

## Data Linkage Results

### Rollover Crash Injuries, Oklahoma, 2007

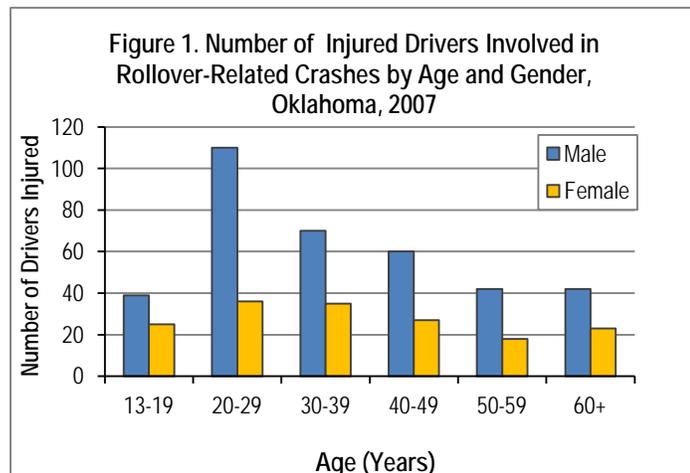
In 2007, in the United States, 41,059 persons were fatally injured and approximately 2.5 million were nonfatally injured in traffic crashes. The Insurance Institute for Highway Safety stated that over half of all single vehicle crash fatalities resulted from a rollover in which the vehicle flipped without colliding with another vehicle. In Oklahoma, in 2007, 30% (N=232) of fatal crash injuries were rollover-related; 79% involved a single vehicle crash.

#### Inclusion of Cases

Information on the traffic crash form is completed by law enforcement personnel, and it contains a specific variable for rollover incidents. Rollover-related crashes were identified from the 2007 linked Traffic Data Linkage Project (TDLP) database as all crash incidents that occurred on public roadways where the vehicle was involved in a rollover. Cases included all drivers and passengers who were hospitalized or killed in rollover crashes.

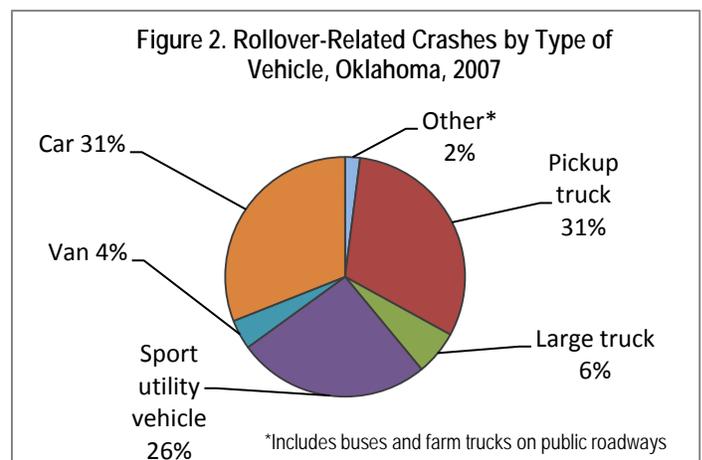
#### Rollover-Related Crashes

- Of a total 75,059 traffic crashes in Oklahoma in 2007, 4,387 (6%) were rollover-related.
- The 2007 TDLP data identified 630 rollover-related crashes that involved a hospitalized injury or fatality; 80% were single vehicle crashes and 20% were multi-vehicle.



#### Rollover-Related Crash Injuries: Hospitalizations and Deaths

- There was a total of 731 injured persons involved in rollovers. Seventy-two percent were drivers and 28% were passengers.
- Nearly one-third (N=232) of injured persons involved in rollovers died. There were 499 persons who were nonfatally injured, but hospitalized for their injuries.
- Overall, the median age of drivers was 35 years (range: 13-93 years). Males accounted for 69% of all drivers; the proportion of male drivers was consistently higher than female drivers in all age groups. The highest number of injuries occurred among drivers 20-29 years of age (Figure 1).
- Among persons who died, 69% were drivers and 31% passengers; 78% of drivers who died were male whereas 50% of passengers who died were male.
- Information on inpatient hospital charges was available for 517 persons. The overall total hospital charges were \$25.3 million (median \$27,452).
- Type of vehicle was known for 729 persons. The most common types of vehicles were passenger cars (31%), pickup trucks (31%), sport utility vehicles (26%), large trucks (6%), passenger vans (4%), and others (2%) (Figure 2).
- Ejection from vehicle status was known for 711 occupants. Approximately one of every three occupants (30%) was totally ejected from the vehicle during the crash; 7% were partially ejected.



