

II. HAZARDOUS SPORTS

A NEW responsibility for the Committee is the assembly and tabulation of statistics on hazardous sports, undertaken because of the growing popularity of such activities. The lack of any systematic tabulation of exposure by governmental agencies, such as that which exists for aviation, makes the compilation of statistics in a form useful for interpreting mortality risk very difficult. The Committee hopes that the sources from which data are being collected will provide more meaningful statistics than are now available. The first report on data from sources outside the insurance industry is given below.

Intercompany hazardous sports insurance data, which are now being compiled on a biennial basis, were insufficient to show any significant results. Ten companies submitted data for issues of 1972 and later for calendar years 1974 and 1975. We urge that additional companies contribute their data to future studies.

HAZARDOUS SPORTS IN THE UNITED STATES

This report provides statistics gathered by a continuous survey of several sports and occupations. Evaluation of the hazards of each sport as well as comparisons of such hazards are left to the reader. Detailed data by age, sex, and frequency were unavailable in most cases. The reader should be aware that, in some cases, the estimates of participants may include persons with very limited activity or persons who have discontinued activity. On the other hand, the fatalities are often understated because there are generally no formal procedures for reporting and recording deaths (unlike fatalities from most aviation activities, which are accurately reported by the National Transportation Safety Board).

For most sports, the numbers participating are available for only one period, although corresponding fatality figures may be available for several years. Certain sports, such as baseball, softball, hunting, and horseback riding are excluded because of the small degree of hazard indicated by relatively few deaths or an extremely large number of participants. Figures are given for football, however, as an illustration. Despite a sizable number of deaths, especially at the high school level, the hazard becomes negligible in view of the tremendous number of participants.

Statistics for several hazardous activities, such as snowmobiling from a ski lift, ski flying, free-style skiing, and aerial acrobatics while hanging from a helicopter, are not available at present.

From time to time, some ingenious sportsman devises either a new

activity based on an existing sport or a totally new sport. Careful attention should be given to such events. The introduction of the moped (motorized bicycle) has been such an innovation. Although speeds normally do not exceed 30 miles per hour, it is likely that a version of the moped will appear as a racing vehicle.

Sources and Reliability

The following sources in the United States were consulted: federal and state official government reports; local, regional, and national clubs and organizations; amateur and professional participants; general and specialized magazines and newspapers; specialized casualty insurance companies; certain universities; journalists and writers; books; radio announcers; and general and specialized employees of some of the aforementioned. Consultation was through correspondence, reading, and telephone and personal conversations. About 200 sources were contacted, of which about 100 volunteered information.

The reliability of these statistics ranges from rough estimates to official numbers. Examples of these two extremes are (1) the estimated number of iceboat racers from a knowledgeable former racer, based on personal experience and observation, and (2) the number of fatalities from closed-course air racing in 1970 based on legally required reports of the National Transportation Safety Board.

Some of the sources quoted above made use of newspaper clipping services and special surveys. In some cases federal government figures are based on samples of the records on hand.

Aerial Acrobats

Aerial acrobatics is comprised of such pursuits as balancing, juggling, tumbling, swinging, walking, or riding when they are executed off the ground. Crude estimates put the current number of professional aerialists at about 300 regularly engaged in such work in the United States. There have been about seven fatalities among them since 1923, with at least three occurring in the 1960's. One death was recorded in 1975.

Air Racing

Closed-course air racing, or racing around pylons, and drag racing currently engage 89 pilots. Pilot fatalities have been as follows:

Year	Deaths
1970	0
1971	5
1972	1
1973	1
1974	0

Point-to-point air racing is much less demanding of skills and experience than closed-course air racing, and FAA approval is not required. There are at least 5,000 pilots who participated in such racing during 1976. It is difficult to obtain the number of fatal accidents because such accidents are often classified under private pleasure flying.

Amateur/Home-built Aircraft Flying

The number of pilots who fly amateur/home-built aircraft may be estimated from the number of such legally registered aircraft. In 1974, 6,970 aircraft were registered but only 3,200 were active (at least one hour flown in the last 12 months). In 1970 there were 3,991 registered aircraft, of which 1,467 were active. It has been estimated that there is nearly a one-to-one correspondence between the pilots and aircraft. The fatality experience among pilots has been as follows:

Year	Deaths
1970.....	13
1971.....	13
1972.....	21
1973.....	30
1974.....	37

Bicycle Racing

There are 10,600 registered bicycle racers. One racer was fatally injured in the 1940's, and two more died a few years ago. No other deaths have been recorded.

