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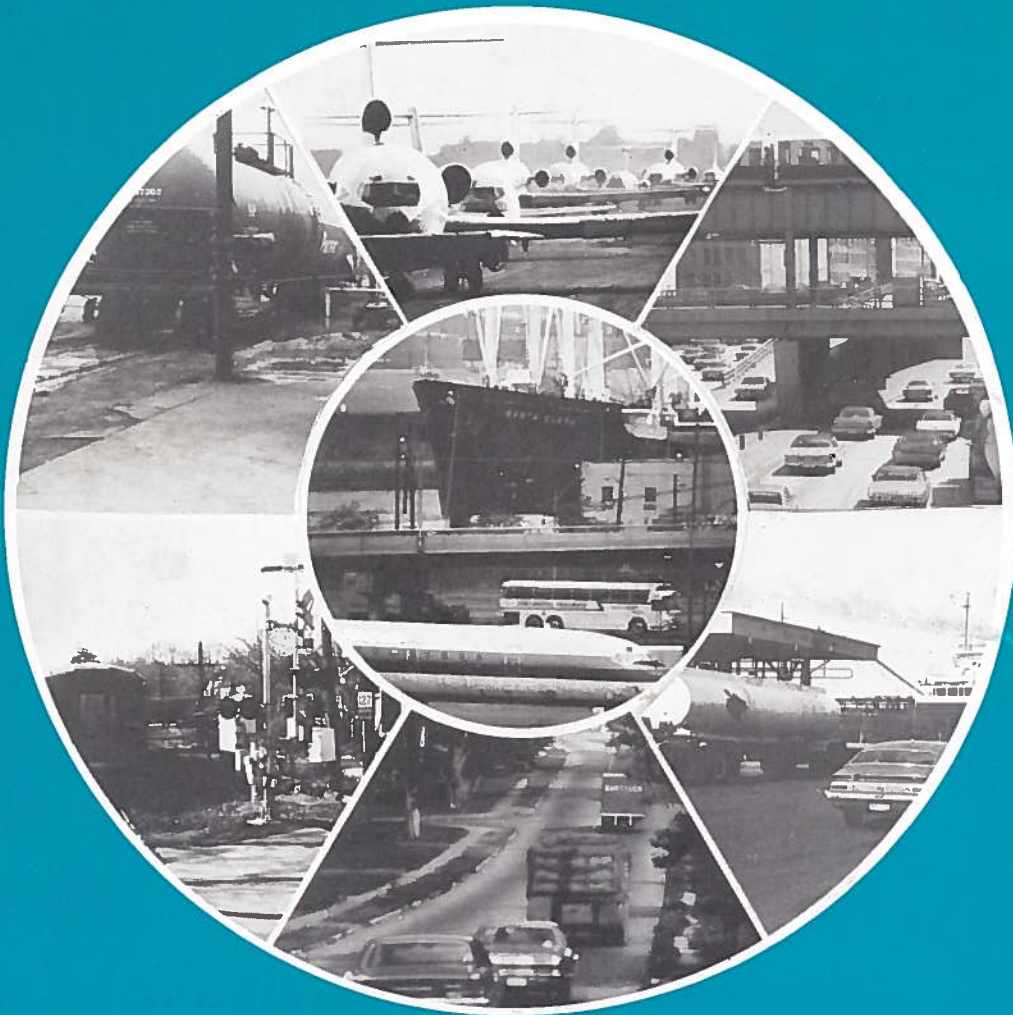


U.S. Department  
of Transportation

**Research and  
Special Programs  
Administration**

# Transportation Safety Information Report

## 1991 Annual Summary



**John A. Volpe National Transportation Systems Center**

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U.S. Department  
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**Research and  
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# Transportation Safety Information Report 1991 Annual Summary

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**Secretary of Transportation**

*Andrew H. Card, Jr.*



# REPORT DOCUMENTATION PAGE

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## INTRODUCTION

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The purpose of the *Transportation Safety Information Report* is to provide a summary of statistics on safety data for individual transportation modes, and for hazardous material transportation by any mode. The TRANSIS report is used by DOT policy makers, state and local safety officials, and private research organizations.

The report is based on data input to the Transportation Safety Information System (TRANSIS) by representatives in each of the U.S. Department of Transportation's (DOT) modal administrations and the National Transportation Safety Board. Offices cited as sources can provide additional detail and in-depth discussion of the use and interpretation of data.

The TRANSIS system was established in 1972 in response to a growing requirement for a base of multimodal safety data, both within DOT and from other agencies. A need was perceived for a system that would provide timely reporting of transportation safety statistics and related information on a modal and multimodal basis, and for monitoring current transportation safety problems, activities and accident trends.

This report is published on an annual basis. A related publication, *National Transportation Statistics*, is also available on an annual basis from the Superintendent of Documents, Government Printing Office, Washington, DC.

The *Transportation Safety Information Report* is prepared by the DOT's Research and Special Programs Administration's Volpe National Transportation Systems Center (RSPA/Volpe Center) located in Cambridge, Massachusetts.

Ms. Francine Butler of the Volpe Center's Center for Transportation Information provided valuable assistance in the preparation of this report.

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## STATISTICAL SUMMARY of TRANSPORTATION SAFETY, 1990-1991

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### Fatalities

Motor Vehicle Traffic, Railroad, and Rail-Highway Grade Crossing operations exhibited a decline in fatalities during 1991. Air Carrier, General Aviation, Recreational Boating, Pipeline, and Hazardous Materials operation rates were, however, elevated. Fatality data were not available for Rail Rapid Transit and Waterborne Transport at the time this report was published.

During 1991, an estimated 41,150 people died in Motor Vehicle traffic accidents, down 7.6 percent from the 44,529 fatalities reported in 1990. The fatality rate per 100 million vehicle-miles of travel was 1.90 in 1991, the lowest rate recorded in the past 15 years. In addition, passenger car occupant fatalities fell from 24,092 in 1990 to 22,347 in 1991.

Air Carrier fatalities, scheduled and nonscheduled, grew from 39 in 1990 to 50 in 1991. Commuter carrier and on-demand air taxi fatalities also increased in 1991. Thus, total air carrier fatalities, including commuter carriers and on-demand air taxis, show a gain from 93 during 1990 to 196 in 1991. General Aviation fatalities remained relatively steady at 746 in 1991, from 745 in 1990.

Railroad fatalities decreased from 599 in 1990 to 583 in 1991. Rail-Highway Grade Crossing fatalities fell to 611 during 1991 versus 698 in 1990. Pipeline fatalities grew from 8 in 1990 to 14 in 1991, while deaths resulting from incidents involving transportation of Hazardous Materials rose to 10 during 1991 from 8 in 1990.

### Injuries

Injuries for Motor Vehicle Traffic, Railroad, and Rail-Highway Grade Crossing operations dropped in 1991. Recreational Boating, Pipeline, and Hazardous Materials operations, all showed a gain in injuries. Injury data for Air Carrier, General Aviation, Rail Rapid Transit, and Waterborne Transport were not available at the time this report was published.

### Accidents/Incidents

Accidents decreased in Air Carrier, General Aviation, Motor Vehicle Traffic, Railroad and Rail-Highway Grade Crossing operations. Recreational Boating, Pipeline, and Hazardous Materials operations, however, all had a growth in the number of accidents. Accident data for Rail Rapid Transit and Waterborne Transport were not available at the time this report was published.

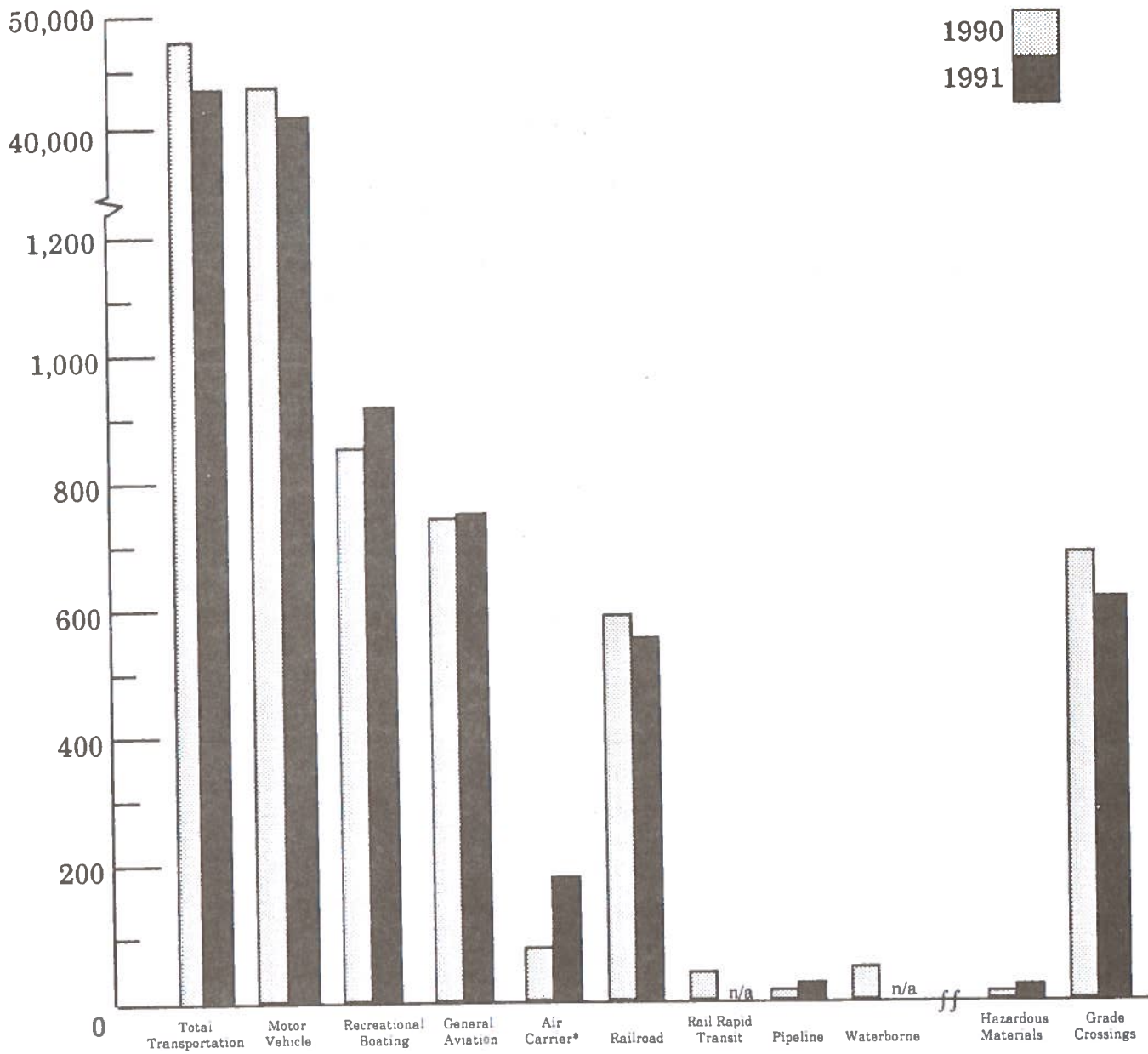
Air Carrier accidents slipped 10.7 percent in 1991, while General Aviation accidents dropped 2.1 percent. Motor Vehicle Traffic accidents decreased by 1.7 percent. Railroad accidents declined 7.6 percent and Rail-Highway Grade Crossings fell 5.7 percent.

Accidents increased in Recreational Boating operations by 2.5 percent in 1991. Pipeline operation accidents rose 17.8 percent and Hazardous Materials operation accidents grew 2.2 percent.

Rail Rapid Transit and Waterborne Transport accident data were not available at the time this report was published.



Chart 1. Transportation Fatalities by Mode, 1990 and 1991



n/a = not available.

\* Includes Commuter Carriers and Air Taxis.

Note: 1991 Total Transportation figure is incomplete as Rail Rapid Transit and Waterborne Transport data were not available at time of publication.

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## SAFETY STATISTICS by MODE

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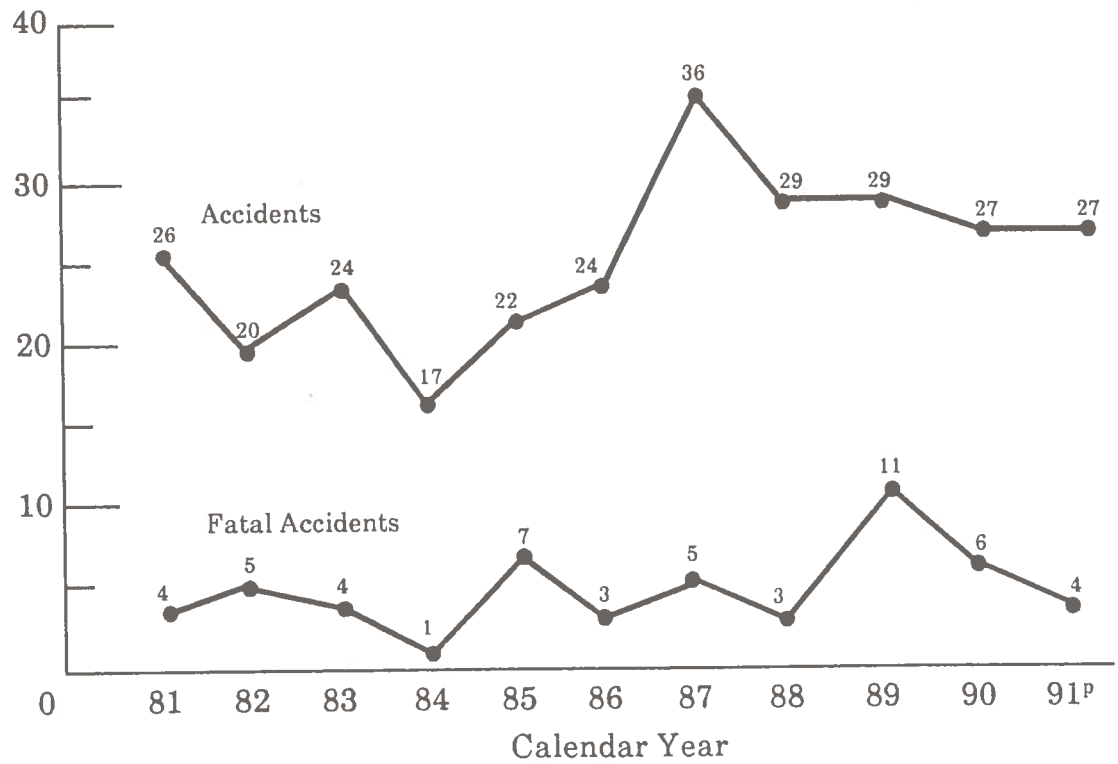
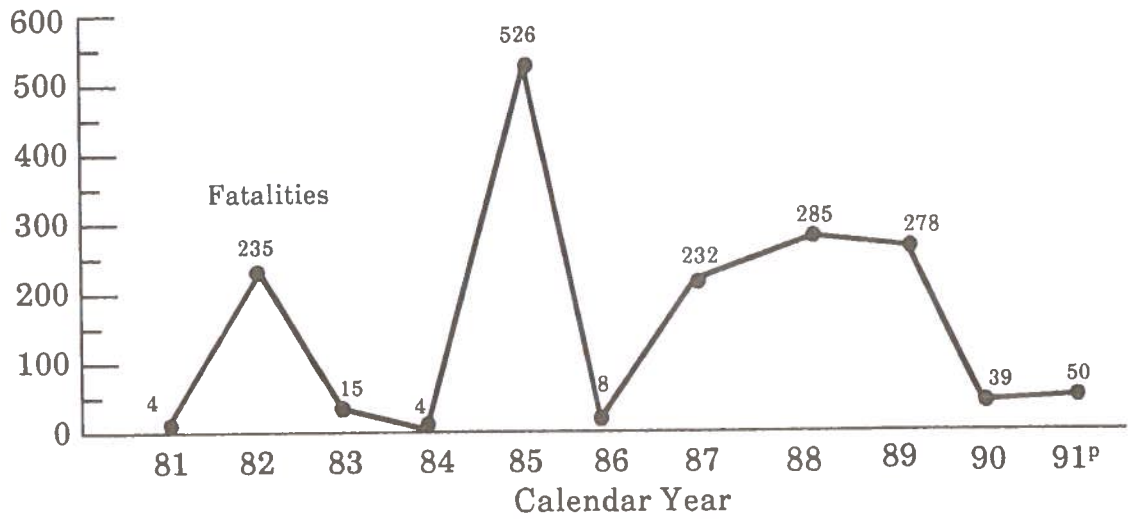
### AVIATION

Beginning in January 1982, the National Transportation Safety Board (NTSB) began reporting aviation accident data according to the Federal Aviation Regulations (FAR) under which the aircraft was operated at the time of an accident. Revenue operations of Air Carriers, Commercial Operators and deregulated All Cargo Carriers, using large aircraft, are conducted under FAR 14 CFR 121. Commuter Air Carriers (scheduled) and On-Demand Air Taxi Operators (unscheduled) revenue operations (using small aircraft) are conducted under FAR 14 CFR 135. Accidents involving flights not being conducted under either FAR 14 CFR 121 or 14 CFR 135 are grouped by the NTSB into the "General Aviation" category.

