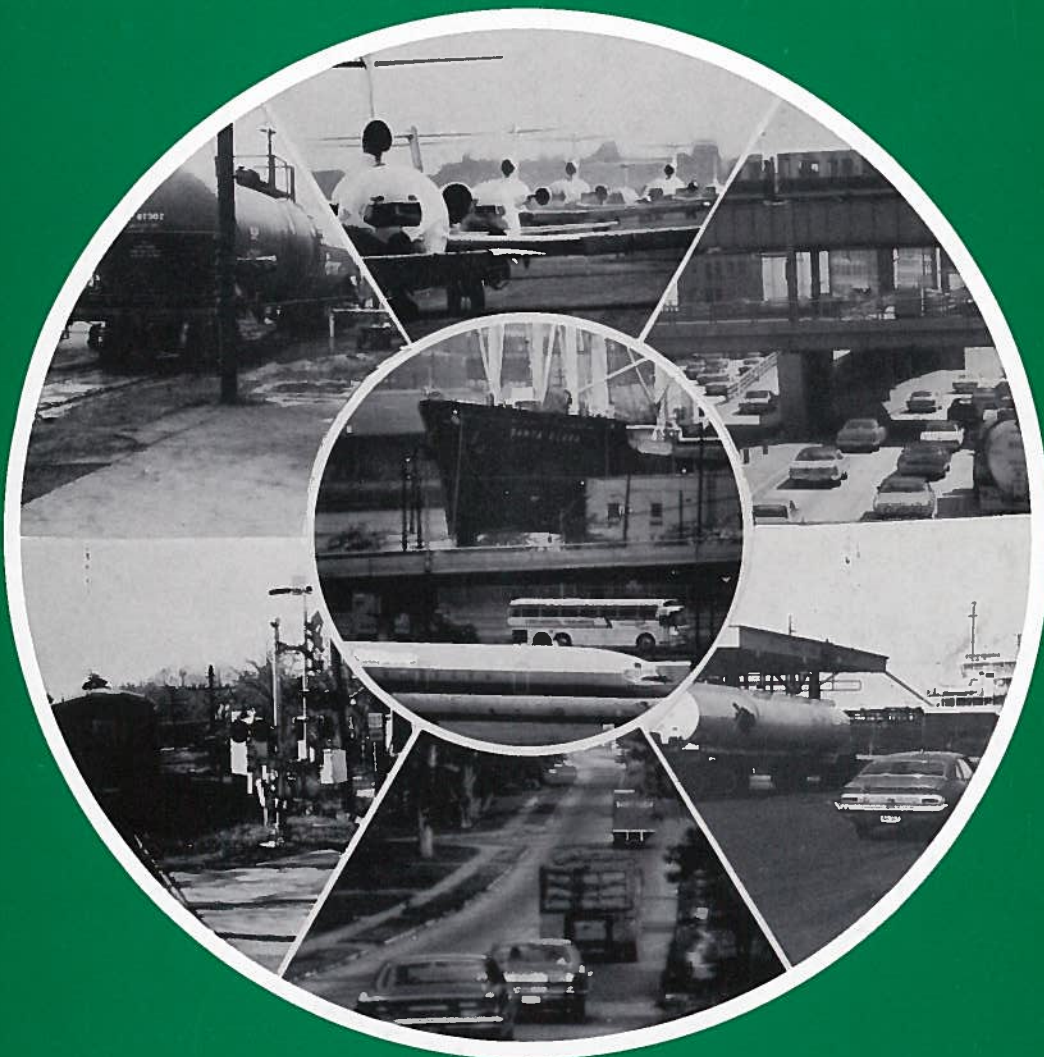




U.S. Department  
of Transportation

**Research and  
Special Programs  
Administration**

# Transportation Safety Information Report 1983 Annual Summary



**Transportation Systems Center**

## FOREWORD

I am delighted to have this opportunity to introduce the 1983 TRANSIS report.

Transportation safety is my highest priority as Secretary of Transportation, and I am pleased to be able to report that accidents and fatalities are decreasing in all transportation modes. For example, in 1983 highway fatalities decreased by 3.5 percent, despite an increase in miles driven. Commercial waterborne fatalities decreased by 26.5 percent, railroad fatalities by 3 percent, and aviation fatalities by 23 percent.

During the last year, the Department has undertaken a number of new safety initiatives and increased its emphasis in others.

One area of increased emphasis has been in providing much greater public awareness of the danger of drunk or drugged driving, and in support of tougher drunk and drugged driving laws. These efforts, combined with similar efforts on the part of State and local officials, private citizens and businesses, helped reduce highway accidents and fatalities in 1983. We also emphasized increased safety belt and child restraint use and other highway safety initiatives.

In aviation, the Federal Aviation Administration is developing improved requirements for airline cabin safety, particularly emphasizing fire safety, and we have recently undertaken a major, short-term surveillance and inspection effort of the entire commercial aviation industry.

In rail, the Federal Railroad Administration (FRA) is working with the railroads and with States and localities to improve railroad-highway grade crossings. The Research and Special Programs Administration has also recently issued a regulation requiring that large-capacity rail tank cars that carry flammable gases be retrofitted to improve resistance to fire puncture.

In the maritime area, the Coast Guard is strengthening and improving programs about recreational boating safety, striking at the cause of most waterborne fatalities.

These are but a few examples of our emphasis on safety. Our commitment to transportation safety remains strong and in the months ahead we will propose still further safety initiatives.

  
Elizabeth Hanford Dole

Report No. <b>DOT-TSC-RSPA-84-2</b>	2. Government Accession No.	3. Recipient's Catalog No.	
Title and Subtitle <b>TRANSPORTATION SAFETY INFORMATION REPORT          1983 ANNUAL REPORT</b>		5. Report Date <b>April 1984</b>	
Author(s) <b>Marjorie Saccoccio</b>		6. Performing Organization Code <b>DTS-32</b>	
Performing Organization Name and Address <b>U.S. Department of Transportation          Research and Special Programs Administration          Transportation Systems Center, Center for          Transportation Information, Cambridge, MA 02142</b>		8. Performing Organization Report No.	
7. Sponsoring Agency Name and Address <b>U.S. Department of Transportation          Research and Special Programs Administration          Management Information Systems          Washington, D.C. 20590</b>		10. Work Unit No. (TRAI5) <b>RS409/R4502</b>	
5. Supplementary Notes		11. Contract or Grant No.	
5. Abstract  <p>The "Transportation Safety Information Report" is a compendium of selected national-level transportation safety statistics for all modes of transportation. The report presents and compares data for transportation fatalities, accidents, and injuries for the current and preceding years. The report is based on data input to the Transportation Information Safety System (TRANSIS) by representatives in each of DOT's modal administrations and the National Transportation Safety Board.</p> <p>Featured in this report is the annual summary of modal safety hazards and safety program highlights for 1983, as well as summary charts detailing modal safety trends from 1973 to 1983. It should be noted that 1983 data are not yet available for selected tables and graphs.</p>		13. Type of Report and Period Covered <b>Final Report 1983</b>	
17. Key Words  <b>Safety, Statistics, Transportation,          Fatalities, Accidents, Injuries</b>		14. Sponsoring Agency Code <b>DMA-20</b>	
19. Security Classif. (of this report)  <b>Unclassified</b>		18. Distribution Statement  <b>Document is available to the U.S. public          through the National Technical Information          Service, Springfield, Virginia 22161</b>	
20. Security Classif. (of this page)  <b>Unclassified</b>	21. No of Pages  <b>97</b>	22. Price	

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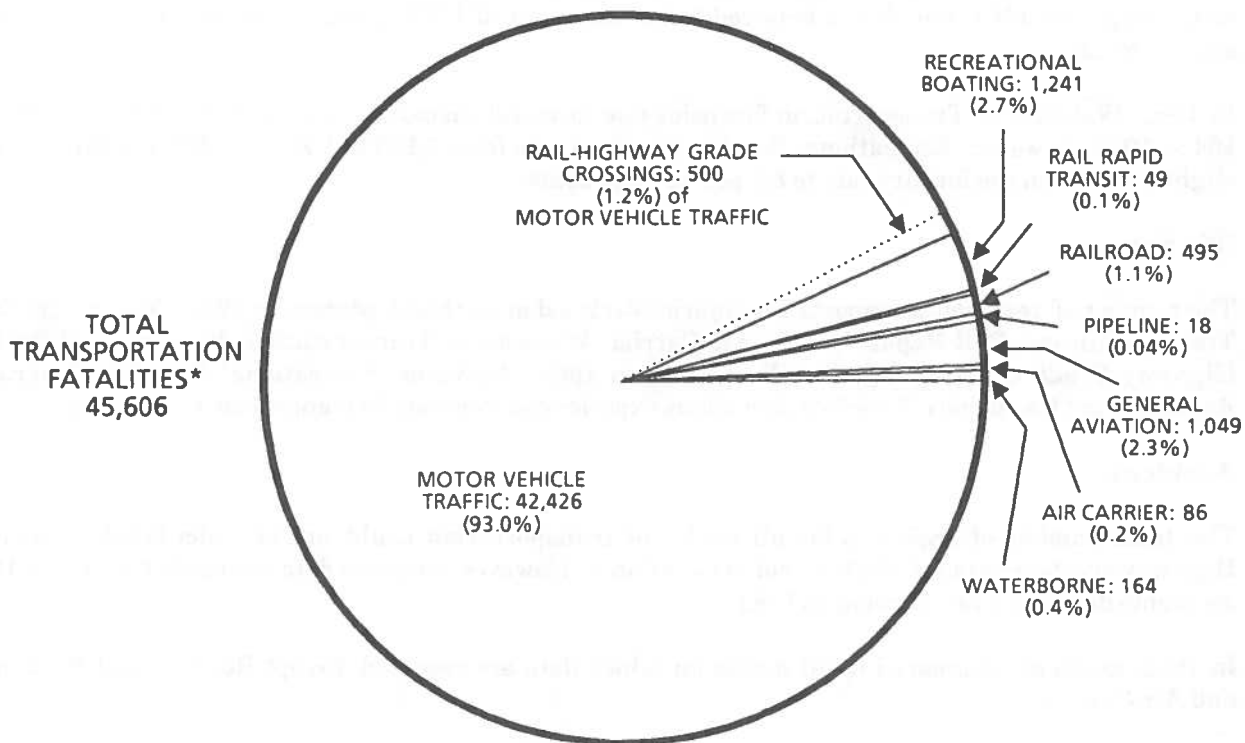
## **TRANSIS REPRESENTATIVES AND MANAGEMENT**

<b>AGENCY</b>	<b>ROUTING SYMBOL</b>	<b>TELEPHONE</b>	<b>ROOM</b>
<b>UNITED STATES COAST GUARD</b>			
LCDR Tony Hart	G-MMI-3	426-6251	1404(TRPT)
Albert J. Marmo	G-BP-42	426-1070	4224(TRPT)
<b>FEDERAL AVIATION ADMINISTRATION</b>			
Charles J. Hoch	ASF-200	426-8256	333(10A)
<b>FEDERAL HIGHWAY ADMINISTRATION</b>			
Phyllis Young	HHS-22	426-2171	3409
<b>FEDERAL RAILROAD ADMINISTRATION</b>			
Bruce Fine	RRS-20	426-0897	7325
<b>NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION</b>			
Grace B. Hazzard	NRD-33	427-7040	6201B
<b>URBAN MASS TRANSPORTATION ADMINISTRATION</b>			
Lloyd G. Murphy	URT-6	426-2896	6429
<b>RESEARCH &amp; SPECIAL PROGRAMS ADMINISTRATION</b>			
Richard C. Stevens	DMA-20	426-4228	8409
<b>NATIONAL TRANSPORTATION SAFETY BOARD</b>			
Bernard Loeb	SP-10	382-6623	834(10A)
<b>TRANSIS MANAGEMENT</b>			
<b>SPONSOR-RSPA/MANAGEMENT INFORMATION SYSTEMS</b>			
Richard C. Stevens	DMA-20	426-4228	8409
<b>TASK MANAGER/PROGRAM ANALYST</b>			
William Gay	DTS-32	494-2450	1163(TSC)
Marjorie Saccoccio	DTS-32	(FTS 837-2450)	1162(TSC)

# SUMMARY STATISTICS OF TRANSPORTATION SAFETY

- In 1983, the total of all transportation fatalities recorded declined to 45,606 from 47,563 in 1982, a decrease of 4.1 percent.
- Motor Vehicle Traffic, Railroad, Rail-Highway Grade Crossings, Air Carrier, General Aviation, Pipeline, Waterborne Transportation, Rail Rapid Transit, and Hazardous Materials operations all experienced a decrease in the number of reported fatalities in 1983. Recreational Boating was the only mode which experienced a fatality increase.
- The following modes experienced a drop in the number of reported injuries in 1983: Motor Vehicles, Railroads and Rail-Highway Grade Crossings, Air Carriers, Pipeline, Rail Rapid Transit, and Waterborne Transportation. Only General Aviation, Recreational Boating, and Hazardous Materials operations had an increase in reported injuries.
- The total number of Motor Vehicle Traffic accidents was not available for 1983. However, the Railroad, Rail-Highway Grade Crossings, General Aviation, Pipeline, Waterborne Transportation, Rail Rapid Transit, and Hazardous Materials operations all experienced a decline in the number of reported accidents in 1983. Only Air Carrier and Recreational Boating experienced an accident increase.

**CHART 1. TRANSPORTATION FATALITIES, 1983**



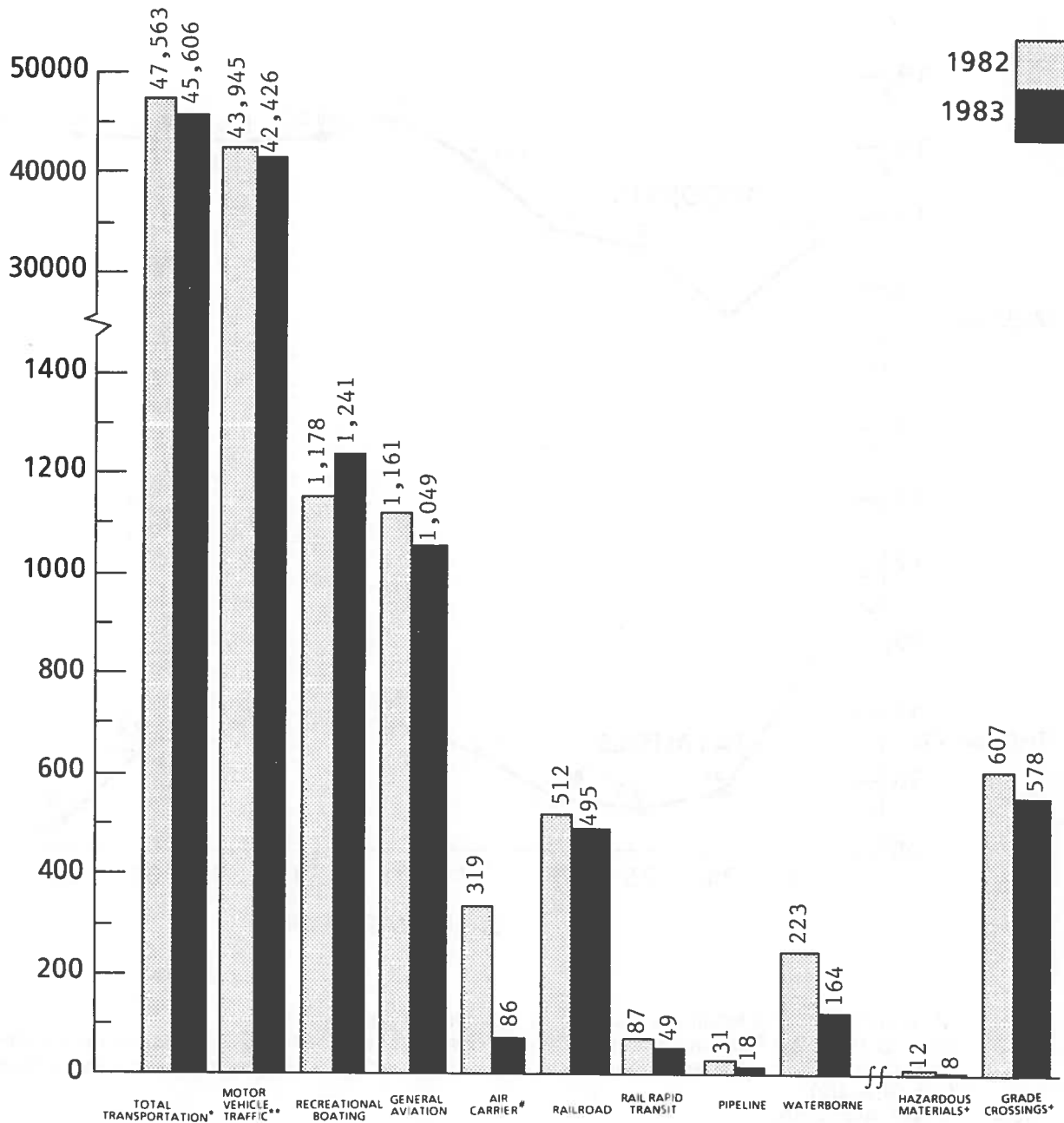
\* Includes 78 Rail-Highway Grade Crossing fatalities which are not reported in Railroad figure.

accidents totaled 35,699 in 1983 compared with 41,872 in 1982, an 14.7 percent decline; while Rail-Highway Grade Crossing accidents totaled 7,168 in 1983, a 7.5 percent decrease over the same period last year. In addition, Rail Rapid Transit accidents dropped from 91 in 1982 to 36 in 1983. Once again, this is believed to be the result of a new reporting system which UMTA initiated in 1983; thus, direct comparisons should not be made.

In the two modes in which accidents increased in 1983, Recreational Boating accidents rose from 5,377 to 5,569, a 3.6 percent increase, while the number of Air Carrier accidents rose slightly, from 176 in 1982 to 178 in 1983, a 1.1 percent increase.

## CHART 2.

### TRANSPORTATION FATALITIES BY MODE 1982 - 1983



- Note: Data for individual modes are shown in Table 1. 1983 Data are preliminary.
- \* Total Transportation includes 107 Rail-Highway Grade Crossing fatalities in 1982 and 78 in 1983 which are not reported in Railroad figure.
  - \*\* Traffic fatalities are NHTSA's estimates based on a 30-day definition. (see Glossary).
  - + These fatalities are included in other modes and Total Transportation.
  - # Air Carrier includes Commuter Carriers and Air Taxis.

