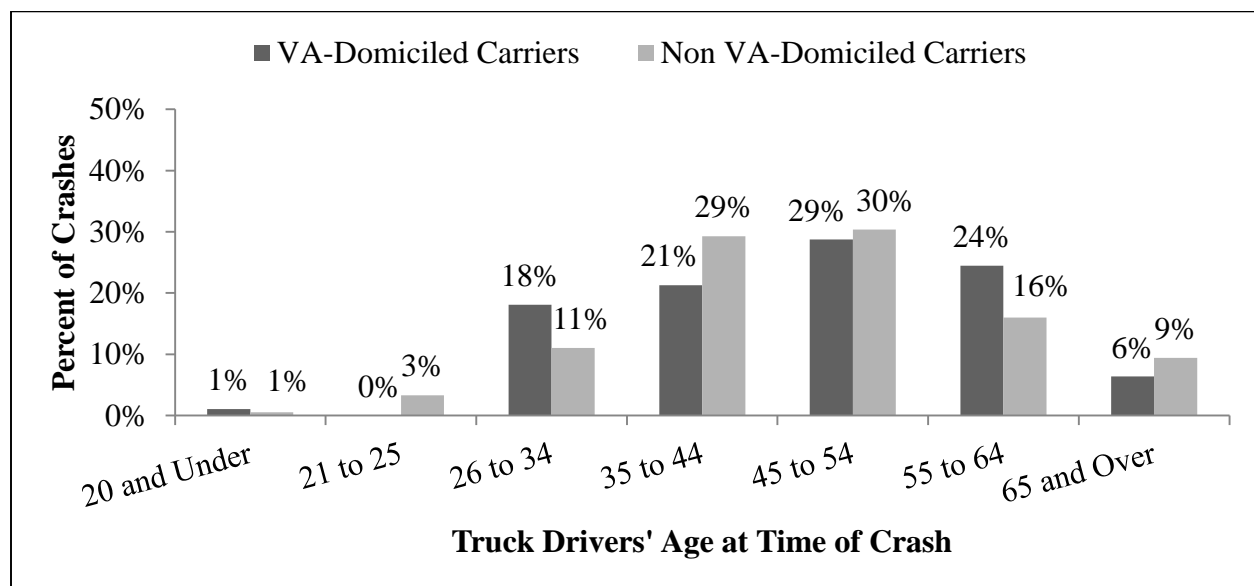


Figure 34. Ages of drivers involved in CUT fatal crashes in Virginia by carrier state of domicile, 2005 – 2009.

RESULTS OF STATE ANALYSES FOR CUT FATAL CRASHES INVOLVING SMALL CARRIERS (10 OR FEWER VEHICLES OPERATED), 2005 – 2009

Small carriers represent a significant subset (31% in North Carolina and 30% in Virginia) of the carriers that were involved in CUT fatal crashes in the two states between 2005 and 2009. Studies (4) have documented that smaller carriers face different safety challenges than larger fleets and, for that reason, a separate review of the crashes of this population was performed. This section of the report describes the most relevant attributes of the small motor carriers (10 or fewer vehicles operated) that were involved in CUT fatal crashes in North Carolina and Virginia between 2005 and 2009.

SUMMARY OF SMALL CARRIER CHARACTERISTICS FOR CUT FATAL CRASHES

Road Type and State of Carrier Domicile for Small Carriers Involved in CUT Fatal Crashes

North Carolina Road Type and State of Small Carrier Domicile Summary

As can be seen in Table 51 and Figure 35, and as was the case with carriers of all fleet sizes, the majority of CUT fatal crashes in North Carolina in which small carriers were involved occurred on non-Interstate highways (84%) and involved carriers domiciled in North Carolina (73%).

Table 51. Number of CUT Fatal Crashes in North Carolina by Road Type and State of Small Carrier (10 or Fewer Vehicles Operated) Domicile, 2005 – 2009

| Road Type | NC-Domiciled Small Carriers | Non-NC-Domiciled Small Carriers | Total |
|--|------------------------------------|--|-------------------|
| Crash Occurred on Interstate Highway | 9 (11%) | 9 (30%) | 18 (16%) |
| Crash Occurred on Non-Interstate Highway | 73 (89%) | 21 (70%) | 94 (84%) |
| Total | 82 (100%) | 30 (100%) | 112 (100%) |

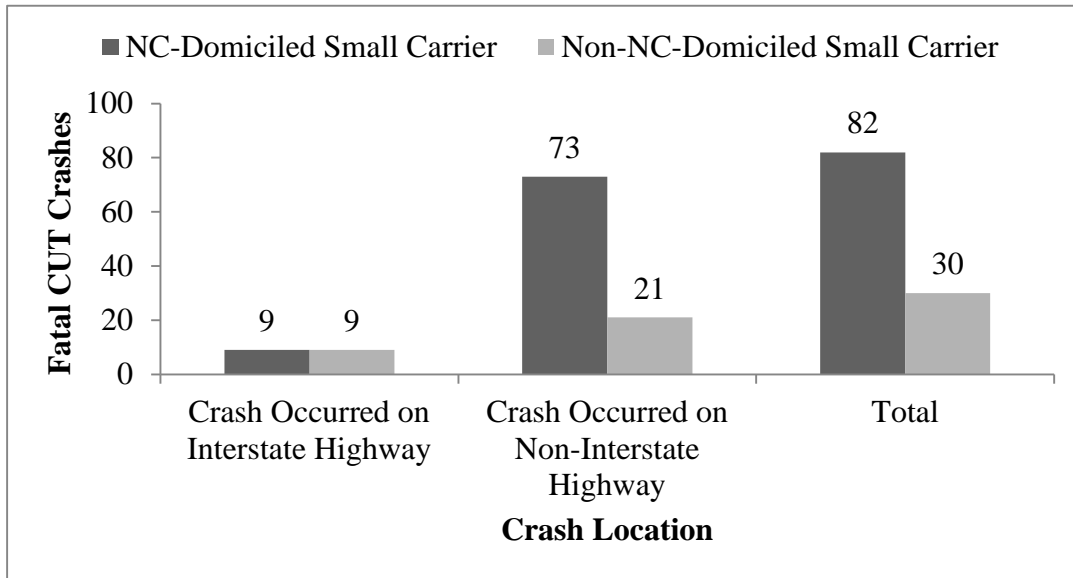


Figure 35. Number of CUT fatal crashes in North Carolina by road type and state of small carrier (10 or fewer vehicles operated) domicile, 2005 – 2009.

Virginia Road Type and State of Small Carrier Domicile Summary

Similar to what was found with the entire population of CUT fatal-crash-involved carriers in Virginia, small carriers involved in CUT fatal crashes experienced those crashes equally on Interstate highways (50%) and non-Interstate highways (50%; Table 52 and

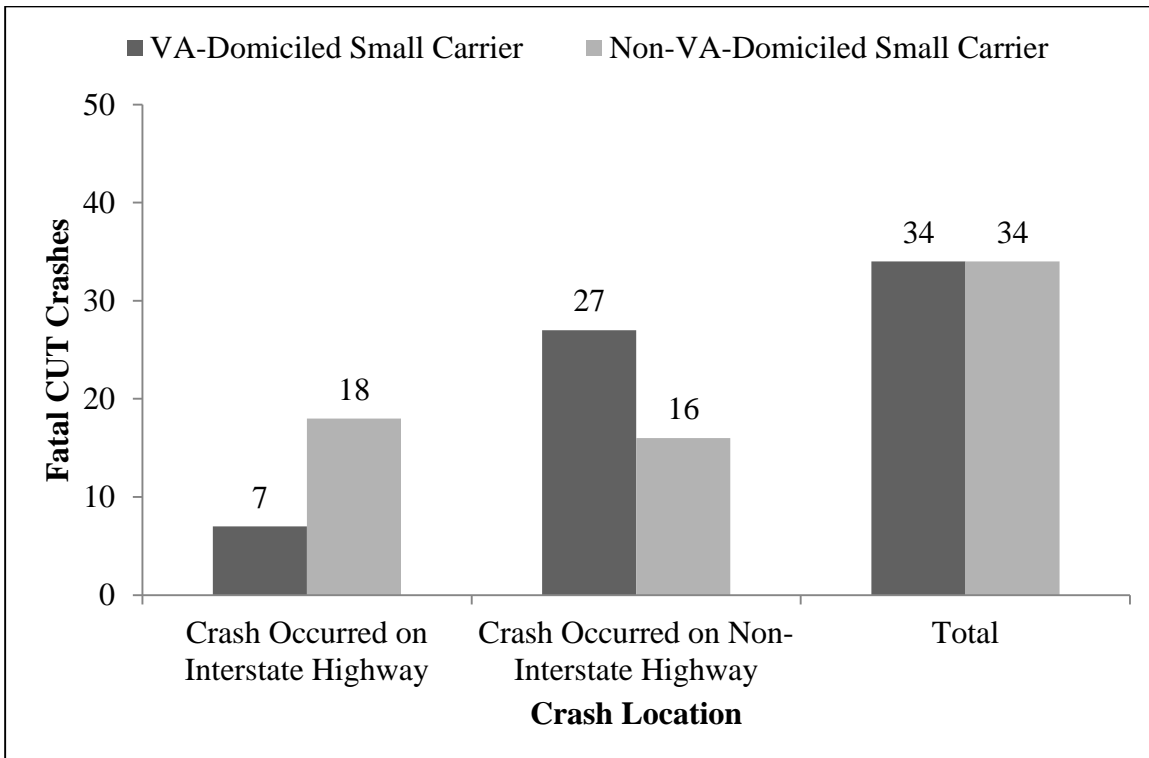


Figure 36). Similar to North Carolina, the majority of CUT fatal crashes for small carriers domiciled in the state occurred on non-Interstate highways (79%).

Table 52. Number of CUT Fatal Crashes in Virginia by Road Type and State of Small Carrier (10 or Fewer Vehicles Operated) Domicile, 2005 – 2009

| Road Type | VA-Domiciled Small Carriers | Non-VA-Domiciled Small Carriers | Total |
|--|-----------------------------|---------------------------------|-----------|
| Crash Occurred on Interstate Highway | 7 (21%) | 18 (53%) | 25 (37%) |
| Crash Occurred on Non-Interstate Highway | 27 (79%) | 16 (47%) | 43 (63%) |
| Total | 34 (100%) | 34 (100%) | 68 (100%) |

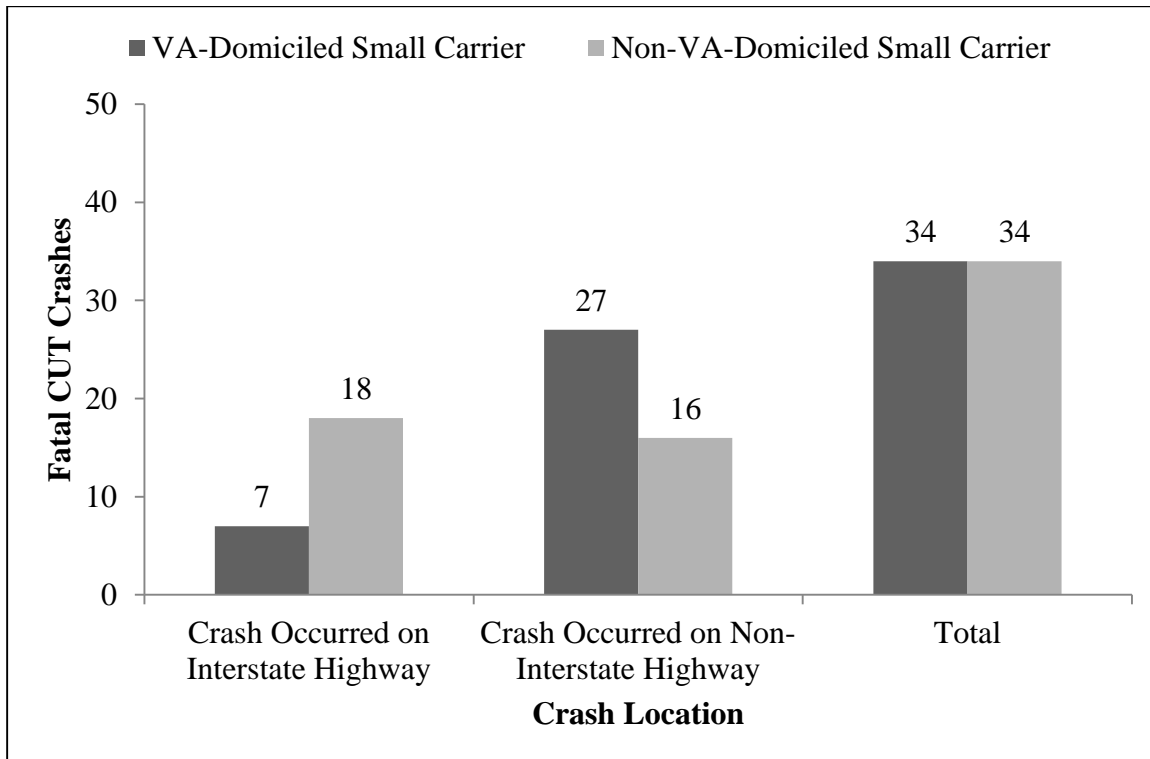


Figure 36. Number of CUT fatal crashes in Virginia by road type and state of small carrier (10 or fewer vehicles operated) domicile, 2005 – 2009.

Type of Collision for Small Carriers Involved in CUT Fatal Crashes

North Carolina Small Carrier Collision Summary

As was found with the entire population of CUT fatal-crash-involved carriers in North Carolina, small carriers involved in CUT fatal crashes were overwhelmingly involved in collisions with another motor vehicle (86%) compared to other crash types. The pattern was the same for North Carolina-domiciled carriers (85%) and for non-North Carolina-domiciled carriers (83%; Table 53, Table 54, and Figure 37). Collisions with other motor vehicles were the most common (90%) type of CUT fatal collisions that occurred on non-Interstate highways and involved small carriers.

Table 53. Type of Collision in CUT Fatal Crashes in North Carolina Involving Small Carriers (10 or Fewer Vehicles Operated) on All Road Types, by Carrier Domicile, 2005 – 2009.

| Collision Type | NC-Domiciled Small Carriers | Non-NC-Domiciled Small Carriers |
|--|-----------------------------|---------------------------------|
| Non-Collision | 5 (6%) | 2 (7%) |
| Collision w/ Other Motor Vehicle | 71 (85%) | 25 (83%) |
| Collision w/ Stopped or Parked Motor Vehicle | 1 (1%) | 2 (7%) |
| Collision w/ Fixed Object | 5 (6%) | 1 (3%) |
| Collision w/ Object Not Fixed | 2 (2%) | 0 (0%) |
| Total | 82 (100%) | 30 (100%) |

Table 54. Type of Collision in CUT Fatal Crashes in North Carolina Involving Small Carriers (10 or Fewer Vehicles Operated) by Carrier Domicile and Road Type, 2005 – 2009

| Collision Type | Crash Occurred On Interstate Highway | | | Crash Occurred on Non-Interstate Highway | | |
|--|--------------------------------------|---------------------------------|-----------|--|---------------------------|-----------|
| | NC-Domiciled Small Carriers | Non-NC-Domiciled Small Carriers | Total | NC-Domiciled Small Carriers | Non-NC-Domiciled Carriers | Total |
| Non-Collision | 1 (11%) | 0 (0%) | 1 (6%) | 3 (4%) | 2 (9%) | 5 (5%) |
| Collision w/ Other Motor Vehicle | 4 (44%) | 7 (78%) | 11 (61%) | 66 (91%) | 18 (86%) | 84 (90%) |
| Collision w/ Stopped or Parked Motor Vehicle | 0 (0%) | 2 (22%) | 2 (11%) | 1 (1%) | 0 (0%) | 1 (1%) |
| Collision w/ Fixed Object | 4 (44%) | 0 (0%) | 4 (22%) | 1 (1%) | 1 (5%) | 2 (2%) |
| Collision w/ Object Not Fixed | 0 (0%) | 0 (0%) | 0 (0%) | 2 (3%) | 0 (0%) | 2 (2%) |
| Total | 9 (100%) | 9 (100%) | 18 (100%) | 73 (100%) | 21 (100%) | 94 (100%) |

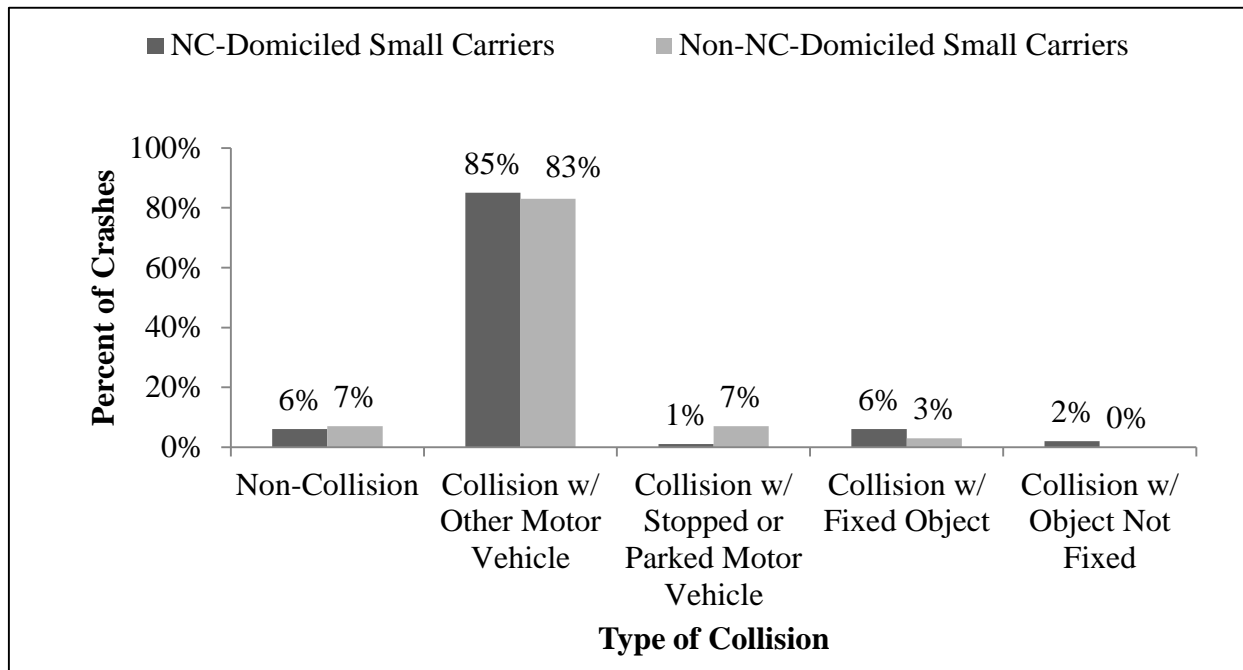


Figure 37. Type of collision in CUT fatal crashes in North Carolina involving small carriers (10 or fewer vehicles operated) on all road types by carrier domicile, 2005 – 2009.

Virginia Small Carrier Collision Summary

As in North Carolina, but not to the same extent, collisions with other motor vehicles were the most prevalent type of CUT fatal crash (61%) in which small carriers were involved in Virginia between 2005 – 2009. However, collisions with fixed objects accounted for 22% of the total and were particularly common in crashes involving both Virginia-domiciled (57%) and non-Virginia-domiciled (44%) small carriers on Interstate highways (Table 55, Table 56, and Figure 38).

