

TRANSACTIONS OF SOCIETY OF ACTUARIES 1966 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 or to indicate trends. The 1960 report of the Committee includes an index, pages 68-70, covering the most recent information not shown in this report.

Only aviation deaths are used in determining death rates. The effects of fatalities due to enemy, or hostile, action are shown separately where data are available. The United States military forces use the term "hostile" action as an indication that the source of the action is not always known.

In general, aviation fatality rates for the period covered in this report do not differ markedly from those reported last year. The more important new developments are summarized briefly below:

1. Aviation fatality rates of United States Air Force rated pilots were significantly higher in 1965 than in 1964, even after excluding deaths due to hostile action. The age group 35-39 has been shown separately because of the significant increase in fatality rates during 1965 at that age group.
2. The 1965 aviation fatality rates of United States Navy and Marine pilots were lower than those for 1964 and, for the first time in recent years, were generally lower than those of Air Force rated pilots.
3. Aviation fatality rates, based on intercompany experience, for private pilots flying 100 or more hours per year and accepted without aviation extra premium continued to increase. In particular, the rate for private pilots flying 100-199 hours per year was 2.8 per 1,000 during the 1963-65 period, compared to 1.6 per 1,000 during the 1957-62 period.
4. A new subdivision of the intercompany experience at ages 35 and over on United States Air Force, Navy, and Marine pilots indicates that pilots over age 39 had significantly lower fatality rates than those at ages 35-39.

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 Hand-*

book 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 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 1954 are fairly constant. The passenger death rate for the entire period 1954-66 is 0.0010 per 1,000 scheduled passenger hours. Also in domestic flying, the death rate for first pilots for the period 1954-66 is 0.0013 per 1,000 scheduled airplane hours.

In international flying of United States scheduled airlines, in 1966 there were no accidents causing passenger fatalities. The death rates in international flying for the entire period 1954-66 are 0.0009 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 regula-

tions, 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 1957-66, helicopters flew almost 120,000,000 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 0.010 per 1,000 scheduled passenger hours.

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

	1954-57	1958-61	1962-65	1965*	1966 (Est.)
Passenger Death Rate per 1,000 Scheduled Passenger Hours †					
Domestic . . . . .	.0009 (19)	.0015 (23)	.0009 (19)	.0012 (6)	.0003 (3)
International . . . . .	.0005 (2)	.0007 (5)	.0015 (4)	.0005 (1)	.0000 (0)
Total . . . . .	.0009 (21)	.0013 (28)	.0010 (23)	.0011 (7)	.0002 (3)
First-Pilot Death Rate per 1,000 Scheduled Airplane Hours †					
Domestic . . . . .	.0009 (11)	.0017 (22)	.0013 (16)	.0012 (4)	.0011 (4)
International . . . . .	.0004 (1)	.0013 (3)	.0016 (3)	.0018 (1)	.0016 (1)
Total . . . . .	.0009 (12)	.0016 (25)	.0013 (19)	.0013 (5)	.0012 (5)
Death Rate of All Pilots and Copilots per Life Year of Exposure					
Domestic . . . . .	.0008 (15)	.0012 (32)	.0007 (22)	.0005 (5)	.0005 (4)
International . . . . .	.0004 (2)	.0009 (3)	.0013 (5)	.0011 (1)	.0010 (1)
Total . . . . .	.0007 (17)	.0012 (35)	.0008 (27)	.0006 (6)	.0005 (5)
Death Rate of Other Crew Members per Life Year of Exposure					
Domestic . . . . .	.0008 (14)	.0013 (24)	.0007 (16)	.0007 (3)	.0003 (3)
International . . . . .	.0007 (2)	.0013 (3)	.0023 (5)	.0022 (1)	.0003 (1)
Total . . . . .	.0008 (16)	.0013 (27)	.0010 (21)	.0009 (4)	.0003 (4)

* Preliminary.

† Helicopter experience excluded, beginning in 1957.

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 such compromises as crossing international boundary lines may require. 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

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	
1954-57.....	.0039	.0010	.0009
1958-61.....	.0035	.0013	.0013
1962-65.....	.0028	.0011	.0010
1965*.....	.0023	.0014	.0011

* Preliminary.

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. Nearly 80 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 ap-

pears to be improving but continues to be less favorable than that of United States scheduled airlines.

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 1965 there were five such carriers, and over 40 per cent of their services were on a scheduled basis.

