

**TRANSACTIONS OF SOCIETY OF ACTUARIES
1983 REPORTS**

**REPORT OF THE COMMITTEE ON AVIATION
AND HAZARDOUS SPORTS**

AVIATION STATISTICS

This report covers statistics obtained from United States and Canadian governmental sources, both civilian and military, supplemented by publications of the aviation industry. The emphasis in the report is primarily on new data that have become available during the past two years. Data for earlier periods are included for comparison and to indicate trends.

UNITED STATES CIVIL AVIATION

United States civil aviation can be divided into four major types: Certificated Route Air Carriers, Charter Air Carriers, Commercial Operators, and General Aviation. Definitions as to what constitutes a particular aviation type or activity have been formulated either by the Civil Aeronautics Board* or the Federal Aviation Administration (FAA) in the U.S. Department of Transportation (DOT).

Pilots engaged in air carrier flying may not, under government regulations, fly more than 100 hours per month or more than 1,000 hours per year in domestic operations. Pilots in international operations are generally limited to 100 hours per month or 300 hours every 90 days depending upon the size of the flight crew. Certificated Route Air Carrier Pilots, in particular, under a union negotiated contractual obligation, generally are limited to a maximum of 700 to 800 hours of flying per year. Some air carriers have no such union obligation, and generally require pilots to fly the maximum annual number of regulation hours. This practice is becoming a more popular trend with deregulation of the airline industry and competition among carriers.

Certificated Route Air Carriers (Passenger/Cargo)

Certificated Route Air Carriers are air carriers holding certificates of public convenience and necessity (issued by the Civil Aeronautics Board and the DOT) authorizing them to conduct scheduled air transportation over

*The Civil Aeronautics Board was formally disbanded on December 31, 1984. Remaining functions were assumed by the Office of Aviation Operations (P/40) in the Office of the Secretary in the U.S. Department of Transportation.

specified routes as well as a limited amount of nonscheduled operations. They are divided into two groups—passenger/cargo and all-cargo.

As defined by the Civil Aeronautics Board and DOT, “domestic” operations are, in general, within the 50 states of the United States, including intra-Alaska and intra-Hawaii operations. “International” (technically “international and territorial”) operations are, in general, outside the territory of the United States including operations between the United States and foreign countries and the United States and its territories and possessions.

Table 1 shows the recent aviation fatality rates of the United States Certificated Route Air Carriers for passengers, first pilots, all pilots and copilots, and other crew members in domestic and international flying. Lives exposed as “All Pilot and Copilot” and “Other Crew Members” include persons who may do less than normal amounts of flying because of supervisory

TABLE 1
UNITED STATES CERTIFICATED ROUTE AIR CARRIER
(PASSENGER/CARGO) AVIATION DEATH RATES*

| Years | Passenger Rate per 1,000 Scheduled Passenger Hours** | First-Pilot Rate per 1,000 Scheduled Airplane Hours** | All Pilot and Copilot Rate per 1,000 Life Years† | Other Crew Member Rate per 1,000 Life Years† |
|---------------------------------------|--|---|--|--|
| Domestic Operations | | | | |
| 1973-77 | .0003 (12) | .0004 (9) | Not Available | |
| 1978-82 | .0001 (10) | .0002 (5)‡ | | |
| 1981 | .0000 (0)‡ | .0000 (0)‡ | | |
| 1982 | .0004 (3) | .0003 (2)‡ | | |
| 1973-82 | .0002 (22) | .0003 (14) | | |
| International Operations | | | | |
| 1973-77 | .0010 (6) | .0012 (4)‡ | Not Available | |
| 1978-82 | .0001 (2) | .0003 (1)‡ | | |
| 1981 | .0000 (0)‡ | .0000 (0)‡ | | |
| 1982 | .0000 (1)‡ | .0000 (0)‡ | | |
| 1973-82 | .0004 (8) | .0008 (5)‡ | | |
| Domestic and International Operations | | | | |
| 1973-77 | .0004 (18) | .0005 (13) | .2058 (15) | .2785 (14) |
| 1978-82 | .0001 (12) | .0002 (6) | .0823 (7) | .1036 (5) |
| 1981 | .0000 (0)‡ | .0000 (0)‡ | .0000 (0)‡ | .0000 (0)‡ |
| 1982 | .0003 (4) | .0003 (2)‡ | .1370 (2)‡ | .1342 (2) |
| 1973-82 | .0002 (30) | .0003 (19) | .1408 (22) | .1837 (19) |

* Number of fatal accidents shown in parentheses.

** Based on scheduled operations only; experience of helicopter carriers is excluded.

† Based on all operations, scheduled and nonscheduled; experience of helicopter carriers is excluded.

‡ Based on 5 or fewer deaths.

duties or other reasons. Helicopter airlines which are also Certificated Route Air Carriers are excluded from the experience in Table 1. The last flight of such airlines took place early in 1979, and they were not resumed in 1980, 1981, or 1982.

In prior studies, mortality rates of crew members have been given for domestic and international operations separately. A review of the exposure information revealed that the split into domestic and international has not always been accurate. Therefore, rates are given for combined domestic and international operations in this report.

Certificated Route Air Carriers (All-Cargo)

Carriers in this class hold temporary certificates of public convenience and necessity (issued by the Civil Aeronautics Board and DOT) authorizing the operation of scheduled air freight express and mail transportation over specified routes as well as nonscheduled flights that may include passengers.

The first pilot fatality rates for all-cargo carriers are shown in Table 2. Earlier reports had shown that there had been pilot fatalities. A reexamination of the earlier data now shows that there have been no pilot fatalities in all-cargo carriers during the period 1973-82.

Charter Air Carriers

Charter Air Carriers form a class of carriers holding temporary certificates of public convenience and necessity (issued by the Civil Aeronautics Board and DOT) authorizing them to operate passenger/cargo charter services supplementing the scheduled services of the Certificated Route Air Carriers. In addition, they may operate scheduled flights, including the transportation of

TABLE 2
ALL-CARGO CARRIERS AND CHARTER CARRIERS
FIRST-PILOT AVIATION DEATH RATES
PER 1,000 AIRCRAFT HOURS*

| Years | All-Cargo (All Operations) | Charter (Revenue Operations) |
|---------------|-------------------------------|---------------------------------|
| 1973-77 | .0000 (0) | .0020 (2) |
| 1978-82 | .0000 (0) | .0012 (1) |
| 1981 | .0000 (0) | .0000 (0) |
| 1982 | .0000 (0) | .0000 (0) |
| 1973-82 | .0000 (0) | .0017 (3) |

* Number of fatalities shown in parentheses.

an individually ticketed passenger and individually weight-billed cargo, on a limited temporary basis, as authorized by the Civil Aeronautics Board and DOT.

The figures shown in Table 2 include experience in operations under contract with the military.

Commercial Operators

A Commercial Operator is a person who, for compensation or hire, engages in air commerce of persons or property other than as an air carrier or air taxi. Formerly Commercial Operators were called Intrastate Air Carriers. Due to changes in information published by the National Transportation Safety Board, data on Commercial Operators are not available for this report. The last published study gave the experience for 1976–80.

Due to the deregulation of the airlines, the distinction among the various types of air carriers is becoming blurred. Future reports may reflect this by different classifications of airlines.

AIR CARRIERS OF COUNTRIES OTHER THAN THE UNITED STATES

The general conditions in aviation technology unique to any country influence the hazards of flying in that country. Each country has its own aviation regulations and methods of enforcement. These regulations may differ for domestic and international operations, the latter being affected by international agreements relating to the crossing of international boundaries.

