

Kentucky Injury Prevention and Research Center
Bona fide agent for Kentucky Department for Public Health
333 Waller Avenue, Suite 242 • Lexington, KY 40504 • 859-257-5839

REPORT#: 19KY047

REPORT DATE: 2-3-2020

INCIDENT HIGHLIGHTS



DATE:

September 30, 2019



TIME:

6:05 AM



VICTIM:

68-year old commercial truck driver



INDUSTRY/NAICS CODE:

484121



EMPLOYER:

Interstate Commercial Carrier



SAFETY & TRAINING:

No driver focused training



SCENE:

Public highway: Two-lane state route



LOCATION:

Kentucky



EVENT TYPE:

Motor Vehicle Collision



Commercial Driver Dies after Overturning on Two-Lane State Highway

SUMMARY

On Monday, September 30, 2019, a 68-year-old male commercial truck driver (the victim) was traveling on a state maintained, two-lane highway travelling to a Kentucky based business. While en route, the driver lost control of the truck and trailer, struck a W-beam guardrail, and overturned into an embankment.

[READ THE FULL REPORT>](#) (p.6)

CONTRIBUTING FACTORS

Key contributing factors identified in this investigation include:

- Traveling too fast for terrain.
- Failing to inspect equipment.
- Operating equipment with inadequate brakes.

[LEARN MORE>](#) (p.8)

RECOMMENDATIONS

Kentucky FACE investigator concluded that, to help prevent similar occurrences, employers should:

- Commercial motor vehicle operators should adjust speed to safely match adverse terrain conditions.
- CMV operators should complete driver vehicle inspection reports on all equipment prior to operating commercial vehicles.
- The Kentucky Transportation Cabinet should consider assigning commercial vehicle-specific speed limits to state highways.

[LEARN MORE>](#) (p.8)



KENTUCKY

State **FACE** Program

Fatality Assessment & Control Evaluation

Kentucky Injury Prevention and Research Center
Bona fide agent for Kentucky Department for Public Health
333 Waller Avenue, Suite 242 • Lexington, KY 40504 • 859-257-5839



Fatality Assessment and Control Evaluation (FACE) Program

This case report was developed to draw the attention of employers and employees to a serious safety hazard and is based on preliminary data only. This publication does not represent final determinations regarding the nature of the incident, cause of the injury, or fault of employer, employee, or any party involved.

This Case report was developed by the Kentucky Fatality Assessment and Control Evaluation (FACE) Program. Kentucky FACE is a NIOSH-funded occupational fatality surveillance program with the goal of preventing fatal work injuries by studying the worker, the work environment, and the role of management, engineering, and behavioral changes in preventing future injuries. The FACE program is located in the Kentucky Injury Prevention and Research Center (KIPRC). KIPRC is a bona fide agent for the Kentucky Department for Public Health.

Email: Kyfaceprogram@uky.edu

Twitter: <http://twitter.com/KYFACEProgram>

Facebook: <https://www.facebook.com/Kyfaceprogram/>

Website: <http://www.mc.uky.edu/kiprc/face/index.html>



Kentucky Injury Prevention and Research Center
Bona fide agent for Kentucky Department for Public Health
333 Waller Avenue, Suite 242 • Lexington, KY 40504 • 859-257-5839

INTRODUCTION

On Monday, September 30, 2019, a commercial truck driver was involved in a fatal single-vehicle collision while traveling eastbound on a state maintained, two-lane highway. On November 6, 2019, the Kentucky Labor Cabinet informed the Kentucky Fatality Assessment and Control Evaluation Program of the incident. On November 29, 2019, the Kentucky FACE investigator conducted a site visit at which time photographs of the scene were taken.

EMPLOYER

The employee was the owner of an interstate motor carrier. According to the Federal Motor Carriers Safety Administration (FMCSA), the victim was the sole employee of the business, which transported general freight¹.

WRITTEN SAFETY PROGRAMS and TRAINING

Due to the victim being self-employed, little is known about his professional training.

WORKER INFORMATION

The victim was a 68-year old, married high school graduate with no children. Because the victim was self-employed, little is known about his employment background.

