

a report on

FLORIDA TRANSPORTATION TRENDS AND CONDITIONS



IMPACT OF TRANSPORTATION Transportation Safety



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Introduction

For years, all levels of government have indicated that transportation safety is one of the highest priority goals for transportation. As mobility is fundamental to the quality of life, transportation safety is an important factor affecting overall quality of life. On average, Americans spend approximately 60 minutes per day in personal vehicle travel. Most are also exposed to potential vulnerable situations as pedestrians and some as bicyclists, motorcyclists or passengers of transit or other group travel. Obviously, safety during such substantial periods of exposure to traffic-related incidents is critical. Virtually everyone has been impacted because of a traffic-related crash.

In light of the importance of transportation safety, extensive efforts are invested in researching, monitoring, reporting and improving safety. Transportation safety is perhaps the most complex aspect of transportation policy as it is affected by a

Safety is one of the highest priorities for national, state, and local transportation plans and investment programs.

multitude of factors such as human traits and behaviors, technology, communications, enforcement, education, vehicle and infrastructure design, investment, and the natural environment including weather. The interactions of the individual, the vehicle, the transportation system, and the rest of the environment influence safety. Safety is an issue for every mode of transportation. There is a particularly strong interest in transportation safety in Florida resulting from a history of above-average crash and fatality rates for vehicle travel in Florida. Florida also has a particularly high level of pedestrian and bicyclist fatalities.

The importance of travel safety has resulted in the development of an extensive database on the safety performance of the transportation system. This database helps in the very difficult task of understanding the complex set of factors that influence safety and aids in the challenging task of determining the appropriate priorities for infrastructure investment to improve travel safety levels. While a combination of factors have resulted in substantial declines in transportation crash and fatality rates over the past several years, the magnitude of this problem, compounded by the challenges of a congested transportation system, will ensure continued attention to this priority for years to come.

The 2012 Strategic Highway Safety Plan (SHSP) was developed by the Florida Department of Transportation in partnership with the Federal Highway Administration to address the “4 E’s” of safety – engineering, enforcement, education, and emergency response. Eight emphasis areas were selected for the 2012 SHSP – aggressive driving, intersection crashes, vulnerable road users (pedestrians, bicyclists, and motorcyclists), lane departure crashes, impaired driving, and traffic data. The following sections present safety performance information for each travel mode.

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Roadway Safety

Each year thousands of lives are lost, tens of thousands of injuries are suffered, and millions of dollars are spent as a result of traffic crashes on Florida's roadways. Continually improving the safety for users of the roadway system is part of the Florida Department of Transportation's mission. Particular attention is being paid to auto, motorcycle, pedestrian, and bicycle safety. Table 1 provides a summary of traffic crash statistics in Florida for 2012 and 2013.

Table 1 - Florida Traffic Crash Statistics, 2012 and 2013

Traffic Crashes	2012		2013	
Fatal	2,255		2,224	
Injury	130,902		140,074	
Property Damage Only	149,044		174,500	
Traffic Crash Victims	Injured	Killed	Injured	Killed
Drivers	120,956	991	130,373	953
Passengers	54,617	366	57,353	341
Pedestrians	7,413	473	7,467	498
Bicyclists	6,058	116	6,520	135
Motorcyclists	8,648	457	8,742	462
Other Non-Motorists	446	17	432	13
Other Statistics				
Vehicle Miles Traveled (millions)	190,850		192,702	
Resident Population	19,320,749		19,552,860	
Registered Vehicles	14,727,755		15,079,971	
Licensed Drivers	15,378,206		15,417,032	
Rates: Fatalities				
Per 100 million VMT	1.27		1.25	
Per 100,000 Population	12.6		12.3	
Per 100,000 Registered Vehicles	16.5		15.9	
Per 100,000 Licensed Drivers	15.8		15.6	
Rates: Injury				
Per 100 million VMT	103.8		109.4	
Per 100,000 Population	1,025.0		1,078.5	
Per 100,000 Registered Vehicles	1,344.6		1,398.5	
Per 100,000 Licensed Drivers	1,287.7		1,367.9	

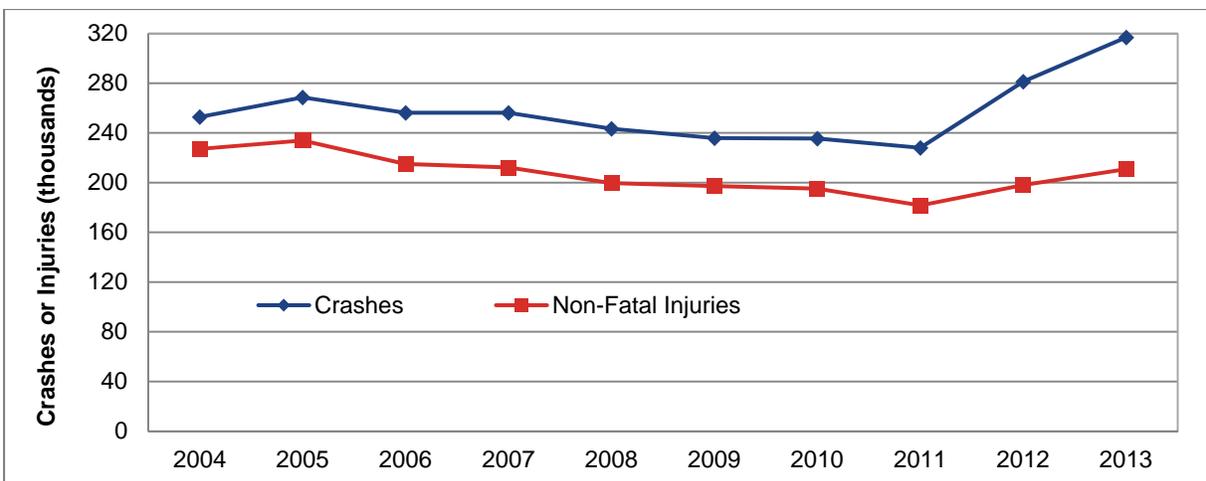
Source: Florida Department of Highway Safety and Motor Vehicles, *Florida Traffic Crash Statistics*, 2013; U.S. Census Bureau, *resident population estimates*.

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Between 2012 and 2013, the number of crashes increased while the number of fatalities and the fatality rate both decreased. A traffic fatality is defined as the death of a person as a direct result of a traffic crash within thirty days of the incident. A fatality rate refers to the number of roadway fatalities per 100 million vehicle miles traveled (VMT). In 2013, there were 2,224 fatal crashes, a decrease of 1.37% from 2012, and the fatality rate dropped to 1.25.

