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**U.S. Department of
Transportation**

Office of the Secretary
of Transportation

14th Annual Report

Fiscal Year 1980

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Summary

The primary purpose of this report is to provide a summary of the findings of the study conducted by the author. The study was designed to investigate the effects of various factors on the performance of the system. The results of the study are presented in the following sections.

The first section of the report describes the methodology used in the study. This includes a description of the experimental design, the subjects involved, and the procedures used to collect and analyze the data. The second section presents the results of the study, which are organized into several sub-sections. Each sub-section discusses a specific aspect of the study, such as the effect of a particular factor on system performance.

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Summary

The primary responsibilities of the U.S. Department of Transportation are to assure the coordination and effective administration of federal transportation laws and to develop policies and programs which will result in the provision of fast, safe, and convenient transportation at the lowest possible cost.

The following paragraphs summarize a few of the Department's fiscal year 1980 activities in carrying out those responsibilities. More detailed accounts of these and other Departmental activities are given in the progress reports which follow this summary.

Transportation Deregulation

The Motor Carrier Act of 1980 and the Staggers Rail Act were passed by Congress. They were expected to increase truck and rail industry flexibility and reduce shipping costs.

Transportation Safety

Calendar year 1979 general aviation accident and fatality rates declined to the lowest levels in more than a decade. Train accidents declined sharply, as did the number of persons killed in train accidents. Motor vehicle fatalities increased slightly, as did the fatality rate, but the fatality rate was only slightly above the record lows of recent years. Most of the increase was due to increased fatalities among motorcyclists and truck occupants. Gas pipeline related casualties increased slightly, even though gas pipeline failures declined.

Marine Transportation

For the second consecutive year, calls for Coast Guard search and rescue services decreased slightly. The Coast Guard responded to more than 73,000 calls, assisting 183,000 people and rescuing more than 5,500 from life threatening situations. Assistance was provided to more than 1,400 vessels carrying Cuban refugees and to 71 carrying Haitians.

Because of the heavy commitment of Coast Guard resources to the assistance of Cuban refugees and to intercepting boats bound for Cuba, Coast Guard drug enforcement patrols were drastically reduced. Nonetheless, 69 vessels were seized, as well as 592 tons of marijuana.

Coast Guard fishery conservation activities brought about 71 civil penalties and the seizure of 18 foreign vessels.

Studies were begun for the use of ship simulation experiments in selecting short range aids to navigation,

and special ice resistant buoys were developed for use on the Great Lakes. Loran-C coverage was extended to the entire U.S. coastal confluence zone, and OMEGA coverage and accuracy for the North Atlantic was validated.

The first of the 270-foot Hero class Coast Guard cutters was launched in September 1980. Three more Hero class cutters were to follow under the initial contract, and a contract for nine more of the vessels was awarded during the year.

A total of 49.5 million metric tons of cargo moved through the U.S. portion of the Saint Lawrence Seaway. This was 11 percent less than in 1979. The decline was attributable largely to the 1980 recession and sharp reductions in auto production, which decreased the demand for iron ore and for imported iron and steel. Despite the decreased tonnage, the number of commercial vessels using the facilities was greater than in 1979.

A fire destroyed a large portion of the Saint Lawrence Seaway Development Corporation's administration building, in Massena, New York. Seaway operations were not disrupted, and administrative operations were moved to temporary structures.

Aviation

The Department played an increasingly important role in the negotiation of bilateral aviation agreements and increased its efforts to respond to instances of discrimination against U.S. airlines.

Steps were taken during the year to improve the Federal Aviation Administration's organizational and technical ability to deal with the certification of increasingly sophisticated aircraft and aircraft components. The steps included increased emphasis on the recruitment of technical specialists and the development of a "lead region" concept in which regions with special technical expertise would assume nationwide certification responsibilities.

The calendar year 1979 safety record was blemished by the worst air disaster in U.S. aviation history, as 273 people died in the crash of a jumbo jet at Chicago. However, aviation safety as a whole showed significant improvement. Air taxi fatalities dropped from 159 to 63, and all measures of general aviation safety indicated improvements.

Hijacking of U.S. aircraft increased significantly, from 13 to 23, during fiscal year 1980, compared to the year before. During the height of the Cuban refugee crisis, federal air marshalls were assigned to the air carriers.

In April 1980, the Federal Aviation Administration announced a plan to consolidate the agency's flight service stations into 61 automated facilities. Contracts were awarded for designing the basic computer system to be used by the facilities.

Direct access radar channel subsystems were installed at all 20 air traffic control centers in the contiguous 48 states. The new subsystem was designed to take over radar data processing whenever the primary computers are shut down.

The first en route minimum safe altitude warning system was installed, at the Cleveland Center. The new system was to be installed at all 20 centers.

The program to equip 62 terminal control areas with conflict alert systems was completed in April, when the last system was commissioned at the Los Angeles tower.

A total of \$667 million was obligated by the Federal Aviation Administration for airport construction and improvement.

Highways

A total of \$7.8 billion was obligated during fiscal year 1980 under the federal-aid highway program. Because of obligational limitations imposed by Congress, a total of \$5.7 billion in obligational authority was deferred until fiscal year 1981.

By the end of the year, 39,800 miles of the interstate system were open to traffic, and an additional 139 miles were under construction. A total of \$3.2 billion was obligated for interstate projects during the year, including \$490 million in discretionary funds which were made available to accelerate the program.

A total of \$136 million was obligated for rehabilitation of existing sections of the interstate system and \$282 million for rehabilitation of primary and secondary system highways.

The bridge replacement and rehabilitation program continued to expand, as fiscal year 1980 obligations reached a record \$770 million. In addition, over \$100 million was obligated for bridges not on the federal-aid system.

Funds obligated for safety construction activities, including hazard elimination, rail-highway grade crossing improvement, and pavement marking, totaled \$241 million.

Federal Highway Administration commercial motor vehicle inspections increased to 31,000. More than 10,000 of the vehicles and 3,600 drivers were taken out of service until they were brought into compliance with safety regulations.

Traffic deaths continued to increase in calendar year 1979, as more than 51,000 people died in traffic accidents. Factors contributing to the increase included the increasing proportion of small cars on the highways, the continuing declining in seatbelt usage, and the declining use of motorcycle safety helmets.

Railroads

Train accidents decreased by nearly 14 percent in calendar year 1979; however, this decrease was at least partly the result of a change in accident reporting requirements.

Federal and state rail safety inspection efforts continued to increase. By the end of fiscal year 1980, a total of 287 federal and 86 state rail safety inspectors and supervisors were available. Thirty states were providing inspectors and efforts were underway to improve and expand the state programs.

Loans and federal guarantees made during the year to railroads by the Federal Railroad Administration totaled \$193 million. This brought the total federal commitment under this program to \$704 million. In addition, \$85 million in federal assistance was provided to the trustee of the Milwaukee Road to permit continuation of essential services pending reorganization of the railroad.

Grants to the states under the local rail service assistance program totaled \$83 million. Most of the money was used for rail improvement, with only about 25 percent being used by the states to subsidize rail operations.

Work continued under the Northeast Corridor Improvement Project. Major accomplishments included installation of 64 miles of concrete ties and 54 miles of continuous welded rail and rehabilitation of 49 bridges. Construction contracts totaling \$18 million were awarded during the year.

Revenue ton miles of freight carried on the Alaska Railroad increased by 4 percent. The number of passengers carried was virtually unchanged, but passenger revenues increased by 7 percent and total revenues increased by 14 percent. Most categories of freight increased, but the increases were largely offset by a 38 percent decline in sand and gravel tonnage.

Urban Mass Transportation

The Urban Mass Transportation Administration obligated a total of \$3.9 billion for transit assistance in fiscal year 1980. A total of \$2.8 billion of the obligated funds was used for capital investments and the remaining \$1.1 billion was used for operating costs.

Work continued on rapid transit projects in Atlanta, Baltimore, Miami, and Washington, D.C., and on a light

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rail system in Buffalo. Engineering studies were funded for Los Angeles and Honolulu rail systems and a Detroit light rail system.

Materials Transportation

The federal pipeline safety regulations were amended in 1980 to establish comprehensive standards for liquefied

natural gas facilities. The standards addressed both the design and construction of the facilities and facility operation and maintenance.

Gas pipeline failures decreased by 5 percent in calendar year 1979, compared to calendar year 1978; however, gas pipeline casualties (deaths and injuries) increased by 3 percent.

Progress Report of the Secretary

The 1957-58 financial year was a very successful one for the Department. The year was marked by a number of important events, including the opening of the new building in April 1957.

Part I: General

A full account of the work of the Department is given in the annual report, which is published in the form of a book.

Part II: The Secretary

The Secretary is the official representative of the Department in all its dealings with the public. He is responsible for the day-to-day running of the Department and for the preparation of the annual report.

Progress Reports

The Secretary is the official representative of the Department in all its dealings with the public. He is responsible for the day-to-day running of the Department and for the preparation of the annual report.

Part III: The Secretary's Office

The Secretary's Office is the central administrative body of the Department. It is responsible for the day-to-day running of the Department and for the preparation of the annual report.

Office of the Secretary

The Office of the Secretary provides staff and advisory support for the Secretary and supports and coordinates the activities of the various administrations of the Department. In addition, the Office of the Secretary has primary responsibility for carrying out certain programs. This progress report emphasizes those programs.

Transportation Regulatory Reform

The Motor Carrier Act of 1980, signed into law on July 1, 1980, reformed entry and ratemaking requirements in the trucking industry and was expected to result in annual consumer savings of as much as \$8 billion per year. The Department drafted the reform proposals which formed the basis for much of the Act and actively participated in Interstate Commerce Commission proceedings to implement the Act.

The Staggers Rail Act of 1980 greatly increased railroad ratemaking flexibility and provided the railroads with new opportunities to improve service, reduce operating costs, and rationalize their physical plants. The Department developed reforms which were incorporated into the Staggers Rail Act and participated in proceedings to implement the Act.

Transportation of Energy Materials

The preliminary report of the *National Energy Transportation Study* was completed in July 1980. The study tried to predict the physical capacity needed to transport fuel during the next decade and then examined possible constraints which might prevent necessary expansion of the fuel transport system or its operation.

The fuels expected to play an important role during the 1980's included coal, oil (including liquefied petroleum gas), natural gas (including liquefied natural

gas), and nuclear fuel. The major conclusions of the study were that greatly increased amounts of coal would be carried by rail, particularly in the West, and that crude oil pipeline flow volumes in the Mississippi River corridor would increase substantially.

The report concluded that, for the most part, the private sector would be capable of making the extensive transportation investments that would be required, but it warned that a number of potential financial and regulatory barriers could arise. The report was expected to contribute to the formation of long-range federal and industry plans for ensuring adequate transport of fuels.

Coal Exports Study

As a result of the increasing importance of steam coal in international trade, there was considerable interest in capabilities for transporting coal from U.S. mines to ports and in capacities for transferring coal to ships for delivery to overseas markets. The Department, at the request of the National Security Council, prepared a preliminary assessment of the transportation system's ability to handle increased U.S. coal exports, for use at the Venice Economic Summit Conference in June 1980. At the same time, the White House established an interagency coal export task force, led by the Department of Energy, to study and make recommendations to the President on all aspects of coal exports. The Department of Transportation participated in this effort.

Truck Sizes and Weights

Work continued on a study of the economic, safety, energy, and environmental consequences of changes in existing federal limits on the size and weight of trucks. Analytic results were expected to be available before the end of calendar year 1980; and a report to Congress was to be completed early in calendar year 1981. A technical committee was organized by the National Academy of Sciences to provide an outside review and to comment on the study's methods, analytic findings, and draft reports.

International Cooperation

In accordance with its international transportation policy, the Department continued to expand its cooperative programs to exchange transportation research information. The Department initiated a government-level dialogue with the People's Republic of China and with Brazil, began its work as U.S. coordinator of the U.S.-Mexican working group on transportation border issues, and negotiated new transportation research agreements with various cooperating countries.

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Automobile Industry Assessment

In response to directives from Congress, the Department began an assessment of the nation's automobile industry, including its present problems and future role. The Secretary convened an automobile industry advisory committee, with members from industry, government, and labor, and took the lead in fostering government-industry cooperation. The Department also organized and led an interagency task force which recommended a short term program to help reverse the most serious losses ever encountered by the industry. The Department was also a participant in efforts to deal with the serious inroads being made in the domestic automobile market by imported vehicles. The first report on the long term future of the automobile industry was to be completed early in calendar year 1981.

Chrysler Loan Guarantee Board

The Secretary of Transportation was named an ex officio member of the Chrysler Corporation Loan Guarantee Board, to oversee the government assistance to that corporation. The Department provided technical support to the Board in assessing the corporate financial and operating plans and in assuring that the terms laid down by Congress for the loan guarantees were met.

Rail System Investment Analysis

A multi-year cooperative research project on rail investments culminated in a joint Association of American Railroads and Department of Transportation rail capital investment conference. Participants in the project included thirteen railroads, the Association of American Railroads, and the Department of Transportation. The Department issued two manuals for investment decision-making for use by the railroads and government officials, as well as eight research reports.

Deepwater Ports

The deepwater port license offer made to the Texas Deepwater Port Authority in August 1979 was extended for six months, to November 15, 1980. The Authority requested a further extension, until May 15, 1981, but it was denied on the grounds that the facility that was proposed in the most recent extension request was totally different from that described in the original license application and for which the Department had issued a federal license. The major differences included changes in capacity (2,500,000 barrels per day originally licensed versus 500,000 barrels per day in the new extension request) and in the location (26 miles offshore originally licensed versus 16 miles offshore in the new request).

The LOOP Inc. (Louisiana offshore port) operations manual was received and was under Departmental review. This was the last major item that needed Departmental approval before LOOP could begin operations. Operations were expected to start in April 1981.

Port Connectivity

A port connectivity study, mandated by the Secretary to examine the adequacy of landside transportation at ports, was completed and a report was published on June 30, 1980.

International Aviation Policy

The Department participated in the negotiation of bilateral civil aviation agreements providing for improved routing and service opportunities and greater pricing flexibility with more than twenty countries, including Finland, Australia, New Zealand, Brazil, Jordan, the Philippines, and the Netherlands Antilles. In April 1980, the bilateral civil aviation agreement with the United Kingdom was amended to permit new nonstop air service between many U.S. cities and London. Of major importance also was the Department's participation in the negotiation of a bilateral civil aviation agreement with the People's Republic of China, signed in September 1980, which authorized the introduction of the first scheduled air service between the United States and the Chinese mainland in over thirty years.

The Department presented testimony at House and Senate hearings which led to enactment of the International Air Transportation Competition Act of 1979. This legislation was expected to promote competition in international air transportation and to provide additional protection for U.S. airlines against discrimination and unfair competition by foreign governments.

Implementation of the Clean Air Act

The Department and the Environmental Protection Agency issued a proposed joint policy on the implementation of the Clean Air Act's requirements that public transportation systems be improved to meet basic transportation needs in certain metropolitan areas with air quality problems. The proposed policy was part of a continuing effort to integrate the transportation-related aspects of the Clean Air Act into the Department's planning and decisionmaking processes.

International Law

The Department's involvement in international aviation issues included participation in selected proceedings before the Civil Aeronautics Board, including the filing

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of comments on a complaint by Air Micronesia regarding alleged discriminatory treatment by the government of Japan. Other major efforts included participation in meetings of the International Civil Aviation Organization; the development of tax and trade strategies for dealing with the problems faced by the U.S. automobile industry as a result of foreign imports; planning for the forthcoming "sunset" of the Civil Aeronautics Board; participation in negotiations toward the establishment of "free association" status for Palau, the Marshall Islands, and the Federated States of Micronesia; and participation in the United Nations Conference on the Law of the Sea.

Litigation

The Office of the Secretary was involved in litigation in a number of federal district courts and courts of appeals. During fiscal year 1980, it reviewed and monitored over 200 cases brought against the Department and its officers. The Office of the Secretary also participated in trial work, in cooperation with the Department of Justice, in several major cases involving the Department. The cases included a challenge by the American Public Transit Association to the regulations implementing the accessibility for the handicapped provisions of the Rehabilitation Act of 1973; challenges in a number of states involving implementation of the Department's minority business enterprise regulations; a suit against the Federal Highway Administration's regulations implementing the Buy-America provisions of the Surface Transportation Assistance Act of 1978; and suits by eleven states challenging deferral by the President of \$1.15 billion in fiscal year 1980 federal-aid highway funds and the method chosen by the Federal Highway Administration to allocate those funds.

Regulation

The Department continued to pursue its commitment to regulatory reform. The Office of Management and Budget identified the Department as a leader in the government-wide regulatory reform effort. The Department's regulatory program was revised to ensure that each significant regulation received effective substantive, legal, and policy review and to ensure that less costly alternatives were being considered, that the regulations were actually necessary, and that the regulations were well written.

The Department also reviewed existing regulations to determine if they needed to be revised or revoked and to see if paperwork requirements imposed were being

minimized. In addition, the Department was also involved in a special effort to determine whether there were any duplicate or overlapping paperwork requirements imposed by the different elements within the Department.

There were three proposals in Congress to allow cities to provide paratransit service to handicapped persons instead of accessible bus and rail service. The 1981 Appropriations Act for the Department incorporated one of these proposals by reference, prohibiting the Department from enforcing its bus accessibility requirements if a city submitted and the Department approved an appropriate local option plan.

Consumer Affairs

In June 1980, the Department published its consumer program. The program was developed in response to an Executive Order and addressed five areas in particular: providing for a consumer perspective within the Department; providing for consumer participation; developing consumer information materials; educating and training agency staff about consumer policy; and establishing systematic procedures for complaint handling. In addition, each operating administration took steps to develop its own consumer program.

In fiscal year 1980, the work groups on citizen participation, charged with developing recommendations to the Secretary of Transportation concerning policy on citizen participation in local transportation planning, conducted an extensive outreach effort. In all, the Department heard from nearly 600 individuals and groups. Those participating in this process included individuals, citizen group representatives, federal, state, and local officials, transportation planners, and transit operators. Comments from these individuals and groups contributed significantly to the development of a Departmental policy and guidelines on citizen participation in local transportation planning.

Minority Business Enterprise

The Department published a notice of proposed rulemaking concerning participation of minority business enterprises in direct contract and financial assistance programs funded by the Department. The proposed rule would require that grantees and contractors take affirmative action to increase participation by businesses owned and controlled by minorities and women. While the proposed rule covered minority business enterprise participation in contracting under Departmental financial assistance programs and in contracts awarded directly by the Department, the final rule covered only financial assistance programs. A final rule on direct contracting was being developed.

A study which identified mechanisms for improving the Department's minority business enterprise program was completed. The study resulted in the centralization of policy and management responsibilities for direct procurement, contracting, and financial assistance activities; establishment of a full-time minority business enterprise program office in each operating administration; creation of an internal advisory committee; and establishment of an external advisory committee to provide advice to the Secretary from minority entrepreneurs interested in participating in the Department's direct procurement, contracting, and financial assistance activities.

Management Improvements

A study of research and development activities in the Department was conducted during the year. The study resulted in a recommendation for the establishment of a new Office of Transportation Research and Technology.

A review of debt management was conducted within the Department, as part of the Government-wide debt collection project. The review resulted in the development and issuance of a Departmental directive on collecting money owed to the Department.

Personnel Programs

The Department successfully implemented major performance appraisal and merit pay provisions of the Civil Service Reform Act. The implementation included developing and issuing the Departmental performance appraisal and merit pay plans and approving performance appraisal systems for merit pay employees. The appraisal system became effective on September 1, 1980.

The senior executive service provisions of the Civil Service Reform Act were also implemented. Two-and-one-half day training sessions were conducted for 300 senior executive service members. A senior executive service performance appraisal system, a performance award system, and an executive resource board were established. In addition, the Department established executive development requirements and established a senior executive service candidate development program.

During the year, over 300 female employees attended sessions of the Department's management development program for women. The program was designed to enhance career opportunities for women within the Department, to improve Departmental management capabilities by capitalizing on the talent of women employees, and to prepare women employees to assume positions of greater responsibility within the Department.

A Departmental position was developed for presentation to the Federal Labor Relations Authority concerning the negotiability of critical job elements and performance standards for employees of the Saint

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Lawrence Seaway Development Corporation. The Authority eventually ruled that the defining of critical job elements and performance standards were not negotiable but were reserved to management.

Minority contractors were utilized to conduct major training programs, including labor relations training for managers and personnel specialists, performance appraisal training for senior executives and merit pay employees, and management training for women.

Automatic Data Processing

Administrative responsibility for the transportation computer center was moved from the Federal Highway Administration to the Office of the Secretary. The first of two new computers was delivered on September 20, 1980. The second new computer was to be delivered in November 1980.

Inspector General

Fiscal year 1980 was the first full year of operation for the Department's Office of Inspector General. During the year, procedures were established for the Inspector General's audits and investigations of major Departmental programs and operations. In addition, the Department's grantees were being encouraged to assume more financial and compliance audit responsibilities, as mandated by the Office of Management and Budget. Although the staffing of the Inspector General's office did not permit complete and comprehensive coverage of all Departmental programs and operations, significant accomplishments and productivity gains were achieved.

During the year, 2,021 audit reports were issued and \$12.4 billion in costs were audited. Many grants and contracts were audited to determine allowable costs, to facilitate project completion. Other audits identified ways to reduce costs and improve efficiency, while still others identified ways to prevent fraud, abuse, or other improprieties in Departmental programs and operations.

During fiscal year 1980, 170 investigations cases were opened and 70 were closed. Referrals for prosecution resulted in 37 indictments, 44 convictions, and jail sentences totaling 36 years. Fines of \$3.2 million were assessed, restitutions or other dollar recoveries amounted to \$124,568, and cost avoidance savings amounted to \$430,000.

Fraud and abuse prevention efforts were expanded considerably during the year. A vulnerability assessment program began to function, and management advisory memoranda were issued to alert Departmental managers to the potential for fraud in certain vulnerable areas. The Departmental complaint center processed over 400 complaints, many of which merited investigative actions.

United States Coast Guard

The United States Coast Guard is responsible for enforcing or assisting in the enforcement of federal laws on the high seas and waters subject to the jurisdiction of the U.S. These laws govern navigation, shipping, and other maritime operations and the related protection of life and property. The Coast Guard also provides maritime search and rescue facilities. Other responsibilities include: promoting the safety of merchant vessels; conducting oceanographic research; furnishing icebreaking services; and developing, installing, maintaining, and operating maritime aids to navigation. A further responsibility is to be ready to function as a specialized part of the U.S. Navy in time of war or national emergency.

The Coast Guard operates a fleet of 232 cutters, 166 aircraft, and more than 2,200 boats. It also maintains more than 48,000 navigational aids.

The missions of the Coast Guard are carried out by 39,401 military and 6,037 civilian personnel. They are supported by the 11,700 member Coast Guard Reserve and by 43,085 civilian volunteers in the Coast Guard Auxiliary.

International Affairs

The Coast Guard's increased involvement in the international arena reflected its expanded domestic maritime role. Long recognized as a world leader in the fields of maritime search and rescue, safety, and aids to navigation, the Coast Guard established an international reputation for competence in the fields of marine pollution prevention and response, enforcement of fisheries laws, smuggling interdiction, and boating safety. Foreign governments wanting to acquire or to

strengthen their own maritime forces looked to the Coast Guard as a model or for assistance. The Coast Guard's international activities during fiscal year 1980 ranged from major involvement in the Cuban and Haitian refugee operations to hosting numerous foreign visitors at Coast Guard units.

The Coast Guard assisted the Department of State in an overall review of U.S. policies in the Caribbean. The number of foreign nationals receiving training at Coast Guard schools and the requests for information coming from abroad showed a steady increase. Coast Guard representatives headed the U.S. delegations to meetings of technical committees of the Intergovernmental Maritime Consultative Organization and actively participated in numerous other international conferences.

A personnel exchange agreement was concluded with the British Navy, and a formal assistance and cooperation program was initiated with the Canadian Department of the Environment. At the request of the Joint Chiefs of Staff, a Coast Guard liaison officer was assigned to Headquarters, U.S. Southern Command, in Panama. A Coast Guard officer was also assigned to the Intergovernmental Maritime Consultative Organization to serve as an interregional advisor on maritime safety.

Search and Rescue

The search and rescue program uses approximately one-third of the Coast Guard's operating funds and manpower resources. The objective of the program is to minimize loss of life, personal injury, and property damage in the maritime regions of the United States.

In 1980, the Coast Guard responded to 73,650 calls for assistance (a slight increase from 1979), rescued 5,515 people from life threatening situations (with the aid of the Coast Guard Auxiliary), and assisted an additional 183,000 people who were in danger. The estimated value of the property saved exceeded \$600 million.

The Coast Guard, responding to a mandate from Congress, completed a national search and rescue facilities plan, which coordinated, for the first time, the search and rescue resources of the Coast Guard and the Department of Defense.

A comprehensive examination of the search and rescue program, initiated in 1978, was completed. The study, requested by the Office of Management and Budget, evaluated existing Coast Guard search and rescue performance as well as potential problems in future years.

Refugees

The Cuban refugee crisis, which began April 21, 1980, and lasted until September 28, 1980, required a massive Coast Guard effort in both search and rescue and law enforcement. During the five month period, over 125,000 refugees arrived in Key West, Florida. The Coast Guard provided search and rescue assistance to over 1,400 vessels, saving all but 27 of the people on board, and intercepted over 200 vessels enroute to Cuba for more refugees. As many as 12 Coast Guard cutters, 15 small craft, 11 aircraft and 1,500 personnel were deployed from other parts of the country to augment existing units in Florida. This caused a severe reduction in the performance of other Coast Guard missions and a maintenance and training backlog that was expected to take two years to correct.

