

## COMMERCIAL VEHICLES, 2014

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## INTRODUCTION

This fact sheet summarizes Indiana traffic collisions involving commercial vehicles (CVs), by examining the characteristics of the collisions, the types of vehicles, and individuals involved from 2010 to 2014. Data come from the Indiana State Police Automated Reporting and Information Exchange System (ARIES) as of March 23, 2015. Collision severity, person type, personal injury status, and restraint use are examined for each type of commercial vehicle and other involved traffic units. The incidence of hazmat placards and releases in Indiana collisions is also noted.

Commercial vehicles (CVs) are defined as:

- (1) large trucks (single 2 axle, 6 tires; single 3 or more axles; truck/trailer — not semi; tractor — cab only, no trailer; tractor/one semi-trailer; tractor/double trailer; tractor/triple trailer),
- (2) combination vehicles,
- (3) pickup trucks over 10,000 pounds,
- (4) buses (15+ passengers with driver),
- (5) school buses, or
- (6) any vehicle with a hazardous materials (hazmat) placard.

In 2014:

- Of the 205,532 collisions reported in Indiana in 2014, 8 percent involved CVs.
- From 2010 to 2014, commercial vehicle collisions increased annually about 5 percent. From 2013 to 2014, collisions involving large trucks or buses increased 23 percent each.
- In 2014, there were 147 persons killed in commercial vehicle collisions—of these, 128 were *not* riding in the commercial vehicle.
- Passengers in CVs are least likely to be properly restrained in collisions.
- The release of hazardous materials in commercial vehicle collisions is rare (less than 1 percent of collision-involved CVs).

*Note: Data discrepancies may exist between the 2014 Indiana traffic safety reports and previous traffic safety publications due to updates to the Indiana State Police ARIES data that have occurred since the original publication dates.*

*The most recent ARIES upgrade added a clarification to reporting officers on the definition of incapacitating injuries criteria to include "transported from scene for treatment"; therefore, 2014 increases in incapacitating injuries should be interpreted with caution.*

Table 1. Indiana collisions involving commercial vehicles (CVs) by collision severity, 2010-2014

Type of CV involved/ collision severity	Count of collisions					Annual rate of change	
	2010	2011	2012	2013	2014	2013-2014	2010-2014
<b>Any CV</b>	<b>13,938</b>	<b>14,454</b>	<b>13,538</b>	<b>13,717</b>	<b>16,791</b>	<b>22.4%</b>	<b>4.8%</b>
Fatal	112	130	111	101	131	29.7%	4.0%
Incapacitating	199	216	220	203	357	75.9%	15.7%
Non-incapacitating	1,708	1,770	1,617	1,652	1,836	11.1%	1.8%
Property damage	11,919	12,338	11,590	11,761	14,467	23.0%	5.0%
<b>Collisions involving a large truck</b>	<b>12,040</b>	<b>12,494</b>	<b>11,817</b>	<b>11,919</b>	<b>14,595</b>	<b>22.5%</b>	<b>4.9%</b>
Fatal	105	123	108	98	124	26.5%	4.2%
Incapacitating	185	198	194	189	325	72.0%	15.1%
Non-incapacitating	1,496	1,580	1,423	1,450	1,619	11.7%	2.0%
Property damage	10,254	10,593	10,092	10,182	12,527	23.0%	5.1%
<b>Collisions involving a bus</b>	<b>1,736</b>	<b>1,880</b>	<b>1,612</b>	<b>1,658</b>	<b>2,040</b>	<b>23.0%</b>	<b>4.1%</b>
Fatal	7	7	3	3	6	100.0%	-3.8%
Incapacitating	14	18	26	12	30	150.0%	21.0%
Non-incapacitating	197	188	191	199	207	4.0%	1.2%
Property damage	1,518	1,667	1,392	1,444	1,797	24.4%	4.3%
<b>Collisions involving other CV</b>	<b>162</b>	<b>80</b>	<b>109</b>	<b>140</b>	<b>156</b>	<b>11.4%</b>	<b>-0.9%</b>
Fatal	0	0	0	0	1	--	--
Incapacitating	0	0	0	2	2	--	--
Non-incapacitating	15	2	3	3	10	233.3%	-9.6%
Property damage	147	78	106	135	143	5.9%	-0.7%

Source: Indiana State Police Automated Reporting and Information Exchange System, as of March 23, 2015



## COLLISIONS

In 2014, there were 16,791 traffic collisions involving at least one or more CVs (Table 1); of these, 87 percent involved *large trucks* (calculated from Table 1). CV collisions have increased from 2010 to 2014 by nearly 5 percent per year. Of the 131 fatal collisions that included a CV in 2014, 95 percent involved large trucks. From 2013 to 2014, there was substantial growth among all levels of CV collision severity involving *large trucks* and *buses*.

