



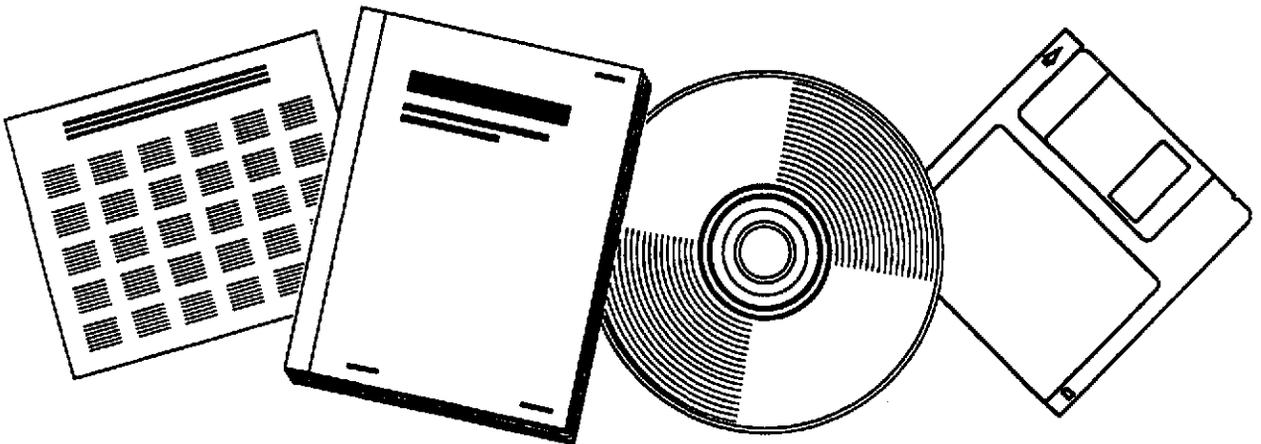
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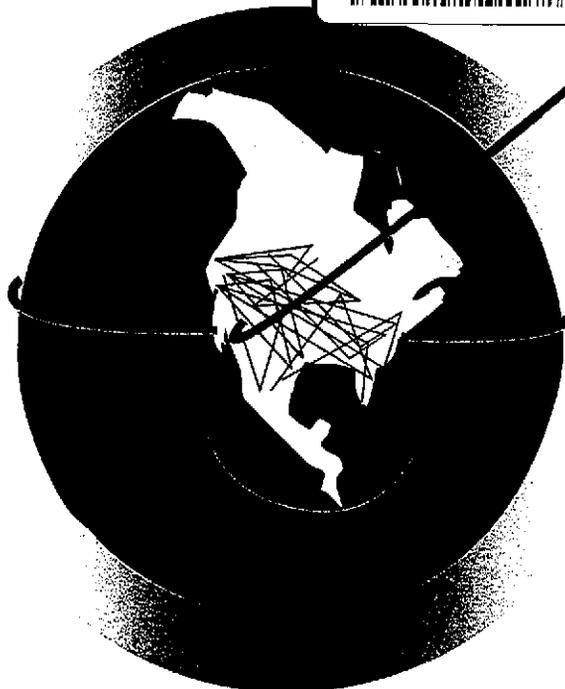
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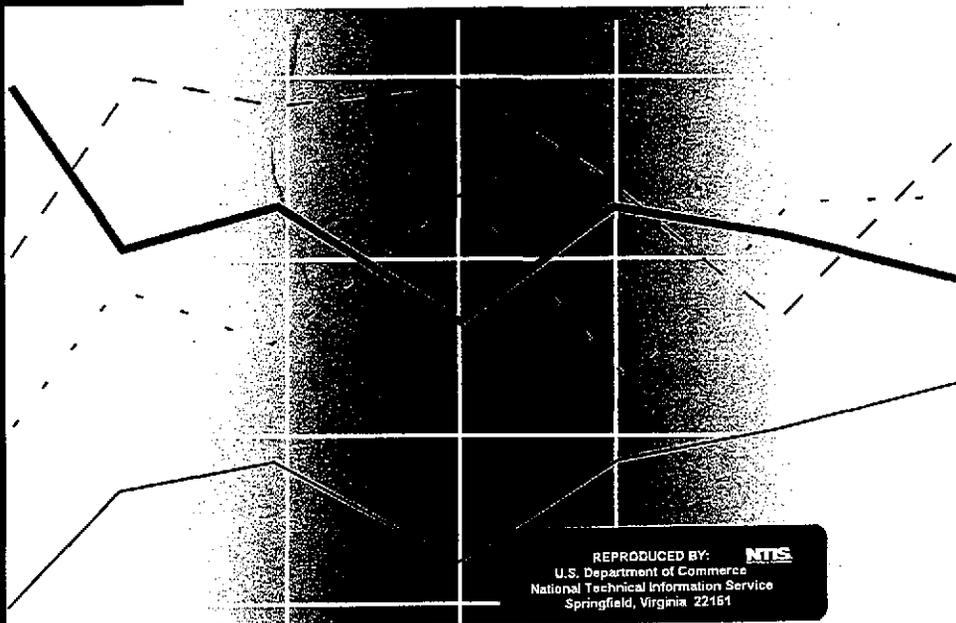
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National Transportation Statistics is a compendium of selected national transportation, and transportation-related statistics from a wide variety of government and private sources. The data illustrate transportation activity for the major transportation modes - air, automobile, bus, truck, transit, rail, water, and pipeline. Basic descriptors such as operating revenues/expenses, number of vehicles and employees, vehicle- and passenger-miles, and passenger and freight operations, are included. Transportation trends in performance, safety, and motor vehicle sales, production and costs are also presented. Safety information compares data for transportation accidents, fatalities, and injuries for all modes of transportation as well as multimodal transportation of hazardous materials. Supplementary information include data on transportation and the economy, energy consumption, energy intensiveness, energy transport, and energy supply and demand. Additionally, selected statistics on commercial space transportation and data from the FHWA's "Journey-to-Work Trends in the United States and its Major Metropolitan Areas, 1960-1990" are also illustrated.

This year's publication has been redesigned to complement the Bureau of Transportation Statistics' "Transportation Statistics Annual Report (TSAR)." The 1994 TSAR summarized the state of the transportation system and its consequences, the quality of statistics used to characterize the transportation system, and provided planned efforts by the BTS to improve the quality of statistics. The 1995 TSAR evaluates, analyzes, and interprets information contained in this document.

In this edition, summary statistics, in five year increments, are provided for the years 1960-1992/93. In some instances, data extend back to 1955 and are forecast through 1998.

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TABLE OF CONTENTS

	Page
USER COMMENT FORM	xiii
INTRODUCTION	1
TREE DISPLAYS	3
FIGURE REFERENCES	11
MODAL PROFILES - 1960, 1970, 1980, 1990, 1992	19
Air Carrier Profile	20
General Aviation Profile	24
Highway Profile	26
Automobile Profile	29
Bus Profile	32
Truck Profile	34
Transit Profile	37
Water Transport Profile	40
Rail Profile, A. Class I Railroads	43
Rail Profile, B. Amtrak	45
Oil Pipeline Profile	46
Natural Gas Pipeline Profile	47
PROFILE REFERENCES	49
TRANSPORTATION TRENDS	53
Section I: Performance	53
Section II: Safety by Transportation Mode	85
Section III: Motor Vehicle Sales, Production, and Costs	137
SUPPLEMENTARY DATA	145
Section I: Transportation and the Economy	145
Section II: Energy in Transportation	167
Part 1. Energy Consumption	169
Part 2. Energy Intensiveness	199
Part 3. Energy Transport	209
Part 4. Energy Supply and Demand	217
Section III: Commercial Space Transportation and Journey-to-Work Statistics	223
TABLE REFERENCES	241
APPENDIX A - Metric Conversion Tables	A-1
APPENDIX B - Transportation Statistics Programs	B-1
APPENDIX C - Glossary	C-1
APPENDIX D - Index	D-1
APPENDIX E - Bibliography	E-1
CONVERSION FACTORS	Inside Backcover

TABLES

Table

Page

TRANSPORTATION TRENDS

Section I: Performance

1.	Average Passenger Revenue per Passenger-Mile, 1960-1992	54
2.	Average Freight Revenue per Ton-Mile, 1960-1992	56
3.	Average Passenger Fare, 1960-1992	58
4.	Total Operating Revenues, 1960-1992	60
5.	Vehicle-Miles, 1960-1992	62
6.	Passenger-Miles, 1960-1992	64
7.	Ton-Miles of Freight, 1960-1993	66
8.	Basic Intercity Mileage Within the Continental United States, 1960-1992	68
9.	Average Length of Haul, Domestic Interstate Freight and Passenger Modes, 1960-1992	70
10.	Number of Vehicles, 1960-1992	71
11.	Number of New Vehicles Purchased by Mode, 1960-1992	72
12.	Number of U.S. Airports, 1980-1993	73
13.	Top 50 Airports, Large Scheduled Certificated Air Carriers, 1992	74
14.	Passengers Denied Boarding by Major and National U.S. Airlines, 1986-1993	75
15.	Flight Operations Arriving On-Time for all Major Air Carriers, 1988-1993	75
16.	Air Travel Arrivals Between the United States and Foreign Countries, 1975-1993	76
17.	Air Travel Departures Between the United States and Foreign Countries, 1975-1993	77
18.	U.S. Automobiles in Fleets by Type of Use, 1965-1993	78
19.	Total Road and Street Mileage in the United States by Type of Surface, 1960-1992	79
20.	Highway Vehicle Miles Traveled vs. Lane Miles by Functional Class (Rural), 1985-1992	80
21.	Highway Vehicle Miles Traveled vs. Lane Miles by Functional Class (Urban), 1985-1992	80
22.	Total Traffic Delay Hours for 50 Cities, 1986-1990	81
23.	Total Delay Hours by Highway Type for 50 Urban Areas in 1990	82
24.	Speed Trend Characteristics, FY 1980-1992	83
25.	Amtrak On-Time Performance Trends, 1980-1993	84

Section II: Safety by Transportation Mode

26.	Number of Fatalities, Injuries, and Accidents by Transportation Mode, 1960-1993	86
27.	U.S. Air Carrier Fatalities, Accidents, and Fatal Accidents, 1960-1993	89
28.	U.S. Air Carrier Accident and Fatal Accident Rates, 1960-1993	91
29.	U.S. Air Carrier Passenger Fatality Rates, 1960-1993	93
30.	Reported Near Midair Collisions, 1980-1993	96
31.	Airline Passenger Screening Results, 1975-1993	97
32.	Commuter Air Carrier Accidents, Fatalities, Injuries, and Accident Rates, 1975-1993	100
33.	On-Demand Air Taxi Accidents, Fatalities, Injuries, and Accident Rates, 1975-1993	101
34.	General Aviation Accidents, Fatalities, Serious Injuries, and Fatal Accidents, 1960-1993	102
35.	General Aviation Fatality and Accident Rates, 1960-1993	104
36.	Motor Vehicle Traffic Data Comparisons, 1960-1993	106
37.	Traffic Fatalities by Major Category, 1960-1993	107
38.	Motor Vehicle Traffic Accidents and Traffic Fatalities, 1960-1993	109
39.	Fatality Rates by Truck Type, 1975-1992	111
40.	Motor Vehicle Fatal Accidents by Posted Speed Limit, 1975-1993	112
41.	Restraint Usage and Injury Severity of Passenger Car Occupants, 1985-1993	115
42.	Fatalities by Highest Blood Alcohol Concentration (BAC) in the Crash, 1985-1993	116

TABLES (cont'd)

Table	Page
43. Percent of Factory Installations of Anti-Lock Braking Systems and Driver-Side Air Bags, 1985-1993	117
44. Motor Carrier Accidents, Injuries, and Fatalities by Type of Carrier, 1965-1992	118
45. Waterborne Transport Accidents, Injuries, and Fatalities Resulting from Vessel Casualties, 1970-1993	119
46. Recreational Boating Fatalities, Injuries, and Accidents, 1960-1993	122
47. Recreational Boating Fatality, Injury, and Accident Rates, 1960-1993	122
48. Number of Vessels Involved in Recreational Boating Accidents and Reported Property Damage, 1960-1993	125
49. Railroad Fatalities and Injuries by Type of Person, 1980-1993	127
50. Train Accident Fatalities, Injuries, and Accidents by Type, 1980-1993	128
51. Railroad Accidents and Fatalities, and Rail-Highway Grade Crossing Fatalities, 1970-1993	129
52. Railroad Accident Rates, 1970-1993	129
53. Liquid and Gas Pipeline Failures, 1970-1993	132
54. Liquid and Gas Pipeline Fatalities, 1970-1993	132

Section III: Motor Vehicle Sales, Production, and Costs

55. Annual U.S. Motor Vehicle Production and Factory Sales, 1960-1993	138
56. U.S. Retail Passenger Car Sales, 1970-1993	139
57. U.S. Retail Sales of New Cars by Sector, 1960-1993	139
58. Model Year Sales, Market Shares, and Sales-Weighted Fuel Economies of Domestic and Import Automobiles, Model Years 1980-1993	140
59. Model Year Sales, Market Shares, and Sales-Weighted Fuel Economies of Domestic and Import Light Trucks, Model Years 1980-1993	141
60. World Motor Vehicle Production, 1961, 1971, 1981, 1991, and 1993	142
61. Cost of Owning and Operating an Automobile, 1975-1994	143
62. New Car Price Comparisons with Safety and Emissions Equipment, 1970-1992	144

SUPPLEMENTARY DATA

Section I: Transportation and the Economy

63. Personal Consumption Expenditures by Transportation Sector, 1960-1993	146
64. Personal Consumption Expenditures by Type, 1960-1993	148
65. Consumer Spending on Transportation, 1960-1993	150
66. Gross Domestic Product by Transportation Sector, 1960-1991	151
67. National Income by Transportation Sector, 1960-1991	151
68. National Transportation and Economic Trends, 1960-1992	153
69. Employment in Transportation and Related Industries, 1960-1993	154
70. Wages and Salaries per Full-Time Employee by Transportation Sector, 1960-1992	156
71. Wages and Salaries by Transportation Sector, 1960-1992	156
72. Measures of Transportation Productivity in Output per Employee-Hour, 1970-1992	159
73. Passenger and Freight Transportation Expenditures, 1960-1992	160
74. Per Capita Freight Statistics, 1960-1992	161
75. Lane Miles of Capacity and Highway Capital Expenditures, 1984-1992	162
76. Railroad Capital and Maintenance Expenditures, 1960-1992	162
77. Federal Transportation Revenues, by Mode, 1980-1992	163
78. Federal, State, and Local Transportation Revenues, by Mode, 1980-1992	163
79. Federal, State, and Local Transportation Expenditures, by Mode, 1980-1992	163

TABLES (cont'd)

Table	Page
80. Transportation Expenditures and User Charges, 1982-1992	164
81. Transportation Expenditures and User Charges, 1982-1992	164
82. Government Expenditures for Transportation, 1982-1992	165
83. Transportation Grants, by Program, 1980-1992	165
84. U.S. Government Transportation Research, Planning and R&D Outlays, 1965-1993	166
Section II: Energy in Transportation	
Energy Equivalents	168
Part 1. Energy Consumption	
85. Fuel Consumption by Mode of Transportation, 1960-1992	170
86. Fuel Consumption by Certificated Air Carriers, 1960-1993	171
87. Total Motor Vehicle Fuel Consumption and Travel, 1960-1992	172
88. Fuel Consumption and Travel by Passenger Cars and Motorcycles, 1960-1992	173
89. Fuel Consumption and Travel by Buses, 1960-1992	174
90. Fuel Consumption and Travel by Trucks, 1960-1992	175
91. Motor Fuel and Total Energy Consumption by the U.S. Transit Industry, 1955-1992	176
92. National Emissions of Carbon Monoxide, 1960-1992	177
93. National Emissions of Nitrogen Oxides, 1960-1992	178
94. National Emissions of Nonmethane Volatile Organic Compounds, 1960-1992	179
95. National Emissions of Particulate Matter, 1960-1992	180
96. National Emissions of Sulfur Dioxide, 1960-1992	181
97. National Lead Emission Estimates, 1970-1992	182
98. Emissions of Particulate Matter from Highway Vehicles, 1970-1992	183
99. Federal Emission Control Requirements for Automobiles and Light Trucks, 1980-1995	184
100. Federal Emission Control Requirements for Heavy-Duty Diesel Trucks, 1980-1998	185
101. Federal Emission Control Requirements for Heavy-Duty Gasoline Trucks, 1980-1998	186
102. Pollution Abatement and Control Expenditures, 1984-1990	187
103. Average Retail Price of Transportation Fuel, 1960-1993	188
104. Price Trend of Gasoline vs. Other Consumer Goods and Services, 1955-1993	189
105. Average Fuel Efficiency of U.S. Passenger Cars, 1955-1994	190
106. Consumption of Energy by Sector, 1955-1993	192
107. U.S. Energy Consumption by the Transportation Sector, 1955-1993	193
108. U.S. Petroleum Production and Consumption, 1970-1993	195
109. U.S. Government Energy Consumption, Fiscal Years 1975-1993	196
110. U.S. Government Energy Use by Agency and Source, Fiscal Years 1983 and 1993	197
Part 2. Energy Intensiveness	
111. Energy Intensiveness of Certificated Air Carriers, 1960-1993	200
112. Energy Intensiveness of General Aviation, 1960-1992	201
113. Energy Intensiveness of Passenger Cars and Motorcycles, 1960-1992	202
114. Energy Intensiveness of Class I Intercity Buses, 1960-1991	203
115. Energy Intensiveness of Trucks, 1960-1992	204
116. Energy Intensiveness of Transit Buses and School Buses, 1960-1992	205
117. Energy Intensiveness of Class I Railroad Freight, 1960-1992	206
118. Energy Intensiveness of Amtrak Service, 1975-1993	206

TABLES (cont'd)

Table	Page
Part 3. Energy Transport	
119.	Crude Oil Transported in the U.S. by Mode of Transportation, 1975-1993 210
120.	Refined Petroleum Products Transported in the U.S. by Mode of Transportation, 1975-1993 211
121.	Crude Petroleum and Petroleum Products Transported in the U.S. by Mode of Transportation, 1975-1993 212
122.	U.S. Gas Utility Industry Miles of Pipeline and Main, by Type, 1955-1992 214
123.	U.S. Tanker Fleet, 1955-1992 214
124.	Annual Oil Spills in U.S. Navigable Waters, by Source, 1982-1992 215
Part 4. Energy Supply and Demand	
125.	Petroleum Products Supplied by Sector (million barrels per day), 1955-1993 218
126.	Domestic Demand for Refined Petroleum Products Supplied by Sector (trillion Btu per day), 1955-1993 219
127.	Petroleum Products Supplied by Type and Sector, 1983 and 1993 220
128.	Domestic Demand for Gasoline, 1955-1992 221
Section III: Commercial Space Transportation and Journey-to-Work Statistics	
129.	Worldwide Commercial Space Launches, 1982-1992 228
130.	Journey-to-Work Comparisons, National Totals, 1960-1990 231
131.	Journey-to-Work Profile: National Summary Statistics, 1990 232
132.	Mean Travel Time to Work, 1980-1990 234
133.	Travel Time Intervals to Work, Percent Distribution, 1990 235
134.	Time Leaving Home to Go to Work, 1990 236
135.	Journey-to-Work Mode Share, 1990 237
136.	Households by Vehicle Availability, 1980-1990 238

ILLUSTRATIONS

Figure Page

TREE DISPLAYS

1.	Expenditures and Revenues (million dollars) - 1992	4
2.	Vehicle-Miles (millions) - 1992	5
3.	Passenger-Miles (millions) - 1992	6
4.	Ton-Miles of Freight (millions) - 1992	7
5.	Number of Vehicles - 1992	8
6.	Number of Fatalities - 1992	9
7.	Fuel Consumed in Transportation (million gallons) - 1992	10

TRANSPORTATION TRENDS

Section I: Performance

8.	Average Passenger Revenue per Passenger-Mile, 1960-1992	55
9.	Average Freight Revenue per Ton-Mile, 1960-1992	57
10.	Average Passenger Fare, 1960-1992	59
11.	Total Operating Revenues, 1960-1992	61
12.	Vehicle-Miles, 1960-1992	63
13.	Passenger-Miles, 1960-1992	65
14.	Ton-Miles of Freight, 1960-1993	67
15.	Basic Intercity Mileage Within the Continental United States, 1960-1992	69

Section II: Safety by Transportation Mode

16.	Fatalities by Transportation Mode, 1960-1993	88
17.	U.S. Air Carrier Fatalities, Accidents, and Fatal Accidents, 1960-1993	90
18.	U.S. Air Carrier Accident and Fatal Accident Rates, 1960-1993	92
19.	U.S. Air Carrier Passenger Fatality Rates, 1960-1993	94
20.	U.S. Air Carrier Accidents and Serious Injuries, 1975-1993	95
21.	U.S. and Foreign Air Carrier Aircraft Hijackings, 1961-1993	98
22.	Bomb Threats Against U.S. Aircraft and U.S. Airports, 1970-1993	99
23.	General Aviation Accidents, Fatalities, Serious Injuries, and Fatal Accidents, 1960-1993	103
24.	General Aviation Fatality and Accident Rates, 1960-1993	105
25.	Traffic Fatalities by Major Category, 1960-1993	108
26.	Motor Vehicle Traffic Accidents and Traffic Fatalities, 1960-1993	110
27.	Fatality Rate Indices by Highway Type, 1970-1993	113
28.	Highway Fatality and Injury Rate Indices, 1970-1993	114
29.	Waterborne Transport Accidents, Fatalities, and Injuries Resulting from Vessel Casualties, 1970-1993	120
30.	Waterborne Transport Fatalities not Related to Vessel Casualties, 1970-1993	121
31.	Recreational Boating Fatalities, Injuries, and Accidents, 1960-1993	123
32.	Recreational Boating Fatality, Injury, and Accident Rates, 1960-1993	124
33.	Number of Vessels Involved in Recreational Boating Accidents and Reported Property Damage, 1960-1993	126
34.	Railroad Accidents and Fatalities, and Rail-Highway Grade Crossing Fatalities, 1970-1993	130
35.	Railroad Accident Rates, 1970-1993	131

ILLUSTRATIONS (cont'd)

Figure		Page
36.	Liquid and Gas Pipeline Failures, 1970-1993	133
37.	Liquid and Gas Pipeline Fatalities, 1970-1993	133
38.	Liquid and Gas Pipeline Injuries, 1980-1993	134
39.	Hazardous Materials Incidents, 1975-1993	135
40.	Hazardous Materials Fatalities and Injuries, 1975-1993	136

SUPPLEMENTARY DATA

Section I: Transportation and the Economy

41.	Personal Consumption Expenditures by Transportation Sector, 1960-1993	147
42.	Personal Consumption Expenditures by Type, 1960 and 1993	149
43.	National Income by Transportation Sector, 1960-1991	152
44.	Wages and Salaries per Full-Time Employee by Transportation Sector, 1960 and 1992	157
45.	Wages and Salaries by Transportation Sector, 1960 and 1992	158

Section II: Energy in Transportation

Part 1. Energy Consumption

46.	Price Trend of Regular Grade Gasoline, 1955-1993	191
47.	Average Fuel Efficiency of U.S. Passenger Cars, 1955-1992	191
48.	U.S. Energy Consumption by the Transportation Sector, 1955-1993	194

Part 2. Energy Intensiveness

49.	Energy Intensiveness by Passenger Mode, 1960-1992	207
-----	---	-----

Part 3. Energy Transport

50.	Crude Petroleum and Petroleum Products Transported in the U.S. by Modal Share, 1975-1993	213
-----	--	-----

Section III: Commercial Space Transportation and Journey-to-Work Statistics

51.	Average Market Share of Launches, 1989-1994	226
52.	Commercial Launch Events, 1989-1994	227
53.	Commercial Launch Revenues, 1989-1994	227
54.	Payloads Launched, 1989-1994	229
55.	Means of Journey-to-Work, 39 Metropolitan Areas Over One Million, 1990	233
56.	Means of Journey-to-Work, National Totals, 1990	233
57.	Vehicle Pools in Commuting, 1990	239



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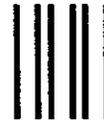
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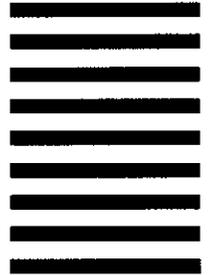


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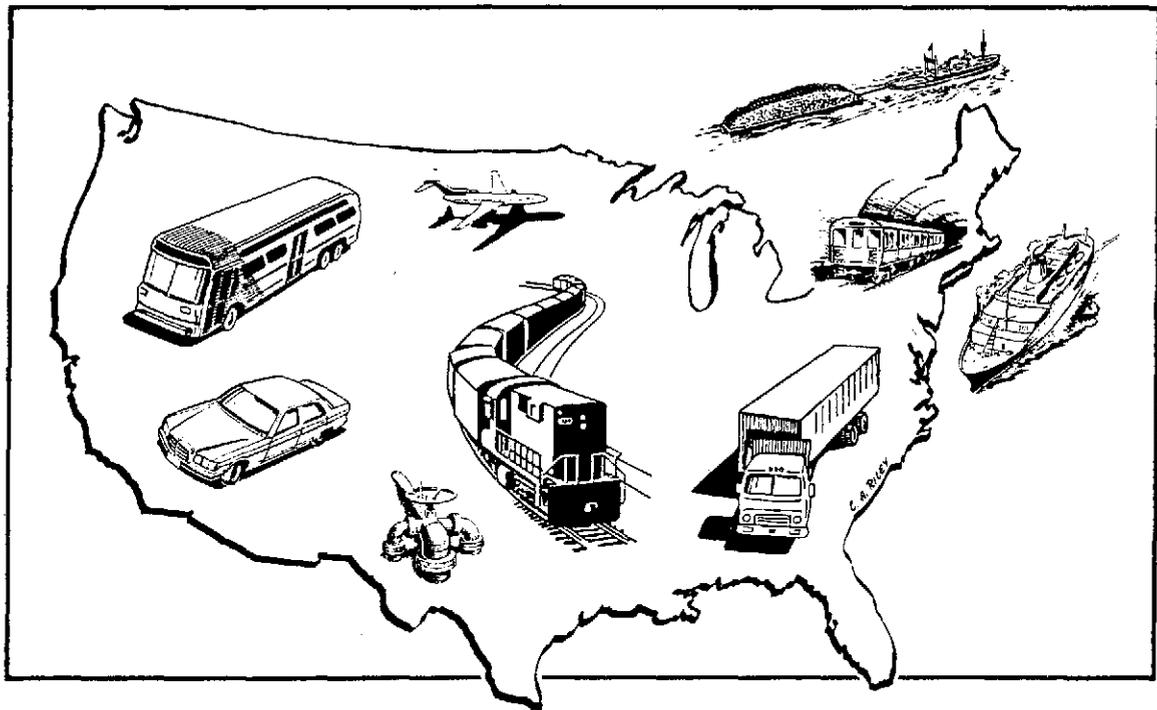
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INTRODUCTION



INTRODUCTION

National Transportation Statistics (NTS) is published by the Bureau of Transportation Statistics (BTS) of the U.S. Department of Transportation to compile and make accessible basic information on the Nation's transportation systems. This twenty-third edition of the NTS also includes information on energy, environmental, and other categories of transportation at the national scale.

The NTS was initially published by DOT's Office of the Secretary of Transportation (OST) and later, the Research and Special Programs Administration (RSPA). BTS assumed responsibility for production of this document with the twenty-second edition. This year's publication has been redesigned to complement the Bureau's *Transportation Statistics Annual Report* (TSAR). The 1994 TSAR summarized the state of the transportation system and its consequences, the quality of statistics used to characterize the transportation system, and provided planned efforts by the BTS to improve the quality of the statistics. Thirty-five data tables or graphs cited in the 1994 TSAR have been updated and incorporated into this edition of the NTS. These data include information on transportation and the economy, energy-related transportation, transportation safety, and transportation facilities/systems. In addition, the Appendix, Transportation Statistics Programs, has been revised and consolidated into this publication. The 1995 *Transportation Statistics Annual Report* evaluates, analyzes, and interprets information contained in this document.

The RSPA/Volpe Center and their on-site contractors, EG&G Dynatrend and Unisys, assisted BTS in compiling this year's NTS report. Summary statistics, in five year increments, are provided for the years 1960-1992, and 1993 when available. In some instances, data extend back to 1955 and are forecast through 1998. As the compilation of statistical material is usually a time-consuming process, reliable sources often represent a one to two year time lag. Consequently, this report incorporates the latest available information at the time of publication.

While most of these statistics are available from various sources such as government agencies and trade associations (see Appendix E), they are presented here in one convenient and comprehensive report. Particular attention has been taken in documenting the sources of all data. These sources are noted either on the same page as the data or in the Figure References that follow the Tree Displays, the Profile References that follow the Modal Profiles, or the Table References that follow Supplementary Data, Section III. The reader is urged to utilize these references and those who may want additional information or an explanation regarding the data in this publication, should check with the source(s).

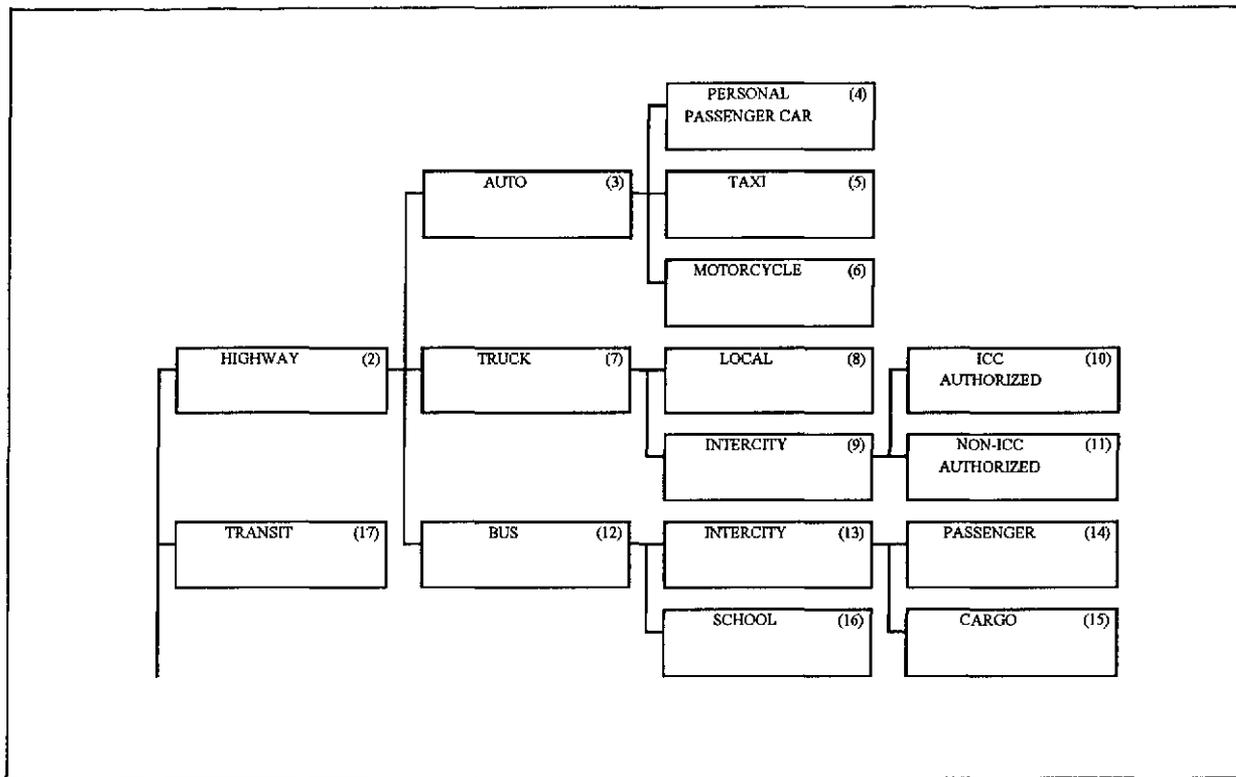
National Transportation Statistics was produced under the general direction of Kathleen Bradley of the BTS staff. I would like to express special appreciation to the following individuals for their invaluable support in the preparation of this document: Francine Butler of the Volpe Center for her diligent efforts in processing and assembling the data, and for her assistance in preparing the publication for printing; Marilyn Gross of EG&G Dynatrend and Richard Feldman of Camber Corporation for their tireless efforts in researching and authoring this edition of the NTS report; Stacy Davis and Angela Gibson of Oak Ridge National Laboratory for their vital contribution in researching and updating thirty-five tables from the 1994 TSAR report for inclusion in this publication, in addition to providing the metric conversion tables in Appendix A; Barbara Eversole of Unisys Corporation for creating the graphs; Mickey LoPresti of Camber Corporation for her artistic ability in designing the new cover; and finally, Richard Tucker and Bob Park of Camber Corporation for bringing it all together.

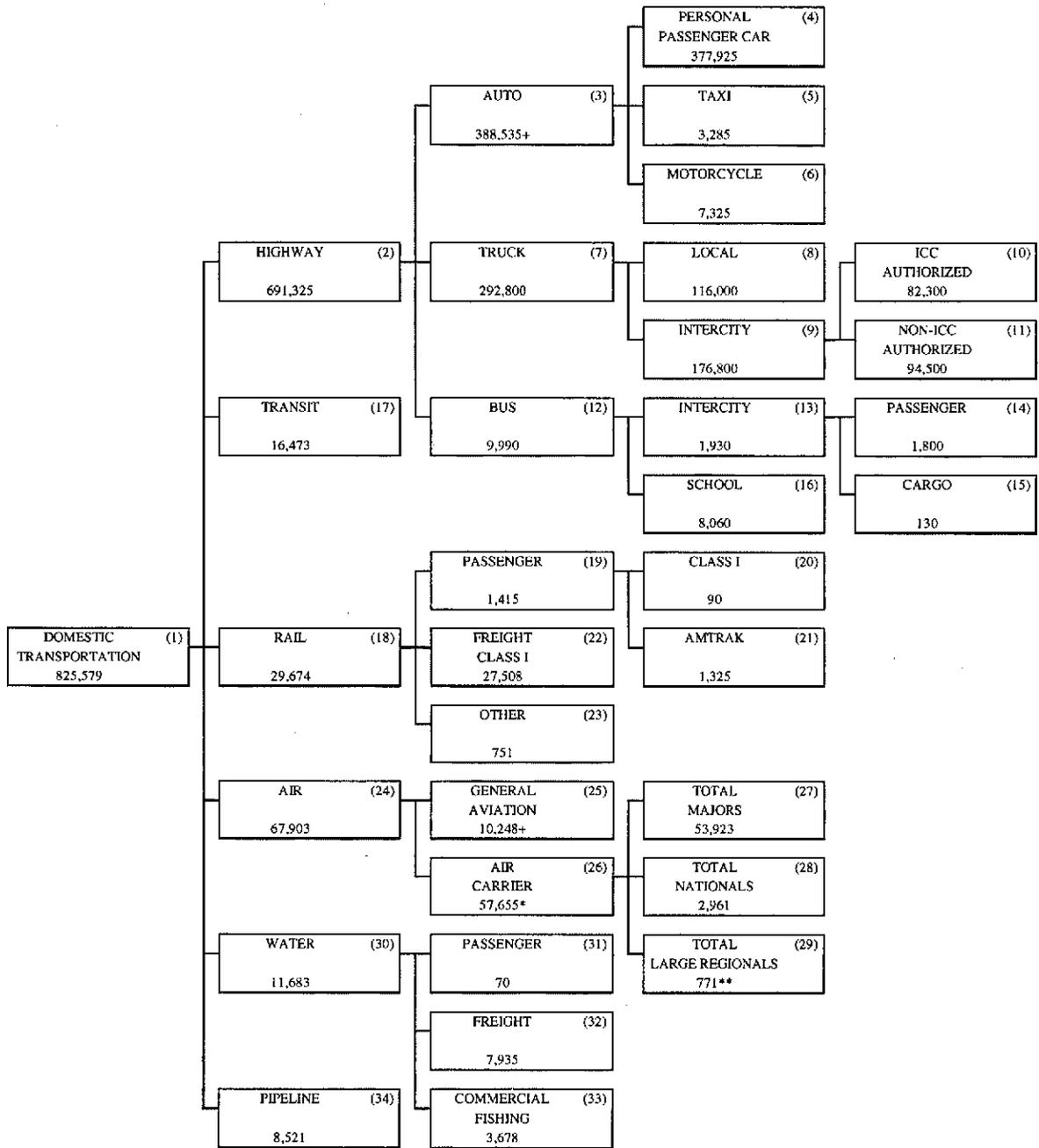
TREE DISPLAYS 1992

The interrelationships of the various modes are presented here via tree displays. These displays illustrate the relationship between and within each transportation mode for the following areas:

- Expenditures and Revenues
- Vehicle-Miles
- Passenger-Miles
- Ton-Miles of Freight
- Number of Vehicles
- Number of Fatalities
- Fuel Consumed in Transportation

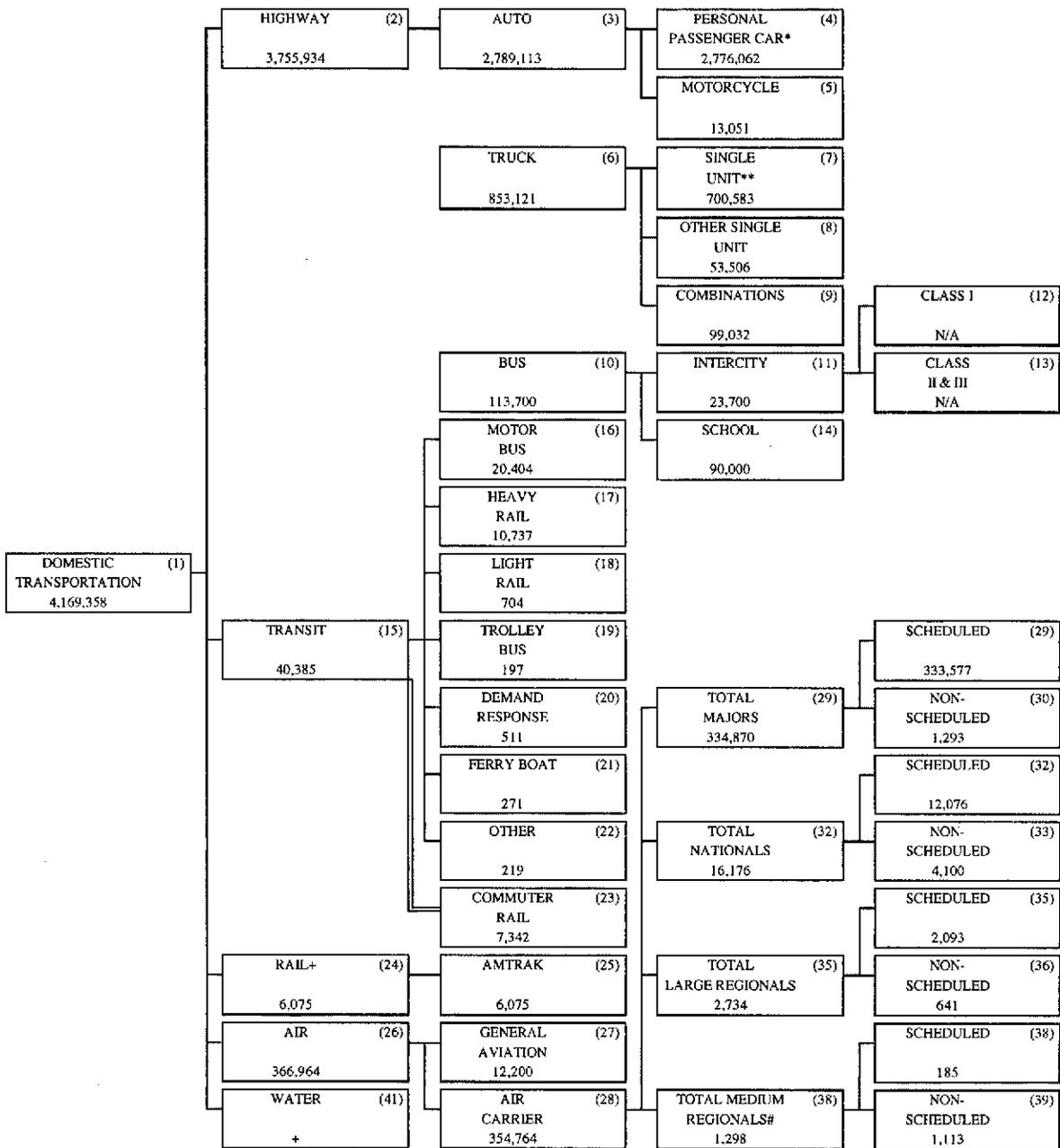
Because of the variety of data sources, the totals may not always equal the sum of the subordinate data. Sources for each statistic may be found by locating its parenthetical reference number in the Figure References on page 11.





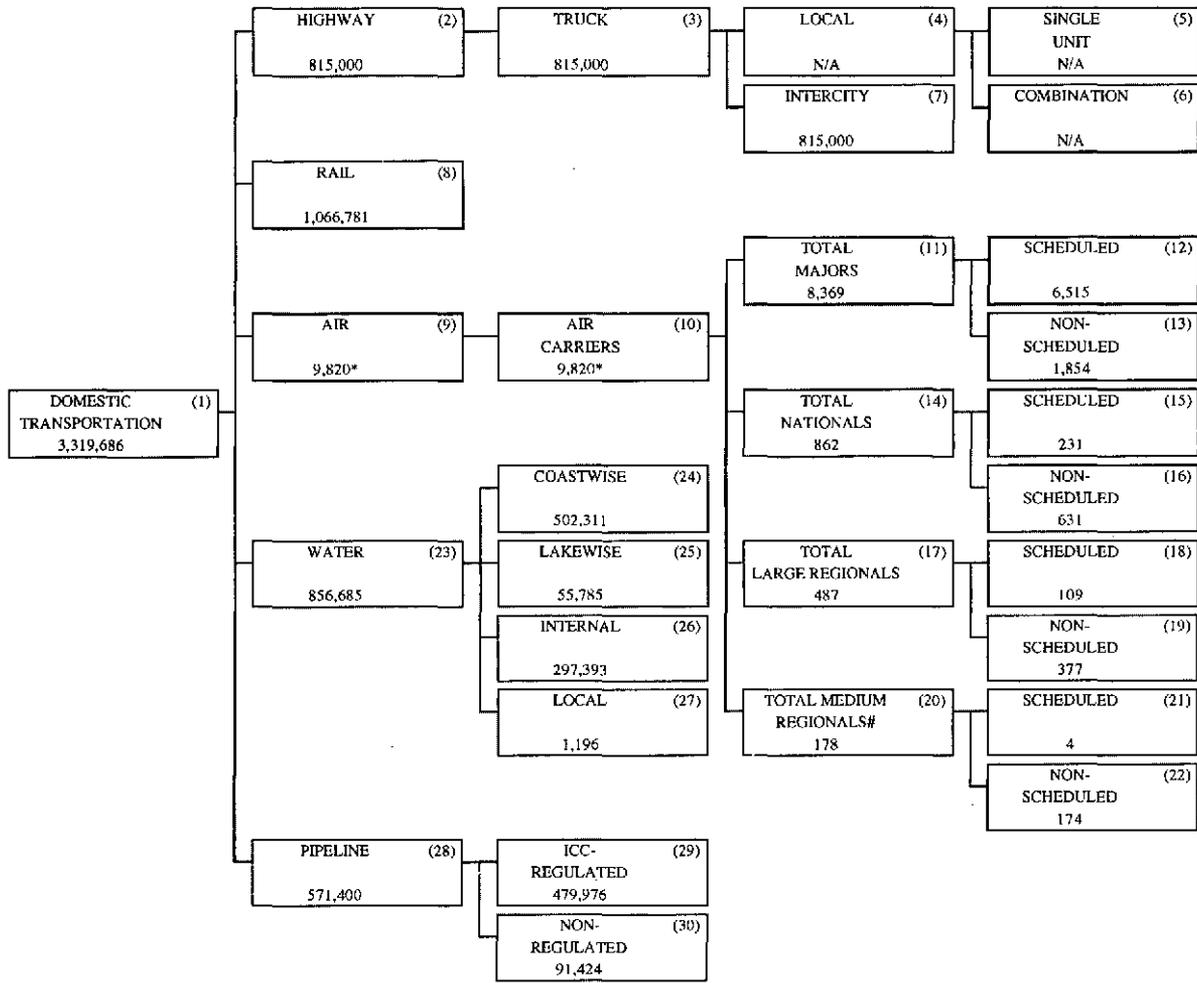
* Represents total domestic.
 ** Includes some international data that cannot be segregated.
 + Represents Expenditures.
 Source: See p. 12.

Figure 1. Expenditures and Revenues (million dollars) - 1992



N/A - not available.
 + See Transit for Commuter Rail and Ferry Boat figures.
 * Includes Taxi.
 ** 2-axle, 4-tire trucks.
 # Medium Regionals include International.
 Source: See p. 14.

Figure 3. Passenger-Miles (millions) - 1992



N/A = not available.
 * Totals may not agree due to rounding of numbers.
 # Medium Regionals include International.
 Source: See p. 15.

Figure 4. Ton-Miles of Freight (millions) - 1992

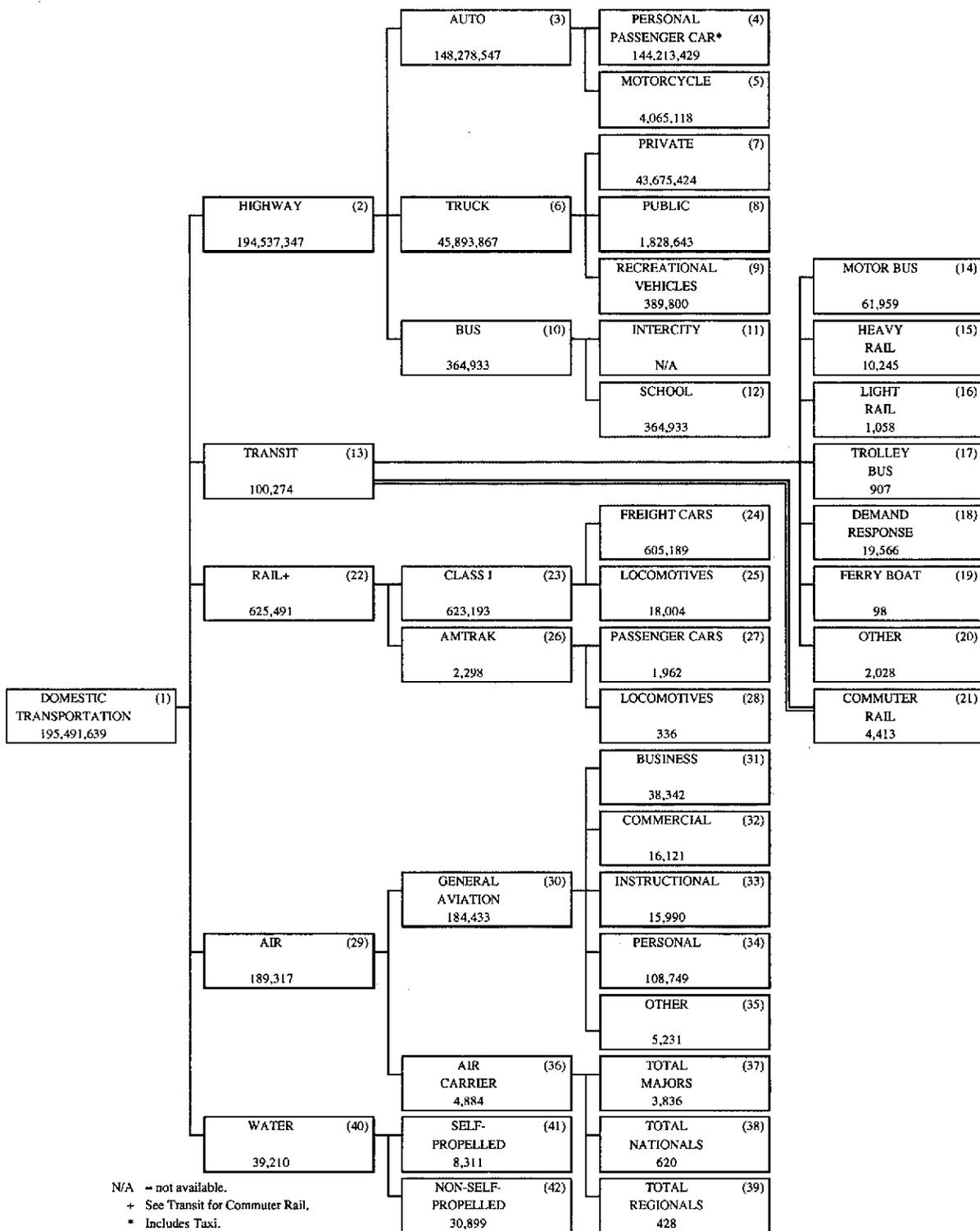
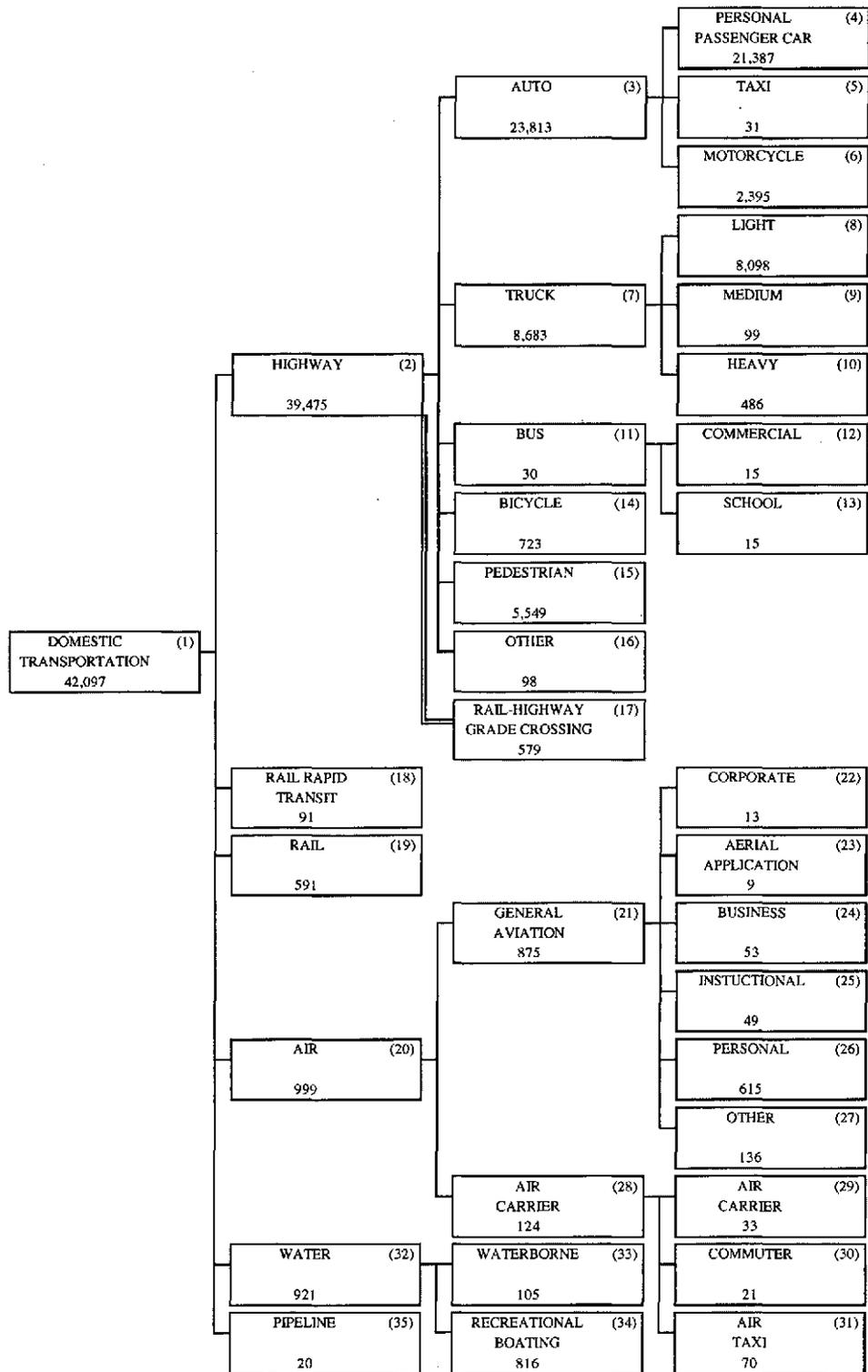


Figure 5. Number of Vehicles - 1992



Source: See p. 17.

Figure 6. Number of Fatalities - 1992

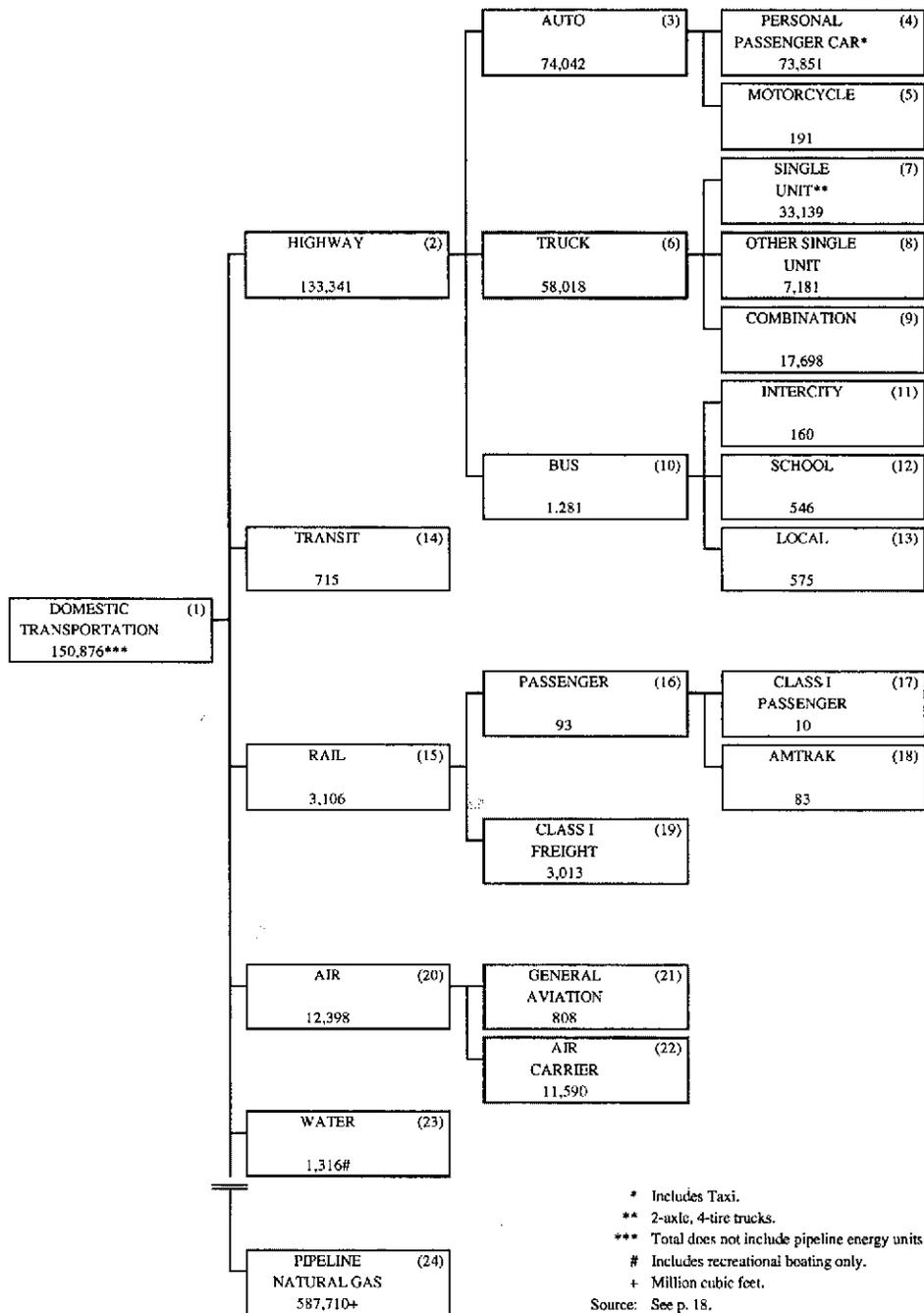


Figure 7. Fuel Consumed in Transportation (million gallons) -1992

FIGURE REFERENCES

FIGURE REFERENCES (FIGURE 1 - FIGURE 7)

Figure 1. Expenditures and Revenues, 1992

1. Domestic Transportation: Sum of Highway, Local Transit, Rail, Air, Water, and Pipeline.
2. Highway: Sum of Auto, Truck, and Bus.
3. Auto: Sum of Personal Passenger Car, Taxi, and Motorcycle.
4. Personal Passenger Car: U.S. Department of Commerce (DOC), Bureau of Economic Analysis. Auto registration and driver's license fees from the U.S. DOT/Federal Highway Administration (FHWA), *Highway Statistics*, 1992, Table MV-2 are also included.
5. Taxi: U.S. Department of Commerce (DOC), Bureau of Economic Analysis.
6. Motorcycle: Motorcycle Industry Council, Inc., *1993 Motorcycle Statistical Annual*.
7. Truck: Sum of Local Truck and Intercity Truck.
8. Local Truck: Eno Foundation for Transportation, *Transportation In America*, 1994, p. 40.
9. Intercity Truck: Sum of ICC-authorized Truck and Non-ICC-authorized Truck.
10. ICC-authorized Truck: Eno Foundation for Transportation, *Transportation In America*, 1994, p. 40. Revenues of the Class I, II, III motor carriers of property. Revenues include local cartage under the assumption that the majority of such revenues constitute pickup and delivery of intercity freight.
11. Non-ICC-authorized Truck: *Ibid.*
12. Bus: Sum of Intercity Bus and School Bus.
13. Intercity Bus: Sum of Passenger and Cargo.
14. Passenger, Intercity Bus: Eno Foundation for Transportation, *Transportation In America*, 1994, p. 42.
15. Cargo, Intercity Bus: *Ibid.*, p. 40.
16. School Bus: *Ibid.*, p. 42.
17. Transit: American Public Transit Association (APTA), *Transit Fact Book*, 1993, p. 51.
18. Rail: Sum of Passenger, Freight, and Other.
19. Rail, Passenger: Sum of Class I Rail and Amtrak.
20. Rail, Class I: Association of American Railroads (AAR), *Railroad Facts*, 1993, p. 10.
21. Amtrak: Amtrak, State and Local Affairs Department.
22. Rail, Freight: AAR, *Railroad Facts*, 1993, p. 10.
23. Rail, Other: *Ibid.*, p. 10.
24. Air: Sum of General Aviation and Air Carrier.
25. General Aviation: Eno Foundation for Transportation, *Transportation In America*, 1994, p. 42. Figure represents the sum of operating costs and total retail value of new general aviation aircraft.
26. Air Carrier: U.S. DOT/Research and Special Programs Administration (RSPA), *Air Carrier Financial Statistics*, 1993/1992, p. 1, total operating revenues, domestic operations.
27. Total Majors: *Ibid.*, p. 3, total operating revenues in scheduled and nonscheduled services.
28. Total Nationals: *Ibid.*, p. 31, total operating revenues in scheduled and nonscheduled services.
29. Total Large Regionals: *Ibid.*, p. 50, total operating revenues in scheduled and nonscheduled service.
30. Water: Sum of Passenger, Freight, and Commercial Fishing.
31. Passenger, Water: Eno Foundation for Transportation, *Transportation In America*, 1994, p. 42. Figure represents revenues of ICC-regulated carriers. Expenditures for private boating are not available.
32. Freight, Water: *Ibid.*, p. 40, domestic operations only.
33. Commercial Fishing: U.S. DOC, NOAA, *Fisheries Statistics of U.S.*, 1993.
34. Pipeline: Eno Foundation for Transportation, *Transportation In America*, 1994, p. 40, includes revenues of regulated and non-regulated oil pipelines.

Figure 2. Vehicle-Miles, 1992

1. Domestic Transportation: Sum of Highway, Local Transit, Rail, and Air.
2. Highway: Sum of Auto, Truck, and Bus.
3. Auto: Sum of Personal Passenger Car and Motorcycle.
4. Personal Passenger Car (includes Taxi): U.S. DOT/Federal Highway Administration (FHWA), *Highway Statistics*, 1992, Table VM-1, includes total rural and urban.
5. Motorcycle: *Ibid.*
6. Truck: *Ibid.*
7. Single-Unit: *Ibid.*
8. Other Single-Unit: *Ibid.*
9. Combination: *Ibid.*
10. Bus: Sum of Commercial Bus and School Bus.
11. Commercial Bus: estimated by Transportation Policy Associates (TPA).
12. School Bus: National Safety Council, *Accident Facts*, 1993, p. 71.
13. Transit: APTA, *Transit Fact Book*, 1993, p. 27.
14. Motor Bus: *Ibid.*
15. Heavy Rail: *Ibid.*
16. Light Rail: *Ibid.*
17. Trolley Bus: *Ibid.*
18. Demand Response: *Ibid.*
19. Ferryboat: *Ibid.*
20. Other: *Ibid.*
21. Commuter Rail: *Ibid.*
22. Rail: Sum of Amtrak and Freight.
23. Amtrak: Amtrak, State and Local Affairs Department.
24. Freight, Rail: AAR, *Railroad Facts*, 1993, p. 34.
25. Air: Sum of General Aviation and Air Carrier.
26. General Aviation: U.S. DOT/FAA, *General Aviation Activity and Avionics Survey*, 1992, Table 3.3; mileage multiplied by 1.151 to convert from nautical miles.
27. Air Carrier: U.S. DOT/RSPA, *Air Carrier Traffic Statistics*, December 1993/1992, p. 2, sum of scheduled aircraft revenue miles, line 27, and nonscheduled aircraft revenue miles, line 50.
28. Total Majors: *Ibid.*, p. 5, sum of scheduled, line 27, and nonscheduled, line 50, services.
29. Scheduled: *Ibid.*, p. 5, line 27.
30. Nonscheduled: *Ibid.*, p. 5, line 50.
31. Total Nationals: *Ibid.*, p. 54, sum of scheduled, line 27, and nonscheduled, line 50, services.
32. Scheduled: *Ibid.*, line 27.
33. Nonscheduled: *Ibid.*, line 50.
34. Total Large Regionals: *Ibid.*, p. 100, sum of scheduled, line 27, and nonscheduled, line 50, services.
35. Scheduled: *Ibid.*, line 27.
36. Nonscheduled: *Ibid.*, line 50.
37. Total Medium Regionals: *Ibid.*, p. 153, includes domestic and international operations, sum of scheduled, line 27, and nonscheduled, line 50, services.
38. Scheduled: *Ibid.*, line 27.
39. Nonscheduled: *Ibid.*, line 50.
40. Water: See Block 19.

Figure 3. Passenger-Miles, 1992

1. Domestic Transportation: Sum of Highway, Local Transit, Rail, Air; Water data not available.
2. Highway: Sum of Auto, Truck, and Bus.
3. Auto: Sum of Personal Passenger Car and Motorcycle.
4. Personal Passenger Car (includes Taxi): Passenger-miles derived by multiplying vehicle-miles by vehicle occupancy rates estimated from the FHWA, Nationwide Personal Transportation Surveys.
5. Motorcycle: *Ibid.*
6. Truck: Sum of Single-Unit Truck and Combination Truck.
7. Single-Unit: Passenger-miles derived by multiplying vehicle-miles by vehicle occupancy rates estimated from the FHWA, Nationwide Personal Transportation Surveys.
8. Other Single-Unit: *Ibid.*
9. Combination: *Ibid.*
10. Bus: Sum of Intercity Bus and School Bus passenger-miles.
11. Intercity Bus: Eno Foundation for Transportation, *Transportation In America*, 1994, p. 47.
12. Class I: estimated by Transportation Policy Associates.
13. Class II and III: Figure derived by subtraction of Class I from Intercity.
14. School Bus: National Safety Council, *Accident Facts*, 1993, p. 74.
15. Transit: APTA, *Transit Fact Book*, 1993, p. 78.
16. Motor Bus: *Ibid.*
17. Heavy Rail: *Ibid.*
18. Light Rail: *Ibid.*
19. Trolley Bus: *Ibid.*
20. Demand Response: *Ibid.*
21. Ferryboat: *Ibid.*
22. Other: *Ibid.*
23. Commuter Rail: *Ibid.*
24. Rail: Amtrak total.
25. Amtrak: Amtrak, State and Local Affairs Department.
26. Air: Sum of General Aviation and Air Carrier.
27. General Aviation: Eno Foundation for Transportation, *Transportation In America*, 1994, p. 47.
28. Air Carrier: U.S. DOT/RSPA, *Air Carrier Traffic Statistics*, December 1993/1992, p. 2, revenue passenger-miles, all services, line 1.
29. Total Majors: *Ibid.*, p. 5, sum of scheduled, line 9, and nonscheduled, line 41, services.
30. Scheduled: *Ibid.*, line 9.
31. Nonscheduled: *Ibid.*, line 41.
32. Total Nationals: *Ibid.*, p. 54, sum of scheduled, line 9, and nonscheduled, line 41, services.
33. Scheduled: *Ibid.*, line 9.
34. Nonscheduled: *Ibid.*, line 41.
35. Total Large Regionals: *Ibid.*, p. 100, sum of scheduled, line 9, and nonscheduled, line 41, services.
36. Scheduled: *Ibid.*, line 9.
37. Nonscheduled: *Ibid.*, line 41.
38. Total Medium Regionals: *Ibid.*, p. 153, includes domestic and international operations, sum of scheduled, line 9, and nonscheduled, line 41, services.
39. Scheduled: *Ibid.*, line 9.
40. Nonscheduled: *Ibid.*, line 41.
41. Water: See Block 21.

Figure 4. Ton-Miles of Freight, 1992

1. Domestic Transportation: Sum of Highway, Rail, Air, Water and Pipeline.
2. Highway: Figure represents total intercity ton-miles of motor vehicle transport.
3. Truck: Sum of local and intercity ton-miles.
4. Local: Sum of Single-Unit and Combination Trucks.
5. Single-Unit: estimated by Transportation Policy Associates.
6. Combination: *Ibid.*
7. Intercity: Eno Foundation for Transportation, *Transportation In America*, 1994, p. 44.
8. Rail: AAR, *Railroad Facts*, 1992, p. 40.
9. Air: Total Air Carrier.
10. Air Carrier: U.S. DOT/RSPA, *Air Carrier Traffic Statistics*, December 1993/1992, p. 2, Freight, Express, U.S. and Foreign Mail Revenue ton-miles, all services, line 3.
11. Total Majors: *Ibid.*, p. 5, line 3.
12. Scheduled: *Ibid.*, sum of Freight, Air Express, U.S. Mail and Foreign Mail, lines 18-21.
13. Nonscheduled: *Ibid.*, sum of Civilian Freight, line 44, and Military Freight, line 45.
14. Total Nationals: *Ibid.*, p. 54, line 3.
15. Scheduled: *Ibid.*, sum of Freight, Air Express, U.S. Mail and Foreign Mail, lines 18-21.
16. Nonscheduled: *Ibid.*, sum of Civilian Freight, line 44, and Military Freight, line 45.
17. Total Large Regionals: *Ibid.*, p. 100, line 3.
18. Scheduled: *Ibid.*, sum of Freight, Air Express, U.S. Mail and Foreign Mail, lines 18-21.
19. Nonscheduled: *Ibid.*, sum of Civilian Freight, line 44, and Military Freight, line 45.
20. Total Medium Regionals: *Ibid.*, p. 153, line 3, includes international operations.
21. Scheduled: *Ibid.*, sum of Freight, Air Express, U.S. Mail and Foreign Mail, lines 18-21.
22. Nonscheduled: *Ibid.*, sum of Civilian Freight, line 44, and Military Freight, line 45.
23. Water: U.S. Army, Corps of Engineers, *Waterborne Commerce of the United States*, Part 5, Section 1.
24. Coastwise: *Ibid.*
25. Lakewise: *Ibid.*
26. Internal: *Ibid.*
27. Local: *Ibid.*
28. Pipeline: Eno Foundation for Transportation, *Transportation In America*, 1994, p. 59.
29. ICC-Regulated: Estimated to be 84% of total pipeline.
30. Non-regulated: Estimated to be 16% of total pipeline.

Figure 5. Number of Vehicles, 1992

1. Domestic Transportation: Sum of Highway, Local Transit, Rail, Air, and Water.
2. Highway: Sum of Auto, Truck, and Bus.
3. Auto: Sum of Personal Passenger Car and Motorcycle.
4. Personal Passenger Car (includes Taxi): U.S. DOT/FHWA, *Highway Statistics*, 1992, Table VM-1. This figure includes private and commercial automobiles (including taxicabs) for the 50 states and the District of Columbia.
5. Motorcycle: *Ibid.* This figure includes private and commercial motorcycles.
6. Truck: Sum of Private Truck, Public Truck, and Recreational Vehicles.
7. Private: U.S. DOT/FHWA, *Highway Statistics*, 1992, Table MV-9.
8. Public: *Ibid.*
9. Recreational Vehicles: American Automobile Manufacturer's Association (AAMA), *Facts and Figures*, 1993, p. 11.
10. Bus: Sum of Intercity Bus and School Bus.
11. Intercity Bus: Eno.
12. School Bus: U.S. DOT/FHWA, *Highway Statistics*, Table MV-10 consists primarily of publicly owned school buses.
13. Transit: APTA, *Transit Fact Book*, 1993, Table 6.
14. Motor Bus: *Ibid.*
15. Heavy Rail: *Ibid.*
16. Light Rail: *Ibid.*
17. Trolley Bus: *Ibid.*
18. Demand Response: *Ibid.*
19. Ferryboat: *Ibid.*
20. Other: *Ibid.*
21. Commuter Rail: *Ibid.*
22. Rail: Sum of Class I and Amtrak.
23. Class I, Sum of Freight Cars and Locomotives.
24. Freight Cars: AAR, *Railroad Facts*, 1993, p. 50.
25. Locomotives: *Ibid.*
26. Amtrak: Sum of Passenger Cars and Locomotives.
27. Passenger Cars: Amtrak, State and Local Affairs Department.
28. Locomotives: *Ibid.*
29. Air: Sum of General Aviation and Air Carrier.
30. General Aviation: U.S. DOT/Federal Aviation Administration (FAA), Office of Management Systems, *General Aviation Activity and Avionics Survey*, 1992, Table 3.1.
31. Business: *Ibid.*, includes Business and Corporate Transportation.
32. Commercial: *Ibid.*, includes Air Taxi, Commuter Carrier, Aerial Application, and Aerial Observation.
33. Instructional: *Ibid.*
34. Personal: *Ibid.*
35. Other: *Ibid.*, includes Other and Other Work.
36. Air Carrier: Includes domestic and international aircraft; sum of Major, National and Regional airlines.
37. Total Majors: U.S. DOT/RSPA, Data Administration Division, DAI-20.
38. Total Nationals: *Ibid.*
39. Total Regionals: *Ibid.*, includes Large and Medium Regional airlines.
40. Water: U.S. Department of Army, Corps of Engineers, *Summary of U.S. Flag Passenger and Cargo Vessels*.
41. Self-Propelled: *Ibid.*, Also includes dry cargo, passenger, railroad car ferries, and tankers.
42. Non-Self-Propelled: *Ibid.*, Also includes railroad car fleets.

Figure 6. Number of Fatalities, 1992

1. Domestic Transportation: Sum of Highway, Rail Rapid Transit, Rail, Air, Water, and Pipeline.
2. Highway: Sum of Auto, Truck, Bus, Bicycle, Pedestrian, and Other. Also includes Rail/Highway Grade Crossing fatalities.
3. Auto: Sum of Personal Passenger Car, Taxi, and Motorcycle.
4. Personal Passenger Car: U.S. DOT/NHTSA/National Center for Statistics and Analysis, NRD-30.
5. Taxi: *Ibid.*
6. Motorcycle: *Ibid.*
7. Truck: Sum of Light Truck, Medium Truck, and Heavy Truck.
8. Light: U.S. DOT/NHTSA/National Center for Statistics and Analysis, NRD-30.
9. Medium: *Ibid.*
10. Heavy: *Ibid.*
11. Bus: Sum of commercial and school bus occupant fatalities.
12. Commercial Bus: U.S. DOT/NHTSA/National Center for Statistics and Analysis, NRD-30.
13. School Bus: *Ibid.*
14. Bicycle: *Ibid.*
15. Pedestrian: *Ibid.*, motor vehicle involvement only.
16. Other: *Ibid.*, includes nonoccupant fatalities, does not include bus fatalities.
17. Rail-Highway Grade Crossing: U.S. DOT/FRA, Systems Support Division, RRS-22.
18. Rail Rapid Transit: *Ibid.*, RSPA/Volpe National Transportation Systems Center, DTS-38.
19. Rail: *Ibid.*, FRA, Systems Support Division, RRS-22, (includes railroad passengers, employees, trespassers, and others killed in railroad operations). Does not include those killed in rail/highway grade crossing accidents.
20. Air: Sum of General Aviation and Air Carrier.
21. General Aviation: National Transportation Safety Board (NTSB), RE-50.
22. Corporate: *Ibid.*
23. Aerial Application: *Ibid.*
24. Business: *Ibid.*
25. Instructional: *Ibid.*
26. Personal: *Ibid.*
27. Other: *Ibid.*
28. Air: *Ibid.*, NTSB Aviation Accident Statistics, 1982-1993. Air Carriers operating under 14 CFR 121 and 14 CFR 135 (commuter air carriers and on-demand air taxis). Includes domestic and international operations.
29. Air Carrier: *Ibid.*, Airlines operating under 14 CFR 121, scheduled and nonscheduled services.
30. Commuter: *Ibid.*, Air Carriers operating under 14 CFR 135.
31. Air Taxi: *Ibid.*, On-Demand Air Carriers operating under 14 CFR 135.
32. Water: Sum of Waterborne and Recreational Boating.
33. Waterborne: U.S. DOT/USCG, Marine Safety Evaluation Branch, G-MMI-3.
34. Recreational Boating: *Ibid.*, Boating Statistics, 1993.
35. Pipeline (includes Liquid and Gas Pipeline): U.S. DOT/RSPA, Office of Pipeline Safety, DPS-35.

Figure 7. Fuel Consumed in Transportation, 1992

1. Domestic Transportation: Sum of Highway, Local Transit, Rail, Air, and Water. Pipeline not included in Total.
2. Highway: Sum of Auto, Truck, and Bus.
3. Auto: Sum of Personal Passenger Car and Motorcycle.
4. Personal Passenger Car (includes Taxi): U.S. DOT/FHWA, *Highway Statistics*, 1992, Table VM-1.
5. Motorcycle: *Ibid.*
6. Truck: Sum of Single-Unit, Other-Single-Unit, and Combination.
7. Single-Unit: U.S. DOT/FHWA, *Highway Statistics*, 1992, Table VM-1.
8. Other Single-Unit: *Ibid.*
9. Combination: *Ibid.*
10. Bus: Sum of Intercity, School Bus and Local Bus.
11. Intercity Bus: Eno Foundation for Transportation, *Transportation In America*, 1994, p. 56. Derived by multiplying figure in source by 42.
12. School Bus: *Ibid.*
13. Local Bus: *Ibid.*
14. Transit: APTA, *Transit Fact Book*, 1993, Table 6.
15. Rail: Sum of Passenger and Class I Rail Freight.
16. Rail, Passenger: Sum of Class I Passenger and Amtrak.
17. Rail, Class I Passenger: AAR, *Railroad Ten-Year Trends*, Volume 10, p. 139.
18. Amtrak: Amtrak, State and Local Affairs Department.
19. Rail, Class I Freight: AAR, *Railroad Ten-Year Trends*, Volume 10, p. 139.
20. Air: Sum of Air Carrier and General Aviation.
21. General Aviation: U.S. DOT/FAA, *General Aviation Activity and Avionics Survey*, 1992, Table 5.1. Figure derived by the addition of jet fuel and aviation gasoline.
22. Air Carrier: U.S. DOT/RSPA, Data Administration Division, DAI-20.
23. Water: U.S. DOT/FHWA, *Highway Statistics*, 1992, Table MF-24.
24. Pipeline (Natural Gas): U.S. Department of Energy (DOE), Energy Information Administration (EIA), *Natural Gas Annual*, 1992, Table 16.

MODAL PROFILES

1960, 1970, 1980, 1990, and 1992

The Modal Profiles present financial, inventory, and performance data comparisons for 1960, 1970, 1980, 1990, and 1992. In some cases, not all of the types of data in these profiles are available for every mode, nor are they always applicable. The following list indicates the type of data usually included in each group:

- I. Financial
 - A. Expenditures (private modes)
 - B. Operating Revenue (for-hire modes)
 - C. Operating expenses
 - D. Federal expenditures
 - E. State and local expenditures

- II. Inventory
 - A. Number of companies
 - B. Number of vehicles
 - C. Number of employees
 - D. Mileage

- III. Performance
 - A. Vehicle-miles
 - B. Passenger-miles
 - C. Number of passengers carried
 - D. Ton-miles
 - E. Tons of freight hauled
 - F. Average passenger trip length
 - G. Average length of freight haul
 - H. Fatality and accident rates

Specific source references are obtained as follows: the letter directly to the right of the data element applies to all subsequent data elements in that column until the next letter appears. In some cases, data are shown that may not appear directly in the sources listed. These were obtained by addition/subtraction of referenced data or of other data in its column, and are marked with an asterisk.

For example: General Aviation Profile

<u>1992</u>	
3,500 ^a	reference letter 'a'
6,748	also applies to the two
10,248	subsequent data elements
9,400 ^b	reference letter 'b' refers to
28,942	a different data source.

The specific source number and page or table reference may then be found at the end of each modal profile. All data sources follow the profile section.

AIR CARRIER PROFILE (page 1 of 4)

	1960 ¹	1970 ¹	1980 ¹	1990 ¹	1992 ¹
I. FINANCIAL					
Operating Revenues (thousand dollars)					
Domestic					
Majors, all services	1,942,635 ^a	6,272,775 ^a	23,012,073 ^b	53,333,552 ^d	53,922,582 ^d
Nationals, all services	146,481	736,831	3,182,418	4,167,552 ^e	2,960,943 ^e
Large Regionals, all services	-	-	245,806	459,404 ^f	770,868 ^f
International					
Majors, all services	705,938	2,109,497	5,976,221 ^c	16,761,376 ^d	18,875,298 ^d
Nationals, all services	-	-	465,923	901,352 ^e	1,240,397 ^e
Large Regionals, all services	-	-	-	327,627 ^f	370,155 ^f
Total Certificated*	2,795,054	9,119,103	32,882,441	75,950,863	78,140,243
Operating Expenses (thousand dollars)					
Domestic					
Majors, all services	1,907,785	6,256,039	23,150,527 ^b	54,209,401 ^d	54,879,378 ^d
Nationals, all services	144,309	745,629	3,058,289	4,297,823 ^e	3,141,608 ^e
Large Regionals, all services	-	-	257,183	445,862 ^f	780,120 ^f
International					
Majors, all services	665,660	2,065,605	6,171,366 ^c	17,746,006 ^d	20,174,644 ^d
Nationals, all services	-	-	470,729	853,361 ^e	1,245,012 ^e
Large Regionals, all services	-	-	-	315,113 ^f	363,942 ^f
Total Certificated*	2,717,754	9,067,273	33,108,094	77,867,566	80,584,704
II. INVENTORY²					
Number of Carriers					
Total Domestic and International	55 ^g	39 ^g	72 ^g	62 ^g	70 ^g
Majors	-	-	12	12	11
Nationals	-	-	17	16	18
Regionals	-	-	43	34	41
Number of Aircraft Available for Service					
Total Domestic and International	2,211	2,564	2,818	4,727	4,884
Majors	-	-	2,071	3,854	3,836
Nationals	-	-	432	650	620
Regionals	-	-	315	223	428
Number of Employees					
Total Domestic and International	169,872	304,690	354,264	588,926	569,616
Majors	118,189	214,021	318,973	549,100	529,919
Nationals	12,470	24,913	29,922	32,077	27,131
Regionals	-	-	5,369	7,749	12,566
III. PERFORMANCE					
Aircraft Revenue-Miles (thousands)					
Domestic					
Certificated, all services*	858,451 ^h	2,067,598 ^h	2,523,375 ⁱ	3,963,263 ^j	3,994,821 ^j
Majors, all services*	716,961	1,778,065	2,113,669	3,547,339 ^k	3,594,946 ^k
Nationals, all services*	94,794	247,055	330,528	351,946 ^l	297,903 ^l
Large Regionals, all services*	-	-	56,995	60,542 ^m	86,447 ^m

AIR CARRIER PROFILE (page 2 of 4)

	1960 ¹	1970 ¹	1980 ¹	1990 ¹	1992 ¹
International					
Certificated, all services*	181,605 ^h	474,666 ^h	400,791 ⁿ	760,338 ^o	904,426 ^o
Majors, all services*	-	-	330,391	666,231 ^p	802,104 ^p
Nationals, all services*	-	-	66,499	48,812 ^q	54,688 ^q
Large Regionals, all services*	-	-	2,948	60,542 ^r	41,403 ^r
Medium Regionals, all services					
Domestic and International*	-	-	23,204	9,017	21,756
Total Certificated*	1,040,056	2,542,264	2,947,370	4,732,618	4,899,247
Aircraft Revenue-Hours					
Domestic					
Certificated, all services*	3,672,900	5,133,161	6,247,795 ⁱ	9,717,375 ^j	9,824,419 ^j
Majors, all services*	2,802,317	4,066,480	4,941,327	8,524,236 ^k	8,556,504 ^k
Nationals, all services*	606,146	908,935	919,187	1,016,491 ^l	930,910 ^l
Large Regionals, all services*	-	-	267,522	167,826 ^m	297,710 ^m
International					
Certificated, all services*	608,736	977,325	819,518 ⁿ	1,556,760 ^o	1,826,032 ^o
Majors, all services*	-	-	668,199	1,351,349 ^p	1,600,791 ^p
Nationals, all services*	-	-	140,239	101,533 ^q	111,869 ^q
Large Regionals, all services*	-	-	7,583	88,641 ^r	97,846 ^r
Medium Regionals, all services					
Domestic and International*	-	-	123,411	24,059	54,821
Total Certificated*	4,281,636	6,110,486	7,190,724	11,298,194	11,650,451
Revenue Passenger-Miles (thousands)					
Domestic					
Certificated, all services	31,098,944	108,441,978	204,367,599 ⁱ	345,872,950 ^j	354,764,451 ^j
Majors, all services	29,430,428	99,903,229	182,984,795	327,112,620 ^k	334,870,399 ^k
Nationals, all services	1,170,779	7,642,071	20,466,712	16,756,818 ^l	16,176,000 ^l
Large Regionals, all services	-	-	711,868	1,752,615 ^m	2,733,649 ^m
International					
Certificated, all services	8,950,672	39,675,312	63,354,387 ⁿ	126,362,697 ^o	138,950,276 ^o
Majors, all services	-	-	54,318,160	118,268,507 ^p	128,699,842 ^p
Nationals, all services	-	-	8,659,592	6,794,533 ^q	8,227,952 ^q
Large Regionals, all services	-	-	330,288	1,219,706 ^r	1,709,024 ^r
Medium Regionals, all services					
Domestic and International*	-	-	250,571	330,848	1,297,861
Total Certificated*	40,049,616	148,137,370	267,972,557	472,566,495	493,714,727
Revenue Passenger Enplanements (thousands)					
Domestic					
Certificated, all services*	56,352	153,662	275,182 ⁱ	428,767 ^j	437,972 ^j
Majors, all services*	48,678	122,866	223,237	393,927 ^k	399,846 ^k
Nationals, all services*	5,949	26,726	47,145	32,015 ^l	30,215 ^l
Large Regionals, all services*	-	-	3,748	2,566 ^m	6,344 ^m
International					
Certificated, all services*	5,904	16,620	26,514 ⁿ	46,126 ^o	46,979 ^o
Majors, all services*	-	-	23,949	42,207 ^p	41,971 ^p
Nationals, all services*	-	-	2,343	2,632 ^q	2,968 ^q
Large Regionals, all services*	-	-	149	1,246 ^r	1,751 ^r
Medium Regionals, all services					
Domestic and International*	-	-	1,125	300	1,856
Total Certificated*	62,256	169,922	302,821	475,193	484,951

AIR CARRIER PROFILE (page 3 of 4)

	1960 ¹	1970 ¹	1980 ¹	1990 ¹	1992 ¹
Revenue Passenger Load Factor (%)					
Domestic					
Certificated, scheduled services	58.5 ^h	48.9 ^b	58.0 ⁱ	60.4 ^j	62.4 ^j
Majors, scheduled services	59.5	49.3	58.1	60.6 ^k	62.6 ^t
Nationals, scheduled services	41.9	43.6	58.4	56.6 ^l	57.4 ^l
Large Regionals, scheduled services	-	-	47.7	48.7 ^m	56.3 ^m
International					
Certificated, scheduled services	62.2	53.0	62.8 ⁿ	69.1 ^o	67.1 ^o
Majors, scheduled services	-	-	62.8	69.1 ^p	67.0 ^p
Nationals, scheduled services	-	-	65.5	73.4 ^q	68.5 ^q
Large Regionals, scheduled services	-	-	73.9	66.5 ^r	67.1 ^r
Medium Regionals, all services	-	-	-	-	-
Domestic and International*	-	-	46.7	0.0 ^s	85.4
U.S. International Passenger Travel					
Total Passenger-Arrivals (thousands)					
Flag of Carrier:					
United States	1,332 ^t	5,531 ^t	10,031 ^u	19,145 ^u	20,537 ^u
Foreign	1,234	4,343	10,231	17,269	18,390
Total Passenger-Departures (thousands)					
Flag of Carrier:					
United States	1,200	4,949	9,369	17,628	18,858
Foreign	1,136	4,147	3,886	16,418	17,353
Total Revenue Ton-Miles (thousands)^g					
Domestic					
Certificated, all services	3,732,949 ^h	13,876,802 ^h	24,964,907 ⁱ	43,651,162 ^j	45,296,134 ^j
Majors, all services	3,332,483	12,589,057	21,427,534	39,107,033 ^k	41,855,865 ^k
Nationals, all services	121,157	850,477	3,336,057	3,561,283 ^l	2,480,057 ^l
Large Regionals, all services	-	-	180,042	945,929 ^m	760,231 ^m
International					
Certificated, all services	1,291,336	6,308,701	9,689,067 ⁿ	19,975,915 ^o	21,383,675 ^o
Majors, all services	-	-	7,377,733	17,803,825 ^p	19,134,254 ^p
Nationals, all services	-	-	2,261,534	1,229,849 ^q	1,335,936 ^q
Large Regionals, all services	-	-	44,438	835,701 ^r	805,464 ^r
Medium Regionals, all services	-	-	-	-	-
Domestic and International*	-	-	28,178	143,457 ^s	308,002 ^s
Total Certificated*	5,024,285	20,185,503	34,682,153	63,770,534	66,679,809
Revenue Ton-Miles of Freight (thousands)^g					
Domestic					
Certificated, all services	552,751	2,189,331	4,528,316 ⁱ	9,063,864 ^j	9,819,701 ^j
Majors, all services	321,176	1,809,996	3,129,087	6,395,767 ^k	8,368,830 ^k
Nationals, all services	3,850	53,558	1,289,510	1,885,600 ^l	862,452 ^l
Large Regionals, all services	-	-	108,864	770,670 ^m	486,877 ^m
International					
Certificated, all services	268,156	1,566,105	3,353,371 ⁿ	7,339,660 ^o	7,486,918 ^o
Majors, all services	-	-	1,945,660	5,976,973 ^p	6,264,266 ^p
Nationals, all services	-	-	1,395,575	550,409 ^q	511,415 ^q
Large Regionals, all services	-	-	11,409	713,733 ^r	634,562 ^r
Medium Regionals, all services	-	-	-	-	-
Domestic and International*	-	-	3,124	110,372 ^s	178,217 ^s
Total Certificated*	820,907	3,755,436	7,884,811	16,513,896	17,306,619

AIR CARRIER PROFILE (page 4 of 4)

	1960	1970	1980	1990	1992
Air Carrier Accidents					
Operating under 14 CFR 121 (airlines)					
Scheduled services	-	-	15 ^w	22 ^w	16 ^w
Nonscheduled services	-	-	4	2	2
Operating under 14 CFR 135					
Scheduled services (commuters)	-	-	38	15	23
Nonscheduled services (on-demand air taxis)	-	-	171	106	76
Total*	90 ^v	55 ^v	228	145	117
Fatal Air Carrier Accidents					
Operating under 14 CFR 121 (airlines)					
Scheduled services	-	-	0	6	4
Nonscheduled services	-	-	1	0	0
Operating under 14 CFR 135					
Scheduled services (commuters)	-	-	8	3	7
Nonscheduled services (on-demand air taxis)	-	-	46	28	24
Total*	17	8	55	37	35
Air Carrier Fatalities					
Operating under 14 CFR 121 (airlines)					
Scheduled services	-	-	0	39	33
Nonscheduled services	-	-	1	0	0
Operating under 14 CFR 135					
Scheduled services (commuters)	-	-	37	6	21
Nonscheduled services (on-demand air taxis)	-	-	105	50	70
Total*	499	146	143	95	124

* Data derived by addition/subtraction and may not appear directly in the data source. Increase in medium regional figures for 1992 due to inclusion of Continental Micronesia, and Atlas Air.

Total Revenue Ton-Miles includes Passenger, Freight, Express and Mail.

¹ Domestic encompasses operations within and between the 50 states of the United States, the District of Columbia, Puerto Rico and the Virgin Islands. It also encompasses Canadian and Mexican transborder operations (U.S. airlines only). All other operations are considered International.

² Includes scheduled and nonscheduled (charter) operators. By Sec. 2 of the Airline Deregulation Act of 1978 "charter air carrier" and "charter air transportation" replaced supplemental air carriers and supplemental air transportation which were formerly Sec. 101(36) and (37) of the Act. The 24 pre-deregulation supplemental carriers now have scheduled service authority.

Source: The following data references are listed on pp. 50, 51.

Source	Reference Number/Location	Source	Reference Number/Location
a	8) pp. 69, 71	l	36) p. 54
b	7) pp. 3/28, 44	m	36) p. 100
c	7) pp. 4/28, 44	n	6) pp. 3/6/47/85/115
d	37) p. 3	o	36) p. 3
e	37) p. 32	p	36) p. 6
f	37) p. 52	q	36) p. 55
g	38) personal communication	r	36) p. 101
h	8) Table 2, 4, 7, 13	s	36) p. 153
i	6) pp. 2/5/46/84	t	25) p. 22
j	36) p. 2	u	40) Tables IIa and II d
k	36) p. 5	v	15) personal communication
		w	15) Tables 3/4/5/6

GENERAL AVIATION PROFILE (page 1 of 2)

	1960	1970	1980	1990	1992
I. FINANCIAL					
Expenditures (million dollars)					
Aircraft	202 ^a	339 ^a	2,853 ^a	3,518 ^a	3,500 ^a
Operating Costs	693	1,696	5,200	6,754	6,748
Total	895	2,035	8,053	10,272	10,248
II. INVENTORY					
Number of Active Aircraft					
Corporate	-	6,835 ^b	14,860 ^b	10,906 ^b	9,400 ^b
Business	-	26,900	49,391	35,496	28,942
Commuter Carrier	-	-	944	1,242	813
Instructional	-	10,727	14,862	19,889	15,990
Personal	-	65,398	96,222	120,636	108,749
Aerial Application	-	5,455	7,294	6,687	5,067
Aerial Observation	-	-	-	5,302	5,593
Air Taxi	-	4,571	7,615	6,188	4,648
Other Work [#]	-	2,054	2,813	1,525	1,689
Other	-	8,249	17,045	4,358	3,542
Total	76,549 ^b	131,743	211,046	212,229	184,433
III. PERFORMANCE					
Number of Hours Flown (thousands)					
Corporate	-	-	5,332 ^c	3,155 ^c	2,262 ^c
Business	5,699 ^c	7,204 ^c	8,434	4,784	3,537
Commuter Carrier	-	-	961	1,444	693
Instructional	1,828	6,791	5,748	7,847	5,340
Personal	3,172	6,896	8,894	10,048	8,592
Aerial Application	-	-	2,044	2,028	1,296
Aerial Observation	-	-	-	1,891	1,730
Air Taxi	-	-	3,535	2,436	2,009
Other Work [#]	-	-	1,053	619	343
Other	2,422	5,139	4,925	514	358
Total	13,121	26,030	40,926	34,767	26,160
Vehicle-miles (millions)	1,769 ^f	3,207 ^f	5,204 ^f	4,831 ^f	3,605 ^f
Passenger-miles (millions)	2,300 ^g	9,100 ^g	14,700 ^g	13,000 ^g	12,200 ^g
Fuel consumed (million gallons)	242 ^e	759 ^e	1,286 ^e	1,016 ^e	808 ^e
Number of Fatalities [*]					
Corporate	-	28 ^d	66 ^d	21 ^d	13 ^d
Business	-	148	126	81	53
Instructional	-	93	73	60	49
Personal	-	726	803	500	615
Aerial Application	-	41	32	17	9
Other	-	174	152	96	136
Total	787 ^d	1,310	1,252	763	875
Number of Accidents					
Fatal	429	641	618 ^c	442 ^c	447 ^c
Total	4,793	4,712	3,590	2,214	2,074
Accident Rate per 100,000 Aircraft					
Hours Flown					
Fatal	3.3	2.5	1.7	1.6	1.9
Total	36.5	18.1	9.9	7.8	8.7

GENERAL AVIATION PROFILE (page 2 of 2)

* Fatalities do not necessarily equal total. Differences are due to collisions involving aircraft in different categories.

In 1960, 1970, 1980, classified as "Industrial."

Source: The following data references are listed on p. 50.

<u>Source</u>	<u>Reference Number/Location</u>
a	9) pp. 42, 47
b	27) Table 3.1
c	27) Table 3.2
d	14) personal communication
e	15) Table 7
f	27) Table 3.3
g	27) Table 5.1

HIGHWAY PROFILE (page 1 of 3)

	1960	1970	1980	1990	1992
I. FINANCIAL					
Government Receipts (million dollars)					
Federal					
Highway Trust Fund	2,858 ^a	5,526 ^a	7,672 ^a	13,303 ^b	16,414 ^b
Other ^a	205	618	2,438	1,205	1,402
Total Federal	3,063	6,144	9,830	14,508	17,816
State and Local					
State and D.C.	6,055	11,737	19,666	39,381	47,056
Local	2,367	3,866	10,219	20,030	22,876
Total State and Local ^a	8,422	15,603	29,885	59,411	69,932
Total	11,485	21,747	39,715	73,919	87,748
Government Expenditures (million dollars)					
Federal					
Highway Trust Fund	-	-	-	431	401
Other ^a	-	-	-	315	323
Total Federal	202 ^c	431 ^c	906 ^c	746	724
State and Local					
State and D.C.	7,125	14,100	25,936	45,609	50,785
Local	3,435	6,304	14,953	28,530	32,832
Total State and Local ^a	10,560	20,404	40,889	74,139	83,617
Total	10,762	20,835	41,795	74,885	84,341
State Highway User Tax Revenues** (million dollars)					
Motor Fuel Tax	3,374 ^d	6,433 ^d	9,485 ^d	19,708 ^e	23,831 ^e
Other Motor Fuel Receipts ¹	22	44	92	203	162
Motor Vehicle Registration Fees	1,514 ^f	2,873 ^f	5,173 ^f	10,257 ^e	11,685 ^e
Other Motor Vehicle Fees ²	235	577	1,490	3,353	3,780
Motor Carrier Taxes ³	110	176	323	695	793
Miscellaneous Fees	68	181	615	1,761	2,179
Total	5,323	10,284	17,177	35,976	42,430
II. INVENTORY					
Rural/Urban Mileage by Jurisdiction					
Rural Mileage					
Under State Control	658,896 ^h	707,002 ^h	701,846 ⁱ	702,562 ⁱ	696,589 ⁱ
Under Federal Control ^f	111,912	187,696	262,010	178,196	181,025
Under Local Control	2,345,317	2,274,714	2,269,770	2,242,030	2,238,941
County Roads	1,742,404	1,732,981	1,686,693	1,617,051	1,617,416
Town and Township Roads	538,651	510,174	507,856	437,493	439,283
Other Local Roads	64,262	31,559	75,221	187,486	182,242
Total Rural Mileage	3,116,125	3,169,412	3,233,626	3,122,788	3,116,555
Urban Mileage					
Under State Control	50,158	74,103	79,359	95,790	103,648
Under Federal Control ^f	-	-	753	1,024	1,387
Under Local Control	-	-	-	-	-
County Roads	-	-	27,515	95,985	109,492
Town and Township Roads	-	-	19,474	42,772	44,284
Other Local Roads	379,410	486,567	496,131	521,792	526,349
Total Urban Mileage	429,568	560,670	623,232	757,363	785,160
Total Rural and Urban Mileage	3,545,693	3,730,082	3,856,858	3,880,151	3,901,715

HIGHWAY PROFILE (page 2 of 3)

	1960	1970	1980	1990	1992
Rural/Urban Mileage by Functional System					
Rural Mileage					
Interstate	-	-	31,997 ^j	33,547 ^j	33,027 ^j
Other Principal Arterial	-	-	82,732	83,802	94,798
Minor Arterial	-	-	149,089	144,735	137,637
Major Collector	-	-	439,050	436,365	434,175
Minor Collector	-	-	299,557	293,912	284,706
Local	-	-	2,231,201	2,130,427	2,132,212
Total Rural Mileage	3,116,125 ^j	3,169,412 ^j	3,233,626	3,122,788	3,116,555
Urban Mileage					
Interstate	-	-	9,219	11,527	12,466
Other Freeways and Expressways	-	-	6,713	7,670	8,465
Other Principal Arterial	-	-	44,338	51,987	52,165
Minor Arterial	-	-	66,581	74,656	80,368
Collector	-	-	68,213	78,248	82,657
Local	-	-	428,168	533,275	549,039
Total Urban Mileage	429,568	560,670	623,232	757,363	785,160
Total Rural and Urban Mileage	3,545,693	3,730,082	3,856,858	3,880,151	3,901,795
U.S. Roads and Streets					
Surfaced Mileage					
State Control	667,214 ^k	747,658 ^k	753,000 ^l	619,000 ^l	619,000 ^l
County and Local Control	1,862,368	2,143,820	2,605,000	2,899,000	2,933,000
Total	2,556,970	2,946,463	3,358,000	3,518,000	3,552,000
Percent Surfaced	72.1	78.9	84.9	90.7	91.0
Non-Surfaced Mileage					
State Control	41,840	33,447	28,000	1,000	1,000
County and Local Control	862,359	617,461	569,000	361,000	349,000
Total	988,723	783,619	597,000	362,000	350,000
Total Mileage					
State Control	709,054	781,105	781,000	620,000	619,000
County and Local Control	2,724,727	2,761,281	3,174,000	3,260,000	3,283,000
Total	3,545,693	3,730,082	3,955,000	3,880,000	3,902,000
Number of Employees					
Highways - State & Local Govt.	499,000 ^m	568,000 ^m	532,000 ^m	569,000 ^m	570,000 ^m
Highway and Street Construction	294,000 ⁿ	331,000 ⁿ	268,400 ⁿ	239,000 ⁿ	214,500 ⁿ
Intercity & Rural Bus Transportation ^d	40,500	43,000	37,900	26,300	22,900
III. PERFORMANCE					
Vehicle-Miles of Travel by Highway Class (millions) ^r					
Rural					
Interstate	288,483 ^o	79,516 ^o	134,513 ^p	200,173 ^p	204,960 ^p
Other Principal Arterial	-	230,590	135,527	175,133	196,153
Minor Arterial	-	-	132,409	155,733	146,723
Major Collector	-	-	150,575	190,152	184,326
Minor Collector	-	-	40,226	49,948	49,945
Local	98,777	229,366	84,236	97,379	98,986
Total Rural	387,260	539,472	677,486	868,878	881,093

HIGHWAY PROFILE (page 3 of 3)

	1960	1970	1980	1990	1992
Urban					
Interstate	-	81,532 ^o	159,347 ^p	278,901 ^p	302,091 ^p
Other Freeways and Expressways	-	488,720	88,328	127,465	137,959
Other Principal Arterial	-	-	227,123	335,543	344,195
Minor Arterial	-	-	172,356	236,225	260,507
Collector	-	-	82,623	106,297	115,631
Local	331,585	-	123,146	191,053	198,352
Total Urban	331,585	570,252	852,923	1,275,484	1,358,735
Total Rural and Urban	718,845	1,109,724	1,530,409	2,144,362	2,239,828
Highway Demand for Petroleum (thousand barrels)					
Motor Fuel	1,373,648 ^a	2,198,290 ^a	2,737,139 ^a	3,113,695 ^a	3,165,189 ^a
Asphalt Paving Products	80,704	129,769	123,542	175,963	165,267
Road Oils	6,475	10,342	1,498	880	830
Total	1,460,827	2,338,401	2,862,179	3,290,530	3,331,286

* Figures obtained by addition/subtraction and may not appear directly in data source.

** Revenues not necessarily allocated to highway expenditures.

* Mileage in Federal parks, forests, and reservations that are not a part of the state and local highway system.

** Highway category classifications changed several times before 1980. Actual 1960 data categories were: Main Rural Roads, Local Rural Roads and Urban Streets; 1970 data categories were: Rural Interstate, Rural Other Arterial, Other Rural, Urban Interstate and Other Urban.

¹ Includes distributors and dealers licenses, inspection fees, fines and penalties, and miscellaneous receipts.

² Includes drivers licenses, title fees, special titling taxes, fines and penalties, estimated service charges and local collections.

³ Includes gross receipt taxes; mileage, ton-mile and passenger-mile taxes; special license fees and franchise taxes; and certificate or permit fees.

⁴ 1980 figure - Intercity Highway Transportation.

Source: The following data references are listed on p. 50.