Table 55. Total Collisions in CUT Fatal Crashes in Virginia Involving Small Carriers (10 or Fewer Vehicles Operated) by State of Carrier Domicile and Road Type, 2005 – 2009

| Collision Type | Total VA-Domiciled Small Carriers | Total Non-VA-Domiciled Small Carriers |
|----------------------------------|-----------------------------------|---------------------------------------|
| Non-Collision | 3 (9%) | 5 (15%) |
| Collision w/ Other Motor Vehicle | 25 (74%) | 16 (48%) |
| Collision w/ Fixed Object | 5 (15%) | 10 (30%) |
| Collision w/Object Not Fixed | 1 (3%) | 2 (6%) |
| Total | 34 (100%) | 33 (100%) |
| Missing Data | 0 | 1 |

Table 56. Type of Collision in CUT Fatal Crashes in Virginia Involving Small Carriers (10 or Fewer Vehicles Operated) by State of Carrier Domicile and Road Type, 2005 – 2009

| Collision Type | Crash Occurred on Interstate Highway | | | Crash Occurred on Non-Interstate Highway | | |
|----------------------------------|--------------------------------------|---------------------------------|-----------|--|---------------------------------|-----------|
| | VA-Domiciled Small Carriers | Non-VA-Domiciled Small Carriers | Total | VA-Domiciled Small Carriers | Non-VA-Domiciled Small Carriers | Total |
| Non-Collision | 0 (0%) | 4 (22%) | 4 (16%) | 3 (11%) | 1 (7%) | 4 (10%) |
| Collision w/ Other Motor Vehicle | 2 (29%) | 4 (22%) | 6 (24%) | 23 (85%) | 12 (80%) | 35 (83%) |
| Collision w/ Fixed Object | 4 (57%) | 8 (44%) | 12 (48%) | 1 (4%) | 2 (13%) | 3 (7%) |
| Collision w/Object Not Fixed | 1 (14%) | 2 (11%) | 3 (12%) | 0 (0%) | 0 (0%) | 0 (0%) |
| Total | 7 (100%) | 18 (100%) | 25 (100%) | 27 (100%) | 15 (100%) | 42 (100%) |
| Missing Data | 0 | 0 | 0 | 0 | 1 | 1 |

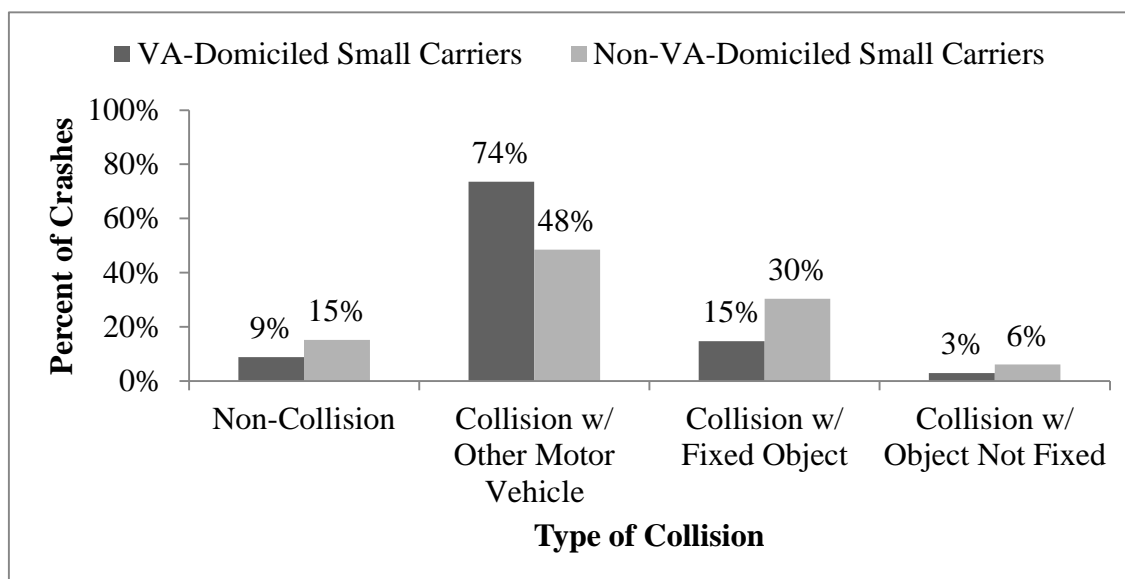


Figure 38. Type of collision in CUT fatal crashes in Virginia involving small carriers (10 or fewer vehicles operated) on all road types by carrier domicile, 2005 – 2009.

Type of Operation of Small Carriers Involved in CUT Fatal Crashes

North Carolina Small Carrier Type of Operation Summary

There were fewer for-hire carriers and, conversely, more exempt and other operation type carriers among small carriers involved in CUT fatal crashes in North Carolina as compared to carriers of all fleet sizes (Table 22, Table 57 and Table 58). This was especially true for North Carolina-domiciled small carriers (compare Figure 39 to Figure 15), and to a lesser degree was

also true for non-North Carolina-domiciled small carriers (compare

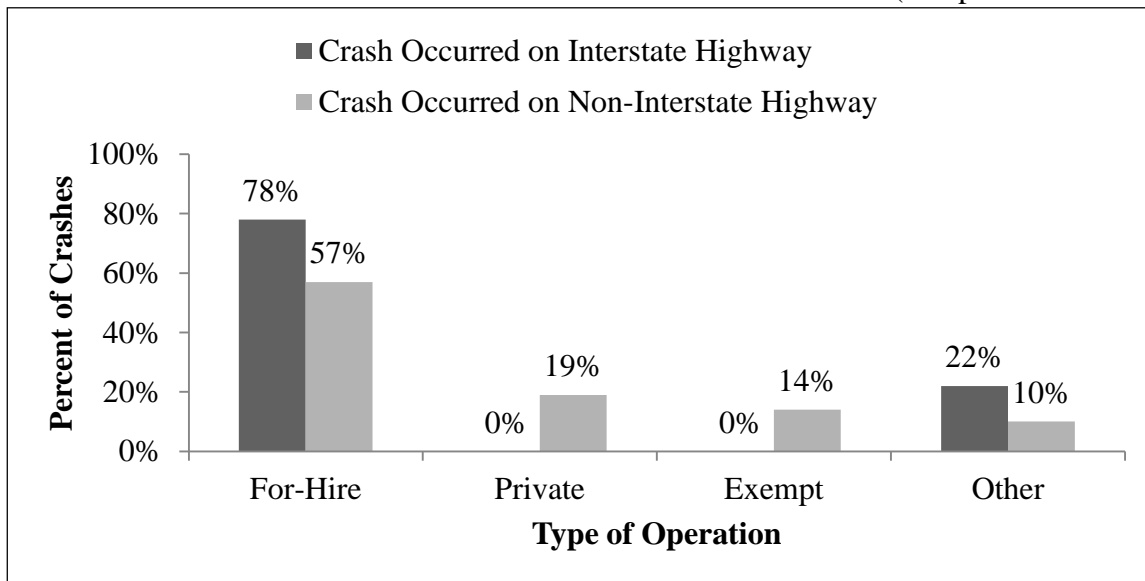


Figure 40 to Figure 16).

Table 57. Type of Operation of Small Carriers (10 or Fewer Vehicles Operated) Involved in CUT Fatal Crashes in North Carolina on All Road Types, by Carrier Domicile, 2005 – 2009

| Type of Carrier Operation | NC-Domiciled Small Carriers | Non-NC-Domiciled Small Carriers |
|---------------------------|-----------------------------|---------------------------------|
| For-Hire | 24 (29%) | 19 (64%) |
| Private | 24 (29%) | 4 (13%) |
| Exempt | 23 (28%) | 3 (10%) |
| Other | 11 (14%) | 4 (13%) |
| Total | 82 (100%) | 30 (100%) |

Table 58. Type of Operation of Small Carriers (10 or Fewer Vehicles Operated) Involved in CUT Fatal Crashes in North Carolina by Carrier Domicile and Road Type, 2005 – 2009

| Type of Carrier Operation | Crash Occurred on Interstate Highway | | | Crash Occurred on Non-Interstate Highway | | |
|---------------------------|--------------------------------------|---------------------------------|-----------|--|---------------------------------|-----------|
| | NC-Domiciled Small Carriers | Non-NC-Domiciled Small Carriers | Total | NC-Domiciled Small Carriers | Non-NC-Domiciled Small Carriers | Total |
| For-Hire | 3 (33%) | 7 (78%) | 10 (55%) | 21 (29%) | 12 (57%) | 33 (35%) |
| Private | 5 (56%) | 0 (0%) | 5 (28%) | 19 (26%) | 4 (19%) | 23 (24%) |
| Exempt | 0 (0%) | 0 (0%) | 0 (0%) | 23 (31%) | 3 (14%) | 26 (28%) |
| Other | 1 (11%) | 2 (22%) | 3 (17%) | 10 (14%) | 2 (10%) | 12 (13%) |
| Total | 9 (100%) | 9 (100%) | 18 (100%) | 73 (100%) | 21 (100%) | 94 (100%) |

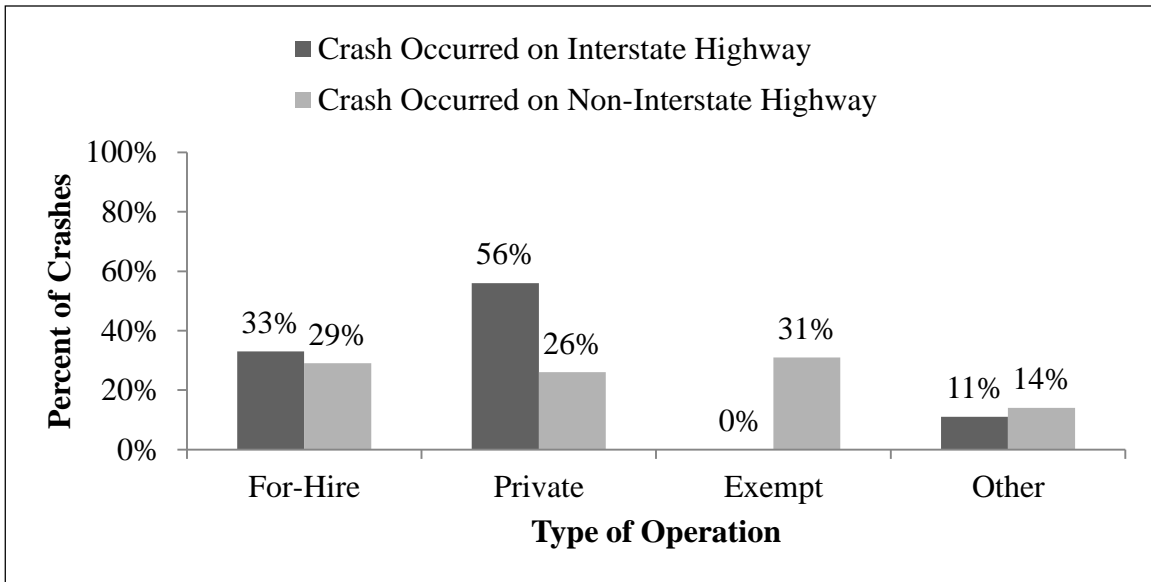


Figure 39. Type of operation in CUT fatal crashes in North Carolina involving NC-domiciled small carriers (10 or fewer vehicles operated) by highway type, 2005 – 2009.

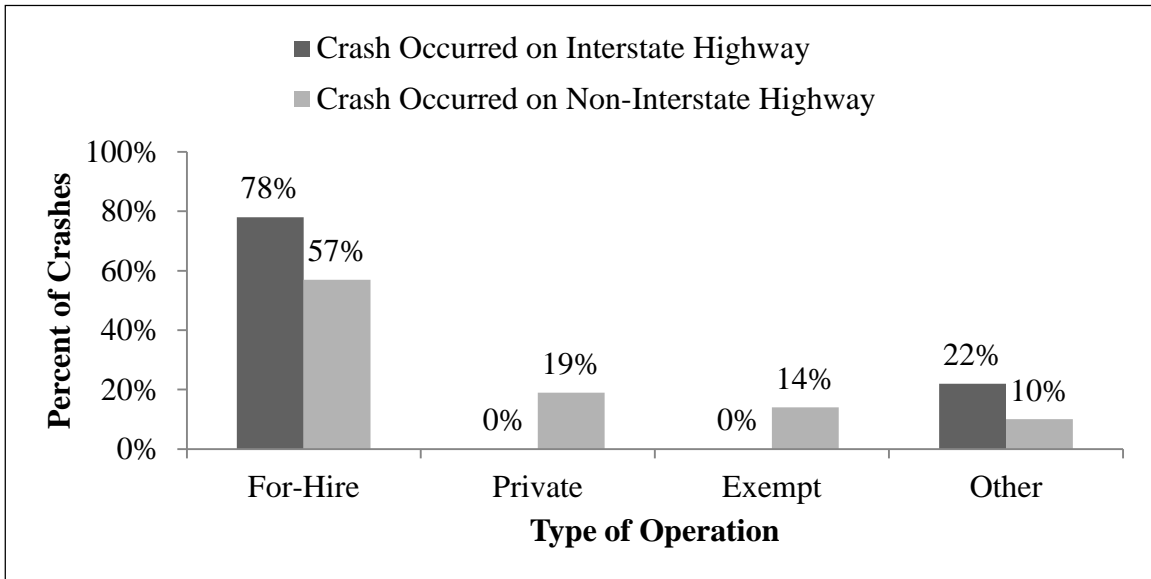


Figure 40. Type of operation in CUT fatal crashes involving non-North Carolina-domiciled small carriers (10 or fewer vehicles operated) by highway type, 2005 – 2009.

Virginia Small Carrier Operation Summary

As in North Carolina, there were somewhat fewer for-hire carriers and, therefore, slightly more private, exempt, and other type carriers among small carriers involved in CUT fatal crashes in Virginia; the shift was not as pronounced in Virginia as compared to North Carolina (Table 24 Table 58 and Table 60). The difference was most evident among Virginia-domiciled small carriers (compare Figure 41 to Figure 17 and Figure 42 to Figure 18).

Table 59. Type of Operation of Small Carriers (10 or Fewer Vehicles Operated) Involved in CUT Fatal Crashes in Virginia on All Road Types, by Carrier Domicile, 2005 – 2009

| Type of Carrier Operation | VA-Domiciled Small Carriers | Non-VA-Domiciled Small Carriers |
|---------------------------|-----------------------------|---------------------------------|
| For-Hire | 18 (53%) | 29 (85%) |
| Private | 7 (21%) | 1 (3%) |
| Exempt | 5 (15%) | 4 (12%) |
| Other | 4 (12%) | 0 (0%) |
| Total | 34 (100%) | 34 (100%) |

Table 60. Type of Operation of Small Carriers (10 or Fewer Vehicles Operated) Involved in CUT Fatal Crashes in Virginia by Carrier Domicile and Road Type, 2005 – 2009

| Type of Carrier Operation | Crash Occurred on Interstate Highway | | | Crash Occurred on Non-Interstate Highway | | |
|---------------------------|--------------------------------------|---------------------------------|-----------|--|---------------------------------|-----------|
| | VA-Domiciled Small Carriers | Non-VA-Domiciled Small Carriers | Total | VA-Domiciled Small Carriers | Non-VA-Domiciled Small Carriers | Total |
| For-Hire | 3 (43%) | 17 (94%) | 20 (80%) | 15 (56%) | 12 (75%) | 27 (64%) |
| Private | 1 (14%) | 0 (0%) | 1 (4%) | 6 (22%) | 1 (6%) | 7 (16%) |
| Exempt | 1 (14%) | 1 (6%) | 2 (8%) | 4 (15%) | 3 (19%) | 7 (16%) |
| Other | 2 (29%) | 0 (0%) | 2 (8%) | 2 (7%) | 0 (0%) | 2 (5%) |
| Total | 7 (100%) | 18 (100%) | 25 (100%) | 27 (100%) | 16 (100%) | 43 (100%) |

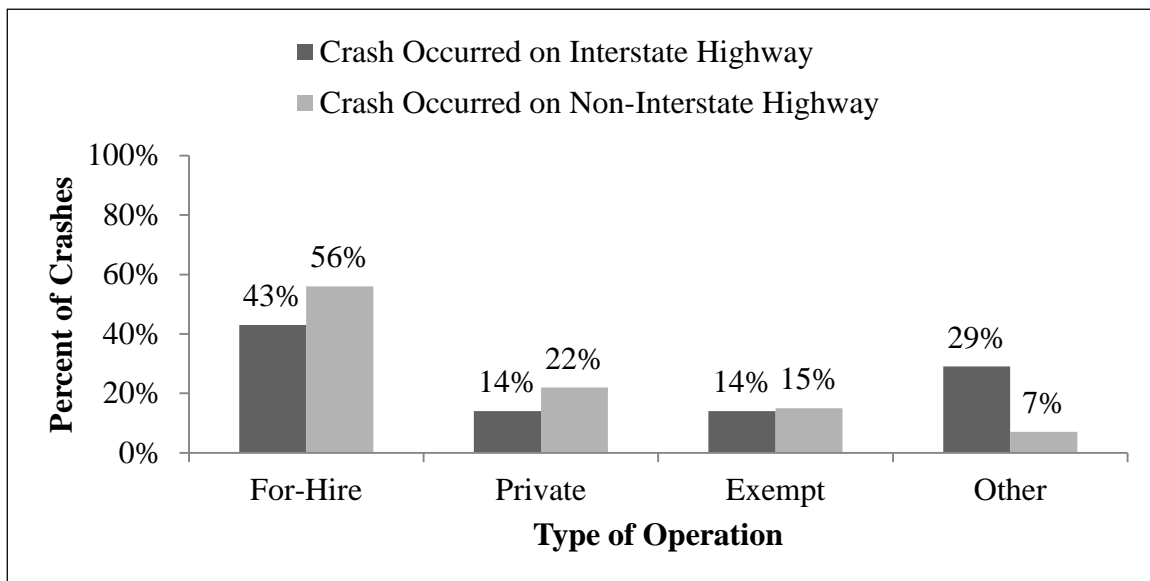


Figure 41. Type of operation in CUT fatal crashes in Virginia involving Virginia-domiciled small carriers (10 or fewer vehicles operated) by highway type, 2005 – 2009.

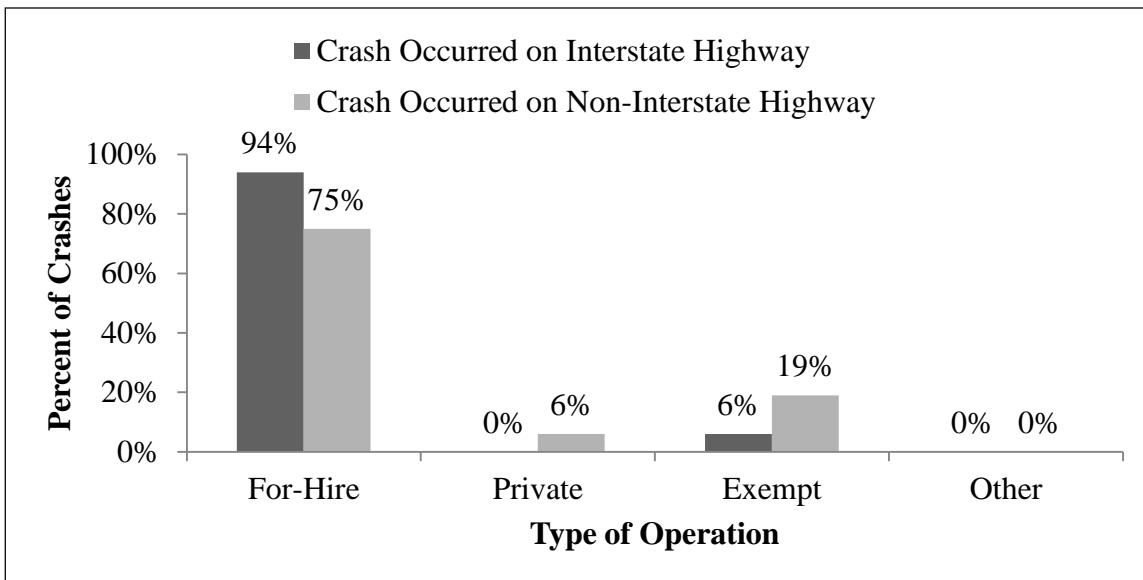


Figure 42. Type of operation in CUT fatal crashes in Virginia involving non-Virginia-domiciled small carriers (10 or fewer vehicles operated) by highway type, 2005 – 2009.

