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**Federal Aviation
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General Aviation Pilot and Aircraft Activity Survey

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16. Abstract

This report provides a summary and analysis of the data collected in the 1981 General Aviation Pilot and Aircraft Activity Survey. The survey was conducted at a random sample of airports across the nation throughout the months of July, August, and September, 1981 by the Federal Aviation Administration with the assistance of the Civil Air Patrol.

The survey data provide information regarding the magnitude and characteristics of general aviation including: type and source of information services, trip length in time and distance, pilot age and certification. Estimates are made of total 1981 general aviation operations, fuel consumption and aircraft miles flown.

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PREFACE

This report presents the results of the 1981 General Aviation Pilot and Aircraft Activity Survey. The survey represents one component of the Federal Aviation Administration's (FAA) efforts to investigate, measure and document the characteristics and impacts of general aviation. The survey was sponsored by FAA's Office of Management Systems, Information and Statistics Division. Survey design, sample design, preparation of survey materials and implementation of the survey was performed by the Transportation Systems Center (TSC), Transportation Statistical Analysis Division.

Although the survey was conducted under the auspices of the FAA, the data collection was made possible through the efforts of the Civil Air Patrol (CAP). The Federal Aviation Administration appreciates the time and efforts of Brig. Gen Johnnie Boyd, former National Commander of the CAP, Brig. Gen. H. W. Miller, USAF, former Executive Director of the CAP, and CAP Wing Commanders of all fifty states and Puerto Rico, who coordinated the survey operations, and thousands of CAP squadron commanders, officers and cadets who performed the on-site data collection nationwide. Carolyn Edwards and Shung-Chai Huang of the FAA, under the guidance of Nicholas L. Soldo, Chief of the Information Analysis Branch, Information and Statistics Division, provided valuable assistance in coordinating with the CAP and in sharing their experiences from past surveys.

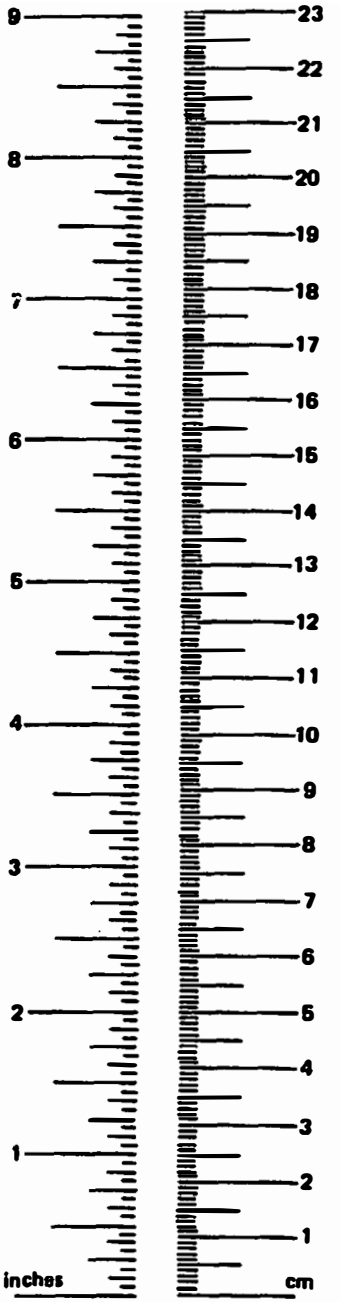
Distribution: ZMS-348F; ZMS-411; FFS-1, 7 (Minimum); CAP

METRIC CONVERSION FACTORS

Approximate Conversions to Metric Measures

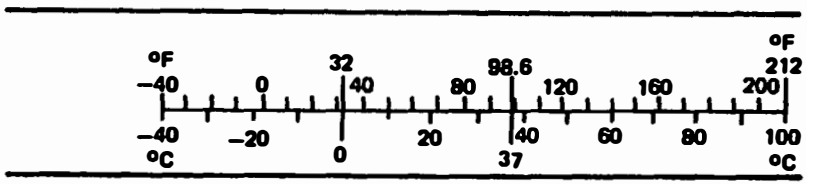
Symbol	When You Know	Multiply by	To Find	Symbol
LENGTH				
in	inches	*2.5	centimeters	cm
ft	feet	30	centimeters	cm
yd	yards	0.9	meters	m
mi	miles	1.6	kilometers	km
AREA				
in^2	square inches	6.5	square centimeters	cm^2
ft^2	square feet	0.09	square meters	m^2
yd^2	square yards	0.8	square meters	m^2
mi^2	square miles	2.6	square kilometers	km^2
	acres	0.4	hectares	ha
MASS (weight)				
oz	ounces	28	grams	g
lb	pounds	0.45	kilograms	kg
	short tons (2000 lb)	0.9	tonnes	t
VOLUME				
tsp	teaspoons	5	milliliters	ml
Tbsp	tablespoons	15	milliliters	ml
fl oz	fluid ounces	30	milliliters	ml
c	cups	0.24	liters	l
pt	pints	0.47	liters	l
qt	quarts	0.95	liters	l
gal	gallons	3.8	liters	l
ft^3	cubic feet	0.03	cubic meters	m^3
yd^3	cubic yards	0.76	cubic meters	m^3
TEMPERATURE (exact)				
°F	Fahrenheit temperature	5/9 (after subtracting 32)	Celsius temperature	°C

*1 in. = 2.54 cm (exactly). For other exact conversions and more detail tables see NBS Misc. Publ. 286, Units of Weight and Measures. Price $2.25 SD Catalog No. C13 10 286.



Approximate Conversions from Metric Measures

Symbol	When You Know	Multiply by	To Find	Symbol
LENGTH				
mm	millimeters	0.04	inches	in
cm	centimeters	0.4	inches	in
m	meters	3.3	feet	ft
m	meters	1.1	yards	yd
km	kilometers	0.6	miles	mi
AREA				
cm^2	square centimeters	0.16	square inches	in^2
m^2	square meters	1.2	square yards	yd^2
km^2	square kilometers	0.4	square miles	mi^2
ha	hectares (10,000 m^2)	2.5	acres	
MASS (weight)				
g	grams	0.035	ounces	oz
kg	kilograms	2.2	pounds	lb
t	tonnes (1000 kg)	1.1	short tons	
VOLUME				
ml	milliliters	0.03	fluid ounces	fl oz
l	liters	2.1	pints	pt
l	liters	1.06	quarts	qt
l	liters	0.26	gallons	gal
m^3	cubic meters	36	cubic feet	ft^3
m^3	cubic meters	1.3	cubic yards	yd^3
TEMPERATURE (exact)				
°C	Celsius temperature	9/5 (then add 32)	Fahrenheit temperature	°F



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EXECUTIVE SUMMARY

This report presents the results of the 1981 General Aviation Pilot and Aircraft Activity Survey. The survey was conducted by the Federal Aviation Administration (FAA) with the assistance of the Civil Air Patrol (CAP). The purpose of the survey was to acquire current information about general aviation characteristics, including pilot profiles, flight profiles, use of weather information services, fuel consumption, aircraft miles flown and traffic volume and patterns. The survey was conducted at 193 airports open to the public. The sample represents a cross-section of airport types and is representative of the FAA regions. Two survey documents were used, a Pilot Questionnaire form and a Traffic Count form. Incoming pilots were interviewed and all general aviation operations were recorded on each of two pre-selected dates (one weekday and one weekend day) during the months of July, August and September, 1981. [It should be noted here that the Air Traffic Controllers strike commenced on August 3, 1981 and that most of the survey forms were completed while the strike was in progress.] The survey was the fourth in a series of general aviation surveys conducted at three year intervals by the FAA in association with the CAP.

Some of the results yielded by the survey are:

- Pilot characteristics have remained stable over the years 1975-1981. However, there appears to be a gradual but not significant aging of the pilot population.

- The composition of the active aircraft fleet has shifted slightly since 1975, the number of single-engine aircraft has declined, while the number of rotorcraft and turboprops has increased.

- Much smaller percentages of pilots of both local and cross-country operations sought both preflight and inflight weather information in 1981 when compared 1975 and 1978, possibly due to effects from the controllers strike. The change is more marked for pilots of local operations. Pilots continue to rely more heavily on FAA weather services in cross-country operations than on non-FAA sources.

- Over 171 million general aviation operations occurred in 1981, with slightly more than half being cross-country operations. The data indicate a 3.2 percent increase in general aviation operations when compared to 1978.

- Nearly five and one-half billion nautical miles were flown in general aviation activity in 1981, consuming approximately 951 million gallons of fuel.

- Approximately 41 percent of all general aviation flights originated at towered airports.

- In general, the results of the 1981 survey did not differ greatly from that of previous surveys. Observed differences in such variables as utilization of weather information, and estimates of fuel consumption may have been due to the unusual circumstances in general aviation at the time the survey was conducted.

I. INTRODUCTION

A. BACKGROUND

The 1981 General Aviation Pilot and Aircraft Activity Survey was conducted by the Federal Aviation Administration (FAA) with the assistance of the Civil Air Patrol (CAP). The major purpose of the survey was to collect current information on the characteristics and magnitude of the general aviation component of aviation.

The data collected in the survey are unique in that there is no other data collection effort performed on such a large scale which obtains information from the primary source, the on-site pilot. The survey is the only data collection effort which attempts to measure the extent of general aviation aircraft operations at non-towered airports on a national level.

The present survey is the fourth in a series of surveys conducted triennially. The first survey in this sequence was conducted in 1972, and was limited in its scope to an examination of pilot and aircraft characteristics, while the objectives of the 1975 and 1978 surveys were expanded to include an examination of all general aviation operations occurring at the selected airports. The 1981 survey is modeled after the 1975 and 1978 surveys. Minor changes have been made primarily to streamline the survey forms to ensure more accurate data collection and interpretation.

B. OBJECTIVES

The specific objectives of the 1981 survey were:

1. Develop pilot profiles including characteristics such as:

   a. age
   b. pilot certificate
   c. instrument rating
   d. hours flown in 1980
   e. utilization of flight plans

2. Develop flight profiles by aircraft type including characteristics such as:

   a. source of aircraft
   b. purpose of trip
   c. load factor
   d. trip time, distance and average speed
   e. local/cross-country breakdown

3. Measure the utilization of the FAA services and facilities for obtaining weather information, preflight and inflight.

4. Estimate fuel consumption and aircraft miles flown by general aviation in 1981.

5. Estimate national totals of general aviation aircraft takeoffs and landings, and identify patterns in general aviation traffic.

6. Identify changes in general aviation by comparison with the results from the 1975 and 1978 surveys.

To accomplish these objectives information was collected on three distinct populations:

a. the population of active GA pilots in 1981,
b. the population of GA flights in 1981, and
c. the population of GA operations occurring in 1981.

