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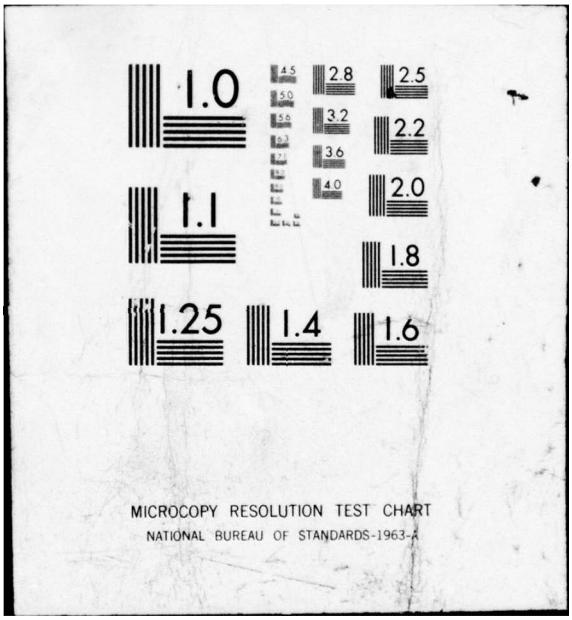
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# 1975 GENERAL AVIATION ACTIVITY SURVEY






**SEPTEMBER 1976**



**U.S. DEPARTMENT OF TRANSPORTATION**
**FEDERAL AVIATION ADMINISTRATION**
**OFFICE OF MANAGEMENT SYSTEMS**
**INFORMATION AND STATISTICS DIVISION**

# 1975

# GENERAL AVIATION ACTIVITY SURVEY




## U.S. DEPARTMENT OF TRANSPORTATION

### FEDERAL AVIATION ADMINISTRATION

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16. Abstract

The Federal Aviation Administration and the Civil Air Patrol conducted this general aviation activity survey as a joint effort on August 23 and 26, 1975.

The survey produced a comprehensive data base. It is useful in describing general aviation aircraft and pilot profiles, in examining the relationship between aircraft use, ownership, pilot certificate, pilot age and activity and in estimating airport traffic as well as fuel consumption.

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# FOREWORD

The report presents the results of the general aviation activity survey conducted by the Federal Aviation Administration and the Civil Air Patrol on August 23 and 26,1975. Based upon the data produced from the survey, it is now possible to: 1) develop aircraft and pilot profiles, 2) estimate fuel consumption and aircraft miles flown, 3) develop daily traffic patterns, particularly at non-towered airports, 4) estimate national total of aircraft takeoffs and landings, and 5) verify the agency's other data bases. The survey data has already been used by the FAA and state and local authorities for their local airport development projects.

The 1975 FAA/CAP general aviation activity survey was formulated by the FAA's Mr. Otho H. Mendenhall, Deputy Assistant Administrator for General Aviation, and Mr. Larry Williams, Chief of the Information and Statistics Division, Office of Management Systems, in coordination with Brig. Gen. Carl S. Miller, USAF, Executive Director of the CAP, and his staff, Mr. John V. Sorensen, Deputy Chief of Staff/Aerospace Education, and Lt. Col. Gale L. Haskins, USAF, Director of the Cadet Programs.

The survey design and final report were prepared by Mr. Shung-Chai Huang under the guidance of Mr. Nicholas L. Soldo, Chief of the Information Analysis Branch, Information and Statistics Division, Office of Management Systems, in cooperation with other offices of the agency.

Hundreds of Civil Air Patrol officers and cadets all over the country conducted the two-day survey. The Federal Aviation Administration appreciates their active participation and also wishes to thank the pilots who responded to the survey. Without their cooperation, the survey would not have been possible.

DISTRIBUTION: ZMS-348F; ZMS-411;
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# EXECUTIVE SUMMARY

## BACKGROUND

In the summer of 1972, the Federal Aviation Administration, with the assistance of the Civil Air Patrol, conducted a general aviation activity survey at 213 airports in 38 states. The results of that survey, published in July 1974,1/ produced much useful information for both the agency and the public.

However, general aviation information in areas such as air traffic at non-towered airports, average flight time in both local and cross-country flights, national total of aircraft takeoffs and landings as well as fuel consumption, etc., was still needed.

## SURVEY OBJECTIVES

To fill this void, the FAA and the CAP conducted another survey in 1975. Its objectives were to develop aircraft and pilot profiles, to estimate fuel consumption and aircraft miles flown, to develop daily traffic patterns, particularly at non-towered airports, and to estimate the national total of aircraft takeoffs and landings. As a by-product, the agency's other general aviation activity data bases could be verified.

In late August 1975, over a thousand CAP volunteers, under FAA guidance, conducted the two-day survey, recording 35,000 aircraft operations and interviewing 7,800 pilots at 71 towered airports and 174 non-towered airports throughout the country and in Puerto Rico.

The results of the survey produced the desired statistics with most of the data consistent, compatible, and valid for statistical inference.

## AIRCRAFT PROFILE

The aircraft profiles varied significantly by aircraft type and by type of operations. On an average, turbine-powered aircraft carried more occupants per flight than piston-powered aircraft of any kind. The flight time on itinerant operations of all aircraft appeared almost identical, but the flight distance for turbojet was much longer than that of all other aircraft. The survey also showed that 48% of the general aviation aircraft were owned by individuals, 27% were operated by rental companies; and 8% by flying clubs. The remaining 17% were owned by other businesses, institutions, or federal, state and local governments.

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1/ 1972 General Aviation Activity Survey, July 1974, FAA.

PILOT PROFILE

A 7% increase in cross-country flight plans filed indicated that general aviation pilots have increased their use of FAA flight services and flight facilities since the 1972 survey. Other findings showed that student pilots made about four landings and four takeoffs an hour --about one more than private pilots--and their cross-country flights were a little more than half as long as those of private pilots.

The pilots who did the most flying have airline transport ratings. They logged an average of 651 hours per year. Commercial pilots logged 427 hours, followed by private pilots with 143 hours, and student pilots with 36. Rotorcraft-only ratings averaged 469 hours per year.

In terms of age, a higher percentage of older pilots owned an aircraft. In terms of certificate, airline transport-rated pilots had the highest percentage of ownership(about 20%), as opposed to student pilots, who had the lowest (about 2%).

Only 8% of the pilots filed a flight plan on local flights, while 54% of the pilots filed a flight plan on cross country operations. Of the total flight plans filed, IFR (Instrument Flight Rule) accounted for 49%; and VFR (Visual Flight Rule) 51%. Compared with only 47% of pilots filing a flight plan in cross country operations recorded in the 1972 survey, the findings indicated that general aviation pilots increased their use of the FAA flight services as well as flight facilities.

FUEL CONSUMPTION

Single-engine 1-to-3 place piston aircraft burned about seven gallons of aviation gasoline per hour, while those over three places averaged about 10 gallons per hour. Multi-engine piston aircraft averaged 34 gallons per hour,compared to 96 gallons of jet fuel for turboprop and 320 gallons of jet fuel for turbojet. Piston-engine rotorcraft averaged about 15 gallons of aviation gasoline per hour, and the turbine-powered helicopter averaged 39 gallons of jet fuel per hour. For fiscal year 1975,it was estimated that general aviation aircraft consumed 409 million gallons of aviation gasoline and 393 million gallons of jet fuel.

AIRCRAFT MILES FLOWN

Based on average cross-county flight speeds and hours flown reported by the aircraft owners, an inconclusive estimate of 4.3 billion aircraft (nautical) miles flown for calendar year 1974 is made. This estimate may be inflated because the survey failed to generate flight speeds in local operations which likely are slower than cross-county speeds.

## AIRPORT TRAFFIC

The amount of daily air traffic varied widely among non-towered airports. Usually, there was more traffic at airports with paved and lighted runway(s). Traffic averaged 213 operations per day at FAA-towered airports, 137 operations per day at non-FAA towered airports, 66 operations at non-towered airports with paved and lighted runway(s), 56 operations at non-towered airports with paved but unlighted runway(s), 18 operations at non-towered airports with unpaved and lighted runway(s), and 10 operations per day at nor-towered airports with unpaved and unlighted runway(s).

## CONCLUSIONS

Now, more is known about pilots, aircraft, and airports. The survey produced information on general aviation activities of value to the whole aviation community. The data has already been used by the agency for general aviation impact studies, and by state and local authorities for area airport development studies. It is apparent that continuing these surveys will enable the FAA to provide more useful information to the public.

# I. INTRODUCTION

## A. BACKGROUND.

General aviation includes all civil aviation activities except those performed by certificated route air carriers, supplemental air carriers and commercial operators. Compared with air carrier operations, general aviation has a greater fleet size, a larger number of pilots and a more diversified use of aircraft, ranging from personal pleasure to a variety of commercial operations. In addition to transporting passengers and cargo, general aviation aircraft also engage in aerial application and industrial operations.

To get more information about general aviation activities, the FAA, with the assistance of the Civil Air Patrol, interviewed more than 40,000 pilots at 213 airports in 38 states in 1972. As a result, many useful statistics were developed and documented in a report published in July 1974. Thousands of copies of the report have been distributed to the public upon request.

## B. OBJECTIVES OF 1975 SURVEY.

However, more information about general aviation was still needed, so the agency, again with the able support of the CAP, conducted a similar but more detailed survey in 1975.

The objectives of the survey were to:

1) Develop aircraft profiles by aircraft type in terms of:

   a. fleet characteristics
   b. ownership
   c. uses
   d. activity

2) Develop pilot profiles by pilot certificate in terms of:

   a. ownership
   b. pilot age
   c. flight plan
   d. activity

3) Estimate fuel consumption and aircraft miles flown.

4) Develop daily traffic patterns, particularly at non-towered airports.

5) Estimate national total of aircraft takeoffs and landings.

6) Verify FAA's other data bases.

The survey plan was designed by the FAA and executed by the officers and cadets of the CAP. Since the accuracy of the survey results is determined by the joint effects of sampling and non-sampling errors, detailed discussion of the survey design, the survey data processing, the data analysis and the estimate of national total of aircraft operations is presented in Chapter VIII, entitled "Methodology."

C. TERMINOLOGY.

Many terms used in describing general aviation activity were not well defined. Very often they were interpreted differently. To avoid any misunderstandings in the survey questionnaire as well as the survey results, definitions of terms are provided when necessary.

## II. AIRCRAFT PROFILES

### A. INTRODUCTION.

The first objective of the survey was to develop aircraft profiles by aircraft type in terms of fleet characteristics, ownership, aircraft use and activity. This chapter will summarize the survey results in these areas. There were many interesting findings, some of which have not been available before.

### B. FLEET CHARACTERISTICS.

Ten years ago, fixed-wing piston-engine aircraft accounted for 98% of all general aviation aircraft. Rotorcraft accounted for 1.5%, and the 306 turbine-powered aircraft then in service amounted to only .3% of the total fleet. Compared with piston-powered aircraft, turbine-powered aircraft cost more to buy and operate. However, their overall performance is better than that of piston aircraft, and in many instances, this benefit outweighs the extra cost. As a result, the average annual utilization rate of turbine-powered aircraft has been much higher than that for piston-engine aircraft. In 1975, the number of turbined-powered aircraft increased to more than 4,000 units and they were used more often than any other aircraft type. A comparison of types of aircraft registered to FAA with those recorded in the survey is shown in Table 1.

**TABLE 1**

**GENERAL AVIATION ACTIVE AIRCRAFT FLEET**

**BY AIRCRAFT TYPE**

| Aircraft Type | Aircraft 1/ Registered with FAA(percent) | | Aircraft Surveyed | |
|---|---|---|---|---|
| | 1972 | 1975 | 1972 | 1975 |
| Single-engine Piston | 83.0 | 81.3 | 80.1 | 79.3 |
| Multi-engine Piston | 11.9 | 12.1 | 14.8 | 13.5 |
| Turboprop | 1.1 | 1.5 | 2.5 | 3.1 |
| Turbojet | 0.8 | 1.0 | 1.5 | 2.2 |
| Rotorcraft | 1.9 | 2.4 | 1.1 | 1.6 |
| All Others | 1.3 | 1.7 | 2/ | 0.3 |
| Total | 100.0 | 100.0 | 100.0 | 100.0 |

1/ FAA Statistical Handbook of Aviation, Annual Edition.
2/ Less than 0.1%.

The two data bases are consistent and compatible. However, the turbine-powered aircraft appear to be used more often than any other aircraft type.

C. OWNERSHIP.

During the interview, pilots were asked if they owned their aircraft, or had obtained it from a rental service, flying club, or other business or an institution, including the government. Of those interviewed, 48% owned their aircraft, 27% had rented theirs, 17% reported their aircraft was owned by a business or institution (including federal and local government), and 8% were using aircraft owned by flying clubs.

Most rental aircraft were single-engine piston types; some were multi-engine piston aircraft; and only a very few were turbine-powered aircraft or helicopters. Most flying club aircraft were single-engine piston types, though some were multi-engine piston aircraft. No helicopters were owned by flying clubs.

As shown in Table 2, most 1-to-3 place single-engine piston aircraft were owned and operated by rental services or flying clubs. Only about one-third of this aircraft type were owned by individuals.