In the ten years 1956-65 the first-pilot fatality rate for scheduled all-cargo services was 0.010 per 1,000 airplane hours, based on 7 deaths, but 5 of the deaths occurred in the last five-year period, 1961-65. The first-pilot fatality rate for scheduled all-cargo services for the five years 1961-65 was 0.018. In combined scheduled and nonscheduled services of the all-cargo carriers there were 6 first-pilot deaths in the five years 1961-65, producing a death rate of 0.007 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 December 31, 1965, there were 13 such airlines.

The figures shown in Table 3 include experience in operations under contracts with the military authorities. Fatality rates are derived from

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
1958-61.....	245 (5)	.007	7	.008
1962-65.....	2 (1)	.000	3	.003
1965.....	0	.000	1	.004
1966 (est.).....	78 (1)	.005	2	.006

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 245 miles per hour in 1966. In the years 1960 and 1961 there were accidents causing a relatively large number of passenger deaths. In each of the years 1963-65 there was a fatal accident, killing in all 3 first pilots and 2 passengers. In 1966 there were two fatal accidents, one of which involved no passengers, causing total deaths of 78 passengers, 2 first pilots, and 5 other crew members. During the eight-year period 1958-65, the passenger death rate was 0.004 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 from surveys, made at intervals, of aircraft use.

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

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 1961-64 the death rate of pilots in pleasure flying was the highest among the five categories in general aviation shown in Table 4. There is reason to believe that these high fatality rates for pleasure flying are substantially accurate.

The business category, which makes up almost two-fifths of total general aviation flying, accounts for about one-fifth of the pilot fatalities and has a relatively low pilot death rate. All flying in connection with business (other than commercial aviation) or government activities, whether by professional or nonprofessional pilots, is included in this category.

No new data on "corporate flying" have become available, and those interested in that subdivision of business flying are referred to the 1964 report.

Flight training of civilians also presents a favorable record. The pilot death rate for the years 1961-64 was 0.011 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 more than 15 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.

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—

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		
1961.....	3,398	180	.053	1,796	38	.021
1962.....	3,489	173	.050	2,385	19	.008
1963.....	3,626	224	.062	2,417	25	.010
1964.....	3,777	227	.060	2,675	18	.007
1961-64..	14,290	804	.056	9,273	100	.011
	Business			Commercial (Excluding Aerial Application) and Miscellaneous		
1961.....	5,699	78	.014	1,779	43	.024
1962.....	5,431	92	.017	2,102	31	.015
1963.....	5,740	93	.016	2,208	31	.014
1964.....	5,823	94	.016	2,313	41	.018
1961-64..	22,693	357	.016	8,402	146	.017
	Aerial Application					
1961.....	855	38	.044			
1962.....	949	39	.041			
1963.....	964	30	.031			
1964.....	992	43	.043			
1961-64..	3,760	150	.040			

* FAA estimate.

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 for these pilots, as a class, and for passengers using these methods of transportation are not available. The experience in aerial application and that of other forms of commercial flying are shown separately in the table.

The pilot fatality rates in aerial application have been higher than in other commercial activities, being estimated at 0.040 per 1,000 airplane hours for the years 1961–64. Aerial application includes any form of flying in which chemicals are distributed from aircraft upon the land below, the usual form being crop-dusting. During 1962 the average annual flying time was about 220 hours per year, but it 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.

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 5.

TABLE 5
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
1954–57.....	.0043 (5)	.0041 (4)
1958–61.....	.0000 (0)	.0000 (0)
1962–65.....	.0031 (5)	.0030 (4)
1954–65.....	.0023 (10)	.0022 (8)
1963–66 (est.).....	.0033 (4)	.0029 (4)

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 6, compared with corresponding fatality rates in scheduled flying (domestic and international).

Data from similar sources have been used to estimate the passenger aviation fatality rates per 1,000 passenger hours in domestic nonscheduled operations of Canadian carriers which are shown in Table 7.

Canadian scheduled airlines comprise air carriers which serve designated points in accordance with a definite service 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 among Canadian civil pilots, by class of license, are shown in Table 8, separately, for the periods 1958-61 and 1962-65, based on figures furnished by the Canadian Department of Transport. 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.

