CED-77-38
2-25-77

REPORT TO THE CONGRESS

BY THE COMPTROLLER GENERAL OF THE UNITED STATES

Comments On The Study: "Consequences Of Deregulation Of The Scheduled Air Transportation Industry"

Air Transport Association of America

The Air Transport Association of America study concluded that if air transport within the United States were deregulated, air services available to the public could be markedly reduced.

GAO assessed the study's methods and assumptions and found that they were often faulty. It warns that conclusions drawn from the study should not be relied on as an estimate of the consequences of a deregulated air transport industry. Other reviewers of the association's study had similar assessments.

CED-77-38

FEB.25.1977

COMPTROLLER GENERAL OF THE UNITED STATES
WASHINGTON, D.C. 20548

B-138942

To the President of the Senate and the
Speaker of the House of Representatives

This report presents our comments on the Air Transport Association of America's study entitled "Consequences of Deregulation of the Scheduled Air Transport Industry." The report was requested by the Chairman, Subcommittee on Administrative Practice and Procedure, Senate Committee on the Judiciary, and is being sent to the Congress because of its interest in the impact of Federal economic regulation of the lessening of regulation on the airline industry and traveling public. The Subcommittee asked us to assess the association's conclusion that the level of service available to the public could be markedly reduced under a deregulated air transport system.

Our review was made pursuant to the Budget and Accounting Act, 1921 (31 U.S.C. 53), and the Accounting and Auditing Act of 1950 (31 U.S.C. 67).

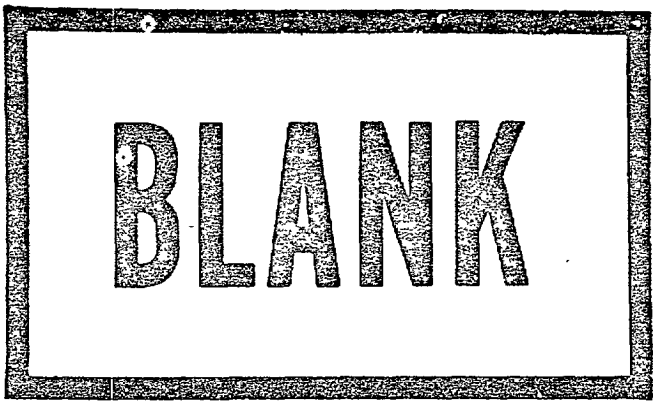
Copies of this report are being sent to the Director, Office of Management and Budget; the Chairman, Civil Aeronautics Board; the Secretary of Transportation; and the President, Air Transport Association of America.

ACTING Comptroller General
of the United States

Contents

ABBREVIATIONS

ATA	Air Transport Association of America
CAB	Civil Aeronautics Board
GAO	General Accounting Office


BLANK

COMPTROLLER GENERAL'S REPORT TO THE CONGRESS

COMMENTS ON THE STUDY: "CONSEQUENCES OF DEREGULATION OF THE SCHEDULED AIR TRANSPORT INDUSTRY" Air Transport Association of America

D I G E S T

The Air Transport Association of America, representing domestic airlines, made a study entitled "Consequences of Deregulation of the Scheduled Air Transport Industry." The association made the study in response to questions posed by the Chairman, Subcommittee on Administrative Practice and Procedure, Senate Committee on the Judiciary. Also, at the Subcommittee Chairman's request, GAO assessed the association's conclusion that air services available to the public could be markedly reduced under a deregulated air transport system.

GAO's overall assessment is that the study's methods and assumptions are often faulty and that its conclusions should not be relied on as an estimate of the consequences of a deregulated air transport industry. Other reviewers of the association's study had similar assessments. (See p. 13.)

The association concluded that 1,198 airline routes risk abandonment in a deregulated climate. This is based on its assumption that Federal subsidies on 826 routes would end and that the remaining 372 are unprofitable according to its computer simulation of the airline industry.

GAO believes these conclusions are questionable because:

--Subsidies are granted under conditions that probably would continue after deregulation.

--In determining that 372 routes were unprofitable, the association did not properly credit routes with the revenue they generated.

--Many of the routes listed as unprofitable appear profitable because they were receiving substantial air service from two or more unsubsidized airlines. (See p. 4 .)

The association concluded that under deregulation, airlines might try to improve their profit by significantly reducing the number of available flights, thus raising average load factors--the percentage of total aircraft passenger seating capacity actually used. Increased profits would result from about the same number of passengers flying fewer flights.

The association's flight reduction estimates are overstated because in some cases, they did not adequately provide for passengers of discontinued flights being diverted to other flights. Many flights which the association contends would be discontinued, may remain to the extent that load factors are increased by passengers being diverted to these flights from other discontinued flights.

The association also did not consider that many flights would be retained because they (1) provide passengers and/or make aircraft available for other routes or (2) receive Federal subsidy. (See p. 10.)

According to the association, raising average system load factors could result in an increase in denial of service to some passengers during peak travel periods. The association, however, did not assess the extent to which passengers may be denied service.

The association also concluded that maintaining the 1973 service level on trunk airline routes flown that year could require as much as $1 billion in subsidies. Because the association's methodology in determining route profitability and flight reductions is questionable, its estimate of subsidies required to maintain the 1973 service level on these routes is also questionable. (See p. 12.)

COMMENTS AND GAO'S EVALUATION

The association generally disagreed with GAO's conclusions. It believes that its outlook as to what might occur in a deregulated environment remains valid, i.e., that the 1,198 unprofitable and unsubsidized routes might not survive except (1) in limited instances as an adjunct to more profitable routes or (2) under large subsidy payments.

The association said that its study has contributed significantly to the on-going debate over anticipated results of proposed changes in the aviation regulatory environment. (See p. 19.)

GAO does not believe the association has provided any significant additional information which would alter GAO's overall assessment of the study.

The Civil Aeronautics Board and the Department of Transportation agreed with GAO's overall conclusion. (See pp. 40 and 42.)

CHAPTER 1

INTRODUCTION

The Chairman, Subcommittee on Administrative Practice and Procedure, Senate Committee on the Judiciary requested that we review several studies which evaluated the impact of Federal economic regulation or the lessening of regulation on the airline industry and the traveling public. Each study will be the subject of a separate report. The first report, which dealt with Dr. Theodore E. Keeler's study, "Airline Regulation and Market Performance" is entitled "Lower Airline Costs Per Passenger Are Possible and Could Result in Lower Fares" (CED-77-34, Feb. 18, 1977).

This report deals with the study entitled "Consequences of Deregulation of the Scheduled Air Transport Industry" issued in April 1975 by the Air Transport Association of America (ATA)--a trade organization representing the domestic airline industry. ATA conducted the study in response to questions posed by the Subcommittee Chairman. As agreed with the Subcommittee Chairman's office, we limited our review to an assessment of ATA's conclusion that air services available to the public could be markedly reduced under a deregulated air transport system.

FEDERAL AIRLINE REGULATION

Under the Federal Aviation Act of 1958 as amended (49 U.S.C. 1301), the Civil Aeronautics Board (CAB) subjects interstate airlines to direct Federal economic regulation. To begin or terminate air service to a city, such airlines must have specific grants of authority from CAB. They must also provide a minimum level of service (flights) which can be discontinued only with CAB approval. By controlling entry into the industry, CAB controls the amount of competition between two cities (usually referred to as city-pairs). Similarly, CAB approves the fares airlines charge between each city-pair.

AIRLINE INDUSTRY

Most domestic passenger service in the 48 contiguous States is provided by four airline categories--trunk, local service, intrastate, and commuter. The trunk and local service airlines are interstate carriers regulated by CAB. From 1938 through fiscal year 1975, the operating revenues of these airlines increased from slightly over $42 million to over $11 billion. During the same period, the revenue passenger miles flown increased nearly 265 times, from 476 million to over 126 billion.

Trunk airlines

Eleven trunk airlines, which include the largest carriers, provide most of the domestic air service:

American Airlines	Northwest Airlines
Braniff Airways	Pan American World Airways
Continental Air Lines	Trans World Airlines
Delta Air Lines	United Air Lines
Eastern Air Lines	Western Air Lines
National Airlines	

CAB specifies the cities each airline can serve and the fares they can charge. CAB does not specify the number of flights that must be provided, but it does specify that a minimum level of service must be maintained.

Local service airlines

Local service airlines generally serve cities in one region of the country. CAB regulation of local service carriers is similar to its regulation of trunk airlines. However, unlike trunk airlines, some local service airlines are subsidized to provide service to some locations. The nine local service airlines are:

Air New England	North Central Airlines
Allegheny Airlines	Ozark Air Lines
Frontier Airlines	Piedmont Aviation
Hughes Airwest	Southern Airways
	Texas International Airlines

Intrastate airlines

Intrastate airlines operate entirely within the boundries of a single State and are not regulated by CAB. Unless restricted by the State, the airlines can serve any city within the State, use any type of aircraft, and charge any fare.

Commuter airlines

Commuter airlines provide service to cities in both the interstate and intrastate markets and are generally restricted by CAB to using aircraft with a capacity of not more than 30 passengers. The only other CAB requirement of these airlines is that they register with CAB, carry prescribed insurance, and provide certain operational data. The establishment of routes, flight frequencies, and fares is not subject to CAB approval.

SCOPE OF REVIEW

We analyzed ATA's response to the Subcommittee's question concerning deregulation's impact on air service. We reviewed critiques of the ATA study prepared by Mr. George Eads, Council on Wage and Price Stability; Mr. James Miller, Council of Economic Advisors; the Civil Aeronautic Board's Special Staff on Regulatory Reform; Dr. Drake, Professor of Economics, Purdue University; Dr. Keeler, Assistant Professor of Economics, University of California (Berkley); Dr. Peltzman, Professor of Economics, University of Chicago; Dr. Sherman, Professor of Economics, University of Virginia; and Dr. Whinston, Professor Economics, Management and Computer Science, Purdue University.

We interviewed officials from ATA, CAB, and the Lockheed Aircraft Corporation, whose "Airline System Simulation Model" was used by ATA to determine the profitability of trunk airline routes. Using the May 15, 1975, Official Airline Guide and CAB data, we analyzed the routes and frequency of flights ATA included in its study.

CHAPTER 2

AN ASSESSMENT OF ATA'S CONCLUSIONS

The Air Transport Association study evaluated the consequences of deregulating the 3,087 nonstop routes served by U.S. trunk and local service airlines in 1973. The ATA study concluded that air service available to the public could be markedly reduced under a deregulated system. Particularly:

--1,198 routes[1]/ (38.8 percent) risk abandonment by trunk and local service airlines because they are unprofitable. Although some of these routes might be retained to provide passengers and/or make aircraft available for other routes or for other reasons, it believes the routes would be subject to instability because, as marginal routes, they would be served only as circumstances dictated.

--Nearly all of the remaining 1,889 routes might experience significant service reductions because airlines might try to improve their profits by significantly reducing the number of available flights, thus raising average load factors--the percentage of total aircraft passenger seating capacity actually used.

--Raising average system load factors has a public service penalty attached to it by increasing the number of passengers denied service during certain daily, weekly, and monthly peak periods.

--Maintaining the level of service provided in 1973 on the 994 trunk routes flown during that year could require as much as $1 billion in airline subsidies.

ROUTES RISKING ABANDONMENT

ATA's conclusion that 1,198 routes risk abandonment is based on its assumption that Federal subsidies on 826 local service airline routes would be discontinued in a deregulated climate and that 372 trunk routes are unprofitable

---

1/The study stated 1,158 routes (37.5 percent) were in this category; however, discussions with ATA officials disclosed that this was a typographical error.

according to its computer simulation of the trunk airline industry. (See app. IV). Although ATA stated some of the 1,198 routes might be retained under a deregulated system to provide passengers and/or make aircraft available for other routes, it believes these routes would be subject to instability because as marginal routes, they would be served only as circumstances dictated.

We believe these conclusions are questionable because

--subsidies are granted under conditions that probably would continue after deregulation,

--ATA's simulation of the trunk airline industry does not support its conclusion that 372 routes are unprofitable, and

--the stability of routes ATA listed as unprofitable would not change substantially under deregulation.

Subsidy termination

ATA concluded that eliminating the Civil Aeronautics Board's regulation of airlines would risk abandonment of 826 local service routes because subsidies would be discontinued. ATA presented no data to support this assumption.

CAB officials have stated that subsidies would continue to be provided under deregulation to the extent that continued service to small communities was deemed in the public interest. Along the same lines, the Council of Economic Advisers said it would be a mistake to conclude that all or a substantial part of the subsidized routes would be discontinued under deregulation.

Trunk routes
risking abandonment

ATA used a computer model to simulate the 1973 domestic trunk airline industry in the 48 contiguous States. Trunk airlines flew 994 routes during that year. The model (Airline System Simulation Model) developed by Lockheed Aircraft Corporation was used to compute the point at which the number of routes and flights flown would produce the maximum profit for the entire airline system.

