

TRANSACTIONS OF SOCIETY OF ACTUARIES 1967 REPORTS

REPORT OF THE COMMITTEE ON AVIATION

AVIATION STATISTICS

THIS report presents primarily new data which have become available during the past year. Data for earlier periods have been included for comparison and to indicate trends.

Only aviation deaths are used in determining death rates. The effects on death rates of fatalities due to enemy or hostile action against United States military forces are shown separately where data are available.

Recent governmental studies of United States civil aviation are the source of separate tabulation of fatality rates for pilots in business, corporate, and air-taxi flying.

Fatality rates for United States Air Force pilots at ages under 25 and for United States Navy and Marine pilots at ages 30-39 are higher in 1966 than they were in 1965.

The experience of United States Navy and Marine pilots by rank is included in this report for the first time.

SCHEDULED AIRLINES

United States Airlines

As in previous years' reports, the information in this section relates only to passenger/cargo air carriers as listed in the *FAA Statistical Handbook of Aviation*. These are air carriers holding certificates of public convenience and necessity issued by the Civil Aeronautics Board, authorizing them to perform scheduled air transportation of passengers and property over specified routes and a limited amount of nonscheduled or charter operations.

Some companies not listed as passenger/cargo air carriers may use such terms as "airlines," "airways," and "carrier" and may provide some scheduled passenger service on a limited basis. Nevertheless, data regarding their activities are included under the "Supplemental Airlines" or "General Aviation Flying" sections of this report.

"Domestic" operations are in general within the territory 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 United States points separated by foreign territory or major expanses of international waters. Operations between the United States

mainland and Alaska, Hawaii, Puerto Rico, or other outlying areas of the United States are included in "International" operations.

Table 1 shows the recent aviation fatality rates in United States scheduled airlines for passengers, pilots, and other crew members. The death rates for "Passengers" and "First Pilots" arise only from scheduled operations, while the death rates for "All Pilots" and for "Other Crew Members" are from all operations, both scheduled and nonscheduled. "All Pilots" and "Other Crew Members" include persons who may do less

TABLE 1
UNITED STATES SCHEDULED AIRLINES AVIATION DEATH RATES
(Number of Fatal Accidents in Parentheses)

	1955-58	1959-62	1963-66	1966*	1967 (Est.)
Passenger Death Rate per 1,000 Scheduled Passenger Hours†					
Domestic . . . . .	.0011 (20)	.0015 (23)	.0006 (18)	.0003 (3)	.0010 (7)
International . . . . .	.0005 (4)	.0006 (3)	.0013 (4)	.0000 (0)	.0000 (0)
Total . . . . .	.0010 (24)	.0014 (26)	.0007 (22)	.0002 (3)	.0008 (7)
First-Pilot Death Rate per 1,000 Scheduled Airplane Hours†					
Domestic . . . . .	.0010 (13)	.0017 (22)	.0012 (16)	.0011 (4)	.0014 (6)
International . . . . .	.0004 (1)	.0014 (3)	.0019 (4)	.0016 (1)	.0000 (0)
Total . . . . .	.0009 (14)	.0017 (25)	.0013 (20)	.0012 (5)	.0012 (6)
Death Rate of All Pilots and Copilots per Life Year of Exposure					
Domestic . . . . .	.0009 (18)	.0012 (30)	.0007 (22)	.0005 (4)	.0008 (7)
International . . . . .	.0004 (2)	.0009 (3)	.0015 (6)	.0010 (1)	.0000 (0)
Total . . . . .	.0008 (20)	.0011 (33)	.0008 (28)	.0005 (5)	.0007 (7)
Death Rate of Other Crew Members per Life Year of Exposure					
Domestic . . . . .	.0008 (17)	.0014 (25)	.0005 (14)	.0003 (3)	.0007 (7)
International . . . . .	.0007 (2)	.0012 (3)	.0021 (6)	.0003 (1)	.0000 (0)
Total . . . . .	.0008 (19)	.0014 (28)	.0008 (20)	.0003 (4)	.0006 (7)

* Preliminary.

† Helicopter experience excluded beginning in 1957.

than the normal amount of flying on account of having some supervisory duties or for other reasons.

The small number of fatal accidents and the relatively large number of passenger fatalities in some accidents result in fatality rates which are subject to marked fluctuation from year to year. Despite this, in domestic flying, death rates resulting from experiences over successive four-year periods from 1955 are fairly constant. The passenger death rate for the entire period 1955-67 is 0.0010 per 1,000 scheduled passenger hours. Also in domestic flying, the death rate for first pilots for the period 1955-67 is 0.0013 per 1,000 scheduled airplane hours.

In international flying of United States scheduled airlines, in both 1966 and 1967 there were no accidents causing passenger fatalities. The death rates in international flying for the entire period 1955-67 are 0.0008 per 1,000 scheduled passenger hours for passengers and 0.0011 per 1,000 scheduled airplane hours for first pilots.

Pilots engaged in scheduled flying may not, under government regulations, fly more than 100 hours per month or 1,000 hours per year in domestic operations. Pilots in international operations are limited either to 100 hours per month or 300 hours every 90 days. In actual practice, pilots average less hours monthly because they have ground duties before and after flights.

During the ten years 1958-67, helicopters flew approximately 145,000,000 passenger miles in scheduled passenger service. In this period, two fatal accidents—referred to in the 1964 report—have produced a passenger death rate of 0.009 per 1,000 scheduled passenger hours.

Airlines of Countries Other than the United States

The general conditions and aviation technology peculiar to any country influence the hazards of flying in that country. Each country has its own aviation regulations and methods of enforcement. These may be different for domestic and international operations, the latter being affected by the requirements of such compromises as crossing international boundary lines. From *World Air Transport Statistics*, a publication of the International Air Transport Association, the Committee has summarized the experience of most of the Association's members. Some companies operate only within the border of a particular country, some only on an international basis, and some, in varying proportions, on both bases.

By making reasonable assumptions regarding average speed, the passenger fatality rates per 1,000 scheduled passenger hours were derived for United States airlines reporting to I.A.T.A. and for the member airlines of all other countries combined. The fatality rates are compared in

Table 2. Almost 50 per cent of the total scheduled passenger hours were flown by United States airlines. Approximately 75 per cent of the scheduled passenger miles flown by United States scheduled airlines were accumulated by airlines which report to the I.A.T.A. The combined international and domestic scheduled experience of all United States scheduled airlines is also included in Table 2 for comparison. The passenger fatality rates presented in Table 2 relate to scheduled services only, excluding United States helicopter services.