The influx of Haitians into South Florida also rose dramatically during the year. The Coast Guard provided search and rescue assistance to 3,441 Haitians in 71 separate cases. Most of the Haitians were sighted in severely overcrowded, leaking, homemade wooden sailboats. Smugglers were charging \$1,000 or more for transporting Haitians to the Bahamas or south Florida, with no guarantee of arrival.

Drug Interdiction

The number of vessels seized in the first half of the fiscal year was equivalent to 1979 figures; but because of Cuban refugee operations, Coast Guard drug enforcement patrols during the second half were reduced by 90 percent, causing drug seizures to dwindle. Not until the Cuban government closed Mariel harbor, at the end of September, permitting cutters to resume normal operations, did drug interdictions rise to previous levels and beyond. This unprecedented rechannelling of Coast Guard law enforcement efforts caused an 85 percent reduction in the amount of marijuana seized during the summer. The final seizure totals were 592 tons of marijuana and 69 vessels. This was only 62 percent of the average amount of marijuana seized in 1978 and 1979. The estimated value of the confiscated contraband was just over \$1 billion, compared to \$1.8 billion in 1979. Interdiction activity was heaviest in the Florida area, but major seizures took place along the entire coastline.

The Coast Guard seized nine times more Quaaludes in 1980 (almost 5 million doses) than in all previous years combined, reflecting the growing illicit methoqualone industry in Colombia and other countries. Other seizures during the year included over 12,000 pounds of Thai sticks and five gallons of hashish oil—both potent forms of marijuana.

Spurred by the Commandant's April visit to Haiti, Barbados, St. Lucia, Venezuela, and Panama, working relationships between the Coast Guard and Latin American and Caribbean governments improved in 1980. The government of the Bahamas was very cooperative and expeditious in approving Coast Guard patrols into Bahamian waters. Panama, Venezuela, and Honduras continued their good record of fast registry checks of vessels. The seizure in February of the Colombian vessel PRESIDENTE DE MOSQUERA by U.S. Coast Guard and Colombian officials indicated that more intergovernmental cooperation would result in an increased interdiction rate. On the other hand, no member nation was utilizing the inter-American maritime intelligence network to any significant degree.

Fisheries Law Enforcement

Coast Guard fishery conservation activities during the year included: boarding 1,865 vessels (1,430 domestic, 435 foreign); issuing 87 citations (29 domestic, 58 foreign); and initiating 71 civil penalty actions (30 domestic, 41 foreign). Eighteen foreign vessels were seized. By the end of the fiscal year, five of the seizure cases had been decided, resulting in the payment of \$1.3 million in penalties. Foreign fishing was the primary concern in the fishery conservation zone waters of Alaska and a major concern in all areas. The final regulations for the Pacific billfish and shark management plan allowed about 900 additional foreign fishing vessels to fish in the fisheries conservation zone. Domestic regulations, developed by regional fishery management councils, required increased enforcement effort on both coasts.

In addition to its fisheries management responsibilities, the Coast Guard continued to enforce various statutes regarding marine mammals, endangered species, and halibut. Conflicts between fishing groups, domestic or foreign, continued to require considerable Coast Guard attention, including onscene intercessions and investigations, fixed gear reporting, and marking system management.

Polar Class Icebreakers

Polar class icebreaker operations began showing encouraging results. In early January, POLAR SEA broke a channel through 16 miles of ice, ranging from 3 to 8 feet thick, to McMurdo Station in 17 hours and 44 minutes, without any propeller damage. This same feat would have taken two Wind class icebreakers a week to accomplish. Although some difficulties and modifications remained, the Polar class was beginning to demonstrate operational reliability and effectiveness.

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In April 1980, the Coast Guard agreed on a settlement of all contract differences with the Lockheed Corporation, builder of the two Polar class icebreakers. All of Lockheed's claims had been denied by the Department's Contract Appeals Board.

Arctic Marine Transportation

The Coast Guard increased its emphasis on the development of an arctic marine transportation system, with specific interest in the extraction and transportation of Alaskan natural resources, including oil and natural gas. Several studies were in progress to forecast Coast Guard icebreaking and support requirements during the remainder of this century. Through its membership on the Interagency Policy Group, the Coast Guard provided significant input to an arctic marine transportation policy paper.

Aids to Navigation

In May 1980, a major Coast Guard reorganization created a separate Office of Navigation, which was given responsibility for three Coast Guard programs: short range aids to navigation; radionavigation aids; and bridge administration.

Major studies were undertaken to select short range aids to navigation using ship simulation experiments. A study on the marking of bridge openings and bridge approaches, the determination of channel dimensions and limitations, and the safeguarding and maintenance of automated lighthouses was accelerated.

A \$1 million grant from the Department of Energy was used to convert battery powered aids to navigation to solar power. A photovoltaic power supply was developed for eventual use on 14,000 minor aids.

Special ice resistant buoys were developed and successfully tested in the Great Lakes winter environment. Forty such buoys were under construction for deployment during the winter of 1980-81.

The first federal radionavigation plan was completed in July 1980 and was to be submitted to Congress, via the Office of Management and Budget, in October 1980. The phaseout of Loran-A continued, with the disestablishment of all west coast and the remaining Alaskan stations on July 1, 1980.

Construction of the Loran-C station at Baudette, Minnesota, was completed. The joint U.S.-Canadian Loran-C chain, which provides radionavigation coverage of the area from George's Bank to the St. Lawrence Seaway approaches, was declared operational on April 30, 1980. Completion of this chain was the final step in the plan begun in 1974 to provide Loran-C

coverage to the entire U.S. coastal confluence zone. Loran-C monitor stations at Eglin, Florida; Rhodes, Greece; and Bermuda ceased operations. Omega coverage and accuracy for the North Atlantic was validated.

Bridges

During fiscal year 1980, 220 bridge permits and 26 special drawbridge regulations were issued. Pursuant to the Truman-Hobbs Act, an order to alter was issued on the Peoria and Pekin Union Railway Company bridge across the Illinois River at Peoria, Illinois.

Demolition was started on the Central Railroad Company of New Jersey bridge across Newark Bay, Newark, New Jersey. Construction began on the Illinois Central Gulf Railroad bridge across the Illinois River at Pearl, Illinois; the Chicago, Milwaukee, St. Paul and Pacific Railroad bridge across the Mississippi River at Hastings, Minnesota; and the Southern Pacific Transportation Company bridge across the Gulf Intracoastal Waterway at Houma, Louisiana.

Construction was completed on the Southern Pacific Transportation Company bridge across the Napa River at Brazos Crossing near Napa, California, and on the Harrison County highway bridge across the Back Bay of Biloxi, Mississippi.

A study was conducted to determine the state of the art in bridge fender systems. No bridges were constructed under the International Bridge Act of 1972.

Commercial Vessel Safety

Through the Intergovernmental Maritime Consultative Organization, the Coast Guard continued to work for international maritime standards equivalent to those of the United States. The Coast Guard, in cooperation with the Department of State, continued to seek passage of maritime safety and pollution prevention treaties brought before Congress. In June 1980, the United States became the first nation to implement the safe container convention, an international agreement governing safe freight container transportation.

To eliminate confusion that could be caused by the implementation of the first of the major provisions of the Port and Tanker Safety Act of 1978, considerable effort was expended to inform tankship owners and operators of the forthcoming requirements and to provide guidance in meeting the requirements.

The Coast Guard commissioned the National Academy of Sciences to undertake a study to identify the causes and effects of oil pollution from tank barges. The final report was due in January 1981.

Significant achievements were made toward meeting the mandates of the Outer Continental Shelf Lands Act Amendments of 1978. All 569 manned platforms were inspected and progress was made in the development of interagency agreements, safety studies, and appropriate safety regulations.

The Coast Guard continued to develop various procedures and health and safety regulations for occupational and health hazards in the marine environment. In conjunction with the National Cancer Institute, three separate but interrelated epidemiologic studies were begun that deal with both Coast Guard and Maritime service personnel.

The criteria for reporting commercial vessel casualties to the Coast Guard were revised. The new criteria were to become effective January 1, 1981. The revision was expected to benefit both the public and the Coast Guard by substantially reducing the reporting of less important events.

In response to both the increased activity of U.S. flag vessels operating exclusively in the Far East and the increased construction of commercial vessels in the Far East, the Coast Guard reestablished an inspection office in Singapore. This five-person office was given responsibility for the inspection of twelve vessels which were under construction and with performing periodic reinspections of U.S. vessels.

Recreational Boating Safety

The Coast Guard continued its efforts to reduce fatalities, injuries, and property damage among the 15 million boats and 63 million people who go boating annually.

During the year, the Coast Guard monitored 236 recall campaigns undertaken by manufacturers to correct potential boating hazards or to modify boats which failed to comply with applicable federal safety standards. These campaigns affected a total of 44,293 boats. At the close of the year, 128 campaigns remained open. An independent testing facility, under contract to the Coast Guard, tested 124 boats, and preliminary test results indicated that 95 of these boats failed to meet one or more of the applicable standards.

Boating safety rulemaking during fiscal year 1980 aimed at improving boat operator and manufacturer requirements. A new regulation required boat operators to carry Coast Guard approved visual distress signals under certain operating conditions. A new standard was issued, requiring engine compartments on newly built boats to meet certain ventilation requirements. Boat

operators were also required to keep certain parts of the ventilation system in operating condition.

The boating safety program was aided greatly by the support of the Coast Guard Auxiliary. During the year, Auxiliary members conducted safety courses for over one million people and made courtesy examinations of over 280,000 boats. The Auxiliary was credited with saving 1,430 lives, assisting almost 59,000 people, and assisting or saving property valued at over \$182 million.

Marine Environmental Response Program

The following environmental response actions were taken in fiscal year 1980: the U.S.-Mexico contingency plan for combating pollution incidents was signed in Mexico City on July 24, 1980; a twelve man dive team was established for combating oil and hazardous material spills; and a course to familiarize Coast Guard and Environmental Protection Agency personnel with the fundamentals of response to toxic chemical substance spills was established.

Waterways Management Program

The final rule requiring an electronic relative motion analyzer and automatic radar plotting aid on certain ships was published on August 14, 1980. Each ship of 10,000 gross tons or more carrying oil or bulk liquid hazardous materials was required to have the equipment installed by July 1, 1982.

In July 1976, a contract for approximately \$5 million was awarded to build a vessel traffic service for the port of New York. The service was to consist of four major subsystems: closed circuit television; radio communications; radar relay; and a computer based vessel information system. The first three subsystems were completed and accepted in May 1980, and delivery of the final subsystem, the vessel information system, was to be made by August 1, 1980. Unfortunately, the contractor was unable to make the system operate as required by the contract and that portion of the contract was terminated for default. An appeal to the Department's Contract Appeals Board was expected.

Port and Environmental Safety

The following port and environmental safety activities were completed during the year: the Coast Guard policy of assisting local firefighters as resources allowed was reaffirmed in an exchange of letters with the National Transportation Safety Board; the marine safety information system completed its conversion to

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CYBERNET'S timesharing services; and regulations for the marine sanitation device compliance enforcement program became effective.

The period in which the Texas Deepwater Port Authority could accept the proposed deepwater port license was extended to November 15, 1980; and the Coast Guard gave preliminary approval to the LOOP, Inc., deepwater port operations manual. Final approval was to come from the Captain of the Port, New Orleans.

Shore Construction

Major new shore construction projects begun included: a logistics support building at Governors Island, New York; family housing complexes at Cape May, New Jersey, and Cheboygan, Michigan; a community support services building at Portsmouth, Virginia; and a new station at Tillamook, Oregon. Major construction projects completed included: a barracks and administration building complex at Alexandria, Virginia; a rebuilding of the station at Ft. Myers Beach, Florida; improvements to the hangar at Traverse City, Michigan; and rehabilitation of facilities at Rockland, Maine.

Aircraft Procurement and Improvement

In June 1979, the Coast Guard awarded a contract to Aerospatiale Helicopter Corporation for 90 short range recovery helicopters. An unsuccessful offeror, Bell Helicopter Textron Division, filed a protest against the award with the General Accounting Office. In July 1979, Bell brought an action in federal district court asking the court to set aside the contract and to require the Coast Guard to reevaluate the offers. Bell also asked the Court to ask the General Accounting Office to transmit its report on Bell's protest to the Court. On December 21, 1979, the General Accounting Office denied Bell's protest and on May 30, 1980, the Court granted the Coast Guard's motion for summary judgment. The Court decision upheld the correctness of the contract award. The first flight of the new short range recovery helicopter (HH-65A) took place in July 1980 and delivery of the first of the helicopters was scheduled for January 1982.

Loran-C mini-navigators for position fixing were installed on Coast Guard helicopters. Additionally, an Omega radionavigation system was installed on the VC-4A executive aircraft, to increase navigational accuracy during transoceanic flights.

Cutter Construction, Design, and Maintenance

The first of the 270-foot Hero class vessels, the BEAR, was launched September 25, 1980, at Tacoma, Washington. The BEAR was to be delivered on August

17, 1981. Three more Hero class cutters were to be delivered later.

On August 28, 1980, the Coast Guard awarded a \$390 million contract to Tacoma Boatbuilding Company for the construction of nine additional 270-foot cutters. Tacoma Boatbuilding was found to be the lowest responsive bidder, after it was determined that the two lower priced bidders (Robert E. Derektor of Rhode Island, Inc. and Marine Power and Equipment Company) had not responded within the 90-day bid acceptance period requirement of the solicitation. On September 2, 1980, Derektor brought an action in the Federal District Court for the District of Rhode Island, asking the court to set aside the contract awarded to Tacoma Boatbuilding. On September 4, 1980, Marine Power brought an action in the Federal District Court for the District of Columbia asking the court to set aside the award to Tacoma Boatbuilding and also asking the court to find Derektor a nonresponsible bidder. Both suits were pending at the close of the fiscal year.

Two 55-foot aids to navigation boats and fifteen 41-foot utility boats were completed during 1980.

Research and Development

A major research effort focused upon improving the Coast Guard's capability to detect and respond to discharges of oil and hazardous chemicals in navigable waters. Development of a number of aerial sensors to detect such discharges was completed. A contract to integrate the sensors into a single system, called AIREYE, and to install the system in the Coast Guard's new medium range surveillance aircraft was awarded. Delivery of the AIREYE prototype was scheduled for June 1982. Other pollution related activities included: development and testing of an open pit incinerator for disposal of recovered oil; development of protective clothing and a self-contained environmental control unit for use in response to spills of hazardous substances; and initiation of a joint arctic pollution research program with the Canadian Government.

Efforts to improve marine navigation and traffic management systems continued. A simulator for use in evaluating various combinations of aids to navigation was completed. The simulator was also to be used as a training device for Coast Guard personnel. A demonstration and evaluation of the use of Loran-C as an all-weather precision navigation system continued on schedule. A program to evaluate the capability of the NAVSTAR global positioning system to meet civil marine and Coast Guard navigation requirements indicated that the system had significant potential.

Development of a prototype infrared day and night search system was completed. This system was to be installed on Coast Guard helicopters and was expected to greatly improve their search capabilities. A program to evaluate advanced marine vehicles as replacements for existing ships and boats was initiated. A project to evaluate the potential of lighter than air vehicles to meet Coast Guard mission requirements was initiated. The feasibility of using pigeons to search the ocean surface from a pod attached to a helicopter was demonstrated, and pigeons were shown to be much more effective than humans in detecting objects in the water.

A prototype marine safety information system was completed. The system was to be used to store information on merchant vessel inspections and boardings as well as the design characteristics of virtually every merchant vessel type. An effort was begun to determine the extent of marine worker exposure to hazardous vapors and substances to provide a scientific basis for Coast Guard policy regarding exposure levels to these substances. A project was initiated to determine to what extent existing personal flotation devices could be used by handicapped boaters.

Coast Guard Reserve

During 1980, improvements were made in the three major functional areas of the Coast Guard Reserve—readiness, training, and administration. The average strength level of 11,700 needed for the Selected Reserve was met and exceeded for the first time since 1977. Over 1,700 reservists contributed in excess of 20,000 person days in support of the 4-month Cuban refugee operation. In addition to direct involvement in refugee operations, the reservists replaced regulars on scores of Coast Guard vessels and shore stations while their regular counterparts were on temporary duty in the south Florida area. The use of the involuntary callup authority for this operation was a successful and appropriate use of the Reserve forces. Although traditional training plans had to be set aside, individual reservists gained valuable experience and enhanced their mobilization readiness.

Despite travel restrictions, reservists participated in seven joint training exercises. Formal training continued to be reinforced by augmentation training, which was considered the best and most cost effective tool available since it prepared reservists for mobilization while simultaneously supporting the peacetime missions of the active Service.

Revision of applicable laws improved the responsiveness of the reserve officer promotion system and standardized the authority, rights, and privileges of reservists while on either active duty or inactive duty training.

Military Readiness

Coast Guard forces represent a significant percentage of the total forces dedicated to the task of sea control and to the facilitation of waterborne transportation for national defense. During the year, the Coast Guard continued its participation in the Defense Department's command post exercise and its worldwide military command and control system. In addition, 6 Coast Guard high endurance cutters engaged in joint operations with other naval forces during fleet exercises, and 38 Coast Guard cutter crews underwent refresher training at Navy training facilities.

In a continuing effort to reduce training costs, the Coast Guard increased its use of simulators. Simulators for the 41-foot utility boat were scheduled for delivery in January 1981. A simulator for the new 270-foot Hero class cutter's command, display and control system was being developed. These simulators were expected to improve Coast Guard professionalism and to enable units to maintain a high state of readiness without significantly increasing their operating costs.

Health Services

The health services support program made significant strides toward self-sufficiency in the delivery of health care to Coast Guard personnel. All existing vacancies for health care professionals were filled. Since 1970, patient loads for Coast Guard active duty personnel at federal hospitals and clinics have declined to less than 100 people per day. Coast Guard clinics process nearly 800,000 outpatient visits annually. The net result has been the improved health of Coast Guard personnel and significant reductions in person years lost to illness.

The dental preceptorship program, in which senior dental students provide dental care under the direction of qualified dentists, continued to expand. During the year, it provided about 30 person years of dental care at no cost to the Coast Guard.

Leased Housing

During the spring of 1980, the demand for Coast Guard housing increased dramatically. With the annual summer transfer season approaching, the Commandant directed an expansion of the leased housing program. The housing staff managed to expand the lease inventory by 25 percent, to provide housing for approximately 1,000 additional Coast Guard members and their families, bringing the total number of leases to 4,800. In general, the Coast Guard found that leased housing was an economical, flexible, and responsive approach to providing its members with adequate housing near their duty stations. The program expansion was expected to

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continue through at least fiscal year 1983, providing leased housing for an additional 3,000 Coast Guard members.

Reenlistment Bonuses

The Coast Guard began a new reenlistment bonus program as of July 31, 1980. The new program, which was an addition to the existing reenlistment program, was aimed at retaining experienced enlisted personnel with between 6 and 10 years of service. This group had been experiencing an especially high attrition rate in recent years.

Training and Education

Because of the recruiting and retention problems of all the armed forces, the demands on their training facilities continued to escalate. The Coast Guard made the training and education of its people a top priority; however, because of the high cost of training programs, scarce financial resources were being diverted from other activities in order to accommodate the training needs.

Recruiting

There were 6,701 regular enlistments in fiscal year 1980, down 12 percent from fiscal year 1979, but 102.7 percent of the quota. Minority enlistments totaled 15.7 percent, down from 16.6 percent in fiscal year 1979. A major shift in recruiting from low to high minority population areas was made. To attract more officers with special skills, direct commission programs for civil engineers and retired merchant marine officers were launched.

Civil Rights

Military. During fiscal year 1980, several important goals were reached in the effort to eliminate racial and sexual discrimination from the Coast Guard. Nine training sessions on equal employment opportunity for supervisors and managers were presented by a contractor specializing in equal employment opportunity training. This program provided training to over 390 officers and senior civilian officials. Special training was given to civil rights officers, to guide them in the duties and responsibilities of their assignments. Four major commands and nine district offices were visited or inspected during the year. Military discrimination complaints were significantly reduced. At the end of the fiscal year, there were three complaints at the Departmental hearing stage, four had completed the formal investigation stage, and there was one formal complaint pending. One sexual harassment case, in which the discriminating official was held accountable, was resolved through informal procedures.

Civilian. Two evaluations of district civilian equal employment opportunity programs were conducted, and a civilian equal employment opportunity program manual was published. In accordance with Equal Employment Opportunity Commission standards, 22 occupational series were identified as having significant underrepresentation of minorities and females. Of the 225 vacancies occurring in these series, 147 were filled, including 65 persons (45 percent) who reduced the underrepresentation. Coast Guard upward mobility positions were increased from 38 to 68; 39 of the positions were filled, and 21 (55 percent) were filled by minorities. An Hispanic employment programs manager was hired, and four full-time equal employment opportunity specialist positions were created in district offices. Eleven formal complaints of discrimination were filed during fiscal year 1980, a decrease of 4 from fiscal year 1979.

Federal Aviation Administration

Under the Federal Aviation Act of 1958 (as amended) the Federal Aviation Administration (FAA) is responsible for ensuring aviation safety, controlling the national airspace to ensure its safe and efficient use, developing and operating a common system of air navigation and air traffic control for civil and military aviation, fostering the growth of civil aeronautics at home and abroad, promoting the development of an effective national airport system, regulating airport safety, and ensuring that civil aviation operations are conducted with little or no harm to the environment. A review of the agency's fiscal year 1980 activities in these areas follows.

Aviation Safety

The Safety Record. U.S. certificated route air carriers in scheduled service had a passenger fatality rate of 0.115 per 100 million passenger miles in calendar year 1979. This was a sharp increase from the 0.005 rate in 1978 and nearly double the .064 rate for the previous 5 years. Total fatal accidents increased by only 1, from 4 to 5, but passenger fatalities increased from 13 to 321. The increase in fatalities and in the fatality rate was almost entirely due to a single crash, at Chicago, which killed 273 people. Because of the small number of fatal accidents each year and the great variety of aircraft which may be involved, year to year variations in air carrier fatalities and fatality rates have generally lost statistical significance.

All other aviation categories showed significant safety improvements. Commuter fatal accidents decreased from 15 to 13 and fatalities decreased from 63 to 58. Air taxi fatal accidents, which had increased sharply in 1978, decreased from 52 to 29 and fatalities

decreased from 157 to 63. General aviation accidents, fatal accidents, fatalities, and accident and fatality rates all decreased.

Certification. Certification is used by FAA to maintain and improve the safety standards of aircraft and aircraft components. During fiscal year 1980, FAA—

- Established and implemented a "lead region" concept, under which certain FAA regions took over various aircraft, propeller, and engine certification functions previously handled by Washington headquarters. Under the new concept, the region with the most expertise in a certain kind of aircraft or component was made responsible for its certification throughout the country. Previously, aircraft and components were certificated by the FAA region in which the manufacturer was located. This, FAA determined, tended to dilute the agency's expertise. It was better to concentrate expertise where it would be used the most. Hence, the New England region, which has the most experience in engine certification, became the lead region for engines; the Central region, for small airplanes; the Southwest region, for helicopters; the Great Lakes region, for propellers. In November 1980, the Northwest region was to be given overall authority for the certification of large transport planes.

- Ordered the recruitment of national resources specialists to back up the lead region concept and to assure the highest possible technical competence in the certification process. The resource specialists are an FAA cadre of professional aerospace specialists, engineering flight test pilots, and manufacturing and airworthiness safety inspectors with the highly specialized skills and knowledge needed for the solution of technically demanding certification problems.

- Proposed that the agency periodically review the type certification basis of aircraft in service and, as necessary, require changes to ensure that aircraft of that type meet the safety levels current at the time of the review.

- Received and began implementing the findings of a blue ribbon panel of the National Research Council, which, at the Secretary's request, had reviewed FAA's procedures in certifying commercial passenger aircraft. The report held that while the agency's system of assuring the airworthiness of U.S.-built aircraft had worked satisfactorily in the past, it was essential that the technical sophistication of agency personnel keep better pace with the state of the art and that FAA substantially upgrade the technical proficiency of its certification staff.

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Rulemaking. Rulemaking, like certification, is used by FAA to improve and maintain aircraft standards and the safety of aircraft operations. During the year, FAA—

- Issued amendments to the Federal Aviation Regulations, Part 61, Certification: Pilots and Flight Instructors, and Part 121, Certification and Operations: Air Carrier and Commercial Operators of Large Aircraft, to encourage flight crews and aircraft operators to accomplish a higher percentage of their proficiency training in flight training simulators, thereby saving fuel, improving training, and reducing airport congestion.

- Proposed a new rule which would prohibit the performance of duties and activities unrelated to the safe operation of the aircraft by flight crewmembers.

- Proposed another rule, under which blind travelers would be permitted to keep their canes beside them during takeoffs and landings so they would have them immediately available in an emergency evacuation.

Aviation Medicine. The objective of FAA's program in aviation medicine is to identify and eliminate physical, psychological, and physiological factors that jeopardize flight safety. In two representative actions, FAA—

- Launched a program calling for toxicological examination of fatal aircraft accident victims as a way of pinpointing toxicological factors to which the accidents might be attributed. When the program found that the alcohol-related accident rate in a three-month sampling of pilot deaths was 10 percent, the agency began combing the automobile driving records of the deceased pilots to determine the potential usefulness of those records in identifying alcohol-impaired pilots.