<u>Source</u>	<u>Reference Number/Location</u>
a	29) HF-211
b	28) Table HF-10
c	29) HF-212
d	29) MF-201
e	28) Table MF-1
f	29) MV-202
g	28) Table MV-2
h	29) M-203
i	28) Table HM-10
j	28) Table HM-20
k	28) Table M-2
l	12) pp. 67, 75, and 77
m	9) p. 61
n	26) SIC 161-413
o	29) VM-201
p	28) Table VM-2
q	9) p. 57

AUTOMOBILE PROFILE (page 1 of 3)

	1960	1970	1980	1990	1992
I. FINANCIAL					
Personal Auto Expenditures (million dollars)					
New and Used Cars*	20,237 ^a	32,668 ^a	61,300 ^a	130,355 ^a	126,719 ^a
Tires, Tubes, Accessories and Parts	2,768	5,396	16,684	22,483	23,687
Gasoline and Oil	14,414	29,329	83,721	108,471	103,444
Tolls	362	756	1,061	2,024	2,116
Insurance Premiums less Claims Paid	2,313	4,335	9,383	18,066	24,572
Repair, Greasing, Washing, Parking, Storage, Rental & Leasing	6,115	13,233	32,327	82,538	89,468
Auto Registration Fees	863 ^b	1,668 ^b	2,892 ^b	6,054 ^b	7,138 ^b
Driver's License Fees	119	222	370	638	781
Total*	47,191	92,270	214,399	370,629	377,925
Taxi Expenditures (million dollars)	858 ^a	1,411 ^a	2,857 ^a	3,209 ^a	3,285 ^a
Business New Auto Expenditures (million dollars)	-	-	20,771 ^c	55,083 ^c	62,188 ^c
Government New Auto Expenditures (million dollars)	-	-	766	1,861	1,555
Total Business/Government Auto Expenditures*	-	-	21,537	56,944	63,743
II. INVENTORY					
Number of Vehicle Registrations					
Passenger Cars and Taxis	61,882,304 ^d	89,243,557 ^d	121,600,843 ^d	143,453,040 ^e	144,213,429 ^e
Motorcycles	575,497	2,824,098	5,693,940	4,259,462	4,065,118
Motor Vehicle Licensed Drivers (thousands)	87,253 ^f	111,543 ^f	145,299 ^f	167,015 ^f	173,125 ^f
Number of Employees					
Taxicabs	120,700 ^g	106,400 ^g	52,500 ^g	32,600 ^g	30,100 ^g
Automotive Dealers and Service Stations	1,267,200 ^h	1,617,400 ^h	1,688,500 ^h	2,067,500 ^h	1,966,300 ^h
New and Used Car Dealers	658,100	763,200	786,600	926,400	875,400
Motor Vehicles, Parts and Supplies	313,000 ⁱ	351,300 ⁱ	417,500 ⁱ	458,400 ⁱ	446,100 ⁱ
Auto Repair, Services, and Parking	251,000 ^j	284,000 ^j	570,900 ^j	916,400 ^j	881,300 ^j
III. PERFORMANCE					
Vehicle-Miles (millions) ¹					
Rural Highway					
Interstate Rural	-	62,342 ^k	89,488 ^k	129,960 ^c	134,990 ^c
Other Arterial Rural	-	182,213	180,857	217,144	230,890
Other Rural	-	179,533	180,314	218,256	220,588
All Rural	303,283 ^k	424,088	450,659	565,360	586,468
Urban Highway ²					
Interstate Urban	-	69,369	124,480	209,429	226,398
Other Urban	-	426,222	546,671	747,952	792,098
All Urban	284,800	495,591	671,151	957,381	1,018,496
Total Rural and Urban Highway	588,083	919,679	1,121,810	1,522,741	1,604,964
Vehicle-Miles (millions)					
Passenger Cars and Taxis	588,083 ^d	916,700 ^d	1,111,596 ^d	1,513,184	1,595,438
Motorcycles	-	2,979	10,214	9,557	9,526
Total	588,083	919,679	1,121,810	1,522,741	1,604,964
Passenger-Miles (millions)					
Total Travel, Passenger Cars and Taxis	1,293,783 ^l	1,833,400 ^l	2,000,872 ^l	2,284,908	2,776,062
Total Travel, Motorcycles	-	3,694	13,278	12,233	10,479
Average Miles Traveled per Vehicle					
Passenger Cars and Taxis	9,446 ^d	10,272 ^d	9,141 ^d	10,548	11,063
Motorcycles	-	1,055	1,794	2,244	2,343
Fuel Consumed (million gallons)					
Passenger Cars and Taxis	41,169	67,820	71,883	71,989	73,851
Motorcycles	-	60	204	191	191

AUTOMOBILE PROFILE (page 2 of 3)

	1960	1970	1980	1990	1992
Average Annual Fuel Consumption per Vehicle (gallons)					
Passenger Cars and Taxis	661 ^d	760 ^d	591 ^d	502 ^e	512 ^e
Motorcycles	-	21	36	45	47
Average Miles Traveled Per Gallon of Fuel Consumed					
Passenger Cars and Taxis	14.3 ^f	13.5	15.5	21.0	21.6
Motorcycles	-	50	50	50	50
Number of Vehicles in All Accidents					
Passenger Cars	16,000,000 ^m	23,500,000 ^m	22,800,000 ^m	14,320,000 ^m	14,200,000 ^m
Taxis	150,000	190,000	230,000	25,000	-
Motorcycles	100,000	275,000	510,000	160,000	200,000
Number of Vehicles in Fatal Accidents					
Passenger Cars	37,400	52,000	39,059 ⁿ	34,085 ⁿ	29,786 ^e
Taxis	150	210	81	78	80
Motorcycles	600	2,200	5,194	3,276	2,438
Number of Occupant & Non Occupant Fatalities					
Motor Vehicles	36,399	54,180	51,091	44,599	39,250
Passenger Cars	27,909	34,800	27,449	24,092	21,387
Taxis	-	-	23	22	31
Motorcycles, total	790	2,330	5,144	3,244	2,395
Motorcycles	790	2,330	4,961	3,129	2,291
Other and Unknown	-	-	65	66	68
Bicycles ³	490	780	965	859	723
Pedestrians ³	7,210	9,900	8,070	6,482	5,549
Occupant Fatality Rate					
Per 100 Million Vehicle-Miles					
Passenger Cars	4.7	3.8	2.5	1.6	1.3
Motorcycles	-	22.5	50.4	33.9	25.1
Per 10,000 Registered Vehicles					
Passenger Cars	5.1	3.9	2.3	1.7	1.5
Motorcycles	-	8.1	9.0	7.6	5.9
Vehicle Involvement Rate (fatal accidents)					
Per 100 Million Vehicle-Miles					
Passenger Cars	-	5.6	3.5	2.3	1.9
Motorcycles	-	22.9	50.4	34.3	25.6
Per 10,000 Registered Vehicles					
Passenger Cars	-	5.6	3.2	2.4	2.1
Motorcycles	-	8.2	9.0	7.7	6.0

AUTOMOBILE PROFILE (page 3 of 3)

- * Figures obtained by addition/subtraction and may not appear directly in data source.
- * In 1960 motorcycles were included with passenger cars and taxis.
- ¹ Includes passenger cars, taxis, and motorcycles.
- ² Urban consists of travel on all roads and streets in urban places of 5,000 or greater population.
- ³ Involvement only with motor vehicle.

Source: The following data references are listed on pp. 50, 51.

<u>Source</u>	<u>Reference Number/Location</u>
a	21) personal communication
b	28) Table MV-2
c	21) personal communication
d	29) Table VM-201A
e	28) Table VM-1
f	28) Table DL-22
g	26) SIC 412
h	26) SIC 55/551
i	26) SIC 501
j	26) SIC 75
k	29) Table VM-201
l	28) estimated using vehicle occupancy rates from FHWA's Nationwide Personal Transportation Surveys and vehicle-miles from reference source.
m	13) p. 68 an similar tables for earlier editions
n	35) personal communication

BUS PROFILE (page 1 of 2)

	1960	1970	1980	1990	1992
I. FINANCIAL					
Expenditures (thousand dollars)					
School Bus	486,000 ^a	1,219,000 ^a	3,833,000 ^a	7,605,000 ^a	8,060,000 ^a
Operating Revenues (thousand dollars)					
Intercity Bus, total	559,000	799,000	1,709,000	1,750,000	1,800,000
Intercity Bus, Class I	463,100 ^b	721,700 ^b	1,397,378 ^b	943,268 ^b	937,675 ^b
Operating Expenses (thousand dollars)					
Intercity Bus, total	494,800	812,200	1,810,900	2,041,088	-
Intercity Bus, Class I	405,400	639,000	1,318,372	1,026,213	874,303
II. INVENTORY					
Number of Operating Companies					
Intercity Bus, total	1,150 ^c	1,000 ^c	1,283 ^c	3,925 ^c	4,801 ^c
Intercity Bus, Class I	143 ^b	71 ^b	61 ^b	21 ^b	31 ^b
Number of Vehicles					
Intercity Bus, total	20,974	22,000	21,400	19,491	-
Intercity Bus, Class I	11,093	10,158	8,427	6,502	-
School Bus	196,000	288,750	380,000	380,000	364,933 ^j
Number of Employees of Operating Companies					
Intercity Bus, total	45,000 ^d	49,500 ^d	38,000 ^d	26,300 ^d	22,900 ^d
Intercity Bus, Class I	40,500 ^b	34,383 ^b	29,723 ^b	10,060 ^b	-
School Bus	-	-	79,900 ^h	112,300 ^h	119,800 ^h
Miles of Highway Served					
Intercity Bus, total	265,000 ^c	267,000 ^c	279,000 ^c	213,000 ^c	-
Intercity Bus, Class I	193,000	194,000	193,000	146,000	-
III. PERFORMANCE					
Vehicle-Miles (millions)					
All Buses					
Rural Highway					
Interstate Rural	-	339 ^e	533 ^e	567 ^f	538 ^f
Other Arterial Rural	-	944	991	995	945
Other Rural	-	1,266	1,511	1,885	1,790
All Rural	2,255 ^e	2,549	3,035	3,447	3,273
Urban Highway ^l					
Interstate Urban	-	277	560	453	491
Other Urban	-	1,718	2,464	1,819	1,975
All Urban	2,098	1,995	3,024	2,272	2,466
Total Rural and Urban Highway	4,353	4,544	6,059	5,719	5,739
School Bus	1,481 ^g	2,100 ^g	3,000 ^g	3,800 ^g	4,400 ^g
Revenue Passenger-Miles (millions)					
Intercity Bus, total	19,300 ^a	25,300 ^a	27,400 ^a	23,000 ^a	23,700 ^a
Intercity Bus, Class I	13,116 ^c	14,190 ^c	16,500 ^c	13,820 ^c	-
Number of Revenue Passengers (thousands)					
Intercity Bus, total	366,000 ^a	401,000 ^a	370,000 ^a	334,000 ^a	339,000 ^a
Intercity Bus, Class I	267,000 ^c	174,000 ^c	130,000 ^c	104,699 ^c	-

BUS PROFILE (page 2 of 2)

	1960	1970	1980	1990	1992
Average Passenger Trip Length (miles)					
Intercity Bus, total	78.3 ^a	63.2 ^a	74.1 ^a	71.4 ^a	-
Intercity Bus, Class 1	79.0	106.0	125.0	141.0	136.0 ^a
Average Miles Traveled per Vehicle					
Commercial	37,789 ^c	32,591 ^f	32,765 ^f	38,499 ^c	-
School and Nonrevenue Bus	7,556	7,274	7,592	10,000	-
All Buses	16,004	12,035 ^e	11,458 ^e	9,121 ^f	8,901 ^f
Fuel Consumed (million gallons)					
Commercial	618	644 ^f	696 ^f	723 ^c	-
School and Nonrevenue Bus	209	300	380	472	546
All Buses	827	820 ^e	1,018 ^c	895 ^f	877
Average Annual Fuel Consumption per Vehicle					
Commercial	8,132	7,132 ^f	6,516 ^f	9,591 ^c	-
School and Nonrevenue Bus	1,066	1,039	994	1,242	-
All Buses	3,040	2,172 ^e	1,926 ^c	1,428 ^f	1,360
Average Miles Traveled per Gallon of Fuel Consumed					
Commercial	4.7	4.6 ^f	5.0 ^f	4.4 ^c	-
School and Nonrevenue Bus	7.1	7.0	7.6	8.1	-
All Buses	5.3	5.5 ^e	6.0 ^c	6.4 ^f	6.5
Average Revenue per Passenger-Mile (cents)	2.7 ^a	3.6 ^a	7.3 ^a	11.6 ^a	11.7 ^a
Number of Fatalities					
School Bus-related	-	-	150 ^h	115 ^h	124 ^b
School Bus Occupants	-	-	14	11	10
Other Vehicle Occupants	-	-	96	64	83
Non-Occupants	-	-	53	40	31
Occupant Fatalities					
All Buses	-	-	46	32	30
School Buses	-	-	14	13	15
Cross Country Buses	-	-	23	2	-
Transit Buses	-	-	6	3	15
Other and Unknown	-	-	3	14	-
Fatalities in Vehicular Accidents ²					
All Buses	-	-	390	340	300
Occupant Fatality Rate					
Per 100 Million Vehicle-Miles					
All Buses	-	-	0.8	0.6	0.5
Per 10,000 Registered Vehicles					
All Buses	-	-	0.9	0.5	0.4
Vehicle Involvement Rate					
Per 100 Million Vehicle-Miles					
All Buses	-	-	5.4	5.0	5.0
Per 10,000 Registered Vehicles					
All Buses	-	-	6.2	4.6	4.4

¹ Urban consists of travel on all roads and streets in urban places of 5,000 or greater population.

² Includes all fatalities in the accident in which the vehicle types listed were involved.

Source: The following data references are listed on pp. 50, 51.

<u>Source</u>	<u>Reference</u>	<u>Source</u>	<u>Reference</u>
a	9) pp. 42, 47, 48, 50, 53, 70	e	29) Table VM-201A
b	11) Appendix F, Tables 1, 6	f	28) Table VM-1
c	16) personal communication.	g	13) p. 75
d	26) SIC 415	h	32) personal communication
		i	35) Table MV-10

TRUCK PROFILE (page 1 of 3)

	1960	1970	1980	1990	1992
I. FINANCIAL					
Revenues (million dollars)					
Local	14,289 ^a	28,819 ^a	60,545 ^a	108,350 ^a	116,000 ^a
Intercity, ICC-authorized	7,214	14,585	43,000	75,500	82,300
Non-ICC-authorized	10,744	18,968	51,551	86,800	94,500
Operating Revenues of Class I Intercity Motor Carriers of Property (million dollars)					
Freight, Intercity, Common Carriers	4,384 ^b	10,147 ^b	26,691 ^b	36,974 ^b	41,061 ^b
Freight, Intercity, Contract Carriers	239	332	1,139	5,212	5,705
Freight, Local Cartage	51	458	340	792	649
Trans. for other Classes I and II Carriers	48	91	187	186	202
Others	42	108	1,981	3,556	3,455
Total	4,764	11,137	30,338	46,710	51,072
Operating Expenses of Class I Intercity Motor Carriers of Property (million dollars)	4,645	10,763	29,012	44,827	48,259
II. INVENTORY					
Number of Truck Registrations					
Private and Commercial	11,360,506 ^c	17,789,980 ^c	32,238,223 ^c	42,731,738 ^c	43,675,424 ^c
Federal	86,229	142,498	209,101	276,293	281,623
State, County, Municipal	498,742	815,943	1,189,917	1,470,817	1,547,020
Total	11,914,000	18,748,421	33,637,241	44,478,848	45,504,067
Number of Recreational Vehicles					
Motorized Homes	93,321 ^d	30,300 ^d	99,900 ^d	226,500 ^d	226,300 ^d
Travel Trailers	41,964	138,000	52,000	80,400	102,500
Folding Camping Trailers	8,272	116,100	24,500	30,700	43,300
Truck Campers	23,703	95,900	5,000	9,700	10,600
Total	167,260	380,300	181,400	354,500	389,800
Number of Employees					
Trucking and Truck Terminals	770,000 ^e	998,500 ^e	1,189,000 ^e	1,534,000 ^e	1,606,000 ^e
Truck Drivers and Deliverymen	1,477,000 ^a	1,565,000 ^a	1,931,000 ^a	2,148,000 ^a	2,185,000 ^a
Number of Employees, Class I Intercity Motor Carriers of Property	302,626 ^b	500,445 ^b	471,458 ^b	607,098 ^b	625,498 ^b
Number of Companies, Class I Intercity Motor Carriers of Property	935	1,376	835	728	688
III. PERFORMANCE					
Vehicle-Miles (millions)					
Rural Highway					
Interstate Rural	-	16,835 ^f	45,063 ^f	69,646 ^g	69,432 ^g
Other Arterial Rural	-	47,433	80,926	112,727	111,041
Other Rural	-	48,567	92,347	117,698	110,879
All Rural	81,722 ^f	112,835	218,336	300,071	291,352
Urban Highway ¹					
Interstate Urban	-	11,886	36,202	69,019	75,202
Other Urban	-	60,780	144,888	246,812	262,571
All Urban	44,687	72,666	181,090	315,831	337,773
Total Rural and Urban Highway	126,409	185,501	399,426	615,902	629,125

TRUCK PROFILE (page 2 of 3)

	1960	1970	1980	1990	1992
Vehicle-Miles					
Single-Unit Trucks*	97,930 ^b	123,286 ^b	290,935 ^b	466,092 ^B	476,587 ^z
Other Single-Unit Trucks	-	27,081	39,813	53,443	53,506
Combination Trucks	28,479	35,134	68,678	96,367	99,032
All Trucks	126,409	185,501	399,426	615,902	629,125
Average Miles Traveled per Vehicle					
Single-Unit Trucks*	-	8,676	10,437	11,993	12,055
Other Single-Unit Trucks	-	7,356	9,103	12,595	12,397
Combination Trucks	-	38,819	48,472	59,807	59,846
All Trucks	10,583	9,869	11,864	13,773	13,826
Ton-Miles (millions)					
Intercity	285,483 ^a	412,000 ^a	555,000 ^a	735,000 ^a	815,000 ^a
Fuel Consumed (million gallons)					
Single-Unit Trucks*	-	12,313 ^b	23,594 ^b	32,937 ^B	33,139 ^z
Other Single-Unit Trucks	-	3,968	5,557	7,294	7,181
Combination Trucks	-	7,348	12,703	17,469	17,698
All Trucks	15,882 ^h	23,630	41,854	57,700	58,018
Average Fuel Consumption per Vehicle (gallons)					
Single-Unit Trucks*	-	866	846	847	838
Other Single-Unit Trucks	-	1,078	1,271	1,719	1,664
Combination Trucks	-	8,119	8,966	10,841	10,695
All Trucks	1,330	1,257	1,243	1,290	1,275
Average Miles Traveled per Gallon of Fuel Consumed					
Single-Unit Trucks*	-	10.01	12.33	14.15	14.38
Other Single-Unit Trucks	-	6.82	7.16	7.33	7.45
Combination Trucks	-	4.78	5.41	5.52	5.60
All Trucks	7.96	7.85	9.54	10.67	10.84
Passenger-Miles					
Single-Unit Trucks*	156,688 ⁱ	192,326 ⁱ	439,312 ⁱ	685,155 ⁱ	700,583 ⁱ
Other Single-Unit Trucks	-	27,081	39,813	53,443	53,506
Combination Trucks	28,479	35,134	68,678	96,367	99,032
Taxes Assignable to Operation (\$ millions)²					
State Highway-User Taxes	1,709 ^d	3,429 ^d	6,731 ^d	12,691 ^d	11,816 ^d
Federal Highway-User Taxes	1,121	2,202	3,157	6,665	7,944
Total Highway-User Taxes	2,830	5,631	9,888	19,356	19,759
Average Length of Haul (freight miles)					
Class I Motor Carriers	272	263 ^a	363 ^a	391 ^a	410 ^a
Total Fatalities, Motor Carriers of Property	-	1,367 ^j	2,528 ^j	3,309 ^j	2,657 ^j
Total Accidents	-	40,233	31,389	35,885	33,965
Total Injuries	-	18,122	27,149	34,348	31,597
Property Damage (\$ thousands)	-	-	311,191	507,330	462,330
Occupant Fatalities					
Light Trucks	-	-	7,486 ^k	8,601 ^k	8,098 ^t
Medium Trucks	-	-	306	134	99
Heavy Trucks	-	-	956	571	486
All Trucks	-	-	8,748	9,306	8,683
Occupant Fatality Rate					
Per 100 Million Vehicle-Miles					
Single-Unit Trucks*	-	-	2.4	1.7	1.6
Combination Trucks	-	-	1.3	0.5	0.4
All Trucks	-	-	2.2	1.5	1.3

TRUCK PROFILE (page 3 of 3)

	1960	1970	1980	1990	1992
Per 10,000 Registered Vehicles					
Single-Unit Trucks*	-	-	2.4 ^k	2.0 ^k	1.9 ^k
Combination Trucks	-	-	6.4	3.2	2.6
All Trucks	-	-	2.6	2.1	1.9
Vehicle Involvement Rate					
Per 100 Million Vehicle-Miles					
Single-Unit Trucks*	-	-	4.3	3.2	3.0
Combination Trucks	-	-	5.8	3.9	3.1
All Trucks	-	-	4.5	3.3	3.0
Per 10,000 Registered Vehicles					
Single-Unit Trucks*	-	-	4.4	3.9	3.6
Combination Trucks	-	-	28.0	23.4	18.3
All Trucks	-	-	5.4	4.6	4.1

* 2-axle, 4-tire trucks

¹ Urban consists of travel on all roads and streets in urban places of 5,000 or greater population.

² Sum of components may not equal total due to independent rounding.

Source: The following data references are listed on pp. 50, 51.

<u>Source</u>	<u>References</u> <u>Number/Location</u>
a	9) pp. 40, 44, 61, 71
b	11) Appendix F, Table 5
c	28) Table MV-9
d	12) pp. 11, 78
e	26) SIC 421
f	29) Table VM-201
g	28) Table VM-1
h	29) Table VM-201A
i	28) Estimated using vehicle occupancy rates from FHWA's Nationwide Personal Transportation Surveys and vehicle-miles from reference source.
j	30) personal communication
k	35) personal communication

TRANSIT PROFILE (page 1 of 3)

	1960	1970	1980	1990	1992
I. FINANCIAL					
Operating Revenues (thousand dollars)					
Passenger	1,335,000 ^a	1,639,000 ^a	2,556,800 ^b	5,890,800 ^b	6,179,300 ^b
Motor Bus	-	-	-	2,967 ⁿ	3,074 ⁿ
Heavy Rail	-	-	-	1,741	1,831
Light Rail	-	-	-	83	98
Trolley Bus	-	-	-	46	53
Demand Response	-	-	-	41	91
Ferry Boat ¹	-	-	-	-	-
Commuter Rail	-	-	-	952	970
Other ²	-	-	-	62	63
Other	72,000	68,000	248,300	895,000	806,300
Total Operating Revenues	1,407,000	1,707,000	2,805,100	6,785,800	6,985,600
Operating Assistance					
State & Local	-	-	2,611,200	8,297,400	8,523,400
Federal	-	-	1,093,900	970,000	964,300
Total Operating Assistance	-	-	3,705,100	9,267,400	9,487,700
Total Revenues	1,407,000	1,707,000	6,510,200	16,053,200	16,473,300
Operating Expenses (million dollars)					
Motor Bus	-	-	-	8,903	9,945 ^f
Heavy Rail	-	-	-	3,825	3,301
Light Rail	-	-	-	237	310
Trolley Bus	-	-	-	109	123
Demand Response	-	-	-	518	719
Ferry Boat ¹	-	-	-	-	-
Commuter Rail	-	-	-	1,939	2,012
Other ²	-	-	-	212	236
Total Operating Expenses	-	-	-	15,742	16,646
Depreciation and Amortization	-	-	277,600	1,593,100	2,017,500
Other Reconciling Items	-	-	186,500	643,900	1,208,500
Total Expenses	1,376,500^e	1,995,600^e	6,710,600	17,979,100	19,871,700
Average Revenue per Passenger-Mile (dollars)					
Motor Bus	-	-	-	0.14 ^e	0.15 ^e
Heavy Rail	-	-	-	0.15	0.17
Light Rail	-	-	-	0.15	0.14
Trolley Bus	-	-	-	0.24	0.27
Demand Response	-	-	-	0.10	0.18
Ferry Boat ¹	-	-	-	-	-
Commuter Rail	0.03	0.04	0.07	0.13	0.13
Other ²	-	-	-	0.50	0.29
Total	-	-	-	0.14	0.15
Average Expense per Passenger Mile (dollars)					
Motor Bus	-	-	-	0.42	0.49
Heavy Rail	-	-	-	0.33	0.31
Light Rail	-	-	-	0.42	0.44
Trolley Bus	-	-	-	0.56	0.62
Demand Response	-	-	-	1.20	1.41
Ferry Boat ¹	-	-	-	0.60	0.65
Commuter Rail	-	-	-	0.27	0.27
Other ²	-	-	-	0.33	0.26
Total	-	-	-	0.38	0.41

TRANSIT PROFILE (page 2 of 3)

	1960	1970	1980	1990	1992
Average Fare (dollars)					
Motor Bus	-	-	-	0.52 ^c	0.56 ^c
Heavy Rail	-	-	-	0.74	0.83
Light Rail	-	-	-	0.47	0.52
Trolley Bus	-	-	-	0.36	0.41
Demand Response	-	-	-	0.60	1.15
Ferry Boat ¹	-	-	-	1.11	0.87
Commuter Rail	-	-	-	2.90	3.09
Other ²	-	-	-	0.67	0.69
Total	-	-	-	0.67	0.73
II. INVENTORY					
Number of Systems					
Motor Bus	1,236 ^c	1,075 ^c	1,022 ^c	2,685	2,691
Heavy Rail	31	15	11	12	13
Light Rail	~	~	9	17	19
Trolley Bus	19	6	5	5	5
Demand Response	-	-	-	3,193	3,894
Ferry Boat ¹	-	-	16	27	26
Commuter Rail	-	-	18	14	14
Other ^{**2}	-	-	5	35	40
Total ^f	1,286	1,096	1,055	5,078	5,086
Number of Vehicles					
Motor Bus	49,600 ^f	49,700 ^g	59,411 ^g	58,714 ^g	61,959 ^g
Heavy Rail	9,010	9,286	9,641	10,419	10,245
Light Rail	2,856	1,262	1,013	913	1,058
Trolley Bus	3,826	1,050	823	832	907
Demand Response	-	-	-	16,471	19,566
Ferry Boat ¹	-	-	-	108	98
Commuter Rail	-	-	4,500	4,415	4,413
Other ^{**2}	-	-	-	1,089	2,028
Total	65,292	61,298	75,388	92,961	100,274
Number of Employees					
Motor Bus	121,300 ^h	101,598 ^h	-	162,189 ⁱ	162,509 ⁱ
Heavy Rail	35,100	36,442	-	46,102	47,075
Light Rail	+	+	-	4,066	3,742
Trolley Bus	+	+	-	1,925	1,686
Demand Response	-	-	-	22,740	26,940
Ferry Boat ¹	-	-	-	2,813	2,574
Commuter Rail	-	-	-	21,443	20,888
Other ^{**2}	-	-	-	898	1,078
Total	156,400	138,040	189,300 ^h	262,176	266,492
III. PERFORMANCE					
Revenue Vehicle-Miles (millions)					
Motor Bus	1,576 ^j	1,409 ^k	1,677 ^k	2,130 ^k	2,185 ^k
Heavy Rail	391	407	385	537	525
Light Rail	75	34	18	24	29
Trolley Bus	101	33	13	14	14
Demand Response	-	-	-	306	382
Ferry Boat ¹	-	-	2	2	2
Commuter Rail	-	-	179	213	219
Other ^{**2}	-	-	13	16	28
Total	2,143	1,883	2,287	3,242	3,384

TRANSIT PROFILE (page 3 of 3)

	1960	1970	1980	1990	1992
Unlinked Passenger Trips (millions)					
Motor Bus	-	5,034 ¹	5,837 ¹	5,677 ¹	5,525 ¹
Heavy Rail	-	1,881	2,108	2,346	2,207
Light Rail	-	124	133	175	189
Trolley Bus	-	182	142	126	127
Demand Response	-	-	-	68	79
Ferry Boat ¹	-	-	63	50	47
Commuter Rail	-	-	280	328	314
Other** ²	-	-	4	29	31
Total	-	7,332	8,567	8,799	8,519
Passenger-Miles (millions)					
Motor Bus	-	-	21,790 ^m	20,981 ^m	20,404 ^m
Heavy Rail	-	-	10,588	11,475	10,737
Light Rail	-	-	381	571	704
Trolley Bus	-	-	219	193	197
Demand Response	-	-	-	431	511
Ferry Boat ¹	-	-	335	286	271
Commuter Rail	-	-	6,516	7,082	7,342
Other** ²	-	-	50	124	219
Total	-	-	39,854	41,143	40,385
Energy Consumption (gallons)					
Motor Bus	-	-	-	569 ^e	579 ^e
Demand Response	-	-	-	54	58
Ferry Boat ¹	-	-	-	20	21
Commuter Rail	-	-	-	53	56
Other ²	-	-	-	22	43
Total	-	-	-	697	715
Energy Consumption (kWh)					
Motor Bus	-	-	-	-	0
Heavy Rail	-	-	-	3,284	3,193
Light Rail	-	-	-	252	287
Trolley Bus	-	-	-	67	73
Commuter Rail	-	-	-	1,225	1,217
Other ²	-	-	-	25	19
Total	-	-	-	4,854	4,790

¹ Transit ferry boats only.

² Includes cablecar, inclined plane, aerial trainway, vanpool, and automated guideway.

* 1980 figure included in General Administration.

** Figure obtained by addition/subtraction.

Total is not sum of all modes since many systems operate more than one mode.

- Included in Heavy Rail figure.

* Included in Motor Bus figure.

Source: The following data references are listed on p. 50.

<u>Source</u>	<u>Reference</u> <u>Number/Location</u>	<u>Source</u>	<u>Reference</u> <u>Number/Location</u>
a	2) Table 5A	h	2) Table 13
b	2) Table 20	i	2) Table 53
c	2) Table 6A	j	2) Table 11
d	2) Table 16	k	2) Table 39
e	2) Table 6	l	2) Table 31
f	2) Table 18	m	2) Table 38
g	2) Table 41	n	2) Table 23

WATER TRANSPORT PROFILE (page 1 of 3)

	1960	1970	1980	1990	1992
I. FINANCIAL					
Operating Revenues (million dollars)					
Domestic Freight*	1,722 ^a	1,822 ^a	7,219 ^a	7,749 ^a	7,935 ^a
Coastal Waterways	747	834	3,155	3,008	3,049
Inland Waterways	461	621	2,395	2,852	2,801
Great Lakes	227	239	513	586	587
Locks, Channels	287	376	1,156	1,303	1,498
International Freight	1,765	3,187	8,279	13,118	11,960
Total Passengers*	281	287	305	1,345	1,485
Domestic Passengers, Intercity	14	12	22	58	70
International Passengers ¹	267	275	283	1,287	1,415
Revenues of U.S. Commercial Fishing Fleet					
U.S. Domestic Commercial Landings (million dollars)	354 ^b	613 ^b	2,237 ^b	3,522 ^b	3,678 ^b
II. INVENTORY					
Number of Companies, Class A & B Carriers Inland and Coastal Waterways					
	105 ^c	82 ^c	82 ^c	327 ^c	360 ^c
Number of Employees					
Ships, Boat Building, and Repairing	141,200 ^e	171,800 ^e	220,500 ^e	187,800 ^e	169,700 ^e
Water Transportation*	232,000	213,400	212,700	177,700	173,300
Number of Employees ²					
Passenger/Combo	8,560 ^f	2,178 ^f	618 ^f	642 ^f	600 ^f
Cargo	28,668	22,257	9,878	7,019	4,408
Tankers	12,053	10,567	8,722	4,471	4,224
Total	49,281	35,000	19,218	12,132	9,232
Mileage of Commercially Navigable Waterways					
	25,253 ^a	25,543 ^a	25,543 ^a	25,777 ^a	25,777 ^a
Number of Vessels					
Total Non-Self-Propelled					
Dry Cargo Barges and Scows	14,025	15,890	27,426	27,091	26,984
Tankers	2,429	3,281	4,166	3,913	3,905
Railroad Car Floats	323	206	70	13	10
Total Self-Propelled	6,543	6,455	7,130	8,216	8,311
Dry Cargo/Passenger	1,796	1,761	2,036	2,205	2,323
Ferries, Railroad Car	31	17	67	579	572
Tankers	489	421	330	214	211
Towboats/tugs	4,203	4,248	4,693	5,218	5,205
Sailing Vessels	24	8	4	-	-
U.S. Merchant Marine (over 1,000 gross tons)					
Total U.S. Flag	5,852 ^h	1,579 ^h	864 ^h	636 ^h	603 ^h
Passenger/Cargo	309	171	65	10	11
Freighters	2,138	977	310	199	349
Bulk Carriers	57	38	20	26	23
Tankers	422	294	308	233	220
Intermodal	-	99	161	168	n/a
Privately Owned	1,008	793	578	408	384
Government Owned	1,918	786	286	228	219
Number of Recreational Boats (thousands)					
	2,450 ⁱ	7,400 ⁱ	14,600 ⁱ	19,500 ⁱ	20,300 ⁱ

WATER TRANSPORT PROFILE (page 2 of 3)

	1960	1970	1980	1990	1992
III. PERFORMANCE					
Ton-Miles (thousands)					
Domestic Waterfreight					
Coastwise	256,000,000 ^j	359,748,000 ^j	631,149,247 ^j	479,133,600 ^j	502,311,000 ^j
Internal	896,140,000	155,816,000	227,342,991	292,393,300	297,393,000
Lakewise	65,990,000	79,416,000	61,747,114	60,929,900	55,784,600
Local	1,730,000	1,179,000	1,596,412	21,087,000	1,196,000
Total**	413,334,000	596,195,000	921,835,764	853,543,800	856,684,600
Tons of Freight Hauled (thousands)					
Domestic Waterfreight					
Coastwise	209,197	238,440	329,609	298,637	285,131
Internal	291,057	472,123	534,979	622,595	621,037
Lakewise	155,109	157,059	115,124	110,159	107,398
Local	105,210	83,105	97,771	91,908	81,063
Total**	760,573	950,727	1,077,483	1,122,299	1,094,629
Export					
Great Lakes Ports**	23,150	35,932	45,077	32,898	30,091
Coastal Ports	104,810	205,697	358,806	408,688	420,667
Total	127,961	241,629	403,883	441,586	450,758
Imports					
Great Lakes Ports**	12,851	26,406	15,515	17,578	15,421
Coastal Ports	198,466	312,934	502,006	582,412	571,287
Total	211,317	339,340	517,521	599,970	586,708
Tons of Freight, Intraterritorial (thousands)					
	1,000 ^l	1,500 ^l	3,588 ^l	4,529	4,245
Average Haul, Domestic System (miles)					
Coastwise	1,496 ^j	1,509 ^j	1,915 ^j	1,604	1,762
Internal	282	330	405	469	479
Lakewise	522	506	536	553	519
Cargo Capacity (short tons)					
Total Non-Self-Propelled Vessels					
Dry Cargo Barges and Scows	16,355,657 ^b	24,026,024 ^e	44,875,116 ^e	48,603,351 ^g	49,449,829 ^g
Tankers	12,147,006	17,695,275	34,486,851	37,973,654	38,707,620
Total Self-Propelled Vessels	4,208,651	6,330,749	10,388,265	10,629,697	10,742,569
Total Self-Propelled Vessels					
Dry Cargo/Passenger	15,905,881	19,284,050	23,906,346	19,723,788	19,430,269
Tankers	12,188,956	10,815,977	8,011,587	7,042,263	69,484,466
Total	3,716,925	8,468,073	15,894,753	12,681,525	12,481,803
Fuel Consumption (thousand barrels)					
Diesel Fuel and Distillate	18,730 ^a	19,503 ^a	35,201 ^a	52,310 ^a	53,337 ^a
Residual Fuel Oil	94,084	89,850	213,131	148,764	171,407
Gasoline	9,200	14,238	25,048	30,962	31,337
Total	122,014	123,591	273,380	232,036	256,081
Total Number of Vessels Involved in Marine Accidents ³					
	2,904	2,582	5,738	5,494 ^l	4,972 ^m
Number of Fatalities in Waterborne Transport					
Freight	-	30 ^m	8 ^m	0 ^m	3
Tankship	-	4	4	5	0
Passenger Vessel	-	1	5	3	4

WATER TRANSPORT PROFILE (page 3 of 3)

	1960	1970	1980	1990	1992
Tug/Towboat	-	22 ^m	14 ^m	13 ^m	9 ^m
Offshore Supply	-	-	-	2	2
Fishing Vessel	-	77	60	47	52
State Numbered	-	-	-	3	6
MODU ⁴	-	-	-	0	1
Platform	-	-	-	1	0
Freight Barge	-	-	-	0	2
Tank Barge	-	+	-	0	0
Miscellaneous	-	44	56	11	26
Total	382	178	206	85	105
Number of Injuries in Waterborne Transport					
Freight	-	14	8	10	9
Tankship	-	19	9	13	1
Passenger Vessel	-	10	10	51	49
Tug/Towboat	-	10	27	19	18
Offshore Supply	-	-	-	9	4
Fishing Vessel	-	13	28	31	40
State Numbered	-	-	-	2	11
MODU	-	-	-	13	1
Platform	-	-	-	9	0
Freight Barge	-	-	-	3	0
Tank Barge	-	+	-	3	1
Miscellaneous	-	39	98	12	38
Total	1,398	105	180	175	172
Number of Fatalities in Recreational Boating					
Inboard	-	119 ¹	100 ¹	50 ¹	30 ¹
Outboard	-	774	609	454	423
Inboard/Outboard	-	28	47	53	61
Jet	-	-	10	25	36
Sail	-	44	43	20	23
Manual (oars, paddle)	-	205	272	182	175
Other	-	29	14	5	10
Propulsion Unknown	-	219	265	76	58
Total	819 ¹	1,418	1,360	865	816

* Includes commercial port, marina and other employees; excludes employees of non-for-hire private businesses.

** Figures obtained by addition/subtraction and may not appear directly in data source.

+ Included in Tankship figure.

¹ Revenues paid by American travelers to U.S. and foreign flag carriers.

² Number of shipboard jobs on oceangoing commercial ships, 1,000 gross tons and over.

³ Casualties to commercial vessels under USCG jurisdiction.

⁴ Mobile Offshore Drilling Units.

Source: The following data references are listed on pp. 50, 51.

Source	Reference Number/Location
a	9) pp. 40, 42, 57, 64
b	22) p. 3
c	11) Appendix E, F, Table 1
d	34) personal communication
e	26) SIC 373 and SIC 44
f	34) personal communication
g	17) annual issues, Table 1
h	33) Table 6
i	19) p. 20 and personal communication
j	18) Part 5, Section 1, Table 1A/B
l	18) Part 5, Section 3, Table 18
m	20) personal communication

RAIL PROFILE
A. CLASS I RAILROADS (page 1 of 2)

	1960	1970	1980	1990	1992
I. FINANCIAL¹					
Operating Revenues, Class I Line-Haul Railroads (million dollars)					
Passenger	640 ^a	421 ^a	446 ^a	94 ^a	90 ^a
Freight	8,025	10,922	26,350	27,471	27,508
Other	849	649	1,462	805	751
Total	9,514	11,992	28,258	28,370	28,349
Operating Expenses, Class I Line-Haul Railroads ² (million dollars)	7,565	9,660	26,355	24,652	25,325
II. INVENTORY					
Number of Vehicles, Class I Railroads					
Freight Cars	1,658,292	1,423,921	1,168,114	658,902	605,189
Locomotives	29,031	27,077	28,094	18,835	18,004
Number of Companies, Class I Railroads	106	71	38	14	12
Number of Employees, Class I Railroads	780,494	566,282	458,994	216,424	197,421
Miles of Road Owned, Class I Railroads	217,552	206,265	164,822	119,758	113,056
III. PERFORMANCE					
Car Mileage, Class I Railroads (thousands)					
Freight	28,170,000	29,890,000	29,277,000	26,159,000	26,128,000
Train Mileage, Class I Railroads (thousands)					
Freight	404,464	427,065	428,498	379,582	390,241
Locomotive Mileage, Class I Railroads (thousands)					
Freight	421,900 ^b	1,278,200 ^b	1,319,010 ^b	1,144,559 ^b	1,149,635 ^b
Train and Yard Switching	-	-	212,040	135,806	128,413
Total	-	-	1,531,050	1,280,365	1,278,048
Revenue Ton-Miles Class I Railroads (millions)					
Freight	572,309 ^a	764,809 ^a	918,958 ^a	1,033,969 ^a	1,066,781 ^a
Average Length of Haul, Class I Railroads (miles)					
Freight	461	515	616	726	763

RAIL PROFILE
A. CLASS I RAILROADS (page 2 of 2)

	1960	1970	1980	1990	1992
Number of Fatalities, Railroads and Grade Crossings					
Passengers on Trains	34 ^f	10 ^f	4 ^c	3 ^d	3 ^d
Employees on Duty	215	179	97	40	34
Employees Not on Duty	-	-	4	0	1
Trespassers	637	607	566	700	646
Non-Trespassers	1,459	1,535	739	551	475
Contractor Employees	-	-	7	3	11
Total Railroad and Grade Crossing	2,345	2,225	1,417	1,297	1,170
Grade Crossing only	1,421	1,440	833	698	579
Railroad only*	924	785	584	599	591

* Figures may not appear directly in data source.

¹ Operating expenses include equipment, joint facility rents, leased roads and equipment, and all taxes except Federal income.

² Excludes Amtrak.

Source: The following data references are listed on pp. 50, 51.

<u>Source</u>	<u>Reference Number/Location</u>
a	4) pp. 3, 10, 12, 13, 14, 33, 34, 36, 40, 44, 48, 50, 56
b	5) Series 3, Series 14
c	32) personal communication
d	31) Tables 7 and 9

RAIL PROFILE B. AMTRAK

	1972	1980	1990	1992
I. FINANCIAL				
Operating Revenues (thousand dollars)				
Passenger	138,176 ^a	368,240 ^a	978,213 ^a	1,195,568 ^a
Other	162,580	85,273	330,187	129,228
Total	300,756	453,513	1,308,400	1,324,796
Operating Expenses (thousand dollars)	286,339	1,081,239	2,011,800 ^b	2,036,576
II. INVENTORY				
Number of Vehicles				
Passenger Train-Cars	1,569	2,128	1,983	1,962
Locomotives	185	419	318	336
Number of Employees	1,500 ^b	21,416 ^b	24,000 ^b	24,132 ^b
Average Line Milcage	-	23,940 ^c	24,000 ^c	24,610 ^c
III. PERFORMANCE				
Passenger Train-Car Miles (thousands)	213,261 ^d	235,200 ^d	300,855 ^d	307,254 ^d
Passenger Train Miles (thousands)	26,302	29,500	32,892	34,349
Passenger Locomotive Miles (thousands)	-	40,600	49,403	51,307
Revenue Passengers Carried (thousands)	16,644	20,800	22,126	21,354
Revenue Passenger-Miles (thousands)	3,038,603	4,503,200	6,040,768	6,074,568
Average Revenue per Passenger (dollars)	8.3 ^e	17.7 ^e	39.6 ^e	40.9 ^e
Average Revenue per Passenger-Mile (cents)	4.5	8.2	14.5	14.3
Average Trip per Passenger (miles)	182.6	217.0	272.5	284.5

Source: The following data references are listed on p. 50.

<u>Source</u>	<u>Reference</u> <u>Number/Location</u>
a	3) Annual Reports
b	3) Human Resources Information Center
c	3) Route Miles by Railroad, Corp. Planning & Development
d	3) Train Information System Reports
e	3) Train Earnings Reports

OIL PIPELINE PROFILE

	1960	1970	1980	1990	1992
I. FINANCIAL					
Operating Revenues (million dollars)					
FERC-regulated	770 ^a	1,188 ^a	6,340 ^a	7,045 ^a	7,158 ^a
Non-Regulated	128	208	1,208	1,342	1,363
Total	895	1,396	7,548	8,387	8,521
Operating Expenses (million dollars)					
FERC-regulated [#]	418 ^b	672 ^b	-	4,809 ^b	-
II. INVENTORY					
Number of FERC-regulated Companies	87 ^c	101 ^c	130 ^c	150 ^c	145 ^c
Number of Employees,					
Oil Pipeline Companies	23,100 ^d	15,017 ^d	21,300 ^d	18,500 ^d	19,000 ^d
Miles of Pipeline (statute miles) ¹					
Crude lines					
Trunk	67,200 ^b	75,143 ^b	71,568 ^b	65,507 ^b	-
Gathering	72,800	71,132	58,263	53,292	-
Product Lines	49,859	72,396	88,562	89,947	86,033 ^b
All Lines	190,944	218,671	218,393	208,752	199,023
III. PERFORMANCE					
Intercity Ton-Miles (millions)					
Crude Petroleum	189,500 ^e	366,800 ^e	362,600 ^e	334,800 ^e	324,400 ^e
Petroleum Products	43,500	64,200	225,600	249,300	247,000
Total	233,000	431,000	588,200	584,100	571,400
Tons Transported (millions)					
Crude Petroleum	328.4	457.2	416.1	415.8	-
Petroleum Products					
(delivered from lines)	140.0	333.1	544.7	641.6	-
Total	468.4	790.3	960.8	1,057.4	1,068.6
Average Length of Haul					
(statute miles)					
Crude Petroleum	325 ^f	300 ^f	871 ^f	805 ^f	794 ^f
Petroleum Products	269	357	414	389	374
Total Liquid Pipeline Fatalities	-	4 ^g	3 ^g	3 ^g	5 ^g

FERC Federal Energy Regulatory Commission. In 1960 and 1970, these were ICC-regulated companies.

[#] Figures represent balance after deducting net income from Operating Revenues, as reported by *Oil and Gas Journal*, November 1992.

¹ Regulated plus unregulated mileage of crude oil trunk and gathering lines, plus refined oil trunk lines.

Source: The following data references are listed on pp. 50, 51.

<u>Source</u>	<u>Reference Number/Location</u>
a	9) pp. 40, 53
b	16) personal communication
c	10) personal communication
d	26) SIC 46
e	9) p. 59
f	9) p. 71
g	39) personal communication

NATURAL GAS PIPELINE PROFILE (page 1 of 2)

	1960	1970	1980	1990	1992
I. FINANCIAL					
Transmission Pipeline Companies					
Total Operating Revenues (million dollars)	3,190 ^a	5,928 ^a	41,604 ^b	21,756 ^b	20,193 ^b
Operating Expenses (million dollars)					
Operation Expenses	2,031	4,094	36,075	16,429	14,295
Maintenance Expenses	64	109	405	629	639
Total Operation and Maintenance Expenses	2,095	4,203	36,480	17,058	14,934
Taxes					
Federal Taxes*	167	202	1,327	768	1,136
State and Local Taxes*	96	174	664	477	659
Total Taxes	263	376	1,991	1,245	1,795
Total Operating Expenses [†]	2,698	5,088	39,709	19,484	17,795
Distribution Pipeline Companies					
Total Operating Revenues (million dollars)	-	-	14,013 ^a	18,750 ^c	19,854 ^c
Operating Expenses (million dollars)					
Operation Expenses	-	-	11,539	14,020	14,370
Maintenance Expenses	-	-	252	524	581
Total Operation and Maintenance Expenses	-	-	11,791	14,544	14,951
Taxes					
Federal Taxes*	-	-	351	581	715
State and Local Taxes*	-	-	785	1,045	1,178
Total Taxes	-	-	1,136	1,625	1,892
Total Operating Expenses [†]	-	-	13,263	17,125	17,980
Integrated Pipeline Companies					
Total Operating Revenues (million dollars)	-	-	17,300 ^l	10,117 ^l	10,274 ^l
Operating Expenses (million dollars)					
Operation Expenses	-	-	14,870	7,525	7,606
Maintenance Expenses	-	-	285	302	333
Total Operation and Maintenance Expenses	-	-	15,155	7,827	7,939
Taxes					
Federal Taxes*	-	-	388	254	322
State and Local Taxes*	-	-	499	568	567
Total Taxes	-	-	887	823	889
Total Operating Expenses [†]	-	-	16,532	9,268	9,555
Combination Pipeline Companies					
Total Operating Revenues (million dollars)	-	-	13,001 ^m	15,404 ^m	15,968 ^m
Operating Expenses (million dollars)					
Operation Expenses	-	-	10,804	11,744	11,699
Maintenance Expenses	-	-	278	455	505
Total Operation and Maintenance Expenses	-	-	11,082	12,198	12,204
Taxes					
Federal Taxes*	-	-	261	433	502
State and Local Taxes*	-	-	572	830	942
Total Taxes	-	-	833	1,264	1,444
Total Operating Expenses [†]	-	-	12,285	14,260	14,606

NATURAL GAS PIPELINE PROFILE (page 2 of 2)

	1960	1970	1980	1990	1992
II. INVENTORY					
Transmission Pipeline Companies					
Number of Employees	31,400 ^d	32,400 ^d	45,200 ^d	37,400 ^c	45,500 ^e
Miles of Transmission Pipeline					
Steel Pipe	-	-	262,200 ^g	276,900 ^g	280,300 ^g
Plastic Pipe**	-	-	4,400	3,100	4,100
Other	-	-	300	100	100
Total	183,700 ^f	252,200 ^f	266,900	280,100	284,500
Distribution Pipeline Companies					
Number of Employees	-	-	52,100 ^d	64,700 ^c	66,000 ^e
Miles of Distribution Pipeline					
Steel Pipe	-	-	560,100 ^g	581,900 ^g	587,200 ^g
Plastic Pipe**	-	-	78,100	202,100	244,300
Other	-	-	61,900	52,600	51,800
Total	391,400 ^f	594,800 ^f	700,100	836,700	883,200
Integrated Pipeline Companies					
Number of Employees	-	-	53,200 ^d	39,900 ^e	35,000 ^e
Miles of Transmission Pipeline	-	-	-	-	-
Steel Pipe	-	-	-	-	-
Plastic Pipe**	-	-	-	-	-
Other	-	-	-	-	-
Total	-	-	-	-	-
Combination Pipeline Companies					
Number of Employees	-	-	52,200	50,100	49,600
Miles of Distribution Pipeline	-	-	-	-	-
Steel Pipe	-	-	-	-	-
Plastic Pipe**	-	-	-	-	-
Other	-	-	-	-	-
Total	-	-	-	-	-
Number of Interstate Natural Gas Pipeline Companies	87 ^h	89 ^h	91 ^h	132 ^h	126 ^a
III. PERFORMANCE					
Total Marketed Production (million cubic feet)	12,771,038 ⁱ	21,920,642 ⁱ	20,179,724 ⁱ	18,561,596 ⁱ	18,711,808 ⁱ
Total Delivered to Consumers (million cubic feet)	10,382,681 ^j	19,018,462 ^j	18,216,233 ^j	16,818,882 ^j	17,785,833 ^j
Total Consumed (million cubic feet)	11,966,537	21,139,386	19,877,293	18,715,090	19,544,364
Total Gas Used as a Pipeline Fuel (million cubic feet)	347,075	722,166	634,622	659,816	587,710
Total Gas Pipeline Fatalities	-	22 ^k	11 ^k	5 ^k	15 ^k

* Does not add due to omission of line from source table for depreciation and other non-cash expenses.

* Figures obtained by addition/subtraction and may not appear directly in data source.

** Includes fiberglass.

Source: The following data references are listed on pp. 50, 51.

Source	Reference Number/Location	Source	Reference Number/Location
a	1) Table 134	h	24) preface
b	1) Table 12-3	i	23) Tables 2, 13
c	1) Table 12-2	j	23) Tables 14, 16
d	1) Table 153	k	39) personal communication
e	1) Table 16-2,17-2	l	1) Table 12-4
f	1) Table 44	m	1) Table 12-5
g	1) Table 5-1	n	10) personal communication

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39. *Ibid.*, Office of Pipeline Safety, DPS-35.
40. *Ibid.*, *U.S. International Air Travel Statistics*, annual issues.

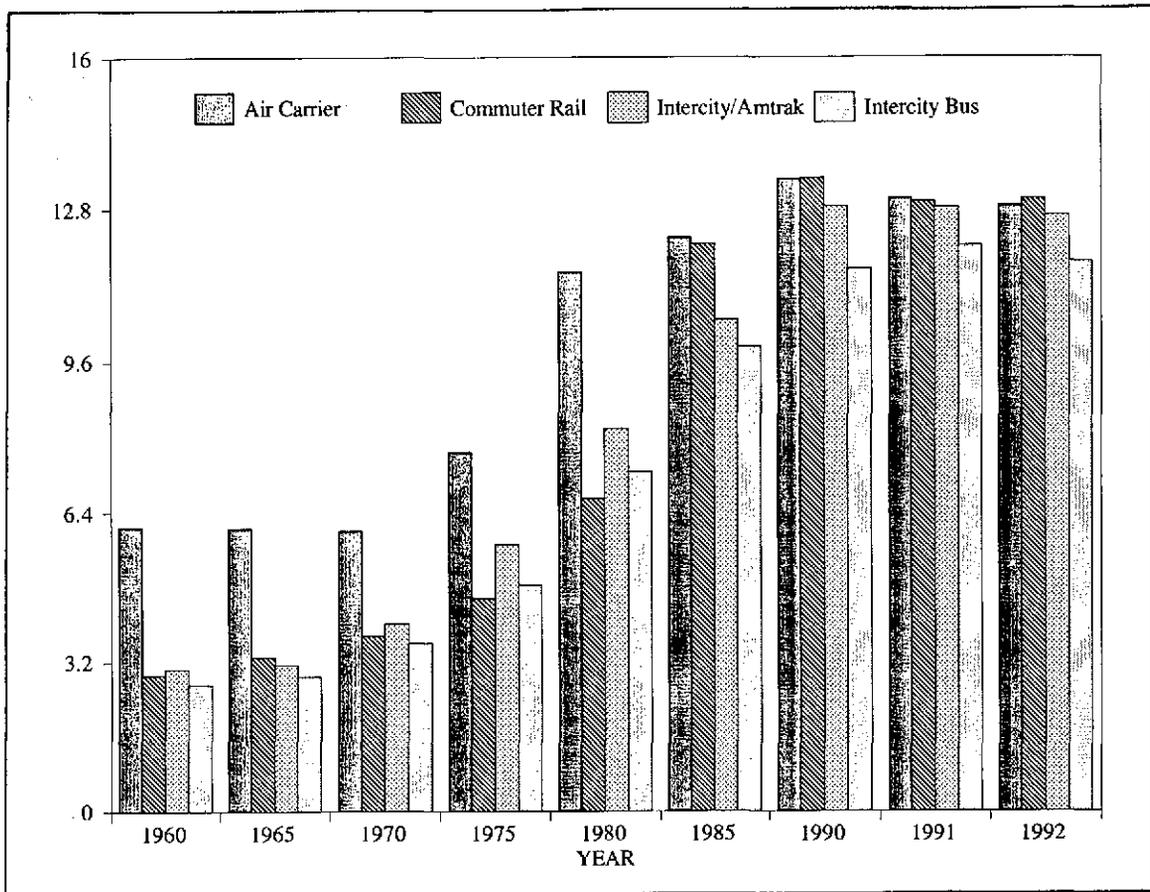


TRANSPORTATION TRENDS

Transportation Trends includes transportation statistics from 1960 through 1992/1993, using tables and graphs to indicate shifts in performance, inventory, safety, production and cost data.

Section I: Performance

This section includes basic transportation descriptors such as operating revenues and expenses, vehicle statistics, and passenger and freight data.



**Table 1. Average Passenger Revenue per Passenger-Mile,
(at 5-Year Intervals 1960-1990 and Annually 1991-1992)**
(cents)

Year	Air Carrier, certificated, domestic, scheduled service													
	Total		First Class		Coach Plus Economy		Commuter Rail		Intercity/ Amtrak ^a		Class I Bus, ^b Intercity		Consumer Price Index*	
	Avg.	Index	Avg.	Index	Avg.	Index	Avg.	Index	Avg.	Index	Avg.	Index	Avg.	Index
1960	6.09	53	7.06	49	5.01	44	2.92	44	3.03	37	2.71	37	29.6	36
1965	6.06	53	7.33	51	5.52	51	3.30	49	3.14	38	2.88	40	31.5	38
1970	6.00	52	8.31	58	5.46	50	3.75	56	4.02	49	3.60	50	38.8	47
1975	7.68	67	10.56	74	7.05	65	4.57	68	5.71	70	4.85	67	53.8	65
1980	11.49	100	14.29	100	10.82	100	6.70	100	8.18	100	7.26	100	82.4	100
1985	12.21	106	17.58	123	10.71	99	12.08	180	10.48	128	9.91	137	107.6	131
1990	13.43	117	22.16	155	12.46	115	13.45	201	12.85	157	11.55	159	130.7	159
1991	13.02	113	23.44	164	11.87	110	12.95	193	12.83	157	12.03	166	136.2	165
1992	12.85	112	26.50	185	11.08	102	13.01	194	12.67	155	11.70	161	140.3	170

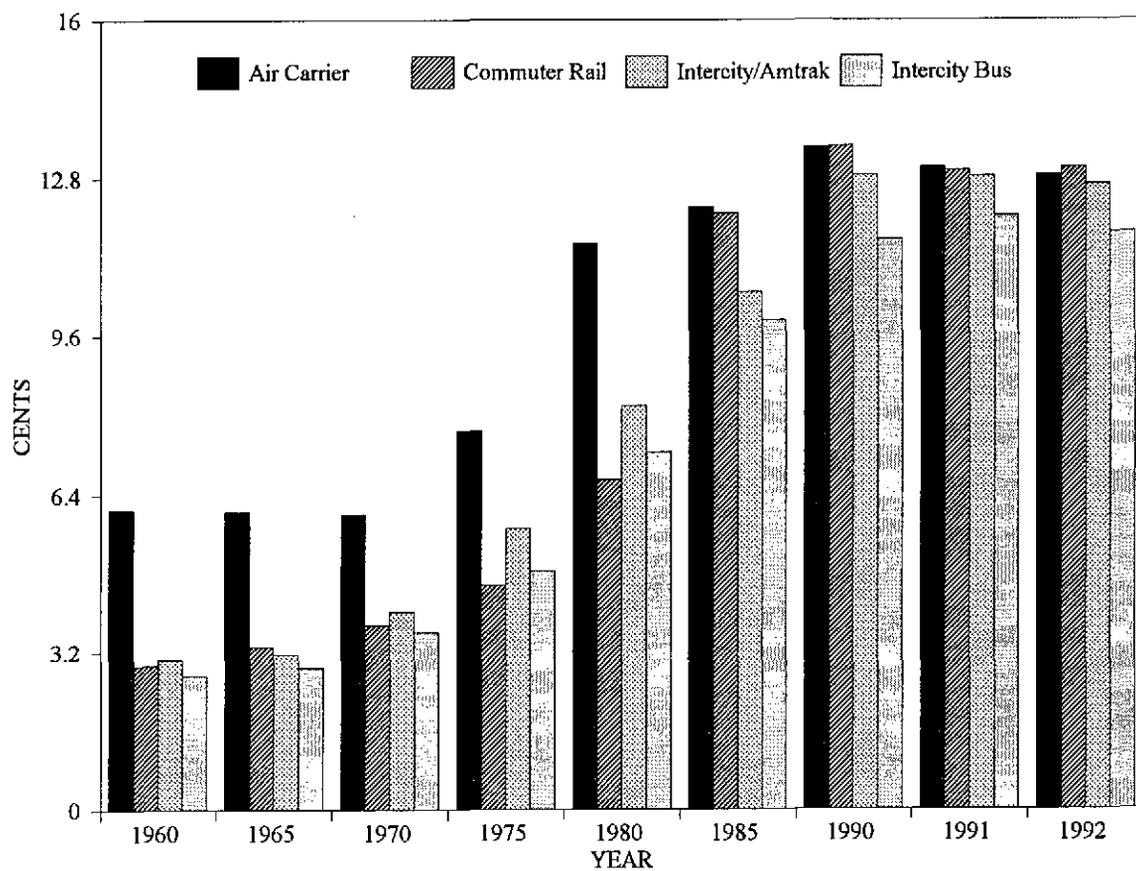
^a Amtrak, 1971-1992.

^b Regular route intercity service.

Index (1980 = 100)

* Index (1982-1984 = 100)

Source: See p. 242.



Source: See Table 1.

Figure 8. Average Passenger Revenue per Passenger-Mile, 1960-1992

**Table 2. Average Freight Revenue per Ton-Mile,
(at 5-Year Intervals 1960-1990 and Annually 1991-1992)**
(cents)

Year	Air Carrier, certificated, domestic, scheduled service		Class I Rail		Class I Intercity Motor Carriers of Property ^a		Oil Pipeline		Inland Waterway Carrier ^b		Producer Price Index*	
	Avg.	Index	Avg.	Index	Avg.	Index	Avg.	Index	Avg.	Index	Avg.	Index
1960	22.80	49	1.40	49	6.31	35	0.32	24	-	-	33	38
1965	20.46	44	1.27	44	6.46	36	0.28	21	0.35	45	34	39
1970	21.91	47	1.43	50	8.50	47	0.27	22	0.30	39	39	45
1975	28.22	61	2.04	71	11.60	64	0.37	28	0.52	67	58	66
1980	46.31	100	2.87	100	18.00	100	1.33	100	0.77	100	88	100
1985	48.77	105	3.04	106	22.90	127	1.57	118	0.80	104	105	119
1990	59.96	129	2.66	93	24.38	135	1.44	108	0.76	98	119	135
1991	64.81	139	2.59	90	24.82	138	1.40	106	0.78	101	122	138
1992	64.08	138	2.58	90	22.40	124	1.49	113	0.76	98	123	140

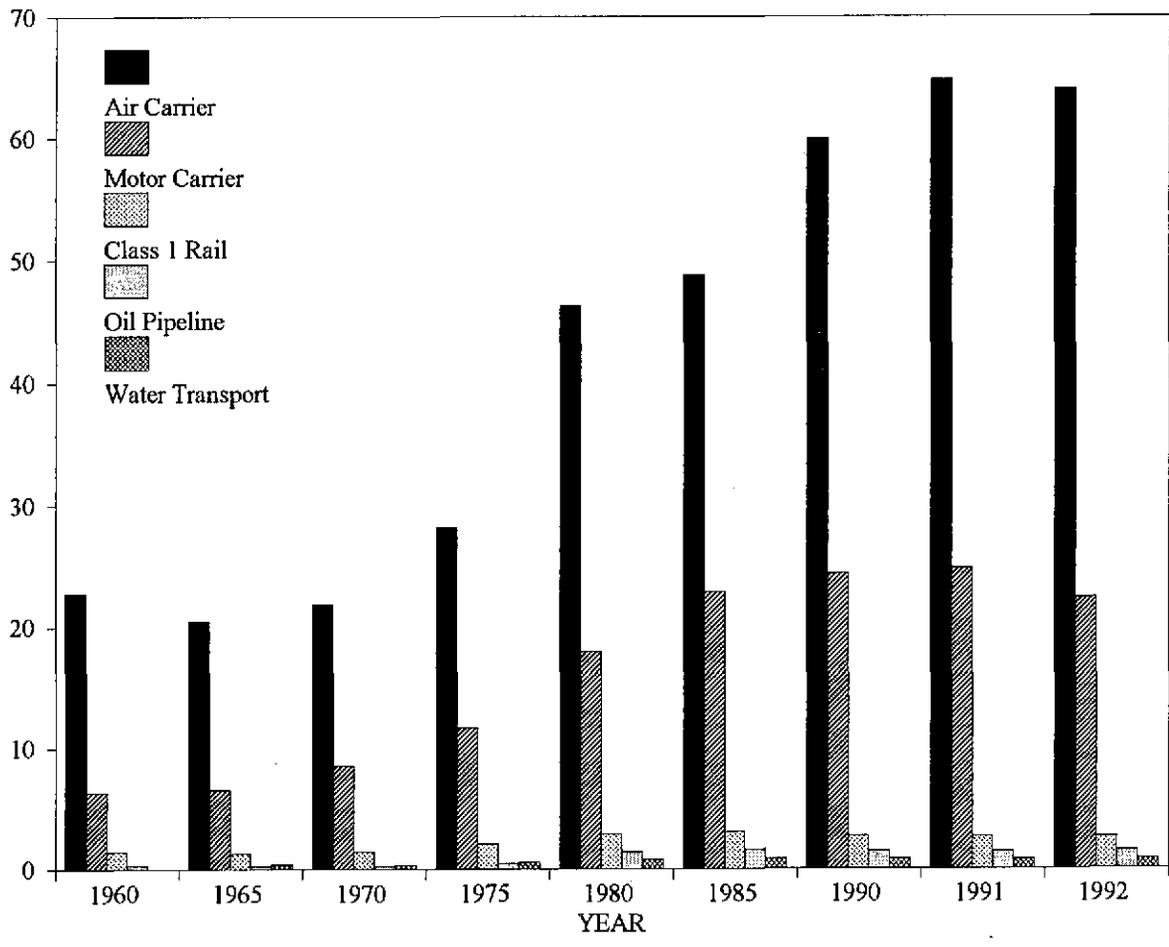
^a Intercity service excluding carriers of household goods.

^b Barge lines operating on Mississippi River and Tributaries.

* Index (1980 = 100)

* Index (1982-1984 = 100)

Source: See p. 242.



Source: See Table 2.

Figure 9. Average Freight Revenue per Ton-Mile, 1960-1992

**Table 3. Average Passenger Fare,
(at 5-Year Intervals 1960-1990 and Annually 1991-1992)
(dollars)**

Year	Air Carrier, certificated, domestic, scheduled service	Class 1 Bus, Intercity ^a	Transit, all modes ^b (unlinked)	Commuter Rail	Intercity/ Amtrak ^c
1960	34.12	2.46	0.14	0.64	4.22
1965	34.12	2.73	0.16	0.71	3.92
1970	40.65	3.81	0.22	0.84	3.19
1975	53.64	5.46	0.27	1.04	12.96
1980	84.55	10.57	0.30	1.41	17.72
1985	92.53	11.02	0.53	2.85	25.78
1990	107.86	20.18	0.67	2.90	39.96
1991	106.86	21.86	0.70	3.01	36.68
1992 ^p	103.60	-	0.73	3.09	41.11

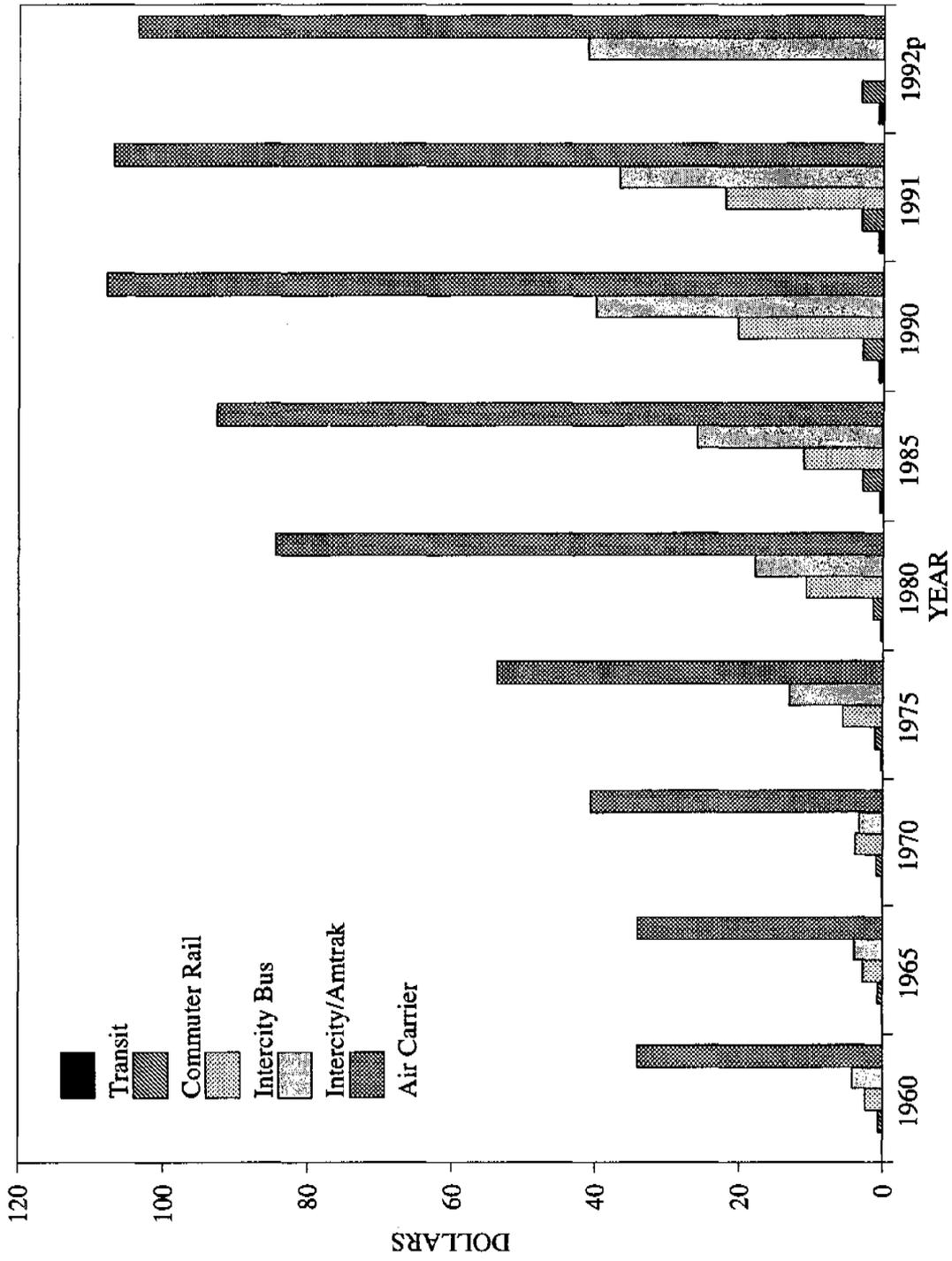
^p preliminary.

^a Regular route intercity service.

^b Prior to 1984, excludes commuter railroad, automated guideway, urban ferry boat, demand response and most rural and smaller systems.

^c Amtrak, 1971-1992.

Source: See p. 243.



Source: See Table 3.

Figure 10. Average Passenger Fare, 1960-1992

**Table 4. Total Operating Revenues,
(at 5-Year Intervals 1960-1990 and Annually 1991-1992)**
(million dollars)

Year	Air Carrier, certificated, domestic, all services	Class 1 Bus, Intercity	Oil Pipeline ^a			Gas Pipeline ^b						
			Transit ^c	Total	Regulated	Non- Regulated	Total	Transmission Companies	Distribution Companies	Integrated Companies	Combination Companies	
												Class 1 Intercity
1960	2,129	463	1,407	895	770	125	8,696	3,190	-	-	-	-
1965	4,958	607	1,444	1,051	904	147	11,525	4,088	-	-	-	-
1970	9,290	722	1,707	1,396	1,188	208	16,380	5,928	-	-	-	-
1975	15,356	955	3,451	2,220	1,874	346	30,550	11,898	5,938	6,962	5,753	5,753
1980	33,728	1,397	6,510	7,548	6,340	1,208	85,918	41,604	14,013	17,300	13,001	13,001
1985	37,629	1,233	12,195	8,910	7,484	1,426	103,945	45,738	21,510	17,396	19,301	19,301
1990	57,994	943	16,053	8,387	7,045	1,342	66,027	21,756	18,750	10,117	15,404	15,404
1991	56,165	981	16,810	8,101	6,805	1,296	63,922	19,818	17,812	11,047	15,245	15,245
1992	44,724	938	16,473	8,521	7,158	1,363	66,289	20,193	19,854	10,274	15,968	15,968

Year	Class 1 Intercity Motor Carriers of Property	Class 1 Rail	Intercity/Amtrak ^d	Water Transport		
				ICC-Regulated Carriers, Inland and Coastal	Maritime Carriers ^e	Class A Freight Forwarders
1960	2,218	9,514	637	1,010	524	438
1965	7,131	10,208	416	1,073	679	461
1970	11,137	11,922	248	502	833	600
1975	16,164	16,402	253	887	1,342	1,141
1980	30,338	28,258	454	991	2,340	1,056
1985	34,902	28,586	725	1,069	2,844	1,675
1990	46,710	28,370	1,308	1,071	2,324	3,970
1991	47,797	27,845	1,359	1,072	2,640	4,166
1992	51,072	28,349	1,325	1,100	2,700	3,381

^a Oil pipeline revenues are much smaller than those of gas pipeline because oil pipeline companies are common carriers and include transport costs only.

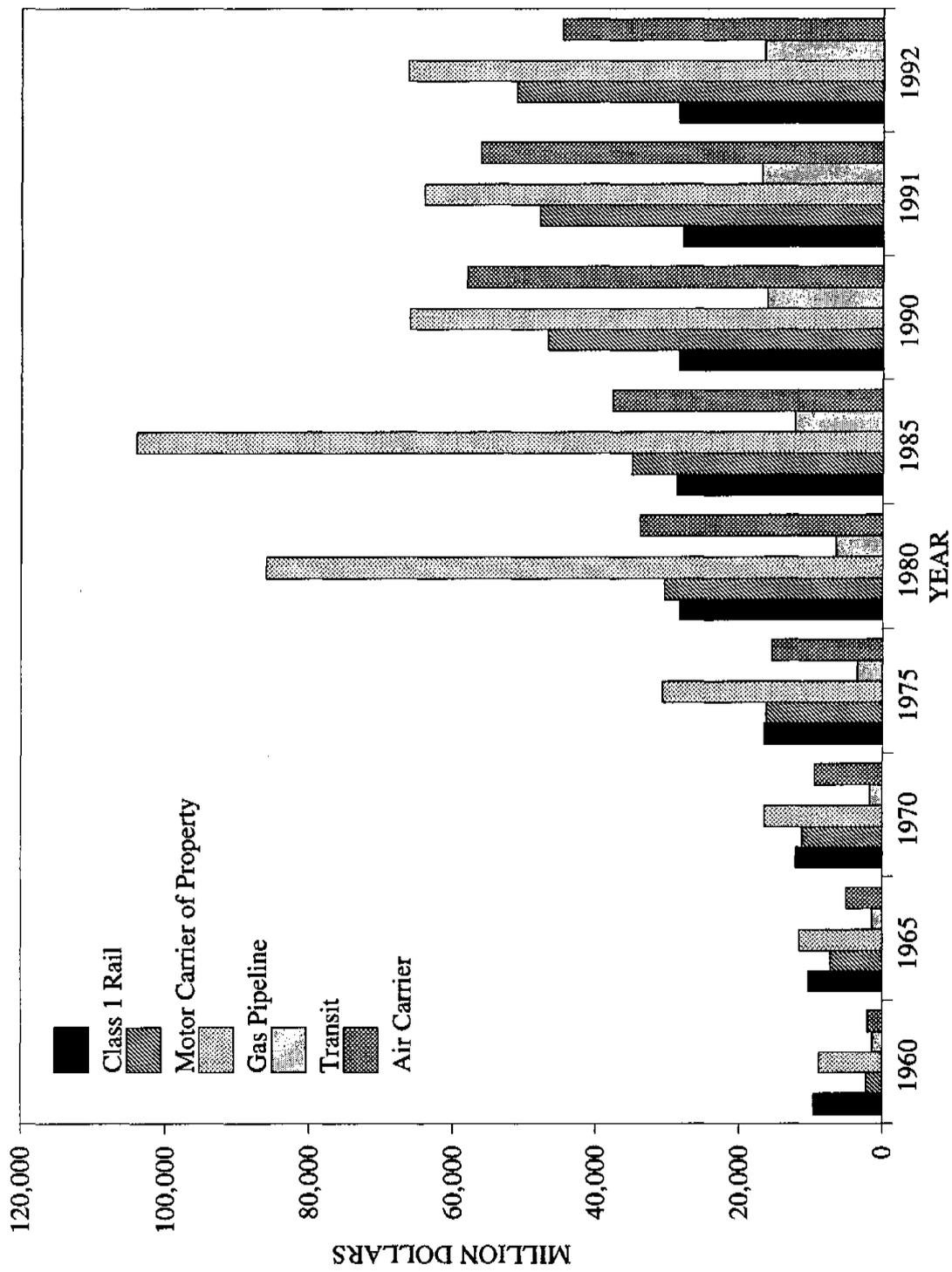
^b Data not directly comparable from year to year due to acquisition and mergers. Prior to 1975, pipeline companies are not broken down by distribution, integrated or combination. Total numbers for these companies are 1960=5,505; 1965=7,437; 1970=10,542

^c Excludes commuter rail, automated guideway, urban boat, demand response and most rural and smaller systems prior to 1984.

^d Amtrak, 1971-1992.

^e Figures include only those American flag carriers being subsidized by MARAD.

Source: See pp. 243, 244.



Source: See Table 4.

Figure 11. Total Operating Revenues, 1960-1992

**Table 5. Vehicle-Miles,
(at 5-Year Intervals 1960-1990 and Annually 1991-1992)
(millions)**

Year	Air Carrier, certificated, domestic, all services ^a	General Aviation	Highway							Transit ^b	Com- muter Rail	Class I Rail Freight ^d	Intercity/ Amtrak ^c
			Passenger Car & Taxi	Motor- cycle	Single- Unit Truck	Other Single- Unit Truck	Combi- nation Truck	Commer- cial Bus	School Bus				
1960	793	1,769	588,083	*	97,930	*	28,479	2,872	1,481	2,143	-	404	209
1965	1,134	2,562	709,300	*	141,159	*	32,497	2,921	1,763	2,008	-	421	172
1970	2,068	3,207	916,700	2,979	123,286	27,081	35,134	2,943	2,100	1,883	-	427	93
1975	1,948	3,939	1,033,950	5,629	200,700	34,606	46,724	2,755	2,500	1,990	173	403	30
1980	2,523	5,204	1,111,596	10,214	290,935	39,813	68,678	3,500	3,000	2,287	179	428	29
1985	3,046	4,817	1,260,565	9,086	373,072	46,980	79,600	3,483	3,400	2,791	183	347	30
1990	3,963	4,831	1,513,184	9,557	466,092	53,443	96,367	3,936	3,800	3,242	213	380	33
1991	3,854	4,510	1,533,552	9,178	472,848	53,787	96,642	4,015	4,300	3,306	215	375	34
1992	3,995	3,605	1,595,438	9,526	476,587	53,506	99,032	-	4,400	3,384	219	390	34

* 1960-1965, motorcycles included in passenger car and taxi figures, and other single-unit truck included in single-unit truck figures.

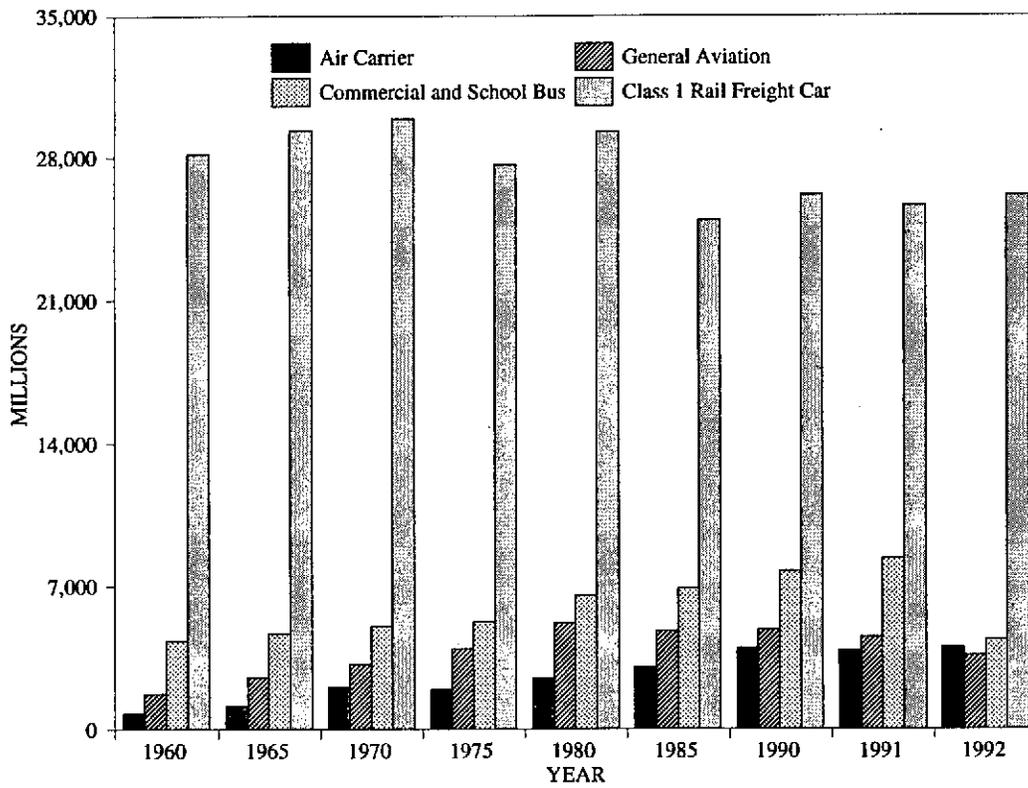
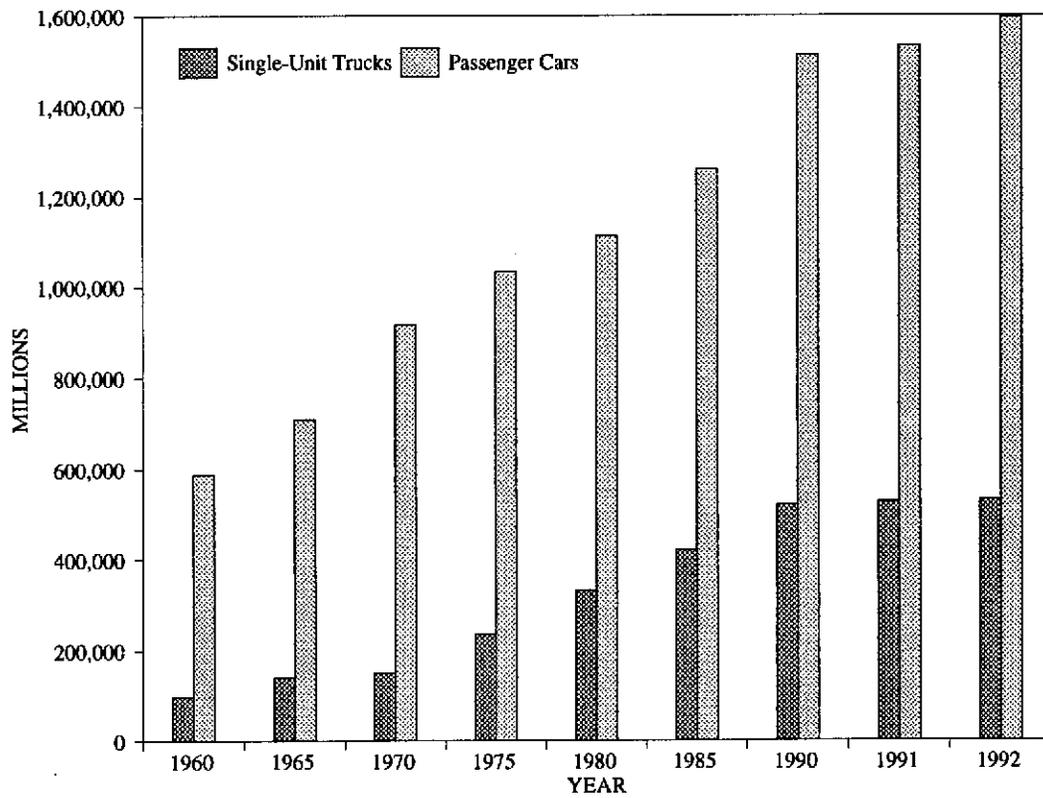
^a All operations other than those operating under 14 CFR 121 & 14 CFR 135.

^b Includes Commuter Rail.

^c Amtrak, 1971-1992.

^d Class I Rail Freight and Intercity/Amtrak figures are for train-miles.

Source: See p. 244.



Source: See Table 5.

Figure 12. Vehicle-Miles, 1960-1992

**Table 6. Passenger-Miles,
(at 5-Year Intervals 1960-1990 and Annually 1991-1992)
(millions)**

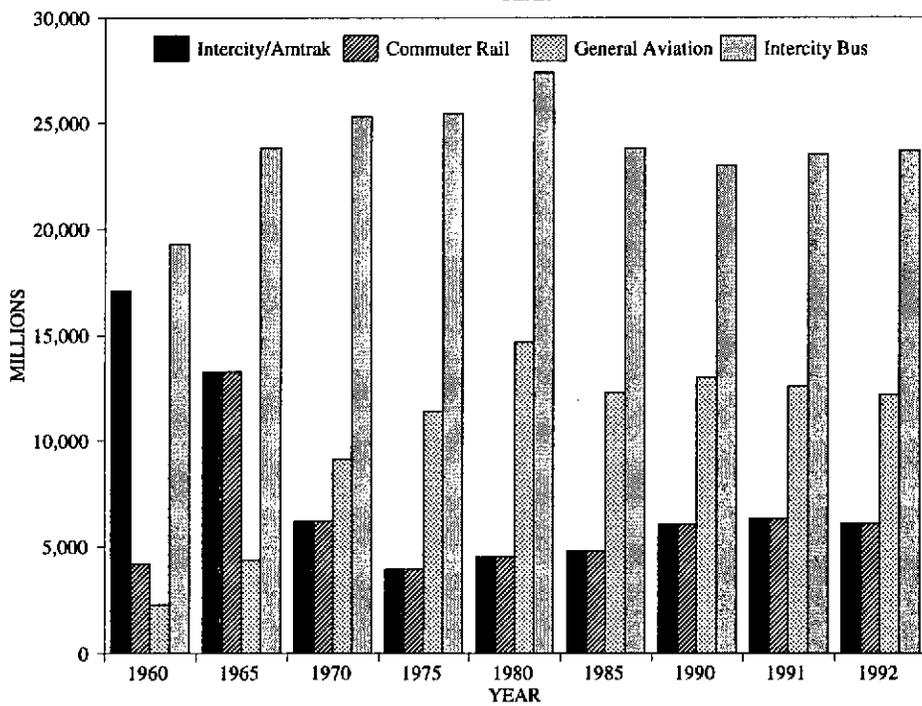
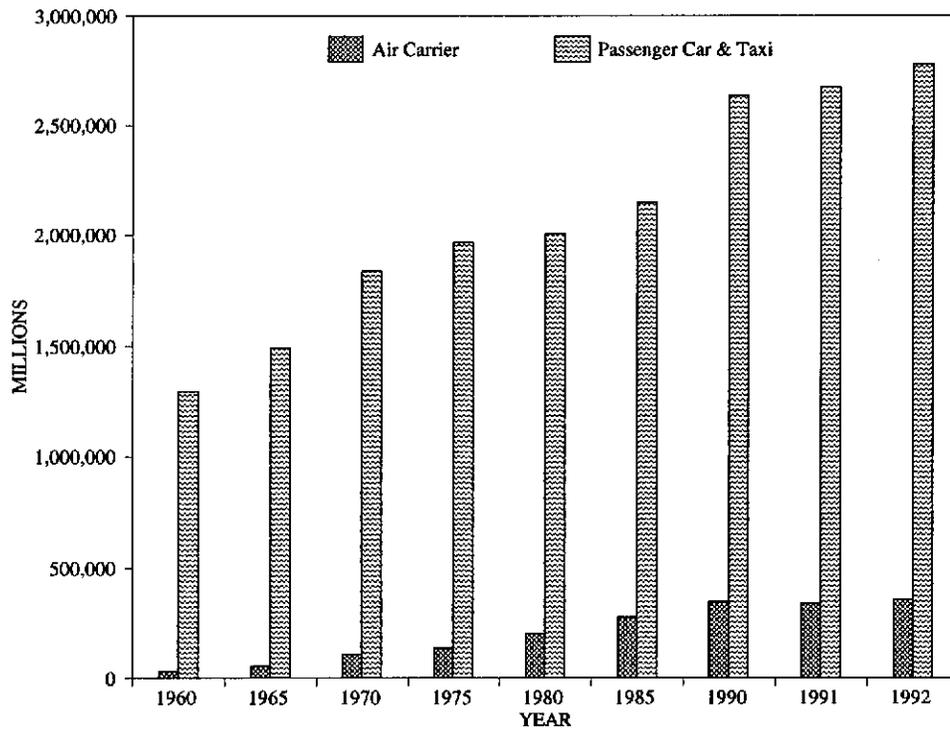
Year	Air Carrier, certificated, domestic, all services	General Aviation	Highway								Transit ^b	Commuter Rail	Intercity/ Amtrak ^c
			Passenger Car & Taxi	Motorcycle	Intercity Bus	School Bus	Single-Unit Trucks ^a	Other Single-Unit Trucks	Combi- nation Trucks				
1960	31,099	2,300	1,293,783	-	19,300	-	156,688	-	28,479	-	4,197	17,064	
1965	53,226	4,400	1,489,530	-	23,800	-	223,031	-	32,497	-	4,128	13,260	
1970	108,442	9,100	1,833,400	3,694	25,300	-	192,326	27,081	35,134	-	4,592	6,179	
1975	136,000	11,400	1,964,505	7,149	25,400	-	309,078	34,606	46,724	-	4,513	3,931	
1980	200,087	14,700	2,000,872	13,278	27,400	41,000	439,312	39,813	68,678	39,854	6,516	4,503	
1985	277,836	12,300	2,142,961	12,084	23,800	70,000	555,877	46,980	79,600	39,581	6,534	4,785	
1990	345,873	13,000	2,284,908	12,233	23,000	74,200	685,155	53,443	96,367	41,143	7,082	6,041	
1991	338,085	12,600	2,668,380	10,096	23,500	83,300	695,087	53,787	96,942	40,703	7,344	6,274	
1992	354,764	12,200	2,776,062	10,479	23,700	90,000	700,583	53,506	99,032	40,385	7,342	6,075	

^a 2-axle, 4-tire trucks.

^b Includes Commuter Rail.

^c Amtrak, 1971-1992.

Source: See pp. 244, 245.



Source: See Table 6.

Figure 13. Passenger-Miles, 1960-1992

**Table 7. Ton-Miles of Freight,
(at 5-Year Intervals 1960-1990 and Annually 1991-1993)
(millions)**

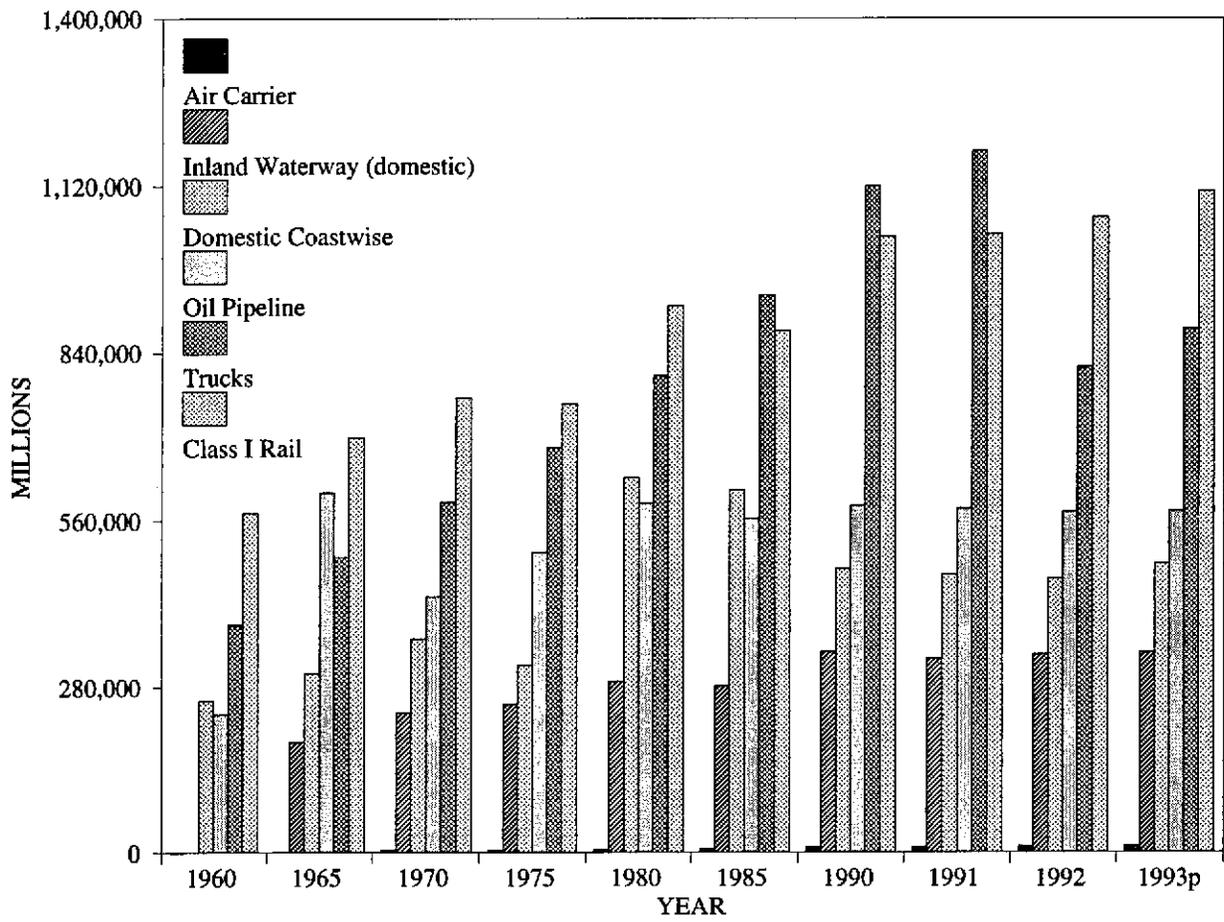
Year	Air Carrier, certificated, domestic, all services ^a	Oil Pipeline	Class I Rail	Trucks		Water Transport		
				Intercity	Local	Inland Waterways ^b	Inland Waterways (dom. only)	Domestic Coastwise
1960	600	233,000	572,309	285,000	100,250	210,000	-	256,000
1965	1,670	306,393	697,878	359,000	139,353	262,421	186,000	303,000
1970	3,010	431,100	764,809	412,000	178,017	318,560	235,000	360,000
1975	3,470	507,000	754,252	454,000	225,932	372,865	249,000	316,000
1980	4,528	588,000	918,958	555,000	246,406	410,240	289,000	631,000 ^c
1985	5,156	564,000	876,984	610,000	326,668	392,604	281,000	611,000
1990	9,064	584,000	1,033,969	735,000	384,687	460,000	339,000	479,000
1991	8,858	579,000	1,038,875	758,000	391,963	443,000	327,000	469,000
1992	9,820	573,000	1,066,781	815,000	-	454,000	335,000	462,000
1993 ^p	10,527	575,000	1,109,309	880,000	-	458,000	338,000	488,000

^a Includes revenue ton-miles of freight, U.S. and foreign mail, and express, as reported on U.S. DOT/RSPA/OAS Form 41.

^b Includes domestic and foreign U.S. traffic.

^c Reflects entrance of Alaska pipeline moving crude to U.S. refineries.

Source: See pp. 245, 246.



p preliminary.
 Source: See Table 7.

Figure 14. Ton-Miles of Freight, 1960-1993

**Table 8. Basic Intercity Mileage Within the Continental United States,
(at 5-Year Intervals 1960-1990 and Annually 1991-1992)**
(statute miles)

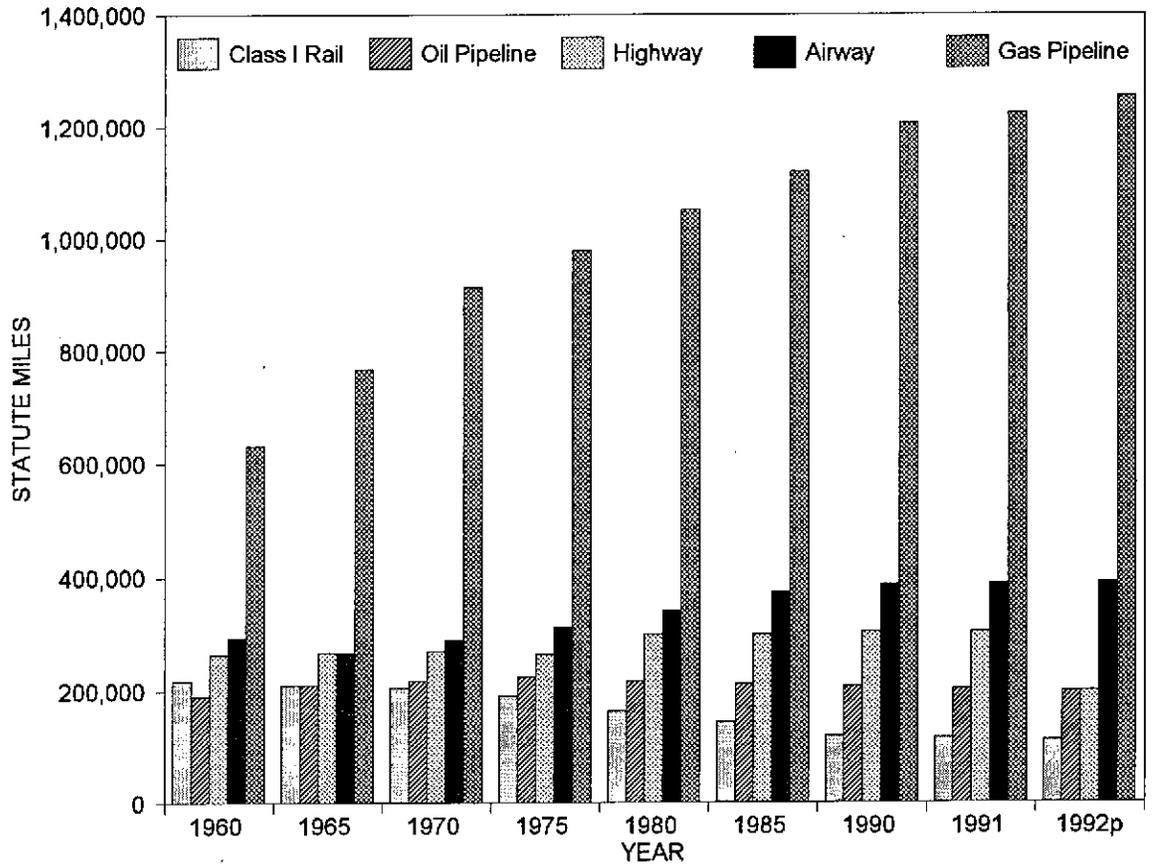
Year	Airway	Oil Pipeline ^a			Gas Pipeline					Class I Rail	Highway ^b	Inland Waterway
		Total	Crude Lines		Product Lines	Total	Distribu- tion Mains	Trans- mission Pipelines	Field and Gathering Lines			
			Trunk	Gathering								
1960	293,003	190,944	67,200	72,800	49,859	630,900	391,460	183,700	55,800	217,552	265,477	25,253
1965	268,275	210,867	72,383	77,041	61,443	767,500	494,500	211,300	61,700	211,925	268,898	25,380
1970	291,122	218,671	75,143	71,132	72,396	913,300	594,800	252,200	66,300	206,625	271,517	25,543
1975	313,178	225,889	77,210	68,469	80,210	979,300	648,200	262,600	68,500	191,520	265,905	25,543
1980	341,823	218,393	71,568	58,263	88,562	1,051,774	701,800	266,500	83,500	164,822	300,456	25,543
1985	373,891	213,605	66,076	51,736	95,793	1,118,875	753,391	271,162	94,322	145,764	301,006	25,777
1990	388,000	208,752	65,507	53,298	89,947	1,206,274	836,667	280,108	89,499	119,758	305,347	25,777
1991	390,000	203,828	65,920	49,940	87,968	1,225,270	857,417	281,591	86,262	116,626	305,226	25,777
1992 ^p	392,000	199,023	-	-	86,033	1,253,924	883,227	284,517	86,180	113,056	200,921	25,777

^p preliminary.

^a Includes petroleum and other liquid product lines, including gathering lines.

^b Federal-Aid primary roads only.

Source: See p. 246.



p preliminary.
 Source: See Table 8.

Figure 15. Basic Intercity Mileage Within the Continental United States, 1960-1992

**Table 10. Number of Vehicles,
(at 5-Year Intervals 1960-1990 and Annually 1991-1992)**

Year	Air Carrier, certified, all services	General Aviation	Motor-cycle	Passenger Car & Taxi (thousands)	Truck		Intercity Bus	School Bus*	Transit*					Com-muter Rail	
					Single-Unit	Combi-nation			Motor Bus	Heavy Rail	Light Rail	Trolley Bus	Demand Response		Other
1960	2,135	76,549	574,080	61,684	-	-	20,080	134,557	49,600	9,010	2,865	3,826	-	-	-
1965	-	95,442	1,381,956	75,261	14,008,000	787,000	20,600	159,227	49,600	9,115	1,549	1,453	-	-	-
1970	2,690	131,743	2,814,730	89,244	17,778,000	960,000	22,000	188,477	49,700	9,286	1,262	1,050	-	-	-
1975	2,540	168,475	4,966,399	106,706	24,644,700	1,131,000	20,500	232,820	50,811	9,608	1,061	703	-	-	-
1980	2,818	211,045	5,693,940	121,601	32,249,718	1,416,869	21,400	274,935	59,411	9,641	1,013	823	-	-	-
1985	3,100	210,654	5,444,404	131,864	37,792,895	1,403,266	20,200	326,677	64,258	9,326	717	676	14,490	867	4,500
1990	4,727	212,229	4,259,462	143,453	43,101,594	1,611,293	19,491	346,943	59,714	10,419	913	832	16,471	1,197	4,035
1991	4,580	198,474	4,177,365	142,956	43,332,778	1,603,510	19,296	352,208	60,377	10,331	1,095	752	17,879	1,496	4,370
1992	4,884	184,433	4,065,118	144,213	43,849,290	1,654,777	-	364,933	61,959	10,245	1,058	907	19,566	2,028	4,413

Year	Class I Rail				Amtrak			Water Transport					
	Freight Cars	Locomotives	Passenger Train-cars	Locomotives	Total Inland Water Vessels	Non-Self-Propelled Vessels		Self-Propelled Vessels		Towboats & Tugs	Ocean-going Steam and Motor Ships (1,000 gross tons & over)		
						Dry Cargo Barges & Scows	Tankers	Towboats & Tugs	Ocean-going Steam and Motor Ships (1,000 gross tons & over)				
1960	1,636,326	29,031	-	-	20,657	14,025	2,429	4,203	957				
1965	1,478,005	27,816	-	-	20,843	14,241	2,548	4,054	2,376				
1970	1,423,921	27,086	-	-	22,908	15,379	3,281	4,248	1,579				
1975	1,314,135	27,846	1,913	355	29,510	21,876	3,534	4,100	857				
1980	1,168,114	28,094	2,128	419	36,285	27,426	4,166	4,693	864				
1985	867,070	22,548	1,818	382	38,493	29,287	4,252	4,954	737				
1990	658,902	18,835	1,983	318	36,222	27,091	3,913	5,218	636				
1991	633,489	18,344	1,967	316	*	*	*	*	619				
1992	605,189	18,004	1,962	336	36,094	26,984	3,905	5,205	603				

* Prior to 1984, excludes most rural and smaller systems funded via Sections 18 and 16(b)(2), Urban Mass Transportation Act of 1964, as amended. Also prior to 1984, includes total vehicles owned and leased.

* Data for January 1, 1991 - June 30, 1991 included in 1990 figure.

* Consists primarily of publicly owned school buses.

Source: See pp. 2-46, 2-47.

**Table 11. Number of New Vehicles Purchased by Mode,
(at 5-Year Intervals 1960-1990 and Annually 1991-1992)**

Year	Air Carrier (all services) Fixed Wing	General Aviation	Passenger Car & Taxi ^a	Motor- cycle	Bicycle ^a	Truck (domestic)	Bus (including school bus)	Transit			
								Motor Bus ^b	Light Rail	Heavy Rail	Trolley Bus
1960	245	7,588	6,529,900	-	-	1,194,475	*	2,415	0	416	0
1965	233	11,852	9,101,000	-	-	1,716,564	35,241	3,000	0	580	0
1970	311	7,384	7,119,000	1,125,000	6,900,000	1,660,446	31,994	1,424	0	308	0
1975	314	14,043	7,053,000	990,000	7,300,000	2,231,630	40,530	5,261	0	127	1
1980	387	11,777	8,980,000	1,070,000	9,000,000	1,667,283	34,385	4,572	32	130	98
1985	278	2,457	11,039,000	1,260,000	11,400,000	3,356,905	33,533	3,367	63	441	0
1990	521	2,785	9,499,000	453,000	10,800,000	3,686,050	32,731	4,779	55	10	118
1991	589	2,867	8,388,000	429,000	11,600,000	3,351,364	24,058	4,722	17	6	149
1992	567	2,517	8,384,000	447,000	11,600,000	4,019,984	22,484	3,360 ^P	35 ^P	163 ^P	0 ^P

Year	Class I Rail		Amtrak		Water Transport		
	Commuter Rail	Freight Car ^c	Passenger Train-Car	Locomotive	Merchant Vessel	Gross Tonnage	Gross Tonnage
1960	214	57,047	-	-	20	319,991	319,991
1965	666	77,822	-	-	13	172,687	172,687
1970	302	66,185	-	-	13	342,000	342,000
1975	265	72,392	109	30	15	452,000	452,000
1980	152	85,920	109	17	23	693,200	693,200
1985	179	12,080	74	0	14	581,300	581,300
1990	83	32,063	129	14	0	0	0
1991	17	24,678	10	20	0	0	0
1992	110 ^P	25,761	0	0	0	0	0

^P preliminary.

* Included in Truck figure.

^a Includes domestic and imported vehicles.

^b Buses or bus-type vehicles only. Excludes most rural and smaller systems prior to 1984.

^c Includes all railroads and private car owners.

Source: See pp. 247, 248.

**Table 12. Number of U.S. Airports,
(at 5-Year Intervals 1980-1990 and Annually 1991-1993)**

Year	Public-Use Airports	Percent with Lighted Runways	Percent with Paved Runways	Private-Use Airports	Percent with Lighted Runways	Percent with Paved Runways	Airports with FAA Towers	Total Airports
1980	4,814	66.4	72.0	10,347	15.0	14.1	432	15,161
1985	5,858	-	-	10,461	-	-	399	16,319
1990	5,589	71.3	70.7	11,901	7.0	31.5	402	17,490
1991	5,551	71.9	71.5	12,030	6.8	32.0	400	17,581
1992	5,545	72.4	71.7	12,301	6.6	32.2	401	17,846
1993	5,538	72.8	72.2	12,779	6.3	32.8	403	18,317

Source: Compiled by Oak Ridge National Laboratory using unpublished data from the U.S. DOT/OST, Office of the Assistant Secretary for Public Affairs.