**TABLE 2**

*SOURCE OF AIRCRAFT BY AIRCRAFT TYPE*

| Aircraft Type | SOURCE OF AIRCRAFT | | | | | | | | TOTAL |
|---|---|---|---|---|---|---|---|---|---|
| | RENT | | FLYING CLUB | | OWNER | | OTHER 1/ | | |
| | No. | Percent | No. | Percent | No. | Percent | No. | Percent | |
| Single-engine Piston 1-3 places | 842 | 44.1 | 191 | 10.0 | 628 | 32.9 | 249 | 13.0 | 1,910 |
| Single-engine Piston 4 places and over | 958 | 26.1 | 336 | 9.1 | 1,958 | 53.1 | 432 | 11.7 | 3,684 |
| Multi-engine Piston | 70 | 7.4 | 10 | 1.1 | 576 | 60.6 | 295 | 31.0 | 951 |
| Turboprop | 5 | 2.3 | 1 | 0.5 | 109 | 50.5 | 101 | 46.8 | 216 |
| Turbojet | 2 | 1.3 | 1 | 0.6 | 69 | 43.7 | 86 | 54.4 | 158 |
| Rotorcraft | 11 | 9.7 | 0 | 0.0 | 36 | 31.9 | 66 | 58.4 | 113 |
| Glider | 8 | 42.1 | 7 | 36.8 | 1 | 5.3 | 3 | 15.8 | 19 |
| Total | 1,896 | 26.9 | 546 | 7.7 | 3,377 | 47.9 | 1,232 | 17.5 | 7,051 |

1/ Aircraft owned by companies or institutions including governments

However, over 53% of the 4-place and over single-engine piston aircraft, over 60% of the multi-engine piston types and about 51% of the turboprops were owned by individuals. Turbojets were mostly owned by companies for corporate/executive flying. Rotorcraft accounted for only 2% of the general aviation fleet, of which, about 32% were owned by individuals, 58% by corporations or institutions, and only 10% were operated by rental services.

D. USE OF AIRCRAFT

1. DEFINITIONS.

For this survey the following terms are defined:

a. Aircraft use:

(1) Personal -- Any use of an aircraft for personal purposes not associated with business or profession, and not for hire. This includes maintenance of pilot proficiency.

(2) Business -- Any use of an aircraft not for compensation or hire by an individual for the purposes of transportation required by a business in which he is engaged.

(3) Executive --any use of an aircraft by a corporation, a company or other organization for the purposes of transporting its employees and/or property not for compensation or hire and employing professional pilots for the operation of the aircraft. This includes maintenance of proficiency of the pilots employed by the company.

(4) Commuter Air Carrier -- Any aircraft operator which performs, pursuant to published schedules, at least five round trips per week between two or more points,or carries mail. This includes maintenance of pilot proficiency.

(5) Air Taxi -- Any use of an aircraft by the holder of an air taxi operating certificate which is authorized by that certificate except for commuter air carrier use. This includes maintenance of pilot proficiency.

(6) Instructional -- Any use of an aircraft for the purposes of formal flight instruction with or without the flight instructor aboard.

(7) Aerial Application -- Any use of an aircraft in agriculture to discharge material in flight and to perform activities such as antifrost agitation, agitating fruit trees, chasing birds from crops, checking crops, restocking of fish, animal and other wildlife, etc.

(8) Industrial/Special -- Any use of an aircraft for specialized work allied with industrial activities; excluding transportation and aerial application. (Examples: pipe line patrol, survey, advertising, photography, hoist, etc.)

(9) Other -- Any use of an aircraft not specified in the preceeding uses. It includes research and development, demonstration, parachuting, sport, etc.

b. Type of Operations:

(1) Local Operations -- Local operations are those performed by aircraft which:

(a) Operate in the local traffic pattern or within sight of the airport.

(b) Are arriving from flight in local practice area located within a 20-mile radius of the airport.

(c) Execute simulated instrument approaches or low passes at the airport.

(2) Itinerant (cross-country) Operation -- Any operation which is not local.

The terms "flight," "flying," and "operation" usually refer to aircraft activity. Numerically, they are not similar. An operation refers to a takeoff or landing, while a flight or flying refers to a sequence of operations which may involve more than one takeoff or landing. For example, a local operation is a takeoff or landing; while a local flight could involve many takeoffs and landings; a non-stop cross-country flight involves one takeoff and one landing (or two itinerant operations).

2. TYPE OF OPERATIONS AND AIRCRAFT USES.

Generally speaking, a definite relationship exists between aircraft uses and type of operations. If the aircraft is used for either business, executive, commuter air carrier, air taxi, aerial

application or industrial/special, the flight can be classified as itinerant (cross-country) even though the aircraft takes off and lands at the same airport. However, there is an exception in that an executive, a commuter air carrier or an air taxi operation could be "local" if it is for the maintenance of pilot proficiency and meets the requirements of a local operation. A takeoff or a landing is counted as one operation, a touch-and-go is counted as two operations.

Of the pilots interviewed, 45.6% reported their flight as local while 54.4% reported as itinerant (cross country). Compared with the 46.5% local and 53.5% itinerant recorded in the 1972 survey, the slight decrease in local flight and slight increase in itinerant flight appears insignificant. Note that on an average, a local flight involved 2.7 takeoffs and 2.7 landings and a non-stop cross country flight involved one takeoff and one landing. In terms of operations(takeoffs/landings), the air traffic at the surveyed airports was estimated as 71% local and 29% itinerant. Compared with 42.3% local and 57.7% itinerant at FAA-towered airports, the survey findings,which derived from 174 non-towered airports and 71 towered airports, suggest that the air traffic at non-towered airports was primarily local.

A breakdown of type of operations by aircraft use is shown in Table 3.

TABLE 3

TYPE OF OPERATIONS AND AIRCRAFT USE

| Aircraft use | Local Operations | Itinerant Operations |
|---|---|---|
| Personal | 74.2% | 25.8% |
| Business | 33.6% | 66.4% |
| Executive | 8.1% | 91.9% |
| Commuter Air Carrier | 8.2% | 91.8% |
| Air Taxi | 21.2% | 78.8% |
| Instructional | 91.8% | 8.2% |
| Aerial Application | 69.7% | 30.3% |
| Industrial/Special | 81.8% | 18.2% |
| Other(Research/Development,demonstration,sport parachuting, etc.) | 77.3% | 22.7% |
| Overall | 70.8 | 29.2 |

The statistics verify that most personal, instructional and industrial/special flying was local, whereas most executive, commuter air carrier, business and air taxi operations were itinerant.

3. SOURCE OF AIRCRAFT AND THEIR USES.

Table 4 shows how aircraft available from different sources were used for various purposes. Of all rental aircraft, 42% were used for personal purposes, 43% for instructional, and about 10% for business. Only a few were used for executive, air taxi, aerial application and industrial/special flying. The use categories of aircraft available from flying clubs were almost identical to rental aircraft: about 86% were for personal and instructional purposes.

TABLE 4

SOURCE AND USE OF AIRCRAFT

| Aircraft Use | SOURCE OF AIRCRAFT | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Rent | | Flying Club | | Owner | | Other1/ | | Total | |
| | No. | % | No. | % | No. | % | No. | % | No. | % |
| Personal | 796 | 42.1 | 322 | 59.1 | 1,786 | 53.0 | 153 | 12.5 | 3,057 | 43.5 |
| Business | 188 | 9.9 | 51 | 9.4 | 899 | 26.7 | 271 | 22.1 | 1,409 | 20.0 |
| Executive | 11 | 0.6 | 2 | 0.4 | 204 | 6.0 | 215 | 17.5 | 432 | 6.2 |
| Commuter Air Carrier | 5 | 0.3 | 1 | 0.2 | 44 | 1.3 | 76 | 6.2 | 126 | 1.8 |
| Air Taxi | 21 | 1.1 | 1 | 0.2 | 84 | 2.5 | 98 | 8.0 | 204 | 2.9 |
| Instructional | 823 | 43.5 | 152 | 27.9 | 215 | 6.4 | 197 | 16.1 | 1,387 | 19.7 |
| Aerial Application | 1 | 0.1 | 0 | 0 | 19 | 0.6 | 50 | 4.1 | 70 | 1.0 |
| Industrial/Special | 9 | 0.5 | 7 | 1.3 | 28 | 0.8 | 47 | 3.8 | 91 | 1.3 |
| Other(Research,Sport Demonstration,etc.) | 36 | 1.9 | 9 | 1.6 | 91 | 2.7 | 119 | 9.7 | 255 | 3.6 |
| Total | 1,890 | 100.0 | 545 | 100.0 | 3,370 | 100.0 | 1,226 | 100.0 | 7,031 | 100.0 |

1/ Aircraft owned by companies or institutions including governments

Of the pilots who owned aircraft, 53% reported using them for pleasure, 27% for business, 6% for instructional purposes, and about 14% for corporate/executive, air taxi and industrial/special operations. In most cases, if the aircraft was used for instructional flying, the aircraft owner also acted as a flight instructor; if the aircraft was used for executive or air taxi operations, the owner also served as a professional pilot.

The last category includes aircraft owned by businesses and institutions, and federal or local governments, and used either for business, executive flying or air taxi operations, or other commercial activities such as aerial application and industrial/special operations.

4. CHARACTERISTICS OF AIRCRAFT USES.

Since 1970, the FAA has asked aircraft owners for voluntary information about the use of their aircraft. The distribution of uses reported by pilots during the survey, as shown in Table 5, generally agreed with those reported by owners in their 1975 annual aircraft registration and activity report, the sole exception being the percentage for instructional and personal uses, which was significantly different.

TABLE 5

COMPARISON OF AIRCRAFT USE

PILOT REPORTS vs AIRCRAFT OWNER REPORTS

| Aircraft use | Reported by Pilots during the survey Interview | | Reported by Aircraft Owners in 1975 Registration/Activity Report |
|---|---|---|---|
| | 1972 | 1975 | |
| Personal | 35.8 % | 43.4 % | 51.1 % |
| Business | 25.4 | 20.1 | 21.5 % |
| Executive | 4.8 | 6.1 | 5.6 % |
| Commuter Air carrier | - | 1.8 | 3.8 %* |
| Air Taxi | 3.6 | 2.9 | |
| Instructional | 25.3 | 19.7 | 9.6 % |
| Aerial Application | 0.9 | 1.0 | 4.3 % |
| Industrial/Special | 1.4 | 1.3 | 1.5 % |
| Other (Research/Development, sport parachuting, etc.) | 2.8 | 3.7 | 2.6 % |
| Total | 100.0 | 100.0 | 100.0 |

* includes both commuter air carrier and air taxi operations

In this connection, it should be pointed out that a large portion of personal flying involved training flights. It appears likely that pilots either reported their personal training proficiency

flight as instructional or the owners reported their aircraft as being used in personal proficiency flights for instructional flights, because personal proficiency and instructional flights were similar in nature. Since the combined total of personal and instructional flying as reported by the pilots agreed closely with those reported by aircraft owners, the data should be considered compatible. Following are the characteristics of aircraft uses:

a. Personal and Instructional Flying.

It was estimated that 43% of the aircraft were used for personal flying and 19% for instructional purpose. In local flying, both personal and instructional flights averaged 1.9 occupants per aircraft. In terms of operations, instructional flying led with almost four takeoffs and four landings per 66-minute flight, whereas personal flying accounted for a total of five takeoffs and landings per 52-minute flight (Table 6).

TABLE 6
LOCAL FLIGHT AND AIRCRAFT USE

| Aircraft use | Average No. of Landings Per Flight | Average time Per Flight (minutes) | Average Seats Occupied |
|---|---|---|---|
| Personal | 2.4 | 52 | 1.9 |
| Business | 1.9 | 49 | 1.9 |
| Executive | 2.1 | 57 | 2.5 |
| Commuter Air Carrier | 1.5 | 42 | 4.5 |
| Air Taxi | 1.6 | 48 | 3.0 |
| Instructional | 3.7 | 66 | 1.9 |
| Aerial Application | 2.5 | 84 | 1.1 |
| Industrial/Special | 2.8 | 76 | 2.2 |
| Other(research/development, demonstration, sport parachuting,etc.) | 1.7 | 48 | 3.6 |
| Overall | 2.7 | 57 | 2.0 |

On cross-country non-stop flights, the average flight distance was 173 nautical miles for personal flying and only 102 miles for instructional flying. The load factor (the number of seats occupied as a percent of seats available) for personal flying was 64% vs. 59% for instructional flying (Table 7). Less than one-fourth of the aircraft used for personal and instructional flying filed a flight plan (Table 8).

TABLE 7

ITINERANT(CROSS-COUNTRY) FLIGHT AND AIRCRAFT USE

| Aircraft use | Average Flight Time 1/ (minutes) | Average Flight Distance 1/ (nautical miles) | Average Seats Available | Average Seats Occupied | Load Factor |
|---|---|---|---|---|---|
| Personal | 82 | 173 | 4.0 | 2.5 | 64% |
| Business | 79 | 205 | 5.0 | 2.5 | 51% |
| Executive | 76 | 297 | 8.1 | 4.3 | 54% |
| Commuter Air Carrier | 47 | 134 | 10.1 | 5.5 | 61% |
| Air Taxi | 68 | 186 | 5.8 | 3.0 | 55% |
| Instructional | 58 | 102 | 3.5 | 1.9 | 59% |
| Aerial Application | 81 | 75 | 2.0 | 1.5 | 80% |
| Industrial/Special | 84 | 131 | 3.6 | 1.7 | 53% |
| Other(research/development, demonstration, sport parachuting, etc.) | 68 | 147 | 5.0 | 2.2 | 50% |
| Overall | 76 | 186 | 5.0 | 2.8 | 58% |

1/ Between takeoff and landing

b. Business and Executive Flying.

Business flying is an individual flying for business reason, while executive flying is done by professional pilots for corporate or company business. If the pilot of an aircraft is either a company employee or owner but is not a professional pilot hired specifically to fly it, the flight could not be classified as corporate/executive. It is, by definition, a business flight.

In the 1975 survey, 20% of the aircraft were reported for business, while 6% were for corporate/executive purposes. This matches favorably with the figures reported by the aircraft owners in the 1975 registration and activity report (Table 5). Flight plans were filed for about 43% of the business flights, and 78% of the executive flights.

