OBTAINING AND ANALYZING

AVIATION INDUSTRY EMPLOYMENT DATA

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ABSTRACT

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According to the author's review of a multitude of sources, there are 2,074,190 people working in the civilian aviation industry in 1985. However, in arriving at this figure, 18.7 percent of the data utilized are estimates and not actual counts. Other problems noted in arriving at this estimate include the fact that there is no consistent, across-the-board source of aviation industry employment data. Finally, there are key segments of the industry which do not keep employment statistics for themselves: general aviation, regional airlines, most of government aviation below the federal level, and such miscellaneous aviation related employers as travel agencies.

The author suggests three things to help improve the aviation industry employment data base. First, aviation educators must become more familiar with the present data and its limitations. Second, aviation educators should strive to undertake research projects to establish base data in those parts of the aviation industry where only estimates are possible today. Finally, the aviation industry is encouraged to track its own employment information in order to contribute to better preparation of its employees through aviation education.

Introduction

Article titles like "Pilot Hirings in June Continue at Record Level"[1] and "Pilot Pool is Drying Up"[2] indicate just how the general economy and the aviation industry have changed in the past few years. In a way, it is good, even great news to aviation educators, to hear that the aviation employment market just might transition from a "buyers" market to a "sellers" market. However, before any aviation educator jumps to a conclusion, it is important to provide a framework to analyze the situation. In fact, it is also important to identify data sources for an analysis of the aviation industry employment market. Therefore, once a basic definition of the aviation industry is provided, this paper will describe selected sources of nationwide aviation industry employment information. A secondary thrust of the paper will be to present and qualitatively analyze some of the general employment information shown in these sources for the five key aviation industry segments. A third thrust of the paper will be to focus on some of the problems in analyzing some of the data sources. Finally, some conclusions will be drawn from the analysis presented concerning overall aviation industry employment information sources and trends.

The Aviation Industry

The first task of this paper is to present an overall framework for the analysis of aviation industry employment information. This framework is a basic definition of the aviation industry. For the purposes of this paper, the aviation industry is described in the following manner:

1. The aviation industry includes only civilian aviation, including Department of Defense (DOD) contractors, but omitting the military itself;

2. The civilian aviation industry is made up of five components.[3]

   A. Aviation/Aerospace Manufacturing - Civil (airline and general aviation), military space.

   B. Airlines - majors, nationals, regionals, all cargo.

   C. General Aviation - not including manufacturing, including all flying except that done by the military and by the scheduled airlines.

   D. Government - Federal (Federal Aviation Administration, National Transportation Safety Board, etc.), State and Local.

   E. Miscellaneous: Travel Agents, Consultants, Industry Associations and Supporting Industries for the Aviation Industry.

Sources of Aviation Industry Employment Information

Industry-wide aviation employment information is available at varying levels of quality for each of the four industry segments. Generally, there are industry-wide associations/lobby groups representing the industry segments, or major portions of each of them, which have data available. The information available from these industry associations is generally "order of magnitude" information. These industry associations are, therefore, not placement centers or employment clearing houses. Instead, they merely are presenting these data for public information purposes.

1. Aviation/Aerospace Manufacturing. The best source for industry-wide employment information for aviation/aerospace manufacturing is the

Aerospace Industries Association of America (AIAA) of Washington, D.C. This industry association distributes statistical reports and issues a periodical entitled Aerospace in which it's employment information is presented. The most recent information from AIAA indicates that there are 1,252,000 employees involved in Aviation/Aerospace Manufacturing.[4] Among the largest of the individual companies in this segment is Boeing, with employment in excess of 120,000 (or about ten percent of the segment total). The source for this information is the company itself,[5] although individual company employment information is usually available from annual reports or from such financial industry sources as Moody's and Standard and Poor's.

2. Airlines. There is an excellent source of employment data for the airline segment of the aviation industry, the annual report of the Air Transport Association of America (or ATA). This source reports a 1984 airline employment figure of 345,079[6] for its 29 ATA member airlines.

The following table shows the composition of the ATA employment figure:[7]

Pilots and Copilots	29,962
Other Flight Personnel	7,035
Flight Attendants	60,251
Communications Personnel	764
Mechanics	42,558
Aircraft/Traffic Servicing	100,621
Office Employees	72,369
All Others	31,519
	354,079

In addition to the ATA estimate, which includes the vast majority of major and national airlines, one must also count employment figures for several excluded categories of airlines. These are:

A. Large and Medium Regional Airlines. ATA estimates employment in this category in 1983 at 12,998,[8] but did not provide a 1984 estimate. Becuase of general industry growth in 1984, the author places the 1984 figure at 14,000.

B. All Cargo Airlines. While figures for three all cargo airlines are included in the ATA figures, the majority of such figures are not. Chief among the excluded airlines are Airborne Express, United Parcel Service and DHL Express. The author estimates all cargo airline employment at 10,000 plus the figures already counted for Federal Express, Flying Tiger and Purolator Courier.

