

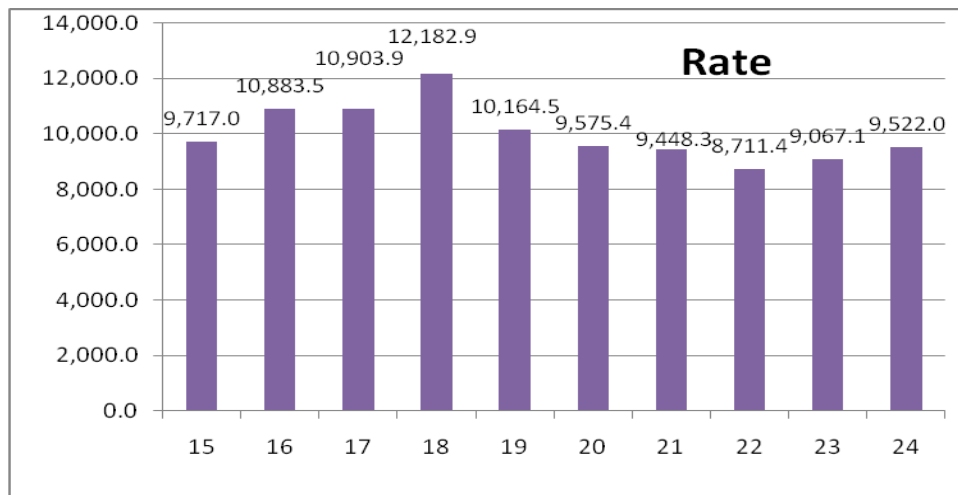
## Iowa Motor Vehicle Crash (MVC) Injury Facts among Emergency Department (ED) Visits -- A Profile of Unbelted Occupants of Passenger Cars, Vans/SUVs (2009)

□ In 2009, 94,686 persons were involved in MVC in Iowa. Among them, 370 persons were killed, and an additional 20,357 were injured<sup>1</sup>.

□ More than 220,087 persons went to Iowa emergency departments (ED) for treatment, which resulted in a total of \$292.8 million in ED charges<sup>2</sup> with an average hospital discharge of \$1,331 per visit (median \$795).

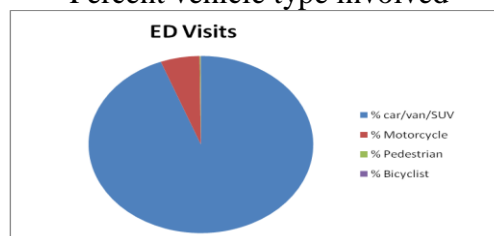
□ Young persons aged 18 had the highest ED visit rate compared to other age groups (see the Appendix 1 for details). Females had a slightly higher percentage than males for all age groups, except children younger than one year.

**MVC Injured ED Visit Rate per 100,000 Population by Age**



□ 10,593 ED patients<sup>3</sup> were linked to crash data records, comprising 11.2% of the total persons involved with crashes and 4.8% of the injuries reported by police officers. 9,235 persons (87.2% of the total links) were occupants of passenger cars, vans, pick-ups or SUVs. 550 (5.2%) were riders of motorcycles or all-terrain vehicles, 15 were pedestrians (0.1%) and 3 were bicyclists (<0.1%).

**Percent vehicle type involved**



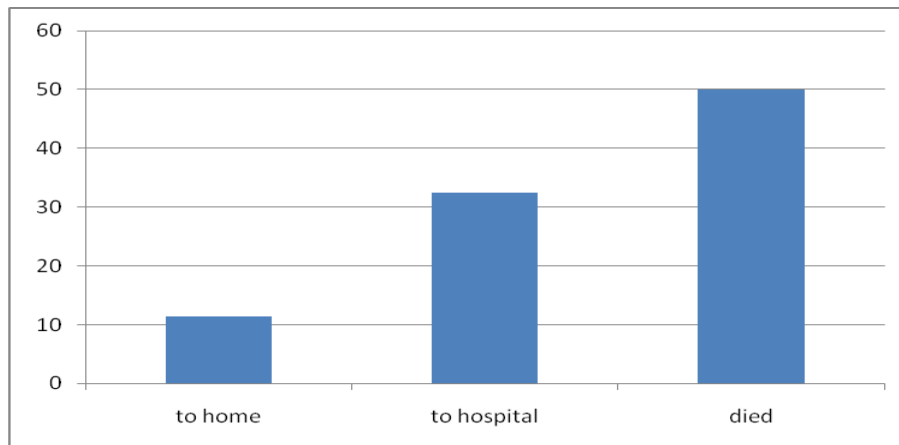
<sup>1</sup> Source: Iowa DOT crash data (2009)

<sup>2</sup> Source: Iowa hospital outpatient discharge data (2009)