TABLE 8

FLIGHT PLAN AND AIRCRAFT USE

| Aircraft use | FLIGHT PLAN | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | NONE | | VFR | | IFR | | TOTAL | |
| | No. | Percent | No. | Percent | No. | Percent | No. | Percent |
| Personal | 2,345 | 75.8 | 542 | 17.5 | 206 | 6.7 | 3,093 | 100.0 |
| Business | 814 | 57.0 | 301 | 21.1 | 313 | 21.9 | 1,428 | 100.0 |
| Executive | 96 | 22.0 | 53 | 12.1 | 288 | 65.9 | 437 | 100.0 |
| Commuter Air Carrier | 28 | 21.5 | 60 | 46.2 | 42 | 32.3 | 130 | 100.0 |
| Air Taxi | 51 | 24.8 | 84 | 40.8 | 71 | 34.5 | 206 | 100.0 |
| Instructional | 1,096 | 78.3 | 233 | 16.6 | 71 | 5.1 | 1,400 | 100.0 |
| Aerial Application | 63 | 88.7 | 6 | 8.5 | 2 | 2.8 | 71 | 100.0 |
| Industrial/Special | 79 | 84.1 | 13 | 13.8 | 2 | 2.1 | 94 | 100.0 |
| Other (research/development, demonstration, sport parachuting, etc.) | 202 | 75.4 | 45 | 16.8 | 21 | 7.8 | 268 | 100.0 |
| Total | 4,774 | 67.0 | 1,337 | 18.8 | 1,016 | 14.2 | 7,127 | 100.0 |

Sixty-six percent of business flights and 92% of executive flights were itinerant. The average flight times for both uses in cross-country flight were almost identical: about one hour and 16 minutes. Since most executive flying involves the use of sophisticated aircraft, the average non-stop flight distance per executive flight was 297 nautical miles, or about 92 miles longer than the average non-stop business flight. In terms of occupants, there were 4.5 occupants per non-stop executive flight, and only 2.5 occupants for business flights. Thus, executive flying averaged two more occupants per plane than business. Since the aircraft used for executive flying generally are larger, there are, of course, more seats available.

However, the load factor(the number of seats occupied as a percent of seats available) shows little difference (Table 7).

c. Commercial Flying.

Commercial flying includes operations involving commuter air carrier, air taxi, aerial application and industrial/special categories. The common purpose of the aircraft in these use categories is to provide services for compensation. Only professional pilots may fly aircraft for commercial purposes.

(1) Commuter Air Carrier and Air Taxi Operations.

A commuter air carrier actually is an air taxi operator who provides at least five scheduled round trip passenger or cargo flights per week. In other words, if air taxi operators perform less than five scheduled services per week, they cannot be classified as commuter air carriers.

In June 1975, two months before the survey was conducted, there were 207 commuter air carriers reporting traffic data to the Civil Aeronautic Board(CAB). Piston aircraft made up 74% of this fleet and turbine aircraft made up the rest. The survey matched the CAB data almost exactly, showing 26% of the fleet as turbine aircraft, 73% as piston-powered, and 1% as helicopters. This is another indication that the survey data is compatible.

Commuter air carriers averaged 5.5 occupants per aircraft per flight, compared to only three occupants for air taxis. In other words, commuter air carriers, in addition to the pilot, carried four to five passengers per aircraft per flight while air taxis only carried about two passengers per aircraft per flight.

However, there was no significant difference in load factor because the aircraft generally used for commuter air carrier were larger and had more seats available. On an average, over 61% of available seats were occupied in commuter air carriers and 55% in air taxis. The average non-stop flight distance/time for commuter air carriers was 134 nautical miles in 47 minutes· for air taxis, the average was one-third longer: 186 miles in 68 minutes.

(2) Industrial/Special.

According to aircraft owners' information at the end of 1975, there were 2,500 aircraft used for industrial/special operations. Of these, 58% were single-engine piston aircraft, 30% were rotorcraft, 11% were multi-engine piston and about 1% was turbine-powered aircraft. However, the survey indicated that of all aircraft used for industrial/special operations, 67% were single-engine piston powered, 26% were rotorcraft, 3% were multi-engined, and 4% were turbine-powered.

Industrial/special operations can be performed locally or a distance away from the base airport. The survey showed that, in local activity,aircraft used for industrial/special operations performed three takeoffs and three landings per 76 minutes of flight. Aircraft used for industrial/special operations usually flew at relatively low speeds, and on an average performed a 131 nautical mile non-stop flight in 84 minutes(the longest flight time of all aircraft used in itinerant operations), usually with two occupants aboard.

(3) Aerial Application.

At the end of 1975, it was reported that 4.4% of all aircraft about 7,200 units were used for aerial application. However, during the survey, only 1% of the pilots interviewed reported their aircraft were used for aerial application. Single-engine piston aircraft with 1-2 places were used most often for aerial application,although in some cases helicopters were used for the same purpose. The average local and itinerant flight time was almost identical: about one hour and 20 minutes. In most cases, the pilot was the sole occupant of the aircraft.

## E. ACTIVITY PROFILES.

### 1. INTRODUCTION.

This section will summarize the characteristics of aircraft activities, including flight time, speed, and distance, and the number of occupants carried in both local and itinerant flights.

In general, small single-engine piston aircraft are used in local operations for aerial application, and instructional as well as personal flying. Rotorcraft are used mainly for commercial purposes with very little personal use; multi-engine piston and turboprops are used more often in itinerant operations for air taxi and business flying; and for the most part, general aviation turbojets are company-owned and used for executive flying.

The average general aviation aircraft in local flying carried two occupants and performed three takeoffs and three landings in 57 minutes of flight. On non-stop cross-country flights, general aviation aircraft carried an average of three (2.8) occupants, and flew a distance of 186 nautical miles in 76 minutes at a flight speed of 147 knots.

The number of occupants carried differed by aircraft type. Naturally, the larger the aircraft the more passengers it can carry. The survey showed that in terms of occupants, turboprops were the leader, followed by turbojets, multi-engine piston aircraft and rotorcraft. Single-engine piston aircraft carried the least (Table 9). A comparison of the number of occupants

TABLE 9
COMPARISON OF AVERAGE OCCUPANTS PER AIRCRAFT IN ITINERANT OPERATIONS

| Aircraft Type | Average Occupants | | Change |
|---|---|---|---|
| | 1972 | 1975 | |
| Single-engine Piston | 2.1 | 2.1 | No Change |
| Multi-engine Piston | 2.7 | 3.8 | +1.1(40.7%) |
| Turboprop | 4.5 | 5.7 | +1.2(26.7%) |
| Turbojet | 4.8 | 5.4 | +0.6(12.5%) |
| Rotorcraft | 1.9 | 2.9 | +1.0(52.6%) |
| Overall | 2.5 | 2.8 | +0.3(12.0%) |

per aircraft per flight between 1972 and 1975 shows no change in single-engine piston aircraft, but an increase for all other types. Compared with 2.5 occupants per aircraft per flight reported in the 1972 survey, the average of 2.8 occupants reported in 1975 represents a 12% increase. This finding suggests that either general aviation aircraft were used more efficiently or the public is currently more interested in general aviation flying. Inasmuch as the 1972 survey's 2.5 occupants per aircraft per flight in general aviation flying had remained constant for a few years, the increase shown in the 1975 survey may be significant.

2. SINGLE-ENGINE PISTON AIRCRAFT, 1-3 PLACES.

These aircraft carried 1.7 occupants and performed three takeoffs and three landings on a 58-minute local flight (Table 10).

TABLE 10
AVERAGE FLIGHT TIME AND AVERAGE SEATS OCCUPIED IN LOCAL FLIGHTS
BY AIRCRAFT TYPE

| Aircraft Type | Average Number of Landings Per Flight | Average Flight Time Per Flight in Minutes | Average Seats Occupied |
|---|---|---|---|
| Single-engine Piston 1-3 places | 3.1 | 58 | 1.7 |
| Single-engine Piston 4 places and over | 2.4 | 56 | 2.1 |
| Multi-engine Piston | 2.1 | 57 | 3.4 |
| Turboprop | 2.6 | 77 | 3.7 |
| Turbojet | - | - | - |
| Rotorcraft | 4.2 | 80 | 2.1 |
| Glider | 1.0 | 18 | 1.2 |

In cross-country non-stop flights, they carried an average of 1.5 occupants and flew a distance of 104 nautical miles in 67 minutes at an average flight speed of 93 knots (Table 11), using an average of seven gallons of aviation gasoline per hour. The 75% load factor for this aircraft type was the highest among all aircraft.

3. SINGLE-ENGINE PISTON AIRCRAFT, 4 PLACES AND OVER.

These aircraft carried 2.1 occupants and performed 2.4 takeoffs and landings on a 56-minute local flight (Table 10). On cross-country non-stop flights they carried an average of 2.4 occupants and flew a distance of 166 nautical miles in 79 minutes at an average flight speed of 126 knots (Table 11), using an average of 10 gallons of aviation gasoline per hour. Their load factor was 59%, or 3% above the average.

4. MULTI-ENGINE PISTON AIRCRAFT.

These aircraft carried 3.4 occupants and performed two takeoffs and two landings in 57-minute local flight (Table 10). On cross-country non-stop flights, they carried an average of 3.8 occupants and flew a distance of 228 nautical miles in 76 minutes at an average flight speed of 180 knots (Table 11), using an average of 34 gallons of aviation gasoline per hour. Their load factor is 58%, or 2% above the average.

TABLE 11

AVERAGE FLIGHT TIME/DISTANCE, AVERAGE OCCUPANTS AND LOAD FACTOR IN ITINERANT FLIGHTS

BY AIRCRAFT TYPE

| Aircraft Type 1/ | Average Flight Time Between Takeoff/Landing (minutes) | Average Flight Distance Between Takeoff/Landing (Nautical Miles) | Average Seats Available | Average Seats Occupied | Load Factor (%) 2/ |
|---|---|---|---|---|---|
| Single-engine Pisto Piston 1-3 Places | 67 | 104 | 2.0 | 1.5 | 75 |
| Single-engine Piston 4 Places and over | 79 | 166 | 4.3 | 2.4 | 59 |
| Multi-engine Piston | 76 | 228 | 6.5 | 3.8 | 58 |
| Turboprop | 75 | 274 | 10.9 | 5.7 | 53 |
| Turbojet | 80 | 481 | 10.3 | 5.4 | 52 |
| Rotorcraft | 65 | 102 | 5.0 | 2.9 | 58 |
| Overall | 76 | 186 | 5.0 | 2.8 | 56 |

1/ Data for glider is insufficient to make estimates

2/ Load Factor = (Total Number of Seats Occupied/Total Seats Available) X 100.

5. TURBOPROPS.

In local operations these aircraft carried 3.7 occupants and performed 2.6 takeoffs and landings in 77 minutes (Table 10). In cross-country non-stop flights, they carried an average of 5.7 occupants and flew a distance of 274 nautical miles in 75 minutes at an average flight speed of 219 knots (Table 11), using 96 gallons of jet fuel per hour; or 92 gallons of aviation gasoline if the turbine-engine were permitted to use aviation gasoline. Their load factor was 53%, or 3% below average.

6. TURBOJETS.

During the survey, no turbojets were reported engaging in local flight. In cross-country non-stop flights they carried an average of 5.4 occupants and flew a distance of 481 nautical miles in 80 minutes at an average flight speed of 361 knots (Table 11), using an average of about 320 gallons of jet fuel per hour. Their load factor was 52%, or 4% below average.

7. ROTORCRAFT.

These aircraft carried two occupants and performed more than four takeoffs and landings in 80 minutes of local flights (Table 10). In cross-country non-stop flights, they carried 2.9 occupants and flew a distance of 102 miles in 65 minutes at an average flight speed of 94 knots. Piston-engine rotorcraft consumed 15 gallons of aviation gasoline per hour while turbine-powered rotorcraft consumed 38 gallons of jet fuel per hour. The load factor for both types was 58%, or 2% above the average.

8. GLIDERS.

Gliders account for about 0.1% of the general aviation fleet. During the survey, 19 glider pilots were interviewed. Most of the gliders were restricted to local operations, with an average flight time of 18 minutes. Since the sample size is very small, the findings may not be conclusive.

## III. PILOT PROFILES

### A. INTRODUCTION.

The survey's second objective was to develop pilot profiles by pilot certificate in terms of aircraft ownership, flight plans, pilot age and activity.

General aviation pilot certificates are classified into the following categories:

(1) Student pilot
(2) Private pilot
(3) Commercial pilot
(4) Airline transport rated (ATR) pilot
(5) Rotorcraft (only)
(6) Glider (only)

To be eligible for a student certificate to fly a glider or a free balloon, a person must be 14 years old; at age 16 he is eligible for a student pilot certificate to fly a powered aircraft. Althought airline transport-rated pilots who fly air carrier aircraft are required to retire at age 60, there is no upper age limit for general aviation pilots. In other words, a general aviation pilot may continue his flying activities as long as he holds a valid medical certificate.1/

### B. PILOT CERTIFICATE AND OWNERSHIP.

Compared with student pilots who most often rented their aircraft, more private, commercial, and ATR pilots owned their aircraft. As shown in Table 12, private pilots owned nearly 50% of all

TABLE 12
AIRCRAFT OWNERSHIP BY PILOT CERTIFICATE

| Pilot Certificate | Percent of Total Pilot Population As of Dec. 1975 1/ | Percent of Total Aircraft Owned |
|---|---|---|
| Student | 24.3 | 4.5 |
| Private | 42.0 | 49.4 |
| Commercial | 26.0 | 36.2 |
| ATR | 5.9 | 9.8 |
| Rotorcraft(only) | 0.7 | 0.1 |
| Glider | 0.7 | *2/ |
| Other | 0.4 | *2/ |

1/ FAA Airmen Statistics
2/ Less Than 0.1%

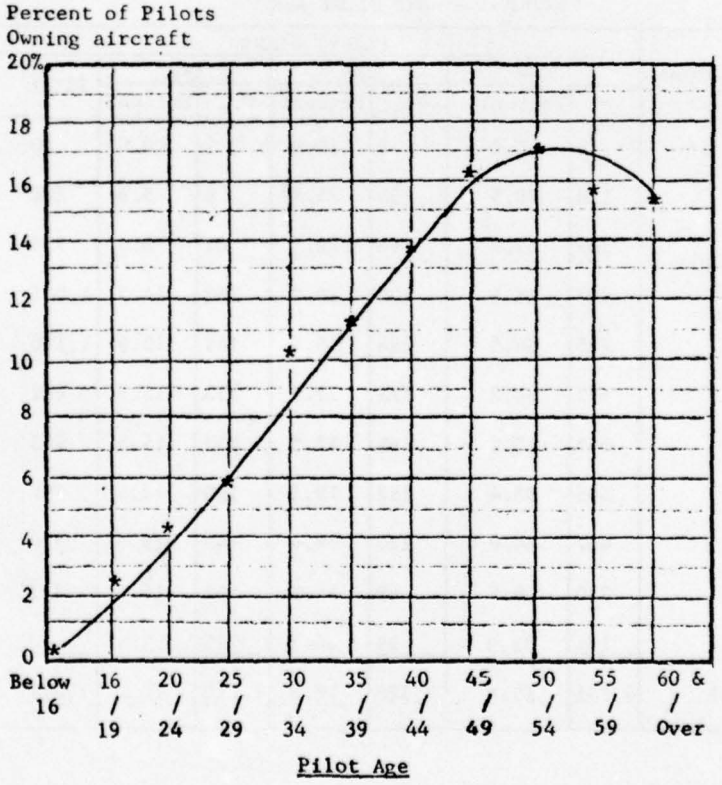
1/ Federal Aviation Regulations Part 61.

individually-owned aircraft. However, in terms of pilot population, 20% of ATR pilots owned aircraft, followed by 17% of commercial pilots and 13% of private pilots, while only about 2% of student pilots owned aircraft. There were very few glider pilots who owned their gliders.