World Air Transport Statistics, a publication of the International Air Transport Association (IATA), reports on operations of association members. IATA member airlines numbered 117 on June 1, 1982. These 117 airlines carried 56 percent of the world's scheduled air traffic. United States membership has fluctuated in recent years and stands at 8 passenger/cargo air carrier members in 1982.

Table 3 gives passenger fatality rates per 1,000 scheduled passenger hours. The safety record of airlines in countries other than the United States has shown improvement but continues to be less favorable than that of United States scheduled airlines.

For 1982, 28 percent of the scheduled passenger hours reported to IATA were flown by the United States members. This was a decline from 34 percent in 1980 and 40 percent in 1978. United States members also accounted for 49 percent of the scheduled airline passenger hours flown by all United States Certificated Route Air Carriers in 1982. This is a decline from

TABLE 3
 SCHEDULED AIR CARRIERS (PASSENGER/CARGO) OF
 UNITED STATES AND OTHER COUNTRIES
 PASSENGER DEATH RATES
 PER 1,000 SCHEDULED PASSENGER HOURS*

| YEARS | MEMBERS REPORTING TO IATA | | ALL UNITED STATES AIR CARRIERS |
|-------------------|---|---------------|-----------------------------------|
| | Countries Other than the United States | United States | |
| 1973-77 | .0008 (1,770) | .0004 (768) | .0004 (826) |
| 1978-82 | .0005 (1,769) | .0002 (407) | .0001 (452) |
| 1981 | .0001 (87) | .0000 (0) | .0000 (0) |
| 1982 | .0002 (192) | .0004 (138) | .0003 (210) |
| 1973-82 | .0006 (3,539) | .0003 (1,175) | .0002 (871) |

* Experience of helicopter air carriers is excluded. Number of fatalities shown in parentheses.

57 percent in 1980 and 69 percent in 1978. The combined international and domestic scheduled experience of all United States Certificated Route Air Carriers (passenger/cargo) is included in Table 3 for comparison.

UNITED STATES GENERAL AVIATION

General aviation includes all domestic civil flying except that performed by United States Certificated Route Air Carriers, Charter Air Carriers, and Commercial Operators. The flying time in general aviation during 1982 was almost seven times that of the Certificated Route Air Carriers, Charter Air Carriers, and Commercial Operated domestic flights. Prior to 1977, the FAA collected statistics on general aviation by sending a registration to all general aviation aircraft owners each January requesting information such as the number of hours flown and the primary use of each aircraft. The data were compiled and adjusted for "nonreporting" aircraft which accounted for about 25 percent of the total estimated flying hours. Beginning in 1977, a sample of approximately 14 percent of all registered general aviation aircraft was selected as a basis for determining hours flown by all aircraft according to primary use.

Death rates in Table 4 are expressed per 1,000 aircraft hours. Although it might be helpful to relate deaths to the average hours flown in a year by pilots in each category of general aviation, such data cannot be estimated reliably from information supplied by the National Transportation Safety Board. Some distortion in death rates by type of flying may occur because the methods used for assigning deaths are not entirely consistent with those

TABLE 4
 GENERAL AVIATION FLYING BY KIND
 PILOT AVIATION DEATH RATES PER 1,000 AIRCRAFT HOURS*

| Years | Pleasure | Instruction | Business | Corporate | Aerial Application | Air Taxi |
|---------|--------------|-------------|------------|------------|--------------------|------------|
| 1973-77 | .033 (1,916) | .008 (224) | .010 (298) | .005 (78) | .013 (129) | .010 (177) |
| 1978-82 | .029 (1,823) | .007 (186) | .008 (306) | .003 (86) | .009 (101) | .011 (204) |
| 1981 | .029 (349) | .007 (38) | .009 (74) | .005 (31) | .011 (27) | .014 (40) |
| 1982 | .033 (371) | .004 (19) | .009 (65) | .001 (5) | .007 (14) | .007 (23) |
| 1973-82 | .031 (3,739) | .008 (410) | .008 (604) | .004 (164) | .011 (230) | .011 (381) |

* Number of fatalities shown in parentheses.

used for assigning aircraft hours. Both rotary- and fixed-winged aircraft are included.

The industrial flying category of general aviation flying is not included in this report because of insufficient data. In 1982, it accounted for 4.7 percent of all general aviation flying hours.

In the five-year period, 1978-82, pleasure flying accounted for about 31 percent of pilots' flying time in general aviation. Death rates in this category are probably overstated because there is a tendency for pilots to understate the amount of time they spend pleasure flying and overreport the amount of time they spend on other types of flying. In Table 4, rental hours are included in "Pleasure" hours on the assumption that most pilots renting planes do so for pleasure purposes. In 1982, rental hours accounted for 8 percent of all general aviation flying hours.

Instructional flying in the 1978-82 period represents about 14 percent of the total hours flown in general aviation. The experience under flight training of civilians includes the death of either the instructor or the student, depending upon who is acting as pilot when the accident occurred. Practice flying not under the supervision of an instructor, either in the air or on the ground, is not included in the "Instruction" category.

The "Business" and "Corporate" categories accounted for approximately 33 percent of the total general aviation hours. Business flying is done by nonprofessional pilots flying for business reasons. Corporate flying is done by professional pilots receiving a direct salary or compensation for piloting an aircraft (not for public hire) operated by a corporation or business firm for the transportation of personnel and/or cargo in furtherance of the company's business.

Air-taxi flying accounted for approximately 11 percent of total general aviation hours. This type of flying includes scheduled and nonscheduled passenger and cargo flying by professional pilots (other than corporate) and is not done by Certificated Route Air Carriers, Charter Air Carriers, or Commercial Operators. Scheduled air-taxi flying comprises the commuter air carriers, third level area airlines, and the feeder airlines. Table 4 includes both scheduled and nonscheduled air-taxi flying.

Aerial application, which accounted for approximately 6 percent of general aviation flying, consists primarily of crop dusting. Other activities include spraying to control insects, reseeding forests, and fertilizing. Fire control is not included in this category. Pilot fatality rates have been higher than those in other commercial activities but, in the years after 1975, have shown some improvement.

CANADIAN CIVIL FLYING

Canadian scheduled airlines comprise air carriers that serve designated points in accordance with a definite service schedule. Nonscheduled airlines are those that follow a route pattern with some degree of regularity or operate from a designated base to serve a defined area or on charter of an entire aircraft.

Passenger and first-pilot aviation fatality rates per 1,000 hours in domestic and international operations of Canadian scheduled airlines derived from figures furnished by Transport Canada and by Statistics Canada are shown in Table 5. Comparable passenger and first-pilot aviation fatality rates for Canadian nonscheduled airlines have been estimated from the same sources and are also shown in Table 5. For scheduled airlines, rates shown in Table 5 generally compare very favorably with the corresponding rates from the United States in Table 1. Statistics Canada has discontinued a publication which has been used in the past to complete this table. It has been difficult to obtain data for passenger hours and airplane hours. We have indicated, however, in parentheses both the number of fatal accidents and passenger fatalities.

The fatality rates among Canadian civil pilots, by class of license, are shown in Table 6 separately, for the periods 1971-75, 1976-80, and 1981-82, based on figures furnished by Transport Canada. It should be noted that many pilots holding licenses may be inactive and that pilots holding airline transport licenses are not necessarily flying for scheduled airlines, since they may engage in other types of flying.