The safety record of other countries' airlines' scheduled services continues to be less favorable than that of United States scheduled airlines.

TABLE 2
SCHEDULED AIRLINES OF
UNITED STATES AND OTHER COUNTRIES
PASSENGER AVIATION DEATH RATES
PER 1,000 PASSENGER HOURS

PERIOD	MEMBERS REPORTING TO I.A.T.A.		ALL UNITED STATES AIRLINES
	Countries Other than the United States	United States	
1955-58 . . . . .	.0035	.0010	.0010
1959-62 . . . . .	.0036	.0014	.0014
1963-66 . . . . .	.0026	.0008	.0007
1966* . . . . .	.0027	.0002	.0002

*Preliminary.

All-Cargo Carriers

These are a class of air carriers holding temporary certificates of public convenience and necessity, issued by the Civil Aeronautics Board, authorizing the performance of scheduled air flight express and mail transportation over specified routes as well as the conduct of nonscheduled operations which may include passengers. In 1966 there were five such carriers, and approximately 30 per cent of their services were on a scheduled basis.

In the eleven years 1956-66 the first-pilot fatality rate for scheduled all-cargo services was 0.009 per 1,000 airplane hours, based on 7 deaths. In the three years 1956-58 there were no first-pilot fatalities. In the four-year period 1959-62 the first-pilot fatality rate was 0.013 per 1,000 airplane hours, based on 3 first-pilot deaths, and in the four-year period

1963-66 the first-pilot fatality rate was 0.017 per 1,000 airplane hours, based on 4 first-pilot deaths. In combined scheduled and nonscheduled services of the all-cargo carriers there were 5 first-pilot deaths in the four years 1963-66, producing a death rate of 0.008 per 1,000 airplane hours.

SUPPLEMENTAL AIRLINES

These airlines are a class of air carriers holding temporary certificates of public convenience and necessity, authorizing them to perform passenger and cargo charter services supplementing the scheduled service of the certificated route air carriers. In addition, they can perform on a limited or temporary basis, as authorized by the Civil Aeronautics Board, scheduled operations including the transportation of individually ticketed passengers. On March 1, 1967, there were 13 such airlines.

TABLE 3
SUPPLEMENTAL AIR CARRIERS—AVIATION DEATH RATES
(Number of Fatal Accidents in Parentheses)

PERIOD	PASSENGER		FIRST PILOT	
	Aviation Deaths	Rate per 1,000 Passenger Hours	Aviation Deaths	Rate per 1,000 Airplane Hours
1959-62.....	245 (5)	.007	6	.007
1963-66.....	80 (2)	.002	5	.005
1966.....	78 (1)	.006	2	.006
1967 (est.).....	0	.000	1	.003

The figures shown in Table 3 include experience in operations under contracts with military authorities. Fatality rates are derived from mileage reports supplied to the Civil Aeronautics Board, assuming an average speed of 200 miles per hour for years prior to 1960, increasing gradually to an assumed 260 miles per hour in 1967. During the eight-year period 1959-66, the passenger death rate was 0.005 per 1,000 passenger hours, and the death rate among first pilots was 0.006 per 1,000 airplane hours.

GENERAL AVIATION FLYING

General aviation flying includes all domestic civil flying except that performed by the public carriers (passenger/cargo carriers, all-cargo carriers, and supplemental airlines). The annual flying time of planes in general aviation totals more than four times the flying time of public carriers in their domestic flights. The number of hours flown in general

aviation is estimated by the FAA from sampling surveys (most recent one in 1962) of aircraft use, supplemented by FAA estimated breakdowns of general information obtained at the time of FAA annual inspection of aircraft.

Pilot death rates per 1,000 airplane hours are shown in Table 4 for five classes of flying. Death rates referred to in this section are death rates per 1,000 airplane hours unless specifically stated otherwise. It is not practical to determine death rates per life year of exposure from the material from which this information has been derived. Such death rates may be markedly lower than death rates per 1,000 airplane hours, depend-

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

Period	Hours* (000)	Aviation Deaths	Rate	Hours* (000)	Aviation Deaths	Rate
	Pleasure			Instruction		
1962.....	3,489	173	.050	2,385	19	.008
1963.....	3,626	224	.062	2,417	25	.010
1964.....	3,777	222	.059	2,675	18	.007
1965.....	4,016	260	.065	3,346	29	.009
1962-65..	14,908	879	.059	10,823	91	.008
	Business and Corporate			Commercial (Excluding Aerial Application) and Miscellaneous		
1962.....	5,431	92	.017	2,102	31	.015
1963.....	5,740	93	.016	2,208	31	.014
1964.....	5,823	93	.016	2,313	41	.018
1965.....	5,857	77	.013	2,332	33	.014
1962-65..	22,851	355	.016	8,955	136	.015
	Aerial Application					
1962.....	949	39	.041			
1963.....	964	30	.031			
1964.....	992	43	.043			
1965.....	1,016	34	.033			
1962-65..	3,921	146	.037			

* FAA estimate based on 1962 survey of aircraft used in general aviation supplemented by information obtained on FAA annual inspection of such aircraft.

ing on the number of hours a pilot flies each year. Of course, this is only one of many factors affecting pilot death rates.

Certain "other" noncommercial and miscellaneous types of flying, such as test, demonstration, and ferry, are not included in Table 4 because the number of flying hours are not available. There were 68 fatalities in these types of flying during 1965.

Pleasure flying accounts for approximately one-fourth of the total general aviation flying time but for somewhat more than one-half of the pilot fatalities. During 1962-65 the death rate of pilots in pleasure flying was the highest among the five categories in general aviation shown in Table 4.

Flight training of civilians presents a favorable record. The pilot death rate for the years 1962-65 was 0.008 per 1,000 plane hours. Included are the deaths of the instructor or the student, whoever was acting as pilot when the accident occurred. The hours of instructional flying now represent almost 20 per cent of the total in general aviation. Practice flying when not under the supervision of an instructor, either in the air or from the ground, is included in pleasure flying.