C. PILOT AGE AND OWNERSHIP.

Pilot age appeared to be associated closely with the aircraft ownership. A comparison of pilot population and percent of pilots who owned an aircraft by age showed that they related linearly -- the younger the pilots, the more often they obtained aircraft from rental services or flying clubs. Pilots of the age 16-19 accounted for 4.4% of the total pilot population but owned less than .5% of total aircraft. Whereas pilots of the age 30-34 accounted for 15.5% of the total, and owned 6.6% of the total aircraft. Pilots of the age 50-54 accounted for only 9% of the pilot population, but owned 7% of the aircraft. However, the positive linear relationship between age and aircraft ownership turned negative at age 55. In other words, the percentage of pilots owning an aircraft increased steadily until age 54, when it began decreasing. The details are shown in Figure 1.

Fig. 1. RELATION OF PILOT AGE AND AIRCRAFT OWNERSHIP



D. FLIGHT PLANS.

Before taking off on a flight, a general aviation pilot may file a flight plan with an FAA Flight Service Station, or an ATC (air traffic control) facility informing the system of his destination, direction and route of the flight. There are two kinds of flight plans: IFR (Instrument Flight Rules) and VFR (Visual Flight Rules). At the completion of the flight, the pilots are required to close the flight plan with an FAA Flight Service Station or ATC facility. The pilot may cancel or change his flight plan at anytime by contacting an FAA Flight Service Station or an ATC facility. If an aircraft with a flight plan is overdue, search procedures are initiated. Therefore, the filing of a flight plan is obviously a safety measure.

Two-thirds of the pilots reported they did not file a flight plan on their flights. The frequency of filing a flight plan by pilot age is shown in Table 13. Among the pilots of all age groups, there is no significant difference in the ratio of filing flight plans. The findings suggest that pilot age does not associate with the frequency of filing flight plans.

TABLE 13

FLIGHT PLAN AND PILOT AGE

| Pilot Age Group | FLIGHT PLANS | | | | | | TOTAL |
|---|---|---|---|---|---|---|---|
| | NONE | | VFR | | IFR | | |
| | No. | Percent | No. | Percent | No. | Percent | |
| Less than 16 | 8 | 80.0 | 1 | 10.0 | 1 | 10.0 | 10 |
| 16 - 19 | 158 | 70.5 | 58 | 25.9 | 8 | 3.6 | 224 |
| 20 - 24 | 509 | 69.2 | 166 | 22.5 | 61 | 8.3 | 736 |
| 25 - 29 | 687 | 66.3 | 197 | 19.0 | 152 | 14.7 | 1,036 |
| 30 - 34 | 735 | 64.5 | 224 | 19.6 | 181 | 15.9 | 1,140 |
| 35 - 39 | 637 | 66.2 | 172 | 17.9 | 153 | 15.9 | 962 |
| 40 - 44 | 641 | 68.0 | 165 | 17.5 | 137 | 14.5 | 943 |
| 45 - 49 | 545 | 68.4 | 152 | 19.1 | 100 | 12.5 | 797 |
| 50 - 54 | 467 | 64.0 | 120 | 16.4 | 143 | 19.6 | 730 |
| 55 - 59 | 230 | 69.5 | 49 | 14.8 | 52 | 15.7 | 331 |
| 60 - Over | 124 | 72.9 | 24 | 14.1 | 22 | 13.0 | 170 |
| Overall | 4,741 | 67.0 | 1,328 | 18.8 | 1,010 | 14.2 | 7,079 |

A breakdown of flight plans filed by pilot certificates (Table 14) shows that about one-quarter of student and private pilots, one-third of commercial and rotorcraft (only) pilots and two-thirds of ATR pilots filed flight plans on their flights. Of all flight plans filed, 43% were IFR; 57% VFR.

TABLE 14

FLIGHT PLAN AND PILOT CERTIFICATE

| Pilot Certificate | TYPE OF FLIGHT PLANS | | | | | | TOTAL |
|---|---|---|---|---|---|---|---|
| | NONE | | VFR | | IFR | | |
| | No. | Percent | No. | Percent | No. | Percent | |
| Student | 666 | 72.4 | 251 | 27.3 | 3 | 0.3 | 920 |
| Private | 2,145 | 75.5 | 530 | 18.7 | 165 | 5.8 | 2,840 |
| Commercial | 1,682 | 65.2 | 435 | 16.9 | 463 | 17.9 | 2,580 |
| Airline Transport | 241 | 33.4 | 105 | 14.6 | 375 | 52.0 | 721 |
| Rotorcraft(only) | 8 | 66.7 | 3 | 25.0 | 1 | 8.3 | 12 |
| Glider (Only) | 5 | 100.0 | 0 | 0 | 0 | 0 | 5 |
| Balloon (Only) | 0 | 0 | 1 | 100.0 | 0 | 0 | 1 |
| Certificate of a Foreign Country | 1 | 50.0 | 1 | 50.0 | 0 | 0 | 2 |
| Total | 4,748 | 67.1 | 1,326 | 18.7 | 1,007 | 14.2 | 7,081 |

In practice, the frequency of pilots filing a flight plan is closely related to the type of operations. If a pilot flies the aircraft in a local traffic pattern within sight of or within a 20-mile radius of the airport, there is no need to file a flight plan to maintain contact with the FAA Flight Service Station or the airport tower. However, on cross country operations such contact becomes more important, and the chance of a pilot filing a flight plan is much higher.

Table 15 shows a breakdown of flight plans filed in local and itinerant operations by aircraft type. On local flights, only 8% of the pilots filed a flight plan. On cross-country flights, however, about 54% filed. This is an increase of 7% since 1972, and it indicates increased use of FAA services and facilities. In terms of aircraft types, cross-country flight plans were filed for almost 98% of the jet aircraft, 87% of the turboprops and 66% of the multi-engine piston aircraft, but for less than half of all single-engine piston aircraft: 47% for those with four or more places, and 41% for those with three places or less.

TABLE 15

AIRCRAFT TYPE AND FLIGHT PLAN

| Aircraft Type | FLIGHT PLANS | | | |
|---|---|---|---|---|
| | Local Flights | | Itinerant Flights | |
| | None | VFR/IFR | None | VFR/IFR |
| Single-engine Piston 1-3 places | 95.4% | 4.6% | 58.9% | 41.1% |
| Single-engine Piston 4 Places and over | 90.4% | 9.6% | 53.0% | 47.0% |
| Multi-engine Piston | 83.9% | 16.1% | 34.0% | 66.0% |
| Turboprop | 57.1% | 42.9% | 4.4% | 95.6% |
| Turbojet | -- | -- | 2.0% | 98.0% |
| Rotorcraft | 88.1% | 11.9% | 63.8% | 36.2% |
| Overall | 92.0% | 8.0% | 46.1% | 53.9% |

## E. ACTIVITY CHARACTERISTICS.

General aviation pilot activity information produced from this survey included pilot flight time, flight distance, number of occupants carried per flight and the purpose of flying, etc. Based on the weekly frequency of flying or the average annual flying time, the student pilots appeared to be the least active,

followed by private pilots. Airline transport-rated pilots were the most active, trailed by commercial pilots. However, an analysis of pilot age and pilot activity indicates no particular relation between age and flight activity -- in other words, no pilots of any age group appeared to be more active than any other. Table 16 displays a comparison of pilots in each age group as a percent of the total pilot population, and pilots interviewed of each age group as a percent of total sample pilot populations. Generally speaking, pilot population and activity are in proportion(Table 16).

**TABLE 16**

**PILOT POPULATION VS. PILOT ACTIVITY**

**BY PILOT AGE**

| Age Group | Pilot Population 1/ (Percent) | Pilot Activity (Percent) |
|---|---|---|
| Less than 16 | *2/ | *2/ |
| 16 - 19 | 4.4 | 3.2 |
| 20 - 24 | 12.3 | 10.4 |
| 25 - 29 | 16.1 | 14.6 |
| 30 - 34 | 15.5 | 16.1 |
| 35 - 39 | 13.0 | 13.6 |
| 40 - 44 | 12.0 | 13.3 |
| 45 - 49 | 10.2 | 11.3 |
| 50 - 54 | 9.1 | 10.3 |
| 55 - 59 | 4.7 | 4.7 |
| 60 and over | 2.7 | 2.5 |
| Total | 100.0 | 100.0 |

1/ FAA 1974 U. S. Airman Statistics

2/ Less than 0.1 Percent

1. STUDENT PILOTS.

From 1970 to 1975 the population of student pilots decreased from 196,000 to 177,000 - a net loss of 10%. In the same period, the original issuance of student pilot certificates increased about 0.5%.

Since the holders of a student certificate are not allowed to pilot an aircraft for carrying passenger(s) for compensation or hire,1/ student pilots very often flew a single-engine piston aircraft for personal or instructional purposes. Therefore, two-thirds of their operations were local, and only about one-third were cross-country flights. In local flying, student pilots averaged four takeoffs and four landings in 61 minutes, and most of the time a flight instructor was aboard. On cross-country non-stop flights, students averaged 94 nautical miles in 56 minutes, and had a flight instructor along about half the time.

About 63% of the active student pilots flew at least once a week, and on an average, they logged 36 hours a year.

2. PRIVATE PILOTS.

The population of private pilots dropped slightly from 304,000 in 1970 to 300,000 in 1973, then rose to 306,000 in 1975 - a net gain of less than of 1%. In the same period,the original issuance of private pilot certificates decreased from 53,026 to 49,733 - a net loss of 6%.

A private pilot is not allowed to act as pilot-in-command of an aircraft that is carrying passenger(s) or property for compensation or hire. He may fly an aircraft in connection with any business or employment if the flight is only incidental to that business or employment and the aircraft does not carry passengers or property for compensation or hire.1/

Private pilots most often flew single-engine piston aircraft. Some flew multi-engine piston aircraft or rotorcraft, and a very few flew turboprop and turbojet aircraft. Less than one-fifth of the pilots who did any flying in the last 12 months maintained a current instrument rating.

The activities of private pilots were equally divided between local and itinerant. On local flights an average private pilot performed three takeoffs and three landings per 53-minute flight. On cross-country flights, private pilots averaged 171 nautical miles in 81 minutes. In general, about two-thirds of their flights were for personal purposes, 20% for business and about 10% for instructional purposes. One of every eight private pilots owned his aircraft. On an average, private pilots logged 143 hours a year, and 65% reported they flew at least once a week.

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1/ Federal Aviation Regulation Part 61.

3. COMMERCIAL PILOTS.

The commercial pilot population increased from 187,000 in 1970 to 196,000 in 1972 then dropped to 189,000 in 1975 - a net gain of about 1%. During that same period, the original issuance of commercial pilot certificates dropped from 21,000 in 1970 to 12,600 in 1975 - a decrease of 40%.

A commercial pilot can act as a pilot-in-command of an aircraft for compensation or hire. On an average, about 18% acted as flight instructors; 9% as air taxi pilots, 5% as crop dusters and industrial flyers; while 6% were employed by corporations for executive flying. However, more than half of the commercial pilots were flying for personal pleasure or individual business. Therefore, their activity was 40% local as against 60% itinerant.

In local flying, an average commercial pilot made three takeoffs and three landings in a 60-minute flight and carried two occupants. On cross-country non-stop flights, an average commercial pilot flew 185 nautical miles in 77 minutes and carried three occupants. Commercial pilots accounted for 70% of all air taxi pilots, 81% of aerial application pilots and 73% of industrial/special pilots. Thirty-one percent of all commercial pilots flew for personal pleasure, 25% for business, 8.6% for air taxi, 6.4% for corporate or executive purposes, 2.6% for industrial/special operations, and 2.2% for aerial application. Thirty-four percent reported they flew at least once a week and 78% maintained a current instrument rating . They recorded an average of 427 flight hours a year, and one out of every six pilots owned an aircraft.

4. AIRLINE TRANSPORT-RATED PILOTS.

The population of ATR pilots increased steadily from 34,400 in 1970 to 42,600 in 1975, a net gain of 8,200, or 24%. During the same period, the original issuance of ATR pilot certificates decreased from 3,700 to 2,700, a decrease of 27%. In 1974, 60% of total ATR pilots(about 26,000) were employed by air carriers. The number of all ATR pilots who were employed by air carriers and were involved in general aviation activity cannot be determined.

ATR pilots acted as pilot-in-command of most turbine-powered general aviation aircraft. Over 35% were employed by corporations for executive flying, 15% were hired by commuter air carrier or non-scheduled air taxi operators, and only 1% worked in crop dusting. In non-commercial activity, 25% flew for business, about 10% for personal purposes, and 9% acted as flight instructors.