TABLE 5
CANADIAN AIRLINES
AVIATION FATALITY RATES

| YEARS | PASSENGER RATE PER 1,000 PASSENGER HOURS* | | FIRST-PILOT RATE PER 1,000 AIRPLANE HOURS† | | |
|---------------|--|-------|---|-------|-------|
| | Scheduled Airlines | | | | |
| 1971-75 | .0000 | (0) | (0) | .0000 | (0) |
| 1976-80 | .0002 | (3) | (55) | .0007 | (2) |
| 1971-80 | .0001 | (3) | (55) | .0004 | (2) |
| 1981-82 | .0000 | (0) | (0) | .0000 | (0) |
| | Nonscheduled Airlines | | | | |
| 1971-75 | .0169 | (109) | (166) | .0176 | (83) |
| 1976-80 | .0114 | (79) | (166) | .0093 | (56) |
| 1971-80 | .0136 | (188) | (332) | .0130 | (139) |
| 1981-82 | ‡ | (24) | (32) | ‡ | (23) |

* Number of fatal accidents and passenger fatalities shown in parenthesis.

† Number of fatal accidents shown in parenthesis.

‡ Statistics Canada has discontinued a publication which has been used in the past to complete this table. It has been difficult to obtain data for passenger hours and airplane hours. We have indicated, however, in parentheses both the number of fatal accidents and passengers' fatalities.

TABLE 6
CANADIAN CIVIL PILOTS BY CLASS OF LICENSE
1971-82 AVIATION FATALITY RATES

| Class of License | Period | Life Years of Exposure | Aviation Fatalities | Rate per 1,000 Life Years of Exposure |
|------------------------------------|-----------|---------------------------|------------------------|---|
| Air transport | { 1971-75 | 16,522 | 32 | 1.9 |
| | { 1976-80 | 22,054 | 38 | 1.7 |
| | { 1981-82 | 12,101 | 9 | 0.7 |
| Senior commercial | { 1971-75 | 4,144 | 14 | 3.4 |
| | { 1976-80 | 5,088 | 15 | 2.9 |
| | { 1981-82 | 2,680 | 5 | 1.9 |
| Commercial | { 1971-75 | 28,382 | 93 | 3.3 |
| | { 1976-80 | 39,093 | 113 | 2.9 |
| | { 1981-82 | 17,098 | 36 | 2.1 |
| Private (excluding students) | { 1971-75 | 141,522 | 160 | 1.1 |
| | { 1976-80 | 117,333 | 170 | 1.4 |
| | { 1981-82 | 82,117 | 64 | 0.8 |
| Glider | { 1971-75 | 7,014 | 5 | 0.7 |
| | { 1976-80 | 14,980 | 5 | 0.3 |
| | { 1981-82 | 8,313 | 0 | 0 |

UNITED STATES MILITARY

General

As in the previous report, deaths due to hostile action are omitted. Experience will continue to be grouped in five-year intervals.

In the aggregate, Air Force experience for each of 1981 and 1982 is more favorable than that reported for each of 1979 and 1980. Experience reported for the Navy and Marine Corps for 1981 and 1982 is slightly more favorable than the 1980 experience. Please note that average strengths for the Navy and Marine Corps were not available for 1981 and 1982. Therefore, exposures for these years are based on 1980 figures. The 1981 and 1982 experience for the Army is less favorable than that reported for 1979 and 1980.

All United States military aviation statistics in this report are shown on a calendar-year basis.

Age and Rank

Table 7 shows aviation fatality rates by age group, while Table 8 presents aviation fatality rates by rank for Air Force pilots and nonpilot rated officers and for Navy and Marine Corps pilots on active duty. This experience includes pilots who flew chiefly to maintain proficiency as well as those with full-time flying duties. Nonpilot rated officers in the Air Force are those with duties other than as a pilot (e.g., navigators and observers.).

The fatality rates for Air Force pilots and nonpilot rated officers were slightly higher in 1982 than 1981. As in the past, the fatality rate for Air Force flyers is highest for those under age 30. Many of the age and rank categories for 1981 and 1982 are based on a limited number of fatalities.

Navy and Marine Corps fatality rates were virtually the same in 1981 and 1982. There were no significant trends by age and rank. Many of these categories are based on a limited number of fatalities.

Duty Assignment

Aviation fatality rates among Air Force pilots with full-time flying duties and all Navy and Marine Corps pilots are shown according to duty assignment in Table 9.

In contrast to the exposures underlying Tables 7 and 8, Air Force pilots who were not assigned to a specific flying duty but who flew chiefly to maintain proficiency were excluded from the experience in Table 9. The fatality rates for helicopters and bombers show a significant increase for

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TABLE 7
 UNITED STATES AIR FORCE, NAVY, AND MARINE CORPS FLYERS, BY AGE
 AVIATION FATALITY RATES PER 1,000 LIFE YEARS OF EXPOSURE
 DEATHS DUE TO HOSTILE ACTION EXCLUDED

| Age Group | 1973-77 | 1978-82 | 1981* | 1982* |
|-----------------------------------|---------|---------|-------|-------|
| Air Force Pilots | | | | |
| Under 25 | 2.2 | 3.9 | 7.0 | 4.8 |
| 25-29 | 1.7 | 2.5 | 2.4 | 2.2 |
| 30-34 | 1.8 | 2.4 | 1.6 | 2.4 |
| 35-39 | 1.0 | 2.0 | 0.6** | 0.3** |
| 40 and over | 0.5 | 1.2 | 0.0** | 0.7** |
| All | 1.4 | 2.5 | 2.1 | 2.3 |
| Air Force Nonpilot Rated Officers | | | | |
| Under 25 | 1.9 | 4.9 | 9.9 | 6.4 |
| 25-29 | 1.7 | 1.7 | 1.2** | 2.2** |
| 30-34 | 0.5** | 2.2 | 1.8** | 0.5** |
| 35-39 | 0.9 | 1.8 | 0.0** | 2.9** |
| 40 and over | 1.2** | 1.6** | 0.0** | 0.0** |
| All | 1.3 | 2.3 | 2.3 | 2.5 |
| Navy and Marine Corps Pilots† | | | | |
| Under 25 | 2.6 | 1.1** | 0.0** | 2.9** |
| 25-29 | 4.1 | 4.6 | 5.3 | 3.8 |
| 30-34 | 2.2 | 4.0 | 2.6 | 3.3 |
| 35-39 | 1.3 | 2.6 | 1.3** | 3.0 |
| 40 and over | 0.7 | 0.8 | 1.1** | 0.8** |
| All | 2.5 | 3.1 | 2.8 | 2.9 |

* Exposure for Navy and Marine Corps Pilots for 1981 and 1982 is based on data from 1980.

** Based on five or fewer deaths.

† A small portion of total Navy and Marine Corps pilots and pilot deaths was not identified by age.

1981 and 1982 over 1979 and 1980. A new category of fighter bomber is included in this report. Many of the categories for 1981 and 1982 show fatality rates based on a limited number of deaths.

For the Navy and Marine Corps, all pilots are included since no exclusions of pilots flying chiefly to maintain proficiency was possible. Fatality rates for each of 1981 and 1982 were significantly lower for Navy carrier-based jets and significantly higher for Marine helicopters.

Hours of Flying

Average hours of flying are based on the combined flying time of pilots who flew chiefly to maintain proficiency and those with full-time flying duties.