In addition, quantitative national and annual estimates were derived based on the characteristics of populations b and c.

During the months of July, August, and September 1981, 3,440 pilots were interviewed at 193 airports in 45 states. The response rate among the pilots was approximately 93 percent. General aviation operations were derived from Traffic Count forms received from 178 airports out of a sample size of 445, a response rate of 39 percent. The results of the survey are based on an analysis of the responses of these pilots and airports.

C. ANALYSIS

The data were analyzed to provide pilot profiles, flight profiles, and estimates of general aviation operations and traffic patterns in 1981. Comparisons of the data in this survey and the 1975 and 1978 surveys were made to determine any major changes in the pilot and flight characteristics over time.

Apart from general descriptive analysis of the data, several issues were considered in developing the pilot and aircraft profiles. These included but were not limited to:

a. The extent of use of FAA services and facilities for obtaining both pre- and inflight weather information.

b. The extent to which pilots filed flight plans.

c. Estimates of fuel consumed and total miles flown by the total general aviation population as derived from the survey data.

The data in the Traffic Count forms were used to derive estimates of the annual general aviation operations for each of the four airport types included in the survey.

These were:

Type 1. Towered

Type 2. Non-towered, paved and lighted (with at least one paved runway)

Type 3. Non-towered, paved and unlighted (with at least one paved runway)

Type 4. Non-towered, unpaved.

The data were adjusted to account for seasonal bias in the collection.

Chapter II presents the survey results and is divided into five major sections:

- Section A Pilot Profiles
- Section B Flight Profiles
- Section C Utilization of Services Providing Weather Information Preflight and Inflight
- Section D Estimates of Fuel Consumption and Aircraft Miles Flown
- Section E Estimates of Total 1981 General Aviation Operations and Traffic Patterns between Airport Types

The details of the sampling plan and statistical methodologies are found in Chapter III. Additional tables are provided in Appendix A. Copies of the survey documents are located in Appendix B.

II. SURVEY RESULTS

A. PILOT PROFILES

One of the objectives of the survey was to develop a profile of the 1981 population of active general aviation pilots. This was achieved by generating frequency distributions of data obtained on such pilot characteristics as age, certification, current instrument rating, aircraft ownership, purpose of flight, and utilization of flight plans. In addition, several cross-tabulations were performed to determine the relationships among these variables.

Table 1 presents the data on the distribution of pilots interviewed by ownership and type of certificate held. The table also shows the comparison between the distribution of survey pilots and the active pilot population as of December 1981.[1] The table indicates that the greatest percentage of pilots interviewed holds private certificates. The second largest percentage of pilots interviewed holds commercial certificates. A comparison between interviewed pilots and the active pilot population indicates that the surveyed pilots were comparable to the 1981 active pilot population in all categories except student pilot certificate. In this category, observed student pilots appear to be greatly underrepresented when compared to the licensed population (11.7 percent to 23.5 percent, respectively).

The relationship between pilot certificate and reported private ownership of aircraft was determined. The data in Table 1 indicate that over half, 59.6 percent, of the pilots who own their own planes hold private certificates. In contrast, privately owned aircraft are less likely to belong to student pilots, airline transport (ATR) pilots and foreign certificate pilots who, all total, account for only 11.3 percent of privately owned aircraft.

A comparison of the 1981 data with that of previous surveys in 1975 and 1978, indicates that there have been no significant changes in the observed distribution of certificate category over the three survey years. The relationship between certificate category and reported ownership of aircraft also appears to have remained stable, with approximately the same percentage of private certificate pilots reporting ownership over the three survey periods.

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[1] According to the Airmen Certification records maintained by the FAA, active airmen are those who hold both an airman certificate and a valid medical certificate.

TABLE 1

PERCENTAGE DISTRIBUTIONS OF ACTIVE PILOT POPULATION, PILOT INTERVIEWS, AND AIRCRAFT OWNERSHIP BY PILOT CERTIFICATE

Pilot Certificate	Active Pilot Population[1]	Pilot Interviews	Reported Private Aircraft Ownership
Student	23.5	11.7	5.5
Private	43.0	43.4	59.6
Commercial	22.1	32.4	29.1
ATR	9.2	12.4	5.8
Foreign	N/A	.1	0.0
Other	2.2	0.0	0.0
Total	100%	100%	100%

[1] 1981 U.S. Civil Airmen Statistics, U.S. Department of Transportation, Federal Aviation Administration (Washington, D.C., 1982), p. 4.

Table 2 presents data on the distributions of age in the observed pilots and in the active pilot population in 1981. These data indicate a high correlation between the age distribution of the 1981 active pilot population and the observed pilot group.

A comparison between the age distribution of observed pilots in the 1975, 1978, and 1981 surveys reveals an apparent aging of the active pilot population. The percentage of pilots over 60 years old increased slightly over each survey period.

TABLE 2

PERCENTAGE DISTRIBUTIONS OF ACTIVE PILOT POPULATION, AND PILOT INTERVIEWS BY PILOT AGE

Pilot Age	Active Pilot Population[1]	Pilot Interviews
Under 16	less than .1%	0.1
16-19	3.7	3.0
20-24	11.2	9.6
25-29	14.3	13.8
30-34	15.5	15.5
35-39	14.5	14.9
40-44	11.3	13.2
45-49	9.5	9.8
50-54	8.2	9.6
55-59	6.3	6.0
60 and over	5.6	4.6
Total	100.00	100.00

[1] 1981 U.S. Civil Airmen Statistics, U.S. Department of Transportation, Federal Aviation Administration (Washington, D.C. 1982), p. 20.

In 1975, the percentage of observed pilots reporting that they were 60 and over was 2.5; this increased to 3.0 percent in 1978 and 4.6 percent in the present survey, indicating that pilots in this age category have almost doubled over the three survey years. Similar patterns are observed when the data on the active pilot populations for 1975, 1978, and 1981 are compared.

TABLE 3

PERCENTAGE DISTRIBUTION OF CURRENT INSTRUMENT RATING BY PILOT CERTIFICATE

Pilot Certificate	CURRENT INSTRUMENT RATING Yes	No
Student	0.3	99.7
Private	20.1	79.9
Commercial	82.2	17.8
ATR	98.4	1.6
Foreign	0.0	100.0
All Certificates	47.8	52.2

The percentages of pilots holding a current instrument rating in each type of certificate are presented in Table 3. Overall, approximately 48 percent report that they hold a current instrument rating, while 52 percent do not. The percentages of pilots without current instrument ratings in the commercial and ATR categories (18 percent and 2 percent, respectively) more than likely indicate either that the instrument rating is not current or that the pilots are not functioning as commercial or ATR pilots at the time of the interview, since FAA regulations require that commercial and ATR pilots have current instrument ratings or be severely restricted in flight range (50 nautical miles and during daylight hours only).

In the examination of pilot characteristics, the relationships among such characteristics as age, pilot certificate, ownership of aircraft, and instrument rating were explored. The results of these analyses are presented in Tables A-1 through A-3, in Appendix A.

The analyses provided more insight into the personal characteristics of the observed pilot population. Table A-1 presents information on the relationship between pilot age and pilot certificate. The data indicate that all pilots reporting their age as under 16 hold student certificates, and in contrast, 56.4 percent of all pilots aged 60 and over hold private certificates.

A significant relationship is found to exist between pilot age and reported ownership (see Table A-2). Pilots over 40 are more likely to own an airplane than to obtain it from another source. For example, 70 percent of all respondents in the 60 and over age category report ownership of their aircraft. Most pilots between the ages of 16 and 29 indicate that their aircraft were rented from a flying club or leased. Pilots in the 30-39 year range are equally likely to own their aircraft as to rent or lease aircraft.

The relationship between source of aircraft and pilot certificate is also examined and is shown in Table A-3. Private ownership is reported by 63 percent of all pilots holding private certificates. Conversely, 75 percent of all pilots in the student category indicate their aircraft are rented, leased, or obtained from a flying club.

TABLE 4

AVERAGE HOURS FLOWN IN CY 1980
BY PILOT CERTIFICATE-LOCAL VS. CROSS-COUNTRY

PILOT CERTIFICATE	AVERAGE HOURS FLOWN				
		Local		Cross-Country	
	Total Hours	Hours	% of Total	Hours	% of Total
Student	64	39	61	25	39
Private	158	66	42	92	58
Commercial	424	197	46	227	54
ATR	748	208	28	540	72
Foreign	150	40	27	110	73

In addition to the personal characteristics of the pilots interviewed, their activities are examined as part of the pilot's profile. Pilots were requested to supply information about the number of hours flown during the previous year, both cross-country

and local[1]. The data are presented in Table 4 by pilot certificate. As expected, commercial and ATR pilots logged in the greatest number of hours flown in 1980. ATR pilots indicate that they flew an average of 784 hours, of which cross-country hours were approximately 72 percent. Commercial pilots flew an average of 424 hours, of which approximately 54 percent were cross-country hours. Student certificated pilots recorded the least number of flying hours with the greatest percentage of hours flown in the local category, 61 percent as compared to 39 percent cross-country hours.

A comparison with the data for previous years indicates no significant changes in average hours flown. However, there appears to be a decrease in percentage of cross-country flight hours for commercial and ATR pilot certificates. In 1977, 61 percent of hours flown by commercial pilots and 82 percent for ATR certificated pilots were cross-country hours, as compared to 54 percent and 72 percent for 1980. While actual cross-country hours flown by these categories remained fairly constant, the percentage of the hours that were cross-country declined.

One objective of the survey was to determine the extent to which pilots filed flight plans. The purpose of the flight plan is to inform the FAA about the destination, direction, and route of a flight. This allows for monitoring available airspace and for initiating search procedures in the event of an overdue aircraft.

Two types of flight plans can be filed--instrument Flight Rules (IFR) and Visual Flight Rules (VFR). In some instances both IFR and VFR may be filed. The results indicating utilization of flight plans for local and cross-country flying are presented in Table 5 by type of pilot certificate.

As expected, the percentage of pilots who did not file a flight plan for local flights is very high, almost 94 percent. Of those pilots making cross-country flights, 55 percent did not file a flight plan. The latter percentage is lower because pilots more routinely file a plan when flying longer distances. Nineteen percent were flying under Instrument Flight Rules (IFR), in which case a flight plan is required. Comparison with similar data for 1978

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[1]A local flight is one that takes place within twenty miles of the airport and usually consists of instructional and practice flights. Cross-country flights are all those of more than twenty miles.