- Undertook a new approach to the problem of pilot fatigue. In this program, FAA measured the psychological and physiological fatigue of FAA's own flight inspection crews while they were inspecting the navigation aids of the national airspace system. These in-flight measurements were to be compared with the fatigue levels of the same individuals when they were at their offices doing administrative work.

Civil Aviation Security. Aircraft hijackings and other criminal acts involving civil aviation increased significantly during the fiscal year. Twenty-two U.S. air carrier aircraft and one U.S. general aviation aircraft were hijacked during the fiscal year, as compared to 12 air carrier aircraft and one general aviation aircraft the

year before—an increase of 77 percent. Other developments in this area included—

- The test and evaluation after eight years of research and development of a computerized explosives detection device based on the principle of X-ray absorption. The device automatically detects explosives in checked baggage.

- The development, with the assistance of the Federal Bureau of Investigation, of a new training program establishing uniform procedures for airline crewmembers to follow in a hijacking.

- The assignment of FAA federal marshals to air carriers during the height of the Cuban refugee crisis.

Other Aviation Safety Developments. Among other safety developments, FAA—

- Completed a joint program, with the National Weather Service, whereby meteorologists were assigned to all 20 air route traffic control centers in the national airspace en route stage A network and to the air route traffic control center at Anchorage, Alaska.

- Signed a research agreement with the Department's Transportation Systems Center at Cambridge, Massachusetts, for the establishment of minimum performance standards for aircraft tire repair and retreading operations. The objective was to enhance the safety and airworthiness of retreaded aircraft tires.

- Worked out a plan with the Federal Communications Commission for the use of two additional radio frequencies as a way of reducing frequency congestion at airports having only one radio service for pilots.

Air Navigation and Air Traffic Control

Flight Service Station Modernization. In April 1980, the FAA Administrator announced a plan to modernize the agency's flight service stations into 61 highly automated flight service stations, which, like the 20 air route traffic control centers in the en route stage A system, would be computer interconnected and operate as a network. The 61 automated stations would be located at important centers of general aviation activity in 45 states and Puerto Rico.

To get the program started, competitive contracts were awarded to three manufacturers to design the basic computer system to be used by the centers. The contractor submitting the winning design would be asked to translate his design into the prototype computer system to be used by the new network. When completed, the prototype was to be tested and evaluated by the agency, after which procurement would begin. It was expected to take about four years to reach the procurement stage and an additional year before the first

14 automated centers were commissioned. FAA expected the automated system to save the government \$1.5 billion by 1995.

Air Traffic Control. During the year, FAA accepted delivery of direct access radar channel subsystems at all 20 of its air route traffic control centers in the contiguous 48 states. The new subsystem was to replace the existing backup radar system for the automated en route stage A air traffic control system. The new subsystem was expected to take over the radar data processing at each of the 20 domestic centers whenever their primary computers failed or were shut down for routine maintenance. It was expected that the first of the direct access subsystems would be commissioned early in 1981 and that all 20 domestic subsystems would be commissioned by mid-1981.

In another development, FAA commissioned the first en route minimum safe altitude warning system, at the Cleveland air route traffic control center. The warning system, a computer software program, monitors the flight path of aircraft equipped with altitude encoding transponders for adequate clearance of terrain and man-made obstructions by comparing the aircraft's flight path with a map of the terrain. When the system detects a potentially unsafe condition, it gives an alert on the controller's scope. The controller, after analyzing the situation, issues an alert to the pilot, if necessary.

The new system was to be installed at all 20 air route traffic control centers in the contiguous 48 states. It was expected to be operational in all 14 centers east of the Rockies by the spring of 1981; it was to be commissioned somewhat later west of the Rockies, since the development of charts for mountainous areas requires more time. A similar system was already operational at 62 terminal areas equipped with ARTS III automated radar systems.

A milestone was reached in April when a terminal area conflict alert system was commissioned at the Los Angeles tower. This marked the completion of the program to equip 62 terminal areas with a conflict alert system. The system warns controllers when aircraft are on converging courses. When the system detects a potential conflict, it activates a buzzer and flashes the letters "CA" on the controller's radar display. The controller instructs the pilots to take action to avoid the potential danger.

In August, the Anchorage center became the first of three centers outside the contiguous 48 states to have in operation an en route automated radar tracking system. The Honolulu and San Juan centers were scheduled to have the same system in operation in February 1981. The automated tracking system, a modified version of the automated radar terminal system which is used at

terminal areas, displays such essential flight information as aircraft identity, altitude, and ground speed. It is simpler and less costly than the system employed at the 20 air route traffic control centers in the contiguous 48 states. It was possible to use a simpler system at Anchorage, Honolulu, and San Juan, because these centers operate independently and are not part of a network.

In other developments, FAA—

- Commissioned 30 ARTS II automated radar terminal systems. This brought to 66 the number of ARTS II's in commission and brought to 73 the number of ARTS II's received from the manufacturer. The ARTS II was specifically designed for airports whose traffic does not justify the more highly automated and much more costly ARTS III.

- Initiated a program to install instrument landing systems at various satellite airports around the country. Of the 24 landing systems earmarked for the program, 14 were in place by the end of the fiscal year, and the other 10 were expected to be in operation early in fiscal year 1981.

- Activated two new terminal control areas, in addition to the previous 21, to provide air travellers with increased protection against midair collisions in areas of dense traffic and high volume passenger loads. Two additional terminal control areas were proposed, and a total of 25 candidate sites were being evaluated.

Airports

The FAA has as an important part of its mission the development of the national airport system. During the year, FAA—

- Obligated \$667.1 million for new airport development grants under the airport development aid program, a new single-year high. Approximately \$35.2 million worth of development grants went for construction of satellite airports to relieve congestion at air carrier airports. In addition, the agency approved 165 planning grants totaling \$10.4 million.

- Updated and published the national airport system plan, for the 10-year period 1980 through 1989.

- Revised the basic regulation implementing the federal airport planning and development aid programs. The revision incorporated new requirements for federal grants, but simplified the regulation.

- Participated in working groups that produced two landmark documents: (1) a Departmental policy statement and proposed guidelines on citizen participation in local transportation planning; and (2) the Federal Interagency Committee's urban noise guidelines for con-

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sidering noise in land use planning control. Both documents were expected to have a positive effect on airport planning.

International Aviation

During fiscal year 1980, FAA—

- Participated in more than 50 meetings of the International Civil Aviation Organization (ICAO). Among the more important of these were the 23rd session of the ICAO Assembly, the 6th African-Indian Ocean regional air navigation meeting, and a special European air navigation meeting. The agency also participated in meetings of the World Meteorological Organization, the International Telecommunications Union, and the North Atlantic Treaty Organization.

- Supplied technical backup for bilateral negotiations leading to: (1) a new air transport service agreement between the United States and the People's Republic of China; (2) a bilateral airworthiness agreement with Poland providing for the reciprocal recognition of the safety certification of certain aeronautical products; (3) a Micronesian compact setting forth the terms and conditions under which FAA would continue to perform safety and regulatory services in the Trust Territory of the Pacific Islands following termination of the U.S. trusteeship.

- Provided technical advice to foreign governments for improvement of the safety, efficiency, and capacity of their air traffic control systems and their safety regulations. The assistance included providing full-time resident advisors in Korea, Oman, Spain, and Venezuela and sending approximately 50 short-term missions to 16 other countries.

- Trained 458 nationals from 70 countries in air traffic control and safety regulation and, at the request of the governments concerned, provided flight inspection services for 50 foreign countries around the world.

Administration

Personnel. After September 30, 1976, when FAA employment peaked at 55,991 full-time employees, it declined steadily, dropping to 55,760 in 1977, 55,221 in 1978, 54,444 in 1979, and 53,538 at the end of fiscal year 1980. There were 2,453 fewer full-time employees in the agency in September 1980 than in September 1976, a 4.3 percent decrease over the 4 year period.

In July 1980, the Office of Personnel Management delegated to FAA the authority to conduct competitive examinations for positions of Aviation Safety Inspector, GS-9, -11, and -12. FAA was to establish a special ex-

amining unit staff at the Mike Monroney Aeronautical Center to carry out the terms of the delegation agreement. This staff was expected to become operational by February 1981. The new examining authority was expected to enable FAA to speed up the hiring process for these key occupations.

Training. A computer-based instructional format for nine airway facilities electronics technician courses was approved for use at the FAA Academy and at 40 learning centers located in various airway facility sectors. Improvement in the quality of the training and significant savings in travel time and per diem were expected.

The radar training facility at the Aeronautical Center was commissioned and began operations. This facility was to be used to train and screen developmental controllers on terminal and center radar operations. The facility uses simulated air traffic control problems which are generated by computers. The system enables instructors to stop, backup, and replay or restart individual problems, according to the needs of each student. The system also measures each student's performance on the problems. The radar training facility was expected to significantly improve the training and screening processes for developmental controllers.

Civil Rights. FAA continued to register advances in civil rights and equal employment opportunity. During the year, the agency—

- Conducted 321 reviews of airport sponsors and found 68 not in compliance with the Civil Rights Act of 1964 and Part 21, Title 49, of the Code of Federal Regulations. All but one of the sponsors found not in compliance voluntarily complied.

- Awarded \$61.1 million (out of a total of \$360 million) in contracts to minority owned firms, as compared to \$40.2 million the year before.

- Increased its percentage of women employees by eight tenths of a percent and minority employees by six tenths of a percent. The percentages of women and minority employees to the total number employed were: women, 14.4 percent, compared to 13.6 percent the year before; minority employees, 11.7 percent, compared to 11.1 percent the previous year.

Labor Relations. The Professional Air Traffic Controllers Organization (PATCO) and FAA completed renegotiation of their labor agreement. Perhaps the most significant provision of the revised agreement was one which permitted PATCO to bring grievances for removals and for suspensions of more than 30 days. Grievance actions arising out of this provision were expected.

The Professional Airways System Specialists (PASS) continued to challenge the Federal Aviation Science and Technology Association (FASTA) as the exclusive representative of FAA's electronics technicians. When FASTA filed a petition with the Federal Labor Relations Authority (FLRA) to consolidate its three bargaining units, PASS filed a challenging petition to force an election among the affected employees to decide which union would represent them. FLRA approved FASTA's request to consolidate the units, but, as the period closed, still had to decide what to do with PASS's petition. The issue was complicated by the fact that FLRA operated under two different rules during the period in which it received the two petitions. As a result, it had to decide which of the two rules to use.

Management. During the year, FAA completed a study of the administrative support requirements of the two Washington Metropolitan Airports—Washington National and Dulles International—as a first step in having them become administratively self-supporting.

A computerized enforcement information system began operating at the flight standards national field office at Oklahoma City. The new system was to provide direct support for the enforcement programs of Flight Standards, Civil Aviation Security, Airport Standards, the Office of Chief Counsel, and Regional Counsel. The new system was designed to follow individual cases from initial investigation, through the court system, to final appeal.

An FAA developed uniform payroll system replaced eleven existing payroll systems. At the end of the fiscal year it was providing payroll services for all FAA employees and the civilian employees of the Coast Guard. The success of the system was such that the Department decided to adopt it for the entire Department. The consolidated system was to begin providing Department-wide service early in fiscal year 1981. It was to cover roughly 99 percent of the Department's employees, with only the employees of the Saint Lawrence Seaway Development Corporation and the Alaska Railroad remaining outside the system.

Federal Highway Administration

The federal-aid highway program is federally assisted and state administered. The program provides federal funds to the states for use in constructing and improving urban and rural highway systems. It is designed to meet specific objectives, all of which contribute to the improvement of the nation's transportation services. This chapter highlights some of the most significant activities and accomplishments of the Federal Highway Administration (FHWA) in carrying out the federal-aid highway program during fiscal year 1980.

Financing

Federal-aid highway funds available to the states at the beginning of fiscal year 1980 totaled \$13.7 billion. This included \$8.6 billion in new budget authority for fiscal year 1980 plus \$5.1 billion in unobligated balances carried over from prior years. However, the Department of Transportation and Related Agencies Appropriations Act of 1980 established an obligational limitation of \$8.75 billion, excluding funds for emergency relief. The effect of this Act was to defer, or make unavailable for obligation, about \$5 billion of authorized funds.

Highway financing was also affected by the President's March 1980 announcement that, because of adverse economic projections, he would submit a new fiscal year 1981 budget that would include substantial reductions in outlays in many federal programs. To implement this decision, FHWA ordered an immediate halt in project approvals in order to "close the books" and determine the total amount of federal-aid highway funds that had been obligated by the states up to that date.

The President submitted a formal deferral message to Congress on April 16, 1980, providing for a new obligation ceiling of \$7.6 billion for the highway program, effectively deferring another \$1.15 billion until

the end of fiscal year 1980. Under the terms of the deferral, the funds which had been temporarily withheld by FHWA in March were to be released for obligation, but under new conditions. The states would be permitted to obligate up to 75 percent of the remaining \$2 billion in obligational authority before August 1 and the remaining 25 percent thereafter. Further, the funds available for obligation were to be allocated to the states based on a formula which was proportional to their original fiscal year 1980 apportionment, but adjusted to provide all states with enough spending authority to prevent the lapse of any of their funds, except where recent state estimates had indicated a planned lapse of interstate system funds.

Finally, on July 8, 1980, Congress overrode the President's deferral by providing a new limitation of \$7.8 billion in the Supplemental Appropriations and Rescission Act of 1980 and directed that redistribution of the remaining unobligated authority be on the basis that each state's share of the \$7.8 billion be proportional to their share of the initial fiscal year 1980 apportionments. States which had already exceeded their share could not obligate any more funds during the year. As a result of these financial limitations, a total of \$5.7 billion in obligational authority was deferred until the beginning of fiscal year 1981.

Highway System Improvements

FHWA continued its efforts to complete the interstate system. By the end of fiscal year 1980, more than 39,980 miles were open to traffic, including 248 miles that were put into service during the year. Another 139 miles of unopened sections were placed under construction contract, leaving only about 2,350 miles to be completed. In an effort to accelerate the interstate program, over \$490 million was obligated from the interstate discretionary fund. This fund gives the Secretary of Transportation the authority to reallocate funds not being used expeditiously in one state to other states with ready-to-go projects. The \$490 million in discretionary funds was in addition to the \$2.7 billion in regular interstate funds that were obligated during the year.

In a related area, \$954 million of federal aid was obligated for interstate substitution projects, using all of the funds appropriated by Congress during the year for that purpose. This included \$679 million for substitute transit projects in 11 urbanized areas and \$275 million for substitute highway projects in 14 urbanized areas. These substitute projects were funded in lieu of certain interstate routes that had been withdrawn from the interstate system.

As the interstate system neared completion, the emphasis was beginning to shift from initial construction to

the resurfacing, restoration, and rehabilitation of the existing system. In fiscal year 1980, \$136 million of federal aid was obligated for rehabilitation projects affecting 811 miles of interstate system highways. A significant number of federal-aid primary and secondary system miles also were improved, as a result of \$282 million that was obligated for rehabilitation projects on those systems.

More than 1,900 projects were initiated using highway bridge replacement and rehabilitation funds during the year. Obligations under this program, which is directed at highway safety as well as the preservation of highways, totaled more than \$750 million, about \$150 million more than was obligated in fiscal year 1979. Nineteen bridge workshops for city, county, and state officials were conducted by FHWA at various locations throughout the country. These workshops were intended to provide information necessary to implement the bridge program, with emphasis on the need for inspection and rating of all bridges.

Attention was also focused on the bridge problems of the 3 million miles of roads and streets not on the federal-aid system. By the close of fiscal year 1980, about 80 percent of the estimated 312,000 off-system bridges had been inventoried and the pertinent information placed in a national bridge inventory. In addition, over \$100 million was obligated for more than 800 off-system bridge projects during the year.

FHWA administers several other major highway programs, including forest highways and public lands highways. In addition, highway engineering and construction services are performed by FHWA for other federal agencies, including the Department of Agriculture and the Department of the Interior. During fiscal year 1980, 65 contracts were awarded under these programs, totaling \$614 million.

Legislative Development

A major undertaking of FHWA during the year was the analysis of highway issues as a part of developing a legislative proposal for a 1981 highway bill. This process began in the spring of 1980, based on an FHWA paper that addressed possible options for the federal-aid highway program. The paper was widely distributed, and responses were received from 88 local governments, 44 states, and 14 interested groups. Teams of DOT representatives subsequently met with the interested groups and state and local officials to discuss the highway program.

Highway and Motor Carrier Safety

The safety-related activities of FHWA include a wide range of educational, promotional, regulatory, in-

spection, and law enforcement activities, as well as programs which provide funds to the states for highway safety improvements. Characteristic of the fiscal year 1980 achievements in these areas was the initiation of approximately 1,000 hazard-elimination projects and approximately 2,100 projects to improve safety at rail-highway grade crossings. These improvements were expected to substantially reduce fatal accidents. In another safety-related program, projects to improve pavement marking on 78,000 miles of roadway were initiated. The total amount of federal funds obligated for safety construction activities during the year was \$241 million.

In order to improve the safety of commercial motor vehicles, FHWA continued to increase the number of commercial motor vehicle examinations and safety management audits. A total of 31,000 roadside driver and vehicle examinations were performed during the year—an increase of 5,000 from fiscal year 1979. Almost 10,800 of the vehicles were found to be imminently hazardous or likely to be involved in an accident or breakdown on the public highways and were taken out of service. Vehicles taken out of service cannot be moved, under penalty of law, until the defects have been corrected. Additionally, some 3,696 drivers were taken out of service for serious violations of the federal safety regulations. A commercial motor carrier safety inspection and weighing demonstration program was underway during the year in the states of Alaska, Idaho, Michigan, and Utah.

Energy Conservation

Since 1974, when federal-aid highway funds were first authorized to fund ridesharing projects, FHWA has worked to promote and improve the effectiveness of carpool and vanpool programs. During fiscal year 1980, FHWA took a number of important steps to enhance ridesharing programs. A total of 76 new ridesharing projects were initiated, and \$27.7 million was obligated to aid ridesharing projects. Other activities included:

- Establishing a national ridesharing information center which operates a toll-free "hotline." The center provides state and local agencies, private businesses, and individuals with a single point to contact to obtain information and technical assistance to establish or expand a ridesharing program.
- Developing and promoting, through the National Conference of State Legislators, a model state law designed to help overcome regulatory barriers to ridesharing.

Development and implementation of steps to increase the use of high-occupancy vehicles were accelerated during fiscal year 1980. As of the end of the

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year, there were 81 exclusive high-occupancy lane projects nationwide, with an additional 72 projects in various stages of planning, design, or construction. Of the 106 urbanized areas of over 200,000 population in the nation, 49 had implemented or were planning high-occupancy vehicle projects.

Efforts to improve traffic operations continued to increase efficiency and energy conservation in the transportation network. Approved projects included improving and modernizing traffic signal systems, removing unwarranted traffic signals, replacing older controllers and detectors with modern and more reliable equipment, and properly coordinating traffic signals. Obligations for these projects totaled about \$560 million, a \$200 million increase from 1979. A significant accomplishment in this area was the start of a signal timing optimization project. The project had the potential of saving over 100,000 barrels of oil per day, by reducing vehicle stops and delays.

A number of other energy conservation activities were undertaken during the year. For example, FHWA increased its efforts related to the development and promotion of technologies for recycling deteriorated pavements and for using sulfur extended asphalt pavement. During fiscal year 1980, 13 experimental sulfur extended asphalt projects were completed, using approximately 230,000 tons of the sulfur and asphalt mixture. Additionally, a total of 87 federal-aid projects using recycled asphalt were completed during the year. Use of both these energy-conserving techniques was expected to increase in the future. In addition, FHWA continued its research on the use of plasticized sulfur binders (called sulphlex binders) as a replacement for asphalt. Experimental sulphlex paving projects were completed in Texas, North Dakota, Nebraska, Pennsylvania, and Florida. Use of sulphlex binders was also expected to increase.

System Operation and Management

There was an effort by both FHWA and the states to identify and strengthen pavement management practices and procedures during the year. Several guidelines and training courses were offered by FHWA, and pavement management research efforts were underway at both the state and federal levels. It was too early to quantify improvements in pavement performance or system condition resulting from this activity, but FHWA observers were convinced that there were definite improvements in many state practices and operations.

The ability of FHWA to determine how the various highway systems are functioning was enhanced by the increasing participation of the states in FHWA's highway performance monitoring system. Almost all the states were participating in the system, which had shown that it was a beneficial management tool. The system appeared likely to become an integral part of FHWA and state highway operations.

Rural Public Transportation

There also was significant progress in an Urban Mass Transportation Administration program, which FHWA was administering, to make public transportation more accessible to citizens in rural areas and in towns of less than 50,000 population. The program provided operating and capital assistance to purchase equipment and provide service to rural areas. Approximately 400 capital and operating projects were initiated (about seven times more than in fiscal year 1979) and a total of \$58 million was obligated to support such projects.

Civil Rights

The civil rights responsibilities of FHWA continued to receive attention during fiscal year 1980. Contracts totaling approximately \$271 million were granted to minority firms under the federal-aid program, a 65 percent increase over fiscal year 1979 and \$96 million above the goal established for the year. Grants to minority firms for construction contracts that are administered directly by the federal government amounted to an additional \$9.9 million.

Significant gains also were made by FHWA in its efforts to increase minority and female representation on its own workforce. During fiscal year 1980, the agency hired a total of 231 professional and 292 technical full-time employees, achieving a minority and female hiring rate of 45 percent in the professional category and 48 percent in the technical category. During the second half of the year, 37 of the agency's 53 new employees were minority or female.

Total FHWA employment decreased from 4,687 in fiscal year 1979 to 4,633 in fiscal year 1980. However, minority employment increased from 612 (13.08 percent) to 632 (13.64 percent), and female employment increased from 1,427 (30.50 percent) to 1,440 (31.08 percent).

Federal Railroad Administration

The Federal Railroad Administration (FRA) is responsible for planning, developing, and administering programs to achieve safe operating and mechanical practices in the railroad industry. Its responsibilities include publication and enforcement of federal railroad safety regulations designed to safeguard employees, travelers, and the general public.

The number of reportable railroad accidents decreased by nearly 14 percent, from 11,177 in calendar year 1978 to 9,740 in calendar year 1979. This decrease was due in part to the adjustment of the accident reporting threshold from \$2,300 for 1978 to \$2,900 for 1979. The reporting threshold is adjusted every two years to account for inflation.

FRA and state safety inspectors monitor the adequacy of railroad inspection activities to assure compliance with federal railroad safety regulations. At the end of fiscal year 1980, there were a total of 287 federal safety supervisors and inspectors. Three new regional offices of railroad safety were established during the year, bringing the total number of FRA regional safety offices to eight.

At the end of fiscal year 1980, 30 states were participating in the state rail safety participation program and providing a total of 86 inspectors. A task force on improvement of the state participation program was initiated in fiscal year 1980 in an effort to improve and expand the program.

FRA completed system wide safety assessments of three railroads during the year. Assessments of the Chicago, Rock Island & Pacific Railroad, the Illinois Central Gulf Railroad, and the Louisville and Nashville Railroad covered all aspects of railroad operations, motive power and equipment, and track conditions. Possibly because of the assessment, the L&N experienced a 42 percent decrease in the total number of accidents in calendar year 1979.

During fiscal year 1980, FRA completed three major rail safety rulemaking projects. As part of its regulatory reform effort, FRA issued final rules revising the freight car and locomotive safety standards. These revisions eliminated some requirements, reduced the paperwork, and resulted in a significant cost savings to the railroad industry. In addition, FRA issued new safety standards requiring the installation of improved glazing materials in the windows of railroad locomotives, cabooses, and passenger cars. The improved glazing reduces the likelihood of injury or death to the occupants caused by objects striking the windows.

Work continued during fiscal year 1980 on the development of FRA's system safety plan. The plan, which was to integrate all of FRA's efforts to improve railroad safety, was to be submitted to Congress early in 1981.

Regulatory Reform

FRA's two year effort in support of railroad regulatory reform culminated with the passage of the Staggers Rail Act of 1980. While the Department had advocated more comprehensive legislation, the Staggers Act afforded the industry substantial relief from outmoded procedures. It also promised sufficient freedom for the railroads to market their services and operate their plant and equipment in a more productive fashion, unimpaired by artificial constraints.

The reforms were designed, in part, to permit railroads to exploit their investments in fixed plant and rolling stock more fully, by offering services and rates that were responsive to shipper needs. The results were expected to be lower unit costs, better use of assets, and improved earnings.

After passage of the Staggers Act, FRA began participating in the implementation of the reforms.

Traffic Forecasts

FRA completed its first forecast of future railroad traffic flows. The forecast predicted 1990 traffic flows for major commodity groups. This forecast differed from previous efforts to identify railroad capacity requirements, in that it attempted to predict future traffic levels, rather than merely analyzing historical flows. The information derived from these forecasts was expected to assist FRA in making judgments regarding the allocation of federal assistance funds and to assist the railroad industry in making long-term investment plans.

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Coal and Grain Transportation

Coal transportation issues continued to command the attention of FRA's policy development and research resources. FRA was active in several interagency groups that were examining current and anticipated problems in the movement of coal. The principal issues were coal port congestion and rail trunk line capacity, as well as estimates of capital needs for future expansion.

Additionally, FRA was seeking ways to provide small coal mine operators with more economical rail service. Another study was directed at identifying other major transportation problems facing small coal mine operators. FRA was also participating in a coal related study which was examining operations on a main line through North Dakota and Minnesota in an effort to develop ways of improving motor vehicle safety and reducing motor vehicle delays caused by increased coal rail traffic.