Table 13. Top 50 Airports*, Large Scheduled Certificated Air Carriers, 1992

Rank	Airport	Total Enplaned Passengers
1	Chicago, (O'Hare), IL	28,666,774
2	Dallas/Ft. Worth (Regional), TX	24,427,582
3	Atlanta, GA	19,659,882
4	Los Angeles, CA	18,304,696
5	San Francisco, CA	14,192,658
6	Denver, CO	13,426,038
7	Phoenix, AZ	10,713,112
8	Newark, NJ	10,442,112
9	St. Louis, MO	10,299,655
10	Detroit, MI	10,124,448
11	Minneapolis/St. Paul, MN	9,640,278
12	New York (La Guardia), NY	9,206,582
13	Boston, MA	9,087,607
14	Miami, FL	8,980,826
15	Honolulu, Oahu, HI	8,740,091
16	Pittsburgh, PA	8,557,030
17	Orlando, FL	8,535,628
18	Las Vegas, NV	8,435,624
19	Seattle-Tacoma, WA	8,355,011
20	New York (John F. Kennedy), NY	8,347,648
21	Houston, (Intercontinental), TX	8,308,479
22	Charlotte, NC	8,220,185
23	Philadelphia, PA	6,827,030
24	Washington (National), DC	6,825,376
25	Salt Lake City, UT	5,703,273
26	San Diego, CA	5,631,471
27	Cincinnati, OH	4,903,127
28	Washington (Dulles Int'l), DC	4,464,895
29	Nashville, TN	4,461,221
30	Tampa, FL	4,378,851
31	Raleigh/Durham, NC	4,376,097
32	Houston (William P. Hobby), TX	4,001,769
33	San Juan, PR	3,948,210
34	Cleveland, OH	3,740,901
35	Baltimore, MD	3,614,491
36	Portland, OR	3,500,423
37	Kansas City, MO	3,482,243
38	Ft. Lauderdale, FL	3,437,643
39	Memphis, TN	3,329,210
40	New Orleans, LA	3,231,972
41	San Jose, CA	3,091,997
42	Oakland, CA	3,009,394
43	Ontario, CA	2,965,837
44	Dallas (Love Field), TX	2,942,967
45	Indianapolis, IN	2,803,504
46	San Antonio, TX	2,638,589
47	Orange County, CA	2,637,841
48	Albuquerque, NM	2,506,884
49	Sacramento, CA	2,485,878
50	West Palm Beach, FL	2,366,819

* Rank order by total enplaned passengers.

Source: U.S. DOT/FAA, *FAA Statistical Handbook of Aviation*, 1992, Table 4.11.

**Table 14. Passengers Denied Boarding by Major and National U. S. Airlines, 1986-1993
(thousands)**

Year	Voluntary	Involuntary	Total Passengers Denied Boarding
1986	557	167	724
1987	705	169	874
1988	648	128	776
1989	616	107	723
1990	561	67	628
1991	599	47	646
1992	718	46	764
1993	632	51	683

Source: Compiled by Oak Ridge National Laboratory from U.S. DOT/Office of Consumer Affairs, *Air Travel Consumer Report*, 1994.

Table 15. Flight Operations Arriving On-Time for All Major Air Carriers, 1988-1993

Year	Percent On-Time Flight Operations
1988	80.0
1989	76.3
1990	79.4
1991	82.5
1992	82.3
1993	81.6

Source: Compiled by Oak Ridge National Laboratory from U.S. DOT/Office of Consumer Affairs, *Air Travel Consumer Report*, 1994.

Table 16. Air Travel Arrivals Between the United States and Foreign Countries, (at 5-Year Intervals 1975-1990 and Annually 1991-1993) (thousands)

	1975	1980	1985	1990	1991	1992	1993
Total Passengers	12,646	20,262	24,156	36,414	35,464	38,927	41,558
Flag of Carrier:							
United States	6,502	10,031	11,798	19,145	18,910	20,537	21,940
Foreign	6,144	10,231	12,357	17,269	16,554	18,390	19,618
Country of embarkation ^a							
Australia	106	227	277	495	561	598	591
Bahama Islands	758	1,123	1,503	1,679	1,436	1,341	1,370
Barbados	76	135	216	228	197	191	208
Belgium	144	242	281	417	366	357	408
Bermuda	398	497	434	487	430	405	436
Brazil	212	300	352	584	635	645	711
Canada*	-	-	-	6,870	6,263	6,546	6,760
China/Taiwan	50	113	206	325	404	447	606
Colombia	173	315	279	286	305	343	389
Denmark	222	267	241	313	279	295	285
Dominican Republic	336	468	606	948	849	951	1,027
France	512	689	955	1,777	1,600	1,926	1,877
Germany	622	1,175	1,582	2,466	2,444	2,797	2,922
Grand Cayman	25	121	173	273	256	229	185
Greece	121	208	187	132	83	146	165
Haiti	91	133	192	233	217	154	200
Hong Kong	98	228	270	356	397	437	511
Ireland	220	220	274	448	418	569	582
Israel	84	189	294	204	202	231	293
Italy	431	537	662	792	716	885	903
Jamaica	457	429	707	975	907	888	982
Japan	1,095	1,624	2,435	4,528	4,510	4,972	4,999
Korea, South	105	234	390	826	827	971	1,070
Mexico	1,626	2,886	2,719	4,313	4,467	4,625	4,778
Netherlands	312	427	583	837	892	1,039	1,297
Netherlands, Antilles	213	327	407	388	353	290	360
Panama Republic	97	150	180	153	175	177	201
Philippines	108	194	145	246	261	315	318
Spain	306	312	419	558	520	659	600
Switzerland	236	312	452	616	525	549	603
United Kingdom	1,549	2,973	3,460	5,166	4,793	5,651	6,006
Venezuela	205	533	248	458	510	576	653

Covers passengers on international commercial flights arriving at U.S. airports. Excludes traffic between U.S. and Canada, border crossers, crewmen, and military personnel. Travelers between U.S. ports in the 50 States, Puerto Rico, Guam, or the Virgin Islands, and any other outlying area are included. Data compiled from flight reports of U.S. Immigration and Naturalization Service.

^a Country where passenger boarded/dboarded a direct flight to/from the U.S.

* Canadian figures are estimates based on total scheduled commercial and charter flight passengers divided by two (assuming passenger flow is equal in both directions, arrivals and departures).

Note: Sum of components may not equal total due to independent rounding.

Source: U.S. DOT/RSPA/Volpe National Transportation Systems Center, *U.S. International Air Travel Statistics*, annual issues Tables Ia/Ia. Canada: Statistics Canada, "Air Carrier Traffic at Canadian Airports", annual issues.

Table 17. Air Travel Departures Between the United States and Foreign Countries, (at 5-Year Intervals 1975-1990 and Annually 1991-1993) (thousands)

	1975	1980	1985	1990	1991	1992	1993
Total Passengers	12,053	19,256	22,487	34,046	33,286	36,211	38,254
Flag of Carrier:							
United States	5,912	9,369	10,696	17,628	17,530	18,858	20,232
Foreign	6,141	9,886	11,791	16,418	15,756	17,353	18,022
Country of debarkation ^a							
Australia	103	245	232	540	581	609	588
Bahama Islands	704	1,006	1,151	1,279	1,128	1,005	1,046
Barbados	74	126	204	230	199	185	207
Belgium	134	231	249	395	318	355	372
Bermuda	372	467	389	277	237	217	247
Brazil	206	291	322	560	592	659	696
Canada	-	-	-	6,870	6,263	6,546	6,760
China/Taiwan	41	90	187	337	447	481	616
Colombia	171	299	294	277	294	324	353
Denmark	188	254	254	307	239	266	272
Dominican Republic	322	443	528	896	780	881	949
France	470	635	894	1,626	1,523	1,769	1,759
Germany	649	1,178	1,539	2,339	2,298	2,627	2,788
Grand Cayman	26	112	161	250	238	196	244
Greece	123	190	210	129	88	150	150
Haiti	81	124	169	201	178	139	180
Hong Kong	59	152	238	310	369	474	477
Ireland	163	212	233	311	263	316	324
Israel	105	186	255	259	249	294	317
Italy	409	495	660	731	694	873	878
Jamaica	416	382	607	888	821	796	887
Japan	1,183	1,602	2,255	4,471	4,431	4,795	4,757
Korea, South	60	186	333	723	759	887	961
Mexico	1,525	2,886	2,671	4,136	4,230	4,307	4,371
Netherlands	304	409	562	777	881	965	1,150
Netherlands, Antilles	184	282	395	377	341	309	347
Panama Republic	100	142	209	183	189	186	194
Philippines	81	160	165	195	194	241	249
Spain	260	273	397	540	513	637	576
Switzerland	224	306	434	600	527	543	593
United Kingdom	1,446	2,840	3,322	4,903	4,594	5,245	5,682
Venezuela	198	518	245	444	488	565	641

Covers passengers on international commercial flights departing at U.S. airports. Excludes traffic between U.S. and Canada, border crossers, crewmen, and military personnel. Travelers between U.S. ports in the 50 States, Puerto Rico, Guam, or the Virgin Islands, and any other outlying area are included. Data compiled from flight reports of U.S. Immigration and Naturalization Service.

^a Country where passenger boarded/deboarded a direct flight to/from the U.S.

* Canadian figures are estimates based on total scheduled commercial and charter flight passengers divided by two (assuming passenger flow is equal in both directions, arrivals and departures).

Note: Sum of components may not equal total due to independent rounding.

Source: U.S. DOT/RSPA/Volpe National Transportation Systems Center, *U.S. International Air Travel Statistics*, annual issues, Tables Id/Id. Canada: Statistics Canada, *"Air Carrier Traffic at Canadian Airports"*, annual issues.

**Table 18. U.S. Automobiles in Fleets by Type of Use,
(at 5-Year Intervals 1965-1990 and Annually 1991-1993)
(thousands)**

Year	Use							Total (Cars in fleets of 10 or more ^c)	(Cars in fleets of 4 or more)
	Business Fleets ^a	Individually Leased	Government ^b	Utilities	Police	Taxi	Daily Rental		
1965	716	323	880	366	158	136	139	-	8,535
1970	2,529	803	674	416	207	171	314	5,114	9,992
1975	2,934	1,072	715	497	278	193	354	6,043	10,398
1980	3,279	1,708	752	532	288	205	500	7,264	10,433
1985	3,484	1,800	643	540	233	140	760	7,600	10,508
1990	3,823	2,020	653 ^d	551	249	141	990	8,427	10,607
1991	3,446	2,008	619 ^d	544	250	141	1,160	8,168	10,514
1992	3,460	2,126	n/a	548	264	140	1,447	7,985	10,468
1993 ^e	2,607	2,400	n/a	386	264	140	1,501	7,298	10,359

^f preliminary.

^a Includes driver schools.

^b Data from *Automotive Fleet Fact Book* does not include all Federal Government fleet vehicles. Federal fleet data are added from *Federal Motor Vehicle Fleet Report*, General Services Administration, Table 1 (all agencies -- domestic sedans and station wagons).

^c Totals do not include government fleets.

Source: Bobit Publishing Company, *Automotive Fleet Fact Book*, 1994.

**Table 19. Total Road and Street Mileage in the United States by Type of Surface,
(at 5-Year Intervals 1960-1990 and Annually 1991-1992)
(millions)**

Year	Nonsurfaced Mileage	Soil Surfaced, Gravel, & Stone	Paved
1960	0.989	1.327	1.230
1965	0.914	1.321	1.454
1970	0.784	1.288	1.658
1975	0.737	1.245	1.855
1980	0.604	1.255	2.005
1985	0.382	1.371	2.109
1990	0.362	1.259	2.259
1991	0.330	1.286	2.274
1992	0.350	1.256	2.295

Source: Compiled by Oak Ridge National Laboratory from U.S. DOT/FHWA,
Highway Statistics, Summary to 1985 and *Highway Statistics*, annual issues.

**Table 20. Highway Vehicle-Miles Traveled vs. Lane Miles by Functional Class (Rural)
(at 5-Year Intervals 1985-1990 and Annually 1991-1992)**

Year	Interstate Rural		Other Arterial Rural		Other Rural		All Rural	
	VMT (millions)	Lane Miles	VMT (millions)	Lane Miles	VMT (millions)	Lane Miles	VMT (millions)	Lane Miles
1985	154,275	131,808	282,595	509,832	206,526	1,465,311	643,396	2,106,951
1990	200,573	135,858	331,226	517,222	241,764	1,464,508	773,563	2,117,588
1991	205,011	136,477	334,755	517,965	245,630	1,465,903	785,396	2,120,345
1992	204,960	133,876	342,876	526,413	236,271	1,432,564	784,107	2,092,534

**Table 21. Highway Vehicle-Miles Traveled vs. Lane Miles by Functional Class (Urban)
(at 5-Year Intervals 1985-1990 and Annually 1991-1992)**

Year	Interstate Urban		Other Arterial Urban		Other Urban		All Urban	
	VMT (millions)	Lane Miles	VMT (millions)	Lane Miles	VMT (millions)	Lane Miles	VMT (millions)	Lane Miles
1985	216,160	57,327	578,170	534,005	89,552	162,203	883,882	591,332
1990	278,404	62,306	698,154	564,410	103,756	167,218	1,080,314	626,716
1991	285,325	62,936	707,518	565,828	107,281	164,752	1,100,124	628,764
1992	302,091	67,135	742,661	591,262	115,631	175,602	1,160,383	658,397

Note: Local VMT and local lane miles are not included.
Source: Compiled by Oak Ridge National Laboratory from U.S. DOT/FHWA, *Highway Statistics 1992*, pp. 198, 208, 209.

**Table 22. Total Traffic Delay Hours for 50 Cities, 1986-1990
(thousands)**

City	1986	1987	1988	1989	1990
1. Albuquerque, NM	15	15	15	20	20
2. Atlanta, GA	225	240	225	230	235
3. Austin, TX	50	45	45	45	45
4. Baltimore, MD	95	100	105	120	125
5. Boston, MA	285	270	370	350	335
6. Charlotte, NC	25	25	30	30	35
7. Chicago, IL	480	470	470	495	530
8. Cincinnati, OH	250	30	40	40	40
9. Cleveland, OH	35	40	45	45	50
10. Columbus, OH	30	35	35	40	40
11. Corpus Christie, TX	5	5	5	5	5
12. Dallas, TX	260	235	240	240	260
13. Denver, CO	110	110	115	120	135
14. Detroit, MI	340	345	350	360	360
15. El Paso, TX	10	10	10	10	10
16. Fort Worth, TX	95	90	90	90	95
17. Ft. Lauderdale, FL	65	65	70	65	70
18. Hartford, CT	20	20	30	35	30
19. Honolulu, HI	45	45	50	55	55
20. Houston, TX	370	355	365	375	385
21. Indianapolis, IN	10	10	15	15	15
22. Jacksonville, FL	40	45	45	55	55
23. Kansas City, MO	20	20	25	25	30
24. Los Angeles, CA	1,645	1,715	1,685	1,750	1,780
25. Louisville, KY	20	20	20	20	20
26. Memphis, TN	15	15	20	20	20
27. Miami, FL	150	170	200	220	230
28. Milwaukee, WI	35	40	45	45	45
29. Minneapolis - St. Paul, MN	70	95	95	95	105
30. Nashville, TN	30	35	40	40	40
31. New York, NY	1,190	1,265	1,370	1,515	1,510
32. New Orleans, LA	65	65	70	70	70
33. Norfolk, VA	60	70	70	75	75
34. Oklahoma, OK	20	20	25	20	20
35. Orlando, FL	60	60	60	70	70
36. Philadelphia, PA	250	270	275	270	275
37. Phoenix, AZ	145	145	185	180	180
38. Pittsburgh, PA	95	100	115	115	120
39. Portland, OR	50	60	70	75	80
40. Sacramento, CA	40	55	70	80	80
41. Salt Lake City, UT	10	15	15	15	15
42. San Bernadino, CA	185	190	215	230	235
43. San Diego, CA	95	125	145	155	155
44. San Antonio, TX	65	65	60	60	60
45. San Jose, CA	195	210	215	225	225
46. San Francisco, CA	540	615	625	650	645
47. Seattle - Everett, WA	175	210	235	255	260
48. St. Louis, MO	115	120	105	140	135
49. Tampa, FL	35	40	45	45	50
50. Washington, DC	440	475	495	540	555

Source: Compiled by Oak Ridge National Laboratory from Texas Transportation Institute, *Estimates of Urban Roadway Congestion - 1990*, Research Report 1131-5, March 1993.

**Table 23. Total Delay Hours by Highway Type for 50 Urban Areas in 1990
(thousands)**

Urban Area	Freeway/Expressway		Principal Arterial	
	Recurring	Incident	Recurring	Incident
1. Albuquerque, NM	2.9	3.2	7.0	7.7
2. Atlanta, GA	73.8	81.2	37.6	41.3
3. Austin, TX	17.9	19.6	4.7	5.2
4. Baltimore, MD	25.2	57.9	20.9	23.0
5. Boston, MA	61.4	214.8	29.0	31.9
6. Charlotte, NC	4.8	3.8	12.1	13.3
7. Chicago, IL	143.1	171.7	101.9	112.1
8. Cincinnati, OH	17.9	14.3	4.7	5.2
9. Cleveland, OH	17.7	12.4	8.6	9.5
10. Columbus, OH	14.0	9.8	7.9	8.7
11. Corpus Christie, TX	0.7	0.8	0.6	0.7
12. Dallas, TX	83.3	149.9	11.6	12.8
13. Denver, CO	36.2	36.2	30.0	33.0
14. Detroit, MI	59.3	130.6	81.3	89.4
15. El Paso, TX	3.6	3.9	0.9	1.0
16. Fort Worth, TX	30.3	54.5	5.9	6.5
17. Ft. Lauderdale, FL	9.2	13.8	22.8	25.0
18. Hartford, CT	4.6	12.3	6.5	7.1
19. Honolulu, HI	14.9	26.7	5.5	6.1
20. Houston, TX	134.8	188.7	28.5	31.3
21. Indianapolis, IN	4.1	6.1	3.4	3.8
22. Jacksonville, FL	8.9	13.4	15.9	17.5
23. Kansas City, MO	3.2	10.0	7.1	7.8
24. Los Angeles, CA	601.8	722.1	217.3	239.0
25. Louisville, KY	1.8	1.9	8.1	8.9
26. Memphis, TN	2.0	2.2	7.8	8.6
27. Miami, FL	32.6	488.9	71.1	78.2
28. Milwaukee, WI	14.2	14.2	8.6	9.4
29. Minneapolis - St. Paul, MN	34.5	31.0	17.7	19.5
30. Nashville, TN	6.3	6.9	13.1	14.4
31. New York, NY	287.5	718.8	239.3	263.2
32. New Orleans, LA	16.0	28.8	11.4	12.6
33. Norfolk, VA	16.6	41.5	7.9	8.7
34. Oklahoma, OK	3.4	3.8	6.7	7.4
35. Orlando, FL	12.5	18.7	19.4	21.3
36. Philadelphia, PA	25.8	54.3	93.2	102.5
37. Phoenix, AZ	29.4	11.8	64.9	71.4
38. Pittsburgh, PA	10.6	30.7	37.0	40.7
39. Portland, OR	17.2	34.3	12.5	13.8
40. Sacramento, CA	22.5	13.5	21.6	23.8
41. Salt Lake City, UT	4.4	2.6	3.8	4.2
42. San Bernadino, CA	78.6	94.3	30.5	33.5
43. San Diego, CA	78.0	46.8	13.3	14.6
44. San Antonio, TX	23.9	26.3	4.2	4.6
45. San Jose, CA	73.3	88.0	29.4	32.4
46. San Francisco, CA	232.5	302.2	52.3	57.6
47. Seattle - Everett, WA	83.0	116.2	29.3	32.2
48. St. Louis, MO	22.1	26.6	40.5	44.5
49. Tampa, FL	5.9	8.8	15.6	17.2
50. Washington, DC	107.5	236.5	99.5	109.5

Source: Compiled by Oak Ridge National Laboratory from Texas Institute of Transportation, *Estimates of Urban Roadway Congestion - 1990*, Research Report 1131-5, March 1993.

Table 24. Speed Trend Characteristics¹, FY 1980-1992

HIGHWAY CATEGORIES	1980	1985	1990	1991	1992
AVERAGE SPEED					
Urban Interstate	55.4	57.3	58.6	58.8	57.7
Urban Other Freeways & Expressways	-	56.9	57.6	58.0	51.7
Urban Other Principal & Minor Arterials	-	53.5	54.1	54.0	54.1
Rural Interstate	57.5	59.7	60.4	59.9	53.5
Rural Other Principal & Minor Arterials	-	54.9	56.4	56.4	56.5
Rural Major Collectors	-	52.9	54.3	54.3	53.1
MEDIAN SPEED (MPH)²					
Urban Interstate	-	57.5	58.7	58.8	58.9
Urban Other Freeways & Expressways	-	57.1	57.7	58.0	58.5
Urban Other Principal & Minor Arterials	-	53.6	54.1	53.9	54.4
Rural Interstate	-	59.5	60.2	59.4	60.5
Rural Other Principal & Minor Arterials	-	55.2	56.4	56.3	56.4
Rural Major Collectors	-	53.0	54.6	54.5	54.5
85TH PERCENTILE (MPH)³					
Urban Interstate	60.1	64.1	65.8	66.1	66.1
Urban Other Freeways & Expressways	-	63.4	64.6	64.9	64.9
Urban Other Principal & Minor Arterials	-	60.5	61.1	60.8	60.7
Rural Interstate	62.1	66.1	67.6	67.2	59.3
Rural Other Principal & Minor Arterials	-	61.7	63.2	63.1	63.1
Rural Major Collectors	-	60.6	62.0	62.1	62.1
PERCENT EXCEEDING 55 MPH					
Urban Interstate	51.2	64.7	69.8	69.8	70.1
Urban Other Freeways & Expressways	-	60.8	65.0	66.5	67.5
Urban Other Principal & Minor Arterials	-	43.0	43.6	42.2	42.5
Rural Interstate	65.9	75.3	77.6	75.5	81.0
Rural Other Principal & Minor Arterials	-	50.5	56.3	56.5	57.5
Rural Major Collectors	-	38.1	45.4	46.7	46.4
PERCENT EXCEEDING 60 MPH					
Urban Interstate	15.6	32.3	40.7	41.4	41.5
Urban Other Freeways & Expressways	-	29.4	34.2	35.3	35.5
Urban Other Principal & Minor Arterials	-	16.7	18.8	18.2	18.4
Rural Interstate	25.3	44.5	50.4	47.6	55.5
Rural Other Principal & Minor Arterials	-	21.1	27.1	26.8	27.2
Rural Major Collectors	-	16.8	20.7	21.7	21.4
PERCENT EXCEEDING 65 MPH					
Urban Interstate	3.2	11.3	17.1	18.0	17.5
Urban Other Freeways & Expressways	-	9.5	12.0	12.5	13.4
Urban Other Principal & Minor Arterials	-	4.9	5.8	5.7	5.9
Rural Interstate	6.5	17.3	23.2	20.9	27.8
Rural Other Principal & Minor Arterials	-	6.7	9.6	9.2	9.4
Rural Major Collectors	-	6.2	7.4	7.9	8.1

¹ Data in this table are only for highways with a 55 mph speed limit.

² Median speed is the speed at or below which 50 percent of the vehicles are traveling.

³ 85th percentile speed is the speed at or below which 85 percent of the vehicles are traveling.

Source: U.S. DOT/FHWA, *Highway Statistics*, annual issues, Tables VS-1, VS-2.

**Table 25. Amtrak On-Time Performance Trends,
(at 5-Year Intervals 1980-1990 and Annually 1991-1993)
(percent)**

Year	Short Distance	Long Distance	Systemwide
1980	71	76	69
1985	82	78	81
1990	82	53	76
1991	82	59	77
1992	82	60	77
1993	79	47*	72

* 14% decrease from Fiscal Year 1992 resulted from extensive Midwest floods.

Source: Compiled by Oak Ridge National Laboratory from Amtrak, *Amtrak Annual Report, 1993*.

TRANSPORTATION TRENDS

Section II: Safety by Transportation Mode

This section presents and compares summary statistics on safety data for individual transportation modes, and for hazardous materials transportation by any mode for 1960-1993. Offices cited as sources can provide additional detail and in-depth discussion of the use and interpretation of the data.

In May 1994, the Secretary of Transportation issued the following definitional clarification:

"For purposes of statistical reporting on transportation safety, a transportation-related fatality shall be considered a death due to injuries in a transportation accident or incident that occurs within 30 days of that accident or incident."

As most of the safety statistics contained in this report were compiled prior to this clarification, time periods between modes may vary. Refer to Appendix C for further definitions of fatality.

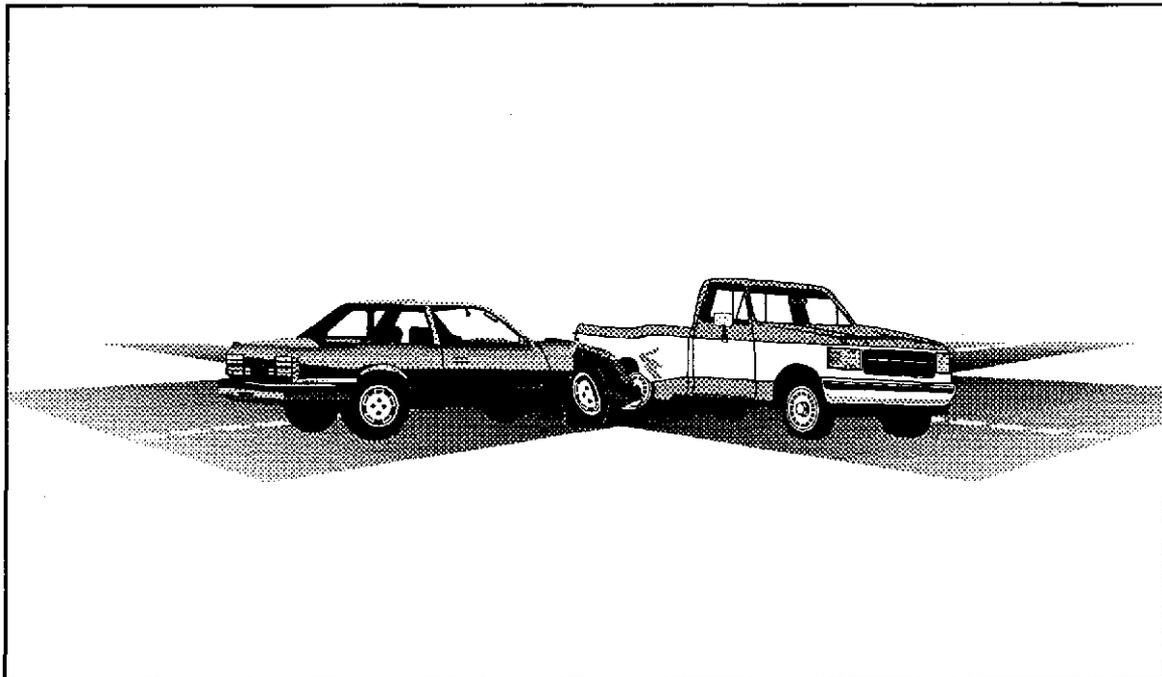


Table 26. Fatalities, Injuries, and Accidents by Transportation Mode, (at 5-Year Intervals 1960-1990 and Annually 1991-1993) (page 1 of 2)

Year	Fatalities											Injuries															
	U.S. Air Carrier ^a	Com-muter Air Carrier ^b	On-Demand Air Taxi ^c	General Aviation ^d	Motor Vehicle Traffic	Railroad ^e	Rail-Highway Grade Crossings ^f	Rail Rapid Transit ^g	Water-borne Transport ^h	Recre-ational Boating	Gas Pipeline	Liquid Pipeline	Hazardous Materials	U.S. Air Carrier ^a	Com-muter Air Carrier ^b	On-Demand Air Taxi ^c	General Aviation ^d	Motor Vehicle Traffic ^e	Railroad ^f	Rail-Highway Grade Crossings	Rail Rapid Transit ^g	Water-borne Transport	Recre-ational Boating	Gas Pipeline	Liquid Pipeline	Hazardous Materials	
1960	499	-	-	787	36,399	924	1,421	-	-	819	-	-	-	-	-	-	-	-	16,113	3,367	-	-	929	-	-	-	-
1965	261	-	-	1,029	47,089	923	1,610	-	-	1,360	-	-	-	-	-	-	-	-	21,930	3,725	-	-	927	-	-	-	-
1970	146	100	*	1,310	54,180	785	1,440	-	178	1,418	4	4	-	-	-	-	-	17,934	3,272	-	-	780	-	-	-	-	
1975	122	28	69	1,252	44,525	575	966	-	243	1,466	7	7	14	243	2,136	-	-	50,138	4,168	-	-	2,136	-	-	-	648	
1980	1	37	105	1,239	51,091	584	833	83	206	1,360	3	3	11	206	2,650	45	45	58,356	3,890	6,801	176	2,757	106	18	3	626	
1985	526	37	76	955	43,825	454	582	17	131	1,116	5	5	8	131	2,757	67	67	31,617	2,687	1,039	172	3,822	67	7	7	425	
1990	39	6	49	766	44,599	599	698	117	85	865	3	3	8	85	3,822	89	89	22,736	2,407	10,036	175	3,967	89	8	8	439	
1991	50	77	73	781	41,508	586	608	103	30	924	0	0	10	30	3,967	87	87	21,374	2,094	9,285	110	3,683	87	38	604		
1992	33	21	70	862	39,250	591	579	91	105	816	5	5	15	105	3,683	89	89	19,408	1,975	10,446	172	3,683	87	10	604		
1993 ^g	1	24	42	715	40,115	653	626	70	104	800	0	0	15	104	3,559	97	97	17,284	1,837	9,792	146	3,559	97	10	626		

Table 26. Fatalities, Injuries, and Accidents by Transportation Mode, (at 5-Year Intervals 1960-1991 and Annually 1991-1993) (page 2 of 2)

Year	Accidents/Incidents												
	U.S. Air Carrier ^a	Commuter Air Carrier ^b	On-Demand Air-Taxi ^c	General Aviation ^d	Motor Vehicle Traffic ^e	Railroad	Rail-Highway Grade Crossings ^f	Rail Rapid Transit ^g	Waterborne Transport	Recreational Boating	Gas Pipeline ^h	Liquid Pipeline ⁱ	Hazardous Materials
1960	90	-	-	4,793	-	-	3,195	-	-	2,738	-	-	-
1965	83	-	-	5,196	-	-	3,820	-	-	3,752	-	-	-
1970	55	190	-	4,712	-	8,095	3,559	-	2,582	3,803	1,019	351	-
1975	37	48	152	3,995	-	8,041	11,354	-	3,310	6,308	1,373	254	-
1980	19	38	171	3,590	6,216,000	8,451	10,611	6,789	4,624	5,513	1,996	219	10,951
1985	22	21	152	2,738	6,081,000	3,275	6,916	1,014	3,439	6,237	331	183	15,737
1990	24	15	108	2,214	6,471,000	2,879	5,713	14,383	3,613	6,411	199	177	6,019
1991	26	22	88	2,170	6,117,000	2,814	5,386	14,102	2,222	6,573	233	216	8,883
1992	18	23	76	2,074	6,000,000	2,531	4,910	15,512	3,297	6,408	192	224	9,110
1993 ^p	23	16	71	2,022	6,105,000	2,785	4,892	14,100	3,188	6,335	216	228	12,817

^p preliminary.

^q Included in Commuter Air Carrier.

^r Large carriers operating under 14 CFR 121, all scheduled and nonscheduled service.

^s All scheduled service operating under 14 CFR 135 (commuter air carriers).

^t Nonscheduled service operating under 14 CFR 135 (on-demand air taxis).

^u All operations other than those operated under 14 CFR 121 and 14 CFR 135.

^v Reporting criteria and source of data changed between 1989 and 1990; thus data from 1990 to present are not comparable to earlier years. Starting with 1990, figures for fatalities, injuries and accident/incidents include those which occur in the entire transit station (stairs, etc.); they also include accident or incidents involving trespassers, employees, and non-passengers. Beginning in 1990, the reporting level for property damage was lowered to \$1000 (previously \$5000). In addition, after 1990, accidents/incidents figures include property-damage-only accidents (previously not reported).

Source: See pp. 248-251.

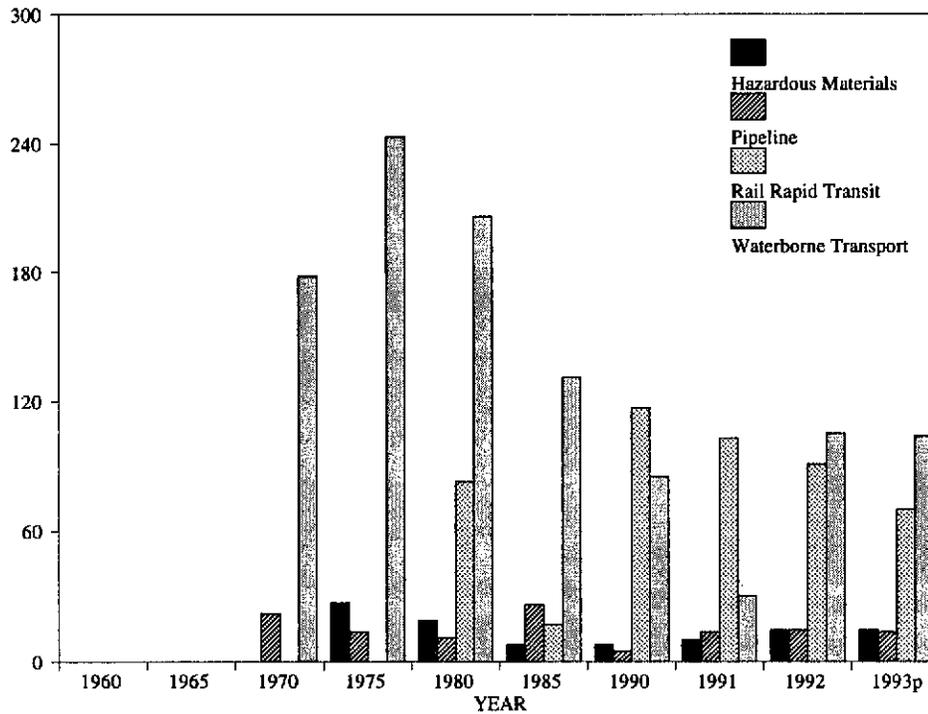
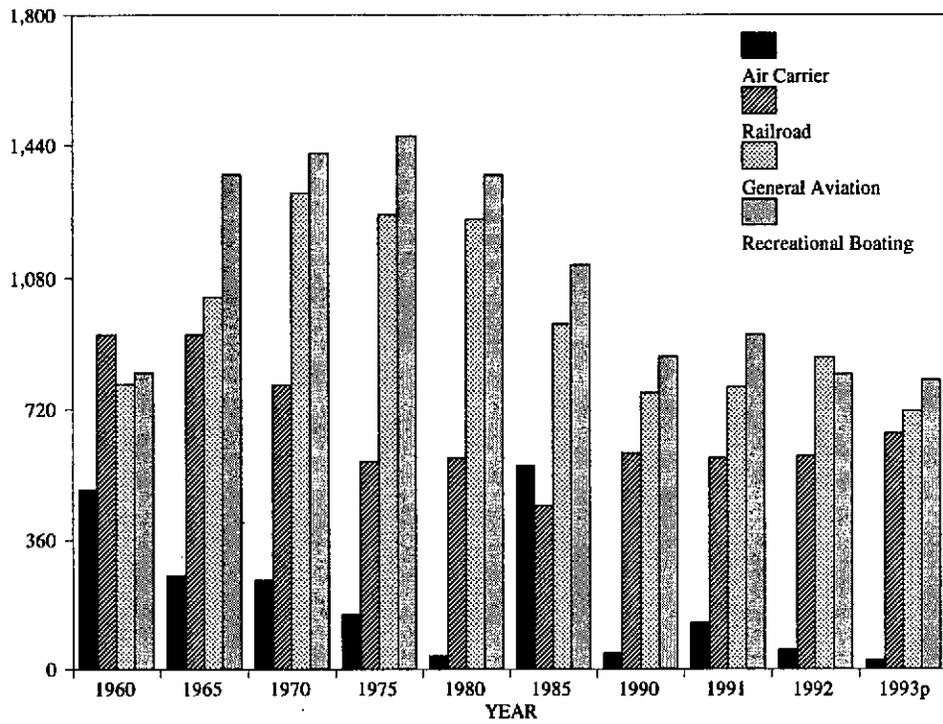
^w Fatalities resulting from train accidents, train incidents and non-train incidents.

^x Data not comparable after 1970 due to change in reporting system.

^y Vessel casualties only.

^z Data from police - reported crashes only.

^{aa} Beginning with 1985 data, Pipeline Incidents are credited to the year in which they occurred, not the year in which the report was received.



p preliminary.

Source: See Table 26.

Figure 16. Fatalities by Transportation Mode, 1960-1993

**Table 27. U.S. Air Carrier* Fatalities, Accidents, and Fatal Accidents,
(at 5-Year Intervals 1960-1990 and Annually 1991-1993)**

Year	Fatalities	Accidents	Fatal Accidents
1960	499	90	17
1965	261	83	9
1970	146	55	8
1975	122	37	3
1980	1	19	1
1985	526	22	7
1990	39	24	6
1991	50	26	4
1992	33	18	4
1993 ^P	1	23	1

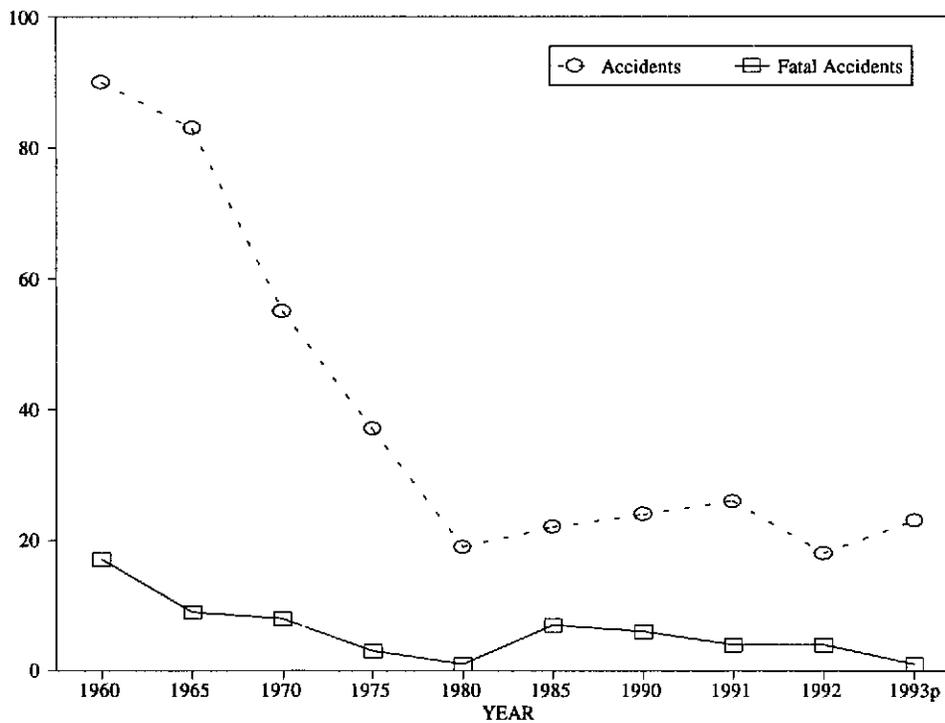
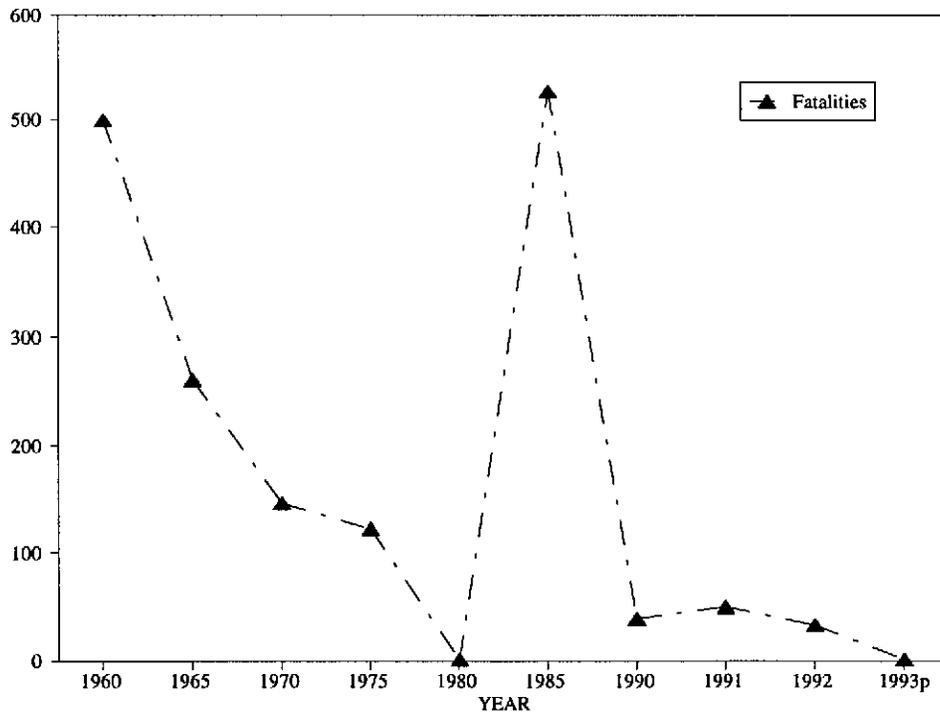
^P preliminary.

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

Source: 1960-1965: U.S. DOT/FAA, *FAA Statistical Handbook of Aviation*, annual issues.

1970-1975: *Ibid.*, RSPA/Volpe Center, *Transportation Safety Information Report*, annual issues, 1980.

1980-1993: National Transportation Safety Board (NTSB), *NTSB Aviation Accident Statistics*, annual issues, Table 2.



p preliminary.

Source: See Table 27.

Figure 17. U.S. Air Carrier Fatalities, Accidents, and Fatal Accidents, 1960-1993

Table 28. U.S. Air Carrier* Accident and Fatal Accident Rates per Aircraft Miles Flown, (at 5-Year Intervals 1960-1990 and Annually 1991-1993)

Year	Aircraft Miles Flown (millions)	Accident Rate	Fatal Accident Rate
1960	1,130	.078	.0110
1965	1,768	.054	.0060
1970	2,685	.020	.0030
1975	2,325	.016	.0010
1980	2,924	.006	.0003
1985	3,631	.006	.0020
1990	4,970	.005	.0012
1991	4,851	.005	.0008
1992	5,088	.004	.0008
1993 ^P	5,147	.005	.0002

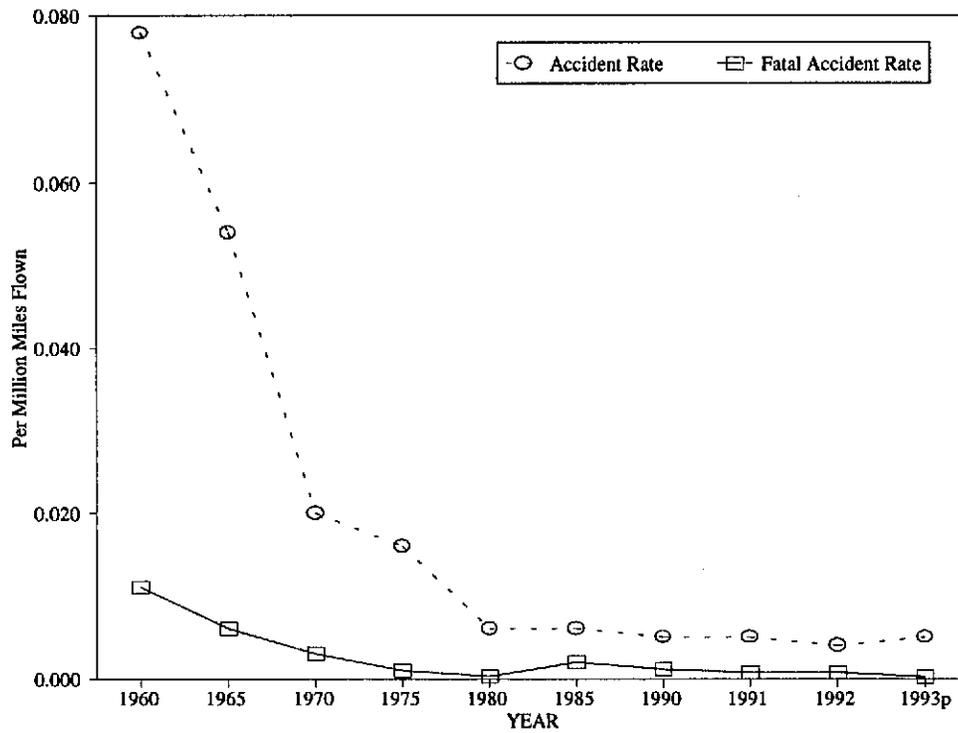
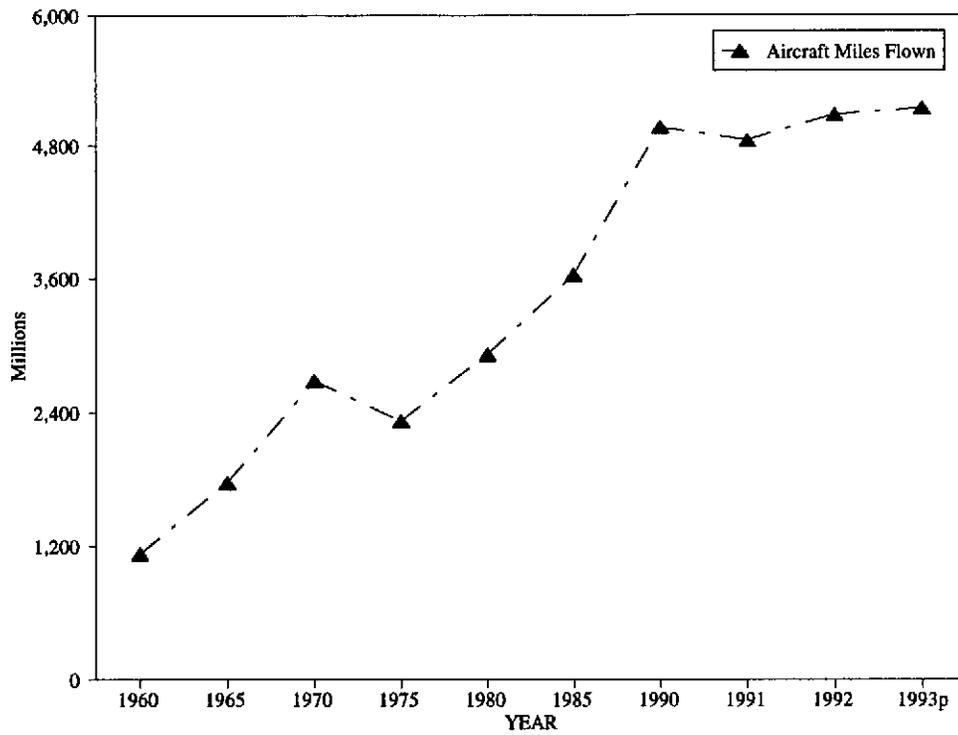
^P preliminary.

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

Source: 1960-1965: U.S. DOT/FAA, *FAA Statistical Handbook of Aviation*, annual issues.

1970-1975: *Ibid.*, RSPA/Volpe Center, *Transportation Safety Information Report*, annual issues, 1980.

1980-1993: National Transportation Safety Board (NTSB), *NTSB Aviation Accident Statistics*, annual issues, Table 2.



p preliminary.
 Source: See Table 28.

Figure 18. U.S. Air Carrier Accident and Fatal Accident Rates per Aircraft Miles Flown, 1960-1993

**Table 29. U.S. Air Carrier* Passenger Fatality
Rates per 100 Million Passenger-Miles,
(at 5-Year Intervals 1960-1990 and Annually 1991-1993)**

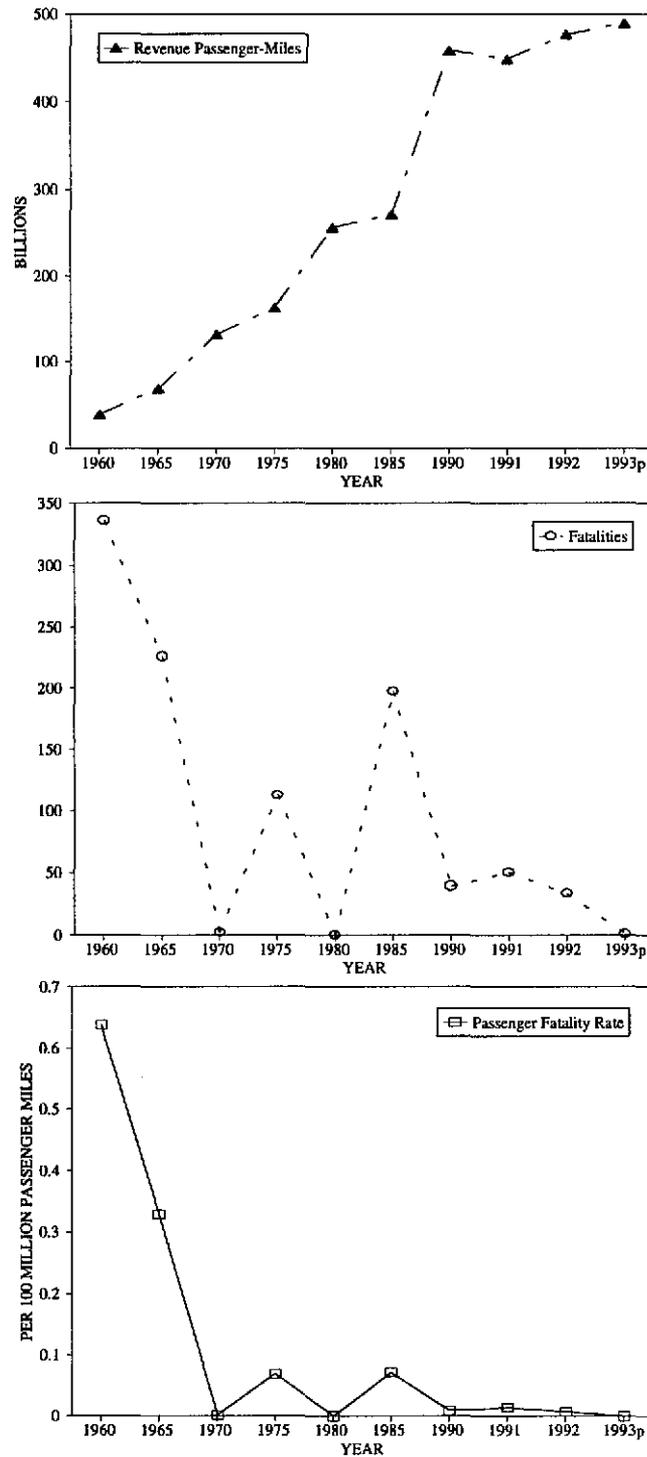
Year	Revenue Passenger-Miles (billions)	Fatalities	Passenger Fatality Rate (per 100 million passenger miles)
1960	38.9	336	.638
1965	68.7	226	.329
1970	131.7	2	.002
1975	162.8	113	.069
1980	255.2	0	.000
1985	270.6	197	.072
1990	457.9	39	.009
1991	447.9	50*	.014
1992	476.1	33	.007
1993 ^P	489.1	1	.000

^P preliminary.

* All scheduled revenue passenger service conducted under 14 CFR 121 operations. Nonscheduled service not included.

* Total fatalities for 1991 does not include the 12 persons killed aboard a commuter aircraft when it and an airliner collided.

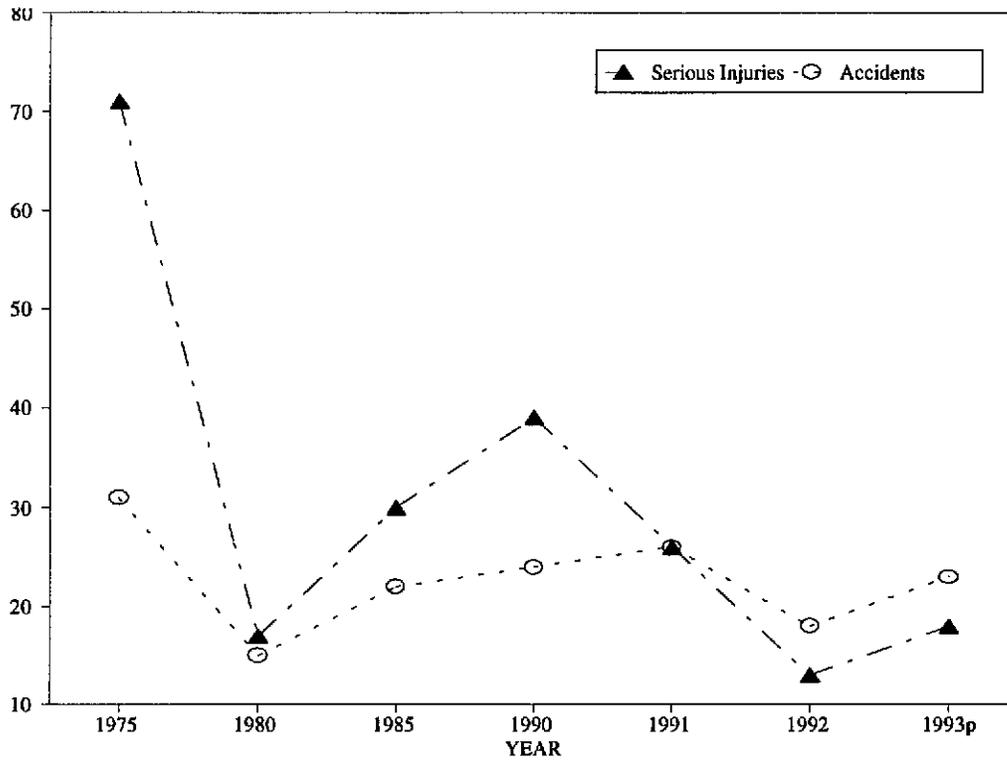
Source: Fatalities: 1960-1965: U.S. DOT/FAA, *FAA Statistical Handbook of Aviation*, annual issues.
1970-1975: *Ibid.*, RSPA/Volpe Center, *Transportation Safety Information Report*, annual issues, 1980.
1980-1993: National Transportation Safety Board (NTSB), *NTSB Aviation Accident Statistics*, annual issues, Table 3.
Revenue Passenger-Miles: U.S. DOT/RSPA, *Air Carrier Traffic Statistics*, annual issues.



p preliminary.

Source: See Table 29.

Figure 19. U.S. Air Carrier Passenger Fatality Rates per Passenger-Mile, 1960-1993



Year	Serious Injuries	Accidents
1975	71	31
1980	17	15
1985	30	22
1990	39	24
1991	26	26
1992	13	18
1993p	18	23

p preliminary.

* Scheduled and non-scheduled service.

Source: 1975: U.S.DOT/RSPA/Volpe Center, "Transportation Safety Information Report", annual issues, 1978.
 1980-1993: National Transportation Safety Board (NTSB), "NTSB Aviation Accident Statistics", annual issues, Table 2.
 Serious Injuries: Ibid., Analysis and Data Division, RE-50.

Figure 20. U.S. Air Carrier* Accidents and Serious Injuries, 1975-1993

**Table 30. Reported Near Midair Collisions, by Degree of Hazard
(at 5-Year Intervals 1980-1990 and Annually 1991-1993)**

CLASSIFICATION	1980	1985	1990	1991	1992	1993
Critical	118	180	74	52	38	35
Potential	319	423	266	197	177	155
No Hazard	122	133	114	99	61	60
Unclassified	9	22	0	0	0	0
Open	0	0	0	0	53	7
Total	568	758	454	348	329	257

Critical: A situation where collision avoidance was due to chance rather than an act on the part of the pilot. Less than 100 feet of aircraft separation would be considered critical.

Potential: An incident which would probably have resulted in a collision if no action had been taken by either pilot. Closest proximity of less than 500 feet would usually be required in this case.

No Hazard: When direction and altitude would have made a midair collision improbable regardless of evasive action taken.

Unclassified: No determination could be made either due to insufficient evidence or unusual circumstances.

Open: Incidents that are still under investigation.

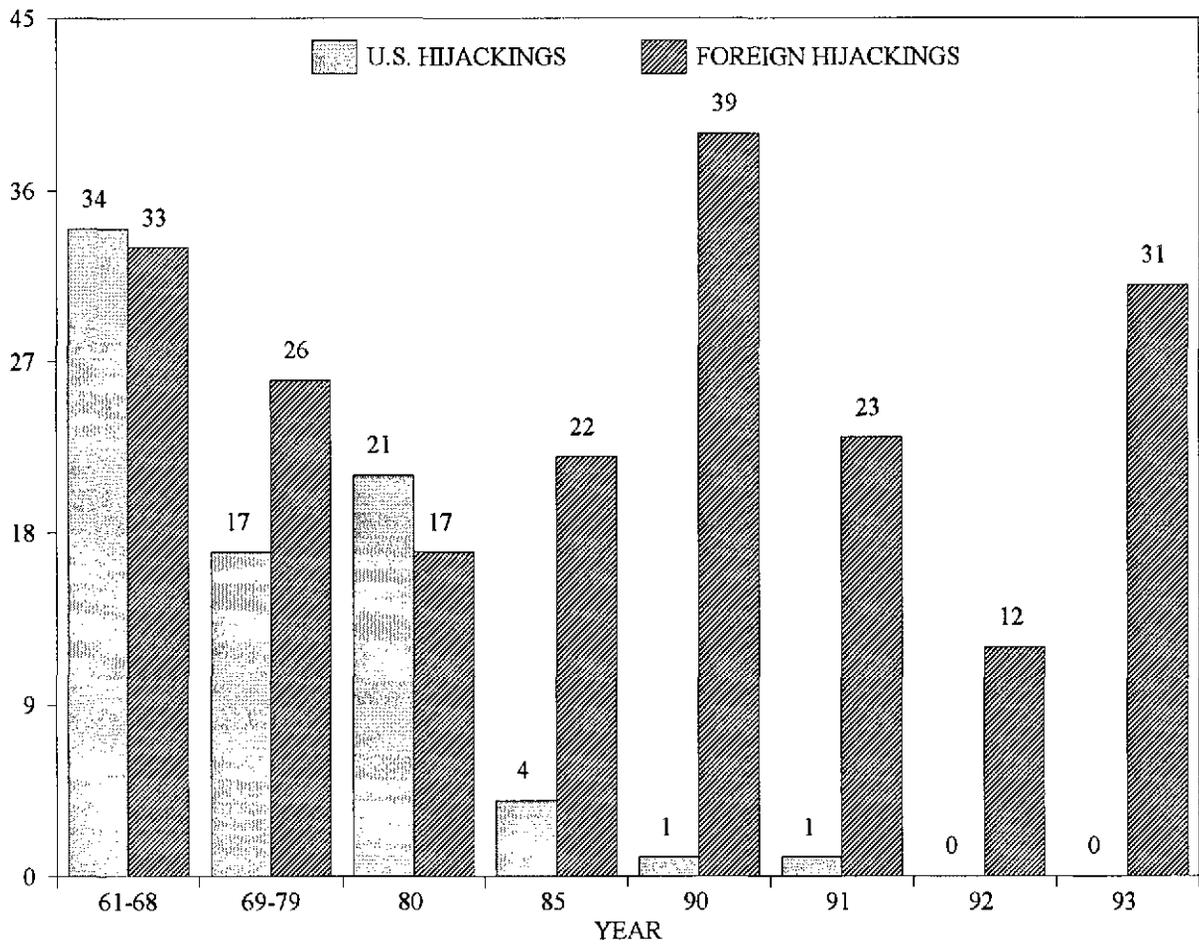
Source: U.S. DOT/FAA, *Safety Statistical Handbook*, 1994.

**Table 31. Airline Passenger Screening Results,
(at 5-Year Intervals 1975-1990 and Annually 1991-1993)**

Year	Persons Screened (millions)	Weapons Detected					Persons Arrested	
		Firearms	(1) Handguns	(2) Long Guns	(3) Other*	Explosive/ Incendiary Devices	Carrying Firearms/ Explosives	Giving False Information
1975	202	4,783	1,993	-	-	-	1,364	227
1980	585	2,022	1,878	36	108	8	1,031	32
1985	993	2,987	2,823	90	74	12	1,310	42
1990	1,145	2,853	2,490	59	304	15	1,337	18
1991	1,015	1,919	1,597	47	275	94	893	28
1992	1,111	2,608	2,503	105	2,341	167	1,282	13
1993	1,150	2,798	2,707	91	3,867	251	1,354	31

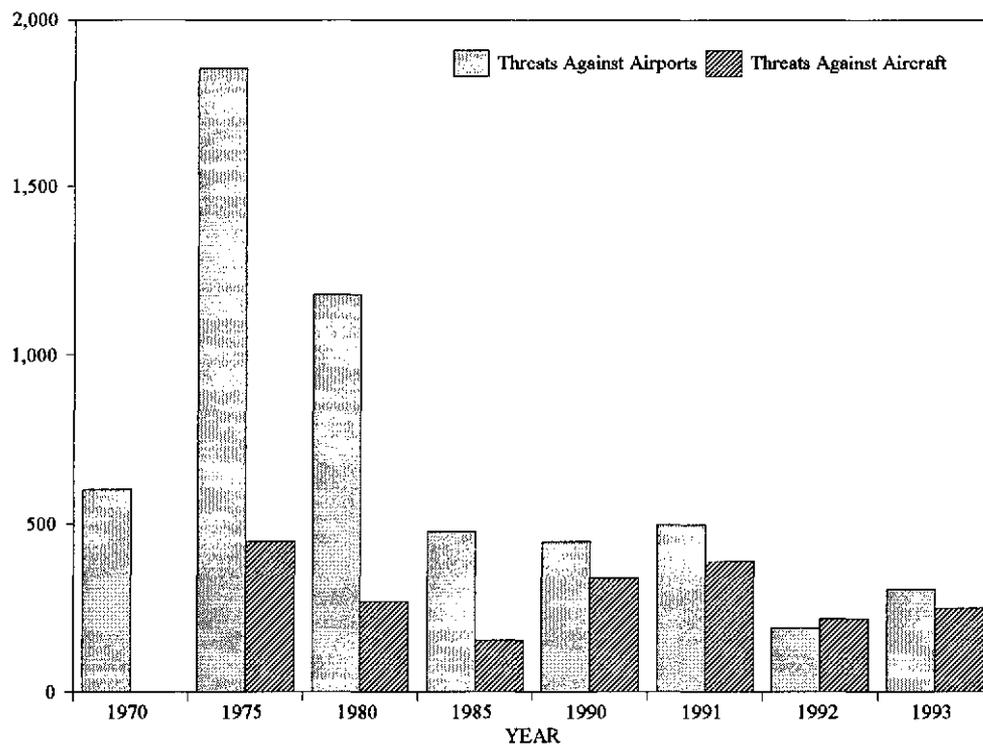
* Beginning in 1992 other dangerous articles include stunning devices, chemical agents, martial arts equipment, knives, bludgecons, and certain other designated items.

Source: U.S. DOT/FAA, *Annual Report to Congress on Civil Aviation Security*, 1993 draft, and earlier editions.



Source: U.S. DOT/FAA, "Criminal Acts Against Civil Aviation, 1993".

Figure 21. U.S. and Foreign Air Carrier Aircraft Hijackings, 1961-1993



Year	Threats Against Airports	Threats Against Aircraft
1970	601	-
1975	1,853	449
1980	1,179	268
1985	477	153
1990	448	338
1991	498	388
1992	188	215
1993	304	248

Source: 1970-1992: U.S. DOT/FAA, "Annual Report to Congress on Civil Aviation Security", 1992 and earlier editions.
 1993: Ibid., "Criminal Acts Against Civil Aviation, 1993".

Figure 22. Bomb Threats Against U.S. Aircraft and U.S. Airports, 1970-1993

Table 32. Commuter Air Carrier* Accidents, Fatalities, Injuries, and Accident Rates, (at 5-Year Intervals 1975-1990 and Annually 1991-1993)

Year	Fatal Accidents	Total Accidents	Fatalities	Serious Injuries	Fatal Accident Rate***+	Total Accident Rate***+	Fatal Accident Rate#+	Total Accident Rate#+
1975	12	48	28	-	0.07	0.30	0.82	3.30
1980	8	38	37	14	0.04	0.20	0.45	2.14
1985	7	21	37	16	0.02	0.07	0.27	0.82
1990	3	15	6	11	0.01	0.03	0.10	0.48
1991	8	22	77***	30	0.02	0.06	0.30	0.81
1992	7	23	21	5	0.02	0.05	0.24	0.80
1993 ^P	4	16	24	2	0.01	0.03	0.13	0.51

^P preliminary.

* All scheduled service conducted under 14 CFR 135.

** Per million aircraft miles flown.

*** Total fatalities for 1991 does not include the 22 persons killed aboard an airliner when it and a commuter aircraft collided.

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

Per 100,000 departures.

Source: 1975-1993: NTSB, *NTSB Aviation Accident Statistics*, annual issues.

Serious Injuries: NTSB, Analysis and Data Division, RE-50.

**Table 33. On-Demand Air Taxi* Accidents, Fatalities,
Injuries, and Accident Rates,
(at 5-Year Intervals 1975-1990 and Annually 1991-1993)**

Year	Fatal Accidents	Total Accidents	Fatalities	Serious Injuries	Fatal Accident Rate**	Total Accident Rate**
1975	24	152	69	-	0.95	6.02
1980	46	171	105	43	1.27	4.73
1985	35	154	76	43	1.36	5.99
1990	28	106	50	36	1.24	4.71
1991	27	87	70	27	1.20	3.88
1992	24	76	70	19	1.19	3.78
1993 ^P	19	71	42	24	0.90	3.38

^P preliminary.

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

** Per 100,000 aircraft hours.

Source: 1975-1993: NTSB, *NTSB Aviation Accident Statistics*, annual issues, Table 6.

Serious Injuries: NTSB, Analysis and Data Division, RE-50.

Table 34. General Aviation* Accidents, Fatalities, Serious Injuries, and Fatal Accidents, (at 5-Year Intervals 1960-1990 and 1991-1993)

Year	Accidents	Fatalities	Serious Injuries	Fatal Accidents
1960	4,793	787	-	429
1965	5,196	1,029	-	538
1970	4,712	1,310	-	641
1975	3,995	1,252	728	633
1980	3,590	1,239	675	618
1985	2,738	955	517	498
1990	2,214	766	391	442
1991	2,170	781	420	431
1992	2,074	862	418	447
1993 ^p	2,022	715	383	385

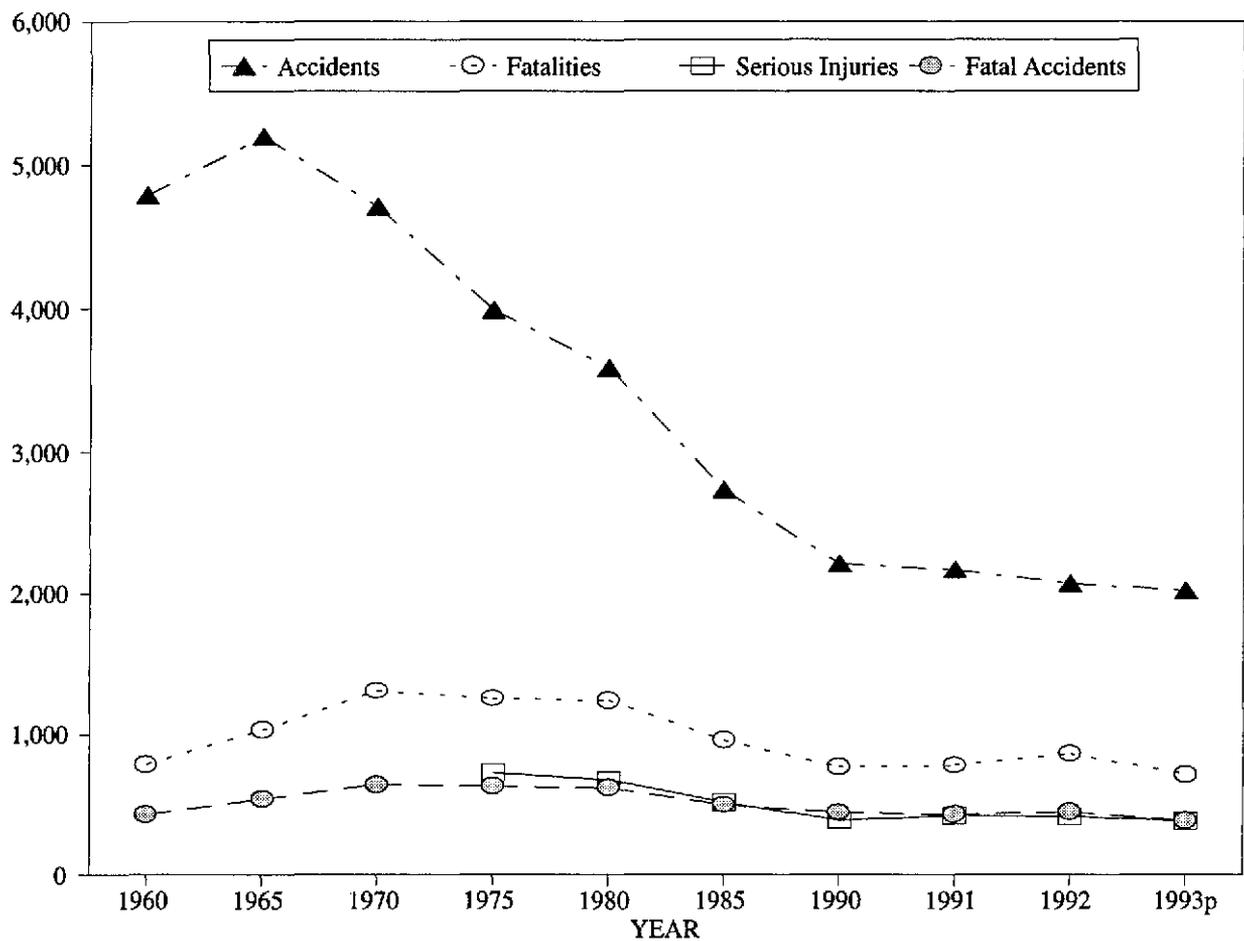
^p preliminary.

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

Source: 1960-1965: U.S. DOT/FAA, *FAA Statistical Handbook of Aviation*, annual issues. 1970-1975: *Ibid.*, RSPA/Volpe Center, *Transportation Safety Information Report*, annual issues, 1978.

1980-1993: National Transportation Safety Board (NTSB), *NTSB Aviation Accident Statistics*, annual issues, Table 7.

Serious Injuries: NTSB, Analysis and Data Division, RE-50.



p preliminary.

Source: See Table 34.

Figure 23. General Aviation Accidents, Fatalities, Serious Injuries, and Fatal Accidents, 1960-1993

Table 35. General Aviation* Fatality and Accident Rates per Aircraft Hours Flown, (at 5-Year Intervals 1960-1990 and Annually 1991-1993)

Year	Aircraft Hours Flown ^c (millions)	Fatality Rate	Accident Rate	Fatal Accident Rate
1960	12.1	6.49	36.5	3.30
1965	15.7	6.54	31.4	3.20
1970	26.0	5.04	18.1	2.46
1975	28.8	4.35	13.9	2.20
1980	36.4	3.40	9.9	1.70
1985	28.3	3.37	9.7	1.75
1990	28.5	2.68	7.8	1.55
1991	27.2	2.87	8.0	1.58
1992	23.7	3.63	8.7	1.87
1993 ^p	23.0	3.10	8.8	1.67

^p preliminary.

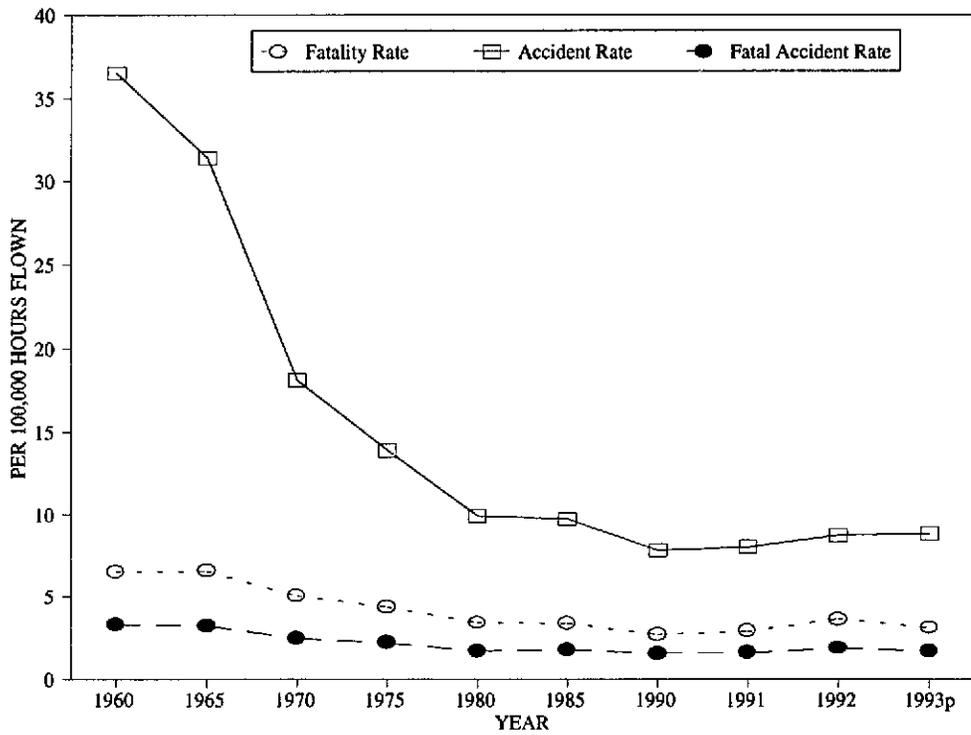
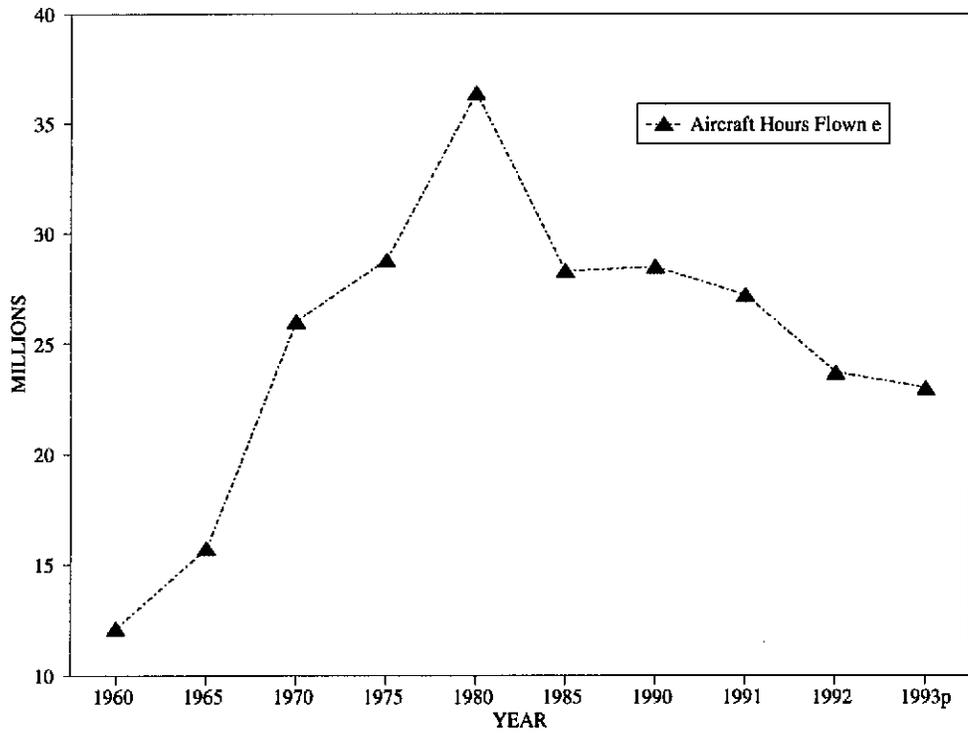
* All operations other than those conducted under 14 CFR 121 or 14 CFR 135. Accidents on foreign soil and in foreign waters are excluded.

^c Source of estimate: FAA. Hours flown for the years 1985 through 1991 have been revised to reflect the results of FAA's General Aviation Activity and Avionics Non-respondent Survey.

Note: Suicide/sabotage accidents excluded from rates as follows: (1975-2, 1980-1, 1985-3)
Suicide/sabotage fatal accidents excluded from rates as follows: (1985-2).

Source: 1960-1965: U.S. DOT/FAA, *FAA Statistical Handbook of Aviation*, annual issues.
1970-1975: *Ibid.*, RSPA/Volpe Center, *Transportation Safety Information Report*, annual issues, 1978.

1980-1993: National Transportation Safety Board (NTSB), *NTSB Aviation Accident Statistics*, annual issues, Table 7.



e estimate.

p preliminary.

Source: See Table 35.

Figure 24. General Aviation Fatality and Accident Rates per Aircraft Hours Flown, 1960-1993

**Table 36. Motor Vehicle Traffic Data Comparisons,
(at 5-Year Intervals 1960-1990 and Annually 1991-1993)**

Year	Total Registered Motor Vehicles* (000)	Auto-mobiles (000)	Trucks (000)	Buses (000)	Motor-cycles (000)	Licensed Drivers (000)	Percent Under 25 yrs Old	Percent Over 64 yrs Old	Vehicle Mileage (Billions)	Traffic Fatalities	Traffic Fatality Rate ^b
1960	74,444	61,684	11,914	272	574	87,253	-	-	719	36,399	5.06
1965	91,743	75,261	14,786	314	1,312	98,502	20.5	7.6	888	47,089	5.30
1970	111,243	89,244	18,797	378	2,824	111,543	22.0	8.0	1,110	54,180	4.92
1975	137,915	106,705	25,781	462	4,967	129,791	22.6	9.5	1,327	44,525	3.36
1980	161,761	121,601	33,667	529	5,694	145,295	21.0	10.6	1,527	51,091	3.35
1985	177,097	131,864	39,196	594	5,444	156,868	18.3	11.9	1,774	43,825	2.47
1990	193,057	143,453	44,718	627	4,259	167,015	15.7	13.3	2,148	44,599	2.08
1991	192,549	142,956	44,785	631	4,177	168,995	15.1	13.4	2,172	41,508	1.91
1992	194,427	144,213	45,504	645	4,065	173,125	14.6	13.9	2,240	39,250	1.75
1993 ^c	196,866	145,740	47,125	*	4,001	175,878	14.6	13.9	2,288	40,115	1.75

^c estimate.

* Included in Truck figure.

^a Figures obtained by addition/subtraction and may not appear directly in data source.

^b Per 100 million vehicle-miles.

Source: Registered Vehicles, Licensed Drivers and Vehicle Mileage:

1960-1980: U.S. DOT/FHWA, *Highway Statistics, Summary to 1985*, Tables MV-200, DL-201, VM-201A.

1985-1992: *Ibid.*, *Highway Statistics*, annual issues, Tables MV-1, DL-20, VM-1.

1993: *Ibid.*, *Selected Highway Statistics and Charts*, Tables SS 92-4, SS 92-7.

Fatalities:

1960-1970: Estimated by NHTSA from data supplied by the National Center for Health Statistics, H.H.S., and State Accident Summaries (adjusted to 30-day deaths).

1975-1993: U.S. DOT/NHTSA, National Center for Statistics and Analysis, Fatal Accident Reporting System (FARS) and U.S. DOT/FHWA, Office of Highway Safety, HHS-12.

**Table 37. Traffic Fatalities by Major Category,
(at 5-Year Intervals 1960-1990 and Annually 1991-1993)**

Year	Occupant Fatalities by Vehicle Type									
	Passenger Cars						Trucks			
	Total ^a	Sub-Compact	Compact	Intermediate	Full	Unknown	Total	Light Trucks	Heavy Trucks	Other Trucks
1960	27,909	-	-	-	-	-	-	-	-	-
1965	36,759	-	-	-	-	-	-	-	-	-
1970	34,800	-	-	-	-	-	5,400	-	-	-
1975	25,928	3,834	614	1,869	10,800	8,811	5,817	4,856	671	290
1980	27,449	7,299	927	3,878	11,580	3,765	8,748	7,486	956	306
1985	23,212	7,993	2,635	4,391	6,586	1,607	7,666	6,689	820	157
1990	24,092	8,309	5,310	4,849	4,635	989	9,306	8,601	571	134
1991	22,385	7,694	5,338	4,681	4,040	632	9,052	8,391	546	115
1992	21,387	7,028	5,354	4,418	3,796	791	8,683	8,098	486	99
1993 ^p	21,494	6,852	5,608	4,424	3,663	947	9,097	8,487	514	96

Year	Occupant Fatalities by Vehicle Type			Non-Occupant Fatalities				Total Traffic Fatalities
	Motorcycles and Other Vehicles			Total	Pedestrian	Pedalcyclist ^c	Other	
	Total	Motorcycles ^b	Other and Unknown Vehicle Type					
1960	790	790	-	7,700	7,210	490	-	36,399
1965	1,650	1,650	-	8,680	7,990	690	-	47,089
1970	3,300	2,330	970	10,680	9,900	780	-	54,180
1975	4,180	3,189	991	8,600	7,516	1,003	81	44,525
1980	5,730	5,144	586	9,164	8,070	965	129	51,091
1985	5,165	4,564	601	7,782	6,808	890	84	43,825
1990	3,736	3,244	492	7,465	6,482	859	124	44,599
1991	3,303	2,806	497	6,768	5,801	843	124	41,508
1992	2,810	2,395	415	6,370	5,549	723	98	39,250
1993 ^p	2,962	2,444	518	6,562	5,638	814	110	40,115

^p preliminary.

^a 1960-1970: Includes taxis.

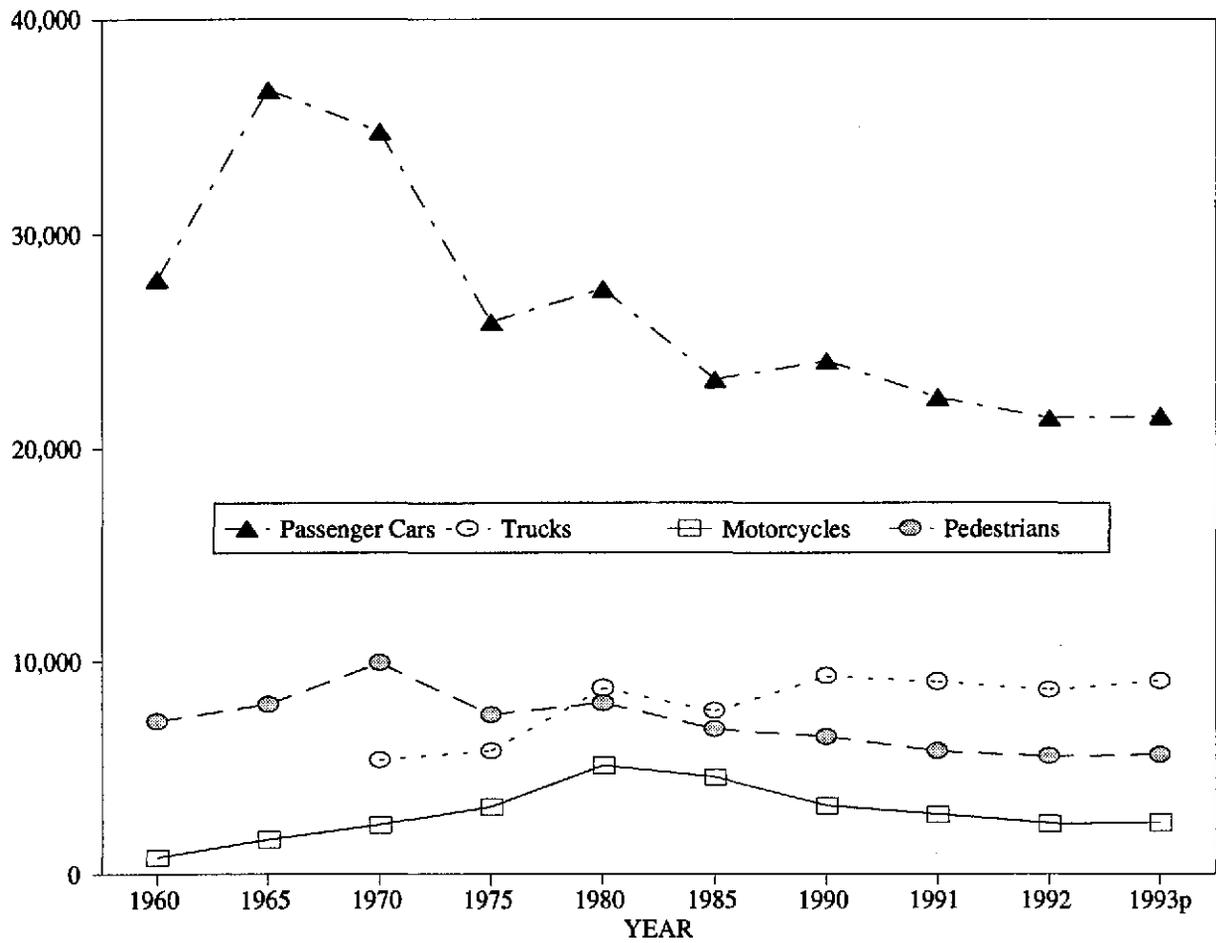
^b 1960-1970: Includes motor scooters and motor bikes.

^c 1960-1970: Includes deaths of pedalcyclists and motor vehicle occupants involved in collision.

Note: Passenger car totals for 1960 and 1965 include a few riders of animals, occupants of animal drawn vehicles, occupants of street cars, unauthorized riders, etc.

Source: 1960-1970: Estimated by NHTSA from data supplied by the National Center for Health Statistics, H.H.S., and State Accident Summaries (adjusted to 30 day deaths)

1975-1993: U.S. DOT/NHTSA, National Center for Statistics and Analysis, Fatal Accident Reporting System (FARS).



p preliminary.
 Source: See Table 37.

Figure 25. Traffic Fatalities by Major Category, 1960-1993

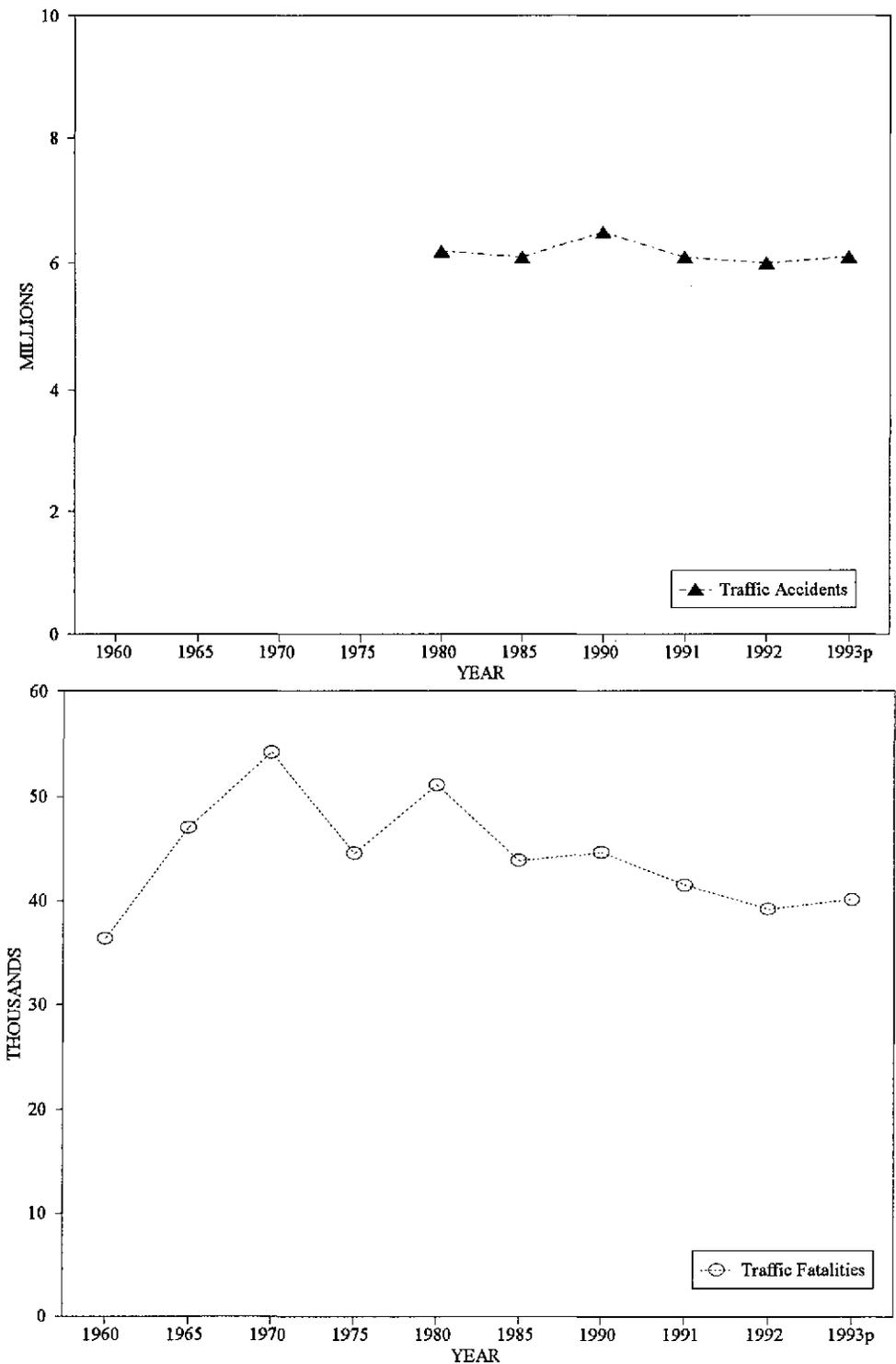
**Table 38. Motor Vehicle Traffic Accidents and Traffic Fatalities,
(at 5-Year Intervals 1960-1990 and Annually 1991-1993)**

Year	Millions	Thousands
	Traffic Accidents	Traffic Fatalities
1960	-	36.4
1965	-	47.0
1970	-	54.2
1975	-	44.5
1980	6.2	51.1
1985	6.1	43.8
1990	6.5	44.6
1991	6.1	41.5
1992	6.0	39.2
1993 ^p	6.1	40.1

^p preliminary.

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

Source: 1960-1970: (Fatality Data): Estimated by NHTSA from data supplied by the National Center for Health Statistics, H.H.S., and State Accident Summaries (adjusted to 30-day deaths).
1975-1993: (Fatality Data): U.S. DOT/NHTSA, National Center for Statistics and Analysis, Fatal Accident Reporting System (FARS).
1980-1985: (Accident Data): *Ibid.*, National Accident Sampling System (NASS).
1990-1993: (Accident Data): *Ibid.*, General Estimates System (GES).



p preliminary.
 Source: See Table 38.

Figure 26. Motor Vehicle Traffic Accidents and Traffic Fatalities, 1960-1993

**Table 39. Fatality Rates by Truck Type, Per 100 Million Miles,
(at 5-Year Intervals 1975-1990 and Annually 1991-1992)**

Year	2-Axle 4-Tire Trucks	Combination Trucks	Other Trucks
1975	2.42	1.44	0.84
1980	2.57	1.39	0.77
1985	1.79	1.03	0.33
1990	1.85	0.59	0.25
1991	1.77	0.56	0.21
1992	1.70	0.49	0.18

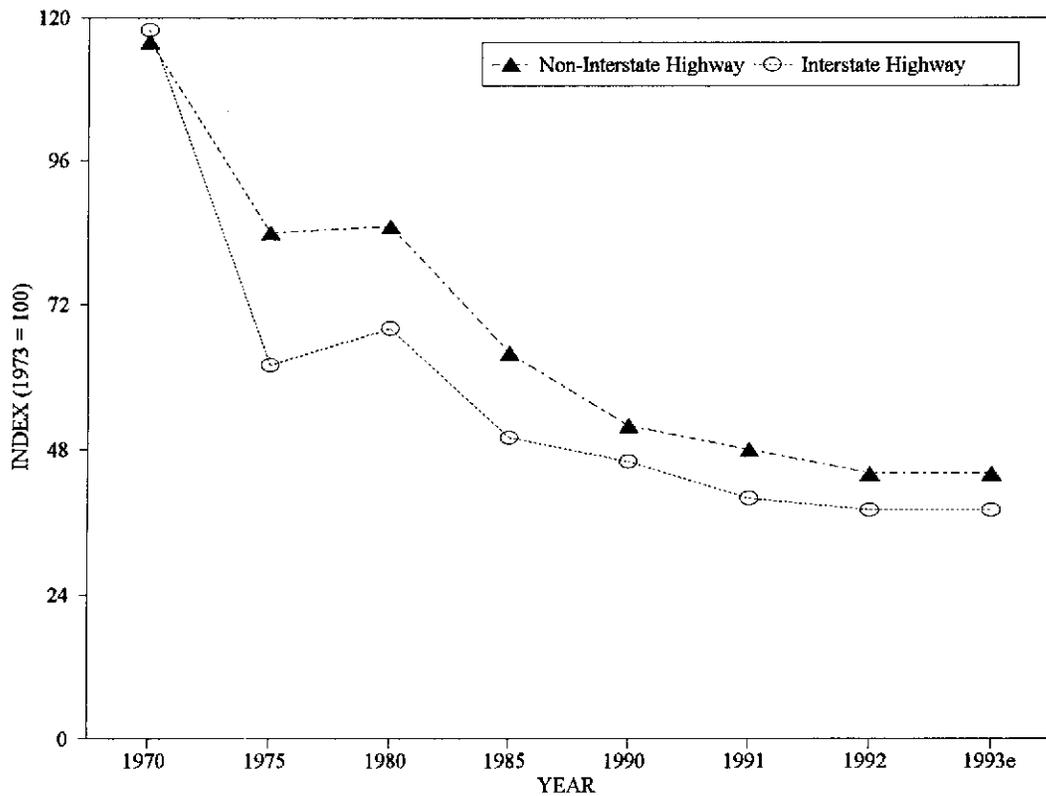
Source: Compiled by Oak Ridge National Laboratory from U.S. DOT/NHTSA, National Center for Statistics and Analysis, *Fatal Accident Reporting System (FARS)* (fatalities) and U.S. DOT/FHWA, *Highway Statistics*, Table VM-1 (vehicle-miles).

**Table 40. Motor Vehicle Fatal Accidents by Posted Speed Limit,
(at 5-Year Intervals 1975-1990 and Annually 1991-1993)**

Year	Posted Speed										Total
	0-25 MPH	26-35 MPH	36-45 MPH	46-54 MPH	Total Under 55 MPH	55 MPH	60 MPH	65 MPH	Unknown	Total	
1975	2,617	6,099	4,276	2,241	15,233	16,093	-	-	7,831	39,157	
1980	2,865	8,527	6,256	2,431	20,079	20,352	-	-	4,853	45,284	
1985	2,504	7,889	6,813	2,072	19,278	18,862	12	-	1,055	39,195	
1990	2,234	7,756	7,092	2,054	19,136	17,556	18	2,175	951	39,836	
1991	2,097	6,908	6,608	1,894	17,507	16,543	9	2,078	800	36,937	
1992	1,911	6,696	6,345	1,875	16,827	15,444	4	2,002	665	34,942	
1993 ^p	1,881	6,716	6,439	1,869	16,905	15,952	9	2,158	723	35,747	

^p preliminary.

Source: 1975-1993: *Ibid.*, NHTSA, National Center for Statistics and Analysis, Fatal Accident Reporting System (FARS).



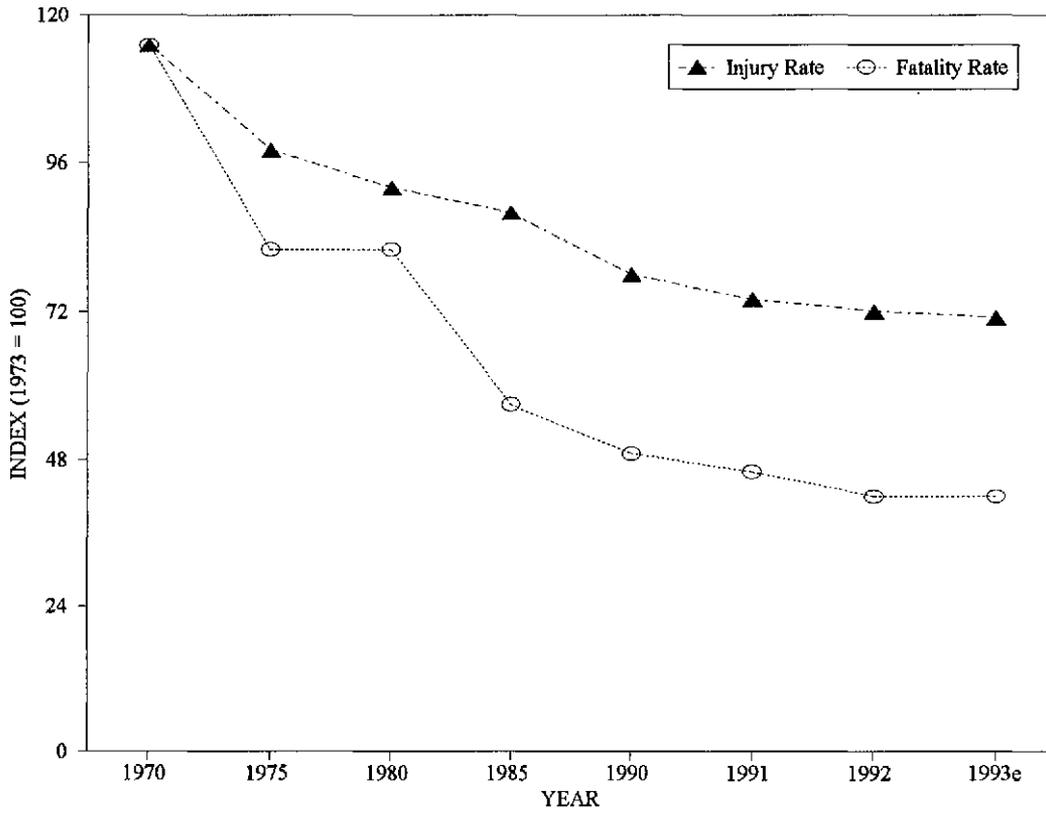
Year	Index (1973 = 100)	
	Non-Interstate Highway	Interstate Highway
1970	116	118
1975	84	62
1980	85	68
1985	64	50
1990	52	46
1991	48	40
1992	44	38
1993e	44	38

e estimate.

Note: Index based on number of fatalities per 100 million vehicle-miles of travel.

Source: 1970-1993: U.S.DOT/FHWA, Office of Highway Safety, HHS-12.

Figure 27. Fatality Rate Indices by Highway Type, 1970-1993



Year	Index (1973 = 100)	
	Injury Rate	Fatality Rate
1970	115	115
1975	98	82
1980	92	82
1985	88	57
1990	78	49
1991	74	46
1992	72	42
1993e	71	42

e estimate.

Note: Index based on number of fatalities per 100 million vehicle-miles of travel.

Source: 1970-1993: U.S.DOT/FHWA, Office of Highway Safety, HHS-12.

Figure 28. Highway Fatality and Injury Rate Indices, 1970-1993

**Table 41. Restraint Usage and Injury Severity of Passenger Car Occupants,
(at 5-Year Intervals 1985-1990 and Annually 1991-1993)**

Injury Severity and Year	Restrained	Unrestrained	Unknown Restraint	Total
Fatal Injury				
1985	2,115	16,773	4,304	23,192
1990	5,728	15,661	2,636	24,025
1991	6,216	13,827	2,304	22,347
1992	6,392	12,855	2,140	21,387
1993 ^e	7,288	12,064	2,142	21,494
Incapacitating Injury				
1985	1,543	8,649	1,929	12,121
1990	3,686	6,762	1,304	11,752
1991	3,881	5,867	1,089	10,837
1992	3,862	5,504	1,105	10,471
1993 ^e	4,305	5,285	991	10,581
Nonincapacitating Injury				
1985	1,314	4,695	1,721	7,730
1990	3,183	3,994	778	7,955
1991	3,190	3,395	633	7,218
1992	3,203	3,022	661	6,886
1993 ^e	3,540	2,833	568	6,941
Possible Injury				
1985	695	1,721	691	3,107
1990	2,404	1,501	361	4,266
1991	2,324	1,308	303	3,935
1992	2,305	1,125	301	3,731
1993 ^e	2,458	1,038	304	3,800
No Injury				
1985	2,574	5,647	3,929	12,150
1990	6,131	2,528	2,306	10,965
1991	5,785	2,077	1,981	9,843
1992	5,740	1,716	1,819	9,275
1993 ^e	5,903	1,627	1,743	9,273
Unknown				
1985	83	350	314	747
1990	68	119	296	483
1991	76	93	294	463
1992	107	98	251	512
1993 ^e	91	88	249	473
Total				
1985	8,324	37,835	12,888	59,047
1990	21,200	30,565	7,681	59,446
1991	21,472	26,567	6,604	54,643
1992	21,607	24,320	6,277	52,204
1993 ^e	23,405	23,102	6,010	52,517

^e estimate.

Source: U.S. DOT/NHTSA, *Fatal Accident Reporting System (FARS) 1993*.

**Table 42. Fatalities by Highest Blood Alcohol Concentration (BAC) in the Crash,
(at 5-Year Intervals 1985-1990 and Annually 1991-1993)**

Year	BAC = 0.00		BAC = 0.01 - 0.09		BAC = 0.10+		Total	Total Fatalities in Alcohol-Related Crashes	
	Number	Percent	Number	Percent	Number	Percent		Number	Percent
1985	21,109	48.2	4,604	10.5	18,111	41.3	43,825	22,715	51.8
1990	22,515	50.5	4,434	9.9	17,650	39.6	44,599	22,084	49.5
1991	21,621	52.1	3,957	9.5	15,930	38.4	41,508	19,900	48.0
1992 ⁺	21,392	54.5	3,625	9.2	14,234	36.3	39,250	17,859	45.5
1993 ^{ac}	22,653	56.5	3,479	8.7	13,982	34.9	40,115	17,461	43.5

⁺ Columns do not add to total in source communication.

^a estimate.

Source: U.S. DOT/NHTSA, *Fatal Accident Reporting System 1993*, Table 12.

Table 43. Percent of Factory Installations of Anti-Lock Braking Systems and Driver-Side Air Bags, 1985-1993 (model years)

Year	Automobiles		Light Trucks	
	ABS	Driver-Side Air Bag	ABS	Driver-Side Air Bag
1985	0.6	0.0	0.0	0.0
1986	1.7	0.0	0.0	0.0
1987	4.5	0.0	15.5	0.0
1988	5.1	0.0	27.9	0.0
1989	11.1	0.0	66.2	0.0
1990	11.1	28.2	71.4	0.0
1991	17.1	36.0	77.8	0.0
1992	32.2	48.9	50.1	17.6
1993	41.2	60.9	83.0	21.2

Source: Compiled by Oak Ridge National Laboratory from *Ward's Automotive Yearbook 1994* and, *Wards Communications*, 1994.

**Table 44. Motor Carrier* Accidents, Fatalities, and Injuries by Type of Carrier,
(at 5-Year Intervals 1965-1990 and Annually 1991-1992)**

Year	Classification								
	Motor Carriers of Property			Motor Carriers of Passengers			All Motor Carriers		
	Accidents	Fatalities	Injuries	Accidents	Fatalities	Injuries	Accidents	Fatalities	Injuries
1965	31,132	1,603	18,737	-	-	-	-	-	-
1970	40,233	1,367	18,122	-	-	-	-	-	-
1975	24,274	2,232	26,374	765	59	2,188	25,039	2,291	28,562
1980	31,391	2,528	27,147	748	74	1,711	32,139	2,602	28,858
1985	29,068	2,646	28,988	676	62	1,825	29,744	2,708	30,813
1990	35,885	3,309	34,348	698	75	2,109	36,583	3,384	36,457
1991	34,405	3,036	32,889	707	46	1,976	35,112	3,082	34,865
1992	33,965	2,657	31,597	723	64	2,065	34,688	2,721	33,662

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

Source: U.S. DOT/FHWA, State Programs Division, HFO-30.