The simulation model adds flights in much the same manner as the airlines develop their schedules:

--First, the model assumes there are no flights, but

that aircraft and a group of possible routes are available.

--The model computes the economic impact of using each available aircraft on each route. The computation includes the amount of revenue and costs which would result from adding a flight.

--The flight producing the greatest profit is then selected.

This process is repeated until no more profitable routes remain.

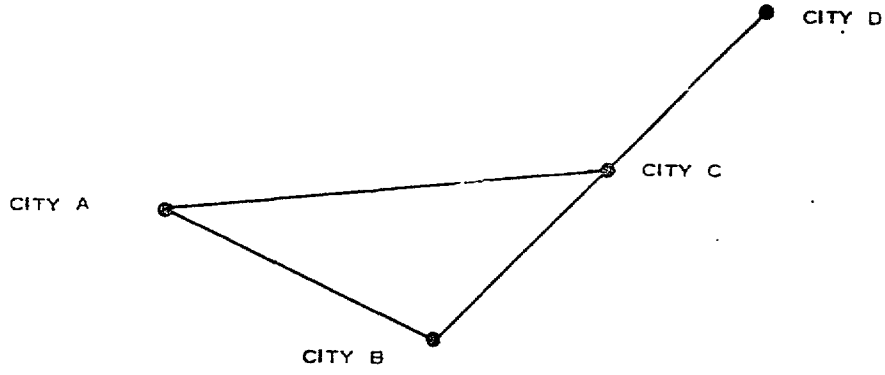
The simulation showed that the point of maximum profit would occur when the trunk airlines were serving 622 nonstop routes, with 2,500 daily flights, at a load factor of 81.6 percent. ATA concluded that the 372 remaining routes served by the trunk airlines in 1973 were unprofitable and would be likely candidates for abandonment of service under deregulation.

Revenues not credited to routes generating passengers for other routes

Our analysis of the ATA study showed that revenues were not always credited to the flights from which they were generated. Thus, the profitability of some routes may be over or understated.

Both ATA and reviewers of ATA's study pointed out that intercity air transportation often depends on combining traffic flows between several city-pairs over a single multistop route. For example, CAB said that an airline often schedules flights, even though they do not earn a profit, because many passengers on such flights connect with profitable flights of the same airline. According to CAB, these flights should be credited with some of the revenues derived from the flights to which passengers were provided.

The ATA study assumed that each city-pair had to be individually profitable, but it did not consider route interaction--alternate ways of going from one city to another--which can be accomplished with the use of one-stop and multistop routes. The following are several types of route interaction.



The simplest route between city A and city C is the nonstop route. An alternate is a one-stop route with the intermediate point city B. Some people can travel from A to C by B; and others from A to B, and from B to C. Thus, there are three interacting passenger demands.

Another alternate is a one-stop route providing nonstop service to the principal cities (A and C) with connections to some other point, in this case D. This route also involves three interacting passenger demands. Higher orders of interaction (two-stop routes, etc.) are also possible.

We found that as of May 1975, the majority of the trunk routes ATA listed as unprofitable were segments of multistop routes. The profitability of multistop routes is illustrated by the route between Baltimore, Maryland, and Washington, D.C. This route was unprofitable according to ATA's study. However, in May 1975 the route was served by 5 airlines which offered a total of 26 daily flights. During 1975, 72,717 passenger traveled between these two cities, boarding at either Baltimore or Washington. However 40,001 (55 percent) of the passengers traveled beyond either city on the same airplane. Although passenger data is not available, some of the remaining 32,716 passengers probably continued their travel on connecting flights of the same or other airlines.

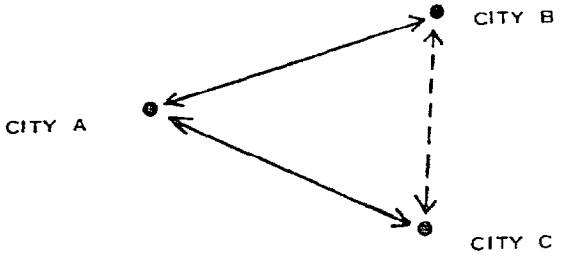
The incentive for serving the Baltimore-Washington route was not only the revenue obtained for the 72,717 passengers traveling between these cities, but also the revenue generated by passengers traveling to points beyond. The profitability of serving this route should include the effect of passengers who use it as a means to a longer journey.

To assume, as ATA did, that there is no route interaction as illustrated, is unrealistic and results in misstatement of a route's profitability. ATA has not supported its conclusion that these routes are unprofitable.

Many trunk routes ATA lists as unprofitable appear profitable

Many of the 372 trunk routes ATA lists as unprofitable appear profitable because of the extent of service provided by airlines on these routes.

CAB grants airlines a great deal of freedom regarding the number of flights they can provide a particular city. Usually, CAB merely requires the airline to provide one flight each day to and from the city that CAB has authorized it to serve. For example, an airline could meet CAB minimum service requirements on a route consisting of cities A, B, and C, by merely providing a round-trip flight each day between A and B, and A and C.



The route between B and C therefore, is discretionary.

Of the 372 trunk routes ATA listed as unprofitable, 352 were being flown in May 1975--337 by trunk airlines and 15 by local service airlines. Most of the air service on these routes was discretionary. In only two instances would CAB approval be necessary to discontinue service--Pan American Airways' service to Philadelphia and United Air Lines' service to Bakersfield, California. In addition, some of these 352 routes were receiving substantial air service; 1 route was served by 74 daily flights, as shown on the next page.

Number of scheduled one-way flights	Number of routes
1	8
2	51
3	24
4	31
5-6	61
7-9	40
10-14	56
15-19	36
20-29	27
30-39	9
40-74	9
Total	352

Furthermore, 198 of the routes were flown by 2 or more trunk and local service airlines, as shown below.

Number of airlines	Number of routes
7 trunks, 1 local	1
6 trunks, 1 local	1
5 trunks, 1 local	3
4 trunks, 1 local	5
3 trunks, 3 locals	1
3 trunks, 2 locals	4
3 trunks, 1 local	8
3 trunks, 0 local	8
2 trunks, 2 locals	2
2 trunks, 1 local	20
2 trunks, 0 local	23
1 trunk, 2 locals	7
1 trunk, 1 local	115
Total	198

The extent of service provided by airlines on many of the 372 routes seems to refute ATA's conclusion that these routes are unprofitable.

Stability of routes listed as unprofitable

As discussed earlier, airlines are generally free to terminate service which exceeds CAB minimum requirements. As of May 1975, trunk airlines had discontinued air service on 35 of the 372 routes ATA listed as unprofitable. Because 34 of these routes were discretionary, airlines

were allowed to terminate service on these routes without CAB approval. Only one location, Titusville, Florida, required CAB approval to discontinue service.

Airlines were also free to terminate air service on most of the remaining 337 routes. Because air service on most routes ATA listed as unprofitable was discretionary, the stability of air service on these routes is not contingent on CAB's airline regulation.

FLIGHT FREQUENCY REDUCTIONS

The ATA study concluded that the routes remaining under deregulation might provide significantly reduced service to the public because airlines would be inclined to reduce the number of flights flown on a route to increase load factors and make the routes more profitable. ATA said that achieving a high load factor is not necessarily consistent with a high level of air service to communities across the Nation. It listed two ways of achieving a higher load factor: eliminating flights with the lowest load factors and/or eliminating unprofitable flights.

Eliminating flights with the lowest load factors

To determine the impact of this method of raising load factors from 55 to 60 percent, ATA arrayed all trunk and local service airline flights for August 1973 from lowest to highest load factors. The average load factor for that month was 55.7 percent. Flights with the lowest load factors were eliminated from the list until an average load factor of 60 percent was obtained. At this point, 144,000 monthly trunk and local service flights had been eliminated.

We believe this method of estimating flight reductions cannot be relied on because it does not take into account the likelihood that some of the passengers that had used the discontinued flights would now use other flights. ATA's estimates assumed these passengers would not fly at all. Thus, it seems reasonable that many of the 144,000 flights would not be eliminated because their load factors would be raised by passengers being diverted to these flights from low load factor flights which are eliminated. Although ATA acknowledged this, it believes some segments would lose all air service.

In addition, this method of computing flight reductions relies on only one element--load factor--as a reason for providing service. Other reasons, such as providing passengers and/or making aircraft available for other routes or the

continuation of Federal subsidy, also need to be considered. Subsidies on routes with low load factors can be expected to continue to the extent that such service is deemed in the public interest.

Eliminating unprofitable flights

Using the computer simulation, ATA concluded that raising load factors to 60 percent, by eliminating the most unprofitable flights, would result in eliminating 20,000 flights a month or 9 percent of all trunk airline service.

Unlike the previous method, the simulation provided for the diversion of passengers of discontinued flights to some of the other flights. However, we believe the results are overstated because the simulation assumed these passengers would only use alternate flights when

--the flight provided nonstop service between the same points,

--the flight had available seating for the additional passengers, and

--the timespan between the discontinued and alternative flights did not exceed a specified time-distance relationship.

The study ignored the possibility of travel between two cities on flights making one or more stops or on a series of connecting flights. Like the previous method, it did not determine how many flights would be retained because they provide passengers and/or make aircraft available for other routes or receive subsidy. Therefore the simulation can not be relied on to estimate flight reductons.

PASSENGERS DENIED SERVICE DURING PEAK PERIODS

ATA concluded that raising average system load factors could result in an increased denial of service to some passengers during peak periods of travel. For example, ATA said that routes with average load factors of 40 percent have individual flights with load factors from 70 to 90 percent. This means that at certain times of the day and on certain days of the week, some passengers may be turned away from flights of their choice even though, on a monthly average, 60 percent of the seats available on the route are empty. ATA, however, did not assess the extent of these denials' occurrence.

$1 BILLION SUBSIDY NEEDED

ATA concluded that to maintain the level of service provided in 1973 on the 994 trunk routes flown that year, $1 billion in subsidies could be required. The $1 billion estimate represents the cost of (1) continuing service on 372 of the 994 trunk routes flown in 1973 which ATA's study indicated were unprofitable and (2) continuing flight frequencies at the 1973 level on the remaining 622 routes. In making its estimate of subsidies required, ATA excluded the cost of continued operation of an unspecified number of unprofitable flights which provide passengers and/or aircraft for other routes and for future route development.

Because the methodology used in determining route profitability and flight reductions is questionable, ATA's estimate of subsidies required to maintain the 1973 service level on the 994 trunk routes studied is also questionable.

CHAPTER 3

CONCLUSIONS

Our assessment is that the study's methodologies and assumptions are often faulty and the conclusions drawn from the study should not be relied on as an estimate of the consequences of a deregulated air transport system. Other reviewers of the ATA study (see p. 3) had similar assessments.

ATA's conclusion that 1,198 routes risk abandonment of service is questionable. No evidence supports ATA's assumption that subsidies would cease on the 826 local service airline routes listed as candidates for abandonment. ATA's simulation of the trunk airlines does not support its conclusion that 372 such routes are unprofitable. The simulation's assessment of each route's profitability did not consider combining traffic flows between several city-pairs over a single multistop route, nor did it properly credit each nonstop route with the revenue it generated by providing passengers for other routes. In addition, many of the 372 trunk routes listed as unprofitable appear profitable because they were receiving substantial air service by at least two airlines operating without subsidies.

Because trunk airlines are free to terminate air service without CAB approval on most of the 372 routes ATA identified as unprofitable, the stability of air service on these routes is not contingent on CAB's airline regulation.

ATA concluded that under deregulation, airlines might try to improve their profits by significantly reducing the number of available flights, thus raising flight load factors. Increased profits would result from about the same number of passengers flying fewer flights. We believe ATA's flight reduction estimates are overstated because they do not adequately provide for passengers of discontinued flights being diverted to other flights. Thus, many flights ATA contends would be discontinued may remain to the extent that load factors are increased by passengers being diverted to these flights from discontinued flights. In addition, ATA did not consider that many flights would be retained because they provide passengers and/or make aircraft available for other routes or receive Federal subsidy.

ATA concluded that raising average system load factors could increase denials of service to some passengers during peak periods of travel. ATA, however, did not assess the extent of service denied to passengers.

Finally, ATA concluded that maintaining the 1973 service level on the 994 trunk routes flown that year could require as much as $1 billion in subsidies. Because ATA's methodology in determining route profitability and flight reductions is questionable, ATA's estimate of subsidies required to maintain the 1973 service level on the 994 trunk routes studied is also questionable.

CHAPTEP 4

COMMENTS BY ATA, CAB, AND TRANSPOPTATION AND GAO'S EVALUATION

ATA'S COMMENTS

ATA said (see app. I) that its study and the discussion of its finoings have contributed significantly to the on-going debate over anticipated results of proposed changes in the aviation regulatory environment.