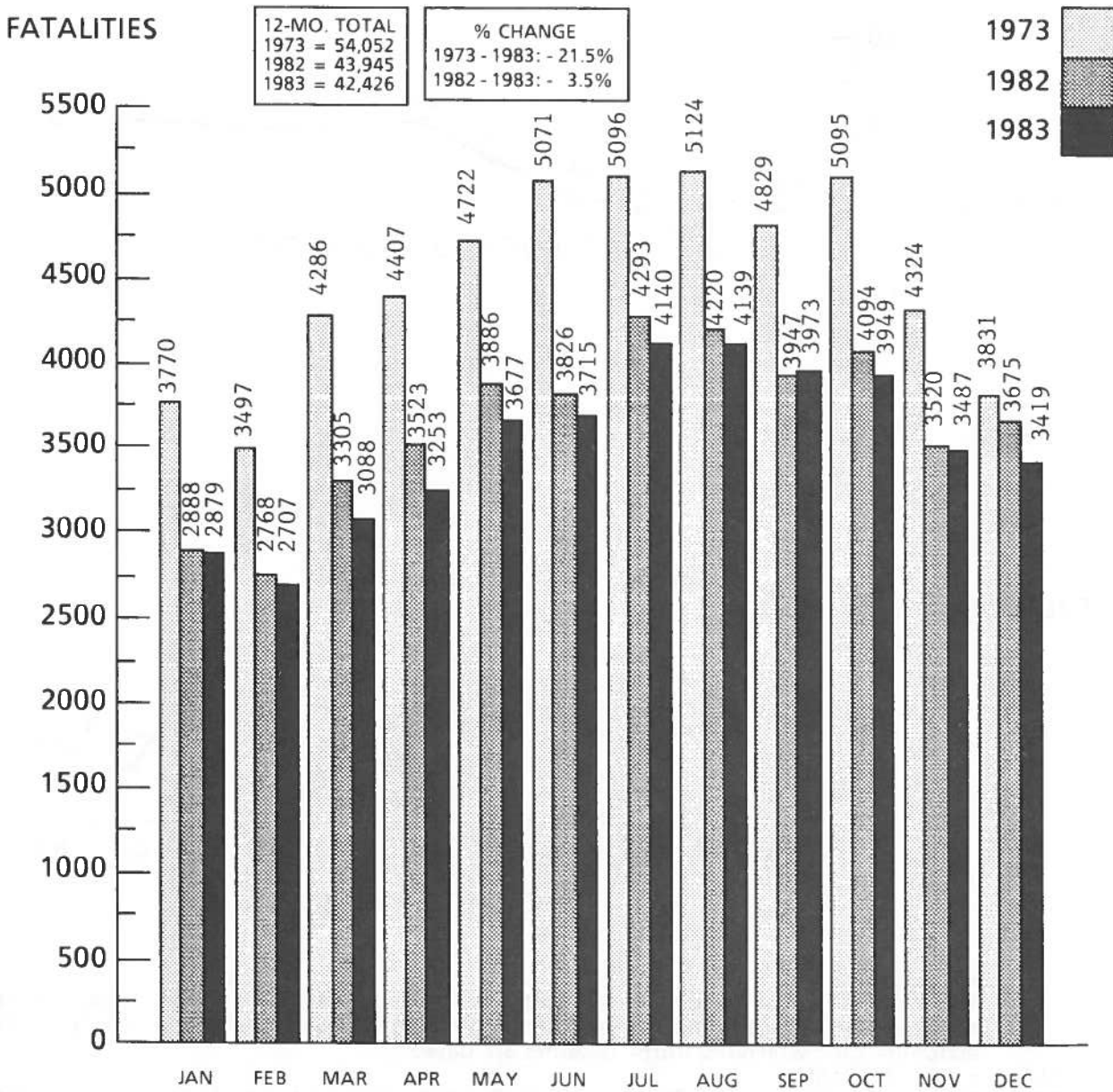


## **HIGHWAY**

- During 1983, about 42,426 people died on the nation's highways. This is more than 3 percent below the total fatalities for 1982. The total decline in the yearly number of fatalities since 1980 has now reached 17 percent.
- Preliminary estimates of travel show a small 2.4 percent increase during 1983. The resulting fatality rate decreased almost 6 percent to a value of 2.6 deaths per 100 million vehicle miles of travel--the lowest value ever recorded.
- The number of licensed drivers increased 25 percent from 1973 to 1983, while the number of registered vehicles rose almost 29 percent during the same period.
- For the nation as a whole, pedestrian and pedalcycle fatalities dropped over 8 percent in 1983. The total number of motor vehicle occupant fatalities decreased more than 2 percent from 1982 to 1983. Occupants of trucks and motorcycles experienced larger decreases than passenger car occupants.

# CHART 4.

## MOTOR VEHICLE TRAFFIC FATALITIES BY MONTH 1973, 1982 AND 1983

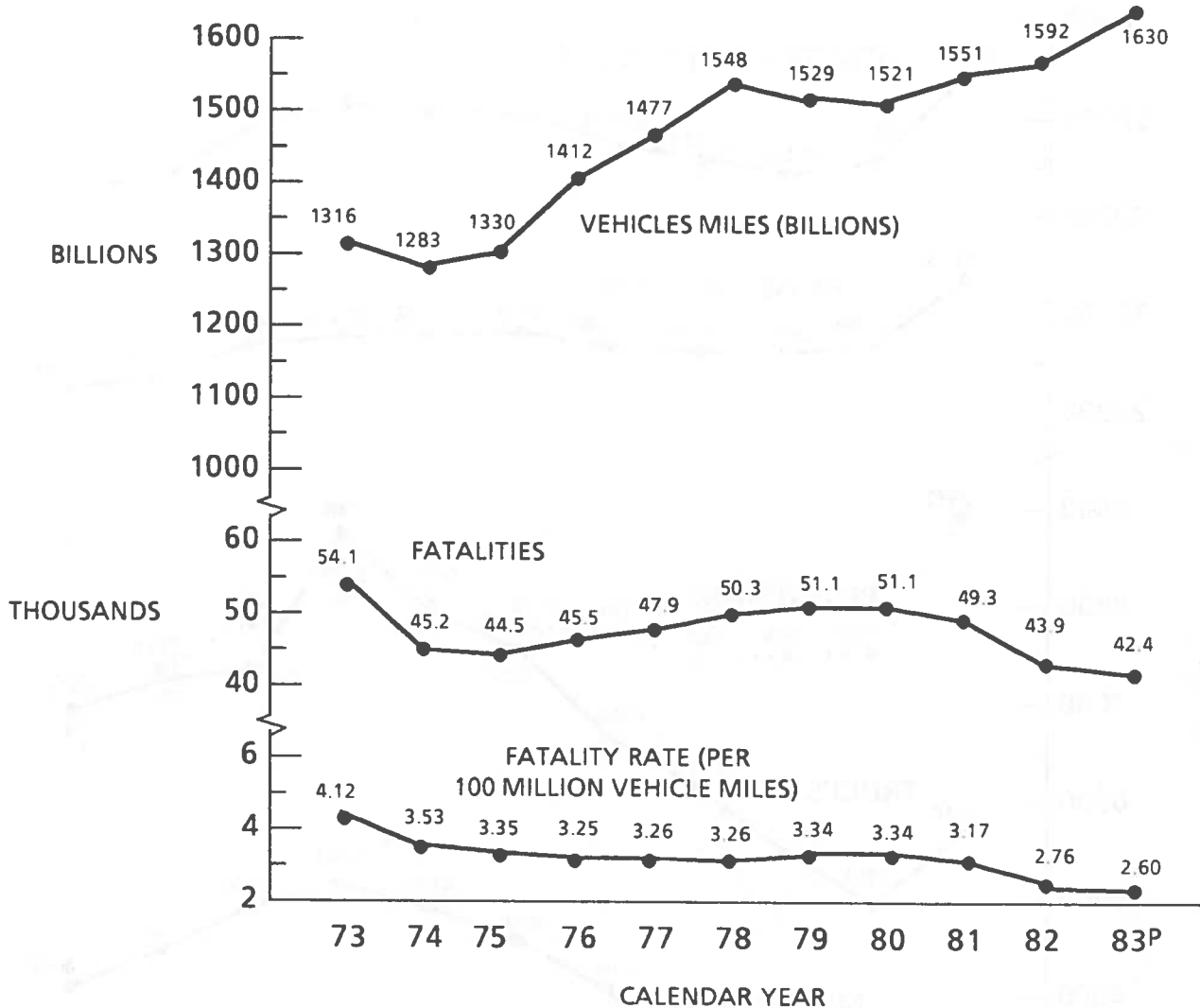


NOTE: Figures are based on 30-day fatality definition (see Glossary).

SOURCE: 1973 Data from State Accident Summaries (adjusted to 30-day definition).  
 1982 Data from NHTSA's Fatal Accident Reporting System (FARS).  
 1983 Data are estimates from FARS.

# CHART 6.

## MOTOR VEHICLE TRAFFIC FATALITY RATES 1973 - 1983



P = Preliminary, NHTSA.

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

SOURCE: 1973-1974 Fatalities, National Center for Health Statistics, HEW and State Accident Summaries (adjusted to 30-day definition).  
 1975-1983 Fatalities, NHTSA, Fatal Accident Reporting System (FARS).  
 Vehicle-Mile Data is from FHWA, Office of Highway Planning, HHP-44.  
 Fatality Rate Data is from NHTSA, NCSA, NRD-33.

**TABLE 3. FATAL ACCIDENTS BY POSTED SPEED LIMIT, 1975, 1981 - 1983**

	1975	1981	1982	1983*	Average Annual % Change 1975-83	%Change 1982-83
Under 55 MPH						
0-25 MPH	2,617	2,532	2,425	2,231	-1.76	-8.00
26-35 MPH	6,099	7,867	7,491	7,292	+2.00	-2.66
36-45 MPH	4,276	6,105	6,000	5,829	+3.50	-2.85
46-54 MPH	2,241	2,322	2,079	1,998	-1.27	-3.90
Total Under 55	15,233	18,826	17,995	17,350	+1.46	-3.58
55 MPH	16,093	19,915	18,707	18,247	+1.41	-2.46
Unknown	7,831	5,259	2,390	2,198	-13.17	-8.03
Total	39,158	44,000	39,092	37,795	-0.39	-3.32

\* Preliminary.

SOURCE: NHTSA, FARS.

**TABLE 5. MOTOR CARRIER\* FATALITIES, ACCIDENTS, AND  
INJURIES, BY TYPE OF CARRIER,  
1976 - 1982**

CLASSIFICATION	1976	1977	1978	1979	1980	1981	1982
<b>Motor Carriers of Property</b>							
Fatalities	2,520	2,983	2,998	3,072	2,528	2,810	2,479
Accidents	25,666	29,936	33,998	35,541	31,389	32,306	31,759
Injuries	26,794	31,698	32,757	32,126	27,149	28,533	25,779
<b>Motor Carriers of Passengers</b>							
Fatalities	62	87	68	60	74	95	76
Accidents	624	830	728	719	748	832	885
Injuries	1,723	1,929	1,917	1,977	1,711	2,041	2,060
<b>All Motor Carriers</b>							
Fatalities	2,582	3,070	3,066	3,132	2,602	2,905	2,555
Accidents	26,290	30,766	34,726	36,260	32,137	33,138	32,544
Injuries	28,517	33,627	34,674	34,103	28,860	30,574	27,839

\* Includes only those motor carriers operating in interstate or foreign commerce.

SOURCE: FHWA, Bureau of Motor Carrier Safety, HMC-12.

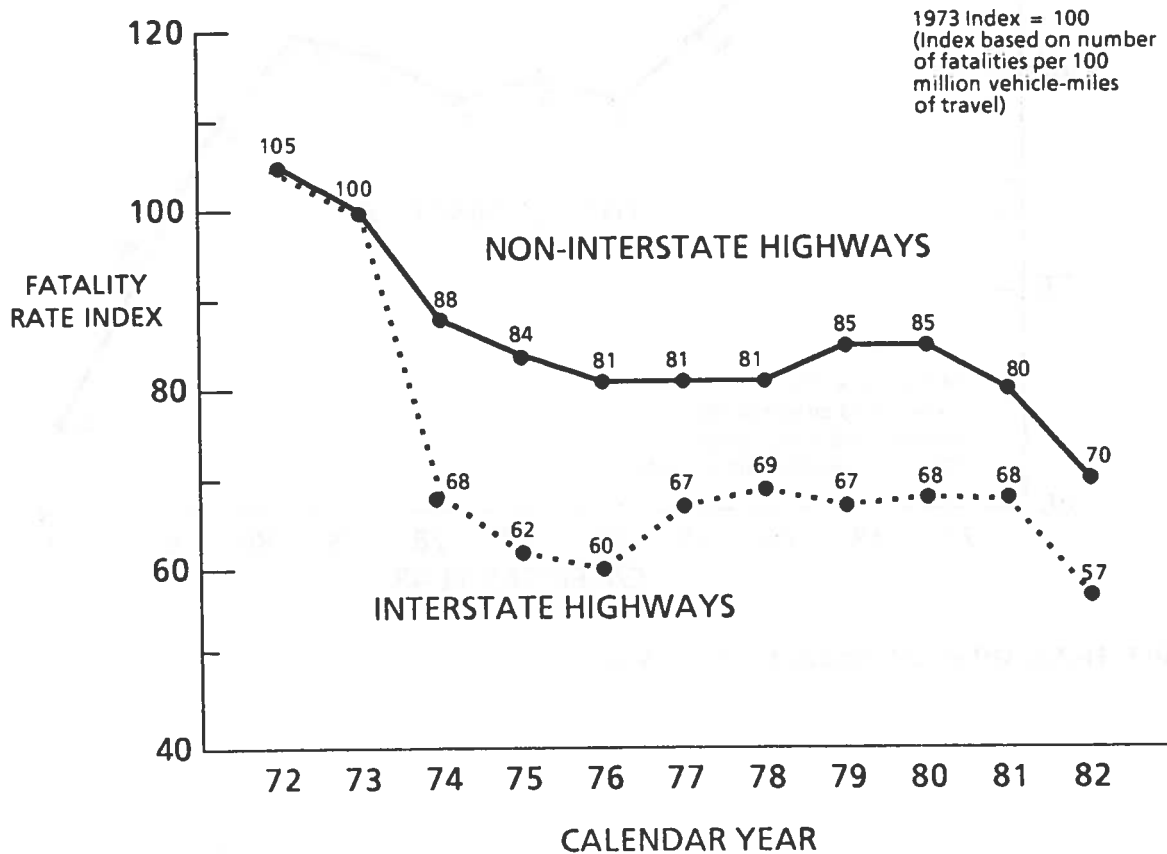
## Fatality and Injury Rate Trends

The rates shown in Figures 1 and 2 are based on a 1973 index. From 1972 through 1974, fatality and injury rates have followed a downward pattern. From 1975 until 1980, the fatality rates remained fairly constant until 1981 when another downward pattern began and reached an all time low in 1982. The one year drop of about 18 percent was even larger than the 1973-1974 decline. The injury rate index reflects a similar downward pattern.

Enforcement of the 55 mph speed limit has been more intensive on the Interstate highway system, where speeds and traffic volume tend to be highest. Figure 1 shows the fatality rate has dropped much more sharply on the Interstate highways than on the non-Interstate roads since 1973.

### FIGURE 1.

#### FATALITY RATE TRENDS, 1972 - 1982



SOURCE: FHWA, Office of Highway Safety, HHS-22.

## **MODAL SAFETY HAZARDS**

### **Safety Delineation and Markings**

The nighttime fatality rate on highways is more than three times that of the daytime rate. Much of this compounding of accidents occurs on typical unlighted, rural two-lane highways where drivers find it more difficult to adequately assess highway characteristics. By improving delineation and markings through wider pavement stripes, longer lasting or more reflective materials, use of additional warning signs, post mounted delineation and fixed object markers, drivers can better assess their situation and act accordingly.

In October 1983, the Code of Federal Regulations was changed to make pavement markings eligible for 100 percent Federal-aid funding. Consistent with this change, a memorandum was forwarded to all FHWA field offices describing several innovative practices and treatments eligible under this initiative. In January 1984, a second memorandum provided additional information on particularly effective state practices for special delineation and markings. Our field offices have reported their promotion of the safety delineation and marking initiative and that it is generally being received well. They expect to report positive activities in the future.

SOURCE: FHWA, Policy Branch, HHS-11

### **Roadside Barrier Design: Accelerate and Expand Research**

The range of vehicle size and weight that needs to be safely accommodated by the nation's highway network has greatly expanded over the past few years. This has had particular impact on roadside barrier and bridge rails which had been originally developed for full-sized passenger cars. The Federal Highway Administration has reprogrammed over \$1 million in highway safety research funds to accelerate and expand barrier design research in the areas of small car crash research, bridge rail design and performance standards, and warrants and hardware design for bridge railing systems on low volume roads.

SOURCE: FHWA, Technical Development Branch, HHS-12

### **Resurfacing, Restoration and Rehabilitation (3R) Program**

Current procedures place considerable responsibility on the states to propose for their particular needs and conditions, what minimum 3R standards are necessary to "preserve and extend the service life of highways and enhance highway safety."

SOURCE: FHWA, Evaluation & Analysis Branch, HMC-22

### **Commercial Driver Training**

Despite the highly specialized knowledge and skills required to safely operate heavy-duty, commercial vehicles, research has shown that most truck driver training programs are inadequate and that currently there are no universally recognized training curriculums, nor minimum truck driver training standards in existence.

SOURCE: FHWA, Evaluation & Analysis Branch, HMC-22

in a dry creek bed. The coroner's report on the four fatally injured teenagers stated that the driver's blood alcohol level was .04, she was 14 years old. The other three occupants, a male, age 17 had a blood alcohol level of .06; a female, 15 years old had a level of .13; and a 17 year old male with a level also .13.

The Department has undertaken a major effort to support and facilitate action in state and local governments, corporations and local communities nationwide to reduce drunk driving. Many of the elements for a successful effort are now in place and NHTSA is moving aggressively to implement them. These include:

A community-based alcohol countermeasure program operating in 10 states;

A separate program aimed specifically at the youths to inform and sensitize them to the dangers of drunk driving;

An Alcohol Incentive Grant Program to states;

An Alcohol Highway Safety Research and Demonstration Program with focus on enforcement aspects;

The Ad Council's mass media campaign;

Joint workshops with the Department of Defense encompassing safety education;

Participation in support of the National Governors Association.

SOURCE: NHTSA, NCSA, NRD-33

### **Consumer Information**

Consumer information is currently available through the Consumer Information Center (CIC) located in Pueblo, Colorado, and through the Auto Safety Hotline located in Washington, D.C. As a practical matter such information has received limited distribution because awareness of the Hotline and its services is not extensive, and because only one publication--THE CAR BOOK--is distributed through the CIC and, though it is popular, much of its content is outdated.

The Department is developing an expanded format consumer "umbrella" publication entitled AUTOWISE which will replace THE CAR BOOK. This new publication is based on the results of the New Car Assessment Program and will be updated periodically.

In an effort to inform consumers about the safety and performance differences among various makes and models, and to foster competition among manufacturers to produce safer motor vehicles, NHTSA developed the experimental New Car Assessment Program (NCAP) in 1979. The program consists of measuring vehicle and test dummy performance in a 35-mph frontal barrier crash test.