In support of the Department's rail regulatory reform effort, FRA completed two studies of the amount of competition in the transportation of grain and of its effectiveness in limiting rail rate increases. One study examined the effects of both intermodal and intramodal competition on the cost of corn and soybean transportation in two parts of Iowa.

Intermodal competition was found to be effective in preventing rate increases in the eastern Iowa study area, located less than 100 miles from the Mississippi River. Intermodal competition was noticeably less effective in the western Iowa study region, which was about 225 miles from the Mississippi. However, intramodal competition was found to be extremely effective (in both study areas) in preventing rate increases when the railroads were assumed not to price collectively.

The other study, which dealt with hard winter wheat transportation in areas of Texas, Kansas, and Oklahoma, examined the effects of rate increases on the traffic balance between railroads and alternative modes.

Rate increases implemented by a single railroad caused a large shift of traffic, primarily to competing railroads. Even small collective rate increases in the eastern portion of the study area resulted in significant diversion to truck barge movements through the port of Catoosa. In the western portion of the region, rail rates could be increased 5-20 percent before diversion to competing modes made the rate increases unprofitable.

Assistance to Railroads

During fiscal year 1980, FRA approved \$118 million in loans and federal guarantees under Title V of the Railroad Revitalization and Regulatory Reform Act of

1976 (4R Act). The funds were used to finance rehabilitation and improvement of track and equipment. FRA also provided \$75 million in guarantees to assist the trustee of the Milwaukee Road in making labor protection payments to employees who lost their jobs as a result of the restructuring of the Milwaukee. At the end of fiscal year 1980, a total of \$704 million had been committed to the Title V program. The commitments had helped to stem the deterioration of vital segments of high density main lines and had helped to rehabilitate equipment in instances where railroads could not find other sources of capital.

Other assistance provided during the year included \$85 million in funds for the trustee of the Milwaukee Road, provided under the Emergency Rail Services Act of 1970, to permit the continuation of essential rail services during the trustee's evaluation of the prospects for reorganization.

FRA was actively involved in several aspects of restructuring bankrupt portions of the rail system, pursuant to Section 401 of the 4R Act, particularly with respect to the Rock Island and the Milwaukee systems. FRA's support in facilitating potential line coordinations, eliminating duplicate operations, and implementing other restructuring possibilities was contributing to development of a more streamlined midwestern rail network.

State Assistance Program

During fiscal year 1980, 48 states received state assistance grants (37 planning grants and 65 project grants) totaling \$83,071,794. The Local Rail Service Assistance Act of 1978, which authorized federal assistance to rail lines prior to abandonment, had a great effect on state rail programs. Over two-thirds of the federal assistance obligated was for track rehabilitation, substitute service, and rail facility construction, while only one-quarter was obligated for the continuation of subsidized operations on rail lines that would otherwise have been abandoned. Capital projects, other than track and bridge rehabilitation, included construction of sidings for loading unit grain trains, relocation of grain elevators, and construction of a trailer-on-flat-car facility.

Labor-Management Programs

In 1980 the task force on rail transportation completed its fourth year of a cooperative program which was established to improve terminal operations through the use of railroad labor-management project teams. Teams

in St. Louis, Chicago, Houston, and Portland conducted experiments to improve information exchange, freight interchange, and labor efficiency during 1980. Estimated benefits for the industry totaled over \$5.7 million for 1980. FRA had also begun preliminary discussions with railroads and labor unions in New England and with the New England Regional Commission in an effort to promote the establishment of a New England regional project.

FRA completed a two-year examination of the prevalence and costs of railroad employee use of alcohol and a review of approaches to combat the alcohol problem. The costs of alcohol abuse to railroad companies include, in addition to the safety considerations, reduced employee productivity, increased absenteeism, more frequent illness, and labor-management disputes. The study found that employee assistance programs apparently provided the best means for rehabilitating problem drinkers.

Northeast Corridor Improvement Project

The Northeast Corridor Improvement Project (NECIP) was in its fourth year. The goal was to achieve timely, dependable, and safe rail passenger and freight service in the 456 mile rail corridor. Congress authorized \$750 million in additional funding in May 1980, bringing the total NECIP authorization to \$2.5 billion.

In fiscal year 1980, NECIP design efforts focused on electrification, signaling stations, bridges, service facilities, and curve realignments. The 1980 construction season began in April. By October, major track improvements included the installation of 64 miles of concrete ties, 54 miles of continuous welded rail, and 46,000 wooden ties. Rehabilitation of 49 bridges was completed and work began on 32 others. Repairs and refurbishments progressed at six stations. Tunnel rehabilitation began in the New York City area, and preparations were made for improvement of the signaling system.

Contracts totaling more than \$18 million were awarded in fiscal year 1980. They included construction of the Odenton, Maryland, maintenance of way base and section improvements (curve realignments, bridge rehabilitation, drainage and interlockings improvements) between Washington, D.C., and Baltimore, Maryland, and between Wilmington, Delaware, and Chester, Pennsylvania.

During the year, several analyses were conducted to resolve issues related to operations in the Northeast corridor. The off-corridor freight diversion plan examined the possible diversion of up to ten Conrail trains per day onto a parallel rail system as a means for resolving

potential freight congestion in the corridor. A corridor freight and passenger service separation study included data analysis as well as information from interested parties on the best ways to coordinate freight and passenger services in the corridor.

As mandated by the Amtrak Improvement Act of 1978, FRA reported to Congress on its analysis of the conflict between the needs of commuter rail passenger service and those of intercity rail passenger service in the corridor, including the allocation of access to key terminals, especially Pennsylvania Station in New York.

FRA's program of technology sharing with the Japanese National Railways, British Rail, French National Railway, German National Railway, and Canadian Railway continued. Information from this program contributed to the design and implementation of the NECIP and to revitalization of the national rail passenger system.

Research and Development

FRA's research and development programs continued to concentrate on railroad safety, railroad operations, passenger equipment research for Amtrak, and energy conservation programs.

Test programs began at the recently completed rail dynamics laboratory at the Transportation Test Center at Pueblo, Colorado. The laboratory was using two separate test machines, a vibration unit and a roll dynamics unit, to investigate the dynamic characteristics of railroad vehicles.

FRA was completing the design of a locomotive and train handling evaluator, a unique facility which could be used to evaluate locomotive cab design and to measure the performance of locomotive engineers in a laboratory situation. The evaluator was scheduled for completion in fiscal year 1982.

FRA sent a report to Congress on the relationship of size, weight, and length of rail cars to the safety and efficiency of rail transportation. This report highlighted several safety issues and suggested methods to address them.

The methods included interim steps to deal with poor performance cars, establish real time safety and efficiency comparisons, and perform research aimed at establishing performance requirements and evaluating conformance.

The methods also include long term actions, such as:

- Legislation and government and industry actions to ensure the health of essential hazardous material carrying railroads so that even the crucial marginal ones will have track that can resist heavier loads.
- Incentives for railroads to shorten the implementation period for improvements.

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- Development, establishment, and use of performance criteria for the introduction of new cars.

FRA accepted, from the manufacturer, the first high speed (80 mph) self-propelled track geometry inspection car to be used in this country. The vehicle was scheduled to begin service early in calendar year 1981.

FRA's Transportation Test Center completed development of the R-3 highway-rail track inspection vehicle. The R-3 was designed to measure track geometry and detect internal rail flaws, displaying the size and shape of the flaws on a video screen.

During the year FRA continued to support Amtrak by:

- Conducting a joint FRA and Amtrak test and evaluation of dual tread and disc brakes to determine if wheel life and brake performance were improved.
- Conducting a joint FRA and Amtrak test and evaluation of a radial axle truck, to determine if ride quality, wheel wear, and stability were improved.
- Completing tests of new passenger train equipment utilizing a tilt feature to obtain data on safe speed through curves and to determine if ride quality, wheel wear, and stability were improved.
- Completing research and development that led to the upgrading of 34 Metroliners for improved performance.
- Providing instrumentation to Amtrak for their use in studying the relationship of diesel train performance to fuel consumption.

Design Award Program

As part of the Department's effort to encourage good design in transportation facilities and equipment, FRA initiated its first design awards. Eighteen projects were cited as exceptional achievements in design. Among the award recipients were a barge-to-rail coal loading facility, new lightweight piggyback equipment, and solar powered signals.

Civil Rights

Fiscal year 1980 FRA employment, including the Alaska Railroad, totaled 1,499, compared to 1,425 in fiscal year 1979. Total minority employment increased from 214 (15.0 percent) to 229 (15.2 percent). Female employment increased from 308 (21.6 percent) to 336 (22.4 percent).

The average grade for all minority employees moved up from GS-8 to GS-9; and the average grade of female employees increased from GS-7 to GS-8. Recruitment of minority and female candidates was enhanced by four recruitment trips and by the safety inspection trainee program, which aimed at bringing minority and female candidates into the safety inspector occupational series at the trainee level.

The Alaska Railroad

The Alaska Railroad, in its 57th year of operation, moved a total of 270,640,000 ton-miles of freight and

earned \$28,892,000 in revenues. The results for fiscal year 1980 reflected a moderate upturn of five percent in ton-miles and 14 percent in revenues.

The Alaska Railroad operates 478 miles of single mainline track extending from the deepwater ports of Seward and Whittier through Anchorage to Fairbanks, with branchlines to Eielson Air Force Base, Fairbanks International Airport, Palmer, and the Suntrana coalfields. Interline freight traffic moves by rail-barge between Whittier and Prince Rupert, British Columbia, or Seattle, Washington. Bulk or loose import cargo is handled at the railroad dock at Seward. Piggyback freight moves by rail from the Port of Anchorage. During fiscal year 1980, 4,746 carloads moved through Whittier, a one percent decline from fiscal year 1979, and 1,642 carloads moved through Seward, a 200 percent increase. A total of 5,793 vans moved by piggyback from Anchorage to Fairbanks, a 21 percent increase.

The railroad operates passenger service between Whittier and Anchorage (63 miles) and between Anchorage and Fairbanks (356 miles). The Whittier-Portage-Anchorage service, which operates daily during the summer and three times a week in winter months, consists of passenger coaches and flatcars for hauling vehicles. It principally serves the state-operated auto ferry, MV BARTLETT, which runs between Whittier and Valdez. The passenger service between Anchorage and Fairbanks operates daily during the summer and twice weekly during the winter. The 150,678 passengers carried by the railroad in fiscal year 1980 were 367 less than were carried in fiscal year 1979; however, passenger service revenue increased seven percent.

In most years, the Alaska Railroad is not able to operate within its revenues. Its operational deficit and capital investment program are supported by a federal appropriation through a revolving fund. The 1980 federal appropriation amounted to \$6.5 million. Positive cash flows did occur in fiscal years 1975-77, as a result of the trans-Alaska oil pipeline construction activity. Those positive cash flows, plus Congressional appropriations of \$38 million, supported a capital and maintenance program of over \$52 million between 1975 and 1980. As a result of these expenditures, the railroad was in good physical condition. During fiscal year 1980, \$5.5 million was expended on track and roadbed improvement.

Revenues for fiscal year 1980 were \$28.9 million (an increase of 15 percent) and expenses were \$35.4 million (an increase of 11 percent). After depreciation, this amounted to a negative cash flow of \$3 million. The strict management and budget controls the Railroad had instituted after completion of the oil pipeline were countering the lower traffic volumes and inflationary costs of subsequent years. As a result, expenses were decreasing in relation to revenues.

National Highway Traffic Safety Administration

The National Highway Traffic Safety Administration (NHTSA) has four basic responsibilities: improving crash avoidance and crashworthiness performance; encouraging safer driver and pedestrian behavior; improving fuel efficiency; and informing consumers of the safety and economic aspects of vehicle ownership.

Traffic accidents are the leading cause of death for people age 44 and under. In calendar year 1979, over 51,000 people lost their lives in traffic accidents and about four million people were injured. Current trends indicated that a person born in 1980 could expect to be involved in a motor vehicle accident an average of once every 10 years. One in 40 could expect to die in a motor vehicle accident, and one in 20 could expect to suffer a disabling injury.

Motor vehicle accidents cost the nation about \$50 billion every year in medical and rehabilitation costs, lost wages, welfare, and property damage. There are also social costs—the emotional and physical suffering inflicted on victims, families, and friends.

Federal motor vehicle standards and programs for highway and motor vehicle safety instituted since 1966 were estimated by NHTSA to have reduced the fatality rate (number of deaths per 100 million miles driven) by 39 percent. In other words, a motorist could drive almost 1,600 miles in 1980 with the same amount of risk as someone who drove 1,000 miles in 1966. This improvement had come about despite large increases in traffic that presumably should have sent the death rate higher—registered motor vehicles had increased 67 percent, licensed drivers had increased 42 percent, and vehicle miles driven had increased 65 percent.

Despite success in reducing the traffic fatality rate, major problems and issues affecting traffic safety remained:

- The new smaller and lighter cars being built were less safe than large models, particularly in a traffic mix that included heavier vehicles.
- Heavy trucks (over 26,000 pounds) were involved in accidents with increasing frequency.
- Drunk driving was still a factor in about half of all fatal highway accidents.
- Occupant restraint usage continued to decline.
- The majority of states had repealed or weakened laws requiring motorcyclists to wear safety helmets.

The Human Factors

In cooperation with state and local safety officials, NHTSA continued its efforts in five "human factors" areas which had shown potential for reducing motor vehicle deaths and injuries: speed enforcement, alcohol, occupant protection, motorcycles, and pedestrian safety.

Speed Enforcement. The 55 mph speed limit had proven to be an effective highway safety measure and was credited with saving an estimated 42,000 lives by the end of calendar year 1979. A Departmental study also indicated a savings in motor fuel of 3.4 billion gallons annually. NHTSA continued to work with the states to increase compliance with the speed limit. By the end of fiscal year 1980, over 50 percent of drivers were complying.

Alcohol. Drunk driving was proving to be a persistent problem. NHTSA had concluded that coordinated local programs were needed to identify and control drunk drivers and to establish voluntary social controls which would make drunk driving unacceptable behavior. NHTSA was conducting conferences and workshops to help states and local communities establish programs to deter drunk driving.

Occupant Protection. Since 1968, all new passenger cars have had lap and shoulder safety belts as standard equipment, and child safety seats have been readily available. These restraint systems are extremely effective if used, but most people do not use them.

Motorcycle Helmets. In fiscal year 1980, the motorcycle fatality rate was seven times the rate for other motor vehicles and annual motorcycle rider deaths had risen 46 percent since 1976. Although scientific research had demonstrated the effectiveness of helmets in preventing deaths and injuries, 28 states had either repealed or weakened laws requiring helmet use.

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NHTSA continued to work with the states to establish comprehensive motorcycle safety programs which would include helmet use laws, operator licensing, rider education, motorist awareness, conspicuity of motorcycles and riders, and safety standards.

Pedestrians. Eight thousand pedestrians are killed every year, and more than 100,000 are injured—a disproportionate share are children and the elderly. NHTSA continued to work with the states to pass uniform state pedestrian laws and to establish a traffic record system to identify likely pedestrian accident locations, the causes of pedestrian accidents, and the age groups most likely to be involved.

Safety Research

Crashworthiness. An important area of crashworthiness research was the development of an instrumented crash barrier. By using such a barrier, the frontal stiffness of an automobile could be determined, and computers could then simulate the results of vehicle-to-vehicle crashes. Work continued on the development of a side impact test barrier.

Biomechanics. An anthropomorphic test dummy was developed for use in evaluating side impacts. In addition, an analysis was being made of the national crash severity study data to determine the body regions and organs that were most likely to be injured in motor vehicle accidents and the type of injuries that occur. The goal was to develop a dummy that could be used to accurately predict injuries in frontal, side, and rollover crashes. Eventually, it was hoped to be possible to evaluate an automobile's crashworthiness with a single test dummy.

Reducing Pedestrian Injuries. Research continued on modifying the frontal area of vehicles to reduce pedestrian injuries. For example, tests using a production automobile fitted with a soft front structure showed that pedestrian injuries would be reduced at impact speeds up to 20 mph. This modification also made the vehicle less destructive in vehicle-to-vehicle crashes. Work began on a project to reduce pedestrian injuries caused by the hoods and windshields of passenger cars.

Occupant Restraints. In crashes with larger cars, the occupants of smaller cars come out second best. In 1979, for example, small cars made up only 38 percent of the cars on the road, but their occupants accounted for 55 percent of the deaths in two-car collisions. NHTSA believed that automatic restraints were the most effective remedy available, and the agency's occupant restraint research placed special emphasis on small cars and trucks.

Recent small car and truck automatic restraint research projects included:

- *Chevrolet Chevette*—Driver and passenger automatic restraint systems were developed and successfully demonstrated at a barrier impact speed of 32 mph.
- *Dodge Omni*—Driver and passenger automatic restraint systems were developed for this lightweight front wheel drive car and successfully demonstrated in 30 mph barrier tests.
- *Volvo 244*—Production-oriented driver and passenger automatic restraint systems were developed and successfully demonstrated in 40 mph barrier impacts.
- *Chevrolet Citation*—Production-oriented driver and passenger automatic restraint systems were successfully demonstrated in a barrier crash test at 37 mph.
- *Standard Pickup Truck*—The development and successful testing of a full front seat air bag system for a standard pickup truck was completed.
- *Volkswagen Rabbit Pickups*—Automatic belt systems were installed and successfully tested in two Volkswagen pickups.

Integrated Vehicle Systems. The integrated vehicle systems research program provided a foundation for regulatory decisions by demonstrating that vehicles could be designed to balance the needs for energy conservation, motor vehicle safety, and low cost.

The program included development of three research safety vehicles which demonstrated significant improvements in safety, fuel economy, and damage reduction. A test program to demonstrate their performance was completed during fiscal year 1980.

The major results of the tests are summarized below:

	Frontal Crash Protection (MPH)	Fuel Economy (MPG)	No-Damage Impact Speed (MPH)
Federal Requirement	30 ¹	27.5 ²	5 ³
Calspan RSV (5-Passenger)	40	32 ⁴	8
Minicars RSV (4-Passenger)	50	32 ⁴	8
Minicars LRSV (6-Passenger)	40	27.5 ⁴	8

¹ Model Year 1984 requirement

² Model Year 1985 requirement, satisfies 1981 emissions

³ Model Year 1981 requirement

⁴ Low Mileage tests

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Advanced Crash Protection. A system engineering project was underway to identify appropriate future crash protection requirements. The goal was to upgrade and consolidate standards for crash protection in frontal, side, rear, and rollover crashes for passenger cars, light trucks, and vans. Demonstration vehicles were to be used to evaluate the technical and economic feasibility of the proposals.

Heavy Duty Trucks. The goal of NHTSA's heavy truck research program was to improve the accident avoidance capability of heavy trucks and buses through better vehicle design, through research on what causes accidents involving such vehicles, and by improving the crash protection for occupants of such vehicles.

During fiscal year 1980, NHTSA completed its evaluation of the straightline stopping capability of current production vehicles equipped with air brakes without antilock systems.

Traffic Safety Statistics. NHTSA's data collection and analysis program provides the statistical foundation which supports its safety programs and standards. The data program uses existing state accident data, which includes all fatal accidents in the nation, and adds other essential details concerning the accident victims and the accident environment. Special teams are also used to investigate selected accidents.

In addition to its internal use, NHTSA statistical information is provided to Congress, private citizens, states, local governments, motor vehicle manufacturers, highway safety organizations, trade associations, and other organizations.

Rulemaking

In April 1979, NHTSA published an updated 5-year plan for motor vehicle safety and fuel economy rulemaking. The plan provided guidance for developing and issuing motor vehicle safety standards, gave the public information on proposed activities and priorities, and permitted the industry to anticipate potential requirements.

Automatic Crash Protection. An existing rule required that automatic restraint systems to protect front seat occupants from serious injury in crashes be provided in passenger cars beginning with 1982 model full-size cars, 1983 model mid-size cars, and 1984 model small cars. Manufacturers could use air bags, automatic belts, or any other automatic system that would meet the performance criteria of the rule.

Pedestrian Impact Protection. A draft notice of proposed rulemaking on pedestrian impact protection was completed. The proposed rule would require the

fronts of passenger cars to be less injurious to pedestrians. The rule was based on data gathered in NHTSA's pedestrian injury causation study, an investigation of 2,000 pedestrian accidents.

Side Impact Protection. An advance notice of proposed rulemaking was published for updating the side impact protection standard. The proposed changes included providing higher levels of occupant protection, extending coverage to all passenger vehicles weighing less than 10,000 pounds, and increasing the testing requirements.

Light Truck Fuel Economy. In December 1979, a notice of proposed rulemaking for model year 1982-85 light trucks was issued. The final standards for model year 1982, issued in March 1980, were to be 18 miles per gallon for two wheel drive vehicles and 16 miles per gallon for four wheel drive vehicles.

Brake Systems. The standard for air brake systems was modified to require that brakes act on all wheels of air braked vehicles. This action was taken to prevent the elimination of brakes from some axles, following a court decision that invalidated the stopping distance requirements in the standard.

In response to a petition to ease the burden involved in showing compliance with the air brake standard, tests were conducted on various trailer emergency brake systems. The tests revealed that the standard could be changed to preserve emergency braking performance while simplifying compliance procedures.

Child Restraints. A new child restraint standard was issued in December 1979 to become effective January 1, 1981. The standard was to apply to safety seats designed for children weighing up to 50 pounds and required dynamic testing.

Motorcycle Helmets. An interim amendment to the motorcycle helmet standard became effective on May 1, 1980. The amendment extended the standard's coverage to about 90 percent of the motorcycle helmets on the U.S. market. A notice of proposed rulemaking which would extend the coverage to all helmets was being prepared.

Special Programs

New Car Assessment Program. Under an experimental new car assessment program, which began in May 1979, new cars were crashed frontally at 35 mph into rigid barriers, to assess whether or not they substantially surpassed federal motor vehicle safety standards for occupant protection. To test fuel system

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integrity, the cars were also struck in the rear by a 4,000-pound object moving at 35 mph.

Instrumented dummies were placed in the driver and front passenger seats. They were fully restrained, wearing both lap and shoulder belts. Dummy placement and belt adjustments were made to resemble properly seated and restrained human passengers.

During the 35 mph crash, readings were taken of the severity of impact to the head, chest, and thighs of each dummy. From these readings, NHTSA scientists and engineers were able to estimate the extent of injury which would have been suffered by human occupants. The cars were graded as either passing or failing to pass the test. A "fail" was assigned if a serious or fatal injury would have been sustained by either occupant. A "pass" was assigned if death or serious injury was likely to have been avoided.

The intent of the program was to increase awareness of safety performance differences among cars of similar weight. It was also expected to lead to a crashworthiness rating system that would foster competition among manufacturers to produce safer cars.

During fiscal years 1979 and 1980, NHTSA tested 52 different autos at 35 mph. The results indicated that most cars did not significantly exceed the minimum performance requirements of the existing safety standards.

Truck and Bus Fuel Economy. The joint industry-government voluntary truck and bus fuel economy program provided nationwide distribution of pamphlets, brochures, and a quarterly newsletter and loaned films on truck fuel conservation. The information distributed emphasized the safety, fuel, and dollar savings of driving 55 mph. Distribution was accomplished through program members, truck shows, truck stops, and truck industry meetings.

The program had 325 active members in fiscal year 1980, a 55 percent increase over 1979, and the membership represented a cross-section of the truck and bus industry. Calendar year 1979 fuel savings from the voluntary use of fuel saving equipment and devices on new trucks amounted to approximately 1.7 billion gallons. Since 1973, the cumulative savings had been approximately 4.9 billion gallons.

Defect Investigations

Ford Transmissions. The most complex investigation in NHTSA history resulted, on June 9, 1980, in an initial determination that a defect existed in the transmissions of some 16 million 1972-79 Ford Motor Company vehicles. The alleged defect was believed to

cause the transmissions to slip from park to reverse. The initial determination was made on the basis of reports of about 23,000 incidents, 1,500 injuries, and 100 deaths attributed to the transmissions.

A 3-day public meeting was held in August 1980 to allow Ford and other interested parties an opportunity to present their views. At the end of the fiscal year, the information presented at the meeting was being reviewed to decide if a recall should be ordered.

Dodge Vans. Reports of temporary brake failures in 1973-77 Dodge vans resulted in a NHTSA investigation and subsequent recall of over 350,000 vehicles. The brake failure resulted from the front disc brake calipers coming in contact with the frame rails during sharp turns.

Uniroyal Tires. Based on a NHTSA investigation initiated in May 1979, an initial determination was made that approximately 2 million tires manufactured by Uniroyal Tire Corporation contained a safety related defect. Uniroyal agreed to a recall. Most of the recalled tires were original equipment on full-size 1975-77 General Motors automobiles.

Firestone Tires. In an extension of its earlier recall of some of its Firestone 500 steel belted radial tires, Firestone Tire and Rubber Company agreed to recall about 5 million additional steel belted radial tires. The five million tires in the second recall were produced between 1976 and 1978. The decision to recall came after NHTSA reviewed the performance record of certain tires made after the cutoff date for the earlier recall and determined that additional tires should be included.

Enforcement

Compliance Testing. In fiscal year 1980, NHTSA tested 268 vehicles to determine if they met federal motor vehicle safety standards. In addition, 2,181 tires and 1,082 other items, including seat belts, lighting equipment, and motorcycle helmets, were also tested. In addition, 85 vehicles were tested to determine if they met requirements for fuel system integrity. Three vehicles failed to meet the requirements. A total of 261 compliance investigations were conducted, and 52 civil penalties were imposed on 35 manufacturers.