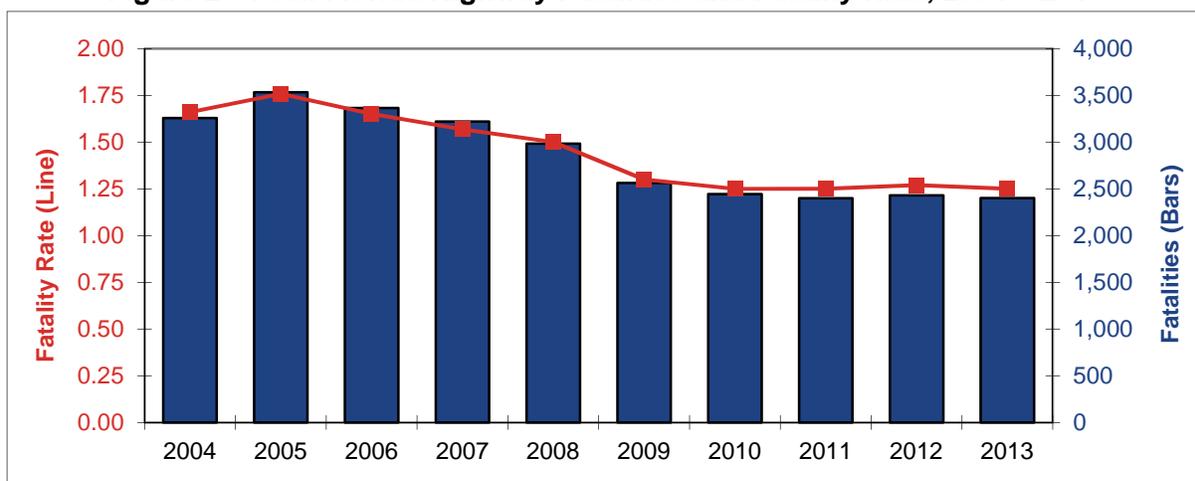
Figure 1 displays the crash and non-fatal injury trends in Florida from 2004 through 2013. From 2006 to 2011, there had been a decline in both the numbers of crashes and injuries, with a sharp increase beginning in 2012.

Figure 1 - Number of Crashes and Non-Fatal Injuries in Florida, 2004 – 2013



Source: Florida Department of Highway Safety and Motor Vehicles, *Florida Traffic Crash Statistics*, 2013

Figure 2 - Total Florida Highway Fatalities and Fatality Rate, 2004 – 2013



Source: Florida Department of Highway Safety and Motor Vehicles, *Florida Traffic Crash Statistics*, 2013

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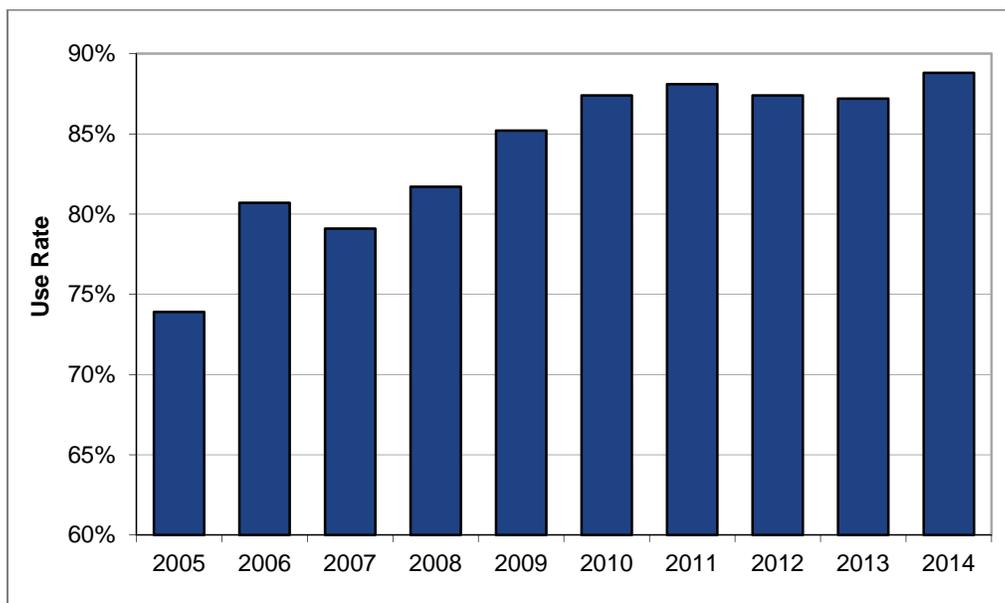
The total number of fatalities decreased over 32% since the peak in 2005, from 3,533 to 2,402 fatalities in 2013. Safety has improved as measured by actual number of fatalities and the fatality rate (Figure 2). For 2013, the fatality rate returned to the 2011 level following a slight increase in 2012.

Safety Belt Use

Florida law requires the operator and each passenger of the vehicle under the age of 18 years old and each front seat passenger to be restrained by a safety belt or by a child restraint device. In 2008, Florida became a primary safety belt enforcement state which means law enforcement may stop a vehicle simply because the driver or front seat passengers are not buckled up.

As shown in Figure 3, the rates of safety belt use have increased from 2005. In 2014, Florida experienced its highest rate of safety belt use at 88.8%. Safety belts and child safety seats help to prevent injuries by inhibiting ejection, redistributing the forces placed on the body during a crash, allowing the body to slow down gradually, and protecting the head and spinal cord.

Figure 3 - Florida Safety Belt Use, 2005 – 2014



Source: National Highway Traffic Safety Administration, 2014

Table 2 presents the injury severity and the safety equipment used by vehicle occupants in Florida. Unfortunately, hundreds of traffic deaths of drivers and passengers in Seat Belt Equipped Vehicles (SBEV) were attributed to drivers and passengers not using or improperly

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using safety belts. Over 45% of fatalities occurred in crashes where the vehicle occupant was not using any safety equipment.

Table 2 – Safety Equipment Use and Classification for Crash-Involved Vehicle Occupants in Florida, 2013

Restraint Type	Not Injured	%	Possible Injuries	%	Injury	%	Fatalities	%	Total
Lap Belt Only Used	5,528	1%	624	1%	293	0%	6	0%	6,451
None Used - Motor Vehicle Occupant	14,597	3%	3,151	3%	4,883	7%	567	45%	23,198
Not Applicable (non-motorist)	22,504	4%	2,421	2%	1,424	2%	22	2%	26,371
Other, Explain in Narrative	36,437	6%	3,080	3%	1,008	1%	58	5%	40,583
Restraint Used - Type Unknown	3,093	1%	494	0%	245	0%	13	1%	3,845
Shoulder and Lap Belt Used	451,562	79%	103,611	88%	58,363	86%	570	45%	614,106
Child Restraint	15,700	3%	2,743	2%	782	1%	6	0%	19,231
Shoulder Belt Only Used	5,040	1%	1,045	1%	616	1%	9	1%	6,710
Unknown	14,399	3%	845	1%	359	1%	6	0%	15,609
Total	568,860	100%	118,014	100%	67,973	100%	1,257	100%	756,104

Source: Department of Highway Safety and Motor Vehicles, *Florida Traffic Crash Statistics*, 2013