TABLE 8
 UNITED STATES AIR FORCE, NAVY, AND MARINE CORPS FLYERS, BY RANK
 AVIATION FATALITY RATES PER 1,000 LIFE YEARS OF EXPOSURE
 DEATHS DUE TO HOSTILE ACTION EXCLUDED

| Rank (Pay Grade)* | 1973-77 | 1978-82 | 1981** | 1982** |
|--|---------|---------|--------|--------|
| Air Force Pilots | | | | |
| 2d Lieutenant (0-1) | 2.0 | 2.0 | 0.8† | 3.7† |
| 1st Lieutenant (0-2) | 1.7 | 2.6 | 2.3† | 2.3 |
| Captain (0-3) | 1.8 | 2.5 | 2.1 | 1.6 |
| Major (0-4) | 1.2 | 3.1 | 2.9 | 3.8 |
| Lieutenant Colonel (0-5) | 0.7 | 1.9 | 2.2† | 1.7† |
| General and Colonel (0-6 and up) | 0.3† | 1.3† | 0.0† | 1.5† |
| All | 1.4 | 2.5 | 2.1 | 2.3 |
| Air Force Nonpilot Rated Officers | | | | |
| 2d Lieutenant (0-1) | 0.7† | 2.8 | 0.0† | 5.8† |
| 1st Lieutenant (0-2) | 1.4 | 3.8 | 4.7† | 0.9† |
| Captain (0-3) | 1.6 | 1.9 | 2.1 | 2.0 |
| Major (0-4) | 1.1 | 2.3 | 2.3† | 4.7† |
| Lieutenant Colonel (0-5) | 0.8† | 1.9† | 2.4† | 0.0† |
| General and Colonel (0-6 and up) | 0.0† | 0.0† | 0.0† | 0.0† |
| All | 1.3 | 2.3 | 2.3 | 2.5 |
| Navy and Marine Corps Pilots‡ | | | | |
| Ensign (0-1) | 1.3† | 1.2† | 0.0† | 0.0† |
| Lieutenant Junior Grade (0-2) | 4.3 | 4.7 | 4.4 | 3.5 |
| Lieutenant (0-3) | 3.6 | 3.7 | 3.9 | 2.9 |
| Lieutenant Commander (0-4) | 1.7 | 3.1 | 1.2† | 3.5 |
| Commander (0-5) | 0.4 | 2.0 | 2.8† | 2.3† |
| Admiral and Captain (0-6 and up) | 0.2† | 0.2† | 0.8† | 0.0† |
| All | 2.5 | 3.1 | 2.8 | 2.9 |

* Ranks shown under "Navy and Marine Corps Pilots" are for Navy; equivalent Marine Corps ranks are similar to Air Force pilot ranks.

** Exposure for Navy and Marine Corps Pilots for 1981 and 1982 is based on data from 1980.

† Based on five or fewer deaths.

‡ A small portion of total Navy and Marine Corps pilots and pilot deaths was not identified by rank.

Navy pilots flew an average of 169 hours in 1981 and an average of 174 hours in 1982. These averages are higher than the corresponding figures for 1979 and 1980. Marine Corps pilots flew an average of 109 and 127 hours in 1981 and 1982, respectively, which shows a slight decrease from the 1979 and 1980 averages. Naval Reserve pilots flew an average of 171 hours in 1981 and 150 hours in 1982, significantly higher than the averages for 1979 and 1980. The average number of flying hours for Marine Corps Reserve pilots was unavailable for 1981 and 1982.

Reliable information on the average number of hours flying was not avail-

TABLE 9
UNITED STATES AIR FORCE, NAVY, AND MARINE CORPS PILOTS,
BY DUTY ASSIGNMENT
AVIATION FATALITY RATES PER 1,000 LIFE YEARS OF EXPOSURE
DEATHS DUE TO HOSTILE ACTION EXCLUDED

| Duty Assignment | 1973-77 | 1978-82 | 1981* | 1982* |
|--|------------------|------------------|------------------|------------------|
| <i>Air Force Pilots**</i> | | | | |
| Search Rescue | 0.0 [‡] | 0.0 [‡] | 0.0 [‡] | 0.0 [‡] |
| Helicopter | 2.4 | 4.3 | 6.0 [‡] | 9.3 [‡] |
| Tanker | 1.1 | 0.2 [‡] | 0.0 [‡] | 0.0 [‡] |
| Bomber | 1.2 | 1.0 | 1.5 [‡] | 5.1 [‡] |
| Reconnaissance | 1.7 | 2.3 | 4.3 [‡] | 0.0 [‡] |
| Trainer | 1.3 | 0.7 | 0.8 [‡] | 1.6 |
| Cargo | 0.7 | 2.1 | 0.6 [‡] | 4.5 |
| Observation | 1.8 [‡] | 7.9 | 6.8 [‡] | 4.8 [‡] |
| Fighter | 4.1 | 5.0 | 4.5 | 3.8 |
| Utility | 0.0 [‡] | 5.6 [‡] | 0.0 [‡] | 0.0 [‡] |
| Liaison | 0.0 [‡] | 0.0 | 0.0 [‡] | 0.0 [‡] |
| Fighter Bomber [‡] | | 1.9 | 3.2 | 1.2 |
| All | 1.4 | 2.5 | 2.1 | 2.3 |
| <i>Navy and Marine Corps Pilots</i> | | | | |
| Navy carrier-based jet | 3.5 | 4.8 | 3.8 | 4.1 |
| Marine fighter/attack jet | 4.9 | 5.2 | 5.4 | 4.6 |
| Navy carrier-based prop. | 1.9 | 2.7 | 0.0 [‡] | 3.3 [‡] |
| Marine fighter/attack/OBS prop ^{§§} | 2.7 [‡] | 1.8 [‡] | 0.0 [‡] | 0.0 [‡] |
| Navy patrol/transport | 0.8 | 0.8 | 0.0 [‡] | 0.0 [‡] |
| Marine patrol/transport | 1.7 [‡] | 0.0 [‡] | 0.0 [‡] | 0.0 [‡] |
| Navy helicopter | 1.6 | 2.2 | 2.5 [‡] | 1.5 [‡] |
| Marine helicopter | 3.4 | 4.0 | 6.3 | 3.7 |
| All | 2.5 | 3.1 | 2.8 | 2.9 |

* Exposure for Navy and Marine Corps Pilots for 1981 and 1982 is based on data from 1980.

** In this table, Air Force pilots who were not assigned to a specific flying duty but flew chiefly to maintain proficiency were excluded from the exposure.

[‡] Based on five or fewer deaths.

[‡] Fighter Bomber not shown separately prior to 1981.

[§] A small portion of total Navy and Marine Corps pilots and pilot deaths was not identified by duty assignment.

^{§§} OBS prop = observation/counterinsurgency propeller.

able in 1981 and 1982 for the Army, Army Reserves, and the Army National Guard.

The average number of aircraft hours for Air Force and Air National Guard pilots was unavailable for 1981 and 1982. Army Reserve pilots and Army National Guard pilots flew an average of 62 and 68 hours in 1981 and 56 and 62 hours in 1982, respectively.

Military Air Command (MAC)

Aviation fatality rates among pilots and crew members of MAC, a branch of the Air Force, are shown in Table 10. There was no information on fatalities available for 1981 and 1982, therefore fatality rates for 1978-82 are based on data for 1978-80 only. The experience of MAC pilots was also included in Tables 7-9.

United States Army

Table 11 includes data for all flying operations among nonstudent Army pilots and crew members. Both pilot and nonpilot fatality rates were higher in 1982 than in 1981.

Rotary-wing aircraft had significantly higher fatality rates in 1981 and 1982 than fixed-wing aircraft.