ATA emphasize.. that its study was made in response to the Chairman's request of Feb. 7, 1975, for a list of those city-pairs that were unprofitable and might be abandoned under a more competitive system. ATA said that when the request was made (2 years ago), no specific proposals for regulatory reform had been introduced and ATA's study approach was designed solely to provide, within the time constraints, an objective, detailed, industry-wide listing of unprofitable city-pairs. ATA said that the list of city-pairs represented unprofitable markets from which individual carriers exercising their independent business judgment in a substantially un-regulated environment would chose routes to be abandoned.

ATA generally disagreed with our conclusions. It believes that its outlook concerning what might occur in a deregulated environment remains valid, namely that the 1,198 unprofitable and unsubsidized routes might not survive except in limited instances as an adjunct to more profitable routes or under large subsidy payments. It cited as further evidence of the validity of its conclusion, an independent study by United Air Lines released after its report.

Although we did not evaluate the United Air Lines study, we question whether a single airline's operation can be indicative of the entire trunk airline industry. ATA has not provided any significant additional information which would alter our assessment that the study's methodologies and assumptions are often faulty and that the conclusions drawn from the study should not be relied on as an estimate of the consequences of a deregulated air transport industry.

In addition, ATA questioned the validity of some factual data presented in our report. The following is a discussion of those matters which ATA questioned.

Route abandonment

Route abandonment, according to ATA, is currently governed by law and economic marketing judgment. ATA cited Section 401(j) of the FAA Act which provides that

> "No air carrier shall abandon any route, or part thereof, for which a certificate has been issued by the Board unless, * * * the Board shall find such abandonment to be in the public interest."

ATA also cited Section 401(j) of the Act as providing that, in the absence of CAB approval, no airline may totally abandon service to any city included in its certificate, even if such abandonment leaves the city with other certificated air service to all points formerly served.

ATA believes, based on this provision, that of the 372 unprofitable routes, the 154 which are served by only one airline can not be abandoned without CAB approval. In addition, it believes some of the remaining 198 routes may also require CAB approval for abandonment because termination would mean total abandonment of service by the airline to a city included in its certificate.

ATA's comments on this matter are inaccurate. CAB has stated that an airline's routes consist, for the most part, of long linear segments describing a series of intermediate points (cities) between terminal points. In very few cases do route certificates consist of only two cities, thus requiring service to a specific city-pair.

For example, a route certificate which authorizes an airline to serve 13 cities, merely requires the airline to provide one or two flights per day to each city. The airline may provide service among any city-pairs or to any series of cities named in its certificate unless explicity prohibted by CAB. The airline might serve such cities by establishing a hub at one city, and serving every city from there or it could provide nonstop service between all of the 78 combinations of city-pairs in a system of 13 cities which it is authorized to serve. The airline has a great deal of freedom in choosing the markets it wishes to serve and may add or drop city-pair markets without CAB approval. We believe that the example cited on p. 8 adequately illustrates this point.

The only guarantee of service for any city on an airline's system is that one or two flights per day will continue to be provided. The flights may be to or from any other city listed on the airline's route certificate; they may arrive at any hour the airline chooses and with any equipment the airline chooses.

ATA said that we incorrectly stated it did not consider that some unprofitable routes might be retained to provide passengers for other routes. ATA is in error. On page 5 we stated that ATA indicated some unprofitable routes might be retained to provide passengers and/or make aircraft available for other routes or for other reasons.

We did, however, point out that in estimating flight reductions on profitable routes, ATA did not take into account that many flights would be retained because they provide passengers and/or make aircraft available for other routes or receive Federal subsidy.

Service on unprofitable routes

ATA believes that some of the data shown in appendix IV--May 15, 1975 Flight Frequencies On Routes Listed By ATA As Risking Abandonment--is in error because we did not distinguish between local service airlines and commuters operating in place of local service airlines. For example, it said the 41 local service daily flights listed by us between Philadelphia and Washington, D.C. is in error. According to ATA, the May 1, 1975 Official Airline Guide shows only 4 local service flights from Washington to Philadelphia, and 29 commuter airline flights (26 by Ransome Airlines flying as "Allegheny Commuter" and 3 by Altair). ATA believes the Washington-Baltimore flight data was similarly distorted.

The flight data we used was taken from the May 15, 1975, Official Airline Guide. The guide listed the commuter airlines' flights as Allegheny service because the commuter operated these flights on behalf of Allegheny pursuant to a CAB approved agreement. Allegheny Airline, however, retains its underlying obligation to insure adequate service. If the substitute fails to provide the required service, Allegheny must find another substitute or resume operations under the obligations of its certificate.

The Allegheny Commuter program is similar to a franchize. The substitute airlines use the name, "Allegheny Commuter" and paint their planes with Allegheny colors. Joint fares are offered, Allegheny furnishes computerized reservation service, and provides interline ticketing and baggage handling.

CAB'S COMMENTS

CAB stated (see app. II) it is in general agreement with our conclusion that the ATA study cannot be relied on as an estimate of the consequences of a deregulated air transport industry. In CAB's opinion, the report successfully rebutted ATA's study on its own terms.

DEPARTMENT OF TRANSPORTATION'S COMMENTS

The Department stated (see app. III) it was in agreement with our position that the ATA study's methodologies, assumptions and conclusions are frequently faulty.

Air Transport Association ata OF AMERICA

1709 New York Avenue N W
Washington D C 20006
(202) 872-4000

GEORGE W JAMES
Senior Vice President
Economics and Finance

January 12, 1977

Mr. Henry Eschwege
Director
United States General Accounting Office
Washington, D. C. 20548

Dear Mr. Eschwege:

Thank you for your letter of December 8 to Paul Ignatius in which you requested ATA review and comments on the draft GAO report to the Chairman, Subcommittee on Administrative Practice and Procedure, Senate Committee on the Judiciary, entitled "Comments of the Air Transport Association of America Study: Consequences of Deregulation of the Air Transport Industry".

We welcome this opportunity, because we believe the ATA study and the subsequent discussion of its findings have contributed significantly to the on-going debate over anticipated results of proposed changes in the aviation regulatory environment. Air transportation represents an essential public service to the nation, and the debate now underway concerns the form and manner in which that service will be provided. We believe it important that thoughtful consideration be given to the consequences of proposed alternatives for changes before the legislative course is set.

The ATA comments are set forth in Appendix I and are in two parts -- first, general remarks with respect to the ATA study, its background and purpose, and the GAO's analysis; and, second, more detailed discussion of certain specific points raised in the GAO paper.

We appreciate this opportunity to review the draft GAO report. If we can provide additional information, please let me know.

Sincerely,

George W. James

Attachments

APPENDIX I

ATA RESPONSE TO GAO DRAFT COMMENTS
ON ATA STUDY:
CONSEQUENCES OF DEREGULATION OF
THE AIR TRANSPORT INDUSTRY

General Comments

During ATA's testimony before the Senate Judiciary Subcommittee on Administrative Practice and Procedure in February, 1975, and subsequently by letter, the Chairman requested that ATA "provide a list ... of those city pairs that are now unprofitable and might be abandoned." He asked further that ATA "specify those city pairs of which the cost of serving exceeds the incremental revenues generated." (Emphasis in original.)

It was in response to this request that the ATA study was undertaken. At that early date no specific proposals for regulatory reform had been introduced. The approach taken by ATA was designed solely to provide, within the required time constraints, an objective, detailed, industry-wide listing of unprofitable city-pairs. The city-pairs listed represented unprofitable markets from which individual carriers exercising their independent business judgment in a substantially unregulated environment would choose routes to be abandoned. These conditions were made clear by ATA in its study report and in its letter dated April 25, 1975, transmitting the study results to the Chairman (Attachment 1).

The approach adopted by ATA employed a computer model (the Lockheed Airline System Simulation Model) adding flights in an iterative process "in much the same manner as the airlines develop their schedules" (as noted by the GAO report), computing "the economic impact of using each available aircraft on each route." The determinative measure employed was profitability based on incremental costs and revenues, as requested by the Chairman. Because of time constraints, the model was applied only to the 994 trunk airline non-stop city-pair routes operated during 1973 (the latest data publicly available at the time of the study). However, where non-stop service on these routes was also provided by local service carriers, this traffic was also included.

Thus, the study results showing 372 unprofitable city-pair routes operated in 1973 probably represents an understatement of the total, given the fact that the unsubsidized local service carrier operations were not included (except as noted above).

On the other hand, the unprofitable trunk city-pair market listing was augmented in the ATA report by an identification of all subsidized 1973 local service routes as a demonstration to the Subcommittee of a substantial number of markets not included in the simulation that were potential targets for service reduction or elimination under essentially "free market" conditions. ATA

made no assumption with respect to maintenance, reduction, or expansion of such subsidy, because public policy considerations are not subject to objective quantification and analysis. ATA did, however, estimate that, if public policy led to maintaining the 1973 system (including all unprofitable trunk routes and absent the current balance of cross-subsidization), substantially increased levels of direct subsidy would be required in the assumed deregulated environment -- perhaps as much as $1 billion. This rough estimate was based on the difference between costs and revenues attributable to the identified unprofitable markets, and to the cost of maintaining the 1973 profitable market structure. Given the extensive data furnished by ATA and others, summarized on the following pages, this estimate appears reasonable.

It should be noted that, subsequent to publication of the ATA study, proponents of major regulatory change have indicated (as the GAO report states at several points -- e.g., pp. 13, 14, 17) that public policy may require extension of direct subsidy to presently unsubsidized unprofitable routes, although there has been disagreement concerning the amount of subsidy that would ultimately be required. As we pointed out in our April 25, 1975 letter to the Subcommittee Chairman, "It is conceivable that the 1,198 unprofitable, and subsidized, routes might not survive in a deregulated environment except in limited instances as an adjunct to more profitable routes or under large subsidy payments by cities or the federal government." We believe this outlook remains valid today [See GAO note, p. 32]

It should be noted further, with respect to the city-pairs listed as unprofitable, that ATA never contended that all would be abandoned in the event of deregulation. Rather, as ATA related in the study report (see pp. 2, 9, of the ATA study report) and in letters to the Subcommittee Chairman dated April 25 and May 8, 1975, it has always been clear that a number of unprofitable routes would be maintained even in a deregulated environment for purposes of feeding heavier travelled routes or aircraft positioning, matters within the sole marketing discretion of individual carriers under such deregulated circumstances.

Subsequent to the ATA report, United Airlines furnished the Subcommittee its independent analysis of its own system (see Attachment II). In a letter to the Subcommittee dated April 29, 1975, a company official noted that of 310 non-seasonal city-pairs operated by United in 1974, 147 did not generate sufficient revenues to cover "fully allocated costs" and 58 failed to cover "incremental costs". In the complete analysis, United judged that 21 of the 58 incrementally unprofitable markets and 58 of the 89 remaining unprofitable markets would be retained for purposes of traffic control, combining markets, operational routings, future profit potential, or for other policy reasons. With regard to the 89 remaining unprofitable markets, United stated "... (markets) where revenue exceeded incremental costs but did not cover fully allocated costs ... are certainly those (markets) which would come under close scrutiny as to the wisdom of continuing service if exit were permitted, inasmuch as it

would not appear economically justified to purchase replacement equipment on which an adequate return was not being earned." In any event, United concluded that 79 of the 147 unprofitable markets would be retained for those purposes.

The following table summarizes the results of both the United and ATA analyses:

TABLE
UNITED AIRLINES
1974

	Number of City-Pairs	Percent of Total	Percent of Unprofitable Markets
UAL non-seasonal markets	310	100%	
Profitable markets	163	53%	
Unprofitable	147	47%	
Retained for: Traffic control, combining markets, operational routings, and future profit potential (or policy)	79	25%	54%
Remainder	68	22%	46%

ATA TRUNK INDUSTRY SIMULATION
1973

	Number of City-Pairs	Percent of Total	Percent of Unprofitable Markets
Total trunk non-seasonal markets	994	100%	
Profitable markets	622	63%	
Unprofitable	372	37%	
Retained for: Traffic control, combining markets, operational routings, and future profit potential (or policy)	219	25%*	
Remainder	219	22%*	
Retained for: Traffic control, combining markets, operational routings, and future profit potential (or policy)	201	20%	54%*
Remainder	171	17%	46%*

* From United Airlines Analysis

APPENDIX I

Both analyses empirically determined the profitability of individual non-stop routes without regard to combined markets. As noted above, United determined that 147 of its 310 non-seasonal non-stop markets (or 47%) were unprofitable on this basis. ATA found that 372 of 994 trunk non-seasonal non-stop routes (or 37%) were unprofitable on the same (non-stop) basis. United then, employing the regular judgmental processes of its scheduling experts, determined which of the 147 unprofitable routes United would probably retain for such purposes as combining markets, traffic control, operational routings, and future profit potential. In its study, ATA expressly recognized that some unprofitable routes might be held for such purposes; quantification of a specific number of such routes was outside the scope of the question posed ATA by the Subcommittee. Further, ATA lacks the scheduling expertise to apply the detailed managerial judgments required for such quantification.