The "Business and Corporate" category, which accounts for about 35 per cent of total general aviation flying, is composed of nonprofessional pilots flying for business reasons (Business) and professional pilots receiving direct salary or compensation for piloting planes operated (not for public hire) by a corporation or business firm for the transportation of personnel or cargo in furtherance of the company's business (Corporate). It has been possible for the years 1964 and 1965 to subdivide the category into "Business" and "Corporate." The results are shown in Table 5. The death rate per 1,000 airplane hours is substantially higher for "Business" flying than for "Corporate" flying. To the extent that nonprofessional "Business" pilots may fly fewer hours per year than professional "Corporate" pilots, the difference in the death rates per life year of exposure may be less than it is for the rates shown. The death rate per 1,000 airplane hours for "Corporate" pilots, although relatively favorable, is substantially higher than that for pilots of scheduled passenger airlines.

Commercial flying—which includes the transportation of passengers and cargo for hire, survey and patrol activities, aerial application, miscellaneous flying, such as search and rescue work, and Civil Air Patrol—accounts for about one-fifth of the total hours in general aviation. Included in this subdivision are pilots who fly scheduled passenger routes for air taxi and other commercial operators. Death rates per 1,000 airplane hours for pilots flying air taxis are shown in Table 5 for the years 1964 and 1965. This group includes scheduled and nonscheduled taxi

flying and charter flying not done by scheduled airlines and supplemental airlines.

The pilot fatality rates in aerial application have been higher than those in other commercial activities, being estimated at 0.037 per 1,000 airplane hours for the years 1962-65. These figures include 121,000 hours flown during 1962-65 for such purposes by rotorcraft (helicopter) with 2 deaths, a fatality rate of 0.016 per 1,000 airplane hours. This compares with 3,800,000 hours flown by other planes during the same period with 144 deaths and a fatality rate of 0.038 per 1,000 airplane hours. Aerial application includes any form of flying in which chemicals are distributed from aircraft upon the land below, the usual form being crop-dusting. Fire control is not included in this category. The average annual flying time is believed to vary considerably among pilots who have a local business confined to a single growing season and those who move from area to area with the season.

TABLE 5
GENERAL AVIATION FLYING
BUSINESS, CORPORATE, AND AIR TAXI
PILOT AVIATION DEATH RATES PER 1,000 AIRPLANE HOURS

Period	Hours (000)	Aviation Deaths	Rate
Business			
1964.....	3,777	79	.021
1965.....	3,416	70	.020
1964-65.....	7,193	149	.021
Corporate			
1964.....	2,046	14	.007
1965.....	2,441	7	.003
1964-65.....	4,487	21	.005
Air Taxi			
1964.....	1,659	22	.013
1965.....	1,802	18	.010
1964-65.....	3,461	40	.012

CANADIAN CIVIL FLYING

Passenger and pilot aviation fatality rates per 1,000 hours in domestic and international operations of Canadian scheduled airlines derived from figures furnished by the Canadian Department of Transport and the Dominion Bureau of Statistics are shown in Table 6.

Pilot aviation fatality rates per 1,000 hours in domestic and international operations of Canadian nonscheduled airlines have been estimated from figures furnished by the Canadian Department of Transport and the Dominion Bureau of Statistics and are shown in Table 7, compared with corresponding fatality rates in scheduled flying (domestic and international).

Data from similar sources have been used to estimate the passenger

TABLE 6
CANADIAN SCHEDULED AIRLINES
AVIATION FATALITY RATES
(Number of Fatal Accidents in Parentheses)

Years	Passenger Fatality Rate per 1,000 Passenger Hours	First Pilot Fatality Rate per 1,000 Airplane Hours
1955-58.....	.0028 (4)	.0029 (3)
1959-62.....	.0004 (2)	.0008 (1)
1963-66.....	.0033 (4)	.0029 (4)
1955-66.....	.0022 (10)	.0021 (8)
1964-67 (est.).....	.0014 (3)	.0020 (3)

TABLE 7
CANADIAN NONSCHEDULED VERSUS
SCHEDULED AIRLINES
FIRST-PILOT FATALITY RATES PER
1,000 AIRPLANE HOURS
(Number of Fatal Accidents in Parentheses)

Years	Nonscheduled	Scheduled
1959-62.....	.0155 (22)	.0008 (1)
1963-66.....	.0191 (33)	.0029 (4)
1959-66.....	.0175 (55)	.0018 (5)

aviation fatality rates per 1,000 passenger hours in domestic nonscheduled operations of Canadian carriers, which are shown in Table 8.

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

The fatality rates amongst Canadian civil pilots, by class of license, are shown in Table 9, separately, for the periods 1959-62 and 1963-66, based on figures furnished by the Canadian Department of Transport.

TABLE 8
CANADIAN NONSCHEDULED FLYING—
DOMESTIC OPERATIONS
AVIATION FATALITY RATES
(Number of Fatal Accidents in Parentheses)

Years	Passenger Fatality Rate per 1,000 Passenger Hours
1959-62 . . . . .	.0127 (21)
1963-66 . . . . .	.0182 (31)
1959-66 . . . . .	.0154 (52)

TABLE 9
CANADIAN CIVIL PILOTS BY CLASS OF LICENSE
1959-66 AVIATION FATALITY RATES

Class of License	Period	Life Years of Exposure	Aviation Fatalities	Rate per 1,000 Life Years of Exposure
Airline transport	{ 1959-62	4,950	8	1.6
	{ 1963-66	5,839	13	2.2
Senior commercial	{ 1959-62	1,646	8	4.9
	{ 1963-66	1,508	6	4.0
Commercial	{ 1959-62	9,260	43	4.6
	{ 1963-66	10,825	54	5.0
Private (excluding students)	{ 1959-62	52,094	79*	1.5
	{ 1963-66	65,548	103	1.6

* Includes 5 missing and presumed dead for years 1959-62 and 1 death as glider pilot in the year 1959.

It should be noted that pilots holding airline transport licenses are not necessarily flying for scheduled airlines, since they may engage in other types of flying.

The 1963-66 fatality rates for airline pilots and commercial pilots have increased slightly over those for the 1959-62 period. For pilots with a senior commercial license the aviation fatality rate for 1963-66 (based on small exposures) has decreased slightly. The rate for private pilots has remained fairly level in recent years.

Excluded from the experience in Table 9 were persons holding glider licenses only, of whom there have been a steadily increasing number—712 in 1964, 793 in 1965, and 870 in 1966, with 1 fatality reported in each of the years 1964 and 1965.