C. Excluded National and Regional Jet Carriers. Chief among the airlines in this category are Southwest, America West, New York Air, People Express, Trans America Air and World. This figure is placed at 13,083.

Combining these additional estimates with the ATA figure gives a total airline employment figure of 382,162.

3. General Aviation. For an estimate of employment in the general aviation segment, the General Aviation Manufacturers Association (GAMA) of Washington, D.C. was consulted. They prepared an estimate for an overall public relations brochure in 1979 of 300,000[10] including manufacturing employment (which was counted in the earlier AIAA estimate). Excluding manufacturing employment from the GAMA estimate, there are a total of 240,000 people working in the general aviation field. This figure is composed of the following types or categories of work:

80,000	Sales, Service
20,000	Agricultural
45,000	Corporate Flight Departments

15,000	Industrial Special Uses (pipeline patrol, etc.)
15,000	Self-employed
65,000	General Aviation Sub-components (tires, etc.)
240,000	

4. Government Aviation. The primary federal government agency associated with aviation is the Federal Aviation Administration with an employment total of 45,873.[11] Other federal agencies with significant aviation-related employment are the National Transportation Safety Board, the Department of Defense (particularly civilian employees of DOD on military aviation installations and in Washington, D.C.), Department of Transportation - Office of the Secretary, Department of Interior - Forestry, U.S. Postal Service, and several other federal agencies.[12] Combined employment at these agencies is estimated by the author to be about 10,000 aviation-related people.

The states are also heavily involved in aviation. Several states operate significant parts of their airport systems, notably Hawaii, Maryland, and Rhode Island. Also, 48 of the 50 states have some form of statewide aviation safety regulation including a statewide aviation or aeronautics agency, division or department. Representing these state agencies is the National Association of State Aviation Officials (NASAO), which estimates state aviation employment totals at 1679.[13] The author estimates that another 321 employees are employed at state agencies not covered in the NASAO estimate.

Local governments have an important role in aviation because they operate a majority of the 5000-plus publicly-owned airports in the nation. Some of these local governments employ no aviation-related

employees while others employ in the thousands. Most of these people are operations personnel, crash-fire-rescue personnel and other support workers. Management personnel represent a relatively small number of these jobs--probably ten percent or so of the estimated 20,000 people working at local government operated airports. The best information available regarding local government aviation employment data is from the American Association of Airport Executives membership roster and from Air Transport Association studies of the economic impact of individual airports.

5. Miscellaneous. This is the portion of the aviation industry which provides needed support. For example, 13,000 travel agencies nationwide help to market airline services, consultants provide engineering, planning and construction support for airport expansion, industry associations help to lobby for the industry and related industries such as various suppliers, food service companies and travel-related businesses (such as hotels and rental car companies) have aviation-related employees. There are also those of us who are aviation educators! Author's estimates for each category are as follows:

Travel Agenices	104,000[14]
Consultants (includes construction)	10,000
Industry Associations	500
Related Industries	5,000
Aviation Educators	600
Total	120,100

This total figure is only a rough estimate and may change depending upon the definition and further research of the various categories.

Problems with the Data

In compiling the data (see Figure 1) for this report, a number of problems surfaced regarding the quality of aviation industry employment data:

1. There is no consistent, across-the-board source of aviation employment data.

2. Some of the industry segments and sub-segments do not maintain employment data. Notably the problems are:

   A. General Aviation.
   B. Regional Airlines.
   C. Most of Government Aviation below the federal level.
   D. All of the miscellaneous categories (especially travel agencies).

3. It is difficult to compare the existing available data because of variation in how and when the data are collected. Approximately 81.3 percent of the data are directly from industry sources while 18.7 percent of the data are industry or author's estimates. Even the direct industry sources are partial in their coverage or collected irregularly.

4. There are no available forecasts of aviation industry employment data, for the industry as a whole, by segment or by sub-segment. This lack of an available forecast information is understandable since there is firm current data for only a portion of the industry. This lack of available employment forecast information does not preclude such forecasts being made, either on a quantitative or qualitative basis. However, such forecasts must be made with recognition of the limitations in the data base.

There are certainly several bright spots in this "forest" of problems with aviation industry employment data. For example, the Air Transport Association's airline data captures a vast majority of airline employment and their employment data base goes back in time for several decades. Also, the Aerospace Industries Association of America data base has been maintained for years and is considered a strong representation of the aerospace/aviation industry segment. Finally, the Future Aviation

Professionals of America maintain a very strong data base concerning pilots, flight attendant and, more recently, mechanic hiring. Such efforts should be duplicated in the other aviation industry segments and sub-segments.

Recommendations

1. In order for aviation educators to be equipped with the best information possible to provide their students and graduates, it is recommended that aviation educators become more familiar with the existing data and its limitations.