### AIR CARRIER

- U.S. air carriers flying large aircraft (14 CFR 121) registered four fatal accidents in 1991 compared with six in 1990.
- There were 50 fatalities in U.S. air carrier operations (14 CFR 121) during 1991 compared with 39 in 1990.
- Commuter carriers had eight fatal accidents and 77 fatalities in 1991, compared with two fatal accidents and 4 fatalities in 1990. The 77 commuter fatalities represents the highest number of deaths ever recorded for the commuter airline industry in a single calendar year.
- There were 84 accidents and 69 fatalities involving U.S. air taxis in 1991, compared to 107 accidents and 50 fatalities in 1990. The 84 accidents represents the lowest number of air taxi accidents since the NTSB began compiling air taxi records in 1975.

**Chart 2. U.S. Air Carrier\* Fatalities, Accidents, and Fatal Accidents, 1981-1991**



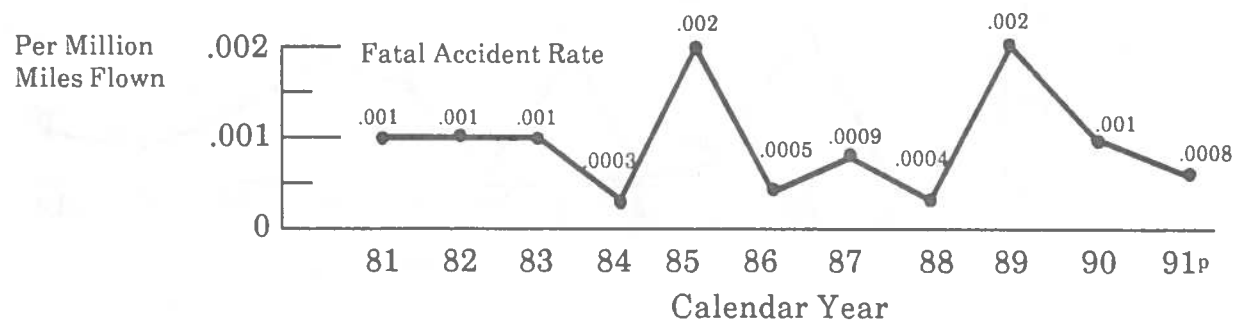
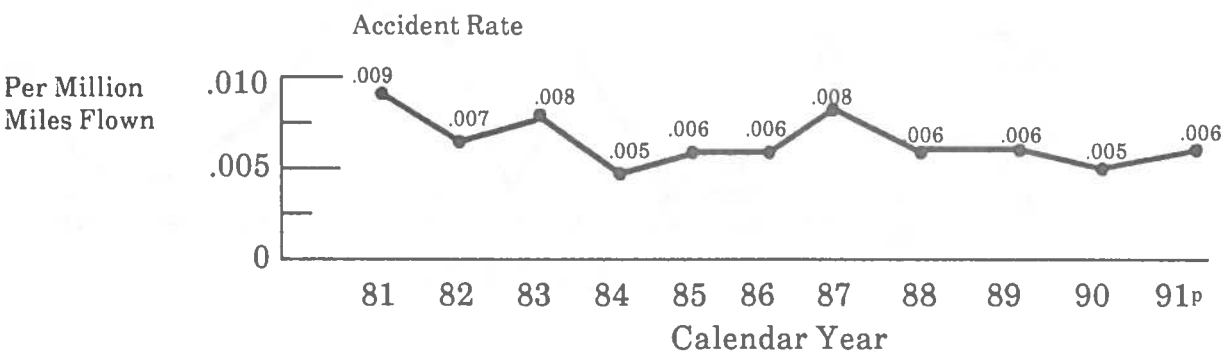
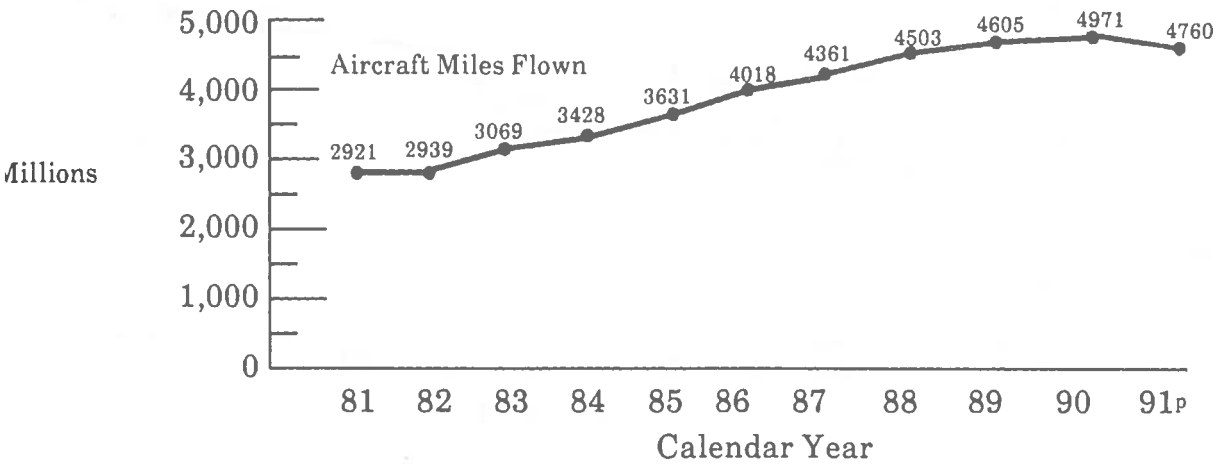
<sup>p</sup> = preliminary.

\* Includes all scheduled and nonscheduled service accidents involving deregulated all cargo air carriers and commercial operators of large aircraft when those accidents occurred during 14 CFR 121 operations.

Source: National Transportation Safety Board (NTSB), Analysis and Data Division, RE-50.



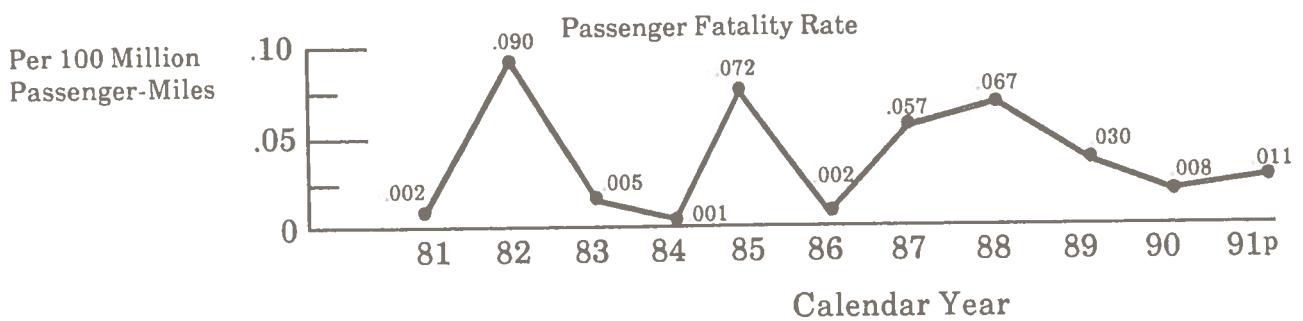
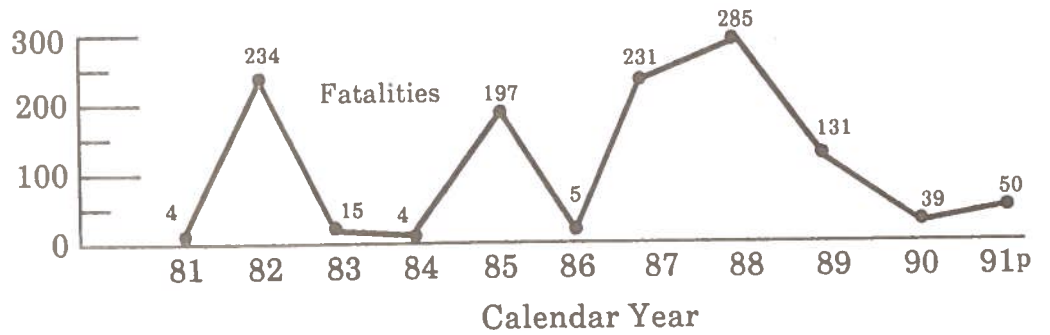
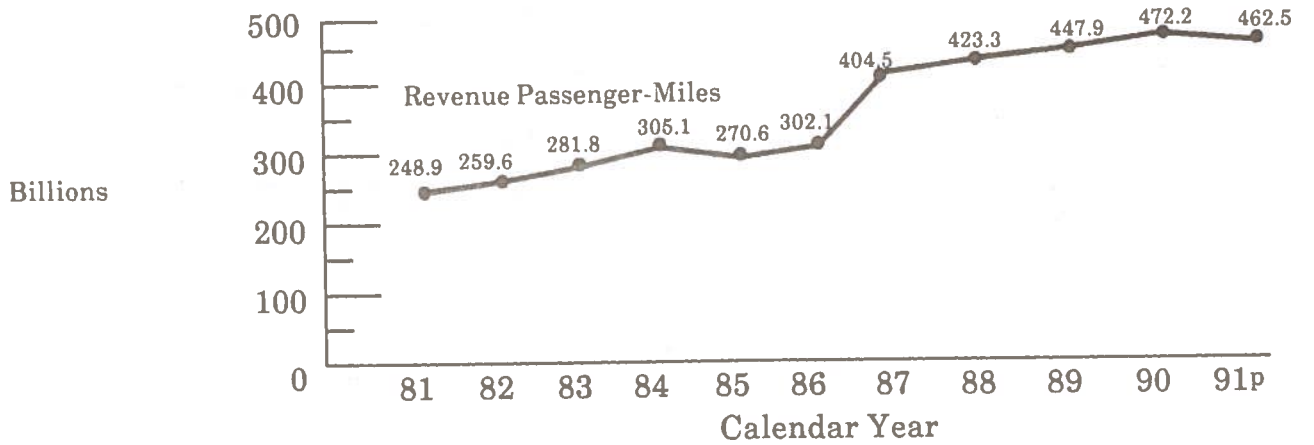
**Chart 3. U.S. Air Carrier\* Accident and Fatal Accident Rates per Aircraft Miles Flown, 1981-1991**



p = preliminary.  
 \* Includes all scheduled and nonscheduled service accidents involving deregulated all cargo air carriers and commercial operators of large aircraft when those accidents occurred during 14 CFR 121 operations.

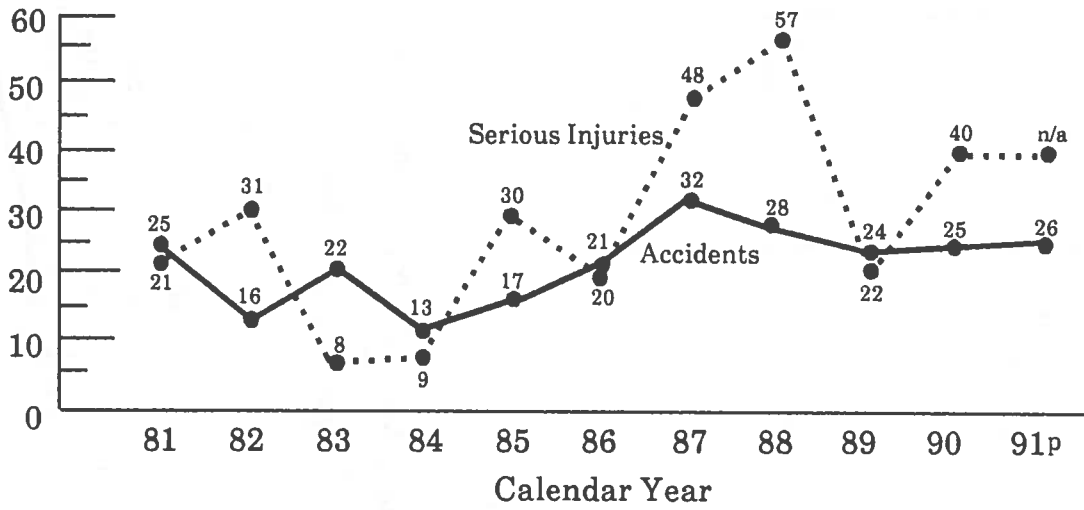
Source: NTSB, Analysis and Data Division, RE-50.

**Chart 4. U.S. Air Carrier\* Passenger Fatality Rates per Passenger-Mile, 1981-1991**



p = preliminary.  
 \* All scheduled revenue passenger service conducted under 14 CFR 121 operations. Nonscheduled service not included.  
 Source: Fatalities: NTSB, Analysis and Data Division, RE-50.  
 Revenue Passenger-Miles: U.S.DOT/RSPA, *Air Carrier Traffic Statistics*, annual report.

**Chart 5. U.S. Air Carrier\* Accidents and Serious Injuries, 1981-1991**



n/a = not available.

p = preliminary.

\* Includes all scheduled service accidents involving deregulated all cargo air carriers and commercial operators of large aircraft when those accidents occurred during scheduled 14 CFR 121 operations. Nonscheduled service is not included.

Source: NTSB, Analysis and Data Division, RE-50.

**Table 2. Commuter Air Carrier\* Accidents, Fatalities, Injuries, and Accident Rates, 1981-1991**

	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991P
Fatal Accidents	9	5	2	7	7	2	10	2	5	2	8
Total Accidents	31	26	17	22	21	15	32	19	16	15	22
Fatalities	34	14	11	48	37	4	59	21	31	4	77
Serious Injuries	24	28	12	23	16	12	20	4	4	11	n/a
Fatal Accident Rate***	0.05	0.02	0.01	0.02	0.02	0.01	0.03	0.01	0.01	0.01	0.02
Total Accident Rate***	0.16	0.12	0.07	0.08	0.07	0.05	0.09	0.05	0.04	0.03	0.06
Fatal Accident Rate# +	0.49	0.25	0.09	0.26	0.27	0.07	0.36	0.07	0.18	0.07	0.30
Total Accident Rate# +	1.69	1.28	0.73	0.82	0.82	0.54	1.14	0.66	0.57	0.49	0.82

n/a = not available.

p = preliminary.

\* All scheduled service conducted under 14 CFR 135.

\*\* Per million aircraft miles flown.

+ Rates are based on all accidents including some involving operators not reporting traffic data to the U.S. Department of Transportation.

# Per 100,000 departures.

Source: NTSB, Analysis and Data Division, RE-50.

**Table 3. On-Demand Air Taxi\* Accidents, Fatalities, Injuries, and Accident Rates, 1981-1991**

	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990P	1991P
Fatal Accidents	40	31	27	23	35	31	30	27	25	29	26
Total Accidents	157	132	141	146	152	116	97	97	107	107	84
Fatalities	94	72	62	52	76	65	65	58	83	50	69
Serious Injuries	37	39	29	35	43	33	19	32	35	32	n/a
Fatal Accident Rate**	1.38	0.95	1.05	0.75	1.26	1.06	1.04	0.95	0.76	0.91	0.80
Total Accident Rate**	5.42	4.05	5.48	4.74	5.46	3.98	3.37	3.41	3.27	3.38	2.57

n/a = not available.

p = preliminary.

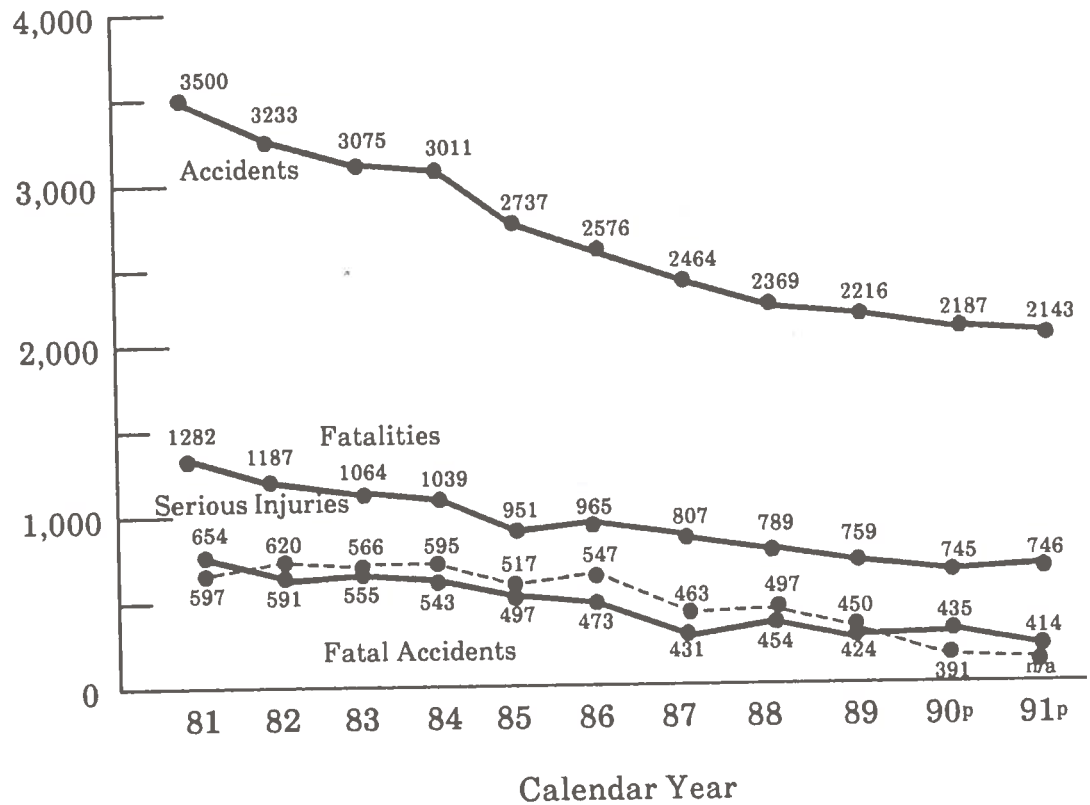
\* Nonscheduled service conducted under 14 CFR 135. Accidents on foreign soil and in foreign waters are excluded.