Over the past decade aviation fatality rates for airline transport pilots

TABLE 6
 CANADIAN NONSCHEDULED VERSUS
 SCHEDULED AIRLINES
 FIRST-PILOT FATALITY RATES PER
 1,000 AIRPLANE HOURS
 (Number of Fatal Accidents in Parentheses)

Years	Nonscheduled	Scheduled
1958-61.....	.0174 (25)	.0000 (0)
1962-65.....	.0155 (23)	.0030 (4)
1958-65.....	.0165 (48)	.0015 (4)

TABLE 7
 CANADIAN NONSCHEDULED FLYING—
 DOMESTIC OPERATIONS
 AVIATION FATALITY RATES
 (Number of Fatal Accidents in Parentheses)

Years	Passenger Fatality Rate per 1,000 Passenger Hours
1958-61.....	.0127 (17)
1962-65.....	.0120 (22)
1958-65.....	.0124 (39)

have improved substantially; for senior commercial and commercial pilots there has been little change; and for private pilots there has been slight improvement. For airline transport and private pilots the improvement took place in the first half of the decade, with practically level fatality rates during the past five years. For senior commercial and commercial pilots the fatality rates have remained relatively high over this entire period.

Excluded from the experience in Table 8 were persons holding glider licenses only, of whom there have been a steadily increasing number—616 in 1963, 712 in 1964, and 793 in 1965, with 1 fatality reported in each of the years 1963, 1964, and 1965.

TABLE 8
CANADIAN CIVIL PILOTS BY CLASS OF LICENSE
1958-65 AVIATION FATALITY RATES

Class of License	Period	Life Years of Exposure	Aviation Fatalities	Rate per 1,000 Life Years of Exposure
Airline transport	{1958-61	4,661	10	2.1
	{1962-65	5,505	10	1.8
Senior commercial	{1958-61	1,674	7*	4.2
	{1962-65	1,470	8	5.4
Commercial	{1958-61	9,594	45*	4.7
	{1962-65	9,729	40	4.1
Private (excluding students)	{1958-61	45,604	71†	1.6
	{1962-65	63,202	94*	1.5

* Includes 1 missing and presumed dead.

† Includes 4 missing and presumed dead for years 1958-61 and 1 death as glider pilot in each of the years 1958 and 1959.

UNITED STATES MILITARY

General

The Navy and Marine Corps aviation fatality rates shown in this section include deaths due to hostile action. Data excluding deaths from hostile action for these services are not available. Air Force and Army aviation fatality rates for 1965 are shown both including and excluding deaths due to hostile action. This separation was not possible for periods involving prior years.

Age

Table 9 shows the 1965 and 1962-65 aviation fatality rates by age group for Air Force pilots and nonpilot rated officers and for Navy and Marine Corps aviators on active duty.

The aviation fatality rates of Air Force rated pilots averaged over the four-year period 1962-65 are higher than those for the period 1961-64 due to significantly higher rates in 1965 as compared with those in 1964. It should be noted that the 1965 rates, excluding deaths due to hostile action, are significantly higher than the 1964 rates, including deaths due to hostile action, shown in last year's report. The age group 35-39 has

TABLE 9
 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	
	1962-65	1965	1962-65	1965	1962-65	1965
Under 25.....	2.8	7.4 [6.9]	2.4	6.5 [4.0]	8.1	6.3
25-29.....	5.6	10.1 [8.0]	2.5	2.1 [1.7]	9.0	7.8
30-34.....	4.5	5.1 [3.5]	2.6	2.3 [2.3]	3.9	2.9
35-39.....	3.0	5.1 [2.9]	1.9	0.4† [0.4]†	3.0	2.2
40 and over....	1.2	1.2 [1.0]	1.2	0.4† [0.4]†	1.0	0.8†
All.....	3.3	4.4 [3.2]	2.2	2.0 [1.7]	4.8	4.1

* Rates in brackets exclude deaths due to hostile action.

† Based on 5 or fewer deaths.

been shown separately in the table because of the significant increase in fatality rates during 1965 among Air Force rated pilots at that age group.

Except for the effect of the continuation in 1965 of the increased fatality rate at ages under 25 noted in 1964, the aviation fatality rates for Air Force nonpilot rated officers for the four-year period 1962-65 were about the same as those for the period 1961-64. The 1965 rates were higher than those for 1964 for ages under 30 but lower for ages 30 and over.

The 1965 aviation fatality rates of Navy and Marine pilots are lower than those for 1964. It should be noted that, in contrast to comparisons made in the reports of former years, Navy and Marine Corps pilot fatality rates for the year 1965 are lower than those of Air Force pilots.

Pilots and Other Rated Officers—by Rank

Aviation fatality rates for Air Force pilots and other rated officers, according to rank, are shown in Table 10.