Fleet Size of Small Carriers Involved in CUT Fatal Crashes

North Carolina Small Carrier Fleet Size Summary

As noted (Table 27), the majority (53%) of all fleets involved in CUT fatal crashes in North Carolina (for which data are available) were domiciled in the state. A significant proportion (40%) of North Carolina-domiciled fleets was small fleets and 12% of them were single-truck operations (Table 27 compared to Table 61). Among single-truck North Carolina-domiciled fleets involved in CUT fatal crashes in North Carolina, the majority (80%) occurred on non-Interstate highways.

Table 61. Fleet Sizes of Small Carriers (10 or Fewer Vehicles Operated) Involved in CUT Fatal Crashes in North Carolina on all Road Types, by Carrier Domicile, 2005 – 2009

| Fleet Size (Number of Vehicles Operated) | NC-Domiciled Small Carriers | Non-NC-Domiciled Small Carriers |
|--|-----------------------------|---------------------------------|
| 1 | 25 (30%) | 11 (37%) |
| 2 – 5 | 41 (50%) | 8 (26%) |
| 6 – 10 | 16 (20%) | 11 (37%) |
| Total | 82 (100%) | 30 (100%) |

Considering non-North Carolina-domiciled carriers, only 16% were small fleets with only 6% of these being single-truck operations (Table 28 compared to Table 62). The fleet size distribution among small carriers involved in CUT fatal crashes in North Carolina is shown in Figure 43.

Table 62. Fleet Sizes of Small Carriers (10 or Fewer Vehicles Operated) Involved in CUT Fatal Crashes in North Carolina by Carrier Domicile and Road Type, 2005 – 2009

| Fleet Size (Number of Vehicles Operated) | Crash Occurred on Interstate Highway | | | Crash Occurred on Non-Interstate Highway | | |
|---|---------------------------------------|---|-----------|--|---|-----------|
| | NC- Domiciled Small Carriers | Non-NC- Domiciled Small Carriers | Total | NC- Domiciled Small Carriers | Non-NC- Domiciled Small Carriers | Total |
| 1 | 5 (56%) | 3 (33%) | 8 (44%) | 20 (28%) | 8 (38%) | 28 (30%) |
| 2 – 5 | 3 (33%) | 4 (44%) | 7 (39%) | 38 (51%) | 4 (19%) | 42 (45%) |
| 6 – 10 | 1 (11%) | 2 (22%) | 3 (17%) | 15 (21%) | 9 (43%) | 24 (25%) |
| Total | 9 (100%) | 9 (100%) | 18 (100%) | 73 (100%) | 21 (100%) | 94 (100%) |

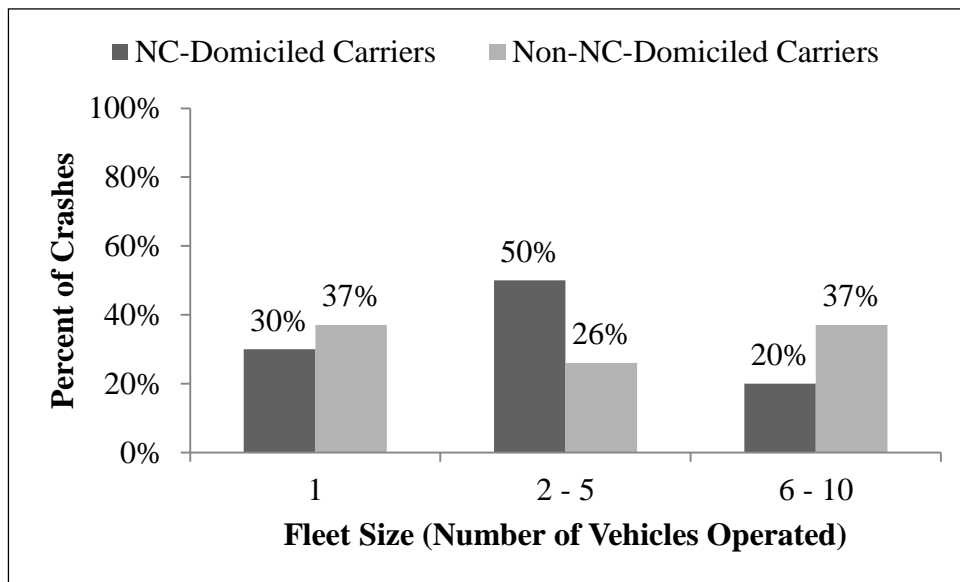


Figure 43. Fleet sizes of small carriers (10 or fewer vehicles operated) involved in CUT fatal crashes in North Carolina on all road types, by carrier domicile, 2005 – 2009.

Virginia Small Carrier Fleet Size Summary

Also, as noted (Table 29) and unlike North Carolina, the majority (62%) of all fleets involved in CUT fatal crashes in Virginia were non-Virginia-domiciled carriers. Similar to North Carolina, among all non-Virginia-domiciled carriers, only 23% were small carriers while only 8% were single-truck operations (Table 29 compared to Table 63).

Looking at all Virginia-domiciled carriers, and again similar to North Carolina, 45% of all CUT fatal crashes that involved Virginia-domiciled carriers were small fleets, while 16% were single-truck operations. (Table 30 compared to Table 64).

Similar to North Carolina, there was an essentially even distribution of fleet sizes among small carriers involved in CUT fatal crashes in Virginia (Figure 44).

Table 63. Fleet Sizes of Small Carriers (10 or Fewer Vehicles Operated) Involved in CUT Fatal Crashes in Virginia on all Road Types, by Carrier Domicile, 2005 – 2009

| Fleet Size (Number of Vehicles Operated) | VA-Domiciled Small Carriers | Non-VA-Domiciled Small Carriers |
|--|-----------------------------|---------------------------------|
| 1 | 12 (35%) | 11 (32%) |
| 2 – 5 | 15 (44%) | 14 (41%) |
| 6 – 10 | 7 (21%) | 9 (26%) |
| Total | 34 (100%) | 34 (100%) |

Table 64. Fleet Sizes of Small Carriers (10 or Fewer Vehicles Operated) Involved in CUT Fatal Crashes in Virginia by Carrier Domicile and Road Type, 2005 – 2009

| Fleet Size (Number of Vehicles Operated) | Crash Occurred on Interstate Highway | | | Crash Occurred on Non-Interstate Highway | | |
|--|--------------------------------------|---------------------------------|-----------|--|---------------------------------|-----------|
| | VA-Domiciled Small Carriers | Non-VA-Domiciled Small Carriers | Total | VA-Domiciled Small Carriers | Non-VA-Domiciled Small Carriers | Total |
| 1 | 0 (0%) | 8 (44%) | 8 (32%) | 12 (44%) | 3 (19%) | 15 (35%) |
| 2 – 5 | 6 (86%) | 7 (39%) | 13 (52%) | 9 (33%) | 7 (44%) | 16 (37%) |
| 6 – 10 | 1 (14%) | 3 (17%) | 4 (16%) | 6 (22%) | 6 (38%) | 12 (28%) |
| Total | 7 (100%) | 18 (100%) | 25 (100%) | 27 (100%) | 16 (100%) | 43 (100%) |

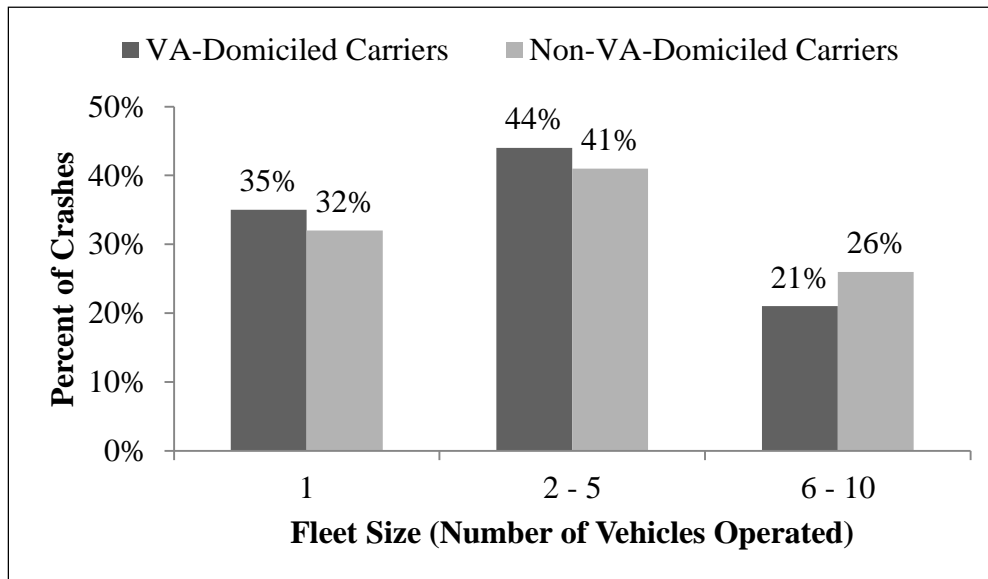


Figure 44. Fleet sizes of small carriers (10 or fewer vehicles operated) involved in CUT fatal crashes in Virginia on all road types, by carrier domicile, 2005 – 2009.

Distance from Small Carriers’ Business Location to Crash Site for Small Carriers Involved in CUT Fatal Crashes

North Carolina Small Carrier Distance from Business Location Summary

The vast majority (86%) of CUT fatal crashes in which North Carolina-domiciled small carriers were involved occurred within 50 miles of their business location (Table 65). This figure was even higher (88%) when North Carolina-domiciled small carriers were involved in CUT fatal crashes on non-Interstate highways (Table 66). On the other hand, crashes involving non-North

Carolina-domiciled small carriers were evenly distributed among nearby and farther away distances between crash sites and the carriers' place of business (Figure 45).

Table 65. Distance from Carriers' Business Location to Crash Site for Small Carriers (10 or Fewer Vehicles Operated) Involved in CUT Fatal Crashes in North Carolina on all Road Types, by Carrier Domicile, 2005 – 2009

| Distance From Business Location to Crash Site (Miles) | NC-Domiciled Small Carriers | Non-NC-Domiciled Small Carriers |
|---|-----------------------------|---------------------------------|
| 1-50 | 71 (86%) | 4 (11%) |
| 51-100 | 5 (6%) | 5 (15%) |
| 101-250 | 7 (8%) | 8 (23%) |
| 251-500 | 0 (0%) | 6 (18%) |
| 501-750 | 0 (0%) | 6 (18%) |
| >750 | 0 (0%) | 5 (15%) |
| Total | 82 (100%) | 30 (100%) |
| Median | 25 | 236 |

Table 66. Distance from Carriers' Business Location to Crash Site for Small Carriers (10 or Fewer Vehicles Operated) Involved in CUT Fatal Crashes in North Carolina by Carrier Domicile and Road Type, 2005 – 2009

| Distance From Business Location to Crash Site (Miles) | Crash Occurred On Interstate Highway | | | Crash Occurred on Non-Interstate Highway | | |
|---|--------------------------------------|---------------------------------|-----------|--|---------------------------------|-----------|
| | NC-Domiciled Small Carriers | Non-NC-Domiciled Small Carriers | Total | NC-Domiciled Small Carriers | Non-NC-Domiciled Small Carriers | Total |
| 1-50 | 6 (67%) | 0 (0%) | 6 (33%) | 64 (88%) | 4 (19%) | 68 (73%) |
| 51-100 | 1 (11%) | 2 (22%) | 3 (17%) | 4 (5%) | 3 (14%) | 7 (7%) |
| 101-250 | 2 (22%) | 1 (11%) | 3 (17%) | 5 (7%) | 6 (29%) | 11 (12%) |
| 251-500 | 0 (0%) | 1 (11%) | 1 (5%) | 0 (0%) | 3 (14%) | 3 (3%) |
| 501-750 | 0 (0%) | 2 (22%) | 3 (17%) | 0 (0%) | 3 (14%) | 3 (3%) |
| >750 | 0 (0%) | 3 (33%) | 2 (11%) | 0 (0%) | 2 (10%) | 2 (2%) |
| Total | 9 (100%) | 9 (100%) | 18 (100%) | 73 (100%) | 21 (100%) | 94 (100%) |
| Median | 46 | 561 | 100 | 24 | 137 | 29 |

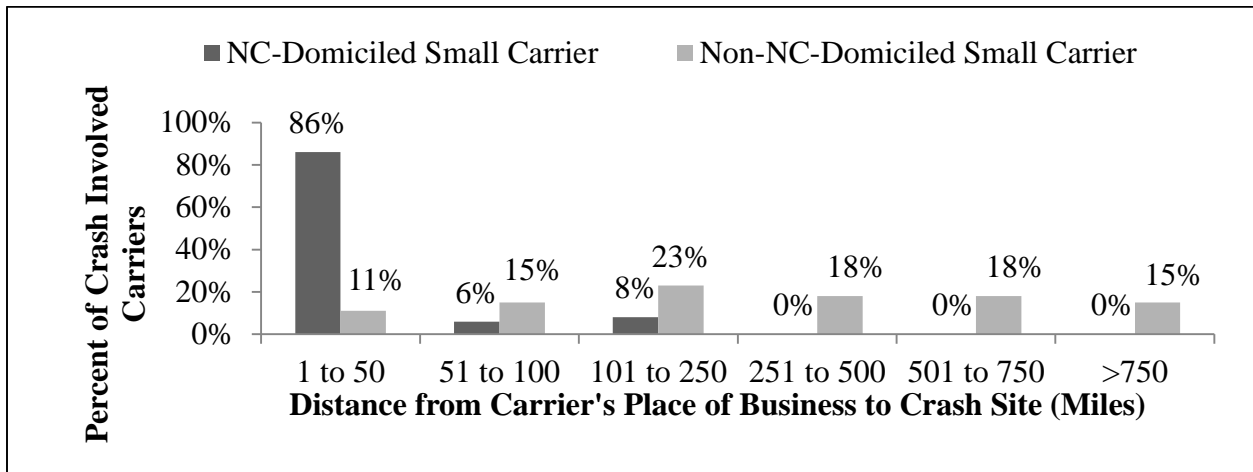


Figure 45. Distance from carriers’ business location to crash site for small carriers (10 or fewer vehicles operated) involved in CUT fatal crashes in North Carolina on all road types, by carrier domicile, 2005 – 2009.

Virginia Small Carrier Distance from Business Location Summary

Compared to North Carolina, the distances between the carrier’s business location and the crash site for CUT fatal-crash-involved Virginia-domiciled small carriers were somewhat farther and more widely dispersed, but still within 250 miles or less with a median of 52 miles (Table 67 and Table 68). As in North Carolina, the distances for crashes involving non-Virginia-domiciled small carriers were more evenly distributed than the distances for Virginia-domiciled carriers (Figure 46).

Table 67. Distance from Carriers’ Business Location to Crash Site for Small Carriers (10 or Fewer Vehicles Operated) Involved in CUT Fatal Crashes in Virginia on all Road Types, by Carrier Domicile, 2005 – 2009

| Distance From Business Location to Crash Site (Miles) | VA-Domiciled Small Carriers | Non-VA-Domiciled Small Carriers |
|---|-----------------------------|---------------------------------|
| 1-50 | 17 (50%) | 2 (6%) |
| 51-100 | 7 (21%) | 8 (24%) |
| 101-250 | 9 (26%) | 5 (15%) |
| 251-500 | 1 (3%) | 7 (21%) |
| 501-750 | 0 (0%) | 3 (9%) |
| >750 | 0 (0%) | 9 (26%) |
| Total | 34 (100%) | 34 (100%) |
| Median | 52 | 267 |

Table 68. Distance from Carriers' Business Location to Crash Site for Small Carriers (10 or Fewer Vehicles Operated) Involved in CUT Fatal Crashes in Virginia by Carrier Domicile and Road Type, 2005 – 2009

| Distance From Business Location to Crash Site (Miles) | Crash Occurred On Interstate Highway | | | Crash Occurred on Non-Interstate Highway | | |
|---|--------------------------------------|----------------------------------|-----------|--|----------------------------------|-----------|
| | VA-Domiciled Small Carriers | Non- VA-Domiciled Small Carriers | Total | VA-Domiciled Small Carriers | Non- VA-Domiciled Small Carriers | Total |
| 1-50 | 2 (29%) | 1 (6%) | 3 (12%) | 15 (56%) | 1 (6%) | 16 (37%) |
| 51-100 | 1 (14%) | 2 (11%) | 3 (12%) | 6 (22%) | 6 (38%) | 12 (28%) |
| 101-250 | 3 (43%) | 1 (6%) | 4 (16%) | 6 (22%) | 4 (25%) | 10 (23%) |
| 251-500 | 1 (14%) | 3 (17%) | 4 (16%) | 0 (0%) | 4 (25%) | 4 (9%) |
| 501-750 | 0 (0%) | 3 (17%) | 3 (12%) | 0 (0%) | 0 (0%) | 0 (0%) |
| >750 | 0 (0%) | 8 (44%) | 8 (32%) | 0 (0%) | 1 (6%) | 1 (2%) |
| Total | 7 (100%) | 18 (100%) | 25 (100%) | 27 (100%) | 16 (100%) | 43 (100%) |
| Median | 125 | 580 | 278 | 46 | 156 | 62 |

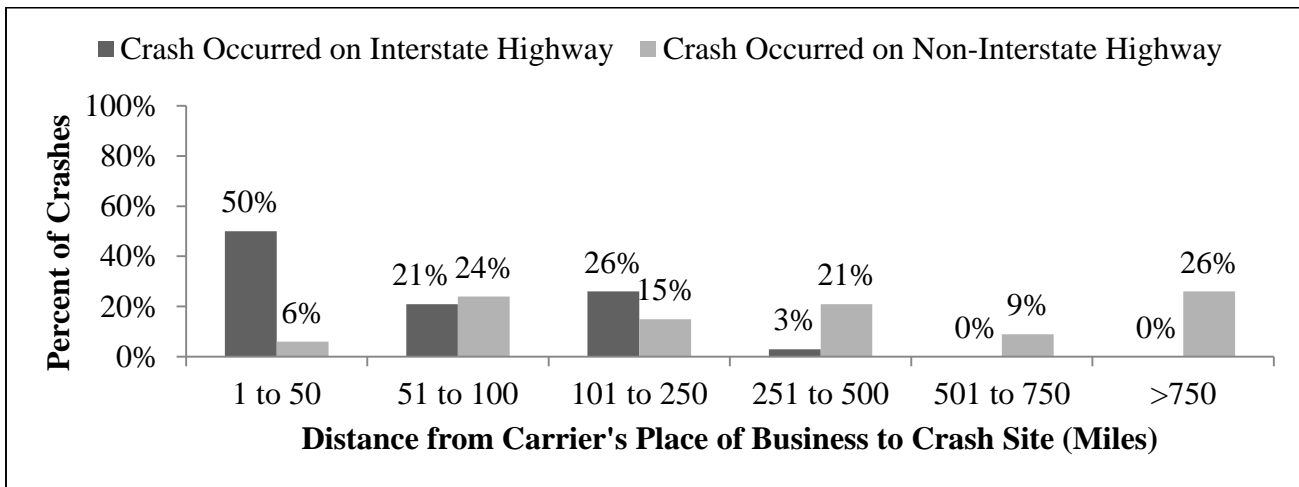


Figure 46. Distance from carriers' business location to crash site for small carriers (10 or fewer vehicles operated) involved in CUT fatal crashes in Virginia on all road types, by carrier domicile, 2005 – 2009.

