



Non-Traffic Surveillance: Non-Crash Fatalities During 2008–2011

Summary

This Research Note provides information on fatalities to people of all ages and children 14 and younger, in particular, who were involved in “motor vehicle non-crash incidents” (herein referred to as “non-crash incidents”) over the four-year period: 2008 to 2011. The data on such incidents was obtained by the National Highway Traffic Safety Administration through its Non-Traffic Surveillance system. The statistics in this research note refer to the non-crash fatalities that occurred to people in these incidents during the above mentioned period.

On an average, 483 people were killed each year in non-crash incidents during 2008–2011. The three most frequent reasons for these fatalities were: crushed by a vehicle (30%), carbon monoxide poisoning from motor vehicle exhaust (24%), and fall from a vehicle (17%). During this period, on an average, 26 children 14 and younger died in non-crash incidents each year. About 77 percent of them died due to vehicle-related heatstroke or hyperthermia from extreme heat.

Introduction

The Non-Traffic Surveillance system is a virtual data collection system designed to provide counts and details of fatalities and injuries that occur in non-traffic crashes and non-traffic incidents. The non-traffic crashes refer to crashes that occur off the public trafficways, such as in driveways and parking lots, etc. On the other hand, non-crash incidents refer to incidents that involve passenger vehicles (cars, pickup trucks, vans, and SUVs), though the underlying mechanism is neither a traffic crash nor a non-traffic crash. These include incidents such as carbon monoxide poisoning by motor vehicle exhaust gas, crushed by a falling vehicle, or falling from a vehicle, etc. Since 2009, NHTSA has published six reports^{1,2,3,4,5,6} (listed in the reference section) covering both non-traffic crashes and non-crash incidents.

To obtain data on non-crash fatalities, NHTSA uses death certificates from the special mortality files of the National Vital Statistics System (NVSS) of the Centers for Disease Control and Prevention (CDC). The narrative sections of these certificates, pertaining to accidental deaths that did not involve a motor vehicle in transport, were searched for scenarios that involved passenger vehicles in non-crash incidents. Fatal incidents that occurred inside the vehicles or where the vehicles were otherwise a factor in accidental deaths were assigned appropriate incident types.

Fatalities in Non-Crash Incidents

This section presents estimates of the annual averages of non-crash fatalities attributable to likely incident types. The statistics, based on the mortality data in the CDC's NVSS database, pertain to the overall population and children 14 and younger, in particular.

Fatalities in Non-Crash Incidents

From 2008 to 2011, an average of 483 fatalities occurred each year in non-crash incidents involving passenger vehicles. Table 1 shows the distribution of these fatalities over some likely incident types. The highest percentage (30%) of the non-crash fatalities occurred to people who were crushed by falling vehicles, a scenario that usually occurs while working under a passenger vehicle that falls from its supports. About 24 percent of the non-crash fatalities occurred due to unintentional carbon monoxide poisoning from motor vehicle exhaust. Such incidents occur when a person remains inside an enclosed space such as garage or a running vehicle. Fall from a vehicle was the next highest incident type that caused about 17 percent of the non-crash fatalities. Vehicle fires caused 7 percent of the fatalities, while 5 percent of the fatalities occurred to people who were struck by objects. Incidents of heatstroke/hyperthermia that usually involve children resulted in 39

fatalities (8%) on average each year. Additionally, 20 fatalities (4%) were attributed to hypothermia, 5 fatalities (1%) were caused by positional asphyxia, and 2 fatalities occurred due to drowning/immersion of the vehicles. Vehicle window asphyxia occurs due to closing of the power windows or from partially opened (stationary) windows. This incident accounted for an annual average of 2 fatalities (less than 1% of all non-crash fatalities).