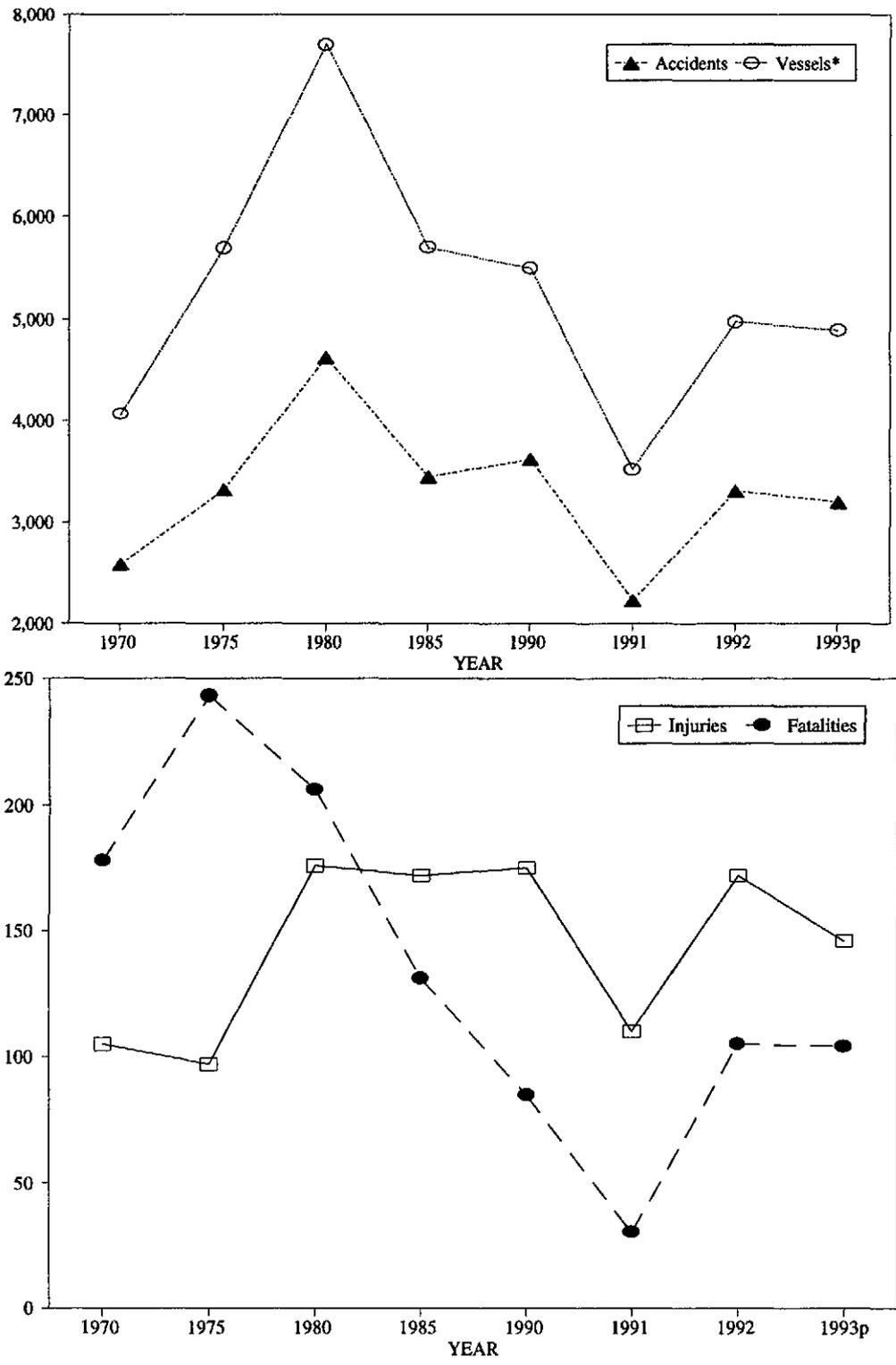
**Table 45. Waterborne Transport Accidents, Injuries
and Fatalities Resulting from Vessel Casualties, (at 5-Year Intervals 1970-1990
and Annually 1991-1993)**

Year	Accidents	Injuries	Fatalities	Vessels*
1970	2,582	105	178	4,063
1975	3,310	97	243	5,685
1980	4,624	176	206	7,694
1985	3,439	172	131	5,694
1990	3,613	175	85	5,494
1991	2,222	110	30	3,514
1992	3,297	172	105	4,972
1993 ^p	3,188	146	104	4,886

^p preliminary.

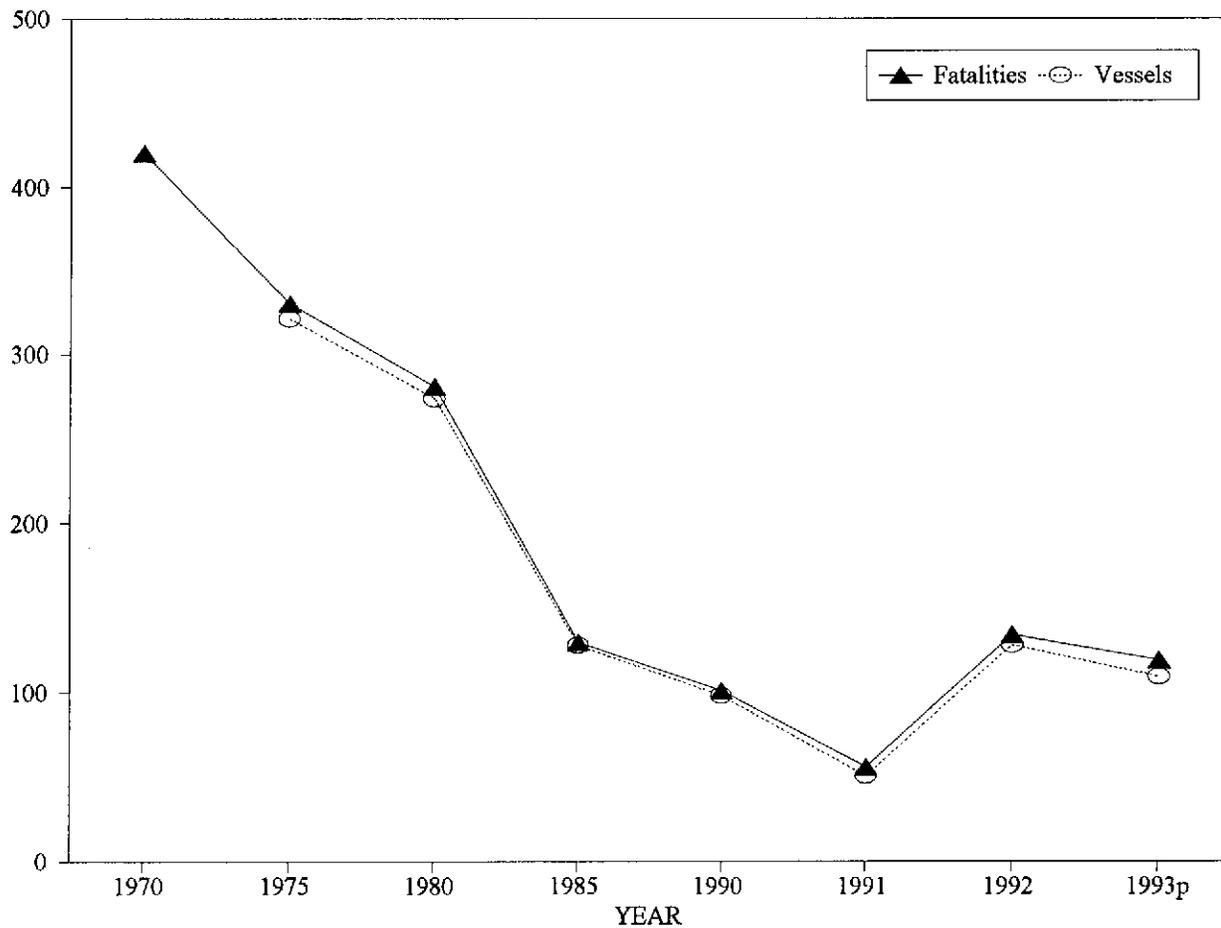
* More than one vessel may be involved in a marine accident.

Note: All deaths and injuries cited result from vessel casualties.
Source: 1970-1993: U.S. DOT/United States Coast Guard, Marine
Investigation Division, G-MMI-3.



p preliminary.
 * More than one vessel may be involved in a marine accident.
 Source: See Table 45.

Figure 29. Waterborne Transport Accidents, Injuries, and Fatalities Resulting from Vessel Casualties, 1970-1993



Year	Fatalities	Vessels
1970	420	-
1975	330	321
1980	281	274
1985	130	128
1990	101	98
1991	56	51
1992	134	128
1993p	119	109

p preliminary.

Source: 1970-1993: U.S.DOT/USCG,
Marine Investigation Division,
G-MMI-3.

Figure 30. Waterborne Transport Fatalities not Related to Vessel Casualties, 1970-1993

Table 46. Recreational Boating Fatalities, Injuries, and Accidents, (at 5-Year Intervals 1960-1990 and Annually 1991-1993)

Year	Fatalities	Injuries	Accidents
1960	819	929	2,738
1965	1,360	927	3,752
1970	1,418	780	3,803
1975	1,466	2,136	6,308
1980	1,360	2,650	5,513
1985	1,116	2,757	6,237
1990	865	3,822	6,411
1991	924	3,967	6,573
1992	816	3,683	6,408
1993	800	3,559	6,335

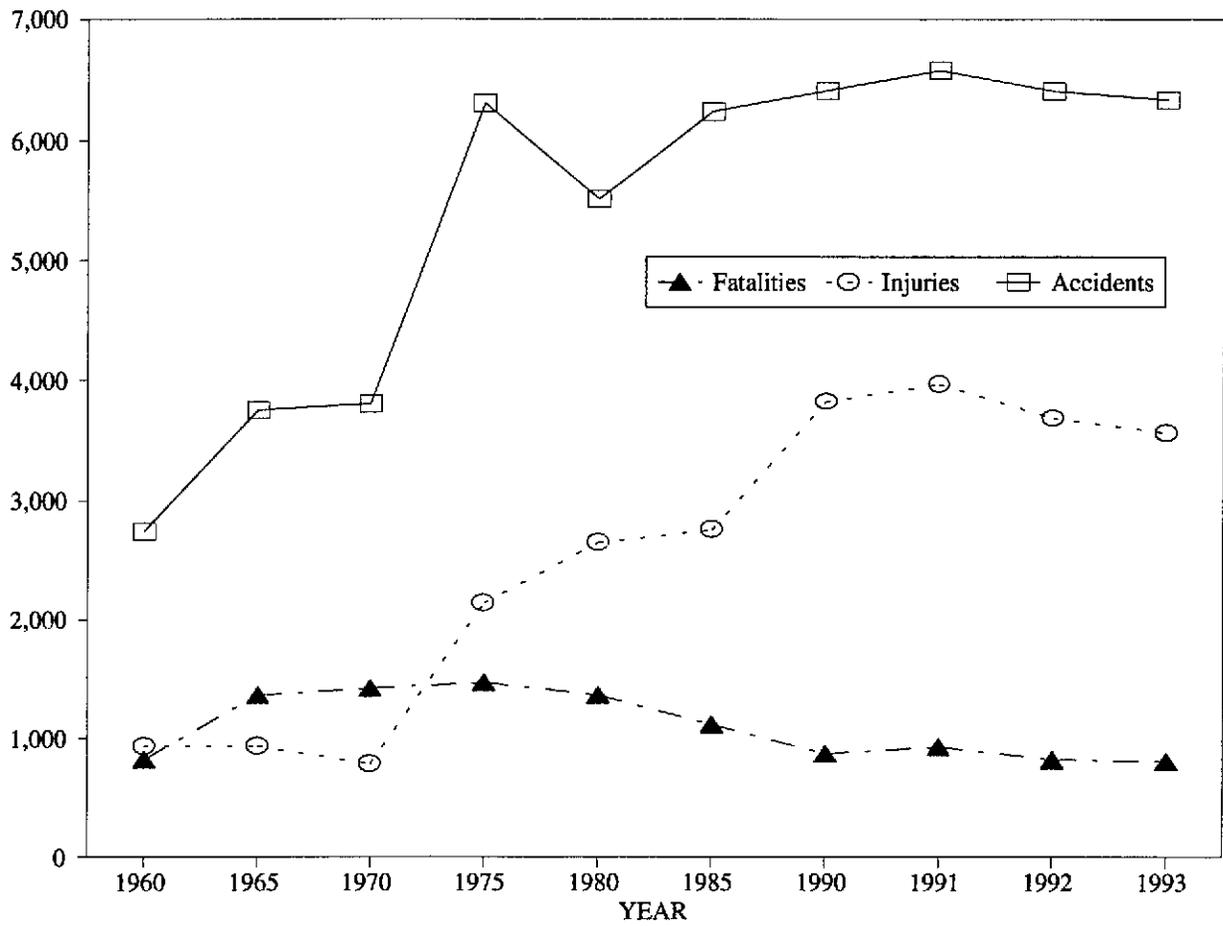
Note: Only a small fraction of property damages and non-fatal accidents are reported to the Coast Guard.

Source: U.S. DOT/USCG, *Boating Statistics*, 1993, and earlier editions.

Table 47. Recreational Boating Fatality, Injury, and Accident Rates per Number of Boats (at 5-Year Intervals 1960-1990 and Annually 1991-1993)

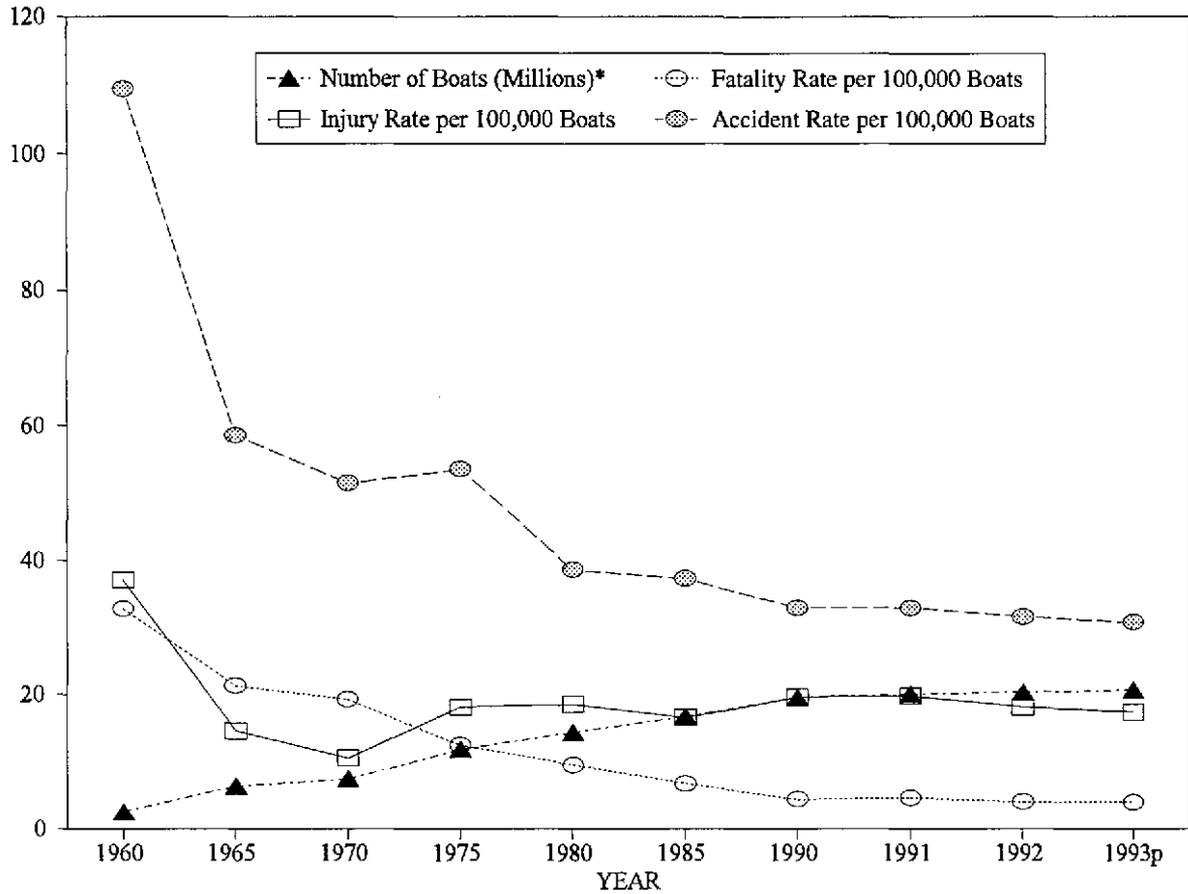
Year	Number of Boats* (Millions)	Fatality Rate per 100,000 Boats	Injury Rate per 100,000 Boats	Accident Rate per 100,000 Boats
1960	2.5	32.8	37.1	109.5
1965	6.4	21.3	14.5	58.6
1970	7.4	19.2	10.5	51.4
1975	11.8	12.4	18.1	53.5
1980	14.3	9.5	18.5	38.6
1985	16.7	6.7	16.5	37.3
1990	19.5	4.4	19.6	32.9
1991	20.0	4.6	19.8	32.9
1992	20.3	4.0	18.1	31.6
1993	20.6	3.9	17.3	30.8

* The total number of boats are estimated by the United States Coast Guard each year.
Source: U.S. DOT/USCG, *Boating Statistics*, 1993, and earlier editions.



Source: See Table 46.

Figure 31. Recreational Boating Fatalities, Injuries, and Accidents, 1960-1993



p preliminary.

* The total number of boats is estimated by the United States Coast Guard each year.

Source: See Table 47.

Figure 32. Recreational Boating Fatality, Injury, and Accident Rates per Number of Boats, 1960-1993

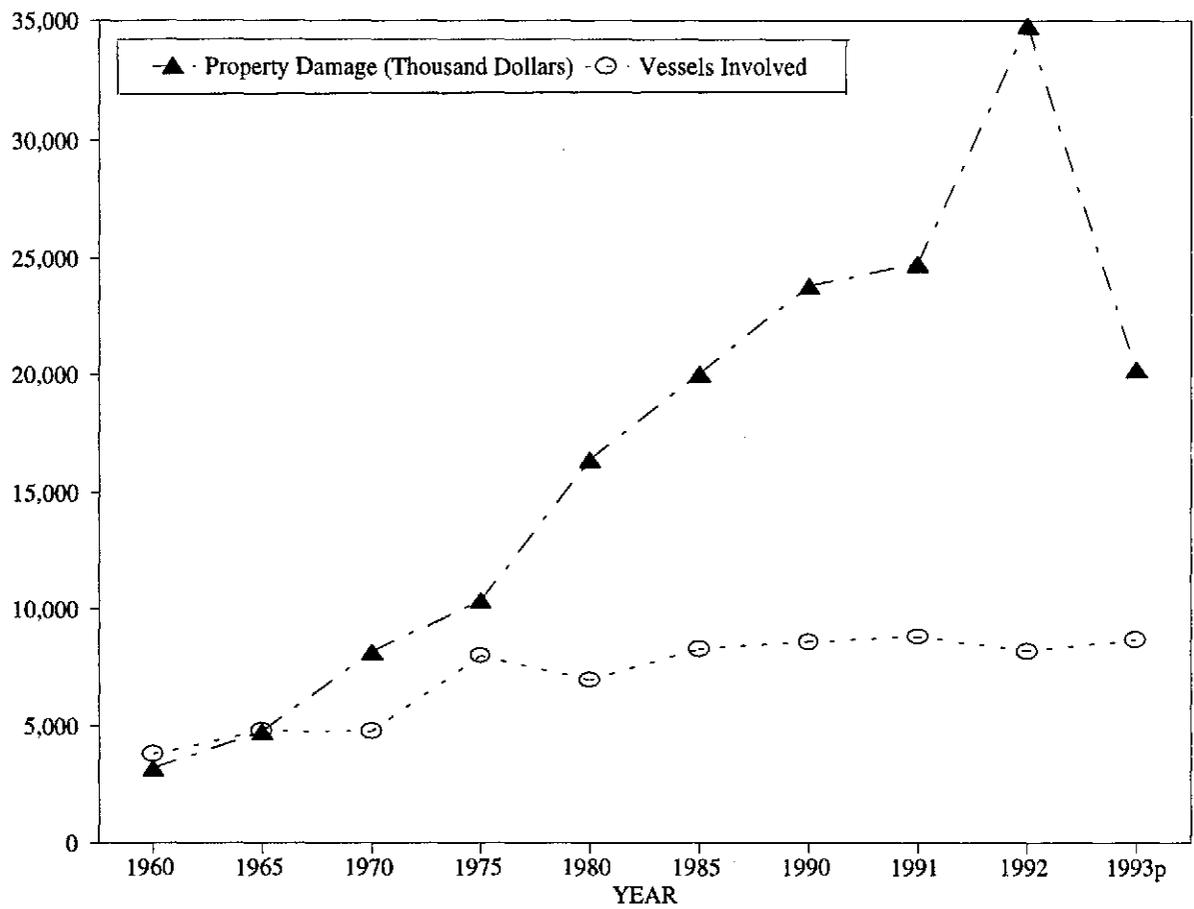
Table 48. Number of Vessels Involved in Recreational Boating Accidents and Reported Property Damage, (at 5-Year Intervals 1960-1990 and Annually 1991-1993)

Year	Property Damage (thousand dollars)	Vessels Involved
1960	3,192	3,785
1965	4,743	4,792
1970	8,173	4,762
1975	10,352	8,002
1980	16,385	6,954
1985	20,039	8,305
1990	23,809	8,591
1991	24,772	8,821
1992	34,800	8,206
1993 ^P	20,220	8,689

^P preliminary.

Note: Only a small fraction of property damage-only accidents is reported to the Coast Guard.

Source: U.S. DOT/USCG, *Boating Statistics*, 1993, and earlier editions.



p preliminary.
 Source: See Table 48.

Figure 33. Number of Vessels Involved in Recreational Boating Accidents and Reported Property Damage, 1960-1993

**Table 49. Railroad Fatalities and Injuries by Type of Person
(at 5-Year Intervals 1980-1990 and Annually 1991-1993)**

Year	Employees on Duty		Employees Not on Duty		Passengers on Trains		Nontrespassers	
	Fatalities	Injuries**	Fatalities	Injuries**	Fatalities	Injuries**	Fatalities	Injuries**
1980	97	56,331	4	671	4	593	739	3,849
1985	46	29,822	2	419	3	657	507	2,562
1990	40	21,010	0	326	3	476	551	2,890
1991	35	19,626	1	362	8	382	484	2,110
1992	34	17,755	1	310	3	411	475	1,909
1993	47	15,363	4	348	58	559	489	1,856

Year	Trespassers		Contractor Employees		Railroad and Grade Crossing			
	Fatalities	Injuries**	Fatalities	Injuries**	Railroad Only*		Grade Crossing Only	
					Fatalities	Injuries**	Fatalities	Injuries**
1980	566	728	7	74	584	58,356	833	3,890
1985	474	734	4	110	454	31,617	582	2,687
1990	700	1,493	3	245	599	22,736	698	2,407
1991	663	769	3	219	586	21,374	608	2,094
1992	646	772	11	226	591	19,408	579	1,975
1993	675	733	6	260	653	17,284	626	1,837

* Includes train and non-train data.

** Includes occupational illness.

Source: 1980-1990: U.S. DOT/RSPA/Volpe Center, *Transportation Safety Information Report*, annual issues.
1991-1993: *Ibid.*, FRA, *Accident/Incident Bulletin*, annual issues, Tables 7 and 9.

**Table 50. Train Accident Fatalities, Injuries, and Accidents by Type,
(at 5-Year Intervals 1980-1990 and Annually 1991-1993)**

Year	Fatalities			Injuries			Accidents		
	Deraillments	Collisions	Other	Deraillments	Collisions	Other	Deraillments	Collisions	Other
1980	8	20	1	286	341	38	6,442	1,201	526
1985	2	6	0	197	223	56	2,495	366	414
1990	2	8	0	272	139	40	2,146	315	418
1991	10	5	4	174	103	49	1,936	262	461
1992	2	1	3	71	59	41	1,734	207	418
1993	53	14	0	179	87	42	1,930	205	476

Note: Train accidents only. Excludes all Rail-Highway Grade Crossing Accidents.

Source: 1980-1990: U.S. DOT/RSPA/Volpe Center, *Transportation Safety Information Report*, annual issues.
1991-1993: *Ibid.*, FRA, *Accident/Incident Bulletin*, annual issues, Tables 5, 14 and 15.

Table 51. Railroad Accidents and Fatalities, and Rail-Highway Grade Crossing Fatalities, (at 5-Year Intervals 1970-1990 and Annually 1991-1993)

Year	Railroad Accidents*	Railroad Fatalities**	Rail-Highway Grade Crossing Fatalities
1970	8,095	785	1,440
1975	8,041	575	966
1980	8,451	584	833
1985	3,275	454	582
1990	2,879	599	698
1991	2,814	586	608
1992	2,531	591	579
1993 ^p	2,785	653	626

^p preliminary.

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

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

Source: 1970-1990: U.S. DOT/RSPA/Volpe Center, *Transportation Safety Information Report*, annual issues, 1980-1991.
1991-1993: *Ibid.*, FRA, *Accident/Incident Bulletin*, annual issues, Tables 3, 4 and 7.

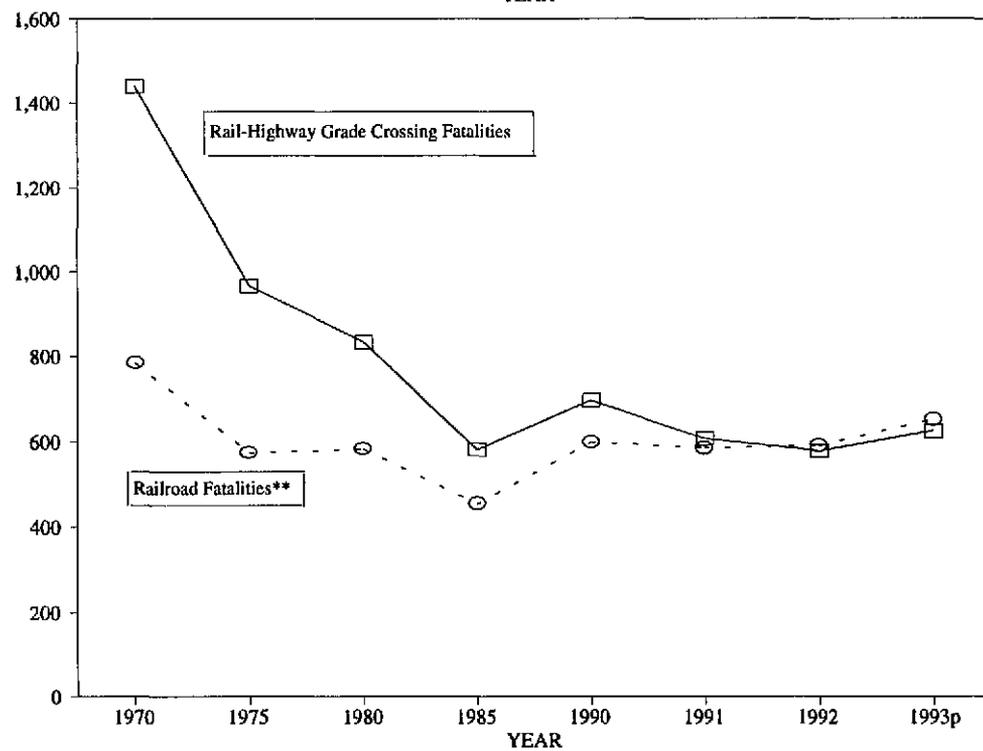
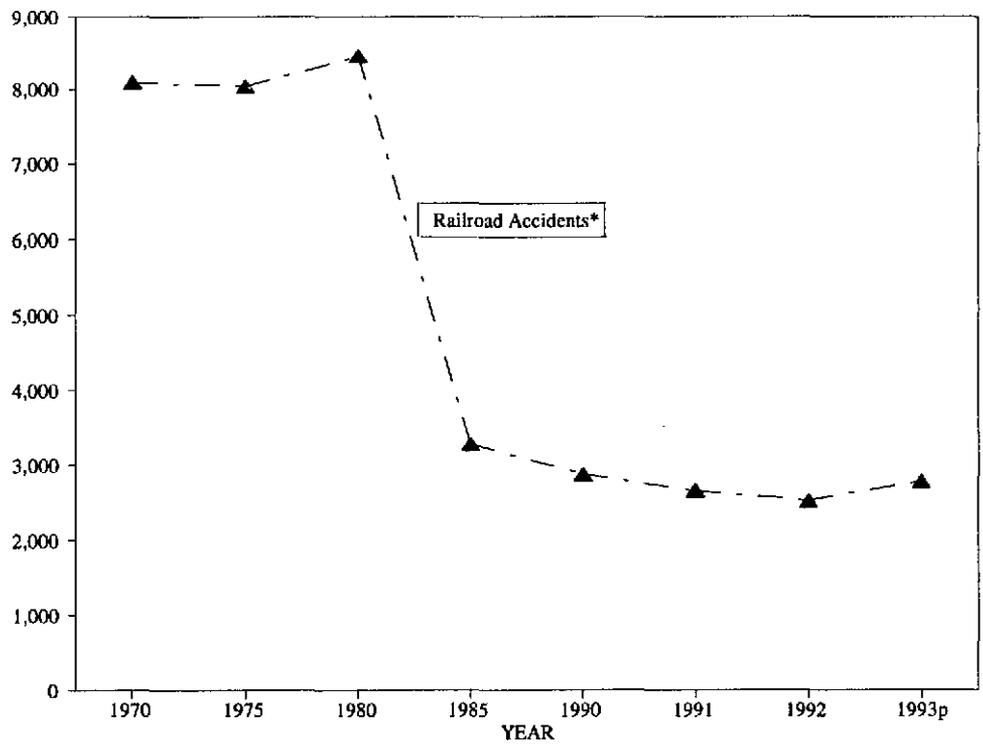
Table 52. Railroad* Accident Rates per Train-Miles, (at 5-Year Intervals 1970-1990 and Annually 1991-1993)

Year	Accident Rate	Train-Miles (millions)
1970	9.7	838.7
1975	10.7	755.0
1980	11.8	717.6
1985	6.0	570.9
1990	5.0	608.8
1991	4.9	576.8
1992	4.3	593.7
1993 ^p	4.5	614.0

^p preliminary.

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

Source: 1970-1990: U.S. DOT/RSPA/Volpe Center, *Transportation Safety Information Report*, annual issues, 1980-1991.
1991-1993: *Ibid.*, FRA, *Accident/Incident Bulletin*, annual issues, Tables 1 and 4.



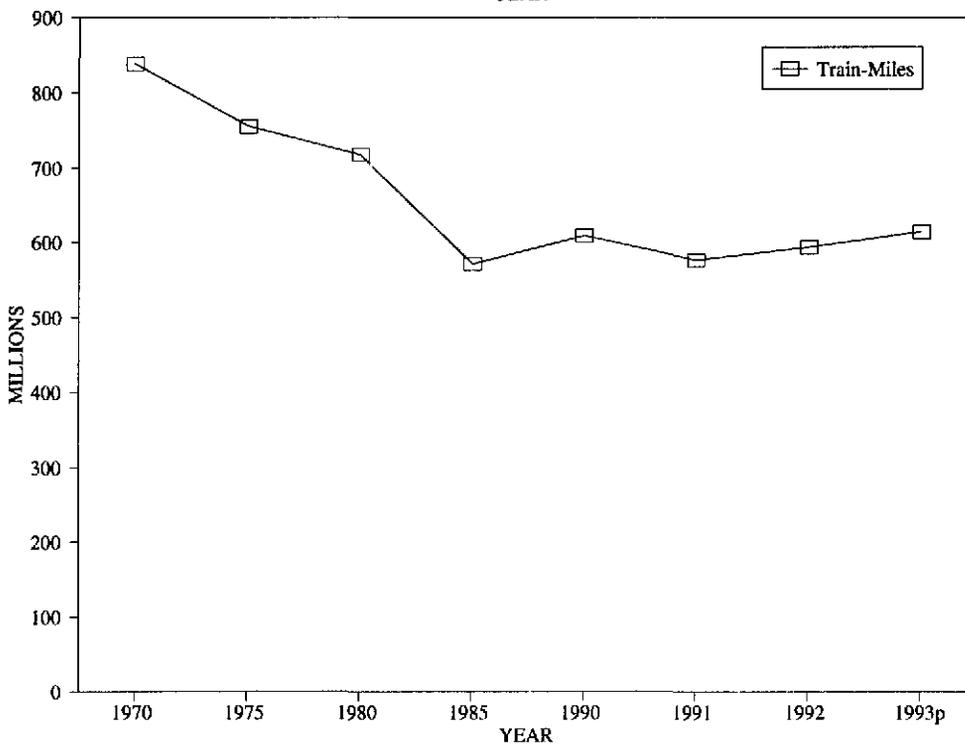
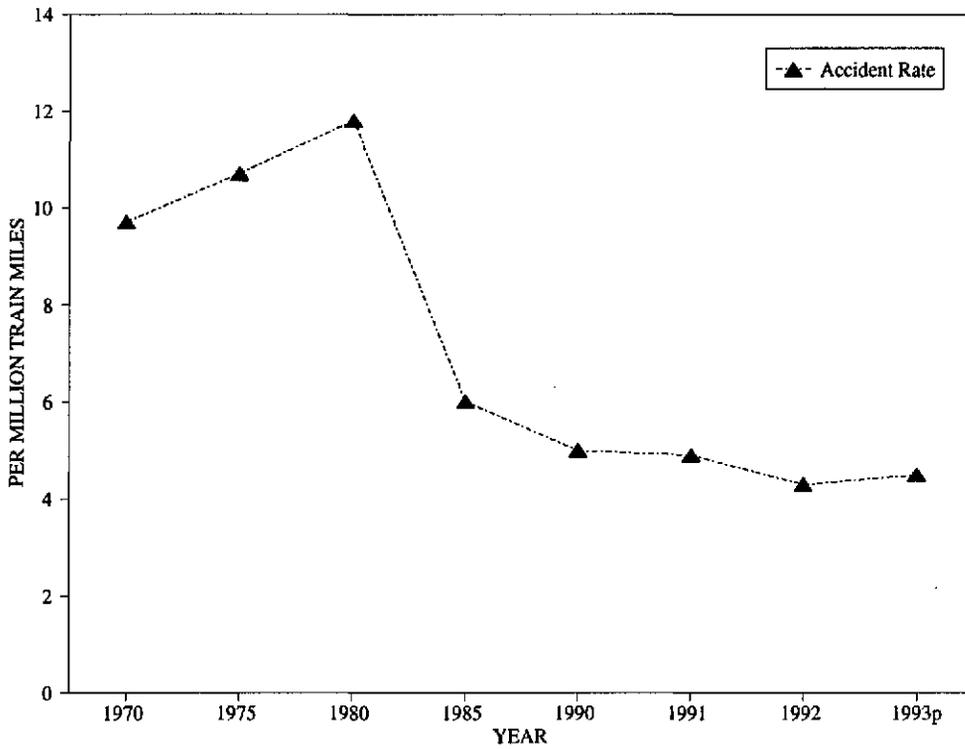
p preliminary.

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

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

Source: See Table 51.

Figure 34. Railroad Accidents and Fatalities, and Rail-Highway Grade Crossing Fatalities, 1970-1993



p preliminary.

Source: See Table 52.

Figure 35. Railroad Accident Rates per Train-Miles, 1970-1993

**Table 53. Liquid and Gas Pipeline Failures,
(at 5-Year Intervals 1970-1990 and Annually 1991-1993)**

Year	Failures	
	Gas	Liquid
1970	1,019	351
1975	1,373	254
1980	1,996	219
1985	331	183
1990	199	177
1991	233	210
1992	192	224
1993	216	228

Note: Beginning with 1985 data, pipeline incidents are credited to the year in which they occurred, not the year in which the report was received.

Source: 1970-1991: U.S. DOT/RSPA/Volpe Center, *Transportation Safety Information Report*, annual issues.

1992-1993: *Ibid.*, U.S. DOT/RSPA, Office of Pipeline Safety, DPS-35.

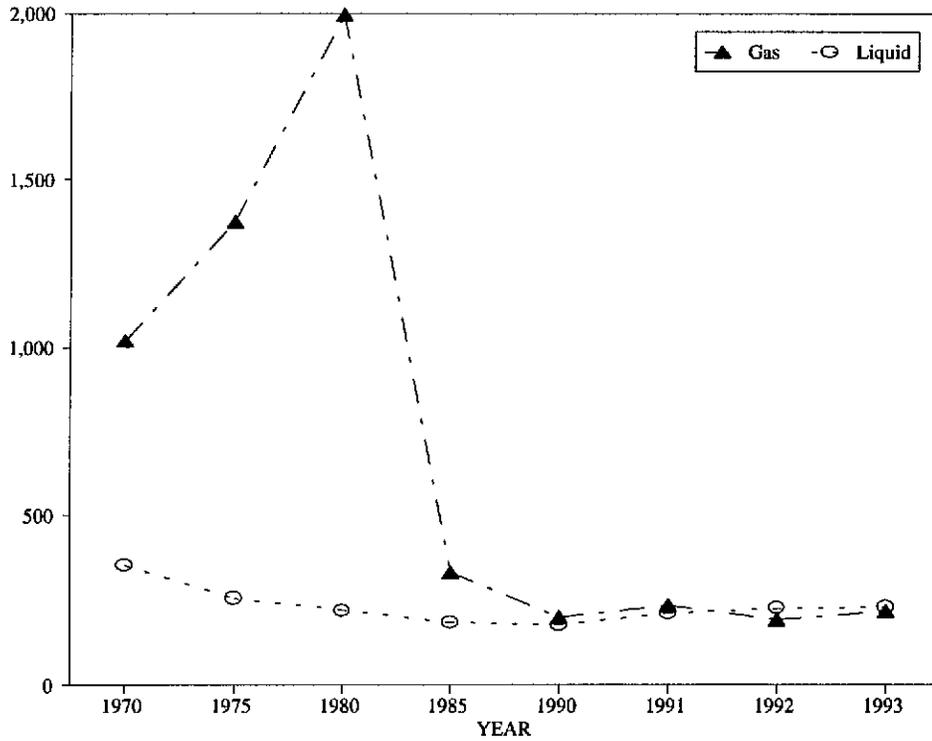
**Table 54. Liquid and Gas Pipeline Fatalities,
(at 5-Year Intervals 1970-1990 and Annually 1991-1993)**

Year	Fatalities	
	Gas	Liquid
1970	22	4
1975	14	7
1980	11	3
1985	26	5
1990	5	3
1991	14	0
1992	15	5
1993	14	0

Note: Beginning with 1985 data, pipeline incidents are credited to the year in which they occurred, not the year in which the report was received.

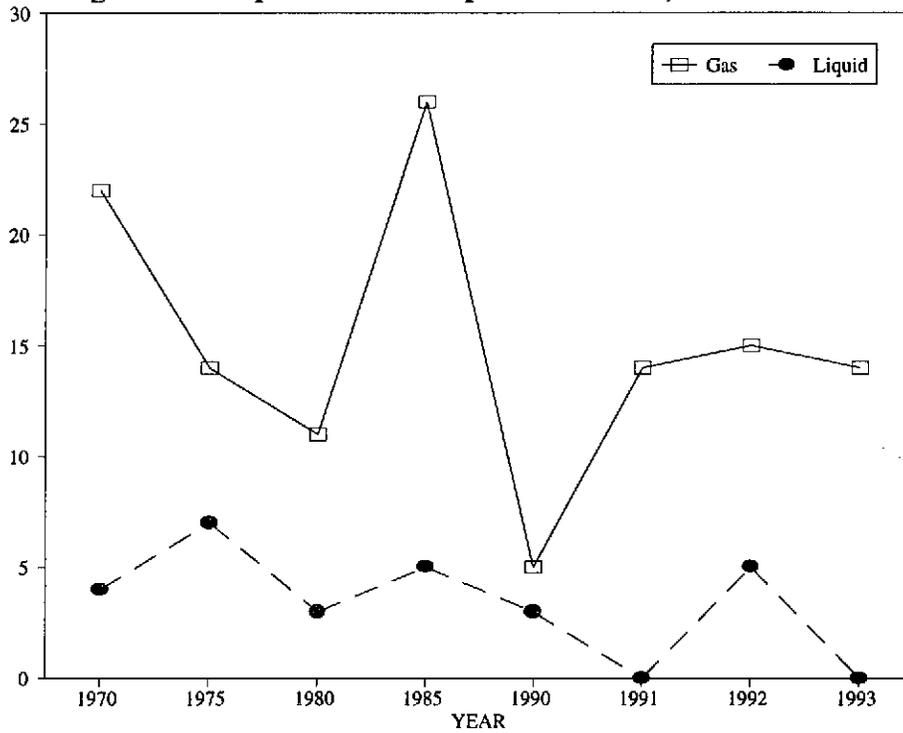
Source: 1970-1991: U.S. DOT/RSPA/Volpe Center, *Transportation Safety Information Report*, annual issues.

1992-1993: *Ibid.*, U.S. DOT/RSPA, Office of Pipeline Safety, DPS-35.



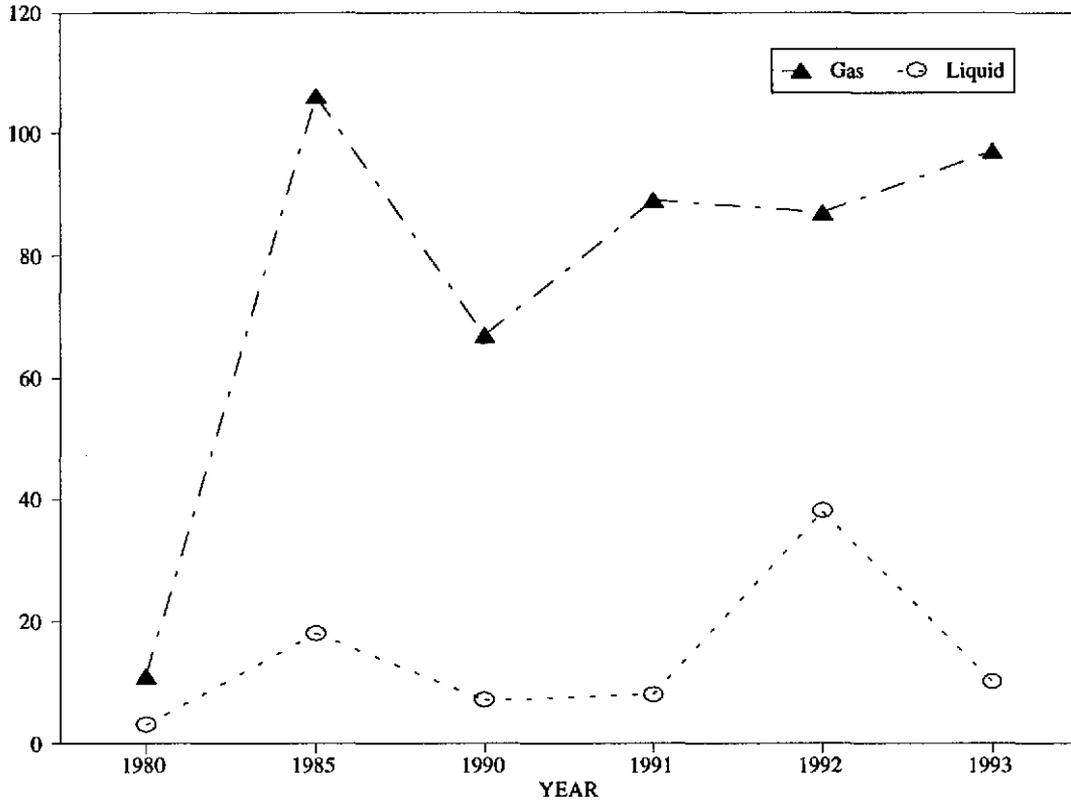
Source: See Table 53.

Figure 36. Liquid and Gas Pipeline Failures, 1970-1993



Source: See Table 54.

Figure 37. Liquid and Gas Pipeline Fatalities, 1970-1993

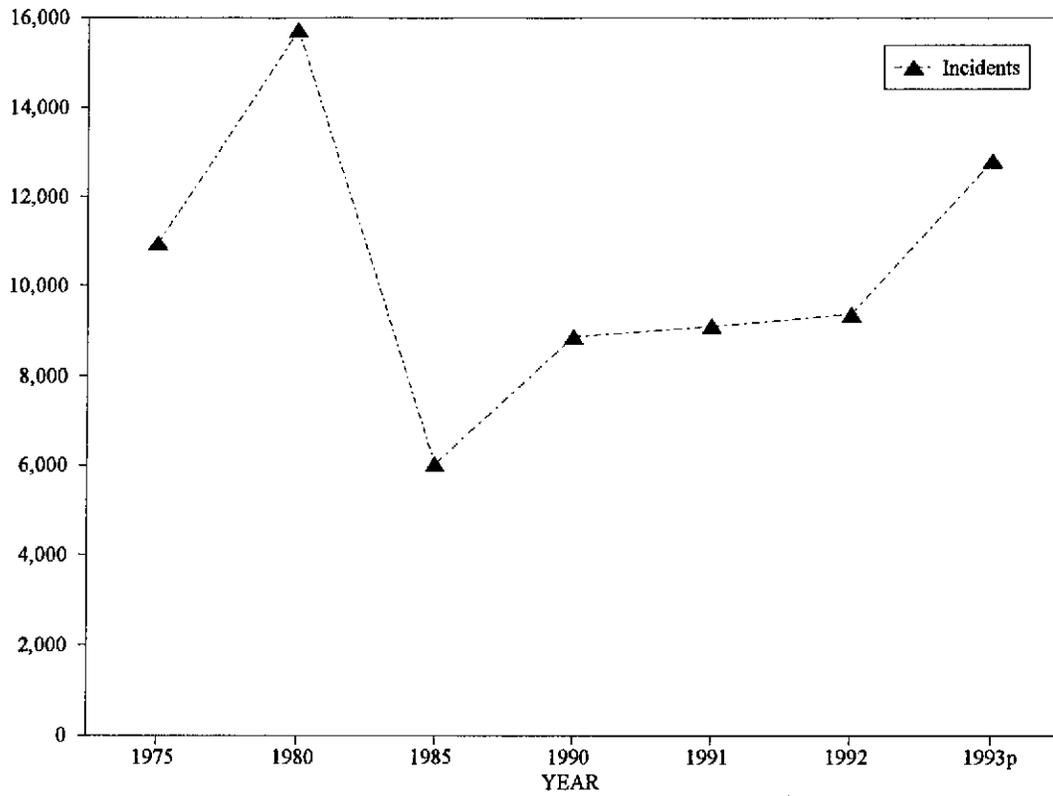


Year	Injuries	
	Gas	Liquid
1980	11	3
1985	106	18
1990	67	7
1991	89	8
1992	87	38
1993	97	10

Note: Beginning with 1985 data, pipeline incidents are credited to the year in which they occurred, not the year in which the report was received.

Source: U.S. DOT/RSPA, Office of Pipeline Safety, DPS-35.

Figure 38. Liquid and Gas Pipeline Injuries, 1980-1993



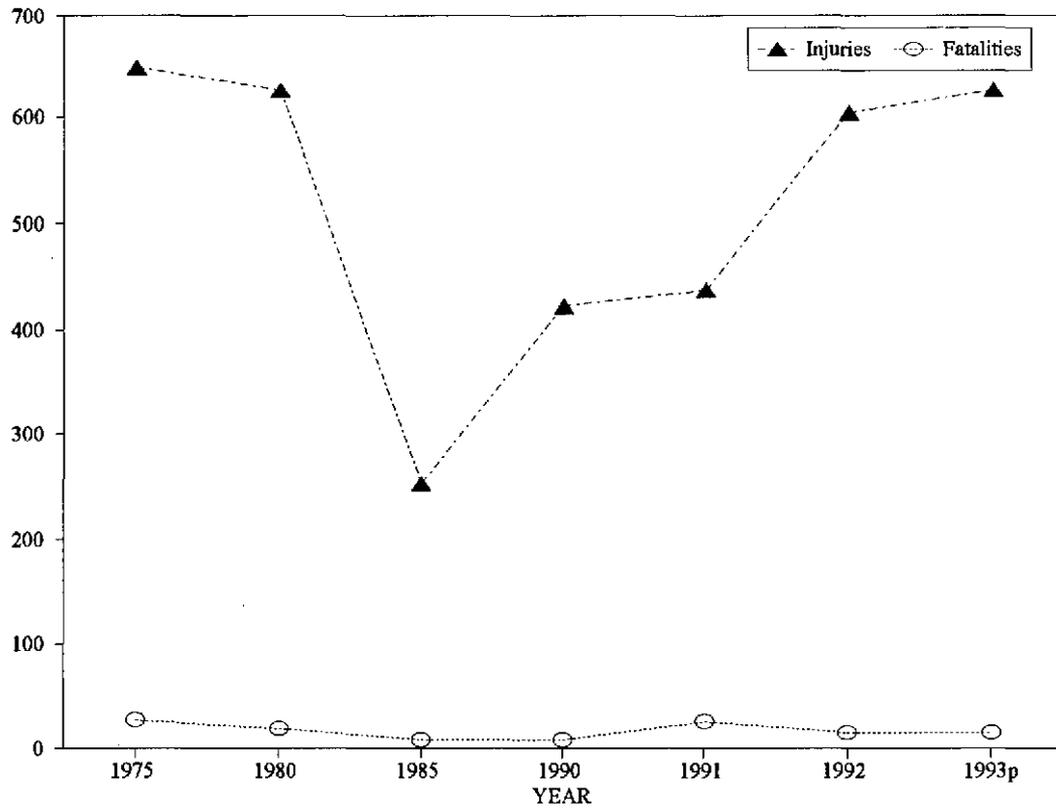
Year	Incidents
1975	10,951
1980	15,737
1985	6,019
1990	8,853
1991	9,093
1992	9,351
1993p	12,817

p preliminary.

Note: Hazardous Materials Operations initiated in 1971.

Source: 1975-1993: U.S.DOT/RSPA, Office of Hazardous Materials Transportation, DHM-63

Figure 39. Hazardous Materials Incidents, 1975-1993



Year	Injuries	Fatalities
1975	648	27
1980	626	19
1985	253	8
1990	423	8
1991	438	26
1992	604	15
1993p	626	15

p preliminary.

Note: Hazardous Materials operations initiated in 1971.

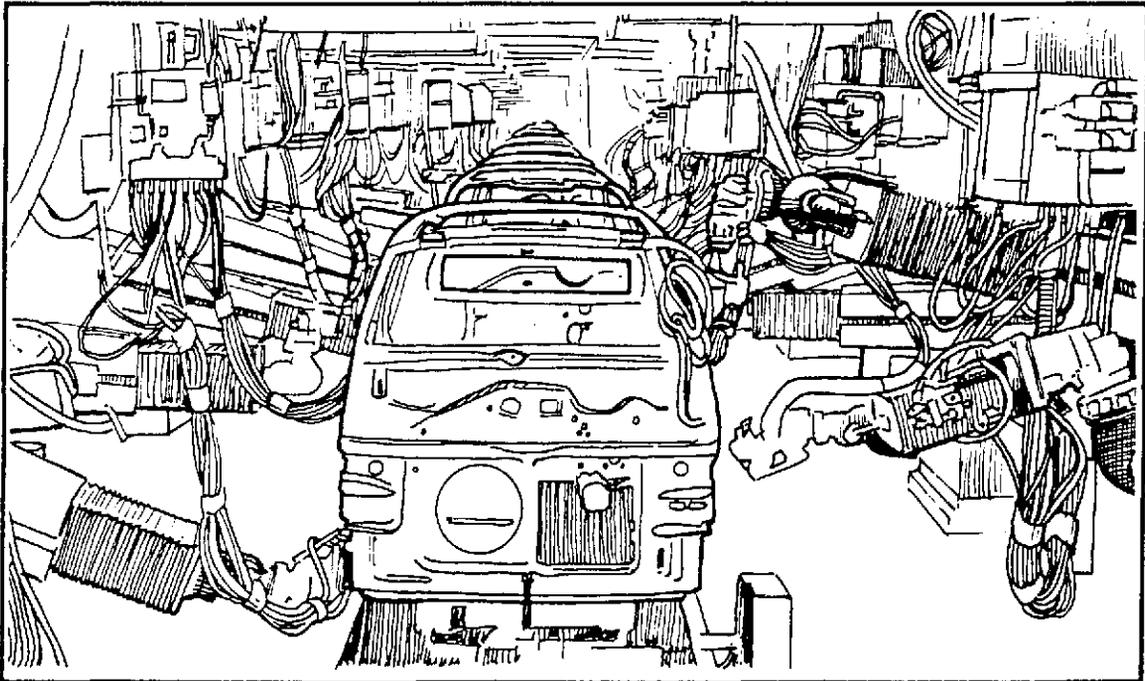
Source: 1975-1993: U.S.DOT/RSPA, Office of Hazardous Materials Transportation, DHM-63.

Figure 40. Hazardous Materials Fatalities and Injuries, 1975-1993

TRANSPORTATION TRENDS

Section III: Motor Vehicle Sales, Production, and Costs

This section includes data for 1960-1993 depicting the number of motor vehicles produced and sold in the U.S. and worldwide. The costs of owning and operating an automobile for 1975-1994 are also shown.



**Table 55. Annual U.S. Motor Vehicle Production and Factory Sales,
(at 5-Year Intervals 1960-1990 and Annually 1991-1993)
(thousands)**

Year	Production			Factory Sales		
	Passenger Cars	Commerical Vehicles	Total Vehicles	Passenger Cars	Commercial Vehicles	Total Vehicles
1960	6,703	1,202	7,905	6,675	1,194	7,869
1965	9,335	1,803	11,138	9,306	1,752	11,057
1970	6,550	1,734	8,284	6,547	1,692	8,239
1975	6,716	2,270	8,987	6,713	2,272	8,985
1980	6,376	1,634	8,010	6,400	1,667	8,067
1985	8,185	3,468	11,653	8,002	3,464	11,467
1990	6,077	3,706	9,783	6,050	3,725	9,775
1991	5,439	3,372	8,811	5,407	3,387	8,795
1992	5,664	4,065	9,729	5,685	4,062	9,747
1993	5,981	4,883	10,864	5,960	4,895	10,856

Note: Sum of components may not equal total due to independent rounding. Factory sales in 1980 were greater than production total because of sales from previous year's inventory.

Source: American Automobile Manufacturers Association, *Facts & Figures*, 1994, p. 3.

**Table 56. U.S. Retail Passenger Car Sales,
(at 5-Year Intervals 1970-1990 and Annually 1991-1993)
(thousands)**

Year	Domestic	Imports				Total	Total Passenger Car Sales
		Japan	Germany	Other	Total		
1970	7,119	313	750	217	1,280	8,400	
1975	7,053	808	493	271	1,571	8,624	
1980	6,581	1,906	305	187	2,398	8,979	
1985	8,205	2,218	424	196	2,838	11,042	
1990	6,897	1,719	265	419	2,403	9,300	
1991	6,137	1,500	193	345	2,038	8,175	
1992	6,277	1,452	201	284	1,937	8,213	
1993	6,734	1,328	186	269	1,783	8,518	

Note: Sum of components may not equal total due to independent rounding.

Source: American Automobile Manufacturers Association, *Facts & Figures*, 1994, p. 18.

**Table 57. U.S. Retail Sales of New Cars by Sector
(at 5-year Intervals 1960-1990 and Annually 1991-1993)**

Year	Units by Consuming Sector (000)				% of Total Sales	
	Consumer	Business	Government	Total	Consumer	Business
1960	4,950	1,616	66	6,632	74.6	24.4
1965	7,106	2,149	89	9,344	76.0	23.0
1970	6,252	2,056	94	8,403	74.4	24.5
1975	5,907	2,508	123	8,538	69.2	29.4
1980	6,062	2,791	126	8,979	67.5	31.1
1985	7,083	3,822	134	11,039	64.2	34.6
1990	5,678	3,567	149	9,484	60.8	37.6
1991	4,538	3,752	97	8,387	54.1	44.8
1992	4,558	3,683	113	8,354	54.6	44.1
1993	4,672	3,943	100	8,715	53.6	45.2

Source: American Automobile Manufacturers Association, *Facts and Figures*, 1994, p. 18.

Table 58. Model Year Sales, Market Shares, and Sales-Weighted Fuel Economies of Domestic and Import Automobiles, Model Years (at 5-Year Intervals 1980-1990 and Annually 1991-1993*)

	1980	1985	1990	1991	1992	1993
MINICOMPACT						
Total sales, units	428,346	52,295	76,698	73,562	100,504	77,215
Market share, %	4.7	0.5	0.8	0.9	1.2	0.9
Fuel economy, mpg	29.4	32.7	26.4	28.0	31.0	30.5
SUBCOMPACT						
Total sales, units	3,441,480	2,382,339	2,030,226	2,172,496	2,039,480	1,891,329
Market share, %	37.8	21.7	22.0	26.1	25.2	22.6
Fuel economy, mpg	27.3	30.1	31.3	31.5	31.8	31.8
COMPACT						
Total sales, units	599,523	3,526,118	3,156,481	2,458,967	2,482,375	2,714,852
Market share, %	6.6	32.1	34.2	29.5	30.6	32.4
Fuel economy, mpg	22.3	29.6	28.9	28.7	28.8	29.3
MIDSIZE						
Total sales, units	3,073,103	3,117,817	2,511,503	2,333,104	2,249,553	2,439,081
Market share, %	33.8	28.4	27.2	28.0	27.8	29.1
Fuel economy, mpg	21.3	24.9	25.9	25.8	25.8	25.7
LARGE						
Total sales, units	1,336,190	1,516,249	1,279,092	1,161,679	1,140,587	1,186,991
Market share, %	14.7	13.8	13.9	13.9	14.1	14.2
Fuel economy, mpg	19.3	22.3	23.5	23.4	23.7	24.0
TWO SEATER						
Total sales, units	215,964	373,697	170,465	139,296	88,612	73,603
Market share, %	2.4	3.4	1.8	1.7	1.1	0.9
Fuel economy, mpg	21.0	27.6	28.0	27.4	25.8	24.0
FLEET						
Total sales, units	9,094,506	10,968,515	9,224,465	8,339,104	8,101,111	8,383,071
Market share, %	100.0	100.0	100.0	100.0	100.0	100.0
Fuel economy, mpg	23.2	27.0	27.6	27.6	27.7	27.8

* These figures represent only those sales that could be matched to corresponding EPA fuel economy value.
Source: Oak Ridge National Laboratory, *Light-Duty Vehicle MPG and Market Shares Systems*. Oak Ridge, TN, 1994.

Table 59. Model Year Sales, Market Shares, and Sales-Weighted Fuel Economies of Domestic and Import Light Trucks, Model Years (at 5-Year Intervals 1980-1990 and Annually 1991-1993^a)

	1980	1985	1990	1991	1992	1993
SMALL PICKUP						
Total sales, units	516,412	863,584	678,488	609,814	586,752	332,470
Market share, %	23.3	20.4	15.0	14.9	13.4	6.6
Fuel economy, mpg	25.5	26.8	25.2	25.6	25.0	24.9
LARGE PICKUP						
Total sales, units	1,115,248	1,690,931	1,573,729	1,364,940	1,452,192	1,877,806
Market share, %	50.3	39.9	34.9	33.4	33.1	37.2
Fuel economy, mpg	17.0	19.0	18.9	18.9	18.9	19.6
SMALL VAN						
Total sales, units	13,649	437,660	932,693	886,841	961,348	1,121,786
Market share, %	0.6	10.3	20.7	21.7	21.9	22.2
Fuel economy, mpg	19.6	23.9	23.1	22.6	22.5	22.8
LARGE VAN						
Total sales, units	328,065	536,242	398,877	308,317	350,013	388,435
Market share, %	14.8	12.7	8.8	7.5	8.0	7.7
Fuel economy, mpg	16.3	16.4	16.9	17.1	16.9	17.3
SMALL UTILITY						
Total sales, units	79,776	477,706	738,294	782,125	854,572	938,514
Market share, %	3.6	11.3	16.4	19.2	19.5	18.6
Fuel economy, mpg	16.7	22.1	21.9	21.4	20.9	21.3
LARGE UTILITY						
Total sales, units	163,387	229,242	192,544	131,740	180,576	388,993
Market share, %	7.4	5.4	4.3	3.2	4.1	7.7
Fuel economy, mpg	14.6	16.6	16.1	16.4	17.2	17.6
FLEET						
Total sales, units	2,216,537	4,235,365	4,514,625	4,083,777	4,385,453	5,048,004
Market share, %	100.0	100.0	100.0	100.0	100.0	100.0
Fuel economy, mpg	18.1	20.4	20.5	20.6	20.4	20.5

a These figures represent only those sales that could be matched to corresponding EPA fuel economy values.
Source: Oak Ridge National Laboratory, *Light-Duty Vehicle MPG and Market Shares System*, Oak Ridge, TN, 1994.

Table 60. World Motor Vehicle Production, 1961-1993
(thousands)

Country	Passenger Cars					Commercial Vehicles					Total				
	1961	1971	1981	1991	1993	1961	1971	1981	1991	1993	1961	1971	1981	1991	1993
Argentina	78	193	139	114	287	58	60	33	25	55	136	253	172	139	342
Australia	182	393	352	278	284	49	77	40	15	11	231	470	392	293	295
Austria	8	1	7	14	41	5	6	8	6	4	13	7	15	19	45
Belgium	-	279	216	253	347	1	17	41	84	57	1	296	257	338	404
Brazil	98	342	406	705	1,099	47	174	374	255	323	145	516	780	960	1,422
Canada	328	1,083	203	1,072	1,349	63	277	520	833	889	391	1,360	1,323	1,905	2,238
China	-	-	-	40	221	-	-	-	604	1,089	-	-	-	644	1,310
Commonwealth of Independent States**	149	518	1,324	1,170	939	406	612	874	759	650	555	1,130	2,198	1,929	1,589
Czech Republic*	59	149	181	173	220	17	28	49	29	9	76	177	230	201	229
France	988	2,694	2,612	3,188	2,836	217	316	408	423	295	1,205	3,010	3,019	3,611	3,131
Germany	1,802	3,829*	3,758*	4,809	3,753	411	312	358	391	237	2,213	4,141	4,116	5,200	3,991
Hungary	-	-	0	0	20	6	10	14	5	5	6	10	14	5	25
India	22	42	42	177	201	32	47	107	177	172	54	89	149	354	373
Italy	694	1,701	1,257	1,631	1,117	65	116	176	245	150	759	1,817	1,434	1,877	1,267
Japan	250	3,718	6,974	9,753	8,497	789	2,093	4,206	3,492	2,730	1,039	5,811	11,180	13,245	11,228
Korea	-	-	69	1,158	1,593	-	-	65	340	457	-	-	134	1,498	2,050
Mexico	-	154	355	720	835	-	57	242	269	245	-	211	597	989	1,080
Netherlands	13	78	78	85	80	6	13	12	26	14	19	91	90	111	94
Poland	14	86	248	155	335	22	60	60	30	19	36	146	308	185	354
Spain	55	453	855	1,774	1,506	20	79	132	308	262	75	532	987	2,082	1,768
Sweden	110	287	258	269	279	22	30	55	75	58	132	317	314	345	337
United Kingdom	1,004	1,742	955	1,237	1,376	443	456	230	217	193	1,447	2,198	1,184	1,454	1,569
United States	5,522	8,584	6,253	5,439	5,981	1,131	2,088	1,690	3,372	4,883	6,653	10,672	7,943	8,811	10,864
Yugoslavia	15	114	240	216	7	5	18	27	26	1	20	132	266	242	8
Total	11,391	26,440	26,782	34,431	33,203	3,815	6,946	9,721	15,206	12,775	9,356	33,175	37,230	33,175	45,586

* formerly Czechoslovakia.

** formerly U.S.S.R.

Note: Production in this table refers to vehicles locally manufactured.

Source: American Automobile Manufacturers Association, *Facts & Figures*, 1994, p. 12, and similar table in earlier editions.

**Table 61. Cost of Owning and Operating an Automobile
(at 5-Year Intervals 1975-1990 and Annually 1991-1994)**

Year	Variable Costs (Constant 1990 Cents Per Mile ^a)				Constant 1990 Dollars Per 10,000 Miles ^b			Total cost Per Mile ^b (Constant 1990 Cents ^a)
	Gas and Oil	Percentage Gas and Oil of Total Cost	Maintenance	Tires	Variable Cost	Fixed Cost	Total Cost	
1975	11.70	26.3	2.36	1.60	1,566	2,880	4,446	44.64
1980	9.29	21.0	1.78	1.01	1,208	3,224	4,433	44.33
1985	7.48	22.6	1.49	0.79	977	2,328 ^c	3,304 ^c	33.04 ^c
1990	5.40	13.2	2.10	0.90	840	3,256 ^c	4,096 ^c	40.96 ^c
1991	6.43	15.4	2.11	0.86	940	3,245 ^c	4,185 ^c	41.85 ^c
1992	5.59	13.1	2.05	0.84	847	3,414 ^c	4,261 ^c	42.61 ^c
1993	5.90	13.1	2.40	0.90	879	3,635 ^c	4,514 ^c	45.14 ^c
1994 ^f	5.60	12.0	2.50	1.00	910	3,755 ^c	4,665 ^c	46.65 ^c

^f preliminary.

^a Adjusted by the Consumer Price Inflation Index.

^b Based on 10,000 miles per year.

^c Fixed and total operating costs preceding 1985 are not comparable with figures after 1985. Fixed cost depreciation from 1975-84 was based on four years or 60,000 miles. After 1984, the depreciation was based on six years or 60,000 miles.

Note: The total cost of operating an automobile is the sum of the fixed cost (depreciation, insurance, finance charge, and license fee) and the variable cost, which is related to the amount of travel. The cost of operating a car in 1992 was approximately 43 cents per mile. From 1985 to 1992, the fixed costs have risen an average of 5.6% per year while the variable costs have declined at an average annual rate of 2.0%.

Source: American Automobile Association, *Your Driving Costs*, 1994 Edition.

**Table 62. New Car Price Comparisons with Safety and Emissions Equipment,
(at 5-Year Intervals 1970-1990 and Annually 1991-1992)
(dollars)**

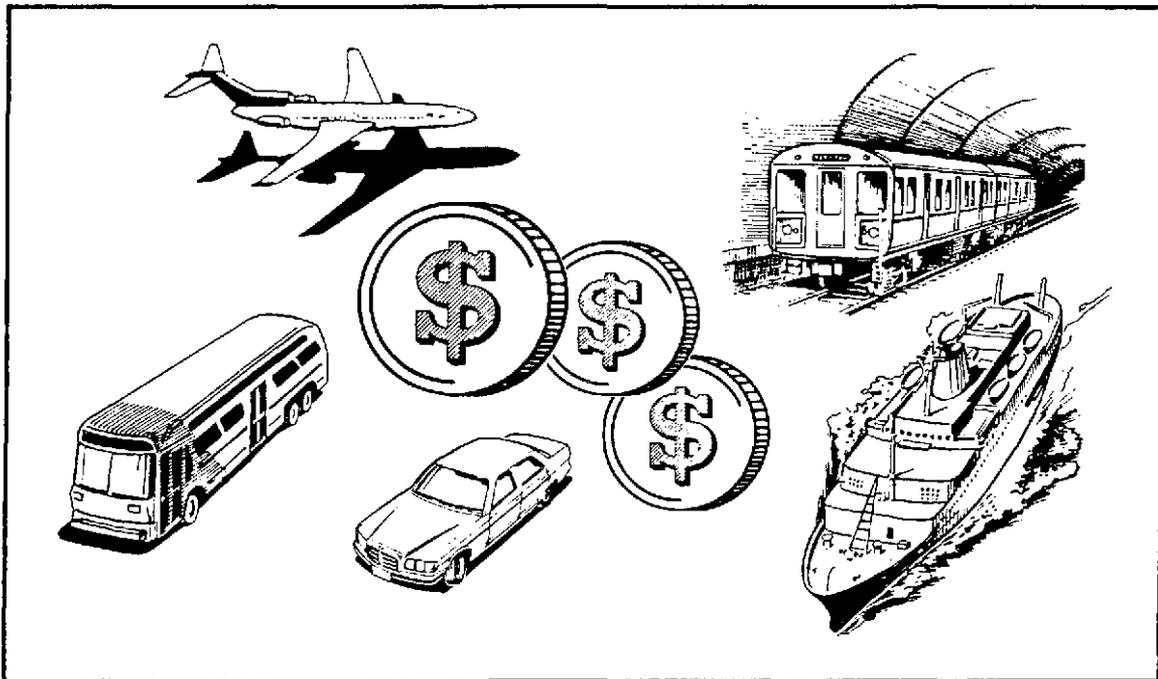
Year	Estimated Average New Car Price For a 1967 "Comparable Car"		
	With Added Safety & Emissions Equipment	Without Added Safety & Emissions Equipment	Price Difference for Added Safety & Emissions Equipment
1970	3,601	3,459	142
1975	4,686	4,103	583
1980	6,863	5,764	1,099
1985	8,984	6,958	2,026
1990	10,581	7,938	2,643
1991	11,152	8,224	2,928
1992	11,462	8,427	3,035

Source: Compiled by Oak Ridge National Laboratory from American Automobile Manufacturers Association, *Facts & Figures* 1993, p. 56.

SUPPLEMENTARY DATA

Section I: Transportation and the Economy

Transportation and the Economy is the first of the three supplementary sections. Tabular and graphic statistics are used to show transportation's interrelationship with the economy from 1960-1992/1993.

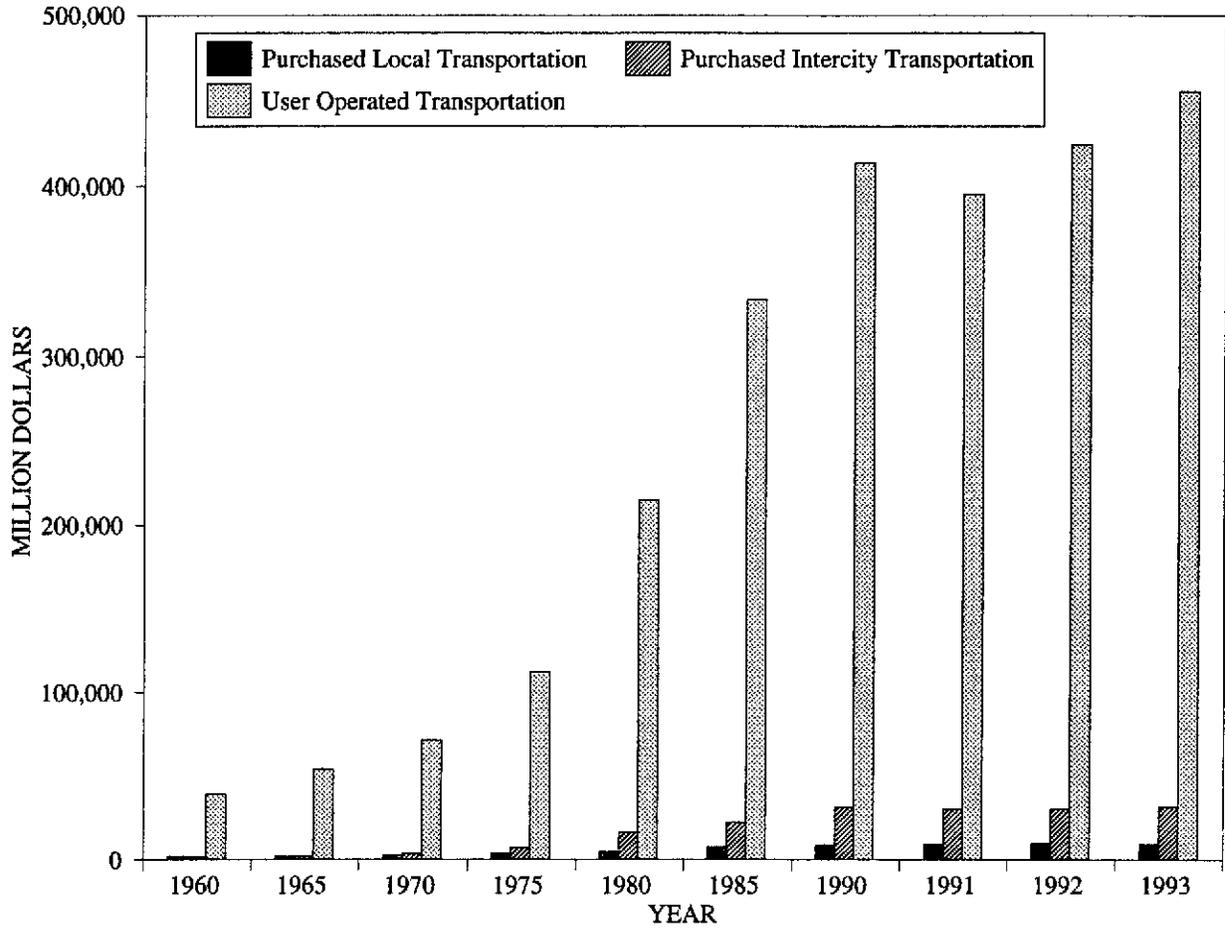


**Table 63. Personal Consumption Expenditures by Transportation Sector,
(at 5-Year Intervals 1960-1990 and Annually 1991-1993)
(million dollars)**

User-Operated Transportation								
Year	New Cars and Net Purchases of Used Cars	New & Used Trucks & RVs	Tires, Tubes, Accessories and Parts	Repair & Rental	Gasoline & Oil	Tolls	Insurance Premiums Less Claims Paid	Total
1960	16,585	606	2,485	5,065	11,977	310	2,029	39,057
1965	25,294	1,284	3,444	6,901	14,696	463	2,379	54,461
1970	27,265	2,883	6,065	11,232	22,419	652	3,752	71,385
1975	37,790	7,739	10,287	19,803	39,703	821	3,776	112,180
1980	57,243	11,849	14,889	33,682	86,689	1,104	9,443	214,879
1985	111,689	37,608	18,059	57,714	96,936	1,519	10,011	333,536
1990	130,359	49,586	22,483	82,538	108,471	2,024	18,066	413,527
1991	116,189	46,020	23,339	82,371	102,879	2,048	22,678	395,524
1992	126,719	53,879	23,687	89,468	103,444	2,116	24,572	423,885
1993	134,327	62,443	25,540	97,344	103,727	2,260	29,706	455,347

Year	Purchased Intercity Transportation					Purchased Local Transportation			Total Transportation
	Railroad	Intercity Bus	Airline	Other	Total	Mass Transit System	Taxi	Total	
1960	306	290	676	35	1,307	1,295	309	1,904	42,268
1965	284	375	1,329	54	1,904	1,313	612	1,925	58,290
1970	214	532	2,450	182	3,378	1,636	1,180	2,816	80,462
1975	267	737	5,878	387	7,269	1,865	1,968	3,833	123,282
1980	300	1,403	13,454	910	16,067	2,927	1,866	4,793	235,739
1985	449	1,612	18,664	1,643	22,368	4,435	2,926	7,361	363,265
1990	708	1,396	26,467	2,644	31,215	5,707	3,209	8,916	453,658
1991	722	1,521	25,609	2,185	30,037	5,707	3,351	9,058	434,619
1992	698	1,451	25,684	2,185	30,018	5,940	3,285	9,225	463,128
1993	692	1,412	27,062	2,428	31,594	5,762	3,372	9,134	496,075

Source: U.S. Department of Commerce, Bureau of Economic Analysis.



Source: See Table 63.

Figure 41. Personal Consumption Expenditures by Transportation Sector, 1960-1993

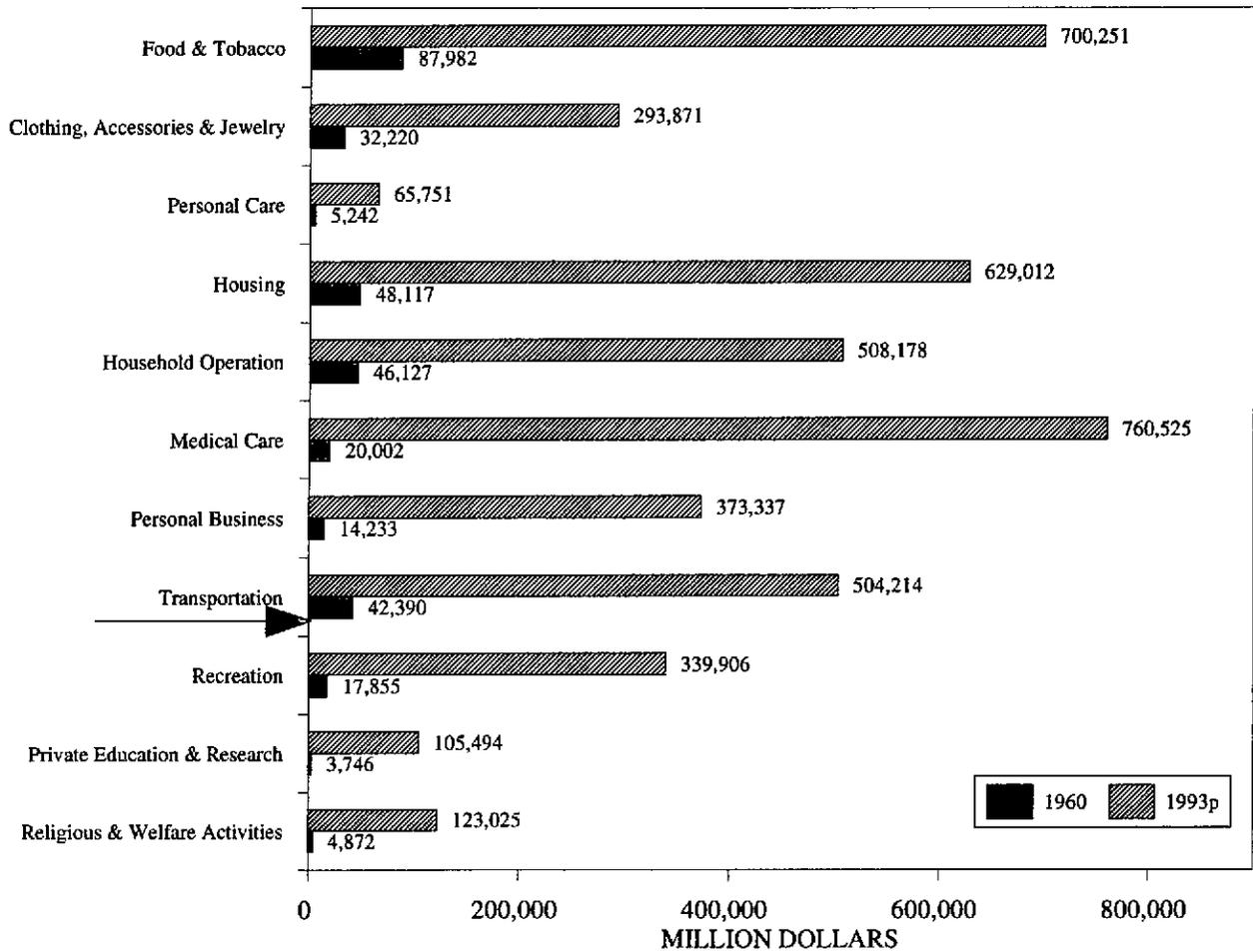
**Table 64. Personal Consumption Expenditures by Type,
(at 5-Year Intervals 1960-1990 and Annually 1991-1993)
(million dollars)**

Year	Food & Tobacco	Clothing, Accessories & Jewelry	Personal Care	Housing	Household Operation	Medical Care	Personal Business	Transportation	Recreation	Private Education & Research	Religious & Welfare Activities	Foreign Travel by U.S. Residents	Total
1960	87,982	32,220	5,242	48,117	46,127	20,002	14,233	42,390	17,855	3,746	4,872	2,121	324,907
1965	106,968	40,305	7,617	65,469	61,322	30,053	19,714	58,426	25,907	5,684	6,055	2,858	430,378
1970	149,662	55,780	11,016	93,910	84,079	50,415	31,635	80,634	41,322	9,877	8,877	4,514	621,721
1975	233,596	85,619	16,731	147,035	135,376	107,867	52,961	130,213	70,902	20,466	19,688	4,445	1,024,898
1980	362,638	131,792	26,913	255,200	233,611	207,231	101,641	235,739	214,879	33,616	38,557	3,540	1,748,077
1985	482,818	185,903	39,948	392,498	342,265	364,698	184,912	363,265	187,899	54,470	63,349	5,381	2,667,396
1990	644,714	258,586	59,513	547,534	434,727	595,871	297,363	453,654	280,670	86,470	102,079	(12,704)	3,748,417
1991	666,843	264,240	60,873	574,883	453,005	646,590	326,030	433,620	298,242	92,208	105,594	(19,690)	3,902,437
1992	678,026	281,683	63,426	601,314	476,716	705,053	353,980	466,283	318,188	98,931	116,907	(23,624)	4,136,883
1993 ^P	700,251	293,871	65,751	629,012	508,178	760,525	373,337	504,214	339,906	105,494	123,025	(25,400)	4,378,164

^P preliminary.

Note: Totals may not add due to rounding of numbers.

Source: U.S. Department of Commerce, Bureau of Economic Analysis, *Survey of Current Business*, July and August issues, Tables 2 and 2.4.



p preliminary.
 Source: See Table 64.

Figure 42. Personal Consumption Expenditures by Type, 1960 and 1993

**Table 65. Consumer Spending on Transportation (Share of Disposable Personal Income)
(at 5-Year Intervals 1960-1990 and Annually 1991-1993)**

Year	Proportion of Disposable Personal Income	Proportion of Disposable Personal Income (constant dollars)
1960	11.91	11.23
1965	12.04	11.12
1970	11.23	10.84
1975	11.31	10.82
1980	12.07	10.05
1985	12.34	11.66
1990	11.21	11.44
1991	10.23	10.52
1992	10.35	10.69
1993	10.75	11.08

Source: Data compiled by Oak Ridge National Laboratory from U.S. Department of Commerce, *Survey of Current Business*, 1993.

**Table 66. Gross Domestic Product by Transportation Sector,
(at 5-Year Intervals 1960-1990 and 1991)
(billion dollars)**

Year	Railroad	Local and Interurban Passenger Transit	Trucking and Warehousing	Water	Air	Pipeline, except Natural Gas	Transportation Services
1960	8.4	1.8	7.5	1.8	2.0	0.6	0.9
1965	9.1	2.1	10.7	2.2	3.4	0.7	1.3
1970	10.0	2.8	15.0	2.9	6.3	1.0	1.6
1975	12.5	3.4	24.3	4.0	10.2	1.8	3.1
1980	20.6	5.3	40.3	7.2	18.1	5.2	6.3
1985	22.2	7.4	53.6	8.3	27.2	6.1	11.2
1990	22.2	10.0	73.3	10.0	39.8	4.2	17.3
1991	21.7	10.9	72.8	10.7	41.6	4.6	18.4

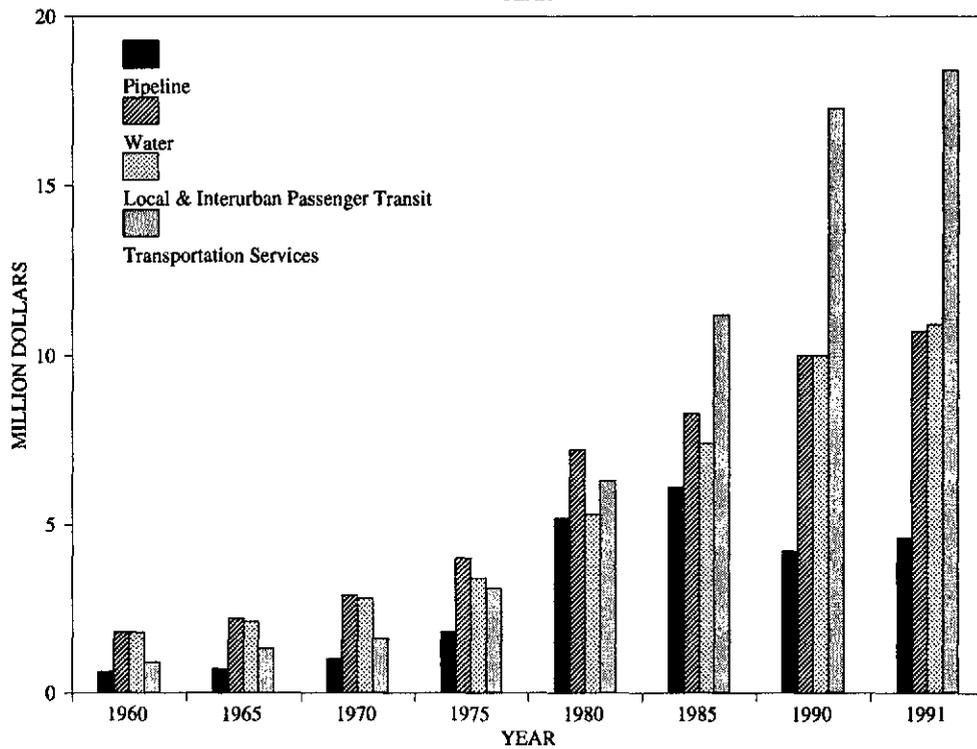
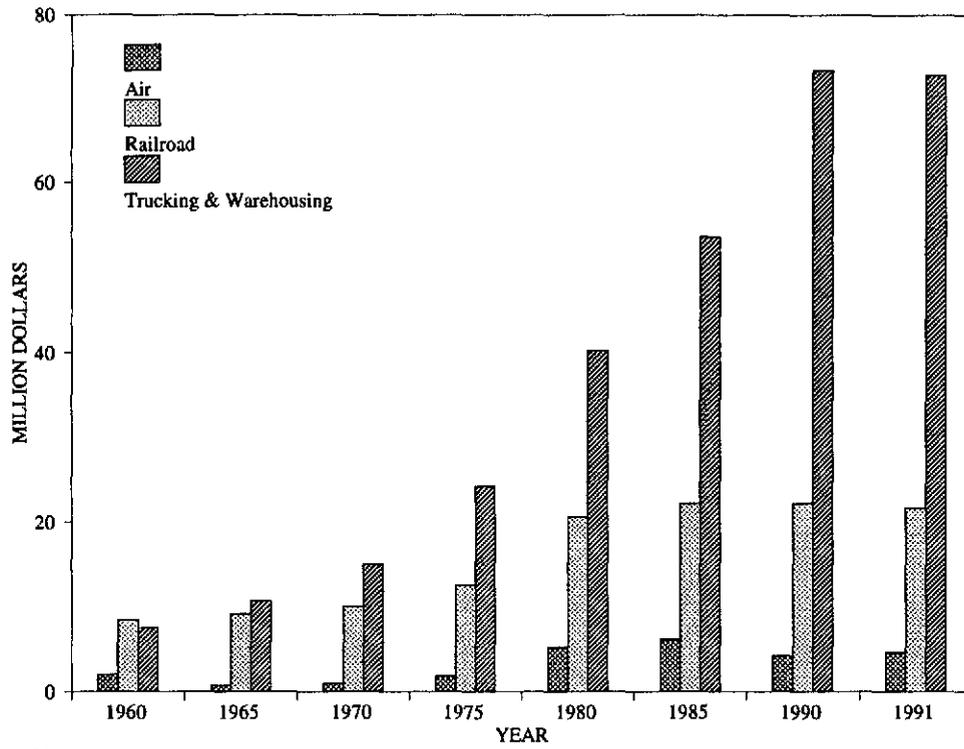
Source: U.S. Department of Commerce, Bureau of Economic Analysis, *Survey of Current Business*, November issues, Table 6 or equivalent.

**Table 67. National Income by Transportation Sector,
(at 5-Year Intervals 1960-1990 and 1991)
(million dollars)**

Year	Railroad	Local and Interurban Passenger Transit	Trucking and Warehousing	Water	Air	Pipeline, except Natural Gas	Transportation Services
1960	6,710	1,619	5,886	1,635	1,370	350	571
1965	7,084	1,857	8,185	2,018	2,574	454	754
1970	7,981	2,476	13,467	2,358	4,916	544	1,222
1975	10,207	3,071	20,774	3,439	7,274	828	2,420
1980	17,533	4,728	35,187	5,995	13,419	1,729	4,956
1985	17,403	6,224	45,214	5,855	18,367	1,970	8,746
1990	17,096	8,810	60,509	7,810	27,980	1,859	13,053
1991	17,364	9,427	61,677	8,331	28,400	2,013	13,626

Note: The Bureau of Economic Analysis no longer breaks down this information as shown.

Source: U.S. Department of Commerce, Bureau of Economic Analysis, *Survey of Current Business*, July issues, Table 6.1C or equivalent.



Source: See Table 67.

Figure 43. National Income by Transportation Sector, 1960-1991

**Table 68. National Transportation and Economic Trends,
(at 5-Year Intervals 1960-1990 and Annually 1991-1992)**

Year	Passenger- Miles (billions)	Index	Ton- Miles (billions)	Index	Population (millions)	Index	Industrial Production Index*	Gross Domestic Product		
								(current dollars) (billions)	Index	(constant 1987 dollars) (billions)
1960	1,553	54	1,657	51	181	79	38	513	19	1,971
1965	1,844	64	1,993	62	194	85	58	703	26	2,471
1970	2,245	78	2,384	74	205	90	61	1,011	37	2,874
1975	2,543	88	2,510	78	216	95	66	1,586	59	3,222
1980	2,889	100	3,233	100	228	100	84	2,708	100	3,776
1985	3,266	113	3,275	101	238	105	94	4,039	149	4,280
1990	3,984	138	3,039	94	250	110	106	5,546	204	4,897
1991	3,848	133	3,573	111	253	111	104	5,723	210	4,861
1992	4,169	144	-	-	255	112	107	6,039	223	4,986

Index (1980=100).

* Index (1987=100).

Source: See p. 251.

**Table 69. Employment in Transportation and Related Industries,
(at 5-Year Intervals 1960-1990 and Annually 1991-1993) (page 1 of 2)**
(thousands)

	1960	1965	1970	1975	1980	1985	1990	1991	1992	1993
TRANSPORT SECTOR										
Air	191	229	351	362	453	537	746	733	729	737
Bus-intercity	41	42	43	39	38	36	26	25	23	22
Local Transport	101	83	77	69	79	90	141	155	159	171
Railroad	885	735	627	538	532	346	279	263	254	250
Oil Pipeline	23	20	18	17	21	19	19	19	19	18
Gas Pipeline (distribution)	-	-	-	51	52	62	65	63	66	-
(transmission)	-	-	-	37	45	46	37	38	45	-
(integrated)	-	-	-	55	53	43	40	40	35	-
(combination)	-	-	-	52	52	53	50	50	50	-
Taxi	121	110	107	83	53	38	33	32	30	30
Trucking and Truck Terminals	770	882	998	996	1,189	1,285	1,629	1,610	1,606	1,685
Water	232	230	215	190	213	214	178	188	173	167
Total	2,566	2,423	2,532	2,489	2,780	2,769	3,243	3,216	3,189	3,080
EQUIPMENT MFG.										
Aircraft and Parts	646	624	669	514	652	647	713	671	611	542
Motor Vehicles and Equip. and Tires	829	945	914	892	789	964	898	870	891	914
Railroad Equipment	43	56	51	52	71	34	33	30	28	30
Ship & Boat Building and Repair	141	160	170	194	221	193	188	178	169	159
Other	33	57	111	115	38	51	230	208	190	170
Total	1,692	1,842	1,915	1,767	1,771	1,889	2,062	1,957	1,889	1,815

**Table 69. Employment in Transportation and Related Industries,
(at 5-Year Intervals 1960-1990 and Annually 1991-1993) (page 2 of 2)**
(thousands)

	1960	1965	1970	1975	1980	1985	1990	1991	1992	1993
RELATED INDUSTRIES										
Automotive and Accessories Retailers	807	902	996	1,076	1,048	1,185	1,265	1,221	1,212	1,254
Automotive Wholesalers	215	255	320	367	418	433	458	446	449	450
Automotive Repair, Services, and Parking	251	324	384	400	571	730	916	882	878	944
Gasoline Service Stations	461	522	614	616	561	611	648	627	615	616
Highway and Street Construction	294	324	331	297	268	264	239	219	214	222
Petroleum	311	292	333	380	533	568	521	518	488	472
Other Industries:										
Truck Drivers and Deliverymen	1,477	1,521	1,565	1,796	1,931	2,050	2,148	2,193	2,185	2,252
Shipping and Receiving Clerks	240	300	411	433	515	491	546	550	550	570
Total	4,056	4,440	4,954	5,365	5,845	6,332	6,741	6,656	6,591	6,780
GOVERNMENT EMPLOYMENT										
U.S. DOT	38	45	67	75	72	62	67	66	70	70
State and Local Highway	499	550	568	569	559	549	569	564	570	579
U.S. Postal Service	83	83	103	98	92	104	115	113	114	110
Other	18	16	12	13	13	11	11	10	11	11
Total	638	694	744	755	736	726	762	753	765	770
Total Transportation	8,952	9,397	10,151	10,376	11,132	11,716	12,808	12,582	12,434	12,445
Total Employed Civilians	65,778	71,088	78,627	84,783	97,545	108,063	117,287	116,877	117,598	119,306
Percent Transportation	13.6	13.2	12.9	12.2	11.4	10.8	10.9	10.8	10.6	10.4

Source: See pp. 251-253.

**Table 70. Wages and Salaries per Full-Time Employee by Transportation Sector,
(at 5-Year Intervals 1960-1990 and Annually 1991-1992)
(dollars)**

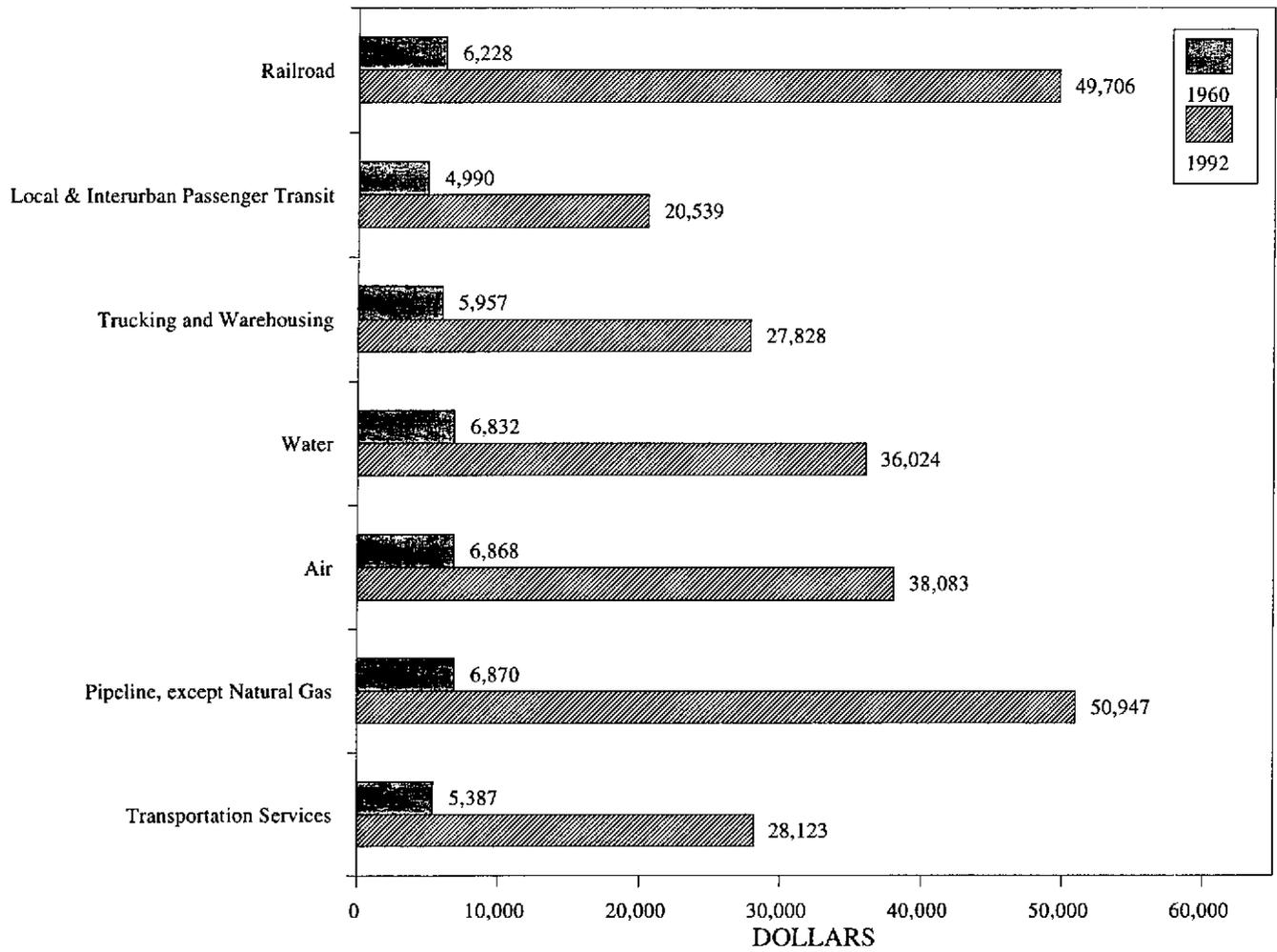
Year	Railroad	Local and Interurban Passenger Transit	Trucking and Warehousing	Water	Air	Pipeline, except Natural Gas	Transportation Services
1960	6,228	4,990	5,957	6,832	6,868	6,870	5,387
1965	7,415	5,438	8,035	7,770	8,122	8,500	6,605
1970	10,013	6,596	10,430	10,662	11,407	10,706	8,608
1975	15,363	9,299	12,709	14,247	17,084	16,765	11,233
1980	25,385	13,224	18,864	22,990	25,498	26,182	15,604
1985	36,746	15,813	22,291	28,435	31,798	36,947	20,207
1990	41,814	19,676	25,833	33,982	34,890	43,474	25,736
1991	45,996	20,031	26,635	34,813	36,835	46,737	26,901
1992	49,706	20,539	27,828	36,024	38,083	50,947	28,123

Source: U.S. Department of Commerce, Bureau of Economic Analysis, *Survey of Current Business*, July and August issues, Table 6.6C or equivalent.

**Table 71. Wages and Salaries by Transportation Sector,
(at 5-Year 1960-1990 and Annually 1991-1992)
(million dollars)**

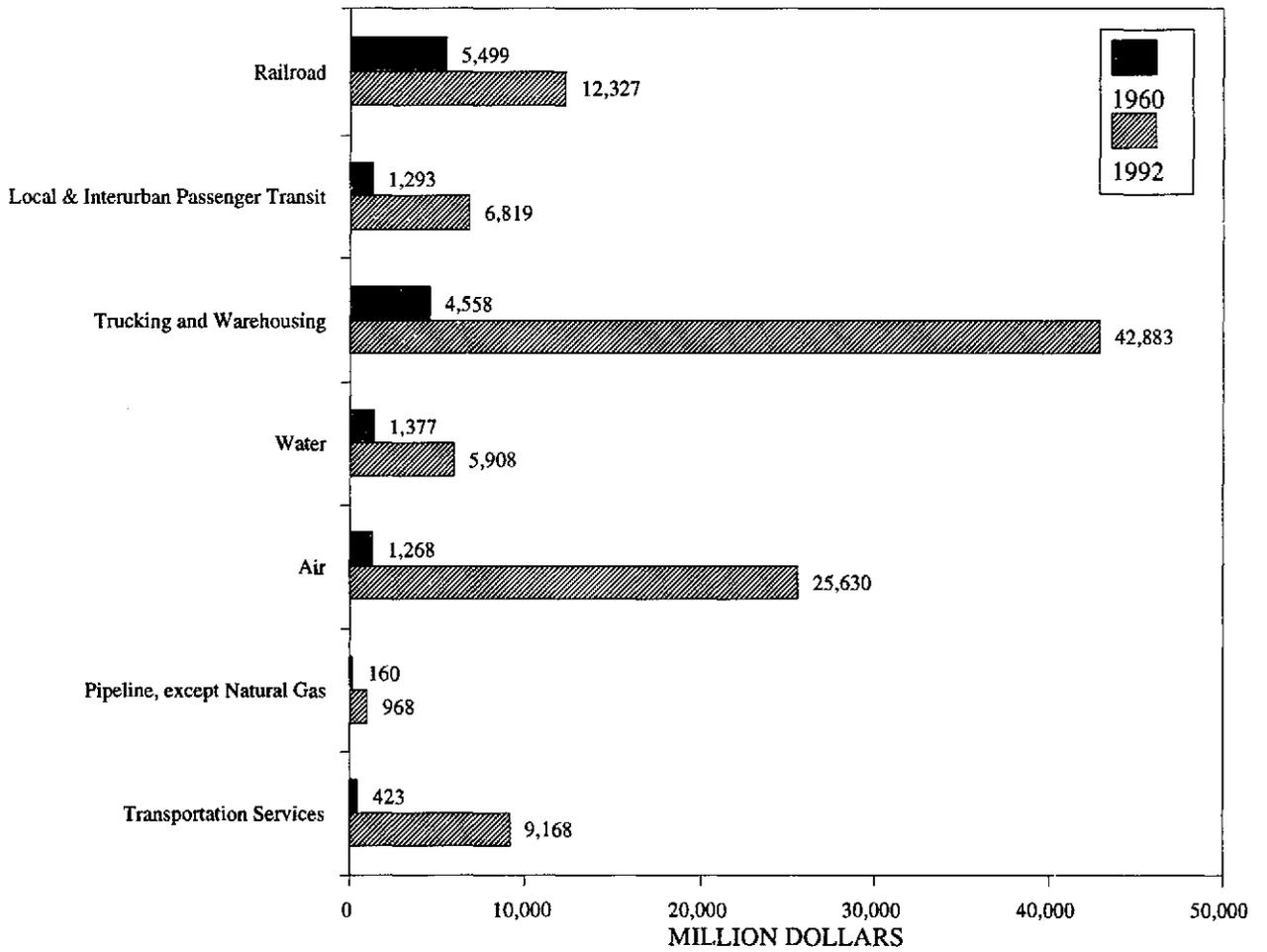
Year	Railroad	Local and Interurban Passenger Transit	Trucking and Warehousing	Water	Air	Pipeline, except Natural Gas	Transportation Services	Total
1960	5,499	1,293	4,558	1,377	1,268	160	423	14,578
1965	5,466	1,397	6,215	1,585	1,860	153	541	17,217
1970	6,114	1,771	9,031	2,141	4,038	182	878	24,155
1975	8,100	2,400	13,800	2,600	5,900	300	1,500	34,600
1980	12,800	3,400	23,700	4,600	11,000	600	3,000	59,100
1985	12,567	4,238	29,535	5,033	15,581	702	5,274	72,930
1990	11,248	6,139	40,145	5,607	24,109	826	8,390	96,464
1991	11,775	6,510	40,778	5,953	24,974	888	8,689	99,567
1992	12,327	6,819	42,883	5,908	25,630	968	9,168	103,703

Source: U.S. Department of Commerce, Bureau of Economic Analysis, *Survey of Current Business*, July and August issues, Table 6.3C or equivalent.



Source: See Table 70.

Figure 44. Wages and Salaries per Full-Time Employee by Transportation Sector, 1960 and 1992



Source: See Table 71.

Figure 45. Wages and Salaries by Transportation Sector, 1960 and 1992

**Table 72. Measures of Transportation Productivity in Output Per Employee-Hour
(at 5-Year Intervals 1970-1990 and Annually 1991-1992)**

Year	Petroleum Pipelines	Railroad Revenue Traffic	Bus Carriers (Class I)	Air	Trucking (Except Local)
1970	75.2	37.6	118.2	49.0	60.1
1975	90.2	43.4	106.9	59.9	64.2
1980	97.9	52.0	111.1	72.8	77.5
1985	99.9	78.4	96.1	93.9	93.8
1990	102.6	112.4	-	89.6	-
1991	99.1	132.7	-	90.9	-
1992	98.3	140.2	-	94.1	-

Note: 1987=100.

Source: Compiled by Oak Ridge National Laboratory from U.S. Department of Labor Statistics, *Productivity Measures for Selected Industries and Government Services*, March 1994.

**Table 73. Passenger and Freight Transportation Expenditures,
(at 5-year Intervals 1960-1990 and Annually 1991-1992)**
(million dollars)

TYPE OF EXPENDITURE	1960	1965	1970	1975	1980	1985	1990	1991	1992
Passenger Transportation Expenditures									
Auto Purchases and Ownership ¹	52,370	71,628	96,977	156,550	276,699	410,313	518,026	499,141	521,713
Local									
Bus ³	668	727	921	2,348	4,649	6,774	8,326	8,739	9,000
Taxi	1,107	1,113	2,145	3,416	5,195	5,636	7,111	7,556	7,333
School Bus	486	707	1,219	2,174	3,833	5,900	7,605	7,879	8,060
Intercity									
Bus	559	629	799	1,016	1,709	1,989	1,750	1,875	1,800
Total Highway Passenger Transportation Expenditures	55,190	74,804	102,081	165,504	284,752	430,612	542,818	525,190	547,906
Air	3,555	5,682	10,565	18,851	38,135	50,319	73,410	73,389	75,385
Rail ²	759	598	464	1,212	2,976	3,875	4,521	4,455	4,650
Transit ³	669	727	920	2,349	4,648	6,774	8,326	8,739	9,000
Water	281	345	287	294	303	576	1,345	1,357	1,485
Total Passenger Transportation Bill	60,434	82,156	114,317	188,210	330,814	492,156	630,420	613,130	638,426
Freight Transportation Expenditures									
Truck Intercity									
ICC-authorized	7,214	10,068	14,585	22,000	43,000	54,200	75,500	76,700	82,300
Non-ICC-authorized	10,744	13,560	18,968	25,400	51,551	69,000	86,800	87,900	94,500
Truck Local	14,289	23,779	28,819	37,287	60,545	82,200	108,350	109,650	116,000
Bus Intercity	42	70	122	156	235	245	126	131	130
Total Highway Freight Transportation Expenditures	32,289	47,477	62,494	84,843	155,331	205,645	270,776	274,381	292,930
Air	354	708	1,171	1,838	4,013	6,817	13,706	14,353	14,950
Oil Pipeline	895	1,051	1,396	2,220	7,548	8,910	8,387	8,101	8,521
Rail	9,028	9,923	11,869	16,509	27,858	29,150	30,403	29,852	30,473
Water	3,487	3,903	5,257	8,221	15,498	18,449	20,907	20,306	19,895
Other	1,714	1,869	1,791	2,208	2,206	1,675	4,041	4,267	4,402
Total Freight Transportation Bill	47,767	64,931	83,978	115,839	212,454	270,646	348,220	351,260	371,171
Total Highway Passenger and Freight Transportation Expenditures	87,749	122,281	164,575	250,347	440,083	636,257	813,594	799,571	840,836
Total Passenger and Freight Transportation Bill	108,221	147,087	198,295	304,049	543,268	762,802	978,640	964,390	1,009,597
Highway Passenger and Freight Transportation Percent of GDP	17.1	17.4	16.3	15.8	16.2	15.8	14.7	13.97	13.92
Total Passenger and Freight Transportation Percent of GDP	21.1	20.1	19.6	19.2	20.1	18.9	17.6	16.9	16.7
Gross Domestic Product (billions)	513	703	1,011	1,586	2,708	4,039	5,546	5,723	6,039

¹ Includes business expenditures for passenger cars.