The NHTSA has treated over 110 different motor vehicles from model years 1979 through 1984 in the NCAP. Many vehicles have "corporate cousins" which are essentially identical (for example, the Pontiac Firebird and Chevrolet Camaro, or the Dodge Omni and Plymouth Horizon). As a result, the NCAP test data are applicable to 170 motor vehicle makes/models.



One of the cases in the NTSB study dramatically illustrates the scope of the problem. The commercial driver involved had a record showing:

- 41 convictions in 8 states in a 17 year period (31 for speeding)
- 6 license suspensions
- 4 other accidents
- 2 valid licenses.

The problem driver must first be identified to be controlled. The National Driver Register is designed to help states and employers detect such individuals.

SOURCE: NHTSA, NCSA, NRD-33

## ***SAFETY PROGRAM HIGHLIGHTS***

### **Resurfacing, Restoration and Rehabilitation (3R) Program**

FHWA recently conducted reviews in all nine regions and 19 states to evaluate the consequences of our current 3R procedures in terms of overall program management and specific 3R project results. This review resulted in nine recommendations in the 3R processes in order to better insure safety enhancements are incorporated into 3R projects. Implementation of the nine recommendations is currently underway.

Section 110(b) of the Surface Transportation Assistance Act of 1982 directs DOT to conduct, through the National Academy of Sciences (NAS), a comprehensive study of the safety cost-effectiveness of current geometric design criteria, and to propose the most appropriate minimum standards that should be applied to 3R work.

FHWA entered into a contract with the NAS Transportation Research Board (TRB) in August 1983 to conduct a prestudy to develop a work plan for the research effort. A master agreement was also executed in September 1983 for a full study. The work plan consists of four major tasks to be completed within three years. The TRB will submit its final report to the Secretary and to Congress by September 15, 1987.

The study is being funded by 100 percent Highway Planning and Research funds provided through contributions from various states. The total budget may run between \$1.6 and \$2.0 million of which \$1.3 million has been committed. Work on Task 1 will begin in February 1984 and on Task 2 in March 1984.

SOURCE: FHWA, Evaluation & Analysis Branch, HMC-22

### **Motor Carrier Safety Grant Program**

FHWA plans to implement the program utilizing many of the established administrative and technical delivery systems in place for state highway assistance. To facilitate initiation of the program concurrent with anticipated fiscal 1984 funding, an interim rule specifying policy and procedures and soliciting comments will be in effect until a final rule, refining the procedure, can be promulgated after a comment period. Specific uniform procedures for the roadside inspection of commercial motor vehicles and drivers have been prepared and will be available, after printing, to FHWA and state staff in the form of a manual. Similar guidelines are complete for safety

Carrier Safety Regulations are applicable to today's fleet, and is planning a research effort to develop pass-fail brake adjustment criteria.

In addition, the FHWA and NHTSA will be conducting research in evaluating factors influencing the dynamic stability of combination vehicles. In this coordinated research, NHTSA will be developing a prospective view of how to design vehicles in the future to overcome stability problems, and FHWA will be developing safe, practical coupling mechanisms for multi-trailer combinations and determining the safety effects of various width combinations possible under the 102-inch width limitation. The FHWA recently completed a major study entitled "Influence of Size and Weight Variables on the Stability and Control Properties of Heavy Trucks."

A coordinated effort will also be undertaken to evaluate heavy commercial vehicle accidents and countermeasures. This research effort will be conducted by a contractor and is scheduled to be awarded in FY 1984.

SOURCE: FHWA, Evaluation & Analysis Branch, HMC-22

### **Alcohol Safety Programs**

Ten cities, counties, and states have been selected as "targets of opportunity" to promote the adoption of comprehensive, community-based, general-deterrence, alcohol highway safety programs.

All states have established at least .10 blood alcohol concentration as the "presumptive" level for driving while intoxicated. Twelve states enacted legislation in 1982/1983 raising the minimum legal drinking age.

SOURCE: NHTSA, NCSA, NRD-33

### **National Seat Belt Usage Program**

NHTSA has now enlisted through contract and informal agreement, the assistance of 25 national organizations to conduct face-to-face safety belt education. Included are groups like the American Red Cross, PTA, Girl Scouts, medical and health groups, driver educators, and police organizations. Principal goals of these efforts are to equate using safety belts and child safety seats with good health, to stimulate grass roots support at the community level, and to institutionalize safety belt programs with these groups so that future dependence on NHTSA resources can be greatly reduced.

Over 150 corporations are now actively participating in safety belt programs. Program materials have been distributed to 700 corporate fleet managers. An advertising firm under contract to NHTSA, has completed the initial phase of a comprehensive advertising campaign to promote and encourage safety belt and child safety seat use. Three Public Service Announcements were produced in 1983 and have been distributed throughout the country.

SOURCE: NHTSA, NCSA, NRD-33

# RAILROAD

- Railroad safety is FRA's top priority. Due to the combined efforts of labor, management and the FRA, the safety statistics continued to improve in 1983. Railroad accidents showed an overall decline of almost 15 percent when 1983 is compared to 1982. The decline is still impressive after normalizing by train miles. The improvement was 13 percent. Total railroad-related casualties also decreased by 13 percent in 1983.
- Of the total number of fatalities reported last year, 54 percent occurred in a rail-highway grade crossing accident. There were 578 rail-highway grade crossing fatalities in 1983 compared to 607 in 1982, a 4.8 percent improvement. The total number of trespasser fatalities was 501 in 1982 and 474 in 1983, a reduction of 5.4 percent. The number of employee on duty fatalities in 1982 was 78 and in 1983 it was 59, a reduction of 24.4 percent.
- Over 87 percent of the total number of injuries involving railroad operations occurred to railroad employees.
- The railroad accident rate per million miles reached a 10-year low in 1983.

**TABLE 6. RAILROAD FATALITIES AND INJURIES,  
BY TYPE OF PERSON, 1982-1983**

CLASSIFICATION	FATALITIES		INJURIES**	
	1982	1983	1982	1983
Employees on Duty	78	59	36,032	30,387
Employees Not on Duty	2	3	509	393
Passengers on Trains	9	4	387	502
Nontrespassers	525	527	2,595	2,729
Trespassers	501	474	671	685
Contractor Employees	4	6	81	95
<b>Total Railroad and Grade Crossing</b>	<b>1,119</b>	<b>1,073</b>	<b>40,275</b>	<b>34,791</b>
Railroad Only*	512	495	37,638	32,160
Grade Crossing Only	607	578	2,637	2,631

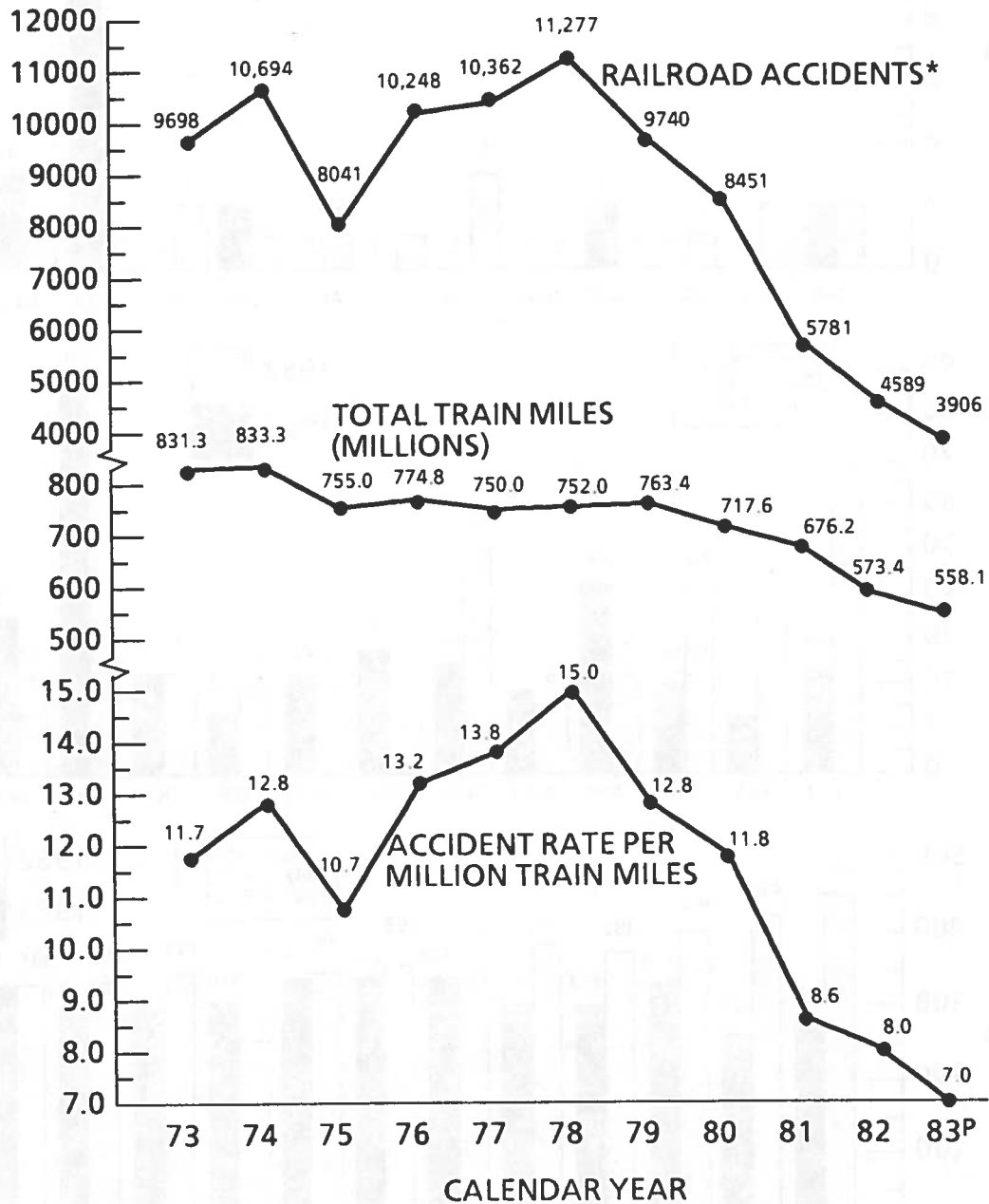
\* Includes train and nontrain data.

\*\* Includes occupational illness.

SOURCE: FRA, Office of Safety Analysis, RRS-20.

# CHART 10.

## RAILROAD ACCIDENT RATES, 1973 - 1983



P = Preliminary

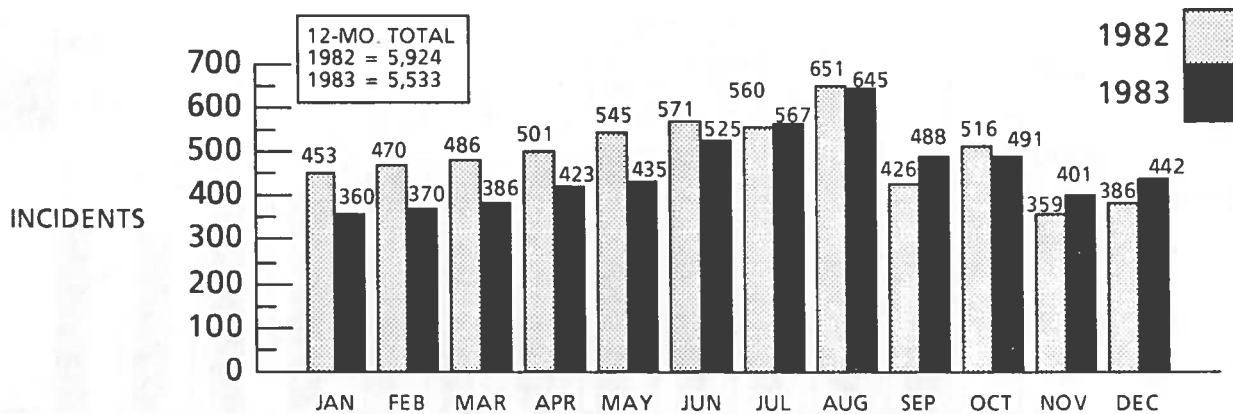
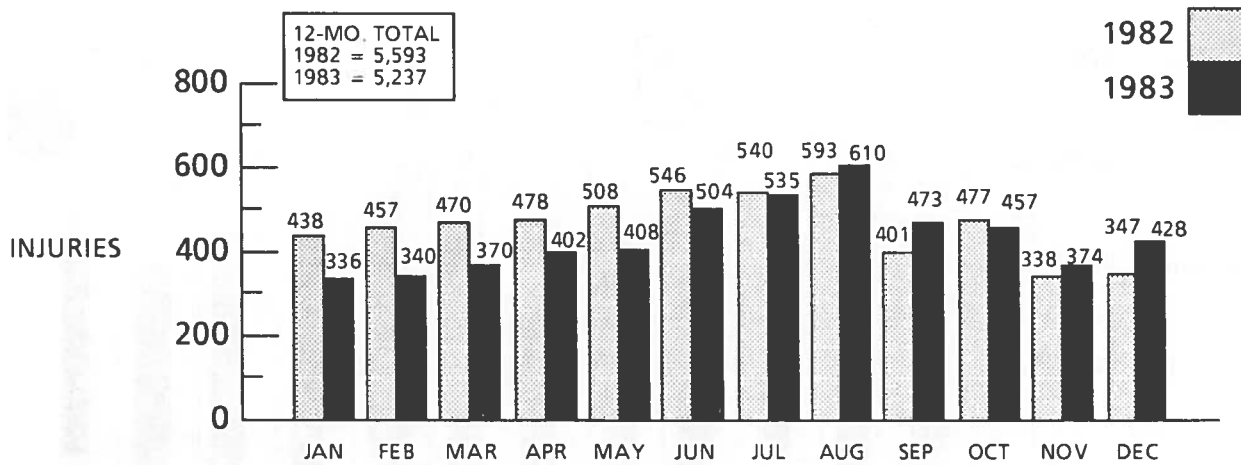
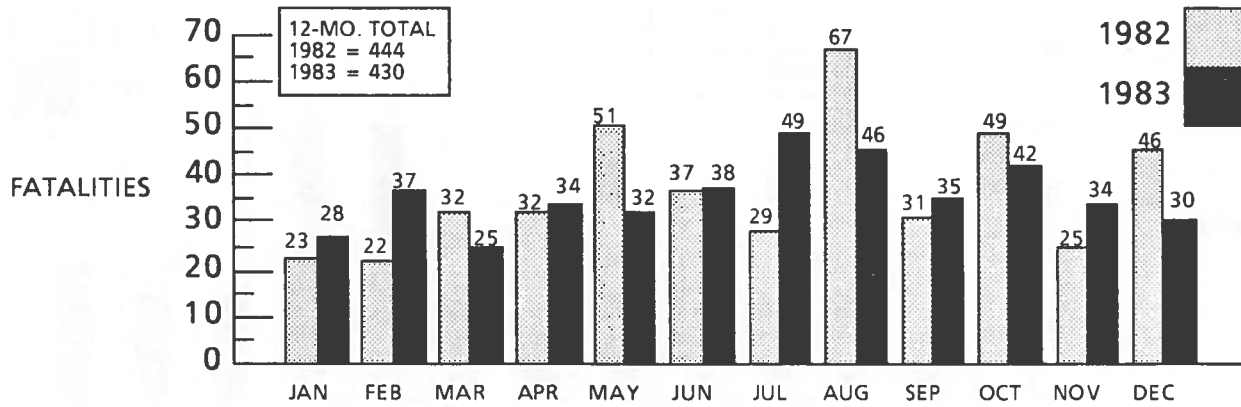
\* Train accidents only--also includes those Rail-Highway Grade Crossing accidents which have been classified as Train accidents.

NOTE: Reporting threshold for Train accidents was raised from \$750 to \$1,750 in 1975, to \$2,300 in 1977, to \$2,900 in 1979, to \$3,700 in 1981, and to \$4,500 in 1983.

SOURCE: FRA, Office of Safety Analysis, RRS-20.

## CHART 12.

### TRAIN INCIDENT\* FATALITIES, INJURIES AND INCIDENTS, 1982 - 1983

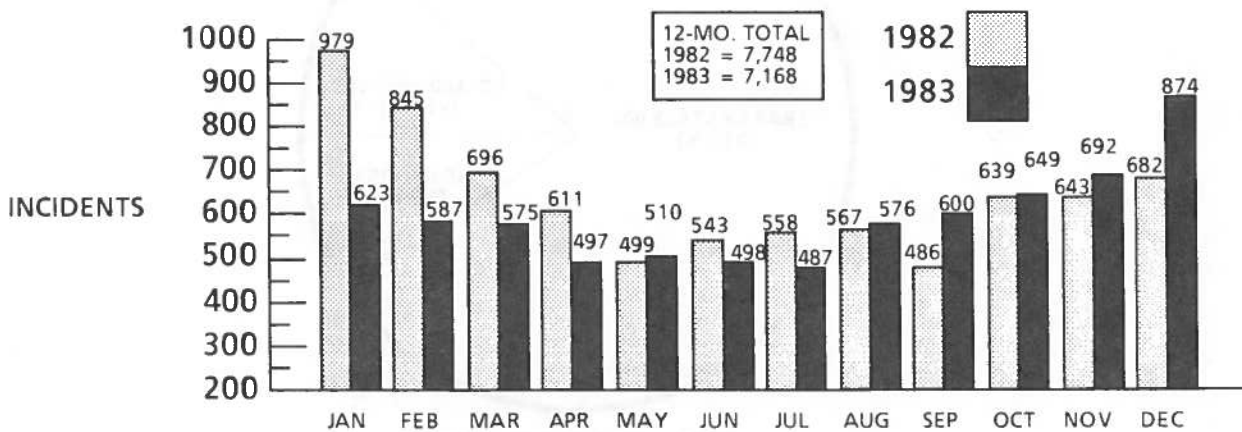
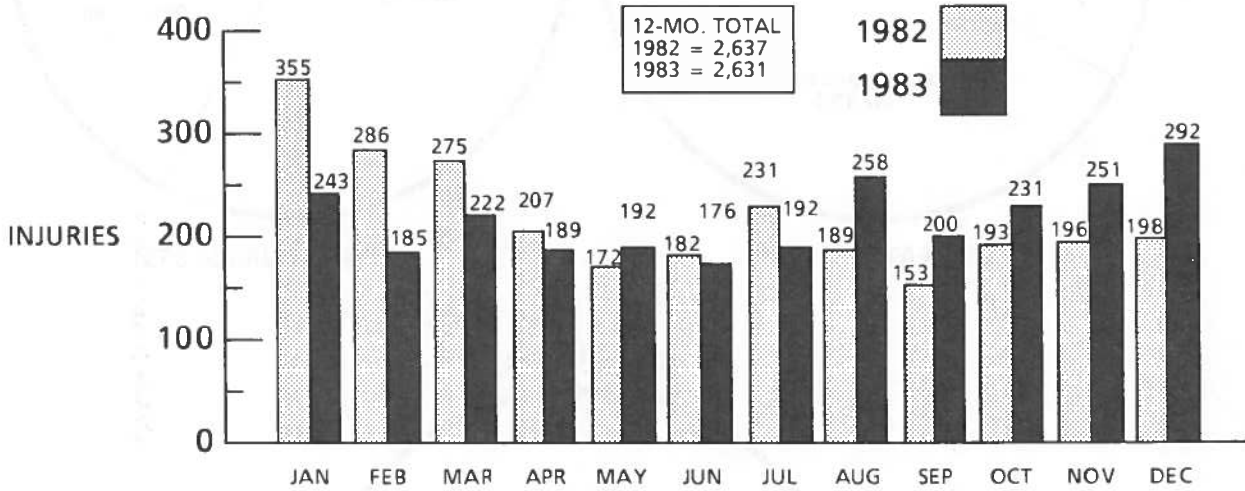
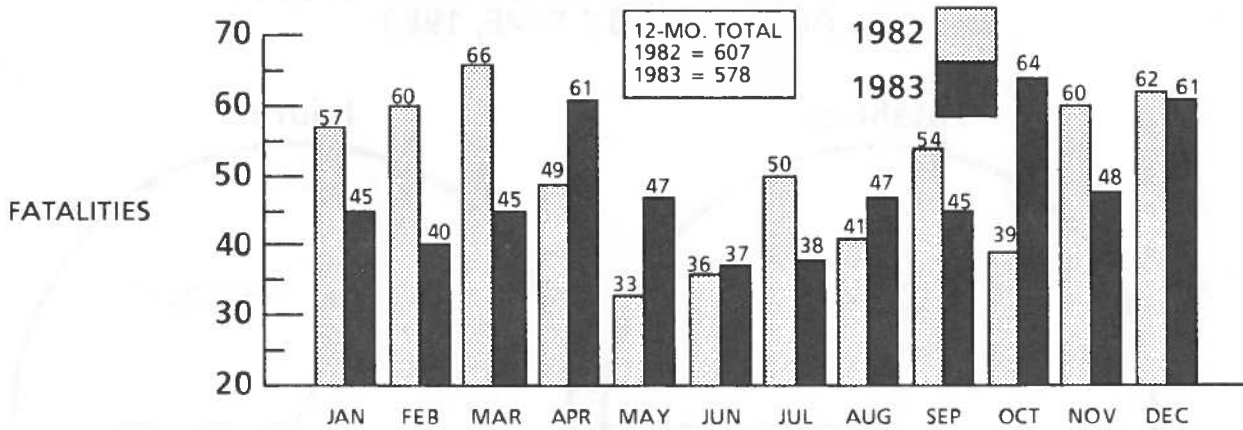


\* See Glossary for Train Incident definition. This chart does not include Grade Crossings.  
NOTE: 1983 Data are preliminary.