## VEHICLES

There were 18,315 collision-involved CVs in 2014, representing 5 percent of the 363,605 traffic units involved in collisions (Table 2). Large trucks comprised nearly 90 percent of CVs involved in collisions. The number of involved CVs has grown substantially over the five-year period, and especially since 2013. Considering all CVs involved in *fatal* collisions in 2014, the vast majority (157 of 164) were *large trucks*.

Few CVs with *hazmat placards* were involved in collisions from 2010 to 2014—typically around 2 percent of all involved CVs (Table 3). Each year from 2010 to 2014, approximately 1 percent of collision-involved CVs reported the release of hazardous material due to the collision. More CVs without a *hazmat placard* released hazardous materials than did CVs with *hazmat placards*.

**Table 2. Commercial vehicles (CVs) involved in Indiana collisions by vehicle type and collision severity, 2010-2014**

Vehicle type/collision severity	Count of vehicles					Annual rate of change	
	2010	2011	2012	2013	2014	2013-2014	2010-2014
<b>All CVs</b>	<b>15,043</b>	<b>15,756</b>	<b>14,666</b>	<b>14,895</b>	<b>18,315</b>	<b>23.0%</b>	<b>5.0%</b>
Fatal	122	150	129	125	164	31.2%	7.7%
Injury	2,006	2,127	1,936	1,960	2,368	20.8%	4.2%
Property damage	12,915	13,479	12,601	12,810	15,783	23.2%	5.1%
<b>Large trucks</b>	<b>13,336</b>	<b>13,954</b>	<b>13,112</b>	<b>13,318</b>	<b>16,336</b>	<b>22.7%</b>	<b>5.2%</b>
Fatal	116	143	126	123	157	27.6%	7.9%
Injury	1,812	1,933	1,743	1,765	2,137	21.1%	4.2%
Property damage	11,408	11,878	11,243	11,430	14,042	22.9%	5.3%
<b>School bus</b>	<b>820</b>	<b>923</b>	<b>768</b>	<b>720</b>	<b>898</b>	<b>24.7%</b>	<b>2.3%</b>
Fatal	3	5	1	0	3	--	0.0%
Injury	87	97	83	77	91	18.2%	1.1%
Property damage	730	821	684	643	804	25.0%	2.4%
<b>Buses</b>	<b>650</b>	<b>683</b>	<b>598</b>	<b>647</b>	<b>812</b>	<b>25.5%</b>	<b>5.7%</b>
Fatal	3	2	2	2	3	50.0%	0.0%
Injury	83	78	96	103	114	10.7%	8.3%
Property damage	564	603	500	542	695	28.2%	5.4%
<b>Combination vehicle</b>	<b>237</b>	<b>196</b>	<b>187</b>	<b>205</b>	<b>263</b>	<b>28.3%</b>	<b>2.6%</b>
Fatal	0	0	0	0	1	--	--
Injury	24	19	14	15	26	73.3%	2.0%
Property damage	213	177	173	190	236	24.2%	2.6%

Source: Indiana State Police Automated Reporting and Information Exchange System, as of March 23, 2015

**Notes:**

- 1) *Vehicle types* will not sum to all CVs due to inclusion of *unknowns* in all CVs.
- 2) *Injury* collisions include those with at least one incapacitating or non-incapacitating injury.