Age of Small Carriers' CUTs Involved in Fatal Crashes

North Carolina Small Carrier CUT Age Summary

There was a significant amount of missing data for this variable. Nevertheless, analysis of the available data shows that the mean age of CUT vehicles operated by both North Carolina-domiciled and non-North Carolina-domiciled small carriers involved in CUT fatal crashes in North Carolina was two years older than the mean age for all size fleets (Table 35 compared to Table 69; Table 70, and Figure 47). Additionally, North Carolina-domiciled carriers operated appreciably more trucks that were more than 10 years old than did non-North Carolina-domiciled carriers.

Table 69. Age of Vehicles Operated by Small Carriers (10 or Fewer Vehicles Operated) Involved in CUT Fatal Crashes in North Carolina on all Road Types, by Carrier Domicile, 2005 – 2009

| Vehicle Age at Time of Crash (Years Old) | NC-Domiciled Small Carrier | Non-NC-Domiciled Small Carrier |
|--|----------------------------|--------------------------------|
| <1 | 1 (3%) | 1 (10%) |
| 1-2 | 0 (0%) | 0 (0%) |
| 3-4 | 5 (15%) | 2 (20%) |
| 5-6 | 7 (21%) | 3 (30%) |
| 7-10 | 11 (32%) | 3 (30%) |
| >10 | 10 (29%) | 1 (10%) |
| Total | 34 (100%) | 10 (100%) |
| Mean | 9 | 7 |
| Missing Data | 48 | 20 |

Table 70. Age of Vehicles Operated by Small Carriers (10 or Fewer Vehicles Operated) Involved in CUT Fatal Crashes in North Carolina by Carrier Domicile and Road Type, 2005 – 2009

| Vehicle Age at Time of Crash (Years Old) | Crash Occurred On Interstate Highway | | | Crash Occurred on Non-Interstate Highway | | |
|--|--------------------------------------|---------------------------------|-----------|--|---------------------------------|-----------|
| | NC-Domiciled Small Carriers | Non-NC-Domiciled Small Carriers | Total | NC-Domiciled Small Carriers | Non-NC-Domiciled Small Carriers | Total |
| <1 | 0 (0%) | 1 (33%) | 1 (13%) | 1 (3%) | 0 (0%) | 1 (3%) |
| 1-2 | 4 (15%) | 2 (13%) | 6 (14%) | 0 (0%) | 0 (0%) | 0 (0%) |
| 3-4 | 4 (15%) | 2 (13%) | 6 (14%) | 4 (14%) | 2 (29%) | 6 (17%) |
| 5-6 | 6 (22%) | 1 (6%) | 7 (16%) | 6 (21%) | 2 (29%) | 8 (22%) |
| 7-10 | 4 (15%) | 7 (44%) | 11 (26%) | 11 (38%) | 2 (29%) | 13 (36%) |
| >10 | 9 (33%) | 4 (25%) | 13 (30%) | 7 (24%) | 1 (14%) | 8 (22%) |
| Total | 27 (100%) | 16 (100%) | 43 (100%) | 29 (100%) | 7 (100%) | 36 (100%) |
| Mean | | | | | | |
| Missing Data | 4 | 6 | 10 | 44 | 14 | 58 |

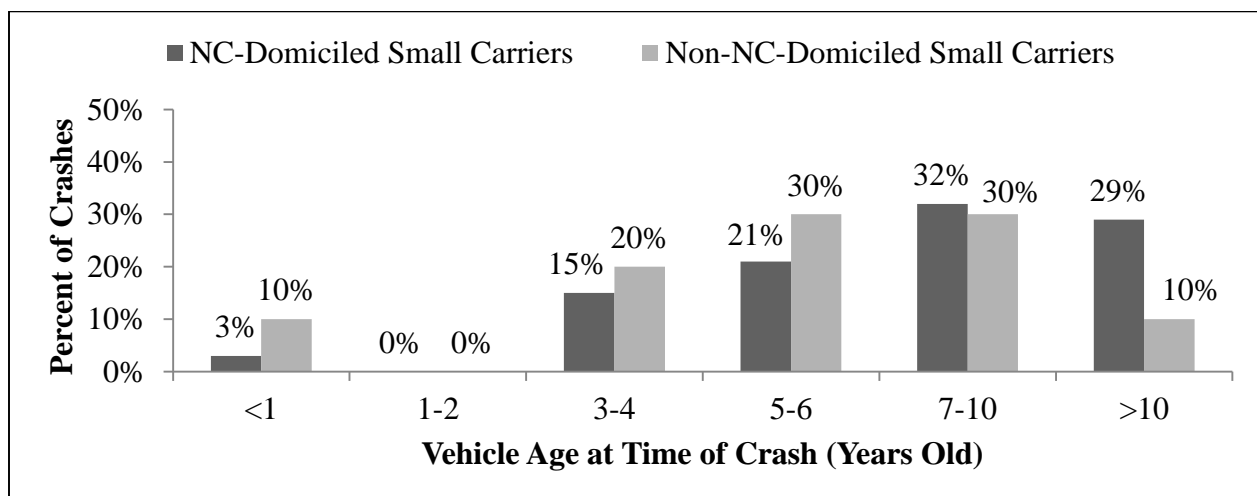


Figure 47. Age of vehicles operated by small carriers (10 or fewer vehicles operated) involved in CUT fatal crashes in North Carolina on all road types, by carrier domicile, 2005 – 2009.

Virginia Small Carrier CUT Age Summary

There were differences between Virginia-domiciled and non-Virginia-domiciled small carriers at the far end (older vehicles) of the CUT age distribution pattern. As was the case in North Carolina, the median age of fatal-crash-involved CUTs operated by small carriers in Virginia was 2-3 years older than that found for carriers of all fleet sizes (Table 37 compared to Table 71; Table 72 and Figure 48). Both Virginia-domiciled and non-Virginia-domiciled small carriers operated vehicles at the older end of the age distribution pattern but, as in North Carolina, Virginia-domiciled small carriers operated more vehicles that were older than 10 years than did non-Virginia-domiciled carriers.

Table 71. Age of Vehicles Operated by Small Carriers (10 or Fewer Vehicles Operated) Involved in CUT Fatal Crashes in Virginia on all Road Types, by Carrier Domicile, 2005 – 2009

| Vehicle Age at Time of Crash (Years Old) | VA-Domiciled Small Carrier | Non-VA-Domiciled Small Carrier |
|--|----------------------------|--------------------------------|
| <1 | 1 (3%) | 0 (0%) |
| 1-2 | 3 (10%) | 3 (9%) |
| 3-4 | 4 (13%) | 4 (12%) |
| 5-6 | 5 (16%) | 4 (12%) |
| 7-10 | 6 (19%) | 18 (54%) |
| >10 | 12 (39%) | 5 (15%) |
| Total | 31 (100%) | 34 (100%) |
| Mean | 9 | 8 |
| Missing Data | 3 | 0 |

Table 72. Age of Vehicles Operated by Small Carriers (10 or Fewer Vehicles Operated) Involved in CUT Fatal Crashes in Virginia by Carrier Domicile and Road Type, 2005 – 2009

| Vehicle Age at Time of Crash (Years Old) | Crash Occurred On Interstate Highway | | | Crash Occurred on Non-Interstate Highway | | |
|--|--------------------------------------|---------------------------------|-----------|--|---------------------------------|-----------|
| | VA-Domiciled Small Carriers | Non-VA-Domiciled Small Carriers | Total | VA-Domiciled Small Carriers | Non-VA-Domiciled Small Carriers | Total |
| <1 | 0 (0%) | 0 (0%) | 0 (0%) | 1 (4%) | 0 (0%) | 1 (2%) |
| 1-2 | 0 (0%) | 1 (6%) | 1 (4%) | 3 (12%) | 2 (13%) | 5 (12%) |
| 3-4 | 0 (0%) | 2 (11%) | 2 (8%) | 4 (16%) | 2 (13%) | 6 (15%) |
| 5-6 | 0 (0%) | 3 (17%) | 3 (13%) | 5 (20%) | 1 (6%) | 6 (15%) |
| 7-10 | 2 (33%) | 11 (61%) | 13 (54%) | 4 (16%) | 7 (44%) | 11 (27%) |
| >10 | 4 (67%) | 1 (6%) | 5 (21%) | 8 (32%) | 4 (25%) | 12 (29%) |
| Total | 6 (100%) | 18 (100%) | 24 (100%) | 25 (100%) | 16 (100%) | 41 (100%) |
| Mean | 12 | 7 | 8 | 8 | 9 | 8 |
| Missing Data | 1 | 0 | 1 | 2 | 0 | 2 |

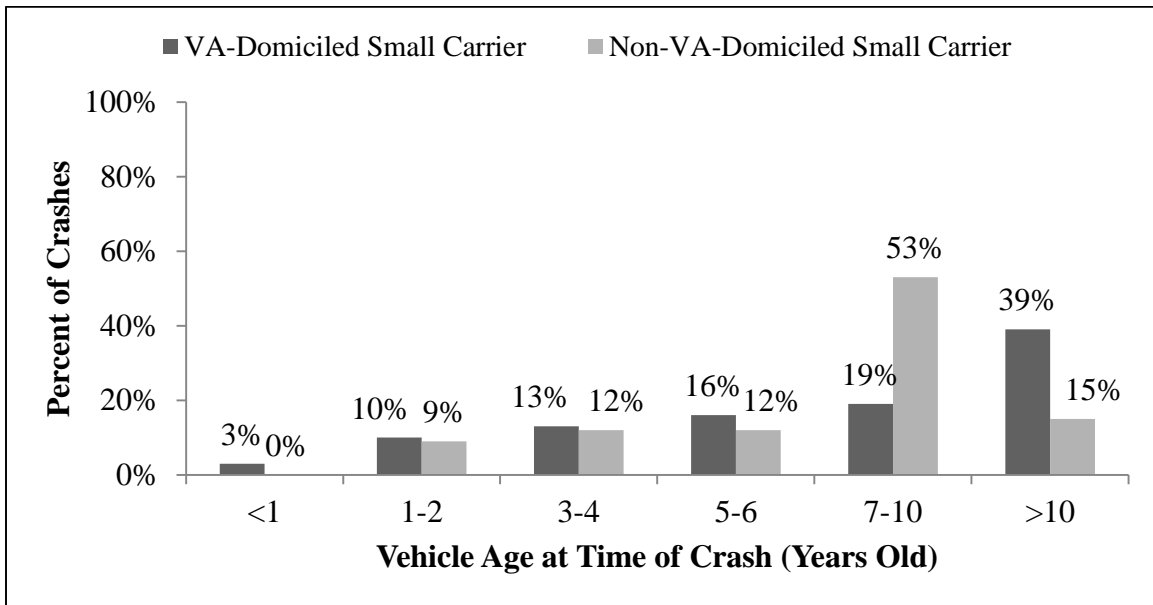


Figure 48. Age of vehicles operated by small carriers (10 or fewer vehicles operated) involved in CUT fatal crashes in Virginia on all road types, by carrier domicile, 2005 – 2009.

Type of Commodity Hauled by Small Carriers Involved in CUT Fatal Crashes

North Carolina Small Carrier Commodity Hauled Summary

The distribution pattern of the types of commodities hauled by small carriers involved in CUT fatal crashes in North Carolina, both North Carolina-domiciled and non-North Carolina-domiciled, was not appreciably different than that of all fleet size CUT fatal-crash-involved carriers (Table 73, Table 74, and Figure 49).

Table 73. Type of Commodity Hauled by Small Carriers (10 or Fewer Vehicles Operated) Involved in CUT Fatal Crashes in North Carolina on all Road Types, by Carrier Domicile, 2005 - 2009

| Commodity Hauled | NC-Domiciled Small Carriers | Non-NC-Domiciled Small Carriers |
|---------------------|-----------------------------|---------------------------------|
| General Freight | 19 (23%) | 16 (53%) |
| Logs | 19 (23%) | 3 (10%) |
| Gas/Liquids | 3 (4%) | 1 (3%) |
| Agriculture-related | 10 (12%) | 2 (7%) |
| All Other | 31 (38%) | 8 (27%) |
| Total | 82 (100%) | 30 (100%) |

Table 74. Type of Commodity Hauled by Small Carriers (10 or Fewer Vehicles Operated) Involved in CUT Fatal Crashes in North Carolina by Carrier Domicile and Road Type, 2005 – 2009

| Commodity Hauled | Crash Occurred On Interstate Highway | | | Crash Occurred on Non-Interstate Highway | | |
|---------------------|--------------------------------------|---------------------------------|-----------|--|---------------------------------|-----------|
| | NC-Domiciled Small Carriers | Non-NC-Domiciled Small Carriers | Total | NC-Domiciled Small Carriers | Non-NC-Domiciled Small Carriers | Total |
| General Freight | 4 (44%) | 6 (67%) | 10 (56%) | 15 (21%) | 10 (48%) | 25 (27%) |
| Logs | 0 (0%) | 0 (0%) | 0 (0%) | 19 (26%) | 3 (14%) | 22 (23%) |
| Gas/Liquids | 0 (0%) | 0 (0%) | 0 (0%) | 3 (4%) | 1 (5%) | 4 (4%) |
| Agriculture-related | 1 (12%) | 1 (11%) | 2 (11%) | 9 (12%) | 1 (5%) | 10 (11%) |
| All Other | 4 (44%) | 2 (22%) | 6 (33%) | 27 (37%) | 6 (28%) | 33 (35%) |
| Total | 9 (100%) | 9 (100%) | 18 (100%) | 73 (100%) | 21 (100%) | 94 (100%) |

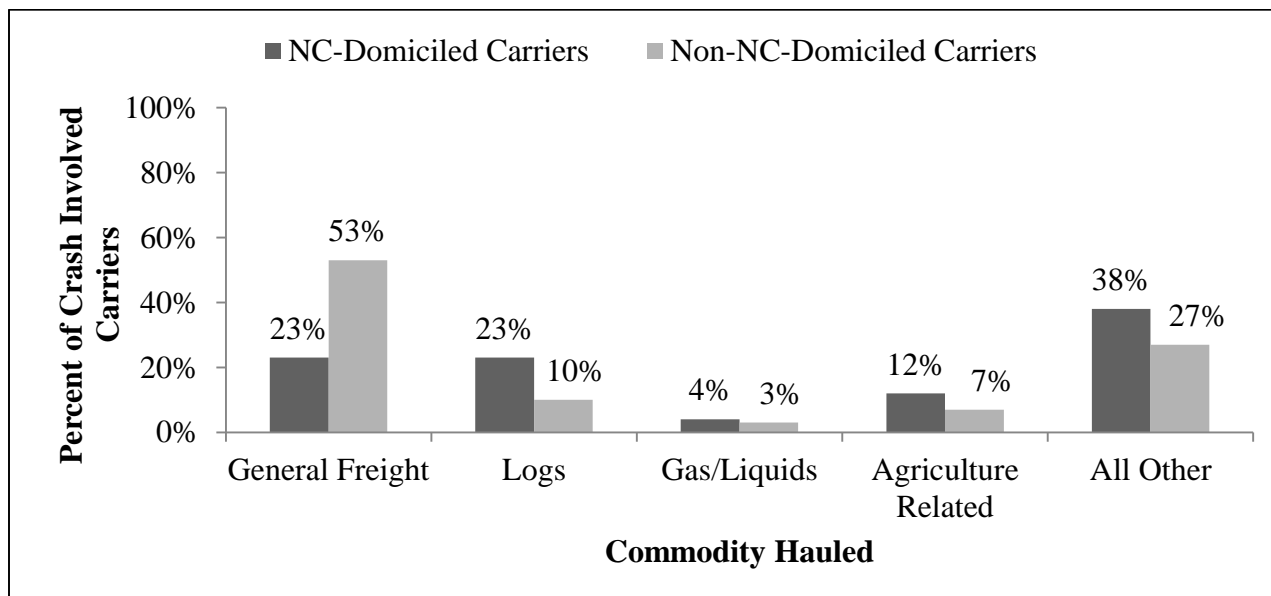


Figure 49. Type of commodity hauled by small carriers (10 or fewer vehicles operated) involved in CUT fatal crashes in North Carolina on all road types, by carrier domicile, 2005 – 2009.

Virginia Small Carrier Commodity Hauled Summary

As with North Carolina, the distribution pattern of the types of commodities hauled by small carriers involved in CUT fatal crashes in Virginia was not appreciably different than that of all fleet size CUT fatal-crash-involved carriers (Table 75, Table 76, and Figure 50).

Table 75. Type of Commodity Hauled by Small Carriers (10 or Fewer Vehicles Operated) Involved in CUT Fatal Crashes in Virginia on all Road Types, by Carrier Domicile, 2005 – 2009

| Commodity Hauled | VA-Domiciled Small Carriers | Non-VA-Domiciled Small Carriers |
|---------------------|-----------------------------|---------------------------------|
| General Freight | 14 (44%) | 19 (58%) |
| Logs | 10 (31%) | 3 (9%) |
| Gas/Liquids | 0 (0%) | 0 (0%) |
| Agriculture-related | 3 (9%) | 0 (0%) |
| All Other | 5 (16%) | 11 (33%) |
| Total | 32 (100%) | 33 (100%) |
| Missing Data | 2 | 1 |

Table 76. Type of Commodity Hauled by Small Carriers (10 or Fewer Vehicles Operated) Involved in CUT Fatal Crashes in Virginia by Carrier Domicile and Road Type, 2005 – 2009

| Commodity Hauled | Crash Occurred On Interstate Highway | | | Crash Occurred on Non-Interstate Highway | | |
|---------------------|--------------------------------------|---------------------------------|-----------|--|---------------------------------|-----------|
| | VA-Domiciled Small Carriers | Non-VA-Domiciled Small Carriers | Total | VA-Domiciled Small Carriers | Non-VA-Domiciled Small Carriers | Total |
| General Freight | 3 (43%) | 13 (72%) | 16 (64%) | 11 (44%) | 6 (40%) | 17 (43%) |
| Logs | 2 (29%) | 1 (6%) | 3 (12%) | 8 (32%) | 2 (13%) | 10 (25%) |
| Gas/Liquids | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) |
| Agriculture-related | 0 (0%) | 0 (0%) | 0 (0%) | 3 (12%) | 0 (0%) | 3 (8%) |
| All Other | 2 (29%) | 4 (22%) | 6 (24%) | 3 (12%) | 7 (47%) | 10 (25%) |
| Total | 7 (100%) | 18 (100%) | 25 (100%) | 25 (100%) | 15 (100%) | 40 (100%) |
| Missing Data | 1 | 0 | 1 | 2 | 0 | 1 |

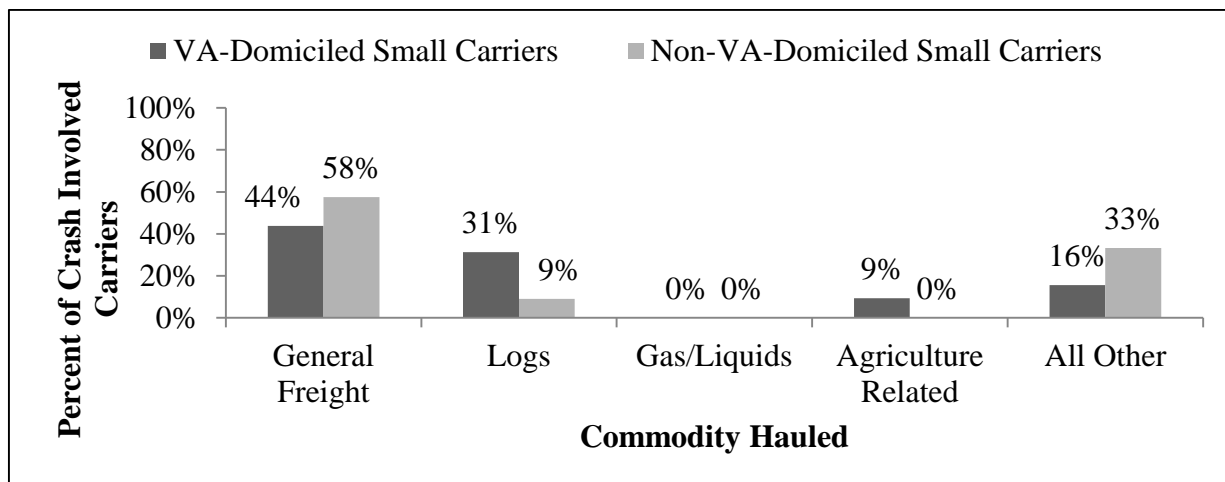


Figure 50. Type of commodity hauled by small carriers (10 or fewer vehicles operated) involved in CUT fatal crashes in Virginia on all road types, by carrier domicile, 2005 – 2009.