TABLE 10
UNITED STATES AIR FORCE, NAVY, AND MARINE CORPS FLYERS
AVIATION FATALITY RATES PER 1,000 LIFE YEARS, BY AGE
DEATHS DUE TO HOSTILE ACTION INCLUDED*

AGE GROUP	AIR FORCE RATED PILOTS		AIR FORCE NONPILOT RATED OFFICERS		NAVY AND MARINE CORPS PILOTS	
	1963-66	1966	1963-66	1966	1963-66	1966
Under 25.....	4.6	16.8 [12.4]	3.2	3.2† [2.1]†	7.2	4.0
25-29.....	5.9	7.5 [4.1]	2.0	2.8 [2.4]	8.5	6.3
30-34.....	4.8	6.8 [3.4]	2.3	1.6 [1.4]	4.5	5.7
35-39.....	3.8	5.2 [2.9]	1.4	0.7† [0.7]†	3.1	3.7
40 and over.....	1.2	1.4 [1.4]	1.2	0.9† [0.9]†	0.9	0.4†
All.....	3.6	4.6 [2.8]	2.0	1.8 [1.6]	4.7	4.0

* Rates in brackets exclude deaths due to hostile action.

† Based on 5 or fewer deaths.

UNITED STATES MILITARY

General

As in last year's report, the Navy and Marine Corps aviation fatality rates include deaths due to hostile action, while the Air Force and Army rates for 1966 are shown both including and excluding deaths due to hostile action.

Age

Table 10 shows aviation fatality rates by age group for Air Force pilots and nonpilot rated officers and for Navy and Marine aviators on active duty, for calendar year 1966 as well as the four-year period 1963-66.

The aviation fatality rates of Air Force rated pilots for 1966 are gen-

erally higher than those experienced in 1965. At ages under 25, the rates during 1965, both including and excluding deaths due to hostile action, have increased further during 1966. At ages 25–29, the rates during 1966 are lower than those experienced during 1965. The fatality rate for the age group 35–39 remained at the 1965 level during 1966; an increase in this rate led to its separate listing in the 1966 report.

The changes in aviation fatality rates for nonpilot rated officers from those shown in last year's report do not appear to be significant.

The Navy and Marine Corps aviation fatality rates for 1966 were about the same as for 1965 for all ages combined. They were, however, lower for ages under 30 and higher for the 30–39 age group. As in 1965, Navy and Marine Corps pilots experienced lower aviation fatality rates than Air Force rated pilots.

Pilots and Other Rated Officers—by Rank

Aviation fatality rates according to rank are shown in Table 11 for Air Force pilots and other rated officers and in Table 12 for Navy and Marine corps aviators on active duty.

The changes in the 1966 aviation fatality rates among such Air Force officers as compared to those experienced in 1965 do not appear to be significant when fluctuations due to small numbers of deaths are taken into account and deaths due to hostile action are eliminated.

Aviation fatality rates for Navy and Marine Corps pilots by rank are shown in this report for the first time and exhibit a pattern similar to those for the Air Force. Fatality rates excluding deaths due to hostile action are not available.

Duty Assignment

Aviation fatality rates by duty assignment, which appeared in last year's report, have not been brought up to date. The new data available to the Committee appear to be incomplete.

Hours of Flying

The average number of hours flown by Navy and Marine Corps pilots increased to 248 in 1966. This is still considerably lower than the high of 279 hours in 1962.

Pilots in the Inactive Naval Reserves flew an average of 125 hours in 1966, which is about the same as the high of 127 recorded in 1965.

The average number of aircraft hours for Army pilots—in fixed-wing and rotary-wing craft combined—increased to 319 hours in 1966. This is substantially higher than the previous high of 229 hours in 1965. The average for the five-year period 1962–66 was 234 hours.

The average number of aircraft hours for Air Force pilots is not available for 1966.

Military Air Command

There were no passenger fatalities on military carriers in MAC in 1966. The passenger fatality rate for the four-year period 1963-66 was 3.42 per 100,000,000 passenger miles.

Aviation fatality rates among pilots and crew members of MAC are shown in Table 13.

TABLE 11
UNITED STATES AIR FORCE ON ACTIVE DUTY, BY RANK
AVIATION FATALITY RATES PER 1,000 LIFE YEARS OF EXPOSURE
DEATHS DUE TO HOSTILE ACTION INCLUDED*

RANK	RATED PILOTS		NONPILOT RATED OFFICERS	
	1963-66	1966	1963-66	1966
2d Lieutenant.....	8.5	8.6† [6.9]†	0.6†	0.0† [0.0]†
1st Lieutenant.....	7.0	10.3 [6.5]	2.9	4.2 [3.9]
Captain.....	5.2	9.1 [4.6]	2.0	1.8 [1.5]
Major.....	2.0	2.5 [1.7]	1.7	0.6† [0.6]†
Lieutenant Colonel.....	0.9	1.5 [1.5]	1.0†	0.0† [0.0]†
General and Colonel.....	0.5	0.9† [0.9]†	1.8†	0.0† [0.0]†
All.....	3.6	4.6 [2.8]	2.0	1.8 [1.6]

* Rates in brackets exclude deaths due to hostile action.

† Based on 5 or fewer deaths.

TABLE 12
UNITED STATES NAVY AND MARINE CORPS AVIATORS
ON ACTIVE DUTY, BY RANK
AVIATION FATALITY RATES PER 1,000 LIFE YEARS OF EXPOSURE
DEATHS DUE TO HOSTILE ACTION INCLUDED

RANK		1963-66	1966
Navy	Marine Corps		
Ensign and Warrant	2nd Lieutenant and Warrant	3.7	2.0*
Lieutenant Junior Grade	1st Lieutenant	11.2	10.7
Lieutenant	Captain	5.1	4.5
Lieutenant Commander	Major	2.6	3.6
Commander	Lieutenant Colonel	2.1	2.4
Admiral and Captain	General and Colonel	0.3*	0.0*
All.....		4.5	4.1

* Based on 5 or fewer deaths.

United States Army

Aviation fatality rates among Army rated pilots and crew members are shown in Table 14. The fatality rates for 1966 are higher than those experienced in 1965, but they are still below the level of the 1964 rates.

Fatality rates among Army rated pilots per 1,000 aircraft hours in rotary-wing and fixed-wing aircraft are compared in Table 15.

The fatality rate per 1,000 aircraft hours for pilots of rotary-wing aircraft exceeded that for pilots of fixed-wing aircraft for the first time since 1961.