The 1965 experience for rated pilots is marked by an increase in the fatality rate in all ranks below lieutenant colonel, both including and excluding deaths due to hostile action. The aviation fatality rates for the various ranks of nonpilot rated officers do not appear significantly different from the average of recent years when fluctuations due to small

TABLE 10
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	
	1962-65	1965	1962-65	1965
2d Lieutenant.....	6.9	15.5 [13.9]	0.5†	4.4† [4.4]†
1st Lieutenant.....	6.8	10.3 [8.0]	3.1	3.5 [2.6]
Captain.....	4.4	6.2 [4.3]	2.2	1.9 [1.7]
Major.....	1.7	2.6 [1.8]	2.0	0.6† [0.6]†
Lieutenant Colonel.....	0.9	0.6† [0.6]†	0.9†	0.0† [0.0]†
General and Colonel.....	0.5	0.0† [0.0]†	1.6†	0.0† [0.0]†
All.....	3.3	4.4 [3.2]	2.2	2.0 [1.7]

* Rates in brackets exclude deaths due to hostile action.

† Based on 5 or fewer deaths.

numbers of deaths are taken into account and deaths resulting from hostile action are eliminated.

Duty Assignment

The 1965, 1964, 1963, and 1959-62 aviation fatality rates among Air Force pilots, according to duty assignment, are given in Table 11.

Fatality rates of pilots of cargo planes are shown for the first time in this year's report. The subdivisions of "Pilot, transport" and "Pilot, troop carrier," which have been shown separately for the years prior to 1965, are included in the new subdivision of "Pilot, cargo," and fatality rates for 1964 have been revised to be comparable to the 1965 classifications. This reclassification has been made to be in accord with Air Force practice.

The fatality rate of pilots of cargo planes showed a significant increase,

while the rate for pilots of fighter planes was markedly below the rates exhibited in 1963 and 1964.

TABLE 11

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

Duty Assignment	1959-62	1963	1964	1965
Pilot, helicopter	1.5†	2.8	0.0‡	4.1‡ [2.7]‡
Pilot, search-rescue	0.0†	4.5	8.5†	0.0‡ [0.0]‡
Pilot, transport	2.5	2.6	‡	‡
Pilot, troop carrier	3.0	1.6	‡	‡
Pilot, cargo			2.1	7.4 [5.6]
Pilot, fighter		13.9		
Pilot, fighter-interceptor }	8.7	10.1	10.3	8.4 [5.1]
Pilot, fighter-bomber }		18.6		
Pilot, bomber	3.9	3.5	2.4	3.1 [2.4]
Pilot, reconnaissance	6.8	8.9	2.3†	7.6 [4.3]‡
Pilot, tanker	2.1	2.6	0.0†	2.0 [2.0]
All	2.9	3.0	2.4	4.4 [3.2]

* Rates in brackets exclude deaths due to hostile action.
 † Based on 5 or fewer deaths.
 ‡ Included in "Pilot, cargo" in 1964 and 1965.

Hours of Flying

Navy and Marine Corps pilots flew an average of 240 hours in 1965. This compares with a high of 279 hours in 1962 and a low of 232 hours in 1964 during the five-year period 1960-64.

The average number of flight hours per year for pilots in the Inactive Naval Reserves was 127 in 1965, thus continuing its upward trend since 1961.

The average number of aircraft hours for Army pilots—in fixed-wing and rotary-wing craft combined—was 229 in 1965. The corresponding average for the five-year period 1961-65 was 208 hours.

The average number of aircraft hours per Air Force pilot is not available for 1965.

Military Air Command

"Military Air Command" (MAC) is now the designation of what has heretofore been referred to as "Military Air Transport Service" (MATS).

During 1965 there were 81 passenger fatalities on military carriers in MAC. The passenger fatality rate for the four-year period 1962-65 was 2.69 per 100,000,000 passenger miles.

Aviation fatality rates among pilots and crew members of MAC are shown in Table 12.

TABLE 12
MILITARY AIR COMMAND
AVIATION FATALITY RATES PER 1,000 LIFE YEARS OF EXPOSURE
DEATHS DUE TO HOSTILE ACTION INCLUDED*

	7/1/58- 6/30/62	7/1/62- 6/30/66	7/1/65- 6/30/66
Pilots:			
Transport units.....	2.2	2.3	1.4† [0.7]†
Other units.....	1.0	1.8	0.0† [0.0]†
All.....	1.6	2.2	1.0† [0.5]†
Crew members:			
Transport units.....	2.7	2.9	1.7 [0.9]
Other units.....	3.5	2.1	1.1† [0.0]†
All.....	2.9	2.7	1.6 [0.7]

* Rates in brackets exclude deaths due to hostile action.