<sup>3</sup> Produced by the CODES project (The Crash Outcome Data Evaluation System) at Iowa Department of Public Health

- 33.8% of unbelted occupants were ejected from their vehicles, including persons partially ejected, compared with 2.6% of belted occupants who were ejected.
- Consequently, those who died at ED had the highest percentage of being ejected (45.9%), and those who were admitted to hospitals had the second highest ejection percentage (24.1%). Only 5.8% of the persons discharged from EDs were ejected (see Appendix 2 for the details).
- The unbelted group also had a higher proportion of very severe vehicle damage (70.2%) compared to the belted group (47.4%). Almost three fifths were involved in single-vehicle-type collisions (62.5%), compared with the belted group (37%); they also had a lower proportion of crash location at intersection (26.8%) compared to belted occupants (39.4%).
- Of these linked ED patients, 8,660 (93.8%) were discharged from EDs, 440 (4.8%) were admitted to hospital from EDs and 27 died at EDs (0.3%). 37% of those who died at EDs were older than age 55.
- The persons who died at EDs had the highest unbelted rate (50%), the hospitalized persons had the second highest unbelted rate (32.5%), compared with the persons seen and discharged from the ED (11.4%).

**Percent of Unbelted by ED Discharge Status**



- Of the unbelted occupants, 12.4% were admitted to an inpatient unit compared with 3.7% of the belted occupants; almost 1.4% of unbelted persons died in ED compared with 0.2% of the belted persons. The unbelted persons were over three times more likely to be admitted than the belted persons (OR=3.3).
- 50.6% of the unbelted ED patients were persons aged 16-24. They had an average age of 31.2 (median at 24) compared with the belted (average age 37.3 and median 32); the unbelted group had more males (58%) than the belted group (42.6%).

□ 2.8% of the unbelted group had traumatic brain injury, a much higher percentage than the belted group (0.7%). The median ED charge for persons in the unbelted group was \$1,765.90; 30% higher than the belted group (\$1,340.50).

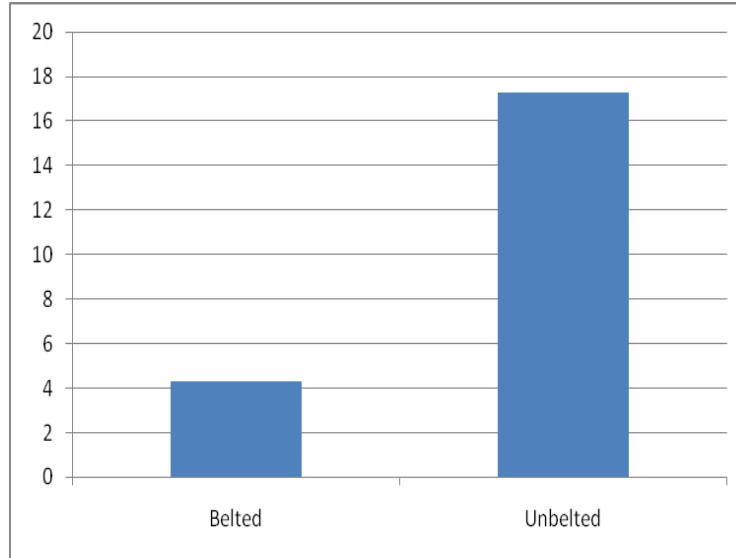
□ The unbelted group had a higher percentage where the payer source was public (19.4%) than the belted group; 15% of them did not have insurance.

□ Unbelted drivers had a four times higher proportion of alcohol or drug use (17.3%) than the belted drivers (4.3%).

**Table 1. Characteristics of Occupants of Passenger Car and Pickup/SUV\* by Seatbelt Use**

<b>Variable</b>	<b>Seatbelt Used</b>	<b>Seatbelt Not Used</b>
<b>Age 16-24</b>	35.0%	50.6%
<b>Age 25-34</b>	17.8%	19.3%
<b>Age 35-44</b>	13.5%	11.1%
<b>Age 45-54</b>	14.1%	6.8%
<b>Age 55+</b>	19.5%	12.2%
<b>Age in yr, mean (95%CI)</b>	37.3	31.2
<b>Age in yr, median</b>	32	24
<b>Male gender</b>	42.6%	58.0%
<b>Traumatic Brain Injury (TBI)</b>	0.7%	2.8%
<b>Median ED charge</b>	\$1,340.50	\$1,765.90
<b>Insurance payer -- Government</b>	15.0%	19.4%
<b>Private</b>	65.4%	57.6%
<b>Self-pay</b>	15.0%	17.8%
<b>Alcohol Involved or Drug used</b>	4.3%	17.3%
<b>Ejected</b>	2.6%	33.8%
<b>Air Bag deployed</b>	30.0%	22.5%
<b>Crash Location: Intersection</b>	39.4%	26.8%
<b>Driver</b>	75.1%	47.6%
<b>Front Passenger</b>	17.8%	19.4%
<b>Rear Passenger</b>	6.7%	26.4%
<b>Single Vehicle Collision</b>	37.0%	62.5%
<b>Head-on Collision</b>	5.5%	5.5%
<b>Rear-end Collision 8</b>	19.9%	7.2%
<b>Angle Collision</b>	5.9%	2.3%
<b>Broadside Collision</b>	23.2%	15.8%
<b>Sideswipe</b>	7.4%	4.8%
<b>Minor damage</b>	8.9%	3.5%
<b>Functional damage</b>	13.9%	8.1%
<b>Disabling damage</b>	27.8%	15.6%
<b>Severe, vehicle totaled</b>	47.4%	70.2%