Eighty-one percent of ATR pilot operations were itinerant, and 19% were local. In local flying, airline transport pilots averaged two takeoffs and two landings on a 57-minute flight and carried two occupants. In itinerant operations, they usually flew a distance of 272 nautical miles in 72 minutes and carried 4 to 5 occupants. Almost 99% reported they maintained a current instrument rating. An average ATR pilot logged 651 flying hours a year and 95% of them flew at least once every week. One of every five owned an aircraft.

5. ROTORCRAFT (ONLY) PILOTS.

Rotorcraft (only) pilots include private, commercial, and airline transport rated pilots with a rotorcraft category and a gyroplane class rating only. They are limited to the operation of rotorcraft. There were about 5,000 pilots in this category in 1975. On local operations, they usually performed about three takeoffs and three landings in 95 minutes,and carried two occupants. On non-stop itinerant operations, they often flew a distance of 146 nautical miles between takeoff and landing in 81 minutes. One of every five rotorcraft (only) pilots owned his own rotorcrarft. The average rotorcraft (only) pilot flew 469 hours a year.

6. GLIDER (ONLY) PILOTS.

Glider (only) pilots include student pilots, private pilots and commercial pilots with only glider rating. There were about 5,000 pilots in this category in 1975. Usually, they were limited to local operations. The average flight time of a glider pilot was 18 minutes. Very few owned their own gliders. However, the sample size for glider pilot was too small to establish the average annual flying hours for the glider (only) pilots.

Other statistics relating to Pilots are shown in Appendix I Tables 28 through 35.

## IV. ESTIMATE OF FUEL CONSUMPTION

Since the energy problem surfaced in 1972, aviation fuel consumption has become one of the major concerns of the FAA as well as of the aviation public. For years, different methods have been used to estimate general aviation fuel consumption. One method is this:

> Total general aviation fuel consumption =
> Summation of estimated fuel consumption for each aircraft
> Where
> Estimated fuel consumption for each aircraft = (fuel consumption per hour for the engine) x (hours flown for that aircraft) X (number of engines).

The formula is self-explanatory and straightforward, but fails to take into account the relation between fuel consumption and aircraft takeoff weight and performance characteristics. For example, Learjet Models 24D and 25B are equipped with two General Electric CJ610-6 Jet engines. The 24D has a fuel flow of 192 gph(gallons per hour) while the 25B uses 220 gph-or 14% more.1/ The 25B is about 14% heavier than the 24D in terms of gross takeoff weight. The Swearingen Models Merlin IIIA and IVA are both equipped with two Gar. TPE331-3U-303G engines, and have the same takeoff weights, but have different performance characteristics. The fuel flow rates for these aircraft are therefore different.

Another method of estimating and forecasting fuel consumption is based on records and reports of aviation fuel produced. These statistics are contained in the annual FAA Aviation Forecasts.2/ Since the fuel produced is not always equal to fuel consumed, such estimates have never been verified by other means.

One of the objectives of the survey was to compile fuel consumption information for a cross-reference with the information obtained from other sources. During the survey, pilots reported the average fuel consumption of their aircraft in terms of gallons per hour as follows: (a) 1-3 place single-engine piston aircraft consumed 6.81 gallons of aviation gasoline per hour; (b) 4-place-and-over single-engine piston aircraft consumed 10.32 gallons of aviation gasoline per hour; (c) multi-engine piston aircraft consummed 33.63 gallons of gasoline per hour; (d) turboprops using aviation gasoline consumed 92.73 gallons per hour; (e) turboprops using jet fuel consumed 96.96 gallons per hour; (f) turbojets consumed 320.19 gallons of jet fuel per hour; (g) piston-powered rotorcraft consumed 15.12 gallons of gasoline per hour; (h) turbine-powered rotorcraft consumed 38.62 gallons of jet fuel per hour.

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1/ 1976 Aircraft Directory of Flying Annual, 1976 Edition.
2/ Aviation Forecasts, Fiscal Year 1976-1987, Federal Aviation Administration of the Department of Transportation,September 1975.

Assuming that the aircraft hours flown for fiscal year 1975 remain unchanged from those aircraft hours flown reported by the aircraft owners for calendar year 1974, the total general aviation fuel consumption was estimated to be 409 million gallons of aviation gasoline and 393 million gallons of jet fuel. The estimating procedures are shown in Table 17.

TABLE 17

ESTIMATE OF FUEL CONSUMPTION

Fiscal Year 1975

| Aircraft Type | Average Fuel Consumed Gallons per Hour | | Aircraft Hours Flown CY 1974 1/ | Total Fuel Consumption (Million-Gallons) | |
|---|---|---|---|---|---|
| | Aviation Gasoline | Jet Fuel | | Aviation Gasoline | Jet Fuel |
| Single-engine Piston 1-3 Places | 6.81 | - | 10,087,757 | 68.7 | - |
| Single-engine Piston 4 Places and Over | 10.32 | - | 13,264,735 | 136.9 | - |
| Multi-engine Piston | 33.63 | - | 5,357,991 | 180.2 | - |
| Turboprop | 92.73 | | 125,000 | 11.6 | |
| | | 96.96 | 1,122,508 | | 108.8 |
| Turbojet | | 320.19 | 805,395 | | 257.9 |
| Rotorcraft | 15.12 | | 731,669 | 11.1 | |
| | | 38.62 | 681,881 | | 26.3 |
| Total | | | 32,176,936 | 408.5 | 393.0 |

1/ Aircraft Registration, Eligibility, Identification and Activity Report, CY 1974

The estimates of fuel consumption for fiscal year 1975 released by the FAA Aviation Forecast were 454 million gallons of aviation gasoline and 405 million gallons of jet fuel. The difference between the survey estimates and the forecast may be attributed to the following:

1) The estimates of fuel consumption in the FAA Aviation Forecast were based on the the fuel producer's reports while the survey estimates were based on pilot information. It is natural that the amount of fuel produced each year would never be equal to the amount consumed.

2) The survey estimates were based on the assumption that the aircraft flying hours for fiscal year 1975 remained the same as those for calendar year 1974. If the actual aircraft flying hours for fiscal year 1975 were higher, the survey estimate for both aviation gasoline and jet fuel consumption could be relatively higher. Under such circumstances, the survey estimate and the forecast estimate would be closer.

## V. ESTIMATE OF AIRCRAFT MILES FLOWN

For any period, the total aircraft miles flown are the summation of estimated miles flown for each aircraft, where

> Estimated miles flown for each aircraft = (flight speed in itinerant operations) x (flight hours in itinerant operations) + (flight speed in local operations) x (flight hours in local operations) for that period.

The survey produced non-stop cross-country flight time and distance figures by aircraft type, and it was thus possible to compute average flight speed in knots for different aircraft types. However, the survey did not produce the information needed to compute aircraft flight speeds in local operations.

Based on the average cross-country flight speeds and on aircraft hours flown as reported to the FAA by aircraft owners, total aircraft miles flown for calendar year 1974 were estimated at 4.321 billion. Details are shown in Table 18. Because aircraft speed in local operations could be relatively slower than that in itinerant operations, and because the aircraft hours flown reported by aircraft owners did not break down into local and itinerant operation categories, the estimate of aircraft miles flown appears to be inconclusive.

TABLE 18

ESTIMATE OF AIRCRAFT MILES FLOWN
CALENDAR YEAR 1974

| Aircraft Type | Average Flight Speed(knots) in Cross-Country Flying | Aircraft Hours Flown CY 1974 (thousand) 1/ | Estimated Aircraft(Nautical) Miles Flown (thousand) |
|---|---|---|---|
| Single-engine Piston 1-3 Places | 93 | 10,088 | 938,184 |
| Single-engine Piston 4 Places and Over | 126 | 13,265 | 1,671,390 |
| Multi-engine Piston | 186 | 5,358 | 996,588 |
| Turboprop | 219 | 1,248 | 273,312 |
| Turbojet | 361 | 805 | 290,605 |
| Rotorcraft | 94 | 1,414 | 132,916 |
| All Other | 60 2/ | 297 | 17,820 |
| Total | | 32,475 | 4,320,815 |

1/ Reported to FAA by aircraf owners. When this report was prepared, the hours flown for CY 1975 were not available.

2/ The flight speed was arbitarily assigned.

## VI. ESTIMATES OF AIRPORT TRAFFIC

In 1975, FAA records showed there were more than 13,000 civil airports. However, only 53%, or about 7,000, were open to public use. Of the 7,000 airports, 414 had an FAA-operated tower, 44 had a non-FAA tower and the rest had no towers. Some non-towered airports were attended dawn to dark; some were attended only at certain periods of the day, and some were not attended at all. The average daily traffic at airports for public use ranged from one or two takeoffs/landings to over 500 operations, or from a few hundred operations a year to over 200,000.

Air traffic activity at airports not for public use is unknown. However, it was assumed that the daily traffic was too light to have significant effects on the overall estimate of daily or annual aircraft operations. In addition, there were difficulties in obtaining access to those airports to conduct a two-day survey. Therefore, the airports for this survey were randomly selected from those which were open for public use.

The survey covered 63 FAA-towered airports, eight non-FAA towered airports and 174 non-towered airports. Projecting the results of two-day survey at those airports to annual numbers produces a total of 137.5 million operations (takeoffs and landings) a year at all active airports. Details are shown in Table 19.

TABLE 19

ESTIMATE OF AIRPORT TRAFFIC

| Airport Classification | Daily Operations | Annual Operations* (Millions) |
|---|---|---|
| FAA-Towered Airports | 213 | 32.3 |
| Non-FAA Towered Airports | 137 | 2.2 |
| Non-Towered Airports (Open to Public Use): | | |
| Runway(s) Paved and Lighted | 66 | 73.4 |
| Runway(s) Paved but Unlighted | 56 | 12.6 |
| Runway(s) Unpaved and Lighted | 18 | 4.1 |
| Runway(s) Unpaved & Unlighted | 10 | 8.4 |
| Non-Towered Airports (Not Open to Public Use): | 2 | 4.5 |
| Annual Total | -- | 137.5 |

*Annual Operations = (Daily Operations)X(365)X(No. of airports)

The procedures used in developing the estimates of airport air traffic are described in Section E of Chapter VIII "Methodology."

Note that for the purpose of developing a national total of airport operations, the daily traffic and the annual total for non-towered airports which were not open to the public were arbitarily assigned. Also note that the air traffic at FAA-towered airports accounts for only 24% of the total, and air traffic at all towered airports is about 25% of total traffic. However, according to the reports of the FAA-operated towers, all FAA-towered airports recorded a total of 47 million operations for fiscal year 1975 - an average of 310 operations per airport per day, or 97 more per day than the estimates developed from the survey information.

General aviation traffic changes along seasonally. For years, annual general aviation activity has been low in the spring, higher in early summer and highest in July or August. Therefore,the average daily traffic developed from the data compiled in August should have been relatively higher than the average daily traffic computed from the annual total traffic. However, a comparison of survey estimates and the annual total recorded by FAA towers at ten randomly selected FAA-operated airports in which air traffic was counted reveals that the daily average for each airport developed from the survey information was generally lower than the average daily total recorded by FAA-operated towers (Table 20). This result may suggest that the sample design as well as the seasonal effect on traffic might not be a major factor of the discrepancy. The discrepancy may be attributed to one or more of the following possibilities:

1. The sample airports for the survey might not be representative.

2. Since the frequency of airport traffic changes seasonally, the data compiled from the two-day survey in August might be biased.

3. The procedures of counting traffic by the survey teams might be biased.

4. The procedures of recording traffic by FAA-operated towers are different from that used in the survey.

However, the causes of the discrepancy cannot be determined with available information, and the problem needs further investigation.

TABLE 20

COMPARISON OF AVERAGE DAILY TRAFFIC
AT TEN AIRPORTS 1/
WITH AN FAA AIR TRAFFIC CONTROl TOWER

| Airport | Daily Traffic Recorded by FAA-operated Towers 2/ | | | Daily Traffic Recorded by CAP Survey Teams 4/ | |
|---|---|---|---|---|---|
| | 8/23/75 Saturday | 8/26/75 Tuesday | Daily 3/ Average | 8/23/75 Saturday | 8/26/75 Tuesday |
| Wichita, Ks. | 526 | 593 | 516 | 326 | 441 |
| Grand Rapids, Mi | 59 | 668 | 393 | 70 5/ | 269 |
| Reading, Pa. | 310 | 306 | 334 | 356 | 166 |
| Redbird, Tx. | 709 | 387 | 438 | 438 | 307 |
| Boise, Idaho | 359 | 533 | 426 | 213 | 374 |
| Herndon, Fla. | 636 | 231 | 512 | 457 | 157 5/ |
| Binghamton,NY. | 156 | 316 | 171 | 63 | 62 |
| Birmingham,Ala. | 458 | 397 | 345 | 348 | 252 |
| Wilmington.Del. | 474 | 400 | 452 | 253 | 175 |
| Milwaukee, Wi. | 338 | 541 | 342 | 259 | 402 |
| Average | 402 | 437 | 397 | 278 | 260 |

1/ The ten airports were randomly selected.
2/ Monthly traffic reports of FAA-operated towers.
3/ Daily average=Annual total/365.
4/ Adjusted to include evening traffic.
5/ IFR weather appeared to contribute to this low traffic figure.

## VII. FINDINGS AND CONCLUSIONS

The survey was not carried out at as many airports as planned. However, it did include 245 airports throughout 50 states, over 7,800 pilot interviews and more than 35,000 aircraft operations. As a result, it produced a comprehensive data base, most of which has been verified as representative in terms of geographical distribution, airport categories, aircraft type and pilot population.

Compared with the data base compiled in the 1972 General Aviation Activity survey and with the agency's other general aviation data bases, the 1975 survey findings seem to be consistent and compatible. They are useful in describing general aviation aircraft and pilot profiles and in examining the relationship between aircraft use, ownership, and pilot certificate, pilot age and activity. Moreover, the survey results made it possible to develop general aviation traffic patterns at airports and estimate total operations as well as fuel consumption.