Student Pilots

Table 12 presents aviation fatality rates for student pilots in the military services. None of the rates for 1981 and 1982 were based on more than five deaths. Because of such a small number of deaths each year, there is a wide fluctuation in rates from year to year.

Coast Guard

Table 13 displays the aviation fatality rates per 1,000 life years of exposure for Coast Guard personnel on flight orders. Most of these rates are based

TABLE 10
MILITARY AIR COMMAND (MAC)
AVIATION FATALITY RATES PER 1,000 LIFE YEARS OF EXPOSURE
DEATHS DUE TO HOSTILE ACTION EXCLUDED

| Pilots: | 1973-77 | 1978-82* | 1981* | 1982* |
|---------------------------|---------|----------|-------|-------|
| Transport units | 1.2 | 0.8** | N/A | N/A |
| Other units | 0.7** | 0.6** | N/A | N/A |
| All | 1.1 | 0.7 | N/A | N/A |
| Crew members: | | | | |
| Transport units | 1.8 | 1.2 | N/A | N/A |
| Other units | 0.7 | 1.3 | N/A | N/A |
| All | 1.5 | 1.2 | N/A | N/A |

* Information on fatality is not available for 1981 and 1982. Therefore fatality rates for 1978-82 are based on data for 1978-80 only.

** Based on five or fewer deaths.

TABLE 11
 UNITED STATES ARMY—ALL FLYING OPERATIONS
 DEATHS DUE TO HOSTILE ACTION EXCLUDED

| | 1973-77 | 1978-82 | 1981 | 1982 |
|-----------------------------|--|---------|--------|--------|
| | Aviation Fatality Rates Per 1,000 Life Years of Exposure | | | |
| Pilots | 1.0 | 1.2 | 1.1 | 1.5 |
| Crew Members | 2.2 | 1.2 | 0.8* | 1.8 |
| | Pilot Fatality Rates Per 1,000 Aircraft Hours | | | |
| Fixed-wing aircraft | .0289 | .0148 | .0182* | .0174* |
| Rotary-wing aircraft | .0118 | .0185 | .0332 | .0536 |
| All types of aircraft | .0143 | .0179 | .0295 | .0436 |

* Based on five or fewer deaths.

TABLE 12
 UNITED STATES AIR FORCE, NAVY, AND MARINE CORPS,
 AND ARMY STUDENT PILOTS
 AVIATION FATALITY RATES PER 1,000 LIFE YEARS OF EXPOSURE

| | 1973-77 | 1978-82 | 1981 | 1982 |
|--------------------------|---------|---------|-------|-------|
| Air Force* | 1.7 | 1.3 | 1.7** | 0.5** |
| Navy and Marine Corps:*† | | | | |
| Basic course | 1.3 | 1.5** | 0.0** | 0.0** |
| Advanced course | 2.4 | 5.1 | 1.7** | 13.5 |
| Army | 1.0**‡ | 1.3 | 1.7** | 0.6** |

* Commissioned officers only.

** Based on five or fewer deaths.

† Exposure for 1981 and 1982 is based on data from 1980.

‡ Based on data excluding 1974, for which year data are not available.

TABLE 13
 UNITED STATES COAST GUARD
 AVIATION FATALITY RATES PER 1,000 LIFE YEARS OF EXPOSURE

| | 1973-77 | 1978-82 | 1981 | 1982 |
|----------------------|---------|---------|------|------|
| Aviator | 1.4* | 2.7 | 5.4* | 2.2* |
| Observer | 4.5* | 3.3* | 0.0* | 0.0* |
| Crewman | 0.5* | 1.0 | 1.9* | 1.5* |
| Student Pilots | 0.0* | 0.0* | 0.0* | 0.0* |

* Based on five or fewer deaths.

on five or fewer deaths causing much fluctuation in rates from year to year. There have been no aviation fatalities for Coast Guard student pilots for the last twenty-six years.

Active Reserves and National Guard

Table 14 shows the aviation fatality rates for Army pilots and for Navy and Marine Corps pilots in the active reserves and for Air and Army National Guard pilots. Such pilots are not on full-time active duty but generally fly on weekend and/or short-term (usually two weeks) training duty. Aggregate rates for the five-year period 1978–82 are similar to those for the five-year period 1973–77. There was a significant decrease in the fatality rate for Army National Guard pilots in 1981 and 1982.

Air Force Flight Surgeons and Nurses

During the five-year period 1978–82, the aviation fatality rate per 1,000 life years of exposure for flight nurses was 0.9. This rate is based on five or fewer deaths. There have been no fatalities among Air Force flight surgeons during the five-year period 1978–82.

CANADIAN MILITARY

Aviation fatality rates among Canadian regular military forces, excluding reserves, are shown in Table 15 by age, rank, and functional classification. The average number of flying hours for all pilots combined has remained

TABLE 14
PILOTS IN THE ACTIVE RESERVES AND NATIONAL GUARD
AVIATION FATALITY RATES PER 1,000 LIFE YEARS OF EXPOSURE

| | 1973–77 | 1978–82 | 1981 | 1982 |
|----------------------------------|---------|---------|-------|-------|
| Navy and Marine Corps Reserves:* | | | | |
| Ages under 30 | 0.0**† | 0.7** | 0.0** | 3.7** |
| Ages 30 and over | 0.7† | 0.8 | 0.3** | 0.3** |
| All ages | 0.6† | 0.8 | 0.3** | 0.5** |
| Army Reserves | 0.7** | 0.5** | 0.0** | 0.7** |
| Air National Guard | 1.8 | 1.7‡ | 0.0** | 0.8** |
| Army National Guard | 0.5 | 0.5 | 0.9** | 0.0** |

* Exposure for 1981 and 1982 is based on data from 1980.
 ** Based on five or fewer deaths.
 † Based on data excluding 1977, for which year data are not available.
 ‡ Based on data excluding 1979, for which year data are not available.

