



KENTUCKY TRANSPORTATION CENTER

176 Raymond Building, University of Kentucky
859.257.4513 www.ktc.uky.edu

Analysis of Farm Vehicle Crashes and Safety Belt Usage

Kentucky Transportation Center Research Report — KTC-16-18/KSP1-16-1F

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Kentucky Transportation Center
176 Oliver H. Raymond Building
Lexington, KY 40506-0281
(859) 257-4513

www.ktc.uky.edu



Research Report
KTC-16-18/KSP1-16-1F

Analysis of Farm Vehicle Crashes and Safety Belt Usage

by

Kenneth R. Agent, P.E.
Transportation Research Engineer

Eric R. Green, P.E.
Transportation Research Engineer

Michael A. Fields
Research Analyst

Kentucky Transportation Center
College of Engineering
University of Kentucky
Lexington, Kentucky

in cooperation with
Kentucky Transportation Cabinet
Commonwealth of Kentucky

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1.0 INTRODUCTION AND BACKGROUND

The use of safety belts and child safety seats has been shown to be an effective means of reducing injuries to motor vehicle occupants involved in traffic crashes. There have been various methods used in efforts to increase safety belt and safety seat usage. Past efforts have included public information campaigns, local followed by statewide legislation, and enforcement of the legislation.

The most recent legislation in Kentucky changed the statewide legislation requiring the use of safety belts for all vehicle occupants from secondary to primary enforcement. A statewide law providing secondary enforcement was enacted in 1994, with the primary enforcement law passed with an effective date in 2006.

The current legislation (KRS 189.125) provides a definition for a motor vehicle. The definition is that the legislation applies to every vehicle designed to carry fifteen or fewer passengers and used for the transportation of persons. Exceptions are provided for motorcycles, motor-driven cycles, and farm trucks registered for agricultural use only and having a gross weight of one ton or more.

Statewide observational surveys have been conducted in Kentucky annually from 1982 through 2016. The statewide usage rate for drivers of passenger cars, pickup truck, vans, and sport utility vehicles has increased from approximately four percent in 1982 to 87 percent in 2016. The usage rates have been found to vary by the type of vehicle. Usage rates found in the 2016 report ranged from 88 percent for passenger cars, 79 percent for pickup trucks, and 89 percent for vans and sport utility vehicles (KTC-16-06; 2016 Safety Belt Usage Survey in Kentucky).

The effect of the exception for the required use of safety belts provided for farm vehicles on the usage rate for occupants of this type of vehicle has not been quantified. To conduct the observational survey, a farm vehicle was defined as a vehicle with a farm license plate.

The objectives of the study were to collect data and review related Kentucky data to determine the following information:

- usage rate specifically for occupants of farm vehicles,
- the number of registered farm vehicles and their percentage of all registered vehicles,
- the number of crashes in which a farm vehicle was involved and their percentage of all crashes, and
- the number of injuries and fatalities for occupants of farm vehicles and their percentage of all injuries and fatalities.

2.0 NUMBER OF VEHICLES WITH FARM TAGS

The number of vehicles for which the exception for the use of a safety belt for farm trucks would apply was estimated. The method used to estimate the number of these vehicles was the number of registered vehicles with farm license plates.

An individual owning a truck having a gross weight of 38,000 pounds or less may have it registered as a farm truck. The individual must meet the requirements that they are a farmer engaged in the production of crops, livestock, or dairy products and own a truck with a gross weight of 38,000 pounds or less and that the truck is used for transporting persons or products related to the farming operation.

A request was made to the Kentucky Transportation Cabinet (KyTC) for a summary of the number of vehicles registered with a farm license plate. An analysis of statewide data, by county, obtained from the KyTC for July 2016 found 166,198 vehicles registered with farm license plates. This is an average of 1,385 per county. The number of farm tag registrations ranged from a low of 84 in Martin County to a high of 3,998 in Barren County. There were four other counties with fewer than 200 farm tag registrations (Bell, Harlan, Knott, and Leslie). There were three other counties with more than 3,000 (Pulaski, Shelby, and Warren).

The latest statewide data show about 3,860,000 total registered vehicles. The data show that only about 4.3 percent of registered vehicles in Kentucky have a farm license plate.

3.0 SAFETY BELT USAGE

The annual statewide safety belt usage survey involves collecting data at 150 sites located in 15 counties across the state. Survey locations have changed several times over the past years of data collection (in 1990, 1999, 2009, and 2013) due to modifications in the data collection procedure used. The reason for the changes was to obtain a nationwide standard data collection procedure.

For the past several years, a statewide “mini-survey” has been conducted in addition to the full survey. The mini-survey involves data collection at 21 sites (selected from the 200 sites for the survey first used prior to the change in sites made in 2009). The 21 sites represent the various road classifications and regions of the state. The mini-survey has been conducted to enable a comparison of identical sites over a long number of years (as the statewide sites change). It was not practical to obtain safety belt usage data for farm vehicles at all of the 150 statewide locations so the decision was made to collect data at the 21 mini-survey sites. It should be noted that the usage rates from mini-survey sites consistently compare closely to the usage rates from the 150 statewide locations.