Safety of Vulnerable Road Users

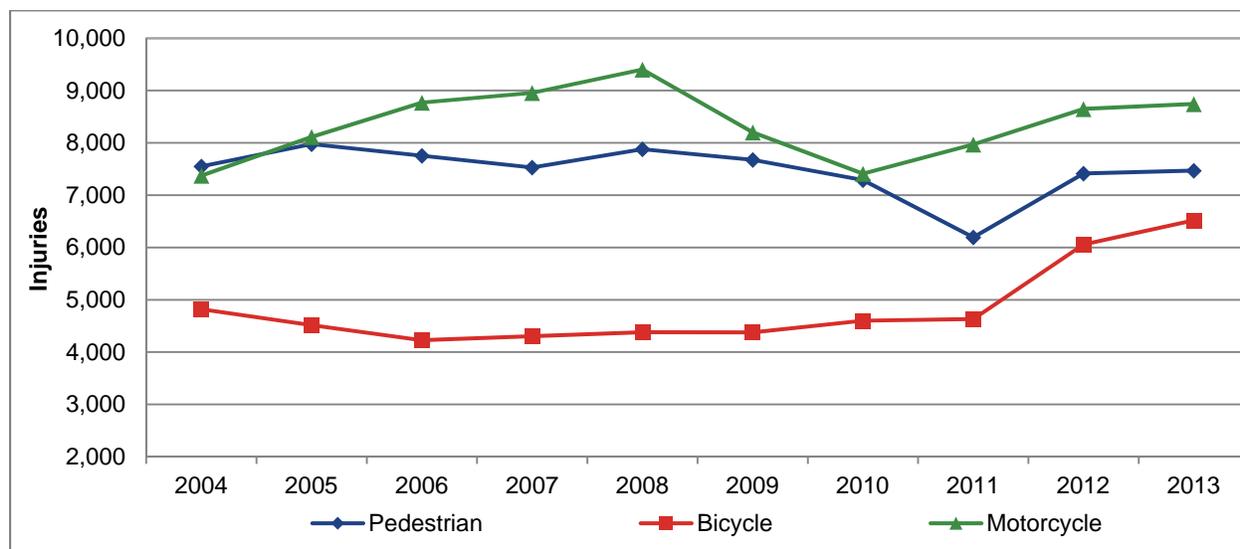
Vulnerable road users consist of bicyclists, pedestrians and motorcyclists, all of whom are susceptible to greater risk of injury or fatality if a collision were to occur. In November 2011 FDOT initiated Florida's Pedestrian and Bicycle Strategic Safety Plan (PBSSP), designed to provide a comprehensive strategy on improving the safety for Florida's vulnerable road users. This initiative included several campaigns such as the *Alert Today Alive Tomorrow* campaign to provide laws and tips pertaining to pedestrians and bicyclists, the *One Foolish Act* campaign targeting impaired drivers impacting pedestrians and bicyclists, and the *National Stop on Red Week* campaign. In addition, the implementation of the Florida Motorcycle Strategic Safety Plan, *Motorcycle Safety Coalition* initiative is targeted to reduce motorcycle fatalities and serious injuries by five percent annually.

The number of injuries for bicyclists has remained smaller than for pedestrians; however both have experienced sharp increases since 2011. Injuries to motorcyclists have been fluctuating rather cyclically since the early 1990s with a considerable peak in 2008. Despite recent safety

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mandates, pedestrians, bicyclists and motorcyclist all experienced noticeable increases in injuries since 2011. Figure 4 provides the trend of injuries for these groups from 2004 through 2013.

Figure 4 – Pedestrian, Bicyclist and Motorcyclist Injuries in Florida, 2004 - 2013



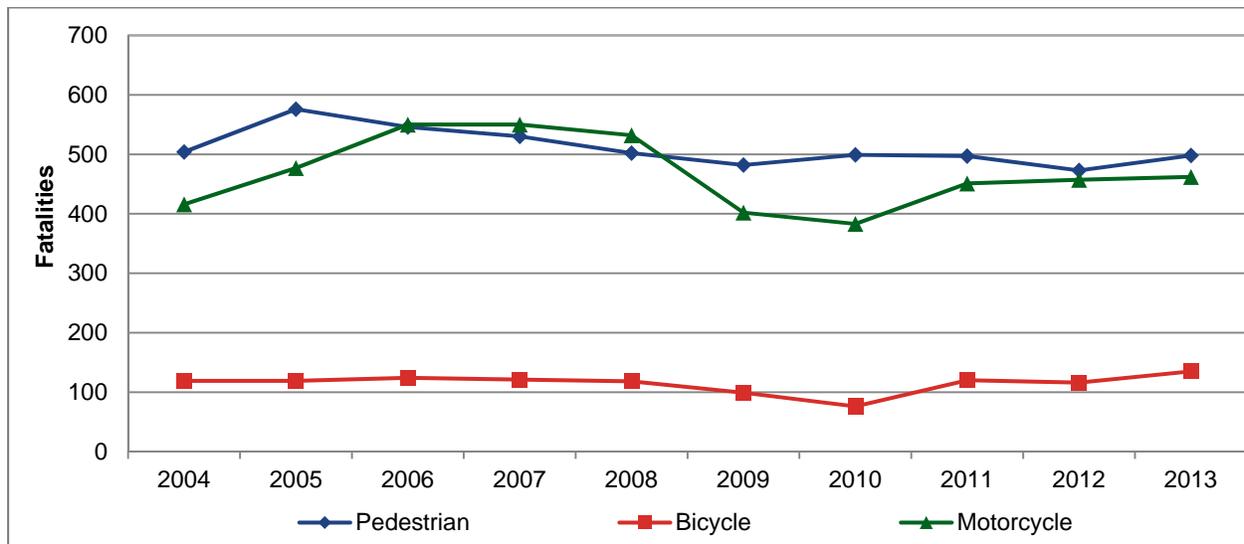
Source: Florida Department of Highway Safety and Motor Vehicles, *Florida Traffic Crash Statistics*, 2013

The fatality trends for pedestrians, bicyclists and motorcyclists from 2004 through 2013 are displayed in Figure 5. The trend in motorcycle fatalities has primarily followed the trend of motorcycle injuries for the same period. The number of bicycle fatalities has remained relatively constant over the past decade whereas pedestrian fatalities have been slowly decreasing since 2005, with the latter experiencing slight increases in 2010 and 2013. Fatality rates based on the amount of biking and walking are not available as there are no reliable data on how much biking and walking takes place.

The age distribution of pedestrians and bicyclists killed or injured in traffic crashes is shown in Figure 6. Non-motorist injuries peak for individuals 15 to 24 years old while non-motorist fatalities peak for individuals 45 to 54 years old. The share of injuries decreases as age increases, with the exception of pedestrians aged 75+. The lack of good quality exposure data (data on how much travel takes place by these modes) makes it difficult to interpret the age related differences.

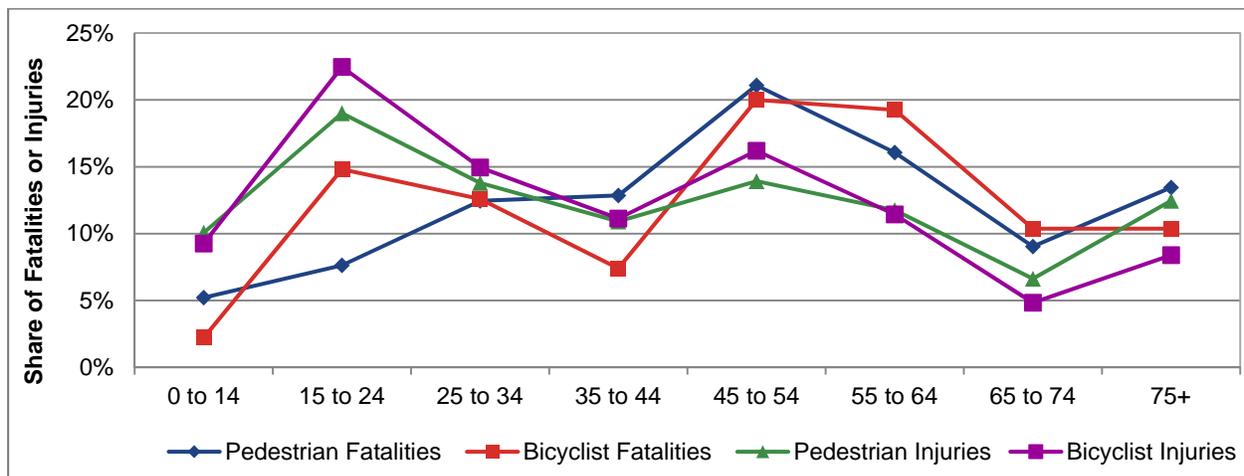
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Figure 5 – Pedestrian, Bicyclist and Motorcyclist Fatalities in Florida, 2004 – 2013