Student Pilots

Table 16 shows aviation fatality rates among student pilots in the military services. The Navy and Marine Corps rates are based on both

TABLE 13
MILITARY AIR COMMAND
AVIATION FATALITY RATES PER 1,000 LIFE YEARS OF EXPOSURE
DEATHS DUE TO HOSTILE ACTION INCLUDED*

	7/1/59- 6/30/63	7/1/63- 6/30/67	7/1/66- 6/30/67
Pilots:			
Transport units.....	1.8	2.1	1.2† [1.2]†
Other units.....	1.1	1.2	0.5† [0.5]†
All.....	1.5	1.8	0.9† [0.9]†
Crew members:			
Transport units.....	2.1	2.8	1.5 [1.5]
Other units.....	1.4	2.9	1.5† [0.8]†
All.....	1.9	2.8	1.5 [1.3]

* Rates in brackets exclude deaths due to hostile action.

† Based on 5 or fewer deaths.

TABLE 14
UNITED STATES ARMY—ALL FLYING OPERATIONS
AVIATION FATALITY RATES PER 1,000 LIFE YEARS OF EXPOSURE
DEATHS DUE TO HOSTILE ACTION EXCLUDED*

	1959-62	1963-66†	1966
Rated pilots.....	3.9	4.2	4.9 [11.0]
Crew members.....	5.4	8.1	9.1 [17.6]

* Aviation fatality rates in brackets include deaths due to hostile action.

† 1963 data exclude all fatalities occurring in Vietnam, hostile action and others. 1964, 1965, and 1966 data exclude only deaths due to hostile action.

officers and cadets, whereas the Air Force rates are based on officers only.

The 1966 fatality rates for Army student pilots and Navy and Marine Corps student pilots in advanced training were higher, and for Air Force student pilots and Navy and Marine Corps pilots attending the basic course were lower than the corresponding 1965 rates.

Coast Guard

The aviation fatality rates among Coast Guard personnel on flight orders are shown in Table 17. There were no aviation fatalities among pilots or crewmen in 1965 or 1966, and there have been no fatalities among student pilots or observers during the past ten years.

Inactive Reservists

Table 18 shows the aviation fatality rates for Navy and Marine Corps inactive reservists on drill-pay status.

TABLE 15
UNITED STATES ARMY—ROTARY- VERSUS FIXED-WING AIRCRAFT
PILOT FATALITY RATES PER 1,000 AIRCRAFT HOURS
DEATHS DUE TO HOSTILE ACTION EXCLUDED*

	1959-62	1963-66†	1966
Fixed-wing aircraft.....	.0168	.0179	.0050‡ [.0126]
Rotary-wing aircraft....	.0206	.0176	.0192 [.0427]
All types of aircraft	.0183	.0177	.0155 [.0349]

* Aviation fatality rates in brackets include deaths due to hostile action.

† 1963 data exclude all fatalities occurring in Vietnam, hostile action and others. 1964, 1965, and 1966 data exclude only deaths due to hostile action.

‡ Based on 5 or fewer deaths.

TABLE 16
UNITED STATES AIR FORCE, NAVY AND MARINE
CORPS, AND ARMY STUDENT PILOTS
AVIATION FATALITY RATES PER 1,000 LIFE YEARS OF EXPOSURE

	1959-62	1963-66	1966
Air Force*.....	N.A.	2.9	1.7†
Navy and Marine Corps:			
Basic course.....	2.9	2.0	1.0†
Advanced course.....	11.9	7.5	9.1
Army.....	1.9	1.9	3.3

* Officers only.

† Based on 5 or fewer deaths.

N.A. = Not available.

Air National Guard

The aviation fatality rates among Air National Guard pilots not federally activated were 2.1 per 1,000 life years of exposure during 1966 and 4.8 for the four-year period 1963-66. This represents a decrease from the corresponding rates for 1965 and 1962-65, which were 7.4 and 5.6, respectively.

Army National Guard and Army Reserves

There were 3 aviation deaths among pilots and 1 death among student pilots in the Army Reserves. All 4 deaths involved pilots of rotary-wing aircraft.

For Army National Guard flyers there was 1 aviation fatality reported during 1966 among pilots, 2 among crew members, and none among student pilots. All 3 deaths involved rotary-wing aircraft.

Air Force Flight Surgeons and Nurses

The aviation fatality rate among flight surgeons was 0.4 per 1,000 life years for the four-year period 1963-66. There have been no fatalities among flight nurses during the past five years.

TABLE 17
 UNITED STATES COAST GUARD PERSONNEL
 ON FLIGHT ORDERS
 AVIATION FATALITY RATES PER 1,000
 LIFE YEARS OF EXPOSURE

	1959-62	1963-66	1966
Pilots.....	1.9*	2.2*	0.0*
Crewmen.....	0.4*	0.7*	0.0*

* Based on 5 or fewer deaths.

TABLE 18
 UNITED STATES NAVY AND MARINE CORPS INACTIVE
 RESERVISTS ON DRILL-PAY STATUS
 AVIATION FATALITY RATES BY AGE PER
 1,000 LIFE YEARS OF EXPOSURE

	1959-62	1963-66	1966
Ages under 30.....	2.2	4.4	2.0*
Ages 30 and over.....	1.7	2.5	4.3
All ages.....	1.9	2.8	4.0

* Based on 5 or fewer deaths.

Graduates of Academies—Assignment to Aviation

In 1967, 1.0 per cent of the military academy graduates and 0.2 per cent of the naval academy graduates were accepted for flying training by the Air Force. Both percentages are the same as in 1966.

All commissioned Air Force Academy graduates were placed in the Air Force.

ROYAL CANADIAN AIR FORCE

Table 19 shows the 1961-66 aviation fatality rates for pilots and crew members of the R.C.A.F. The over-all aviation fatality rate for pilots on active duty decreased slightly to 3.3 per 1,000 life years from 3.6 for the

TABLE 19
ROYAL CANADIAN AIR FORCE
1961-66 AVIATION FATALITY RATES
PER 1,000 LIFE YEARS OF EXPOSURE

	REGULAR	
	Pilot	Other Crew
Age group:		
Under 25.....	3.9	1.8
25-29.....	5.7	1.0*
30-34.....	4.2	2.3*
35-39.....	3.7	2.4*
40 and over.....	0.8*	0.7*
All.....	3.3	1.6
Rank:		
Officer Cadet.....	0.8*	0.0*
Pilot Officer and Flying Officer... ..	6.7	2.0
Flight Lieutenant.....	3.9	1.8
Squadron Leader.....	0.5*	1.0*
Wing Commander and higher ranks	0.6*	0.0*
All.....	3.3	1.6
Function:		
Fighter.....	4.6	2.7
Training.....	3.0	0.0*
Transport.....	1.5*	0.7*
Maritime.....	4.2	2.6
Others.....	2.4	0.8*
All.....	3.3	1.6

* Based on 5 or fewer deaths.