TABLE 5

PERCENTAGE UTILIZATION OF FLIGHT PLAN
BY TYPE OF FLIGHT BY PILOT CERTIFICATE

Local Flight Plan					Cross-Country Flight Plan			
None	IFR	VFR	Comp[1]	Pilot Certificate	None	IFR	VFR	Comp[1]
92.6	0.0	7.0	0.4	Student	26.3	3.2	70.5	0.0
94.1	1.6	4.3	0.0	Private	67.7	7.5	24.5	0.3
93.9	1.3	3.8	1.0	Commercial	58.1	19.7	21.7	0.5
90.5	5.2	4.3	0.0	ATR	25.2	53.1	21.3	0.3
100.0	0.0	0.0	0.0	Foreign	100.0	0.0	0.0	0.0
93.5	1.5	4.6	0.4	All Certificates	55.0	19.2	0.3	25.5

[1]Composite: Use of both IFR and VFR flight plans

indicates that the percentage of pilots not filing a flight plan in 1981 increased from 91 percent to 94 percent for local and from 47 percent to 55 percent for cross-country.

It is possible that the decrease in filing may be due to the air traffic controllers strike. The survey was taken over a period from the end of July through early September 1981. The controllers strike started on August 3, so most of the survey forms were completed while the strike was in progress[1]. Flight plans are usually filed with the Flight Service Stations (FSS) and if an IFR flight plan is filed, the FSS must contact the Air Route Traffic Control Center (ARTCC) for clearance. The ARTCCs were understaffed and extremely busy at the time so it was difficult to get clearance. Shortly after the strike commenced, a plan was set up for the allocation of the number of aircraft to be

[1]Eighty-nine percent of survey forms were completed during the months of August and September, with 73 percent occurring in August.

handled by an ARTCC over a certain time period. Since the number of general aviation slots was very limited, most pilots chose to fly VFR if they could. In fact, they were encouraged to fly VFR and not file flight plans[1]. This condition existed until October when the FAA set up a system under which general aviation pilots could make advance reservations for Center and airport slots.

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[1]An analysis of the survey data to determine the relationship between the month of the survey and the filing of a flight plan indicates that 31 percent of pilots surveyed in July filed flight plans as compared to 27 percent surveyed in August.

B. FLIGHT PROFILES

The second objective of the 1981 survey was to develop flight profiles by aircraft type. Several characteristics such as flight time, source of aircraft, purpose of trip, and load factor were examined. The results are presented in the following pages.

Table 6 presents a comparison of the distribution of registererd active aircraft over the three survey periods (1975, 1978, and 1981), along with the distribution of survey aircraft for the same three periods by type of aircraft. The two sets of distributions are quite similar and each set appears to have remained fairly constant over time. The slight under-representation of turbojets in the survey may be a function of the airports that were sampled, primarily general aviation and small hub airports.

Tables 7 and 8 present salient flight characteristics from the current survey data by type of aircraft and by type of flight (local and cross-country). Tables 9A and 9B show comparative data for the three survey years.

Among the surveyed aircraft, flight characteristics--such as average time and load factor--differed between local and cross-country operations. In general, cross-country operations reported longer average flight times and higher load factors than did local operations.

For local flights shown in Table 9A, the load factor appears to have increased for all categories except turboprop and turbojet. The number of landings per flight for these two aircraft types also decreased sharply from previous surveys. Flight times decreased for most of the aircraft types. The dramatic decrease in turbojets may be due to the limited sample since only one turbojet was observed on local flight. The lower number of landings per flight for turboprops may be due to increased cost of fuel which may have discouraged the use of such aircraft on local flights. Increased use of simulators for training of turboprop pilots may also be a factor.

Cross-country flight characteristics (Table 9B) display similar comparative differences. Average last leg distance and average total trip distance appear to have decreased for most air craft types. For example, average last leg distance for turboprops was 214 miles in 1981 as compared to 269 miles in 1978. Similarly, average total trip distance for turboprops in 1981 was 280 miles as compared to 497 miles in 1978. Higher flying costs, particularly fuel costs, may have curtailed both the number of trips and miles flown and encouraged carriage of more passengers per flight. The air traffic controllers strike, which occurred during the time the survey was taken, discouraged general aviation flying because of the difficulty of getting ARTCC clearance and landing slots, as previously observed.

TABLE 6

GENERAL AVIATION ACTIVE AIRCRAFT
FLEET BY AIRCRAFT TYPE

AIRCRAFT TYPE	PERCENTAGE DISTRIBUTIONS					
	SURVEYED AIRCRAFT			REGISTERED ACTIVE AIRCRAFT		
	1975	1978	1981	1975[1]	1978[2]	1981[3]
Single-engine piston	79.3	80.4	82.1	81.8	80.8	78.7
Multi-engine piston	13.5	13.6	10.6	11.5	11.7	11.9
Rotorcraft	1.6	1.6	2.0	2.7	2.7	3.3
Turboprop	3.1	2.6	3.6	1.3	1.6	2.2
Turbojet	2.2	1.5	1.0	1.0	1.2	1.5
Other Aircraft	0.3	0.3	0.7	1.6	2.1	2.4
Total	100.0	100.0	100.0	100.0	100.0	100.0

1- 1975 General Aviation Avionics Statistics, U.S. Department of Transportation, Transportation Systems Center (Cambridge, Massachusetts, 1978), p. 38.

2- 1978 General Aviation Activity and Avionics Survey, U.S. Department of Transportation, Federal Aviation Administration (Washington, D.C., 1980), p. 2-27.

3- 1981 General Aviation Activity and Avionics Survey, U.S. Department of Transportation, Federal Aviation Administration (Washington, D.C., 1982), p. 2-27.

TABLE 7

LOCAL FLIGHT CHARACTERISTICS BY AIRCRAFT TYPE

Aircraft Type	AVERAGE CHARACTERISTICS					
	Landings Per Flight	Flight Time (Minutes)	Flight Speed (Nautical mph)	Seats Available	Seats Occupied	Load Factor
Single-engine Piston (1-3 Places)	2.6	54.8	98.7	1.9	1.6	82.8
Single-engine Piston (4 Places and over)	2.2	54.5	111.6	4.2	2.2	53.4
Multi-engine Piston	2.1	55.9	149.0	5.7	2.5	47.2
Rotorcraft Piston	3.1	80.7	78.9	3.3	2.4	81.7
Rotorcraft Turbine	1.9	73.9	99.4	5.8	3.4	60.2
Turboprop	1.1	35.5	160.0	9.4	2.4	29.8
Turbojet*	1.0	6.0	230.0	10.0	1.0	10.0
Glider	1.4	55.7	45.4	1.7	1.7	100.0

* Extremely low representation in survey sample.

TABLE 8

CROSS-COUNTRY FLIGHT CHARACTERISTICS BY AIRCRAFT TYPE

Aircraft Type	AVERAGE CHARACTERISTICS					
	Last Leg Distance (Nautical Miles)	Last Leg Time (Minutes)	Total Trip Distance (Nautical Miles)	Seats Available	Seats Occupied	Load Factor
Single-engine Piston (1-3 Places)	104.3	91.1	166.5	2.0	1.5	75.9
Single-engine Piston (4 Places and over)	170.3	91.0	263.7	4.4	2.4	56.3
Multi-engine Piston	205.2	93.1	328.2	6.6	3.7	55.7
Rotorcraft Piston	59.6	37.2	561.6	3.0	2.6	93.3
Rotorcraft Turbine	86.2	76.5	176.7	6.4	2.8	45.2
Turboprop	214.5	53.4	280.1	14.6	6.6	47.0
Turbojet	498.2	82.2	697.6	12.9	9.1	62.2

TABLE 9A

SELECTED LOCAL FLIGHT CHARACTERISTICS BY AIRCRAFT TYPE
1975 - 1981

Aircraft Type	AVERAGE CHARACTERISTICS							
	Landings Per Flight			Flight Time (Minutes)			Load Factor	
	1975	1978	1981	1975	1978	1981	1978	1981
Single-engine Piston (1-3 Places)	3.1	3.5	2.6	58.0	63.0	54.8	82.7	82.8
Single-engine Piston (4 Places and over)	2.4	2.5	2.2	56.0	58.0	54.5	50.5	53.4
Multi-engine Piston	2.1	2.1	2.1	57.0	56.0	55.9	43.8	47.2
Rotorcraft Piston		5.2	3.1		94.0	80.7	60.2	81.7
Rotorcraft Turbine	4.2**	3.4	1.9	80.0**	92.0	73.9	36.0	60.2
Turboprop	2.6	2.2	1.1	77.0	35.0	35.5	40.7	29.8
Turbojet*	N/A	5.8	1.0	N/A	71.0	6.0	31.1	10.0
Glider	1.0	3.5	1.4	18.0	67.0	55.7	97.2	100.0

* Extremely low representation in survey sample.
** Reported as a combined figure for Rotorcraft.

TABLE 9B

SELECTED CROSS-COUNTRY FLIGHT CHARACTERISTICS BY AIRCRAFT TYPE
1975 - 1981

Aircraft Type	AVERAGE CHARACTERISTICS											
	Last Leg Distance (Nautical Miles)			Last Leg Time (Minutes)			Total Trip Distance (Nautical Miles)		Load Factor		
	1975	1978	1981	1975	1978	1981	1978	1981	1975	1978	1981
Single-engine Piston (1-3 Places)	104	121	104	67	77	91	293	166.5	75	73.7	75.9
Single-engine Piston (4 Places and over)	166	197	170	79	95	91	389	263.7	59	54.8	56.3
Multi-engine Piston	228	223	205	76	77	93	455	328.2	58	55.7	55.7
Rotorcraft Piston	102*	125	60	65*	78	37	188	561.6	58*	51.8	93.3
Rotorcraft Turbine		155	86		86	76	367	176.7		41.3	45.2
Turboprop	274	269	214	75	69	53	497	280.1	53	53.2	47.0
Turbojet*	481	541	498	80	77	82	851	697.6	52	57.8	62.2

* Reported as a combined figure for Rotorcraft.

Pilots reported a breakdown of 46.2 percent local and 53.8 percent cross-country operations, as indicated in Table 10. The observed split in 1978 was 49.5 percent local and 50.5 percent cross-country. In 1975 the split was 45.6 percent and 54.5 percent, and in 1972 it was 46.5 percent and 53.5 percent. This indicates a general consistency in the relationship of local and cross-country operations over the past 10 years.

The relationships between several pilot and flight characteristics are also examined. The data are presented in Tables A-9 through A-12 in Appendix A. An examination of the relationship observed between flight characteristics and pilot certificates shown in Table A-9 indicates that for local flights, student pilots report more landings per flight and longer flight times than any other certificate type. Highest flight speeds are reported by ATR and private certificate pilots. On cross-country flights, apart from foreign pilots (Table A-10), student pilots appear to fly the least number of miles for a total trip.

A comparison of this data with data from previous surveys (1975 and 1978) indicates that while flight characteristics by pilot certificate are comparable for local flights, for cross-country flights, total trip distances and last leg distances across all pilot certificates were lower in 1981. For example, average total trip distance for ATR pilots is 323 miles in 1981 as compared to 488 miles in 1978.