INCIDENT SCENE

The incident initially began in the eastbound lane of a two-lane state highway with a posted speed limit of 55 miles per hour. This particular section of highway ascends at a grade of approximately 18-degree with a large embankment positioned just beyond the shoulder of the west-bound lane of travel. A standard W-beam guardrail is positioned between the west-bound travel lane and the embankment. While traveling east, the involved tractor trailer exited a sharp turn, crossed into the west-bound travel lane and struck the W-beam guardrail which resulted in the trailer overturning. As the trailer descended down the embankment, the truck overturned as well. The semi-truck came to final rest partially on the west-bound travel lane with the rear of the truck and trailer completely off of the roadway, descending down the embankment.

Kentucky Injury Prevention and Research Center
Bona fide agent for Kentucky Department for Public Health
333 Waller Avenue, Suite 242 • Lexington, KY 40504 • 859-257-5839



Photo 1. Photo of the semi-truck and trailer involved at the scene of the crash. Photo retrieved from WTVQ.com (Photo was taken from the west)



Photo 2. Photo with animation depicting the path the semi-truck and trailer traveled as it entered the west-bound lanes. Photo created by and property of KY FACE.

Kentucky Injury Prevention and Research Center
Bona fide agent for Kentucky Department for Public Health
333 Waller Avenue, Suite 242 • Lexington, KY 40504 • 859-257-5839



Photo 3. Photo representing the point in which the rear driver's side trailer struck and punctured the W-beam guardrail. Photo by and property of KY FACE.



Photo 4. Photo of depicting the area the semi-truck and trailer overturned down the embankment. Photo by and property of KY FACE. (guardrail had been replaced when photos were taken)

Kentucky Injury Prevention and Research Center
Bona fide agent for Kentucky Department for Public Health
333 Waller Avenue, Suite 242 • Lexington, KY 40504 • 859-257-5839

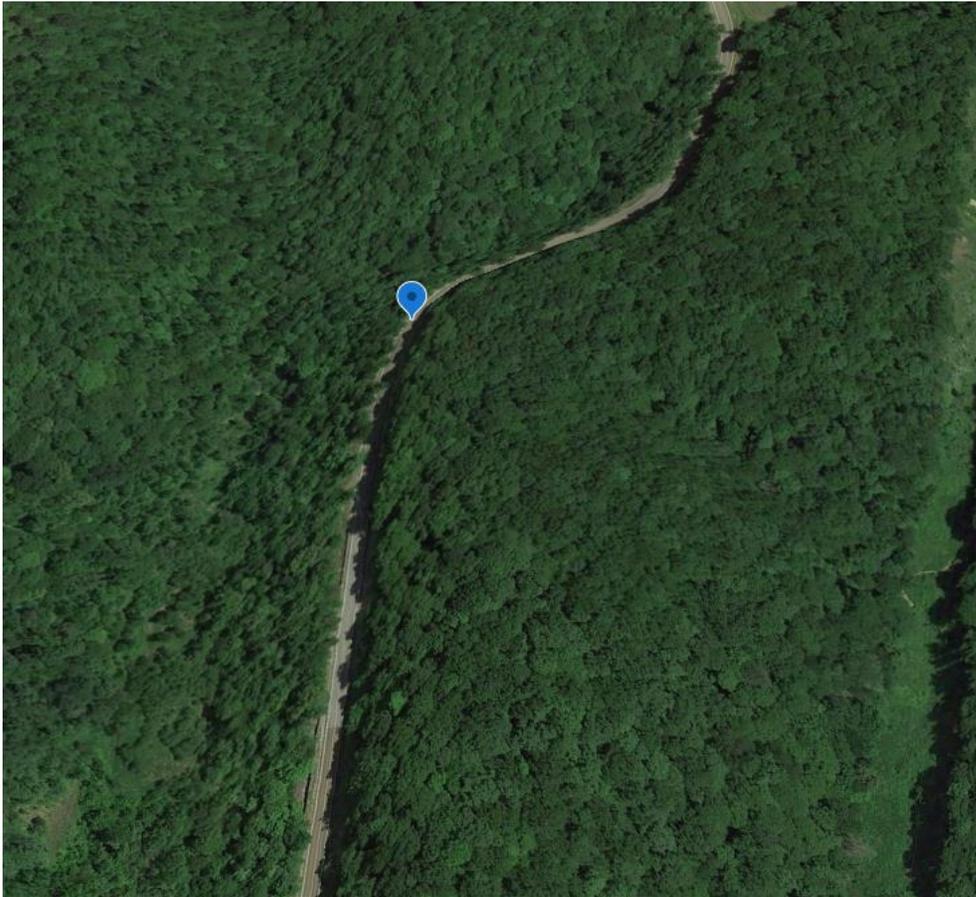


Photo 5. Google Earth image of the collision scene. Photo retrieved from and property of Google Earth.