² Data include Federal and state/local authorities operating subsidies and capital grants.

³ One-half of amount for "Bus and Transit" shown in source.

Source: Eno Foundation for Transportation, *Transportation In America, 1994*, pp. 40, 42 and previous editions published by the Transportation Policy Associates.
GDP Figure: Council of Economic Advisors, *Economic Report of the President*, annual issues.

**Table 74. Per Capita Freight Statistics,
(at 5-Year Intervals 1960-1990 and Annually 1991-1992)**

Year	Freight Tons (millions)	Freight Ton-miles (billions)	Resident Population (thousands)	Gross National Product (billions)	Freight Tons per Capita	Freight Ton-Miles per Capita	Freight Ton-Miles per GNP
1960	3,606	1,314	179,979	1,985	20.0	7,301	0.66
1965	4,435	1,638	193,526	2,492	22.9	8,464	0.66
1970	5,060	1,936	203,984	2,894	24.8	9,491	0.67
1975	4,962	2,066	215,465	3,248	23.0	9,589	0.64
1980	5,542	2,487	227,225	3,823	24.4	10,945	0.65
1985	5,543	2,458	237,924	4,295	23.3	10,331	0.57
1990	6,338	2,864	249,391	4,896	25.4	11,484	0.58
1991	6,366	2,885	252,160	4,821	25.3	11,441	0.60
1992	6,578	2,989	255,082	4,923	25.8	11,718	0.61

Source: Compiled by Oak Ridge National Laboratory from U.S. Department of Commerce, *Statistical Abstract of the United States*, 1993 (population) and Eno Foundation for Transportation, *Transportation in America*, 1993 (freight tons, freight ton-miles, and GNP).

Table 75. Lane Miles of Capacity and Highway Capital Expenditures, 1984-1992

Year	Lane Mile Capacity*	Capital Expenditures (millions)
1984	2,693,604	23,123
1985	2,698,283	27,138
1986	2,706,221	28,955
1987	2,725,974	31,063
1988	2,733,309	32,982
1989	2,739,188	33,335
1990	2,744,304	35,481
1991	2,749,109	36,154
1992	2,750,931	38,708

* Lane miles do not include local miles.

Source: Compiled by Oak Ridge National Laboratory from U.S. DOT/FHWA, *Highway Statistics*, 1992, Tables HM-60 and HF-10.

Table 76. Railroad Capital and Maintenance Expenditures, (at 5-Year Intervals 1960-1990 and Annually 1991-1992)

Year	Capital Expenditures		Maintenance Expenditures	
	Current Dollars (thousands)	Constant 1990 Dollars (thousands)	Current Dollars (thousands)	Constant 1990 Dollars (thousands)
1960	285,664	1,240,441	1,191,690	5,174,685
1965	327,084	1,300,274	1,235,801	4,912,744
1970	358,344	1,152,622	1,612,585	5,186,919
1975	486,417	1,116,189	2,408,980	5,527,924
1980	953,467	1,501,345	4,940,091	7,778,748
1985	3,458,015	4,135,698	4,335,663	5,181,755
1990	2,643,966	2,643,966	4,278,075	4,278,075
1991	2,369,405	2,286,375	5,215,582	5,032,814
1992	2,736,002	2,528,066	4,373,006	4,040,658

Note: A change in the accounting practices of Railroads after 1980 caused some changes in the definition of capital and maintenance expenditures.

Source: Compiled by Oak Ridge National Laboratory from American Association of Railroads, *Railroad Facts*, 1993.

**Table 77. Federal Transportation Revenues, by Mode
(at 5-Year Intervals 1980-1990 and Annually 1991-1992)
(millions of current dollars)**

FY Year	Highway Trust Fund	Highway Trust Fund Transit Account	Airport/Airways Trust Fund	Water Receipts	Pipeline Safety Fund	Total
1980	7,647	0	2,274	381	-	10,302
1985	12,908	1,420	3,598	463	-	18,388
1990	13,453	1,977	4,945	1,147	10	21,532
1991	15,303	3,149*	6,206	1,325	11	25,995
1992 ^p	16,572	1,816	5,918	1,474	14	25,797

^p preliminary.

* In FY 1991, an incorrect inflated rate was assessed against the Transit Account. The FY 1992 figure reflects reconciled revenues.

Source: U.S. DOT/BTS, *Federal, State, and Local Transportation Financial Statistics*.

**Table 78. Federal, State, and Local Transportation Revenues, by Mode
(at 5-Year Intervals 1980-1990 and Annually 1991-1992)
(millions of current dollars)**

FY Year	Transit	Highway (includes parking)	Air	Water	Pipeline	Total
1980	2,397	25,268	4,100	1,202	-	32,967
1985	5,664	38,053	6,715	1,605	-	52,038
1990	7,193	49,944	10,119	2,635	10	69,901
1991	8,778	53,838	11,924	2,860	10	77,410
1992 ^p	7,558	57,738	11,787	3,099	14	80,196

^p preliminary.

Source: U.S. DOT/BTS, *Federal, State, and Local Transportation Financial Statistics*.

**Table 79. Federal, State, and Local Transportation Expenditures, by Mode
(at 5-Year Intervals 1980-1990 and Annually 1991-1992)
(millions of current dollars)**

FY Year	Transit	Highway (includes-parking)	Air	Water	Rail Freight	Rail Passenger	Pipeline	Unallocated	Total
1980	7,974	34,569	5,673	3,946	1,086	1,091	6	177	54,523
1985	14,145	46,658	7,902	4,563	141	934	12	183	74,539
1990	19,195	62,515	12,568	5,038	(66)	607	26	190	100,073
1991	20,792	66,480	13,879	5,403	42	741	26	265	107,629
1992 ^p	22,350	68,315	15,753	5,653	905	*	19	289	113,284

^p preliminary.

* Included in Rail Freight figure.

Source: U.S. DOT/BTS, *Federal, State, and Local Transportation Financial Statistics*.

Table 80. Transportation Expenditures and User Charges, 1982-1992
(millions of current dollars)

Year	Total User Revenues	Total Government Expenditures
1982	36,171	60,396
1983	40,020	63,098
1984	46,914	68,886
1985	52,038	74,539
1986	54,798	81,253
1987	58,399	85,345
1988	62,822	89,948
1989	67,579	94,006
1990	69,901	100,073
1991	77,410	107,629
1992	80,196	113,284

Table 81. Transportation Expenditures and User Charges, 1982-1992
(millions of 1982 dollars)

Year	Total User Revenues	Total Government Expenditures
1982	36,171	60,396
1983	38,332	60,435
1984	43,116	63,309
1985	46,012	65,908
1986	47,259	70,075
1987	49,055	71,690
1988	50,937	72,931
1989	52,659	73,252
1990	52,332	74,921
1991	56,104	78,005
1992	56,278	79,498

Source: U.S. DOT/BTS, *Federal, State, and Local Transportation Financial Statistics*.

Table 82. Government Expenditures for Transportation, 1982-1992
(millions of 1982 dollars)

Year	State and Local Spending Less Federal Grants	Federal Grants	Federal Spending without Grants
1982	60,396	13,845	9,786
1983	60,435	14,146	8,422
1984	63,309	15,358	9,613
1985	65,908	16,588	8,540
1986	70,075	16,458	8,936
1987	71,690	15,721	8,413
1988	72,931	15,688	8,099
1989	73,252	15,259	8,093
1990	74,921	15,310	8,305
1991	78,005	15,239	8,888
1992	79,498	15,464	9,698

Source: U.S. DOT/BTS, *Federal, State, and Local Transportation Financial Statistics*.

Table 83. Transportation Grants, by Program
(at 5-Year Intervals 1980-1990 and Annually 1991-1992)
(millions of current dollars)

FY Year	Highway	Air	Transit	Rail Freight	Pipeline	Rail Passenger
1980	11,082.5	590.0	3,565.0	53.2	3.1	0.4
1985	14,244.1	789.0	3,381.0	35.3	4.2	0.9
1990	14,483.3	1,220.0	3,793.0	8.4	4.4	1.5
1991	14,751.3	1,540.9	3,881.0	8.3	9.2	-
1992 ^P	16,044.2	1,672.1	3,631.5	4.3	6.9	*

^P preliminary.

* Included in Rail Freight figure.

Source: U.S.DOT/BTS, *Federal, State, and Local Transportation Financial Statistics*.

**Table 84. U.S. Government Transportation Research, Planning and R&D Outlays
(at 5-Year Intervals 1965-1990 and Annually 1991-1993)**
(million dollars)

	1965	1970	1975	1980	1985	1990	1991	1992	1993
General									
Dept. of Transportation	2.0	8.1	33.3	22.1	7.5	20.5	16.8	8.3	5.9
Dept. of Agriculture	5.9	9.0	11.6	12.5	15.1	18.3	20.1	21.2	21.6
Total	7.9	17.1	44.9	34.6	22.6	38.8	36.9	29.5	27.5
Air									
FAA - aviation	96.8 ^a	214.4 ^a	104.9	127.5	279.3	173.3	196.4	231.1	259.6
NASA - aircraft technical	65.6	187.3	305.8	510.7	651.8	807.7	918.4	1,121.4	1,251.6
Total	162.4	401.7	410.7	638.2	931.1	981.0	1,114.8	1,352.5	1,511.2
Highway									
FHWA - highways ^b	-	94.2	20.1	42.2	41.4	44.4	46.6	48.9	83.5
NHTSA/FHWA - safety	-	14.0	21.8	50.1	36.9	40.9	44.9	51.3	62.4
Total	38.0	108.2	42.9	92.3	78.3	85.3	91.5	100.2	145.9
Rail - FRA	-	16.4	43.0	47.8	15.0	21.6	19.8	21.5	31.5
Transit - FTA	1.0	7.6	88.6	75.7	40.1	13.5	12.8	11.5	16.6
Water									
Maritime Administration	9.3	12.7	26.5	31.2	12.4	10.0	10.4	12.1	12.1
Coast Guard	-	10.1	16.6	21.9	18.4	24.2	16.4	23.6	35.5
Total	9.3	22.8	43.1	53.1	30.8	34.2	26.8	35.7	47.6
Total Transportation R&D	218.6	495.6	672.2	941.7	1,117.9	1,174.4	1,302.6	1,550.9	1,780.3
Total U.S. Government R&D	14,889	15,632	19,525	30,389	45,244	64,674	66,281	71,956	73,562.0
Percent Trans. R&D of Total U.S.	1.5	3.2	3.4	3.1	2.5	1.8	2.0	2.2	2.4

^a Includes R&D outlays for U.S. supersonic transport program, which was subsequently phased down to basic research.

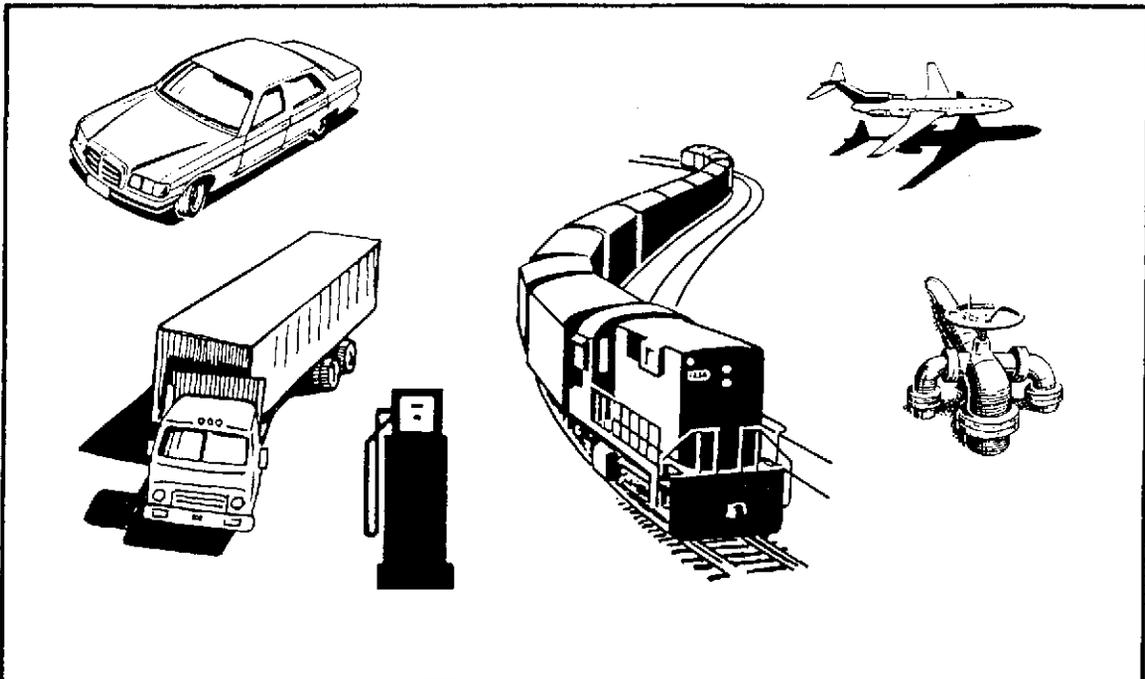
^b Does not include considerable research funded by FHWA but administered by States.

Source: Eno Foundation for Transportation, *Transportation in America*, 1994, p. 74.

SUPPLEMENTARY DATA

Section II: Energy in Transportation

Energy in Transportation is the second part of the supplementary data section. This section details the relationship between energy and transportation, particularly in the areas of Energy Consumption, Energy Intensiveness, Energy Transport, and Energy Supply and Demand for the years 1960-1992/1993. Some data are illustrated for 1955.



Energy Equivalents

1 Btu of Energy equals approximately:

1 match tip
 250 calories (International Steam Table)
 0.25 kilocalories (food calories)

1 million Btu of Energy equals approximately:

90 pounds of coal
 8 gallons of motor gasoline
 10 therms of dry natural gas
 11 gallons of propane
 1.1 days of U.S. energy consumption per capita

1 Quadrillion^b Btu of Energy equals approximately:

45 million short tons of coal
 60 million short tons of oven-dried hardwood
 1 trillion cubic feet of dry natural gas
 170 million barrels of crude oil
 470 thousand barrels of crude oil per day for
 1 year
 21 days of U.S. petroleum imports
 25 days of U.S. motor gasoline use
 26 hours of world energy use (1992)

One Barrel of Crude Oil equals approximately:

15 days of U.S. petroleum consumption per capita
 5.6 thousand cubic feet of dry natural gas
 0.26 short tons (520 pounds) of coal
 1.7 thousand kilowatthours of electricity^c

One short ton of Coal equals approximately:

101 days of U.S. coal consumption per capita
 3.8 barrels of crude oil
 21 thousand cubic feet of dry natural gas
 6.5 thousand kilowatthours of electricity^c

1,000 Cubic Feet of Natural Gas equals approximately:

4.7 days of U.S. natural gas consumption per capita
 300 kilowatthours of electricity^c

1,000 Kilowatthours of electricity equals approximately:

33 days of U.S. electricity use per capita

^a Equivalents are approximate.

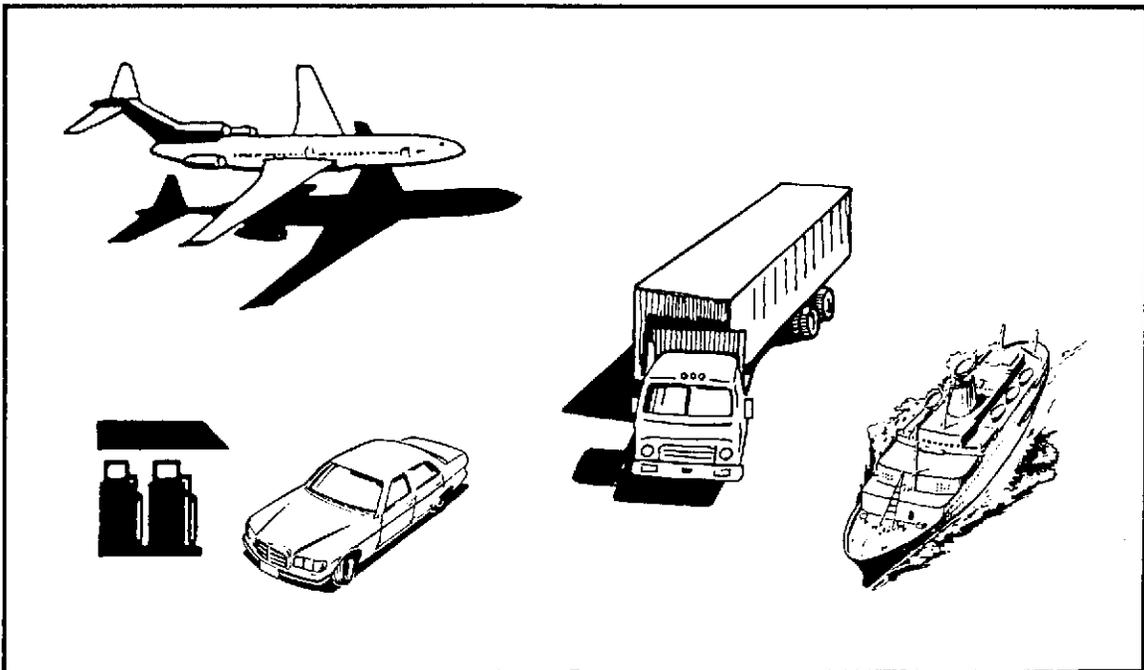
^b One quadrillion equals 1,000,000,000,000,000.

^c However, because of net energy losses associated with the generation of electricity, about three times as much fossil fuel is required to generate 1,000 kilowatthours: 1.8 barrels of crude oil, 0.47 short tons of coal, or 10,000 cubic feet of natural gas.

Note: One million Btu of fossil fuels burned at electric utilities can generate about 100 kilowatthours of electricity, while it takes about 100 kilowatthours of electricity generated at electric utilities to produce 1 million Btu of heat. Calculations are based on 1993 data where applicable, unless otherwise noted.

Part 1. Energy Consumption

This section details the amount of fuel consumed by each mode of transportation and end-use sector. Also presented are fuel price data for 1960-1992/1993. In some instances, data are shown for 1955.



**Table 85. Fuel Consumption by Mode of Transportation,
(at 5-Year Intervals 1960-1990 and 1992)**

	1960	1965	1970	1975	1980	1985	1990	1992
Class I Railroads								
Locomotives								
Diesel Oil, gals x 10 ⁶	3,472	3,742	3,808	3,736	3,955	3,144	3,134	3,022
Air								
Certified Carriers*								
Jet Fuel, gals x 10 ⁶	1,331	4,650	10,085	9,507	9,096	10,121	12,936	11,813
General Aviation								
Aviation Gasoline, gals x 10 ⁶	242	292	551	412	520	421	353	314
Jet Fuel, gals x 10 ⁶	-	81	208	453	766	691	663	494
Highway								
Gasoline, gals x 10 ⁶								
Passenger Cars	41,169	49,723	67,820	76,447	71,883	69,268	71,989	73,851
Motorcycles	+	+	60	113	204	182	191	191
Diesel & Gasoline, gals x 10 ⁶								
Commercial Buses ¹	618	628	644	553	696	688	725	-
School Buses	209	247	300	342	380	425	472	-
Single-Unit Trucks ²	-	13,848	12,313	17,903	23,594	29,021	32,937	33,139
Other Single-Unit Trucks	-	-	3,968	4,815	5,557	6,735	7,294	7,181
Combination Trucks	-	6,658	7,348	8,654	12,703	15,280	17,469	17,698
Water Transport								
Residual Fuel Oil, gals x 10 ⁶	3,952	3,093	3,774	4,060	8,952	4,590	6,326	6,563
Distillate Fuel Oil, gals x 10 ⁶	787	652	819	1,098	1,478	1,699	2,065	2,219
Gasoline, gals x 10 ⁶	-	-	598	730	1,052	1,053	1,300	1,316
Transit**								
Electricity, kWh x 10 ⁶	2,908	2,584	2,561	2,646	2,446	4,216	4,837	4,790
Gallons of Motor Fuel, gals x 10 ⁶								
Gasoline	192	124	68	8	11	46	34	43
Diesel Oil	208	248	271	365	431	609	651	672
Pipelines, Natural Gas cu. ft. x 10 ⁶	347,075	500,524	722,166	582,963	634,622	503,766	659,816	587,710
Non-Highway³ Use of Gasoline x 10⁶	5,332	4,208	4,003	3,642	3,655	4,005	4,078	3,904

* Domestic consumption only.

** Prior to 1984, excludes commuter rail, automated guideway, urban ferryboat, demand response, and most rural and smaller systems. Series not continuous between 1983 and 1984.

+ Included in passenger cars.

¹ Includes intercity and local buses.

² 2-axle, 4-tire single-unit trucks only.

³ Private, commercial, and public non-highway use of gasoline.

Source: See p. 254.

**Table 86. Fuel Consumption by Certificated Air Carriers,
(at 5-Year Intervals 1960-1990 and Annually 1991-1993)**
(thousand gallons)

Year	Total Certificated Route Air Carriers	Domestic Operations				International Operations		
		Passenger Cargo Carriers				Total International Operations	Majors ^c	Other
		Total Domestic Operations	Majors ^a	Nationals ^b	Other			
1960	2,519,757	1,954,236	1,806,202	88,032	59,842	565,520	547,040	18,480
1965	5,169,023	3,888,834	3,617,172	176,252	95,390	1,280,189	1,235,878	44,311
1970	10,099,172	7,856,593	7,106,903	618,126	102,577	2,242,579	2,013,883	228,696
1975	9,506,600	7,557,700	6,650,000	725,800	181,900	1,948,900	1,756,700	192,200
1980	11,034,038	9,096,023	7,424,555	1,094,678	577,090	1,937,715	764,506	173,209
1985	12,598,193	10,121,329	7,726,689	2,106,161	288,479	2,476,864	2,052,972	423,892
1990	16,412,553	12,935,950	11,279,812	952,097	203,541	3,977,103	3,586,302	390,801
1991	15,581,992	11,637,280	10,510,055	934,472	192,753	3,944,712	3,485,020	459,692
1992	15,669,071	11,589,822	10,718,311	692,650	178,861	4,079,249	3,749,798	329,451
1993	16,042,206	11,930,411	10,916,623	710,997	302,790	4,111,795	3,709,668	402,127

^a 1960-1980, categorized as domestic trunk.

^b 1960-1980, categorized as local service.

^c 1960-1980, categorized as international trunk.

Note: Sum of components may not equal total due to independent rounding.

Source: 1960-1975: CAB, *Handbook of Airline Statistics*, 1977.

1980: CAB, *Fuel Cost and Consumption, Twelve Months Ended December 31, 1984*, and earlier editions.

1985-1993: U.S. DOT/RSPA, Data Administration Division, DAI-20.

**Table 87. Total Motor Vehicle Fuel Consumption and Travel,^a
(at 5-Year Intervals 1960-1990 and Annually 1991-1992)**

Year	Number Registered (thousands)	Vehicle Miles Traveled (millions)	Average Miles Traveled per Vehicle	Average Miles Traveled per Gallon	Fuel Consumed (million gallons)	Average Gallons Consumed per Vehicle
1960	74,475	718,845	9,652	12.42	57,878	777
1965	91,752	887,640	9,674	12.48	71,104	775
1970	111,242	1,109,724	9,976	12.02	92,329	830
1975	137,913	1,327,664	9,627	12.18	108,984	790
1980	161,490	1,527,295	9,458	13.29	114,960	712
1985	177,098	1,774,179	10,018	14.62	21,322	685
1990	193,057	2,144,362	11,107	16.40	130,775	677
1991	192,314	2,172,050	11,294	16.85	128,561	668
1992	194,427	2,239,828	11,250	16.85	132,938	684

^a Includes personal passenger vehicles, buses, and motor trucks.

Source: 1960-1980: U.S. DOT/FHWA, *Highway Statistics, Summary to 1985*, Table VM-201A.

1985-1992: *Ibid.*, *Highway Statistics*, annual issues, Table VM-1.

**Table 88. Fuel Consumption and Travel by Passenger Cars and Motorcycles,
(at 5-Year Intervals 1960-1990 and Annually 1991-1992)**

Year	Number Registered ^a (thousands)	Vehicle Miles Traveled ^a (millions)	Average Miles Traveled Per Vehicle		Average Miles Traveled Per Gallon		Fuel Consumed (million gallons)		Average Gallons Consumed Per Vehicle	
			Passenger Cars	Motor-cycles	Passenger Cars	Motor-cycles	Passenger Cars	Motor-cycles	Passenger Cars	Motor-cycles
1960	62,258	588,083	9,446	*	14.28	*	41,169	661	*	
1965	76,643	709,300	9,255	*	14.27	*	49,723	649	*	
1970	92,068	919,679	10,272	1,055	13.52	50	67,820	760	21	
1975	111,670	1,039,579	9,690	1,134	13.52	50	76,447	716	23	
1980	127,295	1,121,810	9,141	1,794	15.46	50	71,883	591	36	
1985	137,308	1,269,651	9,560	1,669	18.20	50	69,268	525	33	
1990	147,713	1,522,741	10,548	2,244	21.02	50	71,989	502	45	
1991	146,746	1,542,730	10,757	2,197	21.69	50	70,692	496	44	
1992	148,279	1,604,964	11,063	2,343	21.60	50	73,851	512	47	

^a Includes motorcycles.

* Data included with passenger car information.

Source: 1960-1980: U.S. DOT/FHWA, *Highway Statistics, Summary to 1985*, Table VM-201A.

1985-1992: *Ibid.*, *Highway Statistics*, annual issues, Table VM-1.

**Table 89. Fuel Consumption and Travel by Buses,
(at 5-Year Intervals 1960-1990 and Annually 1991-1992)**

Year	Number Registered ^a	Total Vehicle Miles Traveled ^a (millions)	Average Miles Traveled per Vehicle			Average Miles Traveled per Gallon			Total Fuel Consumed (million gallons)			Average Gallons Consumed per Vehicle		
			Commercial	School	All Buses ^a	Commercial	School	All Buses ^a	Commercial	School	All Buses ^a	Commercial	School	All Buses ^a
1960	272,000	4,353	37,789	7,556	16,004	4.65	7.09	5.26	618	209	827	8,132	1,066	3,040
1965	314,000	4,684	34,365	7,689	14,903	4.65	7.14	5.35	628	247	875	7,388	1,077	2,784
1970	377,562	4,544	32,591	7,274	12,035	4.57	7.00	5.54	644	300	820	7,132	1,039	2,172
1975	462,156	6,055	28,320	6,788	13,102	4.79	7.31	5.75	553	342	1,053	5,896	929	2,279
1980	528,789	6,059	32,765	7,592	11,458	5.03	7.64	5.95	696	380	1,018	6,516	994	1,926
1985	593,485	4,876	36,859	10,145	8,216	4.15	7.74	5.84	688	452	835	8,879	1,311	1,407
1990	626,987	5,719	38,499	10,000	9,121	4.38	8.05	6.39	723	472	895	9,591	1,242	1,428
1991	631,279	5,743	39,038	12,286	9,097	4.39	8.06	6.65	738	533	864	9,939	1,524	1,369
1992	644,732	5,739	-	-	8,901	-	-	6.54	-	-	877	-	-	1,360

^a Includes commercial, school and non-revenue buses.

Source: 1960-1965: U.S. DOT/FHWA, *Highway Statistics, Summary to 1985*, Table VM-201A.

1970-1975: *Ibid.*, *Highway Statistics, annual issues*, Table VM-1.

1980: *Ibid.*, *Highway Statistics, Summary to 1985*, Table VM-201A.

1985-1992: *Ibid.*, *Highway Statistics, annual issues*, Table VM-1.

1984-1991: Commercial/School Bus: Transportation Policy Associates, personal communication.

**Table 90. Fuel Consumption and Travel by Trucks,
(at 5-Year Intervals 1960-1990 and Annually 1991-1992)**

Year	Number Registered (thousands)	Vehicle Miles Traveled (millions)	Average Miles Traveled per Vehicle			Average Miles Traveled per Gallon			Total Fuel Consumed (million gallons)			Average Gallons of Fuel Consumed per Vehicle					
			Single-Unit*	Other Single Unit	Combination	Single-Unit*	Other Single Unit	Combination	Single-Unit*	Other Single Unit	Combination	Single-Unit*	Other Single Unit	Combination			
1960	11,945	126,409	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1965	14,795	173,656	10,077	-	41,292	10.19	-	4.88	13,848	-	6,658	989	-	8,460	-	-	-
1970	18,797	185,501	8,676	7,356	38,819	10.01	6.82	4.78	12,313	3,968	7,348	866	1,078	8,119	1,138	7,653	-
1975	25,781	282,030	9,829	8,178	41,321	11.21	7.19	5.40	17,903	4,815	9,654	877	1,138	7,653	1,138	7,653	-
1980	33,667	399,426	10,437	9,103	48,472	12.33	7.16	5.41	23,594	5,557	12,703	846	1,271	8,966	1,271	8,966	-
1985	39,196	499,652	11,115	11,962	56,725	12.86	6.98	5.21	29,021	6,735	15,280	857	1,715	10,889	1,715	10,889	-
1990	44,718	615,902	11,993	12,595	59,807	14.15	7.33	5.52	32,937	7,294	17,469	847	1,719	10,841	1,719	10,841	-
1991	44,936	623,577	12,103	12,610	60,456	14.54	7.54	5.65	32,531	7,134	17,157	833	1,672	10,699	1,672	10,699	-
1992	45,504	629,125	12,055	12,397	59,846	14.38	7.45	5.60	33,139	7,181	17,698	838	1,664	10,695	1,664	10,695	-

* 2-axle, 4-tire trucks.

Source: 1960-1980: U.S. DOT/FHWA, *Highway Statistics, Summary to 1985*, Table VM-201A.
1985-1992: *Ibid.*, *Highway Statistics*, annual issues, Table VM-1.

**Table 91. Motor Fuel and Total Energy Consumption
by the U.S. Transit Industry,
(at 5-Year Intervals 1955-1990 and Annually 1991-1992)**

Year	Kilowatt Hours Consumed (millions)	Gallons of Motor Fuel Used (thousands)	
		Gasoline ^a	Diesel
1955	3,530	276,000	172,600
1960	2,908	191,900	208,100
1965	2,584	124,200	248,400
1970	2,561	68,200	270,600
1975	2,646	7,576	365,060
1980	2,446	11,400	431,400
1985	4,216	45,704	608,738
1990	4,837	33,906	651,030
1991	4,853	34,467	665,158
1992 ^p	4,790	43,061	671,873

^p preliminary.

^a Includes gasoline, propane, LPG, LNG, kerosene and others.

* Prior to 1984, excludes commuter rail, automated guideway, urban ferryboat, demand response, and most rural and smaller systems.

Source: American Public Transit Association, *Transit Fact Book*, 1993, Tables 54 and 55, and similar table in earlier editions.

**Table 92. National Emissions of Carbon Monoxide^a,
(at 10-Year Intervals 1960-1990 and Annually 1991-1992)
(million short tons)**

Year	Transportation ^b										Stationary Fuel Combustion	Industrial Processes	Waste Disposal and Recycling	Miscel- laneous	Total of All Sources
	Highway Vehicles	Aircraft	Railroads	Vessels ^c	Other Off-Highway	Total									
1960	58.30	1.76	0.33	0.52	8.96	69.87	7.02	10.28	5.60	11.01	103.78				
1970	79.26	1.00	0.28	0.40	8.33	89.27	4.63	9.84	7.06	7.91	118.70				
1980	88.00	1.02	0.28	1.30	13.52	104.12	7.30	6.95	2.30	8.34	129.00				
1990 ^p	59.80	0.97	0.12	1.21	12.35	74.45	6.76	5.23	1.69	4.27	92.38				
1991 ^p	58.83	0.97	0.13	0.18	11.97	73.08	6.62	5.15	1.64	4.20	90.68				
1992 ^p	55.29	1.00	0.12	1.21	12.35	69.97	6.18	5.08	1.69	4.27	87.18				

^p preliminary.

^a The sum of subcategories may not equal total due to rounding.

^b There was a change in methodology for estimates from 1970 to 1980.

^c Recreational marine vessels.

Source: Compiled by Oak Ridge National Laboratory from U. S. Environmental Protection Agency, *National Air Pollutant Emission Estimates, 1900-1992, 1993*, pp. 3-12.

**Table 93. National Emissions of Nitrogen Oxides^a,
(at 10-Year Intervals 1960-1990 and Annually 1991-1992)
(million short tons)**

Year	Transportation ^b				Stationary Fuel Combustion	Industrial Processes	Waste Disposal and Recycling	Miscellaneous	Total of All Sources
	Highway	Railroads	Other Off-Highway	Total					
1960	4.42	0.77	0.67	5.86	7.37	0.57	0.33	0.44	14.58
1970	7.43	0.71	1.12	9.26	10.06	0.78	0.44	0.33	20.86
1980	8.71	0.83	1.90	11.44	11.32	0.56	0.11	0.25	23.66
1990 ^p	7.82	0.93	1.91	10.66	11.79	0.89	0.08	0.13	23.56
1991 ^p	7.72	0.98	1.79	10.49	11.83	0.89	0.08	0.13	23.41
1992 ^p	7.48	0.93	1.93	10.34	11.73	0.88	0.08	0.13	23.15

^p preliminary.

^a The sum of subcategories may not equal total due to rounding.

^b There is a change in methodology for highway vehicles and off-highway emission estimates from 1970 to 1980.

Source: Compiled by Oak Ridge National Laboratory from U. S. Environmental Protection Agency, *National Air Pollutant Emission Estimates, 1900-1992, 1993*, pp. 3-13.

**Table 94. National Emissions of Nonmethane Volatile Organic Compounds,
(at 10-Year Intervals 1960-1990 and Annually 1991-1992)**
(million short tons)

Year	Transportation ^a			Stationary Fuel Combustion	Industrial Processes	Waste Disposal and Recycling	Miscel- laneous	Total of All Sources
	Highway	Off-Highway	Total					
1960	10.37	1.22	11.59	0.88	8.73	1.55	1.57	24.32
1970	12.22	1.39	13.61	0.72	12.33	1.98	1.10	29.74
1980	10.99	2.32	13.31	1.05	12.10	0.76	1.13	28.35
1990 ^p	6.98	2.12	9.10	0.76	10.98	2.26	0.58	23.67
1991 ^p	6.81	2.06	8.87	0.75	11.00	2.22	0.57	23.40
1992 ^p	6.10	2.13	8.23	0.71	10.90	2.31	0.58	22.73

^p preliminary.

^a There is a change in methodology for highway vehicles and off-highway emission estimates from 1970 to 1980.

Source: Compiled by Oak Ridge National Laboratory from U. S. Environmental Protection Agency, *National Air Pollutant Emission Estimates, 1900-1992*, 1993, pp. 3-14.

**Table 95. National Emissions of Particulate Matter^a,
(at 10-Year Intervals 1960-1990 and Annually 1991-1992)
(million short tons)**

Year	Transportation					Stationary Fuel Combustion	Industrial Processes	Waste Disposal and Recycling	Miscel- laneous	Total of All Sources
	Highway	Railroads	Other Off-Highway	Total						
1960	0.55	0.10	0.09	0.74	1.90	9.24	0.76	1.24	13.90	
1970	0.96	0.07	0.21	1.24	1.34	7.67	1.00	0.84	12.08	
1980	1.11	0.06	0.22	1.39	1.76	2.75	0.27	0.85	7.02	
1990 ^p	1.48	0.04	0.24	1.76	1.16	1.98	0.22	45.73 ^b	50.84 ^b	
1991 ^p	1.53	0.04	0.23	1.80	1.14	1.87	0.22	50.32 ^b	55.34 ^b	
1992 ^p	1.56	0.04	0.24	1.84	1.09	1.94	0.25	46.31 ^b	51.43 ^b	

^p preliminary.

^a The sum of subcategories may not equal total due to rounding.

^b Includes fugitive dust estimates which were not available before 1990. For 1990-1992, fugitive dust is approximately 98% of miscellaneous.

Source: Compiled by Oak Ridge National Laboratory from U. S. Environmental Protection Agency, *National Air Pollutant Emission Estimates, 1900-1992, 1993*, pp. 3-17.

**Table 96. National Emissions of Sulfur Dioxide^a,
(at 10-Year Intervals 1960-1990 and Annually 1991-1992)**
(million short tons)

Year	Transportation				Stationary Fuel Combustion	Industrial Processes	Waste Disposal and Recycling	Miscellaneous	Total of All Sources
	Highway	Railroads	Other Off-Highway	Total					
1960	0.11	0.22	0.12	0.45	15.45	5.78	0.01	0.55	22.25
1970	0.28	0.14	0.24	0.66	23.46	7.09	0.01	0.11	31.33
1980	0.46	0.13	0.40	0.99	21.41	3.77	0.03	0.01	26.21
1990	0.74	0.07	0.20	1.01	19.57	2.20	0.04	0.00	22.82
1991 ^P	0.77	0.07	0.20	1.04	19.53	2.16	0.04	0.00	22.77
1992 ^P	0.79	0.07	0.20	1.06	19.52	2.12	0.04	0.00	22.73

^P preliminary.

^a The sum of subcategories may not equal total due to rounding.

Source: Compiled by Oak Ridge National Laboratory from U.S. Environmental Protection Agency, *National Air Pollutant Emission Estimates, 1900-1992, 1993*, pp. 3-15.

**Table 97. National Lead Emission Estimates,
(at 5-Year Intervals 1970-1990 and Annually 1991-1992)
(thousand short tons)**

Year	Transportation			Stationary Fuel Combustion	Industrial Processes	Waste Disposal and Recycling	Miscellaneous	Total of All Sources
	Highway	Off-Highway	Total					
1970	171.96	8.34	180.30	10.62	26.35	2.20	0.00	219.47
1975	130.21	5.01	135.22	10.35	11.38	1.60	0.00	158.54
1980	62.19	3.32	65.51	4.30	3.94	1.21	0.00	74.96
1985	15.98	0.23	16.21	0.52	2.53	0.87	0.00	20.12
1990	1.69	0.20	1.89	0.50	2.44	0.80	0.00	5.64
1991	1.52	0.18	1.70	0.50	2.24	0.58	0.00	5.01
1992	1.38	0.21	1.59	0.49	2.35	0.74	0.00	5.18

Source: Compiled by Oak Ridge National Laboratory from U. S. Environmental Protection Agency, *National Air Pollutant Emission Estimates, 1900-1992*, 1993, pp. A-28, A-29, A-30.

**Table 98. Emissions of Particulate Matter from Highway Vehicles,
(at 10-Year Intervals 1970-1990 and Annually 1991-1992)
(million short tons)**

Year	Gasoline Powered ^a				Diesel Powered ^a				Highway Vehicle Total
	Passenger Cars & Motorcycles	Light Trucks ^b	Heavy Duty Vehicles	Total	Passenger Cars	Light Trucks ^b	Heavy Duty Vehicles	Total	
1970	0.64	0.10	0.07	0.81	-	-	0.14	0.14	0.96
1980	0.60	0.16	0.06	0.82	0.01	0.00	0.29	0.29	1.11
1990	0.70	0.18	0.05	0.93	0.03	0.02	0.51	0.55	1.48
1991	0.72	0.19	0.04	0.95	0.03	0.02	0.53	0.58	1.53
1992	0.74	0.19	0.04	0.97	0.03	0.02	0.54	0.59	1.56

^a The sum of subcategories may not equal total due to rounding.

^b Less than 8,500 pounds.

Source: Compiled by Oak Ridge National Laboratory from U.S. Environmental Protection Agency, *National Air Pollutant Emission Estimates*, 1900-1992, 1993, p. A-32.

**Table 99. Federal Emission Control Requirements for Automobiles and Light Trucks^a,
(at 5-Year Intervals 1980-1990 and Annually 1991-1995)**
(grams per mile)

Year	Automobiles					Light Trucks ^b						
	Hydro-carbons (HC)	Carbon Monoxide (CO)	Nitrogen Oxides (No _x)	Particulates	Hydro-carbons (HC)	Carbon Monoxide (CO)	Nitrogen Oxides (No _x)	Particulates	Hydro-carbons (HC)	Carbon Monoxide (CO)	Nitrogen Oxides (No _x)	Particulates
1980	0.41	7.0	2.0	*	1.7	18.0	2.3	*	1.7	18.0	2.3	*
1985	0.41	3.4	1.0	0.6	0.8	10.0	2.3	0.6	0.8	10.0	2.3	0.60
1990	0.41	3.4	1.0	0.2	0.8	10.0	1.2 ^c	0.2	0.8	10.0	1.2 ^c	0.26
1991	0.41	3.4	1.0	0.2	0.8	10.0	1.2 ^c	0.2	0.8	10.0	1.2 ^c	0.26
1992	0.41	3.4	1.0	0.2	0.8	10.0	1.2 ^c	0.2	0.8	10.0	1.2 ^c	0.26
1993	0.41	3.4	1.0	0.2	0.8	10.0	1.2 ^c	0.2	0.8	10.0	1.2 ^c	0.26
1994	0.25	3.4	0.4	0.08	0.3 ^c	3.4 ^c	1.2 ^c	0.08	0.3 ^c	3.4 ^c	1.2 ^c	0.26
1995	0.25	3.4	0.4	0.08	0.3 ^c	3.4 ^c	0.4 ^c	0.08	0.3 ^c	3.4 ^c	0.4 ^c	0.08

* Applies to light trucks up to and including 3,750 pounds loaded vehicle weight (LVW).

^a California standards not included.

^b Applies to light trucks under 8,500 pounds gross vehicle weight rating (GVWR) beginning in model year 1980.

^c Applies to light trucks up to and including 3,750 pounds loaded vehicle weight (LVW). Does not apply to diesel-fueled light trucks.

Sources: Compiled by Oak Ridge National Laboratory from *Code of Federal Regulations 40CFR86, Control of Air Pollution from New Motor Vehicles and New Motor Vehicle Engines: Certification and Testing Procedures*, July 1, 1987, p. 264 (1980-1993) and *Clean Air Act Amendment of 1990 (1994-1995)*.

**Table 100. Federal Emission Control Requirements for
Heavy-Duty Diesel Trucks^a,
(at 5-Year Intervals 1980-1990 and Annually 1991-1998)
(grams per brake horsepower hour)**

Year	Hydro-carbons (HC)	Carbon Monoxide (CO)	Nitrogen Oxides (NO _x)	Particulates
1980	1.5	25.0	b	b
1985	1.3	15.5	10.7	b
1990	1.3	15.5	6.0	0.60
1991	1.3	15.5	5.0	0.25
1992	1.3	15.5	5.0	0.25
1993	1.3	15.5	5.0	0.25
1994	1.3 ^c	15.5 ^c	5.0	0.10
1995	1.3 ^c	15.5 ^c	5.0 ^c	0.10 ^c
1996	1.3 ^c	15.5 ^c	5.0 ^c	0.10 ^c
1997	1.3 ^c	15.5 ^c	5.0 ^c	0.10 ^c
1998	1.3 ^c	15.5 ^c	4.0 ^c	0.10 ^c

^a Applies to trucks greater than 8,500 pounds gross vehicle weight beginning in model year 1980.

^b No standard was set for this year.

^c Heavy-duty trucks must meet these standards or standards which reflect the greatest degree of emission reduction achievable through the application of the technology available.

Source: Compiled by Oak Ridge National Laboratory from *Code of Federal Regulations*, 40CFR86, *Control of Air Pollution from New Motor Vehicles and New Motor Vehicle Engines: Certification and Testing Procedures*, July 1, 1987, p. 264 (1980-1993) and *Clean Air Act Amendment of 1990* (1994-1998).

**Table 101. Federal Emission Control Requirements for Heavy-Duty Gasoline Trucks^a,
(at 5-Year Intervals 1980-1990 and Anually 1991-1998)
(grams per brake horsepower hour)**

Year	Hydrocarbons (HC)	Carbon Monoxide (CO)	Nitrogen Oxides (NO _x)
1980	1.5	25.0	b
1985	2.5	40.0	10.7
1990	1.9	37.1	6.0
1991	1.9	37.1	5.0
1992	1.9	37.1	5.0
1993	1.9	37.1	5.0
1994	1.9 ^c	37.1	5.0 ^c
1995	1.9 ^c	37.1 ^c	5.0 ^c
1996	1.9 ^c	37.1 ^c	5.0 ^c
1997	1.9 ^c	37.1 ^c	5.0 ^c
1998	1.9 ^c	37.1 ^c	4.0 ^c

^a Applies to trucks greater than 8,500 pounds gross vehicle weight from model year 1980-1985; and greater than 14,000 pounds gross vehicle weight starting in 1990.

^b No standard was set for this year.

^c Heavy-duty trucks must meet these standards or standards which reflect the greatest degree of emission reduction achievable through the application of the technology available.

Source: Compiled by Oak Ridge National Laboratory from *Code of Federal Regulations, 40CFR86, Control of Air Pollution from New Motor Vehicles and New Motor Vehicles Engines: Certification and Testing Procedures*, July 1, 1987, p. 264 (1980-1993) and *Clean Air Act Amendment of 1990* (1994-1998).

Table 102. Pollution Abatement and Control Expenditures, 1984-1990
(billions of 1987 dollars)

Type of Expenditure	1984	1985	1986	1987	1988	1989	1990
Pollution Abatement:							
Personal Consumption	11.0	11.8	12.7	10.9	11.8	10.1	8.7
Motor Vehicle Emission Abatement Devices	8.1	8.8	9.6	8.6	9.8	9.2	8.5
Operation of Motor Vehicle Emission Abatement Devices	2.8	2.9	3.1	2.2	2.0	0.9	0.2
Business Consumption	41.2	42.4	43.8	44.5	46.0	47.8	49.7
Capital	15.3	15.5	14.9	14.8	15.2	15.4	16.4
Motor Vehicle Emission Abatement Devices	5.1	5.4	5.3	5.1	6.0	5.5	5.3
Plant and Equipment	7.6	7.6	7.0	6.6	7.1	7.9	9.3
Other	2.5	2.5	2.6	3.1	2.1	2.0	1.8
Current Account	25.9	26.9	28.9	29.7	30.7	32.4	33.2
Operation of Motor Vehicle Emission Abatement Devices	2.1	2.2	2.2	1.6	1.5	0.8	0.2
Operation of Plant and Equipment	16.8	16.9	18.2	19.0	19.7	21.3	21.8
Operation of Public Sewer Systems	6.1	6.6	7.3	7.8	8.4	8.7	9.4
Other	0.9	1.2	1.2	1.3	1.1	1.5	1.8
Government Consumption	13.9	14.6	15.7	17.1	17.0	17.8	19.1
Regulation and Monitoring	1.5	1.4	1.6	1.5	1.6	1.7	1.6
Research and Development	2.5	2.5	2.6	2.6	2.7	2.7	2.7
Total Expenditures	70.0	72.7	76.4	76.7	79.1	80.1	81.8
Total Motor Vehicle Expenditures	18.2	19.4	20.2	17.6	19.3	16.4	14.2
Motor Vehicle Percent	26.0	26.7	26.4	23.0	24.4	20.5	17.4

Source: Compiled by Oak Ridge National Laboratory from American Automobile Manufacturers Association, *Facts & Figures*, 1993, p. 83.

**Table 103. Average Retail Price of Transportation Fuel,
(at 5-Year Intervals 1960-1990 and Annually 1991-1993)
(cents per gallon)**

Year	Aviation Fuel		Highway Fuel				Railroad Fuel
	Aviation Gasoline	Jet Fuel Kerosene	Motor Gasoline				Diesel
			Leaded Regular	Unleaded Premium	Unleaded Regular	Truck No. 2 Diesel	
1960	-	-	31.1	-	-	-	9.0
1965	-	-	31.2	-	-	-	9.1
1970	-	-	35.7	-	-	-	10.7
1975	41.1	29.8	56.7	-	-	-	30.0
1980	108.4	86.8	119.1	128.1	124.5	81.8	83.0
1985	120.1	79.6	111.5	134.0	120.2	78.9	78.3
1990	112.0	76.6	114.9	134.9	116.4	72.5	69.2
1991	104.7	65.2	-	132.1	114.0	64.8	67.2
1992	102.7	61.0	-	131.6	112.7	61.8	63.2
1993	99.0	57.9	-	130.2	110.8	60.3	63.1

Source: Railroad Fuel: Association of American Railroads, personal communication.
Other Data: U.S. DOE/EIA, *Monthly Energy Review*, April 1994, Tables 9.4/9.7 and similar tables in earlier editions.
Motor Gasoline, 1960-1970: *Ibid.*, *Annual Energy Review*, June 1992, Table 5.22.

**Table 104. Price Trend of Gasoline vs. Other Consumer Goods and Services,
(at 5-Year Intervals 1955-1990 and Annually 1991-1993)**

Year	Retail Price of Regular Grade Gasoline (Cents Per Gallon)			Price Indexes of Motor Fuel and Other Consumer Items (Index: 1982-84 = 100)					
	Service Station Price Excl. Taxes	State & Federal Taxes	Service Station Price Incl. Taxes	All Items	Food	Shelter	Apparel and Upkeep	Motor Fuel	Medical Care
1955	21.42	7.65	29.07	26.8	27.8	22.7	42.9	22.1	18.2
1960	20.99	10.14	31.13	29.6	30.0	25.2	45.7	24.4	22.3
1965	20.70	10.45	31.15	31.5	32.2	27.0	47.8	25.1	25.2
1970	24.55	11.14	36.69	38.8	39.2	35.5	59.2	27.9	34.0
1975	44.93	11.77	56.70	53.8	59.8	48.8	72.5	45.1	47.5
1980	107.35	14.37	119.10	82.4	86.8	81.0	90.9	97.4	74.9
1985	89.64	21.86	111.50	107.6	105.6	109.8	105.0	98.7	113.5
1990	89.00	25.90	114.90	130.7	132.4	140.0	124.1	101.2	162.8
1991	81.20	32.80	114.00*	136.2	136.3	146.3	128.7	99.4	177.0
1992	79.10	33.60	112.70*	140.3	137.9	151.2	131.9	99.0	190.1
1993	75.90	35.40	111.30*	144.5	140.9	155.7	133.7	98.0	201.4

* Price of regular unleaded gasoline. Regular leaded prices are no longer available.

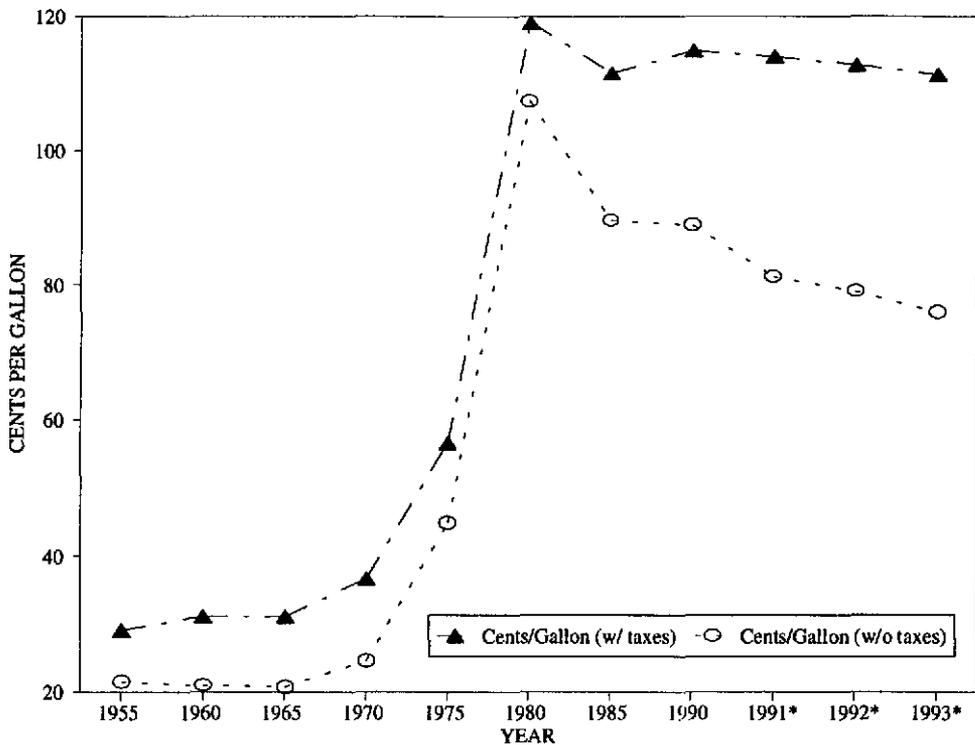
Source: Price of Regular Grade Gasoline: American Petroleum Institute, *Basic Petroleum Data Book*, Section VI, Tables 4/4a/5a.

Price Indexes of Motor Fuel/Consumer Items: Council of Economic Advisors, *Economic Report of the President*, February 1994, Tables B-59, 60.

**Table 105. Average Fuel Efficiency of U.S. Passenger Cars,
(at 5-Year Intervals 1955-1990 and Annually 1991-1994)**

Year	Average U.S. Passenger Car Fuel Efficiency, (mpg) (Calendar Year Basis)	New Car Fuel Efficiency, (mpg) ¹ (Model Year Basis)	
		Domestic Cars	Domestic and Imported Cars
1955	14.53	16.0	16.1
1960	14.28	15.5	16.1
1965	14.27	15.4	15.9
1970	13.52	14.1	15.2
1975	13.52	15.1	16.2
1980	15.46	22.6	24.3
1985	18.20	26.3	27.6
1990	21.02	26.9	28.0
1991	21.69	27.3	28.3
1992	21.60	27.0	27.8
1993	-	27.8	28.4
1994	-	27.3	28.2

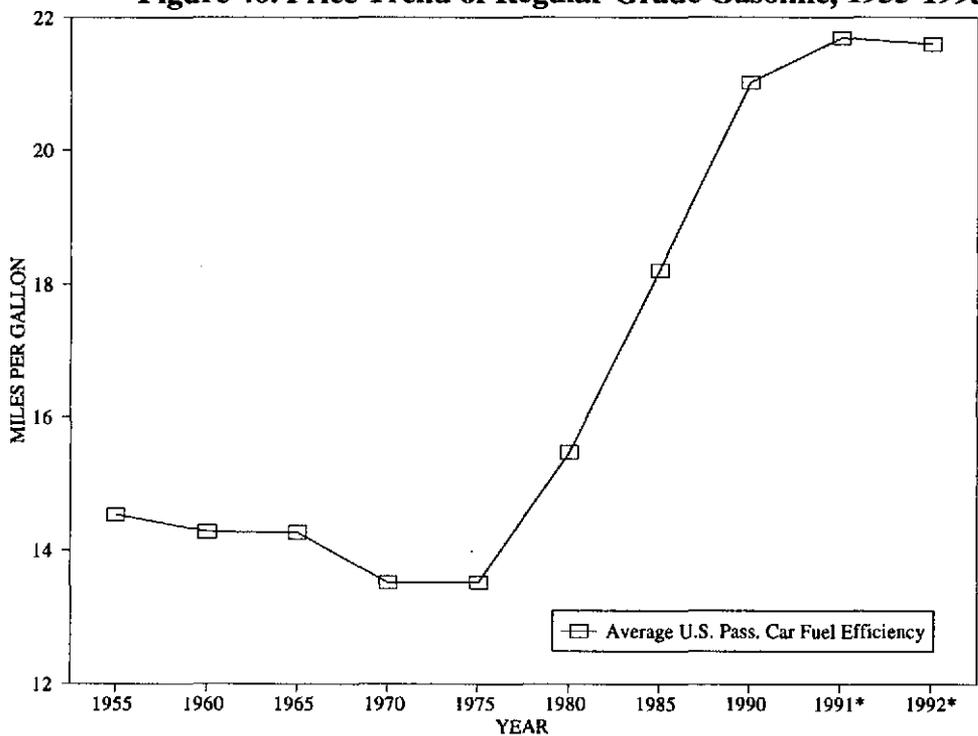
¹ 55% city, 45% highway miles sales weighted harmonic average.
Source: Average Passenger Car Fuel Efficiency: U.S. DOT/FHWA,
Highway Statistics, annual issues, Table VM-1.
New Car Fuel Efficiency:
1955-1975: U.S. DOT/NHTSA, Motor Vehicle Requirements
Division, NRM-21.
1980-1990: *Ibid.*, EPA Final Fuel Economy Calculations for
NHTSA.
1991-1994: *Ibid.*, Manufacturer's preliminary estimates for
NHTSA.



* Price of regular unleaded gasoline. Regular leaded prices are no longer available.

Source: See Table 104.

Figure 46. Price Trend of Regular Grade Gasoline, 1955-1993



Source: See Table 105.

Figure 47. Average Fuel Efficiency of U.S. Passenger Cars, 1955-1992

**Table 106. Consumption of Energy by Sector,
(at 5-Year Intervals 1955-1990 and Annually 1991-1993)
(quadrillion Btu)**

Year	Residential and Commercial ^a	% of Total	Industrial ^a	% of Total	Transportation ^b	% of Total	Electric Utilities	% of Total	Total Energy Consumption
1955	7.39	19.0	15.42	39.7	9.48	24.4	6.50	16.7	38.82
1960	8.75	20.0	16.26	37.1	10.56	24.1	8.19	18.7	43.80
1965	10.00	19.0	19.24	36.5	12.40	23.5	11.01	20.9	52.68
1970	12.14	18.3	21.92	33.0	16.06	24.2	16.27	24.5	66.43
1975	11.60	16.5	20.36	28.9	18.21	25.8	20.35	28.9	70.55
1980	10.72	14.1	21.04	27.7	19.66	25.9	24.51	32.3	75.96
1985	9.78	13.2	17.63	23.8	20.02	27.1	26.52	35.8	73.98
1990	9.55	11.8	19.58	24.0	22.48	27.7	29.60	36.4	81.26
1991	9.80	12.1	19.28	23.8	22.24	27.3	29.92	36.7	81.12
1992	10.00	12.2	20.12	24.5	22.42	27.3	29.55	36.0	82.14
1993 ^P	10.39	12.4	20.28	24.2	22.79	27.1	30.43	36.2	83.96

^a Includes coal, petroleum and natural gas.

^b Includes petroleum and natural gas. (Table 6.6 pipeline fuel, converted to BTU's using Table A4, "Consumption for sectors other than electric utilities").

Note: Sum of components may not equal total due to independent rounding.

Source: U.S. DOE/EIA, *Annual Energy Review 1993*, Table 2.1; *Monthly Energy Review*, April 1994, Table 2.6.

**Table 107. U.S. Energy Consumption by the Transportation Sector,
(at 5-Year Intervals 1955-1990 and Annually 1991-1993)**

Year	Petroleum		Natural Gas ^a		Total Fossil Fuels ^b		Sales of Electricity ^c		Total Transportation Consumption		Total Gross Energy Consumption
	Million Barrels	Trillion Btu ^d	Trillion Cubic Feet	Trillion Btu ^d	Trillion Btu	Trillion Btu ^d	Million Kilowatt-Hours	Trillion Btu ^d	Trillion Btu ^e	% of Total Gross Energy Consumption	Quadrillion Btu
1955	1,627.9	8,804	0.25	259	9,063	15.6	4,563	15.6	9,079	23.4	38.82
1960	1,881.2	10,136	0.35	259	10,498	16.3	4,770	16.3	10,514	24.0	43.80
1965	2,204.6	11,876	0.50	516	12,392	15.9	4,652	15.9	12,408	23.6	52.68
1970	2,839.7	15,315	0.72	742	16,057	15.8	4,633	15.8	16,073	24.3	66.43
1975	3,266.7	17,641	0.58	592	18,206	14.6	4,273	14.6	18,221	25.8	70.55
1980	3,494.1	19,008	0.63	645	19,653	14.6	4,275	14.6	19,668	25.9	75.96
1985	3,596.5	19,504	0.50	516	20,020	16.1	4,704	16.1	20,036	27.1	73.98
1990	4,005.5	21,810	0.66	680	22,490	17.9	5,255	17.9	22,508	27.7	81.26
1991	3,942.7	21,456	0.60	620	22,076	17.9	5,253	17.9	22,093	27.2	81.12
1992	4,005.9	21,812	0.59	606	22,418	17.6	5,162	17.6	22,436	27.3	82.14
1993	4,072.2	22,157	0.61	626	22,783	17.5 ^p	5,133 ^p	17.5 ^p	22,801 ^p	27.2 ^p	83.96 ^p

^p preliminary.

^a Pipeline Fuel.

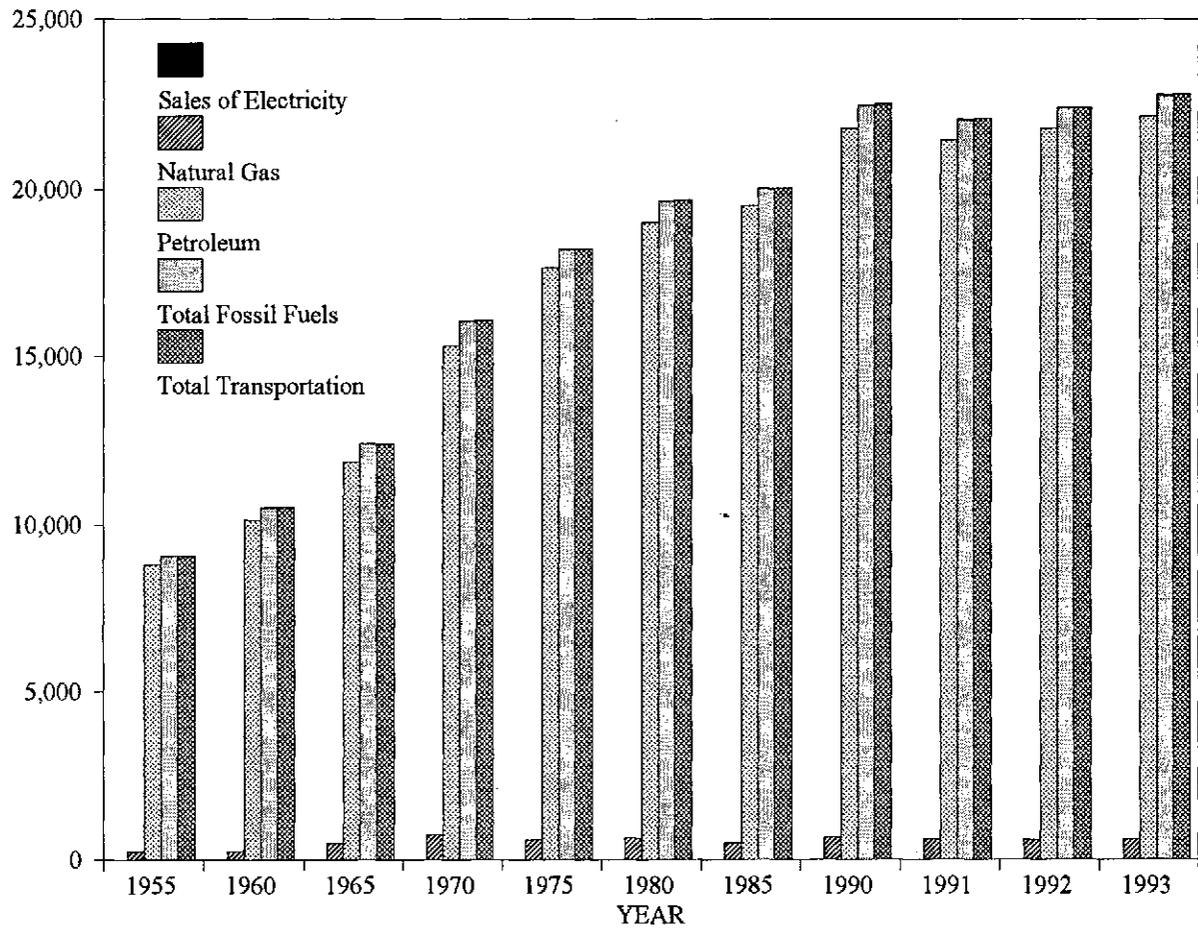
^b Sum of Petroleum and Natural Gas.

^c Includes only energy used by Railroads and Railways.

^d Btu's derived by multiplying by conversion factors in Table A3 for Petroleum in Transportation, and Table A4 for Natural Gas Consumption by Nonutility. U.S. DOE/EIA, *Monthly Energy Review*, April 1994.

^e Sum of Total Fossil Fuels and Sales of Electricity.

Source: U.S. DOE/EIA, *Monthly Energy Review*, April 1994, Petroleum and Natural Gas: Table 2.5; Total Energy Consumption: Table 2.2; Electricity: Edison Electric Institute, *Statistical Yearbook of the Electric Utility Industry*, Table 38.



Source: See Table 107.

Figure 48. U.S. Energy Consumption by the Transportation Sector, 1955-1993

**Table 108. U.S. Petroleum Production and Consumption,
(at 5-Year Intervals 1970-1990 and Annually 1991-1993)**
(million barrels per day)

Year	Domestic Crude Oil Production		Gross Imports		U.S. Petroleum Consumption ¹	World Petroleum Consumption	Imports as a Percentage of U.S. Petroleum Consumption	Petroleum Products as a Percentage of Gross Imports	U.S. Petroleum Consumption as a Percentage of World Consumption	Transportation Petroleum Use as a Percentage of Domestic Production
	Crude Oil	Petroleum Products	Total	Petroleum Products						
1970	9.64	1.32	3.42	2.10	14.70	46.38	23.3	61.4	31.7	-
1975	8.37	4.10	6.05	1.95	16.32	55.48	37.1	32.2	29.4	99.4
1980	8.60	5.26	6.91	1.65	17.06	63.07	40.5	23.9	27.0	104.4
1985	8.97	3.20	5.07	1.87	15.73	60.10	32.2	36.9	26.2	102.6
1990	7.36	5.89	8.02	2.12	16.99	66.16	47.2	26.4	25.7	140.0
1991	7.42	5.78	7.63	1.84	16.71	66.71	45.7	24.1	25.0	136.6
1992	7.17	6.08	7.89	1.81	17.03	66.74	46.3	24.2	25.5	148.0
1993	6.84	6.73	8.53	1.80	17.19	-	49.6	21.2	-	157.7

¹ Best estimate for U.S. petroleum consumption is the amount of petroleum products supplied to the U.S. in a given year.

Sources: Compiled by Oak Ridge National Laboratory from U.S. Department of Energy, Energy Information Administration, *Monthly Energy Review*, March 1994, pp. 29, 40, 41 and U.S. Department of Energy, Energy Information Administration, *International Energy Annual 1992*, January 1994, p. 24 (World Petroleum Consumption).

**Table 109. U.S. Government Energy Consumption, Fiscal Years 1975-1993
(trillion Btu)**

Activity	1975	1980	1985	1990	1991	1992	1993 ^e
Agency							
Defense	1,558.1	1,183.1	1,250.6	1,241.7	1,269.3	1,104.0	1,104.0
Energy	85.2	47.4	52.2	43.4	41.8	44.4	45.5
Postal Service	59.2	27.2	27.8	30.6	30.8	31.7	31.7
Veterans Affairs	39.2	24.8	25.1	24.9	25.3	25.3	25.6
Transportation	28.5	19.2	19.5	19.0	18.8	15.8	16.6
General Services Admin.	43.0	18.1	17.1	14.2	14.0	13.8	14.0
NASA	26.4	10.4	10.9	12.3	12.4	12.5	12.1
Agriculture	11.9	8.6	8.4	9.9	9.2	9.1	5.9
Health and Human Services	9.3	6.0	7.0	8.0	7.1	8.0	8.0
Justice	7.1	5.7	8.2	7.0	8.0	7.5	7.5
Interior	12.3	8.5	6.5	7.4	6.9	7.0	12.0
Other ¹	14.8	12.3	10.7	15.1	13.4	13.8	13.8
Total	1,895.0	1,371.2	1,444.0	1,433.4	1,456.8	1,292.9	1,296.7
Energy Source							
Petroleum	1,162.0	1,011.8	1,052.9	1,020.5	1,049.4	875.5	878.3
Jet Fuel	707.4	638.7	705.7	732.4	774.5	627.0	627.6
Distillate & Residual Fuel	364.7	307.7	290.7	244.1	236.1	203.8	203.5
Motor Gasoline	63.4	56.5	50.5	37.2	34.7	35.6	31.6
Liquefied Petroleum Gases	5.4	4.0	4.1	6.3	3.7	8.1	14.6
Aviation Gasoline	21.1	4.9	1.9	0.5	0.4	1.0	1.0
Electricity	481.2	141.9	165.4	192.4	190.0	191.5	191.6
Natural Gas	166.2	147.3	148.0	157.5	153.5	151.3	151.6
Coal	77.9	63.5	64.0	44.2	45.9	51.8	52.3
Purchased Steam	7.6	6.8	13.6	18.8	18.2	22.8	22.9
Total	1,895.0	1,371.2	1,440.0	1,433.4	1,456.8	1,292.9	1,296.7

^e estimate.

¹ Includes National Archives and Records Administration, U.S. Department of Commerce, Panama Canal Commission, Tennessee Valley Authority, U.S. Department of Labor, National Science Foundation, Federal Trade Commission, Federal Communications Commission, Environmental Protection Agency, U.S. Department of Housing and Urban Development, Railroad Retirement Board, Commodity Futures Trading Commission, Equal Employment Opportunity Commission, Nuclear Regulatory Commission, U.S. Department of State, U.S. Department of Treasury, Small Business Administration, Office of Personnel Management, Federal Emergency Management Agency and U.S. Information Agency. National Science Foundation data for 1990 are estimated.

Note: Sum of components may not equal total due to independent rounding. These data include energy consumed at foreign installations and in foreign operations, including aviation and ocean bunkering, primarily by the U.S. Department of Defense. U.S. Government energy use for electricity generation and uranium enrichment is excluded. However, other energy used by U.S. agencies that produce electricity or enrich uranium is included.

Source: U.S. DOE/EIA, *Annual Energy Review 1993*, Table 1.12.

**Table 110. U.S. Government Energy Use by Agency and Source,
Fiscal Years 1983 and 1993
(trillion Btu)**

	Petroleum				Electricity	Natural Gas	Coal and Other ²	Total
	Motor Gasoline	Distillate and Residual Fuel Oils	Other ¹	Total				
1983								
Defense	27.1	303.6	671.2	1,001.9	94.0	106.9	45.6	1,248.3
Energy	1.3	3.6	0.6	5.6	17.4	6.9	19.6	49.5
Postal Service	9.4	2.8	0.2	12.3	9.0	4.4	0.7	26.5
Veterans Affairs	0.5	2.3	0.0	2.8	5.9	14.4	0.9	24.1
Transportation	1.4	8.0	4.6	14.0	3.9	1.2	0.2	19.4
General Services Admin.	0.1	1.1	0.0	1.2	0.6	3.2	3.1	16.1
NASA	0.3	0.8	1.5	2.5	5.0	2.3	0.4	10.3
Agriculture	4.0	0.6	0.4	5.0	1.2	1.1	0.0	7.4
Interior	2.1	1.7	0.9	4.7	1.3	1.6	0.2	7.7
Health & Human Services	0.4	2.5	0.1	3.1	1.7	1.4	0.0	6.2
Justice	1.7	0.4	0.1	2.2	0.9	2.1	0.4	5.5
Other ³	3.1	2.2	0.3	5.7	2.6	2.2	0.2	10.8
Total	51.6	329.5	679.9	1,061.1	151.5	147.8	71.5	1,431.8
1993*								
Defense	10.7	171.5	605.2	787.4	115.4	103.6	42.4	1,048.8
Energy	1.2	2.4	0.9	4.4	17.5	12.0	9.7	43.6
Postal Service	10.3	3.2	0.0	13.6	13.6	6.0	0.5	33.7
Veterans Affairs	0.6	1.6	0.0	2.2	8.4	13.8	1.2	25.6
Transportation	0.7	4.6	5.6	10.8	6.0	1.5	0.1	18.4
General Services Admin.	0.1	0.4	0.0	0.5	9.3	2.8	1.5	14.1
NASA	0.3	1.0	1.4	2.7	7.0	2.4	0.3	12.4
Agriculture	4.6	0.6	0.3	5.4	2.1	1.7	0.1	9.3
Interior	1.8	1.2	1.7	4.7	1.8	0.8	0.1	7.5
Health & Human Services	0.2	1.5	0.3	1.9	3.4	2.7	0.1	8.1
Justice	2.0	0.3	0.7	3.1	2.4	3.2	0.4	9.1
Other ⁴	2.2	2.4	1.6	6.2	5.4	2.5	0.6	14.7
Total	34.5	190.7	617.8	842.9	192.3	153.1	57.0	1,245.4

^o estimate.

* Less than 50 billion Btu's.

¹ Includes aviation gasoline, jet fuel, liquefied petroleum gases, and other.

² Includes purchased steam, coal, and other.

³ Includes U.S. Department of Commerce, Panama Canal Commission, Tennessee Valley Authority, National Science Foundation, U.S. Department of Treasury, and Environmental Protection Agency.

⁴ Includes National Archives and Records Administration, U.S. Department of Commerce, U.S. Department of Labor, U.S. Department of State, Environmental Protection Agency, Federal Communications Commission, Federal Trade Commission, National Science Foundation, Panama Canal Commission, Commodity Futures Trading Commission, Equal Employment Opportunity Commission, Nuclear Regulatory Commission, Office of Personnel Management, U.S. Department of Housing and Urban Development, U.S. Department of Treasury, Tennessee Valley Authority, Railroad Retirement Board, U.S. Information Agency, and Federal Emergency Management Agency.

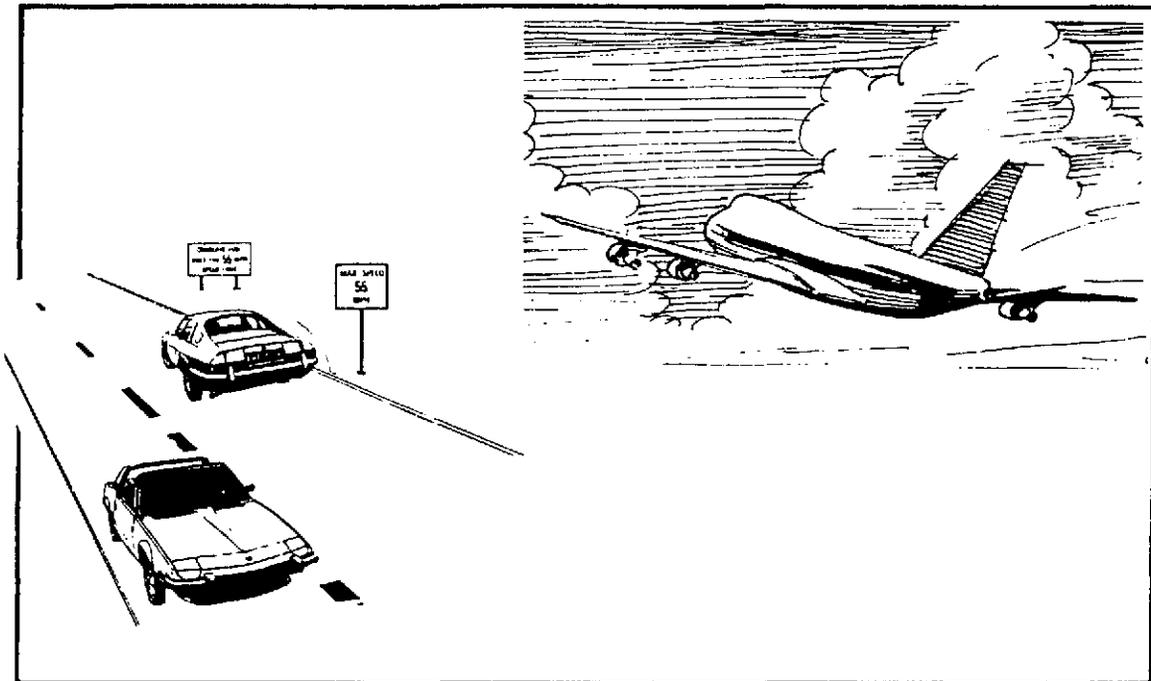
Note: Sum of components may not equal total due to independent rounding. These data include energy consumed at foreign installations and in foreign operations, including aviation and ocean bunkering, primarily by the Department of Defense. U.S. Government energy use for electricity generation and uranium enrichment is excluded. However, other energy used by U.S. agencies that produce electricity or enrich uranium is included.

Source: U.S. DOE/EIA, *Annual Energy Review 1993*, Table 1.13 and revisions from personal communication.



Part 2. Energy Intensiveness

This section presents the energy intensiveness of each transportation mode utilizing the number of miles traveled and the amount of fuel consumed for the years 1960-1992/1993.



**Table 111. Energy Intensiveness of Certificated Air Carriers (All Services),
(at 5-Year Intervals 1960-1990 and Annually 1991-1993)**

Year	Aircraft Miles (millions)		Fuel Consumed (million gallons)		Passenger-Miles (millions)		Passenger Load Factor (%)		Btu/Passenger-Mile	
	Domestic Operations	Inter-national Operations	Domestic Operations	Inter-national Operations	Domestic Operations	Inter-national Operations	Domestic Operations	Inter-national Operations	Domestic Operations	Inter-national Operations
1960	793	182	1,954	566	31,099	8,951	58.5	62.2	8,482	8,536
1965	1,134	284	3,889	1,280	53,226	19,990	54.7	56.8	9,863	8,644
1970	2,068	475	7,857	2,243	108,442	39,695	49.8	51.1	9,781	7,628
1975	1,885	310	7,558	1,949	136,000	37,320	54.6	52.3	7,502	7,050
1980	2,523	401	9,096	1,938	200,087	63,354	58.0	62.8	6,089	4,460
1985	3,046	415	10,121	2,477	277,836	73,237	60.7	64.6	4,918	4,566
1990	3,963	760	12,963	3,977	345,873	126,363	60.4	69.1	5,049	4,249
1991	3,854	807	11,637	3,945	338,085	125,211	61.2	67.3	4,647	4,253
1992	3,994	904	11,590	4,079	354,764	138,950	62.4	67.1	4,410	3,963
1993 ^p	4,144	955	11,930	4,112	361,319	143,459	62.0	67.7	4,457	3,870

^p preliminary.

Note: Heat equivalent factor used for Btu conversion is 135,000 Btu/gallon.

Source: Aircraft Miles:

1960-1970: CAB, *Handbook of Airline Statistics*, 1969 & 1973, Part III, Tables 2 and 13.

1975-1980: CAB, *Air Carrier Traffic Statistics*, annual issues, pp. 5, 15, and similar tables in earlier editions.

1985-1993: U.S. DOT/RSPA, *Ibid.*, annual issues, pp. 2,3.

Fuel Consumed:

1960-1975: CAB, *Handbook of Airline Statistics*, 1977, Table 2.

1980: CAB, *Fuel Cost and Consumption, Twelve Months Ended Dec. 31, 1984*, Tables 1,2,3,4,6,7, and similar tables in earlier editions.

1985-1993: U.S. DOT/RSPA, Data Administration Division, DAI-20.

Passenger Miles:

1960-1970: CAB, *Handbook of Airline Statistics*, 1969 & 1973, Part III, Tables 2 and 13.

1975-1980: *Ibid.*, *Air Carrier Traffic Statistics*, annual issues, pp. 4,5, and similar tables in earlier editions.

1985-1993: U.S. DOT/RSPA, *Ibid.*, annual issues, pp. 2,3.

Passenger Load Factor:

1960-1970: CAB, *Handbook of Airline Statistics*, 1969 & 1973, Part III, Tables 2 and 13.

1975-1980: *Ibid.*, *Air Carrier Traffic Statistics*, annual issues, pp. 5,15, and similar tables in earlier editions.

1985-1993: U.S. DOT/RSPA, *Ibid.*, annual issues, pp. 2,3.

**Table 112. Energy Intensiveness of General Aviation,
(at 5-Year Intervals 1960-1990 and Annually 1991-1992)**

Year	Intercity Passenger- Miles (millions)	Fuel Consumption (million gallons)		Btu/Passenger- Mile
		AVGAS	Jet Fuel	
1960	2,300	242	*	12,646
1965	4,400	292	56	9,694
1970	9,100	551	208	10,363
1975	11,400	412	453	9,709
1980	14,700	520	766	11,286
1985	12,300	421	691	11,697
1990	13,000	353	663	10,148
1991	12,600	354	577	9,559
1992	12,200	314	494	8,560

* Prior to 1962, jet fuel was included with aviation gasoline.

Note: The heat equivalent factors used in Btu conversion are:

AVGAS = 120,190 Btu/gal.

Jet Fuel (kerosene) = 135,000 Btu/gal.

Source: Passenger-Miles Flown: Eno Foundation for Transportation, *Transportation In America*, 1994, p. 47, and similar table in earlier editions by TPA.

Fuel Consumed: 1960-1975: U.S. DOT/FAA, *FAA Statistical Handbook of Aviation*, annual issues.

1980-1992: *Ibid.*, *General Aviation Activity and Avionics Survey*, annual issues, Table 5-1.

**Table 113. Energy Intensiveness of Passenger Cars and Motorcycles,
(at 5-Year Intervals 1960-1990 and Annually 1991-1992)**

Year	Vehicle-Miles (millions)		Passenger-Miles (millions)		Fuel Consumed (million gallons)		BTU/Passenger-Mile	
	Passenger Cars	Motorcycles	Passenger Cars	Motorcycles	Passenger Cars	Motorcycles	Passenger Cars	Motorcycles
1960	588,083	-	1,293,783	-	41,169	-	3,978	-
1965	709,300	-	1,489,530	-	49,723	-	3,992	-
1970	916,700	2,979	1,833,400	3,694	67,820	60	4,418	2,030
1975	1,033,950	5,629	1,964,505	7,149	76,447	113	4,777	1,976
1980	1,111,596	10,214	2,000,873	13,278	71,883	204	4,491	1,920
1985	1,260,565	9,086	2,142,961	12,084	69,268	182	4,040	1,883
1990	1,513,184	9,557	2,284,908	12,233	71,989	191	3,938	1,952
1991 ¹	1,533,552	9,178	2,668,380	10,096	70,692	184	3,312	2,278
1992	1,595,438	9,526	2,776,062	10,479	73,851	191	3,325	2,278

¹ revised.

Note: The heat equivalent factor used for Btu conversion is 125,000 Btu/gal.

Source: 1960-1980: U.S. DOT/FHWA, *Highway Statistics, Summary to 1985*, Table VM-201A.

1985-1992: *Ibid.*, *Highway Statistics*, annual issues, Table VM-1, for vehicle-miles and fuel consumption data.

**Table 114. Energy Intensiveness of Class I Intercity Buses,
(at 5-Year Intervals 1960-1990 and 1991)**

Year	Passenger-Miles (millions)	Fuel Consumed (million gallons)	Btu/ Passenger Mile
1960	13,496	140.0	1,439
1965	15,749	148.2	1,305
1970	17,900	137.7	1,067
1975	18,200	135.1	1,030
1980	16,500	132.2	1,111
1985	12,540	102.6	1,135
1990	13,820	99.0	994
1991	13,682	99.3	997

Note: The heat equivalent factor used in Btu conversion is 138,700 Btu/gal.
Source: Transportation Policy Associates.

**Table 115. Energy Intensiveness of Trucks,
(at 5-Year Intervals 1960-1990 and Annually 1991-1992)**

Year	Vehicle-Miles (millions)			Passenger-Miles (millions)			Fuel Consumed (million gallons)			Btu/Passenger Mile		
	Single-Unit*	Other Single-Unit	Combination	Single-Unit*	Other Single-Unit	Combination	Single-Unit*	Other Single-Unit	Combination	Single-Unit*	Other Single-Unit	Combination
1960	97,930	-	28,479	156,688	-	28,479	-	-	-	-	-	-
1965	141,159	-	32,497	223,031	-	32,497	13,848	-	6,658	7,761	-	28,462
1970	123,286	27,081	35,134	192,326	27,081	35,134	12,313	3,968	7,348	8,003	20,323	29,008
1975	200,700	34,606	46,724	309,078	34,606	46,724	17,903	4,815	9,654	7,240	19,298	28,658
1980	290,935	39,813	68,678	439,312	39,813	68,678	23,594	5,557	12,703	6,713	19,359	25,655
1985	373,072	46,980	79,600	555,877	46,980	79,600	29,021	6,735	15,280	6,526	19,884	26,625
1990	466,092	53,443	96,367	685,155	53,443	96,367	32,937	7,294	17,469	6,009	18,930	25,143
1991	472,848	53,787	96,942	695,087	53,787	96,942	32,330	7,133	17,156	5,850	18,394	24,546
1992	476,587	53,506	99,032	700,583	53,506	99,032	33,139	7,181	17,698	5,915	18,615	24,787

* 2-axle, 4-tire trucks.

Note: The heat equivalent factors used for Btu conversions are:

Automotive gasoline = 125,000 Btu/gal. (single-unit trucks).

Distillate fuel = 138,700 Btu/gal. (combinations) (other single-unit trucks).

Source: 1960-1980: U.S. DOT/FHWA, *Highway Statistics, Summary to 1985*, Table VM-201A.

1985-1992: *Ibid.*, *Highway Statistics*, annual issues, Table VM-1.

**Table 116. Energy Intensiveness of Transit Buses and School Buses,
(at 5-Year Intervals 1960-1990 and 1991-1992)**

Year	Vehicle-Miles (millions)		Passenger-Miles (millions)		Fuel Consumed (million gallons)		Btu/ Passenger-Mile	
	Motor Bus	School Bus	Motor Bus	School Bus	Motor Bus (Diesel)	School Bus (Gasoline)	Motor Bus	School Bus
1960	1,576	1,481	-	-	208	-	-	-
1965	1,528	1,763	-	-	248	249	-	-
1970	1,409	2,100	-	-	271	300	-	-
1975	1,526	2,500	-	-	365	342	-	-
1980	1,677	3,000	21,790	41,000	431	380	2,743	1,159
1985	1,863	3,400	21,161	70,000	518	452	3,395	759
1990	2,130	3,800	20,981	74,200	563	472	3,722	795
1991	2,166	4,300	21,090	83,300	573	533	3,768	800
1992	2,185	4,400	20,404	90,000	575 ^P	546 ^P	3,909 ^P	758 ^P

^P preliminary.

Note: The heat equivalent factors used for Btu conversions are:
Automotive gasoline = 125,000 Btu/gal. (School Bus).
Distillate Oil = 138,700 Btu/gal. (Motor Bus).

Source: School Bus: 1960-1992: National Safety Council, *Accident Facts*, annual issues.
(fuel consumed): 1960-1992: Eno Foundation for Transportation, *Transportation In America*,
1994, p. 56 and earlier editions published by Transportation Policy
Associates.

Motor Bus: 1960-1992: American Public Transit Association (APTA), *Transit Fact
Book*, 1993, pp. 78, 79, 100.

**Table 117. Energy Intensiveness of Class I Railroad Freight,
(at 5-Year Intervals 1960-1990 and Annually 1991-1992)**

Year	Revenue Freight Ton-Miles (millions)	Fuel Consumed (million gallons)	Btu/Revenue Freight Ton-Mile
1960	572,309	3,463	839
1965	697,878	3,592	714
1970	764,809	3,181	577
1975	754,252	3,657	672
1980	918,621	3,904	589
1985	876,984	3,110	492
1990	1,033,969	3,115	418
1991	1,038,875	2,906	388
1992	1,066,781	3,005	391

Note: The heat equivalent factor used for Btu conversion is 138,700 Btu/gal.
Source: AAR, *Railroad Facts*, 1993, p. 40, and similar table in earlier editions.

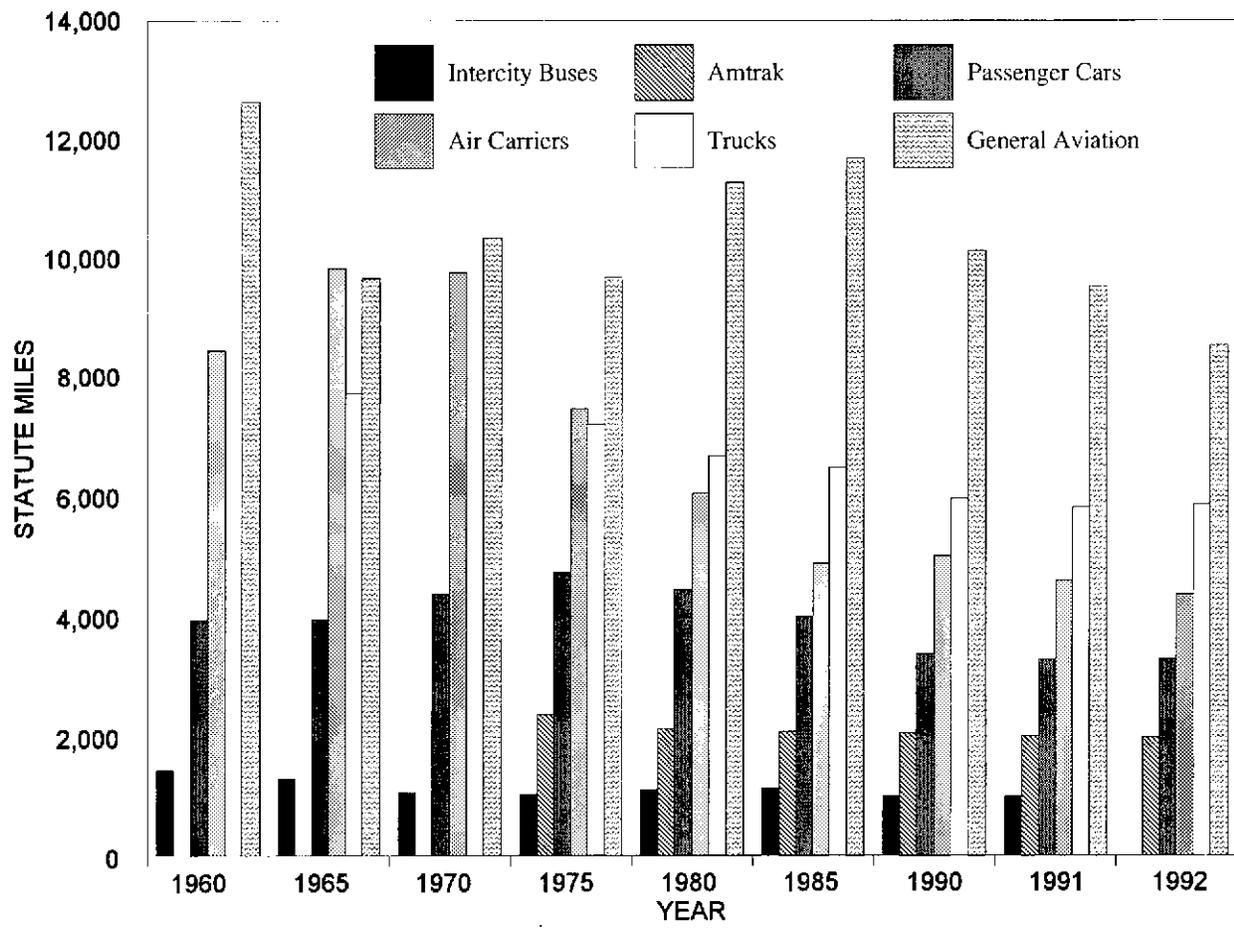
**Table 118. Energy Intensiveness of Amtrak Service,
(at 5-Year Intervals 1975-1990 and Annually 1991-1993)**

Year	Revenue Passenger-Miles (10 ⁶)	Fuel Consumed			Btu/Revenue Passenger-Mile*
		Locomotive			
		Diesel gallons (10 ⁶)	Electric kWh (10 ⁶)*	Total Fuel Consumed (10 ⁹ Btu)*	
1975	3,931	63.1	180.3	9,367	2,383
1980	4,503	63.5	253.8	9,673	2,148
1985	4,785	64.8	295.1	9,995	2,089
1990	6,041	82.1	329.6	12,512	2,071
1991	6,274	82.0	302.5	12,406	1,977
1992	6,091	81.5	299.2	12,325	2,023
1993	6,199	82.8	257.7	12,364	1,995

* Does not include electric power generation and distribution losses; which, if included, would increase figures shown by about 20%.

Note: The heat equivalent factors used in Btu conversion are:
Diesel = 138,700 Btu/gal.
Electric = 3,412 Btu/kWh.

Source: Amtrak, State and Local Affairs Department.



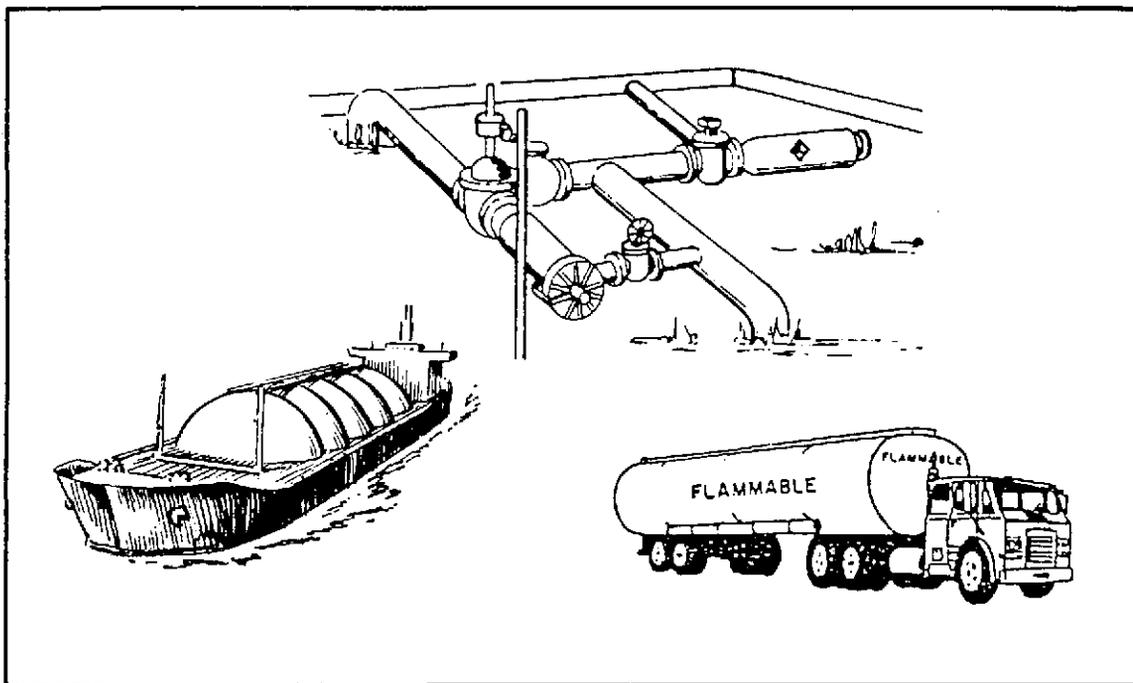
Source: See Tables 111, 112, 113, 114, 115, 118.

Figure 49. Energy Intensiveness by Passenger Mode, 1960-1992



Part 3. Energy Transport

Included in this section are data showing the types of energy transported in the U.S., the miles traveled, and the means used for transportation. Data cover the period 1960-1992/1993, and in some instances, 1955.



**Table 119. Crude Oil Transported in the U.S. by Mode of Transportation,
(at 5-Year Intervals 1975-1990 and Annually 1991-1993)**
(billion ton-miles)

Year	Pipelines ¹		Water Carriers		Trucks		Railroads		Total Ton-Miles
	Ton-Miles	Percent of Total	Ton-Miles	Percent of Total	Ton-Miles	Percent of Total	Ton-Miles	Percent of Total	
1975	288.0	86.9	40.6	12.2	1.4	0.4	1.5	0.5	331.5
1980	362.6	48.2	387.4	51.4	2.5	0.3	0.5	0.1	753.0
1985	334.4	42.5	449.2	57.2	1.8	0.2	0.8	0.1	786.2
1990	334.8	53.3	291.2	46.4	1.5	0.2	0.7	0.1	628.2
1991	336.0	53.0	296.4	46.7	1.5	0.2	0.7	0.1	634.6
1992	324.4	52.8	288.1	46.9	1.5	0.2	0.7	0.1	614.7
1993 ^P	306.6	52.4	276.0	47.2	1.5	0.3	0.7	0.1	584.8

^P preliminary.

¹ The amounts carried by pipeline are based on ton-miles of crude and petroleum products for Federally regulated pipelines (84 percent) plus an estimated breakdown of crude and petroleum products for the ton-miles for pipelines not Federally regulated (16 percent).

Source: 1975-1992: Association of Oil Pipelines, *Shifts in Petroleum Transportation*, annual issues.

1993: Eno Foundation for Transportation, *Transportation In America*, 1994, p. 59.

**Table 120. Refined Petroleum Products Transported in the U.S. by Mode of Transportation,
(at 5-Year Intervals 1975-1990 and Annually 1991-1993)**
(billion ton-miles)

Year	Pipelines ¹		Water Carriers		Trucks		Railroads		Total Ton-Miles
	Ton-Miles	Percent of Total	Ton-Miles	Percent of Total	Ton-Miles	Percent of Total	Ton-Miles	Percent of Total	
1975	219.0	42.5	257.4	50.0	26.2	5.1	12.6	2.4	515.2
1980	225.6	45.8	230.4	46.8	24.3	5.0	12.0	2.4	492.3
1985	229.9	56.2	141.2	34.5	26.9	6.6	11.3	2.8	409.3
1990	249.3	56.0	157.8	35.2	28.2	6.3	13.3	3.0	448.6
1991	242.3	57.3	140.0	33.1	27.4	6.5	13.0	3.1	422.7
1992	247.0	57.0	144.8	33.4	28.1	6.5	14.0	3.2	433.9
1993 ^P	261.8	59.2	138.4	31.3	28.4	6.4	13.6	3.1	442.3

^P preliminary.

¹ The amounts carried by pipeline are based on ton-miles of crude and petroleum products for Federally regulated pipelines (84 percent) plus an estimated breakdown of crude and petroleum products for the ton-miles for pipelines not Federally regulated (16 percent).

Source: 1975-1992: Association of Oil Pipelines, *Shifts in Petroleum Transportation*, annual issues.

1993: Eno Foundation for Transportation, *Transportation In America*, 1994, p. 59.

**Table 121. Crude Petroleum and Petroleum Products Transported in the U.S.
by Mode of Transportation, (at 5-Year Intervals 1975-1990 and Annually 1991-1993)**
(billion ton-miles)

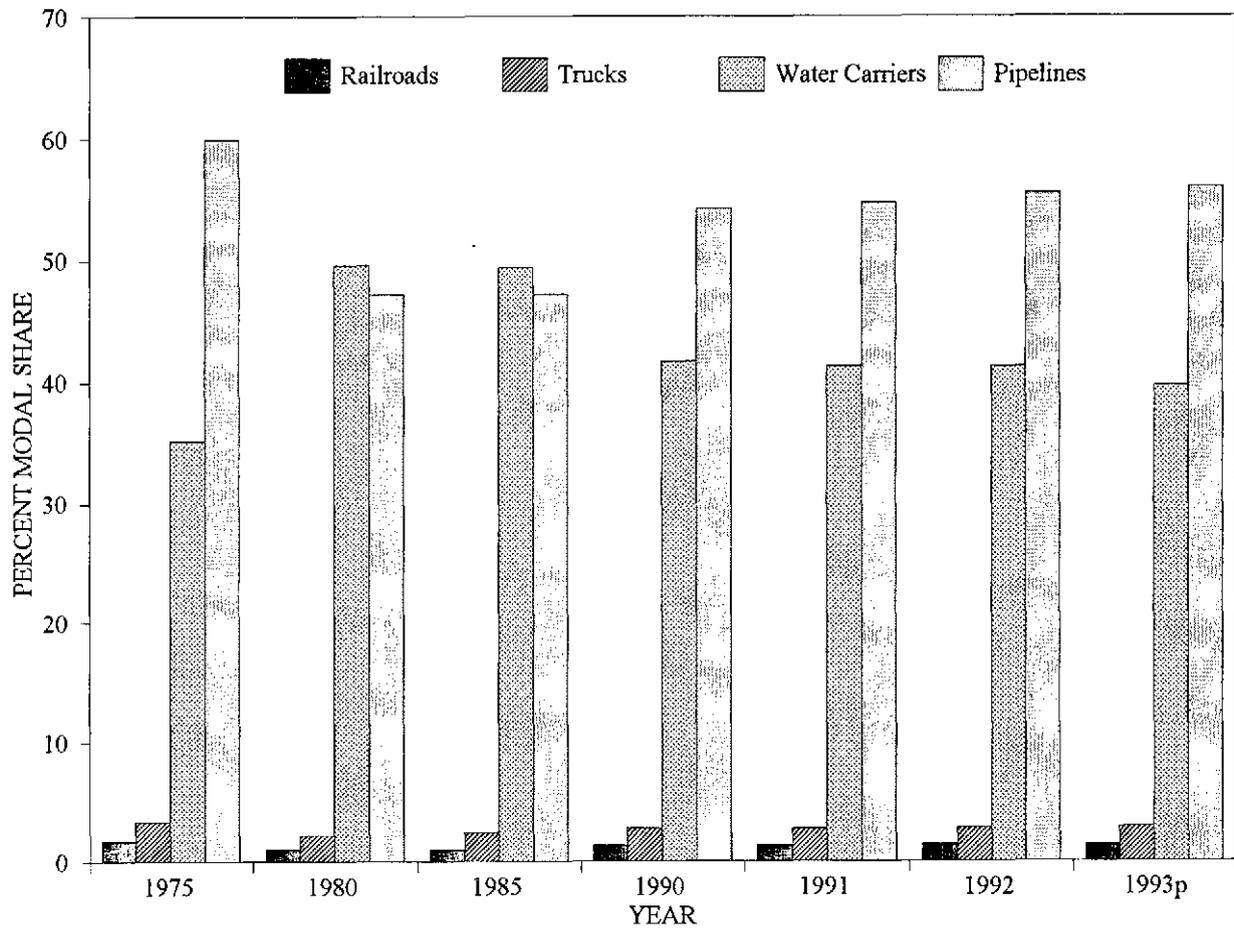
Year	Pipelines ¹		Water Carriers		Trucks		Railroads		Total Ton-Miles
	Ton-Miles	Percent of Total	Ton-Miles	Percent of Total	Ton-Miles	Percent of Total	Ton-Miles	Percent of Total	
1975	507.0	59.9	298.0	35.2	27.6	3.3	14.1	1.7	846.7
1980	588.2	47.2	617.8	49.6	26.8	2.2	12.5	1.0	1,245.3
1985	564.3	47.2	590.4	49.4	28.7	2.4	12.1	1.0	1,195.5
1990	584.1	54.2	449.0	41.7	29.7	2.8	14.0	1.3	1,076.8
1991	578.3	54.7	436.4	41.3	28.9	2.7	13.7	1.3	1,057.3
1992	571.4	55.5	432.9	41.3	29.6	2.8	14.7	1.4	1,048.6
1993 ^P	572.5	56.0	406.5	39.7	29.9	2.9	14.3	1.4	1,023.2

^P preliminary.

¹ The amounts carried by pipeline are based on ton-miles of crude and petroleum products for Federally regulated pipelines (84 percent) plus an estimated breakdown of crude and petroleum products for the ton-miles for pipelines not Federally regulated (16 percent).

Source: 1975-1992: Association of Oil Pipelines, *Shifts in Petroleum Transportation*, annual issues.

1993: Eno Foundation for Transportation, *Transportation in America*, 1994, p. 59.



p preliminary.
 Source: See Table 121.

Figure 50. Crude Petroleum and Petroleum Products Transported in the U.S. by Modal Share, 1975-1993

Table 122. U.S. Gas Utility Industry Miles of Pipeline and Main, by Type^a, (at 5-Year Intervals 1955-1990 and Annually 1991-1992) (thousands)

Year	Total	Field and Gathering	Transmission Pipeline ^b	Distribution Main
1955	496.7	45.7	145.9	305.1
1960	630.9	55.8	183.7	391.4
1965	767.5	61.7	211.3	494.5
1970	913.3	66.3	252.2	594.8
1975	979.3	68.5	262.6	648.2
1980	1,051.8	83.5	266.5	701.8
1985	1,118.9	94.3	271.2	753.4
1990	1,206.9	89.5	280.1	837.3
1991	1,225.4 ^r	86.3	281.6	857.5 ^r
1992	1,253.9	86.2	284.5	883.2

^r revised.

