Florida

TRAFFIC SAFETY FACTS

January 2011

ROLLOVER CRASHES

A SAFER
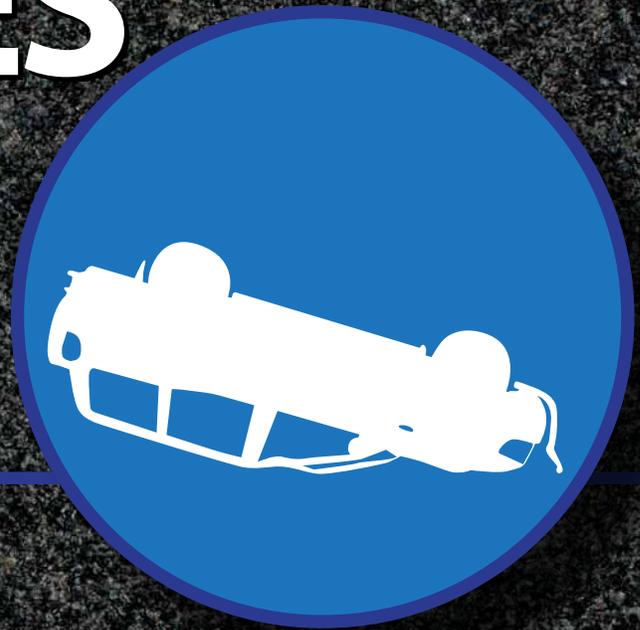
FLORIDA

HIGHWAY SAFETY AND MOTOR VEHICLES

2009 Florida Quick Facts:

Rollover Crashes

	Fatalities	Injuries
ALL Fatalities & Injuries	2,563	197,214
2009 Rollover	174	9,420
PERCENT OF ALL	6.8%	4.8%
2008 Rollover	238	9,826
PERCENT CHANGE	26.9% decrease	4.1% decrease

Safety Equipment	Fatalities	Injuries
Driver With Seatbelt	30	4,845
Driver Without Seatbelt	72	942
Passengers With Seatbelt	13	2,364
Passengers Without Seatbelt	43	908

Executive Summary

When it comes to fatality rates, the most dangerous collision on the road is not being hit head-on by another vehicle, or T-boned from the side as one might think, but it is the single-vehicle, roadway departure crash. More than 8,000 people die each year in the United States due to single-vehicle crashes. Vehicles roll over in less than 3 percent of all crashes, but these crashes account for more than a third of passenger vehicle occupant deaths. In 2008 (the most recent year data is available), 25,428 passenger vehicle occupants died in crashes of all kinds. Of those, 9,023 died in crashes where their vehicle rolled over.

According to the National Highway Traffic Safety Administration (NHTSA), between 1991 and 2007, single-vehicle, run-off-road (ROR) crashes, account for 70 percent of all fatal single-vehicle crashes. The biggest factors in causing these crashes are easily avoidable: don't speed, don't drive drowsy or drunk, and limit distractions. Nearly 80 percent of all crashes involved some form of driver inattention within three seconds of the crash. Inattentive drivers (those who are talking, eating, fiddling with electronics) are 75 percent more likely to be involved in a fatal, single-vehicle, ROR crash, than are drivers who make actual driving errors (like failing to signal a turn or tailgating), according to NHTSA.

Rollovers are complex crash incidents and are particularly violent in nature. They are reflective of the interaction of the driver, the road, the vehicle, and environmental factors. So while vehicle type does play a significant role, other factors such as driver distraction and road and environmental conditions can cause a vehicle to rollover. Rollover crashes are directly related to a vehicle's stability in turns. That stability is influenced by the relationship between the center of gravity and the track width (the distance between the left and right wheels). A high center of gravity and narrow track can make a vehicle unstable in fast turns or sharp changes of direction increasing the odds that it will tip over once it begins to skid sideways.

According to NHTSA, the deadliest risk facing Sport Utility Vehicles (SUV), minivan, and truck occupants is a rollover accident. More than 280,000 rollover crashes are reported each year, claiming more than 10,000 lives annually. In Florida, between 2005 and 2009, there were 2,230 people killed in rollover crashes and 56,390 injured. In 2009, fatalities from rollover crashes dropped by almost 27 percent to 174 down from 238 in 2008.