Aircraft profiles varied by aircraft type whereas pilot profiles differed with pilot certificate. No findings in this respect were contradictory. The survey revealed a slight increase in the average occupants carried per aircraft per flight and in the frequency of pilots filing flight plans. The findings suggest that the public is more interested in general aviation flying, and that general aviation pilots are using the system more often than they did years ago, although the trends have to be verified by other methods.

The traffic count at both towered and non-towered airports is also essential for assessing the impact of general aviation on the national aviation system. However, the survey's traffic count at FAA-towered airports is inconclusive because its estimates of airport traffic are substantially lower than the traffic recorded by the FAA-operated towers. The causes of the discrepancy cannot be determined without further study, perhaps in the form of another traffic count.

The survey results also disclose the need for other information which is essential to investigating general aviation activity, but which the 1975 survey was not designed to collect, i.e., the traffic frequency between towered airports and non-towered airports, between non-towered airports, and the average flight speed by aircraft type in local operations, etc.

In spite of its shortcomings, the survey produced comprehensive information that is valuable in visualizing general aviation activity. Some of the data already has been used by the agency for general

aviation impact studies and by a few state and local authorities for regional airport development planning. Several private companies have contacted the agency requesting the survey data for their own use. Both the benefits and shortcomings of the 1975 survey indicates the need for another one, and the FAA, with the support of the Civil Air Patrol, plans to begin another joint survey effort in the near future.

# VIII. METHODOLOGY

## A. SURVEY DESIGN.

The purpose of the general aviation activity survey was to broaden our knowledge of general aviation's impact on the national aviation system. It was accomplished by compiling general aviation activity and pilot profiles at airports. As a by-product, the FAA's other general aviation data bases can be compared and verified. The survey was designed to be conducted in two parts: Part I consisted of interviewing general aviation pilots on arrival; Part II consisted of recording general aviation aircraft taking off or landing, and recording their identification numbers. Part I and Part II of the survey were performed independently by CAP cadets and officers guided by FAA-prepared survey instructions (Appendix II).

General aviation pilots were interviewed on arrival at airports even though they might have been interviewed at another airport. The questionnaire (Appendix III) for interviewing pilots contained 16 questions, and was designed to be answered completely in less than four minutes. The interviewers were asked to keep a daily head count of those who refused to cooperate because that information was crucial to the evaluation of the validity of the survey data. The questionnaire data were for developing aircraft and pilot activity profiles.

A form (Appendix IV) was designed for recording the N-number of the aircraft taking off from or landing at airports. The daily airport traffic counts were used to estimate air traffic, particularly non-towered airport traffic, and to develop a national total of aircraft operations.

## B. PRETEST.

To evaluate the adequacy of the survey procedures and to determine the possible existence of any pilot difficulties in answering the questionnaire, a test survey was conducted in June 1975 by CAP officers and cadets at three airports in the vicinity of Montgomery, Alabama. The pretest produced information for improving the survey procedures, the format and the contents of the questionnaire, and the traffic count form.

## C. AIRPORT SAMPLING.

One of the most important problems in the survey design was how to select a sufficient number of representative airports.

In the spring of 1975, there were about 13,000 airports on FAA records, including both public and privately owned airports. However, only 7,000, or 53%, were open to the public; about 6,000, or 47%, were for private use. Of the public-use airports, 454 had air traffic control towers, 414 of which were FAA-operated. The rest were non-towered. A breakdown of airports by tower and runway category is shown in Table 21. There

TABLE 21

GENERAL AVIATION AIRPORTS*

Calendar Year 1975

| Airport Classification | Airports Open to Public Use | Airports not Open to Public Use | Total |
|---|---|---|---|
| Total Towered Airports | 454 | 4 | 458 |
| FAA Towered | 414 | - | 414 |
| Non-FAA Towered | 40 | 4 | 44 |
| Total Non-Towered Airports | 6,609 | 6,155 | 12,764 |
| Runway(s) Paved and Lighted | 3,051 | 242 | 3,293 |
| Runway(s) Paved but Unlighted | 617 | 952 | 1,569 |
| Runway(s) Unpaved and Lighted | 636 | 206 | 842 |
| Runway(s) Unpaved & Unlighted | 2,305 | 4,755 | 7,060 |
| Grand Total | 7,063 | 6,159 | 13,222 |

* Seaplane bases not included

were no statistics on non-FAA towered airports or on non-towered airports. Therefore, one of the survey objectives was to estimate traffic volume at non-towered airports, and to develop a national total of takeoffs and landings. Since, on the one hand, an assumption was made that the daily traffic volume at those airports for private use would be too light to have significant effects on the estimate of overall traffic, and on the other hand, there were difficulties in obtaining access to these airports to conduct a daily survey, the term "airport" for the sample design of this survey refers only to the 7,000 airports open to the public. To determine the sample size and select survey airports, the following criteria were weighed in the selection of airports in each state:

1. Towered airports in a state as a percent of total towered airports in the nation.

2. Towered airports as a percent of total airports in a state.

3. Non-towered airports in a state as a percent of total non-towered airports in the nation.

4. Non-towered airports as a percent of total airports in each state.

5. Airports with paved and lighted runways as a percent of total airports.

6. Airports with paved and lighted runways as a percent of total airports in each state.

7. Operations at towered airports in a state as a percent of total towered airport operations.

8. Selection of at least one towered airport and one non-towered in each state, to insure adequate geographical distribution of sampled airports.

9. Availability of CAP cadet squadrons for the survey.

A total of 349 airports in 50 states and Puerto Rico were randomly selected. If an airport was randomly selected for the survey, but was too far from the closest available CAP squadron, another airport was randomly selected.

Because most CAP cadets are students, the survey had to be conducted before the school reopened in September. To balance the weekend and weekday traffic, it took place on Saturday, August 23rd and Tuesday, August 26th, 1975, beginning at dawn and continuing until dark.

## D. FINAL SURVEY AND DATA RELIABILITY

The nationwide two-day survey took place as scheduled. Due to various reasons, such as sickness, some early school openings, weather, transportation problems, and contingency assignments, etc., the survey was was actually conducted at 245 airports in 50 states and Puerto Rico. At some airports there was only a one-day survey.

Of the 245 airports, 63 had FAA towers, eight had a non-FAA operated tower and 174 had no tower. Table 22 shows the number of surveyed airports by FAA region. Table 23 shows the number of survey days in each region. In terms of geographical distribution and airport category, the sample appeared to be representative and adequate for analytical purposes.

TABLE 22
NUMBER OF SURVEY AIRPORTS
BY FAA REGION

| FAA Region | NUMBER OF SURVEYED AIRPORTS | | | |
|---|---|---|---|---|
| | Airport(s) with an FAA Tower | Airport(s) with Non-FAA Tower | Airport(s) without a Tower | Total |
| Alaska | 2 | 0 | 3 | 5 |
| Central | 6 | 1 | 17 | 24 |
| Eastern | 8 | 1 | 30 | 39 |
| Great Lakes | 11 | 1 | 36 | 48 |
| New England | 6 | 0 | 13 | 19 |
| Northwest | 3 | 0 | 10 | 13 |
| Southern | 14 | 1 | 28 | 43 |
| Rocky Mountain | 4 | 1 | 13 | 18 |
| Western | 2 | 1 | 8 | 11 |
| Southwest | 7 | 2 | 15 | 24 |
| Pacific | 0 | 0 | 1 | 1 |
| TOTAL | 63 | 8 | 174 | 245 |

TABLE 23
NUMBER OF DAYS OF THE SURVEY
BY FAA REGION

| FAA Region | NUMBER OF SURVEYED AIRPORTS | | | |
|---|---|---|---|---|
| | Airport(s) with an FAA Tower | Airport(s) with Non-FAA Tower | Airport(s) without a Tower | Total |
| Alaska | 3 | 0 | 3 | 6 |
| Central | 10 | 1 | 26 | 37 |
| Eastern | 15 | 2 | 47 | 64 |
| Great Lakes | 20 | 2 | 55 | 77 |
| New England | 11 | 0 | 20 | 31 |
| Northwest | 6 | 0 | 13 | 19 |
| Southern | 25 | 2 | 61 | 88 |
| Rocky Mountain | 7 | 1 | 18 | 26 |
| Western | 3 | 2 | 14 | 19 |
| Southwest | 11 | 4 | 21 | 36 |
| Pacific | 0 | 0 | 2 | 2 |
| TOTAL | 111 | 14 | 280 | 405 |

During the survey, over 35,500 takeoffs/landings were recorded. For various reasons, not every survey team started or ended the survey in accordance with the time schedule. In addition to the traffic count, 7,815 pilots were interviewed, 631 pilots, or 8% of the total, declined to respond because of "no time," and only a few refused to cooperate. Since only 8% of the pilots interviewed declined to provide information, the number of "non-respondents" could be considered too small to have any significant effect on overall statistics.

Table 24 shows a comparison of the ratio of pilots interviewed with the active pilot population by FAA region. The surveyed pilots accounted for about 1% of the total pilot population. Except in the Western Region (California, Nevada, and Arizonza), the percentage of surveyed pilots in each region was approximately in proportion to that of pilot population for that region.

TABLE 24

NUMBER OF PILOTS INTERVIEWED vs ACTIVE PILOT POPULATION

| FAA Region | Pilots Interviewed | | Active Pilot Population | |
|---|---|---|---|---|
| | No. | Percent | No. | Percent |
| Alaska | 94 | 1.3 | 8,474 | 1.2 |
| Central | 688 | 9.6 | 47,192 | 6.5 |
| Eastern | 1,355 | 18.9 | 103,915 | 14.4 |
| Great Lakes | 1,104 | 15.4 | 133,201 | 18.4 |
| New England | 536 | 7.5 | 31,985 | 4.4 |
| Northwest | 480 | 6.7 | 37,485 | 5.2 |
| Southern | 1,382 | 19.2 | 111,601 | 15.4 |
| Rocky Mountain | 384 | 5.3 | 34,726 | 4.8 |
| | 451 | 6.3 | 125,624 | 17.3 |
| Southwest | 686 | 9.6 | 87,207 | 12.0 |
| Pacific | 12 | 0.2 | 2,956 | 0.4 |
| Total | 7,172 | 100.0 | 724,366 | 100.0 |

In addition to possible sampling errors, the accuracy of the survey statistics is subject to non-sampling errors. Therefore, during data processing both manual and machine edits were used to minimize errors resulting from definitional difficulties, differences in the interpretation of the questionnaire, inability to obtain information about all cases in the

sample as well as from data recording or coding, etc. Furthermore, statistical methods were applied to test the data consistency and validity. The data compiled from interviewing the pilots, analyzed by aircraft type, pilot certificate, purpose of flying and pilot age, was used for developing aircraft and pilot activity profiles. To make the data compatible with that from other sources, the classification of aircraft type and aircraft use categories used in the survey report is identical to those used in many publications of the Agency. In general, most of the data has been verified as consistent, compatible and adequate for statistical inference. However, the survey traffic counts at FAA-operated towered airports are significantly different from those recorded by FAA air traffic controllers. Details of this aspect of the survey are discussed in Section E below.

## E. ESTIMATE OF AIRPORT TRAFFIC

Every fiscal and calendar year the FAA publishes a 12-month report on air traffic activities recorded by the agency-operated air traffic facilities. 1/ However, there is no reliable air traffic data concerning airports with a non-FAA tower, or with no tower at all, although in a few cases the management of those airports had reported to the agency their estimates of airport air traffic. Therefore, estimating the daily operations at airports, particularly at non-towered airports, emerged as one of the survey's primary objectives.

The survey recorded aircraft takeoffs and landings at 63 FAA-operated airports, eight non-FAA towered airports and 174 non-towered airports in all 50 states and Puerto Rico. No airports which were not for public use were included.

The daily traffic differed significantly from one airport to another. Daily operations at FAA-towered airports ranged from 22 to over 460; at non-FAA towered airports from 37 to 420; and at non-towered airports from zero to 462. Conceivably, weather can have an overwhelming effect on air traffic, particularly at non-towered airports. However, the overall effect of the weather conditions in this two-day survey on estimates of national aircraft operations could not be determined.

Another factor which affects estimating annual air traffic is the difference between weekend and weekday traffic. On a daily basis, weekend traffic was usually heavier. To minimize the bias due to sample design and sampling procedures, the two-day survey was taken on Saturday and Tuesday and the estimates of airport traffic were broken down into the following categories:

(1) FAA-towered airports.

(2) Non-FAA towered airports.

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1/ FAA Air Traffic Activity, Annual Edition.

(3) Non-towered airports with paved and lighted runway(s).

(4) Non-towered with paved but unlighted runway(s).

(5) Non-towered with unpaved and lighted runway(s).

(6) Non-towered with unpaved and unlighted runway(s).

Since the survey at different airports did not start and end at the same time schedule, the daily average was estimated on an hourly basis. Therefore, the average daily traffic for any airport category is a summation of the average hourly traffic for that category. The average hourly traffic is a summation of the traffic count recorded at that hour at airports of that category(in which the traffic count was conducted) divided by the number of airports. The computation procedures can be simplified as follows:

Let "S" be number of traffic counts recorded at any hour on Saturday.
"T" be the number of traffic counts recorded at any hour on Tuesday.
"N" be the number of airports surveyed at any hour of the day.
"j" be any hour of the day between 0600 through 2100
"Y" be the hourly average traffic at airport of any airport category.
"D" be the average daily operations,of any airport category, such that

$$Yj = [(2(\sum_{i=1}^{N} Si))/N) + (5(\sum_{i=1}^{N} Ti)/N)]/7$$

Where "2" and "5" are weights on two-day weekend traffic and five-day weekday traffic, and that

$$D = \sum_{j=1}^{15} Yj$$

As a result, the hourly and daily average traffic for FAA-towered airports, for non-FAA towered airports and for non-towered airports are developed as shown in Tables 25 and 26.