SOURCE: FRA, Office of Safety Analysis, RRS-20.

# CHART 14.

## GRADE CROSSING\* FATALITIES, INJURIES AND INCIDENTS, 1982 - 1983



\* See Glossary for definition.

NOTE: 1983 Data are preliminary.

SOURCE: FRA, Office of Safety Analysis, RRS-20.

## **MODAL SAFETY HAZARDS**

### **Alloy Rail Failure**

In December 1983 an Amtrak train derailed near Marshall, Texas, resulting in four fatalities and approximately twenty injuries. The derailment involved an alloy rail which failed in an unusual manner, i.e., by fracturing for an excessive distance and breaking into numerous fragments. Concurrent inspection reports from other regions revealed several occurrences of excessive cracking in both alloy and non-alloy rails, but in these cases the cracks were detected and removed from the track before any rail failures occurred.

SOURCE: TSC, Structures & Dynamics Division, DTS-76

### **Track Structures Research**

Approximately 2,200 derailments and \$80 million in damage per year are caused by defects in railroad track structures. The majority of the responsible track defects fall into four categories: 1) track geometry deviations which induce adverse dynamic motions of certain types of railroad cars; 2) degradation of the tie/fastener system, resulting in loss of rail support; 3) buckling of continuously welded rail in warm weather; and 4) rail failures resulting from growth of undetected fatigue cracks.

SOURCE: TSC, Structures & Dynamics Division, DTS-76

## **SAFETY PROGRAM HIGHLIGHTS**

### **Alloy Rail Failures**

As a consequence of the unusual features of the Texas rail failure, the Federal Railroad Administration (FRA) formed a joint FRA/Transportation Systems Center (TSC) task force to study the subject rail and to identify the technical factors involved. The task force convened in December 1983 and will continue its deliberations until April 1984.

SOURCE: TSC, Structures & Dynamics Division, DTS-76

### **Commuter Car Axle Failure**

Metro North, previously Conrail, operates commuter service, using equipment known as M-2 commuter cars between New Haven and New York City. In 1982, during the course of operations several incidents of journal bearing damage and failures occurred. Remedial action (additional inspections) taken after the first incident failed to prevent a second occurrence. FRA immediately launched an investigation into the problem. A task force was established to conduct a full technical evaluation of the failures. The M-2 commuter car design put stringent load restrictions on the weight of the car. In order to meet those requirements the cars were built using thin wall tubular axles. New inspection procedures were instituted in February 1983, supplemented by ultrasonic testing of all hollow axles for defects. The axles retrofit program for the 244 car fleet was completed in October 1983.

SOURCE: FRA, Office of Safety Analysis, RRS-20

## RAIL RAPID TRANSIT

- Comparisons between 1983 and 1982 accident data would be inappropriate as thresholds, definitions and the scope of reported accidents changed under the Safety Information Reporting and Analysis System (SIRAS) compared to the previously reported FRA data. Year-to-year comparisons will again be possible starting next year.
- The major cause of Rail Rapid Transit (RRT) revenue train accidents in 1983 was from fires/explosions. Of the 36 train accidents in 1983, 15 were of this type (42 percent).
- The predominant cause of personal casualties (injuries and fatalities) in 1983 was from persons slipping and falling. More than 68 percent of the 1,878 casualties occurring were from slips and falls.

**TABLE 7. RRT EQUIPMENT FATALITIES,  
ACCIDENTS AND INJURIES  
1982 - 1983**

	1982			1983*		
	Accidents	Injuries	Fatalities	Accidents	Injuries	Fatalities
JAN	10	13	4	3	2	0
FEB	3	1	0	3	1	1
MAR	10	54	0	5	5	1
APR	6	54	0	5	0	0
MAY	7	6	0	4	17	1
JUN	7	11	0	3	1	0
JUL	10	0	0	6	6	0
AUG	8	1	0	1	0	0
SEP	7	1	0	2	0	0
OCT	10	3	0	1	0	0
NOV	12	4	0	3	3	0
DEC	1	1	0	1	1	0
<b>TOTAL</b>	<b>91</b>	<b>149</b>	<b>4</b>	<b>36</b>	<b>36</b>	<b>3</b>

\* Preliminary data prior to the verification and final publication of the first SIRAS report.

SOURCE: TSC, Safety & Security Division, DTS-65, SIRAS.



## **MODAL SAFETY HAZARDS**

From the preliminary data reported, the major cause of RRT revenue train accidents in 1983 was from fires/explosions. Of the 36 train accidents in 1983, 15 were of this type (42 percent of the total train accidents). The number presented in the data here is conservative as many fires are detected early and suppressed prior to their propagating major reportable accidents. However, the potential does exist for serious injuries and fatalities to occur from these types of accidents. Fortunately, because of early detection in most accidents this potential has remained unrealized. This early detection and subsequent suppression is vital to the fire safety of a transit system and can be accomplished through transit personnel training and equipment design. The best detection device in the system is the transit system personnel.

In any emergency situation, the major goal of the transit system is to minimize the effect or consequences of the emergency situation. To accomplish this, the transit system and emergency response personnel must be prepared to evacuate the patrons from the hazardous area. Patron evacuation and the timely response of emergency personnel is extremely important considering that transit systems operate in confined underground tunnels and on elevated structures. To insure that a transit system is prepared to respond to this need requires adequate planning, coordination and the appropriate facilities and equipment. This emergency preparedness need is vital to the safety of the public.

It is the goal of current research to continue to decrease the likelihood of transit fires and to increase the effectiveness of all parties involved when emergency fire situations do occur, thus keeping any casualties and property damage to minimum levels.

SOURCE: TSC, Safety & Security Division, DTS-65.

## **SAFETY PROGRAM HIGHLIGHTS**

### **Emergency Preparedness**

A draft of the Emergency Preparedness Guidelines, which specifically addresses the development of an Emergency Plan and the post-incident aspects of vehicle and facility safety, was prepared by the Transportation Systems Center (TSC). In addition, a draft Federal Register Notice was prepared for UMTA requesting comment on the Guidelines. The Notice presents the background, scope and an outline which contains the following four basic elements: (1) emergency plan development, (2) training, (3) facilities and equipment, and (4) vehicles. Summaries of the guidelines for each of these four elements are included in the Notice.

SOURCE: TSC, Safety & Security Division, DTS-65.

### **Fire and Life Safety**

A number of fire and life safety R&D projects were conducted during 1983. Included were the following:

- The UMTA Fire and Life Safety Training Steering Committee met to designate a Task Force which will develop a training program for transit and fire service personnel. The steering committee is composed of representatives from the American Public Transit Association

# AVIATION

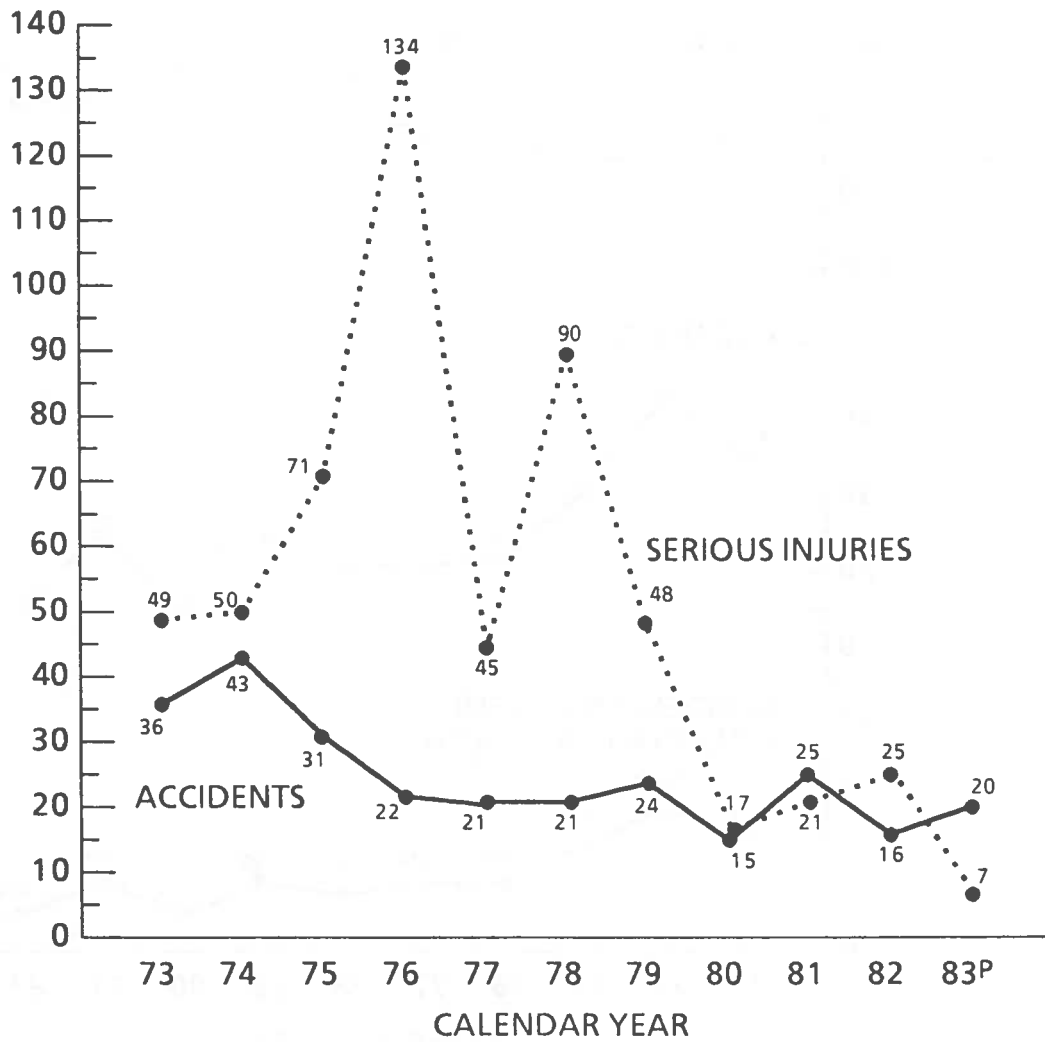
Beginning in January 1982, the National Transportation Safety Board began reporting aviation accident data according to the Federal Aviation Regulations under which the aircraft was operated at the time of an accident. Revenue operations of Air Carriers, Commercial Operators and deregulated All Cargo Carriers, using large aircraft, are conducted under 14 CFR 121. Commuter Air Carriers' (scheduled) and On-Demand Air Taxi Operators (unscheduled) revenue operations (using small aircraft) are conducted under 14 CFR 135. Accidents involving flights not being conducted under either 14 CFR 121 or 14 CFR 135 are grouped by the Safety Board into the "General Aviation" category. It is anticipated that classifying aviation accidents according to the operating rules will better serve aviation safety because they set the minimum levels of such safety-related areas as pilot experience, flight and duty time, and maintenance of aircraft. Further exposure data now obtained from the CAB will be obtainable in less and less detail until the CAB's demise, at which time much of this data will be obtained from the FAA. Therefore, it is appropriate to begin using FAA definitions of such terms as air carriers and general aviation.

## AIR CARRIER

- In contrast with 1982 when 153 persons died in the July 9 takeoff crash near New Orleans, the highest airline fatality toll last year was ten in the en route crash on an Air Illinois Hawker-Siddeley 748 at Pinckneyville, Illinois. The total of 15 fatalities in all scheduled service was a dramatic reduction in the toll of 235 in 1982.
- The airlines' four fatal accidents in scheduled service last year produced a rate of 0.061 fatal accidents per 100,000 aircraft hours flown, or 6.1 per 10 million hours. There were 20 total accidents, however, as compared with 16 in 1982, for a 1983 rate of 0.306 total accidents per 100,000 hours.
- Commuters had only 17 total accidents, two of them fatal, last year. There had been 27 and five, respectively, in 1982. Fatalities dropped from 14 to 11. The rate of 0.78 total accidents per 100,000 departures -- the rate most often used to measure commuter safety -- was 41 percent lower than in 1982, and the fifth successive annual decline in that rate. The rate of 0.09 fatal accidents per 100,000 departures was a 64 percent reduction from the 1982 rate, and an 82 percent reduction since 1981.
- On-demand air taxis had 141 accidents, up from 133 in 1982. Twenty-eight were fatal accidents, a reduction of two, and the fatality toll of 60 was down ten from 1982. The results were rates of 4.55 total accidents per 100,000 aircraft hours, up 12 percent, and 0.90 fatal accidents per 100,000 hours, down 2 percent.

# CHART 17.

## ACCIDENTS AND SERIOUS INJURIES FOR U.S. CARRIERS, OPERATING UNDER 14 CFR 121 ALL SCHEDULED SERVICE (AIRLINES\*) 1973 - 1983



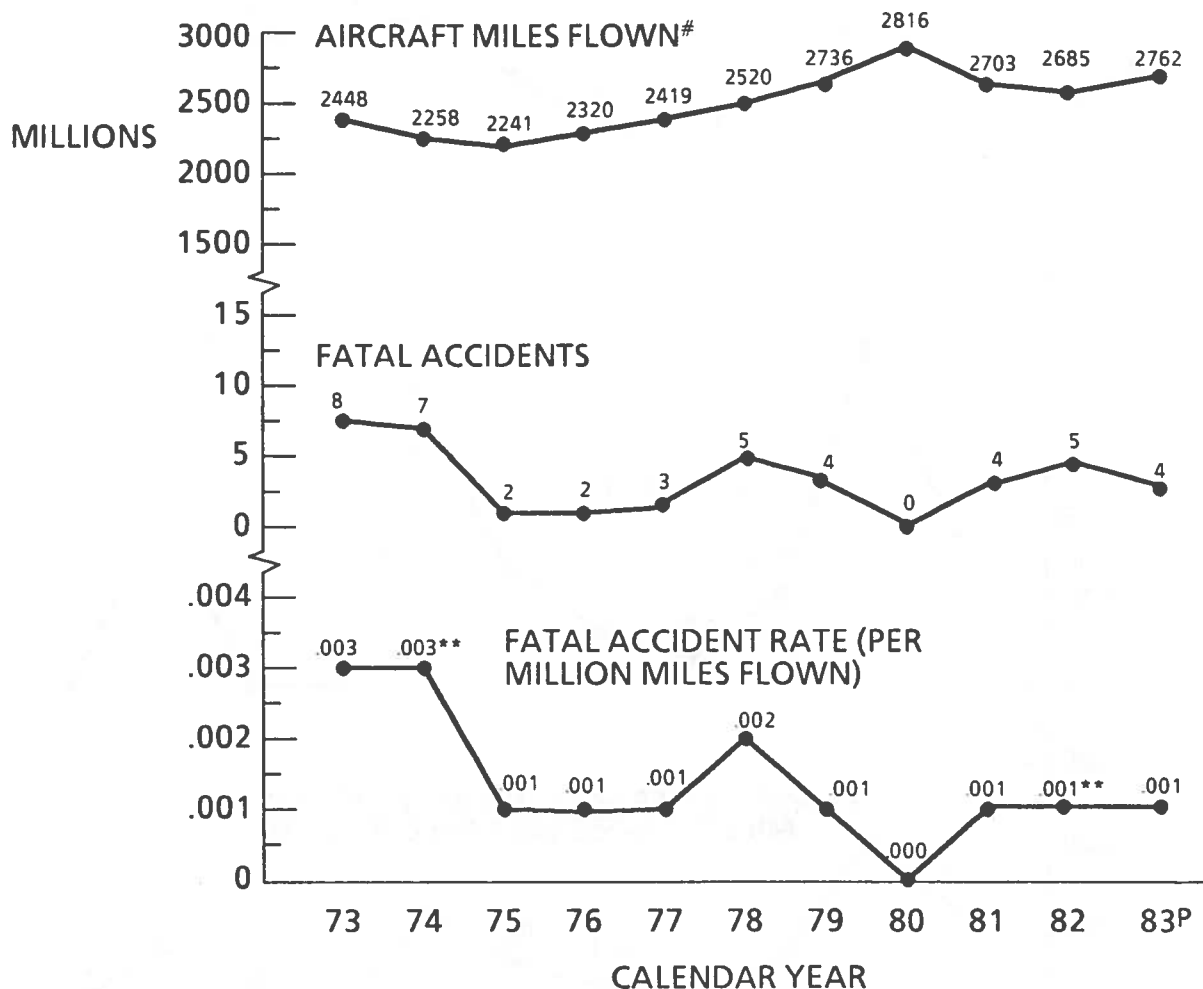
P = Preliminary.