Bobsledding

There are about 100 bobsled competitive racers and 100 bobsled recreational users. Five deaths have occurred since 1932. The last recorded death (in 1968) was that of a foreign racer in the United States.

Boxing

There are between 4,500 and 7,000 professional boxers. A death in the ring is rare. Nevertheless, an American boxer not licensed in the United States died in an Australian ring in 1976.

Football

Table 1 shows the fatality experience in football playing.

Glider Flying

Glidors may be used for business as well as for pleasure. Table 2 shows the experience for all glider flying.

TABLE 1
FOOTBALL DEATHS BY TYPE

YEAR	TYPE			
	Sandlot	Pro and Semipro	High School	College
1970	3	0	23	3
1971	2	0	15	3
1972	3	1	16	2
1973	2	0	7	0
1974	0	0	10	1
1975	1	0	13	1
Number of Players*				
1976	1,000,000	1,500	1,000,000	40,000

* Minimum numbers.

TABLE 2
GLIDER FLYING HOURS, PILOTS, AND FATALITIES

Year	Number of FAA Certificated Glider Pilots	Hours of Flight (All Purposes)	Fatalities (Pilots, Crewmen, Passengers)
1970	11,114	141,577	8
1971	12,189	155,900	11
1972	13,482	163,100	8
1973	10,723	196,100	6
1974	15,013	191,200	4

During 1974, hours of flight were distributed as follows: personal—88,052; training—37,889; and rental—43,778. The remaining hours were largely unaccounted for.

Hang Gliding

Estimates of the number of people who have used a hang glider at least once during 1976 range from 25,000 to 75,000, but the approximation made most often is 30,000. Deaths from hang gliding have occurred as follows:

Year	Deaths
1971	2
1972	4
1973	9
1974	40
1975	32
1976	68

These recorded deaths are understated to some degree.

Hot-Air Ballooning

As of December 31, 1976, the number of certificated hot-air balloonists was between 1,000 and 3,000. Hours flown and fatalities experienced are shown below:

Year	Hours of Flight*	Pilot and Passenger Fatalities
1970	6,702	3
1971	8,100	0
1972	10,800	0
1973	13,800	1
1974	22,400	8

* Includes balloon and blimp flying. For blimp flying: 1974—4,400 hours; 1976—5,023 hours.

Iceboating

There are at least 1,000 iceboat racers, while those who participate in iceboating for pleasure number at least 5,000. Iceboating is very dependent on the weather. Air temperatures near 20° F must be maintained constantly for at least 10 days to ensure adequate ice strength, and ice surfaces must be free of all snow.

One death of an iceboat user was recorded during the winter of 1977. However, there have been no other deaths in the past five years.

In-Flight Acrobatics

There are currently at least 200 professional pilots in competitive acrobatic flying. Pilot fatalities experienced either in practice or during a competitive event have been as follows:

Year	Deaths
1970	2
1971	4
1972	0
1973	2
1974	1

Amateur acrobatic flying may be practiced by any pilot with a valid pilot's certificate (excluding a student certificate), provided such practice does not violate certain FAA regulations, such as not flying below 1,500 feet or over populated areas. Acrobatic flying may involve any one of about 5,000 textbook maneuvers, and deaths do occur in such flying. However, not all deaths are accurately recorded, because it is not always known whether casual acrobatic flying preceded an accident.

Professional Stunting

There are currently about 200 men and women who are professional stuntpeople, employed in most cases by the motion-picture industry. One death from stunting occurred in 1976, but no more than three deaths were recorded in the last twenty years. None occurred in aircraft.

Motor Vehicle Racing

Motor vehicle racing contains the most diverse and varied subdivisions of any one sport. There are more than 1,000 closed outdoor tracks and perhaps as many indoor, offroad, and other road tracks, as well as drag strips. Racing organizations and sanctioning bodies number at least 150. Since most racing takes place on private property, motor vehicle licenses generally are not required. Racers range in age from 12 to 60 depending on the type of vehicle. Fatalities are not officially coded as vehicular traffic deaths or racing deaths but are classified as "miscellaneous" in most states. Only Vermont, Connecticut, and New Jersey require special racing permits, thereby enforcing safety rules and allowing for the collection of statistics.