**Table 3. Commercial vehicles (CVs) in Indiana collisions by hazmat placard and hazmat release, 2010-2014**

	Count of vehicles					Annual rate of change	
	2010	2011	2012	2013	2014	2013-2014	2010-2014
<b>Total CVs in collisions</b>	<b>15,043</b>	<b>15,756</b>	<b>14,666</b>	<b>14,895</b>	<b>18,315</b>	<b>23.0%</b>	<b>5.0%</b>
CVs with hazmat placard	303	334	304	333	378	13.5%	5.7%
CVs with hazmat release	213	214	151	126	148	17.5%	-8.7%
Release with hazmat placard	59	50	53	38	30	-21.1%	-15.6%
Release without hazmat placard	154	164	98	88	118	34.1%	-6.4%
<b>Percent total CVs in collisions:</b>							
with hazmat placard	2.0%	2.1%	2.1%	2.2%	2.1%		
with hazmat release	1.4%	1.4%	1.0%	0.8%	0.8%		
without hazmat placard	1.0%	1.0%	0.7%	0.6%	0.6%		

Source: Indiana State Police Automated Reporting and Information Exchange System, as of March 23, 2015

# INDIVIDUALS IN CV COLLISIONS

Individuals involved in CV collisions include CV operators and passengers, the operators and passengers of other vehicles (motorists), and non-motorists. In 2014, this included 16,900 persons in CVs, as well as 11,514 other motorists and 87 non-motorists (Table 4). Persons not in CVs are

more likely to be injured or killed than CV occupants. From 2010 to 2014, 678 individuals were killed in CV collisions, consisting of non-CV drivers and their passengers (58 and 21 percent, respectively), the CV drivers (11 percent), non-motorists (7 percent), and CV passengers (3 percent) (Figure 1).

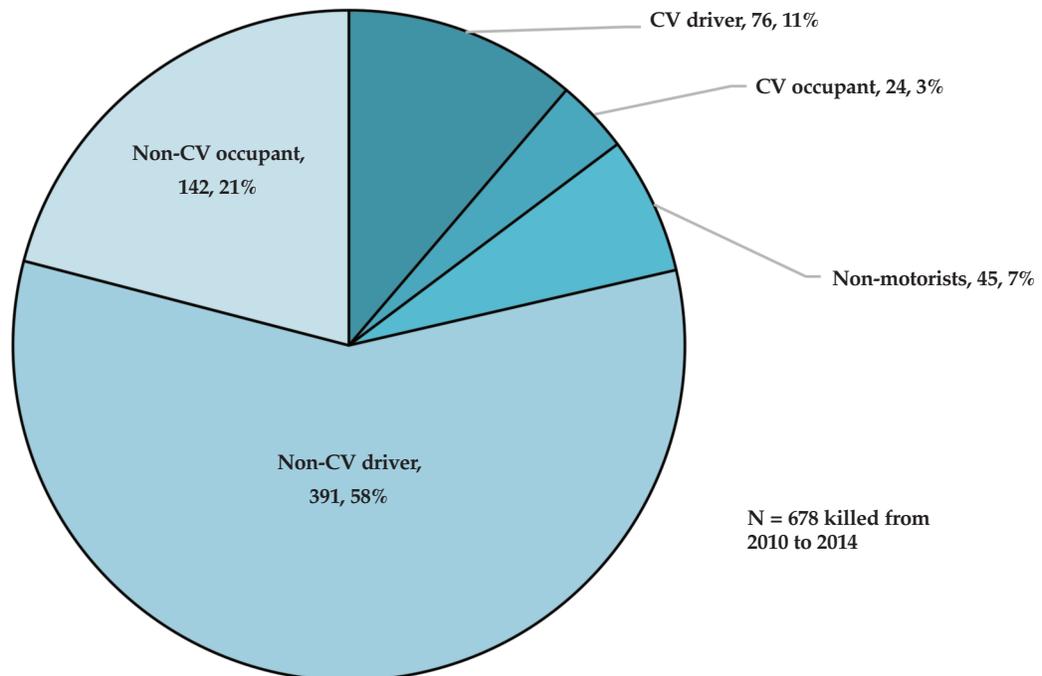
**Table 4. Individuals in Indiana collisions involving a commercial vehicle (CV) by vehicle type and injury severity, 2010-2014**