\*\* Per 100,000 aircraft hours.

## GENERAL AVIATION

- In general aviation, 2,143 accidents and 746 fatalities were reported in 1991, the lowest accident total since the NTSB began compiling general aviation records in the 1960s. In 1990, there were 2,187 accidents and a record low of 745 fatalities.

**Chart 6. General Aviation\* Accidents, Fatalities, Serious Injuries, and Fatal Accidents, 1981-1991**



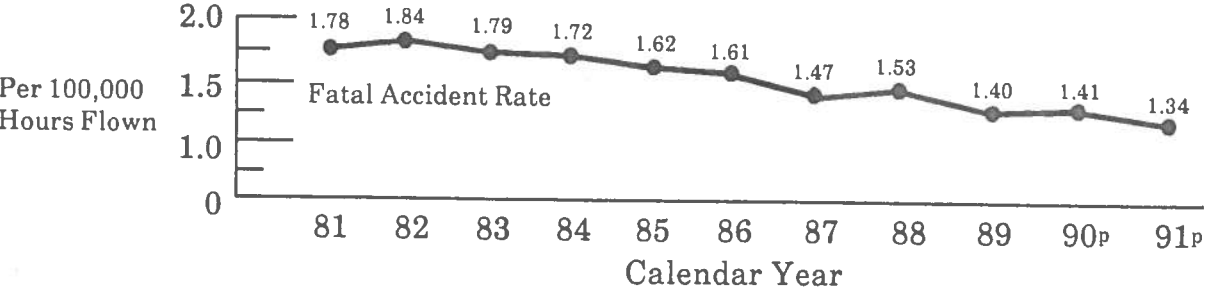
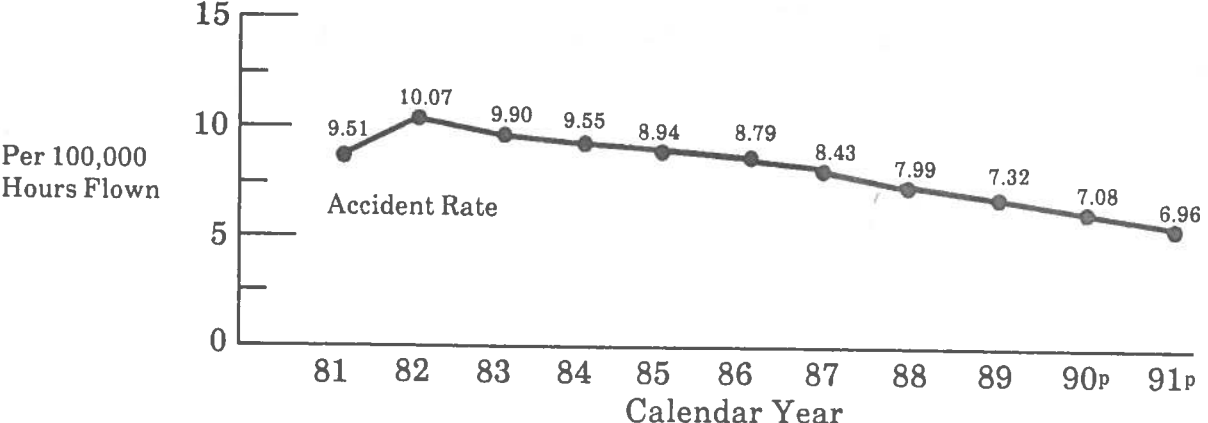
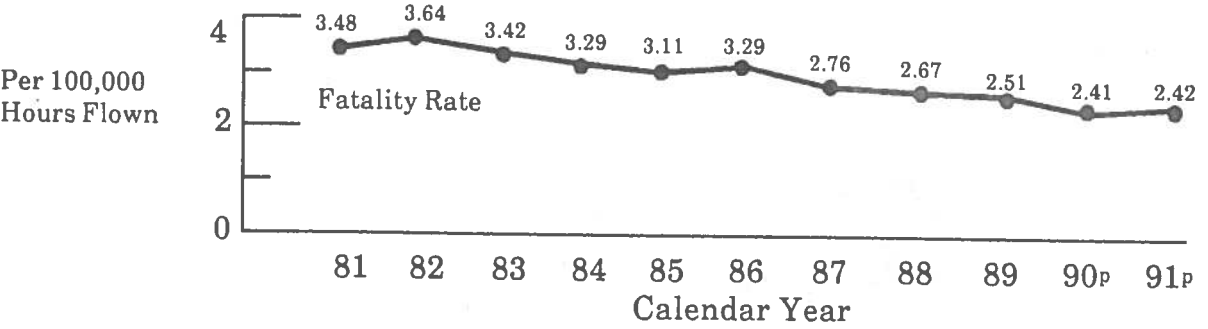
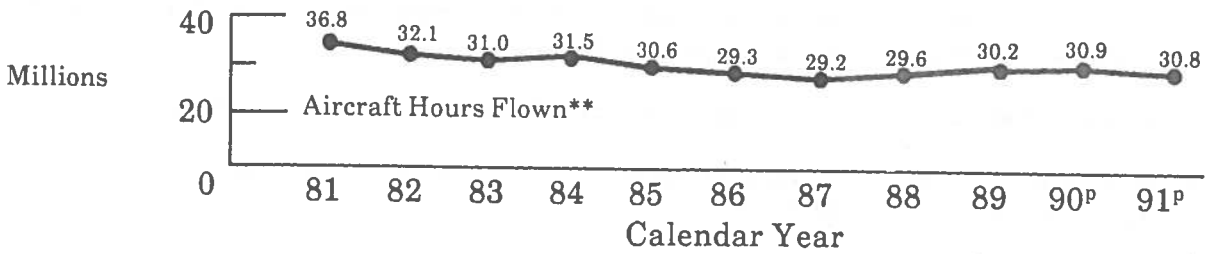
n/a = not available.

p = preliminary.

\* All operations other than those conducted under 14 CFR 121 or 14 CFR 135. Accidents on foreign soil and in foreign waters are excluded.

Source: NTSB, Analysis and Data Division, RE-50.

**Chart 7. General Aviation\* Fatality and Accident Rates per Aircraft Hours Flown, 1981-1991**



p = preliminary.  
 \* All operations other than those conducted under 14 CFR 121 or 14 CFR 135. Accidents on foreign soil and in foreign waters are excluded.  
 \*\* Estimated by Federal Aviation Administration.  
 Note: Suicide/sabotage accidents excluded from rates as follows (1982-3, 1983-1, 1984-3, 1985-3, 1987-1, 1988-1, and 1989-3). Suicide/Sabotage fatal accidents excluded from rates as follows (1984-2, 1985-2, 1987-1, and 1989-2).  
 Source: NTSB, Analysis and Data Division, RE-50.

## HIGHWAY

- The 1991 fatality rate dipped to 1.9 deaths per 100 million vehicle-miles of travel, a remarkable improvement from the 3.2 figure registered in 1981.
- There were 41,150 traffic fatalities in 1991, a decline of 7.6% from the 44,529 deaths in 1990.
- Occupant fatalities of passenger cars decreased by 7.2% from 1990, while light truck occupant fatalities showed a decrease of 2.6%.
- Nonoccupant fatalities (pedestrians and pedalcyclists) has an overall decrease of 13.5% from 1990.



**Table 4. Motor Vehicle Traffic Data Comparisons, 1981, 1990-1991**

	1981	1990	1991 <sup>e</sup>	1981-1991 Average Annual % Change	1990-1991 % Change
Total Registered Motor Veh (000) <sup>†</sup>	158,457	188,655	190,741	1.9	1.1
Automobiles (000)	123,462	143,550	145,043	1.6	1.0
Trucks (000)	34,451	44,468	45,052	2.7	1.3
Buses (000)	544	638	646	1.7	1.3
Motorcycles (000)	5,831	4,259	4,156	-3.3	-2.4
Licensed Drivers (000)	147,075	167,015	169,183	1.4	1.3
Percent under 25 years old	20.6	15.7	15.7	-2.7	0.0
Percent over 64 years old	10.8	13.3	13.3	2.1	0.0
Vehicle Mileage (Billions)	1,551	2,148	2,169	3.4	1.0
Traffic Fatalities	49,301	44,529	41,150	-1.8	-7.6
Traffic Fatality Rate*	3.18	2.07	1.90	-5.0	-8.2

<sup>e</sup> = estimate.

\* Per 100 million vehicle-miles.

<sup>†</sup> Excludes motorcycles.

Note: Totals may not add due to rounding.

Source: Registered Vehicles, Licensed Drivers and Vehicle Mileage 1981, 1990: U.S.DOT/FHWA, *Highway Statistics*, 1981, 1990, Tables MV-1, DL-20, VM-1.

Registered Vehicles, Licensed Drivers and Vehicle Mileage, 1991: U.S.DOT/FHWA, Office of Highway Information Management, HPM-40.

Fatalities: U.S.DOT/NHTSA, National Center for Statistics and Analysis, Fatal Accident Reporting System (FARS).

**Table 5. Traffic Fatalities by Major Category, 1981, 1990-1991**

**Occupant Fatalities by Vehicle Type**

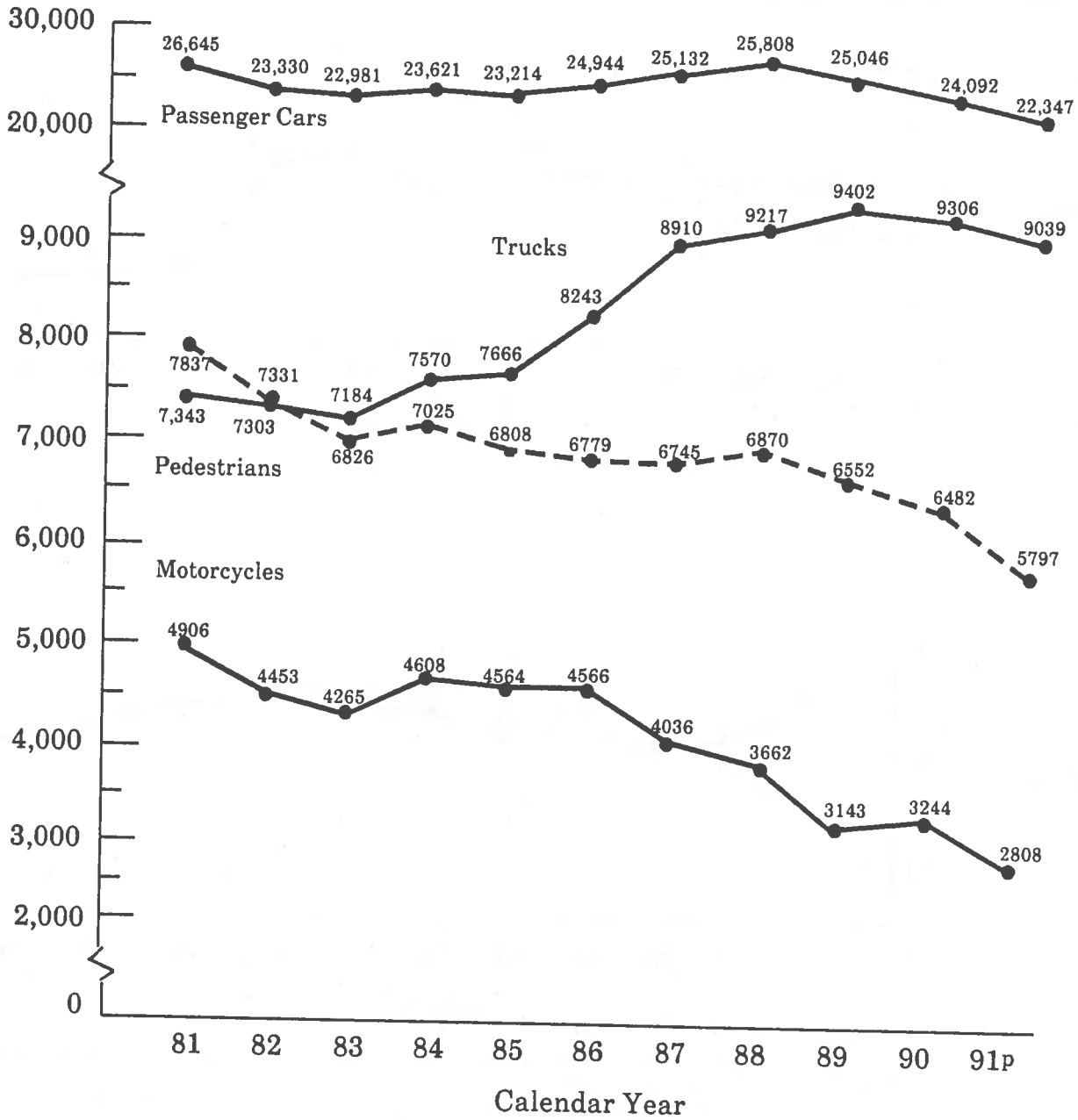
	1981	1990	1991 <sup>p</sup>	1981-1991 Average Annual % Change	1990-1991 % Change
Passenger Cars	26,645	24,092	22,347	-1.7	-7.2
Subcompact	8,176	8,309	7,623	-0.7	-8.3
Compact	6,218	5,310	5,284	-1.6	-0.5
Intermediate	5,664	4,849	4,644	-2.0	-4.2
Full	2,942	4,635	3,979	1.6	-14.2
Unknown	3,645	989	817	-13.9	-17.4
Trucks	7,343	9,306	9,039	2.1	-2.9
Light Trucks	6,137	8,601	8,380	3.2	-2.6
Heavy Trucks	897	571	544	-4.9	-4.7
Other Trucks	309	134	115	-9.4	-14.2
Motorcycles	4,906	3,244	2,808	-5.4	-13.4
Other and Unknown Vehicle Type	1,530	492	506	-10.5	2.9
<b>Total</b>	<b>40,424</b>	<b>37,134</b>	<b>34,700</b>	<b>-1.5</b>	<b>-6.6</b>

**Non-Occupant Fatalities**

	1981	1990	1991 <sup>p</sup>	1981-1991 Average Annual % Change	1990-1991 % Change
Pedestrian	7,837	6,482	5,797	-3.0	-10.6
Pedalcyclist	936	859	834	-1.2	-2.9
Other	104	124	73	-3.5	-41.1
<b>Total</b>	<b>8,877</b>	<b>7,465</b>	<b>6,704</b>	<b>-2.8</b>	<b>-10.2</b>

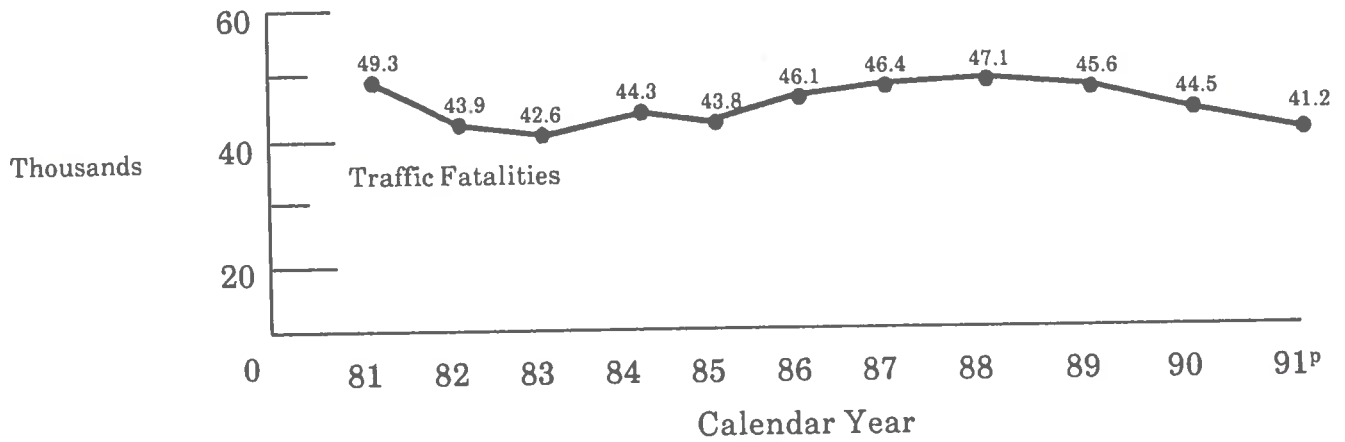
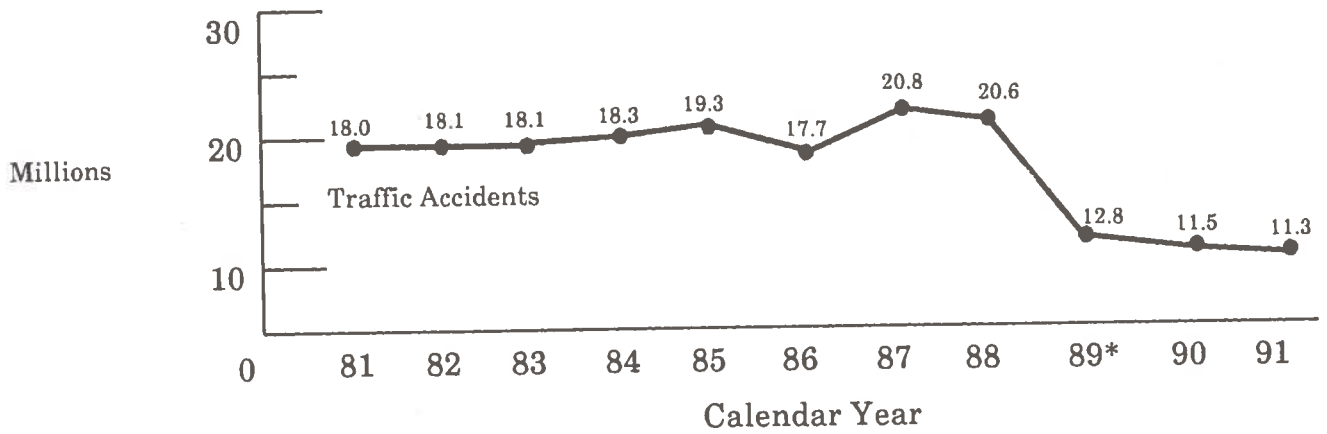
<sup>p</sup> = preliminary.  
 Source: U.S.DOT/NHTSA, National Center for Statistics and Analysis, Fatal Accident Reporting System (FARS).