Source: Florida Department of Highway Safety and Motor Vehicles, *Florida Traffic Crash Statistics*, 2013

Figure 6 – Age Distribution of Non-Motorist Fatalities and Injuries in Florida, 2013



Source: Florida Department of Highway Safety and Motor Vehicles, *Florida Traffic Crash Statistics*, 2013

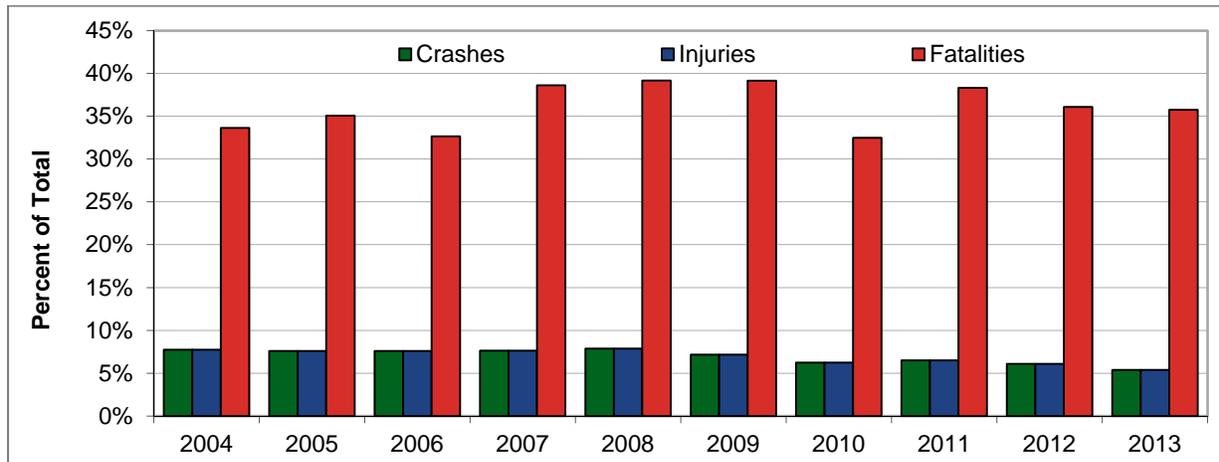
Other Factors Influencing Vehicle Travel Safety

The influence of drugs and/or alcohol is a factor in many traffic incidents. The share of alcohol-related/suspected fatalities has shown a fluctuating trend since 2004 (Figure 7) between 32 percent and 39 percent. While their roles are much more modest as factors in all crashes and all injuries, alcohol was a contributing factor to approximately 36% of fatalities, and drugs were a

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contributing factor to nearly 25% of fatalities¹. The substantially higher involvement of drugs and alcohol in fatalities suggests a combination of those factors contributing to more severe crashes and/or the greater opportunity to determine drug/alcohol involvement in those severe crashes.

Figure 7 – Percent of Traffic Incidents Involving Alcohol in Florida, 2004 – 2013



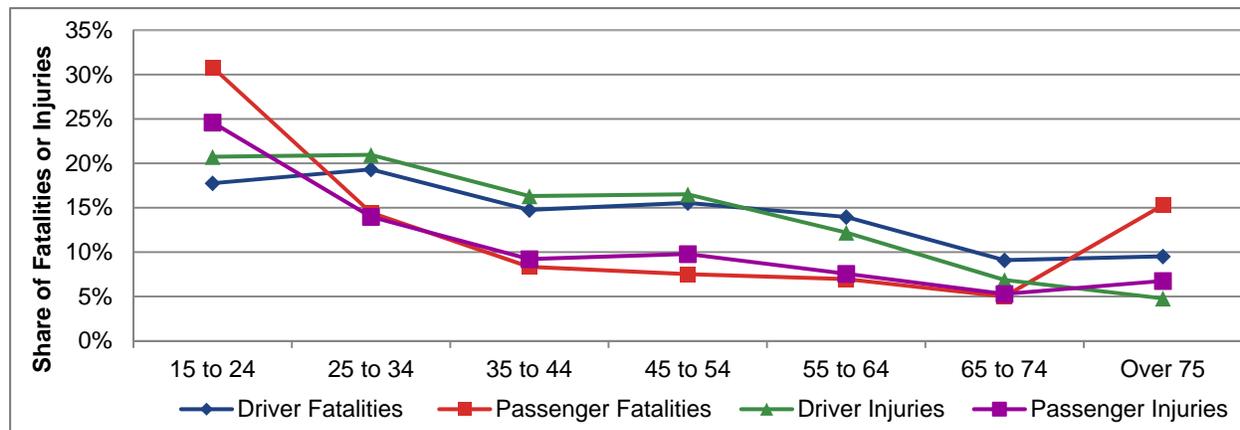
Source: Florida Department of Highway Safety and Motor Vehicles, *Florida Traffic Crash Statistics*, 2013

Figure 8 provides the share of fatalities and injuries by age group for drivers and passengers in 2013. The largest share of traffic fatalities and injuries for drivers and passengers is for persons between ages 15 and 34. However, the majority of licensed drivers are between the ages of 31 and 60. Therefore, a smaller percentage of drivers on the road are responsible for the majority of fatalities and injuries. According to the Governors Highway Safety Association (GHSA), motor vehicle crashes are the leading cause of death for 15 to 20 year olds in the U.S., which occur because of the inexperience of young drivers to recognize hazards and take corrective actions. Driver distraction is a key component in many crashes, with the largest share of distracted driver fatal crashes attributable to the 15-19 year olds. The National Highway Traffic Safety Administration (NHTSA) defines driver distraction as any diversion of attention from the task of driving, such as electronic devices, navigation systems, passenger interactions, eating, etc. To combat the distractions most drivers face, FDOT launched its Put it Down campaign in October of 2011 with an emphasis on drivers between the ages of 16 and 24. The goal of the campaign is to educate, communicate, and enforce the statutes in place to reduce distracted driving and improve the safety of the network.

¹ Alcohol was confirmed in nearly 20% of fatalities, drugs were confirmed in over 9% of fatalities, and the combination of drugs and alcohol was confirmed in approximately 11% of fatalities. These totals can be combined to indicate a total of confirmed impaired related fatalities to be over 40%. The overlap in the categorization of *suspected* alcohol or drug use in fatalities is not available.

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Figure 8 - Age Distribution of Motorist Fatalities and Injuries in Florida, 2013



Source: Florida Department of Highway Safety and Motor Vehicles, *Florida Traffic Crash Statistics*, 2013

While older age groups may have the smallest share of injuries, they also have the lowest travel rates as discussed in the *Travel Demand: Travel Behavior Trends* report. As this age group increases in size, its exposure to traffic incidents are also likely to increase.