WEATHER

The temperature was approximately 74°F at the time of the incident. The humidity was 73%, there was no wind or precipitation, and the roadway was dry. The weather was not considered to be a contributing factor in the collision².

Kentucky Injury Prevention and Research Center
Bona fide agent for Kentucky Department for Public Health
333 Waller Avenue, Suite 242 • Lexington, KY 40504 • 859-257-5839

INVESTIGATION

In the early morning of Monday, September 30, 2019, a commercial truck driver was operating a 2003 Freightliner Cascadia semi-truck and trailer east-bound on a two-lane Kentucky state highway. The driver was en route to a Kentucky based business to deliver a load of farm tractor parts. According to the investigating officers, at 6:05 AM, the driver entered a right-hand curve traveling approximately 55 miles per hour, while ascending a hill with a grade of approximately 18 degrees. Investigators determined the speed of the truck was too fast for the type of terrain the semi-truck and trailer was traveling, which resulted in the driver losing control of the vehicle. The driver attempted to regain control of the truck by taking evasive action, but was unable to do so before crossing the centerline and entering the west-bound travel lanes. The trailer struck the W-beam guardrail that separates the west-bound travel lane from a large embankment.

The force of the impact punctured and compromised the guardrail, and the shifting weight of the cargo pitched the trailer off of the roadway. The trailer overturned as it descended down the embankment, subsequently pulling the tractor down and overturning it as it exited the highway down the embankment. The semi-truck came to final rest partially on the west-bound travel lane with the rear of the truck and trailer completely off of the roadway. First responders arrived on the scene of the crash at 6:37 AM. Upon approaching the vehicle, it was determined that the driver had succumbed to injuries sustained in the crash, and he was pronounced dead at the scene. Accident investigators determined the victim was wearing a seat belt.

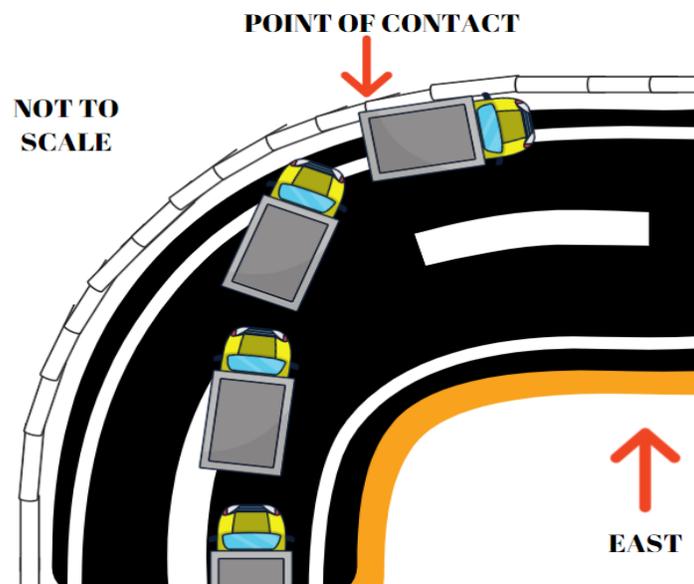


Diagram 1. Diagram showing the path the semi-truck and trailer traveled as it crossed the centerline and struck the W-beam guardrail before descending down the embankment. Photo created by KY FACE.



Kentucky Injury Prevention and Research Center
Bona fide agent for Kentucky Department for Public Health
333 Waller Avenue, Suite 242 • Lexington, KY 40504 • 859-257-5839

CAUSE OF DEATH

According to the death certificate, the victim died due to positional asphyxia and blunt force injuries as a result of a motor vehicle crash.