^a Includes data for Alaska subsequent to 1960; excludes service pipe. Data not adjusted to common diameter equivalent. Mileage shown as of end of each year.

^b Includes 5,000 miles of Underground Storage pipe in 1975; 6,200 in 1980; 6,000 in 1985; 6,200 in 1990 & 1991; and 6,000 in 1992, some of which was formerly included in Field and Gathering pipe.

Source: 1955-1992: American Gas Association, *Gas Facts*, 1993, Table 5-1.

Table 123. U.S. Tanker Fleet (Ocean-going Vessels of 1,000 Gross Tons and Over) (At 5-Year Intervals 1955-1990 and Annually 1991-1992)

Actual Fleet				
Year	Number	Gross Tons	Deadweight Tons	Average Speed (Knots)
1955	490	5,094,900	7,989,500	15.1
1960	478	5,664,000	8,894,600	15.7
1965	410	5,479,800	8,733,500	16.0
1970	350	5,305,800	8,911,002	16.2
1975	293	5,943,289	10,601,370	16.4
1980	308	8,949,000	16,152,000	16.3
1985	258	8,444,000	15,535,000	16.0
1990	233	8,501,000	15,650,000	16.0
1991	226	8,189,000	14,993,000	15.0
1992	220	7,825,000	14,180,000	16.0

Source: 1955-1975: Sun Oil Company, Division of Planning and Industry Affairs, *Analysis of World Tank Ship Fleet*, 1977, Table 1, and equivalent table in earlier editions.

1980-1992: U.S. DOT/Maritime Administration, *Merchant Fleets of the World*, annual issues, Table 6 and equivalent tables in earlier editions.

Table 124. Annual Oil Spills in U.S. Navigable Waters, by Source, 1982-1992

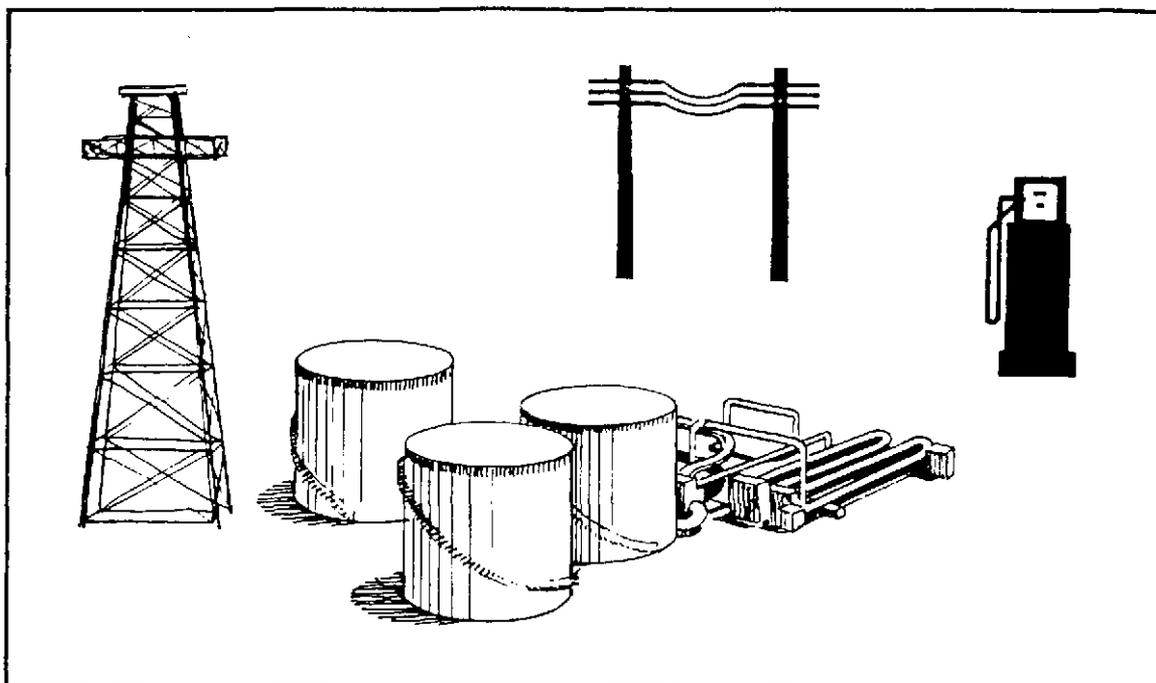
Year	Tankships		Tank Barges		Other Vessels		Total Vessels		Non-Vessel		Total	
	Incidents	Volume (thousand gallons)	Incidents	Volume (thousand gallons)	Incidents	Volume (thousand gallons)	Incidents	Volume (thousand gallons)	Incidents	Volume (thousand gallons)	Incidents	Volume (thousand gallons)
1982	289	1,221	566	1,810	1,443	409	2,298	3,340	6,314	5,748	8,612	9,189
1983	263	143	545	1,803	1,526	368	2,334	2,315	6,874	5,956	9,208	8,270
1984	244	1,907	529	2,488	1,652	1,873	2,425	6,258	6,820	9,987	9,245	13,255
1985	173	10,732	417	3,689	1,479	707	2,069	15,128	4,953	3,547	6,993	18,667
1986	225	1,165	575	1,644	2,284	330	3,084	3,139	3,246	1,288	6,330	4,428
1987	195	1,543	451	574	2,472	1,009	3,118	3,127	2,965	633	6,083	3,760
1988	260	852	555	3,181	2,540	407	3,355	4,440	2,800	2,177	6,155	6,617
1989	255	11,272	578	752	2,957	712	3,790	12,737	4,133	770	7,923	13,507
1990	312	4,978	530	1,002	3,493	484	4,335	6,463	5,265	4,912	9,600	11,376
1991	254	92	498	246	3,664	502	4,416	840	5,434	612	9,850	1,452
1992	198	118	328	74	4,893	400	5,419	592	3,371	912	8,790	1,504

Source: Compiled by Oak Ridge National Laboratory from personal communication with U.S. DOT/USCG, Marine Environmental Protection, G-MEP.



Part 4. Energy Supply and Demand

Included in this section are data illustrating the types of energy supplied and used by the end-use sectors from 1955-1992/1993.



**Table 125. Petroleum Products Supplied by Sector,
(at 5-Year Intervals 1955-1990 and Annually 1991-1993)
(million barrels per day)**

Year	Residential and Commercial	Industrial	Transportation	Transportation as % of Total	Electric Utilities	Total
1955	1.40	2.39	4.46	52.7	0.21	8.46
1960	1.71	2.71	5.14	52.4	0.24	9.80
1965	1.91	3.25	6.04	52.4	0.32	11.51
1970	2.18	3.81	7.78	52.9	0.93	14.70
1975	1.95	4.04	8.95	54.8	1.39	16.32
1980	1.52	4.84	9.55	56.0	1.15	17.06
1985	1.30	4.10	9.85	62.6	0.48	15.73
1990	1.14	4.32	10.97	64.6	0.55	16.99
1991	1.14	4.25	10.80	64.6	0.52	16.71
1992 ^r	1.12	4.55	10.95	64.3	0.42	17.03
1993 ^e	1.13	4.45	11.16	64.9	0.46	17.19

^r revised.

^e estimate.

Note: Sum of components may not equal total due to independent rounding.

Source: U.S. DOE/EIA, *Annual Energy Review 1993*, Table 5.12.

**Table 126. Domestic Demand for Petroleum Products
Supplied by Sector, (at 5-Year Intervals 1955-1990 and Annually 1991-1993)
(trillion Btu's per day)¹**

Year	Residential and Commercial	Industrial	Transportation	Transportation as % of Total	Electric Utilities	Total
1955	7.85	14.02	24.12	51.0	1.31	47.30
1960	9.53	15.72	27.69	50.9	1.50	54.44
1965	10.57	18.61	32.54	51.1	2.01	63.67
1970	11.78	21.35	41.96	51.9	5.81	80.89
1975	10.45	22.33	48.26	53.8	8.69	89.70
1980	8.31	26.02	51.95	55.6	7.19	93.47
1985	6.92	21.41	53.42	63.0	3.00	84.74
1990	5.94	22.78	59.73	65.0	4.62	91.93
1991	5.89	22.07	58.77	65.3	3.25	89.97
1992	5.79	23.61	59.62	65.1	2.62	91.64
1993 ^a	5.85	23.11	60.72	65.6	2.87	92.55

^a preliminary conversion factor.

^c estimated.

¹ Data derived by multiplying figures in previous table by conversion factors in each sector column in Table A3 in U.S. DOE's *Annual Energy Review 1993*.

Table 127. Petroleum Products Supplied by Type and Sector, 1983 and 1993

Year and Refined Product	Residential and Commercial		Industrial		Transportation		Electric Utilities		Total	
	Million Barrels Per Day	Quad-rillion Btu	Million Barrels Per Day	Quad-rillion Btu	Million Barrels Per Day	Quad-rillion Btu	Million Barrels Per Day	Quad-rillion Btu	Million Barrels Per Day	Quad-rillion Btu
1983										
Asphalt and Road Oil	0.00	0.00	0.37	0.90	0.00	0.00	0.00	0.00	0.37	0.90
Aviation Gasoline	0.00	0.00	0.00	0.00	0.03	0.05	0.00	0.00	0.03	0.05
Distillate Fuel Oil	0.74	1.58	0.54	1.14	1.37	2.91	0.05	0.10	2.69	5.72
Jet Fuel	0.00	0.00	0.00	0.00	1.05	2.14	0.00	0.00	1.05	2.14
Kerosene	0.10	0.20	0.03	0.07	0.00	0.00	0.00	0.00	0.13	0.26
Liquefied Petroleum Gases	0.31	0.41	1.17	1.54	0.03	0.04	0.00	0.00	1.51	1.99
Lubricants	0.00	0.00	0.08	0.17	0.07	0.16	0.00	0.00	0.15	0.32
Motor Gasoline	0.05	0.10	0.06	0.11	6.51	12.48	0.00	0.00	6.62	12.70
Residual Fuel Oil	0.09	0.21	0.34	0.79	0.36	0.82	0.63	1.44	1.42	3.26
Other ¹	0.00	0.00	1.27	2.70	0.00	0.00	*	0.01	1.27	2.71
Total	1.29	2.50	3.85	7.42	9.41	18.59	0.68	1.54	15.23	30.05
1993 ^e										
Asphalt and Road Oil	0.00	0.00	0.48	1.15	0.00	0.00	0.00	0.00	0.48	1.15
Aviation Gasoline	0.00	0.00	0.00	0.00	0.02	0.04	0.00	0.00	0.02	0.04
Distillate Fuel Oil	0.63	1.35	0.55	1.16	1.82	3.86	0.04	0.08	3.03	6.44
Jet Fuel	0.00	0.00	0.00	0.0	1.47	3.02	0.00	0.00	1.47	3.02
Kerosene	0.04	0.09	0.01	0.01	0.00	0.00	0.00	0.00	0.05	0.10
Liquefied Petroleum Gases	0.33	0.44	1.37	1.80	0.01	0.02	0.00	0.00	1.71	2.25
Lubricants	0.00	0.00	0.08	0.17	0.07	0.16	0.00	0.00	0.15	0.34
Motor Gasoline	0.04	0.08	0.10	0.20	7.34	14.07	0.00	0.00	7.48	14.35
Residual Fuel Oil	0.08	0.18	0.15	0.35	0.43	0.99	0.41	0.94	1.07	2.45
Other ¹	0.00	0.00	1.72	3.58	0.00	0.00	0.02	0.04	1.73	3.62
Total	1.13	2.13	4.45	8.43	11.16	22.16	0.46	1.05	17.19	33.77

^e estimate.

* Less than 5,000 barrels per day.

¹ Other in the industrial sector includes petrochemical feedstock, special naphthas, wax, petroleum coke, still gas, natural gasoline, pentanes plus crude oil, and miscellaneous products. Other for electric utilities is petroleum coke.

Note: Sum of components may not equal total due to independent rounding.

Source: U.S. DOE/EIA, *Annual Energy Review 1993*, Table 5.13.

**Table 128. Domestic Demand for Gasoline,
(at 5-Year Intervals 1955-1990 and Annually 1991-1992)**
(thousand gallons)

Year	Total Demand	Highway	Non-Highway				Total
			Agriculture	Aviation ^a	Marine	Other ^b	
1955	52,566,255	47,731,734	2,156,434	999,440	25,885	1,652,762	4,834,521
1960	63,221,243	57,879,908	2,291,666	1,323,769	60,633	1,656,267	5,332,335
1965	75,312,613	71,104,430	1,963,432	501,339	96,336	1,647,076	4,208,183
1970	96,331,909	92,329,056	1,931,966	393,012	598,159	1,079,713	4,002,850
1975	112,626,656	108,984,347	1,564,882	409,713	729,718	937,996	3,642,309
1980	104,837,657	101,183,014	1,059,044	412,883	1,052,185	1,130,531	3,654,643
1985	107,612,794	103,607,851	1,080,677	381,515	1,052,998	1,489,753	4,004,943
1990	114,262,125	110,184,150	681,220	357,718	1,300,421	1,738,616	4,077,975
1991	112,259,709	107,948,371	776,217	339,103	1,709,687	1,486,331	4,311,338
1992 ^p	114,853,944	110,950,359	805,511	343,956	1,316,170	1,437,948	3,903,585

^p preliminary.

^a Does not include aviation jet fuel.

^b Includes state, county, and municipal use, industrial, commercial, construction and miscellaneous.
Source: 1955-1975: U.S. DOT/FHWA, *Highway Statistics*, annual issues, Tables MF-24 and MF-26.
1980-1992: *Ibid.*, Tables MF-21A and MF-24.



SUPPLEMENTARY DATA

SECTION III:

A. Commercial Space Transportation

and

B. Journey-to-Work Statistics

Data on commercial space transportation and journey-to-work trends is the final part of the supplementary data section.

A. Commercial Space Transportation

For more than 35 years, all U.S. space exploration and development activities were conducted by the Federal government. During that time, expendable launch vehicles (ELVs) with varying lift capabilities were developed to carry out suborbital, and planetary missions. Combined efforts of the military, scientific, and industrial space sectors produced a tremendous growth in U.S. launch technology and capabilities. This technology, and the manufacturing activities and infrastructure facilities needed to support it, remain important national resources.

In 1981, Space Services Incorporated (SSI), a small company in Houston, Texas, initiated a new phase in the development of U.S. space transportation with its plan to conduct a private rocket launch off the Texas coast. SSI's difficulties in obtaining government approval for this launch highlighted the need for a coherent set of government safety regulations and procedures governing private sector launches.

In 1983, the government issued a directive to encourage development of a private sector ELV capability, including commercialization of key technologies at no cost to industry and private sector use of Federal launch facilities on a direct reimbursement basis.

In 1984, DOT was designated as the lead agency for U.S. commercial space transportation activities by Executive Order of the President. Later that year, Congress enacted the Commercial Space Launch Act of 1984, which authorizes DOT to regulate U.S. commercial space transportation activities. DOT's Office of Commercial Space Transportation (OCST) carries out dual responsibilities under the Executive Order and the Act, (as amended), (1) to license and regulate all U.S. commercial space transportation activities to ensure that they are conducted safely and responsibly; (2) to promote, encourage, and facilitate the U.S. commercial space transportation industry; and (3) to develop policy recommendations regarding this industry.

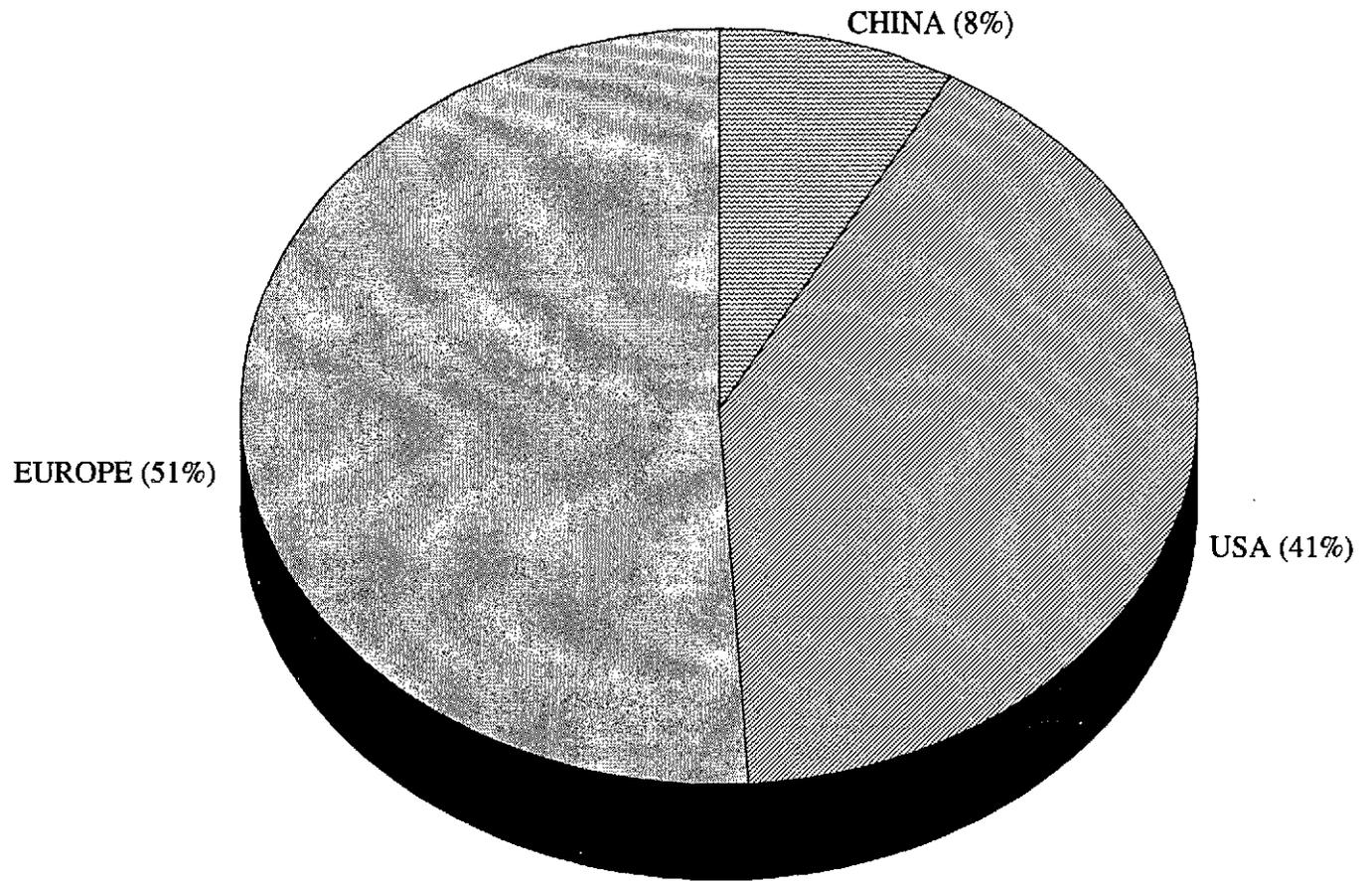
Commercial space transportation is an industry best characterized by its growth and diversity. The annual U.S. commercial launch rate has fluctuated, but shows an overall increase since the industry's early years.

The number of new entrants and new space applications demonstrates the industry's growth potential. Companies are marketing new concepts, such as air-launched rockets, reentry vehicles, and single-stage-to-orbit technologies. Companies are also proposing innovative payload concepts, such as low earth orbit communication satellites, often with new service applications. Others are promoting satellites as a means of participating more widely in the educational, entertainment and other information service roles of the Global Information Infrastructure. Additionally, state governments and other entities are taking steps to develop commercial launch facilities.

Inventory of Launch Sites/Infrastructure

The existing infrastructure for manufacture and operations of the space launch industry is widely dispersed throughout the U.S., largely based upon the needs of the Department of Defense (DOD) and the National Aeronautics and Space Administration (NASA), which have been the primary developers and users of space launch vehicles over the past four decades. In recognizing the growing needs of the commercial space sector, significant progress was made toward a joint government/commercial environment in the 1980s. Institutional arrangements by DOD and NASA have been necessary to accommodate commercial operations which allow the one dominant U.S. to compete internationally. These accommodations are designed to promote the growing number of commercial launches as well as a continued utilization of a U.S. government launch capability for DOD, NASA, and National Oceanic and Atmospheric Administration (NOAA) programs. U.S. government launch site operators have endeavored to establish a balance among the stewardship of a public asset, operational safety, and the increasing demand to provide flexibility in all phases of commercial launch services. A broad range of vehicle size and requirements creates a challenge to site operators who must be prepared to offer efficient services for vehicles with different needs.

In the last ten years of U.S. launch history, much has been accomplished in developing the basis for operation of infrastructure for commercial launches. Licensing of commercial launches has been established providing a regime for insuring and defining commercial liability. New relationships have been built among industry, DOT, NASA, and DOT to establish a basis for commercial operations on government facilities. The U.S. government continues to upgrade and add to its infrastructure for programs essential to the public good while also supporting the emergence of a commercial sector that requires more flexibility and responsiveness in relation to its operations.



Source: U.S. DOT/OST, Office of Commercial Space Transportation.

Figure 51. Average Market Share of Launches, 1989-1994

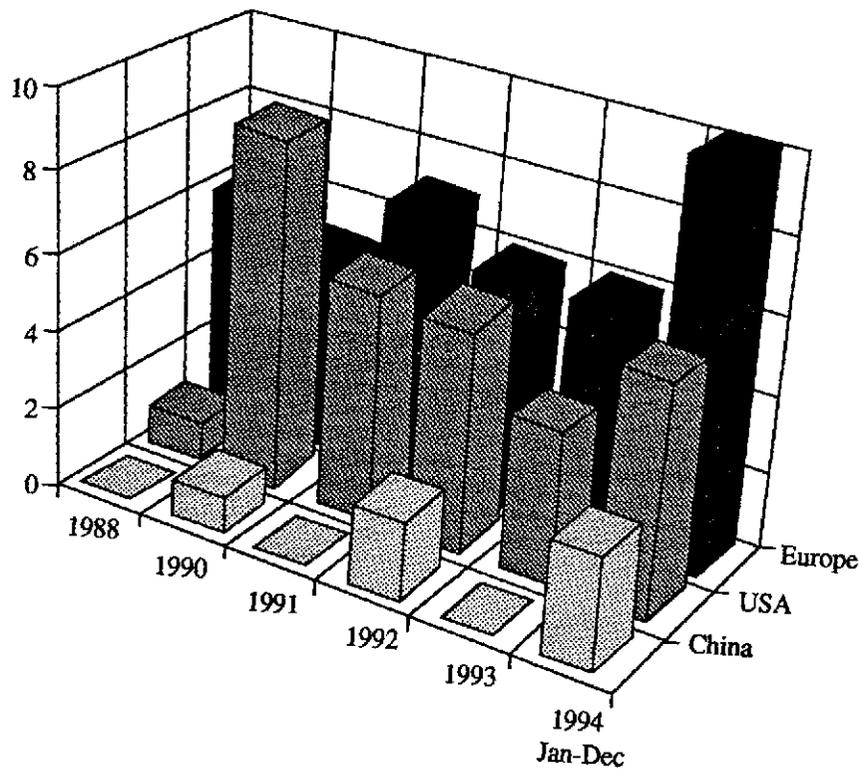


Figure 52. Commercial Launch Events, 1989-1994

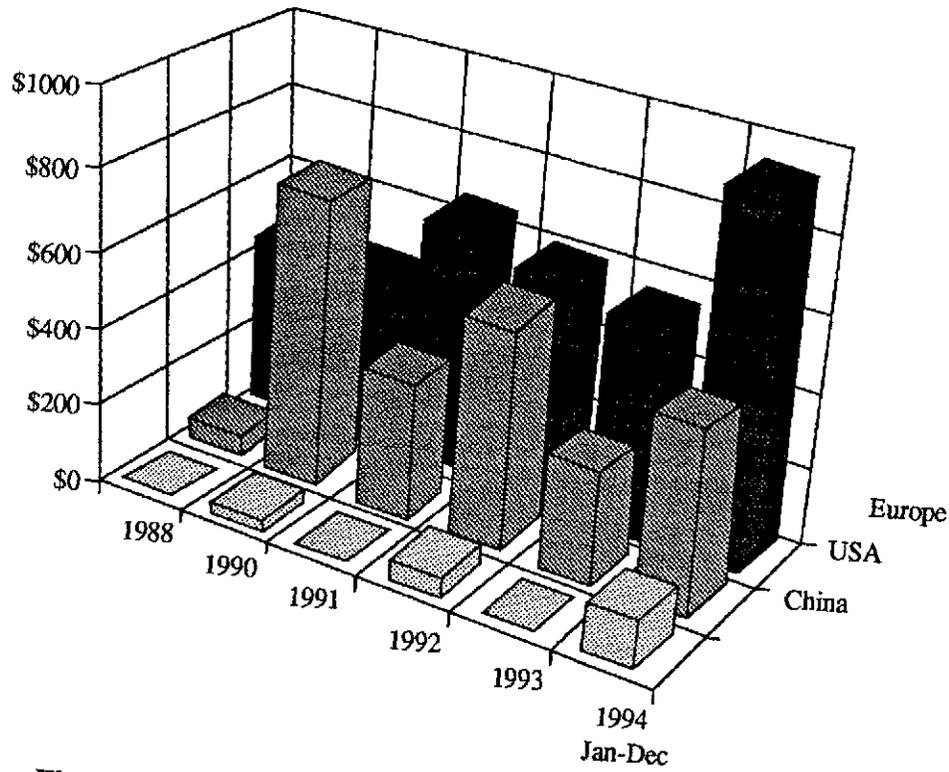
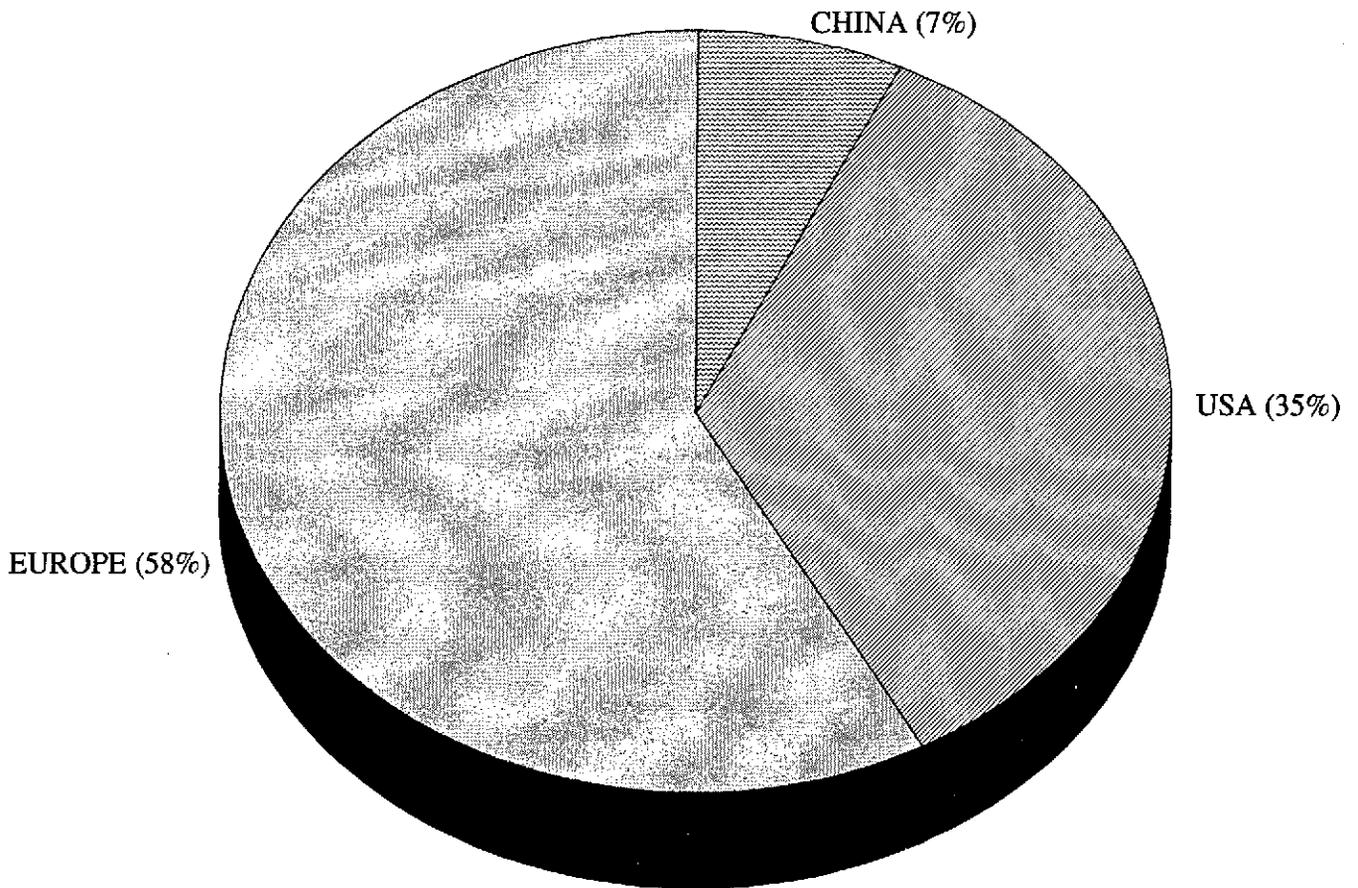


Figure 53. Commercial Launch Revenues, 1989-1994

Table 129. Worldwide Commercial Space Launches, 1982-1992

Year	Titan	Atlas	Delta	Ariane	Long March	Total
1982	-	1	1	1	-	3
1983	-	1	5	2	-	8
1984	-	1	1	4	-	6
1985	-	3	-	3	-	6
1986	-	-	-	2	-	2
1987	-	-	1	2	-	3
1988	-	-	-	7	-	7
1989	-	-	1	6	-	7
1990	3	1	5	5	1	15
1991	-	2	4	7	-	13
1992	-	3	3	6	2	14
Total	3	12	21	45	3	84

Source: U.S. DOT/OST, Office of Commercial Space Transportation.



Source: U.S. DOT/OST, Office of Commercial Space Transportation.

Figure 54. Payloads Launched, 1989-1994

B. Journey-to-Work Statistics

How people in the United States travel to work is affected by demographic and worker characteristics, the availability modes of commuting, perceived travel time and the supply and location of jobs.

The data presented here were abstracted from the U.S. Department of Transportation's Federal Highway Administration's, *Journey-to-Work Trends in the United States and its Major Metropolitan Areas, 1960-1990*. The report is based on U.S. Bureau of the Census data from decennial data sets.

Selected data include Journey-to-Work Comparisons, National Totals, 1960-1990; Journey-to-Work Profile: National Summary Statistics, 1990; Means of Journey-to-Work, 39 Metropolitan Areas Over One Million, 1990; Means of Journey-to-Work, National Totals, 1990; Mean Travel Time to Work (in minutes), 1980-1990; Travel Time Intervals to Work (in minutes), 1990; Time Leaving Home to Go to Work, 1990; Journey-to-Work Mode Share, 1990; Households by Vehicle Availability, 1980-1990; and Vehicle Pools in Commuting, 1990, Percent of All Private Vehicle Trips.

The following codes will assist the user in identifying the metropolitan areas in Figure 57.

WAS	Washington, DC	ORL	Orlando
NRL	New Orleans	TAM	Tampa
LOS	Los Angeles- Anaheim-Riverside, CA CMSA	POR	Portland
BAL	Baltimore, MD MSA	DEN	Denver
SAT	San Antonio, TX MSA	ATL	Atlanta
NYC	New York-Northern New Jersey-Long Island CMSA	SEA	Seattle
NFK	Norfolk	IND	Indianapolis
SDG	San Diego	KSC	Kansas City
MIA	Miami-Fort Lauderdale, FL CMSA	STL	St. Louis
HOU	Houston-Galveston- Brazoria, TX CMSA	ROC	Rochester
PHX	Phoenix	MIN	Minneapolis
SFC	San Francisco	BOS	Boston
CHA	Charlotte	BUF	Buffalo
SLC	Salt Lake City	CIN	Cincinnati
SAC	Sacramento	COL	Columbus
PIT	Pittsburgh	HAR	Hartford
CHI	Chicago-Gary-Lake County, IL-IN-WI CMSA	MIL	Milwaukee
PHI	Philadelphia	DET	Detroit
DAL	Dallas	PRO	Providence

Table 130. Journey-to-Work Comparisons, National Totals, 1960-1990

DATA ITEM	1960	1970	1980	1990	Percent Change			
					1960-70	1970-80	1980-90	1960-90
POPULATION								
Total	179,323,175	203,211,926	226,545,805	248,709,873	13.32	11.48	9.78	38.69
Number of Households	53,022,121	63,444,750	80,389,673	91,993,582	19.66	26.71	14.43	73.50
Persons per Household	3.33	3.11	2.75	2.63	-6.61	-11.58	-4.36	-21.02
Persons per Vehicle	3.27	2.57	1.75	1.63	-21.44	-32.12	-6.52	-50.15
Households per Vehicle	0.97	0.80	0.62	0.60	-17.05	-22.85	-2.56	-37.64
Urban Population	125,268,750	149,646,029	167,050,992	187,051,543	19.46	11.63	11.97	49.32
Rural Population	54,054,525	53,565,297	59,494,813	61,658,330	-0.91	11.07	3.64	14.07
Percent Urban	69.86	73.64	73.74	75.21	5.42	0.13	1.99	7.66
WORKERS								
Total	64,655,805	76,852,389	96,617,296	115,070,274	18.86	25.72	19.10	77.97
Workers as Percent of Population	36.06	37.82	42.65	46.27	4.89	12.77	8.49	28.32
Worked in County of Residence	55,254,625	62,065,319	76,564,160	87,587,677	12.33	23.36	14.40	58.52
Worked Outside County of Residence	9,401,180	14,784,070	20,108,023	27,482,597	57.26	36.01	36.67	192.33
Workers per Household	1.22	1.21	1.20	1.25	-0.66	-0.78	4.08	2.58
Workers per Vehicle	1.18	0.97	0.74	0.76	-17.60	-23.45	1.41	-36.03
COMMUTING (1)								
Mean Travel Time to Work			21.7	22.4			3.23	
Private Vehicle (2)	42,987,904	61,963,414	83,016,457	101,285,208	44.14	33.98	22.01	135.61
% Private Vehicle	69.48	80.63	85.92	88.02	16.05	6.57	2.44	26.69
Public Transit (3)	7,806,932	6,514,012	6,007,728	5,890,155	-16.56	-7.77	-1.96	-24.55
% Transit	12.62	8.48	6.22	5.12	-32.82	-26.64	-17.68	-59.43
Walked to Work	6,416,343	5,689,819	5,413,248	4,488,886	-11.32	-4.86	-17.08	-30.04
% Walked	10.37	7.40	5.60	3.90	-28.61	-24.32	-30.37	-62.38
Worked at Home	4,662,750	2,685,144	2,179,863	3,406,025	-42.41	-18.82	56.25	-26.95
% Worked At Home	7.54	3.49	2.26	2.96	-53.64	-35.43	31.19	-60.72
VEHICLES (4)								
Total Household Vehicles (5)	54,766,718	79,002,052	129,747,911	152,380,479	44.25	64.23	17.44	178.24
Vehicles per Household	1.03	1.25	1.61	1.66	20.55	29.62	2.63	60.37
Vehicles per Person	0.31	0.39	0.57	0.61	27.29	47.32	6.98	100.61
Vehicles per Worker	0.85	1.03	1.34	1.32	21.36	30.64	-1.39	56.34
Households with 0 Vehicles	11,416,835	11,081,394	10,390,307	10,602,297	-2.94	-6.24	2.04	-7.13
% with 0 Vehicles	21.53	17.47	12.92	11.53	-18.88	-26.00	-10.83	-46.48
Households with 1 Vehicle	30,189,103	30,268,323	28,564,622	31,038,711	0.26	-5.63	8.66	2.81
% with 1 Vehicle	56.94	47.71	35.53	33.74	-16.21	-25.52	-5.04	-40.74
Households with 2 Vehicles	10,073,684	18,599,907	27,347,235	34,361,045	84.64	47.03	25.65	241.10
% with 2 Vehicles	19.00	29.32	34.02	37.35	54.31	16.04	9.80	96.60
Households with 3+ Vehicles	1,342,499	3,495,126	14,087,509	15,945,357	160.34	303.06	13.19	1,087.74
% with 3+ Vehicles	2.53	5.51	17.52	17.33	117.58	218.10	-1.09	584.57

(1) Does not include means of travel to work not reported for 1960 of 2,781,876.

(2) Includes cars, trucks, vans, bicycles, motorcycles, taxicabs, and all other means.

(3) Public Transit includes bus, streetcar, subway, railroad, and ferryboat.

(4) Vehicles include automobile only for 1960 and 1970. For 1980 and 1990, it includes cars, vans, and trucks of one ton capacity or less kept at home for use by members of the household.

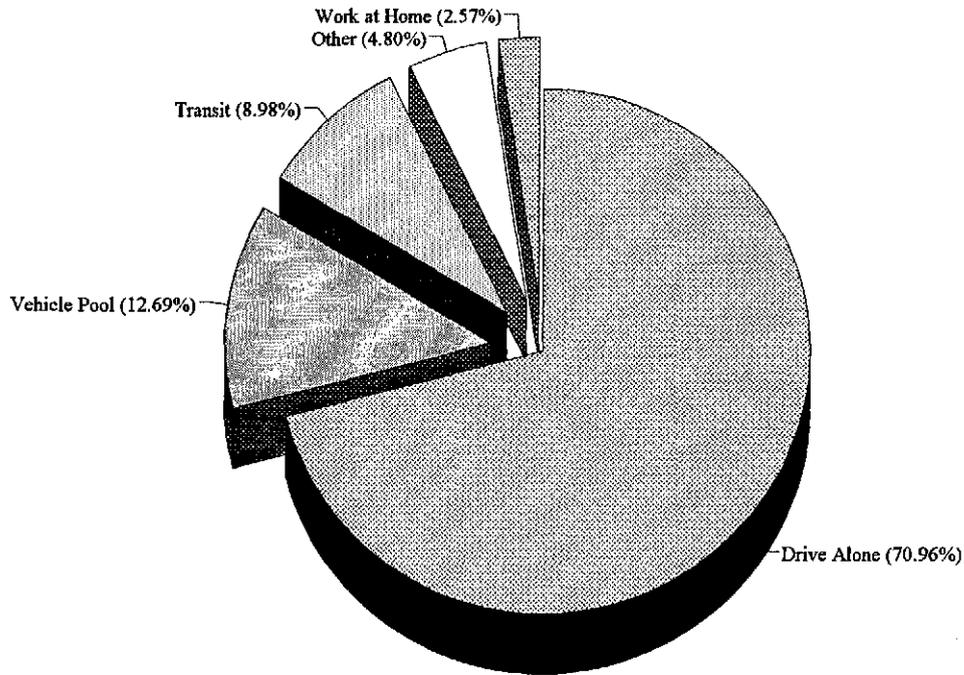
(5) Households with three or more vehicles assumed 3.3 vehicles per household.

Source: U. S. DOT/FHWA, "Journey-to-Work Trends in the United States and its Major Metropolitan Areas, 1960-1990", Table 2-1.

Table 131. Journey-to-Work Profile: National Summary Statistics, 1990

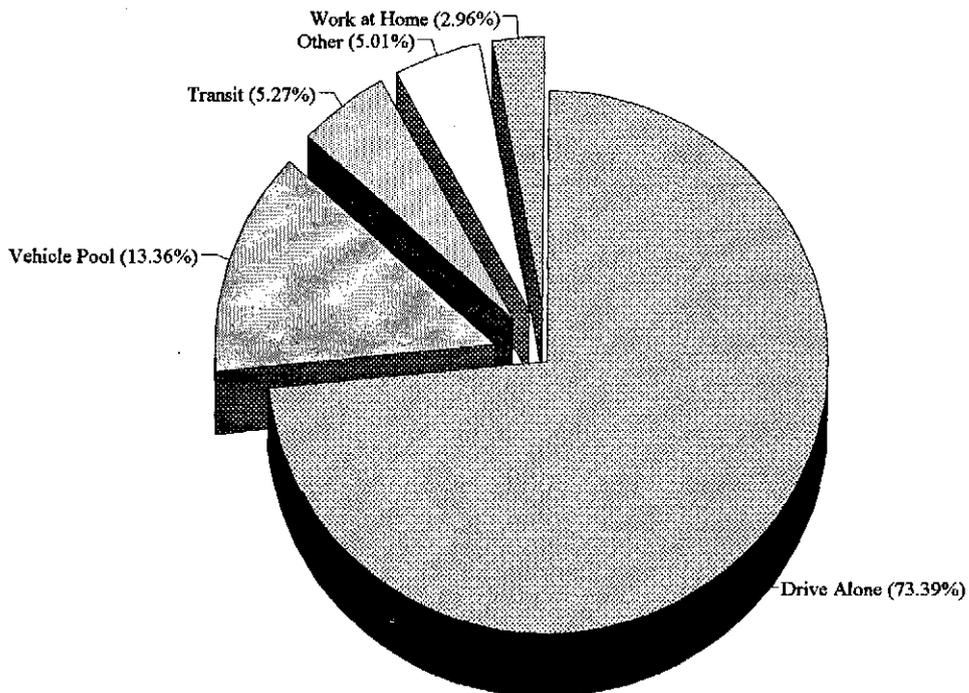
Demographics and Land Area		Travel Time		Journey to Work by Mode	
Area Population	248,709,873	Mean (in minutes)		National	
% Inside 39 Metro Areas	49.78	Originating in:		% Drive Alone	73.19
% Remainder of Nation	50.22	Nation	22.38	% Carpooled	13.36
% Urban	75.21	39 Metro Areas	25.20	% Public Transit	5.27
% Rural	24.79	Remainder of Nation	19.30	% Motorcycle	0.21
Total Households	91,993,582			% Walk	3.90
Persons Per Household	2.63			% Bicycle	0.41
Median Household Income				% Other	0.70
Nationwide	\$30,338	Commute Length		% Work at Home	2.96
Inside 39 Metro Areas	\$31,016	National		Inside 39 Metro Areas	
Remainder of Nation	\$29,665	% Less Than 15 Minutes	15.87	% Drive Alone	70.75
National Age Characteristics		% 15 - 29 Minutes	51.64	% Carpooled	12.69
Median Age	32.90	% 30 - 39 Minutes	14.66	% Public Transit	8.98
% 15 Years or Less	22.87	% 40 - 59 Minutes	9.01	% Motorcycle	0.21
% 65 Years or More	12.56	% 60 Minutes or More	5.86	% Walk	3.76
Square Miles		Inside 39 Metro Areas		% Bicycle	0.43
National Total	3,536,338	% Less Than 15 Minutes	11.45	% Other	0.62
% Inside 39 Metro Areas	5.27	% 15 - 29 Minutes	49.22	% Work at Home	2.57
% Remainder of Nation	94.73	% 30 - 39 Minutes	17.48	Remainder of Nation	
Workers		% 40 - 59 Minutes	11.77	% Drive Alone	75.81
National Total	115,070,274	% 60 Minutes or More	7.52	% Carpooled	14.09
% of Population	46.3	Remainder of Nation		% Public Transit	1.27
% Male	54.7	% Less Than 15 Minutes	20.63	% Motorcycle	0.20
% Female	45.3	% 15 - 29 Minutes	54.24	% Walk	4.06
Inside 39 Metro Areas	59,704,401	% 30 - 39 Minutes	11.62	% Bicycle	0.38
% Inside 39 Metro Areas	51.89	% 40 - 59 Minutes	6.04	% Other	0.79
Remainder of Nation	55,365,873	% 60 Minutes or More	4.07	% Work at Home	3.39
% Remainder of Nation	48.11			General Indicators	
Household Vehicle Availability				National	
National		Time Workers Leave Home		Population/Sq. Mile	70
Total Vehicles	152,380,479	National		Households/Sq. Mile	26
% 0 Vehicles	11.53	5:00 AM - 6:59 AM	26.04	Workers/Sq. Mile	33
% 1 Vehicles	33.76	7:00 AM - 8:29 AM	41.87	Workers/Household	1.25
% 2 Vehicles	37.37	8:30 AM - 9:59 AM	10.28	Vehicles/Household	1.66
% 3+ Vehicles	17.34	All Other Departures	18.85	Vehicles/Worker	1.32
Inside 39 Metro Areas		Worked at Home	2.96	Workers/Vehicle	0.76
Total Vehicles	72,464,899	Inside 39 Metro Areas		Inside 39 Metro Areas	
% 0 Vehicles	14.02	5:00 AM - 6:59 AM	25.49	Population/Sq. Mile	664
% 1 Vehicles	34.00	7:00 AM - 8:29 AM	42.44	Households/Sq. Mile	245
% 2 Vehicles	35.85	8:30 AM - 9:59 AM	11.57	Workers/Sq. Mile	320
% 3+ Vehicles	16.12	All Other Departures	17.93	Workers/Household	1.31
Remainder of Nation		Worked at Home	2.57	Vehicles/Household	1.59
Total Vehicles	79,915,580	Remainder of Nation		Vehicles/Worker	1.21
% 0 Vehicles	9.08	5:00 AM - 6:59 AM	26.63	Workers/Vehicle	0.82
% 1 Vehicles	33.52	7:00 AM - 8:29 AM	41.26	Remainder of Nation	
% 2 Vehicles	38.86	8:30 AM - 9:59 AM	8.88	Population/Sq. Mile	37
% 3+ Vehicles	18.54	All Other Departures	19.84	Households/Sq. Mile	14
		Worked at Home	3.39	Workers/Sq. Mile	17
				Workers/Household	1.19
				Vehicles/Household	1.72
				Vehicles/Worker	1.44
				Workers/Vehicle	0.69

Source: U.S. DOT/FHWA, "Journey-to-Work Trends in the United States and its Major Metropolitan Areas, 1960-1990", Table 2-4.



Source: U.S. DOT/FHWA, "Journey-to-Work Trends in the United States and its Major Metropolitan Areas, 1960-1990", Figure 2-2.

Figure 55. Means of Journey-to-Work, 39 Metropolitan Areas Over One Million, 1990



Source: U.S. DOT/FHWA, "Journey-to-Work Trends in the United States and its Major Metropolitan Areas, 1960-1990", Figure 2-2.

Figure 56. Means of Journey-to-Work, National Totals, 1990

**Table 132. Mean Travel Time to Work, 1980-1990
(minutes)**

Area	1980			1990			% Change Travel Time
	Workers in Area	Work at Home	Mean Time	Workers in Area	Work at Home	Mean Time	
New York City	7,248,643	102,084	33.7	8,057,252	186,512	31.1	-7.70
Los Angeles	5,189,055	78,972	23.6	6,809,043	186,102	26.4	11.87
Chicago	3,496,988	41,347	26.3	3,841,337	80,832	28.1	6.73
San Francisco	2,564,593	47,767	23.9	3,200,833	111,565	25.6	6.91
Philadelphia	2,378,301	36,551	24	2,794,917	63,090	24.1	0.47
Detroit	1,887,578	19,339	22.5	2,079,880	36,656	23.4	3.84
Boston	N/A	N/A	23.4	2,141,717	53,692	24.2	3.62
Washington, DC	1,646,632	26,268	27.2	2,214,350	62,878	29.5	8.53
Dallas	1,450,908	19,975	22.4	1,976,606	45,116	24.1	7.37
Houston	1,508,211	16,658	25.9	1,759,796	36,340	26.1	0.71
Miami	1,153,080	13,754	22.6	1,476,085	29,149	24.1	6.47
Atlanta	995,028	11,366	24.9	1,481,781	33,221	26.0	4.57
Cleveland	1,206,817	15,047	21.6	1,242,099	24,401	22.0	1.67
Seattle	976,885	20,241	22.8	1,308,338	43,979	24.3	6.73
San Diego	853,666	17,397	19.5	1,230,446	61,285	22.2	13.69
Minneapolis	1,055,726	24,427	20.1	1,307,624	44,425	21.1	4.93
St. Louis	1,012,460	16,346	22.6	1,144,336	27,152	23.1	2.25
Baltimore	979,973	13,571	25.3	1,191,813	27,276	26.0	2.65
Pittsburgh	963,336	11,201	22.8	956,154	19,808	22.6	-1.05
Phoenix	658,854	10,545	21.6	996,495	29,309	23.0	6.49
Tampa	622,490	9,473	20.2	914,711	20,769	21.8	7.84
Denver	806,904	16,640	22	964,912	34,767	22.4	1.93
Cincinnati	587,898	9,362	21.8	812,766	17,042	22.1	1.43
Milwaukee	720,308	11,409	18.8	772,752	17,331	20.0	6.15
Kansas City	663,211	10,362	20.7	771,309	21,337	21.4	3.56
Sacramento	471,851	8,732	19.5	685,945	21,338	21.8	11.80
Portland	670,458	12,498	21.4	724,532	27,306	21.7	1.50
Norfolk	531,647	N/A	21	698,999	37,301	21.6	2.98
Columbus	550,284	7,518	20.1	677,859	15,629	21.2	5.67
San Antonio	449,090	6,386	20.2	569,149	13,115	21.9	8.34
Indianapolis	523,549	9,380	20.8	624,971	14,989	21.9	5.40
New Orleans	510,747	5,107	24.5	514,726	8,877	24.4	-0.57
Buffalo	499,842	7,480	19.3	531,122	9,808	19.4	0.67
Charlotte	472,188	N/A	19.9	604,856	11,390	21.6	8.60
Providence	486,604	N/A	18.3	544,668	7,352	19.6	6.95
Hartford	N/A	N/A	20.1	561,969	10,967	20.6	2.51
Orlando	324,943	N/A	20.3	557,448	10,883	22.9	12.72
Salt Lake City	384,078	N/A	20.2	479,338	14,846	19.8	-1.92
Rochester	427,779	N/A	19.3	481,467	11,709	19.7	2.21
Total	44,303,366	657,203		53,633,939	1,371,404	25.2	

N/A Data not available for this MSA/CMSA.

Source: U.S.DOT/FHWA, "Journey-to-Work Trends in the United States and its Major Metropolitan Areas, 1960-1990", Table 4-13.

**Table 133. Travel Time Intervals to Work, Percent Distribution, 1990
(minutes)**

Area	15 Minutes or Less	15 - 29 Minutes	30 - 39 Minutes	40 - 59 Minutes	60 Minutes or More	Work at Home
New York City	21.23	28.15	16.66	15.13	16.51	2.31
Los Angeles	23.81	34.36	17.86	12.01	9.22	2.73
Chicago	22.73	30.94	18.22	15.33	10.67	2.10
San Francisco	24.56	34.83	16.82	12.39	7.91	3.49
Philadelphia	27.20	35.38	16.62	12.21	6.33	2.26
Detroit	25.74	39.48	17.85	10.73	4.42	1.76
Boston	27.70	33.40	17.38	12.62	6.40	2.51
Washington, DC	17.45	30.93	20.08	18.06	10.65	2.84
Dallas	23.71	38.43	19.39	11.31	4.88	2.28
Houston	22.14	34.96	20.18	13.44	7.21	2.07
Miami	22.13	38.49	21.61	11.16	4.63	1.97
Atlanta	20.40	35.49	20.81	14.97	6.10	2.24
Cleveland	27.75	41.00	16.90	9.02	3.36	1.96
Seattle	23.95	37.81	17.58	11.86	5.45	3.36
San Diego	26.43	40.08	16.65	7.91	3.95	4.98
Minneapolis	28.21	42.63	15.33	7.76	2.68	3.40
St. Louis	25.37	39.06	18.64	10.63	3.93	2.37
Baltimore	21.36	36.87	18.89	13.43	7.17	2.29
Pittsburgh	29.24	37.29	15.76	10.91	4.74	2.07
Phoenix	26.09	38.65	18.14	10.09	4.08	2.94
Tampa	29.03	39.16	16.61	8.94	3.99	2.27
Denver	25.83	40.83	17.32	8.95	3.47	3.60
Cincinnati	26.49	42.19	17.28	8.71	3.24	2.10
Milwaukee	32.27	43.14	13.61	6.00	2.74	2.24
Kansas City	27.87	41.63	17.04	7.70	3.00	2.77
Sacramento	29.05	40.47	15.40	7.79	4.19	3.11
Portland	28.27	40.91	15.37	7.98	3.70	3.77
Norfolk	26.03	40.92	16.39	8.07	3.25	5.34
Columbus	27.91	43.90	15.60	7.09	3.19	2.31
San Antonio	25.43	44.29	17.82	6.49	3.67	2.30
Indianapolis	26.80	42.79	17.11	7.44	3.46	2.40
New Orleans	24.05	39.15	18.73	9.80	6.54	1.72
Buffalo	33.47	42.57	14.28	5.51	2.33	1.85
Charlotte	27.90	40.96	17.21	8.80	3.25	1.88
Providence	36.24	39.87	11.90	6.42	3.82	1.75
Hartford	30.55	40.87	15.86	8.26	2.51	1.95
Orlando	24.41	39.84	19.96	10.36	3.48	1.95
Salt Lake City	31.27	44.91	12.75	4.94	3.03	3.10
Rochester	32.74	42.74	12.94	6.44	2.70	2.43

Source: U.S. DOT/FHWA, "Journey-to-Work Trends in the United States and its Major Metropolitan Areas, 1960-1990", Table 4-14.

Table 134. Time Leaving Home to Go to Work, 1990

Area	5:00 AM - 6:59 AM		7:00 AM - 8:29 AM		8:30 AM - 9:59 AM		All Other Departures		Work At Home	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
New York City	1,570,501	19.49	3,737,872	46.39	1,274,483	15.82	1,287,884	15.98	186,512	2.31
Los Angeles	1,988,648	29.21	2,617,755	38.45	760,033	11.16	1,256,505	18.45	186,102	2.73
Chicago	1,103,783	28.73	1,530,200	39.84	382,474	9.96	744,048	19.37	80,832	2.10
San Francisco	768,998	24.02	1,355,709	42.35	405,089	12.66	559,472	17.48	111,565	3.49
Philadelphia	627,737	22.46	1,276,894	45.69	346,080	12.38	481,116	17.21	63,090	2.26
Detroit	520,191	25.01	820,637	39.46	241,185	11.60	461,211	22.17	36,656	1.76
Boston	471,202	22.00	975,233	45.54	280,935	13.12	360,655	16.84	53,692	2.51
Washington, DC	600,459	27.12	955,168	43.14	294,843	13.32	301,002	13.59	62,878	2.84
Dallas	487,123	24.64	916,220	46.35	192,731	9.75	335,416	16.97	45,116	2.28
Houston	530,435	30.14	749,876	42.61	159,121	9.04	284,024	16.14	36,340	2.07
Miami	318,027	21.55	669,317	45.34	211,396	14.32	248,196	16.81	29,149	1.97
Atlanta	356,320	24.05	681,426	45.99	170,578	11.51	240,236	16.21	33,221	2.24
Cleveland	294,832	23.74	524,429	42.22	141,275	11.37	257,162	20.70	24,401	1.96
Seattle	400,819	30.64	479,388	36.64	132,567	10.13	251,585	19.23	43,979	3.36
San Diego	385,153	31.30	452,757	36.80	123,089	10.00	208,162	16.92	61,285	4.98
Minneapolis	336,796	25.76	553,706	42.34	121,642	9.30	251,055	19.20	44,425	3.40
St. Louis	323,881	28.30	467,488	40.85	104,661	9.15	221,154	19.33	27,152	2.37
Baltimore	327,625	27.49	510,023	42.79	127,465	10.70	199,424	16.73	27,276	2.29
Pittsburgh	234,780	24.55	394,827	41.29	111,819	11.69	194,920	20.39	19,808	2.07
Phoenix	304,458	30.55	371,992	37.33	84,506	8.48	206,230	20.70	29,309	2.94
Tampa	219,476	23.99	406,547	44.45	103,593	11.33	164,326	17.96	20,769	2.27
Denver	267,898	27.76	405,822	42.06	90,147	9.34	166,278	17.23	34,767	3.60
Cincinnati	199,692	24.57	343,486	42.26	84,981	10.46	167,565	20.62	17,042	2.10
Milwaukee	222,872	28.84	298,959	38.69	63,952	8.28	169,638	21.95	17,331	2.24
Kansas City	196,467	25.47	348,983	45.25	66,594	8.63	137,928	17.88	21,337	2.77
Sacramento	185,147	26.99	285,503	41.62	68,697	10.01	125,260	18.26	21,338	3.11
Portland	186,937	25.80	303,093	41.83	68,749	9.49	138,447	19.11	27,306	3.77
Norfolk	223,416	31.96	249,685	35.72	68,011	9.73	120,586	17.25	37,301	5.34
Columbus	165,390	24.40	292,139	43.10	67,857	10.01	136,844	20.19	15,629	2.31
San Antonio	150,467	26.44	248,679	43.69	51,785	9.10	105,103	18.47	13,115	2.30
Indianapolis	165,657	26.51	274,029	43.85	53,295	8.53	117,001	18.72	14,989	2.40
New Orleans	143,400	27.86	214,906	41.75	56,443	10.97	91,100	17.70	8,877	1.72
Buffalo	110,965	20.89	224,608	42.29	68,428	12.88	117,313	22.09	9,808	1.85
Charlotte	162,308	26.83	265,673	43.92	52,810	8.73	112,675	18.63	11,390	1.88
Providence	136,524	25.07	237,001	43.51	59,607	10.94	101,999	18.73	9,537	1.75
Hartford	147,381	26.23	254,009	45.20	58,474	10.41	91,138	16.22	10,967	1.95
Orlando	143,497	25.74	242,671	43.53	57,126	10.25	103,271	18.53	10,883	1.95
Salt Lake City	119,112	24.85	197,340	41.17	49,296	10.28	98,744	20.60	14,846	3.10
Rochester	122,416	25.43	203,430	42.25	52,856	10.98	91,056	18.91	11,709	2.43
Total	15,220,790	25.49	25,337,480	42.44	6,908,673	11.57	10,705,729	17.93	1,531,729	2.57

Source: U.S. DOT/FHWA, "Journey-to-Work Trends in the United States and its Major Metropolitan Areas, 1960-1990", Table 4-16.

Table 135. Journey-to-Work Mode Share, 1990

Area	Drive Alone		Vehicle Pool		Transit		Other		Work at Home	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
New York City	4,212,768	52.29	830,398	10.31	2,239,776	27.80	587,798	7.30	186,512	2.31
Los Angeles	4,960,888	72.86	1,052,249	15.45	310,563	4.56	299,241	4.39	186,102	2.73
Chicago	2,592,012	67.48	459,372	11.96	524,756	13.66	184,365	4.80	80,832	2.10
San Francisco	2,203,208	68.83	416,375	13.01	297,363	9.29	172,322	5.38	111,565	3.49
Philadelphia	1,934,795	69.23	339,504	12.15	284,579	10.18	172,949	6.19	63,090	2.26
Detroit	1,720,149	82.70	209,717	10.08	50,568	2.43	62,790	3.02	36,656	1.76
Boston	1,502,708	70.16	220,185	10.28	227,948	10.64	137,184	6.41	53,692	2.51
Washington, DC	1,396,480	63.07	349,273	15.77	302,351	13.65	103,368	4.67	62,878	2.84
Dallas	1,559,416	78.89	273,037	13.81	46,504	2.35	52,533	2.66	45,116	2.28
Houston	1,341,876	76.25	256,399	14.57	66,540	3.78	58,641	3.33	36,340	2.07
Miami	1,114,511	75.50	213,658	14.47	64,240	4.35	54,527	3.69	29,149	1.97
Atlanta	1,156,901	78.08	188,844	12.74	69,822	4.71	32,993	2.23	33,221	2.24
Cleveland	988,796	79.61	127,692	10.28	56,675	4.56	44,535	3.59	24,401	1.96
Seattle	965,417	73.79	155,709	11.90	82,619	6.31	60,614	4.63	43,979	3.36
San Diego	880,634	71.57	169,326	13.76	40,378	3.28	78,823	6.41	61,285	4.98
Minneapolis	994,590	76.06	146,892	11.23	69,125	5.29	52,592	4.02	44,425	3.40
St. Louis	913,303	79.81	137,883	12.05	33,994	2.97	32,004	2.80	27,152	2.37
Baltimore	846,322	71.01	169,695	14.24	91,176	7.65	57,344	4.81	27,276	2.29
Pittsburgh	683,400	71.47	122,414	12.80	75,995	7.95	54,537	5.70	19,808	2.07
Phoenix	755,116	75.78	143,170	14.37	21,184	2.13	47,716	4.79	29,309	2.94
Tampa	724,420	79.20	121,420	13.27	13,367	1.46	34,735	3.80	20,769	2.27
Denver	725,366	75.17	120,028	12.44	40,961	4.25	43,790	4.54	34,767	3.60
Cincinnati	644,269	79.27	92,858	11.42	29,758	3.66	28,839	3.55	17,042	2.10
Milwaukee	597,224	77.29	84,502	10.94	37,737	4.88	35,958	4.65	17,331	2.24
Kansas City	616,880	79.98	96,537	12.52	16,504	2.14	20,051	2.60	21,337	2.77
Sacramento	519,109	75.68	93,834	13.68	16,462	2.40	35,202	5.13	21,338	3.11
Portland	536,907	74.10	88,975	12.28	39,259	5.42	32,085	4.43	27,306	3.77
Norfolk	510,273	73.00	98,754	14.13	15,319	2.19	37,352	5.34	37,301	5.34
Columbus	539,583	79.60	77,347	11.41	18,587	2.74	26,713	3.94	15,629	2.31
San Antonio	425,653	74.79	84,011	14.76	20,870	3.67	25,500	4.48	13,115	2.30
Indianapolis	498,776	79.81	80,393	12.86	12,999	2.08	17,814	2.85	14,989	2.40
New Orleans	365,840	71.07	78,718	15.29	37,337	7.25	23,954	4.65	8,877	1.72
Buffalo	409,719	77.14	59,495	11.20	24,943	4.70	27,157	5.11	9,808	1.85
Charlotte	476,962	78.86	87,667	14.49	11,186	1.85	17,651	2.92	11,390	1.88
Providence	428,505	78.62	67,169	12.33	14,116	2.59	25,341	4.65	9,537	1.75
Hartford	446,346	79.43	63,419	11.29	20,567	3.66	20,670	3.68	10,967	1.95
Orlando	437,591	78.50	74,000	13.27	8,617	1.55	26,357	4.73	10,883	1.95
Salt Lake City*	367,159	76.60	67,072	13.99	14,266	2.98	15,995	3.34	14,846	3.10
Rochester	374,490	77.78	55,877	11.61	15,372	3.19	24,019	4.99	11,709	2.43
Total	42,368,362	70.96	7,573,868	12.69	5,364,383	8.98	2,866,059	4.80	1,531,729	2.57

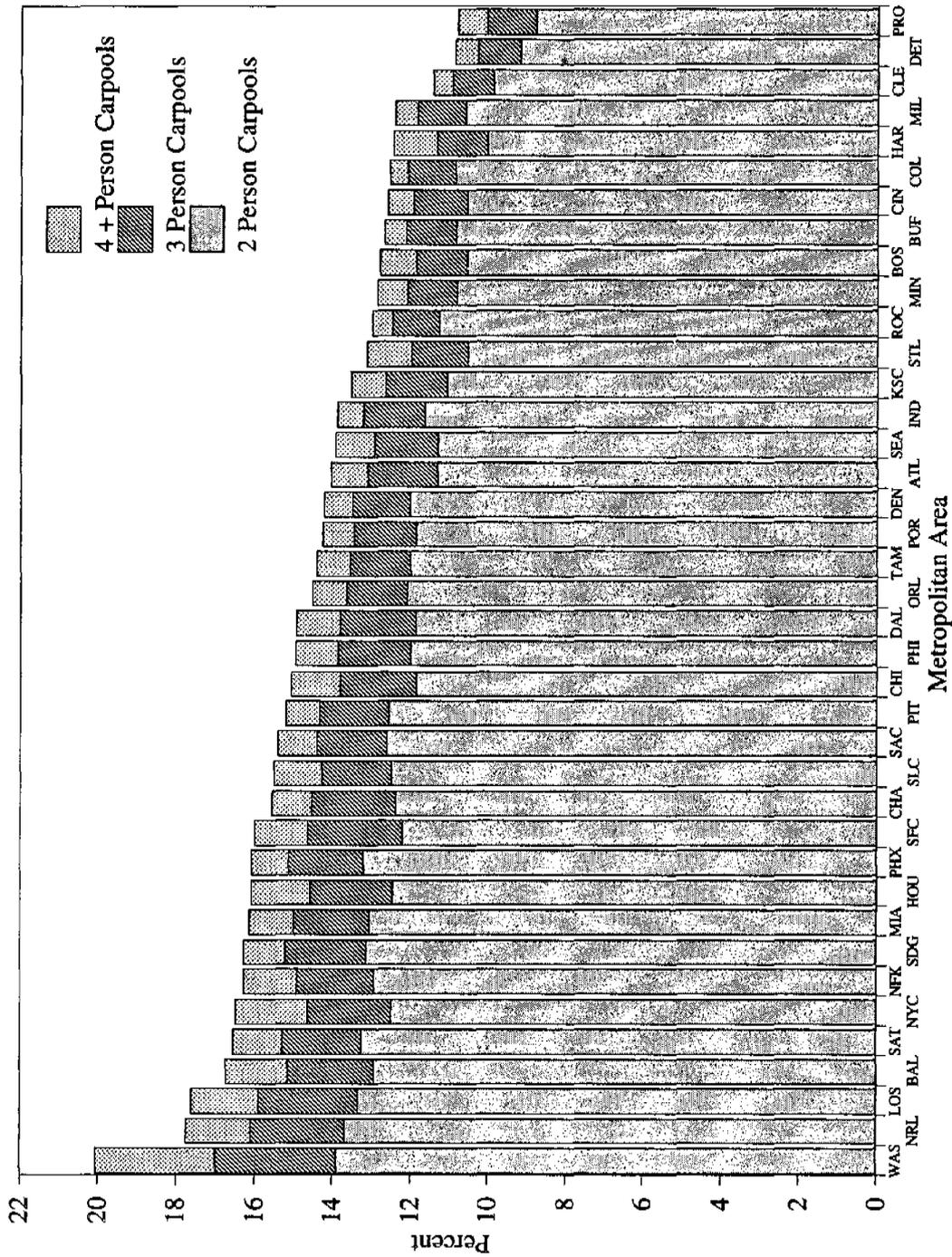
Source: U.S. DOT/FHWA, "Journey-to-Work Trends in the United States and its Major Metropolitan Areas, 1960-1990", Table 5-7.

Table 136. Households by Vehicle Availability, 1980-1990

Area	0 Vehicle Households		1 Vehicle Households		2 Vehicle Households		3+ Vehicles Households	
	1980	1990	1980	1990	1980	1990	1980	1990
New York City	2,069,662	1,981,582	2,096,108	1,997,100	1,434,177	1,583,468	523,569	703,714
Los Angeles	425,594	436,773	1,521,737	1,649,594	1,355,443	1,835,083	828,323	979,270
Chicago	525,908	481,943	1,077,418	1,030,125	863,791	1,008,472	299,727	387,523
San Francisco	246,591	241,975	730,311	754,819	666,773	853,276	398,667	479,738
Philadelphia	370,636	364,856	741,099	749,712	622,080	751,861	236,259	287,675
Detroit	191,584	209,583	579,999	564,951	594,728	647,561	278,766	301,383
Boston	N/A	228,010	N/A	547,476	N/A	555,154	N/A	216,472
Washington, DC	158,287	173,181	436,679	483,983	392,591	536,559	178,709	265,635
Dallas	69,608	92,322	354,042	507,132	394,760	603,651	241,717	246,767
Houston	78,551	110,538	387,176	493,520	406,177	535,013	224,449	192,774
Miami	151,722	165,276	450,209	490,145	309,337	412,991	116,079	152,385
Atlanta	83,967	93,785	243,896	315,708	276,883	421,485	158,341	225,449
Cleveland	127,146	131,506	376,615	362,038	362,831	389,154	152,692	174,955
Seattle	77,386	79,250	261,937	315,429	271,055	389,209	181,816	218,269
San Diego	62,055	70,337	244,886	302,648	221,374	343,476	141,779	170,942
Minneapolis	82,959	85,569	270,877	293,920	279,351	387,530	136,692	168,497
St. Louis	104,163	100,461	301,454	310,880	308,807	361,693	130,390	151,699
Baltimore	138,577	144,015	271,570	278,081	252,211	316,701	103,472	141,348
Pittsburgh	155,368	147,511	357,977	335,520	275,963	303,017	95,762	105,875
Phoenix	32,478	57,626	206,700	317,181	186,887	315,529	118,694	117,224
Tampa	72,861	79,324	312,043	385,903	194,292	303,924	77,455	100,330
Denver	48,634	57,233	201,311	245,580	214,761	287,240	143,696	147,753
Cincinnati	70,481	76,103	173,345	207,169	175,625	251,164	79,237	118,484
Milwaukee	79,308	80,636	212,603	203,803	194,731	226,481	73,460	90,538
Kansas City	52,503	51,898	180,058	199,107	196,989	245,587	99,462	105,755
Sacramento	34,709	42,533	143,422	181,569	141,501	219,222	96,714	113,124
Portland	56,456	50,631	191,409	185,656	192,374	227,485	125,215	111,759
Norfolk	45,778	48,855	142,764	165,749	140,124	197,504	57,263	81,428
Columbus	44,480	46,597	163,136	175,970	167,510	210,210	74,141	91,758
San Antonio	35,548	45,213	124,931	165,519	120,873	170,396	64,978	69,893
Indianapolis	39,976	42,458	146,706	162,305	158,767	191,388	73,036	83,859
New Orleans	81,920	82,804	164,862	169,781	139,010	153,461	53,406	49,132
Buffalo	74,707	75,282	187,121	171,729	136,917	156,952	46,730	57,840
Charlotte	33,321	38,132	109,273	133,933	131,169	174,108	68,581	94,497
Providence	N/A	49,083	N/A	149,590	N/A	160,487	N/A	70,620
Hartford	N/A	43,139	N/A	128,104	N/A	164,362	N/A	75,955
Orlando	20,326	26,658	98,766	144,027	91,548	167,488	42,003	63,486
Salt Lake City	19,315	21,096	88,160	102,370	104,304	146,243	77,600	77,822
Rochester	41,085	41,841	136,157	127,101	119,993	146,020	44,960	59,513
Total	6,003,650	6,395,615	13,686,757	15,504,927	12,095,707	16,350,605	5,843,840	7,351,140

N/A Data not available for this MSA/CMSA.

Source: U.S. DOT/FHWA, "Journey-to-Work Trends in the United States and its Major Metropolitan Areas, 1960-1990", Table 6-1.



Source: U.S. DOT/FHWA, "Journey-to-Work Trends in the United States and its Major Metropolitan Areas 1960-1990", Figure 5-2.

Figure 57. Vehicle Pools in Commuting, 1990
Percent of All Private Vehicle Trips



TABLE REFERENCES

TABLE REFERENCES

Table 1. Average Passenger Revenue Per Passenger-Mile, 1960-1992

Certificated Air Carrier, Domestic Operations, Scheduled Service:	
1960-1970:	Civil Aeronautics Board (CAB), <i>Handbook of Airline Statistics</i> , 1969, 1973.
1975-1980:	<i>Ibid.</i> , <i>Air Carrier Financial Statistics</i> , 1976-1981, annual issues, p. 2, lines 1, 2, and 3; <i>Air Carrier Traffic Statistics</i> , 1976-1981, annual issues, p. 4/5, lines 7, 8, and 9. To compute Total, First Class, and Coach plus economy figures, divide line 1 by line 7, line 2 by line 8, and line 3 by line 9.
1985-1992:	U.S. Department of Transportation (DOT) Research and Special Programs Administration (RSPA), <i>Air Carrier Financial Statistics</i> , annual issues, 1986-1993, p. 1, lines 1, 2 and 3; <i>Air Carrier Traffic Statistics</i> , annual issues, 1986-1993, p. 2, lines 7, 8, and 9.
Commuter I Rail:	
1960-1992:	Eno Foundation for Transportation, <i>Transportation In America</i> , 1994, p. 50.
Intercity/Amtrak:	
1960-1970:	Association of American Railroads, (AAR), <i>Railroad Facts</i> , annual issues.
1975-1992:	Eno Foundation for Transportation, <i>Transportation in America</i> , 1994, p. 50.
Class I Bus Intercity:	
1960-1965:	Interstate Commerce Commission, (ICC), <i>Transport Economics</i> , annual issues.
1970-1980:	American Bus Association (ABA), <i>Bus Facts</i> , annual issues.
1985:	ICC, <i>Transport Statistics in U.S., Motor Carriers, Part 2</i> , annual issues.
1990-1992:	Eno Foundation for Transportation, <i>Transportation In America</i> , 1994, p. 50.
Consumer Price Index:	
1960-1992:	Council of Economic Advisors, <i>Economic Report of the President</i> , annual issues.

Table 2. Average Freight Revenue Per Ton-Mile, 1960-1992

Certificated Air Carrier, Domestic Operations, Scheduled Service:	
1960-1970:	CAB, <i>Handbook of Airline Statistics</i> , 1969, 1973.
1975-1980:	<i>Ibid.</i> , <i>Air Carrier Financial Statistics</i> , 1976-1981, annual issues, p. 2, line 4; <i>Air Carrier Traffic Statistics</i> , 1976-1981, annual issues, p. 4/5, line 18. Freight revenue (Financial Statistics) divided by revenue ton-miles of freight (Traffic Statistics).
1985-1992:	U.S. DOT/RSPA, <i>Air Carrier Financial Statistics</i> , 1986-1993, annual issues, p. 1, line 4; <i>Air Carrier Traffic Statistics</i> , 1986-1993, annual issues, p. 2, line 18. Freight revenue (Financial Statistics) divided by revenue ton-miles of freight (Traffic Statistics).
Class I Rail:	
1960-1992:	AAR, <i>Railroad Facts</i> , 1993, p. 30, and similar table in earlier editions.
Class I Intercity Motor Carriers of Property:	
1960-1992:	Eno Foundation for Transportation, <i>Transportation In America</i> , 1994, p. 49 and similar table in earlier editions published by Transportation Policy Associates.
Oil Pipeline:	
1960-1992:	<i>Ibid.</i>
Inland Waterway Carrier:	
1960-1992:	<i>Ibid.</i>
Producer Price Index:	
1960-1992:	Council of Economic Advisors, <i>Economic Report of the President</i> , annual issues.

Table 3. Average Passenger Fare, 1960-1992

Certificated Air Carrier, Domestic Operations, Scheduled Service:	
1960-1970:	CAB, <i>Handbook of Airline Statistics</i> , 1969, 1973.
1975-1980:	<i>Ibid.</i> , <i>Air Carrier Financial Statistics</i> , 1976-1981, annual issues, p. 1, line 3 and <i>Air Carrier Traffic Statistics</i> , 1976-1981, annual issues, p. 2, line 16, passenger revenue (Financial Statistics) divided by revenue passenger enplanements (Traffic Statistics).
1985-1992:	U.S. DOT/RSPA, <i>Air Carrier Financial Statistics</i> , 1986-1993, annual issues, p. 1, line 3 and <i>Air Carrier Traffic Statistics</i> , 1986-1993, annual issues, p. 2, line 16, passenger revenue (Financial Statistics) divided by revenue passenger enplanements (Traffic Statistics).
Class I Bus Intercity:	
1960-1980:	ABA, <i>Bus Facts</i> , annual issues.
1985-1992:	Transportation Policy Associates (TPA).
Transit:	
1960-1992:	American Public Transit Association (APTA), <i>Transit Fact Book</i> , 1993, p. 56, and similar table in earlier editions.
Commuter Rail:	
1960-1985:	<i>Ibid.</i>
1990-1992:	<i>Ibid.</i> , Table 23 divided by Table 31.
Intercity/Amtrak:	
1960-1970:	AAR, <i>Railroad Facts</i> , annual issues.
1975-1992:	Amtrak, State and Local Affairs Department and Public Affairs Department.

Table 4. Total Operating Revenues, 1960-1992

Certificated Air Carrier, Domestic Operations, All Services:	
1960-1970:	CAB, <i>Handbook of Airline Statistics</i> , 1969, 1973.
1975-1980:	<i>Ibid.</i> , <i>Air Carrier Financial Statistics</i> , 1976-1981, annual issues, p. 1.
1985-1992:	U.S. DOT/RSPA, <i>Ibid.</i> , 1986-1993, annual issues, p. 1.
Class I Bus, Intercity:	
1960-1992:	ICC, <i>Annual Report of the ICC</i> , 1993, Table 6 and similar table in earlier editions.
Transit:	
1960-1992:	APTA, <i>Transit Fact Book</i> , 1993, Table 20, and similar table in earlier editions.
Oil Pipeline, ICC-Regulated and Non-Regulated:	
1960-1992:	Eno Foundation for Transportation, <i>Transportation In America</i> , 1994, p. 40 and previous issues published by TPA.
Gas Pipeline:	
1960-1992:	Transmission Companies: American Gas Association (AGA), <i>Gas Facts</i> , 1993, p. 148, and similar table in earlier editions.
1975-1992:	Integrated Companies: <i>Ibid.</i> , p. 149, and similar table in earlier editions.
1975-1992:	Combination Companies: <i>Ibid.</i> , p. 150, and similar table in earlier editions.
1975-1992:	Distribution Companies: <i>Ibid.</i> , p. 147, and similar table in earlier editions.
Class I Intercity Motor Carriers of Property:	
1960-1992:	ICC, <i>Annual Report of the ICC</i> , 1993, Appendix F, Table 5, and similar table in earlier editions.
Class I Rail:	
1960-1992:	AAR, <i>Railroad Facts</i> , 1993, p. 12, and similar table in earlier editions.
Intercity/Amtrak:	
1960-1970:	<i>Ibid.</i>
1975-1992:	Amtrak, State and Local Affairs Department and Public Affairs Department.
Water Transport:	
ICC-Regulated Carriers, Inland and Coastal Waterways:	
1960-1992:	Eno Foundation for Transportation, <i>Transportation In America</i> , 1994, p. 53 and previous issues published by TPA.
Maritime Carriers:	
1960-1992:	U.S. DOT/Maritime Administration, Office of External Affairs, MAR-240.

Table 4. Total Operating Revenues, 1960-1992 (cont'd)

Class A Freight Forwarders:

1960-1992: Eno Foundation for Transportation, *Transportation In America*, 1994, p. 53 and previous issues published by TPA.

Table 5. Vehicle-Miles, 1960-1992

Air Carrier:

Certificated, Domestic Operations, All Services:

1960-1970: CAB, *Handbook of Airline Statistics*, 1969, 1973.

1975-1980: *Ibid.*, *Air Carrier Traffic Statistics*, 1976-1981, annual issues, p. 2, line (27) plus line (50).

1985-1992: U.S. DOT/RSPA, *Ibid.*, annual issues, 1986-1993, p. 2, line (27) plus line (50).

General Aviation:

1960-1980: U.S. DOT/Federal Aviation Administration (FAA), *FAA Statistical Handbook of Aviation*, annual issues.

1985-1992: *Ibid.*, *General Aviation Activity and Avionics Survey*, annual issues, Table 3.3; mileage multiplied by 1.151 to convert from nautical miles.

Highway:

Passenger Car and Taxi:

1960-1980: U.S. DOT/Federal Highway Administration (FHWA), *Highway Statistics, Summary to 1985*, Table VM-201A.

1985-1992: *Ibid.*, *Highway Statistics*, annual issues, Table VM-1.

Motorcycle:

1970-1980: *Ibid.*, *Highway Statistics, Summary to 1985*, Table VM-201A.

1985-1992: *Ibid.*, *Highway Statistics*, annual issues, Table VM-1.

Single-Unit Truck:

1970-1980: *Ibid.*, *Highway Statistics, Summary to 1985*, Table VM-201A.

1985-1992: *Ibid.*, *Highway Statistics*, annual issues, Table VM-1.

Other Single-Unit Truck:

1970-1980: *Ibid.*, *Highway Statistics, Summary to 1985*, Table VM-201A.

1985-1992: *Ibid.*, *Highway Statistics*, annual issues, Table VM-1.

Combination Truck:

1960-1980: *Ibid.*, *Highway Statistics, Summary to 1985*, Table VM-201A.

1985-1992: *Ibid.*, *Highway Statistics*, annual issues, Table VM-1.

Commercial Bus:

1960-1980: *Ibid.*, *Highway Statistics*, annual issues.

1985-1991: Transportation Policy Associates.

School Bus:

1960-1965: U.S. DOT/FHWA, *Highway Statistics, Summary to 1985*, Table VM-201A.

1970-1975: *Ibid.*, *Highway Statistics*, annual issues, Table VM-1.

1980-1992: National Safety Council, *Accident Facts*, annual issues, p. 75.

Transit:

1960-1992: APTA, *Transit Fact Book*, 1993, Table 39, and similar table in earlier editions.

Commuter Rail:

1975-1992: *Ibid.*

Class I Rail Freight:

1960-1992: AAR, *Railroad Facts*, 1993, p. 33.

Intercity/Amtrak:

1960-1970: *Ibid.*, *Yearbook of Railroad Facts*, 1972, p. 37.

1975-1992: Amtrak, annual reports.

Table 6. Passenger-Miles, 1960-1992

Air Carrier:

Certificated, Domestic Operations, All Services:

1960-1970: CAB, *Handbook of Airline Statistics*, 1969, 1973.

1975-1980: *Ibid.*, *Air Carrier Traffic Statistics*, 1976-1981, p. 2, line 1.

1985-1992: U.S. DOT/RSPA, *Ibid.*, annual issues, 1986-1993, p. 2, line 1.

Table 6. Passenger-Miles, 1960-1992 (cont'd)

General Aviation:	
1960-1992:	Eno Foundation for Transportation, <i>Transportation In America</i> , 1994, p. 47, and similar table in earlier editions published by TPA.
Highway:	
Passenger Car and Taxi:	
1960-1980:	U.S. DOT/FHWA, <i>Highway Statistics, Summary to 1985</i> , Table VM-201A.
1985-1992:	<i>Ibid.</i> , <i>Highway Statistics</i> , annual issues, Table VM-1. Derived by multiplying vehicle miles in Table VM-1 by vehicle occupancy rates estimated from FHWA'S Nationwide Personal Transportation Survey.
Motorcycle:	
1970-1992:	<i>Ibid.</i>
Intercity Bus:	
1960-1992:	Eno Foundation for Transportation, <i>Transportation In America</i> , 1994, p. 47.
School Bus:	
1980-1992:	National Safety Council, <i>Accident Facts</i> , 1993, p. 74, and similar table in earlier editions.
Single-Unit Truck:	
1960-1992:	U.S. DOT/FHWA, <i>Highway Statistics</i> , annual issues, Table VM-1. Derived by multiplying vehicle-miles in Table VM-1 by vehicle occupancy rates estimated from FHWA's Nationwide Personal Transportation Survey.
Other Single-Unit Truck:	
1970-1992:	<i>Ibid.</i>
Combination Truck:	
1960-1992:	<i>Ibid.</i>
Transit:	
1980-1992:	APTA, <i>Transit Fact Book</i> , 1993, Table 6, and similar table in earlier editions.
Commuter Rail:	
1960-1975:	AAR, <i>Railroad Facts</i> , 1976, p. 32.
1980-1992:	APTA, <i>Transit Fact Book</i> , 1993, Table 6, and similar table in earlier editions.
Intercity/Amtrak:	
1960-1980:	AAR, <i>Railroad Facts</i> , annual issues.
1985-1991:	Amtrak, State and Local Affairs Department.
1992:	Amtrak, Public Affairs Department.

Table 7. Ton-Miles of Freight, 1960-1993

Certificated Air Carrier, Domestic Operations, All Services:	
1960-1970:	CAB, <i>Handbook of Airline Statistics</i> , 1969, 1973.
1975-1980:	<i>Ibid.</i> , <i>Air Carrier Traffic Statistics</i> , 1976-1981, annual issues, p. 2, line 3.
1985-1993:	U.S. DOT/RSPA, <i>Ibid.</i> , annual issues, 1986-1993, p. 2, line 3.
Oil Pipeline:	
1960-1993:	Eno Foundation for Transportation, <i>Transportation In America</i> , 1994, p. 44 and similar table in earlier editions published by TPA.
Class I Rail:	
1960-1992:	AAR, <i>Railroad Facts</i> , p. 27, and similar table in earlier editions.
1993:	AAR.
Trucks	
Intercity:	
1960-1993:	Eno Foundation for Transportation, <i>Transportation In America</i> , 1994, p. 44, and similar table in earlier editions published by TPA.

Table 7. Ton-Miles of Freight, 1960-1993 (cont'd)

Local:
1960-1991: Transportation Policy Associates.

Water Transportation:
Inland Waterways, including Great Lakes:
1960-1985: U.S. Army, Corps of Engineers, *Waterborne Commerce of the U.S.*, annual issues, Part 5, Section 1, Table 6 and similar table in earlier editions.
1990-1993: Eno Foundation for Transportation, *Transportation In America*, 1994, p. 44, and similar table in earlier editions published by TPA.

Inland Waterways (domestic only):
1960-1985: U.S. Army, Corps of Engineers, *Waterborne Commerce of the U.S.*, annual issues, Part 5, Section 1, Table 6 and similar table in earlier editions.
1990-1993: Eno Foundation for Transportation, *Transportation In America*, 1994, p. 44, and similar table in earlier editions published by TPA.

Domestic Coastwise:
1960-1985: U.S. Army, Corps of Engineers, *Waterborne Commerce of the U.S.*, annual issues, Part 5, Section 1, Table 6 and similar table in earlier editions.
1990-1993: Eno Foundation for Transportation, *Transportation In America*, 1994, p. 44, and similar table in earlier editions published by TPA.

Table 8. Basic Intercity Mileage Within the Continental United States, 1960-1992

Airway:
1960-1985: U.S. DOT/FAA, *FAA Statistical Handbook of Aviation*, annual issues. Mileage equals sum of VHF low altitude direct and VHF jet route mileages multiplied by 1.151 to convert from nautical miles.
1990-1992: Estimated using FAA methodology.

Oil Pipeline, Total:
1960-1992: Eno Foundation for Transportation, *Transportation In America*, 1994, p. 64, and similar table in earlier editions published by TPA.

Crude Lines and Product Lines:
1960-1991: Transportation Policy Associates.

Gas Pipeline:
1960-1992: American Gas Association (AGA), *Gas Facts*, 1993, Table 5-1 and similar table in earlier editions.

Class I Rail:
1960-1992: AAR, *Railroad Facts*, annual issues, p. 44, and similar table in earlier editions. Data represent aggregate length of roadway, excluding yard tracks, sidings and parallel lines. Jointly used track is counted only once.

Highway:
1960-1992: U.S. DOT/FHWA, *Highway Statistics*, annual issues, Table HM-14 and similar table in earlier editions.

Inland Waterway:
1960-1992: Eno Foundation for Transportation, *Transportation In America*, 1994, p. 64 and similar table in earlier editions.

Table 10. Number of Vehicles, 1960-1992

Certificated Air Carrier, All Services:
1960-1992: U.S. DOT/RSPA, Data Administration Division, DAI-20.

General Aviation:
1960-1980: *Ibid.*, FAA, *FAA Statistical Handbook of Aviation*, annual issues.
1985-1992: *Ibid.*, *General Aviation Activity and Avionics Survey*, annual issues, Table 3.1.

Motorcycle:
1960-1965: *Ibid.*, FHWA, *Highway Statistics*, annual issues, Table VM-1.
1970-1980: *Ibid.*, *Highway Statistics, Summary to 1985*, Table VM-201A.
1985-1992: *Ibid.*, *Highway Statistics*, annual issues, Table VM-1.

Passenger Car & Taxi:
1960-1980: *Ibid.*, *Highway Statistics, Summary to 1985*, Table VM-201A.
1985-1992: *Ibid.*, *Highway Statistics*, annual issues, Table VM-1.

Table 10. Number of Vehicles, 1960-1992 (cont'd)

Truck:

Combination and Single-Unit:

1965-1980: *Ibid.*, *Highway Statistics, Summary to 1985*, Table VM-201A.

1985-1992: *Ibid.*, *Highway Statistics*, annual issues, Table VM-1.

Intercity Bus:

1960-1975: ABA, *Bus Facts*, annual issues.

1980: *Ibid.*, Public Affairs Office.

1985-1991: Transportation Policy Associates.

School Bus:

1960-1985: U.S. DOT/FHWA, *Highway Statistics, Summary to 1985*, p. 25.

1990-1992: *Ibid.*, Table MV-10.

Transit and Commuter Rail:

1960-1992: APTA, *Transit Fact Book*, 1993, Table 41, and similar table in earlier editions.

Class I Rail:

Freight Cars and Locomotives:

1960-1992: AAR, *Railroad Facts*, 1992, pp. 48, 50, and similar table in earlier editions. Excludes Amtrak.

Amtrak:

Passenger Train-Cars and Locomotives:

1975-1992: Amtrak, State and Local Affairs Department.

Water Transport:

Total Inland Water Vessels:

1960-1992: U.S. Army, Corps of Engineers, *Summary of U.S. Flag Passenger and Cargo Vessels*, 1992. Sum of non-self-propelled vessels and self-propelled vessels.

Non-Self-Propelled Vessels and Self-Propelled Vessels:

1960-1992: U.S. Army, Corps of Engineers, *Summary of U.S. Flag Passenger & Cargo Vessels*, annual issues.

Oceangoing Steam and Motor Ships:

1960-1992: U.S. DOT/Maritime Administration (MARAD), *Merchant Fleets of the World*, annual issues, Table 6 and similar table in earlier editions.

Table 11. Number of New Vehicles Purchased by Mode, 1960-1992

Air Carrier, All Services:

1960-1991: Aerospace Industries Association, *Aerospace Year-end Review and Forecast*.

1992: *Ibid.*, *Aerospace Facts and Figures, 1993-1994*, p. 34.

General Aviation:

1960-1992: U.S. DOT/FAA, *FAA Statistical Handbook of Aviation*, 1992, Table 10-1 and similar table in earlier editions.

Passenger Car and Taxi:

1960-1992: U.S. DOC, Bureau of Economic Analysis, *Survey of Current Business*, January issues, p. S-32 and similar table in earlier editions.

Motorcycle:

1970-1992: Motorcycle Industry Council, Inc., *1992 Motorcycle Statistical Annual*, p. 10, and similar table in earlier editions.

Bicycle:

1970-1992: Bicycle Manufacturer's Association of America, *The Bicycle Market in Review*, annual issues.

Truck:

1960-1992: American Automobile Manufacturers Association, Inc., *Facts and Figures*, annual issues.

Bus (including School Bus):

1960-1992: American Automobile Manufacturers Association, *Facts & Figures*, 1993, p. 6 and similar table in earlier editions.

Table 11. Number of New Vehicles Purchased by Mode, 1960-1992 (cont'd)

Transit and Commuter Rail:

1960-1992: APTA, *Transit Fact Book*, 1993, Table 42, and similar table in earlier editions.

Class I Rail:

Freight Car and Locomotive:

1960-1992: AAR, *Railroad Facts*, 1993, p. 54, and similar table in earlier editions.

Amtrak:

Passenger Train-Car and Locomotive:

1975-1980: *Ibid.*, p. 17, and similar table in earlier editions.

1985-1992: Amtrak, State and Local Affairs Department.

Water Transport:

Merchant Vessel and Gross Tonnage:

1960-1992: U.S. DOT/MARAD, *Merchant Fleets of the World*, annual issues, p. 50 and similar table in earlier editions.

Table 26. Number of Fatalities, Injuries, and Accidents by Transportation Mode, 1960-1993

Fatalities

Aviation:

U.S. Air Carrier:

1960-1965: U.S. DOT/FAA, *FAA Statistical Handbook of Aviation*, annual issues.

1970-1975: *Ibid.*, RSPA/Volpe National Transportation Systems Center (Volpe Center), *Transportation Safety Information Report*, annual issues.

1980-1993: National Transportation Safety Board (NTSB), *NTSB Aviation Accident Statistics*, annual issues, Table 2.

Commuter Air Carrier:

1970: U.S. DOT/FAA, *FAA Statistical Handbook of Aviation*, 1975.

1975: *Ibid.*, RSPA/Volpe Center, *Transportation Safety Information Report*, annual issues.

1980-1993: NTSB, *NTSB Aviation Accident Statistics*, annual issues, Table 5.

On-Demand Air Taxi:

1970: U.S. DOT/FAA, *FAA Statistical Handbook of Aviation*, 1975.

1975: *Ibid.*, RSPA/Volpe Center, *Transportation Safety Information Report*, annual issues.

1980-1993: NTSB, *NTSB Aviation Accident Statistics*, annual issues, Table 6.

General Aviation:

1960-1965: U.S. DOT/FAA, *FAA Statistical Handbook of Aviation*, annual issues.

1970-1975: *Ibid.*, RSPA/Volpe Center, *Transportation Safety Information Report*, annual issues.

1980-1993: NTSB, *NTSB Aviation Accident Statistics*, annual issues, Table 7.

Highway:

Motor Vehicle Traffic:

1960-1970: Estimated by NHTSA from data supplied by the National Center for Health Statistics, H.H.S., and State Accident Summaries (adjusted to 30-day deaths).

1975-1993: U.S. DOT/NHTSA, National Center for Statistics and Analysis, Fatal Accident Reporting System (FARS).

Rail:

Railroad:

1960-1965: National Safety Council, *Accident Facts*, 1974.

1970-1990: U.S. DOT/RSPA/Volpe Center, *Transportation Safety Information Report*, annual issues.

1991-1993: *Ibid.*, FRA, *Accident/Incident Bulletin*, annual issues, Table 7.

Rail-Highway Grade Crossing:

1960-1965: National Safety Council, *Accident Facts*, 1974.

1970-1990: U.S. DOT/RSPA/Volpe Center, *Transportation Safety Information Report*, annual issues.

1991-1993: *Ibid.*, FRA, *Accident/Incident Bulletin*, annual issues, Table 7.

Rail Rapid Transit:

1980-1985: *Ibid.*, RSPA/Volpe Center, *Transportation Safety Information Report*, annual issues.

1990-1993: *Ibid.*, *Safety Management Information Statistics (SAMIS)*, annual issues.

Waterborne Transport:

1970-1990: *Ibid.*, RSPA/Volpe Center, *Transportation Safety Information Report*, annual issues.

1991-1993: *Ibid.*, USCG, Marine Safety Evaluation Branch, G-MM1-3.

Table 26. Number of Fatalities, Injuries, and Accidents by Transportation Mode, 1960-1993 (cont'd)

Recreational Boating:	
1960-1965:	<i>Ibid.</i> , USCG, <i>Boating Statistics</i> , annual issues.
1970-1991:	<i>Ibid.</i> , RSPA/Volpe Center, <i>Transportation Safety Information Report</i> , annual issues.
1992-1993:	<i>Ibid.</i> , USCG, <i>Boating Statistics</i> , 1993, p. 20.
Gas Pipeline:	
1970-1991:	<i>Ibid.</i> , RSPA/Volpe Center, <i>Transportation Safety Information Report</i> , annual issues.
1992-1993:	<i>Ibid.</i> , Office of Pipeline Safety, DPS-35.
Liquid Pipeline:	
1970-1991:	<i>Ibid.</i> , Volpe Center, <i>Transportation Safety Information Report</i> , annual issues.
1992-1993:	<i>Ibid.</i> , Office of Pipeline Safety, DPS-35.
Hazardous Materials:	
1975-1991:	<i>Ibid.</i> , Volpe Center, <i>Transportation Safety Information Report</i> , annual issues.
1992-1993:	<i>Ibid.</i> , Office of Hazardous Materials Transportation, DHM-63.
Injuries	
Aviation:	
U.S. Air Carrier:	
1975:	U.S. DOT/RSPA/Volpe Center, <i>Transportation Safety Information Report</i> , annual issues.
1980-1993:	NTSB, <i>NTSB Aviation Accident Statistics</i> , Table 2.
Commuter Air Carrier:	
1980-1993:	<i>Ibid.</i> , Table 5.
On-Demand Air Taxi:	
1980-1993:	<i>Ibid.</i> , Table 6.
General Aviation:	
1975:	U.S. DOT/RSPA/Volpe Center, <i>Transportation Safety Information Report</i> , annual issues.
1980-1993:	NTSB, <i>NTSB Aviation Accident Statistics</i> , Table 7.
Highway:	
Motor Vehicle Traffic:	
1980-1985:	U.S. DOT/NHTSA, National Center for Statistics and Analysis, National Accident Sampling System (NASS).
1990-1993:	<i>Ibid.</i> , General Estimates System (GES).
Rail:	
Railroad:	
1960-1975:	<i>Ibid.</i> , 1974, 1984.
1980-1990:	U.S. DOT/RSPA/Volpe Center, <i>Transportation Safety Information Report</i> , annual issues.
1991-1993:	<i>Ibid.</i> , FRA, <i>Accident/Incident Bulletin</i> , annual issues, Table 7.
Rail-Highway Grade Crossings:	
1960-1975:	National Safety Council, <i>Accident Facts</i> , 1974, 1984.
1980-1990:	U.S. DOT/RSPA/Volpe Center, <i>Transportation Safety Information Report</i> , annual issues.
1991-1993:	<i>Ibid.</i> , FRA, <i>Accident/Incident Bulletin</i> , annual issues, Table 7.
Rail Rapid Transit:	
1980-1985:	<i>Ibid.</i> , RSPA/Volpe Center, <i>Transportation Safety Information Report</i> , annual issues.
1990-1993:	<i>Ibid.</i> , <i>Safety Management Information Statistics (SAMIS)</i> , annual issues.
Waterborne Transport:	
1970-1990:	<i>Ibid.</i> , RSPA/Volpe Center, <i>Transportation Safety Information Report</i> , annual issues.
1991-1993:	<i>Ibid.</i> , USCG, Marine Safety Evaluation Branch, G-MM1-3.
Recreational Boating:	
1960-1965:	<i>Ibid.</i> , USCG, <i>Boating Statistics</i> , annual issues.
1970-1991:	<i>Ibid.</i> , RSPA/Volpe Center, <i>Transportation Safety Information Report</i> , annual issues.
1992-1993:	<i>Ibid.</i> , USCG, <i>Boating Statistics</i> , 1993, p. 9.

Table 26. Number of Fatalities, Injuries, and Accidents by Transportation Mode, 1960-1993 (cont'd)

Gas Pipeline:	
1980-1991:	<i>Ibid.</i> , RSPA/Volpe Center, <i>Transportation Safety Information Report</i> , annual issues.
1992-1993:	<i>Ibid.</i> , Office of Pipeline Safety, DPS-35.
Liquid Pipeline:	
1980-1991:	<i>Ibid.</i> , Volpe Center, <i>Transportation Safety Information Report</i> , annual issues.
1992-1993:	<i>Ibid.</i> , Office of Pipeline Safety, DPS-35.
Hazardous Materials:	
1975-1991:	<i>Ibid.</i> , Volpe Center, <i>Transportation Safety Information Report</i> , annual issues.
1992-1993:	<i>Ibid.</i> , Office of Hazardous Materials Transportation, DHM-63.
Accidents/Incidents	
Aviation:	
U.S. Air Carrier:	
1960-1965:	U.S. DOT/FAA, <i>FAA Statistical Handbook of Aviation</i> , annual issues.
1970-1975:	<i>Ibid.</i> , RSPA/Volpe Center, <i>Transportation Safety Information Report</i> , annual issues.
1980-1993:	National Transportation Safety Board (NTSB), <i>NTSB Aviation Accident Statistics</i> , annual issues, Table 2.
Commuter Air Carrier:	
1970-1975:	U.S. DOT/FAA, <i>FAA Statistical Handbook of Aviation</i> , 1975, 1978.
1980-1993:	NTSB, <i>NTSB Aviation Accident Statistics</i> , annual issues, Table 5.
On-Demand Air Taxi:	
1975:	U.S. DOT/FAA, <i>FAA Statistical Handbook of Aviation</i> , 1978.
1980-1993:	NTSB, <i>NTSB Aviation Accident Statistics</i> , annual issues, Table 6.
General Aviation:	
1960-1965:	U.S. DOT/FAA, <i>FAA Statistical Handbook of Aviation</i> , annual issues.
1970-1975:	<i>Ibid.</i> , RSPA/Volpe Center, <i>Transportation Safety Information Report</i> , annual issues.
1980-1993:	NTSB, <i>NTSB Aviation Accident Statistics</i> , annual issues, Table 7.
Highway:	
Motor Vehicle Traffic:	
1980-1985:	U.S. DOT/NHTSA, National Center for Statistics and Analysis, National Accident Sampling System (NASS).
1990-1993:	<i>Ibid.</i> , General Estimates System (GES).
Rail:	
Railroad:	
1970-1990:	U.S. DOT/RSPA/Volpe Center, <i>Transportation Safety Information Report</i> , annual issues.
1991-1993:	<i>Ibid.</i> , FRA, <i>Accident/Incident Bulletin</i> , annual issues, Table 4.
Rail-Highway Grade Crossings:	
1960-1975:	<i>Ibid.</i> , <i>Rail-Highway Grade Crossing Accidents</i> , annual issues. Data not comparable after 1974 due to change in reporting requirements.
1980-1990:	<i>Ibid.</i> , RSPA/Volpe Center, <i>Transportation Safety Information Report</i> , annual issues.
1991-1993:	<i>Ibid.</i> , FRA, <i>Highway Rail-Crossing, Accident/Incident and Inventory Bulletin</i> , annual issues, Table 5.
Rail Rapid Transit:	
1980-1985:	<i>Ibid.</i> , RSPA/Volpe Center, <i>Transportation Safety Information Report</i> , annual issues.
1990-1993:	<i>Ibid.</i> , <i>Safety Management Information Statistics (SAMIS)</i> , annual issues.
Waterborne Transport:	
1970-1990:	<i>Ibid.</i> , RSPA/Volpe Center, <i>Transportation Safety Information Report</i> , annual issues.
1991-1993:	<i>Ibid.</i> , USCG, Marine Safety Evaluation Branch, G-MM1-3.
Recreational Boating:	
1960-1965:	<i>Ibid.</i> , USCG, <i>Boating Statistics</i> , annual issues.
1970-1991:	<i>Ibid.</i> , RSPA/Volpe Center, <i>Transportation Safety Information Report</i> , annual issues.
1992-1993:	<i>Ibid.</i> , USCG, <i>Boating Statistics</i> , 1993, p. 9.

Table 26. Number of Fatalities, Injuries, and Accidents by Transportation Mode, 1960-1993

Gas Pipeline:
1970-1991: *Ibid.*, RSPA/Volpe Center, *Transportation Safety Information Report*, annual issues.
1992-1993: *Ibid.*, Office of Pipeline Safety, DPS-35.

Liquid Pipeline:
1970-1991: *Ibid.*, Volpe Center, *Transportation Safety Information Report*, annual issues.
1992-1993: *Ibid.*, Office of Pipeline Safety, DPS-35.

Hazardous Materials:
1975-1991: *Ibid.*, Volpe Center, *Transportation Safety Information Report*, annual issues.
1992-1993: *Ibid.*, Office of Hazardous Materials Transportation, DHM-63.

Table 68. National Transportation and Economic Trends, 1960-1992

Passenger-Miles:
1960-1992: Summation of all modes from Table 6. (This edition of NTS.)

Revenue Ton-Miles:
1960-1992: Summation of all modes from Table 7. (This edition of NTS.)

Population:
1960-1992: Council of Economic Advisors, *Economic Report of the President*, annual issues, Table B-32, and similar table in earlier editions.

Industrial Production:
1960-1992: *Ibid.*, Table B-108, and similar tables in earlier editions.

Gross Domestic Product:
1960-1992: *Ibid.*, Tables B-7, B-8, and similar tables in earlier editions.

Table 69. Employment in Transportation and Related Industries, 1960-1993

Transport Sector:
Air:
1960-1975: U.S. Department of Labor (DOL), Bureau of Labor Statistics, *Employment and Earnings*, 1979, SIC 45.
1980-1991: *Ibid.*, *Supplement to Employment and Earnings, Revised Establishment Data*, annual issues, SIC 45.
1992-1993: *Ibid.*, *Employment and Earnings*, June issues, Table "Employees on Nonfarm Payrolls by Detailed Industry", SIC 45.

Bus (intercity):
1960-1975: *Ibid.*, *Employment and Earnings*, 1979, SIC 45.
1980-1991: *Ibid.*, *Supplement to Employment and Earnings, Revised Establishment Data*, annual issues, SIC 413.
1992-1993: *Ibid.*, *Employment and Earnings*, June issues, Table "Employees on Nonfarm Payrolls by Detailed Industry", SIC 413.

Local Transport:
1960-1975: *Ibid.*, *Employment and Earnings*, 1979, SIC 45.
1980-1991: *Ibid.*, *Supplement to Employment and Earnings, Revised Establishment Data*, annual issues, SIC 411.
1992-1993: *Ibid.*, *Employment and Earnings*, June issues, Table "Employees on Nonfarm Payrolls by Detailed Industry," SIC 411.