Multiple factors influence the numbers: the economic downturn likely accounted for some of the recent decline in rollover crash fatalities, the new Electronic Stability Control Systems have made vehicles less likely to rollover, and the passing of the primary seatbelt law in Florida effective July 1, 2009. The declining trends are also a testament to the emphasis that law enforcement agencies, safety advocates and businesses have placed on saving lives on our roadways.

Some Positive trends include:

■ Rollover crashes on Florida roadways decreased 8.4 percent between 2008 and 2009, from 9,097 to 8,334. This is the third consecutive year that rollover crashes have decreased.
■ The number of rollover fatalities decreased 26.9 percent between 2008 and 2009, from 238 to 174. This is the fourth consecutive year that rollover fatalities have decreased.
■ The number of rollover injuries decreased 4.1 percent between 2008 and 2009, from 9,826 to 9,420. This is the third consecutive year that rollover injuries have decreased.
■ The number of rollover fatalities in which the driver and passenger were not wearing their seatbelts decreased between 2008 and 2009, from 156 to 115, a 26.3 percent decrease. This decrease can be attributed in part to the primary seatbelt law effective July 1, 2009.

DHSMV will continue to work with our safety partners to add to the momentum we have gained in recent years so that we continue to see rollover crashes and rollover fatalities decline in the years to come.

The following information will give some insight into rollover crashes and rollover fatalities that occurred during 2009 on Florida roadways.

What is the definition of a rollover crash?

A vehicle that has overturned at least 90 degrees to its side. A rollover is a crash in which a vehicle revolves at least one-quarter turn (which would be onto its side), regardless of whether the vehicle ends up laying on its side, roof, or even returning upright on all four wheels. Many rollovers lead to partial or full ejection of occupants from the vehicle, increasing the likelihood of injury or death.

(continued)

Executive Summary *(continued)*

Are rollovers a big problem?

Vehicle rollover crashes accounted for 3.5 percent of all crashes in Florida in 2009. While it is not a huge number, the danger exists due to the chance of ejection that accompanies a rollover crash.

What causes a rollover crash?

Most rollovers occur when a driver loses control of their vehicle and it begins to slide sideways. When this happens, something can "trip" the vehicle and cause it to roll over. This tripping object could be a curb, a guardrail, a tree, or uneven ground on the side of the road. Rollovers can also occur when a driver turns a vehicle too aggressively at a high speed or with a tight turning radius. The force in a multiple-vehicle crash can also cause a vehicle to rollover.

Are rollovers more common for SUVs than for other vehicles?

Yes, rollovers are much more common for SUVs and pickups than for cars, and more common for SUVs than for pickups. Nationally, in 2008, 58 percent of occupants killed in crashes were in vehicles that rolled over. In comparison, 47 percent of deaths in pickups and 25 percent of deaths in cars were in rollovers.

What is being done on a national level to reduce the occurrence of rollovers?

Manufacturers are creating more stable vehicle designs. The static stability factor (SSF), a measurement of the vehicle's geometrical ability to resist rollover, increased an average of 6 percent for new SUVs between 1998 and 2003, after remaining constant for 20 years. SSF is calculated by dividing half of a vehicle's track width by its center of gravity height. Wider vehicles with centers of gravity closer to the ground tend to be more stable. Electronic Stability Control (ESC) also has become more common. This technology helps prevent the sideways skidding and loss of control that can lead to rollovers.

What is Electronic Stability Control and how does it prevent rollover crashes?

Electronic Stability Control is a vehicle control system comprised of sensors, brakes, engine control modules, and a microcomputer that continuously monitors how well a vehicle responds to a driver's steering input. The computer compares a driver's commands to the actual travel of the vehicle.

When the sensors indicate the vehicle is leaving the intended line of travel, ESC applies the brake pressure needed at each wheel to bring the vehicle back on track. In some cases, ESC also reduces engine speed. ESC has been found to reduce single-vehicle fatal crash involvement risk by 51 percent and could reduce the risk of rolling over by 75 percent for SUVs and by 72 percent for cars, according to the Insurance Institute for Highway Safety.