TABLE 15
CANADIAN REGULAR FORCES
1971-82 AVIATION FATALITY RATES
PER 1,000 LIFE YEARS OF EXPOSURE*

| | 1971-75 | | 1976-80† | | 1981-82 | | 1976-82‡ | |
|--|----------|----------|----------|----------|----------|----------|----------|----------|
| | Pilots | Crew | Pilots | Crew | Pilots | Crew | Pilots | Crew |
| Age group: | | | | | | | | |
| Under 25..... | 7.6 (6) | 1.9 (1) | 2.8 (3) | 2.5 (11) | 6.1 (4) | 11.3 (3) | 4.0 (7) | 6.0 (4) |
| 25-29..... | 3.5 (9) | 1.0 (2) | 7.5 (10) | 2.9 (3) | 5.3 (5) | 1.7 (1) | 6.6 (15) | 2.5 (4) |
| 30-34..... | 3.3 (7) | 3.4 (7) | 6.3 (10) | 3.1 (5) | 5.6 (3) | 0.0 (0) | 6.1 (13) | 2.3 (5) |
| 35-39..... | 1.2 (2) | 1.8 (4) | 2.9 (4) | 0.7 (1) | 2.9 (2) | 5.8 (4) | 2.9 (6) | 2.4 (5) |
| 40 and over..... | 0.0 (0) | 0.5 (1) | 2.0 (3) | 2.5 (4) | 1.4 (1) | 0.0 (0) | 1.8 (4) | 1.7 (4) |
| All..... | 2.7 (24) | 1.7 (15) | 4.4 (30) | 2.3 (14) | 4.2 (15) | 2.8 (8) | 4.3 (15) | 2.5 (22) |
| Rank: | | | | | | | | |
| Lieutenant and lower rank..... | 4.9 (5) | 2.5 (13) | 2.0 (3) | 2.8 (11) | 4.0 (1) | 0.0 (0) | 1.3 (1) | 6.1 (1) |
| Captain..... | 3.0 (17) | 0.7 (2) | 7.1 (25) | 1.3 (2) | 6.1 (10) | 0.0 (0) | 6.8 (35) | 0.9 (2) |
| Major..... | 1.1 (2) | 0.0 (0) | 1.5 (2) | 0.0 (0) | 0.0 (0) | 4.1 (1) | 1.0 (2) | 1.5 (1) |
| Lieutenant Colonel and higher rank..... | 0.0 (0) | 0.0 (0) | 0.0 (0) | 9.4 (1) | 4.1 (4) | 3.6 (7) | 2.8 (7) | 3.0 (18) |
| All..... | 2.7 (24) | 1.7 (15) | 4.4 (30) | 2.3 (14) | 4.2 (15) | 2.8 (8) | 4.3 (45) | 2.5 (22) |
| Functional classification:‡ | | | | | | | | |
| Fighter..... | 1.8 (4) | 1.3 (1) | 8.9 (14) | 1.9 (1) | 6.1 (5) | 0.0 (0) | 7.9 (19) | 1.3 (1) |
| Training..... | 1.4 (6) | 0.0 (0) | 1.7 (6) | 0.0 (0) | 2.2 (4) | 3.4 (1) | 1.9 (10) | 1.1 (1) |
| Transport..... | 1.6 (4) | 1.3 (5) | 1.2 (2) | 2.7 (8) | 5.8 (5) | 3.6 (5) | 2.7 (7) | 3.0 (13) |
| Maritime..... | 3.7 (4) | 1.3 (4) | 4.0 (3) | 1.1 (2) | 0.0 (0) | 0.0 (0) | 2.7 (3) | 0.8 (2) |
| Helicopter..... | 2.3 (4) | 3.2 (4) | 1.6 (3) | 1.9 (3) | 0.0 (0) | 0.0 (0) | 1.0 (3) | 1.2 (3) |
| Others..... | 1.2 (2) | 0.8 (1) | 6.2 (2) | 0.0 (0) | 3.4 (1) | 23.3 (2) | 4.8 (3) | 9.2 (2) |
| All..... | 1.7 (24) | 1.4 (15) | 3.1 (30) | 1.8 (14) | 4.2 (15) | 2.8 (8) | 4.3 (45) | 2.5 (22) |

* Number of fatalities shown in parentheses.

† Based on data excluding 1979, for which year data are not available.

‡ The fatality rates by functional classification are understated because some pilots and crew members fly more than one type of aircraft. The extent of understatements in total can be determined by comparing the fatality rates of the "All" categories.

steady over the period at approximately 295 hours per year and shows little variation by age group. Crew members average about 340 hours per year. There is some variation by functional classification, but this cannot be accurately determined because of duplicate counting in different functions. Pilots and crew members flying more than one type of aircraft are counted in each function in which flying is done.

The extent of overstatement by type of aircraft is unknown. The unadjusted average annual flying time for pilots and crew in the transport and maritime categories is considerably higher than for those in the categories of fighter, training, and helicopter. The former group averages 350 hours per year and the latter approximately 135 hours per year.

The functional classification "Others" is composed largely of pilots who ferry planes to air bases and test new planes, both accepted and experimental models. It also includes a small number of pilots whose primary assignment is on the ground but who occasionally fly to maintain proficiency.

INTERCOMPANY EXPERIENCE

This year's report and the data contained in Tables 16-18 were based on the 1981-82 calendar year experience for issues of 1967 and subsequent calendar years. Additionally, each of the tables shows the experience between 1971-74, 1975-78, 1979-80 and 1981-82 for issues of 1967 and subsequent years for comparison purposes over the four periods.

All experience is by number of policies, and the insured is classified according to status at the time of application of insurance. Policies with an aviation exclusion clause are not included. Exposure for policies with aviation extra premium is terminated when the extra premium is discontinued. For those policies with civilian flying hazards and where there is still an aviation hazard after discontinuance of the extra premium, companies were encouraged to transfer the exposure to the "Without Aviation Extra Premium" category. Not all companies were able to do this, and consequently, the experience for that category includes only a portion of such cases.

In analyzing the data, it should be kept in mind that the criteria by which the lives are classified are determined largely by the facts at time of issue. The older the issue, the greater the chance that the classification does not properly reflect current flying activity. The data used were submitted by eight companies, as compared with ten companies contributing to the study two years ago. It appears that the companies that withdrew did contribute large amounts of data in the past. (The two companies contributed 21 percent of the exposure in the previous study.)

TABLE 16
 INTERCOMPANY EXPERIENCE ON PILOTS IN CIVILIAN
 AVIATION—BY POLICIES*

(1971-74, 1975-78, 1979-80 and 1981-82 Experience on 1967 and Subsequent Issues)

| STATUS AT ISSUE | YEARS | WITH AVIATION EXTRA PREMIUM | | | WITHOUT AVIATION EXTRA PREMIUM | | |
|--|-----------|--------------------------------|------------------------|-------------------|-----------------------------------|------------------------|-------------------|
| | | Years of Exposure | Aviation Fatalities | Rate per 1,000 | Years of Exposure | Aviation Fatalities | Rate per 1,000 |
| Scheduled airline pilots..... | { 1971-74 | 625 | 1 | 1.6 | 1,842 | 6 | 3.3 |
| | { 1975-78 | 570 | 2 | 3.5 | 7,790 | 6 | 0.8 |
| | { 1979-80 | 204 | 1 | 4.9 | 3,423 | 1 | 0.3 |
| | { 1981-82 | 127 | 0 | 0.0 | 2,394 | 0 | 0.0 |
| Other commercial pilots flying for hire: | | | | | | | |
| Instructing (at least half-time)..... | { 1971-74 | 3,664 | 10 | 2.7 | 231 | 1 | 4.3 |
| | { 1975-78 | 4,312 | 16 | 3.7 | 506 | 0 | 0.0 |
| | { 1979-80 | 1,977 | 0 | 0.0 | 307 | 0 | 0.0 |
| | { 1981-82 | 1,085 | 1 | 0.9 | 433 | 1 | 2.3 |
| Corporate..... | { 1971-74 | 1,881 | 2 | 1.1 | 3,064 | 1 | 0.3 |
| | { 1975-78 | 2,470 | 7 | 2.8 | 4,447 | 5 | 1.1 |
| | { 1979-80 | 1,136 | 4 | 3.5 | 2,108 | 2 | 0.9 |
| | { 1981-82 | 729 | 0 | 0.0 | 2,107 | 3 | 1.4 |
| Charter and other airlines..... | { 1971-74 | 2,765 | 10 | 3.6 | 521 | 1 | 1.9 |
| | { 1975-78 | 3,021 | 12 | 4.0 | 854 | 1 | 1.2 |
| | { 1979-80 | 1,402 | 6 | 4.3 | 468 | 1 | 2.1 |
| | { 1981-82 | 572 | 2 | 3.5 | 598 | 1 | 1.7 |
| Others†..... | { 1971-74 | 2,446 | 6 | 2.6 | 623 | 1 | 1.6 |
| | { 1975-78 | 3,174 | 12 | 3.8 | 838 | 0 | 0.0 |
| | { 1979-80 | 3,020 | 13 | 4.3 | 1,542 | 3 | 1.9 |
| | { 1981-82 | 3,170 | 2 | 0.6 | 3,335 | 4 | 1.2 |
| Private pilots..... | { 1971-74 | 22,275 | 24 | 1.1 | 85,101 | 87 | 1.0 |
| | { 1975-78 | 26,757 | 25 | 0.9 | 106,122 | 98 | 0.9 |
| | { 1979-80 | 11,899 | 7 | 0.5 | 54,148 | 47 | 0.9 |
| | { 1981-82 | 6,929 | 2 | 0.3 | 47,219 | 30 | 0.6 |
| Student pilots..... | { 1971-74 | 35,129 | 21 | 0.6 | 4,717 | 9 | 1.9 |
| | { 1975-78 | 39,055 | 14 | 0.4 | 8,450 | 0 | 0.0 |
| | { 1979-80 | 18,100 | 6 | 0.3 | 5,531 | 3 | 0.5 |
| | { 1981-82 | 7,976 | 3 | 0.4 | 9,684 | 1 | 0.1 |
| Total..... | { 1971-74 | 68,786 | 74 | 1.1 | 96,099 | 106 | 1.1 |
| | { 1975-78 | 79,359 | 88 | 1.1 | 129,007 | 110 | 0.9 |
| | { 1979-80 | 36,369 | 31 | 0.9 | 67,527 | 57 | 0.8 |
| | { 1981-82 | 20,588 | 10 | 0.5 | 65,770 | 40 | 0.6 |