## TDLP Data Linkage Results

### Rollover Crash Injuries, Oklahoma, 2007

- Approximately 40% (N=191) of drivers were reported to be speeding at the time of the incident.
- Time of injury was known for 729 persons. Rollover crash incidents most commonly occurred between noon and 3:59 pm (23%).
- Seat belt use and child restraint status were known for 678 persons. Of these, 56% were not restrained (Table 1). There was a total of 22 child passengers who were 8 years of age or younger; of these, 77% were not restrained.
- Males were less likely to wear a seat belt than females.
- Overall, the median age of persons who were not wearing a seat belt was less (28 years) than the median age of those who were belted (37 years). Persons younger than 40 years of age were significantly less likely to be restrained than persons 40 years and older.
- Drivers were more likely to be belted than passengers.
- Persons who survived were more likely to wear a seat belt than persons who died.
- Persons who were not impaired by alcohol were more likely to wear a seat belt than impaired persons.
- Occupants of passenger cars and pickup trucks had the lowest seat belt use rates; seat belt use was highest for occupants of passenger vans.
- Persons who were not wearing a seat belt were more likely to be totally or partially ejected than persons who were wearing a seat belt at the time of the rollover.
- Seat belt use status was not significantly different between drivers who were speeding and drivers who were not speeding.
- Types of injuries sustained were known for 458 hospitalized patients. The most common types of injuries sustained by persons in rollovers were fractures and/or dislocations (52%), traumatic brain injuries (23%), and spinal cord and/or vertebral column injuries (17%). Seat belt use was not significantly different for persons with traumatic brain injuries when compared to persons with other types of injuries.
- The median hospital charge was 39% higher for persons who were not wearing a seat belt (\$31,457) than for persons who were wearing a seat belt (\$22,650).

Table 1. Characteristics of Injured Persons by Seat Belt Use Status\*

Description	Seat belt in use (N=295)	Seat belt not in use (N=383)
Gender		
Male	169 (39%)	261 (61%)
Female	126 (51%)	122 (49%)
Median age	37 years Range: 2-88 years	28 years Range: 0-93 years
Age group (years)		
<1-13	8 (24%)	25 (76%)
14-19	38 (34%)	75 (66%)
20-29	74 (43%)	97 (57%)
30-29	35 (29%)	87 (71%)
40-49	47 (50%)	47 (50%)
50-59	40 (57%)	30 (43%)
60+	53 (71%)	22 (29%)
Occupancy status		
Driver	238 (48%)	253 (52%)
Passenger	57 (30%)	130 (70%)
Outcome		
Survived	246 (53%)	215 (47%)
Died	49 (23%)	168 (77%)
Alcohol		
Impaired	48 (27%)	127 (73%)
Not impaired	247 (49%)	256 (51%)
Vehicle type		
Sport utility vehicle	91 (52%)	85 (48%)
Passenger car	84 (39%)	132 (61%)
Pickup truck	82 (39%)	130 (61%)
Large truck	18 (49%)	19 (51%)
Passenger van	16 (59%)	11 (41%)
Other	4 (40%)	6 (60%)
Ejected from the vehicle**	(N=287)	(N=379)
Totally ejected	7 ( 3%)	216 (97%)
Partially ejected	7 (17%)	35 (83%)
Not ejected	273 (68%)	128 (32%)
Driver speeding	(N=238)	(N=253)
Yes	89 (50%)	90 (50%)
No	149 (48%)	163 (52%)
Common types of injuries		
Fractures/dislocations	115 (50%)	114 (50%)
Traumatic brain injury	47 (48%)	51 (52%)
Median hospital charge		
Nonfatal injuries	\$22,650	\$31,457
Range	\$1,234-\$319,006	\$1,634-\$529,935

\*Fifty-three persons with unknown restraint status were excluded.

\*\*The original crash reports were reviewed in detail. Narratives for these rollover incidents identified that the vehicles rolled between 2 and 4.25 times, the vehicle hit an object before it rolled, or the vehicle landed on its top. Seven persons who were totally ejected from the vehicle were wearing a seat belt; one of the seven persons was wearing a lap belt only. Persons may have been ejected during the rollovers due to the following reasons: (1) the seat belt was not used correctly; (2) it was a worn out seat belt; (3) seats were not in a proper travel position; (4) strong impact or high speed, or (5) a combination of any of these reasons.