Railway Safety

The railroad system in Florida is another important mode when transportation safety is considered. Railway safety includes both safety on the rail system and safety associated with the interface of the roadway system and the railway system at-grade crossings. Grade crossing incidents have the potential to be extremely dangerous because of the size and speed differences between trains and cars or pedestrians. The inability of trains to swerve or stop quickly and the historic propensity for individuals to exercise risky behavior in crossing rail tracks makes them hazardous as well. According to the Federal Railway Administration (FRA), Florida had a total of 5,092 at-grade crossings as of March 2014. Of these at-grade crossings, 3,784 crossings are public roadways, 58 crossings are for pedestrians exclusively, and 1,253 are private – typically driveways to private property.²

While progress is being made in improving safety, continued improvements are necessary to reduce fatalities and injuries on Florida's roadways and the associated economic losses.

² FDOT maintains their own rail crossing database that differs from that used by FRA. FDOT shows 10,280 crossings as of December 2013. Removing closed or unknown status crossings results in 5,188 crossings. 369 crossings are grade separated. The result is 4,819 crossings that are subject to exposure. Of these, 45 are pedestrian crossings, 1,146 are private crossings and 3,628 are public crossings.

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Table 3 – Rates for Motor Vehicle Incidents at Public Crossings, 2013

		Florida	U.S.
Crashes	Count	47	1,586
	Per 100 Crossings	1.24	1.37
	Per 100 thousand ADT	0.22	0.59
Deaths	Count	7	139
	Per 100 Crossings	0.18	0.16
	Per 100 thousand ADT	0.03	0.07
Nonfatal	Count	11	776
	Per 100 Crossings	0.29	0.65
	Per 100 thousand ADT	0.05	0.28

Source: Federal Railroad Administration, Office of Safety Analysis, 2013.

The U.S. averages of deaths and injuries per 100 crossings are 2 and 3 times that of Florida.

per 100 crossings. Different volumes of rail traffic at the rail crossing and different degrees of crossing protection could be among the factors in the safety differences.³

Various types of warning devices at highway-rail crossings promote safety. Table 4 lists the number of crossings by type of warning device and the number of incidents that occurred in 2013. Sixty-six percent of grade crossings in Florida have gates, and 89% of incidents occurred at these crossings.

From 2004 through 2011, the number of highway-rail incidents in Florida primarily decreased from the levels observed in the middle of the last decade (Figure 9). In 2012 and 2013, both total and highway-rail incidents experienced an increase. The number of incidents involving highway users has consistently been much higher than all other rail incidents.

³ FDOT has more refined and up-to-date safety data that updates inventory conditions and extracts incidents that are beyond the influence of agency policy and investments; however, FRA data is used as it is comparable to that from other locations.

Table 4 – Warning Devices and Incidents at Public Highway–Rail Grade Crossings in Florida, 2013

Warning Device	Grade Crossings	Incidents
Gates	2,475	47
Cross Bucks	564	2
Flashing Lights	402	3
Stop Signs	193	0
Special warning	62	0
HWTS, WW, Bells	10	0
Unknown	35	0
Other	36	1
Total	3,777	53
AADT	23,565,586	N/A

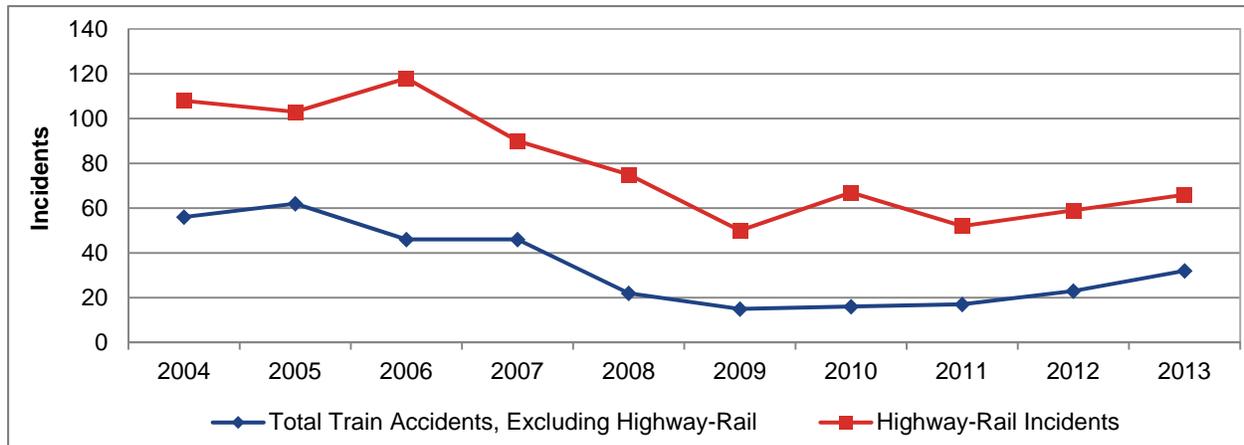
Note: HWTS (Highway Traffic Signal), WW (wigwags), AADT estimated using several years data.

Source: Federal Railroad Administration, Office of Safety Analysis. 2014

Table 3 compares the rates of motor vehicle incidents at public crossings in 2013 for Florida and the United States based on FRA data. The U.S. averages 2 times that of Florida's injuries

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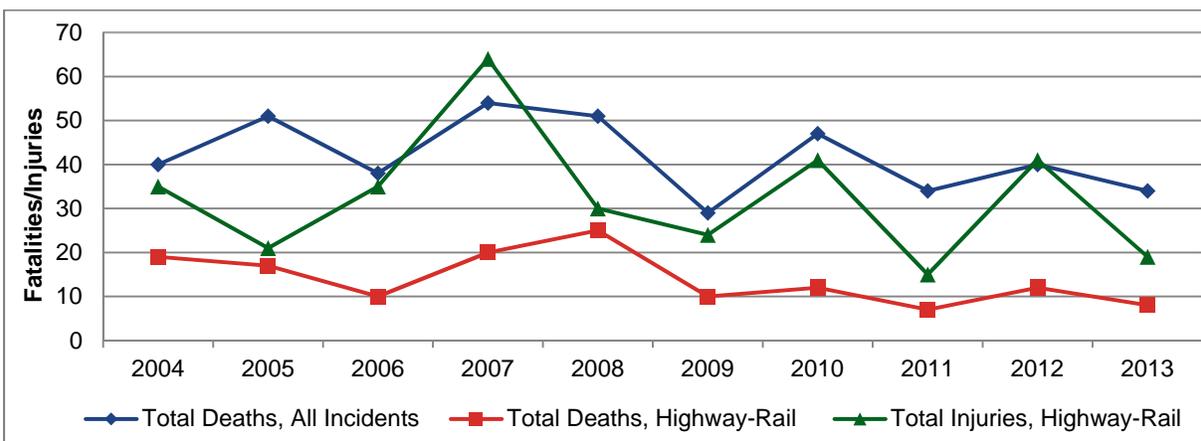
Figure 9 – Rail Incidents in Florida, 2004 - 2013



Source: Federal Railroad Administration, Office of Safety Analysis. *Interim Railroad Safety Statistics Report*, 2013

In 2013, there were 66 highway-rail incidents, 19 nonfatal injuries and 8 deaths. Figure 10 shows the number of deaths and injuries from 2004 through 2013. The number of injuries and deaths varied from year to year. The number of highway-rail related deaths doubled from 2006 to 2007 and peaked in 2008 before returning to approximately 10 per year. From 2009 to 2013, the number of highway-rail related deaths remained relatively steady.

Figure 10 – Fatalities and Injuries from Rail Incidents, 2004 - 2013



Source: Federal Railroad Administration, Office of Safety Analysis, *Railroad Safety Statistics Annual Report*, 2013

Persons are injured or die in rail incidents for different reasons. The context involved in a rail incident plays a role in determining the cause for the incident and subsequent injury. Table 5 details the number of injuries and fatalities in Florida for 2012. Thirty-seven trespassers died while illegally on railroad property. The largest number of injuries involved passengers on the train.