Enforcement Settlements. On May 12, 1980, the Firestone Tire and Rubber Company paid compromise civil penalties of \$450,000 and \$50,000 for violations of the federal tire standard. The tires, produced in 1973 and 1974, were recalled in 1977.

Odometer Tampering. Odometer tampering continued to be a major problem, particularly with late-

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model high-mileage leased vehicles. During fiscal year 1980, 90 investigations were completed which confirmed odometer fraud. Twenty-three cases involving large scale odometer tampering were referred to the Department of Justice for criminal prosecution, civil penalties were assessed against 22 dealers, and 10 cases were referred to state enforcement agencies. The results of the other 35 investigations were given to consumers so that they could take private civil actions to recover damages.

Litigation

Vehicle Equipment Safety Commission v. NHTSA. On December 11, 1979, the U.S. Court of Appeals for the Fourth Circuit upheld NHTSA's amended vehicle identification number regulation. The court rejected arguments that NHTSA had exceeded its authority in establishing a uniform vehicle numbering requirement.

In Re Fiat Motors of North America, Inc. On October 15, 1980, the U.S. Court of Appeals for the D.C. Circuit denied a petition, submitted by Fiat Motors of North America, to reverse the U.S. District Court ruling in *United States v. Fiat* that NHTSA's enforcement action under the Vehicle Safety Act should be heard in the District of Columbia rather than in New York. In the enforcement action pending in the U.S. District Court for the District of Columbia, the government was seeking enforcement of NHTSA's January 4, 1980, recall order, which was based on a finding that Fiat had inadequately conducted a recall campaign for 1971 Fiat model 850 vehicles and that 1970-74 Fiat model 124 vehicles contained a safety related defect. The defect in both the 850 and the 124 models involved undercarriage rust and corrosion.

Center for Auto Safety et al. v. Claybrook. On April 7, 1980, the U.S. Court of Appeals for the D.C. Circuit upheld the fuel economy exemptions NHTSA granted to three low volume manufacturers: Rolls Royce,

Excalibur, and Maserati. The Motor Vehicle Information and Cost Savings Act gave NHTSA the authority to exempt manufacturers of less than 10,000 vehicles annually and to establish alternative fuel economy levels for them.

National Wheel & Rim Association et al. v. NHTSA. On July 21, 1980, the U.S. Court of Appeals for the Ninth District dismissed this suit for lack of jurisdiction. The NHTSA action in question was a letter, sent to the National Wheel & Rim Association on February 28, 1980, advising the association that its "petition," which had requested the agency to consider the relative safety of single piece truck rims in its rulemaking on multipiece rims, would be treated as a letter of comment to the rulemaking docket. The association sought to have the court review the NHTSA action.

Civil Rights

NHTSA exceeded its minority business enterprise goal for fiscal year 1980 of \$4 million by awarding contracts totaling \$4.17 million to minority businesses. NHTSA also developed a model minority business enterprise program agreement for state highway safety agencies. Minority business enterprise plans for all state agencies eligible for NHTSA funds were received and approved.

Three compliance training programs were conducted for state highway safety officials, to improve their understanding of their civil rights enforcement responsibilities and to promote voluntary compliance.

A minority executive recruiter was hired to work exclusively on locating well qualified minorities and women for mid-level and senior executive service vacancies.

Total NHTSA employment declined from 828 in fiscal year 1979 to 808 in fiscal year 1980. Female employment also declined, from 302 (36.4 percent) to 298 (36.8 percent). However, minority employment increased from 180 (21.7 percent) to 185 (22.8 percent).

Urban Mass Transportation Administration

The Urban Mass Transportation Administration (UMTA) is responsible for carrying out the Department's mandate to improve urban mass transportation. UMTA is the principal source of federal funds to help both urban and nonurban areas plan, develop, and improve mass transportation systems.

Regulations

A bus rehabilitation program was developed during fiscal year 1980. The program will permit UMTA funding of bus rehabilitation projects, thus increasing transit system capacity with a minimum expenditure of funds. UMTA also prepared a policy and guidelines for emergency stockpiling of buses. The new policy and guidelines were expected to encourage grantees to stockpile buses for use during local emergencies and during unexpected surges in demand for service.

A joint draft of proposed requirements and guidelines for the interstate transfer program was prepared by UMTA and the Federal Highway Administration. A joint draft of proposed consolidated specifications for environmental impact statements prepared for either UMTA or the Federal Highway Administration was also prepared. The consolidated specifications would have considerable advantages for grant applicants who deal with both agencies.

Red Tape Reductions

UMTA continued its efforts to streamline its procedures and eliminate unnecessary administrative burdens.

A pilot program was begun to test procedures which would simplify UMTA grant delivery systems for

routine capital and operating fund grants. The process was expected to combine labor requirement clearances with the public hearings, thus permitting earlier obligation of funds and reduction of paperwork.

Draft regulations for urban formula grants, in addition to providing a single source document that would list all the applicable requirements for operating assistance grants, would also provide for a renewable grant process in which certain operating assistance grants could be renewed on an annual basis. The result would be reduced paperwork and accelerated funding.

Joint agreements between UMTA and the Environmental Protection Agency were published. This was a unique and successful experiment in cooperation between federal agencies. It integrated transportation and air quality planning and avoided the red tape that would have been created if EPA had administered a separate transportation planning program.

Consumer Affairs

The Transit Community Relations Working Group, which began in 1979, doubled in size and, together with the American Public Transit Association, fostered a renewed transit industry awareness of the importance of community relations.

Payments To Grantees

Substantial progress continued to be made in achieving more timely payments to grantees. During fiscal year 1980, over 70 percent of payments to grantees were made under letters of credit. Letters of credit payments during fiscal year 1980 totaled over \$2 billion, compared to \$800 million during fiscal year 1979.

Transit Assistance Grants

Total obligated funds for UMTA's various transit assistance programs reached an all time high of \$3.9 billion in fiscal year 1980, surpassing the previous year's level by 32 percent. The increase was the result of expanded appropriation levels for all major programs and the obligation of available carryover funds.

The obligated funds included: urban discretionary grants, \$1.6 billion; urban formula grants, \$1.5 billion; interstate transfer grants, \$678 million; federal aid urban systems, \$25 million; emergency rail operating assistance, \$1.6 million; and nonurban formula grants, \$55 million.

Urban Discretionary Grants

Urban discretionary grants are distributed for specific projects. The largest grants were made for rail modernization or for extensions of existing rail systems (\$760 million or 46 percent of the program funds) and bus improvements (\$405 million or 24 percent of the program funds). An additional \$80 million was obligated during fiscal year 1980 for the urban initiatives program, which combines mass transit improvement and community development projects.

Urban discretionary grant funds also provided \$390 million for the fiscal year 1980 new starts program. These funds permitted continued work on rapid transit projects in Atlanta, Baltimore, and Miami and on the light rail system in Buffalo. Also funded were preliminary engineering studies for the Detroit light rail project and rapid rail systems in Los Angeles and Honolulu.

Urban Formula Grants

For the first time since the inception of the program, urban formula grant obligations exceeded authorizations and reduced available carryover. Except for certain funds reserved for bus purchases, urban formula grant funds can be used for either capital investments or operating assistance; however, most transit agencies elect to apply the money to operating costs. A total of \$1.1 billion of the fiscal year 1980 obligations was applied to operating costs and \$431 million to capital investments, including \$300 million of the bus funds.

Interstate Transfer Grants

During fiscal year 1980, \$678 million was obligated for transit projects under the interstate transfer program. Ten new interstate system withdrawal requests were approved, which was the largest number of requests that had been approved in any one year.

Other Transit Assistance Grants

Federal aid urban systems grants for urban transit totaled \$25.7 million in fiscal year 1980. Small urban and rural areas received nonurban formula grants totaling \$63.5 million for capital and operating assistance.

The emergency rail operating assistance program helps defray the costs imposed on certain transit agencies because of the railroad reorganization that led to the formation of Conrail in 1976. A total of \$1.7 million in emergency rail operating assistance funds was obligated during fiscal year 1980.

Transportation Planning

Several steps were taken during the year to improve urban transportation planning. They included: (1) publishing an urban transportation planning management guide for professionals not familiar with UMTA's planning system; (2) improving UMTA's urban transportation planning course; (3) developing and field testing a more advanced planning course using an interactive computer program; (4) improving the beginning level planning courses (which are jointly sponsored by the Federal Highway Administration); and (5) awarding contracts to study traffic engineering and transit system operation interactions, the feasibility of developing a self-teaching planning system that could be installed in a desktop microcomputer, special issues such as transit pricing analysis, and development of a users guide for the planning system's new capabilities in highway network analysis.

Planning Assistance

Transportation alternatives analyses were completed and draft environmental impact statements were prepared for proposed transit projects in five metropolitan areas (Boston, Columbus, Detroit, Los Angeles, and Portland).

A notice of proposed rulemaking was published which would reduce planning requirements for urbanized areas under 200,000 population and which would integrate UMTA and Federal Highway Administration planning requirements for major capital investments. Guidelines for transit energy conservation and contingency planning were also published.

Service and Methods Demonstrations

The effectiveness of user subsidies in improving the mobility of particular groups, such as elderly and handicapped persons, has been shown in UMTA sponsored demonstrations. User subsidies were tested in small and medium size cities and were applied to both taxi service and fixed route bus service. By the end of fiscal year 1980, the concept had spread to approximately 20 new locations, in addition to the four basic UMTA demonstration sites.

Significant progress was made toward defining the transportation brokerage arrangements that work best in opening competitive opportunities for private operators. The transportation broker approach was working well in the Chicago area, where the Regional Transportation Authority was acting as a broker to provide transportation service to suburban areas, and in

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Pittsburgh, where the Port Authority of Allegheny County was acting as a broker to provide transportation service to social agencies and to qualified individuals.

The demonstration of four alternative management approaches for ridesharing programs was completed during the year. Three of the programs used transit operators as program managers.

The Boston auto restricted zone, known locally as the "Downtown Crossing", was well received by city officials, merchants, and the public. Early reports showed foot traffic up, and customer sales were up 5-15 percent. At the same time, there was a significant increase in the use of transit and a decrease in auto use. City officials were planning extensions to the auto restricted zone, and several new retail, office, residential, and hotel developments were underway in the auto restricted area.

Fare prepayment plans were shown to be an effective means by which employers could encourage employees to use transit, by offering transit passes at a discount. Major employers throughout the country developed programs of this kind, and the Department was supporting legislation to assure that these programs provided some form of tax free benefit, as employer provided parking programs have done.

During the year, procedures were developed to aid the transit industry in assessing the effects of changes in fares and services. The new procedures added to the tools that decision makers had available for their use in considering changes in fares and services.

Transit Management

UMTA completed virtually all elements in the design of the mass transit data reporting system, as well as arrangements for managing the system. A new type of bus maintenance manual and a multi-year project to design and validate training programs for bus drivers were completed. Work continued on development of similar programs for mechanics. The materials developed in this project had become the standard of the bus industry and had been adopted by dozens of transit systems from coast to coast.

New Buses And Paratransit Vehicles

The fuel efficiency, accessibility, life cycle cost, and passenger comfort of buses received a great deal of attention during the year. Information provided by operators of advanced design buses was providing data for use in the planning of future bus research and development programs.

There was a continuing need to develop multipurpose paratransit vehicles with easy accessibility for the elderly and handicapped. During fiscal year 1980, two contractors continued paratransit vehicle development projects. The goal of UMTA's paratransit vehicle program was to stimulate the automotive industry to manufacture vehicles that would meet the needs of paratransit service and to provide the vehicles at an affordable cost. The vehicles would be used for shared-ride taxicab service, dial-a-ride service, transportation for the elderly and handicapped, and other transportation services that do not require the capacity of vans or small buses.

Computer Transit Services

UMTA has pioneered the use of computers in the control of paratransit vehicles, in automatic vehicle monitoring, and in providing riders with immediate and accurate information about routes and schedules.

To improve the responsiveness and efficiency of paratransit service, UMTA developed a dial-a-ride computer control system. The system was tested in Rochester, New York. At the end of fiscal year 1980, it was implemented in Orange County, California.

UMTA was also sponsoring development of an automatic vehicle monitoring system, which was being evaluated in Los Angeles. The system automatically reports each bus's identification, location, passenger load, and status to a central computer and bus dispatcher.

An automated transit information system was developed by UMTA. It could be used to provide travelers with reliable information on transit options for getting from one place in a city to another.

Railcar Standardization

UMTA continued its industry supported feasibility study of the development of a standard baseline specification for rapid transit cars. UMTA had already applied the common purchase principle to minimize the cost of railcars for two new rapid transit systems (Miami and Baltimore).

Urban Rail Construction Technology

The construction cost of urban rail transit systems increased fourfold during the 1970s. The goal of the Department's construction technology research and development program was to reverse this cost escalation, through the development and deployment of innovative technology. The program included research in management, elevated structures, track and wayside

structures, and tunneling technology. By the end of fiscal year 1980, \$136 million had been saved as a direct result of the application of technologies developed under this program.

Rail Car Testing

New rapid transit cars frequently exhibit reliability, maintainability, and quality problems. To help rail transit systems discover these problems quickly, UMTA established a policy that initial production transit vehicles from a new manufacturer, for a new transit system, or of a totally new design, must undergo testing at the Department's Transportation Test Center in Pueblo, Colorado. This testing supplements the normal new car acceptance testing usually performed at delivery.

The use of a dedicated test facility, with special equipment and with a staff experienced in identifying problems and prescribing remedies, permits significant experience to be amassed in a short time. Since the testing is conducted at the Pueblo Center, it is free from the risks and schedule conflicts involved in testing new cars while operating a revenue service at the same time on the same system. At the end of fiscal year 1980, cars from Washington and Boston had completed their tests and cars from Atlanta were being tested.

Urban Rail Noise Abatement

As a result of UMTA's research efforts, methods were developed to reduce rail transit noise. By the end of fiscal year 1980, transit systems in Boston, New York, Chicago, Miami, Philadelphia, and Atlanta had employed the results of this research to implement cost effective noise controls.

Advanced Group Rapid Transit

The goal of the advanced group rapid transit program was to develop and install test facilities for transit systems that would be able to provide a capacity of 14,000 seats per lane per hour, using 12-seat vehicles. During the year, three contractors developed designs, developed critical subsystems, and performed extensive simulation studies of the proposed systems.

Accelerating Walkways

Accelerating walkways could be used to transport large numbers of travelers over short distances, and they would compare favorably in both cost and travel time to vehicular travel.

A feasibility study was conducted by UMTA to review accelerating walkway technology, to identify potential applications and associated costs, and to assess the possible safety problems. The next phase of UMTA's research was to include design and preliminary demonstration studies.

Future phases were to involve fabrication and testing of one or two accelerating walkways, to be followed by public demonstrations and evaluations.

Automated Guideway Systems

The Morgantown, West Virginia, people mover is an automated self-service transit system, consisting of a fleet of electrically-powered rubber-tired 21-passenger vehicles operating on guideways at intervals based on actual passenger demand, but as close as 15 seconds. In 29 months of service, the original system carried over 4 million passengers. It typically carried 13,000 to 15,000 passengers daily, with over 97 percent service availability, exceeding specifications.

An expanded system (with five stations, 8.6 miles of single-lane guideway, and 71 vehicles) began revenue service early in September 1979. At the end of fiscal year 1980, ridership had increased by more than 50 percent over previous levels, and system reliability was exceeding 97 percent.

Safety And Product Qualification

Under a plan approved by the Secretary in May 1979, UMTA was made responsible for safety on rapid rail and light rail transit systems. In carrying out this responsibility, UMTA was emphasizing three functions—safety information, system safety, and safety research.

To provide safety information, UMTA developed a safety information reporting and analysis system. All rapid rail and light rail systems nationwide were to report their accident and incident data to this system, so the data could be analyzed and compared.

The system safety activities consisted largely of educational projects. The Transportation Safety Institute planned and conducted four safety courses and six security management seminars, which were attended by over 300 transit operators, suppliers, consultants, government officials, and other transit specialists.

The primary safety research project was UMTA's continuing investigation of unsafe conditions on the New York City Transit Authority's R-46 rapid transit cars, which resulted in an UMTA report calling for corrective action.

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Civil Rights

Over \$4.3 million was awarded to minority business enterprises during the year through direct UMTA procurement, an increase of 23 percent over the amount reported in fiscal year 1979. UMTA grantees, through their respective procurement activities, awarded \$225 million to minority business enterprises, an increase of 29 percent over the previous fiscal year. In addition,

UMTA grantees had more than \$7 million deposited in minority owned banks, a 22 percent increase over fiscal year 1979.

Total UMTA employment declined from 535 in fiscal year 1979 to 519 in fiscal year 1980. However, minority employment increased from 177 (32.34 percent) to 183 (35.26 percent), and female employment increased from 214 (40.00 percent) to 244 (47.01 percent).

Saint Lawrence Seaway Development Corporation

The Saint Lawrence Seaway Development Corporation was created in 1954 to construct the U.S. facilities for the Saint Lawrence Seaway project. Since 1959, when the Seaway opened to navigation by ocean-going ships, the Seaway Corporation has been responsible for operation, maintenance, and development of that part of the Seaway between Montreal and Lake Ontario which is within the territorial limits of the U.S.

Unlike most government agencies, the Seaway Corporation is self-sustaining. All operation, maintenance, administrative, and capital improvement costs are paid from revenues obtained from tolls charged to vessels which transit the system.

A total of 49.5 million metric tons of cargo moved through the Montreal-Lake Ontario section in 1980 on 4,690 commercial ships. This was an 11 percent reduction in tonnage from 1979 and was the first time since 1976 that Seaway cargo volume had dipped below the 55 million ton mark.

The 1980 economic recession was primarily responsible for the overall cargo decline. Iron ore was the cargo category hardest hit by the economic slump. Iron ore shipments were down by nearly 4 million metric tons. This was due mainly to reduced demands by U.S. automotive and iron and steel industries in the Midwest.

Grain cargoes during 1980 climbed by 8 percent to nearly 27 million metric tons—the second highest grain shipment year in Seaway history. Wheat exports, primarily from Canada, were responsible for the in-

crease, while corn, soybeans, and barley registered decreases. The increase in Seaway grain movements from Canada was attributed to high overseas demand and to improved grain handling systems in Canada.

The decline in general cargo volume through the Seaway in 1980 was due to sharp reductions in iron and steel imports, which reflected a 28 percent decrease in European steel exports to the U.S. and the continued impact of the U.S. trigger pricing policy on steel imports into the Great Lakes region.

The Seaway Corporation registered several important accomplishments in 1980. They included: moving 57 more commercial vessels through the U.S. facilities than in 1979; managing one of the safest and most orderly Seaway closings during late November and early December; facilitating the Seaway's earliest ever opening on March 24; operating the Seaway for 271 days (equaling the all-time record); and completing one of the most extensive winter maintenance programs ever at the U.S. locks.

In carrying out its responsibilities for Seaway development, the Seaway Corporation worked closely with the Great Lakes Commission (an interstate compact composed of representatives of the eight Great Lakes states) in drafting specifications for a one-year marketing study aimed at enhancing Seaway general cargo traffic. The Seaway Corporation was financing the study, and the contract was awarded in October by the Great Lakes Commission, which was administering the contract.

During December, the Seaway Corporation and the Seaway Authority of Canada selected a consortium composed of one U.S. and one Canadian consulting firm to conduct a one-year Seaway commodity flow forecast study. Jointly funded, the study was designed to provide the two agencies with a 20-year forecast of Seaway commodity movements that could be used to plan changes in Seaway navigation facilities (which were expected to reach capacity levels in a few years).

On August 30, 1980, a fire destroyed a large portion of the Seaway Corporation's administrative building in Massena. There were no personal injuries, nor was vessel traffic affected, but nearly 50 employees had to be quickly relocated to mobile units on the site. They were to continue to operate out of the mobile units until rebuilding was completed. Damage to the structure was estimated to be almost \$3 million and it was thought that the Seaway Corporation might have to use some of its unused borrowing authority to pay for the rebuilding.

According to the Seaway Act of 1954, the Seaway Corporation is required to submit to the President, for transmission to Congress, a separate annual report based on calendar year results. Single copies of the most recent report may be obtained at no charge from: The Public Information Office, Saint Lawrence Seaway Development Corporation, P.O. Box 520, Massena, New York 13662.

Research and Special Programs Administration

The Research and Special Programs Administration (RSPA) was established on September 23, 1977, as part of a major Departmental reorganization. The Administration includes three major elements: the Materials Transportation Bureau; the Transportation Programs Bureau; and the Transportation Systems Center. Major accomplishments of RSPA during fiscal year 1980 included: establishing a basic auto research program; initiation and completion of important regulatory actions in hazardous materials and pipeline safety; identification and examination of multimodal transportation problems; and overall improvement of emergency transportation preparedness.

Materials Transportation

RSPA amended its pipeline safety regulations in 1980 to establish a set of comprehensive standards governing the design, construction, operation, and maintenance of facilities used in the transportation of liquefied natural gas (LNG). The need for comprehensive new LNG safety regulations arose out of the seriousness of the potential hazards, anticipated increases in LNG facility construction, and variations in the design of facilities which were being built near population centers.

The first part of the new regulations concerned the design and construction of facilities used to liquefy natural gas or to transfer, store, or vaporize LNG in conjunction with the transportation of natural gas by pipeline. The regulations prescribed actions needed to prevent accidents and to minimize the effects of accidents that might occur. The second part of the regulations established standards for the operation, maintenance, fire protection, security, and personnel qualifications and training of LNG facilities.

A major regulatory milestone was reached during the year with the completion of two rulemaking actions, in cooperation with the Environmental Protection Agency, concerning hazardous substances and hazardous wastes. Section 311 of the Clean Water Act requires the Environmental Protection Agency to regulate substances which, when discharged, could be harmful to the public health or welfare. So that the industry would not be subjected to dual regulation, RSPA incorporated materials identified as hazardous substances by EPA into the identification and spill reporting requirements of the hazardous materials transportation regulations of the Department of Transportation.

The Resource Conservation and Recovery Act directs the Environmental Protection Agency to regulate transporters of hazardous wastes regarding recordkeeping, labeling, manifests, and destination. The Environmental Protection Agency and RSPA were concerned that those involved in the transportation of hazardous wastes not be confronted with two sets of regulations. Accordingly, the Department of Transportation amended its regulations to provide for proper identification of hazardous waste materials in transport, and to establish appropriate recordkeeping requirements for transportation of hazardous wastes.

In recent years, there had been a proliferation of inconsistent local laws and regulations affecting radioactive materials transportation. In response to this problem, and after 16 months of investigation and evaluation of 550 comments from state and local governments, public interest groups, motor carriers, and shippers, RSPA issued, on January 31, 1980, a notice of proposed rulemaking on the highway routing of radioactive materials.

The proposed rule would require vehicles: (1) to avoid areas posing hazards to large numbers of people; and (2) to choose among the available routes on a basis which would minimize time in transit. Motor vehicles carrying high-level radioactive shipments, such as spent nuclear fuel, would be required to travel only on "preferred" highways — interstate highways or alternate highways selected by the states. Motor vehicles carrying low-level radioactive materials, such as medical, research, and industrial-use isotopes and low-level wastes, would be subject to less restrictive routing requirements.

The proposed rule would preempt a number of state and local restrictions on radioactive shipments. It would also prohibit state and local laws banning shipments between any two points served by highway; and it would prohibit statutes that ban the use of interstate highways

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or impose restrictions on hours of shipment on interstate highways, unless an equivalent "preferred" highway is designated.

RSPA also adopted a regulation requiring the use of a numerical identification system for hazardous materials based on the system developed by the United Nations. The regulation required that the 4-digit number be displayed on shipping papers and packages, in association with the hazardous materials description, and on orange panels affixed to portable tanks, cargo tanks, and tank cars.

Development of the United Nations numbering system was sponsored by the Economic and Social Council of the United Nations. The numbers have the same meaning throughout worldwide commerce, thus facilitating international trade.

The use of standardized identification numbers was expected to enable fire, police, and other emergency services personnel to communicate quickly and accurately about a material without using lengthy technical names. The numbers were also to be used in RSPA's emergency action guide to provide quick access to the emergency response information contained in the guide.

Emergency Transportation Initiatives

One of the major events affecting RSPA during fiscal year 1980 was the May 18th eruption of Mount St. Helens in Washington State. In eastern Washington, Idaho, and western Montana, ash from the eruption closed or restricted activity on highways and at airports, caused severe damage to emergency service vehicles, disrupted mass transit systems, and reduced railroad activity. RSPA contributed to the effort to mitigate these problems. A crisis center was established by RSPA to handle inquiries pertaining to transportation activities in the affected areas. The agency also became involved in the problems of vehicle maintenance that occurred because of the volcanic ash. As a result of RSPA encouragement, major auto manufacturers published guidelines for vehicle maintenance. RSPA was also responsible for contracting the Army Tank-Automotive Research and Development Command, which then became involved in the modification of Washington state patrol cars so they could operate in the heavy ash conditions. This work resulted in the publication of a document called "Driving and Vehicle Maintenance in Heavy Ash Areas."

RSPA also serves as the Departmental representative on regional emergency response advisory committees. These committees assist state and

local planners in the development of response plans for potential accidents at fixed nuclear facilities. Following the accident at Three Mile Island, Pennsylvania, the federal radiological emergency preparedness programs, of which the regional advisory committees are a part, were extensively revised. Included in the revision was the introduction of new planning criteria for state response plans and a requirement that all state plans meet the new criteria prior to the start-up of new nuclear power plants. RSPA participated in the development of the new planning criteria.