Note that the weighted daily average of takeoffs and landings did not include traffic that occurred before 6 a.m. and after 9 p.m. Since aircraft may not takeoff or land after dark at unlighted airports, it is assumed there was no traffic at night at those unlighted airports. For those lighted airports, it is assumed that the night-time traffic was about 7% of daytime traffic at FAA-towered airports,

TABLE 25

AIRPORT TRAFFIC COUNT
AT AIRPORTS WITH A TOWER

| Hour | Average Number of Takeoffs and Landings | |
|---|---|---|
| | Airports with an FAA Tower | Airports with a Non-FAA Tower |
| 0600 - 0659 | 6-7 | 6-7 |
| 0700 - 0759 | 6-7 | 8-9 |
| 0800 - 0859 | 11-12 | 13-14 |
| 0900 - 0959 | 15-16 | 10-11 |
| 1000 - 1059 | 14-15 | 12-13 |
| 1100 - 1159 | 17-18 | 11-12 |
| 1200 - 1259 | 15-16 | 9-10 |
| 1300 - 1359 | 17-18 | 8-9 |
| 1400 - 1459 | 17-18 | 6-7 |
| 1500 - 1559 | 16-17 | 8-9 |
| 1600 - 1659 | 14-15 | 6-7 |
| 1700 - 1759 | 14-15 | 9-10 |
| 1800 - 1859 | 14-15 | 9-10 |
| 1900 - 1959 | 13-14 | 6-7 |
| 2000 - 2059 | 7-8 | 3-4 |
| Daily Average | 199 | 130 |

5% at non-FAA towered airports, and 3% at non-towered airports with lighted runway. Therefore, the average daily operations for different airport categories are adjusted as follows:

1. FAA-towered airports - 213
2. Non-FAA towered airports - 137
3. Non-towered airports with paved and lighted runway - 66
4. Non-towered airports with paved and unlighted runway - 56
5. Non-towered airports with unpaved and lighted runway - 18
6. Non-towered airports with paved and unlighted runway - 10

TABLE 26

AIRPORT TRAFFIC COUNT
AT AIRPORTS WITHOUT A TOWER

| Hour | Average Number of Takeoffs and Landings | | | |
|---|---|---|---|---|
| | Airports with Paved/lighted Runway(s) | Airports with Paved but not Lighted Runway(s) | Airports with Unpaved/Lighted Runway(s) | Airports with Unpaved/not Lighted Runway(s) |
| 0600-0659 | 1-2 | 1-2 | 0-1 | 0 |
| 0700-0759 | 1-2 | 1-2 | 0-1 | 0-1 |
| 0800-0859 | 2-3 | 3-4 | 0-1 | 0-1 |
| 0900-0959 | 4-5 | 6-7 | 1-2 | 1-2 |
| 1000-1059 | 6-7 | 7-8 | 1-2 | 2-3 |
| 1100-1159 | 6-7 | 6-7 | 1-2 | 1-2 |
| 1200-1259 | 5-6 | 5-6 | 1-2 | 1-2 |
| 1300-1359 | 5-6 | 5-6 | 1-2 | 1-2 |
| 1400-1459 | 6-7 | 5-6 | 1-2 | 2-3 |
| 1500-1559 | 6-7 | 4-5 | 2-3 | 1-2 |
| 1600-1659 | 6-7 | 3-4 | 1-2 | 0-1 |
| 1700-1759 | 5-6 | 4-5 | 0-1 | 0-1 |
| 1800-1859 | 5-6 | 3-4 | 1-2 | 0-1 |
| 1900-1959 | 2-3 | 1-2 | 0-1 | 0-1 |
| 2000-2059 | 1-2 | 0-1 | 0-1 | 0 |
| Daily Average | 64 | 56 | 17 | 10 |

Little information concerning airports not for public use was available. According to the estimates of air traffic of public-use airports reported to the agency by their airport managements, many such airports recorded no more than an average of one takeoff and one landing a day. Assuming that the average air traffic for those airports not for public use averaged also one takeoff and one landing per airport per day, the annual aircraft operations at non-towered airports as well as national total of aircraft takeoffs and landings are estimated as shown in Table 27:

TABLE 27

ESTIMATE OF AIRPORT TRAFFIC
Calendar Year 1975

| Airport Classification | Estimated Daily Operations | Number of Airports | Annual Total Operations (million) |
|---|---|---|---|
| FAA-Towered Airports | 213 | 414 | 32.3 |
| Non-FAA Towered Airports | 137 | 44 | 2.2 |
| Non-Towered Airports for Public Use: | | | |
| Runway(s) Paved and Lighted | 66 | 3,051 | 73.4 |
| Runway(s) Paved but Unlighted | 56 | 617 | 12.6 |
| Runway(s) Unpaved and Lighted | 18 | 636 | 4.1 |
| Runway(s) Unpaved & Unlighted | 10 | 2,305 | 8.4 |
| Non-Towered Airports not for Public Use | 2 | 6,155 | 4.5 |
| Grand Total | | 13,222 | 137.5 |

APPENDIX I - TABLES 28-35

TABLE 28

SOURCE OF AIRCRAFT BY PILOT AGE

| Pilot Age Group | SOURCE OF AIRCRAFT | | | | | | | | Total |
|---|---|---|---|---|---|---|---|---|---|
| | Rent | | Flying Club | | Owner | | Other 1/ | | |
| | No. | Percent | No. | Percent | No. | Percent | No. | Percent | |
| Less than 16 | 6 | 60.0 | 1 | 10.0 | 3 | 30.0 | 0 | 0 | 10 |
| 16 - 19 | 138 | 61.6 | 25 | 11.2 | 34 | 15.2 | 27 | 12.0 | 224 |
| 20 - 24 | 350 | 48.1 | 83 | 11.4 | 169 | 23.3 | 125 | 17.2 | 727 |
| 25 - 29 | 377 | 37.1 | 97 | 9.5 | 296 | 29.1 | 246 | 24.2 | 1,016 |
| 30 - 34 | 328 | 29.1 | 79 | 7.0 | 460 | 40.9 | 259 | 23.0 | 1,126 |
| 35 - 39 | 259 | 27.3 | 56 | 5.9 | 462 | 48.7 | 171 | 18.0 | 948 |
| 40 - 44 | 185 | 19.7 | 71 | 7.6 | 527 | 56.2 | 154 | 16.4 | 937 |
| 45 - 49 | 118 | 15.0 | 61 | 7.7 | 529 | 67.0 | 81 | 10.3 | 789 |
| 50 - 54 | 79 | 10.9 | 41 | 5.7 | 491 | 67.7 | 114 | 15.7 | 725 |
| 55 - 59 | 35 | 10.6 | 16 | 4.9 | 239 | 72.6 | 39 | 11.9 | 329 |
| 60 - Over | 14 | 8.3 | 10 | 6.0 | 134 | 79.8 | 10 | 6.0 | 168 |
| Overall | 1,889 | 27.0 | 540 | 7.7 | 3,344 | 47.8 | 1,226 | 17.5 | 6,999 |

1/ Aircraft owned by companies or Institutions including Governments

TABLE 29

SOURCE OF AIRCRAFT BY PILOT CERTIFICATE

| Pilot Certificate | SOURCE OF AIRCRAFT | | | | | | | | Total | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Rent | | Flying Club | | Owner | | Other 1/ | | | |
| | No. | Percent | No. | Percent | No. | Percent | No. | Percent | No. | Percent |
| Student | 603 | 65.8 | 117 | 12.8 | 150 | 16.4 | 46 | 5.0 | 916 | 100.0 |
| Private | 744 | 26.5 | 262 | 9.3 | 1,658 | 59.0 | 144 | 5.1 | 2,808 | 100.0 |
| Commercial | 489 | 19.2 | 143 | 5.6 | 1,214 | 47.6 | 707 | 27.7 | 2,553 | 100.0 |
| Airline Transport | 48 | 6.8 | 18 | 2.5 | 329 | 46.4 | 314 | 44.3 | 709 | 100.0 |
| Rotorcraft(only) | 1 | 9.1 | 0 | 0 | 2 | 18.2 | 8 | 72.7 | 11 | 100.0 |
| Glider(Only) | 3 | 60.0 | 2 | 40.0 | 0 | 0 | 0 | 0 | 5 | 100.0 |
| Balloon(Only) | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 100.0 |
| A Certificate of Foreign Country | 0 | 0 | 0 | 0 | 2 | 100.0 | 0 | 0 | 2 | 100.0 |
| Overall | 1,888 | 27.0 | 542 | 7.7 | 3,356 | 47.9 | 1,219 | 17.4 | 7,005 | 100.0 |

1/ Aircraft owned by Companies or Institutions including Governments

TABLE 30

PURPOSE OF FLYING vs. PILOT CERTIFICATE (Part 1)

| Purpose of Flying | Student | Private | Commercial | Airline Transport | Rotorcraft Only | Glider Only |
|---|---|---|---|---|---|---|
| Personal | 32.7 | 66.2 | 31.7 | 10.7 | 8.3 | 20.0 |
| Business | 3.0 | 20.3 | 24.8 | 24.4 | -- | -- |
| Executive | -- | 0.4 | 6.4 | 35.4 | 16.7 | -- |
| Commuter Air Carrier | -- | -- | 3.0 | 6.7 | -- | -- |
| Air Taxi | -- | -- | 5.6 | 8.0 | 16.7 | -- |
| Instructional | 61.5 | 9.7 | 18.6 | 9.2 | 8.3 | 80.0 |
| Aerial Application | -- | 0.4 | 2.2 | 0.8 | 16.7 | -- |
| Industrial/Special | 0.9 | 0.4 | 2.6 | 0.4 | 16.7 | -- |
| Other(research/development demonstration, sport parachuting etc.) | 1.9 | 2.6 | 5.1 | 4.4 | 16.6 | -- |
| TOTAL | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |

TABLE 31

PURPOSE OF FLYING vs. PILOT CERTIFICATE(Part 2)

| Purpose of Flying | Student | Private | Commercial | Airline Transport | Rotorcraft Only | Glider Only | Balloon | Foreign | Total |
|---|---|---|---|---|---|---|---|---|---|
| Personal | 9.8 | 61.1 | 26.5 | 2.5 | 0.0 | 0 | 0 | 0 | 99.9 |
| Business | 2.0 | 40.6 | 45.0 | 12.4 | - | - | - | - | 100.0 |
| Executive | 0.0 | 2.8 | 37.8 | 58.8 | 0.5 | - | - | - | 99.9 |
| Commuter Air Carrier | 0.8 | 3.1 | 58.5 | 36.9 | - | - | - | 0.8 | 100.0 |
| Air Taxi | 1.0 | 1.0 | 69.5 | 27.5 | 1.0 | - | - | - | 100.0 |
| Instructional | 40.7 | 19.8 | 34.4 | 4.7 | 0.1 | 0.3 | - | - | 100.0 |
| Aerial Application | 0 | 7.1 | 81.4 | 8.6 | 2.9 | - | - | - | 100.0 |
| Industrial/Special | 8.6 | 12.9 | 73.1 | 3.2 | 2.2 | - | - | - | 100.0 |
| Other(research/development, demonstration, sport parachuting etc.) | 5.5 | 29.0 | 51.8 | 12.5 | 0.8 | - | 0.4 | - | 100.0 |

TABLE 32

TYPE OF OPERATIONS AND PILOT CERTIFICATE

| Pilot Certificate | TYPE OF FLYING | | | | | |
|---|---|---|---|---|---|---|
| | Local | | Itinerant | | Total | |
| | No. | Percent | No. | Percent | No. | Percent |
| Student | 632 | 68.5 | 291 | 31.5 | 923 | 100.0 |
| Private | 1,386 | 48.7 | 1,462 | 51.3 | 2,848 | 100.0 |
| Commercial | 1,070 | 41.4 | 1,512 | 58.6 | 2,582 | 100.0 |
| Airline Transport | 135 | 18.7 | 587 | 81.3 | 722 | 100.0 |
| Rotorcraft(Only) | 5 | 41.7 | 7 | 58.3 | 12 | 100.0 |
| Glider(Only) | 5 | 100.0 | 0 | 0 | 5 | 100.0 |
| Balloon(Only) | 1 | 100.0 | 0 | 0 | 1 | 100.0 |
| A Certificate of Foreign Country | 0 | 0 | 2 | 100.0 | 2 | 100.0 |
| Total | 3,234 | 45.6 | 3,861 | 54.4 | 7,095 | 100.0 |

TABLE 33

AVERAGE TIME, NUMBER OF OPERATIONS AND OCCUPANTS ON LOCAL FLIGHTS BY PILOT CERTIFICATE

| Pilot Certificate | Flight Time (minutes) | No. of Landings | Occupants |
|---|---|---|---|
| Student | 61 | 3.9 | 1.7 |
| Private | 53 | 2.9 | 2.0 |
| Commercial | 60 | 2.6 | 2.3 |
| Airline Transport | 57 | 2.2 | 2.2 |
| Rotorcraft(only) | 95 | 2.5 | 2.0 |
| Glider(only) | 18 | 1.0 | 1.2 |

TABLE 34

AVERAGE TIME, DISTANCE AND OCCUPANTS
ON ITINERANT FLIGHTS BY PILOT CERTIFICATE

| Pilot Certificate | Flight Time (minutes) | Flight Distance (nautical Miles) | Occupants |
|---|---|---|---|
| Student | 56 | 94 | 1.5 |
| Private | 81 | 171 | 2.9 |
| Commercial | 77 | 185 | 2.9 |
| Airline Transport | 72 | 272 | 4.5 |
| Rotorcraft(only) | 81 | 146 | 1.3 |

TABLE 35

CURRENCY OF INSTRUMENT RATING

BY PILOT CERTIFICATE

| Pilot Certificate | INSTRUMENT RATING | | | | Total | |
|---|---|---|---|---|---|---|
| | Current | | Not Current | | | |
| | Number | Percent | Number | Percent | Number | Percent |
| Student | 0 | 0 | 894 | 100.0 | 894 | 100.0 |
| Private | 500 | 17.8 | 2,308 | 82.2 | 2,808 | 100.0 |
| Commercial | 1,991 | 78.0 | 562 | 22.0 | 2,553 | 100.0 |
| Airline Transport | 694 | 98.6 | 10 | 1.4 | 704 | 100.0 |
| Rotorcraft(only) | 6 | 60.0 | 4 | 40.0 | 10 | 100.0 |
| Glider(Only) | 0 | 0 | 4 | 100.0 | 4 | 100.0 |
| A Certificate of Foreign Country | 1 | 50.0 | 1 | 50.0 | 2 | 100.0 |
| Total | 3,192 | 45.9 | 3,783 | 54.1 | 6,975 | 100.0 |

# APPENDIX II

# GENERAL AVIATION ACTIVITY SURVEY INSTRUCTIONS

**DEPARTMENT OF TRANSPORTATION**
**FEDERAL AVIATION ADMINISTRATION**

OMB No. 04-S75030
Approval Expires 12/31/75

# GENERAL AVIATION ACTIVITY SURVEY INSTRUCTIONS

## I. INTRODUCTION.

The purpose of the general aviation activity survey is to broaden the base of knowledge concerning the impact of general aviation on the national aviation system. This will be accomplished by compiling general aviation activity and pilot profiles at airports. As a by-product, the FAA aircraft data base can be verified. General aviation includes all operations that are not performed by a certificated air carrier (all the airlines - FAR Part 121 and Part 127 operators) or a military aircraft. Therefore, air carrier and military aircraft operations are excluded from the survey. The survey is designed to be conducted in two parts: Part I is to interview general aviation pilots; Part II is to record the identification number of general aviation aircraft taking off or landing at airports. The Part I and Part II surveys are to be performed independently.