TABLE 10

PERCENTAGE DISTRIBUTION OF TYPE OF FLIGHT BY AIRCRAFT TYPE

Aircraft Type	TYPE OF FLIGHT		
	Local	Cross-Country	Total
Single-engine Piston (1-3 Places)	69.2	30.8	100
Single-engine Piston (4 Places and over)	39.3	60.7	100
Multi-engine Piston	17.7	82.3	100
Rotorcraft Piston	70.6	29.4	100
Rotorcraft Turbine	51.0	49.0	100
Turboprop	7.3	92.7	100
Turbojet	2.9	97.1	100
Glider	100.0	0.0	100
Total	46.2	53.8	100

C. UTILIZATION OF SERVICES PROVIDING PREFLIGHT AND INFLIGHT WEATHER INFORMATION

An important question posed during the survey was the extent to which various sources of preflight and inflight weather information were utilized at the individual flight level. This variable was first explored in the 1978 survey.

Preflight information may be obtained from several sources provided by the FAA. These include: Flight Service Station (FSS) briefings; Pilots Automatic Telephone Weather Answering Service (PATWAS); Transcribed Weather Broadcasts (TWB); and Voice Response System (VRS). Additionally, pilots may obtain preflight weather information from sources other than the FAA. These include: National Oceanographic and Atmospheric Administration (NOAA) broadcasts, National Weather Service briefings (NWS), television, radio, and newspaper reports.

FAA sources of inflight weather information include: Enroute Flight Advisory Service (EFAS); Flight Watch; Airport Terminal Information Service (ATIS); FSS hourly broadcasts; TWEB broadcasts both NDB (non-directional beacon) and VOR (very high frequency in the directional range); and direct contact with the FSS, ARTCC or tower.

The major concern of this portion of the survey was to determine the extent to which FAA services were utilized by type of flight and purpose of flight, and by pilot certificate and type of aircraft. Tables 11 and 12 show the percentages of pilots who used FAA and other sources of pre- and inflight weather information by purpose of flight for local and cross-country flights.

Table 11 indicates that overall, 34.5 percent of all local flights used one or more of the FAA sources of preflight weather information. 17.6 percent used one or more non-FAA sources of preflight weather information, while 50.4 percent of all flights did not obtain weather information prior to their flight. Looking at individual flight purpose, it appears that local flight pilots making personal, aerial application or "other" flights were least likely to obtain weather information. The data indicate that pilots were more likely to obtain weather information when they were on cross-country flights. Only 13.0 percent of cross-country flights did not obtain preflight weather information. Of those who obtained such information, 79.4 percent used one or more FAA sources as compared to 12.9 percent utilization of one or more non-FAA sources.

With respect to inflight weather information, the data in Table 12 indicate that 18.7 percent of local flight pilots contacted one or more FAA weather sources. 77.2 percent of local flight pilots did not obtain inflight weather information. Of the cross-country flight pilots, 49.7 percent obtained weather information from one or more FAA

TABLE 11

PERCENTAGE UTILIZATION OF PREFLIGHT WEATHER INFORMATION SERVICES BY TYPE OF FLIGHT BY PURPOSE OF FLIGHT

Local: Preflight Weather Information			Purpose of Flight	Cross-country: Preflight Weather Information		
FAA	Other	None		FAA	Other	None
30.2	17.1	55.6	Personal	76.7	13.5	16.0
47.8	15.2	38.7	Business	81.3	10.9	12.3
45.4	27.3	30.0	Executive/Corporate	91.4	13.6	4.9
50.0	50.0	25.0	Commuter Air Carrier	90.3	6.4	3.3
50.0	0.0	50.0	Air Taxi	82.8	14.8	7.8
36.7	19.4	46.0	Instructional	81.1	12.6	9.2
17.9	12.8	74.5	Aerial Application	37.5	12.5	50.0
57.9	21.1	21.1	Industrial	57.7	34.6	19.2
28.0	14.0	59.6	Other	65.3	18.4	22.4
34.5	17.6	50.4	All Flights	79.4	12.9	13.0

TABLE 12

PERCENTAGE UTILIZATION OF INFLIGHT
WEATHER INFORMATION SERVICES BY
TYPE OF FLIGHT BY PURPOSE OF FLIGHT

Local: Inflight Weather Information			Purpose of Flight	Cross-country: Inflight Weather Information		
FAA	Other	None		FAA	Other	None
16.9	2.8	80.8	Personal	46.8	2.3	51.5
23.2	8.0	68.8	Business	51.2	2.7	46.4
9.1	18.2	72.7	Executive/Corporate	50.6	1.2	48.1
75.0	50.0	0.0	Commuter Air Carrier	82.3	1.6	16.1
8.3	0.0	91.7	Air Taxi	45.7	5.4	48.8
20.5	5.1	74.7	Instructional	50.9	1.3	48.0
0.0	5.1	94.9	Aerial Application	25.0	0.0	75.0
42.1	5.3	52.6	Industrial	38.5	3.8	57.7
15.8	3.0	81.2	Other	44.9	6.1	51.0
18.7	4.5	77.2	All Flights	49.7	2.6	48.1

sources, 2.6 percent used some other source, while 48.1 percent did not ask for weather information during flight.

Utilization of pre- and inflight weather information by pilot certificate and type of aircraft are also examined. The data are contained in Tables A-13 through A-16. With respect to aircraft type and preflight weather information (Table A-13), the data show that 34.3 percent of all aircraft on a local flight obtained FAA preflight weather information. Local pilots flying larger aircraft are more likely to get FAA preflight weather information. On cross-country flights, FAA services were more heavily used. Only 12.6 percent of the aircraft surveyed were being flown without preflight weather information.

The extent to which preflight or inflight weather information is used by pilot category is also examined (Tables A-15 and A-16). The data indicate that on local flights, pilots, regardless of certificate type, are less likely to get preflight weather information than those on cross-country flights. However, when such information is obtained, FAA sources are most often used. A much greater percentage of pilots on cross-country flights obtain preflight weather information and rely upon FAA sources. This is consistent across all certificate categories. Similar patterns are observed for use of inflight weather information in all categories.

Pilot utilization of pre- and inflight weather information was compared to similar data in 1978. The data indicate that use of both preflight and inflight information declined sharply between the two periods. The 1981 survey data indicate that 50 percent of all local flights did not obtain preflight weather information as compared to only 7.1 percent in 1978. Similarly, 13.0 percent of all cross-country flights did not obtain preflight weather information in 1981, as compared with only 1.6 percent in 1978.

There seems to be a similar pattern of under-utilization of inflight weather information services. Among local flight pilots, 77.0 percent reportedly did not obtain inflight weather information compared to 22.6 percent in 1978. Similarly, 47.6 percent of cross-country flight pilots in the 1981 survey did not obtain inflight weather services as compared to only 12.6 percent in 1978.

Overall utilization of preflight and inflight weather information is indicated in Table 13A. The data indicate that 43.7 percent of local flights did not utilize either pre- or inflight weather services. Of the local flight pilots who said they obtained weather information, the greater percentage obtained weather information before departure (almost 32 percent). 36.8 percent of cross-country pilots said they obtained preflight but not inflight.

Pilots on cross-country flights most often used both types of services, 50.9 percent as compared to 18.1 percent pilots on local flights. Conversely, few pilots appear to have obtained inflight information only (6.1 percent local and 3.0 percent cross-country).

A comparison of 1978 and 1981 overall use of both preflight and inflight weather services was made to determine whether a similar pattern of under-utilization of weather information was observed. There was a large increase in 1981 in the percentages of both local and cross-country flights which reportedly did not use either pre- or inflight weather information services. There is, as expected, a corresponding decrease in the percentage of both types of flights that obtain both preflight and inflight weather information; the decline is much greater for local flights. The percentage of flights using only preflight weather information increased significantly in 1981.

There appears to be some relationship between failure to file a flight plan and requests for preflight and inflight weather information. This may be particularly so for requests from FAA weather sources. It appears that pilots are more likely to request and obtain preflight weather information at the time they file a flight plan. Consequently, difficulty in filing a flight plan because of the air controllers strike may be directly related to non-utilization of preflight weather information.

TABLE 13A

OVERALL PERCENTAGE UTILIZATION OF
PREFLIGHT AND INFLIGHT WEATHER
INFORMATION SERVICES BY TYPE OF FLIGHT

Type of Flight	WEATHER INFORMATION SERVICES UTILIZED			
	Preflight and Inflight	Preflight But Not Inflight	Inflight But Not Preflight	Neither Preflight Nor Inflight
Local	18.1	32.0	6.1	43.7
Cross-country	50.9	36.8	3.0	9.3

TABLE 13B

COMPARISON OF OVERALL UTILIZATION OF
PREFLIGHT AND INFLIGHT WEATHER INFORMATION
SERVICES BY TYPE OF FLIGHT - 1978 and 1981

Type of Flight	WEATHER INFORMATION SERVICES UTILIZED							
	Preflight and Inflight		Preflight But Not Inflight		Inflight But Not Preflight		Neither Preflight Nor Inflight	
	1978	1981	1978	1981	1978	1981	1978	1981
Local	75.9	18.1	17.1	32.0	1.5	6.1	5.5	43.7
Cross-country	86.8	50.9	11.6	36.8	0.6	3.0	1.0	9.3

D. ESTIMATES OF FUEL CONSUMPTION AND AIRCRAFT MILES FLOWN

Another objective of the data analysis was to estimate total fuel consumption and average miles flown in general aviation. An estimate of general aviation fuel consumption in 1981 is obtained using fuel consumption rates reported in the survey. The estimates are arrived at by multiplying total hours flown by each type of aircraft by the average fuel consumed by each aircraft type. Data for total hours flown are obtained from the FAA General Aviation Activity and Avionics Survey of 1981.

The results are presented in Table 14 and indicate an estimate of approximately 951 million gallons of fuel consumption in 1981. (451 million gallons of aviation gasoline and 500 million gallons of jet fuel.) Estimates for 1981 represent a decline from the estimates presented in the 1978 survey. In 1978, total fuel consumed was estimated at 1,066 million gallons: 428 million gallons of aviation gasoline and 638 million gallons of jet fuel. The results are consistent with our overall findings of decreases in aircraft and activity in 1981.

Another apparent reason for the lower estimate may be the small number of the large and more powerful aircraft in this survey. These types of aircraft have high fuel consumption rates, and would, therefore, be expected to contribute substantially to any estimate of total fuel consumed. These estimates must, therefore, be interpreted with extreme caution, since the small number of turbojets and turboprops included in the survey may have caused an under-estimate of the actual total fuel consumed in general aviation during 1981.