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

SOURCE: NTSB, Safety Studies & Analysis Division, SP-10

# CHART 19.

## FATAL ACCIDENT RATES FOR U.S. AIR CARRIERS OPERATING UNDER 14 CFR 121 ALL SCHEDULED SERVICE (AIRLINES\*) 1973 - 1983



P = Preliminary.

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

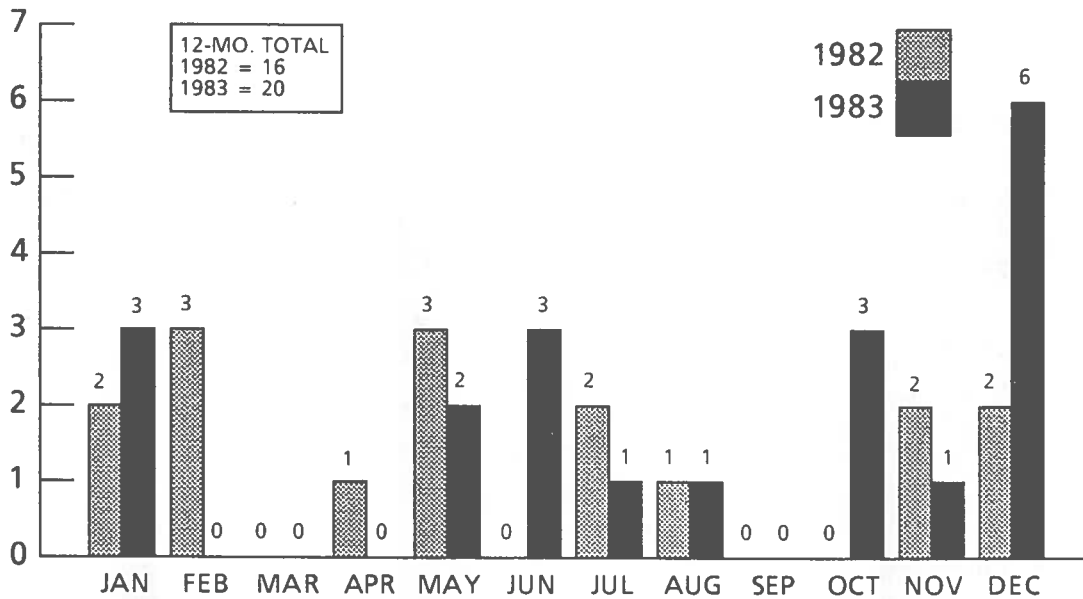
\*\* Sabotage accidents not included in rate computation.

# Source of data: CAB.

SOURCE: NTSB, Safety Studies & Analysis Division, SP-10.

## CHART 21.

### U.S. AIR CARRIER\* ACCIDENTS, 1982-1983

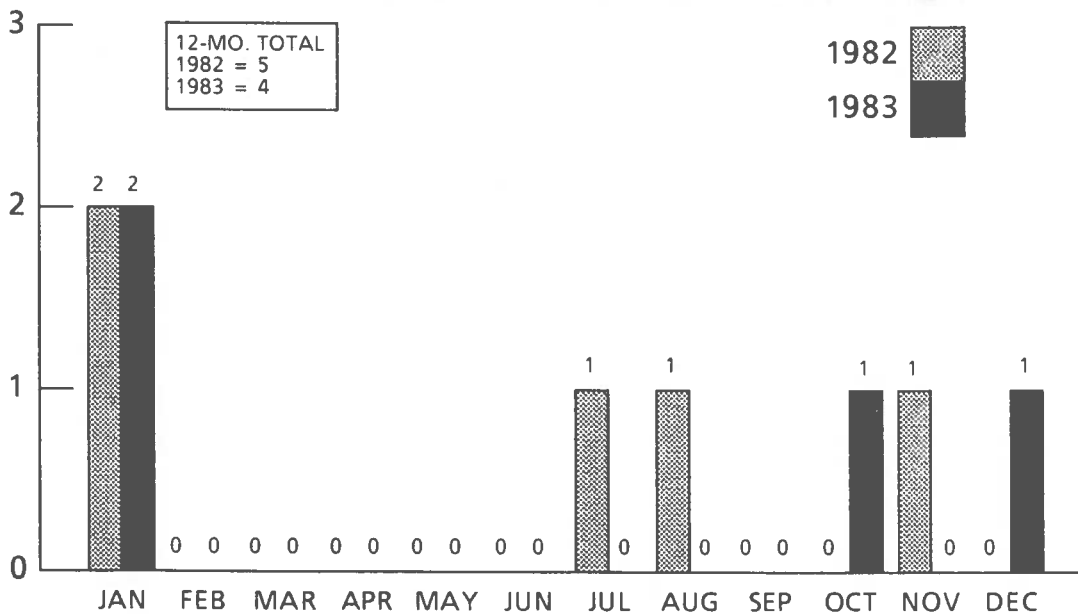


\* Large carriers operating under 14 CFR 121, all scheduled operations.

SOURCE: NTSB, Safety Studies and Analysis Division, SP-10.

## CHART 22.

### U.S. AIR CARRIER\* FATAL ACCIDENTS, 1982-1983

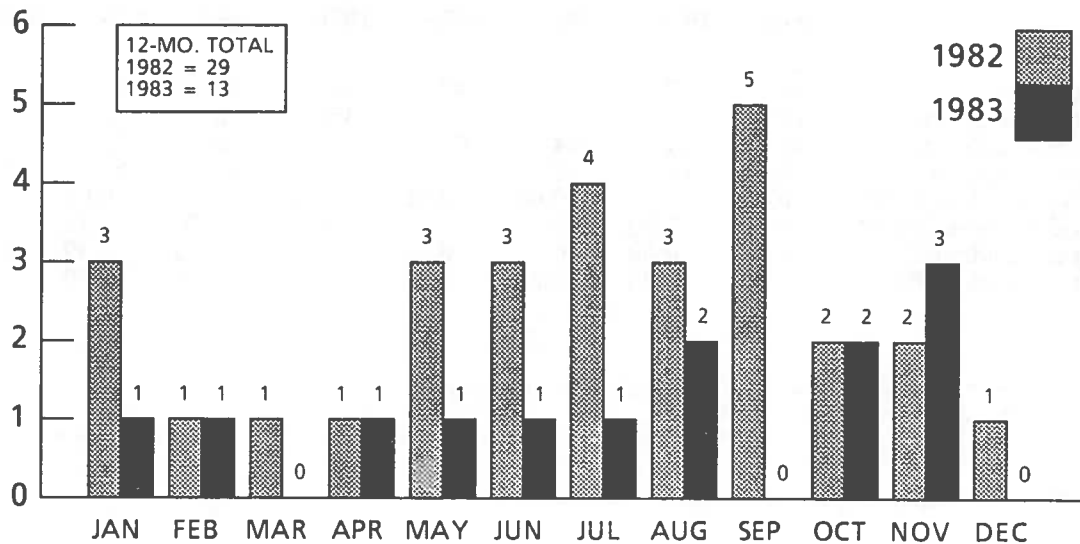


\* Large carriers operating under 14 CFR 121, all scheduled operations.

SOURCE: NTSB, Safety Studies and Analysis Division, SP-10.

## CHART 24.

### U.S. CIVIL AVIATION MID-AIR COLLISION ACCIDENTS\*, 1982 - 1983

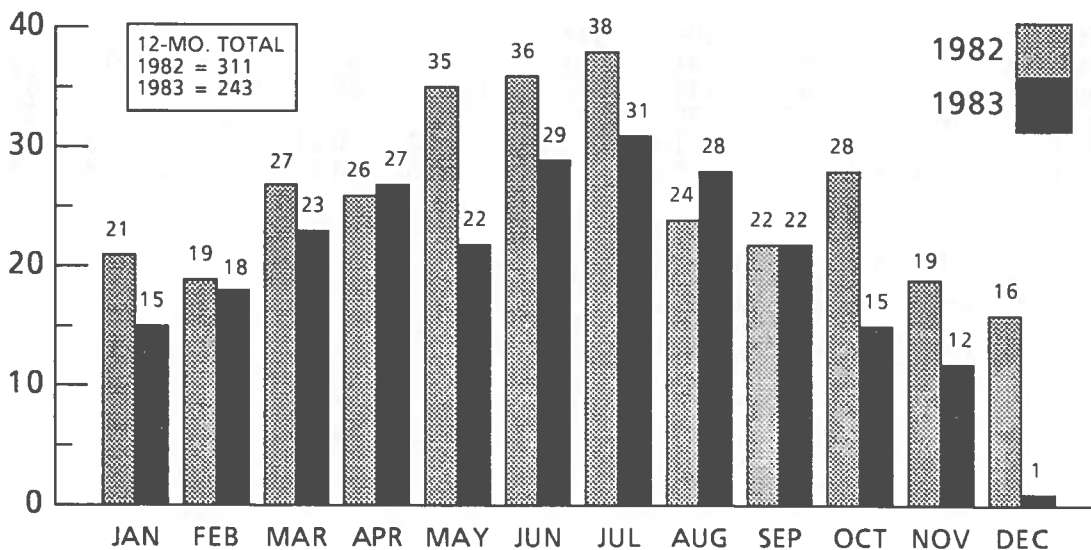


\* Both Aircraft Airborne, Includes General Aviation and Air Carrier.

SOURCE: NTSB, Safety Studies & Analysis Division, SP-10.

## CHART 25.

### U.S. CIVIL AVIATION NEAR COLLISIONS\*, 1982 - 1983



\* Both Aircraft Airborne, Includes General Aviation and Air Carrier.

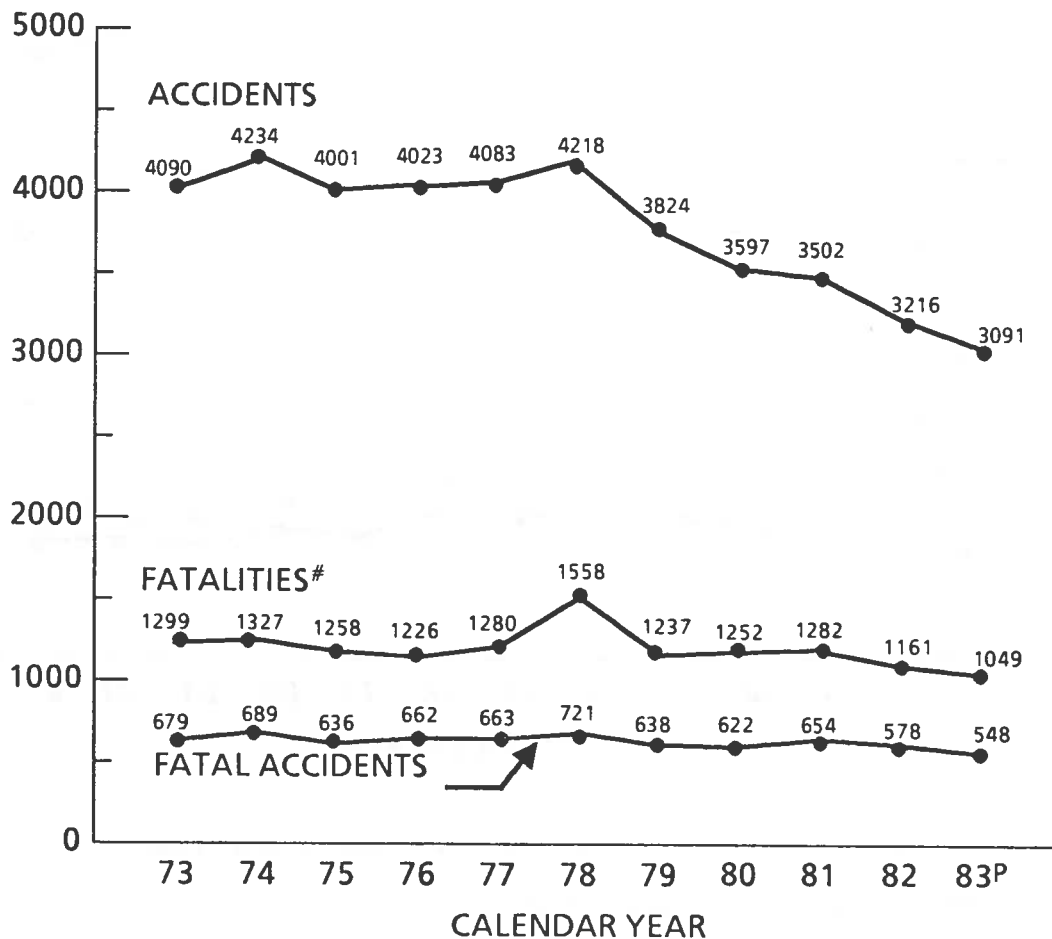
SOURCE: FAA, Safety Analysis Division, ASF-200.

## GENERAL AVIATION

- Except for a fractionally lower fatal accident rate in 1979, General Aviation last year recorded new lows in every accident total and rate. There were 3,091 total accidents, down from 3,216. Fatal accidents dropped from 578 to 548, or 5 percent, and fatalities were down from 1,161 to 1,049.
- General Aviation's rate of 9.4 total accidents per 100,000 aircraft hours was down 6 percent from 1982, and was the lowest ever. Last year's rate of 1.67 fatal accidents per 100,000 hours flown was a 7 percent reduction from 1982; only the 1.65 rate in 1979 was lower.

### CHART 26.

**U.S. GENERAL AVIATION\* ACCIDENTS, FATALITIES,  
AND FATAL ACCIDENTS, 1973 - 1983**



<sup>P</sup> = Preliminary.

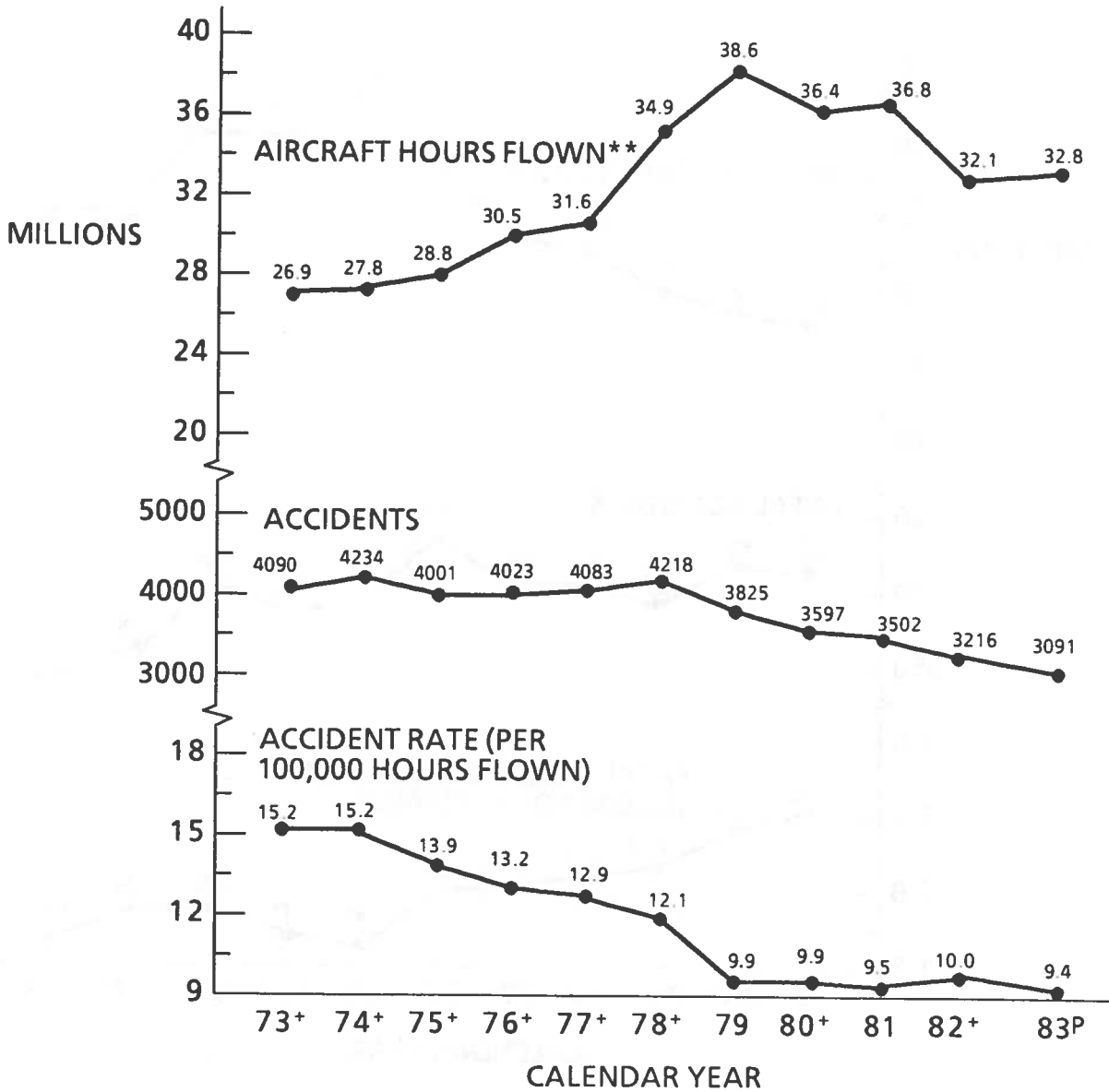
\* All operations other than those operated under 14 CFR 121 and 14 CFR 135.

# Includes air carrier fatalities when in collision with General Aviation aircraft.

SOURCE: NTSB, Safety Studies & Analysis Division, SP-10.

# CHART 28.

## U.S. GENERAL AVIATION\* ACCIDENTS AND RATES 1973-1983



P = Preliminary.

\* All operations other than those operated under 14 CFR 121 and 14 CFR 135.

\*\* Source of estimate: FAA.