NOTE.—The function classified as "Others" is composed largely of pilots whose primary assignment is on the ground but who occasionally fly to maintain proficiency. It also includes pilots of the Air Matériel Command who ferry planes to air bases and test new planes, both accepted and experimental models.

years 1960-65 and 3.5 for 1959-64. The decrease in rate occurs at ages under 30, with a tendency toward increased rates at ages 30 and over. The aviation fatality rate for other crew members was 1.6 per 1,000 life years as compared with 1.9 in 1960-65 and 1.2 in 1959-64.

The fatality rate for pilots with the rank of Flight Lieutenant increased to 3.9 per 1,000 life years as compared with 2.5 for the period 1960-65 and 2.3 for the period 1959-64. The R.C.A.F. Auxiliary (i.e., reserve personnel who undergo weekly training in organized squadrons) has had no pilot fatalities during the nine years ending 1966.

A comparison of the 1961-66 fatality rates for pilots, by function, shows that the rates for pilots in the Fighter Command have decreased slightly; the rate was 4.6 per 1,000 life years for the period 1961-66 as compared with 5.5 for the period 1960-65 and 5.9 for the period 1959-64. For pilots in the Training Command the aviation fatality rate has leveled out, and for the period 1961-66 the rate was 3.0 per 1,000 life years as compared with 2.9 for each of the periods 1960-65 and 1959-64. The aviation fatality rates for pilots and other crew members in the Maritime Command, based on small exposures, have been higher for the periods 1961-66 and 1960-65 due mainly to the effect of one aircraft accident in 1965.

In reviewing the results shown in Table 19, it should be kept in mind that the bulk of the R.C.A.F. pilot experience was concentrated in the "Fighter" and "Training" categories and that the aviation fatality rates for the "Transport" and "Maritime" categories were based on relatively small exposures. As has been indicated in the reports of prior years, transfers of aircrew from one functional formation to another continue to occur, depending upon the requirements of the service at the time. Tours of full flying duty with a functional formation having an above-average fatality expectancy rate are normally separated by a tour of duty with a functional formation having a lower fatality expectancy or by a tour of ground duty during which proficiency flying only is carried out.

During the period 1961-66 the aviation fatality rates were 0.0248 per 1,000 flying hours for R.C.A.F. pilots flying jet aircraft and 0.0077 for pilots flying other aircraft. For crew members, the corresponding rates were 0.0163 and 0.0058, respectively.

The average number of flight hours per pilot during 1966 was 318 for R.C.A.F. Regular pilots and 176 for R.C.A.F. Auxiliary pilots.

There has been relatively little change in the distribution of R.C.A.F. pilots and crew members by duty assignment and age for 1966 as compared with 1965.

INTERCOMPANY EXPERIENCE

Contributions submitted for the experience of 1963-66 were limited to issues of 1953 and later, and this is indicated in the footnotes to the tables.

Civilian Aviation

Tables 20 and 21 show the aviation fatality rates experienced in recent years among civilian pilots on policies issued since January 1, 1946, by the twenty-nine companies contributing part or all of their data on civilian aviation risks. The experience is by numbers of policies, and the classification of the insured is according to status at the time of application for insurance. Exposure in the "With Aviation Extra Premium" category is terminated when the extra premium is discontinued. If discontinuance is due to a liberalization of underwriting practices, companies have been encouraged to transfer the exposure to the "Without Aviation Extra Premium" classification. Not all companies have been able to do so, and consequently the experience for such policies shown in Table 20 includes only a portion of such cases.

The material in Table 20 compares the experience of 1957-62 and that of 1963-66, each period being shown separately, for cases with aviation extra premium and without aviation extra premium. For scheduled airline and other commercial pilots accepted without aviation extra premium, the 1963-66 aviation fatality rates were lower than the corresponding 1957-62 rates. Private pilots with fewer than 100 hours flown in the twelve months preceding issue represent the major class by years of exposure. The aviation fatality rates for these pilots are at about the same level for issues with and without aviation extra premiums. In contrast, for private pilots with 100-199 hours flown in the year preceding issue the 1963-66 rate of 2.7 per 1,000 for issues without aviation extra premiums is approximately 60 per cent higher than both the corresponding 1957-62 rate and the 1963-66 rate for pilots charged aviation extra premiums.

Table 21 shows the experience during the period 1954-66, inclusive, among pilots flying only for pleasure or personal business, but not for hire, (a) by type of flying certificate and (b) by attained age, in each case according to the hours flown in the twelve months preceding issue. Among the pilots with fewer than 100 hours flown in the year prior to issue, the experience has been distinctly more favorable for those pilots with private licenses than for those with commercial or transport certificates. For pilots with 100 or more hours in the twelve months prior to

issue, the experience has been generally more favorable for holders of commercial or transport certificates. By attained ages, the mortality has been more favorable at ages 35 and over for the pilots with fewer than 100 hours in the year prior to issue and more favorable at ages under 35 for pilots with 100 or more hours.

TABLE 20
INTERCOMPANY EXPERIENCE ON PILOTS IN CIVILIAN
AVIATION—BY POLICIES*

STATUS AT ISSUE AND HOURS FLOWN IN 12 MONTHS PRECEDING ISSUE	PERIOD	WITH AVIATION EXTRA PREMIUM†			WITHOUT AVIATION EXTRA PREMIUM (1955 AND SUBSEQUENT ISSUES)		
		Years of Exposure	Avia- tion Fata- lities	Rate per 1,000	Years of Exposure	Avia- tion Fata- lities	Rate per 1,000
Scheduled airline pilots...	{1957-62	8,029	24	3.0	21,233	33	1.6
	{1963-66	1,507	2	1.3‡	17,474	21	1.2
Other commercial pilots flying for hire: Instructing (at least half-time).....	{1957-62	5,250	19	3.6	.....	.....	.....
	{1963-66	3,007	10	3.3	.....	.....	.....
Others.....	{1957-62	13,700	79	5.8	3,160	8	2.5
	{1963-66	8,856	44	5.0	4,824	7	1.5
Private pilots:§ Less than 100 hours....	{1957-62	53,842	57	1.1	49,615	50	1.0
	{1963-66	22,538	31	1.4	77,789	90	1.2
100-199 hours.....	{1957-62	23,097	63	2.7	6,821	11	1.6
	{1963-66	9,522	16	1.7	18,301	49	2.7
200-299 hours.....	{1957-62	8,123	34	4.2	905	1	.....
	{1963-66	3,949	7	1.8	2,051	6	2.9
300 or more hours.....	{1957-62	7,297	27	3.7	850	1	.....
	{1963-66	4,080	9	2.2	1,353	1	.....
Hours not stated.....	{1957-62	3,388	5	1.5‡	1,318	1	.....
	{1963-66	1,010	3	3.0‡	1,796	0	.....