## II. INTERVIEW PROCEDURES (FAA Form No. 1800-39 OT (6-75)).

Interview every general aviation pilot on arrival even though he may have been interviewed at another airport. The questionnaire for interviewing pilots is designed to be answered completely in less than four minutes. Upon their arrival, ask them to fill out the questionnaire and return it to you before they leave the airport. Check to be sure every question is answered properly. Do not detain pilots for too long in answering the questions or create any inconvenience to their activities. If a pilot expresses that he does not have time to fill out the questionnaire, ask him the questions in the questionnaire; if a pilot refuses to cooperate, politely try to persuade him to change his mind. However, keep a daily head count to those who refuse to cooperate and report it to your team leader at the end of the day. This information is crucial to the evaluation of the validity of the survey data. Due to the paper shortage, the questionnaire has been printed on both sides; each side can be used for interviewing one pilot. .

While all questions are self-explanatory, the following terms are defined:

A. Purpose of Flight (Question No. 5)

1. Personal--Any use of an aircraft for personal purposes not associated with business or profession, and not for hire. This includes maintenance of pilot proficiency.

2. Business--Any use of an aircraft not for compensation or hire by an individual for the purposes of transportation required by a business in which he is engaged.

3 Executive--Any use of an aircraft by a corporation, company or other organization for the purposes of transporting its employees and/or property not for compensation or hire and employing professional pilots for the operation of the aircraft. This includes maintenance of proficiency of the pilots employed by the company.

4. Commuter Air Carrier--Any aircraft operator which performs, pursuant to published schedules, at least five round trips per week between two or more points, or carries mail. This includes maintenance of pilot proficiency.

5. Air Taxi--Any use of an aircraft by the holder of an air taxi operating certificate which is authorized by that certificate except commuter air carrier. This includes maintenance of pilot proficiency.

6. Instructional--Any use of an aircraft for the purposes of formal flight instruction with or without the flight instructor aboard.

7. Aerial Application--Any use of an aircraft in agriculture to discharge material in flight and to perform activities such as antifrost agitation, agitating fruit trees, chasing birds from crops, checking crops, restocking fish, animal and other wildlife, etc.

8. Industrial/Special--Any use of an aircraft for specialized work allied with industrial activities; excluding transportation and aerial application. (Example: pipe line patrol; survey; advertising, photography; hoist, etc.)

9. Other-- Research and development, demonstration, parachuting, sport, etc.

B. Type of Operation (Question No. 7)

1. Local Operations--Local operations are those performed by aircraft which:

   (a) Operate in the local traffic pattern or within sight of the airport.

   (b) Are arriving from flight in local practice area located within a 20-mile radius of the airport.

   (c) Execute simulated instrument approaches or low passes at the airport.

2. Itinerant (cross country) Operations--Any operation which is not local.

   Note: There exists some relationship between the purpose of flying and the type of operation. If the purpose of flying is either business, executive, commuter air carrier, air taxi, aerial application or industrial/special, generally speaking, the flight should be an itinerant (cross country) even though the aircraft performing such operations take off and land at the same airport. However, there is an exception that an executive, a commuter air carrier or an air taxi flight could be "local" if it is for the maintenance of pilot proficiency and meets the requirements of either 1(a), 1(b), or 1(c) of a local operation.

III. OBSERVATION PROCEDURES (FAA Form No. 1800-40 OT (6-75))

Record the N-number of the aircraft taking off from or landing at the airports. The survey team for observing such activities should be stationed at a safe area close to the runway(s) where every aircraft can be observed and recorded.

Complete the survey form as follows:

Items 1, 3, 4 and 5 are self-explanatory.

Item 2 "Airport code" is reserved for the FAA only.

Item 6 "Weather" - enter the weather condition at airport twice a day, one in the morning and one in the afternoon.

Item 7 "Aircraft Identification Number" - enter the aircraft N-number or any visible identification number if it is a foreign aircraft. Make sure the alphabetic suffixes are recorded. Make alphabetic character distinct from number.

Item 8 "Aircraft type" - enter "1" for single-engine piston 1-3 places,
"2" for single-engine piston 4 places and over
"3" for multi-engine piston,
"4" for turboprop,
"5" for turbojet,
"6" for rotorcraft,
"7" for glider, and
"8" for balloon

Item 9 "Takeoff/landing"--Enter "T" for takeoff and "L" for landing. Count 'touch-and-go' as one landing and one takeoff.

Item 10 "Time"--The observation should start at dawn and continue until dark. Write the local time of the day that the takeoff or landing took place, using the 24-hour clock in this column.

Number the form continuously during the day. Start a new form for each day.

## IV. LEADERS OF THE SURVEY TEAMS

At the end of each day, collect from the interviewers all completed questionnaires and the head count for those pilots who refused to cooperate, and the completed forms from the observers. Make sure that the forms are numbered properly. Keep a record of the total number of completed questionnaires and survey forms, and the total head count for each day.

At the end of the survey period, return all completed questionnaires and all completed forms and the information relating to those who refused to participate in the survey program in the envelopes provided to:

Federal Aviation Administration
Information & Statistics Division, AMS-200
800 Independence Avenue, SW
Washington, D. C. 20591

APPENDIX III

GENERAL AVIATION ACTIVITY SURVEY QUESTIONNAIRE

APPENDIX IV

GENERAL AVIATION ACTIVITY SURVEY AIRPORT
TRAFFIC COUNT FORM

# Appendix III

**DEPARTMENT OF TRANSPORTATION**
**FEDERAL AVIATION ADMINISTRATION**

OMB No. 04-S75030
Approval Expires 12/31/75

## GENERAL AVIATION ACTIVITY SURVEY
Questionnaire

(This questionnaire survey is designed to interview pilot-in-command to collect information about general aviation traffic as well as pilot flight profiles for the use of FAA and the general public. THE IDENTITY OF THOSE PILOTS PARTICIPATING IN THE SURVEY IS NOT REQUIRED. However, the N-numbers of the aircraft which take off or land at the airport are recorded. The data so obtained will be used for statistical purposes.)

INSTRUCTIONS FOR ANSWERING THE QUESTIONS
A. Cross ☒ to indicate the answer or fill in as indicated.
B. Best estimate is acceptable if there is not an exact answer.

Airport Name:_____ |_|_|_|_|_|_|_|_|_|_| State:_____ |_|_| Date:__/__/75
cc 1-10 FAA USE ONLY cc 11, 12 cc 13-18

(1) What type of aircraft did you use in your flight?
cc-20
1. ☐ Single-engine piston
2. ☐ Multi-engine piston
3. ☐ Turboprop
4. ☐ Turbojet
5. ☐ Rotorcraft
6. ☐ Glider
7. ☐ Balloon

(2) How did you obtain the aircraft for that flight?
cc-22
1. ☐ Rent
2. ☐ Flying club
3. ☐ Owner(part or sole)
4. ☐ Other

(3) How many seats (including pilot seat) are available in that aircraft?
No.|_|_|_| seat(s)
cc 24 25 26

(4) How many seats (including pilot seat) were occupied during the flight?
No.|_|_|_| seat(s)
cc 28 29 30

(5) What was the purpose of that flight?
cc-32
1. ☐ Personal (individual flying for personal non-business reasons)
2. ☐ Business (individual flying for business reasons)
3. ☐ Executive (corporate flying by professional pilots)
4. ☐ Commuter air carrier (air taxi with 5 or more weekly scheduled services)
5. ☐ Air Taxi (with less than 5 scheduled weekly service and charter)
6. ☐ Instructional (all training flight excluding proficiency)
7. ☐ Aerial application (agriculture, health, forestry)
8. ☐ Industrial/special (patrol, survey, photo hoist, etc.)
9. ☐ Other (research and development, demonstration and sport parachuting, etc.)

(6) Did you file a flight plan?
cc-34
1. ☐ None
2. ☐ VFR
3. ☐ IFR

(7) Was that flight a local or itinerant (cross country) operation?
cc-36
1. ☐ Local
2. ☐ Itinerant (cross country)

(If the answer is local, skip question 9, if the answer is itinerant (cross country), skip question 8.)

(8) If it was a local flight,
(a) How many landings were performed?
No.|_|_| landings
cc 38 39

(b) What was the total flight time of the local flight?
No.|_|_| hour(s) and |_|_| minutes
cc 41 42 43 44

(9) If it was an itinerant (cross country) flight,
(a) What is the air distance between the airport of departure and airport of arrival for the last leg?
No.|_|_|_|_| nautical miles
cc 46 47 48 49

(b) What was the flight time of the last leg?
No.|_|_| hour(s) and |_|_| minutes
cc 51 52 53 54

(10) What kind of fuel did you use for your aircraft during that flight?
cc-56
1. ☐ Aviation gasoline
2. ☐ Jet fuel

(11) What is the average fuel consumption (gallons per hour) for this aircraft?
No.|_|_|_|_| gallons per hour
cc 58 59 60 61

(12) What pilot certificate do you hold?
cc-63
1. ☐ Student
2. ☐ Private
3. ☐ Commercial
4. ☐ Airline Transport
5. ☐ Helicopter(only)
6. ☐ Glider(only)
7. ☐ Balloon(only)
8. ☐ A certificate of foreign country

(13) Do you hold current instrument rating?
cc-65
1. ☐ Yes
2. ☐ No

(14) What is your age group?
cc-67,68
1. ☐ Less than 16
2. ☐ 16-19
3. ☐ 20-24
4. ☐ 25-29
5. ☐ 30-34
6. ☐ 35-39
7. ☐ 40-44
8. ☐ 45-49
9. ☐ 50-54
10. ☐ 55-59
11. ☐ 60 or Over

(15) What was your total flight time in 1974?
No.|_|_|_|_| hours
cc 70 71 72 73

(16) How often did you fly during the last twelve months?
cc-75
1. ☐ At least once a week
2. ☐ At least once every other week
3. ☐ At least once every month
4. ☐ At least once every other month
5. ☐ At least once every three months
6. ☐ At least once every six months
7. ☐ At least once every year
8. ☐ Not at all

FAA Form 1800-39 OT(6-75) Use expires December 31, 1975

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Date: / / 75
5,6 7,8 9,10

**DEPARTMENT OF TRANSPORTATION**
**FEDERAL AVIATION ADMINISTRATION**

OMB No. 04-S75030
Approval Expires 12/31/75

## GENERAL AVIATION ACTIVITY SURVEY
### Airport Traffic Count

1. Airport Name:_____ 2. Airport Code:_____
cc 12-21 (FAA USE ONLY)

3. Location--Nearest City:_____ County:_____ State:_____
cc 23,24

4. Airport Tower: (1) ☐ FAA Tower (2) ☐ Non-FAA Tower (3) ☐ No Tower
cc 26

5. Runway(s): (1) ☐ Paved cc 28 (2) ☐ Unpaved cc 28 (3) ☐ Lighted cc 29 (4) ☐ Not Lighted cc 29

6. Weather:
(a) 0900--1.☐Fair 2.☐Cloudy 3.☐Rain 4.☐Haze 5.☐Fog 6.☐Cross wind
cc 30
(b) 1500--1.☐Fair 2.☐Cloudy 3.☐Rain 4.☐Haze 5.☐Fog 6.☐Cross wind
cc 32

| 7. Aircraft Identification Number | 8. A/C a/ Type | 9. T/L b/ | 10. Time (Local) c/ | 7. Aircraft Identification Number | 8. A/C a/ Type | 9. T/L b/ | 10. Time (Local) c/ |
|---|---|---|---|---|---|---|---|
| 33 34 35 36 37 38 | 40 | 42 | 44 45 46 47 | 33 34 35 36 37 38 | 40 | 42 | 44 45 46 47 |
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Legends:
a/ 1 = Single-engine piston 1-3 places; 2 = Single-engine piston 4 places/over;
3 = Multi-engine piston; 4 = Turboprop; 5 = Turbojet;
6 = Rotorcraft; 7 = Glider; 8 = Balloon.
b/ T = Takeoff; L = Landing (Count "touch-and-go" as one landing and one takeoff)
c/ Use 24 hour clock to the nearest minute: 2:30PM = 1430.

*U.S. GOVERNMENT PRINTING OFFICE:1976 721-539/63 1-3