Are Electronic Stability Control Systems widely available?

Yes, the percentage of new passenger vehicle models with standard ESC has increased from 9 percent in the 2000 model year to 85 percent in the 2010 model year. NHTSA has issued a standard requiring all passenger vehicles to be equipped with ESC by the 2012 model year.

What can be done to reduce the fatalities and the severity of injuries when rollovers occur?

Seat belt use is one of the most effective ways to reduce the risk of injury or death in a rollover. In Florida, 65 percent of drivers killed in passenger vehicle rollover crashes in 2009 were not wearing seatbelts and 68 percent of passengers killed were not wearing seatbelts.

Who are our rollover fatalities?

■ In 2009, fatalities of drivers under age 20 account for 7.2 percent of all drivers' fatalities.
■ The largest category of fatalities due to rollovers was drivers in the age group of 25 to 34, which accounted for 27 percent.
■ Just over 7 percent of rollover fatalities were of drivers' that were age 65 and older.
■ Males accounted for just over 76 percent of drivers killed in rollover crashes or 84 males and just over 52 percent of the passengers killed, or 33, were males.

What types of roadways are involved in rollover fatal crashes?

■ Thirty-seven percent of fatal rollover crashes occurred on four-lane roadways.
■ Thirty-six percent occurred on two-lane roadways.
■ Fifteen percent occurred on six-lane roadways.

Executive Summary *(continued)*

What day of the week is the most deadly for rollover fatal crashes?

■ Saturday is the most deadly day for rollover fatal crashes with 23 percent occurring on this day.
■ Sunday was the second most deadly day for rollover fatal crashes with 21 percent occurring on this day, followed by Monday with 16 percent.

What month of the year is the most deadly for rollover fatal crashes?

■ May was the most deadly month for fatal crashes that were classified as rollovers. There were 22 fatal crashes or 12 percent.
■ March and June both accounted for 10 percent of fatal crashes with 19 fatal rollover crashes each.

Do rollover fatal crashes occur more during the day or at night?

■ Daylight hours account for 43 percent of fatal rollover crashes.
■ Darkness with no street lights account for 28 percent of fatal rollover crashes.
■ Twenty-five percent of fatal rollover crashes occurred during evening hours with street light present.

Are there other factors that contribute to rollover crashes in Florida?

Rollovers crashes occur in a multitude of ways. The type of vehicle plays a part in a rollover crash, as does speed, distractions, and road and environmental conditions.

What counties in Florida have the highest number of rollover fatalities?

Six counties accounted for 80 (46%) of the 174 rollover fatalities in 2009. They are Polk (18), Broward (17), Duval (13), Volusia (11), Miami-Dade (11), and Palm Beach (10).

Over the last five years, are rollover fatalities increasing or decreasing?

Between 2005 and 2009, 2,230 people have died in rollover crashes on Florida highways with the year 2005 having the greatest number with 656 fatalities. Over the last five years, Florida's population has increased by 5.2 percent, however, rollover fatalities have decreased significantly by 73.5 percent. In 2009, 6.8 percent of all traffic fatalities were rollover for a total of 174 drivers and their passengers killed.

Why have rollover fatalities gone down in Florida over the last five years?

There is no clear answer why rollover crashes have gone down. However, the economic downturn likely accounted for some of the recent decline in rollover fatalities, the Electronic Stability Control Systems have made vehicles less likely to rollover, and the passing of the primary seatbelt law in Florida effective July 1, 2009 The declining trends are also a testament to the emphasis that law enforcement agencies, safety advocates and businesses have placed on saving lives on our roadways.

Five-Year History (2005-2009)

During the last five years, 2,230 persons have died in rollover crashes on Florida highways and an additional 56,390 have been injured. Rollover fatalities have decreased 73.5 percent over the last five years as the state's population has increased 5.2 percent. In addition, rollover injuries have decreased 23.4 percent over the same five-year period.