Table 3 summarizes statistics collected from many sources. No distinctions were made between amateur and professional racers. A small number of deaths resulted from heart attacks ascribed to the stress and strain of racing.

Mountaineering

Between 2,000 and 10,000 mountaineers may be considered professionals or very high quality amateurs, although a conservative estimate of the number of active mountaineers is 50,000. No distributions according to type of mountain climbing are available. However, the most proficient climbers probably can climb anywhere. The fatality experience has been as follows:

Year	Deaths
1970	16
1971	35
1972	49
1973	36
1974	26

TABLE 3

FATALITY EXPERIENCE FOR MOTOR VEHICLE RACING, 1967 TO 1976
EXPOSURES FOR 1976
MAXIMUM SPEEDS ATTAINED
RACING ONLY IN THE UNITED STATES

TYPE OF RACING*	ESTI- MATED NUMBER OF RACERS IN 1976	REPORTED RACING DEATHS										MAXIMUM SPEED (MPH)	
		1967	1968	1969	1970	1971	1972	1973	1974	1975	1976		
All-terrain vehicle:													
Stock dune buggy	1,000	0	0	0	0	0	0	0	0	0	0	0	120
Modified dune buggy	75	0	0	0	0	0	0	0	0	0	0	0	80
6- and 8-wheel ATV stock	75	0	0	0	0	0	0	0	0	0	0	0	120
6- and 8-wheel ATV modified and supermodified	100	0	0	0	0	0	0	0	0	0	0	0	45
Others (3-wheel vehicle, etc.)	100	0	0	0	0	0	0	0	0	0	0	0	80
	650	0	0	0	0	0	0	0	0	0	0	0	40
Championship and formula car:													
Formula I	5,000	0	3	3	2	1	2	3	0	4	0	0	240
Formula Vee	2	0	0	0	1	0	0	0	0	1	0	0	240
Formula super Vee	3,000	0	0	1	0	0	0	0	0	0	0	0	120
Formula 5000	182	0	0	0	0	0	0	0	0	0	0	0	150
Formula A (Atlantic)	50	0	0	1	0	0	1	0	0	1	0	0	152
Formula B	144	0	0	0	0	0	0	0	0	0	0	0	—
Formula C	364	0	0	0	0	0	0	0	0	0	0	0	—
Formula F (Ford)	208	0	0	0	0	0	0	0	0	0	0	0	—
Championship	936	0	0	0	0	0	0	1	0	0	0	0	140
Other formula cars	50	0	3	1	1	1	1	2	0	2	0	0	240
	64	0	0	0	0	0	0	0	0	0	0	0	120
Drag car:													
Altered coupe, sedan, and roadster	145,000	13	6	7	5	8	11	5	3	8	8	8	250
Gas coupe, sedan, and road- ster	800	0	0	0	0	0	0	0	0	0	0	0	190
Top fuel eliminator	2,000	0	0	0	0	0	0	0	0	0	0	0	150
Fuel dragster	562	4	1	2	1	1	0	0	1	1	—	—	250
Gas dragster	200	0	1	0	0	0	1	0	0	0	0	0	250
Other dragster	400	1	0	0	0	0	0	0	0	0	0	0	240
Funny car	800	1	3	0	0	1	2	0	0	4	—	—	200
Pro comp	452	0	0	1	0	0	0	0	0	1	—	—	240
Comp eliminator	1,128	0	0	1	0	1	2	2	0	0	—	—	210
Modified	2,247	4	1	0	0	1	0	0	0	0	—	—	200
Stock and super stock	30,899	0	0	3	2	2	3	1	0	1	—	—	170
Pro stock	104,000	0	0	0	2	1	2	1	1	1	—	—	150
Formula stock	574	3	0	0	0	1	1	1	1	0	—	—	160
Other stock	800	0	0	0	0	0	0	0	0	0	0	0	150
Other drag (hot rod, grand touring, etc.)	138	0	0	0	0	0	0	0	0	0	0	0	—
Go-Kart:													
Sprint	18,000	0	0	1	0	1	0	1	0	1	2	1	150
Enduro	13,500	0	0	0	0	0	0	1	0	0	1	0	80
Formula kart experimental	4,100	0	0	1	0	1	0	0	0	1	0	0	140
	400	0	0	0	0	0	0	0	0	0	1	1	150
Midget:													
Quarter midget	5,785	2	1	6	0	2	1	0	3	3	4	4	100
Half midget	3,000	0	0	0	0	0	0	0	0	0	0	0	60
Three-quarter midget	35	0	0	0	0	0	0	0	0	0	0	0	70
Full midget	750	0	0	1	0	1	0	0	0	1	1	1	80
	2,000	2	1	5	0	1	1	0	3	2	3	3	100
Motorcycle:													
Desert racing	124,165	—	—	—	—	3	4	7	18	22	23	23	230
Dirt track, short track, and steplechase	1,500	—	—	—	—	1	1	1	1	2	4	4	80
Drag racing:													
Dragster	19,500	—	—	—	—	—	—	—	—	6	—	—	—
Others	1,500	—	—	—	—	0	0	0	0	0	0	0	230
Hill climb:	3,500	—	—	—	—	0	0	0	0	0	0	0	230
Pikes Peak	200	0	0	0	0	0	0	0	0	0	0	0	175
Others	2,000	0	0	0	0	0	0	0	0	0	0	0	87
Ice racing	80	0	0	0	0	0	0	0	0	0	0	0	87
Motocross	60,000	—	—	—	—	—	—	—	—	8	—	—	30
Road racing	5,000	—	—	—	—	—	—	—	—	2	—	—	120
Scrambles	30,000	—	—	—	—	—	—	—	—	—	—	—	—
Speedway	500	0	0	0	0	0	0	0	0	0	0	0	—
Stunt and daredevil	85	—	—	—	—	—	—	1	—	—	1	1	90
Speed record run	300	—	—	—	—	—	—	1	1	1	1	1	—