**Chart 8. Traffic Fatalities by Major Category, 1981-1991**



p = preliminary.  
 Source: U.S.DOT/NHTSA, National Center for Statistics and Analysis, Fatal Accident Reporting System (FARS).

**Chart 9. Motor Vehicle Traffic Accidents and Traffic Fatalities, 1981-1991**



p = preliminary.

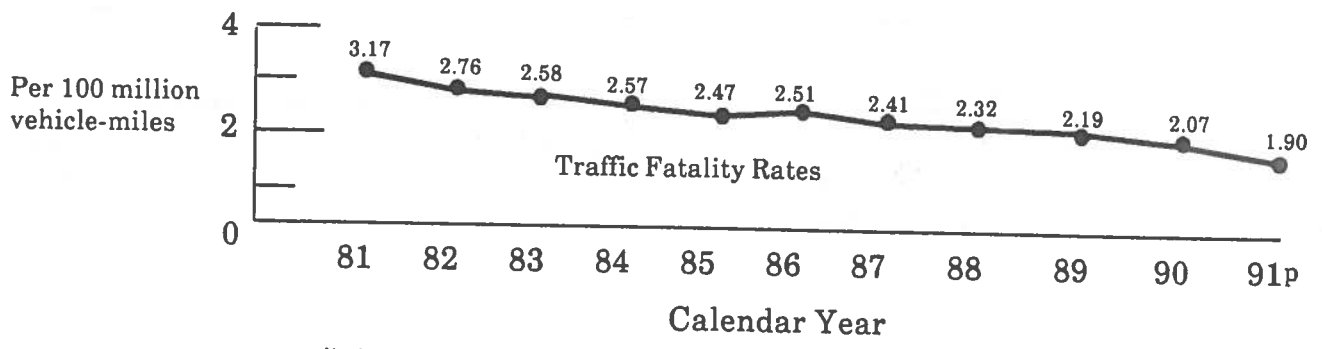
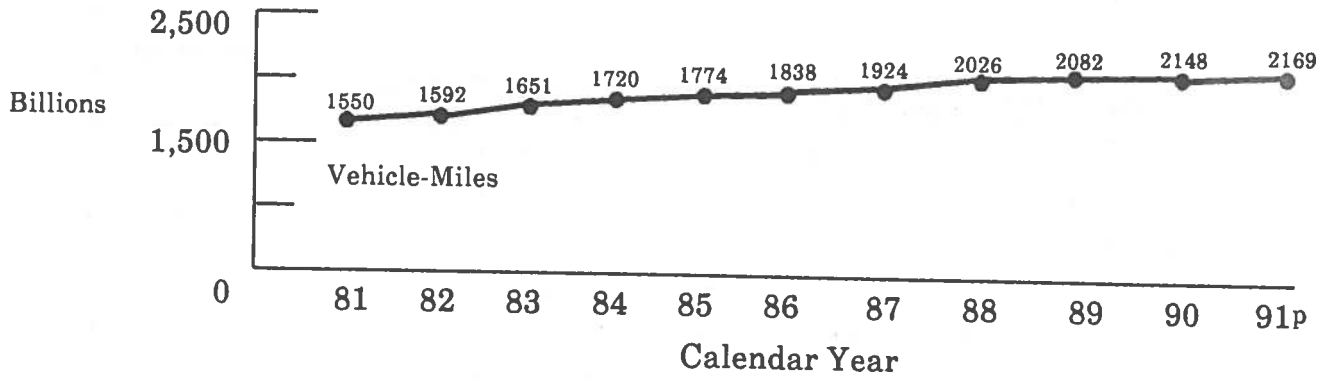
\* National Safety Council procedures for estimating the number of accidents were changed in 1989. Thus, 1989-1991 data are not comparable to previous years.

Note: Fatalities in this chart are based on a 30-day definition, and include 50 states and the District of Columbia.

Source: Fatality Data: U.S. DOT/NHTSA, Fatal Accident Reporting System (FARS).

Accident Data: National Safety Council, *Accident Facts*, annual report.

**Chart 10. Motor Vehicle Traffic Fatality Rates per Vehicle-Miles, 1981-1991**



p = preliminary.  
 Source: Vehicle-Mile Data: U.S. DOT/FHWA, Office of Highway Information Management, HPM-40.  
 Fatality Rate Data: *Ibid.*, Office of Highway Safety, HHS-12.

**Table 6. Motor Vehicle Fatal Accidents by Posted Speed Limit, 1981, 1990-1991**

Posted Speed				1981-1991	
	1981	1990	1991 <sup>p</sup>	Average Annual % Change	1990-1991 % Change
0-25 MPH	2,532	2,234	2,081	-1.9	-6.9
26-35 MPH	7,868	7,756	6,819	-1.4	-12.1
36-45 MPH	6,104	7,092	6,582	0.8	-7.2
46-54 MPH	2,322	2,054	1,880	-2.1	-8.5
Total Under 55 MPH	18,826	19,136	17,362	-0.8	-9.3
55 MPH	19,913	17,556	16,533	-1.8	-5.8
60 MPH	n/a	18	9	-	-50.0
65 MPH	n/a	2,175	2,077	-	-4.5
Unknown	5,261	951	914	-16.1	-3.9
Total	44,000	39,836	36,895	-1.8	-7.4

p = preliminary.  
n/a = not applicable.

Source: U.S.DOT/NHTSA, National Center for Statistics and Analysis, Fatal Accident Reporting System (FARS).

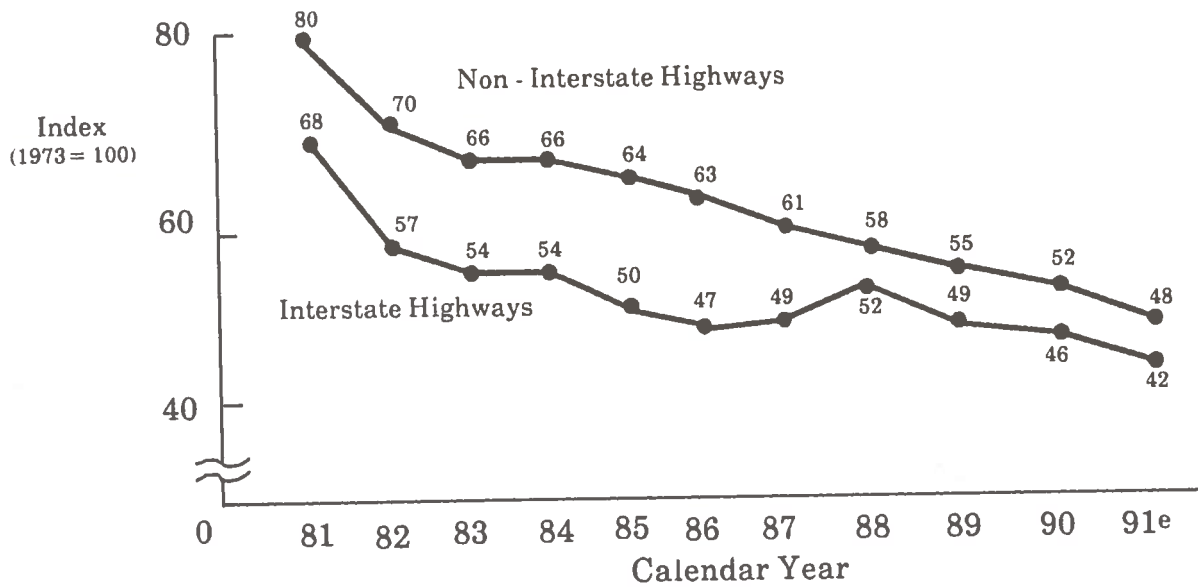
**Table 7. Motor Carrier\* Accidents, Fatalities, and Injuries by Type of Carrier, 1981-1991**

Classification	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991P
<b>Motor Carriers of Property</b>											
Accidents	27,772	27,001	26,032	29,579	29,068	26,229	27,479	32,778	35,341	35,735	17,198
Fatalities	2,810	2,456	2,528	2,721	2,646	2,616	2,907	3,309	3,451	3,281	1,501
Injuries	28,533	26,117	26,692	29,149	28,988	25,106	28,018	31,295	34,653	34,178	16,597
<b>Motor Carriers of Passengers</b>											
Accidents	832	855	711	628	676	400	558	660	692	573	487
Fatalities	95	76	67	57	62	100	89	64	74	55	36
Injuries	2,041	1,970	1,827	1,505	1,825	1,176	2,059	2,042	2,392	1,793	1,335
<b>All Motor Carriers</b>											
Accidents	28,604	27,856	26,743	30,207	29,744	26,629	28,037	33,438	36,033	36,308	17,685
Fatalities	2,905	2,532	2,595	2,778	2,708	2,716	2,996	3,373	3,525	3,336	1,537
Injuries	30,574	28,087	28,519	30,654	30,813	26,282	30,077	33,337	36,695	35,791	17,932

P = preliminary.

\* Includes only those motor carriers operating in interstate or foreign commerce.  
Source: U.S. DOT/FHWA, Motor Carrier Information Division, HIA-10.

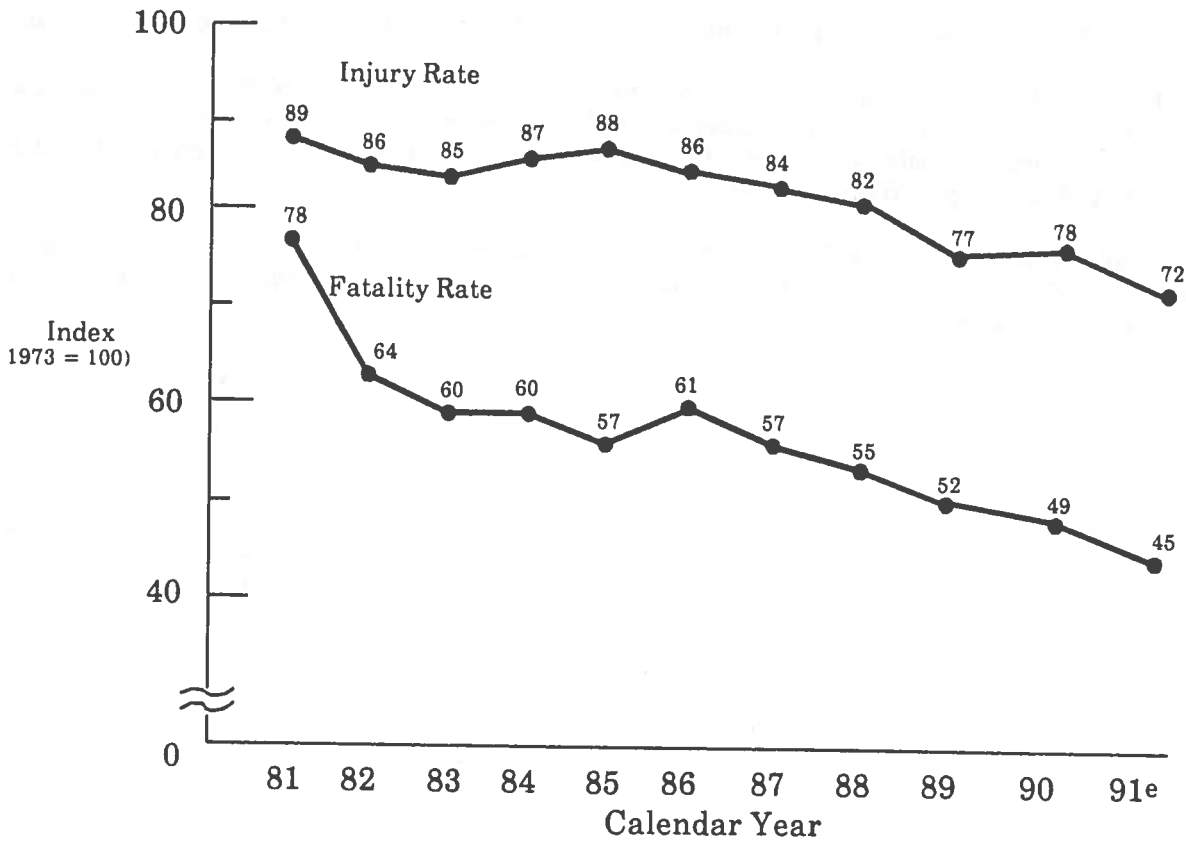
**Chart 11. Fatality Rates by Highway Type, 1981-1991**



e = estimate.  
 Note: Index based on number of fatalities per 100 million vehicle-miles of travel.  
 Source: U.S.DOT/FHWA, Office of Highway Safety, HHS-12.



Chart 12. Highway Fatality and Injury Rates, 1981-1991



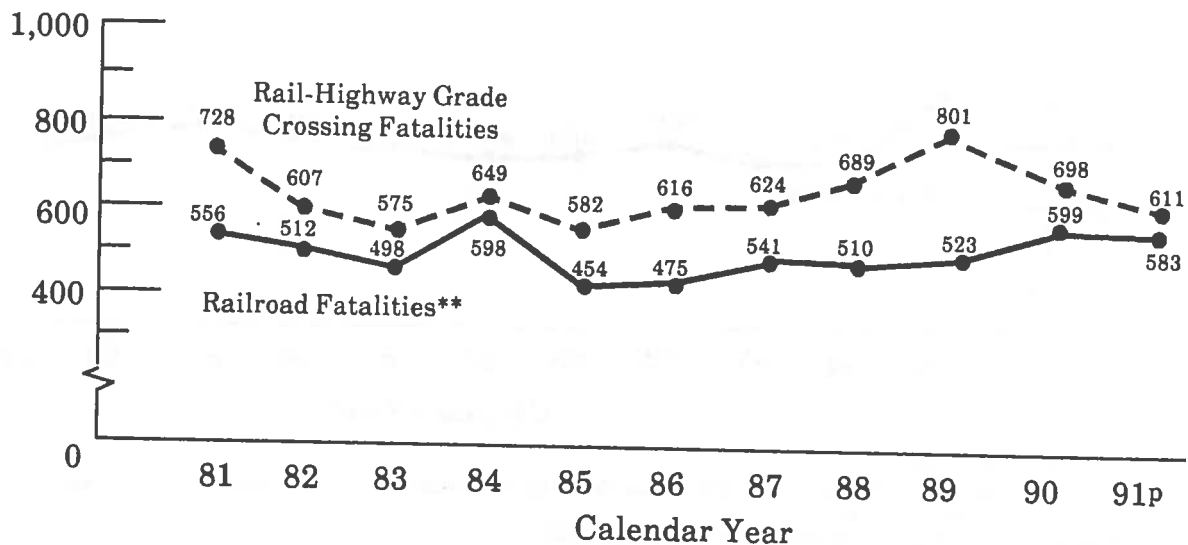
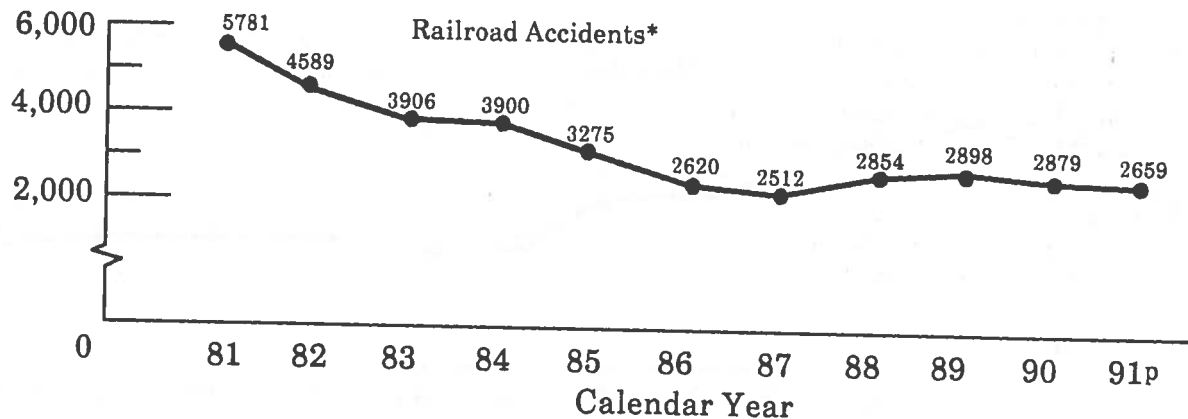
e = estimate.