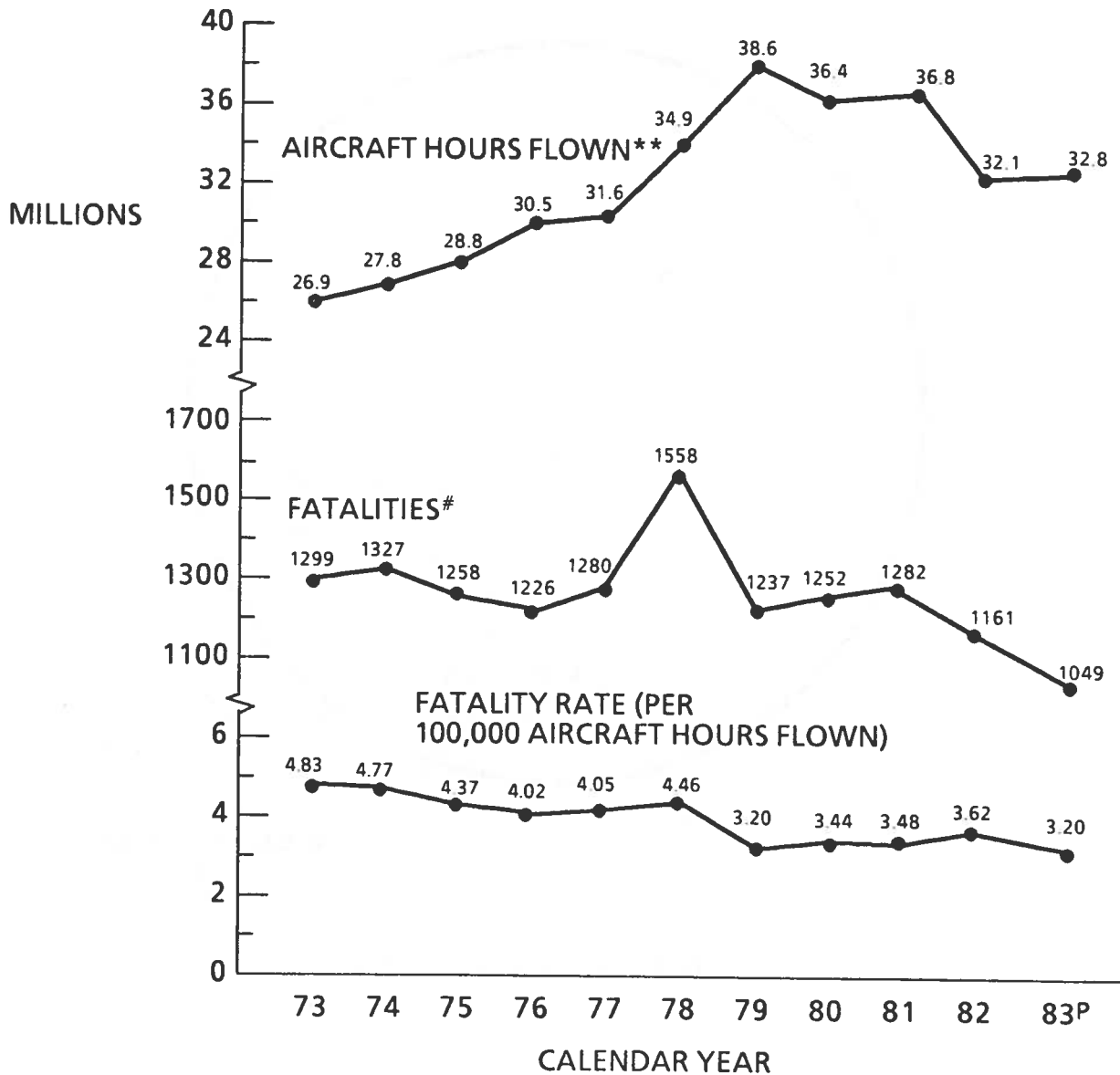
+ Suicide/sabotage accidents included in all computations except rates (1973 - 2, 1974 - 2, 1975 - 2, 1976 - 4, 1977 - 1, 1978 - 2, 1980 - 1, 1982 - 3).

SOURCE: NTSB, Safety Studies & Analysis Division, SP-10.



# CHART 30.

## U.S. GENERAL AVIATION\* FATALITIES AND RATES 1973 - 1983



P = Preliminary.

\* All operations other than those operated under 14 CFR 121 and 14 CFR 135.

\*\* Source of estimate: FAA.

# Includes air carrier fatalities when in collision with General Aviation aircraft.

SOURCE: NTSB, Safety Studies & Analysis Division, SP-10.

## **MODAL SAFETY HAZARDS**

### **Pan American World Airways Flight 759 at New Orleans International Airport**

About 1609 c.d.t., July 9, 1982, low level wind shear conditions had been detected by the Low Level Wind Shear Alert System (LLWSAS), and the system had alarmed several times, the last time about four minutes before the takeoff of Flight 759. The system was not alarming at the time the takeoff clearance was issued; however, a wind shear advisory was broadcast two seconds after the accident.

Flight 759 climbed to an altitude of 100 to 150 feet before it began to descend. The airplane crashed into a residential area 4,610 feet from the end of the runway and was destroyed upon impact; an explosion and ground fire occurred after impact. One hundred and forty-five persons on board and eight persons on the ground were killed in the crash. Six houses were destroyed and five were damaged substantially.

Other aircraft accidents for which wind shear was a factor include: (1) Trans World Airlines Boeing 727 on July 28, 1982, at LaGuardia Airport, New York; (2) Braniff Airways B-727 on November 1980 at Newark International Airport; and (3) Eastern Airlines B-727 at Atlanta, Georgia, on August 22, 1979. Detailed NTSB recommendations concerning these three accidents are contained in NTSB Safety Recommendation(s) A-83-13 through A-83-26 dated March 25, 1983.

NTSB recommendation A-83-13 and the FAA response are reproduced below:

- A-83-13: Review all Low Level Wind Shear Alert System (LLWSAS) installations to identify possible deficiencies in coverage similar to the one resulting from the inoperable west sensor at New Orleans International Airport and correct such deficiencies without delay.
- FAA Comment: The FAA has placed the LLWSAS on the National Airspace Performance Reporting System list which means that all deficiencies must be reported and repairs accomplished on a priority basis. The west sensor at New Orleans International Airport has been replaced with a ruggedized sensor with no moving parts which should reduce its vulnerability to vandalism.

FAA responses to NTSB recommendations A-83-14 to A-83-26 are available from FAA and are contained in a memorandum of July 21, 1983, to NTSB. Research and analysis of the wind shear problem will continue as reflected in the aforementioned July 21, 1983 memorandum.

SOURCES: NTSB Recommendation: NTSB, Economics Division  
FAA Response: Special Programs Division ASF-300

### **Airworthiness Safety Programs**

The FAA has increased its efforts and has focused its attention to several key areas of occupant survivability since the Air Florida crash of 1982. Some key elements are structural integrity of seat/restraint cabin interiors, fuel system protection, antimisting kerosene fuel, cabin fire hazards (both post-crash and in-flight), and emergency evacuation systems. Other elements related to the

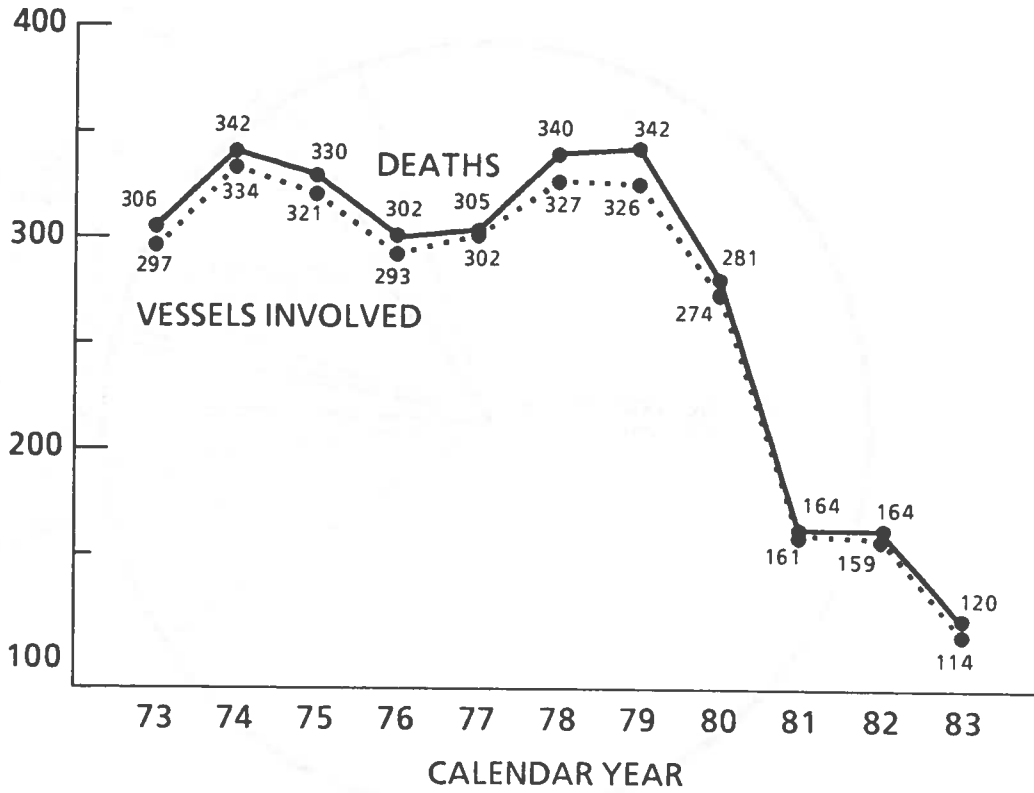
# **MARINE**

## **WATERBORNE**

- Preliminary statistics for 1983 show that 82 fatalities resulted from vessel casualties. In addition, 82 persons are listed as missing from the sinking of the GLOMAR JAVA SEA. When 1983 casualty data is complete, total death/missing statistics are expected to be slightly below the number of fatalities which occurred during 1982.
- Preliminary 1983 data indicates that an additional 82 accidental fatalities occurred onboard vessels. Of these, 33 (40 percent) resulted from falls overboard.
- In the preliminary data, 93 percent of all vessel losses were uninspected vessels. Fishing vessels accounted for the majority of these with 71.2 percent of the total. This percentage is not expected to change substantially when 1983 data is complete.
- Losses of major ocean-going merchant vessels were down from 1982. In 1982, three major losses occurred. In 1982, the GOLDEN DOLPHIN (44,881 GT) and POLING BROS. #9 (1,242 GT) suffered fire and explosion. The POINT MILTON (12,532 GT) was declared a constructive total loss after having sustained machinery failure. In 1983, two major losses occurred; the MARINE ELECTRIC (13,757 GT) and the GLOMAR JAVA SEA (5,930 GT).

# CHART 33.

## WATERBORNE TRANSPORTATION FATALITIES NOT RELATED TO VESSEL CASUALTIES 1973 - 1983

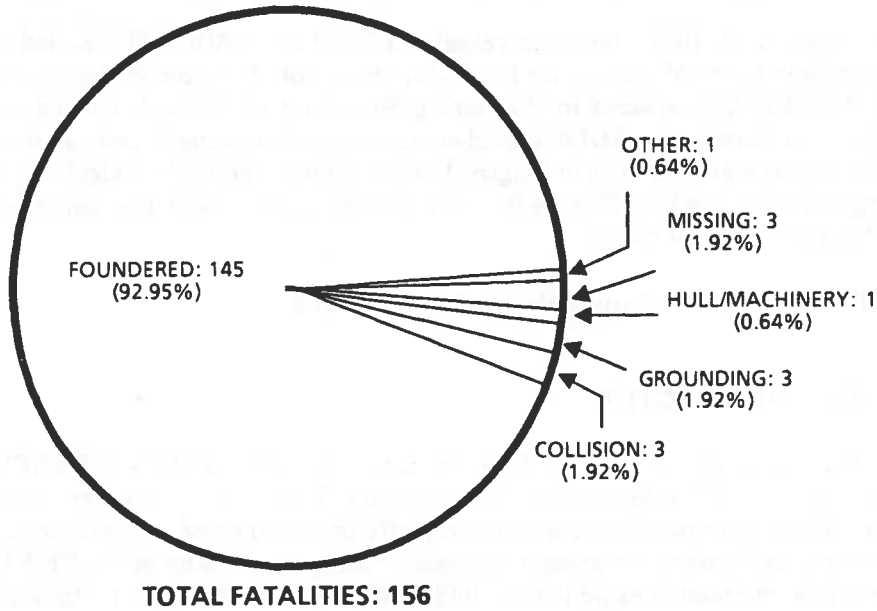


NOTE: 1982 and 1983 data are incomplete.

SOURCE: USCG, Marine Investigation Division, G-MMI.

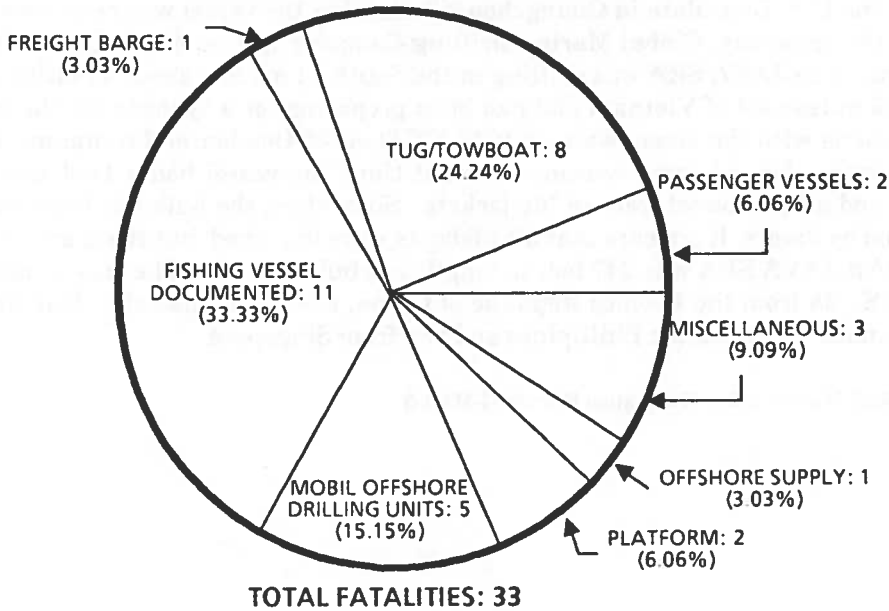
### CHART 35.

**FATALITIES RESULTING FROM TOTAL LOSS OF VESSELS, 1983**



### CHART 36.

**ACCIDENTAL DEATHS RESULTING FROM FALLS OVERBOARD (NO VESSEL CASUALTY), 1983**



SOURCE: USCG, Office of Merchant Marine Safety, G-MMI-3.

Data supplied as of 02/01/84.

## **Small Passenger Vessel SAN MATEO**

On February 17, 1983, the small passenger vessel SAN MATEO capsized in large waves as it attempted to cross the bar at Morro Bay, California. On board were two crew members, seven adult passengers and 23 children. All persons on board were rescued within 15 minutes by Harbor Patrol and Coast Guard units, with one significant injury reported. The SAN MATEO was built of wood in 1948, 46 feet in length, 14 gross tons and propelled by a diesel engine. The casualty is being investigated by a Marine Board of Investigation.

SOURCE: USCG, Marine Safety Evaluation Branch, G-MM1-3

## ***SAFETY PROGRAM HIGHLIGHTS***

### **Exposure Suits: Requirements for Mobile Offshore Drilling Units and Coastwise Vessels**

The Coast Guard published a Notice of Proposed Rulemaking in the Federal Register of February 3, 1983, proposing that exposure suits be required on most large commercial cargo ships, tankers, oceanographic vessels, and mobile offshore drilling units. The final regulations were published on February 7, 1984, and are effective August 6, 1984.

The regulations will apply to vessels and mobile offshore drilling units operating north of 35 degrees north and south of 35 degrees south latitude. These limits define an area where water temperature is usually below 60 degrees Fahrenheit and therefore presents a threat from hypothermia. In the warmer area between these two boundaries, some waters close to shore on the U.S. coasts can be below 60 degrees Fahrenheit at some times, but our data shows that the lowest mean monthly water temperature in these areas is about 56 degrees Fahrenheit. Since the 60 degrees Fahrenheit is only a guideline and not an absolute value for the onset of hypothermia, and since the colder waters are nearer shore and consequently nearer rescue, this should not create a problem.

An exemption was written into the final rule for cargo ships, tankers, and oceanographic vessels equipped with the most modern and efficient gravity davit and winch systems and totally enclosed lifeboats. This system allows boarding of the boat at the position in which it is stowed, and launching directly from that position using a control that is operated from the boat.

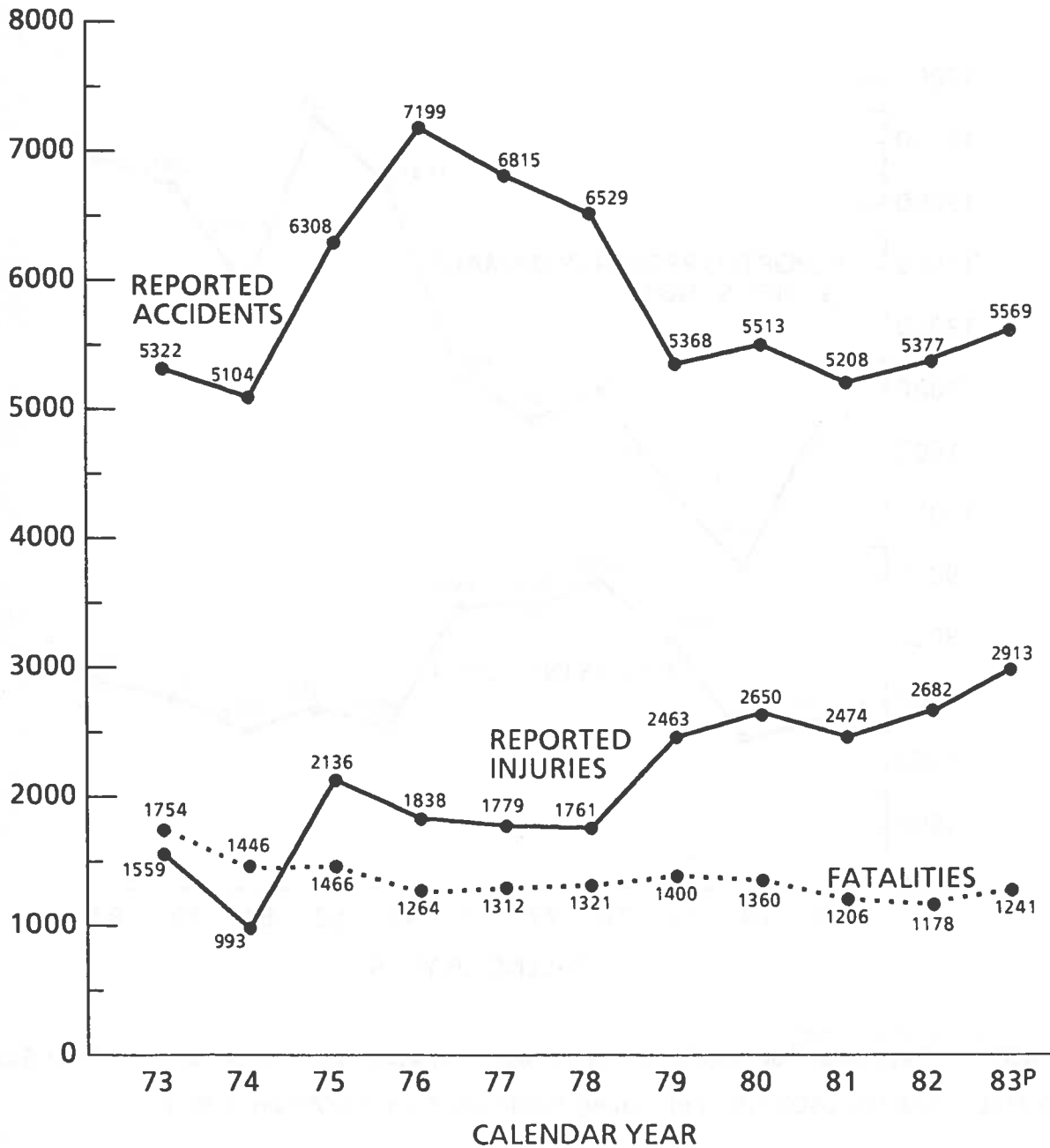
SOURCE: USCG, Marine Safety Evaluation Branch, G-MM1-3

## **RECREATIONAL BOATING**

- The number of recreational boating fatalities and the fatality rate per 100,000 estimated boats moved up in 1983 from the record low set in 1982. The number of fatalities increased 5.3 percent to 1,241, a number which is higher than the total fatalities in 1981. The fatality rate rose from 7.9 to 8.1 fatalities per 100,000 boats estimated. The increase may be attributed to greater boating activity in 1983 than in 1982 due to the improved national economy.
- The number of reported injuries rose to a record high for the second year in a row. Boaters reported 2,913 injuries, up 8.6 percent from the 2,682 in 1982.