Vehicle type/injury status	Count of individuals					Annual rate of change	
	2010	2011	2012	2013	2014	2013-2014	2010-2014
<b>Persons in CVs</b>	<b>13,807</b>	<b>14,382</b>	<b>13,493</b>	<b>13,646</b>	<b>16,900</b>	<b>23.8%</b>	<b>5.2%</b>
Fatal	13	27	24	17	19	11.8%	10.0%
Injured	969	1,019	896	1,061	1,190	12.2%	5.3%
Not injured	12,825	13,336	12,573	12,568	15,691	24.8%	5.2%
<b>Other motorists</b>	<b>9,654</b>	<b>10,106</b>	<b>9,368</b>	<b>9,449</b>	<b>11,514</b>	<b>21.9%</b>	<b>4.5%</b>
Fatal	107	120	93	97	116	19.6%	2.0%
Injured	1975	1969	1902	1797	2126	18.3%	1.9%
Not injured	7572	8017	7373	7555	9272	22.7%	5.2%
<b>Non-motorists</b>	<b>80</b>	<b>80</b>	<b>72</b>	<b>77</b>	<b>87</b>	<b>13.0%</b>	<b>2.1%</b>
Fatal	7	12	6	8	12	50.0%	14.4%
Injured	63	54	54	57	62	8.8%	-0.4%
Not injured	10	14	12	12	13	8.3%	6.8%
<b>Rates of fatal injury</b>							
In CVs	0.1%	0.2%	0.2%	0.1%	0.1%		
Other motorists	1.1%	1.2%	1.0%	1.0%	1.0%		
Non-motorists	8.8%	15.0%	8.3%	10.4%	13.8%		
<b>Rates of non-fatal injury</b>							
In CVs	7.0%	7.1%	6.6%	7.8%	7.0%		
Other motorists	20.5%	19.5%	20.3%	19.0%	18.5%		
Non-motorists	78.8%	67.5%	75.0%	74.0%	71.3%		

Source: Indiana State Police Automated Reporting and Information Exchange System, as of March 23, 2015

Note: Injured includes incapacitating, non-incapacitating, possible, unknown, or refused treatment.

**Figure 1. Five-year total (2010-2014) of individuals killed in Indiana collisions involving commercial vehicles (CVs), by person type**



Source: Indiana State Police Automated Reporting and Information Exchange System, as of March 23, 2015