Year	Florida Population		Fatalities		Injuries	
	#	% Change	#	% Change	#	% Change
2005	17,872,296		656		12,306	
2006	18,349,132	2.6	614	-6.4	12,738	3.5
2007	18,680,367	4.5	548	-10.7	12,100	-5.0
2008	18,807,219	5.2	238	-56.6	9,826	-18.8
2009	18,818,998	5.2	174	-26.9	9,420	-4.1

Cumulative Percentage Change Since 2005
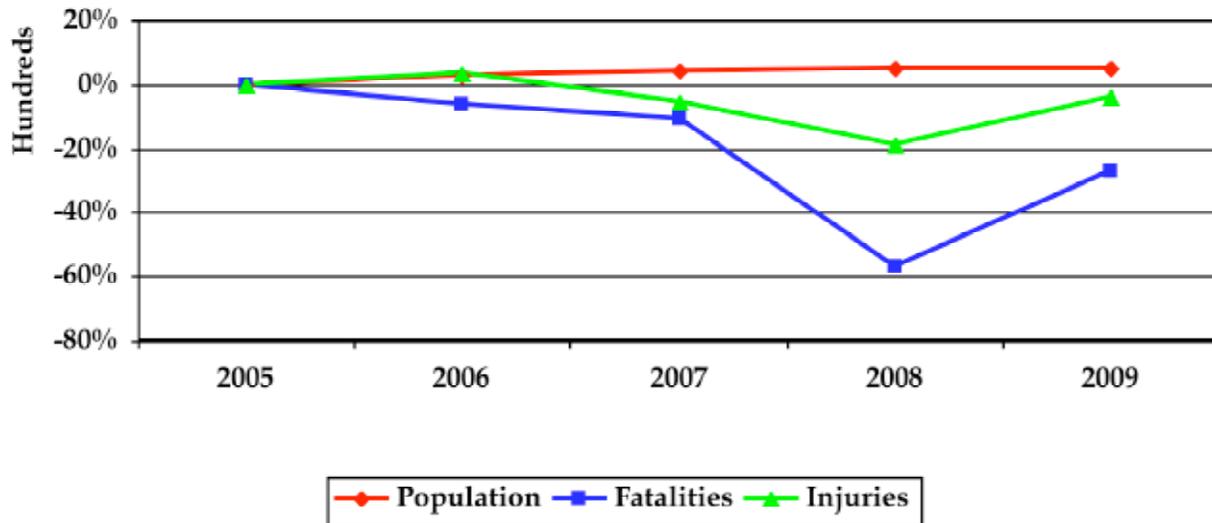
Rollover Drivers/Passengers-Using Seat Belts: Fatalities and Injuries: Between 2005 and 2009, rollover fatalities using seat belts have decreased slightly. Year 2005 had the highest number of fatalities (150) and 2009 had the lowest with 43 fatalities. During this same time-period, the injuries have decreased with 2006 having the highest number of injuries, (9,211) and 2009 having the lowest (7,209).