† Based on 5 or fewer deaths.

United States Army

Table 13 shows aviation fatality rates among Army rated pilots and crew members. The 1965 fatality rates are lower than those for 1964.

Fatality rates among Army rated pilots per 1,000 aircraft hours in rotary-wing and fixed-wing aircraft are compared in Table 14.

The fatality rate, excluding fatalities due to hostile action, per 1,000 aircraft hours for pilots of fixed-wing aircraft continues to be higher than that for pilots of rotary-wing aircraft. However, if deaths due to hostile

TABLE 13
UNITED STATES ARMY—ALL FLYING OPERATIONS
AVIATION FATALITY RATES PER 1,000 LIFE YEARS OF EXPOSURE
DEATHS DUE TO HOSTILE ACTION EXCLUDED*

	1958-61	1962-65†	1965
Rated pilots.....	4.3	3.9	3.4 [7.2]
Crew members.....	6.4	6.6	4.2 [17.2]

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

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

action are included, the 1965 rotary-wing pilot fatality rate was more than double the corresponding rate for fixed-wing aircraft pilots.

TABLE 14
 UNITED STATES ARMY—ROTARY- VERSUS FIXED-WING AIRCRAFT
 PILOT FATALITY RATES PER 1,000 AIRCRAFT HOURS
 DEATHS DUE TO HOSTILE ACTION EXCLUDED*

	1958-61	1962-65†	1965
Fixed-wing aircraft.....	.0161	.0217	.0179 [.0191]
Rotary-wing aircraft.....	.0251	.0160	.0131 [.0400]
All types of aircraft.....	.0196	.0188	.0150 [.0315]

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

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

Student Pilots

Table 15 shows aviation fatality rates among student pilots in the military services. The Navy and Marine Corps rates are based on both officers and cadets, whereas the Air Force rates are based on officers only.

The fatality rates averaged over four-year periods continued to exhibit a downward trend.

TABLE 15
 UNITED STATES AIR FORCE, NAVY AND MARINE
 CORPS, AND ARMY STUDENT PILOTS
 AVIATION FATALITY RATES PER 1,000 LIFE YEARS OF EXPOSURE

	1958-61	1962-65	1965
Air Force*.....	N.A.	3.7	4.0
Navy and Marine Corps:			
Basic course.....	3.0	2.5	1.6†
Advanced course.....	11.2	7.0	4.4†
Army.....	1.6	1.2	0.0†

* Officers only.

† Based on 5 or fewer deaths.

N.A. = Not available.

Coast Guard

Table 16 shows aviation fatality rates among Coast Guard personnel on flight orders. There were no fatalities among pilots or crewmen in 1965,

and there have been no fatalities among student pilots or observers during the past nine years.

TABLE 16
UNITED STATES COAST GUARD PERSONNEL
ON FLIGHT ORDERS
AVIATION FATALITY RATES PER 1,000
LIFE YEARS OF EXPOSURE

	1958-61	1962-65	1965
Pilots	2.7*	2.2*	0.0*
Crewmen	0.2*	0.9*	0.0*

* Based on 5 or fewer deaths.

Inactive Reservists

The fatality rates for Navy and Marine Corps inactive reservists on drill-pay status are shown in Table 17.

TABLE 17
UNITED STATES NAVY AND MARINE CORPS INACTIVE
RESERVISTS ON DRILL-PAY STATUS
AVIATION FATALITY RATES BY AGE PER
1,000 LIFE YEARS OF EXPOSURE

	1958-61	1962-65	1965
Ages under 30	1.7	4.6	5.2*
Ages 30 and over	2.1	1.8	1.8
All ages	2.0	2.3	2.2

* Based on 5 or fewer deaths.

Air National Guard

The aviation fatality rates among Air National Guard pilots not federally activated were 7.4 per 1,000 life years of exposure during 1965 and 5.6 for the four-year period 1962-65. The rates for 1964 and 1961-64 were 6.5 and 4.9, respectively.

Army National Guard

For Army National Guard flyers, there was one aviation fatality reported during 1965 among crew members and none among rated pilots or student pilots.