* Exposure in "With Aviation Extra Premium" category is terminated on discontinuance of extra premium. Exposure in "Without Aviation Extra Premium" category is for pilots apparently active at time of issue who were issued standard (without aviation rider) or reduced to standard because of a liberalization in companies' underwriting rules.

† 1957-62 data include issues of 1946 and later years; 1963-66 data include issues of 1953 and later years only.

‡ Based on 5 or fewer deaths.

§ Pilots flying only for pleasure or personal business (not flying for hire). Includes pilots having commercial or transport certificate and pilots having private certificate and 100 or more solo hours (or solo hours not stated).

Military Aviation

Table 22 shows, for the twenty-six companies which have contributed to the experience on military aviation, the aviation fatality rates separately for the years 1957-62 and 1963-66 among military aviation personnel on policies issued with an aviation extra premium. The experience is by

TABLE 21
INTERCOMPANY EXPERIENCE ON PILOTS FLYING FOR
PLEASURE OR PERSONAL BUSINESS*
WITH AVIATION EXTRA PREMIUM†
(1954-66 Experience on 1946 and Subsequent Issues‡—by Policies)

HOURS FLOWN IN 12 MONTHS PRECEDING ISSUE	BY TYPE OF FLYING CERTIFICATE—ALL AGES					
	Commercial or Transport			Private (with 100 or More Solo Hours)		
	Years of Exposure	Aviation Fatalities	Rate per 1,000	Years of Exposure	Aviation Fatalities	Rate per 1,000
Less than 100 hours...	15,717	29	1.8	73,479	71	1.0
100-199 hours.....	7,525	17	2.3	30,789	71	2.3
200-299 hours.....	5,310	13	2.4	9,537	35	3.7
300 or more hours....	5,433	13	2.4	7,270	30	4.1
Hours not stated.....	879	3	3.4§	4,173	8	1.9
Total.....	34,864	75	2.2	125,248	215	1.7
	BY ATTAINED AGES—ALL TYPES OF FLYING CERTIFICATES||					
	Attained Ages under 35			Attained Ages 35 and Over		
	Years of Exposure	Aviation Fatalities	Rate per 1,000	Years of Exposure	Aviation Fatalities	Rate per 1,000
Less than 100 hours...	31,877	47	1.5	56,053	52	0.9
100-199 hours.....	11,932	22	1.8	25,835	64	2.5
200-299 hours.....	2,827	7	2.5	10,836	39	3.6
300 or more hours....	2,577	7	2.7	9,944	36	3.6
Hours not stated.....	1,432	1	.....	3,600	10	2.8
Total.....	50,645	84	1.7	106,268	201	1.9

* Excludes pilots flying for hire. Includes pilots having commercial or transport certificate and pilots having private certificate and 100 or more solo hours (or solo hours not stated), flying only for pleasure or personal business.

† Exposure is terminated on discontinuance of extra premium.

‡ For exposure years 1965-1966, issues of only 1953 and later years are included.

§ Based on 5 or fewer deaths.

|| Excludes experience of those companies which were unable to subdivide experience by age.

TABLE 22

INTERCOMPANY EXPERIENCE ON PILOTS AND CREW MEMBERS IN
MILITARY AVIATION—WITH AVIATION EXTRA PREMIUM*
FATALITIES IN COMBAT MISSIONS INCLUDED WHETHER
OR NOT RESULTING FROM ENEMY ACTION†

(1957-62 Experience on 1946 and Subsequent Issues—by Policies;
1963-66 Experience on 1953 and Subsequent Issues—by Policies)

STATUS AT ISSUE AND ATTAINED INSURANCE AGE	YEARS OF EXPOSURE		AVIATION FATALITIES		RATE PER 1,000		
	1957-62	1963-66	1957-62	1963-66	1957-62	1963-66	
U.S. Air Force pilots:‡							
Under 25.....	2,476	556	9	3 (1)	3.6	5.4§	[3.6]§
25-29.....	19,419	7,302	72	38 (13)	3.7	5.2	[3.4]
30-34.....	28,275	21,847	85	79 (16)	3.0	3.6	[2.9]
35 and over.....	103,513	56,305	218	74 (13)	2.1	1.3	[1.1]
Total.....	153,683	86,010	384	194 (43)	2.5	2.3	[1.8]
U.S. Army pilots:‡							
Under 25.....	225	248	1	6 (1)	.....	24.2	[20.2]§
25-29.....	2,180	1,804	3	13 (3)	1.4§	7.2	[5.5]
30-34.....	3,664	3,733	19	13 (9)	5.2	3.5	[1.1]§
35 and over.....	17,678	4,263	19	12 (5)	1.1	2.8	[1.6]
Total.....	23,747	10,048	42	44 (18)	1.8	4.4	[2.6]
U.S. Air Force and Army pilots:							
Under 25.....	3,082	806	11	9 (2)	3.6	11.2	[8.7]
25-29.....	24,393	9,202	82	50 (16)	3.4	5.4	[3.7]
30-34.....	36,972	26,240	120	92 (25)	3.2	3.5	[2.6]
35 and over.....	152,691	63,451	304	90 (18)	2.0	1.4	[1.1]
Total.....	217,138	99,699	517	241 (61)	2.4	2.4	[1.8]
U.S. Air Force and Army crew members:							
Under 25.....	9,079	3,052	17	11 (1)	1.9	3.6	[3.3]
25-29.....	22,873	13,198	55	27 (4)	2.4	2.0	[1.7]
30-34.....	14,184	19,623	32	40 (10)	2.3	2.0	[1.5]
35 and over.....	31,043	18,003	52	17	1.7	0.9	
Total.....	77,179	53,876	156	95 (15)	2.0	1.8	[1.5]
U.S. Navy and Marine pilots:							
Under 25.....	1,847	657	24	6	13.0	9.1	
25-29.....	11,768	5,132	115	20 (1)	9.8	3.9	[3.7]
30-34.....	18,861	9,627	90	51 (10)	4.8	5.3	[4.3]
35 and over.....	61,848	23,289	172	67 (17)	2.8	2.9	[2.1]
Total.....	94,324	38,705	401	144 (28)	4.3	3.7	[3.0]
U.S. Air Force, Army, and Navy Reserve pilots.....	10,323	6,380	18	11	1.7	1.7	
U.S. Air National Guard pilots.....	3,565	3,010	12	3 (1)	3.4	1.0§	[0.7]§

* Exposure is terminated on discontinuance of extra premium.