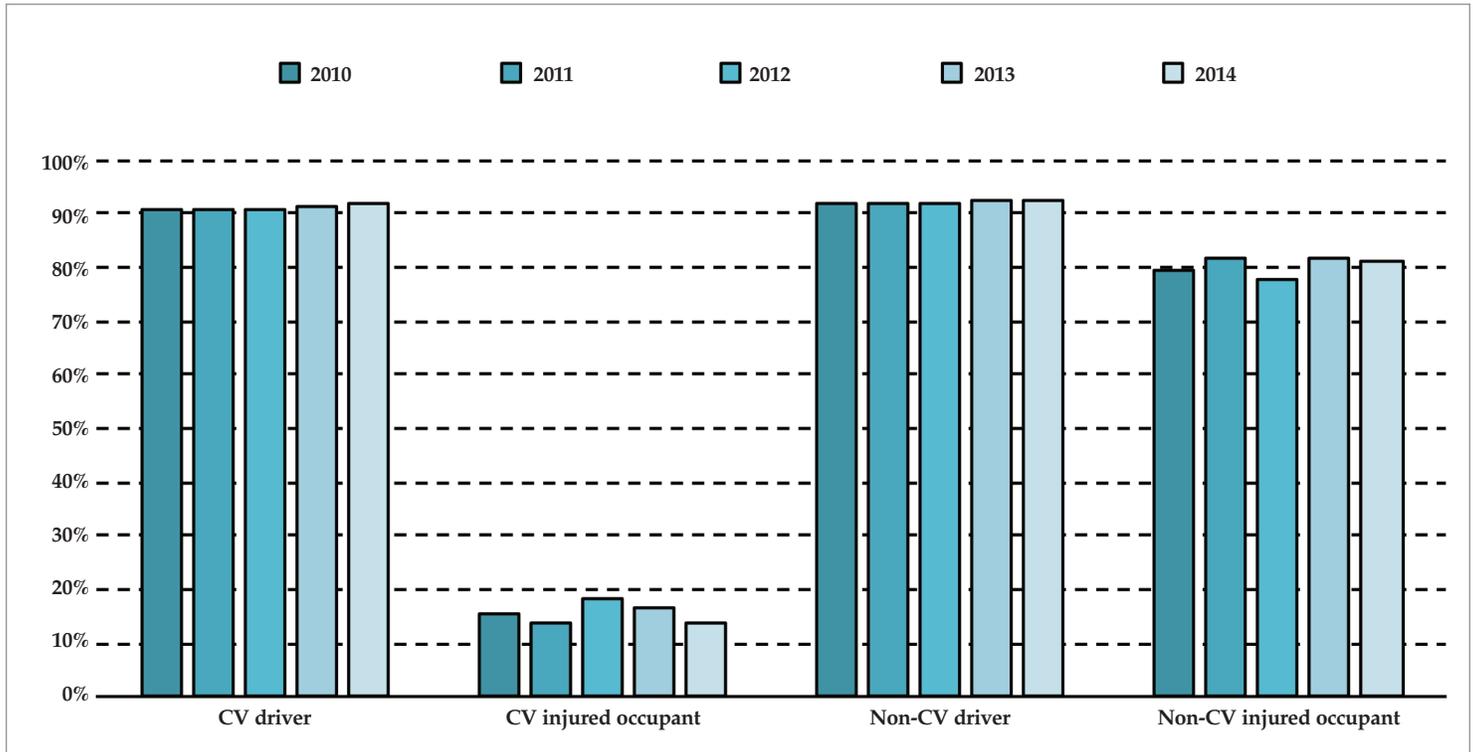


## RESTRAINT USE

Approximately 9 of 10 drivers involved in CV collisions were properly restrained across the five-year period (Figure 2). In comparison, passengers in CV-involved collisions have lower rates of restraint use than driv-

ers. This is most striking in the case of the passengers in the CV: in no year were more than 20 percent of injured occupants in a collision-involved CV properly restrained. The non-CV passengers had much higher restraint use rates (approximately 80 percent), although less than non-CV drivers.

Figure 2. Restraint use by individuals involved in commercial vehicle collisions by person type, 2010-2014



Source: Indiana State Police Automated Reporting and Information Exchange System, as of March 23, 2015

Notes:

- 1) Excludes non-motorists.
- 2) Individuals with 'NULL' and *unknown* restraint use are included as 'no restraint use'.

## DEFINITIONS

- **Annual rate of change (ARC)** – The rate that a beginning value must increase/decrease each period (e.g., month, quarter, year) in a time series to arrive at the ending value in the time series. ARC is a “smoothed” rate of change because it measures change in a variable as if the change occurred at a steady rate each period with compounding. For example, to measure change in a variable from 2010 to 2014, it is calculated as  $(\text{Value in 2014}/\text{Value in 2010})^{1/4} - 1$ .
- **Commercial vehicle** — Units identified within ARIES as (1) large trucks (*single 2 axle, 6 tires; single 3 or more axles; truck/trailer — not semi; tractor — cab only, no trailer; tractor/one semi-trailer; tractor/double trailer; tractor/triple trailer*), (2) *combination vehicles*, (3) *pickup trucks* over 10,000 pounds, (4) *buses (15+ passengers with driver)*, (5) *school buses*, or (6) any vehicle displaying a hazardous materials (*hazmat*) placard.
- **Hazmart placard** — A sign that must be affixed to any motor vehicle transporting hazardous materials in quantities above the thresholds established by the USDOT, or other authorized entity.
- **Hazmart release** — Some or all of the hazardous materials carried by the commercial vehicle were released at the accident site.
- **Motorists** — drivers/operators of collision-involved motor vehicles and the injured occupants in those vehicles.
- **Non-incapacitating injury** includes *non-incapacitating* and *possible* injuries.
- **Non-motorist** — *pedestrians, pedalcyclists, or animal-drawn vehicle operators*.
- **Restraint use** — Vehicle occupants are counted as restrained when the investigating officer selected any one of the following passenger vehicle safety equipment categories on the Indiana Crash Report: (1) *Lap belt only*; (2) *Harness*; (3) *Airbag deployed and harness*; (4) *Child restraint*; or (5) *Lap and harness*.

## DATA SOURCE

Indiana State Police Automated Reporting Information Exchange System (ARIES), as of March 23, 2015.