Air Force Flight Surgeons and Nurses

During the period 1962-65 the aviation fatality rate among flight surgeons was 0.9 per 1,000 life years, the same as reported in last year's report for 1961-64. There have been no fatalities among flight surgeons during the past three years or among flight nurses during the past four years.

Graduates of Academies—Assignment to Aviation

In 1966, 1.0 per cent of the military academy graduates and 0.2 per cent of the naval academy graduates were accepted for flight training by the Air Force.

Of the commissioned Air Force Academy graduates, 99.8 per cent were placed in the Air Force and the remaining 0.2 per cent in the Army.

ROYAL CANADIAN AIR FORCE

Table 18 shows the 1960-65 aviation fatality rates for pilots and crew members of the R.C.A.F. The aviation fatality rate for pilots on active duty was 3.6 per 1,000 life years as compared with 3.5 for the years 1959-64 and 4.2 for 1958-63. The aviation fatality rates for other crew members increased to 1.9 per 1,000 life years from 1.2 in 1959-64 and 1.6 in 1958-63.

The fatality rates by rank follow, in general, patterns similar to those in last year's report for pilots. For other crew members, however, the fatality rates are slightly higher for Flying Officers and Flight Lieutenants.

The R.C.A.F. Auxiliary (i.e., reserve personnel who undergo weekly training in organized squadrons) has had no pilot fatalities during the eight years ending 1965.

A comparison of the 1960-65 fatality rates for pilots, by function, shows that the rates for pilots in the Fighter Command have decreased slightly; the rate was 5.5 per 1,000 life years for the period 1960-65 as compared with 5.9 for the period 1959-64 and 7.2 for the period 1958-63. For pilots in the Training Command the aviation fatality rate has leveled out, and for each of the periods 1960-65 and 1959-64 the rate was 2.9 per 1,000 life years as compared with 3.2 for the period 1958-63. The aviation fatality rates for pilots and other crew members in the Maritime Command (based on small exposures) have been higher for the period 1960-65 due mainly to the effect of one aircraft accident in 1965.

In reviewing the results shown in Table 18, 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 1960-65 the aviation fatality rates were 0.0280 per

TABLE 18
ROYAL CANADIAN AIR FORCE
1960-65 AVIATION FATALITY RATES
PER 1,000 LIFE YEARS OF EXPOSURE

	REGULAR	
	Pilot	Other Crew
Age group:		
Under 25.....	5.1	2.1
25-29.....	6.5	1.9
30-34.....	3.4	1.9*
35-39.....	2.9	1.7*
40 and over.....	0.8*	1.5*
All.....	3.6	1.9
Rank:		
Flight cadet and pilot officer.....	0.7*	0.0*
Flying officer.....	7.8	2.8
Flight lieutenant.....	2.5	1.6
Squadron leader.....	0.5*	0.0*
Wing commander and higher ranks.....	2.2*	2.4*
All.....	3.6	1.9
By function:		
Fighter.....	5.5	4.3
Training.....	2.9	0.4*
Transport.....	1.2*	0.0*
Maritime.....	3.0	2.6
Others.....	3.3	0.0*
All.....	3.6	1.9

* 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 Materiel Command who ferry planes to air bases and test new planes, both accepted and experimental models.

1,000 flying hours for R.C.A.F. pilots flying jet aircraft and 0.0067 for pilots flying other aircraft. For crew members, the corresponding rates were 0.0195 and 0.0052, respectively.

The average number of flight hours per pilot during 1965 was 304 for R.C.A.F. Regular pilots and 151 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 1965 as compared with 1964.

INTERCOMPANY EXPERIENCE

Contributions submitted for the 1963, 1964, and 1965 experience were limited to issues of 1953 and later, and this is indicated in the footnotes to the tables.

Civilian Aviation

Tables 19 and 20 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 19 includes only a portion of such cases.

The material in Table 19 compares the experience of 1957-62 and that of 1963-65, 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 1963-65 aviation fatality rates were lower than the corresponding 1957-62 rates. Private pilots flying 100-199 hours and accepted without aviation extra premium experienced a fatality rate of 2.8 per 1,000, based on 35 deaths during the 1963-65 period. This rate of 2.8 per 1,000 is considerably higher than the corresponding 1957-62 rate of 1.6 per 1,000, based on 11 deaths, and is even higher than the rates experienced during the 1957-62 and 1963-65 periods on similar pilots who were charged an aviation extra premium. A similar change in experience may have taken place among private pilots flying 200-299 hours and accepted without

extra premium, but the data are yet too meager to justify a firm conclusion.