SUMMARY OF SMALL CARRIER DRIVER-RELATED CHARACTERISTICS FOR CUT FATAL CRASHES

This section of the report describes the most relevant attributes of the truck drivers that were employed by small motor carriers that were involved in CUT fatal crashes in North Carolina and Virginia from the years 2005 – 2009.

Small Carrier Drivers' State of Licensure Summary

North Carolina Drivers' State of Licensure Summary

Drivers employed by North Carolina-domiciled small carriers that were involved in CUT fatal crashes in North Carolina were overwhelmingly (96%) licensed in the state of North Carolina. In the case of non-North Carolina-domiciled small carriers, the majority (82%) were licensed in North Carolina or the neighboring states of Virginia and South Carolina (Table 77, Table 78, and Figure 51).

Table 77. State of Licensure for Drivers Employed by Small Carriers (10 or Fewer Vehicles Operated) Involved in CUT Fatal Crashes in North Carolina on all Road Types, by Carrier State of Domicile, 2005 – 2009

| Driver's State Of Licensure | NC-Domiciled Small Carriers | Non-NC-Domiciled Small Carriers |
|-----------------------------|-----------------------------|---------------------------------|
| North Carolina | 78 (96%) | 16 (57%) |
| Virginia | 0 (0%) | 4 (14%) |
| Tennessee | 0 (0%) | 0 (0%) |
| Georgia | 0 (0%) | 0 (0%) |
| South Carolina | 0 (0%) | 3 (11%) |
| Other | 3 (4%) | 5 (18%) |
| Total | 81 (100%) | 28 (100%) |
| Missing Data | 1 | 2 |

Table 78. State of Licensure for Drivers Employed by Small Carriers (10 or Fewer Vehicles Operated) Involved in CUT Fatal Crashes in North Carolina by Road Type and Carrier State of Domicile, 2005 – 2009

| Driver's State of Licensure | NC Interstate Highway Crashes | | | NC Non-Interstate Highway Crashes | | |
|-----------------------------|-------------------------------|---------------------------------|-----------|-----------------------------------|---------------------------------|-----------|
| | NC-Domiciled Small Carriers | Non-NC-Domiciled Small Carriers | Total | NC-Domiciled Small Carriers | Non-NC-Domiciled Small Carriers | Total |
| North Carolina | 7 (78%) | 6 (74%) | 13 (76%) | 71 (99%) | 10 (50%) | 81 (88%) |
| Virginia | 0 (0%) | 1 (13%) | 1 (6%) | 0 (0%) | 3 (15%) | 3 (3%) |
| Tennessee | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) |
| Georgia | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) |
| South Carolina | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | 3 (15%) | 3 (3%) |
| Other | 2 (22%) | 1 (13%) | 3 (18%) | 1 (1%) | 4 (20%) | 5 (6%) |
| Total | 9 (100%) | 8 (100%) | 17 (100%) | 72 (100%) | 20 (100%) | 92 (100%) |
| Missing Data | 0 | 1 | 0 | 1 | 1 | 2 |

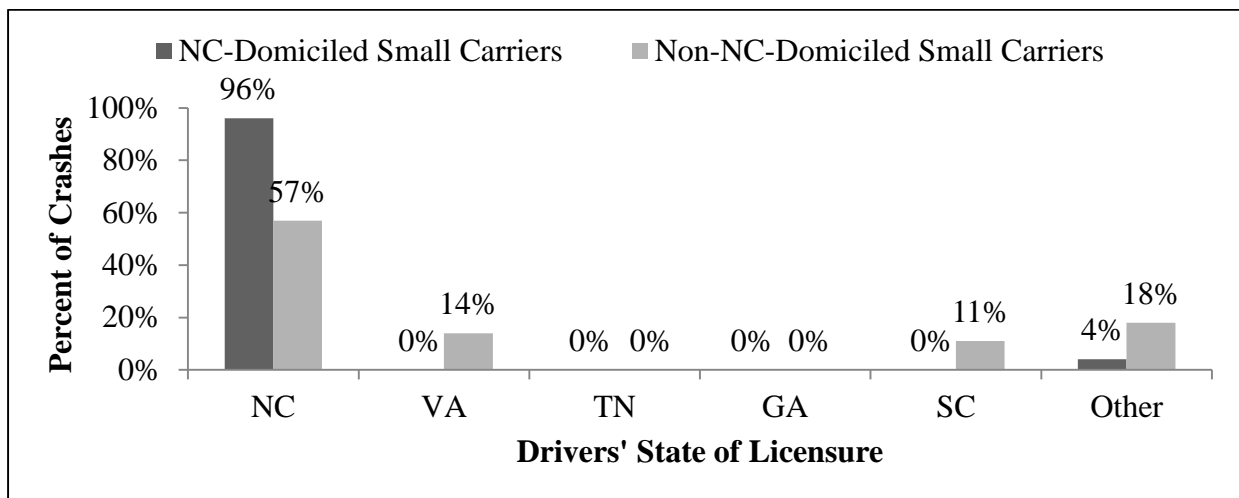


Figure 51. State of licensure for drivers employed by small carriers (10 or fewer vehicles operated) involved in CUT fatal crashes in North Carolina on all road types, by carrier state of domicile, 2005 – 2009.

Virginia Small Carrier Drivers' State of Licensure Summary

As in North Carolina, drivers employed by Virginia-domiciled small carriers that were involved in CUT fatal crashes in Virginia were mostly (91%) licensed in the state of Virginia. Also similar to North Carolina, 74% of the drivers employed by non-Virginia-domiciled small carriers that were involved in CUT fatal crashes in Virginia were licensed either in Virginia or in the states immediately adjacent to Virginia (Table 79, Table 80, and Figure 52).

Table 79. State of Licensure for Drivers Employed by Small Carriers (10 or Fewer Vehicles Operated) Involved in CUT Fatal Crashes in Virginia on all Road Types, by Carrier State of Domicile, 2005 – 2009

| Driver's State Of Licensure | VA-Domiciled Small Carriers | Non-VA-Domiciled Small Carriers |
|-----------------------------|-----------------------------|---------------------------------|
| Virginia | 31 (91%) | 3 (9%) |
| North Carolina | 1 (3%) | 7 (21%) |
| District of Columbia | 0 (0%) | 0 (0%) |
| Tennessee | 1 (3%) | 1 (3%) |
| Maryland | 0 (0%) | 5 (15%) |
| Pennsylvania | 0 (0%) | 2 (6%) |
| West Virginia | 1 (3%) | 1 (3%) |
| Kentucky | 0 (0%) | 1 (3%) |
| Other | 0 (0%) | 12 (36%) |
| Total | 34 (100%) | 33 (100%) |
| Missing Data | 0 | 1 |

Table 80. State of Licensure for Drivers Employed by Small Carriers (10 or Fewer Vehicles Operated) Involved in CUT Fatal Crashes in Virginia by Road Type and Carrier State of Domicile, 2005 – 2009

| Driver's State of Licensure | VA Interstate Highway Crashes | | | VA Non-Interstate Highway Crashes | | |
|-----------------------------|-------------------------------|---------------------------------|-----------|-----------------------------------|---------------------------------|-----------|
| | VA-Domiciled Small Carriers | Non-VA-Domiciled Small Carriers | Total | VA-Domiciled Small Carriers | Non-VA-Domiciled Small Carriers | Total |
| Virginia | 6 (86%) | 1 (6%) | 7 (28%) | 25 (93%) | 2 (13%) | 27 (64%) |
| North Carolina | 0 (0%) | 4 (22%) | 4 (16%) | 1 (4%) | 3 (20%) | 4 (10%) |
| District of Columbia | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) |
| Tennessee | 1 (14%) | 1 (6%) | 2 (8%) | 0 (0%) | 0 (0%) | 0 (0%) |
| Maryland | 0 (13%) | 1 (6%) | 1 (4%) | 0 (0%) | 4 (27%) | 4 (10%) |
| Pennsylvania | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | 2 (13%) | 2 (5%) |
| West Virginia | 0 (0%) | 0 (0%) | 0 (0%) | 1 (4%) | 1 (7%) | 2 (5%) |
| Kentucky | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | 1 (7%) | 1 (2%) |
| Other | 0 (0%) | 11 (61%) | 11 (44%) | 0 (0%) | 2 (13%) | 2 (5%) |
| Total | 7 (100%) | 18 (100%) | 25 (100%) | 27 (100%) | 15 (100%) | 42 (100%) |
| Missing Data | 0 | 0 | 0 | 0 | 1 | 43 |

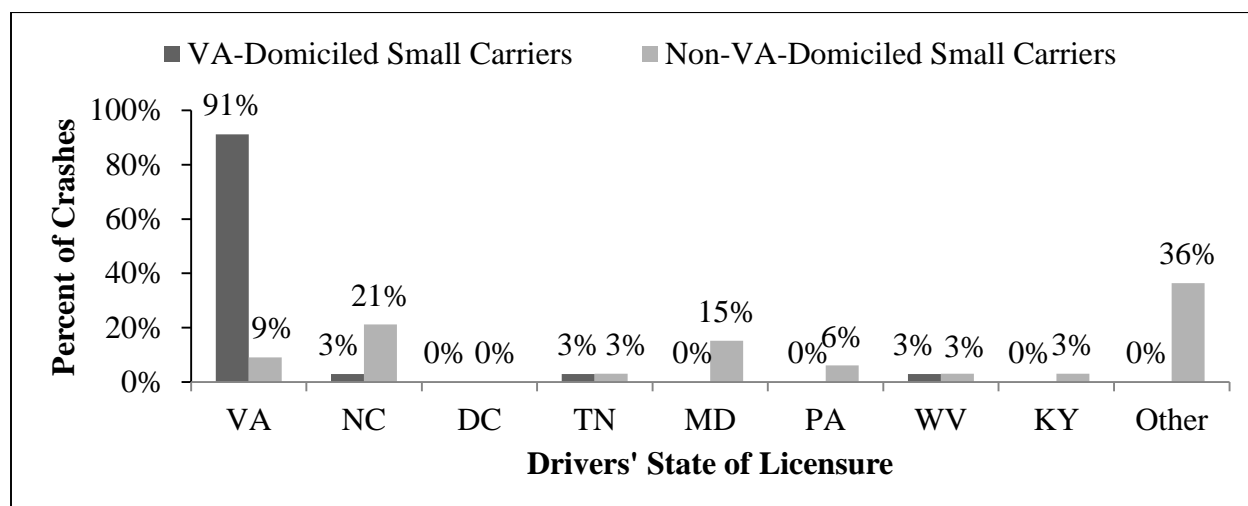


Figure 52. State of licensure for drivers employed by small carriers (10 or fewer vehicles operated) involved in CUT fatal crashes in Virginia on all road types, by carrier state of domicile, 2005 – 2009.

Small Carrier Drivers' Age Summary

North Carolina Small Carrier Drivers' Age Summary

The age distribution pattern of truck drivers employed by small carriers that were involved in CUT fatal crashes in North Carolina was not significantly different than the population of crash-involved drivers employed by fleets of all sizes (Table 81, Table 82, and Figure 53).

Table 81. Ages of Drivers Involved in CUT Fatal Crashes in North Carolina on all Road Types, by Small Carriers' (10 or Fewer Vehicles Operated) State of Domicile (2005 – 2009)

| Driver's Age | NC-Domiciled Small Carriers | Non-NC-Domiciled Small Carriers |
|--------------|-----------------------------|---------------------------------|
| 20 and Under | 0 (0%) | 0 (0%) |
| 21 to 25 | 1 (1%) | 0 (0%) |
| 26 to 34 | 8 (10%) | 5 (17%) |
| 35 to 44 | 32 (40%) | 5 (17%) |
| 45 to 54 | 16 (20%) | 8 (27%) |
| 55 to 64 | 20 (24%) | 8 (27%) |
| 65 and Over | 4 (5%) | 4 (12%) |
| Total | 81 (100%) | 30 (100%) |
| Mean | 47 | 49 |
| Missing Data | 1 | 0 |

Table 82. Ages of Drivers Involved in CUT Fatal Crashes in North Carolina by Road Type and Small Carriers' (10 or Fewer Vehicles Operated) State of Domicile (2005 – 2009)

| Driver's Age | Crash Occurred on Interstate Highway | | | Crash Occurred on Non-Interstate Highway | | |
|--------------|--------------------------------------|---------------------------------|-----------|--|---------------------------------|-----------|
| | NC-Domiciled Small Carriers | Non-NC-Domiciled Small Carriers | Total | NC-Domiciled Small Carriers | Non-NC-Domiciled Small Carriers | Total |
| 20 and Under | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) |
| 21 to 25 | 0 (0%) | 0 (0%) | 0 (0%) | 1 (1%) | 0 (0%) | 1 (1%) |
| 26 to 34 | 1 (11%) | 1 (11%) | 2 (11%) | 7 (10%) | 4 (19%) | 11 (12%) |
| 35 to 44 | 3 (33%) | 1 (11%) | 4 (22%) | 29 (40%) | 4 (19%) | 33 (35%) |
| 45 to 54 | 3 (33%) | 3 (33%) | 6 (33%) | 13 (18%) | 5 (24%) | 18 (19%) |
| 55 to 64 | 1 (11%) | 2 (22%) | 3 (17%) | 19 (26%) | 6 (29%) | 25 (25%) |
| 65 and Over | 1 (11%) | 2 (22%) | 3 (17%) | 3 (4%) | 2 (9%) | 5 (5%) |
| Total | 9 (100%) | 9 (100%) | 18 (100%) | 73 (100%) | 21 (100%) | 94 (100%) |
| Mean | 48 | 52 | 50 | 47 | 48 | 47 |
| Missing Data | 0 | 0 | 0 | 1 | 0 | 1 |

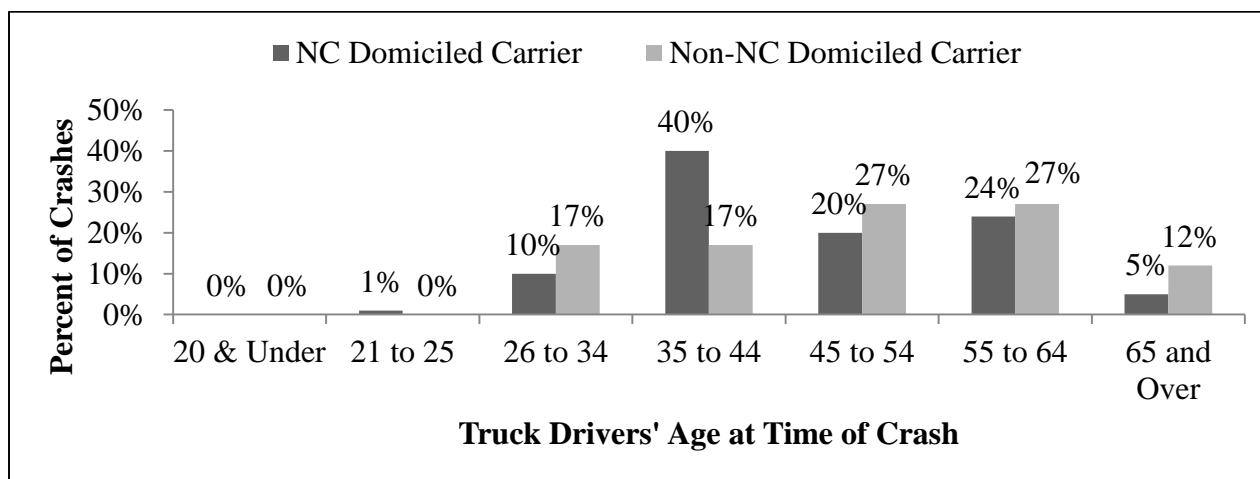


Figure 53. Ages of drivers involved in CUT fatal crashes in North Carolina on all road types, by small carriers' (10 or fewer vehicles operated) state of domicile (2005 – 2009).