2. Aviation educators are also encouraged to work with industry segments and sub-segments in researching aviation employment data. Aviation educators can help industry establish stronger employment data bases through cooperative research.

3. The aviation industry is encouraged to track its employment information in order to provide the information necessary to understand its manpower trends and needs by segment and by sub-segment. Understanding these trends and needs will assist aviation educators in their efforts to prepare future employees for the aviation industry.

Summary

According to the data presented in this paper, the civilian aviation industry employs approximately 2,074,190 people in five key industry segments. Of this total employment figure 81.3 percent of it is based on industry data, 16.6 percent of it is based on industry estimates and 2.1 percent of it is based on the author's estimate. Even though there are a large number of existing industry data sources covering 97.9 percent of the aviation industry employment (see Figure 2), formats and data

management methods vary widely. This lack of consistency in the data, leads to difficulty in using the data. Also, no one has ventured into the area of forecasting aviation industry employment data, possibly because of the weak base data.

Based on the relatively large percentage of aviation industry employment data which must still be estimated, there is indicated a need for further research to establish a solid aviation industry employment data base. Once these data bases are established, it will be much easier to monitor past trends, establish current needs and develop forecasts of future aviation industry employment.

FIGURE 1

AVIATION INDUSTRY EMPLOYMENT DATA

ARRANGED BY SOURCE

	Industry Data	Industry Estimate	Author's Estimate	TOTALS
Manufacturing	1,252,000	--------	--------	1,252,000
Airlines				
ATA Members (minus all cargo)	291,427	--------	--------	291,427
Regionals	12,998	--------	1,002	14,000
All Cargo	53,652	--------	10,000	63,652
Others	15,138	--------	--------	15,138
General Aviation (minus manufacturing)	--------	240,000	--------	240,000
Government				
Federal Aviation Administration	45,873	--------	--------	45,873
Other Federal	--------	--------	10,000	10,000
State	1,679	--------	321	2,000
Local	13,147	--------	6,853	20,000
Miscellaneous				
Travel Agents	--------	104,000	--------	104,000
Consultants	--------	--------	10,000	10,000
Industry Associations	--------	--------	500	500
Supporting Businesses	--------	--------	5,000	5,000
Aviation Educators	--------	--------	600	600
TOTALS	1,685,914	344,000	44,276	2,074.190
	81.3%	16.6%	2.1%	100%

FIGURE 2

SUMMARY OF

AVIATION EMPLOYMENT DATA SOURCES

Aerospace/Aviation Manufacturing

Aerospace Industries Association of America

General Aviation Manufacturers Association

Individual Company Annual Reports

Airlines

Air Transport Association of America

Regional Airline Association

Individual Company Annual Reports

Future Aviation Professionals of America

General Aviation

General Aviation Manufacturers Association

Government Aviation

Federal Aviation Administration

National Association of State Aviation Officials

American Association of Airport Executives

Miscellaneous

American Society of Travel Agents

FOOTNOTES

[1]"Pilot Hirings in June Continue at Record Levels," Aviation Daily, July 1, 1985, p. 2.

[2]J. A. Donoghue, "Pilot Pool is Drying Up," Air Transport World, June 1985, pp. 32-35.

[3]This general aviation industry overview was originally presented in David A. NewMyer, "Aviation Industry: An Employment Outlook" in the Summer 1981 Journal Studies in Technical Careers, pp. 289-296.

[4]Aerospace Industries Association of America, "Aerospace Economic Indicators," Aerospace Washington, D.C.: AIAA, Spring 1985, p. 17.

[5]Telephone interview, Boeing Public Relations Department, June 27, 1985.

[6]Air Transport Association of America, Air Transport 1985, Washington, D.C.: ATA, June 1984, p. 7.

[7]Ibid.

[8]Air Transport Association of America, Air Transport 1984, Washington, D.C.: ATA, June 1984, p. 7.

[9]Ziff-Davis Publishing, World Aviation Directory Winter 1984-85, pp. 6-46.

[10]General Aviation Manufacturers Association, The General Aviation Story, Washington, D.C.: GAMA, 1979, p. 9.

[11]Federal Register, Vol. 48, No. 137, July 15, 1983, p. 32492.

[12]Walter Zaharevitz, "Aviation Career Series: Government" Aviation Education, Washington, D.C.: DOT/FAA, 1976, pp. 22-25.

[13]Letter from Jean R. Lloyd, National Association of State Aviation Officials, January 1980.

[14]Telephone conversation, Public Information Office, American Society of Travel Agents, July 16, 1985.

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Air Transport Association of America, Air Transport 1984, Washington, D.C., ATA, June 1984.

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American Society of Travel Agents, Public Information Office, Telephone conversation, July 16, 1985. They said that there were 13,000 travel agencies in the nation with an average of eight employees each.

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