JOHN F. BROWN COMPANY, INC.

EFFECT OF DUAL TRACK ALTERNATIVES ON AIRLINE SERVICE AND AIR FARES

February 8,.1996

Prepared for:
MINNEAPOLIS ST.-PAUL METROPOLITAN AIRPORTS COMMISSION

Prepared by:
JOHN F. BROWN COMPANY, INC.
Cincinnati, Ohio

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AIRPORT MANAGEMENT CONSULTANTS

February 8, 1996

Mr. Nigel D. Finney
Deputy Executive Director, Planning-Environment
Metropolitan Airports Commission Executive Offices
6040 - 28th Avenue South
Minneapolis, MN 55450

Dear Mr. Finney:

This transmits our final report on the effect of the Dual Track alternatives on airline service and air fares at Minneapolis-St. Paul. We trust that it will assist you and the MAC board in your deliberations.

We gratefully acknowledge the assistance of MAC management and staff in the course of preparing this report.

We appreciate this opportunity to work on this assignment with the Metropolitan Airports Commission, and we look forward to being of service to you again in the future.

Yours truly,

JOHN F. BROWN COMPANY, INC.

Paul D. McKnight /ks

Paul D. McKnight
President
John F. Brown Canada, Inc.

PDM/ks

our ref: D:\MSP\NDF02086.DOC

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MINNEAPOLIS-ST. PAUL
EFFECT OF DUAL TRACK ALTERNATIVES
ON
AIRLINE SERVICE AND AIR FARES

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I. INTRODUCTION

The Metropolitan Airports Commission (MAC) retained John F. Brown Company in the spring of 1995 to assist in projecting the financial consequences associated with each of the Dual Track alternatives (i.e., the development of MSP and the development of a replacement airport on a new site). MAC also charged the firm with evaluating the likely effects of the Dual Track alternatives on airline service and fares. This latter issue is the subject of this report.

Purpose

The main purpose of this report is to identify for decision makers the key factors associated with the Dual Track alternatives that may have a differential effect on airline service and air fares at Minneapolis-St. Paul.

Scope of Study

This study pertains only to passenger airline service, air fares, and passenger traffic; the examination of cargo (i.e., freight and mail) was not a part of our mandate. Our analysis considered the 25-year period from 1995 through 2020.

Our description of the relevant factors and the differential effect of those factors under each of the Dual Track alternatives is mostly qualitative. We defer to the numerical passenger forecasts as prepared by HNTB.

Approach

We used our general conceptual air travel framework to identify the factors that derive from the implementation of either Dual Track alternative and which may affect future airline service, air fares, and passenger traffic at Minneapolis-St. Paul.

We then focused on the differences between the Dual Track alternatives that could influence service and fare decisions by airlines and travel decisions by air passengers. In this regard, we treated origin-destination (O&D) and connecting traffic as two distinct components of the passenger base at Minneapolis-St. Paul.

We also examined the changes in airline service, air fares, and passenger traffic both leading up to, and just after, the February 1995 opening of the new international airport at Denver.

Our conclusions drew upon our understanding of passenger air travel and our knowledge of the airline industry, and they are supported by the findings of our analysis of the recent experience with the new airport in Denver.

Organization of Report

Section 2 presents our conceptual framework with respect to air travel demand which we used to assess the potential differential effect that each of the Dual Track alternatives may have on service, fares, and traffic at Minneapolis-St. Paul. A more detailed discussion of the framework is provided in Appendix A.

In Section 3, we identify the key differences between the Dual Track alternatives which may influence on service, fares, and traffic, from the point of view of (a) the airlines and (b) air travelers.

Section 4 presents the key factors influencing the supply side of the air service question, i.e., service and fare decisions by the airlines. A more detailed discussion of airline decision making is attached as Appendix B. Based on the differences between the Dual Track alternatives laid out in Section 3, we identify the specific factors that could potentially have a differential effect on air service and passenger fares at Minneapolis-St. Paul.

Section 5 focuses on the demand side, i.e., factors influencing decision-making by air travelers. It examines the possibility that the Dual Track alternatives may have a differential effect on, first, O&D passenger traffic and, secondly, connecting passenger traffic.

In Section 6, we summarize the findings from our study of the changes in service, fares, and traffic at Denver, with particular emphasis on the degree to which those changes were caused by the opening of its new international airport. Our memorandum to MAC officials on this subject is attached as Appendix C.

Our overall conclusions are presented in Section 7.