Virginia Small Carrier Drivers' Age Summary

As in North Carolina, the age distribution pattern of the ages of truck drivers employed by small carriers that were involved in CUT fatal crashes in Virginia was not significantly different than the population of crash-involved drivers employed by fleets of all sizes (Table 83, Table 84, and Figure 54)

Table 83. Ages of Drivers Involved in CUT Fatal Crashes in Virginia on all Road Types, by Road Type and Carrier State of Domicile (2005-2009) for Small Carriers (10 or Fewer Vehicles Operated)

| Driver's Age | VA-Domiciled Small Carriers | Non-VA-Domiciled Small Carriers |
|--------------|-----------------------------|---------------------------------|
| 20 and Under | 0 (0%) | 0 (0%) |
| 21 to 25 | 0 (0%) | 1 (3%) |
| 26 to 34 | 7 (21%) | 5 (15%) |
| 35 to 44 | 4 (12%) | 8 (24%) |
| 45 to 54 | 8 (24%) | 16 (47%) |
| 55 to 64 | 11 (32%) | 1 (3%) |
| 65 and Over | 4 (12%) | 3 (9%) |
| Total | 34 (100%) | 34 (100%) |
| Mean | 50 | 45 |

Table 84. Ages of Drivers Involved in CUT Fatal Crashes in Virginia by Road Type and Carrier State of Domicile (2005-2009) for Small Carriers (10 or Fewer Vehicles Operated)

| Driver's Age | Crash Occurred on Interstate Highway | | | Crash Occurred on Non-Interstate Highway | | |
|--------------|--------------------------------------|---------------------------------|-----------|--|---------------------------------|-----------|
| | VA-Domiciled Small Carriers | Non-VA-Domiciled Small Carriers | Total | VA-Domiciled Small Carriers | Non-VA-Domiciled Small Carriers | Total |
| 20 and Under | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) |
| 21 to 25 | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | 1 (6%) | 6 (2%) |
| 26 to 34 | 1 (14%) | 4 (22%) | 5 (20%) | 6 (22%) | 1 (6%) | 7 (15%) |
| 35 to 44 | 1 (14%) | 6 (33%) | 7 (28%) | 3 (11%) | 2 (16%) | 5 (24%) |
| 45 to 54 | 1 (14%) | 7 (39%) | 8 (32%) | 7 (26%) | 9 (12%) | 16 (47%) |
| 55 to 64 | 3 (39%) | 0 (0%) | 3 (12%) | 8 (30%) | 1 (37%) | 9 (3%) |
| 65 and Over | 1 (14%) | 1 (6%) | 2 (8%) | 3 (11%) | 2 (21%) | 5 (9%) |
| Total | 7 (100%) | 18 (100%) | 25 (100%) | 27 (100%) | 16 (100%) | 43 (100%) |
| Mean | 52 | 46 | 12 | 49 | 48 | 48 |

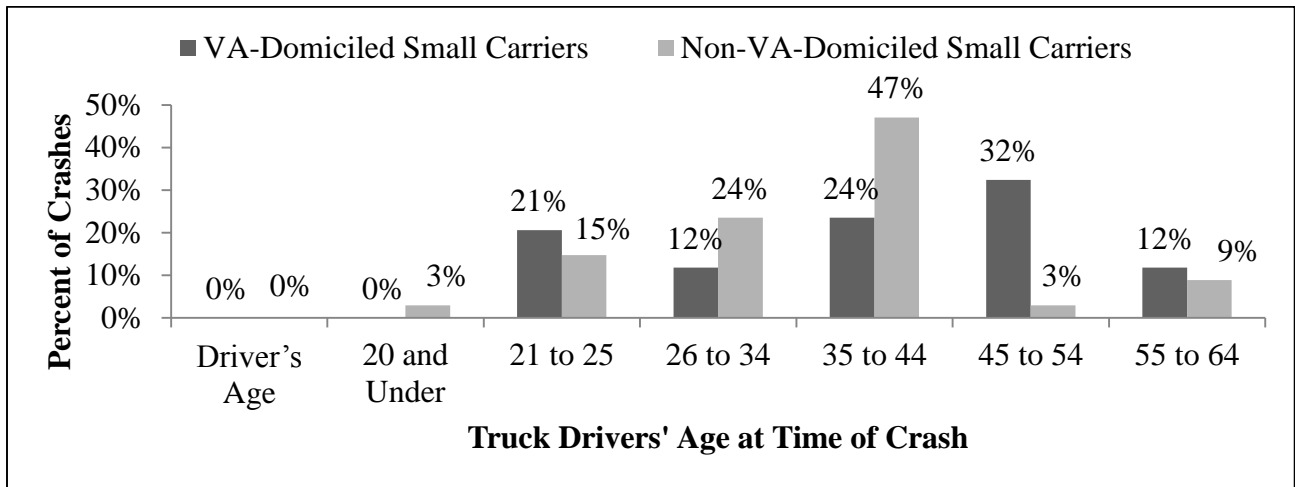


Figure 54. Ages of drivers involved in CUT fatal crashes in Virginia on all road types, by road type and carrier state of domicile (2005-2009) for small carriers (10 or fewer vehicles operated).

DISCUSSION

While there are many similarities between the findings in North Carolina and Virginia, there were some interesting crash pattern differences that are likely attributable to travel pattern differences in the two states among all vehicles as well as CUTs. In both states, more CUT fatal crashes occurred on non-Interstate highways than on Interstates, but Virginia had an appreciably higher proportion of CUT fatal crashes on Interstates as well as a higher proportion of involvements among non-Virginia-domiciled carriers than North Carolina experienced among non-North Carolina-domiciled carriers.

Travel from 2007-2009⁷ by all vehicles on Interstates in Virginia was not only higher in absolute number of miles traveled (72,139 million) compared to North Carolina (61,659 million), but also the proportion of travel by all vehicles that occurred on Interstates in Virginia was higher in Virginia (29%) as compared to same figure in North Carolina (20%). This puts light-duty vehicles and CUTs in potential conflicts with each other on Interstates 15% more in absolute terms in Virginia compared to North Carolina. On the other hand and conversely, CUTs in North Carolina traveled more than twice as many miles (8,631 million) on non-Interstate roads than did CUTs in Virginia (4,186 million) (Table 6). Sixty-five percent (65%) of all CUT travel in Virginia took place on Interstates, whereas the comparable figure in North Carolina was 51%. This amounts to higher absolute as well as proportional exposure to crash risks on non-Interstate highways for carriers operating in North Carolina than in Virginia and directly explains why Virginia experienced a higher proportion of CUT fatal crashes on Interstates than did North Carolina.

These data also suggest that Virginia may be more of a transit state than North Carolina, meaning that CUTs travel from states outside Virginia to destinations also outside Virginia, whereas more commerce occurs wholly within North Carolina. The I-81 and I-95 corridors through Virginia are known to have high volumes and proportions of CUT travel on them. Although the I-85, I-95, and I-40 corridors in North Carolina also experience high volumes of CUT travel, the manufacturing data in Table 5 and the fact that CUT travel is proportionally more extensive in Virginia than in North Carolina suggest transit travel. However, a more detailed analysis of the USDOT/Bureau of Transportation Statistics *Commodity Flow Survey* would be needed to fully confirm this point. Regardless, the most profound finding of the study is that very different carrier operations are associated with CUT fatal crashes on Interstate highways compared to those that occurred on non-Interstate highways.

Off the Interstates, the fleet size of the carriers was smaller, more of them tended to be domiciled in the state in which the crash occurred, more private and exempt carriers were involved, the involved trucks were somewhat older and, in many cases, the crash occurred very close to the carrier's place of business. For crashes on the Interstates, the carriers tended to be larger, were more likely to be for-hire carriers located in other states, the involved trucks were newer, and

⁷ Travel data, disaggregated to the state level, were made available to the authors by the Federal Highway Administration (FHWA). Data were not available for 2005-2006.

they had traveled greater distances from the carrier’s business location before the crash occurred. Off the Interstates, more of the cargoes hauled tended to be logs/lumber, agriculture-related, or gases/liquids – cargoes that are typically loaded in flatbed or tank trailers. On the Interstates, the predominant cargo was general freight which is typically hauled in van semitrailers. Both off and on the Interstates, the majority of crash-involved truck drivers were either licensed in the state in which the crash occurred or in a state that was very nearby. There were not significant numbers of young, potentially inexperienced truck drivers involved in the crashes in either state.

When considering the subset of small carriers (10 or fewer vehicles operated) the crash pattern differences were the same but more pronounced compared to the patterns associated with carriers of all sizes. In North Carolina, even more of the crash-involved small carriers were domiciled in the state (73% versus 53%), while in Virginia the same figure increased to 50% compared to the 32% for the entire population of CUT fatal-crash-involved carriers in the state. Focusing just on the in-state-domiciled population of CUT fatal-crash-involved small carriers, as can be seen in Table 85, the following apply:

- Fewer small carriers were for-hire carriers, thus more of them were private, exempt, or other type carriers,
- Small carriers were involved in more collisions with other motor vehicles, a direct consequence of traveling more on non-Interstate highways,
- Small carriers were involved in crashes very close to their places of business,
- Small carriers operated older vehicles than did fleets of all sizes, and
- Log and agriculture-related hauling were more prevalent among small carriers.

Table 85. Comparison of Characteristics of In-State-Domiciled, CUT Fatal-Crash-Involved Small Carriers to Carriers of All Fleet Sizes

| | NC-Domiciled Carriers | | VA-Domiciled Carriers | |
|--|-----------------------|-------------------------|-----------------------|-------------------------|
| | Small Carriers | All Fleet Size Carriers | Small Carriers | All Fleet Size Carriers |
| Proportion of Fleets that are For-Hire Carriers | 29% | 47% | 53% | 64% |
| Proportion of Crashes that were Collisions w/ Other Vehicles | 85% | 80% | 74% | 66% |
| Median Distance from Business Location to Crash Site (Miles) | 25 miles | 30 miles | 52 miles | 47 miles |
| Mean Vehicle Age at Time of Crash (Years Old) | 9 years | 7 years | 9 years | 7 years |
| Proportion of Commodities Hauled that were Logs or Agriculture-related | 35% | 28% | 40% | 34% |

Because small carriers are involved in an appreciable number of CUT fatal crashes in both states, and also because they have different descriptive characteristics than larger carriers, generally are based in their state, and operate more on non-Interstate highways, finding ways to help them improve their safety performance takes on added significance but presents significant challenges. In this regard, a recently published U.S. Government Accountability Office report (10) noted that even the new FMCSA Compliance, Safety, and Accountability (CSA) program is having difficulty tracking the safety performance of the small carrier sub-population, as noted in Table 86. This may be due in large part to the fact that since they do not operate as much on Interstates – where detailed inspections are principally conducted – they have less chance of being inspected. Thus, finding new ways to connect with these carriers, beyond those now being

employed, becomes increasingly important. A more detailed discussion of the study findings (organized around each of the initial hypotheses) appears below, and is summarized in Table 87.

Table 86. Data Sufficiency Rates, by CSA Behavior, Analysis, and Safety Improvement Categories (BASIC) and Carrier Size, Test States Carrier Size (10)

| Fleet Size | Unsafe Driving | Controlled Substances and Alcohol | Fatigued Driving | Driver Fitness | Vehicle Maintenance | Improper Loading/Cargo Securement | Crash Indicator | Any BASIC |
|-------------------|----------------|-----------------------------------|------------------|----------------|---------------------|-----------------------------------|-----------------|-----------|
| 0-5 Vehicles | 1.1% | 3.1% | 0.2% | 0.1% | 3.6% | 0.4% | 0.3% | 5.7% |
| 6-15 Vehicles | 9.9% | 11.6% | 2.2% | 0.4% | 23.4% | 5.5% | 4.0% | 28.3% |
| 16-50 Vehicles | 27.4% | 25.1% | 6.1% | 1.3% | 45.1% | 17.2% | 17.7% | 50.2% |
| 51-500 Vehicles | 47.9% | 40.0% | 22.9% | 4.3% | 59.1% | 37.2% | 46.7% | 65.7% |
| Over 500 Vehicles | 71.4% | 55.1% | 63.3% | 20.4% | 79.6% | 67.3% | 77.6% | 83.7% |
| Total | 4.8% | 6.4% | 2.5% | 1.9% | 8.7% | 3.5% | 3.4% | 11.0% |

Note: Higher percentages indicate higher levels of data availability

Table 87. Summary of Hypotheses and Findings

| Hypothesis Number | Hypothesis | NC Finding | VA Finding |
|-------------------|--|------------|------------|
| Hypothesis One | Crash-involved carriers, both those domiciled in the state and not domiciled in the state, would predominantly be involved in collisions with other motor vehicles, but single-vehicle crashes would be more prevalent on Interstates and among out-of-state carriers – possibly indicating that this is where run-off-road/struck fixed object, fatigue-related crashes mostly occur. | Supported | Supported |
| Hypothesis Two | Crash-involved carriers domiciled in the state would be involved in proportionally more crashes on non-Interstate roads than carriers not domiciled in the state – because that is where their operations dictate they travel. | Supported | Supported |
| Hypothesis Three | Crash-involved carriers domiciled in the state would tend to operate smaller size fleets. | Supported | Supported |
| Hypothesis Four | Crash-involved carriers not domiciled in the state would be larger and more likely to experience crashes on Interstate highways. | Supported | Supported |
| Hypothesis Five | Crash-involved small carriers domiciled in the state would likely be involved in crashes much closer to the carrier’s place of business than larger fleets and carriers not domiciled in the state. | Supported | Supported |
| Hypothesis Six | Crash-involved private carriers, versus for-hire carriers, are more likely to be small operations domiciled in the state and are more likely to experience crashes close to their places of business. | Supported | Supported |
| Hypothesis Seven | Crash-involved carriers involved in farm-to-market/agricultural commodity operations are more likely to be domiciled in the state and to be involved in crashes off the Interstates. | Supported | Supported |
| Hypothesis Eight | Crash-involved carriers not domiciled in the state are more likely to be for-hire, general freight haulers, whereas carriers domiciled in the state would be more likely to have higher proportions of tank, flatbed, and other cargo body type/commodities operations. | Supported | Supported |

| Hypothesis Number | Hypothesis | NC Finding | VA Finding |
|-------------------|---|---------------|------------------|
| Hypothesis Nine | Crash-involved carriers domiciled in the state and smaller carriers would be more likely to operate older trucks. | Supported | Supported |
| Hypothesis Ten | Crash-involved carriers domiciled in the state would be more likely to have younger drivers. | Not Supported | Not Supported |
| Hypothesis Eleven | Crash-involved carriers in both states would not experience classic time-of-day, day-of-week, weather, and roadway condition crash patterns that differed significantly from national patterns. | Supported | Mostly Supported |

Hypothesis One: Crash-involved carriers, both those domiciled in the state and not domiciled in the state, will predominantly be involved in collisions with other motor vehicles, but single-vehicle crashes would be more prevalent on Interstates and among out-of-state carriers – possibly indicating that this is where run-off-road/struck fixed object, fatigue-related crashes mostly occur.

Collisions with other motor vehicles were the most prevalent type of CUT fatal crash in North Carolina and Virginia, for both in-state-domiciled carriers (North Carolina-80%; Virginia-66%) and non-in-state-domiciled carriers (North Carolina-70%; Virginia-64%). Single-vehicle CUT fatal crashes were more prevalent on Interstate highways in North Carolina and Virginia (North Carolina-15%; Virginia-26%) than on non-Interstate highways (North Carolina-5%; Virginia-10%). For both states, single-vehicle CUT fatal crashes on Interstate highways were more prevalent among in-state-domiciled carriers (North Carolina- 23%, Virginia-38%) than among non-in-state-domiciled carriers (North Carolina-12%, Virginia-22%).

Hypothesis Two: Crash-involved carriers domiciled in the state will be involved in proportionally more crashes on non-Interstate roads than carriers not domiciled in the state – because that is where their operations dictate they travel.

In North Carolina, 87% of the North Carolina-domiciled carrier CUT fatal crashes occurred on non-Interstate highways. Similarly, in Virginia, 74% of the Virginia-domiciled carrier CUT fatal crashes occurred on non-Interstate highways. In contrast, in North Carolina, only 44% of the non-North Carolina-domiciled carrier CUT fatal crashes occurred on non-Interstate highways while, in Virginia, 49% of the non-Virginia-domiciled carrier CUT fatal crashes occurred on non-Interstate highways.

Hypothesis Three: Crash-involved carriers domiciled in the state will tend to operate smaller size fleets.

In North Carolina, the median fleet size of CUT fatal-crash-involved North Carolina-domiciled carriers was 22 vehicles; whereas the median fleet size of non-North Carolina-domiciled CUT fatal-crash-involved carriers was 251 vehicles. Much the same as North Carolina, in Virginia the median fleet size of CUT fatal-crash-involved Virginia-domiciled carriers was 15 vehicles; whereas the median fleet size of non-Virginia-domiciled CUT fatal-crash-involved carriers was 155 vehicles.

Hypothesis Four: Crash-involved carriers not domiciled in the state will be larger and more likely to experience crashes on Interstate highways.

In North Carolina, the median size of non-North Carolina-domiciled carriers involved in CUT fatal crashes in North Carolina was over 10 times larger than North Carolina-domiciled carriers involved in CUT fatal crashes in the state. The comparable finding in Virginia was the same.

Relative to crash location, in North Carolina, 56% of the CUT fatal crashes involving non-North Carolina-domiciled carriers occurred on Interstate highways. In Virginia, 51% of the CUT fatal crashes involving non-Virginia-domiciled carriers occurred on Interstate highways.

Hypothesis Five: Crash-involved small carriers domiciled in the state will likely be involved in crashes much closer to the carrier's place of business than larger fleets and carriers not domiciled in the state.

As can be seen in Figure 55 and Figure 56, the distances from the carriers' place of business to the crash site for non-North Carolina-domiciled carriers was evenly distributed among short and longer distances. The median distance for non-North Carolina-domiciled small carriers was 236 miles and for non-North Carolina-domiciled carriers of all fleet sizes it was 477 miles.

On the other hand, for North Carolina-domiciled carriers, the distribution of distances from the carriers' place of business to the crash site was skewed decidedly towards shorter distances. The median distance for North Carolina-domiciled small carriers was 25 miles, and for North Carolina-domiciled carriers of all fleet size it was 30 miles.

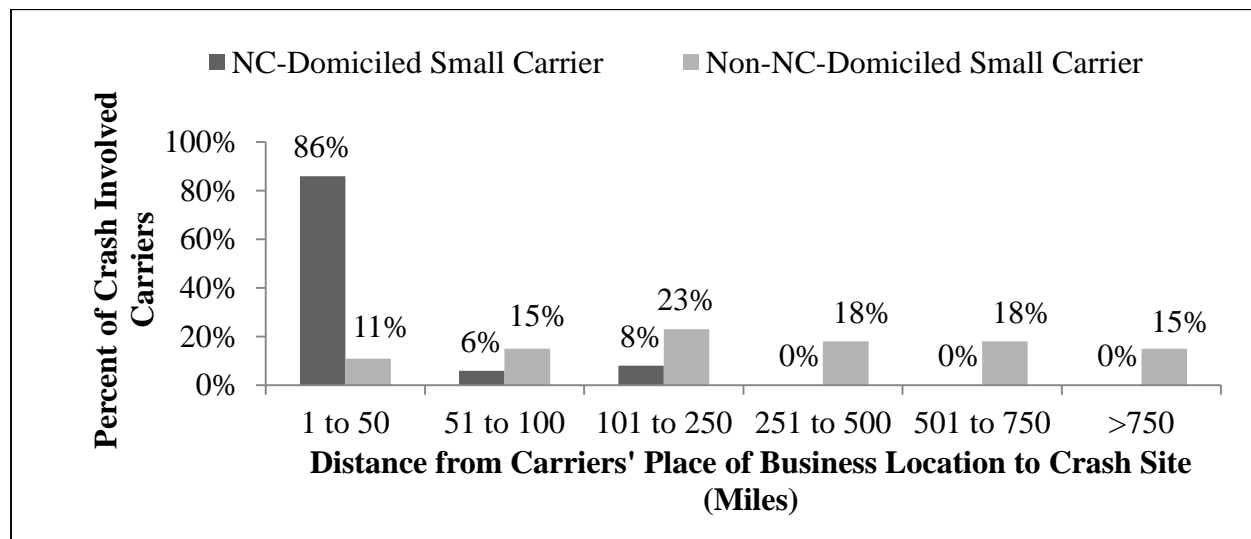


Figure 55. Distance from carriers' business location to crash site for small carriers (10 or fewer vehicles operated) involved in CUT fatal crashes in North Carolina on all road types, by carrier domicile (2005 – 2009).

