

established, but on new routes which they may wish to explore as opportunities for expansion.

3. Principal uses must be considered in determining the future of these data programs. The data need to be complete, should include all significant carriers on the traffic routes, need to be stable and of high quality, to permit sophisticated analytical use in forecasting. The traffic flow data need to be made readily available to a wide range of users from private industry to government, and hopefully preserving the excellent services now provided by the data vendors.

4. U.S. data are essential for major international aviation statistics programs. Furthermore, the United States needs such information in order to maintain its leadership in aviation, both in terms of having the world's largest and most advanced air carriers and as the principal supplier of aircraft and other aerospace industry products to the world. These programs must continue and maintain a high quality, and this can only be done if the United States can provide the data needed for its own carriers and manufacturers. For marketing and designing of aerospace equipment, American industry needs to know what is going on in the traffic flows of other parts of the world and sometimes international statistics programs are the only source of these data in any consistent way.

The Civil Aeronautics Board programs as they now exist are well-designed and efficient and have produced reliable data. Some of the major gaps and limitations in traffic flow data resources in fact are in related non-CAB programs, particularly in the foreign trade data both of the United States and of the United Nations. Under the legislative authority of the Census Bureau, much of the detailed data needed to analyze air cargo markets cannot be made available to users, even though this could be done operationally without endangering its confidentiality. The United Nations data is subject to strict budgetary limitations and the problems of coordinating complex data series from well over a hundred countries make it very difficult to provide prompt and complete data; the U.N. does not have the resources needed to do a mode analysis on foreign trade data. The limitations on the passenger data are severe also. For example, the Immigration and Naturalization Service is no longer able to provide adequate data from its I-94 Alien Declaration Forms to give United States tourism and airline industries some very valuable data for marketing to foreign travelers. The United States Travel Service used to provide some very valuable information here, but its budget has been severely cut. Thus areas where data improvements are most needed in many cases are non-CAB data sources. Essentially there are two major problems: (1) there is a need to develop data resources that are now not adequately developed outside of the Civil Aeronautics Board, and (2), there is a need to preserve those portions of the CAB traffic flow statistics that are considered to be essential.

What the future of these data programs will be cannot now be foretold. Hopefully, through efforts like this conference of the TRB, an effective consensus can be worked out with government and industry, and that consensus can be presented to the Congress for action. Furthermore, let us hope that the users of these data programs will be closely involved in the major decisions for the post-CAB era.

FAA USES OF CAB DATA IN FORECASTING
Gene S. Mercer, Federal Aviation Administration

Summary

The airline industry data now collected by the Civil Aeronautics Board is an integral part of the analyses and forecasts made by FAA for budget, facility and manpower planning, industry surveillance and regulatory economic impact determinations. Air cargo provides a good example of the problems encountered in forecasting and analyses by the decline in availability of CAB data. The limited data now available from general aviation is another example of the minimum kinds of data that may be available for the air carriers in the future. Forecasting will become more difficult in the future but it will be performed.

Data describing the aviation industry and aviation traffic is used by the FAA as a basis for:

- Budget, facility and manpower planning;
- Industry surveillance; and
- Regulatory economic impact determination.

The airline industry data now collected by the CAB is an integral part for all three types of analyses. The forecast branch of the Office of Aviation Policy and Plans supports these analyses by providing the traffic and FAA workload projections they require.

The following is a brief review of the types of data FAA uses in generating its forecasts and identification of some of the issues which will have to be resolved as a result of CAB sunset.

FAA currently uses Form 41 data in its national and hub level forecasts. In doing the national forecasts the following data elements are used:

- Revenue passenger miles,
- Passenger enplanements,
- Average passenger trip length,
- Passenger load factors, and
- Passenger revenues.

These passenger data, when combined with data on the airline fleet, provides the historical data base which is utilized to project activity levels at FAA towered airports and at air route traffic control centers. Form 41 airline fleet data elements used in conjunction with the passenger data are:

- Airborne miles by equipment type,
- Hours flown by equipment type,
- Number of aircraft by type, and
- Fuel consumption.

Hub level forecasts -- forecasts of traffic at a number of airports within a limited geographical area -- are more dependent on O&D type data. That is, the trend in connecting airline passengers are as important at this level as are enplaning and deplaning passengers. This is true because connecting passenger traffic is a function of airline route structure and its growth is dependent on economic activity levels outside the hub, among other factors.