# CHART 38.

## RECREATIONAL BOATING FATALITIES INJURIES, AND ACCIDENTS, 1973 - 1983



P = Preliminary.

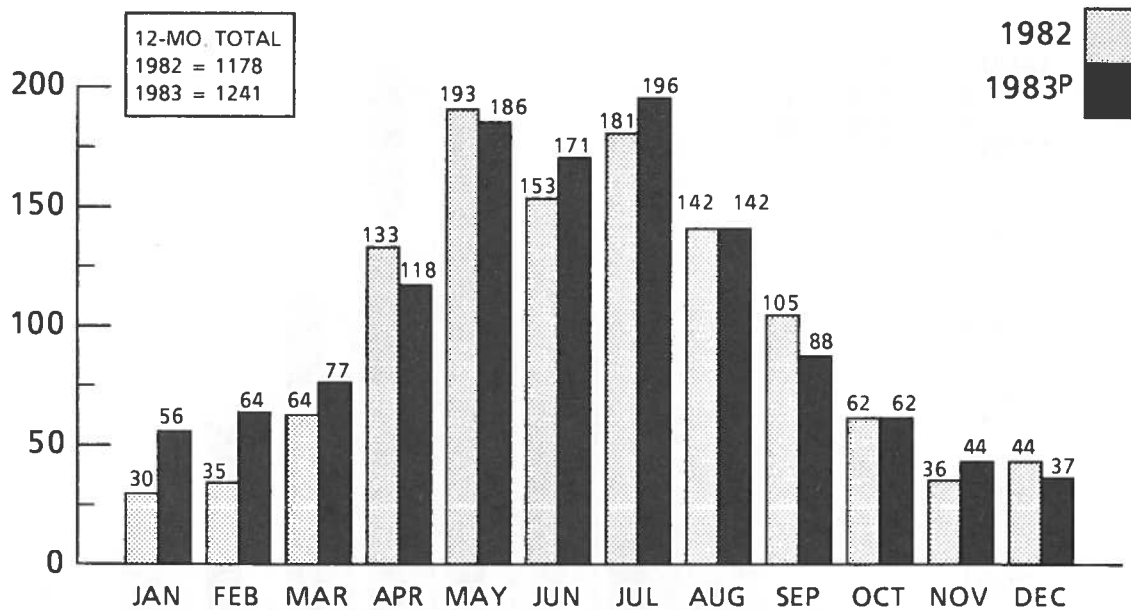
NOTE: Only a small fraction of property damages and non-fatal accidents are reported to the Coast Guard.

SOURCE: BAR File, USCG, Office of Boating, Public, and Consumer Affairs, G-BP-1.



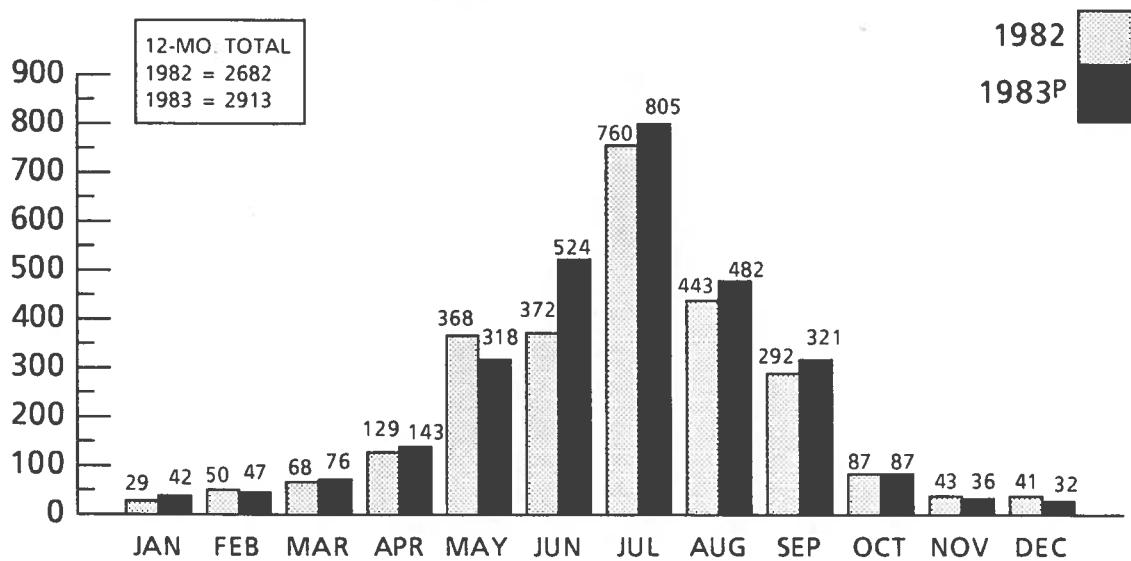
## CHART 40.

### RECREATIONAL BOATING FATALITIES, 1982-1983



## CHART 41.

### RECREATIONAL BOATING INJURIES, 1982 - 1983



P = Preliminary.

SOURCE: BAR File, USCG, Office of Boating, Public, and Consumer Affairs, G-BP-1.

## **MODAL SAFETY HAZARDS**

### **Carbon Monoxide Poisoning**

Most boaters are aware of the usual dangers of carbon monoxide poisoning while traveling in their cars. However, many may not realize that they are also in danger while they are boating. The poisoning usually occurs when heaters are burning improperly in a closed cabin or when the engine exhaust fills the cabin while idling.

However, there are other ways that poisoning can occur. One of the ways is by the air turbulence created behind a moving boat. The turbulence catches the engine exhaust and pushes it back toward the boat. If there is an open window or door, the exhaust will enter the cabin.

There was a different sort of accident recently that resulted in the boat running aground.

An ocean fisherman was nearly home after a good day's catch. On the way the exhaust pipe had sprung a leak. After shutting off the engine, the fisherman wrapped the pipe in what was available, an old rag. He tested the wrapping awhile with the engine running and noticed no exhaust from the leak. However, he was just a few hundred yards from shore when he passed out. Without an operator the boat ran aground on the beach. The fisherman was treated for carbon monoxide poisoning in a hospital.

The man in the story seemed to know that the engine exhaust was dangerous. He noticed no exhaust in the form of odor or smoke coming from the leak. The rag was effective in that way. However, carbon monoxide is odorless and colorless. He had no way of knowing that it was present. Operators of boats should be sure that the engine exhaust is properly dissipated behind their boats.

SOURCE: USCG, Office of Boating, Public & Consumer Affairs, G-BP-1

### **Alcohol**

Two men and a woman were heading toward their homes across the bay at nine o'clock on a summer night, each having consumed a considerable amount of beer. Their boat, a 21 foot runabout, was moving at thirty knots without its running lights on. Midway across the bay a 35 foot cabin cruiser was heading in the opposite direction. Its running lights were on. It was traveling over 20 knots. Even as the two boats came closer, nearly bow on, the occupants of the small boat, engrossed in conversation, failed to notice the larger boat. It was too late by the time the operator of the cruiser saw the unlighted runabout. His evasive action did not avoid the collision because both boats turned in the same direction.

The runabout was demolished as the cruiser ran completely over it. The two men were killed in the crash, while the woman was thrown out of the boat and discovered floating in the bay on the next day. The water patrol found many empty beer cans in the bottom of the runabout. The blood alcohol content of the two men were found to be 0.18% and 0.13% at the hospital where they were taken. Both were over the amount which legally defines operating a car under the influence of alcohol in their state.

SOURCE: USCG, Office of Boating, Public & Consumer Affairs, G-BP-1

between the Federal Government and the States in developing, administering and enforcing Federal and State laws and regulations pertaining to boating safety. This authority is now included in Chapter 131 of Title 46 United States Code. This statute provides for distribution of funds to eligible States to assist them in developing, carrying out and financing State recreational boating safety and facilities improvement programs. Approximately twelve million dollars were distributed to the States in Fiscal Year 1983 for boating safety programs; twelve and one half million are being distributed in Fiscal Year 1984.

The law also provides that up to five percent of the total funds available may be awarded to national, nonprofit, public service organizations for national boating safety activities. Up to \$625,000 is available for "5%" grants in Fiscal Year 1984. The use of alcohol while boating is one of the project areas the Coast Guard will pursue with these grants.

SOURCE: USCG, Office of Boating, Public & Consumer Affairs, G-BP-1

### **Alcohol and Boating**

Alcohol's adverse impact on all forms of transportation has increasingly been identified as a serious problem. Although the problem on the highways is the most well-known, a problem also exists in recreational boating. The U.S. Coast Guard and others concerned with recreational boating safety are putting more effort into public awareness of the dangers of mixing boating and alcohol.

"THINK - before you drink...Be a responsible boat operator" is the theme of National Safe Boating Week this year. National Safe Boating Week, the first full week in June, is sponsored by the National Safe Boating Council, Inc. The council consists of thirty-four organizations in the USA and Canada concerned with recreational boating. The council will distribute approximately five thousand safety information packets to the chairpersons of the local committees that are organizing observances for National Safe Boating Week.

The Coast Guard has produced public service announcements on the subject of alcohol. Approximately a thousand radio stations and three to five hundred television stations are expected to put the ads on the air before the summer boating season.

The state, industry and public members of the National Boating Safety Advisory Council will review the safety problems posed by boaters' use of alcohol. The National Association of State Boating Law Administrators is drafting a model state act addressing boat operation while intoxicated. The Coast Guard's National Boating Safety Course for State boating officers is making them more aware of the potential contributions of alcohol to accidents. The Coast Guard also supports and encourages public organizations in their work.

The Coast Guard assists boating writers and educators in writing and teaching about alcohol. It also helps boating law administrators in the states in working with their state legislators to tackle the problem. The Coast Guard Auxiliary will include alcohol material in its safety courses.

Expect to see and hear more about the dangers of operating a boat while under the influence of alcohol.

SOURCE: USCG, Office of Boating, Public & Consumer Affairs, G-BP-1

# **MATERIALS TRANSPORT**

## **PIPELINES**

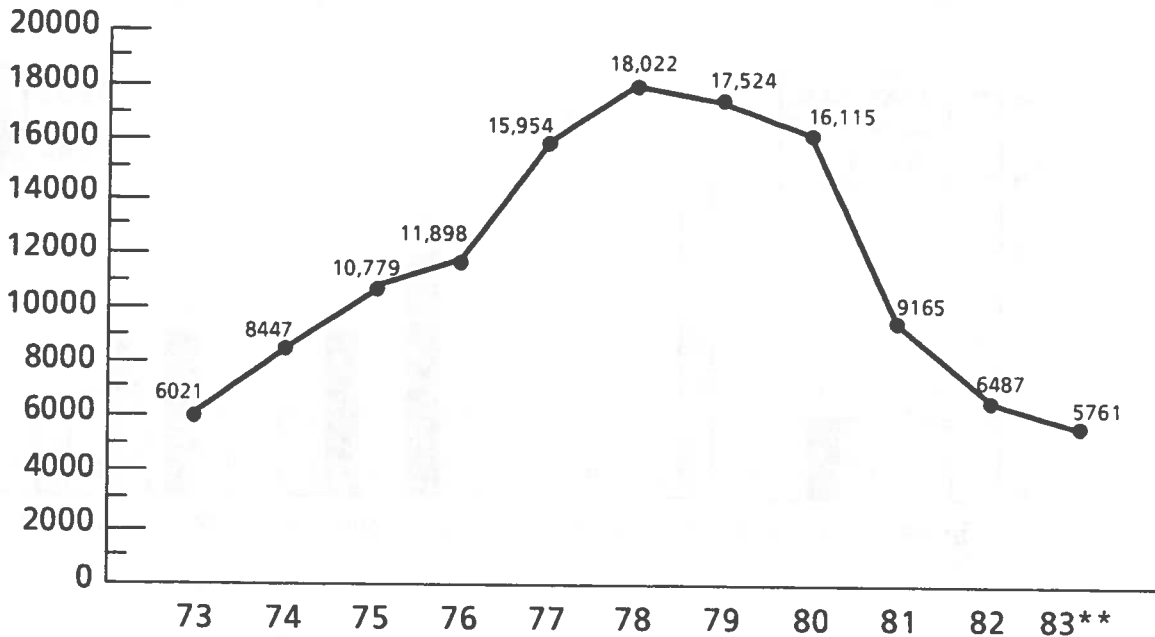
- The number of gas and liquid pipeline fatalities decreased from 31 in 1982 to 18 in 1983. Gas pipeline fatalities were 12 while liquid pipeline fatalities totaled 6 in 1983.
- The number of reported gas pipeline leaks/failures decreased from 1,711 in 1982 to 1,580 in 1983. Liquid pipeline leaks/failures decreased from 200 in 1982 to 161 in 1983.

## **HAZARDOUS MATERIALS**

- Reported Hazardous Materials incidents declined from 6,487 in 1982 to 5,761 in 1983. Changes in reporting requirements, effective January 1, 1981, exclude, with some exceptions, incidents involving consumer commodities, wet storage batteries, or paint, enamel, lacquer, stain, shellac, etc., in packaging of five gallons or less. Increased emphasis on report review at time of submission is eliminating data entry of unregulated incidents.
- Hazardous Materials related fatalities decreased from 12 in 1982 to 8 in 1983.

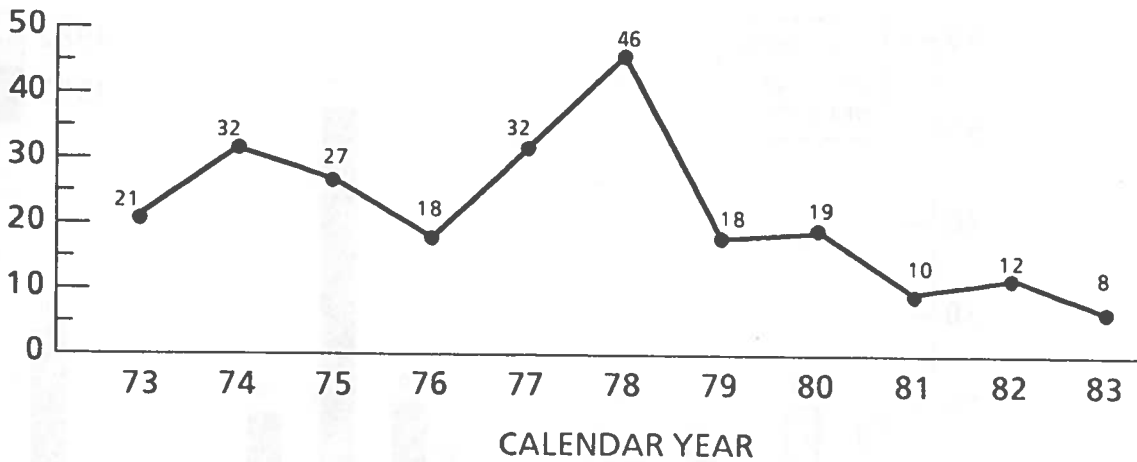
## CHART 44A.

### HAZARDOUS MATERIALS INCIDENTS, 1973 - 1983\*



## CHART 44B.

### HAZARDOUS MATERIALS FATALITIES, 1973 - 1983



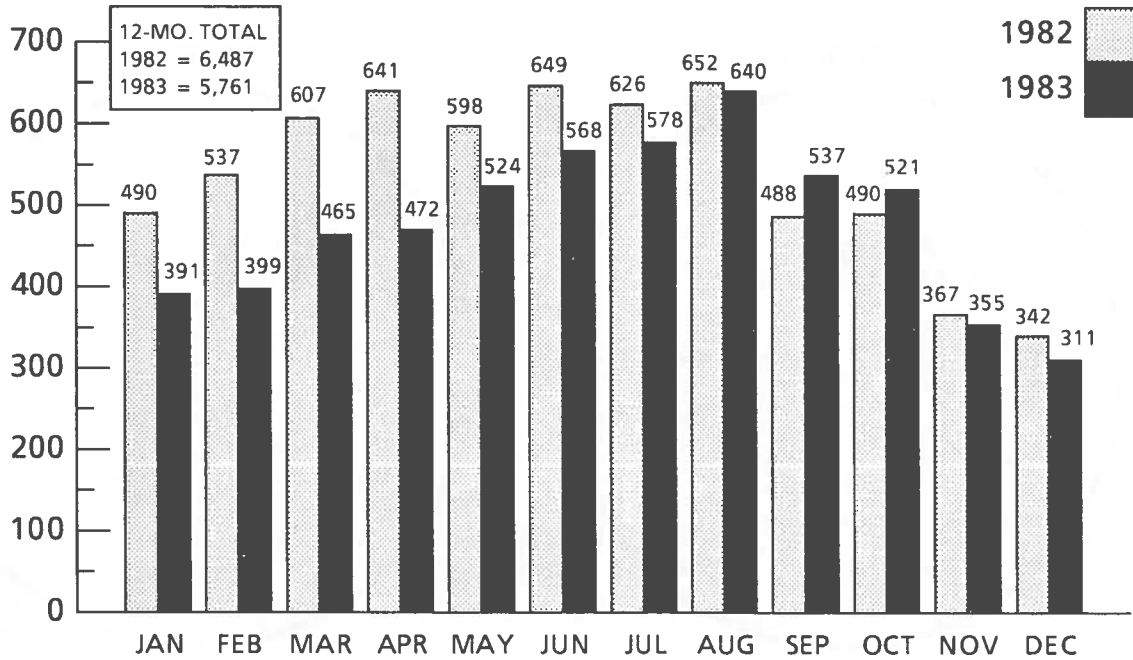
\* Effective January 1, 1981, the reporting requirements were changed to exclude incidents involving consumer commodities, wet electric storage batteries, or paint, enamel, lacquer, stain, shellac, etc., in packaging of 5 gallons or smaller unless the incident results in death, injury or property damage over \$50,000; the material is being transported by air or the material is classified as a hazardous waste.

\*\* Hazardous Materials incidents are reported in the year in which they occurred.  
NOTE: Data supplied as of 01/31/84.

SOURCE: RSPA, Hazardous Materials Information Systems, DMT-63.