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Table 5 – Type of Person Injured in Florida Railroad Incidents, 2012

Type of person	Fatalities	Injuries
Worker on duty (railroad employee)	0	52
Employee not on duty	0	4
Passenger on train	0	58
Non-trespasser	2	27
Trespasser	37	29
Worker on duty (contractor)	0	10
Contractor (other)	1	14
Worker on duty (volunteer)	0	0
Volunteer (other)	0	0
Non-trespasser (off RR property)	0	1
Total	40	195

Source: Federal Railroad Administration, Office of Safety Analysis. *Railroad Safety Statistics – Annual Report 2012*. Preliminary data as of September 2013.

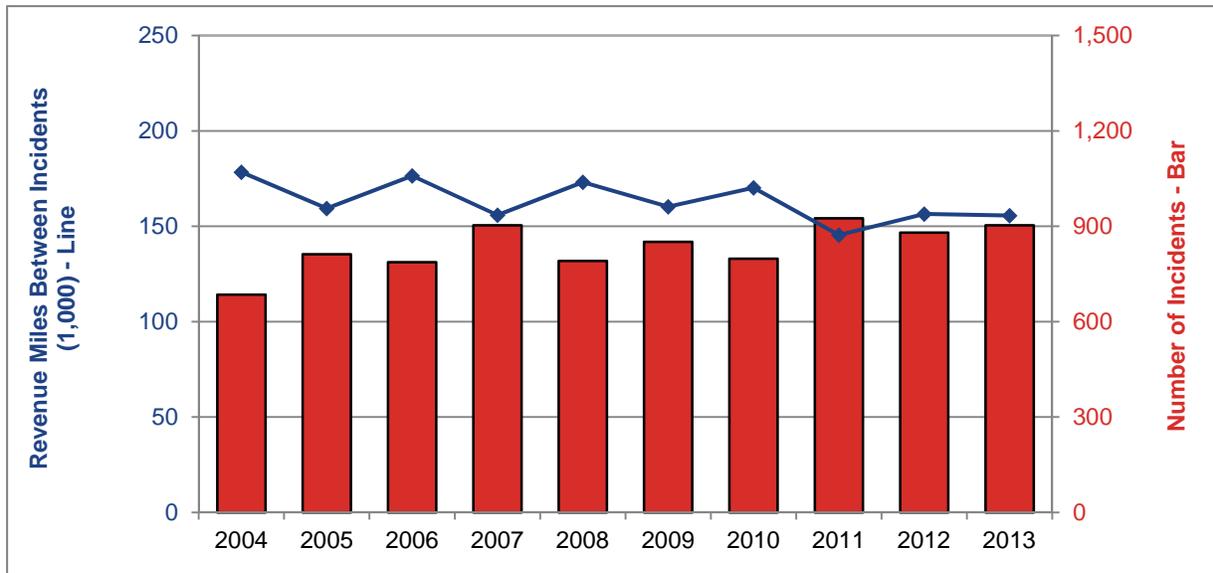
Public Transportation Safety

In addition to the impact on people, safety and security incidents that involve transit vehicles can impact the operation of transit services and on-time performance. Similarly, incidents that occur where transit shares the roadway with other vehicles can impact the flow of traffic in that vicinity. An incident is anything that involves a transit vehicle or property which affects the operation of revenue service and involves the commission of a crime (security) or the loss of life, personal injury, or property damage (safety).

According to the National Transit Database (NTD), major incidents are the most severe safety and security incidents that occur in the transit environment. For major incidents, the definition of an incident is further refined to include any fatality due to an incident, any injury requiring a person to be transported away from the scene for immediate medical attention, property damage greater than or equal to \$25,000 for all property involved, evacuations due to life safety reasons, and mainline derailments. Figure 11 shows the number of major incidents and revenue miles between incidents for fixed route transit in Florida between 2004 and 2013.

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Figure 11 – Florida Fixed Route Major Transit Incidents, 2004 – 2013



Sources: Florida Transit Handbook and National Transit Database, 2014

In Figure 11, the number of incidents is represented by bars, and the revenue miles between incidents are represented by a line. Revenue miles between incidents indicate the average interval between incidents. The greater the increase in revenue miles between incidents, the more effective the transit system is in reducing incidents. As depicted above, the number of incidents and the revenue miles per incident both show fairly stable trends from 2004 to 2013. Between 2007 and 2008, the number of incidents increased, and the miles between incidents decreased; however, this was an anomaly due to the fact that the NTD set new requirements in reporting safety data. In the most recent years between 2011 and 2013, the number of incidents decreased slightly. This trend is significant because while the incidents decreased, the ridership actually increased between those years. This indicates fewer disruptions in service for passengers and lower agency cost associated with responding to incidents. More information on service levels can be found in the *Transportation System: Transit and Transportation Disadvantaged Trends and Conditions* report.

Table 6 presents safety data for motorbus, and demand response modes for the 30 fixed and deviated route agencies in Florida. In 2013, 406 major incidents occurred. Three hundred seventy-nine of the 406 incidents were collisions, twelve were assaults, four were fires, two were bomb threats, one was a robbery, one was a homicide, and seven were classified as "other". Property damage caused by the incidents was estimated to be \$2,993,771. Of the estimated property damage total, \$121,600 was due to fire/smoke.

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Table 6 – Florida Transit Safety Data, All Fixed Route Agencies, 2013

Mode	Number of Incidents	Fatalities	Injuries	Total Property Damage (\$1000)
Motorbus	826	14	1,304	2,705
Demand Response	92	0	108	288
Total	918	14	1,412	2,994

Source: National Transit Database

Aviation Safety

In the United States, the aviation industry is critical to the economy, the mobility of residents and visitors, and the movement of goods. Safety and security play important roles in determining the productivity of the industry.

Table 7 – U.S. Aviation Incidents, Fatalities and Rates, 2004 – 2013

Year	U.S. Air Carrier, Scheduled and Nonscheduled			U.S. Air Carrier, Commuter			U.S. Air Carrier, On-Demand			U.S. General Aviation		
	Incidents	Fatalities	Incidents per 100,000 Flight Hours	Incidents	Fatalities	Incidents per 100,000 Flight Hours	Incidents	Fatalities	Incidents per 100,000 Flight Hours	Incidents	Fatalities	Incidents per 100,000 Flight Hours
2004	30	14	0.16	4	0	1.32	66	64	2.04	1,617	559	6.51
2005	40	22	0.21	6	0	2.00	65	18	1.70	1,670	563	7.21
2006	33	50	0.17	3	2	1.00	52	16	1.39	1,520	706	6.36
2007	28	1	0.14	3	0	1.03	61	43	1.51	1,654	496	6.94
2008	28	3	0.15	7	0	2.36	58	69	1.70	1,569	496	6.88
2009	30	52	0.17	2	0	0.65	47	17	1.53	1,480	479	7.09
2010	29	2	0.16	6	0	1.91	30	17	0.96	1,440	457	6.64
2011	31	0	0.17	4	0	1.23	50	41	1.62	1,470	448	6.84
2012	27	0	0.15	4	0	1.25	35	9	0.99	1,471	440	7.04
2013	23	9	0.13	8	6	2.48	44	27	1.24	1,222	387	5.85

Note: According to FAA's Office of System Safety, most researchers prefer to use the number of flights, measured as departures, instead of hours or miles flown, because the risk of an accident in an aircraft is greatest at takeoff or landing. While only six percent of flight time for a commercial aircraft is spent in the takeoff, initial climb, final approach, and landing, approximately 70% of "hull loss" accidents occur in these stages. However, normalizing the data based on hours-flown remains a common metric and enables comparisons across modes as does miles of travel which can also serve as an exposure measure.