Railroad:
1960-1975: *Ibid.*, *Employment and Earnings*, 1979, SIC 45.
1980-1991: *Ibid.*, *Supplement to Employment and Earnings, Revised Establishment Data*, annual issues, SIC 40.
1992-1993: *Ibid.*, *Employment and Earnings*, June issues, Table "Employees on Nonfarm Payrolls by Detailed Industry," SIC 40.

Oil Pipeline:
1960-1975: *Ibid.*, *Employment and Earnings*, 1979, SIC 45.
1980-1991: *Ibid.*, *Supplement to Employment and Earnings, Revised Establishment Data*, annual issues, SIC 46.
1992-1993: *Ibid.*, *Employment and Earnings*, June issues, Table "Employees on Nonfarm Payrolls by Detailed Industry," SIC 46.

Table 69. Employment in Transportation and Related Industries, 1960-1993 (cont'd)

Gas Pipeline, Transmission, Distribution, Integrated and Combination:	
1960-1993:	AGA, <i>Gas Facts</i> , 1993, Table 16-2 and similar table in earlier editions.
Taxi:	
1960-1975:	U.S. Department of Labor (DOL), Bureau of Labor Statistics, <i>Employment and Earnings</i> , 1979, SIC 45.
1980-1991:	<i>Ibid.</i> , <i>Supplement to Employment and Earnings, Revised Establishment Data</i> , annual issues, SIC 412.
1992-1993:	<i>Ibid.</i> , <i>Employment and Earnings</i> , June issues, Table "Employees on Nonfarm Payrolls by Detailed Industry," SIC 412.
Trucking and Truck Terminals:	
1960-1975:	<i>Ibid.</i> , <i>Employment and Earnings</i> , 1979, SIC 45.
1980-1985:	<i>Ibid.</i> , <i>Supplement to Employment and Earnings, Revised Establishment Data</i> , annual issues, SIC 421.3.
1990-1991:	<i>Ibid.</i> , <i>Supplement to Employment and Earnings, Revised Establishment Data</i> , annual issues, SIC 42.
1992-1993:	<i>Ibid.</i> , <i>Employment and Earnings</i> , June issues, Table "Employees on Nonfarm Payrolls by Detailed Industry," SIC 42.
Water:	
1960-1975:	<i>Ibid.</i> , <i>Employment and Earnings</i> , 1979, SIC 45.
1980-1991:	<i>Ibid.</i> , <i>Supplement to Employment and Earnings, Revised Establishment Data</i> , annual issues, SIC 44.
1992-1993:	<i>Ibid.</i> , <i>Employment and Earnings</i> , June issues, Table "Employees on Nonfarm Payrolls by Detailed Industry," SIC 44.
Equipment Manufacturing:	
Aircraft and Parts:	
1960-1975:	<i>Ibid.</i> , <i>Employment and Earnings</i> , 1979, SIC 45.
1980-1991:	<i>Ibid.</i> , <i>Supplement to Employment and Earnings, Revised Establishment Data</i> , annual issues, SIC 372.
1992-1993:	<i>Ibid.</i> , <i>Supplement to Employment and Earnings</i> , June issues, Table "Employees on Nonfarm Payrolls by Detailed Industry," SIC 372.
Motor Vehicles and Equipment:	
1960-1975:	<i>Ibid.</i> , <i>Employment and Earnings</i> , 1979, SIC 45.
1980-1991:	<i>Ibid.</i> , <i>Supplement to Employment and Earnings, Revised Establishment Data</i> , annual issues, SIC 301 and 371, sum of motor vehicles and tires and equipment.
1992-1993:	<i>Ibid.</i> , <i>Employment and Earnings</i> , June issues, Table "Employees on Nonfarm Payrolls by Detailed Industry," SIC 301 and 371, sum of motor vehicles and tires and equipment.
Railroad Equipment:	
1960-1975:	<i>Ibid.</i> , <i>Employment and Earnings</i> , 1979, SIC 45.
1980-1991:	<i>Ibid.</i> , <i>Supplement to Employment and Earnings, Revised Establishment Data</i> , annual issues, SIC 374.
1992-1993:	<i>Ibid.</i> , <i>Employment and Earnings</i> , June issues, Table "Employees on Nonfarm Payrolls by Detailed Industry," SIC 374.
Ship and Boat Building and Repair:	
1960-1975:	<i>Ibid.</i> , <i>Employment and Earnings</i> , 1979, SIC 45.
1980-1991:	<i>Ibid.</i> , <i>Supplement to Employment and Earnings, Revised Establishment Data</i> , annual issues, SIC 373.
1992-1993:	<i>Ibid.</i> , <i>Employment and Earnings</i> , June issues, Table "Employees on Nonfarm Payrolls by Detailed Industry," SIC 373.
Other:	
1960-1975:	<i>Ibid.</i> , <i>Employment and Earnings</i> , 1979, SIC 45.
1980-1991:	<i>Ibid.</i> , <i>Employment and Earnings, Revised Established Data</i> , annual issues, sum of SIC 376 and SIC 379.
1992-1993:	<i>Ibid.</i> , <i>Employment and Earnings</i> , June issues, Table "Employees on Nonfarm Payrolls by Detailed Industry," sum of SIC 376 and SIC 379.
Related Industries:	
Automotive and Accessories Retailers:	
1960-1975:	<i>Ibid.</i> , <i>Employment and Earnings</i> , 1979, SIC 45.
1980-1991:	<i>Ibid.</i> , <i>Supplement to Employment and Earnings, Revised Establishment Data</i> , annual issues, SIC 551.2 and 553, sum of new and used automobile dealers and other auto and home supply stores.
1992-1993:	<i>Ibid.</i> , <i>Employment and Earnings</i> , June issues, Table "Employees on Nonfarm Payrolls by Detailed Industry," SIC 551.2 and 553, sum of new and used automobile dealers and other auto and home supply stores.

Table 69. Employment in Transportation and Related Industries, 1960-1993 (cont'd)

Automotive Wholesalers:

- 1960-1975: *Ibid.*, *Employment and Earnings*, 1979, SIC 45.
- 1980-1991: *Ibid.*, *Supplement to Employment and Earnings, Revised Establishment Data*, annual issues, SIC 501.
- 1992-1993: *Ibid.*, *Employment and Earnings*, June issues, Table "Employees on Nonfarm Payrolls by Detailed Industry," SIC 501.

Automotive Repair, Services, and Parking:

- 1960-1975: *Ibid.*, *Employment and Earnings*, 1979, SIC 45.
- 1980-1991: *Ibid.*, *Supplement to Employment and Earnings, Revised Establishment Data*, annual issues, SIC 75.
- 1992-1993: *Ibid.*, *Employment and Earnings*, June issues, Table "Employees on Nonfarm Payrolls by Detailed Industry," SIC 75.

Gasoline Service Stations:

- 1960-1975: *Ibid.*, *Employment and Earnings*, 1979, SIC 45.
- 1980-1991: *Ibid.*, *Supplement to Employment and Earnings, Revised Establishment Data*, annual issues, SIC 554.
- 1992-1993: *Ibid.*, *Employment and Earnings*, June issues, Table "Employees on Nonfarm Payrolls by Detailed Industry," SIC 554.

Highway and Street Construction:

- 1960-1975: *Ibid.*, *Employment and Earnings*, 1979, SIC 45.
- 1980-1991: *Ibid.*, *Supplement to Employment and Earnings, Revised Establishment Data*, annual issues, SIC 161.
- 1992-1993: *Ibid.*, *Employment and Earnings*, June issues, Table "Employees on Nonfarm Payrolls by Detailed Industry," SIC 161.

Petroleum:

- 1960-1993: Eno Foundation for Transportation, *Transportation in America*, 1994, p. 61, and similar table in earlier editions by TPA.

Other Industries:

Truckdrivers and Deliverymen:

- 1960-1993: Eno Foundation for Transportation, *Transportation In America*, 1994, p. 61 and similar table in earlier editions by TPA.

Shipping and Receiving Clerks:

- 1960-1993: *Ibid.*, p. 62 and similar table in earlier editions by TPA.

Government Employment:

U.S. DOT

- 1960-1990: U.S. DOC, Bureau of the Census, *Statistical Abstract of the U.S.*, 1992, Table 514 and similar table in earlier editions.
- 1991-1993: Eno Foundation for Transportation, *Transportation In America*, 1994, p. 61.

State and Local Highway:

- 1960-1990: U.S. DOC, Bureau of the Census, *Statistical Abstract of the U.S.*, 1992, Table 482, and similar table in earlier editions.
- 1991-1993: Eno Foundation for Transportation, *Transportation In America*, 1994, p. 61.

U.S. Postal Service:

- 1960-1993: *Ibid.* Figures based on assumption that 14% of postal workers are engaged in transportation work, i.e., employees transporting or delivering mail by motor vehicles.

Other:

- 1960-1993: *Ibid.*, Agencies include Civil Aeronautics Board (sunset in 1985), Federal Maritime Commission, and Federal Energy Regulatory Commission.

Total Employed Civilians:

- 1960-1991: U.S. DOC, Bureau of the Census, *Statistical Abstract of the U.S.*, 1992, Table 629, and similar table in earlier editions.
- 1992-1993: Eno Foundation for Transportation, *Transportation In America*, 1994, p. 61.

Table 85. Fuel Consumption by Mode of Transportation, 1960-1992

Class I Railroads:

Locomotives:

- 1960-1970: AAR, *Statistics of Class I Railroads*, September 1971, p. 15.
- 1975: *Ibid.*, *Railroad Ten-Year Trends*, 1986, Table III-D-2.
- 1980-1992: *Ibid.*, *Railroad Facts*, 1993, p. 60.

Certificated Air Carrier, Domestic Operations:

- 1960-1970: CAB, *Handbook of Airline Statistics*, 1971, pp. 66, 67.
- 1975: U.S. DOT/FAA, *FAA Statistical Handbook of Aviation*, 1975, Table 6.27.
- 1980: CAB, *Fuel Cost and Consumption, Twelve Months Ended December 31, 1984*; Total of Tables 2, 3, 4, 6 and 7 and similar tables in earlier editions.
- 1985-1992: U.S. DOT/RSPA, Data Administration Division, DAI-20.

General Aviation:

- 1960-1970: *Ibid.*, FAA, *FAA Statistical Handbook of Aviation*, annual issues.
- 1985-1992: *Ibid.*, *General Aviation Activity and Avionics Survey*, annual issues, Table 5-1, and similar table in earlier editions.

Highway:

- 1960-1980: *Ibid.*, FHWA, *Highway Statistics, Summary to 1985*, Table VM-201A.
- 1985-1992: *Ibid.*, *Highway Statistics*, annual issues, Table VM-1. Commercial and School bus figures for 1984-1991 were calculated by the Transportation Policy Associates.

Water Transport:

Residual and Distillate Fuel Oil:

- 1960-1980: American Petroleum Institute, *Basic Petroleum Data Book*, annual issues, Tables 10, 10a, 12, and 12a.
- 1985-1992: U.S. DOE/EIA, *Fuel Oil and Kerosene Sales*, annual, Tables 2 and 4.

Gasoline:

- 1960-1992: U.S. DOT/FHWA, *Highway Statistics*, annual issues, Table MF-24 and similar table in earlier editions.

Transit:

Electricity:

- 1960-1992: APTA, *Transit Fact Book*, 1993, Tables 54, 55 and similar table in earlier editions.

Gallons of Motor Fuel:

- 1960-1992: *Ibid.*

Pipeline:

- 1960-1992: U.S. DOE, *Natural Gas Annual*, 1992, Table 97, and similar table in earlier editions.

Non-Highway Use of Gasoline:

- 1960-1992: U.S. DOT/FHWA, *Highway Statistics*, annual issues, Table MF-21 and similar table in earlier editions.

APPENDIX A

Metric Conversion Tables

**Table 1A. Vehicle Kilometers,
(at 5-Year Intervals 1960-1990 and Annually 1991-1992)
(millions)**

Year	Air Carrier, certificated, domestic, all services ^a	General Aviation	Highway							Transit ^b	Com- muter Rail	Class 1 Rail Freight Car ^c	Intercity/ Amtrak ^d
			Passenger Car & Taxi	Motor- cycle	Single- Unit Truck	Other Single- Unit Truck	Combi- nation Truck	Commer- cial Bus	School Bus				
1960	1,276	2,846	946,226	*	157,569	*	45,823	4,621	2,383	3,448	-	650	336
1965	1,825	4,122	1,141,264	*	227,125	*	52,288	4,700	2,837	3,231	-	677	277
1970	3,327	5,160	1,474,970	4,793	198,367	43,573	56,531	4,735	3,379	3,030	-	687	150
1975	3,134	6,338	1,663,626	9,057	322,926	55,681	75,179	4,433	4,023	3,202	278	648	48
1980	4,060	8,373	1,788,558	16,434	468,114	64,059	110,503	5,632	4,827	3,680	288	689	47
1985	4,901	7,751	2,028,249	14,619	600,273	75,591	128,076	5,604	5,471	4,491	294	558	48
1990	6,376	7,773	2,434,713	15,377	749,942	85,990	155,055	6,333	6,114	5,216	343	611	53
1991	6,201	7,257	2,467,485	14,767	760,812	86,543	155,497	6,460	6,919	5,319	346	603	55
1992	6,428	5,800	2,567,060	15,327	766,828	86,091	159,342	-	7,080	5,445	352	628	55

* 1960-1965, motorcycles included in passenger car and taxi figures, and other single-unit truck included in single-unit truck figures.

^a All operations other than those operating under 14 CFR 121 & 14 CFR 135.

^b Includes Commuter Rail.

^c Amtrak, 1971-1992.

^d Class 1 Rail Freight and Intercity/Amtrak figures are for train-kilometers.

Source: See p. 244.

**Table 2A. Passenger Kilometers,
(at 5-Year Intervals 1960-1990 and Annually 1991-1992)
(millions)**

Year	Air Carrier, certificated, domestic, all services	General Aviation	Highway								Transit ^b	Com- muter Rail	Intercity/ Amtrak ^c
			Passenger Car & Taxi	Motor- cycle	Intercity Bus	School Bus	Single-Unit Trucks ^a	Other Single- Unit Trucks	Combi- nation Trucks				
1960	50,038	3,701	2,081,697	-	31,054	-	-	252,111	-	-	45,823	6,753	27,456
1965	85,641	7,080	2,396,654	-	38,294	-	-	358,857	-	-	52,288	6,642	21,335
1970	174,483	14,642	2,949,941	5,944	40,708	-	-	309,453	43,573	-	56,531	7,389	9,942
1975	218,824	18,343	3,160,889	11,503	40,869	-	-	497,307	55,681	-	75,179	7,261	6,325
1980	321,940	23,652	3,219,403	21,364	44,087	65,969	-	706,853	64,059	64,125	110,503	10,48	7,245
1985	447,038	19,791	3,448,024	19,443	38,294	112,63	-	894,406	75,591	63,686	128,076	10,51	7,699
1990	556,510	20,917	3,676,417	19,683	37,007	119,38	-	1,102,414	85,990	66,199	155,055	11,39	9,720
1991	543,979	20,273	4,293,423	16,244	37,812	134,03	-	1,118,395	86,543	65,491	155,980	11,81	10,095
1992	570,815	19,630	4,466,684	16,861	38,133	144,81	-	1,127,238	86,091	64,979	159,342	11,81	9,775

^a 2-axle, 4-tire trucks.

^b Includes Commuter Rail.

^c Amtrak, 1971-1992.

Source: See pp. 244, 245.

**Table 3A. Tonne-Kilometers of Freight,
(at 5-Year Intervals 1960-1990 and Annually 1991-1993)
(millions)**

Year	Air Carrier, certificated, domestic, all services ^a	Oil Pipeline	Class I Rail	Trucks		Water Transport		
				Intercity	Local	Inland Waterways ^b	Inland Waterways (dom. only)	Domestic Coastwise
1960	900	349,500	858,46	427,500	150,37	315,000	-	384,000
1965	2,505	459,590	1,046,8	538,500	209,03	393,632	279,000	454,500
1970	4,515	646,650	1,147,2	618,000	267,02	477,840	352,500	540,000
1975	5,205	760,500	1,131,3	681,000	338,89	559,298	373,500	474,000
1980	6,792	882,000	1,378,4	832,500	369,60	615,360	433,500	946,500
1985	7,734	846,000	1,315,4	915,000	490,00	588,906	421,500	916,500
1990	13,596	876,000	1,550,9	1,102,50	577,03	690,000	508,500	718,500
1991	13,287	868,500	1,558,3	1,137,00	587,94	664,500	490,500	703,500
1992	14,730	859,500	1,600,1	1,222,50	-	681,000	502,500	693,000
1993 ^P	15,791	862,500	1,663,9	1,320,00	-	687,000	507,000	732,000

^a Includes revenue ton-miles of freight, U.S. and foreign mail, and express, as reported on U.S. DOT/RSPA/OAS Form 41.

^b Includes domestic and foreign U.S. traffic.

^c Reflects entrance of Alaska pipeline moving crude to U.S. refineries.

Source: See pp. 245, 246.

**Table 4A. Basic Intercity Mileage Within the Continental United States,
(at 5-Year Intervals 1960-1990 and Annually 1991-1992)
(statute kilometers)**

Year	Oil Pipeline ^a			Gas Pipeline						Class I Rail	Highway ^b	Inland Waterway
	Airway	Crude Lines		Product Lines	Total	Distribution Mains	Transmission Pipelines	Field and Gathering Lines				
		Trunk	Gathering									
1960	471,442	108,125	117,135	80,223	1,015,118	629,763	295,573	89,782	350,041	427,152	40,632	
1965	431,654	116,464	123,959	98,862	1,234,908	795,651	339,982	99,275	340,987	432,657	40,836	
1970	468,415	120,905	114,451	116,485	1,469,500	957,033	405,790	106,677	332,460	436,871	41,099	
1975	503,903	124,231	110,167	129,058	1,575,694	1,042,954	422,523	110,217	308,156	427,841	41,099	
1980	549,993	115,153	93,745	142,496	1,692,304	1,129,196	428,799	134,352	265,199	483,434	41,099	
1985	601,591	106,316	83,243	154,131	1,800,270	1,212,206	436,300	151,764	234,534	484,319	41,475	
1990	624,292	105,401	85,756	144,725	1,940,895	1,346,197	450,694	144,004	192,691	491,303	41,475	
1991	627,510	106,065	80,353	141,541	1,971,459	1,379,584	453,080	138,796	187,651	491,109	41,475	
1992 ^p	630,728	-	-	138,427	2,017,564	1,421,112	457,788	138,664	181,907	323,282	41,475	

^p preliminary.

^a Includes petroleum and other liquid product lines, including gathering lines.

^b Federal-Aid primary roads only.

Source: Sec p. 246.

**Table 5A. Average Length of Haul, Domestic Interstate Freight and Passenger Modes,
(at 5-Year Intervals 1960-1990 and Annually 1991-1992)
(kilometers)**

Year	Freight										Passenger			
	Air Carrier	Oil Pipeline		Railroads		Trucks ^a	Water			Air Carrier, scheduled	Bus, intercity	Commuter Rail	Intercity/ Amtrak ^b	
		Crude	Products	All	Per System		Internal	Lake- wise	Coast- wise					
1960	1,333	523	433	787	711	438	454	840	2,407	938	127	33.3	209	
1965	1,517	515	539	837	767	417	478	795	2,415	988	151	34.4	201	
1970	1,632	483	574	879	788	423	531	814	2,428	1,093	171	35.9	114	
1975	1,741	1,018	830	927	830	460	576	853	2,191	1,123	182	37.3	375	
1980	1,693	1,401	666	943	949	584	652	862	3,081	1,184	201	37.5	349	
1985	1,862	1,250	629	993	1,022	589	700	843	3,173	1,220	195	38.3	373	
1990	2,235	1,295	626	1,039	1,168	629	755	890	2,581	1,292	227	35.4	441	
1991	2,166	1,326	608	1,065	1,208	640	777	861	2,743	1,297	230	37.0	463	
1992	2,238	1,278	602	1,083	1,228	660	771	835	2,835	1,311	219	37.0	467	

^a Total Class I motor carriers of freight (LTL, specialized and others).
^b Amtrak, 1971-1992.

Source: Eno Foundation for Transportation, *Transportation In America*, 1994, pp. 70, 71.

Passenger Data, 1960: Transportation Association of America, *Transportation Facts and Trends*.

Oil Pipeline Data, 1960-1970: Oil Pipeline data; Transportation Policy Associates, personal communication.

Water Data: U.S. Army Corps. of Engineers, *Waterborne Commerce of the United States, Part 5, Section 1*.

**Table 6A. Fuel Consumption by Mode of Transportation,
(at 5-Year Intervals 1960-1990 and Annually 1991-1992)**

	1960	1965	1970	1975	1980	1985	1990	1992
Class I Railroads								
Locomotives								
Diesel Oil, liters x 10 ⁶	13,142	14,163	14,413	14,141	14,970	11,900	11,862	11,438
Air								
Certified Carriers*								
Jet Fuel, liters x 10 ⁶	5,038	17,600	38,172	35,984	34,428	38,308	48,963	44,712
General Aviation								
Aviation Gasoline, liters x 10 ⁶	916	1,105	2,086	1,559	1,968	1,593	1,336	1,188
Jet Fuel, liters x 10 ⁶	-	307	787	1,715	2,899	2,615	2,509	1,870
Highway								
Gasoline, liters x 10 ⁶								
Passenger Cars	155,825	188,202	256,699	289,352	272,077	262,179	272,478	279,526
Motorcycles	+	261	227	428	772	689	723	723
Diesel & Gasoline, liters x 10 ⁶								
Commercial Buses ¹	2,339	2,377	2,438	2,093	2,634	2,604	2,744	0
School Buses	791	935	1,136	1,294	1,438	1,609	1,787	0
Single-Unit Trucks ²	-	52,415	46,605	67,763	89,303	109,844	124,667	125,431
Other Single-Unit Trucks	-	-	15,019	18,225	21,033	25,492	27,608	27,180
Combination Trucks	-	25,201	27,812	32,755	48,081	57,835	66,120	66,987
Water Transport								
Residual Fuel Oil, liters x 10 ⁶	14,958	11,707	14,285	15,367	33,883	17,373	23,944	24,841
Distillate Fuel Oil, liters x 10 ⁶	2,979	2,468	3,100	4,156	5,594	6,431	7,816	8,399
Gasoline, liters x 10 ⁶	-	-	2,263	2,763	3,982	3,986	4,921	4,981
Transit**								
Electricity, kWh x 10 ⁶	11,007	9,780	9,693	10,015	9,258	15,958	18,308	18,130
Gallons of Motor Fuel, liters x 10 ⁶								
Gasoline	727	469	257	30	42	174	129	163
Diesel Oil	787	939	1,026	1,382	1,631	2,305	2,464	2,544
Pipelines, Natural Gas								
cu. meters x 10 ⁶	9,828	14,173	20,450	16,508	17,971	14,265	18,684	16,642
Non-Highway³ Use of Gasoline liters x 10⁶	20,182	15,927	15,151	13,785	13,834	15,159	15,435	14,777

* Domestic consumption only.

** Prior to 1984, excludes commuter rail, automated guideway, urban ferryboat, demand response, and most rural and smaller systems. Series not continuous between 1983 and 1984.

+ Included in passenger cars.

¹ Includes intercity and local buses.

² 2-axle, 4-tire single-unit trucks only.

³ Private, commercial, and public non-highway use of gasoline.

Source: See p. 254.

**Table 7A. Fuel Consumption by Certificated Air Carriers,
(at 5-Year Intervals 1960-1990 and Annually 1991-1993)
(kiloliters)**

Year	Total Certificated Route Air Carriers	Domestic Operations						International Operations		
		Passenger Cargo Carriers						Total International Operations	Majors ^c	Other
		Total Domestic Operations	Majors ^a	Nationals ^b	Other					
1960	9,537,280	7,396,783	6,836,475	333,201	226,502	2,140,493	2,070,546	69,947		
1965	19,564,752	14,719,237	13,690,996	667,114	361,051	4,845,515	4,677,798	167,717		
1970	38,225,366	29,737,205	26,899,628	2,339,607	388,254	8,488,162	7,622,547	865,614		
1975	35,982,481	28,605,895	25,170,250	2,747,153	688,492	7,376,587	6,649,110	727,477		
1980	41,763,834	34,428,447	28,101,941	4,143,356	2,184,28	7,334,251	6,678,655	655,596		
1985	47,684,161	38,309,230	29,245,518	7,971,819	1,091,89	9,374,930	7,770,499	1,604,43		
1990	62,121,513	48,962,571	42,694,088	3,603,687	770,403	15,053,335	13,574,15	1,479,18		
1991	58,977,840	44,047,105	39,780,558	3,536,977	729,570	14,930,735	13,190,80	1,739,93		
1992	59,307,434	43,867,476	40,568,807	2,621,680	676,989	15,439,957	14,192,98	1,246,97		
1993	60,719,750	45,156,606	41,319,418	2,691,124	1,146,06	15,563,144	14,041,09	1,522,05		

^a 1960-1980, categorized as domestic trunk.

^b 1960-1980, categorized as local service.

^c 1960-1980, categorized as international trunk.

Note: Sum of components may not equal total due to independent rounding.

Source: 1960-1975: CAB, *Handbook of Air-line Statistics*, 1977.

1980: CAB, *Fuel Cost and Consumption, Twelve Months Ended December 31, 1984*, and earlier editions.

1985-1993: U.S. DOT/RSPA, Data Administration Division, DAI-20.

**Table 8A. Total Motor Vehicle Fuel Consumption and Travel,^a
(at 5-Year Intervals 1960-1990 and Annually 1991-1992)**

Year	Number Registered (thousands)	Vehicle Kilometers Traveled (millions)	Average Kilometers Traveled per Vehicle	Average Liters per 100 Kilometers	Fuel Consumed (million liters)	Average Liters Consumed per Vehicle
1960	74,475	1,156,622	15,530	18.9	219,068	2,941
1965	91,752	1,428,213	15,565	18.8	269,129	2,933
1970	111,242	1,785,546	16,051	19.6	349,465	3,142
1975	137,913	2,136,211	15,490	19.3	412,504	2,990
1980	161,490	2,457,418	15,218	17.7	435,124	2,695
1985	177,098	2,854,654	16,119	16.1	459,204	2,593
1990	193,057	3,450,278	17,871	14.3	494,983	2,562
1991	192,314	3,494,828	18,172	14.0	486,603	2,528
1992	194,427	3,603,883	18,101	14.0	503,170	2,589

^a Includes personal passenger vehicles, buses, and motor trucks.

Source: 1960-1980: U.S. DOT/FHWA, *Highway Statistics, Summary to 1985*, Table VM-201A.
1985-1992: *Ibid.*, *Highway Statistics*, annual issues, Table VM-1.

**Table 9A. Fuel Consumption and Travel by Passenger Cars and Motorcycles,
(at 5-Year Intervals 1960-1990 and Annually 1991-1992)**

Year	Number Registered ^a (thousands)	Vehicle Kilometers Traveled ^a (millions)	Average Kilometers Traveled Per Vehicle		Average Liters Per 100 Kilometers Traveled		Fuel Consumed (million liters)		Average Liters Consumed Per Vehicle	
			Passenger Cars	Motorcycles	Passenger Cars	Motorcycles	Passenger Cars	Motorcycles	Passenger Cars	Motorcycles
1960	62,258	62,258	15,199	*	16.5	*	155,825	2,502	*	
1965	76,643	1,141,264	14,891	*	16.5	*	188,202	2,456	*	
1970	92,068	1,479,764	16,528	1,697	17.4	4.7	256,699	2,877	79	
1975	111,670	1,672,683	15,591	1,825	17.4	4.7	289,352	2,710	87	
1980	127,295	1,804,992	14,708	2,887	15.2	4.7	272,077	2,237	136	
1985	137,308	2,042,868	15,382	2,685	12.9	4.7	262,179	1,987	125	
1990	147,713	2,450,090	16,972	3,611	11.2	4.7	272,478	1,900	170	
1991	146,746	2,482,253	17,308	3,535	10.8	4.7	267,569	1,877	167	
1992	148,279	2,582,387	17,800	3,770	10.9	4.7	279,526	1,938	178	

^a Includes motorcycles.

* Data included with passenger car information.

Source: 1960-1980: U.S. DOT/FHWA, *Highway Statistics, Summary to 1985*, Table VM-201A.

1985-1992: *Ibid.*, *Highway Statistics*, annual issues, Table VM-1.

**Table 10A. Fuel Consumption and Travel by Buses,
(at 5-Year Intervals 1960-1990 and Annually 1991-1992)**

Year	Number Registered ^a	Total Vehicle Kilometers Traveled ^a (millions)	Average Kilometers Traveled per Vehicle			Average Liters per 100 Kilometers			Total Fuel Consumed (million liters)			Average Liters Consumed per Vehicle		
			Commer- cial	School	All Buses ^a	Commer- cial	School	All Buses ^a	Commer- cial	School	All Buses ^a	Commer- cial	School	All Buses ^a
1960	272,000	7,004	60,803	12,158	25,750	50.6	33.2	44.7	2,339	791	3,130	30,780	4,035	11,506
1965	314,000	7,537	55,293	12,372	23,979	50.6	32.9	44.0	2,377	935	3,312	27,964	4,076	10,537
1970	377,562	7,311	52,439	11,704	19,364	51.5	33.6	42.5	2,438	1,136	3,104	26,995	3,933	8,221
1975	462,156	9,742	45,567	10,922	21,081	49.1	32.2	40.9	2,093	1,294	3,986	22,316	3,516	8,626
1980	528,789	9,749	52,719	12,216	18,436	46.8	30.8	39.5	2,634	1,438	3,853	24,663	3,762	7,290
1985	593,485	7,845	59,306	16,323	13,220	56.7	30.4	40.3	2,604	1,711	3,160	33,607	4,962	5,325
1990	626,987	9,202	61,945	16,090	14,676	53.7	29.2	36.8	2,737	1,787	3,388	36,302	4,701	5,405
1991	631,279	9,240	62,812	19,768	14,637	53.6	29.2	35.4	2,793	2,017	3,270	37,619	5,768	5,182
1992	644,732	9,234	-	-	14,322	-	-	36.0	-	-	3,319	-	-	5,148

^a Includes commercial, school and non-revenue buses.

Source: 1960-1965: U.S. DOT/FHWA, *Highway Statistics, Summary to 1985*, Table VM-201A.

1970-1975: *Ibid.*, *Highway Statistics*, annual issues, Table VM-1.

1980: *Ibid.*, *Highway Statistics, Summary to 1985*, Table VM-201A.

1985-1992: *Ibid.*, *Highway Statistics*, annual issues, Table VM-1.

1984-1991: Commercial/School Bus: Transportation Policy Associates, personal communication.

**Table 11A. Fuel Consumption and Travel by Trucks,
(at 5-Year Intervals 1960-1990 and Annually 1991-1992)**

Year	Number Registered (thousands)	Vehicle Kilometers Traveled (millions)	Average Kilometers Traveled per Vehicle			Average Liters per 100 Kilometers			Total Fuel Consumed (million liters)			Average Liters of Fuel Consumed per Vehicle					
			Single-Unit*	Other Single Unit	Combination	Single-Unit*	Other Single Unit	Combination	Single-Unit*	Other Single Unit	Combination	Single-Unit*	Other Single Unit	Combination			
1960	11,945	203,392	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1965	14,795	279,413	16,214	-	66,439	23.1	-	48.2	52,415	-	25,201	3,743	-	32,021	-	-	-
1970	18,797	298,471	13,960	11,836	62,460	23.5	34.5	49.2	46,605	15,019	27,812	3,278	4,080	30,730	4,080	4,080	4,080
1975	25,781	453,786	15,815	13,158	66,485	21.0	32.7	43.6	67,763	18,225	36,540	3,319	4,307	28,967	4,307	4,307	4,307
1980	33,667	642,676	16,793	14,647	77,991	19.1	32.9	43.5	89,303	21,033	48,081	3,202	4,811	33,936	4,811	4,811	4,811
1985	39,196	803,940	17,884	19,247	91,271	18.3	33.7	45.2	109,844	25,492	57,835	3,244	6,491	41,215	6,491	6,491	6,491
1990	44,718	990,986	19,297	20,265	96,229	16.6	32.1	42.6	124,667	27,608	66,120	3,206	6,506	41,033	6,506	6,506	6,506
1991	44,936	1,003,335	19,474	20,289	97,274	16.2	31.2	41.6	123,130	27,002	64,939	3,153	6,329	40,496	6,329	6,329	6,329
1992	45,504	1,012,262	19,396	19,947	96,292	16.4	31.6	42.0	125,431	27,180	66,987	3,172	6,298	40,481	6,298	6,298	6,298

* 2-axle, 4-tire trucks.

Source: 1960-1980: U.S. DOT/FHWA, *Highway Statistics, Summary to 1985*, Table VM-201A.
1985-1992: *Ibid.*, *Highway Statistics*, annual issues, Table VM-1.

**Table 12A. Motor Fuel and Total Energy Consumption
by the U.S. Transit Industry,
(at 5-Year Intervals 1955-1990 and Annually 1991-1992)**

Year	Kilowatt Hours Consumed (millions)	Liters of Motor Fuel Used (thousands)	
		Gasoline	Diesel
1955	3,530	931,110	653,291
1960	2,908	726,342	787,659
1965	2,584	470,097	940,194
1970	2,561	258,137	1,024,221
1975	2,646	28,675	1,381,752
1980	2,446	43,149	1,632,849
1985	4,216	172,990	2,304,073
1991	4,837	128,334	2,464,149
1991	4,853	130,458	2,517,623
1992 ^p	4,790	162,986	2,543,039

^p preliminary.

* Prior to 1984, excludes commuter rail, automated guideway, urban ferryboat, demand response, and most rural and smaller systems.

Source: American Public Transit Association, *Transit Fact Book*, 1993, Tables 54 and 55, and similar table in earlier editions.

**Table 13A. Average Fuel Efficiency of U.S. Passenger Cars,
(at 5-Year Intervals 1955-1990 and Annually 1991-1994)**

Year	Average U.S. Passenger Car Fuel Efficiency, (liters per 100 kilometers) (Calendar Year Basis)	New Car Fuel Efficiency, (liters per 100 kilometers) ¹ (Model Year Basis)	
		Domestic Cars	Domestic and Imported Cars
1955	16.2	14.7	14.6
1960	16.5	15.2	14.6
1965	16.5	15.3	14.8
1970	17.4	16.7	15.5
1975	17.4	15.6	14.5
1980	15.2	10.4	9.7
1985	12.9	8.9	8.5
1990	11.2	8.7	8.4
1991	10.8	8.6	8.3
1992	10.9	8.7	8.5
1993	-	8.5	8.3
1994	-	8.6	8.3

¹ 55% city, 45% highway miles sales weighted harmonic average.

Source: Average Passenger Car Fuel Efficiency: U.S. DOT/FHWA,
Highway Statistics, annual issues, Table VM-1.

New Car Fuel Efficiency:

1955-1975: U.S. DOT/NHTSA, Motor Vehicle Requirements
Division, NRM-21.

1980-1990: *Ibid.*, EPA Final Fuel Economy Calculations for
NHTSA.

1991-1994: *Ibid.*, Manufacturer's preliminary estimates for
NHTSA.

**Table 14A. Consumption of Energy by Sector,
(at 5-Year Intervals 1955-1990 and Annually 1991-1993)
(petajoules)**

Year	Residential and Commercial ^a	% of Total	Industrial ^a	% of Total	Transportation ^b	% of Total	Electric Utilities	% of Total	Total Energy Consumption
1955	7,796	19.0	16,268	39.7	10,001	24.4	6,858	16.7	40,955
1960	9,231	20.0	17,154	37.1	11,141	24.1	8,640	18.7	46,209
1965	10,550	19.0	20,298	36.5	13,082	23.5	11,616	20.9	55,577
1970	12,808	18.3	23,126	33.0	16,943	24.2	17,165	24.5	70,084
1975	12,238	16.5	21,480	28.9	19,212	25.8	21,469	28.9	74,430
1980	11,310	14.1	22,197	27.7	20,741	25.9	25,858	32.3	80,138
1985	10,318	13.2	18,600	23.8	21,121	27.1	27,979	35.8	78,049
1990	10,075	11.8	20,657	24.0	23,716	27.7	31,228	36.4	85,729
1991	10,339	12.1	20,340	23.8	23,463	27.3	31,566	36.7	85,582
1992	10,550	12.2	21,227	24.5	23,653	27.3	31,175	36.0	86,658
1993	10,961	12.4	21,395	24.2	24,043	27.1	32,104	36.2	88,578

^a Includes coal, petroleum and natural gas.

^b Includes petroleum and natural gas.

Note: Sum of components may not equal total due to independent rounding.

Source: U.S. DOE/EIA, *Annual Energy Review 1991*, Table 5. (Table 6.6 pipeline fuel, converted to BTU's using Table A4, "Consumption for sectors other than electric utilities").

**Table 15A. U.S. Government Energy Consumption, Fiscal Years 1975-1993
(petajoules)**

Activity	1975	1980	1985	1990	1991	1992	1993 ^c
Agency							
Defense	1,643.8	1,248.2	1,319.4	1,310.0	1,339.1	1,164.7	1,164.
Energy	89.9	50.0	55.1	45.8	44.1	46.8	48.0
Postal Service	62.5	28.7	29.3	32.3	32.5	33.4	33.4
Veterans Affairs	41.4	26.2	26.5	26.3	26.7	26.7	27.0
Transportation	30.1	20.3	20.6	20.0	19.8	16.7	17.5
General Services Admin.	45.4	19.1	18.0	15.0	14.8	14.6	14.8
NASA	27.9	11.0	11.5	13.0	13.1	13.2	12.8
Agriculture	12.6	9.1	8.9	10.4	9.7	9.6	6.2
Health and Human Services	9.8	6.3	7.4	8.4	7.5	8.4	8.4
Justice	7.5	6.0	8.7	7.4	8.4	7.9	7.9
Interior	13.0	9.0	6.9	7.8	7.3	7.4	12.7
Other ^d	15.6	13.0	11.3	15.9	14.1	14.6	14.6
Total	1,999.2	1,446.6	1,523.4	1,512.2	1,536.9	1,364.0	1,368.
Energy Source							
Petroleum	1,225.9	1,067.4	1,110.8	1,076.6	1,107.1	923.7	926.6
Jet Fuel	746.3	673.8	744.5	772.7	817.1	661.5	662.1
Distillate & Residual Fuel	384.8	324.6	306.7	257.5	249.1	215.0	214.7
Motor Gasoline	66.9	59.6	53.3	39.2	36.6	37.6	33.3
Liquefied Petroleum Gases	5.7	4.2	4.3	6.6	3.9	8.5	15.4
Aviation Gasoline	22.3	5.2	2.0	0.5	0.4	1.1	1.1
Electricity	507.7	149.7	174.5	203.0	200.5	202.0	202.1
Natural Gas	175.3	155.4	156.1	166.2	161.9	159.6	159.9
Coal	82.2	67.0	67.5	46.6	48.4	54.6	55.2
Purchased Steam	8.0	7.2	14.3	19.8	19.2	24.1	24.2
Total	1,999.2	1,446.6	1,519.2	1,512.2	1,536.9	1,364.0	1,368.

^c estimate.

^d Includes National Archives and Records Administration, U.S. Department of Commerce, Panama Canal Commission, Tennessee Valley Authority, U.S. Department of Labor, National Science Foundation, Federal Trade Commission, Federal Communications Commission, Environmental Protection Agency, U.S. Department of Housing and Urban Development, Railroad Retirement Board, Commodity Futures Trading Commission, Equal Employment Opportunity Commission, Nuclear Regulatory Commission, U.S. Department of State, U.S. Department of Treasury, Small Business Administration, Office of Personnel Management, Federal Emergency Management Agency and U.S. Information Agency. National Science Foundation data for 1990 are estimated.

Note: Sum of components may not equal total due to independent rounding. These data include energy consumed at foreign installations and in foreign operations, including aviation and ocean bunkering, primarily by the U.S. Department of Defense. U.S. Government energy use for electricity generation and uranium enrichment is excluded. However, other energy used by U.S. agencies that produce electricity or enrich uranium is included.

Source: U.S. DOE/EIA, *Annual Energy Review 1993*, Table 1.12.

**Table 16A. U.S. Government Energy Use by Agency and Source,
Fiscal Years 1983 and 1993
(petajoules)**

	Petroleum				Electricity	* Natural Gas	Coal and Other ²	Total
	Motor Gasoline	Distillate and Residual Fuel Oils	Other ¹	Total				
1983								
Defense	28.6	320.3	708.1	1,057.0	99.2	112.8	48.1	1,317.0
Energy	1.4	3.8	0.6	5.9	18.4	7.3	20.7	52.2
Postal Service	9.9	3.0	0.2	13.0	9.5	4.6	0.7	28.0
Veterans Affairs	0.5	2.4	0.0	3.0	6.2	15.2	0.9	25.4
Transportation	1.5	8.4	4.9	14.8	4.1	1.3	0.2	20.5
General Services Admin.	0.1	1.2	0.0	1.3	0.6	3.4	3.3	17.0
NASA	0.3	0.8	1.6	2.6	5.3	2.4	0.4	10.9
Agriculture	4.2	0.6	0.4	5.3	1.3	1.2	0.0	7.8
Interior	2.2	1.8	0.9	5.0	1.4	1.7	0.2	8.1
Health & Human Services	0.4	2.6	0.1	3.3	1.8	1.5	0.0	6.5
Justice	1.8	0.4	0.1	2.3	0.9	2.2	0.4	5.8
Other ³	3.3	2.3	0.3	6.0	2.7	2.3	0.2	11.4
Total	54.4	347.6	717.3	1,119.5	159.8	155.9	75.4	1,510.5
1993								
Defense	11.3	180.9	638.5	830.7	121.7	109.3	44.7	1,106.5
Energy	1.3	2.5	0.9	4.6	18.5	12.7	10.2	46.0
Postal Service	10.9	3.4	0.0	14.3	14.3	6.3	0.5	35.6
Veterans Affairs	0.6	1.7	0.0	2.3	8.9	14.6	1.3	27.0
Transportation	0.7	4.9	5.9	11.4	6.3	1.6	0.1	19.4
General Services Admin.	0.1	0.4	0.0	0.5	9.8	3.0	1.6	14.9
NASA	0.3	1.1	1.5	2.8	7.4	2.5	0.3	13.1
Agriculture	4.9	0.6	0.3	5.7	2.2	1.8	0.1	9.8
Interior	1.9	1.3	1.8	5.0	1.9	0.8	0.1	7.9
Health & Human Services	0.2	1.6	0.3	2.0	3.6	2.8	0.1	8.5
Justice	2.1	0.3	0.7	3.3	2.5	3.4	0.4	9.6
Other ⁴	2.3	2.5	1.7	6.5	5.7	2.6	0.6	15.5
Total	36.4	201.2	651.8	889.3	202.9	161.5	60.1	1,313.9

^c estimate.

* Less than 50 billion Btu's.

¹ Includes aviation gasoline, jet fuel, liquefied petroleum gases, and other.

² Includes purchased steam, coal, and other.

³ Includes U.S. Department of Commerce, Panama Canal Commission, Tennessee Valley Authority, National Science Foundation, U.S. Department of Treasury, and Environmental Protection Agency.

⁴ Includes National Archives and Records Administration, U.S. Department of Commerce, U.S. Department of Labor, U.S. Department of State, Environmental Protection Agency, Federal Communications Commission, Federal Trade Commission, National Science Foundation, Panama Canal Commission, Commodity Futures Trading Commission, Equal Employment Opportunity Commission, Nuclear Regulatory Commission, Office of Personnel Management, U.S. Department of Housing and Urban Development, U.S. Department of Treasury, Tennessee Valley Authority, Railroad Retirement Board, U.S. Information Agency, and Federal Emergency Management Agency.

Note: Sum of components may not equal total due to independent rounding. These data include energy consumed at foreign installations and in foreign operations, including aviation and ocean bunkering, primarily by the Department of Defense. U.S. Government energy use for electricity generation and uranium enrichment is excluded. However, other energy used by U.S. agencies that produce electricity or enrich uranium is included.

Source: U.S. DOE/EIA, *Annual Energy Review 1993*, Table 1.13 and revisions from personal communication.

**Table 17A. Energy Intensiveness of Certificated Air Carriers (All Services),
(at 5-Year Intervals 1960-1990 and Annually 1991-1993)**

Year	Aircraft Kilometers (millions)		Fuel Consumed (million liters)		Passenger-Kilometers (millions)		Passenger Load Factor (%)		Joules/Passenger- Kilometer	
	Domestic Operations	Inter- national Operations	Domestic Operations	Inter- national Operations	Domestic Operations	Inter- national Operations	Domestic Operations	Inter- national Operations	Domestic Operations	Inter- national Operations
1960	1,276	293	7,396	2,142	50,038	14,402	58.5	62.2	5,561,742	5,597,316
1965	1,825	457	14,720	4,845	85,641	32,164	54.7	56.8	6,467,589	5,667,952
1970	3,327	764	29,739	8,490	174,483	63,869	49.8	51.1	6,413,423	5,001,789
1975	3,033	499	28,607	7,377	218,824	60,048	54.6	52.3	4,919,242	4,622,741
1980	4,060	645	34,428	7,335	321,940	101,937	58.0	62.8	4,024,035	2,707,747
1985	4,901	668	38,308	9,375	447,038	117,838	60.7	64.6	3,224,521	2,993,828
1990	6,376	1,223	49,065	15,053	556,510	203,318	60.4	69.1	3,317,560	2,785,903
1991	6,201	1,298	44,046	14,932	543,979	201,464	61.2	67.3	3,046,808	2,788,918
1992	6,426	1,455	43,868	15,439	570,815	223,571	62.4	67.1	2,891,840	2,598,510
1993	6,668	1,537	45,155	15,564	581,362	230,826	62.0	67.7	2,922,672	2,537,199

^p

preliminary.

Note: Heat equivalent factor used for Btu conversion is 135,000 Btu/gallon.

Source: Aircraft Miles:

1960-1970: CAB, *Handbook of Airline Statistics, 1969 & 1973*, Part III, Tables 2 and 13.

1975-1980: CAB, *Air Carrier Traffic Statistics*, annual issues, pp. 5, 15, and similar tables in earlier editions.

1985-1993: U.S. DOT/RSPA, *Ibid.*, annual issues, pp. 2,3.

Fuel Consumed:

1960-1975: CAB, *Handbook of Airline Statistics, 1977*, Table 2.

1980: CAB, *Fuel Cost and Consumption, Twelve Months Ended Dec. 31, 1984*, Tables 1,2,3,4,6,7, and similar tables in earlier editions.

1985-1993: U.S. DOT/RSPA, Data Administration Division, DAI-20.

Passenger Miles:

1960-1970: CAB, *Handbook of Airline Statistics, 1969 & 1973*, Part III, Tables 2 and 13.

1975-1980: *Ibid.*, *Air Carrier Traffic Statistics*, annual issues, pp. 4,5, and similar tables in earlier editions.

1985-1993: U.S. DOT/RSPA, *Ibid.*, annual issues, pp. 2,3.

Passenger Load Factor:

1960-1970: CAB, *Handbook of Airline Statistics, 1969 & 1973*, Part III, Tables 2 and 13.

1975-1980: *Ibid.*, *Air Carrier Traffic Statistics*, annual issues, pp. 5,15, and similar tables in earlier editions.

1985-1993: U.S. DOT/RSPA, *Ibid.*, annual issues, pp. 2,3.

**Table 18A. Energy Intensiveness of General Aviation,
(at 5-Year Intervals 1960-1990 and Annually 1991-1992)**

Year	Intercity Kilometers (millions)	Fuel Consumption (million liters)		Joules/ Kilometer
		AVGAS	Jet Fuel	
1960	3,701	916	-	8,291,194
1965	7,080	1,105	212	6,356,149
1970	14,642	2,086	787	6,794,936
1975	18,343	1,559	1,715	6,365,388
1980	23,652	1,968	2,899	7,400,380
1985	19,791	1,593	2,615	7,670,086
1990	20,917	1,336	2,509	6,654,316
1991	20,273	1,340	2,184	6,267,774
1992	19,630	1,188	1,870	5,612,496

* Prior to 1962, jet fuel was included with aviation gasoline.

Note: The heat equivalent factors used in Btu conversion are:

AVGAS = 120,190 Btu/gal.

Jet Fuel (kerosene) = 135,000 Btu/gal.

Btus were converted to Joules using 1055 Joules/Btu.

Source: Passenger-Miles Flown: Eno Foundation for Transportation, *Transportation In America*, 1994, p. 47, and similar table in earlier editions by TPA.

Fuel Consumed: 1960-1975: U.S. DOT/FAA, *FAA Statistical Handbook of Aviation*, annual issues.

1980-1992: *Ibid.*, *General Aviation Activity and Avionics Survey*, annual issues, Table 5-1.

**Table 19A. Energy Intensity of Passenger Cars and Motorcycles,
(at 5-Year Intervals 1960-1990 and Annually 1991-1992)**

Year	Vehicle-Kilometers (millions)		Passenger-Kilometers (millions)		Fuel Consumed (million liters)		Joules/Passenger-Kilometer	
	Passenger Cars	Motorcycles	Passenger Cars	Motorcycles	Passenger Cars	Motorcycles	Passenger Cars	Motorcycles
1960	946,226	-	2,081,697	-	155,825	-	2,608,046	-
1965	1,141,264	-	2,396,654	-	188,202	-	2,735,990	-
1970	1,474,970	4,793	2,949,941	5,944	256,699	227	3,031,845	1,331,174
1975	1,663,626	9,057	3,160,889	11,503	289,352	428	3,189,434	1,295,477
1980	1,788,558	16,434	3,219,405	21,364	272,077	772	2,944,510	1,259,245
1985	2,028,249	14,619	3,448,024	19,443	262,179	689	2,649,262	1,234,442
1990	2,434,713	15,377	3,676,417	19,683	272,478	723	2,582,095	1,279,901
1991 ^r	2,467,485	14,767	4,293,423	16,244	267,569	696	2,171,346	1,493,655
1992	2,567,060	15,327	4,466,684	16,861	279,526	723	2,180,387	1,493,655

^r revised.

Note: The heat equivalent factor used for Btu conversion is 125,000 Btu/gal. Btus were converted to Joules using 1055 Joules/Btu.

Source: 1960-1980: U.S. DOT/FHWA, *Highway Statistics, Summary to 1985*, Table VM-201A.

1985-1992: *Ibid.*, *Highway Statistics*, annual issues, Table VM-1, for vehicle-miles and fuel consumption data.

**Table 20A. Energy Intensiveness of Class I Intercity Buses,
(at 5-Year Intervals 1960-1990 and Annually 1991)**

Year	Passenger-Kilometers (millions)	Fuel Consumed (million liters)	Joules/ Kilometer
1960	21,715	530	943,403
1965	25,340	561	855,797
1970	28,801	521	699,609
1975	29,284	511	675,078
1980	26,549	500	728,639
1985	20,177	388	744,080
1990	22,236	375	651,490
1991	22,014	376	660,054

Note: The heat equivalent factor used in Btu conversion is 138,700 Btu/gal.
Btus were converted to Joules using 1055 Joules/Btu.

Source: Transportation Policy Associates.

**Table 21A. Energy Intensiveness of Trucks,
(at 5-Year Intervals 1960-1990 and Annually 1991-1992)**

Year	Vehicle-Kilometers (millions)			Passenger-Kilometers (millions)			Fuel Consumed (million liters)			Joules/Passenger Kilometer		
	Single- Unit*	Other Single- Unit	Combi- nation	Single- Unit*	Other Single- Unit	Combi- nation	Single- Unit*	Other Single- Unit	Combi- nation	Single- Unit*	Other Single- Unit	Combi- nation
1960	157,569	-	45,823	252,111	-	45,823	-	-	25,201	5,088,949	-	18,632,481
1965	227,125	-	52,288	358,857	-	52,288	52,415	-	27,812	5,247,249	-	19,020,039
1970	198,367	43,573	56,531	309,453	43,573	56,531	46,605	15,019	27,812	13,325,488	13,325,488	19,020,039
1975	322,926	55,681	75,179	497,307	55,681	75,179	67,763	18,225	36,540	4,747,486	12,653,719	18,790,558
1980	468,114	64,059	110,503	706,853	64,059	110,503	89,303	21,033	48,081	4,401,847	12,693,727	16,821,362
1985	600,273	75,591	128,076	894,406	75,591	128,076	109,844	25,492	57,835	4,278,979	13,037,563	17,457,599
1990	749,942	85,990	155,055	1,102,414	85,990	155,055	124,667	27,608	66,120	3,940,051	12,412,142	16,485,844
1991	760,812	86,543	155,980	1,118,395	86,543	155,980	123,126	26,998	64,935	3,835,759	12,060,608	16,094,446
1992	766,828	86,091	159,342	1,127,238	86,091	159,342	125,431	27,180	66,987	3,876,915	12,205,515	16,252,600

* 2-axle, 4-tire trucks.

Note: The heat equivalent factors used for Btu conversions are:

Automotive gasoline = 125,000 Btu/gal. (single-unit trucks).

Distillate fuel = 138,700 Btu/gal. (combinations) (other single-unit trucks).

Bus converted to Joules using 1055 Joules/Btu.

Source: 1960-1980: U.S. DOT/FHWA, *Highway Statistics, Summary to 1985*, Table VM-201A.

1985-1992: *Ibid.*, *Highway Statistics*, annual issues, Table VM-1.

**Table 22A. Energy Intensiveness of Transit Buses and School Buses,
(at 5-Year Intervals 1960-1990 and 1991-1992)**

Year	Vehicle-Kilometers (millions)		Passenger-Kilometers (millions)		Fuel Consumed (million liters)		Joules/ Passenger-Kilometer	
	Motor Bus	School Bus	Motor Bus	School Bus	Motor Bus (Diesel)	School Bus (Gasoline)	Motor Bus	School Bus
1960	2,536	2,383	-	-	787	-	-	-
1965	2,459	2,837	-	-	939	942	-	-
1970	2,267	3,379	-	-	1,026	1,136	-	-
1975	2,455	4,023	-	-	1,382	1,294	-	-
1980	2,698	4,827	35,060	65,969	1,631	1,438	13,065,586	759,637
1985	2,998	5,471	34,048	112,63	1,961	1,711	13,854,535	529,233
1990	3,427	6,114	33,758	119,38	2,131	1,787	13,474,476	521,367
1991	3,485	6,919	33,934	134,03	2,169	2,017	12,118,258	524,430
1992	3,516	7,080	32,830	144,81	2,176 ^p	2,067 ^p	11,884,024 ^p	497,229 ^p

^p preliminary.

Note: The heat equivalent factors used for Btu conversions are:

Automotive gasoline = 125,000 Btu/gal. (School Bus).

Distillate Oil = 138,700 Btu/gal. (Motor Bus).

Btus converted to Joules using 1055 Joules/Btu.

Source: School Bus: 1960-1992: National Safety Council, *Accident Facts*, annual issues.

(fuel consumed): 1960-1992: Eno Foundation for Transportation, *Transportation In America*, 1994, p. 56 and earlier editions published by Transportation Policy Associates.

Motor Bus: 1960-1992: American Public Transit Association (APTA), *Transit Fact Book*, 1993, pp. 78, 79, 100.

**Table 23A. Energy Intensiveness of Class I Railroad Freight,
(at 5-Year Intervals 1960-1990 and Annually 1991-1992)**

Year	Revenue Freight Tonne-Kilometers (millions)	Fuel Consumed (million liters)	Joules/Revenue Freight Tonne-Kilometers
1960	858,464	13,107	590,282
1965	1,046,817	13,596	502,105
1970	1,147,214	12,040	405,740
1975	1,131,378	13,842	472,984
1980	1,377,932	14,777	414,582
1985	1,315,476	11,771	345,944
1990	1,550,954	11,790	293,892
1991	1,558,313	10,999	272,879
1992	1,600,172	11,374	274,794

Note: The heat equivalent factor used for Btu conversion is 138,700 Btu/gal. Btus were converted to Joules using 1055 Joules/Btu.

Source: AAR, *Railroad Facts*, 1993, p. 40, and similar table in earlier editions.

**Table 24A. Energy Intensiveness of Amtrak Service,
(at 5-Year Intervals 1975-1990 and Annually 1991-1993)**

Year	Revenue Passenger-Kilometers (10 ⁶)	Fuel Consumed			Joules/Revenue Passenger-Kilometer*
		Locomotive			
		Diesel liters (10 ⁶)	Electric Joules (10 ⁹)*	Total Fuel Consumed (10 ⁹ Joules)*	
1975	6,325	239	649,080	9,882,185	1,562,401
1980	7,245	240	913,680	10,205,015	1,408,560
1985	7,699	245	1,062,360	10,544,725	1,369,623
1990	9,720	311	1,186,560	13,200,160	1,358,041
1991	10,095	310	1,089,000	13,088,330	1,296,516
1992	9,800	308	1,077,120	13,002,875	1,326,824
1993	9,974	313	927,720	13,044,020	1,307,802

* Does not include electric power generation and distribution losses; which, if included, would increase figures shown by about 20%.

Note: The heat equivalent factors used in Btu conversion are:

Diesel = 138,700 Btu/gal.

Electric = 3,412 Btu/kWh.

Btus were converted to Joules using 1055 Joules/Btu.

Source: Amtrak, State and Local Affairs Department.

**Table 25A. Crude Oil Transported in the U.S. by Mode of Transportation,
(at 5-Year Intervals 1975-1990 and Annually 1991-1993)**
(billion tonne-kilometers)

Year	Pipelines ¹		Water Carriers		Trucks		Railroads		Total Tonne- Kilometers
	Tonne- Kilometers	Percent of Total	Tonne- Kilometers	Percent of Total	Tonne- Kilometers	Percent of Total	Tonne- Kilometers	Percent of Total	
1975	432.0	86.9	60.9	12.2	2.1	0.4	2.3	0.5	497.3
1980	543.9	48.2	581.1	51.4	3.8	0.3	0.8	0.1	1,129.5
1985	501.6	42.5	673.8	57.2	2.7	0.2	1.2	0.1	1,179.3
1990	502.2	53.3	436.8	46.4	2.3	0.2	1.1	0.1	942.3
1991	504.0	53.0	444.6	46.7	2.3	0.2	1.1	0.1	951.9
1992	486.6	52.8	432.2	46.9	2.3	0.2	1.1	0.1	922.1
1993 ^P	459.9	52.4	414.0	47.2	2.3	0.3	1.1	0.1	877.2

^P preliminary.

¹ The amounts carried by pipeline are based on ton-kilometers of crude and petroleum products for Federally regulated pipelines (84 percent) plus an estimated breakdown of crude and petroleum products for the ton-kilometers for pipelines not Federally regulated (16 percent).

Source: 1975-1992: Association of Oil Pipelines, *Shifts in Petroleum Transportation*, annual issues.

1993: Eno Foundation for Transportation, *Transportation In America*, 1994, p. 59.

**Table 26A. Refined Petroleum Products Transported in the U.S. by Mode of Transportation,
(at 5-Year Intervals 1975-1990 and Annually 1991-1993)
(billion tonne-kilometers)**

Year	Pipelines ¹		Water Carriers		Trucks		Railroads		Total Tonne- Kilometers
	Tonne- Kilometers	Percent of Total	Tonne- Kilometers	Percent of Total	Tonne- Kilometers	Percent of Total	Tonne- Kilometers	Percent of Total	
1975	328.5	42.5	386.1	50.0	39.3	5.1	18.9	2.4	772.8
1980	338.4	45.8	345.6	46.8	36.5	5.0	18.0	2.4	738.5
1985	344.9	56.2	211.8	34.5	40.4	6.6	17.0	2.8	614.0
1990	374.0	56.0	236.7	35.2	42.3	6.3	20.0	3.0	672.9
1991	363.5	57.3	210.0	33.1	41.1	6.5	19.5	3.1	634.1
1992	370.5	57.0	217.2	33.4	42.2	6.5	21.0	3.2	650.9
1993 ^P	392.7	59.2	207.6	31.3	42.6	6.4	20.4	3.1	663.5

^P preliminary.

¹ The amounts carried by pipeline are based on ton-kilometers of crude and petroleum products for Federally regulated pipelines (84 percent) plus an estimated breakdown of crude and petroleum products for the ton-kilometers for pipelines not Federally regulated (16 percent).

Source: 1975-1992: Association of Oil Pipelines, *Shifts in Petroleum Transportation*, annual issues.

1993: Eno Foundation for Transportation, *Transportation In America*, 1994, p. 59.

**Table 27A. Crude Petroleum and Petroleum Products Transported in the U.S.
by Mode of Transportation, (at 5-Year Intervals 1975-1990 and Annually 1991-1993)
(billion tonne-kilometers)**

Year	Pipelines ¹		Water Carriers		Trucks ²		Railroads		Total Tonne- Kilometers
	Tonne- Kilometers	Percent of Total	Tonne- Kilometers	Percent of Total	Tonne- Kilometers	Percent of Total	Tonne- Kilometers	Percent of Total	
1975	760.5	59.9	447.0	35.2	41.4	3.3	21.2	1.7	1,270.1
1980	882.3	47.2	926.7	49.6	40.2	2.2	18.8	1.0	1,868.0
1985	846.5	47.2	885.6	49.4	43.1	2.4	18.2	1.0	1,793.3
1990	876.2	54.2	673.5	41.7	44.6	2.8	21.0	1.3	1,615.2
1991	867.5	54.7	654.6	41.3	43.4	2.7	20.6	1.3	1,586.0
1992	857.1	55.5	649.4	41.3	44.4	2.8	22.1	1.4	1,572.9
1993 ^P	858.8	56.0	609.8	39.7	44.9	2.9	21.5	1.4	1,534.8

^P preliminary.

¹ The amounts carried by pipeline are based on ton-kilometers of crude and petroleum products for Federally regulated pipelines (84 percent) plus an estimated breakdown of crude and petroleum products for the ton-kilometers for pipelines not Federally regulated (16 percent).

Source: 1975-1992: Association of Oil Pipelines, *Shifts in Petroleum Transportation*, annual issues.

1993: Eno Foundation for Transportation, *Transportation in America*, 1994, p. 59.

Table 28A. U.S. Gas Utility Industry Kilometers of Pipeline and Main, by Type^a, (at 5-Year Intervals 1955-1990 and Annually 1991-1992) (thousands)

Year	Total	Field and Gathering	Transmission Pipeline ^b	Distribution Main
1955	799.2	73.5	234.8	490.9
1960	1,015.1	89.8	295.6	629.8
1965	1,234.9	99.3	340.0	795.7
1970	1,469.5	106.7	405.8	957.0
1975	1,575.7	110.2	422.5	1,043.0
1980	1,692.3	134.4	428.8	1,129.2
1985	1,800.3	151.7	436.4	1,212.2
1990	1,941.9	144.0	450.7	1,347.2
1991	1,971.7	138.9	453.1	1,379.7
1992	2,017.5	138.7	457.8	1,421.1

^r revised.

^a Includes data for Alaska subsequent to 1960; excludes service pipe. Data not adjusted to common diameter equivalent. Mileage shown as of end of each year.

^b Includes 5,000 miles of Underground Storage pipe in 1975; 6,200 in 1980; 6,000 in 1985; 6,200 in 1990 & 1991; and 6,000 in 1992, some of which was formerly included in Field and Gathering pipe.

Source: 1955-1992: American Gas Association, *Gas Facts*, 1993, Table 5-1.

Table 29A. Petroleum Products Supplied by Sector, (at 5-Year Intervals 1955-1990 and Annually 1991-1993) (petajoules)

Year	Residential and Commercial	Industrial	Transportation	Transportation as % of Total	Electric Utilities	Total
1955	3,126	5,337	9,959	52.7	469	18,891
1960	3,818	6,051	11,478	52.4	536	21,883
1965	4,265	7,257	13,487	52.4	715	25,702
1970	4,868	8,508	17,373	52.9	2,077	32,825
1975	4,354	9,021	19,985	54.8	3,104	36,443
1980	3,394	10,808	21,325	56.0	2,568	38,095
1985	2,903	9,155	21,995	62.6	1,072	35,125
1990	2,546	9,647	24,496	64.6	1,228	37,939
1991	2,546	9,490	24,116	64.6	1,161	37,313
1992 ^f	2,501	10,160	24,451	64.3	938	38,028
1993 ^g	2,523	9,937	24,920	64.9	1,027	38,385

^r revised.

^g estimate.

Note: Sum of components may not equal total due to independent rounding.

Source: U.S. DOE/EIA, *Annual Energy Review 1993*, Table 5.12.

**Table 30A. Domestic Demand for Petroleum Products
Supplied by Sector, (at 5-Year Intervals 1955-1990 and Annually 1991-1993)
(trillion joules per day)¹**

Year	Residential and Commercial	Industrial	Transportation	Transportation as % of Total	Electric Utilities	Total
1955	8,282	14,791	25,447	51.0	1,382	49,902
1960	10,054	16,585	29,213	50.9	1,583	57,434
1965	11,151	19,634	34,330	51.1	2,121	67,172
1970	12,428	22,524	44,268	51.9	6,130	85,339
1975	11,025	23,558	50,914	53.8	9,168	94,634
1980	8,767	27,451	54,807	55.6	7,585	98,611
1985	7,301	22,588	56,358	63.0	3,165	89,401
1990	6,267	24,033	63,015	65.0	4,874	96,986
1991	6,214	23,284	62,002	65.3	3,429	94,918
1992	6,108	24,909	62,899	65.1	2,764	96,680
1993 ^{pe}	6,172	24,381	64,060	65.6	3,028	97,640

^p preliminary conversion factor.

^e estimated.

¹ Data derived by multiplying figures in previous table by conversion factors in each sector column in Table A3 in U.S. DOE's *Annual Energy Review 1993*.

**Table 31A. Petroleum Products Supplied by Type and Sector, 1983 and 1993
(petajoules)**

Year and Refined Product	Residential and Commercial	Industrial	Transportation	Electric Utilities	Total
1983					
Asphalt and Road Oil	0	950	0	0	950
Aviation Gasoline	0	0	53	0	53
Distillate Fuel Oil	1,667	1,203	3,070	106	6,035
Jet Fuel	0	0	2,258	0	2,258
Kerosene	211	74	0	0	274
Liquefied Petroleum Gases	433	1,625	42	0	2,099
Lubricants	0	179	169	0	338
Motor Gasoline	106	116	13,166	0	13,399
Residual Fuel Oil	222	833	865	1,519	3,439
Other ¹	0	2,849	0	11	2,859
Total	2,638	7,828	19,612	1,625	31,703
1993					
Asphalt and Road Oil	0	1,213	0	0	1,213
Aviation Gasoline	0	0	42	0	42
Distillate Fuel Oil	1,424	1,224	4,072	84	6,794
Jet Fuel	0	0	3,186	0	3,186
Kerosene	95	11	0	0	106
Liquefied Petroleum Gases	464	1,899	21	0	2,374
Lubricants	0	179	169	0	359
Motor Gasoline	84	211	14,844	0	15,139
Residual Fuel Oil	190	369	1,044	992	2,585
Other ¹	0	3,777	0	42	3,819
Total	2,247	8,894	23,379	1,108	35,627

^e estimate.

* Less than 5,000 barrels per day.

¹ Other in the industrial sector includes petrochemical feedstock, special naphthas, wax, petroleum coke, still gas, natural gasoline, pentanes plus crude oil and miscellaneous products. Other for electric utilities is petroleum coke.

Note: Sum of components may not equal total due to independent rounding.

Source: U.S. DOE/EIA, *Annual Energy Review 1993*, Table 5.13.

**Table 32A. Domestic Demand for Gasoline,
(at 5-Year Intervals 1955-1990 and Annually 1991-1992)
(kiloliters)**

Year	Total Demand	Highway	Non-Highway					Total
			Agriculture	Aviation ^a	Marine	Other ^b		
1955	198,963,275	180,664,613	8,162,103	3,782,880	97,975	6,255,704	18,298,666	
1960	239,292,405	219,075,452	8,673,956	5,010,466	229,496	6,268,971	20,182,888	
1965	285,058,240	269,130,268	7,431,590	1,897,568	364,632	6,234,183	15,927,97	
1970	364,616,276	349,465,477	7,312,491	1,487,550	2,264,032	4,086,714	15,150,78	
1975	426,291,893	412,505,753	5,923,078	1,550,764	2,761,983	3,550,315	13,786,14	
1980	396,810,532	382,977,708	4,008,482	1,562,762	3,982,520	4,279,060	13,832,82	
1985	407,314,425	392,155,716	4,090,362	1,444,034	3,985,597	5,638,715	15,158,70	
1990	432,482,143	417,047,008	2,578,418	1,353,963	4,922,093	6,580,662	15,435,13	
1991	424,902,999	408,584,584	2,937,981	1,283,505	6,471,165	5,625,763	16,318,41	
1992 ^p	434,722,178	419,947,109	3,048,859	1,301,873	4,981,703	5,442,633	14,775,06	

^p preliminary.

^a Does not include aviation jet fuel.

^b Includes state, county, and municipal use, industrial, commercial, construction and miscellaneous.

Source: 1955-1975: U.S. DOT/FHWA, *Highway Statistics*, annual issues, Tables MF-24 and MF-26. 1980-1992: *Ibid.*, Tables MF-21A and MF-24.



APPENDIX B

Transportation Statistics Programs

Bureau of Transportation Statistics

Agency Mission

The Bureau of Transportation Statistics (BTS) is responsible for compiling, analyzing, and making accessible information on the nation's transportation systems; collecting information on intermodal transportation and other areas as needed; and enhancing the quality and effectiveness of the statistical programs of DOT through research, the development of guidelines, and the promotion of improvements in data acquisition and use.

Current Data Programs

BTS maintains a diverse set of data that supports a better understanding of the performance of the nation's transportation system and the potential for its improvement which requires both better coverage and increased quality of existing data. BTS attempts to design and implement better measures to transform existing and new data into useful information.

Current Publications.

Transportation Statistics Annual Report 1994 is a summary of the state of the nation's transportation systems and its consequences, the quality of statistics used to characterize the transportation system, and planned efforts by BTS to improve the quality of the statistics.

North American Transportation: Statistics on Canadian, Mexican, & United States Transportation describes the transportation system of North American with comparable statistics for Canada, Mexico, and the United States. This report contains extensive data on the size and scope, use, employment, fuel consumption, and economic role of each country's transportation system.

Directory of Transportation Data Sources, 1993 is a compilation of 285 transportation data bases and publications existing in the Federal government. The Directory is available on CD-ROM, diskette, and in printed form. The Directory is currently being updated to include transportation data sources in the private industry, Canada, and Mexico.

Telephone Contacts for Users of Federal Transportation Statistics, January 1994 is a listing of individuals in the Federal government who are primary contacts for those in the transportation community who require a detailed knowledge about transportation information. Individuals are listed by mode of transportation and area of expertise. This

document was created from the Contact information provided in the above Directory.

National Transportation Statistics Report developed by BTS and the Research and Special Programs Administration's (RSPA) Volpe National Transportation Systems Center, contains transportation activity data for the major transportation modes - air, automobile, bus, truck, transit, rail, water, and pipeline. Trends in performance, safety and motor vehicle sales, production, and cost are also presented. Supplementary data on transportation-related energy consumption, intensiveness, transport, and supply and demand. Current Data Bases.

Surface Transborder Commodity Data diskettes provide freight flow data by commodity type by mode of transportation for rail, truck, and pipeline for U.S. exports and imports to and from Canada and Mexico. The purpose of this program is to provide information needed to monitor increased traffic associated with the North American Free Trade Agreement and provide border communities better data to plan transportation improvement. This information was provided by the Federal Railroad Administration. Currently, diskettes are available for April 1993 through March 1994. *Census Transportation Planning Package CD-ROM* is a set of special tabulations of 1990 census data produced by the Bureau of the Census, tailored to meet the data needs of transportation planners. Statewide CTPPs and urban CTPPs for the "CTPP region" defined by each MPO are available. The CTPP includes data by geographic area of residence, place of work, and journey-to-work flows. Statewide data are provided for cities and counties; urban CTPPs provide data for traffic analysis zone and census tracts.

Traffic Safety Data CD-ROM was developed by BTS and the National Highway Traffic Safety Administration's National Center for Statistics and Analysis. The data include the 1992 Alcohol Involvement in Fatal Crashes Annual Report, the 1988-1993 General Estimates System (GES) data files, the 1988-1993 Fatal Accident Reporting System (FARS) data files, the 1992 Traffic Safety Facts Annual Report, and the 1992 Traffic Safety Fact Sheets.

Transportation Data Sampler-2 CD-ROM is an introduction to a variety of information sources in the U.S. Department of Transportation, Oak Ridge National Laboratory, the Interstate Commerce Commission, and the U.S. Army Corps of Engineers. The original sampler (no longer available) contained no searching or retrieval

software; however, sampler-2 does contain this software. The entire language for the Intermodal Surface Transportation Efficiency Act 1991 and the Clean Air Act Amendment are also included on this cd.

Transportation Expressions, developed by BTS and RSPA's Volpe Center, contains transportation terms and definitions used throughout the Federal government. The terms were identified from the sources cited in the 1993 edition of the *Directory of Transportation Data Sources*.

Transportation Acronym Guide (TAG), developed by BTS and RSPA's Volpe Center, contains transportation acronyms and their referents used throughout the Federal government. The acronyms were identified from the sources cited in the 1993 edition of the *Directory of Transportation Data Sources*.

Rail Waybill CD-ROM is the public-use file that contains aggregate nonconfidential rail shipment data such as origin and destination points, type of commodity, number of cars, tons, revenue, length of haul, participating railroads, and interchanges locations. Movements are aggregated to the BEA-to-BEA level at the 5-digit STCC level. This data for this CD-ROM were provided by the Federal Railroad Administration.

Planned Survey.

1995 American Travel Survey (ATS) will measure interstate and intermetropolitan passenger travel nationwide by trip and traveler characteristics for all modes and for intermodal combinations. The objective of the survey is to provide basic information about the quantity and geography of passenger movements by all modes.

Office of the Secretary of Transportation, Office of Commercial Space and Transportation

Agency Mission

The Office of Commercial Space Transportation (OCST) was established in 1984 within the Office of the Secretary of Transportation (OST). The provisions of the Commercial Space Launch Act, which gave DOT the authority to regulate U.S. commercial space launch activities are carried out through OCST. Its goal is to facilitate development of a safe and competitive U.S. commercial space transportation industry. OCST carries out their mission by (a) licensing and regulating all U.S. commercial launch activities to ensure that they are conducted safely and responsibly, and (b) promoting and encouraging commercial space transportation.

Current Data Programs

OCST is developing two data bases to support its responsibilities in the rapidly evolving commercial space transportation sector.

Space Transportation Analysis and Research data base provides information on international space transportation infrastructure and markets. Specifically, it provides information on launch vehicles, payloads (e.g., physical and operating characteristics), future and historical launch events, characteristics and facilities of launch sites, and characteristics of commercial launch service companies (e.g., facilities, products, and services).

Space Accident Data Base includes data on space-related accidents and incidents for commercial space launches in the United States. The data base encompasses ground, launch, orbital, and reentry accidents and incidents; it provides information on the parties involved and the payload, the date, a description and the sequence of the accident or incident, and the consequences (e.g., casualties, damage, and delays).

Research and Special Programs Administration

Agency Mission

The mission of the Research and Special Programs Administration (RSPA) is to serve as a research, analytical, and technical development arm of DOT for long-range and multimodal research and development and to conduct special programs. Particular emphasis is given to pipeline safety, transportation of hazardous cargo by all modes of transportation, safety, security, facilitation, generation, collection and distribution of air transportation data related to domestic and international commerce, and intermodal research and development activities, including university programs.

Current Data Programs

Aviation Statistics. RSPA's Office of Airline Statistics manages the following data programs related to aviation economics and operating statistics:

- Form 41: Schedule T-100(f): Foreign Air Carrier Traffic Data by Nonstop Segment and On-Flight Market is filed by foreign air carriers that provide service to and from the United States. Schedule T-100 contains traffic (e.g., passengers enplaned) and operating (e.g., aircraft departures) statistics by nonstop segments and on-flight markets for scheduled, nonscheduled, and chartered operations. Data are for operations between the carrier's home country and the United States.
- Form 41: Report of Financial and Operating Statistics for Large Certificated Air Carriers (Financial Schedules only) is filed by large certificated U.S. air carriers. It comprised 15 financial schedules.
- Carrier's Audit Report must be submitted by each large certificated U.S. air carrier whose records are audited by an independent certified public accountant.
- Form 291-A: Statement of Operations and Summary Statistics for Section 418 Operations contains profit and loss data and traffic and capacity statistics. The form is filed by U.S. air carriers operating under Section 418 domestic all-cargo certificates.
- Form 41: Schedule T-100: U.S. Air Carrier Traffic and Capacity Data by Nonstop Segment and On-Flight Market and Supplemental Schedules, T-1: U.S. Air Carrier Traffic and Capacity Summary by Service Class, T-2: U.S. Air Carrier Traffic and Capacity Statistics by Aircraft Type, and T-3: U.S. Air Carrier Airport Activity Statistics are filed by all large certificated U.S. air carriers. Schedule T-100 contains traffic (e.g., passengers enplaned) and capacity (e.g., available seat miles) statistics by nonstop segments and on-flight markets for domestic and international scheduled, nonscheduled, and chartered operations. The supplemental schedules contain summary traffic and capacity statistics without segment or market detail for domestic all-cargo operations, domestic charter operations, and international military charter operations.
- Form 251: Report of Passengers Denied Confirmed Space must be filed quarterly for scheduled passenger service performed with large aircraft (i.e., more than 60 seats), by all large U.S. certificated air carriers and foreign air carriers that provide service from the United States, disclosing the number of passengers who were denied confirmed space and how those passengers were accommodated.
- Form 298-C: Report of Financial and Operating Statistics for Small Aircraft Operators contains five schedules. U.S. scheduled passenger commuter carriers file three of the five; small U.S. certificated air carriers file all five.
- Form 2787: Passenger Origination and Destination must be filed by certificated U.S. air carriers providing scheduled passenger service. The report includes a 10 percent survey of all tickets. The survey provides information on the origin and destination of the passenger, routings by carrier, fare paid, and fare class.
- U.S. International Air Travel Statistics program is a compilation of international air travel statistics began in the 1970s under a joint project with DOT, the Immigration and Naturalization Service (INS), and the U.S. Travel and Tourism Administration. The project consisted of coding INS Form I-92, completed by

international air carriers arriving in and departing from the United States. The information coded from the form included the international airports of embarkation and debarkation, flight number, date, and number of U.S. citizens and noncitizens aboard the flight. The Origin and Destination information can be obtained from Form 41: Schedule T-100, but citizenship data is only available from Form I-92.

- **Electronic Tariff Information System (Airlines) program:** International air carriers are regulated by DOT. Tariffs for changes in passenger fares, rules, and cargo rates must be filed with RSPA's Office of Automated Tariffs. In January 1989, DOT published a regulation that allows the international airline industry to file electronically with DOT and withdrew the requirement for manual posting at pricing locations. After an experimental program, the automation of international aviation tariffs began in phases. In July 1990, the fares portion of the system was completed and is operation. Future enhancements include automating passenger rules.
- **Air Carrier On-Time Performance Report:** The 10 largest air carriers are required to submit monthly reports to DOT on domestic flights that are delayed 15 minutes or more from the scheduled departure or arrival time at an airport. The regulation requires this information to be reported for only the 29 largest U.S. airports, but the participating air carriers have voluntarily submitted reports for all airports on their domestic systems. A summary report that covers each airline's overall performance and the performance of individual airports by time of day is published each month. A data tape can be purchased from RSPA's Volpe Center in Cambridge, Massachusetts.

Hazardous Materials Information System.

RSPA's Office of Hazardous Materials Transportation collects on hazardous materials spills. Carriers of regulated hazardous materials are required to file a written report (DOT Form 5800.1) on all unintentional releases as well as a telephonic report on certain releases of regulated hazardous materials being transported in commerce. A summary of ongoing programs and policies for promoting hazardous materials transportation safety is provided in an Annual Report on Hazardous Materials Transportation. A national overview of safety and enforcement initiatives, and incident and accident data is provided; regulations and exemptions to regulations issued during the year are described; the status of the national safety program is summarized; and areas of future concentration are identified. Statistical summaries of incident and accident data indicate the condition of the hazardous materials transportation industry, and in conjunction with enforcement data, show the performance of that industry.

Pipeline Safety. RSPA's Office of Pipeline Safety collects the following data on liquids and natural gas pipelines for the Hazardous Materials Information System. Operators of natural gas transmission and gathering, and distribution pipeline systems, as well as liquids petroleum pipeline systems, are required to file incident and accident reports for any pipeline leak or failure that results in death, injuries that require hospitalization, or property and product loss in excess of specified amounts. These reports provide data about the nature of the incident, apparent cause, and impacts. Annual reports covering inventory data (e.g., miles of pipe by type) and leak repairs are also required of natural gas pipeline operators.

Federal Aviation Administration

Agency Mission

The primary function of the Federal Aviation Administration (FAA) is to foster the development and safety of American aviation. More specifically, FAA is responsible for developing the major policies necessary to guide the long-range growth of civil aviation; modernizing the air traffic control system; establishing in a single authority the essential management functions necessary to support the common needs of civil and military operations; and providing for the most effective and efficient use of the airspace over the United States. The agency is also responsible for

rulemaking relative to these functions.

FAA prescribes and administers rules and regulations concerning the competency of pilots, mechanics, and other FAA-licensed aviation technicians; aircraft airworthiness; and air traffic control. It promotes safety through certification of pilots and other technicians, aircraft, and flight and aircraft maintenance schools. Finally, it reviews the design, structure, and performance of new aircraft to ensure passenger safety. The Airport Improvements Program authorizes FAA to make grants of federal funds to sponsors for airport development and for advanced planning and engineering.

FAA constructs, operates, and maintains the National Airspace System and the facilities that are part of the system; allocates and regulates the use of airspace; ensures adequate separation among aircraft operating in controlled airspace; and, through research and development programs, provides new systems and equipment for improving use of the nation's airspace.

Current Data Programs

FAA maintains a diverse set of data that supports critical activities in safety regulation; airspace and air traffic management; management of air navigation facilities; research, engineering, and development; testing and evaluation of aviation systems; airport programs; registration of airmen and aircraft; and others.

Because of the large amount of FAA data, many of which are used for administrative purposes, an attempt was made here to limit the list to those major statistical publications and data bases from which summary statistics and trend data can readily be derived for policy purposes.

Major Statistical Publications.

Airport Activity Statistics of Certificated Route Air Carriers is a joint annual publication of FAA and RSPA that contains data on the volume of revenue passengers, freight, express, and mail traffic carried by U.S. certificated route air carriers for each airport and individual airline; and total departures by airport, airline, and aircraft model operated. Scheduled/nonscheduled service shown by airport and carrier are included.

FAA Statistical Handbook of Aviation is an annual publication that presents historical statistical information pertaining to FAA; the National Airspace System (NAS); airports; airport activity; U.S. civil air carrier fleet; U.S. civil air carrier operating data; pilots, mechanics, and other FAA-

certificated aviation technicians; general aviation aircraft; aircraft accidents; aeronautical production; and imports and exports.

General Aviation Activity and Air Taxi and Avionics Survey is an annual report that presents the results and description of the U.S. general aviation and air taxi aircraft fleet. The report contains estimated flying time, landings, fuel consumption, lifetime airframe hours, avionics, and engine hour estimates of the active general aviation fleet by manufacturer and model group, aircraft type, state and region of based aircraft, and primary use.

U.S. Civil Airmen Statistics is a detailed annual report containing statistics on pilots and non-pilots, mechanics, and other FAA-licensed aviation technicians, by type of certificates held, by sex and age, and by FAA region, state, and county.

Criminal Acts Against Civil Aviation is an annual publication that contains data on U.S. and worldwide aircraft hijacking attempts and legal disposition of hijackers as well as data on explosions aboard aircraft. The report covers circumstances of incident, destination outcome, casualties, and identity of hijackers, where known.

Census of U.S. Civil Aircraft is an annual report that summarizes all civil aircraft registered with FAA as of December 31 by type, manufacturers and model, state, county, and other characteristics. Two master tabulations - registered aircraft by manufacturer, and registered civil aircraft by type, state, and county are included.

Aircraft Utilization and Propulsion Reliability Report is a monthly publication that provides the following information for each aircraft model, engine model, and aircraft combination: number of aircraft, fleet aircraft and engine hours, daily utilization hours, engine overhaul and hot inspection periods, and number and rate of engine shutdowns and removals, for current month; and aircraft and engine hours, and engine shutdown and shutdown rates, for most recent three-month period.

General Aviation Pilot and Aircraft Activity Survey is a triennial report that presents data on the type and source of aircraft flight plan and weather information services, trip length in time and distance, pilot age and certification, estimates of total general aviation operations, fuel consumption and aircraft miles flown.

FAA Aircraft Traffic Activity is an annual document that contains data on terminal and enroute air traffic activity. Data include airport operations, instrument operations, instrument approaches, departures, overflights, aircraft handled, total flight

services, aircraft contacted, flight plans originated, radio contacts, pilot briefs, and airport advisories.

Annual Report to Congress on Civil Aviation Security contains information on the civil aviation security program and the operation of airline passenger and baggage screening procedures. These procedures were instituted to prevent aircraft hijackings and related crimes. This is a narrative report with text statistics on hijackings, passengers screened, weapons and dangerous articles detected, arrests, explosions and bomb threats, and international security measures.

Data Bases and Data Systems. The following list of major data bases comprises, for the most part, real-time operational data systems; however, summary statistics can be and are regularly derived from them.

Comprehensive Airmen Information System includes information on personal, medical, and certification status of individuals associated with civil aviation operations including pilots, mechanics, flight crews, and others.

Service Difficulty Reports System contains reports about abnormal, potentially unsafe conditions in aircraft, aircraft components, and aircraft equipment.

Near Midair Collisions (NMACs) are reports received from pilots or flight crew members (who were in the cockpit of one of the aircraft involved) stating that a collision hazard existed between two or more airborne aircraft, regardless of aircraft separation distance. The usual criterion of declaring an NMAC is an unintentional proximity of less than 500 feet.

Aviation Safety Reporting System (ASRS) was developed to store reports of situations observed by pilots, controllers, passengers, or mechanics that compromised safety, or had the potential to do so. The information is evaluated and edited by ASRS analysts, before entry, to ensure the anonymity of the reporting individual. Limited immunity is provided to reporting individuals for inadvertent violation of FAA regulations.

Civil Aviation Security Information System contains information about security checks of airports, air carriers, and security stations; tracks security alerts, bulletins and summaries; and records reports of arrests made at screening stations, bomb threats, explosions, screening device findings, hijackings, and use of K-9 teams.

Enforcement Information System supports the FAA Compliance and Enforcement Program. This program provides effective administration and

enforcement of Federal Aviation Regulations by combining separate reporting procedures in Flight Standards, Aircraft Certification, Civil Aviation Security, Airports, Medical, and Legal Counsel. The system contains data on violations of the Federal Aviation Regulations (FARs), violators identification, the FAR violated, descriptions of the aircraft, engine or component involved if pertinent, demographics, and recommended sanctions.

National Airspace Information Monitoring System is used for tracking and analyzing reports, safety-related incidents, and rules violations in the National Airspace System. The Operational Error/Deviation System, Pilot Deviations System, Near Midair Collision reports, Pedestrian/Vehicle Deviation System, and Runway Incursion reports are included as subsystems.

Aeronautical Information System contains operational and physical descriptions of all civil I (public and private) airports; selected military airports, navigational aids, and flight service stations, air traffic control towers, air route traffic control centers and airways; jet routes, military training routes, and preferred instrument flight rule routes; standard instrument approach procedures; standard terminal arrival routes, standard instrument departure routes; fixed reporting points; holding patterns; restricted, warning, alert, prohibited, and military operations areas; part time control zones; and U.S. Notices to Airmen. It also contains activity information such as the annual estimated number of airport operations and the number of based general aviation aircraft.

National Forecasting System includes annual forecasts of aviation activity and other selected statistics.

Flight Service Station Forecast is also a facility level activity forecast.

Terminal Area Forecast contains activity forecasts for each of 5,000 public use airports.

Hub Forecasts are detailed forecasts of major air carrier airports and all other airports within major metropolitan areas.

Air Carrier Activity Information System (ACAIS) is a collection of data required to calculate Air Improvement Program Entitlement funds based on air carrier enplanements and cargo operations landed weight. All data collected are validated with individual airports. Each year the system calculates the distribution of over \$600 million of AIP entitlement funds.

Air Traffic Operating Management System contains the number of flights delayed more than 15 minutes by cause of delay (e.g., weather, air traffic control center volume, airport terminal volume) and by airport. This delay system should not be confused with the On-Time Performance Monitoring System operated by the Research and Special Programs Administration.

National Plan of Integrated Airport Systems and Capital Improvement Program (NPIAS-CIP) identifies the estimated airport development and planning costs necessary to expand and improve the national system of airports that are likely to be warranted during the next ten years and eligible for Federal Aid. CIP provides a systematic approach to determine the most efficient means of allocating available airport grant funds.

Federal Highway Administration

Agency Mission

The roads and highways across the nation are used by more Americans more often than any other transportation system. The Federal Highway Administration (FHWA) oversees federal support for the facilities of greatest significance to the nation, including Interstate highways. The agency is concerned with the total operation and environment of highway systems, including highway and motor carrier safety. In administering its highway transportation programs, it gives full consideration to the impacts of highway development and travel; transportation needs; engineering and safety concerns; social, economic, and environmental effects; and project costs.

FHWA meets its data needs primarily through three offices. The Associate Administrator for Policy oversees the Office of Highway Information Management, which is responsible for collecting and publishing highway data from the states, managing related programs such as the *Nationwide Personal Transportation Survey*, and coordinating statistical policy within FHWA. The Office of Policy Development, also under the Associate Administrator for Policy, manages census surveys of truck owners and business establishments. The Associate Administrator for Motor Carriers oversees the Office of Motor Carrier Information and Analysis, which is responsible for collecting and publishing safety data from motor carriers.

Current Data Programs

Data Collected Through States. The Highway Performance Monitoring System (HPMS) is FHWA's on-going, integrated, annual data base, which consists of data on systems mileage, physical dimensions, usage, condition, performance, operating characteristics, and fatal and injury accidents. The HPMS data reported annually by each state consist of areawide data (e.g., areawide summaries of mileage, travel, accidents, travel activity by vehicle type, and population), universe data (38 data items that identify the nation's total public road mileage by systems, jurisdiction, and operation), and sample section data for approximately 116,000 sample sections of the nation's arterial and collector highway systems (44 additional pavement, improvements, geometric, traffic and capacity, environment, and supplemental items are reported for each sample section).

An equally important part of the overall HPMS is a set of analytical models that are used to assess overall system performance, project future capital needs, and evaluate future system performance under varying assumptions of standards, travel growth, and investment levels. These models, which use the sample data to obtain more useful information, constantly undergo refinement.

Three types of data on traffic characteristics are collected, processed, and analyzed:

- Traffic volumes from continuous automated traffic recorders are reported by the states and used to produce a monthly report on traffic volume trends that tracks changes in travel by state and functional class of highway. Hourly traffic volume data are reported monthly for about 4,000 stations.
- Travel by urban and rural functional systems is furnished annually as part of each state's HPMS submittal. These data are, for the most part, based on traffic counts taken on the HPMS sections. On part of the HPMS samples, vehicles are classified to provide systemwide estimates of the proportion of travel by 13 vehicle types. Recommended traffic counting procedures are included in FHWA's Traffic

Monitoring Guide and in the HPMS field manual.

- Vehicle classification data collected at truck weight stations and corresponding truck weight data are reported annually by the states. Axle weight data are converted to axle loadings, and a series of tables are produced for use in highway design, bridge design, pavement management, and truck enforcement programs. Much of these data are collected by weigh-in-motion scales that provide the desired data without interrupting traffic flow.

The state highway agencies report a series of data elements which form FHWA's highway statistics data base.

- FHWA collects motor-fuel use data from the states on a monthly basis. "Motor fuel" applies to gasoline and other fuels under the purview of state motor-fuel tax laws. In addition to gasoline, motor fuel can include "special fuels," which include diesel fuel, liquefied petroleum gases, and similar fuels when they are used to operate vehicles on highways, as well as gasohol and neat alcohol.
- The highway finance data base contains information on highway receipts, disbursements, debt status, and other financial information of federal, state, and local agencies. Information is also included on intergovernmental transfers of funds from the federal government to states, and from states to local governments. Revenue data includes the amount and source of funds, including tax sources and debt. Expenditure data are broken down by capital and maintenance spending, spending for administration, police and safety purposes, and debt service.
- Motor vehicle registrations are reported to FHWA by major vehicle classes including automobiles, buses,

trucks, and motorcycles. FHWA also supplements the data supplied by the states with information obtained from other sources. For instance, the Truck Inventory and Use Survey conducted by the Bureau of the Census is one source that is used to achieve a level of uniformity in preparing various estimates and summaries.

- Each state and the District of Columbia administers its own driver licensing system and provides data to FHWA. This data is the basis for summaries of drivers licenses by type, sex, and age. The information is sometimes used as an exposure measure in the analysis of motor vehicle accidents and fatalities.

The *National Bridge Inventory (NBI)* is a mainframe computer data base system that includes detailed identification, classification, condition, appraisal, and proposed improvement information on more than 570,000 bridges on U.S. public roads. Bridge information is submitted by states in tape format at least annually and can be submitted as individual updates or as a replacement of the entire file. NBI data are accessible on-line using a report generator that can produce several reports in various formats. NBI data are used to manage the bridge program and answer questions concerning any physical aspect of the Nation's bridges.

Data Collected From States and Motor Carriers.

The Office of Motor Carriers (OMC) is responsible for overseeing the safety of the Interstate motor carrier fleet in the United States. The extensive data system that supports this effort is known as the Motor Carrier Management Information System (MCMIS). This is a computerized system that provides a comprehensive record of the safety performance of individual carriers for the use of OMC and authorized external organizations. The distributed portion of the MCMIS is known as SAFETYNET, which is a comprehensive data system for exchanging data among states and with the federal government. Information maintained in the MCMIS includes the following:

- Census: Carrier identification of the 300,000 interstate carriers, type and size of operation, commodities carried, as well as

other characteristics of the operation are included.

- Review and Rating: About 20,000 on-site reviews of carriers and hazardous materials shippers are conducted annually by OMC field and state staff; reviews take place in the office of the company and cover compliance with critical parts of the federal safety regulations.
- Inspections: Data are collected during approximately two million roadside inspections of vehicles and drivers conducted annually; violations of regulations covering the driver and the vehicle, or specifically related to hazardous materials, are included.
- Accidents: Based on police accident reports, States report accidents of commercial vehicles with a standardized set of accident elements and definitions.

Highway Safety Information System (HSIS) is a highway safety data base developed by FHWA and the University of North Carolina Highway Safety Research Center that provides detailed information linking accident, roadway, and traffic data for analyses of highway safety problems.

The current system includes five years of data (1985-1989) from five states: Illinois, Maine, Michigan, Minnesota, and Utah. Detailed information on accident characteristics, roadway features, and traffic volumes are available from each of the five states. Additional data on roadway geometrics, intersections, and guardrail characteristics are available from one or more states.

Data Collected From Households and Truck Owners.

Nationwide Personal Transportation Survey (NPTS) data are based on a nationally representative sample of households from which the amount and nature of personal travel by all modes is collected. NPTS has been conducted by the U.S. Bureau of the Census under contract with DOT in 1969, 1977, and 1983. FHWA has had the responsibility for the technical and administrative lead for DOT. Data collection for the most recent survey, using a computer-assisted telephone interviewing (CATI) technique, was completed in March 1991 under contract with the Research Triangle Institute of North Carolina. Substantial funding was provided by FHWA, the National

Highway Traffic Safety Administration (NHTSA), and the Federal Transit Administration (FTA). Results are used within the department to address national transportation policy issues, forecast future travel demand on various modes, analyze transit use, and calculate accident exposure rates. NPTS is the only authoritative nationwide source of information that allows a linkage between the characteristics of travel and the demographics of the household. Key indicators available from the NPTS include trip generation rates per household; distribution of households by income and vehicle ownership; distribution of person trips by mode, purpose, and time of day; and average annual miles by driver age and sex. Data collection for updates of NPTS are planned for 1995.

The Nationwide Truck Activity and Commodity Survey (NTACS) is conducted for FHWA by the Bureau of the Census as a follow-on to the Census Bureau's Truck Inventory and Use Survey (see section on U.S. Bureau of the Census).

National Highway Traffic Safety Administration

Agency Mission

The mission of the National Highway Traffic Safety Administration (NHTSA) is to improve the safety of motor vehicle transportation through the development of a systematic approach for the identification and elimination of motor vehicle and highway safety problems. The National Center for Statistics and Analysis (NCSA) serves this mission through the collection and analysis of motor vehicle crash data, the development of advanced technologies for data collection, and the creation of improved analysis techniques.

The data are used by NHTSA in support of research and the development of motor vehicle and highway safety policies and programs. The analysis of these data provide the scientific foundation for the agency's legal and regulatory actions. These data bases are also the primary source of information on motor vehicle and highway safety to other DOT agencies, especially FHWA, and to the auto manufacturing and insurance industries, state and local governments, and consumer interest groups.

Current Data Programs

NCSA develops and uses large-scale automated data bases to support problem identification, program planning, and program

evaluation. The main crash data systems supported by the agency are the following:

Fatal Accident Reporting System (FARS) provides basic information on all highway traffic crashes in the United States in which one or more persons die of their injuries within 30 days of the accident.

FARS has been in operation since 1975, producing a census of records on more than 860,000 crash-induced fatalities. These data are collected from the 50 states, the District of Columbia, and Puerto Rico. The data provide information on the demographics of the people involved, their injuries, the types of vehicles involved, the roadway and environment, alcohol involvement, restraint usage, and the history of each driver's previous violations and accidents.

National Accident Sampling System (NASS) provides information from investigations of a statistical sample of police-reported traffic crashes at all levels of injury severity. NASS consists of two components: the *Crashworthiness Data System (CDS)* and the *General Estimates System (GES)*.

CDS currently comprises detailed investigations of real world highway crashes involving passenger cars, light trucks, and vans, which provide detailed information on the crashworthiness and occupant protection afforded by these vehicles.

Information is collected on the sequence of crash events, the severity of the crash, occupant injuries and their causes, and details of vehicle crash protection performance. These data provide national estimates of the scope and extent of highway crash injuries and causes. Occupant protection research and rulemaking depend on this data base for the detailed crash investigation-related data needed to understand crash injury mechanisms in a real world environment, and for countermeasure development and assessment.

GES currently comprises a uniform data file on a statistical sample of police-reported traffic crashes, which provides the basis for estimates of the general state of traffic safety. The current GES collects more than 48,000 cases per year for the preparation of general estimates of highway crash statistics. They are the only data the agency has that provide national estimates of traffic crash characteristics for all types of vehicles, and this is the only data base that provides these estimates with measurable reliability. In cooperation with FHWA, the NASS-GES system has been expanded to include additional data on heavy truck crashes to provide national estimates of heavy truck safety.

State Data Program provides a large data base that consists of all police-reported accidents from a large number of states. This data base allows for a wide variety of motor vehicle and highway safety issues to be assessed and currently contains data from 26 states.

The *Crash Avoidance Research Data File* is currently one of the main constituents of the State Data Program. Its function is to collect and analyze data dealing with factors that contribute to crashes. Ancillary data bases, such as the *Crashworthiness Data File*, are being expanded and will be used in the statistical analyses of motor vehicle and highway safety issues.

The purpose of the State Data Program is to build a large, high quality, statistically useful data base. NCSA is currently working with several states in a research program focused on linking diverse state data bases. The *Crash Outcome Data Education (CODES)* data linkage program is attempting to link police crash reports with emergency medical services' data, hospital discharge data, and insurance data on a statewide, population-based design. The linkage of automated state traffic crash data with *Emergency Medical Services (EMS)* and hospital-collected trauma data will enhance the quality of State data bases dramatically. Currently, crash data bases at the state level traditionally provide only a general classification of the seriousness of a victim's injuries available from a police officer's assessment at the crash scene. *Crashworthiness* analyses often require more detailed descriptions of injuries (e.g., type of injuries and location at which they were sustained). Further, the data will be of vital importance for determining societal costs and who is paying these costs. Both pieces of information can be used to identify and support new highway safety initiatives.

Federal Transit Administration

Agency Mission

The mission of the Federal Transit Administration (FTA) is to assist public and private mass transportation companies in the development of improved mass transportation facilities, equipment, techniques, and methods; encourage the planning and establishment of arcawide urban mass transportation systems needed for economical and desirable urban development, and provide assistance to state and local governments in financing these systems.

Current Data Programs

The Uniform System of Accounts and Records (Section 15) Reporting System was statutorily authorized as the basis for formula allocation of FTA's Grant-in-Aid programs in the early 1980s. The Section 15 Reporting System provides data on transit revenues by source; transit expenses by function and object class; nonfinancial operating data, including maintenance, employee counts, and service measures; and performance indicators, which relate measures of service outputs or use (e.g., vehicle revenue-miles and passenger-miles) to measures of resource inputs (e.g., revenue vehicles and labor hours).

Grants Management Information System. The Grants Management Information System provides comprehensive information on all grants and contracts that FTA has made since the 1960s.

Financial Management System. The Financial Management System provides financial information on allotments, operating budget authority, and disbursements.

Other Data Activities. FTA contacted with the Community Transportation Association of America in 1985 and again in 1989 to prepare a directory of rural (Section 18) and elderly and handicapped (Section 16(b)(2)) transit service providers that includes information about type of service offered, fleet size, and county(ies) in which the service operates.

All states are currently developing work plans and data consistency for Public Transportation Facilities and Equipment Management System, Internodal Facilities and Systems Management System, and the Traffic Monitoring System.

Federal Railroad Administration

Agency Mission

The Federal Railroad Administration promotes safe, environmentally sound, successful railroad transportation to meet the needs of all customers today and tomorrow. We encourage policies and investments in infrastructure and technology to enable rail to realize its full potential by promulgating and enforcing rail safety regulations, administering railroad financial assistance programs, conducting research and development in support of improved railroad safety and national rail transportation policy, providing for the upgrade and rehabilitation of Northeast Corridor rail passenger service, and consolidating

government support of rail transportation activities, and facilitating the development of new and improved rail technology, including High-Speed Passenger Rail service.

Current Data Programs

Carload Waybill Sample. The annual Carload Waybill Sample contains comprehensive detailed information provided by freight railroads from a stratified sample of rail waybills to the Interstate Commerce Commission (ICC) about actual rail shipments, including commodities carried; railroads involved; origin, destination, and junction points; number of carloads; tons transported; and total revenues. ICC contracts with the Association of American Railroads to collect and process the data. FRA, which provides half of the funding for the waybill sample, uses a confidential version to produce periodic and ad hoc reports for use in traffic and competitive analyses in support of DOT policy development. A more aggregated sample, which does not reveal specific carriers or shipper locations, is available to the public from the DOT's Bureau of Transportation Statistics.

Freight Commodity Statistics. This annual data base contains detailed commodity data filed with ICC by Class 1 Railroads on tons and carloads of local, forwarded, received, overhead, and total traffic. Revenue for each commodity is also submitted. This source supports in-house analyses requiring traffic mix information for individual Class 1 railroads.

National Rail Planning Network. This data base contains a digital representation of the major continental U.S. railway systems, covering some 190,000 miles of route. A typical FRA analysis involves flowing the waybill sample data over the network to examine nationwide hazardous materials by rail. This data base is available to the public on the DOT's Bureau of Transportation Statistics' *Transportation Data Sampler-2 CD-ROM*.

Railroad Inspection Reporting System. The Railroad Inspection Reporting System (RIRS) is used to monitor each FRA-performed inspection and record the nature of each defect uncovered and any follow-up action by the railroad to correct the deficiency. RIRS contains four data bases, each with its own forms and reports: (a) Signal, Track, and Motive Power (locomotives); (b) Equipment (cars); (c) Operating Practices; and (d) Hazardous Materials. Reports in inspector activity are generated monthly; other periodic reports

summarize railroad compliance. FRA also produces ad hoc reports on specific elements of the inspection form by railroad or division.

Railroad Accident/Incident Reporting System. The Railroad Accident/Incident Reporting System includes all railroad accidents, grade-crossing accidents, railroad employee casualties, and any other injuries on railroad property. These data bases provide the basis for accident analyses and assessments as well as the annual Accident/Incident Bulletin.

Grade Crossing Inventory System. This system contains a record of every public and private crossing in the United States along with the accident history of each crossing. This data base is often used in conjunction with the Grade Crossing Accident Reporting System to general Grade Crossing Accident Prediction reports requested by states and railroads.