Table 1
Fatalities in Non-Crash Incidents, 2008–2011

Incident Type	Estimated Annual Average	
	Frequency	Percentage†
Crushed by vehicle	143	30%
Carbon monoxide poisoning from vehicle exhaust	114	24%
Fell from vehicle	80	17%
Heatstroke / hyperthermia	39	8%
Vehicle fire	33	7%
Struck by object	23	5%
Hypothermia	20	4%
Poisoning in vehicle from other source	7	1%
Wheelchair fell from vehicle	6	1%
Positional asphyxia	5	1%
Miscellaneous vehicle incidents	3	1%
Burns	2	<1%
Drowning	2	<1%
Electrocution	2	<1%
Vehicle window asphyxia	2	<1%
Tire explosion	1	<1%
Closed in trunk	1	<1%
Total	483	100%

Source: NVSS, 2008–2011

†The sum of percentages may not equal the total shown in the table due to rounding.

Fatalities Among Children 14 and Younger in Non-Crash Incidents

Table 2 shows the distribution of the fatalities among children 14 and younger in non-crash incidents such as heatstroke/hyperthermia, carbon monoxide poisoning, etc. About 77 percent of the estimated annual average of 26 non-crash fatalities to children occurred due to heatstroke/hyperthermia. The underlying cause of fatality reported on a death certificate for a case in which heatstroke is the suspected incident is not always heat-related and the narrative used to capture non-crash fatalities might not reference a motor vehicle. Thus, the number reported in this Research Note may differ from the total count of such fatalities obtained through other sources. In addition to the heat-related fatalities, carbon monoxide poisoning from the vehicle exhaust caused about 8 percent of the fatalities. Vehicle window asphyxia caused the death of 1 child. One child died due to falling from a vehicle and one being struck by an object.

Table 2
Fatalities Among Children 14 and Younger in Non-Crash Incidents, 2008–2011

Incident Type	Estimated Annual Average	
	Frequency	Percentage†
Heatstroke/Hyperthermia	20	77%
Carbon monoxide poisoning from vehicle exhaust	2	8%
Vehicle window asphyxia	1	4%
Crushed by vehicle	1	4%
Fell from vehicle	1	4%
Closed in trunk	1	4%
Total	26	100%

Source: NVSS 2008–2011

†The sum of percentages may not equal the total shown in the table due to rounding.

References

1. National Center for Statistics and Analysis. (2009, January). *Not-in-Traffic Surveillance 2011–Highlights*. (Traffic Safety Facts Crash•Stats. Report No. DOT HS 811 085). Washington, DC: National Highway Traffic Safety Administration. Available at <https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/811085>.
2. NCSA. (2009, June). *Not-in-Traffic Surveillance 2011 – Children*. (Traffic Safety Facts Crash•Stats. Report No. DOT HS 811 116). Washington, DC: National Highway Traffic Safety Administration. Available at <https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/811116>.
3. NCSA. (2012, August). *Not-in-Traffic Surveillance – Non-Crash Injuries*. (Traffic Safety Facts Crash•Stats. Report No. DOT HS 811 655). Washington, DC: National Highway Traffic Safety Administration. Available at <https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/811655>.
4. Singh, S., Stern, S., & Subramanian, R. (2014, April). *Not-in-Traffic Surveillance: Child Fatality and Injury in Nontraffic Crashes – 2008 to 2011 Statistics*. Crash•Stats, Report No. DOT HS 811 812). Washington, DC: National Highway Traffic Safety Administration. Available at <https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/811812>.
5. Singh, S., Stern, S., & Subramanian, R. (2014, April). *Not-in-Traffic Surveillance: Fatality and Injury Statistics in non-traffic crashes, 2008 to 2011*. Crash•Stats, Report No. DOT HS 811 813, Washington, DC: National Highway Traffic Safety Administration. Available at <https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/811813>.
6. Singh, S. (2016, August). *Non-Traffic Surveillance: Fatality and Injury Statistics in Non-Traffic Crashes, 2012 to 2014*. Crash•Stats, Report No. DOT HS 812 311, Washington, DC: National Highway Traffic Safety Administration. Available at <https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/812311>.

For More Information

For questions regarding the information presented in this Research Note, please contact NCSArequests@dot.gov. Internet users may access this Research Note and other general information on traffic safety at www.nhtsa.gov/research-data. To report a safety-related problem or to inquire about motor vehicle safety information, contact the Vehicle Safety Hotline at 888-327-4236.

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<https://crashstats.nhtsa.dot.gov/#/>.