Note: Index based on number of persons killed or injured per 100 million vehicle-miles of travel.  
 Source: U.S. DOT/FHWA, Office of Highway Safety, HHS-12.

## RAILROAD

- The year 1991 saw 2,659 railroad accidents compared with 2,879 in 1990, a decrease of 7.6 percent.
- The total number of rail-related fatalities fell from 1,297 in 1990 to 1,194 in 1991, representing a 7.9 percent decrease. Of the total number of fatalities reported last year, 51 percent occurred in rail-highway grade crossing accidents. Rail-highway grade crossing accidents decreased by 12.5 percent in 1991, dropping from 698 to 611.
- Total rail-related injuries fell from 25,143 in 1990 to 23,460 in 1991, a decrease of 6.7 percent. Injuries resulting from grade-crossing accidents dropped from 2,407 in 1990 to 2,090 in 1991, a decrease of 13.2 percent.

**Chart 13. Railroad Accidents and Fatalities, and Rail-Highway Grade Crossing Fatalities, 1981-1991**



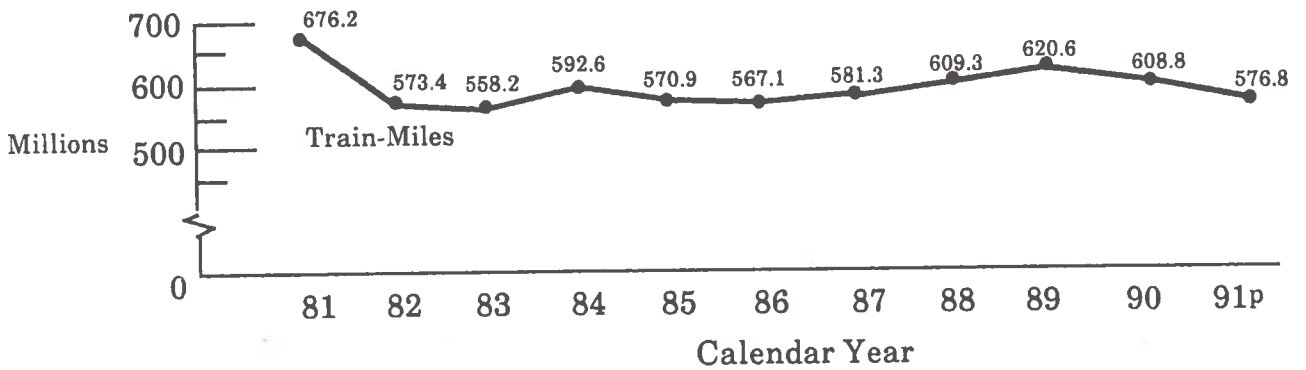
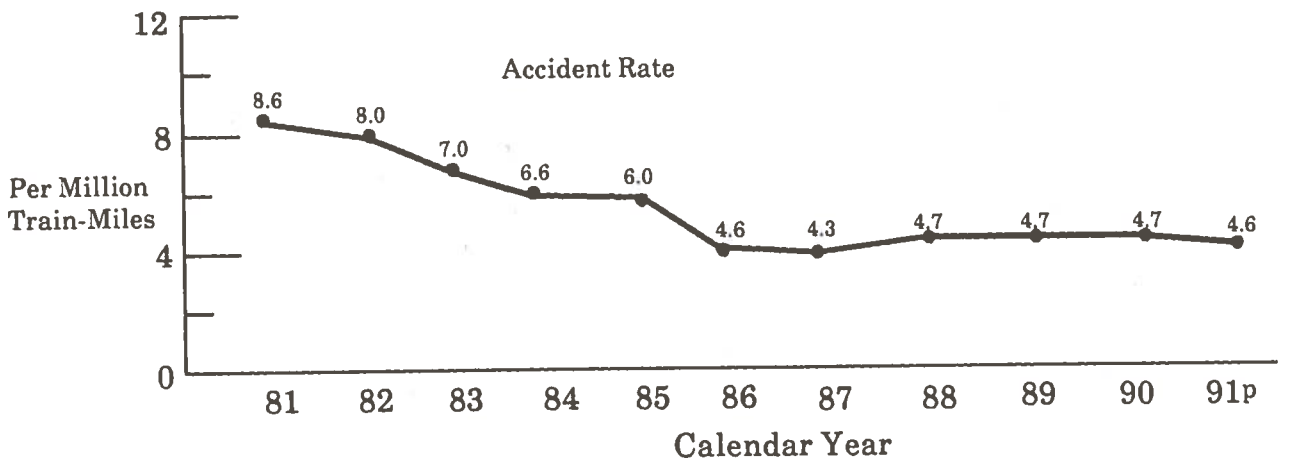
<sup>p</sup> = preliminary.

\* Train accidents only--also includes those Rail-Highway Grade Crossing accidents which have been classified as Train accidents.

\*\* Fatalities resulting from train accidents, train incidents and nontrain incidents.

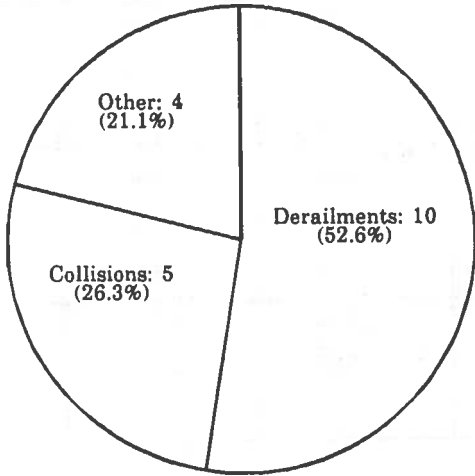
Source: U.S.DOT/FRA, Office of Safety Analysis, RRS-20.

**Chart 14. Railroad\* Accident Rates per Train-Miles, 1981-1991**

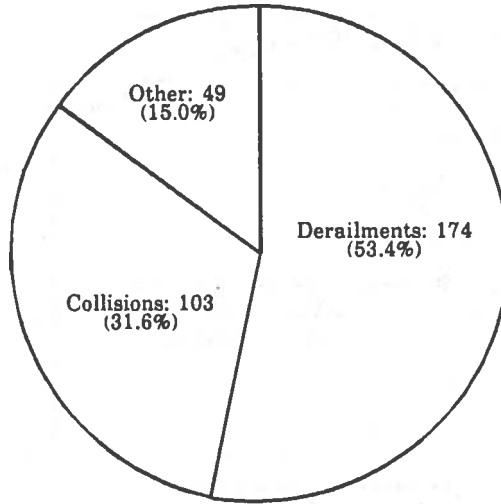


P = preliminary.  
 \* Train accidents only--also includes those Rail-Highway Grade Crossing accidents which have been classified as Train accidents.  
 Source: U.S.DOT/FRA, Office of Safety Analysis, RRS-20.

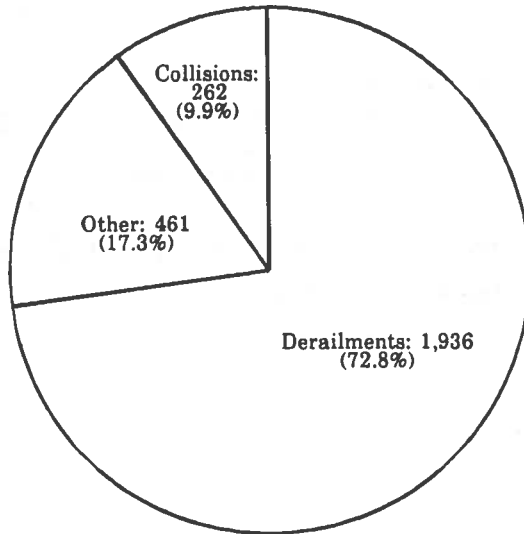
**Chart 15. Train Accident Fatalities, Injuries, and Accidents by Type, 1991**



**Total Fatalities: 19**



**Total Injuries: 326**



**Total Accidents: 2,659**

Source: U.S DOT/FRA, Office of Safety Analysis, RRS-20.

**Table 8. Railroad Fatalities and Injuries by Type of Person, 1990 and 1991**

Classification	Fatalities		Injuries**	
	1990	1991	1990	1991
Employees on Duty	40	35	21,010	19,661
Employees Not on Duty	0	1	326	363
Passengers on Trains	3	8	476	390
Nontrespassers	551	484	2,890	2,594
Trespassers	700	663	1,493	1,432
Contractor Employees	3	3	245	222
<b>Railroad and Grade Crossing</b>	<b>1,297</b>	<b>1,194</b>	<b>25,143</b>	<b>23,460</b>
Railroad only*	599	583	22,736	21,370
Grade Crossing Only	698	611	2,407	2,090

\* Includes train and non-train data.

\*\* Includes occupational illness.

Source: U.S. DOT/FRA, Office of Safety Analysis, RRS-20.

## RAIL RAPID TRANSIT

Users of Rail Rapid Transit (RRT) statistics should use caution when comparing 1990 data to earlier years. In 1990, the Federal Transit Administration (FTA) in consultation with the American Public Transit Association (APTA) developed the Safety Management Information Statistics (SAMIS) report. Data for the SAMIS report were derived from 1990 Section 15 reports submitted to FTA by individual transit agencies. Because new thresholds for Section 15 safety data were set in 1990, data from earlier Section 15 reports are not directly comparable. Also, earlier SIRAS (Safety Information Reporting and Analysis System) data differ in thresholds and definitions, so they cannot be used to compare with 1990 data.

- During 1990, there were 144 Rail Rapid Transit revenue train accidents. The train accidents resulted in 296 injuries and 51 fatalities. The following data summarize train accidents, fatalities, and injuries, by type. Also shown are train and non-train personal casualties by type.

	1990
Collision with Other Vehicle	11
Collision with Object	17
Collision with Person	106
Number of Fatalities by Collision	47
Number of Injuries by Collision	142
Number of Derailments/Left Roadway	10
Number of Fatalities by Derailment/Left Roadway	4
Number of Injuries by Derailment/Left Roadway	154
Personal Casualty Incidents, by Type	
On Vehicle	1,046
Enter/Exit*	618
Station/Stop	8,381
Escalator**	969
Personal Casualty Fatalities, by Type	
On Vehicle	8
Enter/Exit*	1
Station/Stop	7
Escalator**	0
Personal Casualty Injuries, by Type	
On Vehicle	991
Enter/Exit*	493
Station/Stop	7,788
Escalator**	615

\* Includes Lift figures.

\*\* Figures also included in Station/Stop category.

Note: Suicide figures are not included in above data. See Source for suicide information.

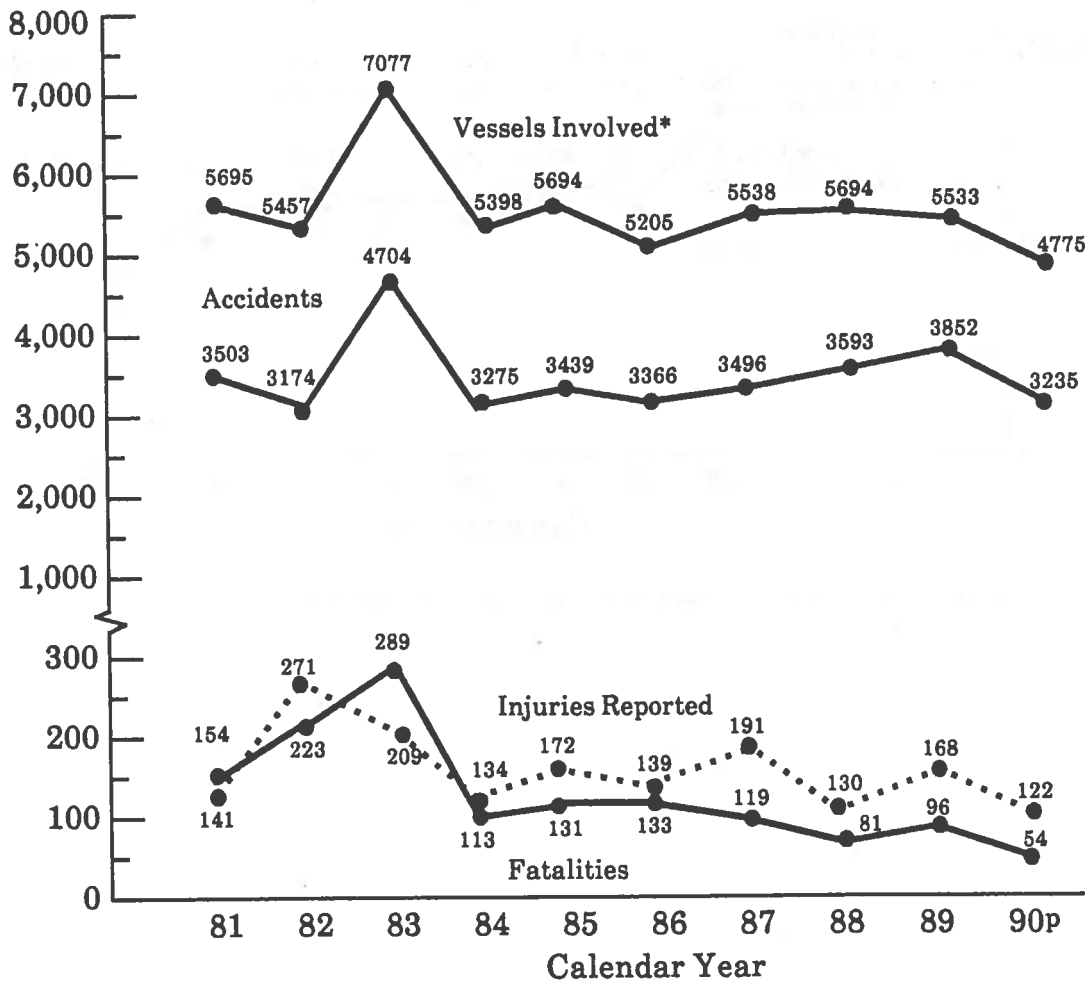
Source: U.S. DOT/FTA, *Safety Management Information Statistics (SAMIS), 1990 Annual Report*.

## WATERBORNE TRANSPORT

- A total of 3,235 waterborne transport accidents involving 4,775 vessels occurred in 1990. As a result of these accidents, 54 fatalities and 122 injuries have been reported.
- In 1990, 321 vessels were lost. Approximately 86 percent of all U.S. vessel losses were uninspected vessels. Fishing vessels accounted for 52 percent of the total number of losses.
- In 1990, 89 fatalities were reported as a result of non-vessel accidents. Of this number, 31 (35 percent) resulted from falls overboard.



**Chart 16. Waterborne Transport Accidents, Fatalities and Injuries Resulting from Vessel Casualties, 1981-1990**



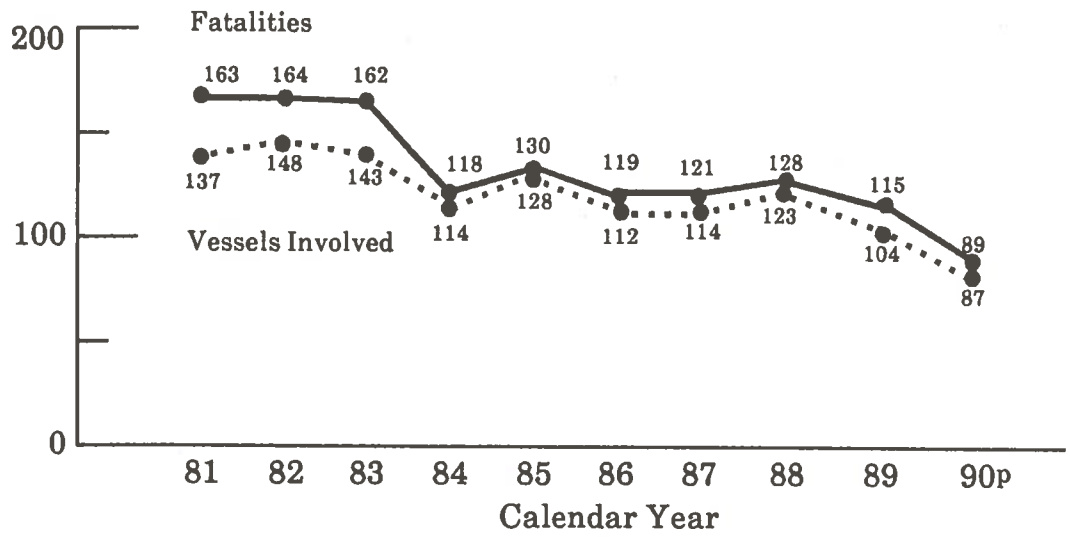
p = preliminary.