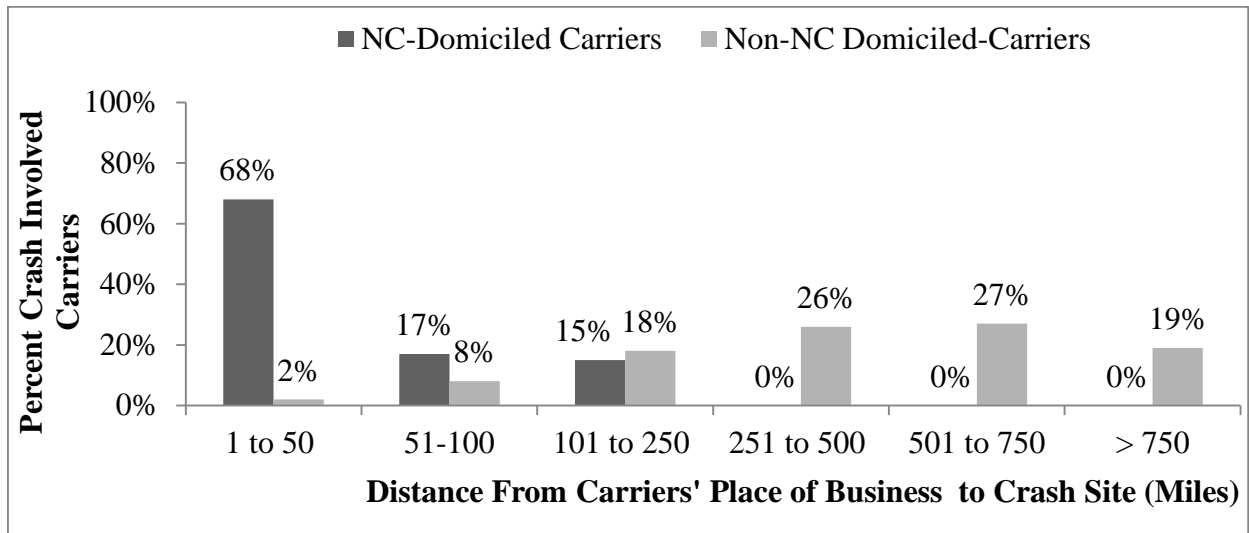


Figure 56. Distance from carriers' business location to crash site for carriers involved in fatal CUT crashes on all road types in North Carolina, by carrier domicile (2005 – 2009).

The same patterns were found in Virginia (Figure 57 and Figure 58). The median distance from the carriers' place of business to the crash site for non-Virginia-domiciled small carriers was 267 miles, and for non-Virginia-domiciled carriers of all fleet sizes it was 536 miles. The median distance for Virginia-domiciled small carriers was 47 miles, and for Virginia-domiciled carriers of all fleet sizes it was 52 miles.

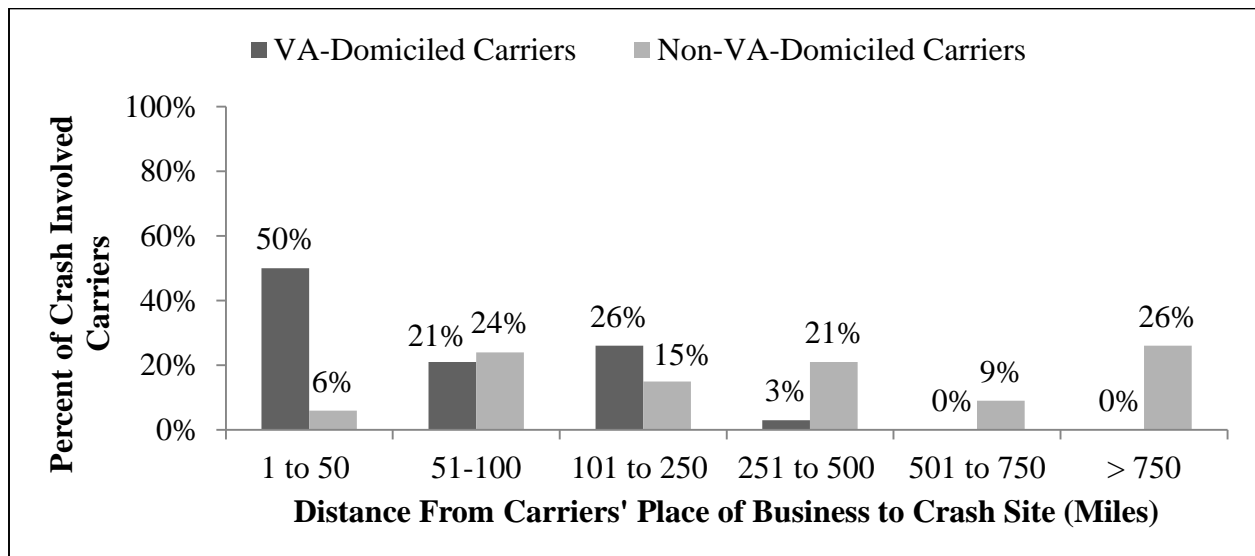


Figure 57. Distance from carriers' business location to crash site for small carriers (10 or fewer vehicles operated) involved in fatal CUT crashes in Virginia on all road types, by carrier domicile (2005 – 2009).

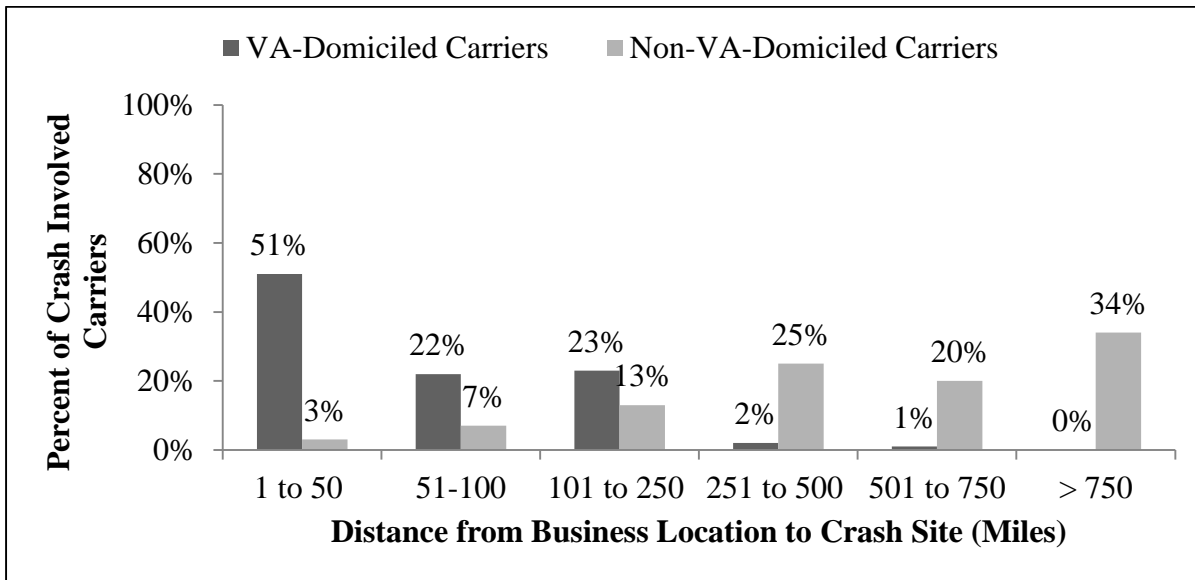


Figure 58. Distance from carriers’ business location to crash site for carriers involved in fatal CUT crashes on all road types in Virginia, by carrier domicile (2005 – 2009).

Hypothesis 6: Crash-involved private carriers, versus for-hire carriers, are more likely to be small operations domiciled in the state and are more likely to experience crashes close to their places of business.

Fifty-four percent (54%) of fatal CUT crashes involved private carriers that were domiciled in the two states were small carriers (10 or fewer vehicles operated). Forty-eight percent (48%) of fatal CUT crashes involved private carriers that were not domiciled in the two states were operating 50 or less vehicles. The comparable figures for for-hire carriers were 37% and 35%, respectively (Table 88 and Table 89). Thus, CUT fatal-crash-involved private carriers were generally smaller than for-hire fleets.

Sixty-two percent (62%) of the CUT fatal-crash-involved private carriers that were domiciled in the two states experienced those crashes within 50 miles or less from their place of business, whereas only 13% of the CUT fatal-crash-involved private carriers that were not domiciled in the two states experienced crashes within 100 miles or less from their place of business. The comparable figures for for-hire carriers were 37% and 7%, respectively (Table 90 and Table 91). Thus, CUT fatal-crash-involved private carriers generally were involved in CUT fatal crashes much closer to their place of business than were for-hire carriers.

Table 88. Fleet Size of For-Hire Carriers Involved in CUT Fatal Crashes in North Carolina and Virginia by Carrier Domicile, 2005 – 2009

| Fleet Size (Number of Vehicles Operated) | Domiciled | Non-Domiciled |
|---|-----------|---------------|
| 1-5 | 14 (29%) | 21 (16%) |
| 6-10 | 4 (8%) | 8 (6%) |
| 11-50 | 11 (23%) | 17 (13%) |
| 51-100 | 5 (10%) | 12 (9%) |
| 101-500 | 7 (15%) | 22 (17%) |
| 501-1000 | 2 (4%) | 13 (10%) |
| >1000 | 5 (10%) | 40 (30%) |
| Total | 48 (100%) | 133 |

Table 89. Fleet Size of Private Carriers Involved in CUT Fatal Crashes in North Carolina and Virginia by Carrier Domicile, 2005 – 2009

| Fleet Size (Number of Vehicles Operated) | Domiciled | Non-Domiciled |
|---|-----------|---------------|
| 1-5 | 6 (46%) | 1 (13%) |
| 6-10 | 1 (8%) | 0 (0%) |
| 11-50 | 4 (31%) | 2 (35%) |
| 51-100 | 1 (8%) | 1 (13%) |
| 101-500 | 0 (0%) | 0 (0%) |
| 501-1000 | 0 (0%) | 0 (0%) |
| >1000 | 1 (8%) | 4 (50%) |
| Total | 13 (100%) | 8 (100%) |

Table 90. Distance from Carriers’ Business Location to Crash Site for For-Hire Carriers Involved in CUT Fatal Crashes in North Carolina and Virginia, by Carrier Domicile, 2005 – 2009

| Distance From Business Location to Crash Site (Miles) | Domiciled | Non-Domiciled |
|---|-----------|---------------|
| 1-50 | 18 (37%) | 2 (2%) |
| 51-100 | 11 (22%) | 7 (5%) |
| 101-250 | 17 (35%) | 17 (13%) |
| 251-500 | 2 (4%) | 27 (20%) |
| 501-750 | 1 (2%) | 28 (21%) |
| >750 | 0 (0%) | 52 (39%) |
| Total | 49 (100%) | 133 (100%) |

Table 91. Distance from Carriers’ Business Location to Crash Site for Private Carriers Involved in CUT Fatal Crashes in North Carolina and Virginia, by Carrier Domicile, 2005 – 2009

| Distance From Business Location to Crash Site (Miles) | Domiciled | Non-Domiciled |
|---|-----------|---------------|
| 1-50 | 8 (62%) | 0 (0%) |
| 51-100 | 4 (31%) | 1 (13%) |
| 101-250 | 1 (8%) | 1 (13%) |
| 251-500 | 0 (0%) | 4 (50%) |
| 501-750 | 0 (0%) | 1 (13%) |
| >750 | 0 (0%) | 1 (13%) |
| Total | 13 (100%) | 8 (100%) |

Hypothesis Seven: Crash-involved carriers involved in farm-to-market/agricultural commodity operations are more likely to be domiciled in the state and be involved in crashes on non-Interstate highways.

Using combined North Carolina and Virginia data, it can be seen that, of the CUT fatal-crash-involved carriers that were hauling agricultural commodities, 79% were domiciled in the state and 74% of the crashes occurred on non-Interstate highways (Table 92).

Table 92. Fatal Crashes in North Carolina and Virginia Involving Carriers Hauling Agricultural Commodities, by Crash Location and State of Domicile, 2005 – 2009

| Crash Location | Domiciled | Non-Domiciled | Total |
|--|-----------|---------------|-----------|
| Crash Occurred on Interstate Highway | 9 (21%) | 5 (45%) | 14 (26%) |
| Crash Occurred on Non-Interstate Highway | 33 (79%) | 6 (55%) | 39 (74%) |
| Total | 42 (100%) | 11 (100%) | 53 (100%) |

Hypothesis Eight: Crash-involved carriers not domiciled in the state are more likely to be for-hire, general freight haulers, whereas carriers domiciled in the state will have higher proportions of tank, flatbed, and other cargo body type/commodities operations.

As can be seen in Table 93 and Table 94, non-domiciled carriers were twice as likely to be hauling general freight as were carriers domiciled in the state (58% vs. 30% in North Carolina and 73% vs. 39% in Virginia). All the other categories of cargoes hauled by carriers domiciled in the two states were commodities typically loaded in trailers other than van-bodied trailers (i.e., general freight); these remaining categories of commodities are typically loaded in tank, flatbed, and other trailer types.

Table 93. Type of Commodity Hauled by Carriers Involved in CUT Fatal Crashes in North Carolina on all Road Types, by Carrier Domicile, 2005 – 2009

| Commodity Hauled | NC-Domiciled Carriers | Non-NC-Domiciled Carriers |
|---------------------|-----------------------|---------------------------|
| General Freight | 61 (30%) | 106 (58%) |
| Logs | 26 (13%) | 5 (2%) |
| Gas/Liquids | 13 (6%) | 8 (5%) |
| Agriculture-related | 31 (15%) | 7 (4%) |
| All Other | 75 (36%) | 57 (31%) |
| Total | 206 (100%) | 183 (100%) |

Table 94. Type of Commodity Hauled by Carriers Involved in CUT Fatal Crashes in Virginia on all Road Types, by Carrier Domicile (2005-2009)

| Commodity Hauled | VA-Domiciled Carriers | Non-VA-Domiciled Carriers |
|---------------------|-----------------------|---------------------------|
| General Freight | 29 (39%) | 108 (73%) |
| Logs | 14 (19%) | 4 (3%) |
| Gas/Liquids | 2 (3%) | 4 (3%) |
| Agriculture-related | 11 (15%) | 4 (3%) |
| All Other | 19 (25%) | 28 (19%) |
| Total | 75 (100%) | 148 (100%) |
| Missing Data | 69 | |

Hypothesis Nine: Crash-involved carriers domiciled in the state and smaller carriers will tend to operate older trucks.

When considering carriers of all fleet sizes, carriers domiciled in the state operated vehicles that were about 2 model years older than carriers not domiciled in the state (7 years old versus 5 years old in North Carolina and Virginia, respectively) (Table 35 and Table 36). Looking at the subpopulation of small carriers, all small carriers operated older vehicles than did the larger population of all fleet-size carriers not domiciled in the state. Small carriers domiciled in the state operated vehicles that were about 2 years older than non-domiciled carriers (9 years old versus 7 years old in North Carolina and Virginia, respectively) (Table 69 and Table 70).

Hypothesis Ten: Crash-involved carriers domiciled in the state will have younger drivers.

The average age of drivers domiciled in North Carolina was slightly younger than for drivers not domiciled in the state (45 versus 48 years old, respectively). A nearly identical pattern was noted among the subpopulation of drivers employed by small North Carolina-domiciled and small non-North Carolina-domiciled carriers (47 versus 49 years old, respectively). However, in Virginia, the average age of drivers domiciled in the state was slightly older than for those not domiciled in the state (48 versus 47 years old, respectively). The difference was more noticeable when looking at the subpopulation of drivers employed by small Virginia-domiciled and small non-Virginia-domiciled carriers (50 versus 45 years old, respectively). However, none of these differences are large nor do they support the hypothesis that young and possibly less experienced drivers were an issue in this regard.

Hypothesis Eleven: Crash-involved carriers in both states would not experience other classic time-of-day, day-of-week, weather, roadway condition crash patterns that differed significantly from national patterns.

Compared to national/U.S. crash patterns, Virginia carriers experienced proportionally more nighttime crashes (both lighting conditions and time-of-day). However, given that CUT Interstate travel is greater in Virginia, one can assume that the greater proportion of crashes could be attributed to increased commercial transit traffic. No other significant differences were noted.

CONCLUSIONS

EMPHASIS AND FOCUS NEEDED ON CRASHES OFF THE INTERSTATE HIGHWAY SYSTEM

The present study highlights that the crash risk associated with non-Interstate highways is more than double that on Interstate highways in both states. The majority of CUT fatal crashes in both states occur in rural environments on U.S. and state routes and other secondary roads, many with undivided traffic-ways, un-signalized intersections, driveways, and other entrances, left turns across traffic, and vehicle speed differentials – all of which create opportunities for conflicts with other vehicles. Interstate highways have separated/divided traffic-ways, and no at-grade intersections, significantly reducing these types of conflict opportunities, thereby making them inherently much safer facilities on which to travel. Carriers that travel primarily on non-Interstate highways, compared to those that travel primarily on Interstate highways, can be expected to be involved in more crashes overall as well as more fatal crashes. The non-Interstate portion of the two states' highway systems is both extensive and widely dispersed making it very challenging to develop safety countermeasures for travel on these road types. Given these conditions, it follows that stepped-up enforcement targeting carriers may not be the most efficient approach to improve the situation on these types of roads.

There is increasing awareness of the safety risks associated with travel on rural, non-Interstate highways. The USDOT and its modal agencies (FHWA, FMCSA, and the National Highway Traffic Safety Administration [NHTSA]) have initiated the Rural Safety Initiative to reduce highway fatalities and injuries on rural roads among all vehicle types by focusing on: safer drivers, better roads, smarter roads, emergency response, and communication and outreach. Based on the findings of this study, programs tailored to the unique challenges that commercial motor carriers face in these operating environments are also needed.

IN-STATE-DOMICILED CARRIERS WOULD BENEFIT FROM ADDED ATTENTION AND ASSISTANCE

The present study also highlights the extensive involvement of in-state-domiciled carriers in the two states' overall CUT fatal crash picture. This finding is highly interrelated with the finding of the substantial involvement of in-state-domiciled small carriers. Also, both in-state and small carrier CUT fatal-crash involvements are interrelated with crashes on non-Interstate highways. Traditional motor carrier crash prevention efforts focus heavily on truck driver licensing and enforcement programs that target carriers and drivers found in non-compliance based on data and findings from roadside inspections, carriers' crash histories, and drivers' traffic records. The majority of detailed inspections take place on Interstate highways, which this study has indirectly shown is more likely to result in inspections of large, out-of-state carriers as opposed to in-state carriers. Efforts to help in-state-domiciled carriers improve their safety performance are, therefore, complicated and may need to be different than those currently employed.

SMALL CARRIERS ARE UNIQUELY DIFFERENT THAN LARGER CARRIERS AND WOULD BENEFIT FROM ASSISTANCE TAILORED TO THEM

This study also highlights differences in the operational and descriptive characteristics of small carriers as compared to larger fleet size carriers. These differences place them at comparatively higher levels of crash risk compared to larger fleets. Because any given small carrier operates relatively few trucks it is much less likely that small carriers will be inspected or audited. This is borne out by the recent U.S. Government Accountability Office study. (10) This problem is compounded in the non-Interstate highway environment where, for many reasons, it is unlikely that traditional in-depth driver/vehicle inspections can be conducted in sufficient numbers to these operators, making the use of this traditional approach problematic. New approaches are needed to make contact with and assist the large number of new and existing small carriers that principally operate on non-Interstate highways within a given state.

Coincidentally, a great deal of national-level attention is now being focused on new entrants into the motor carrier industry, many of which are small carriers. Training and information exchange are likely to be key elements in efforts to improve small carrier safety and constitute a proactive approach that can be employed to help new entrants and small carriers. State trucking associations are an untapped asset in this regard.