An estimate was also made of total aircraft miles flown in general aviation using both survey data and data obtained from the FAA General Aviation Activity and Avionics Survey of 1981. The following methods were used to obtain an estimate of total aircraft miles flown in general aviation for 1981 by aircraft type:

1. Local/cross-country breakdown of flights by aircraft type was obtained from Table 10. The percentages were used as proxies for percentages of hours flown in local/cross-country flights.

2. Total hours flown for each aircraft type were obtained from the 1981 General Aviation Activity and Avionics Survey. The hours were broken down into cross-country/local using the percentages from step 1.

TABLE 14

ESTIMATE OF FUEL CONSUMPTION
FOR 1981

Type of Aircraft	Average Fuel Consumed (Gallons Per Hour)		Aircraft Hours Flown CY 1981[1] (Thousand Hours)	Total Fuel Consumed (Million Gallons)	
	Aviation Gasoline	Jet Fuel		Aviation Gasoline	Jet Fuel
Single-engine Piston (1-3 Places)	6.8		10,186	69.3	
Single-engine Piston (4 Places and over)	10.2		17,506	178.6	
Multi-engine Piston	28.7		6,715	192.7	
Rotorcraft Piston	11.5		930	10.7	
Rotorcraft Turbine		27.7	1,754		48.6
Turboprop		78.6	2,154		169.3
Turbojet		203.6	1,387		282.4
Total				451.3	500.3

[1] 1981 General Aviation Activity and Avionics Survey, U.S. Department of Transportation, Federal Aviation Administration (Washington, D.C., 1982). p. 2-2.

3. Average local and cross-country speeds were obtained from survey data. The local speed was requested in the pilot questionnaire. Cross-country speed was calculated as (average last leg distance divided by the average last leg time) for each aircraft type.

4. Average speed was multiplied by hours flown for each aircraft type for local and cross-country flights to obtain estimates of miles flown by aircraft type.

5. Estimates of total miles flown for both local and cross-country were obtained by summing the estimates over all aircraft types.

The results of these calculations are presented in Table 15.

Total miles flown was estimated to be 5,462 million miles. Local flight activity is estimated at 1,838 million miles as compared to 3,624 million miles for cross-country flight activity. The estimates for 1981 show an increase of 675 million miles over the 1978 estimates. Miles flown have increased in each of the three surveys. In 1975, total aircraft miles flown were estimated at 4,321 million miles and in 1978, the estimate was 4,787 million miles.

TABLE 15

ESTIMATION OF AIRCRAFT MILES
FLOWN BY AIRCRAFT TYPE
1981

Type of Aircraft	Local			Cross-Country		
	Hours Flown (Thous.)	Average Speed (Nautical mph)	Miles Flown (Millions)	Hours Flown (Thous.)	Average Speed (Nautical mph)	Miles Flown (Millions)
Single-engine Piston (1-3 Places)	7049	99	698	3137	87	273
Single-engine Piston (4 Places and over)	6878	112	770	10626	128	1360
Multi-engine Piston	1189	149	177	5526	160	884
Rotorcraft Piston	657	79	52	273	96	26
Rotorcraft Turbine	895	99	89	859	98	84
Turboprop	157	160	25	1997	256	511
Turbojet	40	230	9	1347	361	486
Other	391	45	18	N/A	N/A	N/A
Total			1838			3624

N/A = Not applicable

E. ESTIMATES OF TOTAL 1981 GENERAL AVIATION OPERATIONS AND TRAFFIC PATTERNS BETWEEN AIRPORT TYPES

One of the primary objectives of the survey was the estimation of the total number of general aviation operations[1] occurring in 1981. The data recorded on the Traffic Count forms were used to derive estimates of daily operations for each of the four airport types. An adjustment was made in the estimation process to account for the fact that the data were collected in the summer months and may be subject to a seasonal bias. The resultant seasonally adjusted estimates of average daily activities by airport type are contained in Table 16. Total 1981 operations for each class were estimated by multiplying the daily averages by 365 and then by the number of airports in each class.

The class of airports which was not represented in the survey, those not open to the public, contains 9,186 facilities. This class includes military bases and other federal government facilities as well as corporate and/or hospital-owned facilities. Some privately-owned airports also appear in this category. The volume of general aviation activity occurring at these airports is believed to be minimal relative to the activity occurring at public-use airports. According to data extracted from the Airport Master File, approximately 7 percent of all general aviation activity occurs at airports which are not open to the public. Final estimates for 1981 yielded 171.8 million general aviation operations. Compared to the 1978 estimate of 166.5 million, this estimate represents a 3.2 percent increase in general aviation operations from 1978 to 1981.

A local/cross-country breakdown for total operations at airports open to the public was derived from the interview data by using the reported local/cross-country flight split and applying it to the reported average number of landings per flight. Results by flight purpose are located in Table 17. The overall breakdown for total operations occurring at airports open to the public is 47 percent local and 53 percent cross-country compared with a 73.9 percent--26.1 percent breakdown in the 1978 survey.

The estimates of miles flown, fuel-consumed, and general aviation operations for 1981 appear to be conflicting. The data indicate, while estimates of miles flown increased in 1981, estimates of total fuel consumed and general aviation operations decreased. (See page 29.) Another interpretation of the apparent conflict may be the increase observed in cross-country operations at the expense of local operations.

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[1]An operation is defined as a takeoff or landing. A touch-go is counted as two operations.

TABLE 16

ESTIMATES OF TOTAL 1981 GENERAL AVIATION OPERATIONS

Type of Airport	Number of Airports	Average Daily Operations[1]	1981 Total Operations (Millions)
Public-Use Airports	6290		
Towered	496[2]	271	51.6[3]
Non-towered			
Paved and Lighted Runways	2709	72	79.1
Paved and Unlighted Runways	591	41	9.7
Unpaved Runways	2494	20	19.1
			159.5
Non-public use airports	9186		12.3
Total	15476		171.8

1. Adjusted for night-time activity.

2. Although 496 towered airports were in operation at the beginning of 1981, between 40 and 70 of them were closed for some period of time between the beginning of the controllers strike and the end of the year.

3. This estimate reflects reduction in operating airports due to the controllers strike.

TABLE 17

PERCENTAGE DISTRIBUTION OF TYPE OF OPERATION
BY FLIGHT PURPOSE
1981

Purpose of Flight	Type of Operation	
	Local	Cross-country
Personal	48.3	51.7
Business	19.7	80.3
Executive/Corporate	12.0	88.0
Commuter Air Carrier	6.1	93.9
Air Taxi	8.5	91.5
Instructional	77.7	22.3
Aerial Application	83.0	17.0
Industrial	42.2	57.8
Other	67.3	32.7
All Operations	47.0	53.0

TABLE 18

PERCENTAGE DISTRIBUTION OF CROSS-COUNTRY FLIGHT
ORGINATING AIRPORT TYPE
BY DESTINATION AIRPORT TYPE

Orginating Airport Type	DESTINATION AIRPORT TYPE			
	Towered	Untowered Paved	Untowered Unpaved	All Airport Types
Towered	60.7	32.1	29.4	40.7
No Tower, Paved Runways	30.4	57.3	52.3	46.7
No Tower, Unpaved Runways	8.9	10.6	18.3	12.6
Total	100.0	100.0	100.0	100.0

Traffic patterns between airports are also addressed. Table 18 shows the percentage distribution of cross-country flight by originating airport type by destination airport type. The findings indicate that the largest percentage of cross-country flights (46.7%) orginates from untowered airports with paved runways.

III. METHODOLOGY

A. SURVEY DESIGN

The purpose of the General Aviation Pilot and Aircraft Activity Survey is to increase FAA knowledge of the characteristics of general aviation activity and its impact on the national aviation system. The survey was accomplished by obtaining information on general aviation activities and pilot characteristics from a sample of airports. In addition, changes in general aviation activity were arrived at by comparing the results of this survey with those of previous surveys.

The survey was designed to be conducted in two phases. Phase I consisted of interviewing a sample of general aviation pilots on arrival at selected airports. Phase II consisted of direct observation of general aviation operations at each airport.

Phase I. Interview of General Aviation Pilots

General aviation pilots were interviewed on arrival at selected airports even if they had previously been interviewed at another airport. Approximately 3,719 pilots were approached with 3,440 agreeing to be interviewed. The survey questionnaire contained 19 questions. Interviews were conducted by members of the Civil Air Patrol (CAP). Completed pilot questionnaires were received from 193 of the 445 airports in the sample.

Interviewers were requested to keep a record of those pilots who refused to cooperate, since such information was essential for determining the validity of the survey data. Data from the questionnaires were used to develop the pilot and flight characteristic profiles.

Phase II. Traffic Count

The sample size of airports was fixed by practical consideration to 445. The sample was a stratified random sample designed to provide proportional representation by region. Within each region, the airport sample was further stratified by airport type:

Type 1. Towered,
Type 2. Non-towered, paved and lighted (with at least one paved runway)
Type 3. Non-towered, paved and unlighted (with at least one paved runway)
Type 4. Non-towered, unpaved

Responses were received from 187 airports out of a total sample of 445. This represents a response rate of 39 percent.

Table 19 presents the distribution of the sample airports along with the distribution of airports open to the public and the distribution of the active pilot population and sample pilot interviews by region. Since the 1978 survey, the number of FAA regions has decresed to nine, making it infeasible to compare the results of this table with preceding years. Table 20 gives the distribution of sample airports over airport type.

The Civil Air Patrol (CAP) was allowed to select the dates for collection at each airport provided one day was a weekday and one was a weekend day. The days selected were during the months of July, August and September. Survey procedures required that every incoming pilot be interviewed on the selected survey days, and every general aviation operation occurring between the hours of 0600-2100 be recorded. If the airport was not open the entire survey period, the survey was conducted during the hours of operation at the airport. This fact was reflected in the estimation of activity level.

TABLE 19

PERCENTAGE DISTRIBUTIONS OF SAMPLE PILOTS AND AIRPORTS VS. POPULATION DISTRIBUTIONS BY FAA REGION

FAA Region	Active Pilot Population[1]	Pilot Interviews	Airports Open to Public[2]	Sample Airports[3]
Alaskan	1.4	3.7	5.9	1.0
Central	6.0	7.6	10.0	5.7
Eastern	12.4	11.2	10.5	15.0
Great Lakes	17.4	17.6	20.9	22.8
New England	4.3	4.6	3.5	6.7
Northwest Mountain	10.1	7.0	11.8	8.3
Southern	16.3	21.1	14.5	16.1
Southwest	13.0	8.1	14.6	11.4
Western Pacific	19.1	19.1	7.9	13.0
Total	100.0	100.0	100.0	100.0

1. 1981 Civil Airmen Statistics, U.S. Department of Tranportation, Federal Aviation Administration (Washington, D.C., 1982), p. 10.