The data collection procedure used for the statewide survey was also used for the farm vehicle survey. A detailed description of the data collection procedure can be found in the annual safety belt survey report. An additional data collector obtained farm vehicle data while the normal data collection was obtained at the mini-survey sites. Data were collected for front seat occupants of vehicles with a farm license plate.

A total sample size of 464 farm vehicles was obtained at the 21 survey locations. While all vehicle types were observed, about 91 percent of vehicles with a farm license plate were pickup trucks. Using the procedure used to combine the data for the various sites, a statewide rate usage rate of 69 percent was obtained for occupants in farm vehicles. As a comparison, the statewide percentage for pickup occupants at the mini-survey sites was 79 percent. Using the complete statewide survey, the overall usage rate for front seat occupants was 87 percent for all vehicle types and 79 percent for pickups.

The total sample size at the 21 mini-survey locations was almost 20,000 vehicle occupants. The small percentage of farm tag vehicles is shown with only about 2.4 percent of the vehicles identified with a farm tag.

The data show that almost all the farm vehicles observed were pickup trucks. The safety belt usage rate for farm vehicle occupants was about 10 percent less than the usage rate for pickup truck occupants in the statewide survey.

4.0 TRAFFIC CRASHES INVOLVING FARM VEHICLES

An effort was made to determine the number of vehicles with a farm license plate involved in crashes. The statewide crash file was reviewed, using vehicle license plate data, to determine the number of vehicles with a farm license plate involved in a crash.

Data were obtained for the five years of 2011 through 2015. The number of farm vehicles involved in crashes ranged from 2,959 in 2013 to 3,295 in 2015 with an average of 3,120 over the five years. Compared to the total number of vehicles involved in crashes, only about 1.3 percent was identified as a farm vehicle.

The data show that the percentage of farm vehicles involved in traffic crashes was under-represented in crashes compared to the overall percentage of registered vehicles for this type of vehicle. Farm vehicles represent about 4.3 percent of all registered vehicles while about 1.3 percent of vehicles involved in crashes are farm vehicles. Although the number of miles driven for farm vehicles is not available, this difference would likely be at least partially related to a smaller number of annual miles driven for farm vehicles compared to other types of vehicles.

The numbers of injuries and fatalities sustained by the occupants of the farm vehicles involved in traffic crashes were also analyzed. For the five years of 2011 through 2015, farm vehicles were involved in 57 fatal crashes resulting in 62 fatalities to farm vehicle occupants. This represents about 1.8 percent of all fatalities in this five-year period. There were 1,737 injuries for occupants of farm vehicles in these five years (209 incapacitating injuries, 596 non-incapacitating injuries, and 932 possible injuries). This represents about 1.2 percent of all incapacitating injuries, 1.0 percent of non-incapacitating injuries, and 0.9 percent of possible injuries over this five-year period.

Safety belt usage for the occupants in farm vehicles who sustained a fatal injury in a traffic crash was reviewed. The crash report was reviewed to determine the safety belt code for the occupant. The police codes indicated that only 48 percent of the occupants sustaining a fatal injury in the farm vehicle were wearing a safety belt. This compares to the usage rate of 69 percent found in the observational survey and shows the benefit of wearing a safety belt.

5.0 SUMMARY

Following is a summary of the results of the investigation of crashes involving farm vehicles and safety belt usage by occupants of those vehicles.

- The observation survey found a usage rate for drivers and front seat occupants of farm vehicles of 69 percent.
- About 91 percent of the vehicles observed with a farm license plate were pickup trucks.
- In 2016, the statewide-observed safety belt usage rate was about 87 percent for all vehicles and 79 percent for pickups.
- The usage rate for occupants of farm vehicles (almost all pickups) was about 10 percent less than the usage rate found for all pickups in the statewide survey.
- Vehicle registration data show that about 4.3 percent of registered vehicles in Kentucky have a farm license plate.
- A review of the crash database found that about 1.3 percent of all vehicles involved in crashes in Kentucky had a farm license plate.

- The percentage of farm vehicles involved in crashes is less than the percentage of this type of vehicle of all registered vehicles. This difference may be related to less miles driven per year for farm vehicles compared to all vehicles
- The number of fatalities involving an occupant of a farm vehicle represents about 1.8 percent of all fatalities. This percentage is about 1.0 percent for injuries.
- The police codes show that only about 48 percent of the occupants sustaining a fatal injury in a farm vehicle were wearing a safety belt. This percentage is about 20 percent lower than the usage rate for farm vehicle occupants found in the survey and illustrates the benefit of safety belt use.

6.0 CONCLUSIONS

The analysis results in the following conclusions relating to the current exemption in the legislation requiring the wearing of a safety belt for occupants of farm vehicles.

- The exemption for safety belt use for occupants of farm vehicles has resulted in a lower usage rate for farm vehicle occupants. Removing the exemption has the potential to increase usage for occupants in this type of vehicle about 10 percent.
- An increase in safety belt use for occupants of farm vehicles (from removing their exemption from the safety belt law) would result in a small increase (less than one percent) in the statewide safety belt usage rate.
- Given the effectiveness of safety belts in reducing injury severity (as shown in the analysis of crashes involving farm vehicles), increasing usage rates for farm vehicle occupants would reduce the number of fatalities and injuries for occupants of these vehicles involved in traffic crashes.