\* More than one vessel may be involved in a marine accident.

Note: All deaths and injuries cited result from vessel casualties.

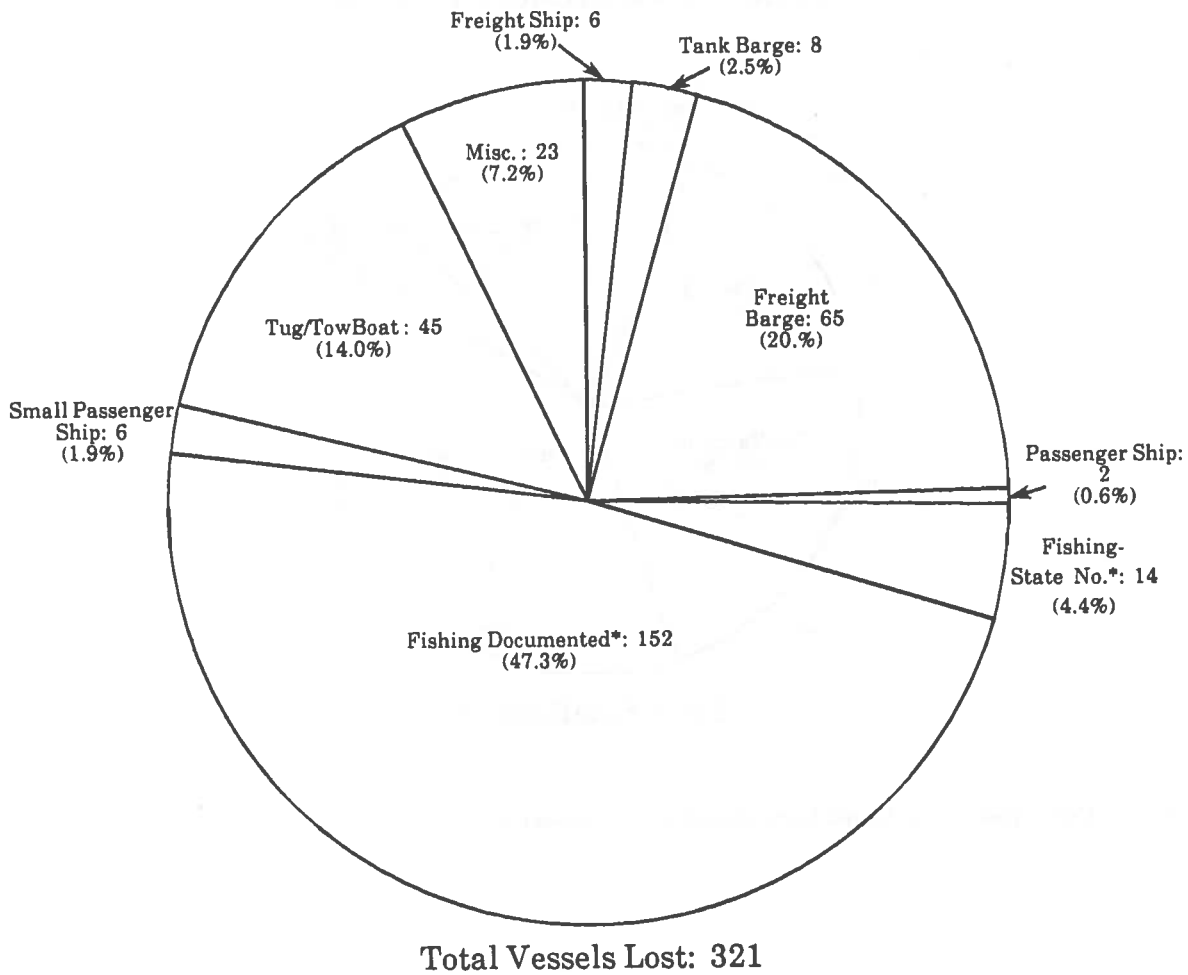
Source: United States Coast Guard, Marine Investigation Division, G-MMI-3.

**Chart 17. Waterborne Transport Fatalities not Related to Vessel Casualties, 1981-1990**



Source: United State Coast Guard, Marine Investigation Division, G-MMI-3.

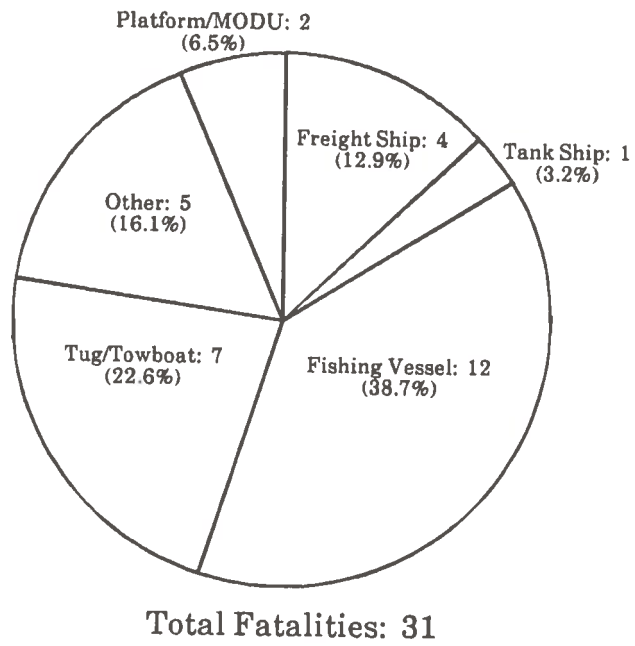
**Chart 18. Number of U.S. Vessels Lost by Type, 1990**



\* All commercial fishing vessels over 5 net tons are documented by the Coast Guard; if less than 5 net tons, commercial fishing vessels are registered in the state.

Source: United States Coast Guard, Marine Investigation Division, G-MMI-3.

**Chart 19. Accidental Deaths Resulting from Falls Overboard by Type of Vessel, (No Vessel Accident), 1990**

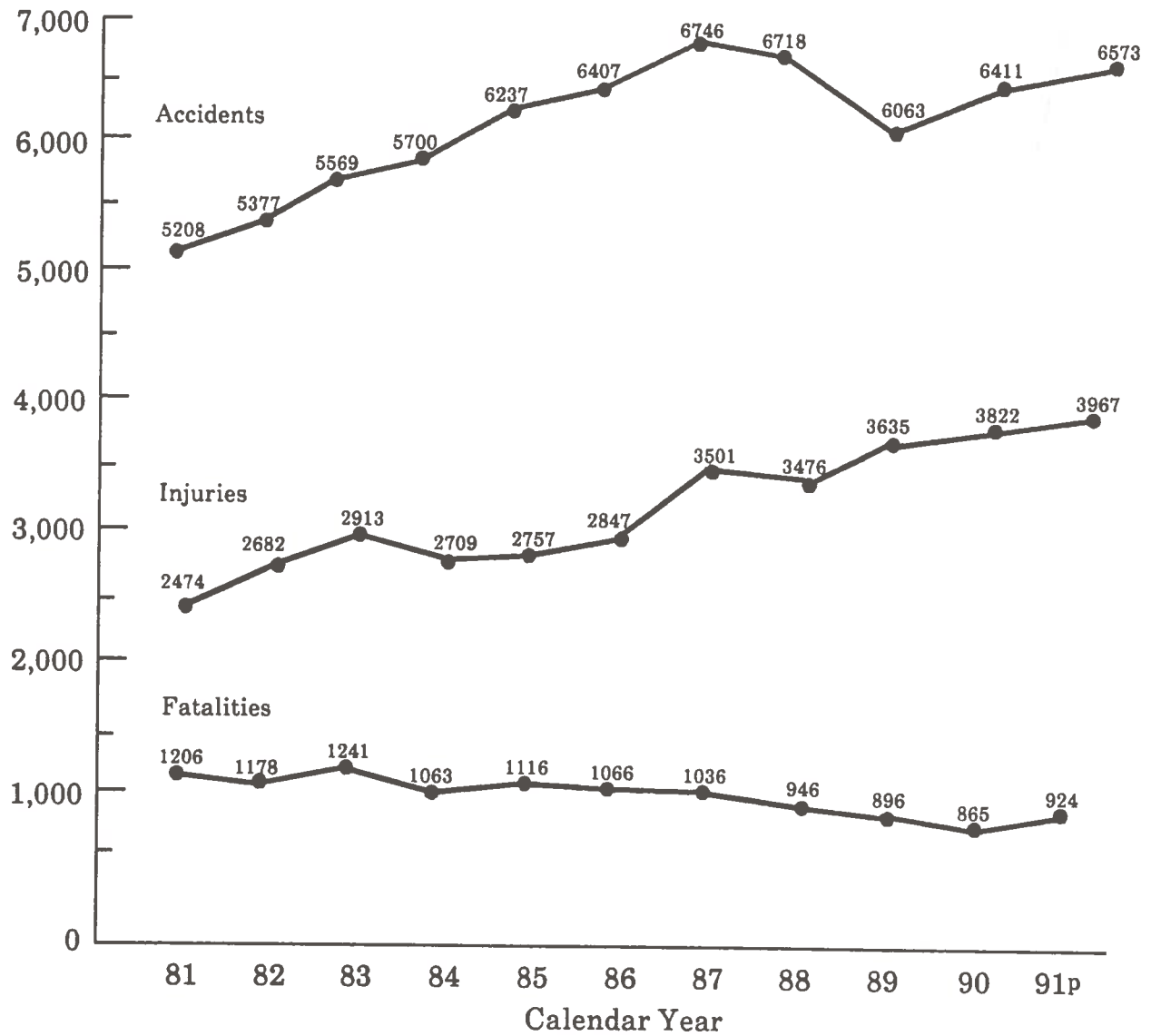


Source: United States Coast Guard, Marine Investigation Division, G-MM1-3.

## RECREATIONAL BOATING

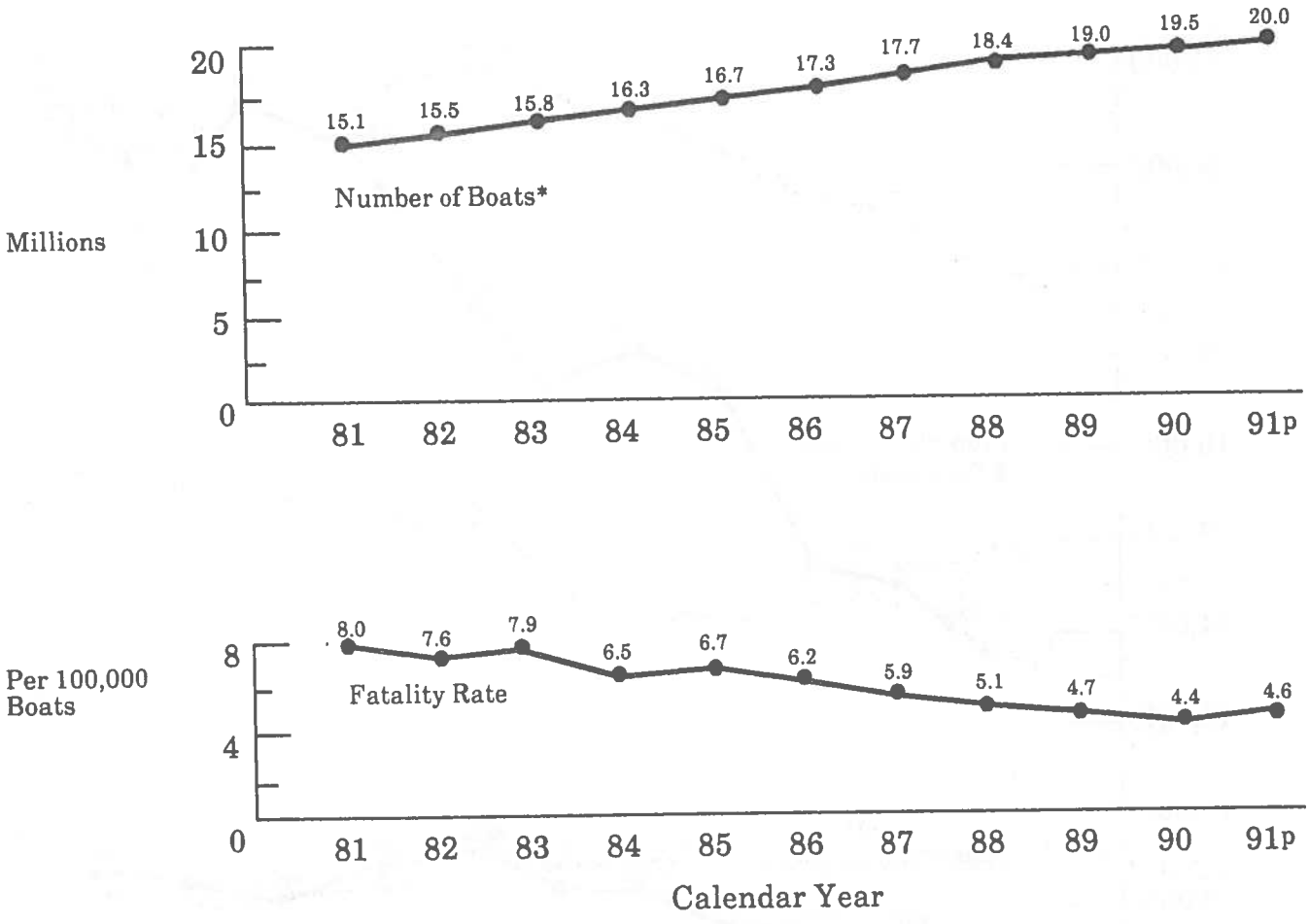
- The number of reported accidents climbed to 6,573 in 1991 from 6,411 in 1990. Beginning in 1989, an accident involving no injured or fatal victims is reportable only if the damage to property exceeds \$500.
- The number of reported injuries rose to 3,967 in 1991 from the 3,822 reported in 1990, a 3.8 percent increase. The increase in the number of injuries is perhaps reflective of an increase in the use of recreational boating.
- Property damage reported reached \$24.8 million in 1991. Only a small fraction of property damages are reported to the Coast Guard.
- Fatalities rose to 924 in 1991 from 865 in 1990, the lowest annual total since 1961. The fatality rate dropped to 4.6 fatalities per 100,000 boats in 1991. The estimated number of recreational boats reached 20 million in 1991.

**Chart 20. Recreational Boating Accidents, Injuries, and Fatalities, 1981-1991**



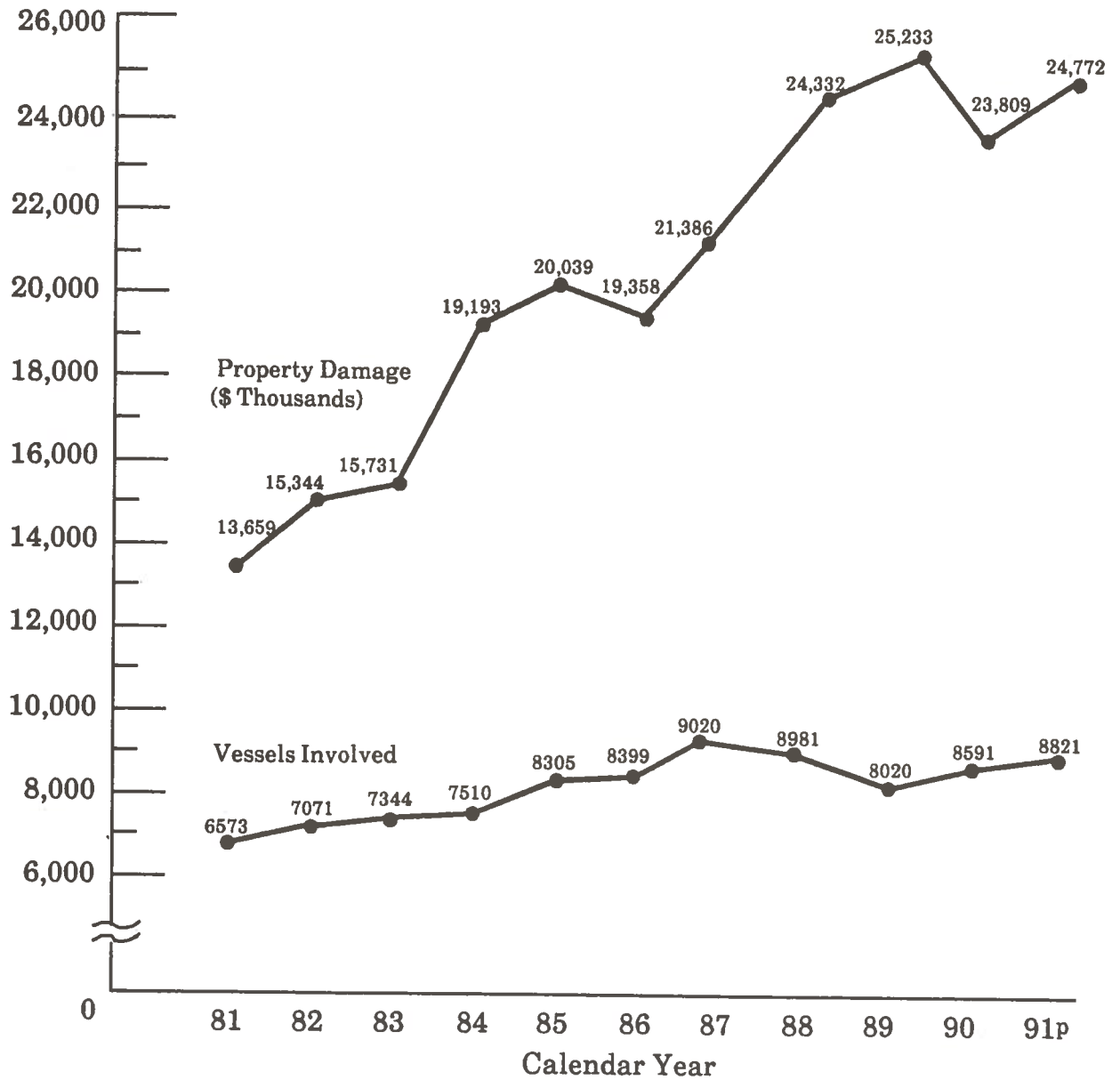
**Note:** Only a small fraction of property damages and non-fatal accidents are reported to the Coast Guard.  
**Source:** United States Coast Guard, Auxiliary, Boating, and Consumer Affairs Division, G-NAB, *Boat Accident Report (BAR) File*.