2. According to data extracted from the Airport Master File, maintained by the National Flight Data Center of the FAA.

3. Represents airports at which interviews were conducted.

TABLE 20

PERCENTAGE DISTRIBUTIONS OF SAMPLE AIRPORTS VS. AIRPORT POPULATION BY TYPE OF AIRPORT

Type of Airport	Airports Open to Public[1]	Sample Airports[2]
Towered	7.8	9.6
Non-Towered	92.1	90.3
Paved, Lighted Runways	43.1	48.0
Paved, Unlighted Runways	9.4	11.3
Unpaved Runways	39.6	31.1
Total	100.0	100.0

1. According to the Airport Master File which is maintained by FAA's National Flight Data Center.

2. Represents airports at which traffic counts were conducted.

B. ESTIMATION FROM THE QUESTIONNAIRE DATA

The cross-tabulations produced from the interview data are descriptive findings. These data represent the unweighted cell totals from the interviews. For those tables involving pilot characteristics, duplicate interviews were removed as indicated by question 19. For results pertaining to cross-country vs. local operations, the tables were produced from the appropriate sub-file according to question 11. In all cases, the cross-tabulations were produced only from those records which contained responses to all relevant questions. Hence, the various tables may be based on differing numbers of interviews. For this reason, and because it was desired to provide information of a descriptive nature, these tabular results are presented as percentages rather than frequencies.

C. ESTIMATION FROM THE TRAFFIC COUNT DATA

The traffic count data were used to estimate total general aviation operations occurring in 1981. The approach taken was to derive an estimate for each of the four airport type codes and to sum over airport types to determine an overall total. This approach groups the airports together which are expected to be homogeneous with respect to their daily traffic volume, since the facilities available at an airport are indicative of the traffic there. It was for this reason that the airports were sampled according to their tower and runway attributes.

For each airport type, an average daily traffic[1] estimate was derived. In order to make a daily estimate, it was necessary to make an estimate for each hour between 0600 an 2100 and sum the hourly estimates to arrive at a daily estimate. This step was necessary because the hours of operation differed from airport to airport as did the hours of observation. Partial hour observations were accounted for in the estimation procedure. Survey interruption periods were recorded and were taken into account.

Because traffic volumes differ between weekend days and week days, estimation of daily profiles was performed separately for the two cases. The hourly traffic estimates over all airports for weekdays and weekends are provided in Tables 21 and 22. An average daily estimate was calculated by weighting the weekday average by five and the weekend average by two and then dividing the total by seven.

An adjustment was made to the airport type daily traffic estimates to account for night traffic occurring between the hours of 2100 and 0600 at lighted airports. The adjustments were expressed

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[1]Daily traffic is defined as the number of takeoffs plus the number of landings.

as percentages of the traffic estimated for the 0600 to 2100 interval. The adjustment factors used were 7 percent and 3 percent of estimated daily traffic for type 1, towered airports and type 2, non-towered, paved and lighted runways, respectively. The resulting estimates are given in Table 16.

Because general aviation activity is affected by the climate, there is a seasonal influence on the level of activity occurring at different times of the year, particularly in regions with more pronounced seasonal weather patterns. The survey data were collected only during summer months. Yet, an annual estimate of total activity was to be made from them. Therefore, it was necessary to remove the seasonal effect prior to using the data for estimation on an annual basis. Historical data collected at FAA-towered airports were used to calculate quarterly seasonal factors for each FAA region via the Census X-11 Seasonal Adjustment Program. The factors yeilded by X-11 are contained in Table 23. The factors for quarter three were applied to the individual airport traffic counts before the estimation was performed, yielding daily averages corrected for potential seasonal bias.

The following summarizes the steps in the estimation of the total number of general aviation operations in 1981.

1. Calculate regional seasonal factors.

2. Apply seasonal factors to individual airport counts.

3. Within each of the four airport categories, perform the following:

    a. Calculate an hourly average number of operations for each hour between 0600-2100. Do this separately for weekdays and weekends.

    b. Sum the hourly averages to obtain daily averages.

    c. Weight the weekday and weekend daily average to obtain an overall daily average.

    d. Adjust the daily average to reflect nighttime activities.

    e. Multiply the adjusted daily estimate by 365 and then by the number of airports in each category, to obtain four annual estimates.

4. Sum the four annual estimates.

5. Add a correction for airports not open to the public.

TABLE 21

SEASONALLY ADJUSTED WEEKDAY HOURLY GENERAL AVIATION TRAFFIC ESTIMATES

Hour of Day	AIRPORT TYPE			
	Towered	Non-Towered		
		Paved Lighted Runways	Paved Unlighted Runways	Unpaved Runways
0600-0659	2.1	0.4	0.5	0.1
0700-0759	7.9	1.9	0.8	0.3
0800-0859	11.7	2.8	1.5	0.4
0900-0959	19.7	4.4	4.4	0.8
1000-1059	34.6	4.8	5.5	1.5
1100-1159	30.3	6.0	6.5	2.1
1200-1259	26.4	6.0	6.1	1.5
1300-1359	32.2	6.2	7.0	2.0
1400-1459	33.5	5.3	7.0	1.6
1500-1559	23.3	6.6	4.0	1.7
1600-1659	27.3	6.7	2.8	1.9
1700-1759	23.4	8.1	2.6	1.7
1800-1859	25.6	8.4	2.0	2.5
1900-1959	15.6	7.9	0.4	1.9
2000-2059	9.8	4.9	0.0	0.6
Total	323.4	80.4	51.1	20.6

TABLE 22

SEASONALLY ADJUSTED WEEKEND DAY HOURLY
GENERAL AVIATION TRAFFIC ESTIMATES

Hour of Day	AIRPORT TYPE			
	Towered	Non-Towered		
		Paved Lighted Runways	Paved Unlighted Runways	Unpaved Runways
0600-0659	6.7	0.3	0.0	0.0
0700-0759	13.0	1.5	0.3	0.2
0800-0859	17.1	3.7	2.1	1.0
0900-0959	17.6	6.0	1.4	1.2
1000-1059	18.0	6.3	1.5	1.7
1100-1159	18.0	8.6	3.0	1.7
1200-1259	15.1	7.7	3.2	2.1
1300-1359	16.4	7.5	3.3	2.8
1400-1459	18.1	6.8	3.7	2.3
1500-1559	16.5	7.4	4.0	3.2
1600-1659	14.7	6.6	3.3	2.0
1700-1759	16.5	4.9	1.6	1.3
1800-1859	8.1	3.1	0.5	0.9
1900-1959	7.1	2.8	1.0	0.4
2000-2059	3.2	1.4	0.0	0.1
Total	206.1	74.6	28.9	20.8

TABLE 23

SEASONAL FACTORS OF GENERAL AVIATION ACTIVITY
BY FAA REGION

FAA Region[1]	QUARTER OF YEAR			
	1	2	3	4
Alaskan	66.9	131.0	137.6	64.2
Central	81.3	108.7	114.2	95.9
Eastern	78.8	113.9	113.4	94.0
Great Lakes	76.3	112.7	119.1	92.0
New England	78.0	110.5	120.1	91.4
Northwest	82.5	115.0	119.5	83.0
Pacific	93.5	104.1	110.7	91.6
Rocky Mountain	85.3	107.3	117.3	90.2
Southern	95.3	104.9	101.9	97.9
Southwest	86.5	105.9	108.4	99.3
Western	89.7	107.4	109.6	93.3

[1] For the purposes of seasonal adjustment only, the old FAA regional definitions were used.

D. RELIABILITY OF THE SURVEY DATA

An assessment of the reliability of survey data is difficult to make under any circumstances. The quality of the data is dependent upon many factors, some of which are within the control of the survey practitioner and others which at best can be guarded in an effort to control their impact.

Errors in survey data are of two types, sampling error and non-sampling eror. Sampling error results from the fact that only a portion of the population under study has been observed rather than the entire population. This type of error manifests itself by the fact that each different sample which could potentially result from a sample design would yield a different estimate of the quantity being estimated. The degree to which these estimates vary over the different samples is referred to as the sampling error. The magnitude of the sampling error is a function of the sample design and estimation techniques. A well-designed sample which incorporates prior knowledge about the underlying population can greatly reduce sampling error. In the case of the 1981 survey, there were three underlying "populations" of interest, the active pilot population, the "population" of general aviation flights occurring in 1981 and the "population" of general aviation operations occurring in 1981. The sample design had to allow for estimation involving all three populations. The discussion concerning the sample design which was presented earlier describes how this goal was achieved. The final sample design was based upon extensive prior knowledge of the underlying populations.

Non-sampling errors arise from a variety of sources and impact the estimate via biases which cause the mathematical expected value of the estimator to differ from the true population value. One such source is non-response. Units in the sample which do not respond bias the estimates produced from the sample to the extent that they represent a homogeneity with respect to the characteristic under study which is different from that represented by the respondents. Non-response bias can be somewhat corrected for by various methods which involve adjusting for the non-respondents. In the survey, non-respondents were represented by those who refused to be interviewed. The extent of non-response differed from site to site, but an overall rate of approximately 7.5% was experienced. Because of the nature of the survey, there was no way to follow-up these cases and no way to adjust for them. Hence, their impact on the results is indeterminable. However, comparisons to other sources of data on the populations suggest that their impact was minimal.

Another type of "non-response" was experienced in the survey. That was non-response at the airport level. Although 445 airports

were selected into the sample, operations were surveyed at 178 of them. As a result, the geographical and airport type distribution of the airport sample was distorted. The effect that this had on the observed characteristics of pilots and flights can not be determined, but again, the alternate sources of data suggest that the impact was not serious.

Another type of non-sampling error is measurement error. This type of error results from respondents providing incorrect data. Careful editing of the survey documents is one means of protecting against this type of error. In addition to non-response error and measurement error, which occur during the data collection operation, other errors may be introduced during the data processing stage. These errors include coding, transcription and keypunching errors, as well as judgemental errors in the editing of the data. Because of the numerous sources of non-sampling errors and the inability to assess the magnitude of the resultant biases, it is generally believed that they are a more dangerous type of error than the sampling error, which in most cases, can be estimated by the data. The most effective manner of dealing with non-sampling errors therefore, is to anticipate them and thereby attempt to control them via quality control measures. In the data processing phase of the survey operations, many such quality control measures were applied to minimize the introduction of non-sampling errors into the survey data.