Rollover Fatalities With Seat Belts On (2005 - 2009)
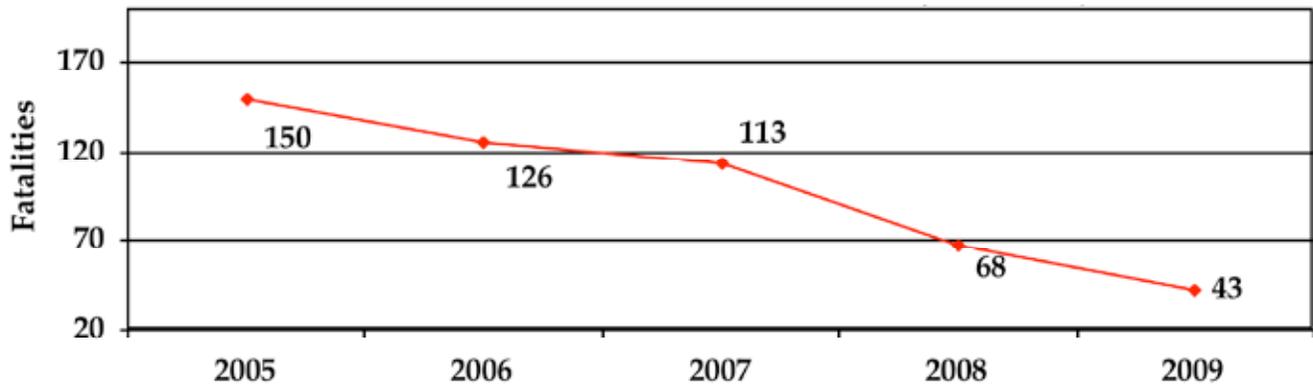
Rollover Injuries With Seat Belts On (2005 - 2009)
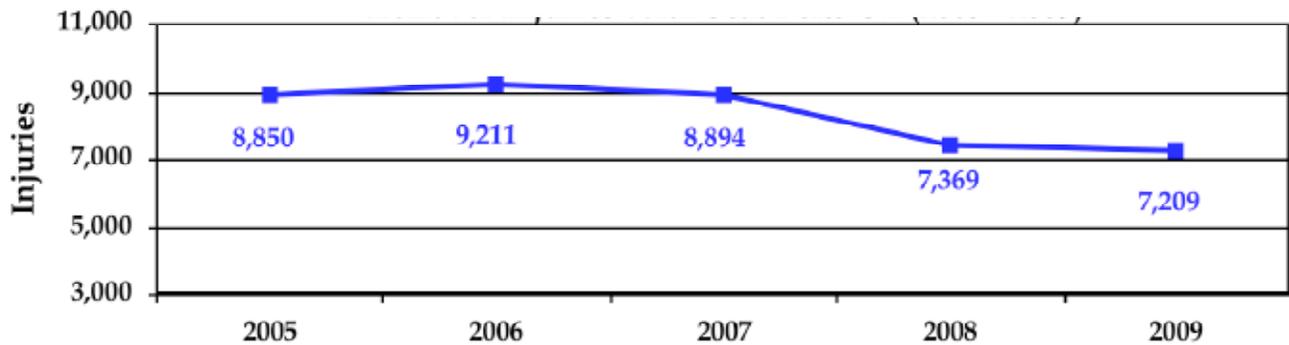
Rollover Drivers/Passengers-Using Seat Belts: Fatality and Injury Rates:

Between 2005 and 2009, the rollover fatality rate has decreased 0.84 per 100,000 population in 2005, to 0.23 fatalities per 100,000 population in 2009. During this same time, rollover injury rate has decreased 4.95 injuries per 100,000 population in 2005 to 3.83 injuries per 100,000 population in 2009.

Year	Population	Fatalities		Injuries	
		#	Rate	#	Rate
2005	17,872,296	150	0.84	8,850	4.95
2006	18,349,132	126	0.69	9,211	5.01
2007	18,680,367	113	0.60	8,894	4.76
2008	18,807,219	68	0.36	7,369	3.91
2009	18,818,998	43	0.23	7,209	3.83