Transborder Surface Transportation Data. FRA funded a census study which demonstrated the feasibility of coding the foreign trade data compiled by the U.S. Census Bureau to reflect the ground modes of transportation of U.S. exports to and imports from Canada and Mexico. Based on that study and FRA's data specifications, the Bureau of Census entered into a contract with the DOT's Bureau of Transportation Statistics to provide monthly files summarizing these data. BTS is disseminating, on diskette, the public files with summary statistics compiled by the FRA.

Maritime Administration

Agency Mission

The Maritime Administration (MARAD) administers programs to aid in the development, promotion, and operation of the U.S. merchant marine. Financial assistance programs are administered to support provision of essential services on U.S. flag carriers and construction of ships in U.S. shipyards. MARAD helps industry generate business for U.S. ships, conducts programs to promote development of efficient port facilities and intermodal transport, and promotes domestic shipping. It is also charged with maintaining the National Defense Reserve Fleet and its component Read Reserve Force, and with organizing and directing emergency merchant ship operations.

Current Data Programs

The following is a brief summary of some of MARAD's principal data systems. It is not intended to represent an exhaustive inventory of all data bases maintained by MARAD but to indicate the scope and diversity of MARAD requirements, the various sources of such data, and the types of issues to which such data may be required.

Trade and Ship Information System is a relational data base that combines MARAD's foreign trade, vessel, and itinerary data. The foreign trade subsystem is primarily Bureau of Census foreign trade data but also includes complete itineraries of more than 35,000 vessels worldwide--data purchased from Lloyd's Maritime Information Service. Foreign trade data obtained from the Bureau of the Census includes information that identifies both the vessel and the operator, which is not available to the public. This data is used within MARAD as the basis for calculating subsidy rates and in support of a wide range of agency programs from operating subsidies and ship financing to bilateral trade negotiations.

The vessel subsystem contains detailed vessel characteristics on more than 35,000 merchant vessels worldwide and includes information from a variety of sources on such items as container capacity, and whether the vessels are government or privately owned, were built with subsidy, have outstanding financing guarantees, or participate in the war risk binder program. The data form the basis for many MARAD publications and support, in some way, virtually all of MARAD's commercial and defense-related programs.

Port Facilities Inventory contains detailed information on more than 4,000 major ocean and river port facilities, including location, physical characteristics, cargo handling equipment and capacities. It supports MARAD's program to provide technical assistance in port and intermodal planning and operations to state and local port authorities, private industry, and foreign governments. It also supports MARAD's program to develop contingency plans for the use of ports and port facilities to meet defense needs.

Domestic Trade Data. MARAD obtains domestic waterborne commerce data from the Corps of Engineers and produces a variety of reports in support of the agency's programs dealing with the inland waterways, Great Lakes, and domestic ocean trade--U.S. flag transportation segments that account for more than one billion tons of cargo each year. The data base also includes detailed information on

vessels and operators engaged in domestic commerce.

Financial Reporting and Contract Surveillance (FRACS) contains financial reports and vessel operating statements for the more than 200 companies that have been required to submit statements to MARAD. FRACS also contains basic information about the companies and the MARAD contracts to which they are party. It enables MARAD to monitor financial and operating results on a timely basis and gives decision makers the benefits of an automated retrieval system.

Cargo Preference Data. To meet a congressional mandate to monitor compliance with cargo preference laws to maximize the use of U.S. flag vessels, MARAD monitors the shipping activities of federal agencies, independent establishments, and government corporations. To perform this activity MARAD maintains a computerized reporting system that processes information from bills of lading collected directly from responsible parties.

Intermodal Equipment. MARAD compiles and published an annual *Intermodal Equipment Inventory*--a comprehensive statistical review and classification of equipment owned by U.S.-flag marine carriers and major container leasing companies operating in the U.S.

Maritime Labor. MARAD supports the training of merchant marine officers through operation of the U.S. Merchant Marine Academy and provision of financial assistance to six state maritime academies. MARAD also monitors maritime industry labor practices and policies in conjunction with national and international organizations. In support of these programs, MARAD collects and publishes data on maritime employment--seafaring, shipyard, and longshore. These data are used extensively in developing training programs, making policy regarding academy and state school support, and defense planning.

Sealift Planning. In connection with its national security responsibilities, MARAD maintains data bases to evaluate U.S. shipbuilding and repair capabilities and forecast U.S.-flag and U.S.-owned foreign-flag fleets.

U.S. Coast Guard

Agency Mission

The mission of the U.S. Coast Guard (USCG) is to enforce or assist in the enforcement

of all applicable federal laws on the high seas and waters subject to the jurisdiction of the United States; administer laws, and promulgate and enforce regulations for the promotion of safety of life and property on the high seas and on waters subject to U.S. jurisdiction, covering all matters not specifically delegated by law to some other executive department or reserved to the states; develop, establish, maintain, operate, and conduct, with due regard to the requirements of national defense, aids to maritime navigation, icebreaking facilities, oceanographic research, and rescue facilities for the promotion of safety on and over the high seas and water subject to U.S. jurisdiction; maintain a state of readiness to function as a specialized service in the Navy in time of war; and establish and maintain a coordinated environmental program and a comprehensive ports and waterways system, including all aspects of marine transportation.

Current Data Programs

Recreational Boating Safety System contains reports on recreational boating accidents that occur in state waters or in waters under joint state and federal control that result in loss of life, injury requiring medical attention beyond first aid, damage to the vessel and other property exceeding \$200, or complete loss of the vessel. The accident reports provide information on the time of day and year of the incident, environmental conditions, type of incident, and cause. Data are also collected on boat registrations, which provide a basis on which to calculate accident and fatality rates.

Casualty Maintenance System (CASMAIN) is a data base administered by the Marine Investigation Division that contains data on commercial vessel casualties, including injuries and deaths. A typical report includes information on case numbers, vessel identification numbers (VINs), casualty coordinates, vessel names and types, gross tonnage, the primary nature and cause of the accident, weather-related information and reported damage.

CASMAIN queries are solicited from all facets of marine industry (i.e., associations, unions, vessel owners, operators, and manufacturers). Users include Congress; local, state, and federal government agencies; financial institutions; universities; medical research facilities; settlement attorneys; salvage operators; and foreign embassies.

Merchant Mariners Documentation System includes the marine licensing program and is located in the Office of Marine Safety, Security and

Environmental Protection. The system, among its other functions, maintains files of shipping articles and master lists for reference in documenting service time for mariner and providing service records to marines, the maritime community, and other interested parties. It also maintains records of every mariner's service and other related information. This replaces the Seaman Documentation and Records System.

Search and Rescue Management Information System is administered by the Office of Navigation Safety and Waterways Services which provides for the collection, storage, and retrieval of information on the Coast Guard's responses to search and rescue (SAR) incidents. The primary use of the system is to derive a picture of the demands made of USCG by SAR clientele and project these demands to measure unit workloads, determine resource use and needs, justify budget requests, and analyze system operations for potential savings.

Marine Safety Information System (MSIS) is a data system that supports USCG marine safety regulator programs. The system tracks inspections of U.S. and foreign vessels (including their cargoes and equipment), offshore oil and gas facilities, and port facilities (e.g., cargo docks) for such safety-related items as presence of hazardous materials and adequacy of fire-fighting equipment. Vessel inspection and violation histories are used, among other purposes, to assist in USCG boarding decisions. MSIS also records and tracks casualty information for marine accidents by vessel; full investigative reports are contained in CASMAIN, although the two systems will soon be linked electronically. Finally, MSIS tracks information about pollution incidents, including the parties and vessels involved and the costs.

Marine Pollution Retrieval System (MPRS) and its predecessor, the Pollution Incident Reporting System, were designed for the Marine Environmental Response Program to generate a data base of pollution incidents. MPRS reports pollution incidents that occur within all navigable waters of the United States. The data base tracks the number of pollution incidents; the nature, cause, extent, location, and time of the spill; and the parties involved. Annual summary data are prepared and published periodically in a report entitled *Polluting Incidents In and Around U.S. Waters*.

Saint Lawrence Seaway Development Corporation (SLSDC)

Agency Mission

The Saint Lawrence Seaway Development Corporation (SLSDC) is a wholly-owned Government corporation. The Corporation is responsible for the development, operation, and maintenance of that part of the St. Lawrence Seaway between the port of Montreal and Lake Erie, within the territorial limits of the United States. The primary function of the Seaway Corporation is to provide a safe, efficient, effective water artery for maritime commerce in coordination with the St. Lawrence Seaway Authority of Canada (SLSA). Traffic development functions and responsibilities are implemented to enhance System utilization and to contribute significantly to the comprehensive economic and environmental development of the entire Great Lakes region.

Current Data Programs

Statistical Seaway data for public information and to support SLSDC programs are collected by the SLSA for both agencies through a memorandum of agreement. Published annual traffic statistics are specific to the flow of cargo and transit of vessels through the Seaway Lock systems and include historical summaries from 1959 forward. The SLSDC participates in the Journal of Commerce's Port Import/Export Reporting System (P.I.E.R.S) for on-line data service and selected annual data publication to support Seaway Corporation programs and to provide services to the Seaway maritime industry.

U.S. Bureau of the Census

Overview and Data Collection Mandate

The Census Bureau is a general purpose statistical agency that collects, tabulates, and publishes a wide variety of data about the people and the economy of the Nation. Over the years, the Census Bureau has conducted a limited number of transportation statistics programs and currently is significantly expanding transportation industry statistics to meet increased data user needs.

The Bureau of the Census is required, by law, to collect and publish general purpose data on the state of the economy and the population through

censuses and sample surveys. The majority of the data are used directly by other agencies as input to their programs or to supplement other data collections to meet specialized needs such as price indexes, productivity measures, and economic development. The data collection authorization of the census covers all sectors of the economy, except when a regulatory organization requires data collection to complete its own mission. Duplicative data collection is not allowed, and therefore regulatory data is often used for general economic and policy decisions. The Bureau serves as the data collecting and compiling agent for other government agencies.

Current Transportation-Related Data Programs

Quinquennial Economic Census Programs.

The Census of Transportation, conducted for the years 1987 and 1992 consists of two parts: establishment-based universe statistics for selected transportation industries; and the *Truck Inventory and Use Survey (TIUS)*, the *Commodity Flow Survey (CFS)*, and the *American Travel Survey (ATS)* which provide basic commodity and passenger flow data.

The transportation establishment statistics correspond to those collected for other kinds of business in other economic censuses. They provide data on general finances and employment and on number of establishments. In 1987, they covered only three of the eight major groups in the transportation-related part of the Standard Industrial Classification (SIC) systems--42: Trucking and Warehousing, 44: Water Transportation, and 47: Transportation Services. The expanded 1992 Census of Transportation presents significantly more transportation establishment statistics for 43 4-digit industries in the following major SIC groups.

SIC	Major Group Title
41	Local and Suburban Transit and Interurban Highway Passenger Transportation
42	Motor Freight Transportation and Warehousing
44	Water Transportation
45	Transportation by Air (excludes large certificated passenger air carriers)
46	Pipelines, except Natural Gas
47	Transportation Services

This represents an expansion in the scope of the Transportation Census for 15 industries in major groups 41, 45, and 46, incorporating more than 24,000 additional establishments with more than 860,000 employees.

Plans are to publish data from the 1992 Census on a national basis and, where not prohibited by confidentiality restrictions, for selected states and metropolitan statistical areas. Publication plans for 1992 include the release of summary data for nonemployers in transportation industries for the first time.

For many of the industries in the transportation census (e.g., trucking), the establishments have activities, workers, and equipment that may move from place to place. For the census, an establishment is a relatively permanent office, shop, station, terminal, or warehouse. Census figures for states and metropolitan areas reflect permanent establishment location and not necessarily the location where the trucking or other activities take place.

The establishment counted in the Census of Transportation offers services to the general public or to other business enterprises. Establishments that furnish similar services (e.g., warehousing) only to other establishments of the same company are classified as auxiliary to the other units of the company that they serve. Data for auxiliaries are presented in a report issued as part of the 1987 Enterprise Statistics series, but not in the census of transportation. The census excludes firms that do not have paid employees. Thus, for example, many independent truckers are not included in the 1987 establishment services.

TIUS, taken every five years as part of the economic census program, reports on the physical characteristics and operational use of the nation's private and commercial trucks. Unlike other economic census programs, the coverage of TIUS cuts across SIC classifications and even includes personal vehicles, although vehicles owned by federal, state, and local government agencies are not covered. Some private or commercially owned vehicles that do not have to be licensed (e.g., trucks used exclusively on private property) are also excluded. The 1992 TIUS includes physical characteristics of the nation's private trucking fleet, such as vehicle type, gross weight, type and size of engine, type of transmission and braking system, power steering, fuel conversion, air conditioning, type and size of body, power axles, axle arrangements of trailer units, and cab type. The survey also includes operational characteristics, such as base of operation; number of trucks, weeks

operated, truck-tractors, and trailers operated from base of operation; area of operations, vehicle miles; miles per gallon; use of vehicle; and type of commodities carried including hazardous materials).

For 1992, about 154,000 private and commercial trucks were sampled from approximately 60 million state vehicle registrations. Data are available in printed reports, CD-ROM, and a public use micro-data CD-ROM.

The 1993 Commodity Flow Survey (CFS) reinstated a commodity flow statistics program that was last collected in 1977. This CFS program was started with major funding and support by the Bureau of Transportation Statistics. The survey sampled approximately 200,000 domestic establishments in mining, manufacturing, wholesale, and selected retail and service activities. These establishments reported a sample of approximately 12 million shipments. Each establishment reported a sample of their outbound shipments for a two week period in each of the four calendar quarters of 1993. The information collected for each shipment includes the origin, destination, commodity code, weight, value, and modes of transportation. Geographic data will be available for states and National Transportation Analysis Regions (NTARs).

The Census of Manufactures 1982, 1987, 1992 includes establishment coverage of more than 10,000 transportation equipment manufacturers. Coverage includes all eighteen 4-digit industries of equipment manufacturers in SIC 37, from guided-missile to recreational-camper manufacturers. Data include employment, wages, value of shipments, value added, capital expenditures, operating expenses, assets, and inventories.

Coverage of the *Census of Governments 1982, 1987, 1992* extends from the federal government and the 50 state government to some 85,00 units of local government--counties, cities, towns, school districts, and special districts. Data collected include full- and part-time employment and payrolls; revenues by type and sources; expenditure by character, object, and function (including an array of transportation-related functions); indebtedness by type and purpose; and assets held by the government as cash or investments in securities

Census of Construction 1982, 1987, 1992 coverage includes transportation-related construction establishments, such as those primarily engaged in highway, street, bridge, and tunnel construction. Data include the value of work done, assets, expenses, capital expenditures, and employment.

Census of Agriculture 1982, 1987, 1992 provides a universe count of farms and farm production by small geographic location is provided by this census. Data highlight the county agricultural production (which is typically transported by truck, rail, or water) plus expenses and assets, including fuel costs and trucks used.

Enterprise Statistics 1982, 1987, 1992 regroups census data for establishments under common ownership or control to show various economic characteristics of the owning or controlling firms. This programs also yields separate data about auxiliary establishments. An auxiliary establishment is one whose employees are primarily engaged in performing supportive services, such as trucking and warehousing, for other establishments of the same company instead of for the general public or other business firms. Information available includes the number of auxiliaries and payroll, the number of employees engaged in several different types of service, sales or receipts, end-of-year inventories, rental payments, selected expense data, and so forth.

Decennial Demographic Census includes questions on the means of transportation people use to get to work by geographic location of their work place have been included in the decennial Census of Population and Housing since 1960. In 1980, items on travel time to work and carpool occupancy during the work trip were added. In 1990, information on the time at which individuals left home to go to work was collected for the first time in the Census of Population and Housing. Data on these topics are made available in printed reports and on computer tapes for geographic areas such as census tracts, places, counties, metropolitan areas, and states.

Existing Economic Survey Programs.

Motor Freight Transportation and Warehousing Survey (WATS) is an annual survey based on a sample of 2,500 firms that represent all employer firms with one or more establishments that are primarily engaged in providing for-hire commercial motor freight transportation and warehousing services. This includes firms that furnish local or long-distance trucking or transfer services and those that store farm products, furniture and other household goods, or commercial goods of any nature. The survey provides about 50 data items on operating revenue and operating expenses, plus inventories of revenue-generating equipment for establishments in SIC 421 for the United States. Comparable statistics are shown for the previous year along with year-to-year percentage

changes. Publication is released about nine months after the period of reference.

The *Nationwide Trade Activity (NTAS)* is a DOT-sponsored follow-on survey to the quinquennial TIUS, and has been designed to obtain operational characteristics and activity patterns of trucks by collecting trip-specific information primarily from commodity-carrying trucks. It provides essential information for the analyses of truck size and weight issues, energy and environmental constraints, proposed investments in new roads and technology, hazardous materials transport, and other aspects of the Federal-Aid Highway Program. Questions on NTAS also provide linkages between TIUS and other existing sources of truck-related information

Annual Survey of Manufacturers provides data on domestic manufacturers' production of transportation equipment, including value of shipments, expenses, and other key measures for 18 transportation equipment manufacturing industries.

Annual Government Finance Surveys provide coverage of the federal government, 50 state governments, and a sample of some 12,000 local governments--counties, cities, towns, school districts, and special districts. Data collected include full- and part-time employment and payrolls; revenues by type and source, including transportation-related sources (e.g., motor fuel taxes, toll charges); expenditure by character, object, and function (including an array of transportation-related functions); indebtedness by type and purpose; and assets held by the government as cash or investments in securities.

Foreign Trade Statistics provide a monthly census of U.S. export and import transactions on the basis of official documents that shippers and receivers must file with the U.S. Customs Service for each shipment. These figures reflect the flow of merchandise, but not such intangibles as services and financial commitments. The trade figures trace commodity movements out of and into U.S. Customs jurisdictions. Key variables in foreign trade reports are export value calculated free alongside ship (f.a.s.), import value, specific commodities (in terms of the harmonized system -- H.S.) shipped, and foreign country of origin and destination. Additional variables shown selectively include S.I.T.C. and SIC-based product codes, separate vessel and air methods of transportation, U.S. state of origin of exports, U.S. and foreign ports, quantities shipped, and weight for the vessel and air shipments.

Plant and Equipment Expenditure Survey is a quarterly publication of transportation equipment manufacturers that provides investment information for manufacturing and transportation service firms. After the 1994 second quarter release, this survey will be replaced with a semiannual survey on investment plans.

Quarterly Financial Report contains up-to-date aggregate statistics on the financial results and position of U.S. corporations. The report presents estimated statements of income and retained earnings, balance sheets, and related financial and operating ratios for the transportation equipment industry, including detailed information on motor vehicles and motor vehicle equipment, aircraft, and parts.

Existing Demographic Surveys include:

- Information has been collected in the *American Housing Survey (AHS)* since the mid-1970s on means of transportation to work, travel time to work, and distance to work. Other data items, including information on the geographic location of the work place, have been collected periodically from both the national sample and the individual metropolitan area samples of AHS. Data are available in printed reports, public-use microdata files, and unpublished tabulations for selected large cities and counties, and for the nation.
- Transportation expenses are collected as part of the *Consumer Expenditure Quarterly Interview Survey*, which provides information on how various groups of U.S. consumers spend. The survey data include large expenditures, such as automobiles, and expenditures that occur on a regular basis, such as gasoline and insurance premiums.

Future Planned Surveys

Charter, Rural, Intercity Bus Survey. This annual survey would provide a complete enumeration of approximately 2,000 firms offering intercity, rural, or charter bus transportation services. Estimates of annual dollar volume for intercity and charter bus activities range from \$5 to

\$8 billion. The 1982 Bus Regulatory Reform Act seriously reduced the amount of data on intercity bus activity. Although intercity scheduled service has continued to decline, charter and tour ridership is growing. More than 40 data items on revenues and expenses are planned. If approved, the survey, covering calendar year 1995 activities, will be published in December 1996.

Transportation Services Survey. This annual sample survey would cover all employer establishments from a universe of 34,000 establishments providing transportation services (SIC 47). Estimates of dollar volume for services incidental to transportation range from \$12 to \$14 billion annually.

Regulatory reform has had a profound effect on the structure of freight transportation as traditional lines of delineation between arrangers of freight transportation have become blurred. All public data collection on freight forwarding ceased in 1980. About 35 data items on detailed revenue and expenses are planned. If approved, the survey, covering calendar year 1995 activities, will be published in December 1996.

Water Transportation Survey. All employer firms providing water transportation services would be covered in this annual sample survey. The industry consists of 7,500 establishments with estimated revenues of \$7 to \$9 billion.

Existing data sources deal almost exclusively with the physical characteristics of the system--vessels, waterways, and port facilities of the industries--or with commodity movements. The passenger transportation segment of this industry is one of the fastest-growing components of the travel sector. About 40 detailed data items on revenues and expenses are planned. If approved, the survey, covering calendar year 1995 activities, will be published in December 1996.

Proposed Joint Projects

State and Local Government Transportation Survey. This proposed survey would fill an important need for information about the resources state and local governments devote to the provision of transportation infrastructure and services. The survey would include all aspects of government transportation services, including highways, water transportation, air transportation, and transit operations. The data would emphasize the financial and personnel resources that state and local governments provide to construct, maintain,

and operate these services.

The existing data on state and local government transportation services is fragmented by the diffuse nature of federal, state, and local government organizations. The Census Bureau's data collection programs on state and local government finances and employment provide an ideal base for establishing a comprehensive transportation information system (i.e., uniform time frame, definitions, data classification, and data collection methods).

This would be a voluntary survey of all state governments and a sample of individual local governments--counties, municipalities, townships, school districts, and special districts. The financial data would cover the entire range of financial activities: revenues (motor fuel taxes, transit charges, federal revenues); expenditures (highway construction, transit system current operations); indebtedness (types of debt financing for airports and highways); and gross assets (including highway trust funds). For comparative purposes, the employment data, showing number of employees and payroll, would cover the same functional areas as the expenditure information. In addition, information would be collected from school systems about the costs related to transportation of pupils.

In summary, this survey would provide for the first time, comprehensive state and local financial data on transportation activities. New consistent data would be published annually for the following categories: (a) gross value of transportation function and (b) specific relationship of governmental financing along with the actual expenditures (e.g., federal government contribution and debt financing by transportation function and purpose). Information on funding sources will include tax levies, debt issues, fees charged, and miscellaneous revenues.

Bus and Government Vehicle Survey. Little is known about the use of the highway system by buses and government-owned vehicles. An estimated two million of these vehicles are currently in use, and they certainly could have an important impact on highway condition. In addition, complete information on bus and government vehicles road use is needed for accurate forecasting of highway capacity and investment requirements.

The Census Bureau and DOT are evaluating existing data sources in these areas and formulating a proposal for efficiently measuring and monitoring annual changes.

U.S. Army Corps of Engineers

Agency Mission

The United States Army Corps of Engineers (COE) is the Federal agency responsible for the operation and maintenance of the Nation's waterway system to insure efficient and safe passage of commercial and recreational vessels. The support and management of economically sound navigation projects is dependent upon reliable navigation data.

COE manages and executes Civil Works Programs, which include research and development, planning, design, construction, operation and maintenance, and real estate activities related to rivers, harbors, and waterways; and administers laws for protection and preservation of navigable waters and related resources such as wetlands. It also assists in recovery from natural disasters.

Through its Navigation Data Center (NDC), COE collects, processes, manages and disseminates a variety of statistical data relating to foreign and domestic waterborne commerce, vessel and port facility and lock descriptions, and navigation lockages and dredging. The reports include annual statistical tabulations of domestic and foreign commodity movements on U.S. waterways and within ports, an annual directory of operating domestic vessels, periodic revisions of port and terminal and facility and lock descriptions, and monthly and quarterly detailed statistics for each Corps of Engineers-operated lock, and dredging statistics. Information is provided in published reports, and electronic form (CD-ROM, diskettes, e-mail, and bulletin board). The Navigation Data Center provides coordination of navigation information within COE, the U.S. Department of Defense, all federal and nonfederal agencies, and with private partners and the general public, to ensure effective data collection and dissemination strategies. The center consists of the Waterborne Commerce Statistics Center, the Port and Waterway Facilities Division, and two teams covering the lock performance monitoring system and lock characteristics and dredging statistics.

Current Data Programs

Waterborne Commerce and Vessel Statistics. *Waterborne Commerce of the United States (WCUS)* contains statistics on the commercial movement of foreign and domestic cargo. *Public Domain Data Base of WCUS* contains aggregated

information on waterborne commodity movements by 26 geographical areas. The *Principal Ports Tonnage Report* ranks U.S. ports for a calendar year by total tons, domestic and foreign. The State Tonnage Report contains total waterborne commerce by state. The *Transportation Lines of the U.S.* lists vessel operators and their addresses, type and physical description of vessels, principal service, location, and commodity serviced. All of the products are available both electronically and in hardcopy form. The Navigation Data Center handles special requests for commerce and vessel statistics, that are not contained in standard products.

Port Waterway Facilities. These data consist of the physical and intermodal characteristics of the coastal, Great Lakes, and inland ports in the United States. Fifty-six Port Series Reports are published at intervals of approximately 8-10 years, covering more than 200 individual port areas. Reports consist of complete descriptions of a port area's waterfront facilities, including detailed information on berthing accommodations, petroleum and bulk handling terminals, grain elevators, warehouses, cranes, transit sheds, marine repair plants, fleeting areas, and floating equipments. Special reports produced on requests include: Summary of Commodity Handling Terminals of the United States Inland Waterways; Inland Waterway Grain Handling Facilities with Rail Connections, and Coal Handling Docks of the United States. Products extracted from the master Port and Waterway Facilities data base are provided in electronic form. Another data base identifies mile markers by latitude and longitude for all commercially navigable U.S. waterways.

Lock Performance Monitoring (LPM) and Lock Characteristics data consist of descriptions of the traffic through locks on the inland waterway system as well as the physical aspects of lockages. Specifically, data is collected on vessel name, number, river direction, number of cuts, lockage, entry and exit type, arrival time, lockage time, and factors that may have interfered with the lockage. Vessel data include vessel name and number, flotation dimensions, number of passengers, barge types, number, and type and tonnage. The LPM system produces several reports, including a monthly *Key Lock Report*, a semiannual *Summary of Lock Statistics*, and an *Overview of the Lock Performance Monitoring System*.

Dredging Statistics Program includes information on each dredging contract awarded by

the Corps and offers a synopsis of information which includes project name and its location, quantity of dredged material, type of dredge, method of disposal and winning bid and bidder. The data are continuously updated.

Integrated Navigation Data Products "Tailored" describes the NDC integrated products. NDC's modernized data access technology, coupled with standardized terms and locators allows customized products to be formed from multiple NDC data bases.

Interstate Commerce Commission

Agency Mission

The Interstate Commerce Commission (ICC) regulates interstate surface transportation, including trains, trucks, buses, water carriers, freight forwarders, transportation brokers, and a coal slurry pipeline. The regulatory laws vary depending on the type of transportation; however, they generally cover certification of carriers seeking to provide transportation for the public and their rates, adequacy of service, purchases, and mergers. The commission ensures that the carriers it regulates will provide the public with rates and services that are fair and reasonable.

With enactment of the Railroad Revitalization and Regulatory Reform Act of 1976, the commission's statutory mandate was altered to provide for less regulation over rail freight rates and practices. This fundamental shift in national transportation policy was reinforced by enactment of the Motor Carrier Act of 1980, the Staggers Rail Act of 1980, the Household Goods Transportation Act of 1980, and the Bus Regulatory Reform Act of 1982. These measures provided for a sharply reduced federal role in regulating the trucking, railroad and bus industries.

Although ICC statistical activities have been reduced, the agency still produces a number of important statistical products. The areas of coverage include railroads and motor carriers of property and passengers (i.e., trucks and buses).

In each modal area the industry is divided into classes based on revenues. Motor carriers of property with annual revenues of \$5 million or more are categorized as Class 1, those between \$5 million and \$1 million as Class 2, and those with less than \$1 million as Class 3. Class 1 intercity bus companies have revenues of \$5 million or more and Class 2 carriers have revenues less than \$5 million. Railroads with revenues of \$250 million or

more are Class 1, between \$20 million and \$250 million are Class 2, and less than \$20 million are Class 3. The revenue thresholds are adjusted for inflation each year.

Current Data Programs

Annual Reports to Congress. The commission has provided an annual report to Congress for more than 100 years. These extensive reports draw on the regulatory activities and statistical reports received by the commission and provide a useful summary of the status of regulated transportation.

Transport Statistics in the United States. This report, published annually, provides summary statistics for Class 1 rail and motor carriers, including general balance sheet and financial data, operating income and expenses, and operating statistics. Some information on operating equipment, is also included.

Motor Carrier of Property Quarterly Freight Revenue Report Form. The Quarterly Freight revenue (QFR) schedule, substantially reduced from its pre-deregulation length, covers major financial and operating statistics for trucking firms. Reporting is required on a quarterly and cumulative annual basis. Only the carriers identified as Class 1 or 2 are required to provide significant reporting in the trucking sector. Reporting carriers number approximately 1,860 in contrast with more than 51,000 non-reporting carriers. Class 3 and exempt carriers are only required to provide identification information and revenue data sufficient for classification purposes.

The individual carrier reports are available for inspection in a public reference room. Each quarter, the commission's Office of Economics and Environmental Analysis produces reports for 100 of the largest trucking companies and 15 of the largest household goods carriers showing selected earnings of data. These are published under the titles: *Large Class I Motor Carriers of Property Selected Earnings Data* and *Large Class I Household Carriers Selected Earnings Data*. Far more detailed financial and operating statistics from data filed in QFR are provided for a fee by the American Trucking Associations in the *Motor Carrier Quarterly Report: Financial and Operating Statistics*.

Motor Carrier of Passengers Quarterly and Annual Report. Motor carriers of passengers (i.e., intercity bus carriers) complete a substantially abbreviated version of the QFR financial and

operating schedule, called MP-1. Only the Class 1 carriers are obligated to provide the required report in the bus sector. The Class 1 intercity bus carriers number about 30 of more than 4,800 bus carriers. Reporting firms provide a mix of scheduled service, tour and charter operations, school bus, and even local transit services. One firm, Greyhound, generates most of the industry's Class I revenues. The ICC Office of Economics and Environmental Analysis publishes a quarterly report showing the earnings of the top ten bus carriers, *Large Motor Carriers of Passengers Selected Earnings Data*.

Quarterly Report of Railroad Revenues, Expenses and Income. Rail reporting follows a format similar to the motor carrier system, but, because of the nature of the industry structure, Class 1 carriers represent almost all of the industry's activity. Only those in Class 1 are required to report quarterly and annual financial and operating information. Class 1 carriers numbered on 13 in 1994, but accounted for more than 90 percent of total industry revenue. There are approximately 575 non-Class 1 carriers. The ICC's Office of Economic and Environmental Analysis publishes a quarterly report showing the earnings of the Class 1 Railroads, Class 1 Line-Haul Railroads Selected Earnings Data.

Report of Railroad Employment Class I Line-Haul Railroads and Wage Statistics of Class I Railroads. Because the rail industry does not participate in the social security system of the United States, ICC is responsible for the collection and publication of monthly and annual data on employment and wages for Class I railroads. These data are provided to the Bureau of Labor Statistics for such purposes as compiling employment statistics of the U.S., the unemployment rate, and the calculation of productivity measures.

Rail Waybill Statistics. In addition to financial and operating statistical reporting, ICC, in a jointly funded activity with FRA, contracts with the Association of American Railroads (AAR) to produce the Rail Waybill Statistics, which reports on rail origin-destination movements by commodity, based on a sample of shipping documents and computer files. The report is published by FRA (see FRA Current Data Programs). The public-use file is available on CD-ROM from the Bureau of Transportation Statistics.

U.S. Department of Agriculture

Agency Mission

The mission of the U.S. Department of Agriculture (USDA) is to improve and maintain farm income and develop and expand markets abroad for agricultural products. The department works to enhance the environment and maintain U.S. production capacity by helping landowners protect soil, water, forests, and other natural resources. Rural development, credit, conservation, and research programs are also part of the Department's mission. Finally, the Department safeguards and ensures standards of quality in the daily food supply through inspection and grading services.

The Transportation and Marketing Division (TMD) of USDA's Agricultural Marketing Service (AMS) helps develop an efficient agricultural and rural transportation system by providing research, technical assistance, and leadership in developing transportation policy and programs within USDA. In doing so, TMD draws on a variety of data sources in both the public and private sectors. TMD is both a data user and a data gatherer.

Current Data Programs

Ocean Grain Freight Rates. TMD has electronically compiled more than five years of grain freight rates from the weekly publication Maritime Research. Both U.S. and foreign origins and destinations are included, along with shipper, volume, rate, and other information. The information is used to determine the U.S. competitive position in worldwide grain markets and estimate USDA export commodity programming levels.

Trucking. TMD monitors trends in agricultural trucking. However, because unprocessed agricultural commodities moving by truck are generally unregulated, the lack of reporting requirements causes a major shortfall in reliable data. Information on rates, tonnage, the number of carriers, and flow patterns is generally nonexistent. Through records kept by the AMS market news reports, data are available on fruit and vegetable shipments and receipts at major markets. TMD also calculates per-mile costs for exempt owner-operators of truck fleets.

Waterways. TMD collects information on grain flows by type of grain through seven strategic locks on the Mississippi River system.

Rail. TMD uses a waybill sample from the ICC to determine grain movements by rail. However, certain use restrictions are placed on these data which limit their utility in analyzing the movement of agricultural goods.



APPENDIX C

Glossary

AIR CARRIER

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

- **Certificated Air Carrier** - An air carrier holding a Certificate of Public Convenience and Necessity issued by the U.S. Department of Transportation (DOT) to conduct scheduled services interstate. Nonscheduled or charter operations may also be conducted by these carriers. These carriers operate large (30 seats or more for a maximum load of 7,500 pounds or more) in accordance with FAR Part 121.
- **Supplemental Air Carrier** - One of a class of air carriers holding Certificates of Public Convenience and Necessity issued by the U.S. DOT, authorizing them to perform passenger and cargo charter services supplementing the scheduled service of the certificated route air carriers. Both international and domestic charter operations are for a temporary period. The authority of supplemental air carriers to engage in military charters is of an indefinite period. In addition, they can perform on an emergency basis, as may be authorized by the DOT, scheduled operations including the transportation of individually ticketed passengers and individually waybilled cargo.
- **Commercial Operator** (of large aircraft) - An air carrier certificated with FAR Part 121 or 127 to conduct scheduled services on specified routes. These air carriers may also provide nonscheduled or charter services as a secondary operation. Four carrier groupings have been designated for statistical and financial data aggregation and analysis: Majors (annual operating revenues greater than \$1 billion), Nationals (annual operation revenue between \$100 million and \$1 billion), Large Regionals (annual operating revenues between \$10 million and \$99,999,999), and Medium Regionals (annual operating revenues less than \$10 million).

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

AIRCRAFT REVENUE HOURS: The airborne hours in revenue service, computed from the moment an aircraft leaves the ground until it touches the ground again.

AIRCRAFT REVENUE MILES: The miles (computed in airport-to-airport distances) for each inter-airport hop actually completed in revenue service, whether or not performed in accordance with the scheduled pattern. For this purpose, operation to a flag stop is a hop completed even though a landing is not actually made. In cases where the inter-airport distances are inapplicable, aircraft miles flown are determined by multiplying the normal cruising speed for the aircraft type by the airborne hours.

AIR TAXI: A class of air carriers, operating pursuant to FAR Part 135, engaged in the nonscheduled air transportation of persons, property, or mail for compensation or hire in aircraft with 30 or fewer passenger seats and a payload capacity of 7,500 pounds or less. Air taxis do not hold Certificates of Public Convenience and Necessity and do not hold specific route authority.

ALL-CARGO CARRIER: One of a class of air carriers holding an All Cargo Air Service Certificate issued under section 418 of the Federal Aviation Act and certificated in accordance with FAR Part 121 to provide domestic air transportation of cargo.

CERTIFICATE OF PUBLIC CONVENIENCE AND NECESSITY: A certificate issued to an air carrier under Section 401 of the Federal Aviation Act, by the Department of Transportation, authorizing the carrier to engage in air transportation.

COACH: Transport service established for the carriage of passengers at special reduced passenger fares that are predicated on both the operation of specifically designated aircraft space and a reduction in the quality of service regularly and ordinarily provided.

COMMUTER AIR CARRIER: A small certificated air taxi operator who performs at least five round trips per week between two or more points and publishes flight schedules which specify the times, days of the week, and points between which such flights are performed.

DOMESTIC OPERATIONS: All air carrier operations having destinations within the 50 United States, the District of Columbia, the Commonwealth of Puerto Rico and the U.S. Virgin Islands.

ECONOMY: Transport service established for the carriage of passengers at fares and quality of service below that of coach service.

FATAL INJURY: Any injury that results in death within thirty days of the accident.

FIRST-CLASS: Transport service established for the carriage of passengers moving at either standard fares or premium fares, or at reduced fares not predicated upon the operation of specifically allocated aircraft space, and for whom standard or premium quality services are provided.

FIXED-WING AIRCRAFT: Aircraft having nonrotating wings fixed to the airplane fuselage and outspread in flight.

FOREIGN FLAG AIR CARRIER: A foreign air carrier that makes stops within the borders of the United States.

INTERNATIONAL OPERATIONS: In general, operations outside the territory of the United States, including operations between the United States and foreign countries, and the U.S. and its territories or possessions. Includes both the combination passenger/cargo carriers and the all-cargo carriers engaged in international and territorial operations.

JET ENGINE: An engine which converts fuel and air into a fast-moving stream of hot gases which effect propulsion of the device of which the engine is a part.

JET FUEL: The term includes kerosene-type jet fuel and naphtha-type jet fuel. Kerosene-type jet fuel is a kerosene-quality product used primarily for commercial turbojet and turboprop aircraft engines. Naphtha-type jet fuel is a fuel in the heavy naphtha range used primarily for military turbojet and turboprop aircraft engines.

KEROSENE-TYPE JET FUEL: A quality kerosene product with an average gravity of 40.7 degrees API and 10 percent distillation temperature of 400 degrees Fahrenheit. It is covered by ASTM Specification D1655 and Military Specification MIL-T-5624L (Grades JP-5 and JP-8). A relatively low freezing point distillate of the kerosene type; it is used primarily for a commercial turbojet and turboprop aircraft engines.

LARGE REGIONALS: Carrier groups with annual operating revenues between \$10,000,000 and \$100,000,000.

MAJORS: Carrier groups with annual operating revenues exceeding \$1,000,000,000.

MEDIUM REGIONALS: Carrier groups with annual operating revenues less than \$10,000,000 or that operate only aircraft with 60 seats or less (or 18,000 lbs. maximum payload).

NAPHTHA-BASE JET FUEL: A fuel in the heavy naphtha boiling range with an average gravity of 52.8 degrees API and 20 to 90 percent distillation temperatures of 290 to 470 degrees Fahrenheit, meeting Military Specification MIL-T-5624L (Grade JPJ-4). JP-4 is used for turbojet and turboprop aircraft engines, primarily by the military. Excludes ram-jet and petroleum rocket fuels.

NATIONALS: Carrier groups with annual operating revenues between \$100,000,000 and \$1,000,000,000.

NONREVENUE FLIGHTS: Flights and flight stages involving training, test, technical, positioning for scheduled flights, ferry, company business, publicity and forced returns for which no remuneration is received.

NONSCHEDULED FREIGHT: Property carried in charter operations.

NONSCHEDULED SERVICE: Revenue flights that are not operated in regular scheduled service, such as charter flights, and all nonrevenue flights incident to such flight.

OPERATING EXPENSES: Expenses incurred in the performance of air transportation based on overall operating revenues and overall operating expenses. Does not include nonoperating income and expenses, nonrecurring items, or income taxes.

OPERATING REVENUES: Revenues from the performance of air transportation and transport related incidental services. Includes (1) transport revenues from the carriage of all classes of traffic in scheduled and nonscheduled services and (2) nontransport revenues consisting of Federal subsidy (where applicable) and revenues for services related to air transportation.

OTHER TRANSPORT REVENUES: Revenues from services such as in-flight sales, rentals and sales of services, supplies and parts.

PASSENGER-MILE: One passenger transported one mile. Total passenger-miles are computed by summation of the products of the aircraft miles flown on each inter-airport flight stage multiplied by the number of passengers carried on that flight stage.

PASSENGER REVENUES: Revenues from the transportation of passengers by air.

REVENUE: Pertaining to transport activities for which remuneration is received by the carrier.

REVENUE PASSENGER: Person receiving air transportation from an air carrier for which remuneration is received by the carrier. Air carrier employees or others receiving air transportation against whom token service charges are levied are considered nonrevenue passengers. Infants for whom a token fare is charged are not counted as passengers.

REVENUE PASSENGER ENPLANEMENTS: The total number of passengers boarding aircraft. Includes both originating and connecting passengers.

REVENUE PASSENGER LOAD FACTOR: The percent that revenue passenger-miles are of available seat-miles in revenue passenger services, representing the proportion of aircraft seating capacity that is actually sold and utilized.

REVENUE PASSENGER-MILE: One revenue passenger transported one mile in revenue service. Revenue passenger-miles are computed by summation of the products of the revenue aircraft-miles flown on a flight stage, multiplied by the number of revenue passengers carried on that flight stage.

REVENUE PASSENGER TON-MILE: One ton of revenue passenger weight (including all baggage) transported one mile. The passenger weight standard for both "Domestic" and "International" operations is 200 pounds.

REVENUE TON-MILE: One ton of revenue traffic transported one mile.

REVENUE TON-MILE OF FREIGHT: One short ton of freight transported one mile. Ton-miles are computed by summation of the products of the aircraft miles flown on each inter-airport flight stage multiplied by the number of tons carried on that flight stage.

SCHEDULED SERVICE: Transport service operated pursuant to published flight schedules, including extra sections and related nonrevenue flights.

SERIOUS INJURY: An injury which:

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

TRANSPORT-RELATED EXPENSES: Expenses from services related to air transportation such as in-flight sales of liquor, food and other items; ground, restaurant and food services, rental expense as lessor, interchange sales, general service sales, mutual aid, substitute service and air cargo service (other than actual air movement).

TRANSPORT-RELATED REVENUES: Revenues from the transportation by air of all classes of traffic in scheduled and nonscheduled services.

U.S. FLAG CARRIER OR AMERICAN FLAG CARRIER: One of a class of air carriers holding a Certificate of Public Convenience and Necessity issued by the DOT, approved by the President, authorizing scheduled operations over specified routes between the U.S. (and/or its territories) and one or more foreign countries.

14 CFR 121: Revenue operations of air carriers, commercial operators and deregulated all cargo carriers, using large aircraft.

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

GENERAL AVIATION

ACTIVE AIRCRAFT: All legally registered civil aircraft which flew one or more hours.

AERIAL APPLICATION: Any use of an aircraft for work purposes which concerns the production of foods, fibers, and health control in which the aircraft is used in lieu of farm implements or ground vehicles for the particular task accomplished. This includes fire fighting operations, the distribution of chemicals or seeds in agriculture, reforestation, or insect control.

AERIAL OBSERVATION: Any use of an aircraft for aerial mapping and photography, survey, patrol, fish spotting, search and rescue, hunting, highway traffic advisory, or sightseeing, not included under Part 135.

AIR TAXI: A class of air carriers, operating pursuant to FAR Part 135, engaged in the nonscheduled air transportation of persons, property, or mail for compensation or hire in aircraft with 30 or fewer passenger seats and a payload capacity of 7,500 pounds or less. Air taxis do not hold a Certificate of Public Convenience and Necessity and do not hold specific route authority.

AVIATION GASOLINE (AVGAS): All special grades of gasoline for use in aviation reciprocating engines, as given in ASTM Specification D 910 and Military Specification MIL-G5572. Excludes blending components, that will be used in blending or compounding into finished aviation gasoline.

BUSINESS: Individual use of an aircraft for business transportation.

COMMUTER AIR CARRIER: A small certificated carrier who performs at least five round trips per week

between two or more points and publishes flight schedules which specify the times, days of the week, and points between which such flights are performed.

CORPORATE: Company flying with a professional crew.

DEMAND AIR TAXI: Use of an aircraft operating under Federal Aviation Regulations, Part 135, passenger and cargo operations, including charter and excluding commuter air carrier.

GENERAL AVIATION: That portion of civil aviation that encompasses all facets of aviation except air carrier. It includes any air taxis, commuter air carriers, and air travel clubs that do not hold a Certificate of Public Convenience and Necessity.

INSTRUCTIONAL: Flying under the supervision of a flight instructor (excludes proficiency flying).

PERSONAL: Flying for personal reasons (excludes business transportation).

RENTAL: Aircraft owned for the purpose of renting; commercial flying club, leased, and rental aircraft activity.

OTHER WORK: Construction work (not FAR Part 135), helicopter hoist, parachuting, aerial advertising, and towing gliders.

OTHER: Experimentation, R&D, testing, government demonstration, air shows, and air racing.

HIGHWAY

ARTERIAL: A major highway, primarily for through traffic, usually on a continuous route.

FEDERAL EXPENDITURES: Intergovernmental payments to the State, District of Columbia, and local governments plus direct expenditures for capital outlay, maintenance, administration, and research.

HIGHWAY TRUST FUND: This is a grant-in-aid type fund administered by the FHWA. That is, most funds for highway improvements are apportioned to States in accordance with formulas that give weight to population, area and mileage.

INTERSTATE: Limited access divided facility of at least four lanes designated by the Federal Highway Administration as part of the Interstate System.

LOCAL STREETS AND ROADS: Streets whose primary purpose is feeding higher order systems, providing direct access with little or no through traffic.

MINOR ARTERIALS: Streets and highways linking cities and larger towns in rural areas in distributing trips to small geographic areas in urban areas (not penetrating identifiable neighborhoods).

OTHER PRINCIPAL ARTERIAL: Major streets or highways, many with multi-lane or freeway design, serving high-volume traffic corridor movements that connect major generators of travel.

ROADWAY: That part of a trafficway used for motor vehicle travel.

RURAL MILEAGE: Roads outside city, municipal district, or urban boundaries.

STATE AND LOCAL EXPENDITURES: Disbursements for capital outlay, maintenance and traffic surfaces, administration and research, highway law enforcement and safety, and interest on debt.

TRAFFICWAY: Any right-of-way open to the public as a matter of right or custom for moving persons from one place to another, including the entire width between property lines or other boundaries.

URBAN MILEAGE: Roads inside city, municipal district, or urban boundaries: includes extensions of the state primary system, and state secondary roads within delimited incorporated and unincorporated places, and mileage under local control; i.e., local city streets, roads, and public ways not under State control within such places.

PEDALCYCLIST: Person on a vehicle that is powered solely by pedals.

AUTOMOBILE

ACCIDENT: An accident is that occurrence in a sequence of events which usually produces unintended injury, death or property damage, on a trafficway or that occurs after the motor vehicle runs off the roadway but before events are stabilized.

COMPACT CAR: An automobile industry designation usually consisting of cars with a wheelbase between 100 and 104 inches.

FATAL MOTOR VEHICLE TRAFFIC ACCIDENT: An accident that involves a motor vehicle in transport on a trafficway and in which at least one person dies within 30 days of the accident.

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

INTERMEDIATE CAR: An automobile industry designation usually consisting of cars with a wheelbase between 105 and 109 inches.

LARGE-SIZE CAR: An automobile industry designation usually consisting of cars with a wheelbase of greater than 114 inches.

LOCAL RURAL ROADS: Streets outside urban boundaries other than principal arteries of travel.

MAIN RURAL ROADS: Streets outside urban boundaries that are generally recognized as principal arteries of travel.

MINI-SUBCOMPACT CAR: An automobile industry designation usually consisting of cars with a wheelbase of less than 95 inches.

MOTORCYCLE: A two- or three-wheeled motor vehicle designed to transport one or two people.

MULTIPURPOSE PASSENGER VEHICLE: A motor vehicle with motive power, except a trailer, designed to carry 10 persons or less which is constructed either on a truck chassis or with special features for occasional off-road operation.

NONOCCUPANT: Any person who is not an occupant of a motor vehicle in transport and includes: pedestrians, pedalcyclists, occupants of parked motor vehicles, and others such as joggers, skateboard riders, people riding on animals, and persons riding in animal-drawn conveyances.

OCCUPANT: Any person who is in or upon a motor vehicle in transport. Includes the driver, passengers, and persons riding on the exterior of a motor vehicle (e.g., a skateboard rider who is set in motion by holding onto a vehicle).

PASSENGER: Any occupant of a motor vehicle who is not a driver.

PASSENGER CAR: Any of the following types of motor vehicles: convertible; 2-door sedan, hardtop, coupe; 4-door sedan or hardtop, coupe; 3- or 5-door hatchback; automobile with pickup body; station wagon; and other small 4-wheel motor vehicles used primarily for carrying passengers.

PASSENGER-MILES: This figure represents the total distance traveled by all passengers in passenger cars and taxis. One passenger traveling one mile generates one passenger-mile.

PEDESTRIAN: Any person not traveling in or upon a motor vehicle or other vehicle.

SUBCOMPACT CAR: An automobile industry designation usually consisting of cars with a wheelbase between 95 and 99.

URBAN STREETS: Street within urban boundaries.

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

VEHICLE-MILES (BY TYPE OF STREET): These figures represent the total number of miles traveled by passenger cars, taxis, and motorcycles on the different types of streets. One vehicle traveling one mile generates one vehicle-mile.

BUS

AVERAGE PASSENGER TRIP LENGTH: Calculated by dividing revenue passenger-miles by the number of revenue passengers.

COMMERCIAL BUS: Any bus used to carry passengers at rates specified in tariffs; charges may be computed per passenger (as in regular route service) or per vehicle (as in charter service).

INTERCITY BUS-CLASS I: An interstate motor carrier of passengers with an average annual gross revenue of at least \$1,000,000 is defined by the ICC as a Class I carrier.

INTERCITY BUS-TOTAL: This figure includes Class I, II, and III interstate carriers, all of which report to the Interstate Commerce Commission, and intrastate carriers.

REVENUE PASSENGERS: Passengers on a commercial bus by or for whom a fare is paid.

REVENUE PASSENGER-MILES: One revenue passenger carried one mile generates one passenger-mile. The revenue passenger-miles reported thus represent the total distance traveled by all bus passengers.

SCHOOL BUS: A passenger motor vehicle which is designed or used to carry more than 10 passengers in addition to the driver, and which the Secretary of Transportation determines is likely to be significantly used for the purpose of transporting pre-primary, primary, or secondary school students to such schools from home or from such schools to home.

SCHOOL BUS - RELATED ACCIDENT: Any accident in which a vehicle, regardless of body design, used as a school bus is directly or indirectly involved, such as an accident involving school children alighting from a vehicle.

VEHICLE-MILE: One vehicle traveling the distance of one mile. Thus, total vehicle-miles is the total mileage traveled by all vehicles.

TRUCK

AVERAGE LENGTH OF HAUL (MILES): The average distance in miles one ton is carried. Computed by dividing total ton-miles by tons of freight originated.

COMBINATION TRUCKS: A tractor not pulling a trailer; a tractor pulling at least one full or semi-trailer; or a single-unit truck pulling at least one trailer.

GROSS VEHICLE WEIGHT (GVW): The maximum rated capacity of a vehicle which includes the weight of the vehicle, all added equipment, driver and passengers, and load.

HEAVY TRUCK: Trucks with GVW greater than 26,000 lbs.

ICC-REGULATED CARRIER: A for-hire motor carrier engaged in interstate or foreign commerce, subject to economic regulation by the Interstate Commerce Commission.

LIGHT TRUCK: Trucks with GVW under 10,000 lbs.

MEDIUM TRUCK: Trucks with GVW between 10,000 and 26,000 lbs.

NON-ICC REGULATED CARRIER: A for-hire motor carrier transporting commodities or conducting operations not subject to economic regulation by the Interstate Commerce Commission.

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

OPERATING EXPENSES: This includes expenditures for equipment maintenance, supervision, wages, fuel, equipment rental, terminal operations, insurance, safety, and administrative and general functions.

OPERATING REVENUES OF CLASS I INTERCITY MOTOR CARRIERS: This term is defined by the ICC to include the five categories of revenue listed in the text.

REVENUE: The total amounts received by carriers for transportation and other services.

SINGLE-UNIT TRUCK: A medium or heavy truck in which the engine, cab, drive train, and cargo area are all one chassis.

TAXES ASSIGNABLE TO OPERATIONS: Includes the amount of federal, state, county, municipal, and other taxing district taxes which relate to motor carrier operations and property use therein (except income taxes on ordinary income).

TON-MILES: The movement of one ton of freight the distance of one mile. Ton-miles are computed by multiplying the weight in tons of each shipment transported by the distance hauled.

VEHICLE-MILES: The miles of travel by all types of motor vehicles, as determined by the State highway departments on the basis of actual traffic counts and established estimating procedures.

TRANSIT

COMMUTER RAIL: Urban passenger train service for short distance travel between a central city and adjacent suburbs. Does not include rapid rail transit or light rail service.

DEMAND RESPONSE VEHICLE: A non-fixed-route vehicle with a lighting at pre-arranged times at any location within the system's service area.

FERRY BOAT: A boat providing fixed-route service over water.

HEAVY RAIL: An electric railway with the capacity for a "heavy volume" of traffic and characterized by exclusive rights-of-way, multicar trains, high speed and rapid acceleration, sophisticated signaling, and high platform loading. Also known as "subway," "elevated (railway)," or "metropolitan railway (metro)."

LIGHT RAIL: An electric railway with a "light volume" traffic capacity compared to "heavy rail." Light rail may be on exclusive or shared rights-of-way, high or low platform loading, multicar trains or single cars. Also known as "streetcar," "trolley car," and "tramway."

MOTOR BUS: Rubber-tired, self-propelled, manually steered bus with fuel supply onboard the vehicle. Motor bus types include: intercity, school, and transit.

OTHER REVENUE VEHICLES: Other modes of transit service such as cable cars, personal rapid transit systems of varying designs, monorail vehicles, inclined railway cars, etc., not covered otherwise.

OPERATING EXPENSES: The total of all expenses associated with operation of an individual mode by a given operator. At the required level, total operating expense is reported on line 14 of Form 301 for a single mode system, and is derived from Form 310 for a multimodal system. Operating expenses include distributions of "joint expenses" to individual modes, and exclude "reconciling items" such as interest expenses and depreciation. Do not confuse with 'vehicle operations expense'.

OPERATING REVENUE: Includes passenger revenue and revenue from charter and contract services.

PASSENGER-MILE: The number of miles traveled by passengers determined by multiplying the number of unlinked passenger trips times the average length of their trips.

PASSENGER REVENUE: Money, including fares and transfer, zone, and park-and-ride parking charges, paid by transit passengers; also known as "farebox revenue." Prior to 1984, data does not include fare revenues collected by contractors operating transit service.

RAIL RAPID TRANSIT: Transit service using rail cars driven by electricity usually drawn from a third rail, configured for passenger traffic and usually operated on exclusive rights-of-way. It generally uses longer trains and has longer station spacing than light rail.

REVENUE PASSENGERS: Single-vehicle transit rides by initial-board (first-ride) transit passengers only; excludes all transfer rides and all nonrevenue rides.

REVENUE VEHICLE-MILES: One vehicle (bus, trolley bus, streetcar, etc.) traveling one mile while revenue passengers are on board generates one revenue vehicle-mile. The revenue vehicle-miles reported thus represent the total mileage traveled by vehicles in scheduled or unscheduled revenue-producing services.

STREETCARS: Relatively lightweight passenger rail cars operating singly or in short trains or fixed rails in right-of-way that is not always separated from other traffic for much of the way. Streetcars do not necessarily have the right-of-way at grade crossings with other traffic.

TROLLEY BUS: An electric rubber-tired transit vehicle, manually steered, propelled by a motor drawing current from a central power source not on board the vehicle through overhead wires.

UNLINKED PASSENGER TRIPS: The number of transit vehicle boardings, including charter and special trips. Each passenger is counted each time that person boards a vehicle.

VANPOOL: A transit service in which passengers share a van with one passenger designated "driver." The route is "fixed," but varies as passengers change.

VEHICLE MAINTENANCE EXPENSES: Expense of labor, materials, services, and equipment used to repair and to service transit vehicles and service vehicles.

VEHICLE-MILES OPERATED: Sum of all miles operated by passenger vehicles, when no passengers are carried. When vehicles are operated in trains, each vehicle is accounted separately -e.g., an eight-vehicle train operating for one mile equals eight vehicle-miles.

VEHICLE OPERATIONS EXPENSES: Expense for labor, materials, fees, and rents reburied for operating transit vehicles and passenger stations including all fuels for vehicle propulsion except electric propulsion power.

WATER TRANSPORT

BULK CARRIER: A ship designed with specialized holds for carrying dry or liquid commodities, in unpackaged bulk form, such as oil, grain, ore, and coal. Bulk carriers may be designed to carry a single bulk product (crude oil tanker), or accommodate several bulk product types (ore/bulk/oil carrier) on the same voyage or on a subsequent voyage after its holds are cleaned.

BUNKER C/NUMBER 6 FUEL OIL: A high viscosity oil used mostly by ships, industry, and large-scale heating installations. This heavy fuel requires preheating in the storage tank to permit pumping and additional preheating to permit atomizing at the burners.

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

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

CLASS A CARRIERS BY INLAND AND COASTAL WATERWAYS: A Class A carrier by water is one with an average annual operation revenue that exceeds \$500,000.

CLASS B CARRIERS BY INLAND AND COASTAL WATERWAYS: A Class B carrier by water is one with an average annual operating revenue greater than \$100,000 but less than \$500,000.

COASTWISE TRAFFIC: Domestic traffic which moves over the ocean, or the Gulf of Mexico; e.g., between New Orleans and Baltimore, New York and Puerto Rico, San Francisco and Hawaii, Puerto Rico and Hawaii. Traffic between Great Lakes ports and seacoast ports, when having a carriage over the ocean, is also deemed to be coastwise. The Chesapeake Bay and Puget Sound are considered internal bodies of water rather than arms of the ocean; traffic confined to these areas is deemed to be "internal" rather than coastwise.

DEADWEIGHT TONNAGE: The carrying capacity of a vessel in long tons (2,240 pounds). It is the difference between the light ship weight and the displacement loaded.

DOMESTIC FREIGHT: All waterborne commercial movements between points in the United States, Puerto Rico and the Virgin Islands, excluding traffic with the Panama Canal Zone. Cargo moved for the military in commercial vessels is reported as ordinary commercial cargo; military cargo moved in military vessels is omitted.

DOMESTIC PASSENGER: Any person traveling on a public conveyance by water between points in the United States, Puerto Rico, and the Virgin Islands.

DRY CARGO BARGES: Large flat-bottomed, non-self-propelled vessels used to transport dry bulk materials such as coal and ore.

EXPORTS: Outbound international freight including re-export of foreign merchandise.

FATALITY: All deaths and missing persons resulting from a vessel casualty.

FREIGHTERS: General cargo carriers, full containerhips, partial containerhips, roll-on/roll-off (Ro-Ro) ships, and barge carriers.

IMPORTS: Inbound international freight.

INJURY: All personal injuries resulting from a vessel casualty.

INLAND AND COASTAL WATERWAYS:

INLAND AND COASTAL CHANNELS: These terms include the Atlantic Coast Waterways, the Atlantic Intracoastal Waterway, the New York State Barge Canal System, the Gulf Coast Waterways, the Gulf Intracoastal Waterway, the Mississippi River System (including the Illinois Waterway), Pacific Coast Waterways, the Great Lakes, and all other channels (waterways) of the United States, exclusive of Alaska, that are usable for commercial navigation.

INTERNAL TRAFFIC: Term used to refer to traffic when the entire movement between ports or landings takes place on inland waterways. The following types of movements are also termed "internal": movements involving carriage on both inland waterways and waters of the Great Lakes, inland movements that cross short stretches of open waters that link inland systems; marine products, sand and gravel taken directly from beds of the oceans, the Gulf of Mexico and important arms thereof, and movements between offshore installations and inland waterways.

INTERNATIONAL (FOREIGN) FREIGHT: Movements between the United States and foreign countries and between Puerto Rico, the Virgin Islands and foreign countries. Trade between U.S. territories and possessions (i.e., Guam, Wake, American Samoa, etc.) and foreign countries is excluded. Traffic to or from the Panama Canal Zone is included.

INTERNATIONAL PASSENGER: Any person traveling on a waterborne public conveyance between the United States and foreign countries and between Puerto Rico and the Virgin Islands and foreign countries.

INTRATERRITORIAL TRAFFIC: Traffic between ports in Puerto Rico and the Virgin Islands, which are considered as a single unit.

LAKELIKE OR GREAT LAKES: These terms apply to traffic between U.S. ports on the Great Lakes system. The Great Lakes system is treated as a separate system rather than as a part of the inland system.

LOCAL: Movements of freight within the confines of a port, whether the port has only one or several arms or channels, except car-ferry and general ferry, are termed "local." The term is also applied to marine products, sand, and gravel taken directly from the Great Lakes.

MARITIME CARRIERS: Carriers which operate on the open sea; i.e., their operations must include a foreign or international component and may include a domestic component.

MARITIME REVENUE: Revenue received for operations in international or foreign shipping.

NON-SELF-PROPELLED: Vessels not containing within themselves the means for their own propulsion.

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

PASSENGER/COMBINATION VESSELS: Ships with a capacity for 13 or more passengers.

PASSENGER-MILE, INTERCITY: Moving one passenger one mile on a trip between two cities generates one intercity passenger mile.

PASSENGER VESSELS: Domestic passenger service, other than short-haul ferry, is limited. However, two operators offer coastwise and river system cruises with small cruise vessels accommodating about 100 passengers each. One operator provides cruises within the Hawaiian Islands, using a refurbished trans-Atlantic passenger liner. The State of Alaska seasonally operates several large passenger/vehicle ferries between Seattle and points in southeastern Alaska, plus service between points in and around Cook Inlet and Prince William Sound.

SELF-PROPELLED TOWBOAT: A self-propelled compact, shallow-draft boat with a squared bow and towing "knees" for pushing tows of barges on inland waterways.

SCOWS: Large, flat-bottomed non-self-propelled vessels used to transport sand, gravel, or refuse.

TANKERS: Crude petroleum, petroleum product, and chemical tankers, LNG and LPG tankers, wine, molasses, and whaling tankers.

TANKSHIP: Carries liquid cargo in bulk, stowed in cargo tanks within vessel hull. Cargo is pumped aboard by a shore terminal and unloaded using the vessel's installed pumping system. It is one of the largest and newest vessels used in domestic commerce, with sizes ranging from 16,000 to 190,000 deadweight tons. Commonly referred to as "tanker." Approximately 180 are presently in domestic service.

TON-MILE: Moving one ton one mile generates one ton-mile.

TONS OF FREIGHT HAULED: The figures for tons of freight hauled on domestic waterways include exports and imports.

TUG: A strong but powerful vessel designed for moving larger vessels or for towing barges.

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

WATERBORNE TRANSPORTATION: Transport of freight and/or people by commercial vessels under USCG jurisdiction.

RECREATIONAL BOATING

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

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

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

RAILROAD

AMTRAK (AMERICAN RAILROAD TRACKS): Operated by the National Railroad Passenger Corporation of Washington, D.C. This rail system was created by President Nixon in 1970 and was given the responsibility for the operation of intercity, as distinct from suburban, passenger trains between points designated by the Secretary of Transportation.

AVERAGE HAUL: The average distance, in miles, one ton is carried. It is computed by dividing ton-miles by tons of freight originated.

AVERAGE PASSENGER TRIP LENGTH: Calculated by dividing the number of revenue passenger-miles by the number of revenue passengers carried.

CAR-MILE: The movement of a car the distance of one mile. An empty car-mile is a mile run by a freight car without a load; a loaded car-mile is a mile run by a freight car with a load. In the case of intermodal movements, the car-miles generated will be loaded or empty depending on whether the trailers/containers are moved with or without a waybill, respectively.

CLASS I RAILROAD: A railroad with an annual gross operating revenue in excess of \$250 million based on 1991 dollars.

FATALITY: 1. Death of any person from an injury within 30 days of the accident/incident; or 2. Death of a railroad employee from occupational illness within 365 days after the occupational illness was diagnosed by a physician.

FREIGHT REVENUE: Revenue from the transportation of freight and from the exercise of transit, stop-off, diversion, and reconsignment privileges, as provided for in tariffs.

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

LINE MILEAGE: The aggregate length of roadway of all line-haul railroads. It does not include the mileage of yard tracks or sidings, nor does it reflect the fact that a mile of railroad may include two or more parallel tracks. Jointly-used track is counted only once.

LOCOMOTIVE: Self-propelled unit of equipment designed for moving other rail freight and passenger equipment on railroad tracks, including self-propelled units.

LOCOMOTIVE-MILE: The movement of a locomotive unit, under its own power, the distance of one mile.

NONTRESPASSERS: Persons who are lawfully on any part of railroad property that is used in railroad operations or persons adjacent to railroad premises when injured as the result of railroad operations.

OPERATING EXPENSE: Expenses of furnishing transportation service, including maintenance and depreciation of the plant used in the service.

OPERATING REVENUE: The amount of money that a carrier receives from transportation operations.

OTHER REVENUE: This is a general heading that includes revenues from miscellaneous operations (i.e., dining and bar car services), income from lease of road and equipment, miscellaneous rent income, income from nonoperating property, profit from separately operated properties, dividend income, interest income, income from sinking and other reserve funds, release or premium on funded debt, contributions from other companies, and other miscellaneous income.

PASSENGER REVENUE: Revenue from the sale of tickets.

PASSENGER TRAIN-CARS: Cars typically found in passenger trains include coaches, sleeping cars (formerly called Pullman cars), parlor cars, dining cars, lounge cars, baggage cars, crew-dormitory cars, and observation cars.

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

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

RAIL MOTOR CARS: Self-propelled passenger rail cars which are driven by electric motors energized from an electrified roadway or by a generator driven by a diesel or gas turbine engine.

REVENUE PASSENGERS CARRIED: Number of one-way trips made by persons holding tickets.

REVENUE PASSENGER-MILE: One revenue passenger traveling one mile generates one revenue passenger-mile. The revenue passenger-miles reported thus represent the total distance traveled by all railroad passengers.

REVENUE TON-MILES: Revenue freight traffic measured in ton-miles.

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

TRAIN-MILE: The movement of a train the distance of one mile.

TRESPASSERS: Persons whose presence on railroad property used in railroad operation.

RAIL RAPID TRANSIT

ACCIDENT: An incident involving a moving vehicles. Includes a vehicle, object, or person (except suicides) or a derailment/left roadway.

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

COLLISION WITH OBJECT: An incident involving one or more vehicles from a transit agency with an obstacle (buildings, shopping carts and other objects on rights-of-way) other than vehicles or persons.

COLLISION WITH PERSON: An incident in which a transit vehicle strikes a person. Except where specifically indicated, collisions with people do not include suicide attempts. Reports are made if the incident results in a death, injury, or property damage of \$1,000.

DERAILMENT/LEFT ROADWAY: A noncollision incident in which a transit vehicle leaves the rails or road on which it travels; this also includes rollovers. Reports are made for all occurrences.

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

INCIDENT: Collisions, derailments, personal casualties, fires, and property damage in excess of \$1,000, associated with transit agency revenue vehicles; all other facilities on the transit property; and service vehicles, maintenance areas and rights-of-way.

INJURY: Any physical damage or harm to a person; there are no thresholds, all injuries are reported.

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

PERSONAL CASUALTY ON VEHICLE: An incident in which a person is injured on a transit vehicle, but not as a result of a collision, derailment/left roadway, or fire.

PERSONAL CASUALTY ENTER/EXIT: An incident in which a person is hurt while getting on or off a transit vehicle (e.g., falls or door incidents), but not as a result of a collision, derailment/left roadway, or fire.

PERSONAL CASUALTY LIFTS: An incident in which a person is hurt while using a lift to get on or off a transit vehicle, but not as a result of a collision, derailment/left roadway, or fire.

PERSONAL CASUALTY STATION/STOP: An incident in which a person is hurt while using a transit facility. This includes anyone on transit property (e.g., patrons, transit employees, trespassers), but does not include incidents resulting from illness or criminal activity.

PERSONAL CASUALTY ESCALATOR: An incident in which a person is hurt while using an escalator in a transit facility.

PROPERTY DAMAGE: The dollar amount required to repair or replace transit property damaged during an incident.

OIL PIPELINE

AVERAGE LENGTH OF HAUL (miles): The total number of ton-miles divided by the total number of tons transported.

BARREL (OIL): A volumetric unit of measurement equivalent to 42 U.S. standard gallons.

COKE: The residue left by petroleum which has been distilled to dryness.

CRUDE OIL: A mixture of hydrocarbons that exists in the liquid phase in natural underground reservoirs and remains liquid at atmospheric pressure after passing through surface-separating facilities.

CRUDE OIL GATHERING LINES: A network of pipelines transporting crude oil from individual wells to compressor station, processing point, or main trunk pipeline.

CRUDE OIL TRUNK LINES: One of three types of pipeline network that is used to transport crude oil to the refineries for processing.

DISTILLATE FUEL OIL: The lighter fuel oils distilled away during the refining process. Included are products known as ASTM grades Nos. 1 and 2 heating oils, diesel fuels, and No. 4 fuel oil. The major uses of distillate fuel oils include heating, fuel for on- and off-highway diesel engines, and railroad diesel fuel.

FERC-REGULATED PIPELINE: A pipeline company operating in interstate commerce under a grant of authorization from the Federal Energy Regulatory Commission and subject to economic regulation by the Commission. Such a pipeline company is required to report relevant statistics to the FERC.

LIQUID TRANSMISSION: Pipelines carrying hazardous material, petroleum and petroleum products in liquid form.

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

NO. 2 DISTILLATE FUEL OIL: A petroleum distillate which meets the specifications for No. 2 heating oil and/or the specifications for diesel fuel grade No. 2.

NONREGULATED PIPELINE: A pipeline company not operating as a common carrier in interstate commerce, hence required neither to secure a grant of operating authority from the Federal Energy Regulatory Commission nor to report to it.

OPEC: Organization for Petroleum Exporting Countries including Saudi Arabia, Iran, Venezuela, Libya, Indonesia, United Arab Emirates, Algeria, Nigeria, Ecuador, Gabon, Iraq, Kuwait, and Qatar.

OPERATING EXPENSES: Expenditures necessarily made while providing services by which operating revenue is earned.

OPERATING REVENUE: Revenue from the transportation of oil and from services incidental to such transportation.

OTHER DISTILLATE FUEL OILS: All other refined petroleum products not included in any other category and which, when produced in conventional distillation operations, have a boiling range from 10% point at 167 degrees C to 90% point at 375 degrees C. Included are products known as No. 1 and No. 4 distillate fuel oils and diesel oils.

PETROLEUM: A material occurring naturally in the earth and predominantly composed of mixtures of chemical compounds of carbon and hydrogen with or without other nonmetallic elements such as sulfur, oxygen, nitrogen, etc. Petroleum may contain, or be composed of, such compounds in the gaseous, liquid, and/or solid state, depending on the nature of these compounds and the existent conditions of temperature and pressure.

PETROLEUM CONSUMPTION, ELECTRIC UTILITY SECTOR: Domestic demand for all fuel oils at electric utilities.

PETROLEUM CONSUMPTION, INDUSTRIAL SECTOR: Domestic demand for petroleum products for use by establishments engaged in processing unfinished materials into another form or product. Excludes industrial space heating.

PETROLEUM CONSUMPTION, "OTHER" SECTOR: Domestic demand for miscellaneous products and for some agricultural uses.

PETROLEUM CONSUMPTION, RESIDENTIAL AND COMMERCIAL: Domestic demand for petroleum products by private households and nonmanufacturing establishments. Includes industrial space heating and road paving.

PETROLEUM CONSUMPTION, TRANSPORTATION SECTOR: Domestic demand for petroleum products for on-highway use, aircraft and vessel bunkering, and railroad use.

PIPELINE: All parts of those physical facilities through which gas is moved in transportation, including pipe, valves and other appurtenances attached to pipe, compressor units, metering stations, regulator stations, delivery stations, holders and fabricated assemblies.

REFINED PRODUCT TRUNK LINES: One of three types of pipeline network that is used to transport refined petroleum products (i.e., gasoline, kerosene, residual oil, etc.) from the refineries to local distribution centers near large market areas.

RESIDUAL FUEL OIL: The heavier oils that remain after the distillate fuel oils and lighter hydrocarbons are distilled away in refinery operations and that conform to ASTM Specifications D396 and 976. Included are No. 5, a residual fuel oil of medium viscosity; Navy Special, for use in steam-powered vessels in government service and in shore power plants; and No. 6, which includes Bunker C fuel oil and is used for commercial and industrial heating, electricity generation, and to power ships. Imports of residual fuel oil include imported crude oil burned as fuel.

GAS PIPELINE

GAS. COMBINATION COMPANY: A company that supplies both gas and some other utilities service (electricity, water, etc). A combination utilities derives at least 5 percent but less than 95 percent of its total sales revenues from gas operations.

GAS, DISTRIBUTION COMPANY: A company that obtains the major portion of its gas operating revenues from the operation of a retail gas distribution system, and which operates no transmission system other than incidental connections within its own system or the system of another company. A distribution company obtains at least 90 percent of its gas operating revenues from sales to ultimate customers and classifies at least 90 percent of mains (other than service pipe) as distribution.

GAS, INTEGRATED COMPANY: A company that obtains a significant portion of its gas operating revenues from the operations of both a retail gas distribution system and gas transmission system. An integrated company obtains less than 90 percent but more than 10 percent of its gas operating revenues from either its retail or transmission operations or does not meet the classification of mains established for distribution.

GAS, TRANSMISSION COMPANY: A company which obtains at least 90 percent of its gas operating revenues from sales for resale and/or transportation of gas for others and/or main line sales to industrial customers and classifies at least 90 percent of mains (other than service pipe) as field and gathering, storage and/or transmission.

GAS TRANSMISSION: Pipelines transporting natural gas, flammable gas or gas which is toxic or corrosive in transmission or gather operations.

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

DISTRIBUTION MAINS: Generally, mains, services, and equipment that carry or control the supply of gas from the point of local supply to and including the sales meters.

FIELD AND GATHERING PIPELINES: A network of pipelines (mains) transporting natural gas from the individual wells to a compressor station, processing point, or main trunk pipeline.

LIQUID PETROLEUM GAS (LPG): A gas containing certain specific hydrocarbons which are gaseous under normal atmospheric conditions but can be liquefied under moderate pressure at normal temperatures. Propane and butane are the principal examples.

MAINS: A distribution line that serves as a common source of supply for more than one gas service line.

NATURAL GAS: A naturally occurring mixture of hydrocarbon and nonhydrocarbon gases found in porous geologic formations beneath the earth's surface, often in association with petroleum. The principal constituent is methane.

LIQUEFIED NATURAL GAS (LNG): Natural gas that has been liquefied by reducing its temperature to -260°F at atmospheric pressure.

REPRESSURING: Forcing gas, under pressure, into the oil reservoir in an attempt to increase the recovery of crude oil; also done with water.

TRANSMISSION PIPELINE: Pipelines (mains) installed for the purpose of transmitting gas from a source or sources of supply to one or more distribution centers, or to one or more large-volume customers, or a pipeline installed to interconnect sources of supply. In typical cases, transmission lines differ from gas mains in that they operate at higher pressures, are longer, and the distance between connections is greater.

HAZARDOUS MATERIALS

FATALITY: Death that was due to a hazardous material.

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

INCIDENT: Any unintentional release of hazardous material while in transit or storage.

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

ENERGY

ASPHALT: A dark-brown-to-black cement-like material containing bitumens as the predominant constituents, obtained by petroleum processing. The definition includes crude asphalt as well as the following finished products; cements, fluxes, the asphalt content of emulsions (exclusive of water), and petroleum distillates blended with asphalt to make cutback asphalt.

AVIATION GASOLINE, FINISHED: All special grades of gasoline for use in aviation reciprocating engines, as given in ASTM Specification D910, and Military Specification MIL-G-5572. Excludes blending components that will be used in blending or compounding into finished aviation gasoline.

BTU--BRITISH THERMAL UNIT: The amount of energy required to raise the temperature of one pound of water by 1°F at or near 39.2°F.

ELECTRIC UTILITY: A corporation, person, agency, authority, or other legal entity or instrumentality, that owns and/or operates facilities within the United States, its territories, or Puerto Rico, for the generation, transmission, distribution, or sale of electricity, primarily for use by the public, and that files forms listed in the Code of Federal Regulations, Title 18, Part 141.

ENERGY EFFICIENCY: In reference to transportation, the inverse of energy intensiveness: the ratio of outputs from a process to the energy inputs; for example, miles traveled per gallon of fuel (mpg).

FOSSIL FUELS: Any naturally occurring organic fuel such as petroleum, coal, and natural gas.

GASOHOL: A blend of finished motor gasoline (leaded or unleaded) and alcohol (generally ethanol but sometimes methanol) limited to 10 percent by volume of alcohol.

GASOLINE: A refined petroleum product which, by its composition, is suitable for use as a fuel in internal combustion engines.

MOTOR GASOLINE, FINISHED: A complex mixture of relatively volatile hydrocarbons, with or without small quantities of additives, that have been blended to form a fuel suitable for use in spark-ignition engines and conforming to ASTM Specification D439. Included are the following:

LEADED REGULAR: A gasoline having an antiknock index $(R+M)/2$ greater than or equal to 87 and less than or equal to 90 and containing more than 0.05 grams of lead or 0.005 grams of phosphorus per gallon.

UNLEADED REGULAR: Motor gasoline having an antiknock index, calculated as $(R+M)/2$ of 87 containing not more than 0.05 grams of lead per gallon and not more than 0.005 grams of phosphorus per gallon.

LEADED PREMIUM: Motor gasoline having an antiknock index, calculated as $(R+M)/2$, greater than 90 and containing more than 0.05 grams of lead per gallon or more than 0.005 grams of phosphorus per gallon.

UNLEADED PREMIUM: Motor gasoline having an antiknock index, calculated as $(R+M)/2$, greater than 90 containing not more than 0.05 grams of lead per gallon or 0.005 grams of phosphorus per gallon.

PSI: Pounds per square inch.

ROAD OIL: Any heavy petroleum oil, including residual asphaltic oil used as a dust palliative and surface treatment on roads and highways. It is generally produced in six grades from 0, the most liquid, to 5, the most viscous.

APPENDIX D

INDEX

INDEX

Subject

Accident Rates

air	87,89,100,101
general aviation	104
railroads	129

Accidents - *see also Fatalities*

air	87,89,100,101
automobile	87
bus	118
general aviation	87,102
hazardous materials	87,135
modal breakdown	87
motor vehicle,	109
by posted speed limit	112
pipeline,	
gas	87,132
liquid	87,132
rail-highway grade crossing	87
rail rapid transit	87
railroad	87,128,129
recreational boating,	87,122
property damage	125
truck	118
water	87,119,121

Air Bags

installations in automobiles and trucks	117
---	-----

Air Carriers - *see also Air Travel; General Aviation*

accident rates	91,100,101
accidents	87,89,100,101
aircraft,	
number of	71
purchased	72
bomb threats	99
collisions, near midair	96
emissions	177
employment	154
energy, intensiveness	200
expenditures,	
freight	160
passenger	160
personal consumption	146
fares, passenger	58
fatalities	86,89,93,100,101
fatality rates	93
fuel,	
consumption	170,171
price, retail	189
Gross Domestic Product	151
hijackings	98
injuries,	86,100,101,115
length of haul	70
load factor	200
mileage,	
flown	91,200
intercity	68
national income	151,153
on-time performance	75

INDEX (cont'd)

passenger-miles	64,93,200
passengers denied boarding	75
productivity, output per employee-hour	159
profile	20-23
revenues,	
freight	56
operating	60
passenger	54
screening, passenger	97
ton-miles	66
vehicle-miles	62
wages and salaries	156

Air Taxis - *see Air Carriers*

Air Travel - *see also Air Carriers*

international arrivals	76
international departures	77

Airports

number of	73
passenger enplanements	74

Alcohol

involvement in motor vehicle fatalities	116
---	-----

Amtrak - *see also Railroads*

energy, intensiveness	206
fares, passenger	58
fuel, consumption	206
length of haul	70
on-time performance	84
passenger-miles	64,206
profile	45
revenues,	
operating	60
passenger	54
vehicle-miles	62
vehicles,	
number of	71
purchased	72

Anti-lock Braking Systems

installations in automobiles and trucks	117
---	-----

Automobiles - *see also Motor Vehicles*

accidents	87,112
air bags	117
anti-lock braking systems	117
emissions,	
Federal control requirements	185
particulate matter	184
emissions equipment	144
employment	155
energy, intensiveness	202
expenditures, personal consumption	146,160
fatalities	86,107
fleets	78
fuel,	
consumption	170,173

INDEX (cont'd)

efficiency	140,191
price, retail	190
injuries	86,115
licensed drivers	106
operating costs	143
passenger-miles	64,202
price comparisons	144
profile	29-31
registrations	106
sales,	
factory	138
market shares	140
retail	139
speed trends	83
vehicle-miles	62,202
vehicles,	
household availability	236
number of	71
produced	
United States	138,142
world	142
purchased	72

Barges

number of	71
-----------------	----

Boating - see *Inland Waterways; Water*

Buses - see also *School Buses; Motor Vehicles; Transit*

accidents	118
employment	154
energy, intensiveness	203,205
expenditures,	
freight	160
passenger	160
personal consumption	146
fares, passenger	58
fatalities	106, 118
fuel, consumption	170, 174
injuries	118
length of haul	70
passenger-miles	64,203,205
productivity, output per employee-hour	159
profile	32-33
registrations	160,174
revenues,	
operating	60
passenger	54
sales, factory	138
vehicle-miles	62,174,205
vehicles,	
number of	71
purchased	72

Cargo - see *Freight*

Commuter Air Carriers - see *Air Carriers*

INDEX (cont'd)

Commuter Rail - see also Transit

fares, passenger	58
length of haul	70
passenger-miles	64
revenue, passenger	54
vehicle-miles	62
vehicles,	
number of	71
purchased	72

Commuting - see Journey-to-Work

Congestion - see Highways, traffic delay

Consumer Price Index	54
-----------------------------------	----

Conversion, metric	A-1
---------------------------------	-----

Demand response - see Transit

Electricity - see Energy

Emissions - see also heading under individual modes; Highways

carbon monoxide	177
Federal control requirements	185,186,187
lead	183
nitrogen oxides	178
nonmethane volatile organic compounds	179
particulate matter	181
sulfur dioxide	182

Employment

air	154
automobile	155
bus	154
pipeline	154
railroad	154
taxi	154
transit	154
transportation, modal breakdown	154-155
transportation-related industries	155
truck	154
water	154

Energy - see also Fuel

consumption,	
by sector	193
transportation sector	194
U.S. government agencies	197,198
conversion factors	back cover
crude oil, transported by mode	210
intensiveness,	
air carrier	200, 201
Amtrak	206
automobile	202
bus	203,205
general aviation	201
motorcycle	202
railroads, Class I	206
school bus	205
trucks	204
equivalents	168

INDEX (cont'd)

oil spills, by source	215
petroleum products,	
consumption	196
demand	219
production	196
supplied	218,220
transported, modal breakdown	211,212
ton-miles	210
transportation,	
R & D outlays, U.S. government	166

Expenditures - *see also heading under individual modes*

consumption,	
personal	148,150
by transportation sector	146
freight, modal breakdown	160
highway, capital	162
passenger, modal breakdown	160
pollution, abatement and control	188
railroad, capital and maintenance	162
transportation	163,164,165

Fares

passenger, modal breakdown	58
----------------------------------	----

Fatalities - *see also Accidents*

air	86,89,93,100,101,102
alcohol-related, motor vehicle	116
automobile	107,116
bus	118
general aviation	86,102
hazardous materials	86
modal breakdown	86
motor vehicle	86,106,107,109
motorcycle	86,106,107,109
pedalcyclist	107
pedestrian	107
pipeline,	
gas	86,132
liquid	86,132
rail rapid transit	86
rail-highway grade crossing	86,127,129
railroad	86,127,128,129
recreational boating	86,122
truck	107,118
water	86,119

Fatality Rates

air carrier	93
general aviation	104
motor vehicle	106
recreational boating	122
truck	111

Fleets - *see Automobiles*

Freight

average length of haul, modal breakdown	70
expenditures, modal breakdown	160
revenues, modal breakdown	56
ton-miles,	

INDEX (cont'd)

modal breakdown	66
per capita	161
tons, per capita	161

Fuel - *see also Energy*

consumption,	
air carrier	170,171,200
automobile	170,173
bus	170,174
general aviation	201
modal breakdown	170
motor vehicles	172
motorcycle	173
pipeline	170
railroad	170
school bus	170,174
transit	170,176
truck	170,175
water	170
efficiency,	
automobiles,	191
sales-weighted	140
light trucks, sales-weighted	141
miles, gas utility	214
price, retail	189,190

Gasoline - *see Fuel*

General Aviation - *see also Air Carriers*

accident rate	104
accidents	87,102
aircraft,	
number of	71
purchased	72
energy, intensiveness	201
fatality rate	104
fatalities	86,102,104
fuel,	
consumption	170,201
price, retail	189
injuries	86,102
passenger-miles	64,201
profile	24,25
vehicle-miles	62

Grants,

transportation by program	165
---------------------------------	-----

Gross Domestic Product

by transportation sector	151
national transportation and economic trends	153

Hazardous Materials

fatalities	86
injuries	87

Heavy Rail - *see Transit*

INDEX (cont'd)

Highways - *see also Automobiles; Buses; Trucks*

emissions, from highway vehicles	177,178,179,181,182,183,184
employment	155
expenditures,	
capital	162
maintenance	162
fuel, price, retail	189
mileage,	
by surface	79
intercity	68
lane	80,162
profile	26-28
speed trends	83
surface	79
traffic delay,	
cities	81
urban areas	82
vehicle-miles traveled	80

Injuries

air	86,100,101
automobile	86,115
bus	118
general aviation	86,102
hazardous materials	86
modal breakdown	86
pipeline,	
gas	86
liquid	86
rail-highway grade crossing	86,127
rail rapid transit	86
railroad	86,128
recreational boating	86,122
truck	118
water	86,119

Inland waterways - *see also Water*

length of haul	70
mileage, intercity	68
revenues, freight	56
ton-miles	66
vessels, number of	71
water profile	40-42

International

air carrier arrivals	76
air carrier departures	77
motor vehicle production	142

Journey-to-Work

modal share	235
national summary	230,231
time,	
intervals	233
leaving home	234
mean travel time to work	232

Light Rail - *see Transit*

INDEX (cont'd)

Local Transit - *see Transit*

Locomotives - *see Amtrak; Railroads*

Motor Carriers of Property - *see Trucks*

Motor Vehicles - *see also Automobiles; Buses; Motorcycles; School Buses; Trucks*

accidents	109
by posted speed limit	112
alcohol-related fatalities	116
fatalities	86,106,107,109
fatality rates	106
fuel consumption	172
production, international	142
speed of travel	83
vehicle-miles	106,172

Motorcycles

accidents	109,112
automobile profile	29-31
energy, intensiveness	202
fatalities	107,112
fuel, consumption	173
passenger-miles	64,202
registrations	106
vehicle-miles	62,202
vehicles,	
number of	71
purchased	72

National Income

by transportation sector	151
--------------------------	-----

Natural Gas - *see Energy; Pipeline*

Oil - *see Energy; Pipeline*

Passenger-miles

air carrier	93
general aviation	201
modal breakdown	64

Passengers

denied boarding at airports	75
enplanements	74
expenditures, modal breakdown	160
fares, modal breakdown	58
length of haul, modal breakdown	70
passenger revenue per passenger-mile,	
modal breakdown	54
screening at airports	97

Pedestrians

fatalities	107
------------	-----

Pedalcyclists

fatalities	107
------------	-----

INDEX (cont'd)

Petroleum - *see Energy; Pipeline*

Pipeline

accidents	87,132
employment	154
expenditures, freight	160
fatalities	86,132
fuel, consumption	170
Gross Domestic Product	151
length of haul	70
mileage,	
gas utility	214
intercity	68
national income	151
natural gas profile	47,48
oil profile	46
productivity, output per employee-hour	159
revenues,	
freight	56
operating	60
ton-miles	66,210
transportation,	
crude oil	210
crude petroleum and petroleum products	212
petroleum, refined	211
wages and salaries	156

Police Vehicles

in fleets	78
-----------------	----

Pollution - *see also Emissions and Emissions under Automobiles; Trucks*

expenditures	188
--------------------	-----

Population, U.S.	153
-------------------------------	-----

Price

transportation, fuel, retail	189
trend of gasoline vs. other consumer goods	190

Productivity - *see heading under Air Carriers; Buses; Pipelines; Railroads; Trucks*

Producer Price Index

revenues, freight	56
-------------------------	----

Railroads - *includes Class I; see also Amtrak*

accident rate	129
accidents	128,129
emissions	177,178,181,182
employment	154
energy, intensiveness	206
expenditures,	
capital and maintenance	162
freight	160,206
passenger	160,206
personal consumption	146
fatalities	86,127,128,129
fuel,	
consumption	206

INDEX (cont'd)

price, retail	189
Gross Domestic Product	151
injuries	127,128
length of haul	70
mileage, intercity	68
national income	151
passenger-miles	64
productivity, output per employee-hour	159
profile	43,44
revenues,	
freight	56
operating	60
ton-miles	206
train-miles	62,129
transportation,	
crude oil	210
crude petroleum and petroleum products	212
petroleum, refined	211
vehicles,	
number of	71
purchased	72
wages and salaries	156
Recreational Boating - see also Water	
accidents,	87,122
property damage	125
fatalities	86,122
fatality rates	122
injuries	86,122
Research and Development Outlays	166
Revenues	
Federal, state and local	163
freight, modal breakdown	56
operating, modal breakdown	60
passenger revenue per passenger-mile,	
modal breakdown	54
Salaries - see Wages and Salaries	
School Buses - see also Buses; Motor Vehicles	
energy, intensiveness	205
expenditures, passenger	160
fuel, consumption	170,174,205
passenger-miles	64,205
registrations	174
vehicle-miles	62,174,205
vehicles,	
number of	71
purchased	72
Space	
commercial launches	226,228
payloads launched	227
Speed	
of motor vehicle travel	83

INDEX (cont'd)

Speed Limits

in motor vehicle accidents 112

Streetcars - *see Transit*

Subway - *see Transit*

Tankers,

number of 71,214
 speed, in knots 214
 weight 214

Taxis - *see also Automobiles*

employment 154
 expenditures, personal consumption 146,160
 in fleets 78

Ton-miles,

freight, per capita 161
 modal breakdown 66
 petroleum products 210,211,212

Towboats,

number of 71

Transit - *see also Commuter Rail*

employment 154
 energy,
 consumption 176
 intensiveness 205
 expenditures,
 passenger 160
 personal consumption 146
 fares, passenger 58
 fatalities, rail rapid transit 86
 fuel, consumption 170,176
 Gross Domestic Product 151
 national income 151
 passenger-miles 64
 profile 37-39
 revenues, operating 60
 vehicle-miles 62
 vehicles,
 number of 71
 purchased 72
 wages and salaries 156

Trolley Coaches/Buses - *see Transit*

Trucks - *see also Highway; Motor Vehicles*

accidents 118
 air bags 117
 anti-lock braking systems 117
 emissions,
 Federal control requirements 185,186,187
 particulate matter 184
 employment 154
 energy, intensiveness 204
 expenditures 160

INDEX (cont'd)

fatality rates	111
fatalities	107,118
fuel,	
consumption	170,175
efficiency	141
price, retail	189
Gross Domestic Product	151
injuries	118
length of haul	70
national income	151
passenger-miles	64,204
productivity, output per employee-hour	159
profile	34-36
registrations	106,175
revenues,	
freight	56
operating	60
sales,	
market shares	141
retail	141
ton-miles	66
transportation,	
crude oil	210
crude petroleum and petroleum products	212
petroleum, refined	211
vehicle-miles	62,175,204
vehicles,	
number of	71
purchased	72
wages and salaries	156

Vehicle-miles

modal breakdown	62
motor vehicle	106,172

Vehicles - *see individual modes*

Wages and Salaries - *see also heading under individual modes*

per full-time employee, by transportation sector	156
by transportation sector	156

Water - *see also Inland Waterways; Recreational Boating*

accidents	87,119,121
employment	154
expenditures,	
freight	160
passenger	160
fatalities	86,119,121
fuel, consumption	170
Gross Domestic Product	151
injuries	119
length of haul	70
national income	151
passenger-miles	66
profile	40-42
revenues,	
freight	56
operating	60
ton-miles	66
transportation,	
crude oil	210

INDEX (cont'd)

crude petroleum and petroleum products	212
petroleum, refined	211
vehicle-miles	62
vessels,	
emissions	177
number of	71
purchased	72
wages and salaries	156

APPENDIX E

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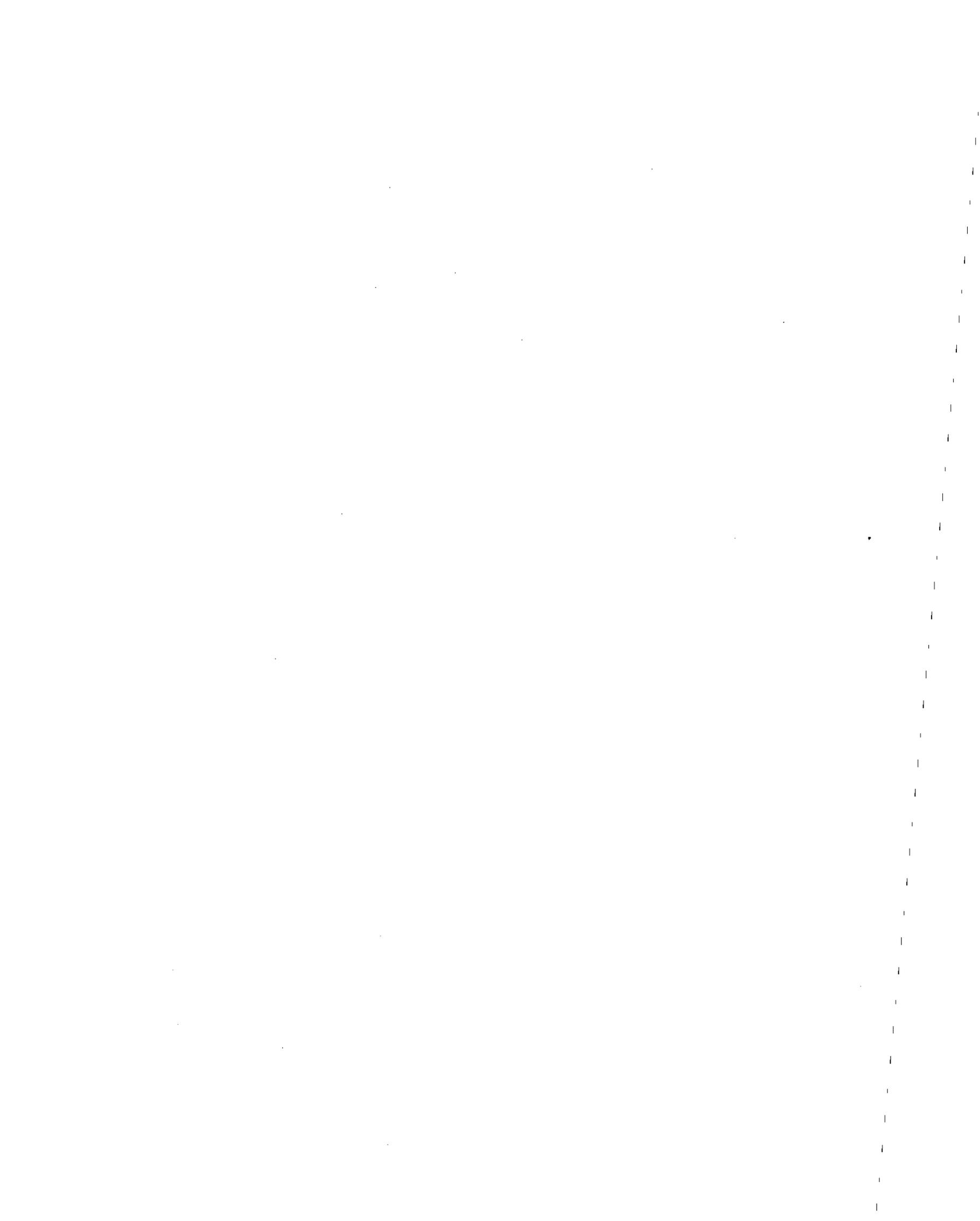
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CONVERSION FACTORS

Heat Content for Various Fuels							
Fuel Oils							
Crude	5,800,000	Btu/bbl	Natural Gasoline	4,620,000	Btu/bbl		
Residual	6,287,000	Btu/bbl	Petroleum Coke	6,024,000	Btu/bbl		
Motor Gasoline	5,253,000	Btu/bbl	Asphalt	6,636,000	Btu/bbl		
Aviation Gasoline	5,048,000	Btu/bbl	Wax	5,537,000	Btu/bbl		
Jet Fuel (Kerosene)	5,670,000	Btu/bbl	Road Oil	6,636,000	Btu/bbl		
Jet Fuel (Naphtha)	5,355,000	Btu/bbl	Natural Gas				
Distillate (Diesel Oil)	5,825,000	Btu/bbl	Liquid	3,925,000	Btu/bbl		
Crude Petroleum	5,800,000	Btu/bbl	Dry (Non-utility)	1,016	Btu/ft		
Ethane	3,082,000	Btu/bbl	Coal				
Still Gas	6,000,000	Btu/bbl	Anthracite	25,170,000	Btu/short ton		
Lubricants	6,065,000	Btu/bbl	Bituminous and Lignite	25,070,000	Btu/short ton		
			Coke	26,000,000	Btu/short ton		
			Electricity Consumption	3,412	Btu/kWh		
Volume Conversions							
	To						
From	in ³	ft ³	U.S. gal	Imp. gal	liter	bbl	
in ³	1	5.787 x 10 ⁻⁴	4.329 x 10 ⁻³	3.605 x 10 ⁻³	0.01639	1.031 X10 ⁻⁴	
ft ³	1728	1	7.481	6.2292	28.32	0.1781	
U.S. gal	231	0.1337	1	0.8327	3.785	2.381 x 10 ⁻²	
Imp. gal	277.4	0.1606	1.201	1	4.545	2.859 x 10 ⁻²	
liter	61.02	3.531 x 10 ⁻²	0.2642	0.2200	1	6.29 x 10 ⁻³	
bbl	9702	5.615	42	34.972	158.97	1	
Mass Conversions							
	To						
From	lb (avoirdupois)	kg	short ton	long ton	metric ton		
lb (avoirdupois)	1	0.4536	5.0 x 10 ⁻⁴	4.4643 x 10 ⁻⁴	4.5362 x 10 ⁻⁴		
kg	2.205	1	1.1023 x 10 ⁻³	9.8425 x 10 ⁻⁴	1.0 x 10 ⁻³		
short ton	2000	907.2	1	0.8929	0.9072		
long ton	2240	1016	1.12	1	1.016		
metric ton	2205	1000	1.102	0.9842	1		
Length Conversions							
	To						
From	cm	in	ft	yd	m	mile	km
cm	1	0.3937	3.281 x 10 ⁻²	1.0936 x 10 ⁻²	1.0 x 10 ⁻²	6.214 x 10 ⁻⁶	1.0 x 10 ⁻⁵
in	2.54	1	8.333 x 10 ⁻²	2.778 x 10 ⁻²	2.54 x 10 ⁻²	1.578 x 10 ⁻⁵	2.54 x 10 ⁻⁵
ft	30.48	12	1	0.333	0.3048	1.894 x 10 ⁻⁴	3.048 x 10 ⁻⁴
yd	91.44	36	3	1	0.9144	5.682 x 10 ⁻⁴	9.144 x 10 ⁻⁴
m	100	39.37	3.281	1.0936	1	6.214 x 10 ⁻⁴	1.0 x 10 ⁻³
mile	160,934	63,360	5280	1760	1609	1	1.609
km	100,000	39,370	3281	1093.6	100	0.6214	1
Energy Conversions							
	To						
From	ft-lb	kg-m	hp-hr	metric hp-hr	Btu	kWh	joule
ft-lb	1	0.1383	5.0505 x 10 ⁻⁷	5.12 x 10 ⁻⁷	1.285 x 10 ⁻³	3.766 x 10 ⁻⁷	1.356
kg-m	7.233	1	3.653 x 10 ⁻⁶	3.704 x 10 ⁻⁶	9.295 x 10 ⁻³	2.724 x 10 ⁻⁶	9.80665
hp-hr	1.98 x 10 ⁶	2.7375 x 10 ⁵	1	1.0139	2544	0.7457	2.6845 x 10 ⁶
metric hp-hr	1.953 x 10 ⁶	270,000	0.9863	1	2510	0.7355	2.6848 x 10 ⁶
Btu	778.2	107.6	3.93 x 10 ⁻⁴	3.985 x 10 ⁻⁴	1	2.931 x 10 ⁻⁴	1055
kWh	2.655 x 10 ⁶	3.671 x 10 ⁵	1.341	1.3596	3412	1	3.6 x 10 ⁶
joule	0.7376	0.10197	0.3725 x 10 ⁻⁶	0.3777 x 10 ⁻⁶	0.9478 x 10 ⁻³	0.2778 x 10 ⁻⁶	1
1 quad Btu = .4724 million barrels crude per day = .1724 billion barrels crude per year							



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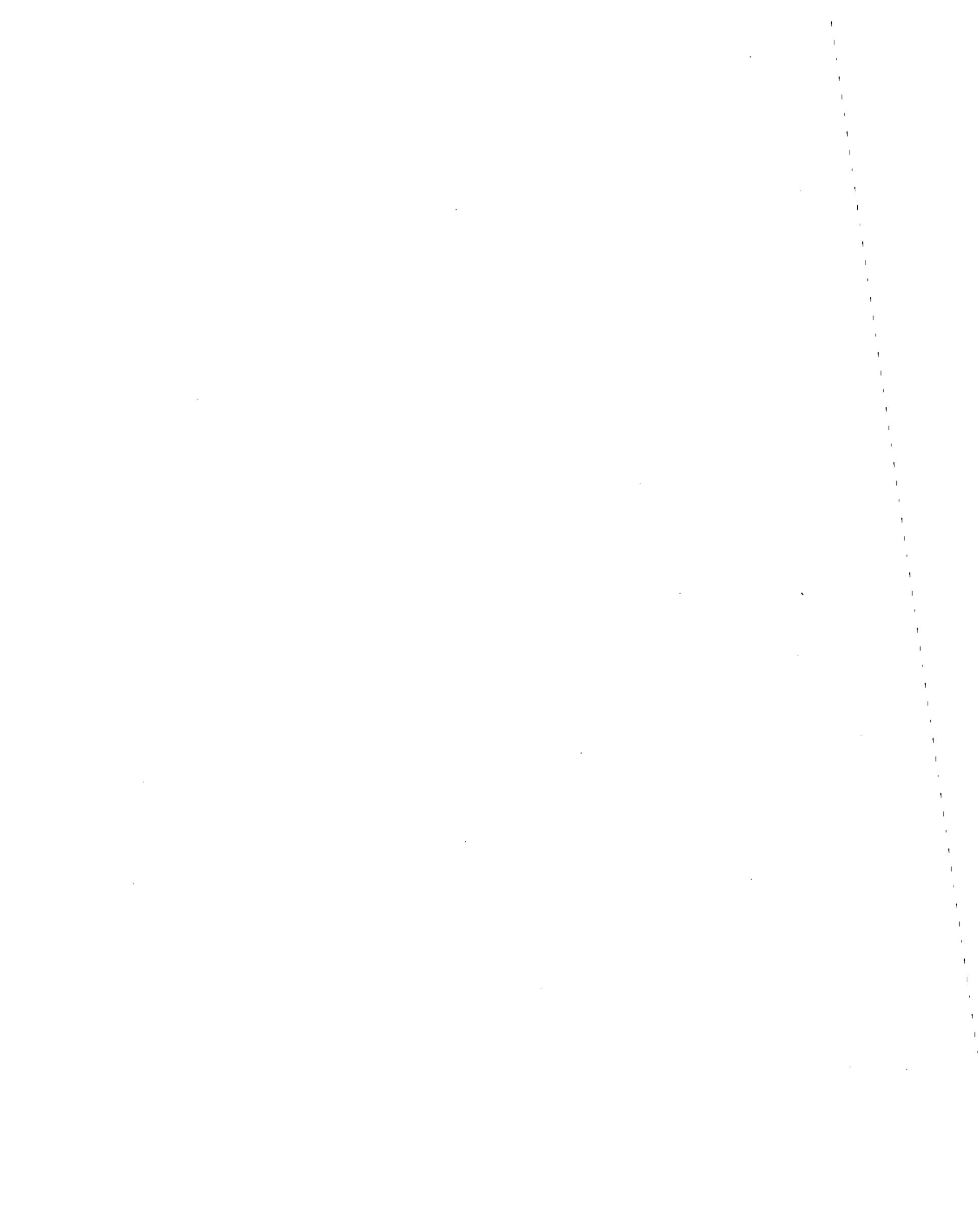
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