Because the empirical portions of both the United and ATA analyses were performed on a non-stop route profitability basis, application of the results of United's managerial judgment process to the ATA findings provides some insight into the number of unprofitable routes that would likely be eliminated, after consideration of combining markets, traffic control, operational routings, and future profit potential (or policy).

As shown in the Table, applying to the 994 trunk routes the percentage of total non-stop routes which United considered would likely be eliminated (22%), a total of 219 trunk routes would be eliminated. Further, United found that 46% of its unprofitable non-stop routes would likely be eliminated. Applying this percentage to the 372 unprofitable non-stop trunk routes results in 171 or 17% of the total trunk routes. In both cases, the percentages are based on non-stop routes.

It should be noted that, in its April 29, 1975 letter, United went on to point out that,

> "... this list is ... not complete in the sense that we might find it desirable to withdraw service from some nominally profitable markets under a condition of free exit and entry."

Thus, the percentage of total routes that might actually be eliminated under free market conditions could be higher than the cited proportions of unprofitable routes.

Specific Comments

- ISSUE: Subsidized Routes

GAO Statements

"GAO believes these conclusions are questionable because:

-- subsidies are granted under conditions that probably would continue after deregulation." (pp. i, 6)

"ATA concluded that eliminating the Civil Aeronautics Board's regulation of airlines would risk abandonment of 826 routes flown by local service airlines because the subsidies would be discontinued. No data was presented by ATA to support this conclusion other than it believed this to be a consequence of deregulation." (p. 7)

'There is no evidence to support ATA's conclusion that subsidies would cease on the 826 local service airline routes listed as candidates for abandonment." (p. 16) [See GAO note, p. 32]

ATA did not conclude that subsidies would cease on the 826 local service routes. Subsidy is granted at the discretion of the CAB. Accordingly, it was assumed, at the time the study was made, that abolishment of the CAB resulting from deregulation could result in discontinuance of subsidies. At that time, it was the view of many proponents of deregulation that all forms of economic regulation, including subsidies, should be abolished. "Free market" proposals then being offered contained no provisions for such continuance.

Since publication of the ATA study, proposed legislation has contained or has been modified to contain various provisions for continuing subsidy at current or even increased levels. These provisions implicitly recognize the fact that, without subsidy, certain routes would be endangered under free market conditions.

- ISSUE: Route Interaction

GAO Statements

"GAO believes these conclusions are questionable because:

-- the Association did not combine different passenger demands over a route, or properly credit routes with the revenue generated by providing passengers for other routes in determining that 372 routes were unprofitable." (p. i) [See GAO note, p. 32]

"Additionally, ATA did not consider that many flights would be retained because they provide passengers and/or make aircraft available for other routes, or receive Federal subsidy." (p. ii)

"Our analysis of the ATA study showed that revenues were not always credited to flights from which they were generated. Thus, the profitability of some routes may be over or understated." (p. 8)

"ATA did not consider route interaction -- alternate ways of going from one city to another -- which can be accomplished with the use of one and multi-stop routes." (p. 8)

"To assume, as ATA did, that there is no route interaction of the kinds described above, is unrealistic and results in misstatement of a route's profitability. ATA's conclusion that these routes are unprofitable is not supported." (p. 10)

"The study ignored the possibility of travel between two cities on flights making one or more stops, or on a series of connecting flights. Like the previous method, it did not determine how many flights would be retained because they provide passengers and/or make aircraft available for other routes, or receive subsidy." (p. 14)

"The simulation's assessment of each route's profitability did not consider combining traffic flows between several city-pairs over a single multi-stop route, nor did it properly credit each non-stop route with the revenue it generated by providing passengers for other routes." (p. 16)

"Additionally, ATA did not consider that many flights would be retained because they provide passengers and/or make aircraft available for other routes, or receive Federal subsidy." (p. 17) [See GAO note, p. 32]

As the GAO report properly points out, the ATA study treated each non-stop route as a separate entity in determining profitability. As previously noted, which of the 372 routes found unprofitable might be retained because they "feed" other routes (thereby rendering the latter profitable) was not determined through direct application of the model. However, the ATA study report explicitly stated that a portion of the unprofitable routes in fact could be retained for these purposes -- such determination in accordance with individual carrier marketing decisions to best suit its needs under the circumstances within which it would be operating.

A multi-stop route is simply a series of non-stops flown in sequence. By using service segment data derived from CAB ER-586 reports (instead of origination-destination data) for passenger flows, the cumulative effect of total passenger flow was included in the ATA simulation. The simulation assumed that the passengers flowing from unprofitable to profitable routes would remain on the profitable routes, regardless of the disposition of the unprofitable. This assumption probably results in an inflation of earnings actually attributable to each route.

However, because the profitable route data does include revenue traffic which may or may not be carried in the event the "feeder" segments are no longer operated (often, today, carriers other than those operating a given profitable route "feed" that route), the effect of current route interaction is contained in the ATA study methodology. ATA in its study sought to arrive at objective route profit data, to which individual carriers would apply business decision processes on a route-by-route basis, determining which "unprofitable" routes they would maintain to support their own "profitable" markets.

The GAO report suggests that elimination of non-stop routes will not cause substantial diminution of total traffic, because the passengers would use a one-stop or multi-stop route in place of an eliminated non-stop. In some instances, this is true. However, 66% of the 372 unprofitable routes listed by ATA are shorter than 200 miles with 25% shorter than 100 miles. (Attachment III) Because of the delays incurred in alternative one or multi-stop routings, most of the traffic currently carried on this 2/3 of all unprofitable routes would likely be diverted to other forms of transport, primarily automobile.

Further, the CAB certificates carriers to serve routes, not cities. The figure appearing on p. 10 of the GAO report is inaccurate -- the carrier certificated to serve AB and AC is not certificated to serve BC unless expressly authorized to do so. [See GAO note, p. 32]

- ISSUE: Service on Unprofitable Routes

GAO Statements

"GAO believes these conclusions are questionable because:

-- many of the routes listed as unprofitable appear profitable because they are receiving substantial air service, by more than one airline operating without subsidy." (pp. i, ii) [See GAO note, p. 32]

APPENDIX I

> "Many of the 372 trunk routes ATA lists as unprofitable appear profitable because they were receiving air service which exceeded Federal minimum levels, by more than one airline operating without subsidies." (p. 10)
>
> "As of May 1975, trunk airlines had discontinued air service on 35 of the 372 routes ATA listed as unprofitable. Because 34 of these routes were discretionary, airlines were allowed to terminate service on these routes without CAB approval. Only one location -- required CAB approval to discontinue service... The fact that air service on most routes ATA listed as unprofitable was discretionary, indicates that the stability of air service on these routes is not contingent on CAB's airline regulation." (p. 12)
>
> "Additionally, many of the 372 trunk routes listed as unprofitable appear profitable because they were receiving substantial air service, by more than one airline operating without subsidies." (p. 16) [See GAO note, p. 32]

The GAO report indicates that the existence of service is itself evidence of profitability. The United Airlines' findings (previously cited) that of 310 non-seasonal markets served in 1974, 147 were unprofitable, should be sufficient evidence to refute this impression.

Whether or not carriers currently serve a route is not a sufficient criteria of profitability. Although the taper of fares was altered in the Domestic Passenger Fare Investigation in favor of the shorter haul routes, a considerable amount of cross-subsidy continues to exist in the industry. Unprofitable shorter-haul routes can be served because longer haul high-density routes provide sufficient profits to offset these losses and still maintain an overall system profit.

As long as airlines remain profitable, even if profits are depressed below levels necessary, airline managements are reluctant to abandon portions of their systems if there are reasonable prospects for future profitability. Moreover, they may not do so without specific approval of the CAB.

In recent years, the U. S. airlines have operated under adverse financial conditions. With significant losses since 1969, Pan American, for example, has had to face up to the difficult decision to cut a large number of cities from its route system. In all, it has suspended service to 27 cities on its system in order to reduce losses.

If domestic carriers continue to experience overall financial difficulties, such as they have during the recent recession, the level of cross-subsidy available will be diminished, and carriers will seek to abandon selected unprofitable

routes if so allowed by the CAB. Despite the significant procedural obstacles, carriers have abandoned 35 of the 372 routes ATA found to be unprofitable since 1973, a period of financial stress for the industry.

If unrestrained competition were to be the rule for the domestic airline system, domestic trunks and local service carriers might well find themselves in the position that Pan Am was in -- unable to continue to serve unprofitable routes because profits on the other routes become eroded by excessive service and consequent low load factors at uneconomic prices.

Some of the GAO appendix data, cited to support its position, is in error since it did not distinguish between local service airlines and commuters operating in place of local service airlines. For example, the GAO report indicates 41 local service daily flights between Philadelphia and Washington, D. C. The May 1, 1975, Official Airline Guide that was the GAO source shows only 4 local service flights from Washington to Philadelphia, and 29 commuter airline flights (26 by Ransome Airlines flying as "Allegheny Commuter" and 3 by Altair). Washington-Baltimore flight data are similarly distorted.

- ISSUE: Flight Reduction Estimates

GAO Statements

"GAO believes the Association's flight reduction estimates are overstated because it did not adequately provide for passengers of discontinued flights being diverted to other flights." (p. ii)

"--- the simulation provided for the diversion of passengers of discontinued flights to some of the other flights. However, we believe the results are overstated because the simulation assumed these passengers would only use alternate flights when

-- The flight provided no-stop service between the same points,

-- the flight had available seating for the additional passengers, and

-- the time span between the discontinued and alternative flights did not exceed a specified time/distance relationship." (p. 14)

"We believe ATA's flight reduction estimates are overstated because it did not adequately provide for passengers of discontinued flights being diverted to other flights." (p. 16)

[See GAO note, p. 32]

ATA maintains that the simulation assumptions with regard to diversion of passengers to alternate flights are valid.

The facts on which these assumptions are based are:

-- Very few passengers will accept one-stop or multi-stop service in markets where non-stop service is available, particularly in very short-haul markets.

-- The number of passengers on a flight cannot exceed the seating capacity.

-- There is a relationship between time span between flights due to frequency, distance (trip time), and demand for air service. This relationship is particularly critical in short-haul markets. For example, an offering of only one or two flights a day will precipitate little demand for air service in a short-haul market even of high density, whereas hourly service in the same market will create substantial demands.

- ISSUE: Route Abandonment

GAO Statements

"We believe these conclusions are questionable because:

-- ATA's simulation of the trunk airline industry does not support its conclusion that 372 routes are unprofitable..." (p. 6) [See GAO note, p. 32]

As noted previously, the ATA study did not forecast abandonment of the 372 trunk and 826 subsidized local service airline routes, but rather cited them as "candidates" for elimination under deregulation because they were found to be unprofitable under 1973 operating conditions. Continued service on those routes was made possible by profitable operation of other routes, or by government subsidy. They become candidates for elimination in the event changing competitive conditions were to impair profitability on other routes, or subsidies were eliminated.

The question of subsidization has been discussed above. With respect to non-subsidized routes, the issue of abandonment currently is governed both by law and by economic and marketing judgment.

Section 401 (j) of the Federal Aviation Act of 1958, as amended, states:

"No air carrier shall abandon any route, or part thereof, for which a certificate has been issued by the Board,

> unless, upon the application of such air carrier, after notice and hearing, the Board shall find such abandonment to be in the public interest. Any interested person may file with the Board a protest or memorandum of opposition to or in support of any such abandonment. The Board may, by regulations or otherwise, authorize such temporary suspension of service as may be in the public interest."

The GAO report states (p. 11) that, of the 372 trunk routes listed by ATA as unprofitable (in 1973), 352 were being flown in May, 1975. Of these, 198 were flown by two or more airlines, leaving 154 monopoly routes. Under Section 401(j) of the Act, these monopoly routes could not be abandoned without Board approval. Inexplicably, the GAO report states (p. 11) that only 2 require CAB approval. [See GAO note, p. 32]

Further, Section 401(j) of the Act provides that, in the absence of CAB approval, no carrier may totally abandon service to any point included in its certificate, even if such abandonment leaves that city with other certificated air service to all points formerly served. Under this interpretation, some of the unprofitable 198 routes receiving service from more than one certificated airline must be added to the list requiring CAB approval for abandonment.