Rollover Fatality Rate With Seat Belts On
(per 100,000 Population)
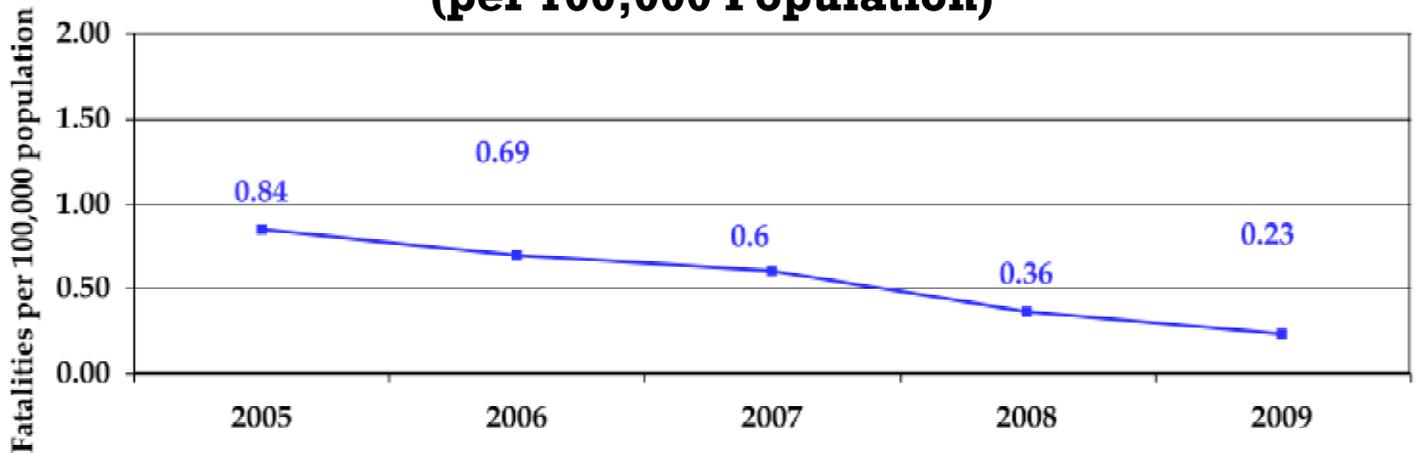
Rollover Injury Rate With Seat Belts On
(per 100,000 Population)
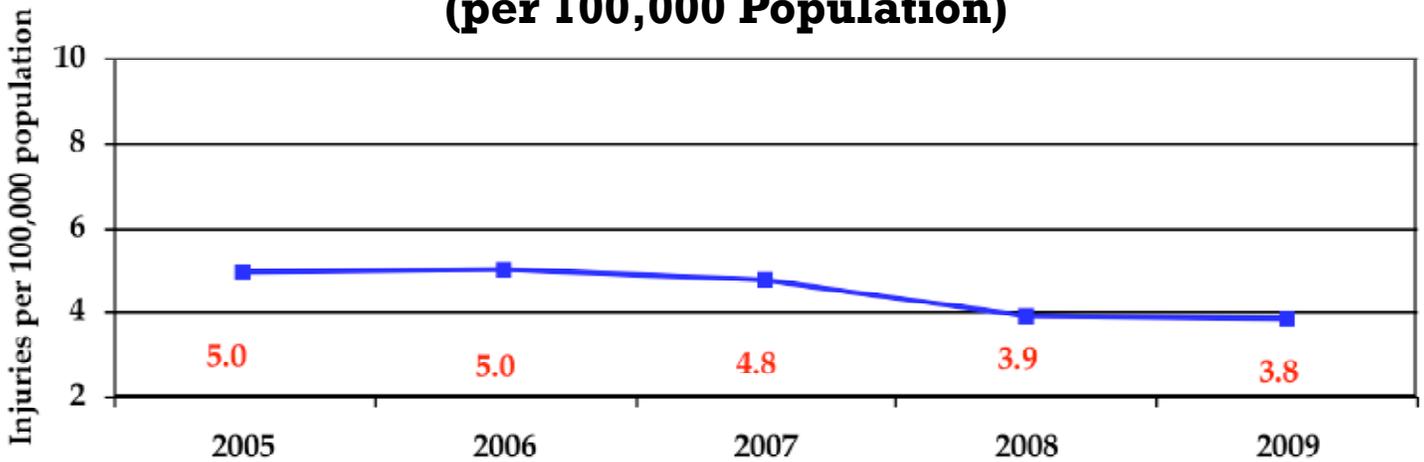
Rollover Driver Characteristics

Pedestrian Fatalities by Age Group

Age Group	Year					% of
	2005	2006	2007	2008	2009	5 Yr. Total
15-20	54	66	62	17	8	14%
21-24	61	76	49	25	16	15%
25-34	84	66	79	38	30	20%
35-44	75	84	64	29	21	18%
45-54	66	62	54	25	14	15%
55-64	38	31	43	14	14	9%
65-74	19	14	12	4	7	4%
75-84	11	12	5	4	1	2%
85-89	1	1	1	1	0	1%
90+	1	0	2	0	0	1%
Unknown	2	3	7	1	0	*

*Unknowns are not included in % of 5 Yr. Total.