APPENDIX A

TABLE A-1

PERCENTAGE DISTRIBUTION OF PILOT CERTIFICATE BY PILOT AGE

Pilot Certificate	PILOT AGE											All Pilots
	Under 16	16-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60 and over	
Student	100.0	51.1	22.3	13.7	13.4	11.5	3.7	5.1	6.5	6.0	4.3	11.7
Private	0.0	35.1	32.0	33.1	40.3	40.4	50.0	55.9	51.4	52.7	56.4	43.6
Commercial	0.0	13.8	39.2	33.1	30.8	32.9	33.9	27.8	33.3	34.1	32.9	32.3
ATR	0.0	0.0	6.5	19.6	15.5	15.2	12.4	11.2	8.8	7.1	6.4	12.3
Foreign	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

TABLE A-2

PERCENTAGE DISTRIBUTION OF SOURCE OF AIRCRAFT BY PILOT AGE

Source of Aircraft	PILOT AGE											
	Under 16	16-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60 and over	All Pilots
Owner/Partner	50.0	17.0	16.7	28.7	39.8	44.1	55.1	60.1	63.4	61.8	70.6	45.0
Rental, Flying Club, Leased	50.0	76.6	64.5	47.3	33.1	33.8	20.2	18.2	17.1	18.5	18.2	33.3
Corporate	0.0	1.1	10.6	13.5	17.6	13.6	18.8	14.5	14.1	16.3	7.7	14.2
Government	0.0	0.0	1.4	0.7	2.1	2.6	1.7	2.3	1.0	0.0	1.4	1.6
Other	0.0	5.3	6.8	9.8	7.3	5.9	4.1	5.0	4.4	3.4	2.1	5.9
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

TABLE A-3

PERCENTAGE DISTRIBUTION OF SOURCE OF AIRCRAFT BY PILOT CERTIFICATE

Source of Aircraft	PILOT CERTIFICATE				
	Student	Private	Commercial	Airline Transport	All Students
Owner/Partner	20.9	62.6	39.8	20.4	45.1
Rental, Flying Club, Leased	74.9	27.7	32.4	15.1	33.2
Corporate	0.8	7.4	17.8	41.4	14.2
Government	0.8	0.5	2.8	2.7	1.5
Other	2.5	2.0	7.2	20.4	6.0
Total	100.0	100.0	100.0	100.0	100.0

TABLE A-4

PERCENTAGE UTILIZATION OF FLIGHT PLAN BY TYPE OF FLIGHT BY PURPOSE OF FLIGHT

Local Flight Plan				Flight Purpose	Cross-Country Flight Plan			
None	IFR	VFR	Comp[1]		None	IFR	VFR	Comp[1]
93.6	0.6	5.5	0.3	Personal	66.8	8.0	24.9	0.3
90.6	5.8	2.9	0.7	Business	59.8	23.5	16.4	0.4
81.8	0.0	18.2	0.0	Corporate/Executive	33.3	50.6	14.8	1.2
25.0	50.0	25.0	0.0	Commuter Air Carrier	4.8	69.4	25.8	0.0
91.7	8.3	0.0	0.0	Air Taxi	35.7	20.9	43.4	0.0
93.9	1.0	4.4	0.7	Instructional	34.9	14.3	50.3	0.6
100.0	0.0	0.0	0.0	Aerial Application	75.0	0.0	25.0	0.0
78.9	15.8	5.3	0.0	Industrial	57.7	7.7	34.6	0.0
94.0	0.0	5.0	0.0	Other	63.3	16.3	20.4	0.0
93.3	1.5	4.8	0.4	All Flights	53.5	18.8	25.5	0.3

[1]Composite: Use of both IFR and VFR flight plans.

TABLE A-5

PERCENTAGE DISTRIBUTION OF FLIGHT
PURPOSE BY SOURCE OF AIRCRAFT

Purpose of Flight	Source of Aircraft					
	Owner/ Partner	Rental, Flying Club, Leased	Corporate	Gov't	Other	All Sources
Personal	59.1	32.4	12.0	3.8	9.0	39.5
Business	22.3	10.0	45.0	17.3	18.5	20.9
Executive/Corporate	0.3	0.0	18.5	1.9	1.0	2.8
Commuter	0.0	0.4	0.4	0.0	29.5	2.0
Air Taxi	0.9	5.4	7.4	3.8	13.5	4.2
Instructional	11.4	48.0	5.0	17.3	15.5	23.4
Aerial Application	1.4	0.4	2.8	5.8	3.0	1.4
Industrial	0.7	0.6	2.0	26.9	2.0	1.4
Other	3.9	2.8	7.0	23.1	8.0	4.5
Total	100.0	100.0	100.0	100.0	100.0	100.0

TABLE A-6

PERCENTAGE DISTRIBUTION OF SOURCE OF AIRCRAFT BY AIRCRAFT TYPE

Source of Aircraft	AIRCRAFT TYPE								
	Single engine Piston (1-3 Places)	Single engine Piston (4 Places and over)	Multi-engine Piston	Rotor-craft Piston	Rotor-craft Turbine	Turbo-prop	Turbo-jet	Glider	All Aircraft Types
Owner/Partner	43.6	53.4	27.9	35.3	3.9	7.4	14.3	25.0	44.3
Rental, Flying, Club, Leased	47.4	31.1	19.2	29.4	19.6	3.3	2.9	66.7	34.1
Corporate	4.1	10.2	42.0	17.6	43.1	48.4	80.0	4.2	14.1
Government	0.7	1.3	2.0	0.0	19.6	3.3	2.9	0.0	1.5
Other	4.1	4.1	9.0	17.6	13.7	37.7	0.0	4.2	6.0
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

TABLE A-7

PERCENTAGE DISTRIBUTION OF FLIGHT PURPOSE BY AIRCRAFT TYPE

Purpose of Flight	AIRCRAFT TYPE								
	Single engine Piston (1-3 Places)	Single engine Piston (4 Places and over)	Multi-engine Piston	Rotor-craft Piston	Rotor-craft Turbine	Turbo-prop	Turbo-jet	Glider	All Aircraft Types
Personal	40.2	47.9	18.1	23.5	6.3	2.7	12.1	40.0	39.6
Business	9.5	24.1	38.8	17.6	27.1	26.8	48.5	4.0	20.9
Executive/Corporate	0.1	0.9	8.2	5.9	22.9	21.4	36.4	0.0	2.8
Commuter	0.1	0.0	5.2	0.0	0.0	42.0	0.0	0.0	2.0
Air Taxi	1.0	4.0	15.2	5.9	14.6	4.5	0.0	0.0	4.2
Instructional	41.0	16.6	9.3	29.4	0.0	0.0	0.0	44.0	23.4
Aerial Application	3.5	0.3	0.0	0.0	4.0	0.0	0.0	0.0	1.4
Industrial	0.7	1.7	1.2	11.8	8.3	0.0	0.0	0.0	1.3
Other	3.9	4.6	4.1	5.9	16.7	2.7	3.0	12.0	4.5
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

TABLE A-8

PERCENTAGE DISTRIBUTION OF SOURCE OF AIRCRAFT BY TYPE OF FLIGHT

Source of Aircraft	Type of Flight	
	Local	Cross-Country
Owner/Partner	41.2	46.8
Commercial	45.6	24.2
Corporate	6.9	20.4
Government	1.4	1.7
Other	4.9	6.9
Total	100.0	100.0

TABLE A-9

LOCAL FLIGHT CHARACTERISTICS BY PILOT CERTIFICATE

Pilot Certificate	AVERAGE CHARACTERISTICS		
	Landings Per Flight	Flight Time (Minutes)	Flight Speed (Nautical mph)
Student	3.3	58.4	98.1
Private	2.1	55.0	108.9
Commercial	2.2	53.8	104.4
ATR	2.0	54.6	109.9
Foreign	1.0	18.0	100.0

TABLE A-10

CROSS-COUNTRY FLIGHT CHARACTERISTICS BY PILOT CERTIFICATE

Pilot Certificate	AVERAGE CHARACTERISTICS		
	Last Leg Distance (Nautical Miles)	Last Leg Time (Minutes)	Total Trip Distance (Nautical Miles)
Student	103.5	100.0	171.1
Private	159.7	87.2	249.9
Commercial	175.7	85.5	275.6
ATR	210.3	85.1	323.0
Foreign	25.0	45.0	25.0

TABLE A-11

LOCAL FLIGHT CHARACTERISTICS BY PURPOSE OF FLIGHT

Purpose of Flight	AVERAGE CHARACTERISTICS		
	Landings Per Flight	Flight Time (Minutes)	Flight Speed (Nautical mph)
Personal	2.0	51.0	106.4
Business	1.6	52.4	114.3
Executive/ Corporate	2.1	73.6	115.6
Commuter Air Carrier	1.3	60.0	150.0
Air Taxi	1.1	42.8	129.1
Instructional	3.1	60.3	100.4
Aerial Application	1.8	50.2	107.5
Industrial	2.1	93.4	150.4
Other	1.6	47.9	105.1

TABLE A-12

CROSS-COUNTRY FLIGHT CHARACTERISTICS BY PURPOSE OF FLIGHT

Purpose of Flight	AVERAGE CHARACTERISTICS		
	Last Leg Distance (Nautical Miles)	Last Leg Time (Minutes)	Total Trip Distance (Nautical miles)
Personal	163.5	90.2	270.2
Business	203.9	90.4	263.2
Executive/ Corporate	276.8	66.1	403.2
Commuter Air Carrier	55.1	73.7	87.9
Air Taxi	136.8	88.5	290.5
Instructional	96.8	91.4	168.5
Aerial Application	33.8	66.9	58.0
Industrial	124.1	79.8	264.4
Other	166.1	80.4	227.8

TABLE A-13

PERCENTAGE UTILIZATION OF PREFLIGHT
WEATHER INFORMATION SERVICES BY
TYPE OF FLIGHT BY TYPE OF AIRCRAFT

Local: Preflight Weather Information			Type of Aircraft	Cross-Country: Preflight Weather Information		
FAA	Other	None		FAA	Other	None
31.8	17.8	53.4	Single-engine Piston (1-3 Places)	70.7	19.0	15.9
35.8	17.3	48.2	Single-engine Piston (4 Places and over)	78.1	13.2	14.5
52.4	19.0	33.3	Multi-engine Piston	89.8	7.8	6.4
41.7	16.7	41.7	Rotorcraft Piston	100.0	0.0	0.0
53.8	11.5	46.2	Rotorcraft Turbine	76.0	28.0	12.0
75.0	25.0	0.0	Turboprop	89.5	10.5	6.1
0.0	0.0	100.0	Turbojet	97.1	2.9	0.0
12.0	28.0	60.0	Glider	N/A	N/A	N/A
34.3	17.6	50.0	All Aircraft	79.5	13.2	12.6

TABLE A-14

PERCENTAGE UTILIZATION OF INFLIGHT WEATHER INFORMATION SERVICES BY TYPE OF FLIGHT BY TYPE OF AIRCRAFT

Local: Inflight Weather Information			Type of Aircraft	Cross-Country: Inflight Weather Information		
FAA	Other	None		FAA	Other	None
15.9	5.2	79.1	Single-engine Piston (1-3 Places)	37.2	4.5	58.5
22.0	2.9	75.5	Single-engine Piston (4 Places and over)	52.4	2.4	45.9
26.6	6.2	70.3	Multi-engine Piston	55.4	1.7	43.0
16.7	8.3	75.0	Rotorcraft Piston	40.0	0.0	60.0
30.8	0.0	69.2	Rotorcraft Turbine	40.0	8.0	56.0
11.1	33.3	55.6	Turboprop	62.3	1.0	36.8
0.0	0.0	100.0	Turbojet	58.8	0.0	41.2
4.0	16.0	80.0	Glider	N/A	N/A	N/A
18.9	4.5	76.9	All Aircraft	50.5	2.6	47.3