Related RSPA activities during the year included:

- Installation of two of a proposed ten radio transmitters for the Secretary's emergency national radio network, to be used in civil or national defense crises.
- Preparation and completion of ten regional training sessions and of a national planning conference for Departmental representatives in the National Defense Executive Reserve and federal mobilization designees.
- Participation in a White House task force which prepared a report entitled "Assessment of Consequences and Preparations for a Major California Earthquake."

Harvest to Harbors Conference

RSPA, in cooperation with the Office of the Secretary, convened three conferences to identify and discuss transportation bottlenecks affecting the nation's freight movement, especially those obstructions which affected exports.

Participants in these conferences, which included representatives of state departments of transportation and economic development, private sector interests, major cities, professional and academic leaders, and officials from other government agencies, addressed transportation concerns of national and regional import.

The conferences accomplished their purpose of identifying physical and institutional bottlenecks in the transportation system which, if removed, would result in increased productivity and a more expeditious movement of goods (particularly those bound for export) and which would stimulate regional economies and private investment.

University Research

During fiscal year 1980, RSPA's university research program received more than 200 proposals from 103 universities in 35 states, the District of Columbia, and Puerto Rico. The program awarded 30 new contracts

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and 15 renewals to 39 universities. The contracts ranged from studies of economic regulation to research on the technological requirements for advanced transportation systems.

Projects carried out under university research contracts included:

- *University of Pennsylvania*—three studies of unregulated trucking in Pennsylvania, New Jersey, and Delaware. The studies provided data for the Department's use in establishing policies for regulatory reform of the motor carrier industry.

- *Washington State University*—a study of motor carrier service to small communities in the Pacific Northwest. Data from the study was presented to the Senate by the Secretary during hearings on the Motor Carrier Reform Act of 1980, which was later passed and signed into law.

- *Lehigh University*—a study on fracture analysis of pipelines provided ways to improve standards for pipeline girth welds. The new analysis was expected to save millions of dollars in the construction of future pipelines, such as the Alaska Natural Gas Pipeline.

Transportation Systems Center

The Transportation Systems Center conducts research on a wide variety of technological and socio-economic problems for various elements within the Department. The Center provides a multimodal perspective, which encourages the transfer of technology across traditional modal lines, and maintains a close relationship with all elements of the Department as well as with industry groups, state and local governments, consumer and user groups, and professional societies.

Auto Research. One area of research by the Center concerned the motor vehicle industry. Technological, economic, and financial assessments of the domestic and international auto industry were prepared and were used in examination of the near- and long-term effects of Japanese imports and in the Chrysler loan guarantee deliberations.

The Center provided data for the Secretary to use in his report to Congress on the long-term viability of the Chrysler Corporation and completed a comprehensive assessment of the state of the U.S. automotive industry. Both of these reports were required under the Chrysler Corporation Loan Guarantee Act of 1979.

For the Chrysler report, the Center assessed many aspects of the company, including its financial requirements and its plans for fuel-efficient cars. In assessing the auto industry in general, the Center

evaluated expected developments each year for the next five years as well as expected developments beyond 1985, projected fuel consumption, government-industry relationships, international competition, factory shutdowns, and potential unemployment.

Rail and Transit Safety. A major technical breakthrough was made in the Department's track research program. For the first time, it became possible to establish precise safety limits for certain deviations of track geometry and for track structural strength. Based on research conducted by the Transportation Systems Center, explicit quantitative limits on deviations in cross level, gauge, and alignment were defined which would enable railroads to avoid virtually all track geometry induced derailments in the speed range from 10 to 25 mph, where most derailments occur. It was also possible to relate the geometry deviations and the track lateral strength in such a way that minimum track strength limits could be established. These track safety standards were being experimentally verified on participating railroads.

Throughout the 1970's, there were about 12,000 accidents each year at rail-highway crossings, resulting in about 4,000 injuries and 1,000 fatalities per year. This was, by far, the largest category of loss of life associated with railroad operations. The Federal Highway Administration and the Federal Railroad Administration sponsored the development by the Transportation Systems Center of a rail-highway crossing analysis and resource allocation procedure. The procedure could be used to predict accident rates at individual rail-highway crossings, which would permit the allocation of resources in the way which would produce the greatest improvement in safety. Analyses using the accident prediction formula were provided to several states and railroads and were used in successful safety improvement programs.

The Center also developed a rail transit safety program plan for the Urban Mass Transportation Administration. The plan was to be the basis for a nationwide transit accident reporting system. The plan included conceptual development, program planning, analysis of historical safety data, analysis of current safety data, instruction manual design, a benefit/cost analysis, and development of a data base management system.

Transportation Data

RSPA continued to improve the management of transportation data. It was given the principal responsibility for planning and developing a coordinated

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program in transportation statistics, data, and information. A Departmental program for national transportation statistics was established, to provide the data on the movement of passengers and freight which are needed for the location of facilities, for economic and investment analyses, for energy studies, and for safety studies. The Department reached an understanding with the Department of Commerce which gave the Department of Transportation the lead role in the development and maintenance of new transportation data standards for the federal government. Furthermore, because the Civil Aeronautics Board was to terminate in 1985, as a result of the Airline Deregulation Act of 1978, RSPA created an aviation information task force, which was examining the

Department's aviation statistical needs and its plans to acquire and process more aviation data.

For the first time, RSPA provided information for the Department of Commerce publication, *Social Indicators For 1980*. This document is a major reference tool for policy analysts, planners, social scientists and statisticians. The 1980 edition was to be the first edition to have a separate chapter on transportation.

Civil Rights

Although total RSPA employment declined from 880 in fiscal year 1979 to 876 in fiscal year 1980, female employment increased from 236 (26.8 percent) to 248 (28.3 percent), and minority employment increased from 110 (12.5 percent) to 119 (13.5 percent).

Appendix

United States Railway Association

During 1980, the United States Railway Association (USRA), in conjunction with the New England Regional Commission, completed a study of alternatives for restructuring the New England railroads.

The USRA also completed two studies mandated in the Amtrak Reorganization Act of 1979. These studies examined the feasibility of transferring USRA functions to other agencies. The first study, conducted jointly with the Department of Transportation, found that it would be feasible to transfer all USRA nonlitigation functions to the Department of Transportation. As a result, the USRA Board of Directors passed a resolution asking Congress to approve the transfer of these functions by December 31, 1981. The other study, conducted jointly with the Department of Justice, examined the feasibility of transferring USRA's litigation functions to the Department of Justice. It concluded that such a transfer would not be feasible.

In December, USRA released the first of several studies of Conrail mandated under Section 703 of the Staggers Rail Act of 1980. The study examined Conrail's situation, then made traffic and financial projections for a scenario in which some lines were cut and efficiency and productivity improvements were made. USRA concluded that Conrail would still require \$1.5 billion to \$2.1 billion more federal assistance through 1985 and that it would not achieve financial self-sufficiency by then, even under optimistic assumptions. Based on that conclusion, plans were made to study other alternatives for restructuring Conrail. The new studies were to be completed by April 1, 1981.

National Railroad Passenger Corporation

At the start of fiscal year 1980, after a route restructuring study and reassessments by the Department of Transportation, the National Railroad Passenger Corporation (Amtrak), and Congress, approximately 16 percent of Amtrak's route mileage was discontinued. The discontinued routes and trains were primarily the long-distance poor-ridership trains which were neither cost effective nor fuel efficient. After those discontinuances, Congress directed Amtrak to show, in its fiscal year 1982 budget request, the effects of eliminating the five least cost-effective long distance routes. Growing interest in shorter-distance state-supported routes and in certain short-haul densely-

populated corridors seemed to indicate further shifts in the nature of the Amtrak route structure.

Table XIV and Figure 6 in this report depict Amtrak's overall performance through fiscal year 1980. Despite some fluctuations, Amtrak ridership, revenues, and passenger miles had consistently increased. Overall ridership during the 1972-80 period increased by more than 54 percent and revenues increased by 186 percent, but costs increased by more than 300 percent.

Despite a 16 percent reduction in route mileage in 1980, Amtrak's ridership decreased only 0.4 percent, to 21.2 million passengers, down from the previous fiscal year's 21.4 million passengers. The fiscal year 1980 revenue/cost ratio was 37.8 percent compared to 38.2 percent in fiscal year 1979 and the low of 35.2 percent in fiscal year 1978. The Department considered it essential that Amtrak management improve the revenue/cost ratio. Amtrak management stated that it expected to meet revenue/cost ratio goals of 44 percent by fiscal year 1982 and 50 percent by fiscal year 1985.

In response to a Congressional initiative, the Department completed several studies concerning rail passenger corridors. Studies in February and April 1980 reported the potential for improved rail service in 19 corridors. A report was to be delivered to Congress in early October, further analyzing these corridors, including development of an evaluation method and a preliminary ranking. A final evaluation and ranking of the corridors was due in Congress by February 1981.

Consolidated Rail Corporation

During 1980, the Consolidated Rail Corporation (Conrail) experienced substantial traffic declines and projected that it would exhaust its currently available federal assistance without becoming self-sufficient. The Finance Committee of the USRA Board (comprised of the Secretary of Transportation, the Secretary of the Treasury, and the Chairman of the USRA Board) confirmed that projection. Subsequently, Congress approved an additional authorization of \$329 million, above Conrail's existing appropriation of \$3.3 billion. Congress also requested that the Department, the United States Railway Association, and Conrail each undertake a study to identify appropriate approaches to Conrail's long term financial viability. The Department was also required to review the USRA and Conrail studies. The Department's findings were to be reported to Congress on May 1, 1981.

TABLE I. U.S. Department of Transportation Funding Levels, Budget Authority, Obligations, and Outlays, Fiscal Year 1980.

(dollars in millions)

<i>Organization</i>	<i>Funding Levels¹</i>	<i>Budget Authority</i>	<i>Obligations</i>	<i>Outlays</i>
Office of the Secretary	41	41.2	50.0	51.1
United States Coast Guard	1,718	1,717.7	1,786.8	1,636.3
Federal Aviation Administration	3,199	3,269.0	3,167.1	3,136.2
Federal Highway Administration	8,573	8,883.5	8,348.7	9,250.9
National Highway Traffic Safety Administration	281	281.0	281.9	275.9
Federal Railroad Administration	748	687.5	694.1	596.3
National Railroad Passenger Corporation	873	873.4	823.4	823.4
Urban Mass Transportation Administration	3,799	2,499.2 ²	4,369.7	3,206.7
Saint Lawrence Seaway Development Corporation	9	—	8.7	(1.1)
Research and Special Programs Administration	26	26.0	19.4	24.1
Office of the Inspector General	20	12.4	19.7	10.4
SUBTOTALS	19,287	18,290.8	18,569.4	19,010.2
Proprietary Receipts from the Public	—	(47.4)	—	(47.4)
TOTALS	19,287	18,243.4	19,569.4	18,962.8

¹Funding level takes into consideration the various types of financing used by the Department, including budget authority, obligations, and loan guarantees, to provide an overall indication of Departmental activity.

²Includes \$200 million in interstate highway system transfer grants.

TABLE II. U.S. Department of Transportation Authorized Full-Time Permanent Positions, Fiscal Year 1980.

<i>Organization</i>	<i>Positions</i>
Office of the Secretary	1,230
United States Coast Guard	46,287 ¹
Federal Aviation Administration	58,108
Federal Highway Administration	4,412
Federal Railroad Administration	1,703
National Highway Traffic Safety Administration	874
Urban Mass Transportation Administration	565
Saint Lawrence Seaway Development Corporation	194
Research and Special Programs Administration	918
Office of the Inspector General	513
TOTAL	114,804

¹Includes 6,845 civilian and 39,442 military positions.

**TABLE III. U.S. Department of Transportation Full-Time Civilian
Minority and Female Employment, 1970-80.**

<i>Year</i>	<i>Total</i> ¹	<i>Minority</i> ¹	<i>Percent</i>	<i>Total</i> ²	<i>Female</i> ²	<i>Percent</i>
1970	62,278	5,216	8.4	56,805	9,979	17.6
1971	66,918	6,063	9.1	60,047	10,411	17.3
1972	66,219	6,372	9.6	61,368	10,773	17.6
1973	65,227	6,248	9.6	61,851	10,316	16.7
1974	65,098	6,773	10.4	62,723	10,898	17.4
1975	68,241	7,647	11.2	64,588	11,373	17.6
1976	71,679	8,989	12.5	65,758	11,745	17.9
1977	72,809	9,573	13.1	74,289	12,833	17.3
1978	71,972	9,623	13.4	73,471	12,752	17.4
1979	71,040	9,807	13.8	72,139	12,650	17.5
1980	69,998	10,169	14.5	71,092	13,166	18.5

¹Minority employment figures and related totals exclude employees in Hawaii and Guam.

²Female employment figures and related totals cover white collar positions only for the years 1972-75, general schedule positions only for the years 1969-71 and 1976, and all employees for the years 1977-79.

NOTES:

1. Minority data are as of June 30 for 1969; September 30 for 1977-79; and May 31 for all other years.
2. Female data are as of May 31 for 1970, 1971, and 1976; June 30 for 1969; September 30 for 1977-79; and October 31 for 1972-75.
3. Source of the data for 1972-75 was the Civil Service Commission.

TABLE IV. U.S. Coast Guard Financial Statement, Fiscal Year 1980.

<i>Appropriated Funds</i>	<i>Funds Available¹</i>	<i>Total Obligations</i>	<i>Unobligated Balance²</i>
Operating Expenses	1,115,208,782	1,113,079,836	2,128,946
Acquisition, Construction & Improvements	440,101,500	374,584,921	65,516,579
Alteration of Bridges	17,867,783	16,930,347	937,436
Retired Pay	206,900,000	206,064,830	835,170
Reserve Training	42,855,000	42,654,438	200,562
Research, Development, Test and Evaluation	22,175,890	20,688,322	1,487,568
State Boating Safety Assistance	163,412	(166,453)	329,865
Pollution Fund	43,014,643	25,197,136	17,817,507
Offshore Oil Pollution Compensation Fund	9,890,708	1,069,761	8,820,947
TOTAL	1,898,177,718	1,800,103,138	98,074,580
<i>Reimbursements</i>			
Operating Expense	25,839,444	25,839,444	—0—
Acquisition, Construction, & Improvements	268,958	28,020	240,938
Reserve Training	21,436	21,436	—0—
Research, Development, Test and Evaluation	1,384,904	1,195,294	189,610
TOTAL	27,514,742	27,084,194	430,548
<i>Trust Funds</i>			
Coast Guard General Gift Fund	65,243	10,789	54,454
Surcharge Collection, Sale of Commissary Stores	436,567	243,848	192,719
Coast Guard Cadet Fund	3,542,459	3,542,459	—0—
TOTAL	4,044,269	3,797,096	247,173
<i>Intra Governmental Revolving Funds</i>			
Coast Guard Supply Fund	81,827,558	81,628,446	199,112
Coast Guard Yard Fund	49,836,009	31,952,915	17,883,094
TOTAL	131,663,567	113,581,361	18,082,206
<i>Accrued Gross Expenditures—All Years</i>	<i>Total</i>	<i>Direct</i>	<i>Reimbursable</i>
Operating Expenses	1,111,167,866	1,083,021,562	28,146,304
Acquisition, Construction & Improvements	231,952,542	230,979,786	972,756
Alteration of Bridges	11,190,922	11,190,922	—0—
Retired Pay	205,934,916	205,934,916	—0—
Reserve Training	42,126,613	42,099,564	27,049
Research, Development, Test and Evaluation	24,531,442	23,401,957	1,129,485
State Boating Safety	1,906,249	1,906,249	—0—
Pollution Fund	21,700,964	21,700,964	—0—
Coast Guard General Gift Fund	11,606	11,606	—0—
Surcharge Collections, Sale of Commissary Stores	243,848	—0—	243,848
Coast Guard Cadet Fund	3,542,459	—0—	3,542,459
Coast Guard Supply Fund	82,105,666	—0—	82,105,666
Coast Guard Yard Fund	32,693,339	—0—	32,693,339
Offshore Oil Pollution Compensation Fund	474,155	474,155	—0—
TOTAL	1,769,582,587	1,620,721,681	148,860,906

TABLE IV. U.S. Coast Guard Financial Statement, Fiscal Year 1980 (continued).¹ Funds available include unobligated balances brought forward from prior year appropriations as follows:

Alteration of Bridges	10,217,783
Acquisition, Construction, and Improvements	
Appropriated Funds	154,090,500
Reimbursements	56,086
Research, Development, Test & Evaluation	
Appropriated Funds	175,890
Reimbursements	66,613
State Boating Safety Assistance	163,412
Pollution Fund	7,041,547
Coast Guard General Gift Fund	44,671
Surcharge Collections, Sale of Commissary Stores	186,936
Coast Guard Supply Fund	124,229
Coast Guard Yard Fund	4,938,255
Offshore Oil Pollution Compensation Fund	225,712
TOTAL	177,331,634

² Unobligated balances remain available for obligation in fiscal year 1981 as follows:

Acquisition, Construction & Improvements	65,579,858
Research, Development, Test & Evaluation	1,677,178
Alteration of Bridges	937,436
State Boating Safety Assistance	329,865
Pollution Fund	17,817,507
Coast Guard General Gift Fund	54,454
Surcharge Collections, Sale of Commissary Stores	192,719
Coast Guard Supply Fund	199,112
Coast Guard Yard Fund	17,883,094
Offshore Oil Pollution Compensation Fund	8,820,947
TOTAL	113,492,170

TABLE V. Summary of Active Airpeople, as of December 31, 1975-79.

Category	Year				
	1975	1976	1977	1978	1979
PILOT					
Student	176,978	188,801	203,510	204,874	210,180
Private	305,863	309,005	327,424	337,644	343,276
Commercial	189,342	187,801	188,763	185,833	182,097
Airline Transport	42,592	45,072	50,149	55,881	63,652
Other ¹	13,412	13,567	14,086	14,601	15,462
TOTAL	728,187	744,246	783,932	798,833	814,667
NONPILOT					
Mechanic	205,436	212,303	220,768	228,743	237,611
Ground Instructor	51,365	53,464	55,717	57,738	59,680
Ground Tower Operator	23,956	24,584	25,107	25,388	25,232
Flight Engineer	26,788	27,560	29,871	33,028	36,869
Other ²	16,389	16,670	17,121	17,453	17,821
TOTAL	323,934	334,611	348,584	362,350	377,213
FLIGHT INSTRUCTOR	44,777	46,236	49,362	52,201	54,398

¹Includes helicopter only, glider only, and lighter-than-air pilot certificates.

²Includes flight navigators, parachute riggers, and dispatchers.

TABLE VI. Hijacking Attempts on U.S. and Foreign Aircraft, Including General Aviation Aircraft, Calendar Years 1969-79.

Aircraft Category	Year										
	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979
U.S.	40	27	27	31	2	7	12	4	6	13	13
Foreign	47	56	31	31	20	19	13	14	26	18	14
TOTAL	87	83	58	62	22	26	25	18	32	31	27

TABLE VII. U.S. Certificated Route Air Carrier Accidents, Fatalities, Passengers Carried, Passenger Miles Flown, and Passenger Fatality Rate, in Scheduled Domestic and International Passenger Service, Calendar Years 1969-79.

Year	Aircraft Accidents		Fatalities			Passengers Carried ¹	Passenger Miles Flown (000)	Passenger Fatalities Per 100 Million Passenger Miles
	Total	Fatal	Passenger	Crew and Other	Total			
1969	48	7	132	20	152	159,213,414	132,161,593	0.100
1970	39	2	2	1	3	171,697,097	139,157,806	0.001
1971	41	6 ²	174	20	194	173,664,737	145,678,876	0.119
1972	43	7	160	26	186	188,938,932	159,722,015	0.100
1973	32	6	197	20	217	202,207,000	171,436,549	0.115
1974	42	7	420 ³	40	460	207,449,006	173,349,894	0.197 ⁴
1975	28	2	113	9	122	205,059,571	174,173,138	0.065
1976	21	2	36	2	38	223,313,131	190,915,721	0.019
1977	17	2	64	11	75	240,326,516	206,205,410	0.031
1978 ^r	19	4	13	3	16	274,717,832	238,987,489	0.005
1979 ^p	17	5	321	29	350	301,000,000	280,100,000	0.115

¹Beginning in 1970, carriers were required to report revenue passenger enplanements; whereas prior to 1970, revenue passenger originations were reported.

²Includes 2 midair collisions that were not fatal to air carrier occupants.

³Includes 79 passenger deaths that occurred in sabotage accidents.

⁴Does not include passenger deaths that occurred in sabotage accidents.

^r Revised

^p Preliminary

TABLE VIII. U.S. General Aviation Accidents, Fatalities, Aircraft Hours Flown, Aircraft Miles Flown, Accident Rates, and Fatality Rates, Calendar Years 1969-79.

Year	Accidents ¹		Fatalities ²	Aircraft-Hours Flown (thousands)	Aircraft-Miles Flown (thousands)	Accident Rates ¹				Fatality Rates	
						Per 100,000 Aircraft-Hours Flown		Per Million Aircraft-Miles Flown		Per 100,000 Aircraft-Hours Flown	Per Million Aircraft-Miles Flown
	Total	Fatal				Total	Fatal	Total	Fatal		
1969	4,767	647	1,495	25,351	3,926,461	18.8	2.55	1.21	0.164	5.89	0.380
1970	4,712	641	1,310	26,030	3,207,127 ³	18.1	2.46	1.47	0.200	5.03	0.408
1971	4,648	661	1,355	25,512	3,143,181	18.2	2.59	1.48	0.211	5.31	0.431
1972	4,256	695	1,426	26,974	3,317,100	15.8	2.57	1.28	0.209	5.28	0.429
1973	4,255	723	1,412	29,974	3,686,802	14.2	2.41	1.15	0.196	4.71	0.382
1974	4,425	729	1,438	31,413	3,863,799	14.1	2.31	1.14	0.188	4.57	0.372
1975	4,237	675	1,345	32,024	3,938,952	13.2	2.10	1.08	0.171	4.19	0.341
1976	4,193	695	1,320	33,922	4,172,406	12.3	2.04	1.00	0.166	3.89	0.316
1977	4,286	702	1,436	35,792	4,402,126	12.0	1.96	0.97	0.159	4.01	0.326
1978 ^r	4,494	793	1,770	39,400	4,964,400	11.4	2.01	0.90	0.159	4.49	0.356
1979 ^p	4,238	658	1,311	39,900	5,052,800	10.6	1.65	0.84	0.130	3.28	0.259

¹Suicide and sabotage accidents are included in all computations except accident rates (1970-1, 1972-3, 1973-2, 1974-2, 1975-2, 1976-4, 1977-1, and 1978-2).

²Includes air carrier fatalities in accidents involving collisions with general aviation aircraft (1972-5 and 1978-142).

³The decrease in aircraft-miles flown, compared to 1969, is the result of a change in the method of estimating miles flown.

^r Revised

^p Preliminary

TABLE IX. Federal-Aid Highway Obligations, Fiscal Years 1970-80.

(dollars in millions)

Funding Category	Year											TOTAL
	1970	1971	1972	1973	1974	1975	1976*	1977	1978	1979	1980	
Interstate	3,349	3,298	3,293	2,633	2,901	4,015	2,616 ^r	3,298 ^r	3,191	4,442	3,380	36,416
ABC ¹	1,048	971	1,036	698	516	425	194 ^r	46 ^r	17	7	—	4,958
Primary ²	64	62	60	69 ^r	620	1,266	725 ^r	1,174 ^r	1,320	1,440	1,605	8,405
Secondary ³	37	38	42	45	285	483	332 ^r	287	364	360 ^r	395	2,668
Urban	—	—	11	84	340	368	564 ^r	657	854	739	774	4,391
Bridge	—	—	41	53	38	181	116 ^r	196	171	611 ^r	770	2,177
Safety												
Construction	— ^r	— ^r	— ^r	— ^r	25 ^r	263 ^r	368 ^r	326 ^r	332 ^r	338 ^r	344	1,996
Emergency Relief	83	32	44	145	149	144	115 ^r	85	105 ^r	135 ^r	280	1,317
Other	210 ^r	260 ^r	498 ^r	463 ^r	369 ^r	657 ^r	1,218 ^r	888 ^r	769 ^r	548 ^r	526	6,406
TOTAL	4,791	4,661	5,025 ^r	4,190 ^r	5,243 ^r	7,802 ^r	6,248 ^r	6,957 ^r	7,123 ^r	8,620 ^r	8,074	68,734

¹Prior to fiscal year 1975, ABC figures include primary, secondary, and urban funds. After fiscal year 1974, ABC figures include urban extension, primary, and secondary funds.

²Prior to fiscal year 1975, primary figures include rural primary and priority funds. After fiscal year 1974, primary figures include rural primary, priority primary, discretionary priority primary, and consolidated primary funds.

³Secondary figures include only rural secondary funds.

*Includes the Transition Quarter, July 1, 1976 to September 30, 1976.

TABLE X. Federal Highway Administration Motor Carrier Safety Inspection Activity, Calendar Years 1974-80.

Year	Inspections Performed	Vehicles Taken Out of Service	Drivers Taken Out of Service
1974	25,939	7,867	688
1975	16,372	4,961	425
1976	16,907	5,574	456
1977	18,730	6,985	558
1978	25,695	9,978	597
1979	26,127	10,779	1,980
1980	29,110	9,600	3,000

TABLE XI. Summary of U.S. Train Accidents and Casualties, Calendar Years 1972-79.