**Chart 21. Recreational Boating Fatality Rates per Number of Boats, 1981-1991**



\* The total number of boats are estimated by the United States Coast Guard each year.  
 Source: United States Coast Guard, Auxiliary, Boating and Consumer Affairs Division, G-NAB, *Boat Accident Report (BAR) File*.

**Chart 22. Number of Vessels Involved in Recreational Boating Accidents and Reported Property Damage, 1981-1991**



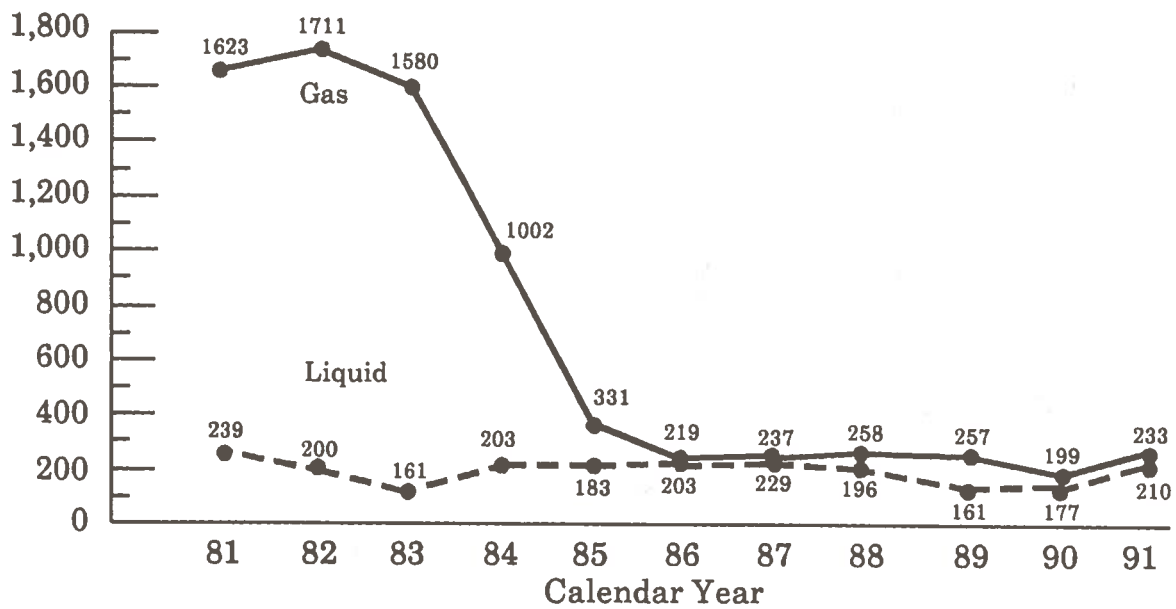
**Note:** Only a small fraction of property damage-only accidents is reported to the Coast Guard.  
**Source:** United States Coast Guard, Auxiliary, Boating, and Consumer Affairs Division, G-NAB, *Boat Accident Report (BAR) File*.



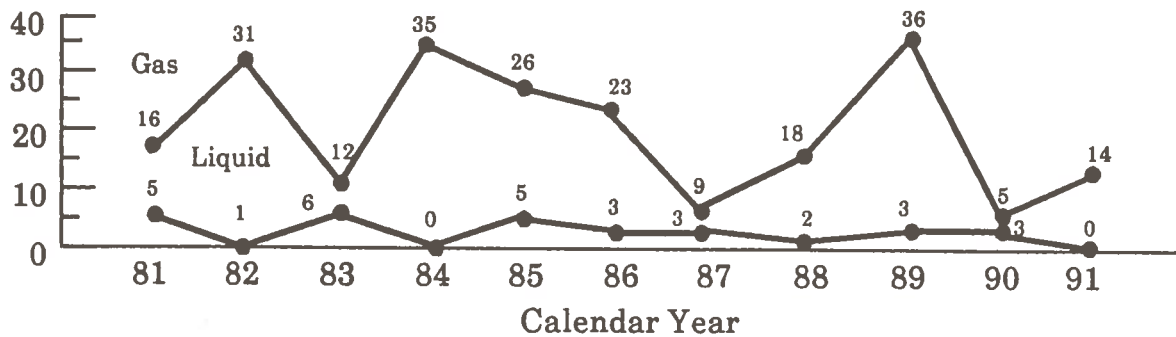
## PIPELINES

- During 1991, liquid pipeline failures increased when compared with 1990. A total of 210 failures were reported in 1991 versus 177 in 1990. Gas pipeline failures also increased from 199 to 233 during the same period.
- Gas pipeline fatalities rose from 5 in 1990 to 14 in 1991, while liquid pipeline fatalities fell to 0 in 1991 from 3 in 1990.
- Injuries resulting from incidents involving the transport of natural gas rose from 67 during 1990 to 89 during 1991. Liquid pipeline injuries, showed a slight increase from 7 in 1990 to 8 in 1991.

**Chart 23. Liquid and Gas Pipeline Failures, 1981-1991**

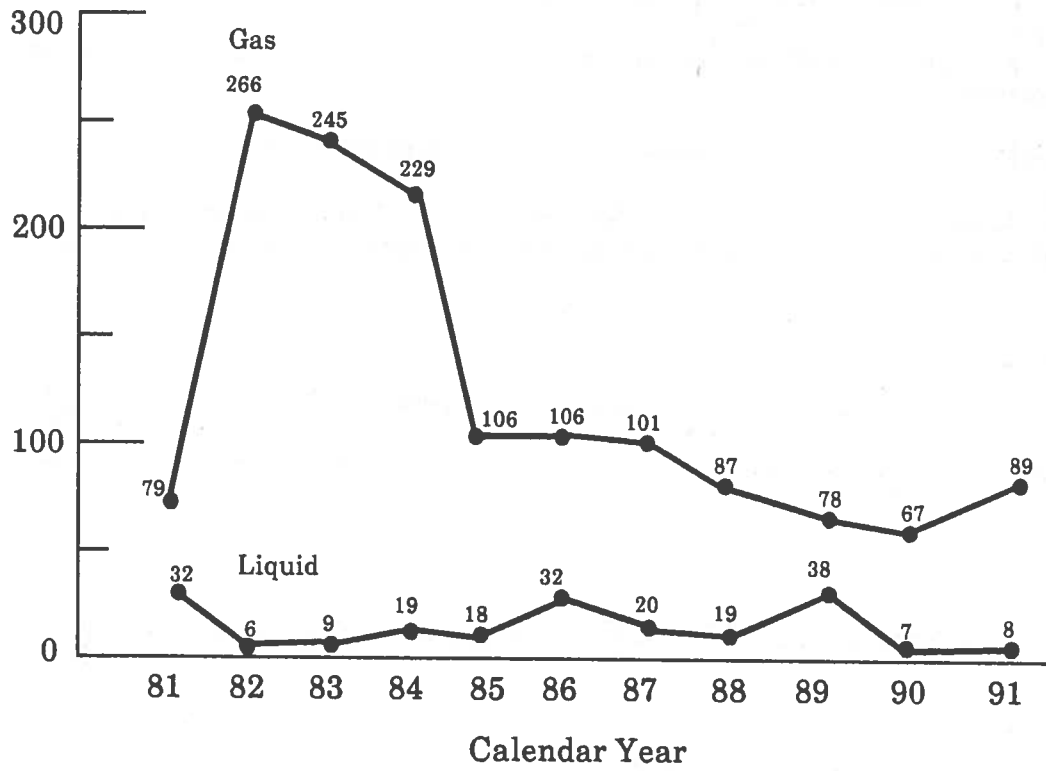


**Chart 24. Liquid and Gas Pipeline Fatalities, 1981-1991**



Note: Beginning with 1983 data, pipeline incidents are credited to the year in which they occurred, not the year in which the report was received.  
 Source: U.S.DOT/RSPA, Office of Pipeline Safety, DPS-21.1.

**Chart 25. Liquid and Gas Pipeline Injuries, 1981-1991**

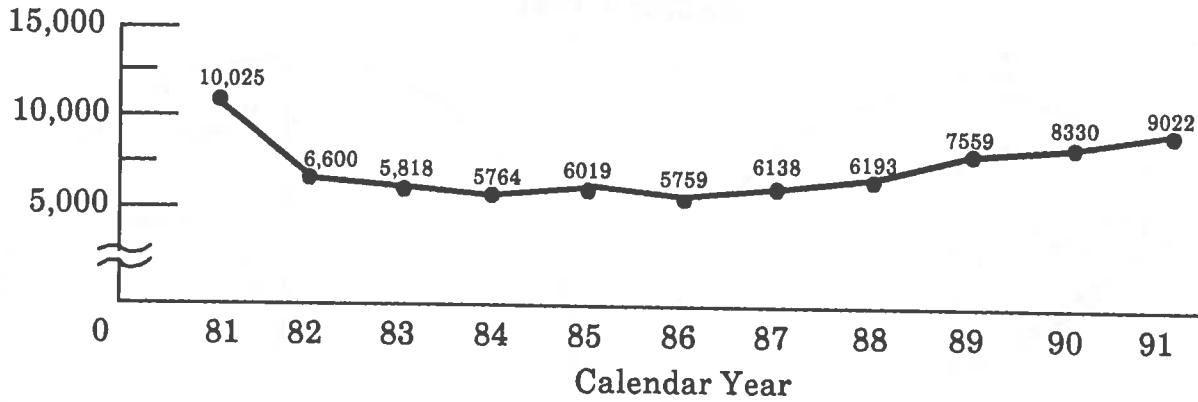


Source: U.S.DOT/RSPA, Office of Pipeline Safety, DPS-21.1.

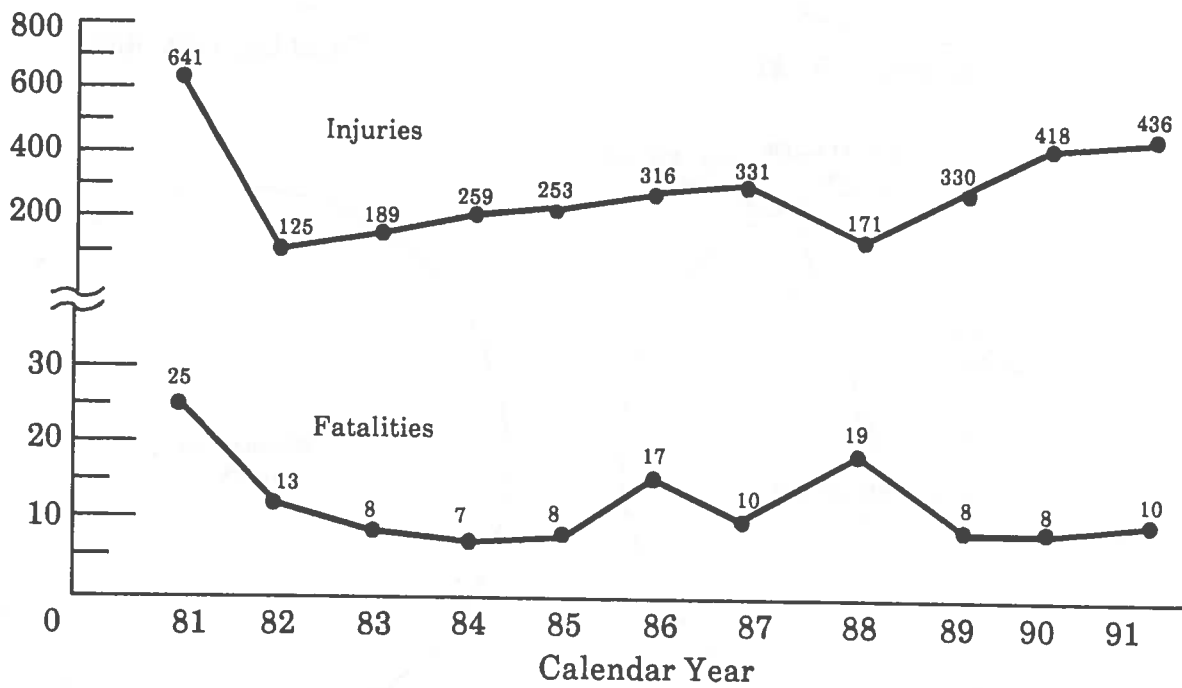
## **HAZARDOUS MATERIALS**

- In 1991, the number of incidents involving the transport of hazardous materials increased when compared with 1990. There were 9,022 incidents reported in 1991 and 8,330 in 1990.
- Hazardous materials fatalities increased to 10 in 1991 from 8 in 1990. All fatalities occurred while transporting gasoline.
- Hazardous materials injuries increased from 418 in 1990 to 436 in 1991.
- Total damages resulting from hazardous materials incidents rose to \$37,630,841 in 1991. Transporting gasoline caused more damages than any other single hazardous material.

**Chart 26. Hazardous Materials Incidents, 1981-1991**

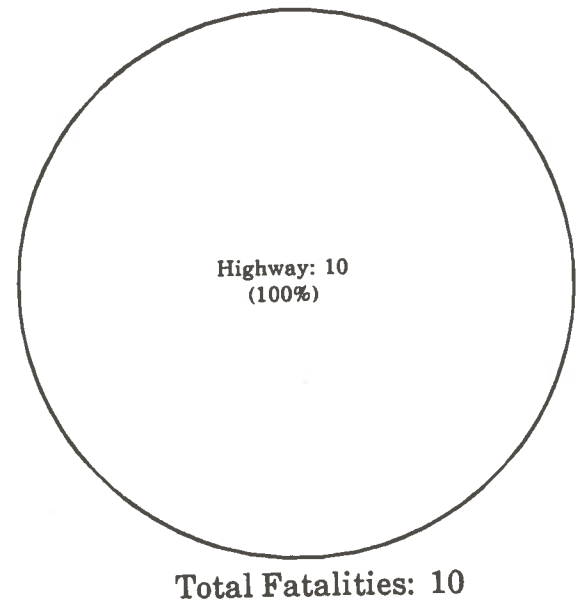
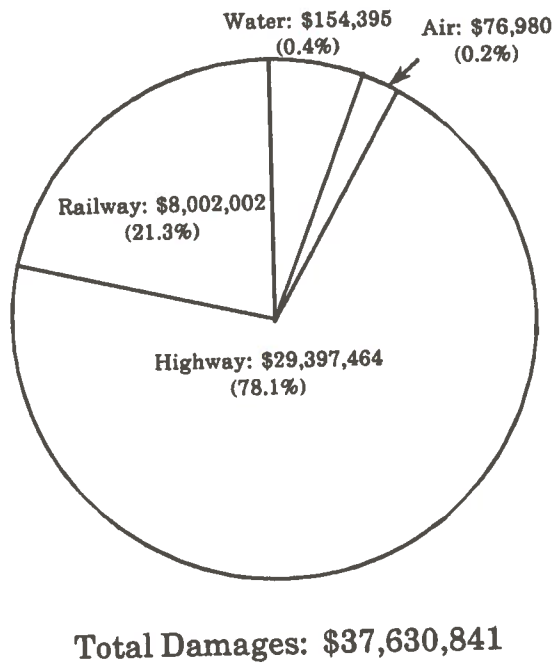
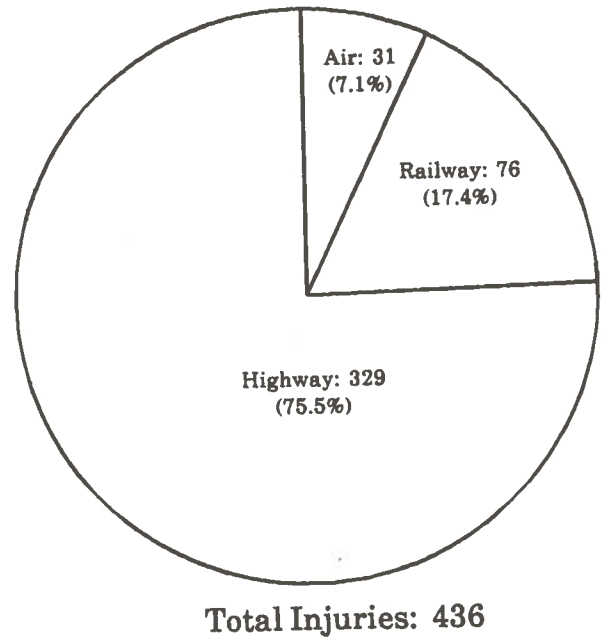
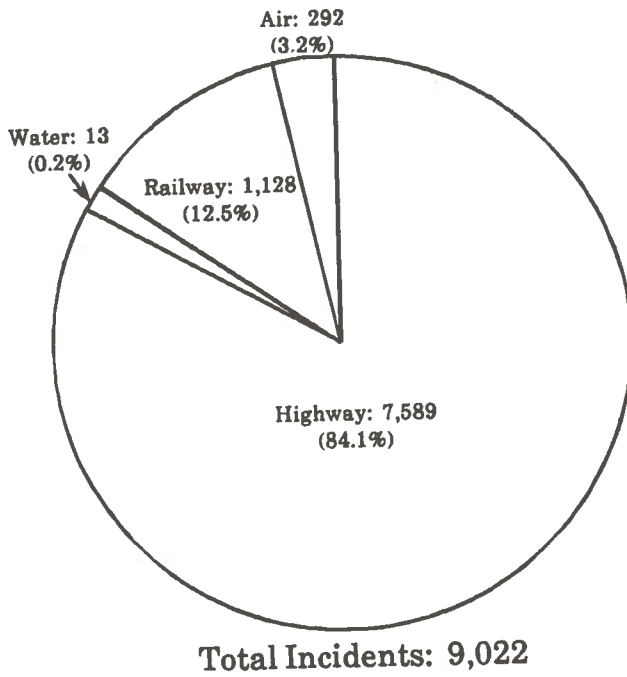


**Chart 27. Hazardous Materials Fatalities and Injuries, 1981-1991**



Source: U.S.DOT/RSPA, Office of Hazardous Materials Transportation, DHM-63.