# CHART 47.

## HAZARDOUS MATERIALS INCIDENTS, 1982-1983

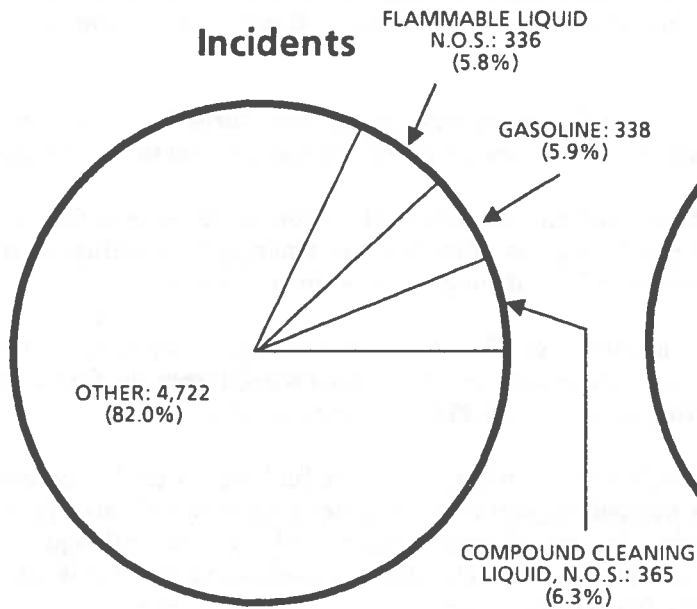


SOURCE: RSPA, Hazardous Materials Information Systems, DMT-63.

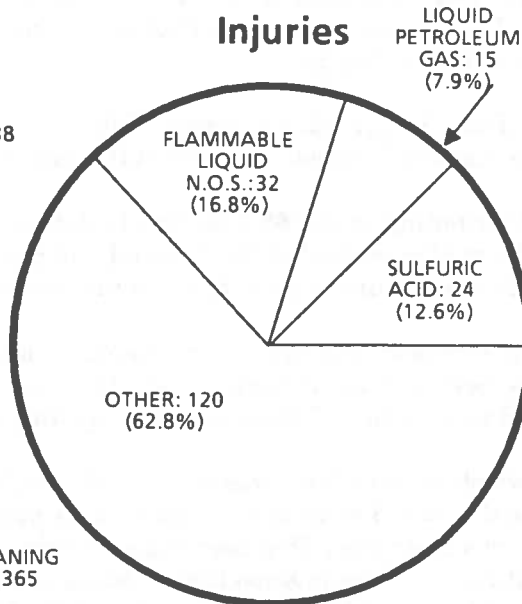
Data supplied as of 01/31/84

# CHART 49.

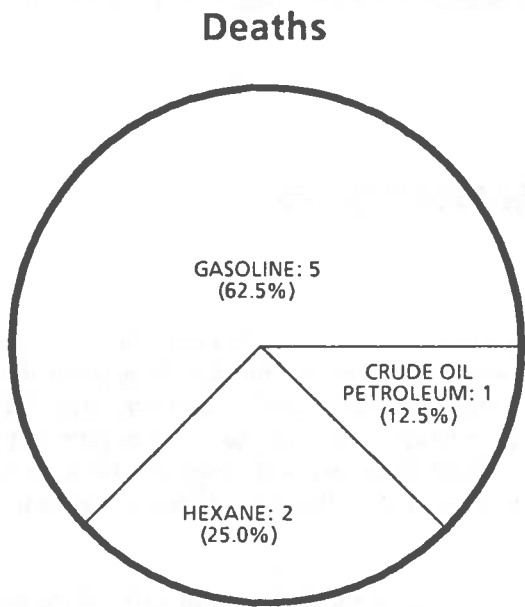
## HAZARDOUS MATERIALS INCIDENTS, INJURIES, DEATHS, AND DAMAGES BY COMMODITY, 1983



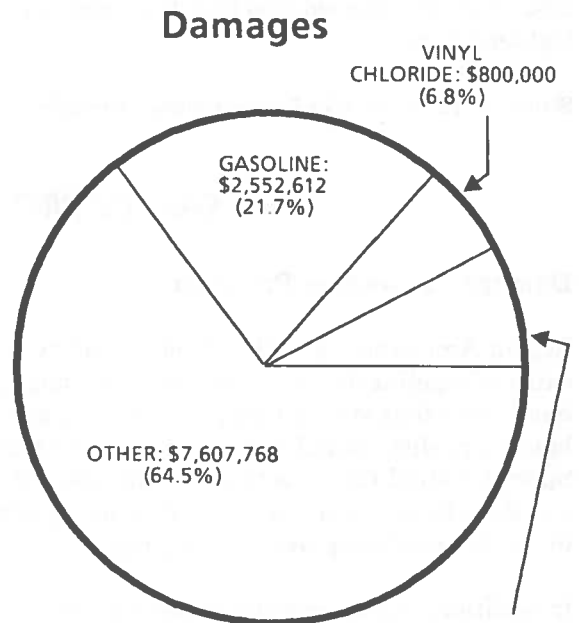
TOTAL INCIDENTS: 5,761



TOTAL INJURIES: 191



TOTAL DEATHS: 8



TOTAL DAMAGES: \$11,791,572

NOTE: N.O.S. = Not Otherwise Specified.

Data supplied as of 01/31/84.

SOURCE: RSPA, Hazardous Materials Information Systems, DMT-63.

# **MAJOR DOT SAFETY REGULATIONS**

**JANUARY 1, 1983 - DECEMBER 31, 1983**

The actions below are summarized from the final rules and regulations published in the Federal Register (FR) during the period covered by this report. These regulations amend the designated titles and sections of the Code of Federal Regulations (CFR).

## **U.S. COAST GUARD**

### **46 CFR Parts 4, 26, 35, 78, 97, 109, 167, 185, 196, and 197 -- Casualty Reporting Requirements**

Amends 46 CFR Parts 4, 26, 35, 78, 97, 109, 167, 185, 196, 197 to reflect new reporting requirements for marine casualties. Implements new reporting form which replaces two separate forms. Will be published as an interim final rule. Effective date September 23, 1983. (48 FR 43328, September 23, 1983.)

### **33 CFR Part 146 -- Casualty Reporting Requirements**

Amends 33 CFR 146 to reflect new reporting requirements of marine casualties. Implements new reporting form which replaces two separate forms. Effective date September 22, 1983. (48 FR 43173, September 22, 1983.)

### **83 CFR Part 181 -- Identification, Boat Hull Numbers**

This rule amends the regulations concerning boat hull identification numbers in Subpart C of Part 181. During past recall campaigns, altered or removed hull identification numbers reduced the effectiveness of the recall causing an adverse impact on boating safety. These amendments make alteration or removal of the hull identification number (HIN) more difficult and require the placement of an additional HIN which will enable identification of the boat even if the primary HIN is altered or removed. These amendments also clarify certain ambiguities in the hull identification number regulations. These changes will ensure that a manufacturer responsible for repairing a defective or noncomplying boat can be identified and that each boat remains uniquely identified with the number assigned by its manufacturer. Effective date August 1, 1984. (48 FR 40716, September 9, 1983.)

### **33 CFR Part 164 -- Confined or Congested Waters**

This final rule eliminates the special operating requirements for vessels 1600 gross tons or more when operating in "confined or congested waters". The deleted requirements never became effective, as a list of "confined or congested waters" has never been published. Effective date August 29, 1983. (48 FR 34259, July 28, 1983.)



#### **14 CFR Part 39 -- Airworthiness Directives; Detroit Diesel Allison (DDA) 250-C30, -C30P, and C-30S Engines**

This amendment amends an existing AD which requires mandatory inspection of all P/N 6898694 fourth-stage nozzles in certain turbine assemblies on DDA 250-C30 engines. This amendment is needed to expand the compliance requirements to the C30P and C30S engines, and because the FAA has determined that the inspection criteria and turbine assembly applicability in the existing AD are inadequate for determining which P/N 6898694 nozzles are subject to cracks. These cracks could possibly lead to uncontained turbine wheel failures and subsequent damage to aircraft. Effective date September 26, 1983. (48 FR 38809, August 26, 1983.)

#### **14 CFR Part 39 -- Airworthiness Directives; McCauley Accessory Division 2A34C66 and E2A34C73 Constant Speed Propellers**

This amendment adopts a new AD which requires a one-time inspection of the propeller blades for scratches or cracks in the retention threads on certain McCauley 2A34C66 and E2A34C73 series propellers. The AD is needed to prevent possible blade retention failure which could result in engine separation from the aircraft. Effective date November 3, 1983. (48 FR 54588, December 6, 1983.)

#### **14 CFR Part 39 -- Airworthiness Directives: Piper Model PA-34-200 Airplanes**

This amendment adopts a new AD which requires modification, inspection and, if necessary, replacement of the heat exchanger/tailpipe assembly on certain Piper Model PA-34-200 airplanes. Failures of the internal cone shaped baffle have occurred on the airplanes which caused significant loss of power. The inspection of the heat exchanger/tailpipe assembly will detect impending failures and prevent engine power loss. Effective date July 20, 1983 (48 FR 32162, July 14, 1983.)

#### **14 CFR Part 183 -- Designated Airworthiness Representatives**

This amendment to Part 183 of the Federal Aviation Regulations (FAR) establishes the designated Airworthiness Representatives (DAR) as a new category of person appointed, under Section 314 of the Federal Aviation Act (FA Act) of 1958, to act as representatives of the Administrator in performing certain certification functions under Title VI of the FA Act. This amendment expands the FAA designee program into new areas of delegation not previously provided for in Part 183. The expanded delegations were necessary since the delegations previously authorized by Part 183 constrained the FAA's ability to deal with the proliferation of requests for FAA examination, inspection, and testing services necessary to the issuance of certificates, including the issuance of certificates, under Title VI of the FA Act. This amendment enables FAA to use its fiscal and human resources in a more effective manner to meet safety objectives. In addition, the amendment eases the burden of regulation on the public by expediting accomplishment of required demonstrations of compliance with applicable airworthiness standards and reduces or eliminates certain delays in obtaining required certifications. Effective date May 16, 1983. (48 FR 16176, April 14, 1983.)

## **FEDERAL HIGHWAY ADMINISTRATION**

#### **49 CFR Part 391 -- Qualifications of Drivers; Handicapped Driver Waiver Program**

The FHWA is amending the Federal Motor Carrier Safety Regulations (FMCSR) to expand the current Handicapped Driver Waiver Program (hereafter referred to as the Waiver Program) to include operations of hazardous materials-laden and passenger-carrying vehicles. This amendment is being adopted because accident statistics do not indicate that drivers who have suffered the loss or impairment of a limb and who are granted waivers are less safe than nonhandicapped drivers.

comply with the existing tire registration requirements in Part 574. All other tire dealers and distributors must continue to comply with those requirements.

The prohibition regarding independent dealers and distributors is self-executing and became effective on the date of enactment, October 15, 1982. In place of the existing requirements, the amendment directed the Secretary of Transportation to require each of those dealers and distributors to furnish a registration form to each tire purchaser after the dealer or distributor has first filled in the tire identification number(s) of the tire(s) sold on the form.

Purchasers wishing to register their tires may then do so by filling in their name on the form and mailing the completed form to the tire manufacturer or brand name owner. Because the new statutory requirements regarding registration of tires sold by independent dealers and distributors are not self-executing, they do not affect those dealers and distributors until this agency has issued and put into effect a rule adopting those requirements. This rule accomplishes that result.

The Safety Act amendment also requires that the agency specify the format and content of the forms to be used in complying with the new requirements. This rule sets forth those specifications. Effective date June 20, 1983. (48 FR 22572, May 19, 1983.)

### **23 CFR Part 1209 -- Incentive Grant Criteria for Alcohol Traffic Safety Programs**

This notice establishes criteria for effective programs to reduce crashes resulting from persons driving while under the influence of alcohol. This effort is undertaken pursuant to Pub. L. 97-364, which provides for two categories of federal incentive grants, basic grants and supplemental grants, to States that implement effective programs to reduce drunk driving. This final rule also sets forth the procedures a State must use to demonstrate it is eligible for a grant and the procedures NHTSA will use to award the grants. Effective dates February 7, 1983 and April 1, 1983. (48 FR 5545, February 7, 1983.)

### **40 CFR Part 571 -- Glazing Materials**

The purpose of this notice is to amend Safety Standard No. 205, Glazing Materials, to permit the installation of glass-plastic glazing as windshields and windows in motor vehicles and to establish appropriate performance requirements for such glazing. The existing requirements of the standard do not permit the use of glass-plastic glazing in areas necessary for driving visibility because the currently produced materials cannot meet the abrasion resistance requirements of the standard.

The agency has determined that glass-plastic glazing should be allowed because research data and limited field experience indicate that such glazing substantially reduces lacerative injuries when vehicle occupants strike windows and windshields in an accident.

Although there are still certain concerns about potential problems with this type of glazing material, the agency believes these to be minor, and has concluded that the safety benefits derived from this material outweigh the possible problems. This amendment permits, but does not require, the use of glass-plastic glazing. Effective date November 16, 1983. (48 FR 52061, November 16, 1983.)

### **49 CFR Part 571 -- Lamps, Reflective Devices and Associated Equipment**

This notice amends Safety Standard No. 108 to require installation of a single center, high-mounted stoplamp on passenger cars, in addition to the stoplamps presently required. Since the new stoplamp is a single function lighting device providing an unambiguous signal, and as it would be closer to the forward line of sight of following drivers, it will reduce rear end collisions by providing a more effective indication to those drivers that the car ahead is slowing or stopping. The amendment is supported by field test data indicating that the reduction in rear end collisions would be significant.

# GLOSSARY

## HIGHWAY

**Trafficway** - is 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.

**Motorcycle** - is a two-wheeled motor vehicle having one or more riding saddles, and sometimes a third wheel for the support of a sidecar. The sidecar is considered a part of the motorcycle. "Motorcycle" includes motorized bicycle, scooter, or tricycle.

**Pedalcycle** - is a vehicle operated solely by pedals, and propelled by human power.

**Includes:** Bicycle (any size, with two wheels in tandem), tricycle, unicycle, and sidecar or trailer attached to any of these devices.

**Excludes:** These devices when towed by a motor vehicle, including hitching.

**Pedestrian** - is any person not in or upon a motor vehicle or other road vehicle.

**Includes:** Person afoot, sitting, lying or working upon a land way or place; person in or operating a pedestrian conveyance.

**Excludes:** Person boarding or alighting from another conveyance, except pedestrian conveyance; person jumping or falling from a motor vehicle in transport.

**Motor Vehicle Traffic Accident** - is any motor vehicle accident that occurs on a trafficway or that occurs after the motor vehicle runs off the roadway but before events are stabilized.

**Motor Vehicle Traffic Fatality** - is a death resulting from motor vehicle accident injuries occurring on a trafficway within 30 days of the accident.

**Motor Vehicle Occupant** - is a driver of or passenger in a motor vehicle other than a motorcycle or motorscooter. For reporting purposes, this category also includes riders of animals, occupants of animal-drawn vehicles, occupants of streetcars, unauthorized riders, etc.

## RAILROAD

**Rail-Highway Grade Crossing** - is 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.

**Train Accident** - is 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 \$4,500 in damages to railroad on-track equipment, signals, track, track structures, or roadbed. Prior to 1983, this threshold stood at \$3,700; prior to 1981, at \$2,900; prior to 1979, at \$2,300; prior to 1977, at \$1,750; and prior to 1975, at \$750.

"Property Damage" refers to the estimated cost to repair or replace damaged property (vehicles, equipment, right-of-way, etc.) to a state equivalent to that which existed prior to the accident. Property damage does not include the cost of clearing wreckage.

**B. Train Derailments**

1. Rail transit train derailments which result in \$5,000 or greater property damage.

**C. Fires/Explosions**

1. Fires/explosions which involve the participation of the local fire department in the fire fighting, and/or which cause the evacuation of passengers onto the system right-of-way.

**D. Exclusions**

1. Accidents (collisions, derailments or fires/explosions) occurring in yards and non-revenue service areas which do not involve revenue trains; accidents (collisions, derailments or fires/explosions) which involve only work trains and servicing equipment; and collisions between train cars resulting from coupling operations which do not involve passenger casualties are excluded.

**RRT Casualty** - is any casualty which satisfies the following threshold levels:

**A. Employee Casualties**

Employees who are on-duty and who are killed or sustain lost workdays resulting from reportable train accidents.

"Lost workday" means any full day or part of a day (consecutive or not) other than the day of the injury, that an employee is away from work because of the injury. The day of the reportable train accident is not to be reported as a lost workday even though the injured employee does not complete the work assignment that day.

**B. Passenger and Other Casualties**

Casualties involving passengers or other personnel (off-duty employees, contractors, etc.) which occur at or in exclusive approaches to or from faregates, or equivalent, or within the normal "paid" area, and which result in:

A. Fatalities, or

B. Personal injuries which require immediate medical treatment beyond first aid.

"Medical treatment" means treatment requiring the attention of a physician or registered professional medical personnel. "Medical treatment" as used here, does not refer to minor first aid treatment (one-time treatment), precautionary measures such as tetanus shots, or subsequent observation of minor scratches, cuts, bruises or splinters.

**C. Exclusions**

Assaults, attempted suicides, and suicides are excluded.

## AVIATION

**Air Carrier** - beginning with 1975\*, air carriers comprise three operational categories:

- (1) **Certificated Route Air Carrier** - one of a class of air carriers holding a certificate of public convenience and necessity issued by the Civil Aeronautics Board to conduct scheduled services over specified routes and a limited amount of nonscheduled charter operations.
- (2) **Supplemental Air Carrier** - one of a class of air carriers holding operating certificates issued by the Civil Aeronautics Board, authorizing them to perform passenger and cargo charter services supplementing the scheduled service of the Certificated Route Air Carriers.
- (3) **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.

**General Aviation** - refers to all civil aircraft operations except those classified as air carrier operations.

### **General Aviation Flying:**

- o **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.
- o **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 he is engaged.
- o **Commuter operator** - any operator who performs, pursuant to published schedule, at least five round trips per week between two or more points, or carries mail on contract.
- o **Executive** - any use of an aircraft by a corporation, a 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.
- o **Air Taxi** - any use of an aircraft by the holder of an air taxi operating certificate which is authorized by the certificate.
- o **Instructional** - any use of an aircraft for the purposes of formal flight instruction with or without the flight instructor aboard.
- o **Aerial Application** - any use of an aircraft in agriculture to discharge material in flight and to perform activities such as antifrost agitation, agitating fruit trees, chasing birds from crops, checking crops, restocking of fish, animal and other wildlife, etc.
- o **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.

\*Prior to 1975, air carriers did not comprise commercial operators.

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

## **HAZARDOUS MATERIALS**

**Incident** - refers to any unintentional release of hazardous material while in transit or storage.

**Fatality** - the information received indicated that the death was due to the hazardous material involved.

**Injury** - the information received indicated that the injury required professional medical treatment and was due to the hazardous material involved.

## **NOTES**