There are, of course, reasons for not abandoning service on unprofitable routes. As pointed out on page 9 of the ATA report, service on such routes might be retained "for such purposes as providing feeder traffic, aircraft positioning, or market growth". As noted above, in letters to the Subcommittee Chairman in 1975, United Airlines stated that about 47% of its total 1974 non-seasonal routes were unprofitable, and, of these, 46% would be considered for deletion under conditions of deregulation (see Attachment II). Although ATA made no specific estimate of the number of unprofitable routes that might be retained to feed passengers to other routes, it is incorrect for the GAO to state that ATA did not consider this effect. ATA identified 372 routes as unprofitable and candidates for abandonment, then stated that some would be retained for various reasons.

- ISSUE: Route Stability

  GAO Statements

  "We believe these conclusions are questionable because:

  -- the stability of routes ATA listed as unprofitable would not change substantially under deregulation." (p. 6) [See GAO note, p. 32]

The data provided by ATA in support of its conclusions, taken together with United Airlines' findings cited above, amply demonstrate the instability of routes currently composing the air transportation network in the event of deregulation. The GAO comment is unsupported by contrary analysis.

In summary, the ATA study represented a response to the Subcommittee Chairman's request for a list of unprofitable routes that might be abandoned. Even under adverse conditions, a carrier would likely retain some of these loss routes on its system, because of aircraft positioning requirements or because of future growth potential. However, taking these factors into account both the ATA and the United studies show that, under deregulation, as many as 17 to 22% of the non-stop trunk routes could be deleted from operation. This number could be higher when marginally profitable routes are also considered for abandonment in favor of more profitable opportunities.

The implications of the ATA study are important in a consideration of regulatory change; the degree to which balance within the national air transport system is maintained will directly affect the perpetuation of the pervasive air transportation network available today.

GAO note: Page references in this appendix refer to the draft report and do not necessarily agree with the page numbers in final report.

APPENDIX I

Attachment I

Air Transport Association ata OF AMERICA

1709 New York Avenue, N.W.
Washington, D. C. 20006
Phone (202) 872-4000

April 25, 1975

Senator Edward M. Kennedy
Chairman
Subcommittee on Administrative
Practice and Procedure
United States Senate
Washington, D. C.

Dear Senator Kennedy:

During my testimony to your Subcommittee on Administrative Practice and Procedure, and subsequently by letter, you requested specific information on the impact of deregulation on the present scheduled air transportation network. You asked us to identify present scheduled routes where service might be reduced or eliminated if each airline could set its own prices and could enter or exit any market at will. Additionally, you requested further explanation of the "feeder line" argument and some comments on safety under deregulation.

The attached report represents the results of the analysis that ATA performed in response to your requests, and includes the application of a computerized analysis of the large interrelated domestic trunk carrier system. We believe this information may represent the first aggregate analysis of its kind. Results of the analysis reveal the adverse impact on scheduled air service that might take place under the assumption of total deregulation that we were asked to make.

As we have discussed with members of your staff, our analysis shows that under deregulation scheduled air service might be eliminated or substantially reduced on 1,820 non-stop routes throughout the nation. A list of these routes is attached. The 1,267 non-subsidized routes of the regional carriers were not included in this study.

Currently, trunk carriers serve 994 non-stop routes. Of these, 372 could be candidates for elimination under deregulation, while nearly all of the remaining 622 could experience sharp curtailment of service. Although a similar analysis has not been applied to the regional carriers, we have identified 826 of their non-stop routes as currently receiving direct subsidy under regulatory procedures.

It is conceivable that the 1,198 unprofitable, and subsidized, routes might not survive in a deregulated environment except in limited instances as an adjunct to more profitable routes or under large subsidy payments by cities or the federal government.

Enclosed are maps of each of the 48 contiguous states and the District of Columbia with an identification of each of the routes that could be jeopardized as well as a tabular listing of these routes.

Although each of the 1,198 routes would be a candidate for elimination under deregulation, it is recognized that some might be held for such reasons as feeding heavier travelled routes or aircraft positioning. Some also might be served by smaller commuter airlines. However, where such routes would remain, there would be a service instability not present today because carriers would view these routes as marginal and would probably move in and out as circumstances dictated.

Our analysis has also been extended to determine the impact on levels of service in a situation where significant fare reductions are made. We have done this for the domestic trunk system. The findings show, for example, that where fares are reduced 20%, the unprofitable routes rise from 372 to 564.

Some have contended that deregulation could occur while subsidy remained. In contrast with today's subsidy level of less than $70 million for regional carriers only, we estimate that subsidy costs under deregulation could run as high as $1 billion annually.

The analysis you requested has produced data shedding new light on load factors. The analysis shows, for example, that to raise the average system load factor from 55% to 60%, solely by eliminating the lowest load factor routes, could require dropping as many as 144,000 monthly flights, or 37% of all flights flown. If eliminating unprofitable routes were the only criteria for raising load factors, the data show that approximately 20,000 monthly flights, or 9% of the route system, would need to be abandoned.

One final point of interest in the analysis is that 23 of the largest 100 markets of the scheduled carriers had load factors in the 60 to 85% range. PSA's load factor on the Los Angeles/San Francisco route during this time period was 60.9%. Similarly, if interstate scheduled carriers served only the 33 interstate high load factor routes, they could operate more profitably and at lower fares. However, service in the present U.S. 58,000 city-pair network would be shattered.

APPENDIX I

We appreciate this opportunity to present relevant information regarding the public service impact of deregulation. We are hopeful that this information will be reflected in the Subcommittee's report.

Sincerely,

George W. James
Senior Vice President-
Economics and Finance

Attachment

2. Reduce the length of hearings by cutting down on excessively detailed cross-examination

3. Provide greater time for filing responses to applications, petitions, motions, etc. Time now available is ordinarily inadequate to permit reasonable evaluation of issues and preparation of answers. The CAB is thus deprived of the best possible arguments and evidence.

4. Expedite the hearing process and try to avoid hearings where possible without prejudice to parties' rights to due process.

5. Change the tariff filing procedure by statute to require 45-day notice and CAB action within 30 days to provide 15 days for orderly implementation.

United also is supporting a number of significant changes related to the regulation of charter service which will expand the potential benefits to the public without impairing the quality of scheduled service. United strongly believes that charter service should be encouraged to serve that segment of the market whose requirements are different from scheduled service—and thus to offer safe, reliable service to the public at the lowest possible cost. However, we do not believe the proper path to this goal is the legislative one. CAB regulation now permits experimentation to test the feasibility of new concepts such as more liberal one-stop inclusive tour charters without the inflexibility involved if such changes were legislated. That freedom should be used before the rigidities of a legislative concept are imposed.

In conclusion, we wish to reemphasize United's vital interest in the proceedings of this subcommittee as well as other investigations of a similar vein. We also wish to stress our willingness to cooperate in bringing about changes which will produce genuine public benefits; our record is clear in this regard. United is not an implacable defender of the status quo. However, we believe it would be unwise to endanger the quality of an excellent system in the pursuit of hypothetical gains which may be unattainable in actual practice. The overall record of the airlines under CAB regulation is one of which the country can be proud. It represents a solid base for future improvement of the system. It should not be discarded without a great deal of careful weighing of the potential benefits against the apparent risks.

UNITED AIR LINES,
Chicago, Ill., Feb 28, 1975.

HON EDWARD M KENNEDY,
U.S. Senate,
Washington, D.C.

DEAR SENATOR: During my testimony on February 18, we discussed the subject of internal cross-subsidization of unprofitable routes. I indicated that we would provide additional information on the scope of such subsidization which existed on United's route system in 1974—a year of relatively good earnings for the company. We have compiled the information below from internal company records using planning standard cost rates and average revenue rates, which closely approximate actual results.

All regular scheduled passenger operations of the company have been separated into two categories: those airport pairs on which we failed to earn a profit before federal income tax, and those on which we did earn a pretax profit. This analysis compiled the results for all nonstop flights between a given pair of airports, in both directions, to determine the profitability category; some of the individual flights serving an airport pair might be unprofitable even though the total of all flights was profitable, and vice versa. Similarly, some airport pairs are unprofitable in certain months of the year and profitable in others. The breakdown shown below reflects full year results of the sum of all flights operated in a given market.

1974 RESULTS OF SCHEDULED PASSENGER OPERATIONS

	Unprofitable city-pairs	Profitable city-pairs	System total
Number of airport pairs	163	164	327
Revenue (in millions)	$462.7	$1,556.9	$2,019.6
Expense (in millions)	$604.7	$1,226.0	$1,819.7
Profit before tax (loss)	($142.0)	$330.9	$188.9
Revenue passenger miles (billions)	13.8	20.0	33.8

Each of the 20 million passengers in the profitable markets provided an internal subsidy of $7.10 to offset the $142 million loss on the unprofitable routes. This is equivalent to approximately 9 percent of the average revenue per passenger on the profitable routes. In order for the unprofitable routes to reach the break-even level, a revenue increase of 30.7 percent would be necessary. A fare increase of this magnitude would almost certainly depress the level of traffic in those markets. The existence of a substantial level of internal cross-subsidization clearly and directly benefits approximately half of the markets served by United.

Further analysis revealed that 75 of the 163 unprofitable airport pairs involving 3.2 million passengers failed to produce sufficient revenue to cover their direct variable cash costs. These markets consist largely of short haul feeding or connecting segments which provide important support for the longer haul flights but are not credited with this support revenue by the accounting system. However, if these segments were not an integral part of a larger system, they would probably receive little or no scheduled airline service since the purely local traffic demand is too small to support such service.

I hope this simple analysis helps shed added light on the subject of internal cross-subsidization of unprofitable route segments. We recognize that implementation of phase 9 of the CAB domestic passenger fare investigation decision will help alleviate this situation but will not end it.

We would be pleased to cooperate further with the subcommittee on this vital subject which is of great interest to the management, employees and shareholders of UAL, Inc., as well as to the public.

Sincerely,

ANDREW M. DE VOGELAERE,
Group Vice President of Finance and Planning.

[NOTE.—The following letter was submitted to the subcommittee by United Air Lines to update and/or replace the data submitted in the letter of February 28, 1975, as printed above.]

UNITED AIR LINES,
Chicago, Ill., Apr. 29, 1975.

MR. STEPHEN M. BREYER,
Subcommittee on Administrative Practice and Procedure,
Washington, D.C.

DEAR MR. BREYER: I am enclosing a detailed listing of our analysis of United's unprofitable routes in 1974 as we discussed by telephone. Section I covers 58 city-pairs on which revenue failed to cover incremental operating costs; this list corresponds to the 75 city-pair list with which you were working originally. The 17 markets which we excluded from our analysis were not scheduled on a year-round basis and, in most cases, received sparse or sporadic service. We believe it is more reasonable to look only at those markets which receive regular scheduled service for most or all of the year. Incidentally, three markets you included in your "retain service" category should be listed among those where service has been discontinued; these are Baltimore–Philadelphia, Birmingham–Knoxville, and Honolulu–Hilo.

Section II of the analysis covers those city pairs where revenue exceeded incremental costs but did not cover fully allocated costs. These markets are certainly those which would come under close scrutiny as to the wisdom of continuing service if exit were permitted, inasmuch as it would not appear economically justified to purchase replacement equipment on which an adequate return was not being earned. It is our working assumption that long run incremental costs (the theoretical basis for capital investment decisions) are equal to or greater than current fully allocated operating costs including overheads. Our internal cost studies indicate that overhead costs tend to vary in the long run in the same way as short run incremental costs.

Some technical definitions may assist you in interpreting the attached table.

Contribution—Total revenue less incremental cash costs (based on system average costs).

PBT (Profit Before Tax)—Total revenue less fully allocated costs including interest but excluding income taxes.

Retained for Traffic Control Purposes—City-pairs where feed traffic to other segments is significant but is not reflected in market profitability.

Retained to Combine Markets—City-pairs where aircraft are routed to combine two cities on a single flight but where local traffic is not significant.

687

Retained for Operational Routings—City-pairs where primary purpose of flights is equipment positioning

Retained for Future Profit Potential (or Policy)—City-pairs which are judged to have good future profit potential but are current losses due to temporary problems or unusual circumstances, or where the market is of such strategic significance that company policy dictates continued operation despite unsatisfactory economic results.

I am certain you understand that this classification exercise is a judgmental process and reflects a conscientious effort by United's scheduling experts but is by no means based on the sort of exhaustive economic studies which we would pursue in the event we were faced with an actual decision. I am satisfied that it also represents our unbiased opinion, not slanted for political impact. Because of the sensitive nature of these data, we are requesting that no details regarding specific city-pairs be released to the public.