Source: NTSB, Aviation Accident Statistic

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In 1996, the U.S. Senate requested that aviation safety data be made more available and accessible to the public. Today a variety of data are available. For example, detailed databases by the Federal Aviation Administration (FAA) and the National Transportation Safety Board (NTSB) can be easily accessed online and contain information on crashes and incidents. According to the NTSB database, crashes result in a fatality or serious injury of a person in contact with an aircraft or substantial damage to an aircraft. Incidents are less severe occurrences “that affect or could affect the safety of operations”.

For analysis of aviation safety data, it is useful to convert the safety data into rates that reflect exposure to the possibility of incidents. Rates can be calculated using the number of flight departures or by flight hours. Table 7 contains safety statistics for U.S. air carriers and general aviation from 2004 through 2013. In the United States, general aviation incident rates per 100,000 flight hours are substantially greater than similar rates for air carriers.

Major aviation incidents are rare events and only a few have occurred within Florida. Hence, incident rates are shown at the national level only. General aviation operations in Florida also have a share of incidents and fatalities. Current state level major incident data is not available.

The FAA, airlines, aircraft manufacturers, airports, flight crews, mechanics and other groups must work together to make the aviation system safe. The mission of FAA is to “provide a safe, secure, and efficient global aerospace system that contributes to national security and the promotion of U.S. aerospace safety.” The FAA works to ensure safety by completing inspections and surveillance of aircraft. Strategic goals for safety include reducing the fatal air carrier and overall incident rates, reduce general aviation fatal incidents, increase survivability, reduce runway incursions and reduce operation errors.

Since September 11, 2001, safety and security of the aviation industry are often regarded in the same context. Prior to September 11, the United States had not had a major security incident since 1988. Now the FAA, the Transportation Security Administration (TSA) and the airlines have implemented new security measures to attempt to prevent future incidents. The FAA has separate strategic goals for security which include no security incidents, improved ability to detect explosive devices and weapons, improved airport security and an increased number of facilities meeting FAA security standards. Safety and security of the aviation industry will continue to be a major area of concern and investment.

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Recreational Boating Safety

Boating is a common recreational activity in Florida.

Table 8 shows safety statistics on recreational boating for 2012 and 2013. Many boating incidents go unreported, but typically reporting increases as severity increases.

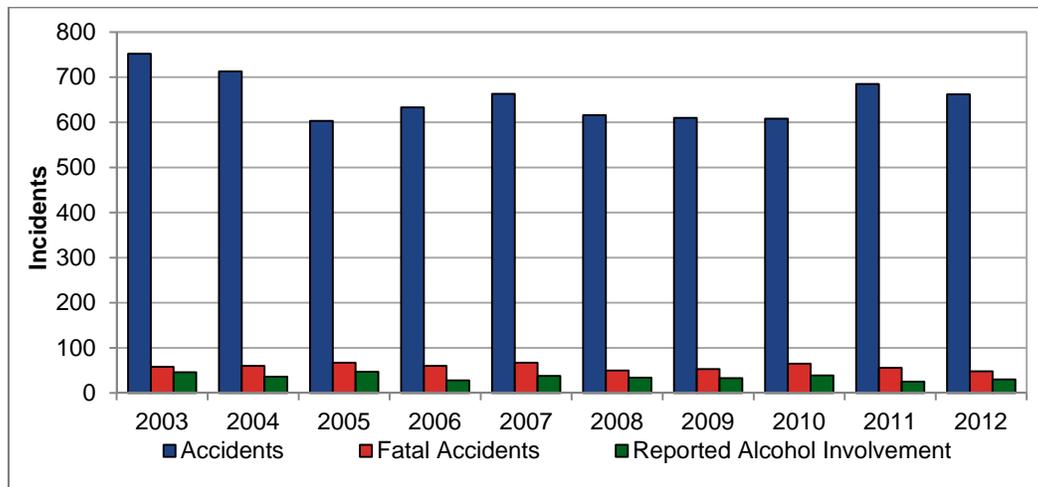
Figure 12 shows the trend in recreational boating incidents from 2004 through 2013. The number of reported incidents has a fluctuating trend, with the lowest number being 603 in 2005. The trend continues with the number of boating related fatalities increasing by 3 persons between 2012 and 2013.

Table 8 – Florida Recreational Boating Safety Statistics, 2012 and 2013

	2012	2013
Total Registered Boats	870,031	870,749
Total Reported Incidents	662	685
Fatal Incidents	48	51
Fatalities	50	58
Non-fatal Injury Incidents	283	295
Injuries	398	406
Property Damage Only	331	339
Property Damage (\$)	\$6,801,730	\$9,490,497

Source: U.S. Coast Guard, 2012 and 2013 *Boating Statistics*

Figure 12 – Recreational Boating Incidents in Florida, 2004 - 2013

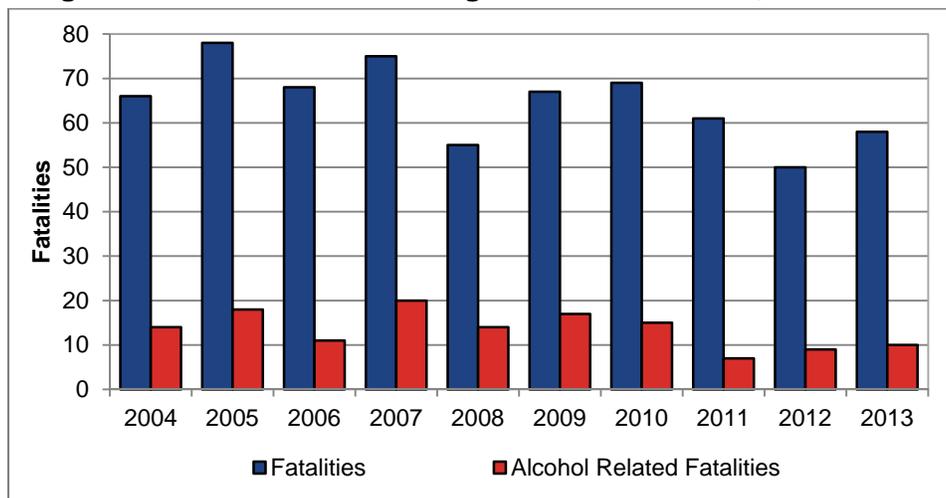


Source: U.S. Coast Guard, *Annual Boating Statistics*, 2013

On average, about 65 people were killed each year in recreational boating and alcohol-related fatalities accounted for almost 21% of all boating fatalities (Figure 13). In 2013, the number of total fatalities increased from 2012 by 16% and the number of alcohol-related fatalities increased by over 11%. Fatal incidents refer to the number of incidents where fatalities occurred, not the number of fatalities.