Rollover Crashes by Gender in 2009

■ 5,222 male and 2,857 female drivers were involved in rollover crashes.

■ 2,762 male and 2,130 female passengers were involved in rollover crashes.

■ 84 male and 27 female drivers were killed in rollover crashes.

■ 33 male and 30 female passengers were killed in rollover crashes.

■ 3,611 male and 2,282 female drivers were injured in rollover crashes.

■ 1,891 male and 1,600 female passengers were injured in rollover crashes

Rollover Safety Equipment

In 2009, Florida experienced 158 deaths of drivers and passengers in seatbelt-equipped vehicles. Of those deaths, 43 (27%) were using seatbelts, and 115 (73%) were not using a seatbelt.

Comparative Safety Equipment Use by Drivers and Their Passengers – Rollover Fatalities

Year	Using Seatbelt			Not Using Seatbelt		
	Drivers	Passengers	Total	Drivers	Passengers	Total
2005	98	52	150	289	180	469
2006	94	32	126	298	160	458
2007	80	33	113	282	130	412
2008	50	18	68	96	60	156
2009	30	13	43	72	43	115

In 2009, of the 9,059 rollover driver/passenger injuries, 7,209 (80%) were using a seatbelt, 1,850 (20%) were not using a seatbelt.

Comparative Safety Equipment Use by Drivers and Their Passengers – Rollover Injuries

Year	Using Seatbelt			Not Using Seatbelt		
	Drivers	Passengers	Total	Drivers	Passengers	Total
2005	6,065	2,785	8,850	1,476	1,545	3,021
2006	6,132	3,079	9,211	1,565	1,509	3,074
2007	6,053	2,841	8,894	1,451	1,313	2,764
2008	5,068	2,301	7,369	1,102	985	2,087
2009	4,845	2,364	7,209	942	908	1,850

Rollover Crash Characteristics:

Lighting Condition
Forty-three percent of fatal rollover crashes occurred during the daylight hours.

	Light Condition						Total
	Dawn	Daylight	Dusk	Dark (Street Light)	Dark (No Light)	Unknown	
Fatal Crashes	5	80	2	47	52	0	186
% of Total	3%	43%	1%	25%	28%	0	

Day of Fatal Crashes
Forty-five percent of fatal rollover crashes occurred on Saturday and Sunday.

	Days of Week							Total
	Mon.	Tues.	Wed.	Thurs.	Fri.	Sat.	Sun.	
Fatal Crashes	30	23	14	17	20	42	40	186
% of Total	16%	12%	7%	9%	11%	23%	22 %	

Month of Fatalities
March had the highest number of fatalities with 15 or 14 percent. June had 12 fatalities or 11 percent of the total due to rollover crashes.

	Months of Year												Total
	J	F	M	A	M	J	J	A	S	O	N	D	
Fatalities	11	11	15	11	9	12	6	5	8	5	8	10	111
% of Total	10%	10%	14%	10%	8%	11%	5%	4%	7%	4%	7%	9%	

Number of Roadway Lanes
Thirty-seven percent of fatal rollover crashes occurred on four-lane roadways and 36 percent occurred on two-lane roadways.

|	# of Roadway Lane								Total
	1	2	3	4	5	6	7	8+	
Fatal Crashes	7	68	3	69	2	29	0	8	186
% of Total	4%	36%	2%	37%	1%	16%	0	4%	

Rollover Fatalities by County

Six counties accounted for 80, or a little under one-half (46%) of the 174 rollover fatalities in 2009. They are Broward (17), Duval (13), Miami-Dade (11), Palm Beach (10), Polk (18), and Volusia (11).