CONTRIBUTING FACTORS

Occupational injuries and fatalities are often the result of one or more contributing factors or key events in a larger sequence of events that ultimately result in the injury or fatality. Kentucky FACE investigator identified the following unrecognized hazards as key contributing factors in this incident:

- Traveling too fast for terrain
- Failing to inspect equipment
- Operating equipment with inadequate brakes

RECOMMENDATIONS/DISCUSSION

Recommendation #1: Commercial motor vehicle (operators should adjust speed to safely match adverse terrain conditions.

Discussion: Collision investigators determined that the driver was traveling at a speed inappropriate for the type of terrain and vehicle being operated. It was determined that the truck was traveling at or near the posted speed limit of 55 miles per hour; however, this section of highway is particularly curvy with several large ascending hills. Due to the treacherous nature of the highway, investigators stated that the vehicle was traveling at a speed that was too fast for the terrain. According to the Federal Motor Carrier Safety Administration (FMCSA), speed limit signs, especially on curve warning signs are intended for passenger vehicles, not large trucks; FMCSA suggest trucks reduce their speed even further. According to FMCSA, studies have shown that large trucks entering a curve, even at the posted speed limit, have lost control and rolled over due to their high center of gravity. The study also revealed that 40 percent of speeding-related fatalities occur on curves. The FMCSA states that a commercial driver should adjust his/her speed considering the traffic, road, and weather conditions. Additionally, braking in a curve can cause the wheels to lock up and the vehicle to skid³. Due to their high center of gravity, traveling at a safe speed is essential to the secure operation of a commercial motor vehicle.

Kentucky Injury Prevention and Research Center
Bona fide agent for Kentucky Department for Public Health
333 Waller Avenue, Suite 242 • Lexington, KY 40504 • 859-257-5839

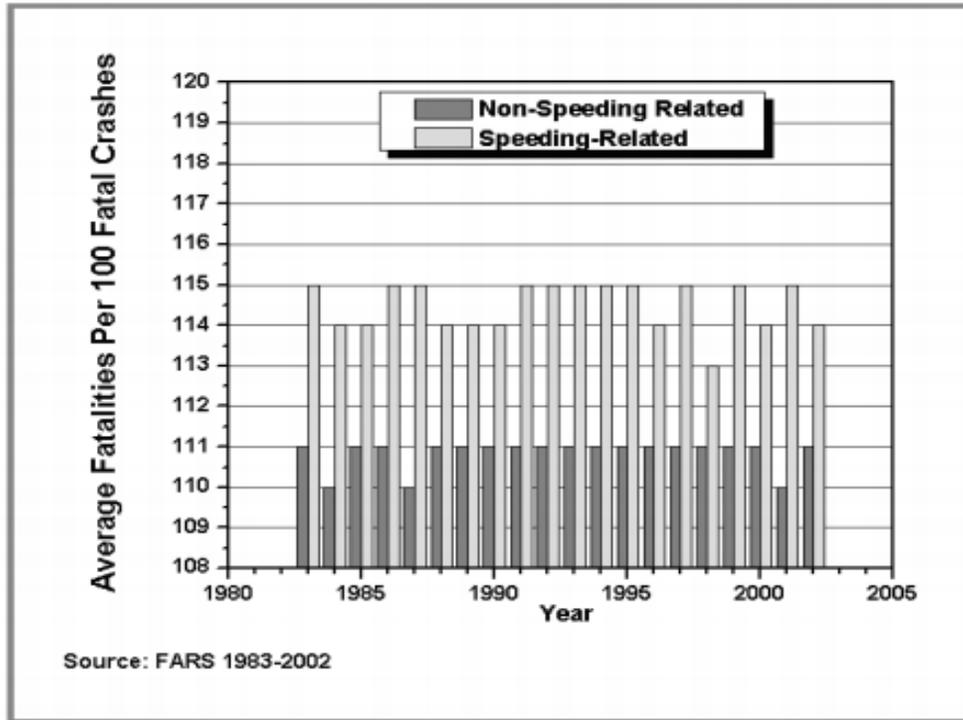


Chart 1. Chart depicting fatal crashes in which speeding was a contributing factor compared to those in which speeding was not a factor from 1983-2002⁴.