† Figures in parentheses indicate fatalities from enemy action included. Rates in brackets exclude deaths from enemy action.

‡ Excludes experience of those companies which were unable to subdivide experience between Air Force and Army.

§ Based on 5 or fewer deaths.

number of policies, and the classification of the insured is according to his status at the time of application for insurance. Exposure was terminated when the extra premium was discontinued.

Fatalities due to enemy action now represent about 20 per cent of the aviation fatalities in the period 1963-66. These deaths are included in the figures in the "Aviation Fatalities" columns of Tables 22-24 and are also

TABLE 23
INTERCOMPANY EXPERIENCE ON PILOTS IN MILITARY AVIATION
WITH AVIATION EXTRA PREMIUM*
FATALITIES IN COMBAT MISSIONS INCLUDED WHETHER
OR NOT RESULTING FROM ENEMY ACTION†
(Experience on 1953 and Subsequent Issues—by Policies)

HOURS FLOWN IN 12 MONTHS PRECEDING ISSUE AND ATTAINED INSURANCE AGE	YEARS OF EXPOSURE		AVIATION FATALITIES		RATE PER 1,000	
	1957-62	1963-66	1957-62	1963-66	1957-62	1963-66
U.S. Air Force and Army						
40-150 hours:						
Ages 30-34.....	7,298	5,335	24	20 (3)	3.3	3.7 [3.2]
Ages 35 and over.....	36,074	24,861	62	18 (3)	1.7	0.7 [0.6]
Total.....	43,372	30,196	86	38 (6)	2.0	1.3 [1.1]
Over 150 hours:						
Ages 30-34.....	22,349	20,082	76	70 (19)	3.4	3.5 [2.5]
Ages 35 and over.....	46,429	36,393	121	67 (13)	2.6	1.8 [1.5]
Total.....	68,778	56,475	197	137 (32)	2.9	2.4 [1.9]
U.S. Navy and Marines						
40-150 hours:						
Ages 30-34.....	4,184	2,335	19	12 (4)	4.5	5.1 [3.4]
Ages 35 and over.....	13,836	9,911	33	24 (5)	2.4	2.4 [1.9]
Total.....	18,020	12,246	52	36 (9)	2.9	2.9 [2.2]
Over 150 hours:						
Ages 30-34.....	10,112	6,974	45	38 (6)	4.5	5.4 [4.6]
Ages 35 and over.....	16,904	12,619	55	40 (10)	3.3	3.2 [2.4]
Total.....	27,016	19,593	100	78 (16)	3.7	4.0 [3.2]

* Exposure is terminated on discontinuance of extra premium.

† Figures in parentheses indicate fatalities from enemy action included. Rates in brackets exclude deaths from enemy action.

shown separately in parentheses. Fatality rates excluding deaths due to enemy action are shown in brackets. The differences between the rates which include and those which exclude deaths due to enemy action are, of course, not a proper measure of the fatality rates from enemy action, inasmuch as the exposures include a portion of the period prior to our extensive involvement in the Vietnam conflict.

The 1963-66 fatality rates excluding deaths due to enemy action shown in Table 22 for the combined United States Air Force and Army pilots are higher at ages under 30 and lower at older ages than those for 1957-62.

TABLE 24
 INTERCOMPANY EXPERIENCE ON PILOTS IN MILITARY AVIATION
 WITH AVIATION EXTRA PREMIUM*
 FATALITIES IN COMBAT MISSIONS INCLUDED WHETHER
 OR NOT RESULTING FROM ENEMY ACTION†
 (1963-66 Experience on 1953 and Subsequent Issues—by Policies)

Status at Issue and Attained Insurance Age	Years of Exposure	Aviation Fatalities	Rates per 1,000
U.S. Air Force pilots:			
Ages 35-39.....	17,685	40 (10)	2.3 [1.7]
Ages 40 and over.....	38,620	34 (3)	0.9 [0.8]
Ages 35 and over.....	56,305	74 (13)	1.3 [1.1]
U.S. Navy and Marine pilots:			
Ages 35-39.....	8,968	46 (11)	5.1 [3.9]
Ages 40 and over.....	14,321	21 (6)	1.5 [1.0]
Ages 35 and over.....	23,289	67 (17)	2.9 [2.1]

* Exposure is terminated on discontinuance of extra premium.

† Figures in parentheses indicate fatalities from enemy action included. Rates in brackets exclude deaths from enemy action.

The combined experience for United States Air Force and Army pilots includes not only the data contributed separately for each service but also data for which the particular branch of service was not given.

The 1963-66 fatality rates for United States Air Force and Army crew members are higher at ages under 25 and lower at older ages than those for 1957-62. Although the crew-member data are based on the combined experience of both Air Force and Army personnel, the Army experience is very limited, amounting to about 1 per cent of the exposure in the years 1964-66 and including no fatalities.

The 1963-66 fatality rates for United States Navy and Marine Corps pilots were lower than the 1957-62 rates at all ages, when deaths due to

enemy action are excluded. However, the aggregate rate continues to be significantly higher than the rate for Air Force and Army pilots combined.

Table 23 shows a further subdivision of the experience on pilots in military aviation at attained ages 30 and over according to the number of hours flown in the twelve months preceding issue. The table shows that for ages 35 and over aviation fatality rates are higher for pilots who flew more than 150 hours during the year preceding issue than for pilots who flew not more than 150 hours; aviation fatality rates have continued to be lower for those at attained ages 35 and over than for those at ages 30-34.

Beginning with the experience of 1963, the contributing companies have been asked to show separately their experience on issues of 1953 and later for pilots in military aviation at attained ages 35-39, as well as at ages 35 and over. A summary of the data is shown in Table 24. This table indicates that for United States Air Force and United States Navy and Marine Corps pilots the aviation fatality rates at attained ages 40 and over are significantly lower than those at ages 35-39.