* In some cases the totals for particular types of racing include figures that could not be allocated to individual categories.

NOTE: A dash (—) means that no data were collected for this report.

TABLE 3—Continued

TYPE OF RACING*	ESTIMATED NUMBER OF RACERS IN 1976	REPORTED RACING DEATHS										MAXIMUM SPEED (MPH)	
		1967	1968	1969	1970	1971	1972	1973	1974	1975	1976		
Snowmobile:													
Closed obstacle course	15,000	—	—	—	—	—	—	3	3	3	2	110	
Drag	—	0	0	0	0	0	0	0	0	0	0	60	
Enduro and marathon	—	—	—	—	—	—	—	0	—	—	0	110	
Hill climb	—	0	0	0	0	0	0	1	—	—	0	80	
Sprint	—	—	—	—	—	—	—	2	—	—	2	40	
Sprint	—	—	—	—	—	—	—	—	—	—	—	90	
Sports car:													
Production	11,000	7	4	2	2	3	2	4	2	3	4	170	
Sedan	2,000	—	—	—	—	—	—	—	—	—	—	170	
Others (showroom stock, sports racing class, etc.)	600	—	—	—	—	—	—	—	—	—	—	160	
Sports racing class, etc.)	8,400	—	—	—	—	—	—	—	—	—	—	120	
Sprint car:													
Modified car	8,500	5	12	12	11	8	5	8	9	5	7	160	
Supermodified car	2,500	1	2	1	0	1	0	0	1	2	0	140	
Sprint, super sprint, and winged sprint	3,000	0	4	3	5	1	1	3	4	1	2	150	
Sprint, super sprint, and winged sprint	3,000	4	6	8	6	6	4	5	4	2	5	160	
Stock car:													
Grand National	25,750	—	5	17	16	7	9	18	6	11	11	200	
Late model sportsman and stock	400	0	0	—	1	—	—	2	—	—	—	200	
Modified, supermodified, and super stock	5,000	4	3	—	3	2	1	9	1	4	2	190	
Limited sportsman and sportsman	3,000	4	2	—	2	4	—	1	1	1	—	150	
Modified mini-stock	10,000	1	0	1	—	—	1	—	1	1	—	140	
Sportsman mini-stock	1,100	0	0	0	0	0	0	0	0	0	0	120	
Other stock (hobby, baby grand, subcompact, street, cadet, etc.)	1,250	0	0	0	0	0	0	0	0	0	0	90	
Other stock (hobby, baby grand, subcompact, street, cadet, etc.)	5,000	0	0	—	—	—	1	1	—	—	—	120	
Other auto racing:													
Ice racing	225	0	0	0	0	0	0	0	0	0	0	130	
Hill climb:													
Pikes Peak	91	0	0	0	0	0	0	0	0	0	0	108	
Others	1,000	0	0	0	0	0	0	0	0	0	0	108	
Desert racing (autos and trucks)	2,500	—	—	—	—	—	—	—	—	—	—	80	
Auto stunt and daredevil	100	—	—	—	—	—	—	—	—	—	—	90	
Figure 8 stock car	2,000	0	0	0	0	0	0	0	1	0	1	60	
Automobile demolition derby	10,000	0	0	0	1	0	0	0	0	0	0	20	