TABLE A-15

PERCENTAGE UTILIZATION OF PREFLIGHT WEATHER INFORMATION SERVICES BY TYPE OF FLIGHT BY PILOT CERTIFICATE

Local: Preflight Weather Information			Pilot Certificate	Cross-Country: Preflight Weather Information		
FAA	Other	None		FAA	Other	None
30.4	17.1	53.2	Student	85.3	10.5	8.4
33.9	16.3	52.1	Private	75.3	13.0	17.4
36.5	19.2	47.4	Commercial	79.4	15.9	10.5
40.0	19.1	47.0	ATR	88.6	10.1	6.5
0.0	0.0	100.0	Foreign	100.0	0.0	0.0
34.5	17.7	50.4	All Certificates	79.6	13.3	12.7

TABLE A-16

PERCENTAGE UTILIZATION OF INFLIGHT WEATHER INFORMATION SERVICES BY TYPE OF FLIGHT BY PILOT CERTIFICATE

Local: Inflight Weather Information			Pilot Certificate	Cross-Country: Inflight Weather Information		
FAA	Other	None		FAA	Other	None
16.2	3.9	79.9	Student	47.4	1.1	51.6
19.7	2.9	77.6	Private	48.3	2.0	50.1
19.3	5.9	75.3	Commercial	49.6	3.4	47.7
20.7	6.9	74.1	ATR	57.9	2.6	39.8
0.0	0.0	100.0	Foreign	0.0	0.0	100.0
19.4	4.4	77.0	All Certificates	50.3	2.5	47.6

APPENDIX B

DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

Form Approved
OMB No. 2120-0097
Use Expires 12/31/81

GENERAL AVIATION PILOT AND AIRCRAFT ACTIVITY SURVEY

Pilot Questionnaire

This survey is authorized by sections 311 and 312 of the Federal Aviation Act of 1958, as amended. While you are not required to respond, your cooperation is needed to make the results of this survey comprehensive, accurate and timely. Information collected in this survey will be used for statistical purposes only.

1. AIRPORT INFORMATION

a. Airport name:_____

b. Airport code *(FAA use only)*:_____

c. Location *(nearest city)*: _____

d. County:_____

e. State:_____

f. Airport tower: (1)_____Tower (2)_____No Tower

g. Runway(s): a. (1)_____Paved (2)_____Unpaved
b. (1)_____Lighted (2)_____Unlighted

2. SURVEY DATE

a. Day of week:_____

b. Month/day/year:_____/ /_____
(mm / dd / yy)

INFORMATION FOR FLIGHT JUST COMPLETED

3. WHAT TYPE AIRCRAFT DID YOU USE IN THIS FLIGHT? *(check 1)*

1. ☐ Single-engine piston
2. ☐ Multi-engine piston
3. ☐ Rotorcraft piston
4. ☐ Rotorcraft turbine
5. ☐ Turboprop
6. ☐ Turbojet
7. ☐ Glider
8. ☐ Balloon

4. HOW DID YOU OBTAIN THE AIRCRAFT FOR THIS FLIGHT? *(check 1)*

1. ☐ Individual owner or partnership
2. ☐ Commercial rental or flying club or leased
3. ☐ Corporate owner other than commercial
4. ☐ Government
5. ☐ Other

5. HOW MANY SEATS ARE AVAILABLE FOR BOTH PASSENGERS AND CREW IN THIS AIRCRAFT? Number of Seats ☐

6. HOW MANY SEATS WERE OCCUPIED DURING THIS FLIGHT? Number of Seats ☐

7. WHAT WAS THE MAIN PURPOSE OF THIS FLIGHT? *(check 1)*

1. ☐ Personal
2. ☐ Business
3. ☐ Executive/corporate
4. ☐ Commuter air carrier
5. ☐ Air taxi *(excluding commuter air carrier)*
6. ☐ Instructional *(excluding proficiency)*
7. ☐ Aerial application
8. ☐ Industrial/special, patrol, survey, etc.
9. ☐ Other *(demonstration, R&D, parachuting, etc.)*

8.a. DID YOU OBTAIN WEATHER INFORMATION *PRIOR* TO THIS FLIGHT?

1. ☐ Yes
2. ☐ No *(If no, go to Question 9.)*

b. HOW DID YOU OBTAIN THE INFORMATION? *(More than one answer is permitted.)*

1. ☐ FSS briefing
2. ☐ NWS briefing
3. ☐ VRS briefing
4. ☐ TV/radio/newspaper
5. ☐ PATWAS/Tele TWEB
6. ☐ TWEB broadcast
7. ☐ NOAA broadcast
8. ☐ Other sources

9.a. DID YOU OBTAIN WEATHER INFORMATION *DURING* THIS FLIGHT?

1. ☐ Yes
2. ☐ No *(If no, go to Question 10.)*

b. HOW DID YOU OBTAIN THIS INFORMATION? *(More than one answer is permitted.)*

1. ☐ Contacted EFAS (FLIGHT WATCH)
2. ☐ Monitored FLIGHT WATCH
3. ☐ Contacted FSS other than FLIGHT WATCH
4. ☐ Contacted center/tower
5. ☐ ATIS broadcast
6. ☐ FSS hourly broadcast
7. ☐ TWEB-NDB broadcast
8. ☐ TWEB-VOR broadcast
9. ☐ Other

10.a. DID YOU FILE A FLIGHT PLAN FOR THIS FLIGHT?

1. ☐ Yes
2. ☐ No *(If no, go to Question 11.)*

b. WHAT TYPE OF FLIGHT PLAN DID YOU FILE? *(check 1)*

1. ☐ Preflight IFR
2. ☐ Preflight VFR
3. ☐ Inflight IFR
4. ☐ Inflight VFR
5. ☐ Composite

c. HOW DID YOU FILE THE FLIGHT PLAN? *(check 1)*

1. ☐ FSS tape-recorder (Fast File) 2. ☐ FSS specialist 3. ☐ Center/tower controller

11. WAS THIS FLIGHT LOCAL OR CROSS-COUNTRY?

1. ☐ Local, i.e., entire flight within 20 miles of this airport *(If local, go to Question 12.)*
2. ☐ Cross-country *(If cross-country, go to Question 13.)*

12. IF THIS WAS A LOCAL FLIGHT, *(answer all)*

1. How many landings, including touch-and-go's, did you make? ☐
2. What was the total flight time? (Hours:Minutes) ☐
3. What was the average air speed? (Knots) ☐

13. IF THIS WAS A CROSS-COUNTRY FLIGHT, *(answer all)*

1. What was your total enroute distance between the last departure and arrival airports? (Nautical Miles) ☐
2. What was the flight time between the last departure and arrival airports? (Hours:Minutes) ☐
3. What type was the last airport you came from? *(check 1)* ☒

1. ☐ Towered 2. ☐ Non-towered, paved runway 3. ☐ Non-towered, unpaved runway

4. Counting all intermediate stops, what was your total enroute distance between origin and destination airports? (Nautical Miles) ☐
5. What was the maximum enroute altitude during this flight? (MSL) ☐

14. WHAT IS THE AVERAGE FUEL CONSUMPTION AT NORMAL CRUISE SPEED FOR THIS AIRCRAFT? (Gallons per Hour) ☐

15. DO YOU HOLD A CURRENT INSTRUMENT RATING?

1. ☐ Yes 2. ☐ No

16. WHAT PILOT CERTIFICATE DO YOU CURRENTLY HOLD? *(check 1)*

1. ☐ Student 3. ☐ Commerical 5. ☐ Foreign
2. ☐ Private 4. ☐ Airline Transport

17. WHAT IS YOUR AGE GROUP?

1. ☐ Less than 16 5. ☐ 30-34 9. ☐ 50-54
2. ☐ 16-19 6. ☐ 35-39 10. ☐ 55-59
3. ☐ 20-24 7. ☐ 40-44 11. ☐ 60 or over
4. ☐ 25-29 8. ☐ 45-49

18. OF YOUR TOTAL FLYING TIME IN 1980, *(answer two)*

1. How many hours were local flying? ☐
2. How many hours were cross-country flying? ☐

19. WERE YOU PREVIOUSLY INTERVIEWED CONCERNING THIS QUESTIONNAIRE AT THIS OR ANOTHER AIRPORT?

1. ☐ Yes 2. ☐ No

If yes, on what date? ☐☐/☐☐/☐☐ (mm/dd/yy), at what airport? ☐

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

FORM APPROVED
OMB No. 2120-0097
Use Expires 12/31/81

GENERAL AVIATION PILOT AND AIRCRAFT ACTIVITY SURVEY

Traffic Count Form

1. Airport name: _____
2. Airport code *(FAA use only)*: _____
3. Location *(nearest city)*: _____ County: _____ State: _____
4. Airport tower: (1)_____Tower (2)_____No tower
5. Runway(s): a. (1)_____Paved (2)_____Unpaved
   b. (1)_____Lighted (2)_____Unlighted
6. Time period(s) of survey interruption(s) _____
7. _____ Day of the Week
8. Date _____ *(mm / dd / yy)*

9 Time *(local)*[a]	10 Aircraft Type[b]	11 Take-off	12 Land-ing	13 Touch/ Go	14 VFR	15 IFR

9 Time *(local)*[a]	10 Aircraft Type[b]	11 Take-off	12 Land-ing	13 Touch/ Go	14 VFR	15 IFR

[a] Use 24 hour clock and record time to the nearest minute: e.g., 2:13 p.m. = 14:13.

[b] 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

DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

Form Approved
OMB No. 2120-0097
Use Expires 12/31/81

GENERAL AVIATION PILOT AND AIRCRAFT ACTIVITY SURVEY

Daily Summaries

1. Airport name: _____

2. Survey dates: _____ _____
   (day of the week) *(day of the month)* *(day of the week)* *(day of the month)*

	First Day	Second Day
3. Time survey started:		
4. Time survey ended:		
5. Number of completed pilot questionnaires:		
6. Time period(s) of pilot survey interruption(s):		
7. Number of pilots who refused to cooperate:		
8. Number of completed traffic count forms:		
9. Time period(s) of traffic count interruption(s):		

10. Survey comments, if any: _____

_____

_____

11. Rank and name of CAP Commander: _____

Telephone Numbers:
(include Area Code)

Home: _____

Office: _____

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