Special note should be taken of current cargo traffic reporting. It represents the first step in the decline of CAB data availability. The reported

CAB data on cargo traffic is incomplete since not all carriers report as they did prior to passage of the cargo deregulation act. Starting in 1979, the FAA had to develop estimates for revenue tons enplaned and revenue ton miles by extrapolating from the information reported by those carriers who still report.

FAA recognizes that in comparison to passenger traffic, air cargo does not generate a great deal of operational traffic at FAA facilities. However, working with this limited data can serve as a test case for the development of forecasting techniques that are not dependent, or as dependent, on the type of data FAA has obtained from the CAB in the past.

Industry Changes

This discussion has focused on the uses of CAB data -- with the view of determining what data series should be preserved and continued. Regardless of the eventual degree of success in acquiring data from the air carriers, there is a need to plan today for the time when the data base will be much leaner. Air carrier activity forecasting in the future is more likely to resemble general aviation forecasting of today than the air carrier forecasting now being conducted.

Deregulation is only one reason for these changes in forecasting methodology.

The changing characteristics of the industry are also going to influence how forecasts are developed. For example, a major issue is fuel prices -- not only aviation fuel prices, but also alternative transportation mode fuel prices. Fuel price increases are driving operating costs ever higher. This dramatically impacts the cost of air transportation in differing ways. A few months ago FAA calculated that revenue generated per passenger mile ranged from three cents for a World Airways transcontinental trip to 75 cents for a commuter trip.

Clearly, in the future, analysts will have to differentiate long and short haul traffic in their forecasting. Today, more than 50 percent of passenger enplanements are for trips of less than 500 miles. Will this continue to be true in the future? The current rapid increases in commuter traffic were assisted by deregulation. They have occurred because flying is still less expensive or more convenient for many travelers than using an automobile. In general, the current traffic growth rates being experienced by short haul carriers -- commuters and local service carriers -- indicate they are competing effectively with the automobile. Thus it will be necessary to gain a much broader perspective -- a perspective on all of transportation -- to maintain a high level of accuracy in FAA forecasts. There is no alternative to flying for long haul travel. There is an alternative for short haul travel.

As of now, there is no mechanism for the collection of Form 41 type data after 1984. The commuters have never reported as extensively as the certificated air carriers. The ongoing changes in the industry indicate that those changes should provide the basis for determining what data will be needed in 1985 and beyond. It is not enough to say that a certain Form 41 data element is absolutely required and that another element is highly desirable, and so on.

Future Planning

In planning for the post-1984 data environment it seems wise to assume the availability of only a minimum of data and that the available data will be very similar to what now exists for general aviation.

FAA current forecasts of general aviation are based on three types of aviation data:

1. Airport counts of general aviation operations. The count is fairly accurate for FAA towered airports. FAA Form 5010 is used by non-towered airport operators to report traffic at their fields. FAA currently has a project under way to improve the accuracy of these counts.
2. Fleet counts are obtained from the aircraft registration files. Aircraft utilization rates are obtained from a survey conducted annually by FAA and the Civil Air Patrol.
3. The third major source of data is manufacturers who report their sales through their trade association, the General Aviation Manufacturers Association. It is this source on which we depend for early warning of changes occurring within the general aviation industry.

As you can see, FAA's general aviation forecast models were developed, utilizing a minimum data base.

In summary, it is known what data is available. Over the next few years the user community has to determine the minimum they require to effectively perform their work.

The type of data desired has to be defined and agreed upon. There are costs associated with collecting the data. So, while FAA would like to have the smallest commuter airline complete a Form 41, it just is not realistic to expect that level of specificity.

The frequency and precise level of detail to be required has to be set out. Much of the general aviation data FAA uses is annual and often is available many months after the year is over. FAA does not like it that way necessarily but, in the absence of legislation, it is all that is available.

There is much to be done. Forecasting will become more difficult after 1984. However, FAA will still be doing it -- somehow.

STATUS OF CAB DATA REQUIREMENTS PLANS
Clifford M. Rand, Civil Aeronautics Board

Summary

Despite the numerous secondary uses which have evolved, the principal reason for CAB data collection has been its regulatory needs. The main body of data used by the Board and others will continue to be available for the next few years. While the CAB is aware that there is a continued need for data to support the international program, the service to small communities program, those involving air safety and airport operations and to monitor the overall condition of the air transport industry, these needs do not require all the data now submitted to CAB. Accordingly, major reductions in