* In some cases the totals for particular types of racing include figures that could not be allocated to individual categories.

NOTE: A dash (—) means that no data were collected for this report.

In the period 1970-74, there were a total of 31 mountaineering deaths in Canada, which may have included American citizens. Recorded deaths are probably somewhat understated.

Power-Boat Racing

In 1975 the major power-boat racers were distributed as follows:

Type	Number of Racers
Cruiser.....	51
Drag boat.....	340
Inboard boat.....	1,615
Modified outboard.....	122
Offshore boat.....	545
Outboard performance craft.....	850
Professional racing outboard.....	447
Stock outboard.....	1,270
Unlimited.....	46
Total.....	5,286

Of the total, 954 racers participated in only a single event.

The following is a partial list of the fatality experience among power-boat racers:

Year	Deaths
1970.....	1 outboard racer
1973.....	1 dragboat racer
1974.....	1 outboard racer
	1 unlimited hydroplane racer
	1 unknown type racer
1977*.....	1 inboard racer

* As of January 1977.

Rodeo

Rodeo encompasses saddle bronc riding, bareback riding, bull riding, calf roping, steer wrestling, steer roping, and team roping. "Clowning" is included under bull riding. Another somewhat different activity from the above-mentioned is trick riding. There are about 50 to 100 trick riders, who have had no fatalities since at least 1960. About 4,000 professional rodeo cowboys perform. Approximately one death per year occurs among professionals; there have been no fatalities in recent years. About 30,000 amateur performers are now in the field, including many high school students. Youngsters 6 years of age are permitted in some events; bull riding is permitted at age 14. One amateur was killed in 1969.

Scuba Diving

A recreational scuba diver may be defined as one who dives only for pleasure, without receiving financial compensation, and not as part of an obligation or duty. Included are divers who attempt to break or equal depth, distance, or time records.

An involved survey to estimate the number of divers was conducted by the Manned Undersea Science and Technology Branch of the National Oceanic and Atmospheric Administration, United States Department of Commerce. Recreational divers were classified as those capable of diving by virtue of training or those actively diving. Table 4 shows the results of this survey.

TABLE 4
ESTIMATED UNITED STATES RECREATIONAL SCUBA DIVING POPULATION
SURVEY ENDING JANUARY 1, 1973

CATEGORY	ESTIMATED POPULATION		
	Minimum	Most Likely	Maximum
Individuals with diving skills	1,500,000	1,890,000	2,300,000
Individuals practicing in the sport	375,000	474,000	600,000

Fatalities among recreational divers are listed below:

Year	Deaths
1970	109
1971	113
1972	121
1973	119
1974	141

Sport Parachuting

There are about 25,000 sport parachutists. Of this number, between 5,000 and 7,000 are experienced and very active. The table below lists the deaths in each year:

Year	Deaths
1970	29
1971	38
1972	35
1973	44
1974	32
1975	41

Stunt or Daredevil Flying

“Flying upside down, one foot off the ground, under the bridge, and then through the barn with FAA approval” best describes stunt flying in its most extreme but most unlikely form. Stunt flying often does not include the precision maneuvers of acrobatic flying, nor is it ever competitively performed. Such performances usually take place at air shows and state fairs. There are at least 200 stunt pilots. Deaths have occurred as follows:

Year	Deaths
1970	2
1971	1
1972	1
1973	0
1974	0

Thoroughbred Horse Racing

There are at least 2,000 professional jockeys. The mortality experience has been as follows:

Year	Deaths
1970	0
1971	2
1972	1
1973	3
1974	7
1975	4
1976	2