**Chart 28. Hazardous Materials Incidents, Injuries, Fatalities, and Damages by Mode, 1991**



Source: U.S.DOT/RSPA, Office of Hazardous Materials Transportation, DHM-63.

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## GLOSSARY

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### AVIATION

**AIR CARRIER** - the commercial system of air transportation consisting of certificated air carriers, air taxis (including commuters), supplemental air carriers, commercial operators of large aircraft, and air travel clubs. The following define several types of air carriers:

- **Certificated Air Carrier** - one of a class of air carriers holding a Certificate of Public Convenience and Necessity issued by the U.S. Department of Transportation (DOT) to conduct scheduled services interstate. Nonscheduled or charter operations may also be conducted by these carriers. These carriers operate large (30 seats or more for a maximum load of 7,500 pounds or more) in accordance with FAR Part 121.
- **Supplemental Air Carrier** - one of a class of air carriers holding a Certificate of Public Convenience and Necessity issued by the U.S. DOT, authorizing performance of passenger and cargo interstate charter services supplementing the scheduled service of the certificated air carriers.
- **Commercial Operator (of large aircraft)** - one of a class of air carriers operating on a private for-hire basis, as distinguished from a public or common air carrier, holding a commercial operator certificate, issued by the Administrator of the Federal Aviation Administration (pursuant to Part 45 of the Civil Air Regulations) authorizing it to operate (large) aircraft in air commerce for the transportation of goods or passengers for compensation or hire.
- **Air Travel Club** - a person who engages in the carriage by airplanes of persons who are required to qualify for that carriage by payment of an assessment, dues, membership fee, or other similar types of remittance.

**AIR TAXI** - the classification of air carriers that transport persons, property, and mail using small aircraft (under 30 seats or a maximum load of less than 7,500 pounds). An air taxi does not hold a Certificate of Public Convenience.

**AIRCRAFT ACCIDENT** - as defined by the National Transportation Safety Board, an aircraft accident is "an occurrence associated with the operation of an aircraft which takes place between the time any person boards the aircraft with the intention of flight until such time as all such persons have disembarked, and in which any person suffers death or serious injury as a result of being in or upon the aircraft or by direct contact with the aircraft or anything attached thereto, or in which the aircraft receives substantial damage."

**COMMUTER AIR CARRIER** - any operator who performs, pursuant to published schedule, at least five round trips per week between two or more points or carries mail (see Paragraph 298.2 of FAR 38).

**FATAL INJURY** - any injury which results in death within seven days of the accident.

**GENERAL AVIATION** - all civil aircraft operations except those classified as air carrier operations. The following define several types of general aviation aircraft:

- **Personal** - any use of an aircraft for personal purposes not associated with business or profession, and not for hire. This includes maintenance of pilot proficiency.
- **Business** - any use of an aircraft, not for compensation or hire, by an individual for the purposes of transportation required by a business in which they are engaged.
- **Executive/Corporate** - any use of an aircraft by a corporation, company or other organization for the purposes of transporting its employees and/or property not for compensation or hire and employing professional pilots for the operation of the aircraft.
- **Instructional** - any use of an aircraft for the purposes of formal flight instruction with or without the flight instructor aboard, or within the maneuvers on the particular flight(s) specified by the flight instructor; excludes proficiency flying.
- **Aerial Application** - any use of an aircraft for work purposes that concerns the production of foods, fibers, and health control in which the aircraft is used in lieu of farm implements or ground vehicles for the particular task accomplished. This includes firefighting operations, the distribution of chemicals or seeds in agriculture, reforestation, or insect control.

## AVIATION (cont'd)

- **Other** - any use of an aircraft not specified in the preceding uses. It includes research and development, demonstration, sport parachuting, ferry flight and industrial/special.

**NONSCHEDULED SERVICE** - revenue flights, such as charter flights, not operated in regular scheduled service and all nonrevenue flights incident to such flights.

**REVENUE PASSENGER-MILE** - one revenue passenger transported one mile (5,280 feet) in revenue service. Revenue passenger-miles are computed by summation of the products of the revenue aircraft-miles flown on each inter-airport hop multiplied by the number of revenue passengers carried on that hop.

**SCHEDULED SERVICE** - transport service operated pursuant to published flight schedules, including extra sections and related nonrevenue flights.

**SERIOUS INJURY** - an injury on any aircraft that:

- requires hospitalization for more than 48 hours commencing within seven days from the date when the injury was received;
- results in a fracture of any bone except simple fractures of fingers, toes or nose;
- involves a laceration which causes a severe hemorrhage, nerve, tendon or muscle damage;
- involves injury to any internal organ; or
- involves second- or third-degree burns, or any burns affecting more than 5 percent of the body surface.

**14 CFR 121** - revenue operations of air carriers, commercial operators and deregulated all cargo carriers, using large aircraft.

**14 CFR 135** - commuter air carriers (scheduled) and on-demand air taxi operators (unscheduled) revenue operations, using small aircraft.

## HIGHWAY

**BUS** - includes school buses, intercity buses, transit buses, and other large motor vehicles used to carry more than ten passengers.

**COMPACT CAR** - an automobile designation usually consisting of cars with a wheelbase between 100 and 104 inches.

**FULL-SIZE CAR** - an automobile industry designation usually consisting of cars with a wheelbase between 110 and 114 inches.

**INTERMEDIATE CAR** - an automobile designation usually consisting of cars with a wheelbase between 105 and 109 inches.

**LIGHT TRUCK** - trucks under 10,000 pounds gross vehicle weight (e.g., pickups, vans, and station wagons).

**HEAVY TRUCK** - 1. single-unit truck with gross vehicle weight greater than 26,000 pounds; 2. tractor-trailer combination; 3. truck with cargo trailers; 4. truck-tractor pulling no trailer.

**MOTOR VEHICLE OCCUPANT** - any person who is in or upon a motor vehicle in transport and includes the driver, passengers and person riding on the exterior of a motor vehicle (e.g., a skateboard rider who is set in motion by holding onto a vehicle).

**MOTOR VEHICLE TRAFFIC ACCIDENT** - an accident that involves a motor vehicle in transport on a trafficway or that occurs after the motor vehicle runs off the roadway but before events are stabilized.

**MOTOR VEHICLE TRAFFIC FATALITY** - death resulting from motor vehicle accident injuries occurring on a trafficway within 30 days of the accident.

**MOTORCYCLE** - two- or three-wheeled motor vehicle having one or more riding saddles, designed to transport one or two people.

**PEDALCYCLIST** - person on a vehicle that is powered solely by pedals.

**PEDESTRIAN** - any person not traveling in or upon a motor vehicle or other vehicle.



## HIGHWAY (cont'd)

**TRAFFICWAY** - the entire width between property lines, or other boundary lines, of every way or place, of which any part is open to the public for purposes of vehicular travel as a matter of right or custom.

**VEHICLE-MILES** - automobile vehicle-miles are estimated by calculating the number of gallons of gas sold from gasoline tax receipts and multiplying by the average number of miles per gallon.

## WATERBORNE TRANSPORTATION

**CASUALTY** - casualties involving commercial vessels are required to be reported to the Coast Guard whenever the casualty results in:

- actual physical damage to property in excess of \$25,000;
- material damage affecting the seaworthiness or efficiency of a vessel;
- stranding or grounding;
- loss of life; or
- injury causing any person to remain incapacitated for a period in excess of 72 hours, except injury to harbor workers not resulting in death and not resulting from vessel casualty or vessel equipment casualty.

**FATALITY** - all deaths and missing persons resulting from a vessel casualty.

**FREIGHTERS** - general cargo carriers, full containerhips, partial containerhips, roll-on/roll-off ships, and barge carriers.

**INJURY** - all personal injuries resulting from a vessel casualty.

**NON-VESSEL-CASUALTY-RELATED DEATH** - death that occurs onboard a commercial vessel, but not as a result of a vessel casualty, such as collision, fire, or explosion.

**TANKSHIP** - carries liquid cargo in bulk, stowed in cargo tanks within vessel hull. Cargo is pumped aboard by a shore terminal and unloaded using the vessel's installed pumping system. Sizes range from 16,000 to 190,000 deadweight tons.

**TUG** - a strongly built, self-propelled boat used for towing and pushing.

**VESSEL-CASUALTY-RELATED DEATH** - death that occurs onboard a commercial vessel as a result of a vessel casualty, such as collision, fire, or explosion.

**WATERBORNE TRANSPORTATION** - transport of freight and/or people by commercial vessels under USCG jurisdiction.

## RECREATIONAL BOATING

**ACCIDENT** - occurrences involving recreational vessels or their equipment are required to be reported whenever they result in 1. a death; 2. a person is injured and requires medical treatment beyond first aid; 3. damage to the vessel and other property totaling more than \$200; or 4. a person's disappearing from the vessel under circumstances indicating death or injury.

**FATALITY** - all deaths (other than deaths by natural causes) and missing persons resulting from an occurrence that involves a vessel or its equipment.

**INJURY** - all injuries meeting the criteria set forth above, resulting from an occurrence that involves a vessel or its equipment.

## RAILROAD

**FATALITY** - 1. death of any person from an injury within 365 days of the accident/incident; or 2. death of a railroad employee from occupational illness within 365 days after the occupational illness was diagnosed by a physician.

**INJURY** - 1. injury to any person other than a railroad employee that requires medical treatment; or 2. injury to a railroad employee that requires medical treatment or results in restriction of work or motion for one or more workdays, one or more lost workdays, termination of employment, transfer to another job, or loss of consciousness.

**NONTRESPASSERS** - persons who are lawfully on that part of railroad property that is used in railroad operation and persons adjacent to railroad premises and injured as the result of the operation of a railroad.

**RAIL-HIGHWAY GRADE CROSSING** - a location where one or more railroad tracks cross a public highway, road, or street or a private roadway at grade, including sidewalks and pathways at, or associated with, the crossing.

**RAIL-HIGHWAY GRADE-CROSSING ACCIDENT** - any impact between railroad on-track equipment and an automobile, bus, truck, motorcycle, bicycle, farm vehicle, or pedestrian, at a rail-highway grade crossing.

## RAILROAD (cont'd)

**TRAIN ACCIDENT** - a collision, derailment, fire, explosion, act of God, or other event involving operation of railroad on-track equipment which, while it does not necessarily result in a reportable death, injury, or illness, results in more than \$4,900 in damages to railroad on-track equipment, signals, track, track structures, or roadbed. Prior to 1985, this threshold stood at \$4,500; prior to 1983, at \$3,700; prior to 1981, at \$2,900.

**TRESPASSERS** - persons who are on that part of railroad property used in railroad operation, and whose presence is prohibited, forbidden or unlawful. A person on a rail-highway grade crossing is classified as a trespasser if the crossing is protected by gates or other similar barriers which were closed when the person entered the crossing. He is also a trespasser if he attempts to pass over or under trains or cars at the crossings.

## RAIL RAPID TRANSIT

**ACCIDENT** - vehicle-only based incidents resulting from collision with a vehicle, object, or person (except suicides) or a derailment/left roadway.

**COLLISION with VEHICLE** - an incident in which a transit vehicle strikes or is struck by another vehicle. Reports are made if the incident results in a death, injury, or property damage over \$1,000.

**COLLISION with OBJECT** - an incident in which a transit vehicle strikes an obstacle (e.g., shopping cart, building or utility pole) other than a vehicle or person. Reports are made if the incident results in a death, injury, or property damage of \$1,000.

**COLLISION with PERSON** - an incident in which a transit vehicles strikes a person. Except where indicated, it does not include suicide attempts. Reports are made if the incident results in a death, injury, or property damage of \$1,000.

**DERAILMENT/LEFT ROADWAY** - a non-collision incident in which a transit vehicle leaves the rails or road; this also includes rollovers. Reports are made for all occurrences.

**FATALITY** - a transit-caused death confirmed within 30 days of a transit incident.

**INCIDENT** - an unforeseen event which causes death, injury, fire, or property damage over \$1,000. This includes all revenue vehicle operations and activities within transit facilities.

**INJURY** - any physical damage or harm to a person; there are no thresholds for reporting.

**PASSENGER ACCIDENT** - a passenger-based combination of incidents related only to the use of a transit vehicle. These result from collision with a vehicle, object, or person (except suicides); a derailment/left roadway; personal casualty on vehicle; or personal casualty entering/exiting the vehicle.

**PERSONAL CASUALTY ON VEHICLE** - an event in which people are hurt on a transit vehicle, but not as a result of a collision, derailment, or fire.

**PERSONAL CASUALTY ENTER/EXIT** - an event in which people are hurt while getting on or off a transit vehicle, not a result of a collision, derailment, or fire (e.g., falls or door incidents).

**PERSONAL CASUALTY LIFTS** - an event in which people are hurt while using a lift to get on or off a transit vehicle (not as a result of a collision, derailment, or fire).

**PERSONAL CASUALTY STATION/STOP** - an event in which people are hurt while using a transit facility. This includes all people on transit property (workers, patrons, and trespassers), but not incidents resulting from illness or criminal activity.

**PERSONAL CASUALTY ESCALATOR** - an event in which people are hurt while using an escalator in a transit facility.

**PROPERTY DAMAGE** - the amount paid to restore or replace transit vehicles damaged by an accident. This does not include the cost of clearing wreckage.

## PIPELINES

**GAS DISTRIBUTION** - pipelines transporting natural gas, flammable gas or gas which is toxic or corrosive in distribution operations. (Injury, fatality or accident definitions as shown under "Gas Transmission" below.)

**GAS TRANSMISSION** - pipelines transporting natural gas, flammable gas or gas which is toxic or corrosive in transmission or gathering operations.

- **Accident - 1.** an event that involves the release of gas from a pipeline or of liquefied natural gas or gas from an LNG facility resulting in a death, or personal injury necessitating in-patient hospitalization; or estimated property damage, including cost of gas lost, of the operator or others, or both, of \$50,000 or more; **2.** an event that results in an emergency shutdown of an LNG facility; or **3.** an event that is significant, in the judgment of the operator, even though it did not meet the criteria of (1.) or (2.).

## PIPELINES (cont'd)

- **Fatality** - death resulting from the failure or escape of gas.
- **Injury** - an injury involving lost time or other than on-site medical treatment.

**LIQUID TRANSMISSION** - pipelines carrying hazardous material, petroleum and petroleum products in liquid form.

- **Accident** - release of the commodity transported as presented in 49 CFR Section 195.50.
- **Fatality** - death resulting from the escape of liquid.
- **Injury** - an injury requiring medical treatment other than on-site first aid.

## HAZARDOUS MATERIALS

**FATALITY** - death that was due to a hazardous material.

**HAZARDOUS MATERIAL** - a substance or material which has been designated by the Secretary of Transportation to be capable of posing an unreasonable risk to health, safety, and property when transported in commerce, and which has been so designated.

**INCIDENT** - any unintentional release of hazardous material while in transit or storage.

**MAJOR INJURY** - 1. injuries requiring hospitalization; 2. injuries involving second- or third-degree burns; or 3. injury-related lost time at work of one or more days such as would be caused by inhalation of strong, irritating vapors are classified as major injuries. All other reported injuries are considered minor.