Table 20 shows the experience during the period 1954-65, inclusive, among commercial, transport, and private pilots flying 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

TABLE 19
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 Fatali- ties	Rate per 1,000	Years of Exposure	Avia- tion Fatali- ties	Rate per 1,000
Scheduled airline pilots....	{1957-62	8,029	24	3.0	21,233	33	1.6
	{1963-65	1,142	1	.....	12,815	17	1.3
Other commercial pilots flying for hire:							
Instructing (at least half-time)	{1957-62	5,250	19	3.6	.....	.....	.....
	{1963-65	2,158	9	4.2	.....	.....	.....
Others.....	{1957-62	13,700	79	5.8	3,160	8	2.5
	{1963-65	6,498	26	4.0	3,342	5	1.5‡
Private pilots:§							
Less than 100 hours....	{1957-62	53,842	57	1.1	49,615	50	1.0
	{1963-65	17,101	28	1.6	55,033	61	1.1
100-199 hours.....	{1957-62	23,097	63	2.7	6,821	11	1.6
	{1963-65	7,153	11	1.5	12,373	35	2.8
200-299 hours.....	{1957-62	8,123	34	4.2	905	1	.....
	{1963-65	2,932	6	2.0	1,365	5	3.7‡
300 or more hours....	{1957-62	7,297	27	3.7	850	1	.....
	{1963-65	2,977	4	1.3‡	936	1	.....
Hours not stated.....	{1957-62	3,388	5	1.5‡	1,318	1	.....
	{1963-65	775	3	3.9‡	1,244	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; 1963-65 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).

twelve months preceding issue. Among private pilots flying less than 100 hours per year, the experience has been distinctly more favorable for pilots with private certificates than for pilots with commercial or transport certificates and more favorable at attained ages 35 and over than at attained ages under 35. On the other hand, among private pilots flying

TABLE 20
 INTERCOMPANY EXPERIENCE ON PILOTS FLYING FOR
 PLEASURE OR PERSONAL BUSINESS*
 WITH AVIATION EXTRA PREMIUM†
 (1954-65 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...	14,869	27	1.8	68,890	70	1.0
100-199 hours.....	7,042	16	2.3	28,903	67	2.3
200-299 hours.....	4,976	13	2.6	8,854	34	3.8
300 or more hours....	4,960	12	2.4	6,640	26	3.9
Hours not stated.....	847	3	3.5§	3,970	8	2.0
Total.....	32,694	71	2.2	117,257	205	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...	30,147	44	1.5	52,346	52	1.0
100-199 hours.....	11,152	21	1.9	24,246	60	2.5
200-299 hours.....	2,660	7	2.6	9,986	38	3.8
300 or more hours....	2,393	5	2.1§	9,025	33	3.7
Hours not stated.....	1,377	1	.....	3,420	10	2.9
Total.....	47,729	78	1.6	99,023	193	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 1963-1965, 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 21

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;
1963-65 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	1963-65	1957-62	1963-65	1957-62	1963-65
U.S. Air Force pilots:‡						
Under 25.....	2,476	413	9	2	3.6	4.8§
25-29.....	19,419	5,804	72	27 (3)	3.7	4.7 [4.1]
30-34.....	28,275	16,681	85	52 (4)	3.0	3.1 [2.9]
35 and over.....	103,513	42,186	218	48 (4)	2.1	1.1 [1.0]
Total.....	153,683	65,084	384	129 (11)	2.5	2.0 [1.8]
U.S. Army pilots:‡						
Under 25.....	225	160	1	3	.....	18.8§
25-29.....	2,180	1,286	3	7	1.4§	5.4
30-34.....	3,664	2,697	19	4 (2)	5.2	1.5§ [0.7]§
35 and over.....	17,678	2,850	19	5	1.1	1.8§
Total.....	23,747	6,993	42	19 (2)	1.8	2.7 [2.4]
U.S. Air Force and Army pilots:						
Under 25.....	3,082	574	11	5	3.6	8.7§
25-29.....	24,393	7,175	82	33 (3)	3.4	4.6 [4.2]
30-34.....	36,972	19,918	120	56 (6)	3.2	2.8 [2.5]
35 and over.....	152,691	47,238	304	55 (4)	2.0	1.2 [1.1]
Total.....	217,138	74,905	517	149 (13)	2.4	2.0 [1.8]
U.S. Air Force and Army crew members:						
Under 25.....	9,079	2,632	17	8 (1)	1.9	3.0 [2.7]
25-29.....	22,873	10,186	55	22 (2)	2.4	2.2 [2.0]
30-34.....	14,184	14,322	32	26 (3)	2.3	1.8 [1.6]
35 and over.....	31,043	13,003	52	14	1.7	1.1
Total.....	77,179	40,143	156	70 (6)	2.0	1.7 [1.6]
U.S. Navy and Marine pilots:						
Under 25.....	1,847	482	24	6	13.0	12.4
25-29.....	11,768	3,996	115	15 (1)	9.8	3.8 [3.5]
30-34.....	18,861	7,336	90	32 (2)	4.8	4.4 [4.1]
35 and over.....	61,848	17,363	172	45 (1)	2.8	2.6 [2.5]
Total.....	94,324	29,177	401	98 (4)	4.3	3.4 [3.2]
U.S. Air Force, Army, and Navy Reserve pilots.....	10,323	4,719	18	11	1.7	2.3
U.S. Air National Guard pilots.....	3,565	2,168	12	1	3.4	.....