### ED Admission where Alcohol Involved or Drug Used, Driver Only



### Appendix 1: MVC Injured ED Visits and Hospitalization by Age, 2009

Age	Number of ED Visits* (E810-E819)	ED Rate per 100,000 Population	Number Admitted to Hospital** (E810-E819)	Hospitalization Rate per 100,000 Population
14 & Under	50,896	8,725.3	770	132.0
15	4,075	9,717.0	91	217.0
16	4,648	10,883.5	111	259.9
17	4,737	10,903.9	96	221.0
18	5,109	12,182.9	92	219.4
19	4,826	10,164.5	97	204.3
20	4,526	9,575.4	88	186.2
21	4,268	9,448.3	83	183.7
22	3,921	8,711.4	101	224.4
23	3,629	9,067.1	74	184.9
24	3,669	9,522.0	74	192.0
15 – 24	43,408	10,013.2	907	209.2
25 – 34	30,871	8,452.0	653	178.8
35 - 44	24,130	6,173.0	573	146.6
45 – 54	23,599	5,330.3	762	172.1
55 – 64	15,875	4,754.5	646	193.5
65 – 74	10,735	5,174.3	539	259.8
75 – 84	11,570	7,532.6	932	606.8
85 & Over	9,003	11,634.6	824	1064.9
Total	220,087	7,365.6	6,606	221.1

Note: \*based on Iowa Outpatient Discharge data excluding duplicated hospitalization.

\*\*based on Iowa Inpatient Discharge data excluding duplicated hospitalization.

**Appendix 2: Characteristics of Occupants of Passenger Car and Pickup/SUV by ED Discharge Status, 2009**

<b>Variable</b>	<b>ED Total</b>	<b>Discharged from ED to Home</b>	<b>Hospital Admission from ED</b>	<b>Died at ED</b>
Person aged 16+	8,341	85.9%	49%	0.3%
Mean Age Yrs (95% CI)	33.5	33.1	39.3	46.2
Median Age Yrs	27	27	33	49
Male gender (%)	45.8%	51.9%	63.4%	73.0%
Traumatic Brain Injury	94	77.7%	16.0%	2.1%
ED charge (\$ median)	\$1,370	\$1,304	\$4,187	\$3,270
Government Insurance	1,451	15.0%	14.6%	33.3%
Private Insurance	5,924	64.4%	65.2%	44.4%
Self-pay	1,455	15.6%	16.6%	18.5%
Seatbelt not Used (%)*	12.7%	11.4%	32.5%	50.0%
Alcohol Involved	701	85.7%	9.6%	0.6%
Ejected	219	1.9%	10.5%	29.6
Air Bag deployed	2,530	26.7%	37.5%	51.8%
Crash Location: intersection	3,523	38.6%	30.9%	33.3%
Driver	6,621	71.6%	72.0%	74.1%
Front Passenger	1,576	17.5%	18.4%	11.1%
Rear Passenger	261	9.4%	7.0%	14.8%
Single Vehicle Collision	3,660	39.0%	50.2%	40.7%
Head-on Collision	507	5.0%	13.4%	25.9%
Rear-end Collision	1,717	19.3%	7.0%	7.4%
Angle Collision	514	5.7%	4.1%	0.0%
Broadside Collision	2,074	22.7%	17.7%	11.1%
Sideswipe	663	7.2%	6.8%	14.8%
Minor Damage	852	9.6%	2.7%	0.0%
Functional Damage	1,283	14.4%	6.1%	0.0%
Disabling	2,409	27.0%	12.0%	0.0%

Damage				
Severe, Vehicle Totaled	4,468	46.5%	78.4%	100.0%
Daylight	6,368	69.4%	64.8%	66.7%
Dusk Or Dawn	375	3.9%	6.6%	0.0%
Dark, Roadway Lighted	714	7.9%	4.1%	11.1%
Dark, Roadway not Lighted	1,723	18.3%	22.7%	22.2%