Recommendation #2: CMV Operators should complete driver vehicle inspection reports on all equipment prior to operating commercial vehicles.

Discussion: Collision investigators determined that multiple brakes were out of adjustment on the semi-truck and trailer combination. In addition to traveling too fast for the terrain, having inadequate brakes may have led to the driver being unable to slow the vehicle effectively. Examining all vehicle components is a critical step in ensuring the safe operation and mechanical road worthiness of a commercial motor vehicle. FMCSR 396.13 states that before driving a commercial motor vehicle, the driver shall be satisfied that the motor vehicle is in safe operating condition. FMCSR 396.11 states that at a minimum, drivers must check the following item:

- Service brakes including trailer brake connections;
- Parking brake;
- Steering mechanism;
- Lighting devices and reflectors;
- Tires;
- Horn;

Kentucky Injury Prevention and Research Center
Bona fide agent for Kentucky Department for Public Health
333 Waller Avenue, Suite 242 • Lexington, KY 40504 • 859-257-5839

- Windshield wipers;
- Rear vision mirrors;
- Coupling devices;
- Wheels and rims;
- Emergency equipment⁵.

It is unknown whether or not the driver completed a vehicle inspection; however, had a proper vehicle inspection been completed, the brake violations may have been discovered and allowed the operator to perform proper repairs on the equipment. The Commercial Vehicle Safety Alliance (CVSA), conducted an unannounced brake inspection blitz in May 2019. 10,358 Commercial Motor Vehicles were inspected during the seven-day period; of those inspected, 16% of vehicles - 1,667 in total - received brake violations. According to an article published in Fleet Owner, these violations simply should not occur⁶. Learning how to check the brakes on a semi-truck and trailer during a pre-trip inspection is part of a commercial driver's license (CDL) training and is tested on the CDL exam. In addition to pre-trip inspections, Fleet Owner states that good preventative maintenance practices should catch normal wear and tear before it deteriorates into an unsafe condition⁶. CMV Operators should complete driver vehicle inspection reports on all equipment prior to operating commercial vehicles to catch violations that could compromise the safe operation of equipment.

Recommendation #3: The Kentucky Transportation Cabinet should consider assigning commercial vehicle specific speed limits to state highways.

Discussion: Collision investigators determined that the involved semi-truck and trailer was traveling at approximately the posted speed limit of 55 miles per hour. However, investigators also determined the speed traveled was too fast for the type of terrain and vehicle being operated. Speed limits are typically set to apply to passenger vehicles and do not account for the added size and weight of commercial motor vehicles. CMV's can legally weigh up to 80,000 pounds and reach lengths up to 65 feet. Due to the extended weight and length, commercial vehicles struggle to navigate rural state highways as easily as passenger vehicles. Currently, commercial vehicles are held to the same standard as passenger vehicles on most state-maintained highways. Commercial vehicle operators should adjust speed to safely match adverse terrain conditions, and having a posted speed limit that applies primarily to passenger vehicles likely prompts CMV drivers to travel at the posted speed rather than a safe speed. According to a study conducted by The Insurance Institute for Highway Safety, upwards of 33,000 fatal accidents between 1993 and 2013 could be linked to increased speed limits. The study concluded that death rates would have been considerably lower had states not increased speed limits⁷. Semi-trucks have increased stopping distances when compared to stopping distances of passenger cars. According to a study conducted by the Utah Department of Transportation, total stopping distance is made up of three parts:

Kentucky Injury Prevention and Research Center
Bona fide agent for Kentucky Department for Public Health
333 Waller Avenue, Suite 242 • Lexington, KY 40504 • 859-257-5839

1. Perception Distance – The distance a vehicle travels while a driver is identifying, predicting and deciding to slow down for a hazard.
2. Reaction Time – The time it takes for a driver to execute a decision once a danger is recognized. The distance your vehicle travels while you react is called a reaction distance.
3. Braking Distance – The distance a vehicle travels from the time a driver begins pressing on the brake pedal until the vehicle comes to a stop⁸.

Taking these three factors into account, the below graph compares car braking distance to semi braking difference. At 55 MPH, the speed limit the victim was traveling, a semi-truck would need approximately 335 feet to come to a complete stop v/s a passenger vehicle needing only 225 feet.