Category	Year								% Change 1978-79	% Change 1975-79
	1972	1973	1974	1975	1976	1977	1978	1979		
Number of Train Accidents ¹										
Collisions	1,348	1,657	1,551	1,002	1,370	1,363	1,476	1,425	- 3.46	+42.21
Derailments	5,509	7,389	8,513	6,328	7,934	8,075	8,763	7,482	-14.62	+18.23
Other	675	652	630	711	944	926	1,038	833	-19.75	+17.15
TOTAL TRAIN ACCIDENTS	7,532	9,698	10,694	8,041	10,248	10,362	11,277	9,740	-13.63	+21.12
Number of Casualties in Accidents of all Types										
Trespassers Killed	537	578	565	524	457	458	492	516	+ 4.87	- 1.53
Trespassers Injured	586	614	674	703	766	689	746	805	+ 7.90	+14.50
Passengers Killed	47	6	7	8	5	4	13	6	-53.85	-25.00
Passengers Injured	680	503	574	1,307	998	503	1,252	1,001	-20.05	-23.42
Employees on Duty Killed .	127	158	140	110	100	114	122	101	-17.22	- 8.19
Employees on Duty Injured ²	12,456	13,098	15,620	47,318	57,889	61,028	65,071	66,924	+ 2.84	+41.43
All Other Persons Killed...	1,234	1,174	1,196	918	1,068	954	1,019	806	-20.91	-12.21
All Other Persons Injured .	4,208	4,039	3,950	4,978	5,678	5,647	5,476	5,396	- 1.47	+ 8.39
TOTAL NUMBER OF PERSONS KILLED ..	1,945	1,916	1,908	1,560	1,630	1,530	1,646	1,429	-13.19	- 8.40
TOTAL NUMBER OF PERSONS INJURED .	17,930	18,245	20,818	54,306	65,331	67,867	72,545	74,126	+ 2.17	+36.49

¹Monetary reporting threshold prior to 1975 was \$750, in 1975 it was increased to \$1,750, in 1977 it was increased to \$2,300.

²Includes lost time cases only prior to 1975. Reporting requirements were changed in 1975 to be comparable to OSHA reporting requirements—including cases with lost or restricted time; those requiring medical treatment beyond first aid; termination of employment; transfer to another job; loss of consciousness; and occupational illnesses.

³Includes occupational illnesses.

TABLE XII. Summary of U.S. Rail-Highway Grade Crossing Accidents and Casualties, Calendar Years 1972-79.

Accidents ¹ and Casualties ²	Year								% Change 1977-78	% Change 1975-78
	1972	1973	1974	1975	1976	1977	1978	1979		
Accidents at Highway Grade Crossings Involving Motor Vehicles										
Total Accidents	3,222	3,190	3,089	10,925	11,700	11,849	11,999	11,108	- 7.43	+ 1.67
Number of Persons Killed .	1,190	1,078	1,128	788	978	846	929	727	- 21.75	+ 17.89
Number of Persons Injured	3,201	3,215	3,166	3,600	4,343	4,455	4,120	4,019	- 2.46	+ 11.63
Total Rail-Highway Grade Crossing Accidents and Resulting Casualties										
Total Accidents	3,379	3,379	3,278	11,354	12,144	12,299	12,435	11,552	- 7.11	+ 1.74
Number of Persons Killed .	1,260	1,186	1,220	978	1,114	944	1,021	834	- 18.32	+ 4.39
Number of Persons Injured	3,285	3,306	3,260	4,168	4,831	4,649	4,256	4,172	- 1.98	+ 0.09
<i>Railroad Casualties</i>										
Passengers on Trains										
Number of Persons Killed .	0	0	0	1	0	0	0	0	—	- 100.0
Number of Persons Injured	0	35	18	96	58	24	18	2	- 88.89	- 97.92
Employees on Duty										
Number of Persons Killed .	1	5	3	2	0	11	2	7	+ 350.00	+ 350.00
Number of Persons Injured	68	103	102	32	54	193	180	152	- 15.56	+ 475.00
Total Railroad Casualties										
Number of Persons Killed .	1	5	3	3	0	11	2	7	+ 350.00	+ 233.33
Number of Persons Injured	68	138	120	128	112	217	198	154	- 22.23	+ 20.31

¹All impacts between on-track equipment and highway users were reported beginning in 1975. Prior to 1975, such impacts were reported only if they resulted in a reportable casualty or in \$750 in damages to railroad on-track equipment, signals, track, track structures, or roadbed.

²Include lost time cases only prior to 1975. Reporting requirements were changed in 1975 to be comparable to OSHA reporting requirements—including cases with lost or restricted time; those requiring medical treatment beyond first aid; termination of employment; transfer to another job; loss of consciousness; and occupational illnesses.

TABLE XIII. Alaska Railroad Revenue Freight Traffic, by Commodity, Fiscal Years 1975-80.

Commodity	Revenue Freight Tons (000's)						% Change 1979-80	% Change 1975-80
	1975	1976	1977	1978	1979	1980		
Sand and Gravel	N/A	N/A	699.5	727.2	637.5	396.2	-37.8	N/C
Coal	N/A	N/A	550.0	593.3	523.9	590.2	+12.7	N/C
Petroleum, Oil, and Lubricants	557.4	632.6	532.3	373.9	219.6	251.7	+14.6	-54.8
Forwarder Traffic (Piggyback)	95.3	114.2	99.7	99.5	88.7	92.4	+4.1	-3.0
Forest Products	119.5	124.3	82.0	67.8	55.2	108.8	+97.1	-8.9
Agricultural Products	13.2	9.4	11.5	8.2	7.1	9.9	+39.4	-25.0
Manufactured Goods and Miscellaneous Commodities	1114.6	1251.1	330.3	307.8	276.9	292.1	+5.5	N/C
TOTAL TONNAGE	1900.0	2131.6	2305.3	2177.7	1808.9	1741.3	-3.7	-8.3

N/A—Not Available, included in "Manufactured Goods and Miscellaneous Commodities."

N/C—Not Comparable.

TABLE XIV. Amtrak Passengers, Passenger Miles, Daily Train Miles, Revenues, Costs, Deficit, and Ratios, Fiscal Years 1972-80.

Category	Year									% Change 1979-80	% Change 1972-80
	1972	1973	1974	1975	1976	1977	1978	1979	1980		
Passengers (millions)	13.7	14.7	16.7	15.8	16.9	19.2	18.9	21.4	21.2	-1.0	+54.7
Passenger Miles (billions)	2.9	3.3	4.4	3.7	3.8	4.1	4.0	4.9	4.6	-6.1	+58.6
Daily Train Miles (thousands)	71.5	72.9	77.0	80.8	81.5	86.5	86.4	86.5	79.0	-8.7	+10.5
Revenue (\$ millions)	152.7	177.3	242.2	246.5	268.0	311.3	313.0	381.5	436.4	+14.4	+185.8
Corporate Costs (\$ millions)	66.9	46.6	24.9	35.6	43.3	56.8	60.2	46.6	50.5	+8.4	-24.5
Operating Costs (\$ millions)	239.3	272.5	413.2	524.2	630.9	776.0	830.1	951.5	1,102.8	+15.9	+360.8
Total Costs (\$ millions)	306.2	319.2	438.1	559.8	674.3	832.9	890.3	998.1	1,153.3	+15.5	+276.6
Deficit (\$ millions)	153.5	141.9	195.9	313.3	379.3	521.6	577.3	616.8	716.9	+16.2	+367.0
Operating Ratio (Revenue/Costs) ..	0.499	0.556	0.553	0.440	0.398	0.374	0.352	0.382	0.378	-1.0	-24.2
Deficit Per Passenger Mile (¢)	5.3	4.2	4.4	8.3	10.9	12.7	14.4	12.6	15.6	+23.8	+194.3

TABLE XV. Summary of U.S. Motor Vehicle Activities and Fatalities, Calendar Years 1970-80.

Year	Licensed Drivers (millions)	Registered Motor Vehicles (millions)	Vehicle Miles Traveled (billions)	Traffic Fatalities ¹	Fatality Rate ²
1970	111.5	111.2	1,110	52,627	4.74
1971	114.4	116.3	1,179	52,542	4.46
1972	118.4	122.6	1,260	54,589	4.33
1973	121.5	130.0	1,313	54,052	4.12
1974	125.4	134.9	1,281	45,196	3.53
1975	129.8	137.9	1,328	44,525	3.35
1976	134.0	143.5	1,402 ^r	45,523	3.25
1977	138.1	147.3	1,467 ^r	47,878	3.26
1978	140.8	153.6	1,545 ^r	50,331	3.26
1979 ^r	143.3	159.6	1,529	51,093	3.34
1980 ^p	146.0	164.9	1,511	51,077	3.38
% Change 1979-80	+1.9	+3.3	-1.2	-0.0	+1.2
% Change 1970-80	+30.9	+48.3	+36.1	-2.9	-28.7

¹Deaths attributable to motor vehicle accidents and occurring within 30 days after the accidents.

²Fatalities per 100 million vehicle miles.

^r Revised

^p Provisional

TABLE XVI. Summary of U.S. Monthly Traffic Fatalities, Motor Vehicle Mileage, and Fatality Rates, Calendar Years 1975-80.

Category and Year	Month											
	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec
Fatalities¹												
1975	3,053	2,832	3,309	3,290	4,005	4,037	4,324	4,337	3,896	3,916	3,800	3,726
1976	3,038	2,969	3,197	3,569	4,113	3,979	4,613	4,348	3,994	4,250	3,534	3,919
1977	2,738	2,877	3,497	3,730	4,060	4,320	4,960	4,586	4,250	4,560	4,148	4,152
1978	2,733	2,657	3,511	3,950	4,384	4,633	4,999	4,998	4,782	4,795	4,385	4,504
1979 ^r	3,075	3,116	4,072	4,123	4,376	4,505	4,663	4,706	4,698	4,665	4,373	4,721
1980 ^p	3,432	3,272	3,645	3,732	4,482	4,935	4,846	5,401	4,497	4,349	4,249	4,237
% Change 1979-80	+11.6	+5.0	-10.5	-9.5	+2.4	+9.5	+3.9	+14.8	-4.3	-6.8	-2.8	-10.3
% Change 1975-80	+12.4	+15.5	+10.2	+13.4	+11.9	+22.2	+12.1	+24.5	+15.4	+11.1	+11.8	+13.7
Mileage²												
1975	96.9	91.6	107.1	107.3	117.0	119.8	124.0	125.9	110.7	114.7	105.6	106.9
1976 ^r	102.0	98.1	113.7	116.5	122.7	123.5	130.3	131.3	118.9	120.6	112.5	112.5
1977 ^r	102.7	102.7	120.3	121.8	129.2	129.6	136.5	136.7	124.5	127.7	118.8	116.5
1978 ^r	109.6	106.8	124.8	122.5	134.1	138.6	147.9	149.1	131.1	132.6	123.4	124.3
1979 ^r	114.4	109.7	131.4	125.9	132.4	131.2	134.9	139.9	127.6	131.6	123.4	123.2
1980 ^p	115.8	106.8	123.7	123.9	130.4	131.4	136.7	139.0	126.8	130.9	122.0	123.3
% Change 1979-80	+1.2	-2.6	-5.9	-1.6	-1.5	+0.2	+1.3	-0.6	-0.6	-0.5	-1.1	+0.1
% Change 1975-80	+19.5	+16.6	+15.5	+15.5	+11.5	+9.7	+10.2	+10.4	+14.5	+14.1	+15.5	+15.3
Fatality Rate³												
1975	3.15	3.09	3.09	3.07	3.42	3.37	3.49	3.44	3.52	3.41	3.60	3.49
1976 ^r	2.98	3.03	2.81	3.06	3.35	3.22	3.54	3.31	3.36	3.52	3.14	3.48
1977 ^r	2.67	2.80	2.91	3.06	3.14	3.33	3.63	3.36	3.41	3.57	3.49	3.56
1978 ^r	2.49	2.49	2.81	3.23	3.27	3.34	3.38	3.35	3.65	3.62	3.55	3.62
1979 ^r	2.69	2.84	3.10	3.27	3.31	3.43	3.46	3.36	3.68	3.54	3.54	3.83
1980 ^p	2.96	3.07	2.95	3.01	3.44	3.75	3.54	3.89	3.55	3.32	3.48	3.44
% Change 1979-80	+10.0	+8.1	-4.8	-8.0	+3.9	+9.3	+2.3	+15.8	-3.5	-6.2	-1.7	-10.2
% Change 1975-80	-6.0	-0.6	-4.5	-2.0	+0.6	+11.3	+1.4	+13.1	+0.9	-2.6	-3.3	-1.4

¹ Deaths attributable to motor vehicle accidents and occurring within 30 days after the accidents.

² Billions of vehicle miles.

³ Fatalities per 100 million vehicle miles.

^r Revised

^p Provisional

FIGURE 1. U.S. Department of Transportation Funding Levels,
Fiscal Year 1980.

TABLE XVII. Urban Mass Transportation Capital Grants, by Grant Program,
Fiscal Years 1971-80.

(dollars in millions)

Year	Discretionary Grants	Formula Grants	Urban System Grants	Interstate Transfer Grants	TOTAL
1971	284.8	—	—	—	284.8
1972	510.0	—	—	—	510.0
1973	863.7	—	—	—	863.7
1974	870.3	—	34.6	51.0	955.9
1975	1,196.6	9.1	15.7	65.7	1,287.1
1976	1,346.1	32.2	23.4	553.1	1,954.8
1977	1,250.0	39.4	42.0	392.3	1,723.7
1978	1,400.0	50.1	30.4	556.4	2,036.9
1979	1,225.0	255.6	21.3	599.7	2,101.6
1980	1,654.0	431.2	25.6	675.4	2,787.2
TOTAL	10,601.5	817.6	193.0	2,893.6	14,505.7

FIGURE 2. U.S. Department of Transportation Authorized Full-Time
Permanent Positions, Fiscal Year 1980.

TABLE XVIII. Summary of Reported Gas Pipeline Failures and Casualties,
Calendar Years 1970-79.

Distribution Lines				Transmission and Gathering Lines			Totals		
Year ¹	Failures	Fatalities	Injuries	Failures	Fatalities	Injuries	Failures	Fatalities	Injuries
1970	676	21	202	343	1	16	1,019	22	218
1971	875	42	365	410	3	24	1,258	45	389
1972	884	28	294	409	6	36	1,293	34	330
1973	893	33	333	471	2	19	1,364	35	352
1974	1,017	20	314	460	4	20	1,477	24	334
1975	979	8	220	394	6	17	1,373	14	237
1976	1,036	53	319	543	10	47	1,579	63	366
1977	1,530	29	420	466	7	30	1,996	36	450
1978	1,555	20	320	533	11	86	2,088	31	406
1979	1,520	33	313	450	12	93	1,970	45	406

¹Date for calendar years 1974-79 include information from telephonic reports which were not included in data for calendar years 1970-73.

TABLE XIX. Summary of Reported Liquid Pipeline Accidents and Casualties, Calendar Years 1969-79.

<i>Year</i>	<i>Accidents</i>	<i>Fatalities</i>	<i>Injuries</i>	<i>Commodity Loss (Barrels)</i>
1969	403	5	4	343,691
1970	347	4	21	521,849
1971	308	1	8	245,057
1972	309	8	19	360,654
1973	273	7	8	379,365
1974	256	10	11	293,643
1975	255	7	15	319,423
1976	209	5	5	255,037
1977	238	3	19	228,429
1978	256	3	10	280,794
1979	241	4	12	543,918

FIGURE 1. U.S. Department of Transportation Funding Levels, Fiscal Year 1980.

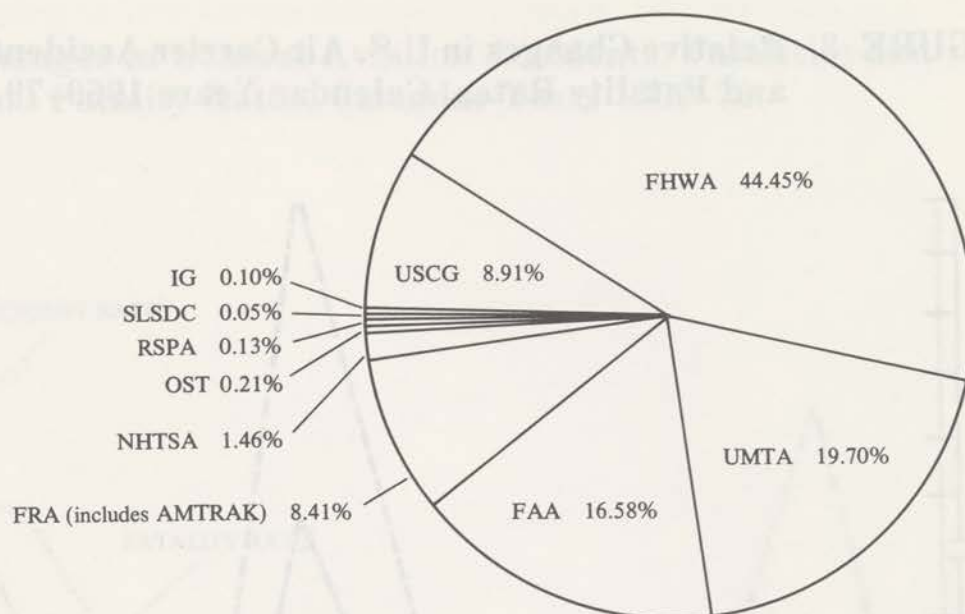


FIGURE 2. U.S. Department of Transportation Authorized Full-Time Permanent Positions, Fiscal Year 1980.

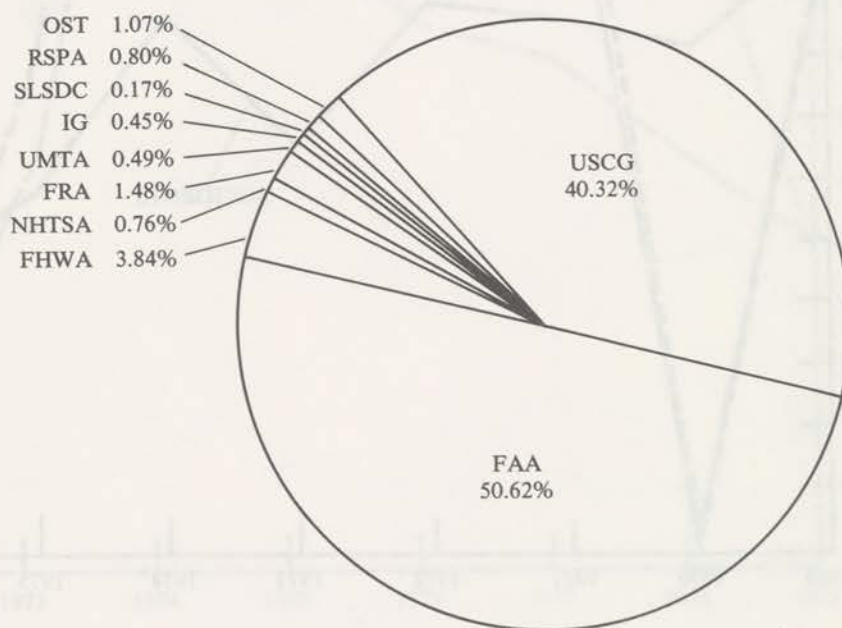
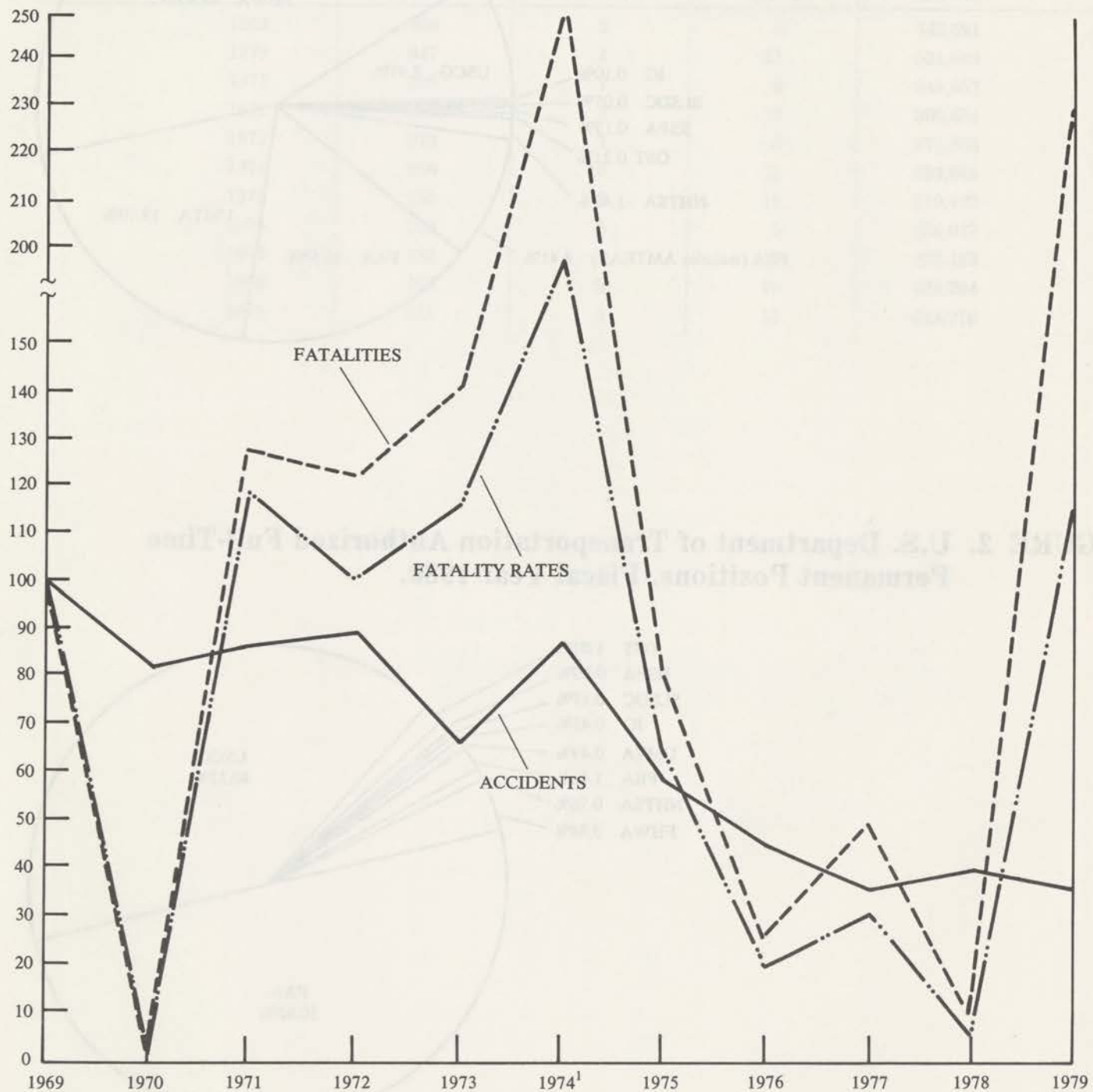
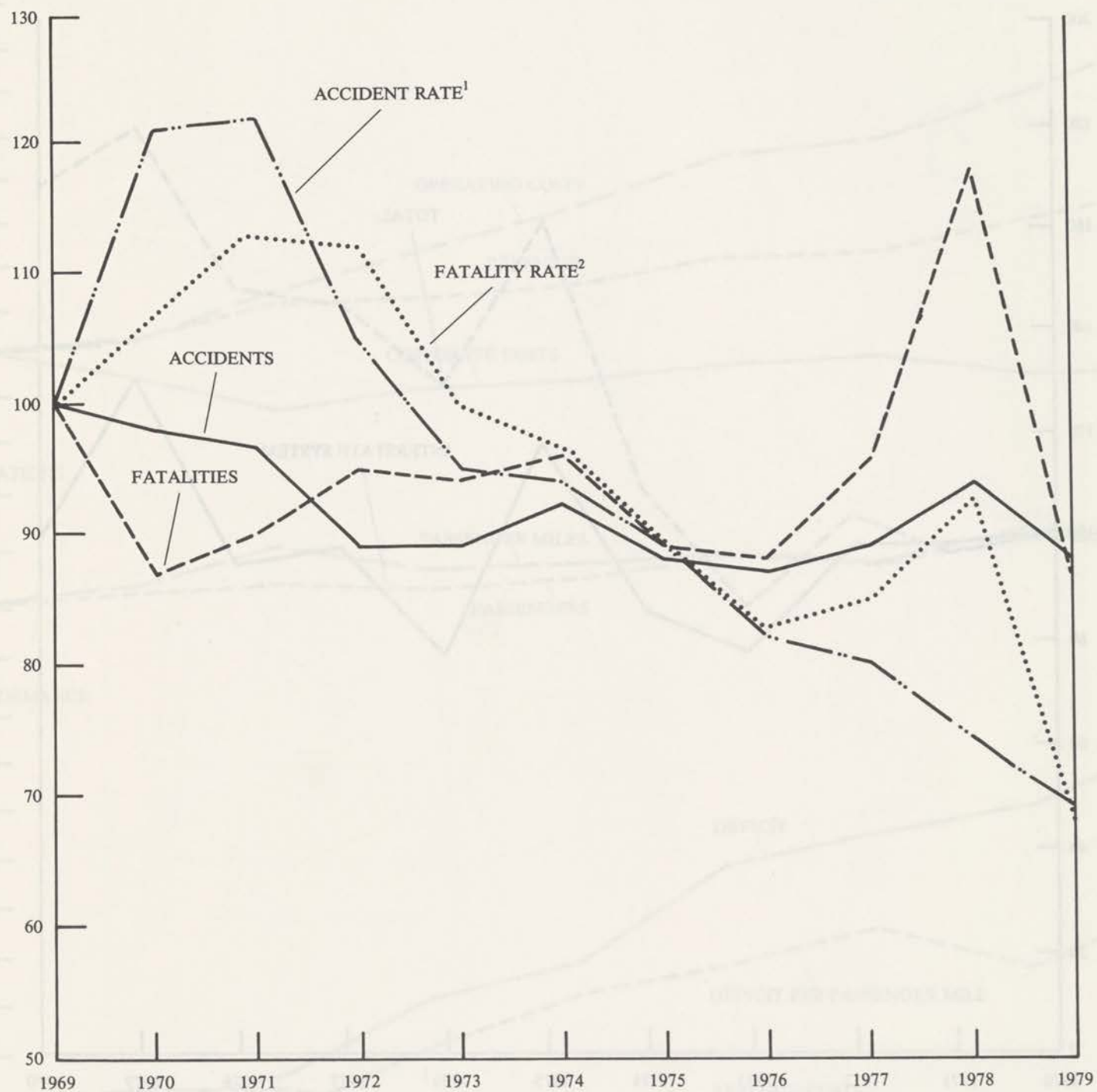


FIGURE 3. Relative Changes in U.S. Air Carrier Accidents, Passenger Fatalities, and Fatality Rates, Calendar Years 1969-79.