In summary, the attached analysis is our approach to answering the question, "What United markets would not be served if you were free to abandon undesired routes?" We agree that in some cases, such as Atlanta–Birmingham, other carriers would continue service. In other instances, new carriers might replace United's service. This list is also not complete in the sense that we may find it desirable to withdraw service from some nominally profitable markets under a condition of free exit and entry. The statistical results are summarized as follows:

CLASSIFICATION OF LOSS MARKETS

[Domestic Airlines, 1974]

	Number of city-pairs	Percent of market	Annual contribution (in thousands)	Profits (PBT) (in thousands)
Markets with negative contribution:				
Retained:				
Traffic control	10	17.2	($55,[illegible])	($12,433)
Dominate markets	7	12.1	(2,[illegible])	([illegible])
Operational	4	6.9	(2,[illegible])	(10,[illegible])
	21	36.2	(6,[illegible])	(29,805)
Consider for deletion	37	63.8	(8,[illegible])	(25,172)
Subtotal	58	100.0	(14,[illegible])	(54,977)
Markets with positive contribution:				
Retained				
Traffic control	29	48.3	31,754	(26,695)
Future profit or policy	15	16.9	23,746	(14,216)
	38	65.2	54,[illegible]	(40,711)
Consider for deletion	31	34.8	12,[illegible]	(13,242)
Subtotal	89	100.0	67,[illegible]	(53,953)
Grand total:				
Retained	79	54.0	48,[illegible]	(70,516)
Considered for deletion	68	46.0	4,[illegible]	(38,414)
Total	147	100.0	53,032	(108,930)

We look forward to an opportunity to read your draft report and we hope we can continue to enjoy a mutually constructive relationship.

Sincerely,

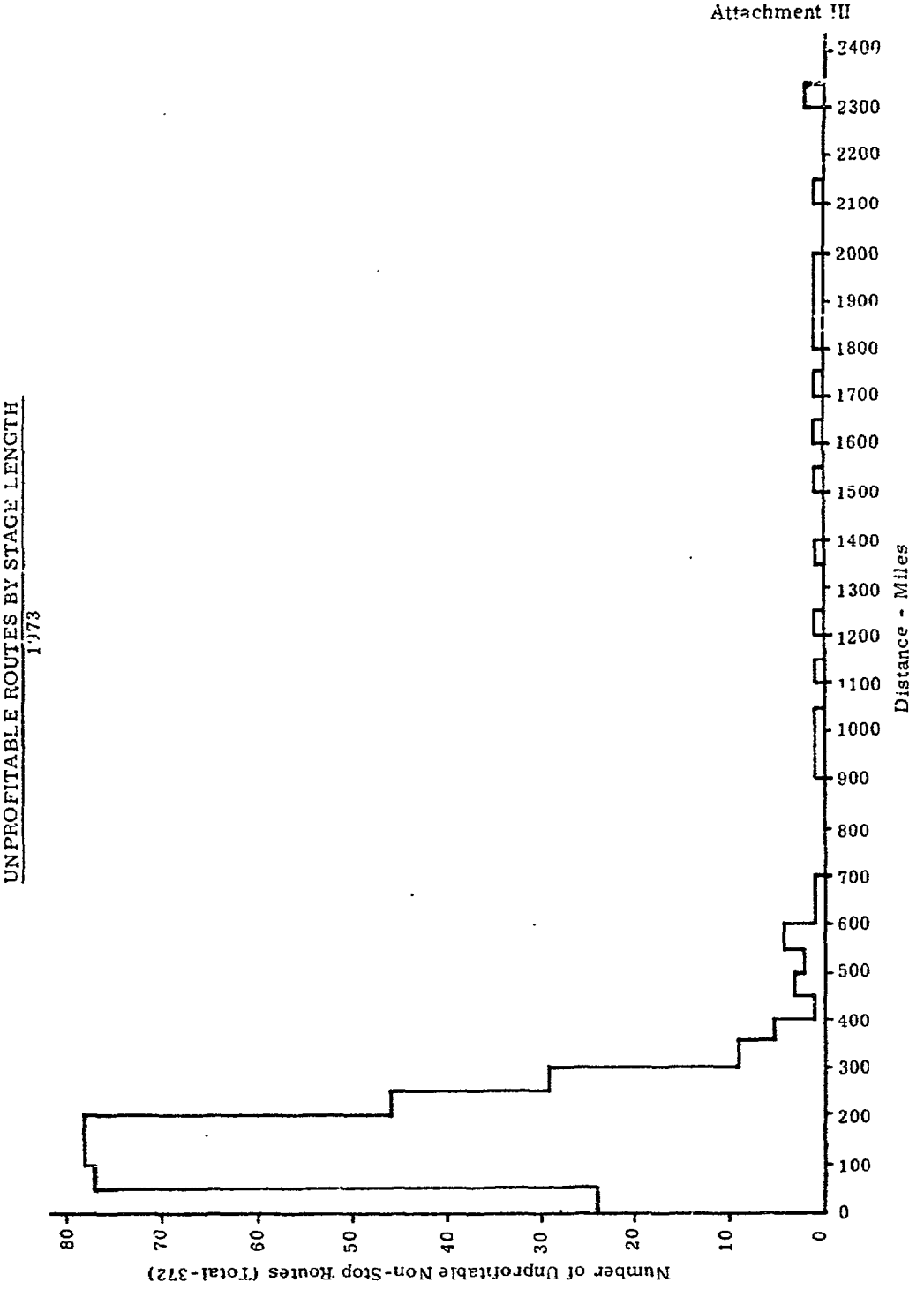
WILLIAM R. NEBIT,
Corporate Economist.

PREPARED STATEMENT OF STUART G. TIPTON

I am Stuart G. Tipton, Pan Am senior vice president for Federal affairs. I am here today with Stanley Gewirtz, Pan Am special adviser on public policy, to tell you about some of our widely-publicized problems. But in the context, essentially, of the effectiveness of regulation, of route awards and the requirements of entry into the business of international air transportation.

APPENDIX I

Attachment III



CIVIL AERONAUTICS BOARD

WASHINGTON, D. C. 20428

OFFICE OF THE CHAIRMAN

January 24, 1977

Mr. Henry Eschwege
Director
Community and Economic Development
Division
United States General Accounting Office
Washington, D. C. 20548

B-1-78

Dear Mr. Eschwege:

Here is a brief staff memorandum which responds to your letter of December 8, 1976, asking for our review and comment concerning a draft of your report, "Comments on the Air Transportation Association of America Study: Consequences of Deregulation of the Air Transport Industry."

The professional staff of the Civil Aeronautics Board has reviewed your draft report and their memorandum to me is attached.

Thank you for affording us this opportunity to comment on your report.

Sincerely,

John E. Robson

John E. Robson
Chairman

Enclosure

APPENDIX II

MEMORANDUM January 24, 1977

TO: The Chairman

FROM: Director, Bureau of Operating Rights

RE: GAO Request for Comments on Their Draft Report: "Comments on the Air Transportation Association of America Study: Consequences of Deregulation of the Air Transport Industry."

The staff of the Civil Aeronautics Board has reviewed the GAO request The staff is in general agreement with the overall conclusion of the GAO that the ATA study cannot be relied on as an estimate of the consequences of a deregulated air transport industry. In the staff's opinion the report successfully rebutted ATA's study on its own terms.

Rebuttal based on the study's own terms is a totally acceptable technique for demonstrating faulty methodology and analysis. It should be pointed out, however, that in addition to the faulty analysis and assumptions which the GAO has successfully refuted, both the ATA study and the GAO report failed to consider fundamental aspects of a deregulated environment. The full effects of the potential for expanded scheduled operations by present day intrastate carriers, commuter carriers, supplemental carriers and others was omitted. More importantly, the absolutely fundamental effects of wholly new entry and price competition were not explored. We believe these most basic mistakes in ATA's approach should be pointed out in the GAO report, or, as an alternative, the GAO report should clearly be identified as a rebuttal of the study on its own terms.

Finally, the staff thinks the GAO report considered the effects of higher load factors only from the perspective of increased potential for denied service on particular flights. The potential for lower fares resulting from higher load factors was not addressed.

Bruce E. Cunningham

OFFICE OF THE SECRETARY OF TRANSPORTATION
WASHINGTON, D.C. 20590

ASSISTANT SECRETARY
FOR ADMINISTRATION

January 17, 1977

Mr. Henry Eschwege
Director
Community and Economic Development Division
U. S. General Accounting Office
Washington, D. C. 20548

Dear Mr. Eschwege:

This is in response to your letter of December 10, 1976, requesting comments on the General Accounting Office draft report entitled, "Comments on the Air Transport Association of America Study: Consequences of Deregulation of the Air Transport Industry." We have reviewed the report in detail and prepared a Department of Transportation reply.

Two copies of the reply are enclosed.

Sincerely,

William S. Heffelfinger

Enclosures

DEPARTMENT OF TRANSPORTATION REPLY

TO

GAO DRAFT REPORT OF DECEMBER 10, 1976

ON

THE AIR TRANSPORT ASSOCIATION OF AMERICA STUDY:
"CONSEQUENCES OF DEREGULATION OF THE AIR TRANSPORT INDUSTRY"

SUMMARY OF GAO FINDINGS AND CONCLUSIONS

GAO limited their review of the Air Transport Association of America (ATA)study to an assessment of ATA's conclusion that a "deregulation" of the nation's air transport system would markedly reduce the level of service available to the public. GAO reviewed critiques of the ATA study prepared by a number of recognized authorities in the field, including that of the Civil Aeronautics Board's (CAB) Special Staff on Regulatory Reform. They also interviewed officials from the ATA, CAB, and Lockheed Aircraft Corporation, whose "Airline System Simulation Model" was utilized by the ATA for their study.

GAO's assessment was that the study's methodologies and assumptions were frequently faulty to the extent that the conclusion of the ATA should not be relied on as an estimate of the consequences of deregulation.

GAO reached this conclusion by examining the 1198 routes which ATA contends risk abandonment under deregulation. Of the 1198, 826 are subsidized local service routes. GAO points out these 826 routes are claimed by ATA to risk abandonment only because ATA makes the unfounded assumption that deregulation implies elimination of the subsidy and the carriers will subsequently drop service.

ATA contends that 372 trunk routes would be subject to abandonment because they were determined to be unprofitable or marginal on the basis of ATA's computer simulation of the trunk network. GAO concluded that the simulation was defective in that the marginal or unprofitable routes were not credited with revenues from passengers generated by other routes on a connecting or multi-stop flight basis. Further, GAO examined the 372 routes and found that a great majority received a level of service (flight frequency) which was discretionary on the part of the airlines. More than half of the 372 routes were found to be served by two or more airlines. Further, GAO found that service continued to be provided at a discretionary level after a two year period from the base year for the study.

GAO suggests that this evidence indicates these routes are not unprofitable and unstable.

GAO's assessment is that the ATA conclusion is faulty.

DEPARTMENT OF TRANSPORTATION POSITION STATEMENT

The GAO study is a useful addition to the substantial number of reviews of the ATA study undertaken by various academic and government sources. The DOT is in agreement with GAO's position that the ATA study's methodologies, assumptions and conclusions are frequently faulty. The DOT is hopeful that the GAO study will be published and released as soon as possible. Of particular value is the GAO analysis of the service available over the 372 trunk routes the ATA suggests are unprofitable. The GAO conclusions and analysis are similar in nature to a number of other reviews of the ATA study.