Five-Year Pedestrian Fatality History By County (Florida, 2005-2009)

COUNTY	2005	2006	2007	2008	2009	COUNTY	2005	2006	2007	2008	2009
ALACHUA	12	9	7	5	0	LEE	31	19	15	11	5
BAKER	3	4	1	1	0	LEON	7	7	2	2	1
BAY	6	5	3	5	1	LEVY	10	2	5	1	0
BRADFORD	1	2	2	0	1	LIBERTY	1	3	2	1	0
BREVARD	17	16	21	5	2	MADISON	6	5	11	0	0
BROWARD	33	38	13	19	17	MANATEE	9	13	8	3	3
CALHOUN	2	1	3	0	0	MARION	20	18	8	1	0
CHARLOTTE	8	10	9	2	3	MARTIN	9	9	9	1	2
CITRUS	2	8	4	1	2	MIAMI-DADE	35	30	34	13	11
CLAY	4	3	8	0	3	MONROE	3	2	0	0	0
COLLIER	18	18	21	3	9	NASSAU	3	3	9	5	1
COLUMBIA	13	6	8	4	3	OKALOOSA	11	3	5	3	0
DE SOTO	3	4	4	1	0	OKEECHOBEE	7	4	3	1	1
DIXIE	5	4	2	0	0	ORANGE	27	22	15	10	9
DUVAL	30	23	21	12	13	OSCEOLA	16	14	8	4	9
ESCAMBIA	4	7	14	4	0	PALM BEACH	27	33	34	39	10
FLAGLER	6	9	4	2	0	PASCO	11	17	10	4	3
FRANKLIN	0	1	1	0	0	PINELLAS	5	13	11	4	4
GADSDEN	13	9	4	1	0	POLK	17	28	23	11	18
GILCHRIST	2	0	2	0	0	PUTNAM	5	7	4	0	1
GLADES	3	2	1	8	2	ST. JOHNS	11	3	9	3	1
GULF	0	0	2	1	0	ST. LUCIE	13	14	14	1	3
HAMILTON	0	1	2	1	1	SANTA ROSA	3	6	5	0	0
HARDEE	4	0	0	1	0	SARASOTA	10	11	9	2	3
HENDRY	9	11	6	1	1	SEMINOLE	6	7	11	4	0
HERNANDO	8	6	7	4	3	SUMTER	9	10	9	1	3
HIGHLANDS	9	6	4	0	0	SUWANNEE	11	9	9	1	2
HILLSBOROUGH	40	28	24	14	9	TAYLOR	2	0	4	0	0
HOLMES	0	2	1	1	0	UNION	1	2	0	0	0
INDIAN RIVER	9	7	10	1	0	VOLUSIA	16	22	28	5	11
JACKSON	6	9	5	1	3	WAKULLA	1	0	1	1	0
JEFFERSON	4	3	2	0	0	WALTON	11	6	3	2	0
LAFAYETTE	1	0	0	0	0	WASHINGTON	5	7	1	1	0
LAKE	22	13	13	5	0	STATEWIDE	656	614	548	238	174
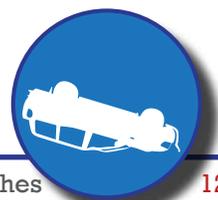
Florida Five-Year Trend Data

	2005	2006	2007	2008	2009	% 5-Yr Change
Fatalities:						
Motor Vehicle	3,533	3,365	3,221	2,983	2,563	-27%
Rollover	656	614	548	238	174	-73%
Injuries:						
Motor Vehicle	233,930	214,914	212,149	199,658	197,214	-16%
Rollover	12,306	12,738	12,100	9,826	9,420	-23%
Crashes:						
Motor Vehicle	268,605	256,200	256,206	243,342	235,778	-12%
Rollover	11,112	11,432	11,033	9,097	8,334	-25%
Roadway Miles:						
All Public (Centerline)	120,556	121,995	121,526	121,386	121,446	1%
State System (Centerline)	12,040	12,067	12,062	12,084	12,088	0.4%
State System (Lane)	41,473	41,916	42,082	42,432	42,633	3%
Licensed Drivers:	15,272,680	15,491,878	15,579,603	15,556,658	15,553,387	2%
Vehicle Registrations	15,062,993	15,612,161	14,858,332	15,966,287	14,983,437	-1%
Vehicle Miles Traveled (millions)	200,974	203,783	205,421	198,494	196,402	-2%
Population	17,872,296	18,349,132	18,680,367	18,807,219	18,818,998	5%
Tourists	83,600,000	83,900,000	84,500,000	84,200,000	80,900,000	-3%