¹Excludes passenger fatalities that occurred in sabotage accidents.

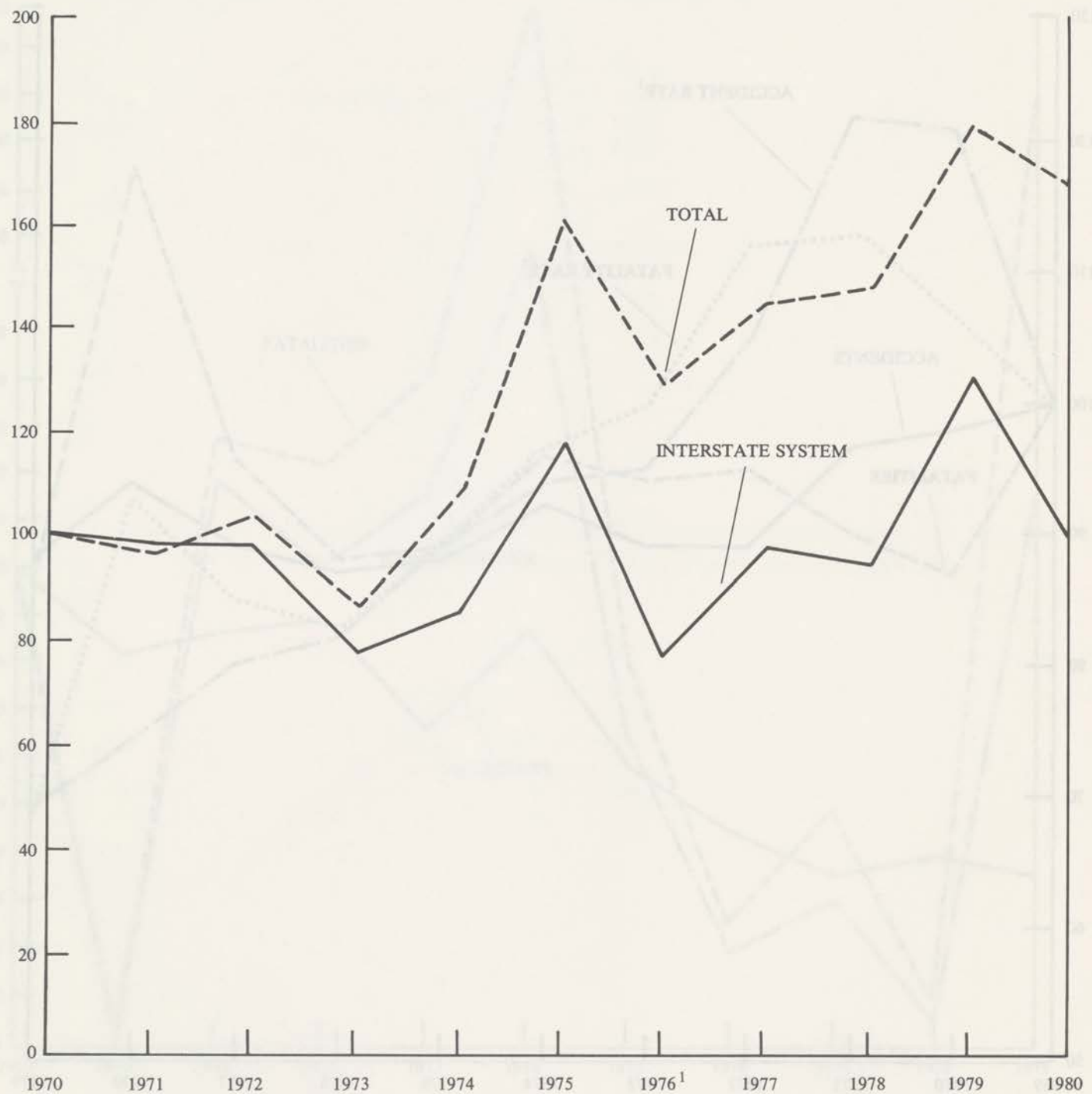
FIGURE 4. Relative Changes in General Aviation Accidents, Fatalities and Accident and Fatality Rates, Calendar Years 1969-79.



¹ Accidents per million aircraft miles flown.

² Fatalities per million aircraft miles flown.

FIGURE 5. Relative Changes in Total and Interstate System Highway Obligations, Fiscal Years 1970-80.



¹Includes the Transition Quarter, July 1, 1976 to September 30, 1976

FIGURE 6. Relative Changes in Amtrak Costs, Revenues, Operations, and Performance, Fiscal Years 1972-80

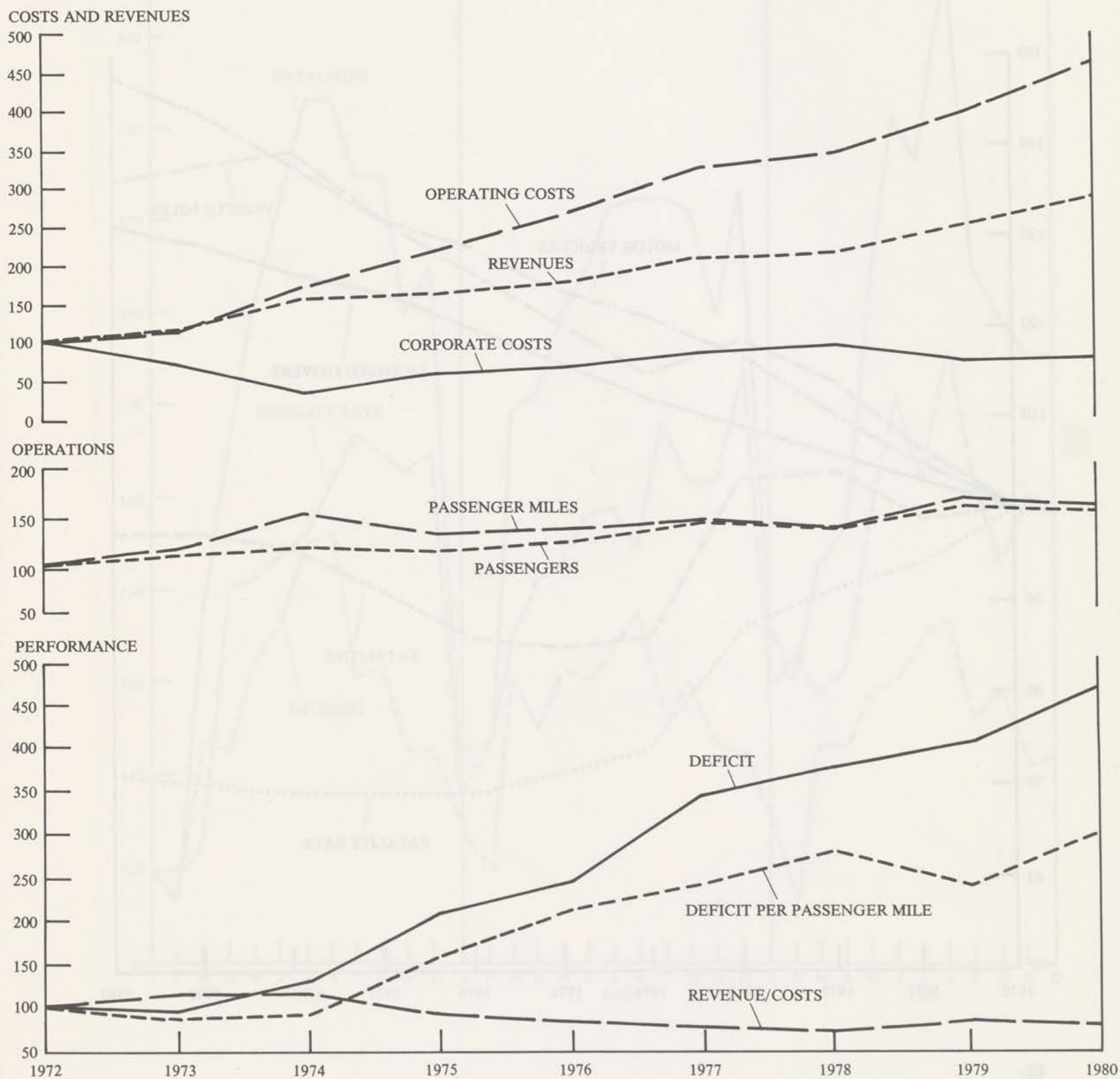


FIGURE 7. Relative Changes in U.S. Motor Vehicle Activities, Fatalities, and Fatality Rate, Calendar Years 1970-80.

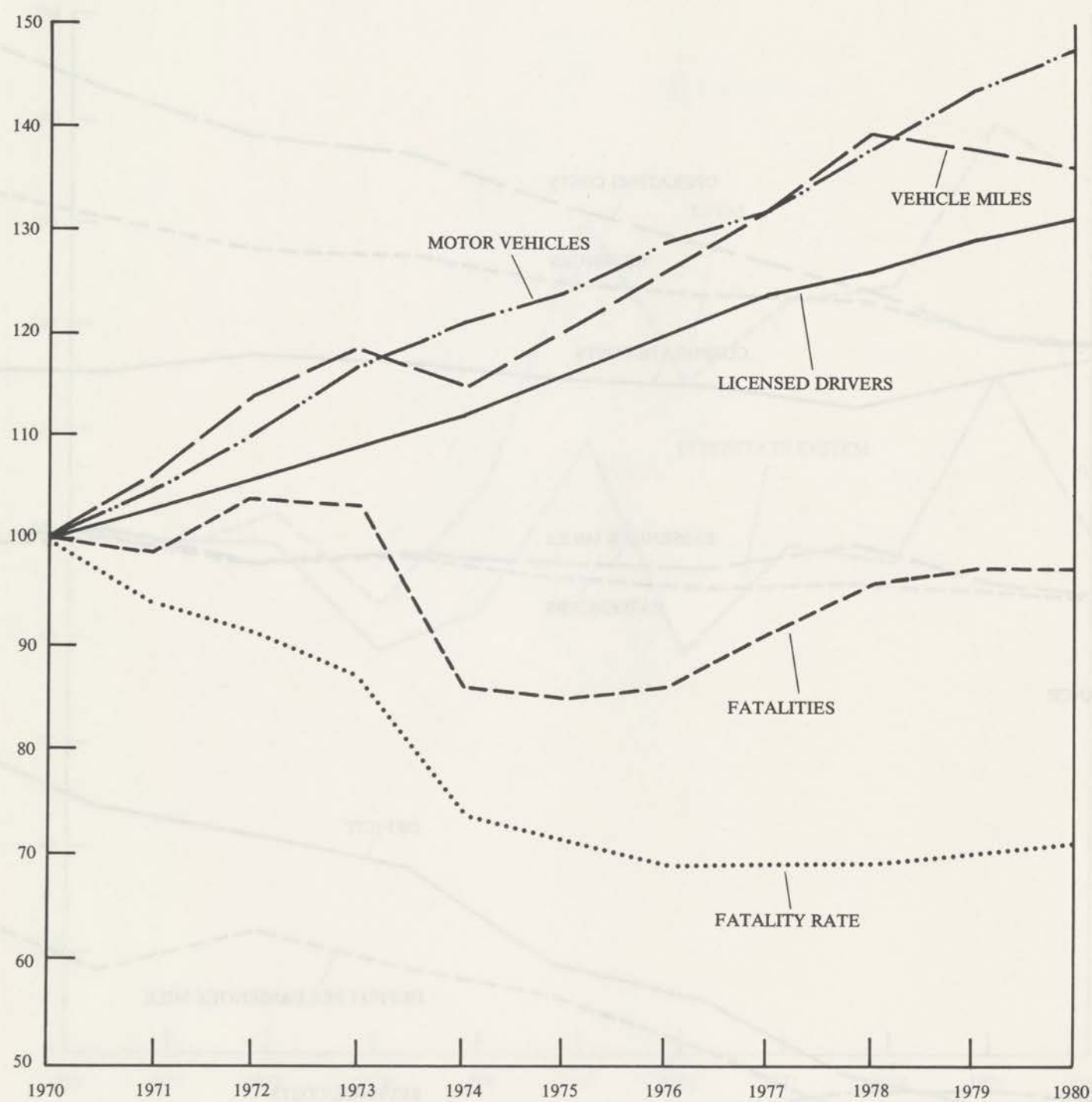


FIGURE 8. Relative Changes in U.S. Traffic Fatalities, Mileage, and Fatality Rate, Calendar Years 1978-80.

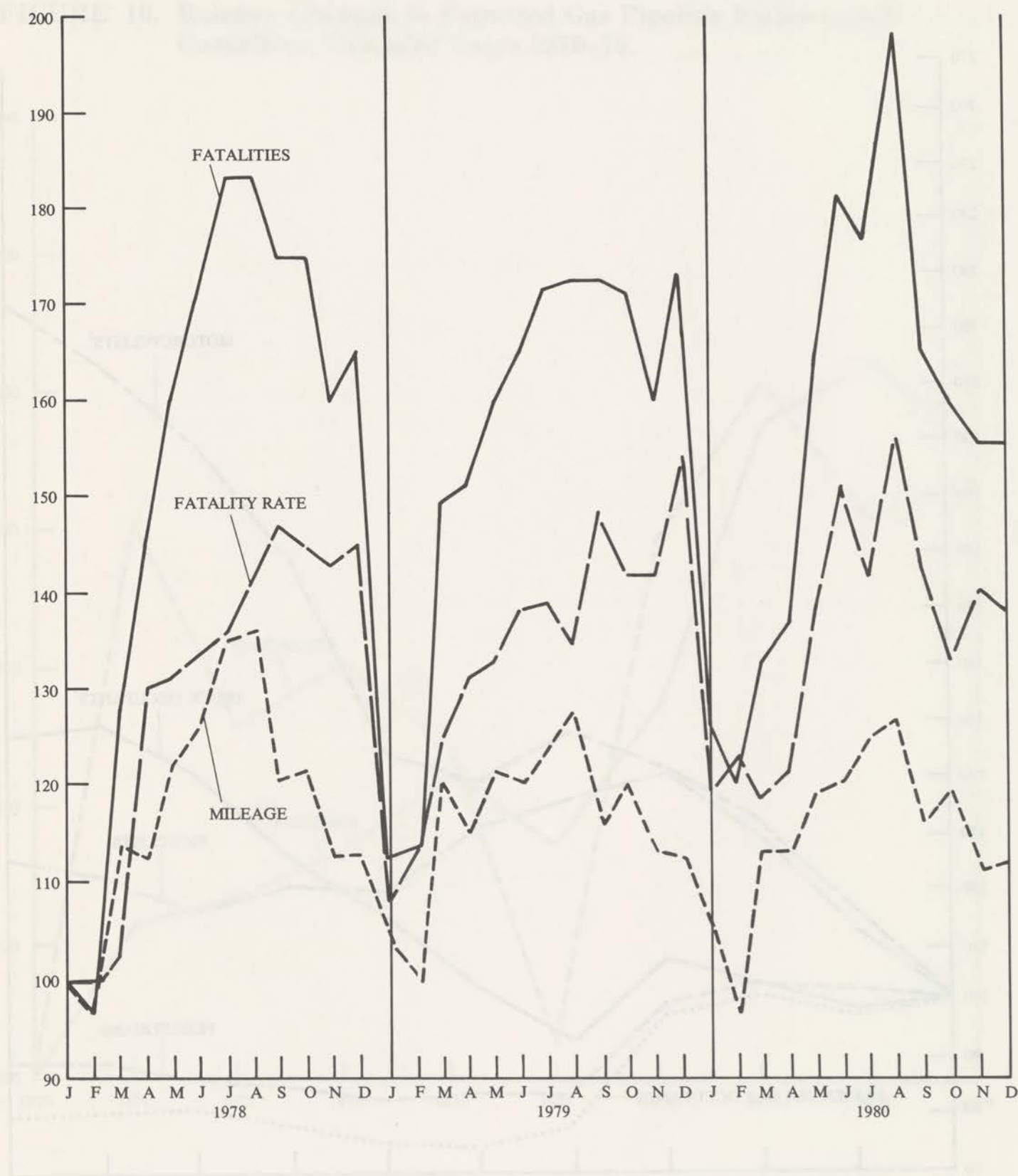
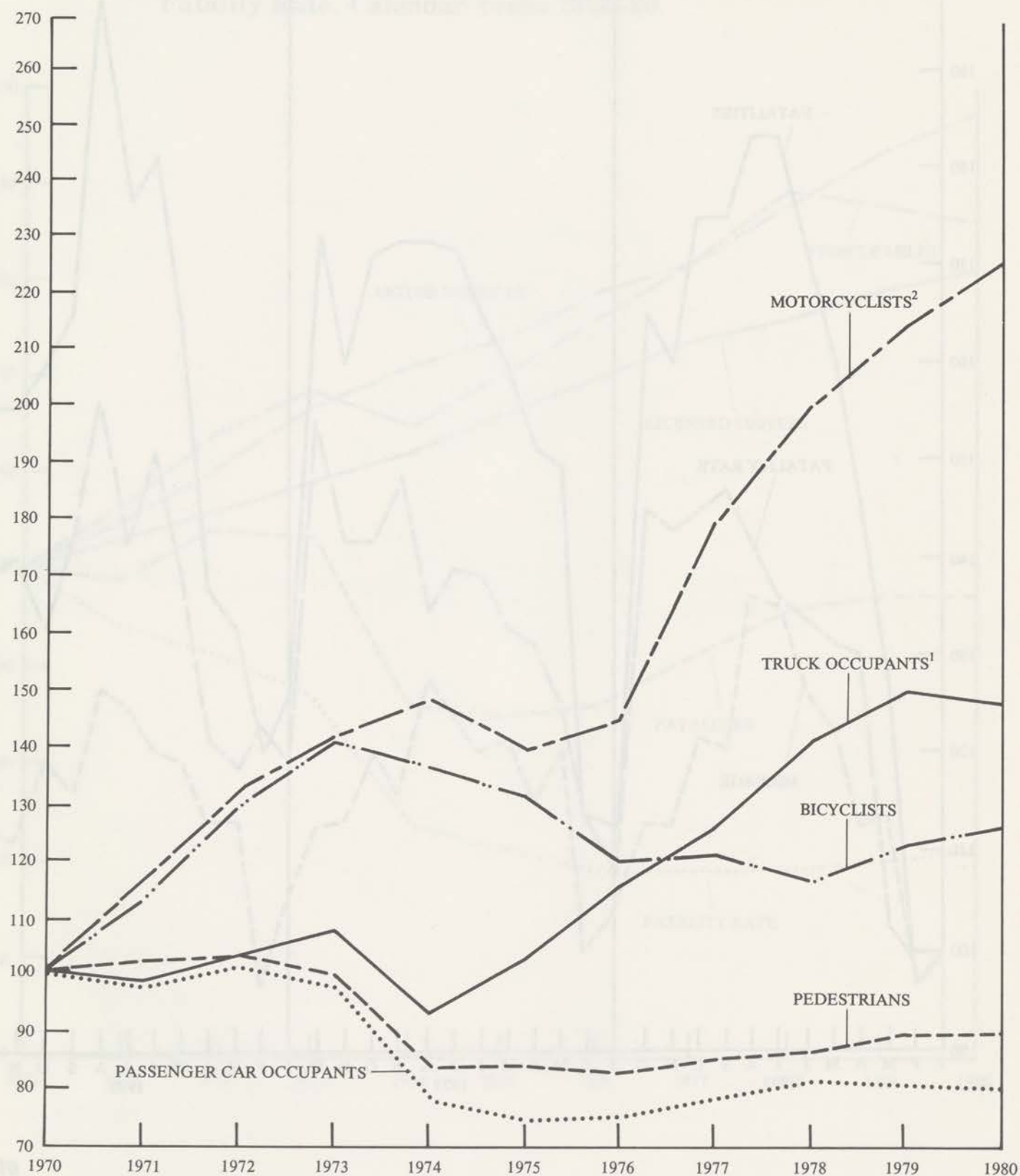


FIGURE 9. Relative Changes in U.S. Traffic Fatalities, by Principal Categories, Calendar Years 1970-80.



¹Includes pickups, vans, and heavy trucks.

²Includes mopeds, motorscooters, and motorbikes.

FIGURE 10. Relative Changes in Reported Gas Pipeline Failures and Casualties, Calendar Years 1970-79.

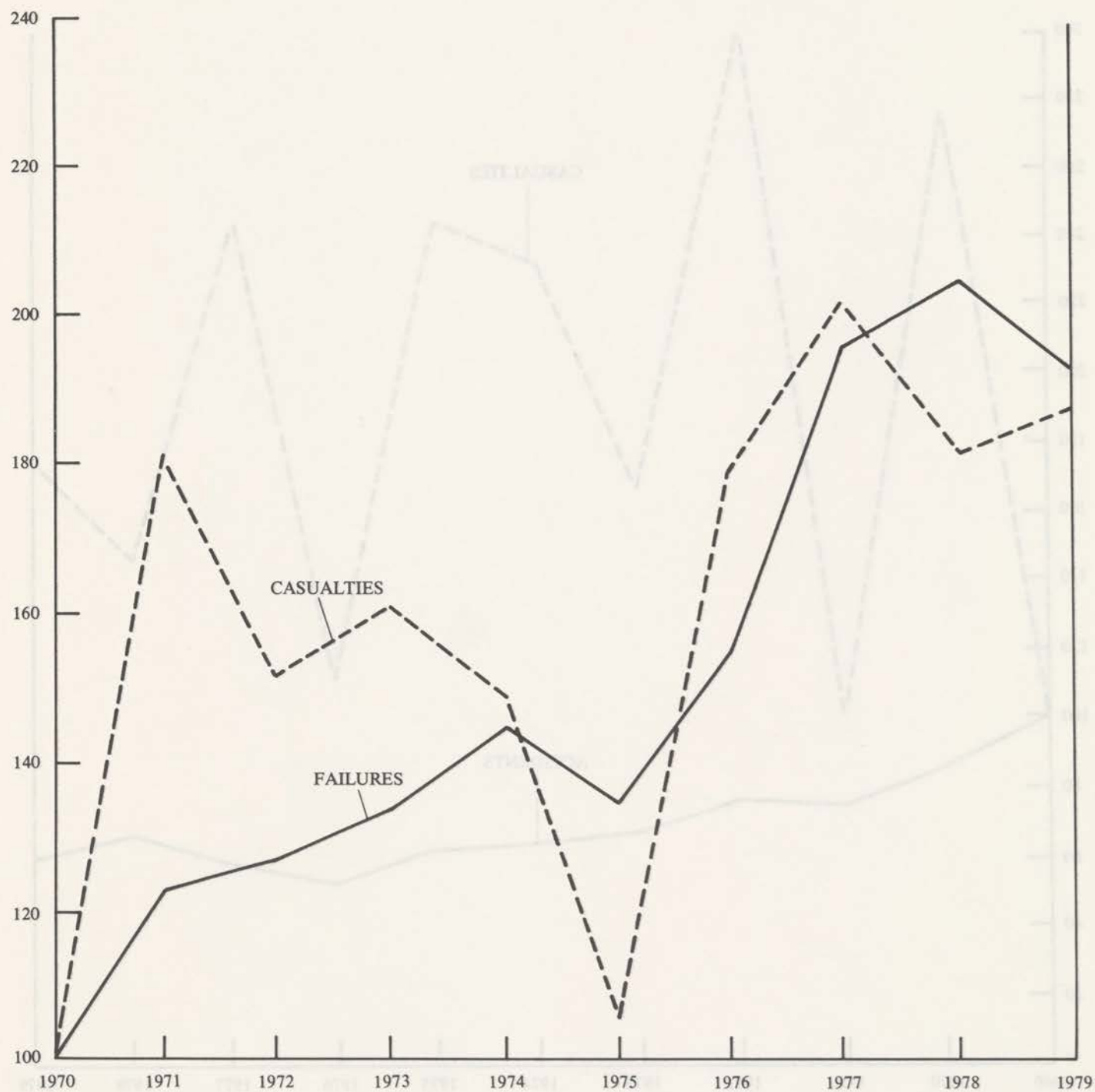


FIGURE 11. Relative Changes In Reported Liquid Pipeline Accidents and Casualties, Calendar Years 1969-78.