* Exposure in "With Aviation Extra Premium" category is terminated upon discontinuance of extra premium. Exposure in "Without Aviation Extra Premium" category consists of pilots active at time of issue and rated standard or reduced to standard through liberalization of underwriting rules.

† Includes exposure of companies unable to subdivide data.

TABLE 17

INTERCOMPANY EXPERIENCE ON PILOTS FLYING FOR PLEASURE
OR PERSONAL BUSINESS—BY POLICIES*

(1971-74, 1975-78, 1979-80, and 1981-82 Experience on 1967 and Subsequent Issues)

| STATUS AT ISSUE | YEARS | WITH AVIATION EXTRA PREMIUM | | | WITHOUT AVIATION EXTRA PREMIUM | | |
|-----------------------------------|-----------|--------------------------------|------------------------|-------------------|-----------------------------------|------------------------|-------------------|
| | | Years of Exposure | Aviation Fatalities | Rate per 1,000 | Years of Exposure | Aviation Fatalities | Rate per 1,000 |
| By hours flown:† | | | | | | | |
| Under 100 | { 1971-74 | 11,966 | 8 | 0.7 | 55,081 | 37 | 0.7 |
| | { 1975-78 | 14,706 | 7 | 0.5 | 68,685 | 38 | 0.6 |
| | { 1979-80 | 6,422 | 3 | 0.5 | 34,775 | 24 | 0.7 |
| | { 1981-82 | 3,602 | 1 | 0.3 | 29,372 | 9 | 0.3 |
| 100-199 | { 1971-74 | 5,429 | 5 | 0.9 | 24,138 | 42 | 1.7 |
| | { 1975-78 | 6,149 | 5 | 0.8 | 28,802 | 54 | 1.9 |
| | { 1979-80 | 2,842 | 1 | 0.4 | 14,519 | 17 | 1.2 |
| | { 1981-82 | 1,534 | 0 | 0.0 | 12,691 | 13 | 1.0 |
| 200-299 | { 1971-74 | 2,309 | 3 | 1.3 | 2,745 | 2 | 0.7 |
| | { 1975-78 | 2,521 | 6 | 2.4 | 3,597 | 4 | 1.1 |
| | { 1979-80 | 1,053 | 1 | 0.9 | 1,740 | 5 | 2.6 |
| | { 1981-82 | 613 | 0 | 0.0 | 1,958 | 5 | 2.6 |
| 300 or more | { 1971-74 | 2,187 | 6 | 2.7 | 1,350 | 2 | 1.5 |
| | { 1975-78 | 2,810 | 5 | 1.8 | 2,434 | 1 | 0.4 |
| | { 1979-80 | 1,268 | 2 | 1.6 | 1,541 | 0 | 0.0 |
| | { 1981-82 | 865 | 1 | 1.2 | 1,802 | 2 | 1.1 |
| By type of flying certificate: | | | | | | | |
| Commercial or transport | { 1971-74 | 5,982 | 6 | 1.0 | 17,239 | 20 | 1.2 |
| | { 1975-78 | 7,103 | 8 | 1.1 | 22,432 | 13 | 0.6 |
| | { 1979-80 | 3,221 | 2 | 0.6 | 11,789 | 11 | 0.9 |
| | { 1981-82 | 1,791 | 1 | 0.6 | 10,380 | 6 | 0.6 |
| By type of flying certificate: | | | | | | | |
| Private | { 1971-74 | 16,293 | 18 | 1.1 | 67,862 | 67 | 1.0 |
| | { 1975-78 | 19,654 | 17 | 0.9 | 83,690 | 85 | 1.0 |
| | { 1979-80 | 8,678 | 5 | 0.6 | 42,359 | 36 | 0.8 |
| | { 1981-82 | 5,138 | 1 | 0.2 | 36,831 | 24 | 0.7 |
| By attained age: | | | | | | | |
| Under 35 | { 1971-74 | 14,069 | 11 | 0.8 | 19,134 | 18 | 0.9 |
| | { 1975-78 | 16,929 | 8 | 0.5 | 19,577 | 10 | 0.5 |
| | { 1979-80 | 7,102 | 2 | 0.3 | 8,126 | 12 | 1.5 |
| | { 1981-82 | 4,041 | 2 | 0.5 | 9,020 | 5 | 0.6 |
| 35-49 | { 1971-74 | 6,198 | 12 | 1.9 | 50,507 | 49 | 1.0 |
| | { 1975-78 | 6,856 | 11 | 1.6 | 60,573 | 56 | 0.9 |
| | { 1979-80 | 3,169 | 2 | 0.6 | 29,617 | 22 | 0.7 |
| | { 1981-82 | 2,191 | 0 | 0.0 | 23,462 | 13 | 0.6 |
| 50 and over | { 1971-74 | 2,008 | 1 | 0.5 | 15,460 | 20 | 1.3 |
| | { 1975-78 | 2,972 | 6 | 2.0 | 25,972 | 32 | 1.2 |
| | { 1979-80 | 1,628 | 3 | 1.8 | 16,405 | 13 | 0.8 |
| | { 1981-82 | 697 | 0 | 0.0 | 14,737 | 12 | 0.8 |
| Total | { 1971-74 | 22,275 | 24 | 1.1 | 85,101 | 87 | 1.0 |
| | { 1975-78 | 26,757 | 25 | 0.9 | 106,122 | 98 | 0.9 |
| | { 1979-80 | 11,899 | 7 | 0.6 | 54,148 | 47 | 0.9 |
| | { 1981-82 | 6,929 | 2 | 0.3 | 47,219 | 30 | 0.6 |

* Exposure in "With Aviation Extra Premium" category is terminated upon discontinuance of extra premium. Exposure in "Without Aviation Extra Premium" category consists of pilots active at time of issue and rated standard or reduced to standard through liberalization of underwriting rules.

† Omits data where hours are not stated.