Total Stopping Distances

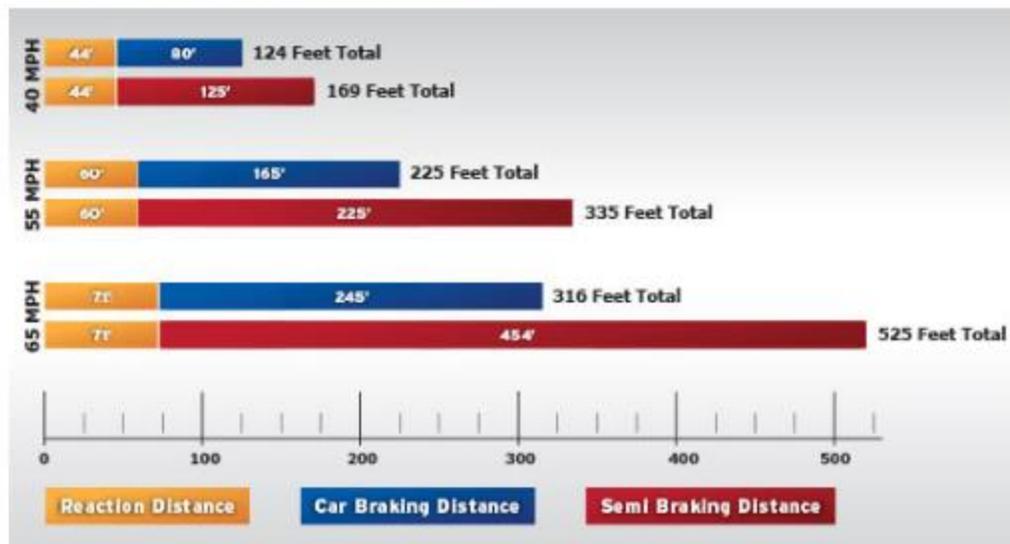


Chart 2. Chart depicting car braking distances v/s semi braking distance⁸.

Considering commercial vehicle size, weight and increase stopping distance, the Kentucky Transportation Cabinet should consider assigning commercial vehicle specific speed limits to state highways.



Kentucky Injury Prevention and Research Center
Bona fide agent for Kentucky Department for Public Health
333 Waller Avenue, Suite 242 • Lexington, KY 40504 • 859-257-5839

DISCLAIMER

This case report was developed to draw the attention of employers and employees to a serious safety hazard and is based on preliminary data only. This publication does not represent final determinations regarding the nature of the incident, cause of the injury, or fault of the employer, employee, or any party involved.

REFERENCES

- [1] Company Snapshot. <https://safer.fmcsa.dot.gov/>
- [2] Historical Weather Date. <https://wunderground.com/history>
- [3] Speeding. <https://www.fmcsa.dot.gov/safety/driver-safety/cm-v-driving-tips-too-fast-conditions>
- [4] FARS Report. <https://pdfs.semanticscholar.org/bc30/789baa1d9cc6328e008ce01e46f8eed640d4.pdf>
- [5] Driver vehicle inspection reports. <https://www.fmcsa.dot.gov/regulations/title49/b/5/3>
- [6] Brake Facts. <https://www.fleetowner.com/ideaxchange/are-you-ready-cvsa-brake-safety-week>
- [7] Speed. <https://www.cdjobs.com/news-notes/news/should-there-be-a-maximum-speed-limit-for-trucks>
- [8] Braking. <https://www.udot.utah.gov/trucksmart/motorist-home/stopping-distances/>

INVESTIGATOR INFORMATION

This investigation was conducted by Beau Mosley, Fatality Investigator, Fatality Assessment and Control Evaluation, Kentucky Injury Prevention and Research Center, University of Kentucky, College of Public Health.

ACKNOWLEDGEMENTS

The Kentucky FACE Program would like to thank the county coroner and the Kentucky State Police for their assistance with completion of this report.

PROGRAM FUNDING

The Kentucky Fatality Assessment & Control Evaluation Program (FACE) is funded by grant 5U600H008483-15 from the National Institute for Occupational Safety and Health (NIOSH)