## COMMERCIAL VEHICLE DEFINITIONS

Indiana Code (IC 9-13-2-31.5 and IC 9-18-2-4). Accessed April 21, 2015, at <https://iga.in.gov/legislative/laws/2014/ic/titles/009/>

U.S. Federal Motor Carrier Safety Administration (U.S. Codebook of Federal Regulations (CFR) 383.1). Accessed April 21, 2015, at <http://www.gpo.gov/fdsys/granule/CFR-2011-title49-vol5/CFR-2011-title49-vol5-sec383-1>

Insurance Institute for Highway Safety (IIHS) (large trucks 10,000 pounds and greater). Accessed April 21, 2015 at <http://www.iihs.org/iihs/topics/t/large-trucks/qnda>

National Highway Transportation Safety Administration. (2015). *Traffic Safety Facts. 2013 Data*. Large trucks. DOT HS 812 150.

National Highway Transportation Safety Administration. (2015). *Traffic Safety Facts. 2004-2013 Data*. School-Transportation Related Crashes. DOT HS 812 170.



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This publication is one of a series of fact sheets that, along with the annual Indiana Crash Fact Book, form the analytical foundation of traffic safety program planning and design in the state of Indiana. Funding for these publications is provided by ICJI and the National Highway Traffic Safety Administration.

An electronic copy of this document can be accessed via the PPI website ([www.policyinstitute.iu.edu](http://www.policyinstitute.iu.edu)), the ICJI website ([www.in.gov/cji/](http://www.in.gov/cji/)), or you may contact the PPI at 317-261-3000.

## Traffic Safety Project

A collision produces three levels of data: collision, unit (vehicles), and individual. For this reason, readers should pay particular attention to the wording of statements about the data to avoid misinterpretations.

Designing and implementing effective traffic safety policies requires data-driven analysis of traffic collisions. To help in the policy-making process, the Indiana University Public Policy Institute is collaborating with the Indiana Criminal Justice Institute to analyze 2014 vehicle crash data from the Automated Reporting Information Exchange System (ARIES), maintained by the Indiana State Police. This marks the ninth year of this partnership. Research findings are summarized in a series of fact sheets on various aspects of traffic collisions, including alcohol-related crashes, trucks, dangerous driving, children, motorcycles, occupant protection, and drivers. An additional publication provides information on county and municipality data, and the final publication produced is the annual Indiana Crash Fact Book. These publications serve as the analytical foundation of traffic safety program planning and design in Indiana.

Indiana collision data are obtained from Indiana Crash Reports, as completed by law enforcement officers. As of December 31, 2014, approximately 99 percent of all collisions are entered electronically through ARIES. Trends in collisions incidence as reported in these publications incorporate the effects of changes to data elements on the Crash Report, agency-specific enforcement policy changes, re-engineered roadways, driver safety education programs, and other unspecified effects. If you have questions regarding trends or unexpected results, please contact the Indiana Criminal Justice Institute, Traffic Safety Division for more information.

## The Indiana Criminal Justice Institute

Guided by a Board of Trustees representing all components of Indiana's criminal and juvenile justice systems, the Indiana Criminal Justice Institute serves as the state's planning agency for criminal justice, juvenile justice, traffic safety, and victim services. ICJI develops long-range strategies for the effective administration of Indiana's criminal and juvenile justice systems and administers federal and state funds to carry out these strategies.

## The Governor's Council on Impaired & Dangerous Driving

The Governor's Council on Impaired & Dangerous Driving, a division of the Indiana Criminal Justice Institute, serves as the public opinion catalyst and the implementing body for statewide action to reduce death and injury on Indiana roadways. The Council provides grant funding, training, coordination, and ongoing support to state and local traffic safety advocates.

## Indiana University Public Policy Institute

The IU Public Policy Institute delivers unbiased research and data-driven, objective, expert analysis to help public, private and nonprofit sectors make important decisions that directly impact quality of life in Indiana. Using the knowledge and expertise of our staff and faculty, we provide research and analysis that is free of political and ideological bias. A multidisciplinary institute within the Indiana University School of Public and Environmental Affairs (SPEA), our efforts also support the Indiana Advisory Commission on Intergovernmental Relations (IACIR).

## The National Highway Traffic Safety Administration (NHTSA)

NHTSA provides leadership to the motor vehicle and highway safety community through the development of innovative approaches to reducing motor vehicle crashes and injuries. The mission of NHTSA is to save lives, prevent injuries and reduce economic costs due to road traffic crashes, through education, research, safety standards and enforcement activity.



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