Many small carriers do not belong to these organizations, thus they do not benefit from the services the organizations can provide relative to commercial vehicle safety – particularly training. While the efforts on the part of these organizations to recruit membership among smaller carriers are not lacking, appreciable numbers of small carriers do not choose to incur the cost of obtaining these services. An immediate way of getting all carriers to use these services is not readily apparent. A mandatory requirement for motor carrier professional training and certification would accomplish the goal but it is premature, at this point, to suggest doing this based on the findings of just this report.

LONGER TERM ISSUES AND CONCERNS IMPLICIT IN THE FINDINGS OF THIS STUDY

This analysis provides a backward-looking view of crash patterns in the two states studied to provide insights on steps that can be taken in the near and longer term future to achieve safety improvements. Past trends and future forecasts do not, however, project a static future. Truck travel is projected to double, again, in the next 15-20 years, notwithstanding our current economic situation. (12). While a significant portion of that growth will occur on Interstates, an even larger portion will occur on non-Interstate highways in the two states. Increased safety and economic concerns will accompany this growth without plans to responsibly accommodate it.

Projected growth in truck travel makes it very important that detailed, requirements-based, state-level plans be developed to foster commerce and economic growth by facilitating truck freight flow. Accomplishing this goal will also reduce fuel use and emissions while improving safety. These plans should be an integral part of each state's Highway Safety Improvement Plan and include roadway design and traffic operations upgrades that will help commercial trucks in areas where truck safety hotspots and bottlenecks are identified. Highway design and traffic operations engineering efforts in this regard should complement and be fully integrated with enforcement and education efforts in these same areas and corridors.

RECOMMENDATIONS

NEAR-TERM RECOMMENDATIONS

Near-Term Recommendation One

Develop Enforcement and Other Safety Improvement Plans at the County and/or Highway Patrol Troop Level.

Significant progress has already been made in this regard in both North Carolina and Virginia, but additional insight would be gained by performing a detailed five-year retrospective analysis of crash locations coupled with carrier descriptive attributes, disaggregated to the county and/or highway patrol troop jurisdictional level. This will provide both state and county-level officials another basis for planning enforcement and other safety improvement activities in their area of responsibility and greatly enhance the planning and use of available state, county, and troop level resources and manpower. To provide a more robust and complete picture, the analyses should be expanded to include all commercial vehicles over 10,000 lbs. GVWR – both CUTs and SUTs, as well as fatal and serious-injury crashes. Periodic updates of these analyses should be scheduled. *In addition, lists of all the carriers domiciled in the county and/or troop jurisdictional area, categorized by address, size, and type of operation should be developed so that proactive outreach activities at this level can be conducted.* Motor carrier enforcement personnel need to find ways to interact more frequently with carrier operations, which data show to have heightened safety risks on non-Interstate roadways.

Near-Term Recommendation Two

SUTs Operate Differently and Have Unique Crash Patterns Compared To CUTs and Warrant Additional Consideration.

Although not part of this study, SUTs, according to FMCSA crash data records, were involved in 30% of the large-truck fatal crashes in North Carolina and 40 % of those in Virginia; most of which occurred on non-Interstate highways. (13) It is not known how many of these crashes involve in-state-domiciled carriers, the GVWRs of the vehicles involved, or any of the operational patterns of the involved carriers. Based on national data (9), it is likely that upwards of 30% of these vehicles and operations are not covered by existing safety requirements in North Carolina and Virginia since both states' regulations only apply to vehicles with GVWRs \geq 26,001 lbs. *This warrants a separate analysis of SUTs, similar to this study of CUTs. The SUT analysis and current CUT analysis should be expanded to include serious-injury crashes, not just fatal crashes.*

Near-Term Recommendation Three

A Broad-Based, Coordinated Effort Focusing on the Safety Needs of the Domiciled Carrier Population is Needed.

North Carolina and Virginia are encouraged to continue collaborating on motor carrier safety issues and to consider empanelling a Joint Commercial Truck Safety Task Force to focus on

ways to improve the safety of domiciled carriers in their two states. Membership on this panel should include representatives from the State DOTs and DMVs, Governor's Highway Safety Representatives, state patrols, county-level public safety organizations, state trucking associations, state chambers of commerce, and state-level FMCSA officials. The first question they are encouraged to address is whether professional safety training and certification of motor carrier management officials should be a mandatory state-level requirement, similar to that required for general contractors, truck drivers, physicians, and other licensed professionals.

Near-Term Recommendation Four

New Ways to Reach Domiciled Carriers, Especially Small Carriers, Need To Be Identified.

Helping new entrant and existing small carriers develop safety management capabilities within their firms will greatly contribute to efforts to improve commercial vehicle safety in the two states. With that goal, North Carolina and Virginia are encouraged to support efforts to develop and pilot-test a series of safety seminars tailored to the needs of new entrants and small carriers domiciled in their state. Providing these sessions regionally would minimize travel, thereby promoting higher levels of attendance and participation. The sessions would not address all the detailed aspects of regulatory compliance, but rather provide an overview of motor carrier safety management best-practices and highlight the key aspects of state and federal motor carrier safety regulations. This approach would provide carriers the tools needed to develop tailored safety management plans and ensure compliance with the relevant safety regulations. Participants would be encouraged to follow up with state trucking associations for more detailed assistance.

Near-Term Recommendation Five

A Detailed, Requirements-Based Plan That Provides a Roadmap for the State DOTs' Systematic Improvement of Their State's Truck Network Is Needed.

The identification of locations with a high frequency or proportion of large-truck crashes is a key component of a truck crash reduction program. Heightened exposure to crash risks is an unwanted and unavoidable side effect that carriers face when they operate on non-Interstate highways. Compared to Interstates, these types of roads have no access control, narrower lane widths, more variable horizontal and vertical alignment, shorter sight distances, and narrow or absent paved shoulders; in many instances they have posted speed limits approaching those of Interstate highways. Further analysis of the relationship between roadway design features and crashes will identify risk factors and possible countermeasures. *The analysis should identify specific locations and where low-cost infrastructure and/or traffic operations improvements have the potential to reduce the frequency and severity of crashes involving large trucks.*

LONGER-TERM RECOMMENDATIONS

Longer-Term Recommendation One

Descriptive Information on All Commercial Motor Carriers is Needed to Have a Complete Picture of Commercial Vehicle Safety in North Carolina and Virginia.

Currently, in both North Carolina and Virginia, motor carrier safety regulations do not apply to intrastate motor carriers and are focused, for the most part, on carriers that operate vehicles with GVWRs greater than 26,000. Therefore, additional analyses are needed to fully understand the extent and nature of crashes involving the portion of the carrier population that operate vehicles with GVWRs between 10,000 and 26,000 lbs – almost all of which will be SUTs. It is also recommended to review the experience of states that require all commercial vehicles over 10,000 lbs. GVWR to register and to complete the FMCSA MCS-150 Carrier Identification form. Additionally, North Carolina and Virginia are urged to consider requiring all carriers operating vehicles with GVWRs greater than 10,000 lbs., including those operating exclusively in intrastate commerce, to register, provide MCS-150 type information, and obtain an identification number.

Longer-Term Recommendation Two

Collection and Analysis of Exposure Data Are Essential to Motor Carrier Safety Improvement and Comprehensive Highway Freight Planning Efforts.

As noted throughout this report, operational use patterns (i.e., VMT accumulation/exposure data as a function of both highway and vehicle type similar to that portrayed in the FHWA Highway Statistics VM-1 table (4)) directly influence crash patterns and are a key element to planning safety improvement efforts. *Crash data collection efforts are well institutionalized in both states but it would greatly enhance the planning and use of available state, county, and troop-level resources and manpower if expanded efforts were made to collect, blend, and analyze commercial vehicle crash and exposure data at the county and individual road corridor level.* These analyses should include roadway geometric, pavement, and bridge design variables as well as the behaviors/actions of all the drivers involved in the crash. It is recognized that VMT by vehicle type data are generally available on the higher classification roads but to a lesser degree on lower class roads where significant amounts of truck mileage are accumulated and numbers of crashes occur. It is also recognized that collecting exposure data on lower classification roadways would require expenditures of scarce resources.

Nevertheless, these same data are needed for statewide comprehensive freight and logistics planning. FHWA projections of future freight demand suggest a picture of increased truck traffic on all classes of roads in Virginia and North Carolina. FHWA's Freight Analysis Framework (FAF) provides estimates of commodity movements by tonnage and by value between major urban areas and FAF zones, but more detailed exposure data (i.e., truck miles traveled – by specific class of truck, by specific class of road, etc.) are needed to enable analyses and support for infrastructure investment decisions at the county and individual road level.

Longer-Term Recommendation Three

Comprehensive Highway Freight and Economic Development Planning Should Be an Integral Part of Ongoing Highway Planning Activities.

The next federal highway reauthorization bill will likely contain provisions requiring that states develop the institutional capability to conduct ongoing, statewide freight planning that will be heavily focused on highway freight transport. *Sophisticated analysis and forecasting capability that integrates highway design, traffic operations, vehicle travel, and crash data – particularly at the primary and secondary road level – will be needed to achieve balances between the need for*

additional highway capacity and elimination of bottlenecks and environmental and energy use concerns. North Carolina and Virginia both have nascent programs of this type and are encouraged to continue and institutionalize their pacesetting efforts in this regard.

Concurrently, there are continual requests by shippers and carriers to use larger, more productive vehicles as a way to reduce growth in truck VMT, fuel use, and emissions. Eventually, this will precipitate a search for ways to accommodate use of these vehicles that are safe, preserve highway infrastructure, and recoup added infrastructure wear costs. Planning should begin now for ways to responsibly accommodate increased numbers of trucks and growth in truck travel. Particular attention should be given to longer and heavier (i.e., ‘more productive’) trucks and their potential impact on pavement and bridge conditions on non-Interstate highways if these vehicles are not designed and configured appropriately.

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Tracy Turpin -VDOT

Angelisa Jennings – VDMV

Poppi Venable – VDMV

Lam Phan – VDMV

Richard A. Weyant – Virginia State Police

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13. FMCSA Truck and Bus Safety Facts, 2005-2009 and FMCSA A&I State Data.

APPENDIX A. USDOT FORM MCS-150

OMB No. 2126-0013 Expiration Date: 07/31/2012

A federal agency may not conduct or sponsor, and a person is not required to respond to, nor shall a person be subject to a penalty for failure to comply with a collection of information subject to the requirements of the paperwork reduction act, unless that collection of information displays a current valid OMB Control Number. The OMB Control Number for this information collection is 2126-0013. Public reporting for this collection of information is estimated to average approximately 20 minutes per response, including the time for reviewing instructions, gathering the data needed, and completing and reviewing the collection of information. All responses to this collection of information are mandatory, and will be provided confidentially to the extent allowed by the Freedom of Information Act (FOIA). Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to: Information Collection Clearance Office, Federal Motor Carrier Safety Administration, MCRRR, 1200 New Jersey Avenue, SE, Washington, D.C. 20590.



U.S. Department of Transportation
Federal Motor Carrier
Safety Administration

Motor Carrier Identification Report (Application for USDOT Number)

REASON FOR FILING (Mark only one)
 NEW APPLICATION BIENNIAL UPDATE OR CHANGES OUT OF BUSINESS NOTIFICATION REAPPLICATION (AFTER REVOCATION OF NEW ENTRANT)

| | | | | | |
|-------------------------------------|------------------|---|---|-----------------------------------|---------------------------|
| 1. NAME OF MOTOR CARRIER | | | 2. TRADE OR D.B.A. (DOING BUSINESS AS) NAME | | |
| 3. PRINCIPAL ADDRESS | | 4. CITY | 5. STATE/PROVINCE | 6. ZIP CODE+4 | 7. COLONIA (MEXICO ONLY) |
| 8. MAILING ADDRESS | | 9. CITY | 10. STATE/PROVINCE | 11. ZIP CODE+4 | 12. COLONIA (MEXICO ONLY) |
| 13. PRINCIPAL BUSINESS PHONE NUMBER | | 14. PRINCIPAL CONTACT CELL PHONE NUMBER | | 15. PRINCIPAL BUSINESS FAX NUMBER | |
| 16. USDOT NO. | 17. MC OR MX NO. | 18. DUN & BRADSTREET NO. | 19. IRS/TAX ID NO. EIN _____ SSN _____ | | |
| 20. INTERNET E-MAIL ADDRESS | | | 21. CARRIER MILEAGE (to nearest 10,000 miles for last calendar year) YEAR _____ | | |

22. COMPANY OPERATION (Mark all that apply)
 Interstate Carrier Intrastate Hazmat Carrier Intrastate Non-Hazmat Carrier Interstate Hazmat Shipper Intrastate Hazmat Shipper Vehicle Registrant Only

23. OPERATION CLASSIFICATION (Mark all that apply)
 A. Authorized For-Hire D. Private Passengers (Business) G. U. S. Mail J. Local Government
 B. Exempt For-Hire E. Private Passengers (Non-Business) H. Federal Government K. Indian Tribe
 C. Private Property F. Migrant I. State Government L. Other _____

24. CARGO CLASSIFICATIONS (Mark all that apply)

| | | | | |
|--|--|---|--|--|
| A. <input type="checkbox"/> GENERAL FREIGHT | G. <input type="checkbox"/> BUILDING MATERIALS | M. <input type="checkbox"/> PASSENGERS | S. <input type="checkbox"/> GARBAGE, REFUSE, TRASH | Y. <input type="checkbox"/> PAPER PRODUCT |
| B. <input type="checkbox"/> HOUSEHOLD GOODS | H. <input type="checkbox"/> MOBILE HOMES | N. <input type="checkbox"/> OIL FIELD EQUIPMENT | T. <input type="checkbox"/> U.S. MAIL | Z. <input type="checkbox"/> UTILITY |
| C. <input type="checkbox"/> METAL-SHEETS, COILS, ROLLS | I. <input type="checkbox"/> MACHINERY, LARGE OBJECTS | O. <input type="checkbox"/> LIVESTOCK | U. <input type="checkbox"/> CHEMICALS | AA. <input type="checkbox"/> FARM SUPPLIES |
| D. <input type="checkbox"/> MOTOR VEHICLES | J. <input type="checkbox"/> FRESH PRODUCE | P. <input type="checkbox"/> GRAIN, FEED, HAY | V. <input type="checkbox"/> COMMODITIES DRY BULK | BB. <input type="checkbox"/> CONSTRUCTION |
| E. <input type="checkbox"/> DRIVE AWAY/TOWAWAY | K. <input type="checkbox"/> LIQUIDS/GASES | Q. <input type="checkbox"/> COAL/COKE | W. <input type="checkbox"/> REFRIGERATED FOOD | CC. <input type="checkbox"/> WATER WELL |
| F. <input type="checkbox"/> LOGS, POLES, BEAMS, LUMBER | L. <input type="checkbox"/> INTERMODAL CONT. | R. <input type="checkbox"/> MEAT | X. <input type="checkbox"/> BEVERAGES | DD. <input type="checkbox"/> OTHER _____ |

25. HAZARDOUS MATERIALS (CARRIER OR SHIPPER) (Mark all that apply)

| | (C) CARRIER | | | (S) SHIPPER | | | (B) BULK - IN CARGO TANKS | | | (NB) NON-BULK - IN PACKAGES | | | | |
|------------------------|--------------------------|--------------------------|--------------------------|-----------------------|--------------------------|--------------------------|---------------------------|--------------------------|--------------------------|-----------------------------|------------------------|--------------------------|--------------------------|--------------------------|
| | C | S | NB | C | S | NB | C | S | B | NB | C | S | B | NB |
| A. DIV 1.1 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | K. DIV 2.2D (Ammonia) | <input type="checkbox"/> | <input type="checkbox"/> | U. DIV 4.2 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | EE. HRCO | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| B. DIV 1.2 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | L. DIV 2.3A | <input type="checkbox"/> | <input type="checkbox"/> | V. DIV 4.3 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | FF. CLASS 8 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| C. DIV 1.3 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | M. DIV 2.3B | <input type="checkbox"/> | <input type="checkbox"/> | W. DIV 5.1 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | GG. CLASS 8A | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| D. DIV 1.4 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | N. DIV 2.3C | <input type="checkbox"/> | <input type="checkbox"/> | X. DIV 5.2 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | HH. CLASS 8B | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| E. DIV 1.5 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | O. DIV 2.3D | <input type="checkbox"/> | <input type="checkbox"/> | Y. DIV 6.2 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | II. CLASS 9 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| F. DIV 1.6 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | P. Class 3 | <input type="checkbox"/> | <input type="checkbox"/> | Z. DIV 6.1A | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | JJ. ELEVATED TEMP MAT. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| G. DIV 2.1 (Flam. Gas) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Q. Class 3A | <input type="checkbox"/> | <input type="checkbox"/> | AA. DIV 6.1B | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | KK. INFECTIOUS WASTE | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| H. DIV 2.1 LPG | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | R. Class 3B | <input type="checkbox"/> | <input type="checkbox"/> | BB. DIV 6.1 POISON | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | LL. MARINE POLLUTANTS | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| I. DIV 2.1 (Methane) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | S. COMB LIQ | <input type="checkbox"/> | <input type="checkbox"/> | CC. DIV 6.1 SOLID | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | MM. HAZARDOUS SUB (RO) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| J. DIV 2.2 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | T. DIV 4.1 | <input type="checkbox"/> | <input type="checkbox"/> | DD. CLASS 7 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | NN. HAZARDOUS WASTE | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | | | | | | | | | | | OO. ORM | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

26. NUMBER OF VEHICLES THAT WILL BE OPERATED IN THE U.S.

| | Straight Trucks | Truck Tractors | Trailers | Hazmat Cargo Tank Trucks | Hazmat Cargo Tank Trailers | Motor-coach | Number of vehicles carrying number of passengers (including the driver) | | | | | | | | | | | | |
|-------------|-----------------|----------------|----------|--------------------------|----------------------------|-------------|---|------|-----|----------|-----|---------------|-----|-----------|-----|--|--|--|--|
| | | | | | | | School Bus | | | Mini-bus | | Passenger Van | | Limousine | | | | | |
| | | | | | | | 1-8 | 9-15 | 16+ | 16+ | 1-8 | 9-15 | 1-8 | 9-15 | 16+ | | | | |
| OWNED | | | | | | | | | | | | | | | | | | | |
| TERM LEASED | | | | | | | | | | | | | | | | | | | |
| TRIP LEASED | | | | | | | | | | | | | | | | | | | |

27. DRIVER INFORMATION

| | | | | |
|------------------------|------------|------------|---------------|-------------------|
| Within 100-Mile Radius | INTERSTATE | INTRASTATE | TOTAL DRIVERS | TOTAL CDL DRIVERS |
| Beyond 100-Mile Radius | | | | |

28. IS YOUR USDOT NUMBER REGISTRATION CURRENTLY REVOKED BY THE FEDERAL MOTOR CARRIER SAFETY ADMINISTRATION? Yes No
 If Yes, enter your USDOT Number. _____

29. PLEASE ENTER NAME(S) OF SOLE PROPRIETOR(S), OFFICERS OR PARTNERS AND TITLES (e.g. president, treasurer, general partner, limited partner)
 1. _____ 2. _____

30. CERTIFICATION STATEMENT (to be completed by authorized official)
 I, _____ certify that I am familiar with the Federal Motor Carrier Safety Regulations and/or Federal Hazardous Materials Regulations. Under penalties of perjury, I declare that the information entered on this report is, to the best of my knowledge and belief, true, correct, and complete.
 Signature _____ Date _____ Title _____ (Please print)