Robert Henri Binder
Assistant Secretary for
Policy, Plans and International Affairs

MAY 15, 1975 FLIGHT FREQUENCIES ON ROUTES LISTED BY ATA AS RISKING ABANDONMENT

City-pair	Distances miles	Daily flights: Trunk airline flights	Daily flights: Local service airline flights
Akron, Ohio - Cleveland, Ohio	40	2	0
Akron, Ohio - Pittsburgh, Pa.	70	3	7
Akron, Ohio - New York, N.Y.	396	3	5
Akron, Ohio - Youngstown, Ohio	47	2	0
Albany, N.Y. - New York, N.Y.	136	0	15
Albuquerque, N. Mex. - Amarillo, Tex.	277	2	2
Albuquerque, N. Mex. - El Paso, Tex.	224	12	2
Alexandria, La. - Baton Rouge, La.	90	6	0
Alexandria, La. - Shreveport, La.	116	2	0
Allentown, Pa. - Cleveland, Ohio	339	1	1
Allentown, Pa. - Washington, D.C.	151	4	0
Allentown, Pa. - Wilkes Barre, Pa.	50	0	4
Amarillo, Tex. - Lubbock, Tex.	108	6	3
Amarillo, Tex. - Wichita, Kans.	292	4	0
Asheville, N.C. - Atlanta, Ga.	164	3	11

APPENDIX IV

City-pair	Distances miles	Daily flights: Trunk airline flights	Daily flights: Local service airline flights
Asheville, N.C. - Charleston, W. Va.	209	1	3
Asheville, N.C. - Knoxville, Tenn.	86	2	2
Asheville, N.C. - Raleigh, N.C.	214	2	2
Atlanta, Ga. - Augusta, Ga.	143	18	4
Atlanta, Ga. - Birmingham, Ala.	134	33	3
Atlanta, Ga. - Chattanooga, Tenn.	106	18	2
Atlanta, Ga. - Columbia, S.C.	192	16	4
Atlanta, Ga. - Columbus, Ga.	83	18	4
Atlanta, Ga. - Greenville, S.C.	154	9	6
Atlanta, Ga. - Knoxville, Tenn.	152	18	0
Atlanta, Ga. - Macon, Ga.	79	12	0
Atlanta, Ga. - Montogmery, Ala.	147	22	0
Augusta, Ga. - Charleston, S.C.	116	3	0
Augusta, Ga. - Charlotte, N.C.	141	8	0
Augusta, Ga. - Columbia, S.C.	63	4	2
Augusta, Ga. - Savannah, Ga.	96	3	0
Austin, Tex. - Dallas, Tex.	183	16	8
Austin, Tex. - El Paso, Tex.	526	5	0
Austin, Tex. - Houston, Tex.	143	5	9
Austin, Tex. - San Antonio, Tex.	70	4	1

APPENDIX IV

City-pair	Distances miles	Daily flights: Trunk airline flights	Daily flights: Local service airline flights
Bakersfield, Calif. - Fresno, Calif.	100	1	0
Bakersfield, Calif. - Los Angeles, Calif.	109	6	0
Bakersfield, Calif. - San Francisco, Calif.	239	4	2
Bakersfield, Calif. - Santa Barbara, Calif.	82	1	2
Baltimore, Md. - Buffalo, N.Y.	281	2	2
Baltimore, Md. - Hartford, Conn.	283	3	4
Baltimore, Md. - Las Vegas, Nev.	2,106	3	0
Baltimore, Md. - New Haven, Conn.	247	0	0
Baltimore, Md. - Newport News, Va.	141	2	0
Baltimore, Md. - New York, N.Y.	179	12	12
Baltimore, Md. - Norfolk, Va.	159	0	0
Baltimore, Md. - Philadelphia, Pa.	96	12	11
Baltimore, Md. - Raleigh, N.C.	255	2	0
Baltimore, Md. - Rochester, N.Y.	277	2	1
Baltimore, Md. - Seattle, Wash.	2,334	2	0
Baltimore, Md. - Washington, D.C.	37	8	18
Bangor, Maine - Portland, Maine	109	5	0
Baton Rouge, La. - Birmingham, Ala.	332	0	0
Baton Roughe, La. - New Orleans, La.	65	4	9
Baton Rouge, La. - Shreveport, La.	206	4	0

City-pair	Distances miles	Daily flights: Trunk airline flights	Daily flights: Local service airline flights
Beaumont, Tex. - Houston, Tex.	79	0	5
Beaumont, Tex. - Shreveport, La.	172	0	0
Billings, Mont. - Bozeman, Mont.	126	4	2
Billings, Mont. - Casper, Wyo.	225	2	5
Billings, Mont. - Fargo, N. Dak.	565	2	0
Billings, Mont. - Great Falls, Mont.	177	10	4
Billings, Mont. - Helena, Mont.	174	5	0
Billings, Mont. - Sheridan, Wyo.	104	2	0
Birmingham, Ala. - Knoxville, Tenn.	221	1	0
Birmingham, Ala. - Monroe, La.	515	2	0
Birmingham, Ala. - Nashville, Tenn.	177	2	4
Birmingham, Ala. - Pensacola, Fla.	214	5	0
Bismarck, N. Dak. - Fargo, N. Dak.	187	3	0
Bismarck, N. Dak. - Jamestown, N. Dak.	99	2	0
Bosie, Idaho - Pendleton, Oreg.	196	2	0
Boise, Idaho - Salt Lake City, Utah	291	8	8
Boise, Idaho - Spokane, Wash.	287	0	4
Boston, Mass. - Burlington, Vt.	181	2	14
Boston, Mass. - Hartford, Conn.	91	9	2
Boston, Mass. - Houston, Tex.	1,603	12	0

APPENDIX IV

City-pair	Distances miles	Daily flights: Trunk airline flights	Daily flights: Local service airline flights
Boston, Mass. - Manchester, N.H.	45	2	0
Boston, Mass. - New Bedford, Mass.	48	0	11
Boston, Mass. - Portland, Maine	95	11	8
Boston, Mass. - Providence, R.I.	49	3	0
Bozeman, Mont. - Butte, Mont.	69	2	0
Bozeman, Mont. - Helena, Mont.	65	4	0
Brunswick, Ga. - Jacksonville, Fla.	49	0	0
Brunswick, Ga. - Macon, Ga.	170	0	0
Brunswick, Ga. - Savannah, Ga.	68	0	0
Buffalo, N.Y. - Rochester, N.Y.	55	10	13
Buffalo, N.Y. - Syracuse, N.Y.	134	0	7
Burlington, Vt. - Portland, Maine	153	2	0
Butte, Mont. - Great Falls, Mont.	119	3	0
Butte, Mont. - Helena, Mont.	51	3	0
Butte, Mont. - Idaho Falls, Idaho	169	3	0
Butte, Mont. - Salt Lake City, Utah	358	5	0
Butte, Mont. - Spokane, Wash.	265	4	0
Casper, Wyo. - Cheyenne, Wyo.	148	2	3
Casper, Wyo. - Denver, Colo.	232	5	8
Casper, Wyo. - Rapid City, S. Dak.	188	5	0

APPENDIX IV

City-pair	Distances miles	Daily flights: Trunk airline flights	Daily flights: Local service airline flights
Casper, Wyo. - Sheridan, Wyo.	131	2	0
Cedar Rapids, Iowa - Chicago, Ill.	196	11	8
Cedar Rapids, Iowa - Des Moines, Iowa	104	2	0
Cedar Rapids, Iowa - Lincoln, Nebr.	272	2	0
Cedar Rapids, Iowa - Moline, Ill.	69	5	11
Cedar Rapids, Iowa - Omaha, Nebr.	221	0	2
Charleston, S.C. - Charlotte, N.C.	168	8	3
Charleston, S.C. - Columbia, S.C.	95	1	4
Charleston, S.C. - Jacksonville, Fla.	192	5	0
Charleston, S.C. - Savannah, Ga.	86	6	0
Charleston, W.Va. - Cincinnati, Ohio	173	4	6
Charleston, W.Va - Cleveland, Ohio	210	2	0
Charleston, W.Va. - Pittsburgh, Pa.	164	4	6
Charlotte, N.C. - Columbia, S.C.	89	8	2
Charlotte, N.C. - Daytona Beach, Fla.	416	3	0
Charlotte, N.C. - Detroit, Mich.	504	6	0
Charlotte, N.C. - Greensboro, N.C.	82	2	8
Charlotte, N.C. - Greenville, S.C.	75	6	6
Charlotte, N.C. - Jacksonville, Fla.	329	2	0
Charlotte, N.C. - Raleigh, N.C.	130	6	5

APPENDIX IV

City-pair	Distances miles	Daily Flights: Trunk airline flights	Daily Flights: Local service airline flights
Charlotte, N.C. - Richmond, Va.	256	0	6
Chattanooga, Tenn. - Cincinnati, Ohio	278	5	0
Chattanooga, Tenn. - Columbus, Ohio	365	0	0
Chattanooga, Tenn. - Indianapolis, Ind.	329	0	0
Chattanooga, Tenn. - Knoxville, Tenn.	87	10	2
Chattanooga, Tenn. - Lexington, Ky.	210	2	0
Chattanooga, Tenn. - Louisville, Ky.	219	2	0
Cheyenne, Wyo. - Denver, Colo.	96	2	11
Chicago, Ill. - Cincinnati, Ohio	254	28	0
Chicago, Ill. - Dayton, Ohio	231	13	2
Chicago, Ill. - Detroit, Mich.	238	44	22
Chicago, Ill. - Flint, Mich.	223	8	3
Chicago, Ill. - Fort Wayne, Ind.	157	8	0
Chicago, Ill. - Grand Rapids, Mich.	137	12	14
Chicago, Ill. - Indianapolis, Ind.	177	14	5
Chicago, Ill. - Lansing, Mich.	179	8	8
Chicago, Ill. - Madison, Wis.	109	10	19
Chicago, Ill. - Milwaukee, Wis.	74	4	39
Chicago, Ill. - Moline, Ill.	139	11	8
Chicago, Ill. - Muskegon, Mich.	118	4	8

APPENDIX IV

City-pair	Distances miles	Daily flights: Trunk airline flights	Daily flights: Local service airline flights
Chicago, Ill. - Saginaw, Mich.	222	10	1
Chicago, Ill. - St. Louis, Mo.	256	31	43
Chicago, Ill. - South Bend, Ind.	84	8	9
Chicago, Ill. - Toledo, Ohio	214	10	0
Cincinnati, Ohio - Cleveland, Ohio	226	8	2
Cincinnati, Ohio - Columbus, Ohio	116	5	2
Cincinnati, Ohio - Dayton, Ohio	63	4	6
Cincinnati, Ohio - Indianapolis, Ind.	98	10	3
Cincinnati, Ohio - Lexington, Ky.	70	5	4
Cincinnati, Ohio - Los Angeles, Calif.	1,888	8	0
Cincinnati, Ohio - Louisville, Ky.	83	3	13
Cincinnati, Ohio - Minneapolis, Minn.	596	2	2
Cincinnati, Ohio - Toledo, Ohio	181	2	0
Cleveland, Ohio - Columbus, Ohio	117	0	5
Cleveland, Ohio - Dayton, Ohio	168	1	6
Cleveland, Ohio - Detroit, Mich.	94	5	32
Cleveland, Ohio - Flint, Mich.	145	5	1
Cleveland, Ohio - Fort Wayne, Ind.	177	6	0
Cleveland, Ohio - Grand Rapids, Mich.	214	7	6
Cleveland, Ohio - Indianapolis, Ind.	266	2	6

City-pair	Distances miles	Daily flights: Trunk airline flights	Daily flights: Local service airline flights
Cleveland, Ohio - Lansing, Mich.	170	4	8
Cleveland, Ohio - Pittsburgh, Pa.	104	13	3
Cleveland, Ohio - Saginaw, Mich.	186	4	3
Cleveland, Ohio - South Bend, Ind.	232	6	0
Cleveland, Ohio - Toledo, Ohio	102	6	0
Colorado Springs, Colo. - Denver, Colo.	67	19	12
Colorado Springs, Colo. - Oklahoma City, Okla.	458	2	0
Columbus, Ga. - Montgomery, Ala.	86	3	0
Columbus, Ohio - Dayton, Ohio	71	23	4
Columbus, Ohio - Detroit, Mich.	161	3	0
Columbus, Ohio - Indianapolis, Ind.	182	5	0
Columbus, Ohio - Knoxville, Tenn.	295	0	0
Columbus, Ohio - Lexington, Ky.	163	0	0
Columbus, Ohio - Pittsburgh, Pa.	144	2	7
Columbus, Ohio - Toledo, Ohio	121	9	0
Corpus Cristi, Tex. - Houston, Tex.	201	12	6
Dallas, Tex. - Houston, Tex.	222	35	17
Dallas, Tex. - Monroe, La.	282	6	2
Dallas, Tex. - Oklahoma City, Okla.	185	26	5
Dallas, Tex. - San Antonio, Tex.	253	38	2

City-pair	Distances miles	Daily flights: Trunk airline flights	Daily flights: Local services airline flights
Dallas, Tex. - Tulsa, Okla.	237	23	6
Dallas, Tex. - Wichita, Kans.	333	13	1
Dayton, Ohio - Detroit, Mich.	175	6	4
Dayton, Ohio - Indianapolis, Ind.	111	4	6
Dayton, Ohio - Los Angeles, Calif.	1,913	3	0
Dayton, Ohio - Louisville, Ky.	144	2	2
Dayton, Ohio - Philadelphia, Pa.	483	5	3
Dayton, Ohio - Toledo, Ohio	119	1	0
Daytona Beach, Fla. - Fort Lauderdale, Fla.	221	0	0
Daytona Beach, Fla. - Jacksonville, Fla.	9[illegible]	17	0
Daytona Beach, Fla. - Orlando, Fla.	54	2	0
Daytona Beach, Fla. - Tampa, Fla.	123	3	0
Denver, Colo. - Grand Junction, Colo.	199	2	10
Des Moines, Iowa - Kansas City, Mo.	165	6	8
Des Moines, Iowa - Lincoln, Nebr.	169	1	0
Des Moines, Iowa - Minneapolis, Minn.	232	5	10
Des Moines, Iowa - Moline, Ill.	164	0	0
Des Moines, Iowa - Omaha, Nebr.	117	5	0
Des Moines, Iowa - St. Louis, Mo.	259	3	10
Detroit, Mich. - Fort Wayne, Ind.	128	6	0