TABLE 18

INTERCOMPANY EXPERIENCE ON MILITARY PILOTS BY BRANCH OF SERVICE
AND FLYING DUTIES—WITH AVIATION EXTRA PREMIUM*

(1971-74, 1975-78, 1979-80 and 1981-82 Experience on 1967 and Subsequent Issues—by Policies)

| STATUS AT ISSUE AND ATTAINED INSURANCE AGE | YEARS | OPERATIONAL | | | ADMINISTRATIVE | | |
|--|-----------|----------------------|------------------------|-------------------|----------------------|------------------------|-------------------|
| | | Years of Exposure | Aviation Fatalities | Rate per 1,000 | Years of Exposure | Aviation Fatalities | Rate per 1,000 |
| U.S. Air Force: | | | | | | | |
| Under 35 | { 1971-74 | 5,228 | 8 | 1.5 | 486 | 2 | 4.1 |
| | { 1975-78 | 3,546 | 3 | 0.8 | 469 | 0 | 0.0 |
| | { 1979-80 | 2,409 | 2 | 0.8 | 120 | 0 | 0.0 |
| | { 1981-82 | 1,262 | 0 | 0.0 | 45 | 0 | 0.0 |
| 35 and over | { 1971-74 | 3,369 | 5 | 1.5 | 1,726 | 3 | 1.7 |
| | { 1975-78 | 2,957 | 3 | 1.0 | 1,180 | 1 | 0.8 |
| | { 1979-80 | 4,486 | 7 | 1.6 | 489 | 0 | 0.0 |
| | { 1981-82 | 2,372 | 6 | 2.5 | 259 | 0 | 0.0 |
| Total | { 1971-74 | 8,597 | 13 | 1.5 | 2,212 | 5 | 2.3 |
| | { 1975-78 | 6,503 | 6 | 0.9 | 1,649 | 1 | 0.6 |
| | { 1979-80 | 6,895 | 9 | 1.3 | 609 | 0 | 0.0 |
| | { 1981-82 | 3,634 | 6 | 1.6 | 304 | 0 | 0.0 |
| U.S. Army: | | | | | | | |
| Under 35 | { 1971-74 | 3,830 | 11 | 2.9 | 2,436 | 2 | 0.8 |
| | { 1975-78 | 3,367 | 6 | 1.8 | 1,810 | 0 | 0.0 |
| | { 1979-80 | 2,076 | 0 | 0.0 | 471 | 1 | 2.1 |
| | { 1981-82 | 1,113 | 0 | 0.0 | 97 | 0 | 0.0 |
| 35 and over | { 1971-74 | 783 | 1 | 1.3 | 1,172 | 2 | 1.7 |
| | { 1975-78 | 1,208 | 4 | 3.3 | 1,351 | 1 | 0.7 |
| | { 1979-80 | 1,546 | 0 | 0.0 | 763 | 0 | 0.0 |
| | { 1981-82 | 478 | 0 | 0.0 | 375 | 0 | 0.0 |
| Total | { 1971-74 | 4,613 | 12 | 2.6 | 3,608 | 4 | 1.1 |
| | { 1975-78 | 4,575 | 10 | 2.2 | 3,161 | 1 | 0.3 |
| | { 1979-80 | 3,622 | 0 | 0.0 | 1,234 | 1 | 0.8 |
| | { 1981-82 | 1,591 | 0 | 0.0 | 472 | 0 | 0.0 |
| U.S. Navy | { 1971-74 | 2,337 | 3 | 1.3 | 1,128 | 0 | 0.0 |
| { 1975-78 | 1,788 | 2 | 1.1 | 846 | 1 | 1.2 | |
| { 1979-80 | 2,345 | 7 | 3.0 | 345 | 1 | 2.9 | |
| { 1981-82 | 1,290 | 0 | 0.0 | 212 | 0 | 0.0 | |
| U.S. Marine Corps | { 1971-74 | 737 | 0 | 0.0 | 380 | 0 | 0.0 |
| { 1975-78 | 758 | 3 | 4.0 | 344 | 1 | 2.9 | |
| { 1979-80 | 519 | 3 | 5.8 | 131 | 1 | 7.6 | |
| { 1981-82 | 228 | 1 | 4.4 | 61 | 0 | 0.0 | |
| U.S. Air Force, Army, Navy, and Marine Corps Reserve | { 1971-74 | | | | 926 | 2 | 2.2 |
| { 1975-78 | | | | | 656 | 1 | 1.5 |
| { 1979-80 | | | | | 280 | 1 | 3.6 |
| { 1981-82 | | | | | 13 | 1 | 7.4 |
| U.S. Air National Guard ... | { 1971-74 | | | | 877 | 2 | 2.3 |
| { 1975-78 | | | | | 1,185 | 0 | 0.0 |
| { 1979-80 | | | | | 392 | 0 | 0.0 |
| { 1981-82 | | | | | 217 | 0 | 0.0 |
| Total | { 1971-74 | 16,284 | 28 | 1.7 | 9,131 | 13 | 1.4 |
| | { 1975-78 | 13,624 | 21 | 1.5 | 7,841 | 5 | 0.6 |
| | { 1979-80 | 13,381 | 19 | 1.4 | 2,991 | 4 | 1.3 |
| | { 1981-82 | 6,743 | 7 | 1.0 | 1,401 | 1 | 0.7 |

* Exposure is terminated on discontinuance of extra premium.

Civilian Aviation

Table 16 covers the experience for various classifications of pilots for policies issued with and without aviation extra premiums. The "Scheduled Airline" classification includes United States certificated route air carriers and corresponding major Canadian airlines. The "Corporate" classification covers hired pilots flying company-owned planes. The "Charter and other airlines" classification comprises the supplemental air carriers and intrastate and foreign airlines, as well as air-taxi and charter operations. The "Others" classification includes corporate and charter pilots insured by companies unable to subdivide their data, as well as specialty pilots in such occupations as aerial application, pipeline survey, advertising, and photography. Pilots with either student or private certificates are defined as (1) private pilots (if they have 100 or more solo hours of pleasure or personal business flying) or (2) student pilots (if they have less than 100 solo hours of flying).

The 1981-82 experience in the "With Aviation Extra Premium" category was better than that for earlier years in all classifications, a change over the last study. However, caution should be used with the recent data due to the limited exposure and deaths.

The "Without Aviation Extra Premium" experience for 1981-82, where there are significant exposures, was better than the 1979-80 experience except for pilot instructors and corporate flying.

Table 17 covers the experience for various categories of private pilots (from Table 16) for policies issued with and without aviation extra premiums. Subdivisions by hours flown, type of flying certificate, and attained age are shown. The exposure for issues without aviation extra premium includes an unknown proportion of lives who have discontinued their flying activities. The total 1981-82 experience showed slight decrease in fatality rates for both "With Aviation Extra Premium" and "Without Aviation Extra Premium" compared to the earlier experience. The 1981-82 experience in the "With Aviation Extra Premium" category by hours flown was better than the previous experience. However, there was only one death. "Private" flying showed a decrease compared to the experience of earlier years. With so few deaths in most classifications, any analysis of trends must be viewed with caution.

Policies in the "Without Aviation Extra Premium" category showed increases in fatality rates by number of hours flown in the "300 or more" classification. By type of flying certificate and attained age, classifications exhibited reduced rates compared to earlier experience. In total, the experience is lower than previous years on reduced exposure and deaths.

Military Aviation

Table 18 shows aviation fatality rates for military aviation pilots with policies issued only with an aviation extra premium separately for operational and administrative pilots. Administrative pilots are defined as those flying 40–150 hours annually, whereas operational pilots are defined as those flying over 150 hours annually. Within the “Operational” category, there has been a slight improvement in the overall results.