* 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.

100 or more hours per year, the experience has generally been more favorable for pilots with commercial or transport certificates and at attained ages under 35 as compared with attained ages 35 and over.

Military Aviation

Table 21 shows, for the twenty-six companies which contributed their experience on military aviation, the aviation fatality rates separately for the years 1957-62 and 1963-65 among military aviation personnel on policies issued with an aviation extra premium. The experience is by number of policies, and the classification of the insured is according to status at the time of application for insurance. Exposure was terminated when the extra premium was discontinued.

Fatalities due to enemy action, although only 10 in 1964 and 13 in 1965, have reached a level to be recognized in Tables 21 and 22. The figures in the "Aviation Fatalities" column include deaths due to enemy action; the number of such deaths is shown in parentheses, and 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 the period prior to our extensive involvement in the Vietnam conflict.

The 1963-65 fatality rates excluding deaths due to enemy action shown in Table 21 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. 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 1963-65 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 report the combined experience of both Air Force and Army personnel, the Army portion is very small, amounting to about 1 per cent of the exposure in 1964 and 1965 and no fatalities.

The 1963-65 fatality rates for United States Navy and Marine pilots were lower than the 1957-62 rates at all ages. The significant reduction at attained ages 25-29 produced lower fatality rates than those experienced by United States Air Force and Army pilots at attained ages 25-29.

Table 22 shows a further subdivision of the experience on pilots in military aviation at attained ages 30 and over according to the number of annual flying hours reported at time of 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; 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 for 1963, the contributing companies

TABLE 22
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	1963-65	1957-62	1963-65	1957-62	1963-65
U.S. Air Force and Army						
40-150 hours:						
Ages 30-34.	7,298	4,073	24	14	3.3	3.4
Ages 35 and over.	36,074	18,953	62	8	1.7	.4
Total.	43,372	23,026	86	22	2.0	1.0
Over 150 hours:						
Ages 30-34.	22,349	15,187	76	41 (4)	3.4	2.7 [2.4]
Ages 35 and over.	46,429	26,648	121	45 (2)	2.6	1.7 [1.6]
Total.	68,778	41,835	197	86 (6)	2.9	2.1 [1.9]
U.S. Navy and Marines						
40-150 hours:						
Ages 30-34.	4,184	1,779	19	7	4.5	3.9
Ages 35 and over.	13,836	7,525	33	17	2.4	2.3
Total.	18,020	9,304	52	24	2.9	2.6
Over 150 hours:						
Ages 30-34.	10,112	5,303	45	29 (2)	4.5	5.5 [5.1]
Ages 35 and over.	16,904	9,294	55	27 (1)	3.3	2.9 [2.8]
Total.	27,016	14,597	100	56 (3)	3.7	3.8 [3.6]

* 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.

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. Data for United States Air Force and United States Navy and Marine pilots are shown in Table 23. This table indicates that

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†
 (1963-65 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.....	13,216	27 (3)	2.0 [1.8]
Ages 40 and over.....	28,970	21 (1)	0.7 [0.7]
Ages 35 and over.....	42,186	48 (4)	1.1 [1.0]
U.S. Navy and Marine pilots:			
Ages 35-39.....	6,736	30 (1)	4.5 [4.3]
Ages 40 and over.....	10,627	15	1.4
Ages 35 and over.....	17,363	45 (1)	2.6 [2.5]

* 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.

fatality rates for pilots over age 39 are significantly lower than those for pilots in the 35-39 age group.