City-pair	Distances miles	Daily flights: Trunk airline flights	Daily flights: Local services airline flights
Detroit, Mich. - Indianapolis, Ind.	241	23	0
Detroit, Mich. - Milwaukee, Wis.	244	10	23
Detroit, Mich. - New Orleans, La.	936	6	5
Detroit, Mich. - Toledo, Ohio	49	4	4
Elko, Nev. - Ely, Nev.	116	2	0
Elko, Nev. - Reno Nev.	230	2	0
El Paso, Tex. - Houston, Tex.	669	15	1
El Paso, Tex. - Midland, Tex.	247	8	2
El Paso, Tex. - San Francisco, Calif.	992	2	0
El Paso, Tex. - Tucson, Ariz.	268	10	0
Ely, Nev. - Salt Lake City, Utah	184	2	0
Eugene, Oreg. - Medford, Oreg.	122	2	0
Eugene, Oreg. - Portland, Oreg.	106	4	2
Evansville, Ind. - Indianapolis, Ind.	135	6	6
Evansville, Ind. - Lexington, Ky.	160	0	0
Evansville, Ind. - Louisville, Ky.	98	4	0
Evansville, Ind. - Memphis, Tenn.	247	4	0
Evansville, Ind. - Paducah, Ky.	96	2	0
Evansville, Ind. - St Louis, Mo.	161	4	0
Fargo, N. Dak. - Grand Forks, N. Dak.	74	2	4

APPENDIX IV

City-pair	Distances miles	Daily flights: Trunk airline flights	Daily flights: Local services airline flights
Fargo, N. Dak. - Minneapolis, Minn.	223	10	0
Flint, Mich. - Lansing, Mich.	45	2	1
Flint, Mich. - Saginaw, Mich.	43	2	4
Fort Lauderdale, Fla. - Miami, Fla.	21	24	0
Fort Lauderdale, Fla. - Orlando, Fla.	178	1	0
Fort Lauderdale, Fla. - West Palm Beach, Fla.	42	6	0
Fort Meyers, Fla. - Miami, Fla	112	3	0
Fort Meyers, Fla. - Orlando, Fla.	131	5	0
Fort Meyers, Fla. - Sarasota, Fla.	70	3	0
Fort Meyers, Fla. - Tampa, Fla.	104	10	0
Fort Smith, Ark. - Little Rock, Ark.	128	2	5
Fort Smith, Ark. - Shreveport, La.	202	2	0
Fort Smith, Ark. - Tulsa, Okla.	104	4	5
Fort Wayne, Ind. - Indianapolis, Ind.	104	8	0
Fort Wayne, Ind. - New York, N.Y.	592	4	0
Fort Wayne, Ind. - South Bend, Ind.	77	0	0
Fort Wayne, Ind. - Toledo, Ohio	84	4	0
Fresno, Calif. - Los Angeles, Calif.	209	10	0
Fresno, Calif. - San Francisco, Calif.	158	11	2
Gainesville, Fla. - Titusville, Fla.	121	0	0

APPENDIX IV

City-pair	Distances miles	Daily flights: Trunk airline flights	Daily flights: Local services airline flights
Grand Forks, N. Dak.- Minneapolis, Minn.	284	6	8
Grand Rapids, Mich. - Saginaw, Mich.	86	2	0
Great Falls, Mont. - Helena, Mont.	67	2	0
Great Falls, Mont. - Spokane, Wash.	289	4	2
Greensboro, N.C. - Raleigh, N.C.	67	2	4
Greensboro, N.C. - Richmond, Va.	175	0	3
Greensboro, N.C. - Roanoke, Va.	85	2	4
Hartford, Conn. - New York, N.Y.	107	16	9
Hartford, Conn. - Providence, R.I.	66	1	21
Helena, Mont. - Missoula, Mont	102	1	0
Houston, Tex. - Kansas City, Mo.	643	15	0
Houston, Tex. - San Antonio, Tex.	192	29	2
Huntsville, Ala. - Nashville, Tenn.	102	2	4
Idaho Falls, Idaho - Pocatello, Idaho	49	5	4
Idaho Falls, Idaho - Salt Lake City, Utah	199	8	0
Indianapolis, Ind. - Lexington, Ky.	148	1	0
Indianapolis, Ind. - Louisville, Ky.	111	12	12
Indianapolis, Ind. - St. Louis, Mo.	229	9	9
Jackson, Miss. - Meridian, Miss.	78	2	0
Jackson, Miss. - Monroe, La.	116	5	0

APPENDIX IV

City-pair	Distances miles	Daily flights: Trunk airline flights	Daily flights: Local services airline flights
Jackson, Miss. - New Orleans, La.	160	3	2
Jacksonville, Fla. - Melbourne, Fla.	177	0	0
Jacksonville, Fla. - Orlando, Fla.	144	10	0
Jacksonville, Fla. - Sarasota, Fla.	220	3	0
Jacksonville, Fla. - Savannah, Ga.	116	5	0
Jacksonville, Fla. - Tallahassee, Fla.	159	4	0
Jacksonville, Fla. - Tampa, Fla.	176	8	0
Jamestown, N. Dak. - Minneapolis, Minn.	295	2	0
Kansas City, Mo. - Oklahoma City, Okla.	306	12	2
Kansas City, Mo. - Omaha, Nebr.	165	9	8
Kansas City, Mo. - St. Louis, Mo.	229	26	11
Kansas City, Mo. - Springfield, Mo.	159	2	7
Kansas City, Mo. - Tucson, Ariz.	1,035	2	1
Kansas City, Mo. - Tulsa, Okla.	223	11	0
Kansas City, Mo. - Wichita, Kans.	185	18	4
Keene, N.H. - Lebanon, N.H.	50	0	6
Keene, N.H. - Manchester, N.H.	42	0	0
Keene, N.H. - New York, N.Y.	168	0	6
Knoxville, Tenn. - Lexington, Ky.	157	4	0
Knoxville, Tenn. - Nashville, Tenn.	152	1	4

APPENDIX IV

City-pair	Distances miles	Daily flights: Trunk airline flights	Daily flights: Local services airline flights
Las Vegas, Nev. - Los Angeles, Calif.	227	41	23
Las Vegas, Nev. - San Diego, Calif.	258	6	4
Las Vegas, Nev. - Tampa, Fla.	1,991	4	0
Lawton, Okla. - Oklahoma City, Okla.	73	2	3
Lawton, Okla. - Wichita Falls, Tex.	40	2	0
Lebanon, N.H. - New York, N.Y.	212	0	6
Lexington, Ky. - Louisville, Ky.	63	0	6
Lincoln, Nebr. - Omaha, Nebr.	55	5	7
Little Rock, Ark. - Memphis, Tenn.	130	17	6
Little Rock, Ark. - Springfield, Mo.	185	2	0
Los Angeles, Calif. - Palm Springs, Calif.	110	2	4
Los Angeles, Calif. - San Diego, Calif.	101	56	1
Los Angeles, Calif. - Santa Barbara, Calif.	89	6	0
Los Angeles, Calif. - Visalia, Calif.	173	2	0
Louisville, Ky. - Nashville, Tenn.	151	2	0
Lubbock, Tex. - Midland, Tex.	121	7	2
Lubbock, Tex. - Wichita Falls, Tex.	193	2	0
Madison, Wis. - Milwaukee, Wis.	74	9	15
Madison, Wis. - Minneapolis, Minn.	228	6	9
Madison, Wis. - Rochester, Minn.	167	6	0

APPENDIX IV

City-pair	Distances miles	Daily flights: Trunk airline flights	Daily flights: Local services airline flights
Manchester, N.H. - New York, N.Y.	195	6	3
Manchester, N.H. - Portland, Maine	75	2	0
Manchester, N.H. - Worcester, Mass.	51	6	0
Melbourne, Fla. - Miami, Fla.	160	7	0
Melbourne, Fla. - Orlando, Fla.	48	1	0
Melbourne, Fla. - Tampa, Fla.	117	7	0
Memphis, Tenn. - Paducah, Ky.	154	2	0
Merced, Calif. - Modesto, Calif.	34	2	0
Merced, Calif. - Visalia, Calif.	91	2	0
Miami, Fla. - Orlando, Fla.	193	17	16
Miami, Fla. - Sarasota, Fla.	178	7	0
Miami, Fla. - West Palm Beach, Fla.	62	17	0
Milwaukee, Wis. - Rochester, Minn.	241	6	0
Milwaukee, Wis. - San Francisco, Calif.	1,844	3	0
Minneapolis, Minn. - Rochester, Minn.	76	8	7
Minneapolis, Minn. - Sioux Falls, S. Dak.	197	10	8
Minneapolis, Minn. - San Diego, Calif.	1,532	10	0
Missoula, Mont. - Spokane, Wash.	169	5	0
Mobile, Ala. - New Orleans, La.	129	7	9
Mobile, Ala. - Pensacola, Fla.	64	7	0

APPENDIX IV

City-pair	Distances miles	Daily flights: Trunk airline flights	Daily flights: Local services airline flights
Modesto, Calif. - San Francisco, Calif.	78	6	0
Modesto, Calif - Stockton, Calif.	24	[illegible]	0
Moline, Ill. - Omaha, Nebr.	280	2	0
Monroe, La. - Shreveport, La.	105	5	0
Monterey, Calif. - San Francisco, Calif.	77	8	6
Nashville, Tenn. - St. Louis, Mo.	271	3	5
New Bedford, Mass. - New York, N.Y.	164	0	8
New Orleans, La. - Oklahoma City, Okla.	567	2	0
Newport News, Va. - Norfolk, Va.	23	3	4
Newport News, Va. - Washington, D.C.	122	7	0
New York, N.Y. - Omaha, Nebr.	1,143	4	0
New York, N.Y. - Providence, R.I.	143	15	2
New York, N.Y. - Philadelphia, Pa.	84	26	11
New York, N.Y. - Tulsa, Okla.	1,231	17	0
New York, N.Y. - Worcester, Mass.	150	6	0
Norfolk, Va. - Washington, D.C.	149	12	6
Oklahoma City, Okla. - Tulsa, Okla.	111	27	5
Oklahoma City, Okla. - Wichita, Kans.	156	10	2
Omaha, Nebr. - Portland, Oreg.	1,368	4	0
Orlando, Fla. - Tampa, Fla.	80	21	0

City-pair	Distances miles	Daily flights: Trunk airline flights	Daily flights: Local services airline flights
Orlando, Fla. - West Palm Beach, Fla.	142	8	0
Palm Springs, Calif. - Phoenix, Ariz.	260	2	0
Palm Springs, Calif. - Tucson, Ariz.	343	4	0
Panama City, Fla. - Pensacola, Fla.	92	5	0
Panama City, Fla. - Tallahassee, Fla.	81	2	4
Pendleton, Oreg. - Portland, Oreg.	182	4	0
Philadelphia, Pa. - Washington, D.C.	133	8	41
Phoenix, Ariz. - San Diego, Calif.	304	12	0
Phoenix, Ariz. - Tucson, Ariz.	109	11	16
Pierre, S. Dak. - Rapid City, S. Dak.	140	4	4
Pierre, S. Dak. - Sioux Falls, S. Dak.	185	4	0
Pittsburgh, Pa. - Roanoke, Va.	219	2	0
Pittsburgh, Pa. - Youngstown, Ohio	57	6	4
Pocatello, Idaho - Salt Lake City, Utah	150	6	0
Portland, Oreg. - St. Louis, Mo.	1,708	8	0
Portland, Oreg. - Salem, Oreg.	51	2	0
Portland, Oreg. - Seattle, Wash.	132	65	8
Raleigh, N.C. - Richmond, Va.	139	2	2
Raleigh, N.C. - Washington, D.C.	227	8	5
Reno, Nev. - Sacramento, Calif.	113	3	0

APPENDIX IV

City-pair	Distances miles	Daily flights: Trunk airline flights	Daily flights: Local services airline flights
Reno, Nev. - San Francisco, Calif.	192	15	2
Richmond, Va. - Washington, D.C.	94	6	9
Rochester, N.Y. - Syracuse, N.Y.	79	2	14
Sacramento, Calif. - San Francisco, Calif.	85	7	12
San Diego, Calif. - San Francisco, Calif.	456	5	0
San Diego, Calif. - Tucson, Ariz.	367	4	0
San Francisco, Calif. - Santa Barbara, Calif.	262	6	2
San Francisco, Calif. - Stockton, Calif.	65	6	2
Sarasota, Fla. - Tampa, Fla.	40	16	0
Seattle, Wash. - Spokane, Wash.	223	14	6
Seattle, Wash. - Washington, D.C.	2,307	8	0
Shreveport, La. - Tulsa. Okla.	284	3	0
Tallahassee, Fla. - West Palm Beach, Fla.	364	0	0
Tampa, Fla. - West Palm Beach, Fla.	174	13	0
Tulsa, Okla. - Wichita, Kans.	132	8	0
Washington, D.C. - Wilkes-Barre, Pa.	185	4	0
Washington, D.C. - Wilmington, Del.	96	0	0