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Figure 13 - Recreational Boating Fatalities in Florida, 2004 – 2013

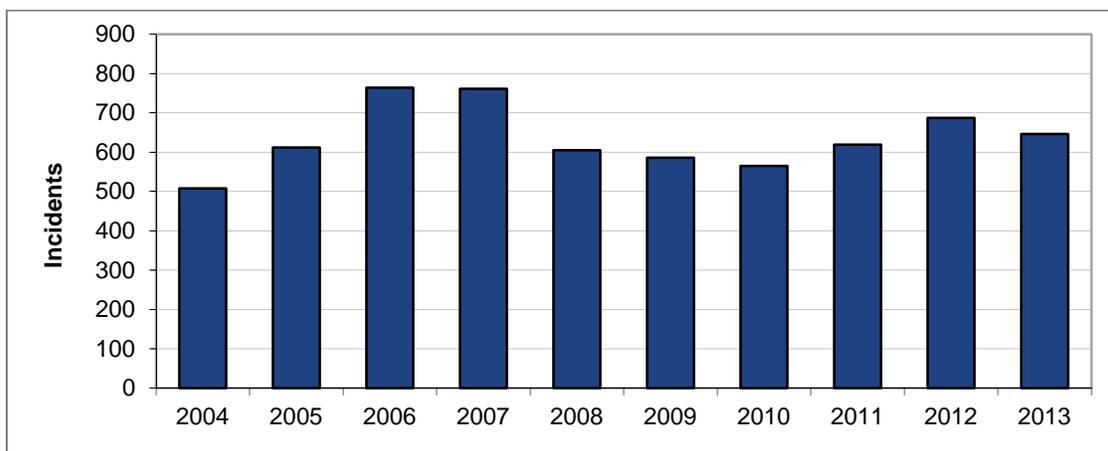


Source: U.S. Coast Guard, *Annual Boating Statistics*, 2013

Hazardous Material Safety

Transporting hazardous materials, such as explosives, flammable gases, or corrosive materials, can have serious implications for safety on the transportation network if incidents occur. In Florida, the trend for the number of incidents varied over time and peaked in 2006 (Figure 14). The total number of hazardous material incidents decreased to 646 in 2013 from 687 in 2012. Of these incidents, 19 resulted in injuries and one resulted in death. The estimated damages caused by the incidents in Florida were over 3.1 million dollars.

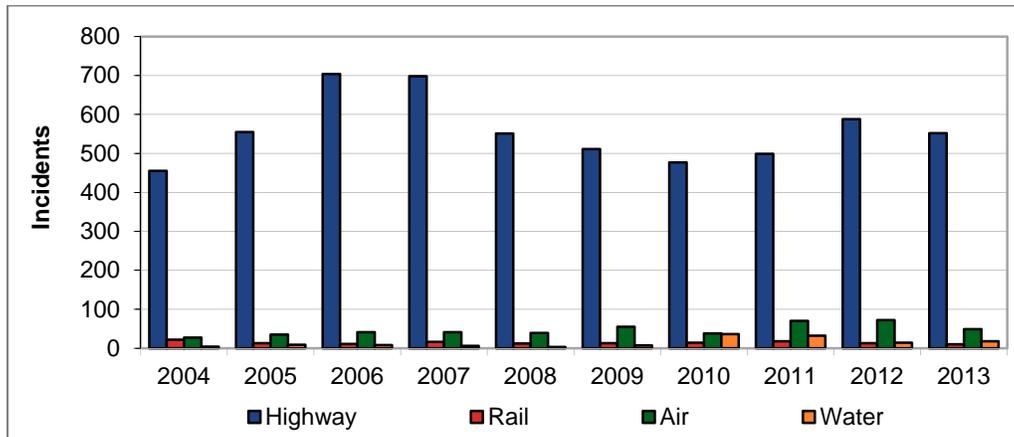
Figure 14 – Hazardous Material Incidents in Florida, 2004 - 2013



Note: The number of incidents excludes pipelines

Source: U.S. Department of Transportation, Hazardous Materials Safety, Annual HAZMAT

Figure 15 – Hazardous Material Incidents by Mode in Florida, 2004 – 2013



Source: U.S. Department of Transportation, Hazardous Materials Safety, Annual HAZMAT

The number of incidents varies across transportation modes. As Figure 15 shows, the highway system accounts for the majority of all hazardous material incidents in Florida. This would be expected given the system's very large role in the movement of commodities including hazardous materials. Each mode has a different probability of incidents, a different magnitude of volume of material moved, different exposure to incidents, and different potential consequences of each incident based on the volume of hazardous material and characteristics of the incident. For example, an incident involving a small truck moving flammable materials may have more minimal consequences than an incident involving a 50 car train transporting flammable materials.

Conclusion

As the transportation system becomes more intermodal and more congested, it is increasingly important that efforts to enhance safety continue. As volumes increase, the operating environment becomes more congested, escalating the chances that an incident will occur and may involve multiple vehicles. Part of the decline in crashes over the past several years is attributable to reductions in the volume of travel. The challenge in maintaining and improving safety going forward requires safety enhancements to more than offset the increased chance of incidents attributable to growing travel. Population increases and a strengthening economy are likely to create travel demand increases which will increase the chance for incidents.

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Efforts to improve safety focus on all modes but one strategy is to encourage use of those modes that have lower safety risks. As shown, each different mode presents meaningfully different rates of incidents and fatalities. A critical challenge for the providers of transportation will be to strive to continue to improve the levels of safety as they deliver the transportation capacity to meet the traveling public's needs without undue constraints on the cost, speed, convenience or other performance characteristics of the modes.

Part of the decline in incidents over the past several years is attributable to reductions in the total volume of travel. The challenge in maintaining and improving safety requires safety enhancements to more than offset the increased chance of incidents that are likely as the economy improves and travel demand increases.

Table 9 – Incident and Fatality Rates for Roadway, Rail, Transit and Air

	Incident Rate	Death Rate
Traffic Crashes (FL 2013)	1.65 per million VMT	0.01 per million VMT
Rail Incidents at Public Crossings (FL 2013)	1.24 per million VMT	0.18 per million VMT
Transit Collisions for Top Ten Agencies (FL 2013)	6.43 per million VMT	0.10 per million revenue miles
General Aviation Incidents (U.S. 2013)	5.85 per 100,000 flight hours	1.06 per 100,000 flight hours

Note: Calculations based on mode data by source

The most recent year-over-year changes in trends are somewhat encouraging relative to a few years ago when fatalities were peaking. Roadway crash rates appear to have established a multi-year positive declining trend but with a troubling reversal in the past two years (Figure 1). Pedestrian, bicycle and motorcycle trends are leveling out; however, there still remains considerable room for improvement (Figure 6). The decrease in share of fatalities involving alcohol is promising, but remains an obvious target for further progress (Figure 4). Initiatives targeting safety in these areas need to be sustained at aggressive levels.

Ultimately, transportation safety is the collective responsibility of everyone from the individual travelers to the host of professionals who have responsibilities for planning, designing, building, operating, and policing the transportation vehicles and systems. It is the combination of public and private efforts and the respective training, licensing and enforcement activities that

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contribute to the ultimate safety performance of the transportation system. In Florida, the safety initiatives of the Florida Department of Transportation are summarized in the Florida Strategic Highway Safety Plan. This federally required plan, developed with extensive stakeholder participation, focuses safety initiatives of the department around eight major emphasis areas: aggressive driving, intersection crashes, vulnerable road users (pedestrians, bicyclists, and motorcyclists), lane departure crashes, impaired driving, and traffic data.

More about FDOT safety initiatives can be gleaned from this plan and other documents from FDOT or the Florida Department of Highway Safety and Motor Vehicles.

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