II. UNDERLYING CONCEPTUAL FRAMEWORK

We discuss in Appendix A our basic frame of reference with respect to air travel demand and the factors affecting the realization of that demand in the form of traffic, i.e., air passengers, under the following major headings:

- Air Travel Potential
- Air Traffic: Realization of Air Travel Potential
- U.S. Airline Industry
- Capacity of Aviation Infrastructure

A. APPLICATION OF FRAMEWORK TO DUAL TRACK PLAN

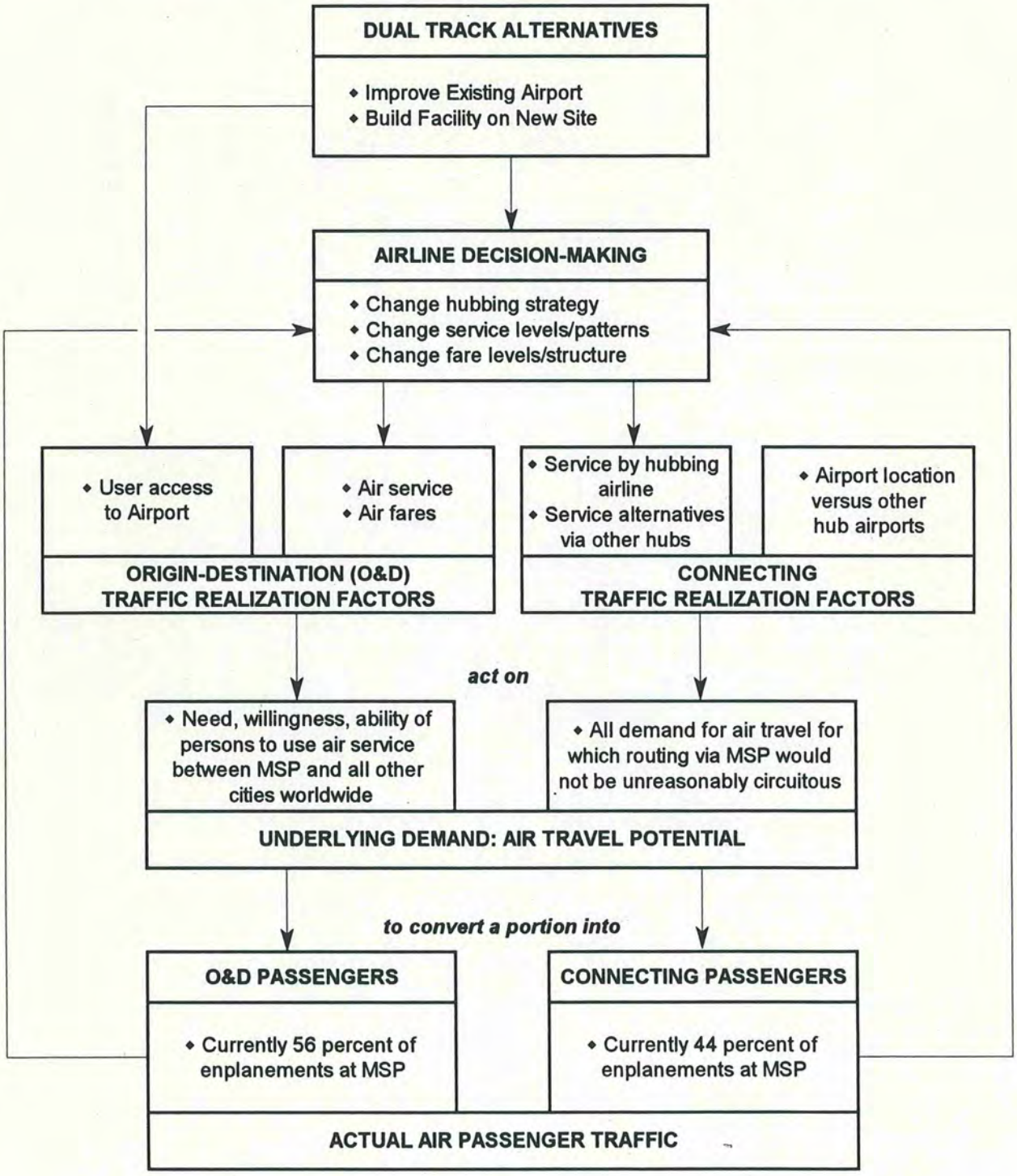
Illustrated in Figure 1 is the way in which we used this framework to assess the potential differential impact that each of the Dual Track alternatives may have on service, fares, and traffic at Minneapolis-St. Paul.

The Dual Track alternatives may affect the convenience of access by some users and the service and fare decisions made by the airlines. In turn, these factors will determine the portion of the total underlying travel demand that is realized in the form of passengers at Minneapolis-St. Paul.

The degree to which this process is likely to differ between the two Dual Track alternatives is discussed further in Sections 3, 4, and 5 which follow.

Figure 1

IMPACT OF DUAL TRACK ALTERNATIVES ON AIRLINE SERVICE, AIR FARES, AND PASSENGER TRAFFIC MINNEAPOLIS-ST. PAUL INTERNATIONAL AIRPORT



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III. RELEVANT DIFFERENCES BETWEEN DUAL TRACK ALTERNATIVES

There are numerous differences between the Dual Track alternatives. Only a few, however, are relevant to the discussion of the potential impact on airline service, air fares, and passenger traffic. These differences are presented in comparative format in Table 1.

Terminal facility capacity (e.g., square footage, number of gates) and the availability in the main passenger terminal of federal inspection services (e.g., immigration, customs) were assumed to be similar under the two Dual Track alternatives. Similarly, we assumed no differences in terms of operational efficiency or limitations on late-night operations by the airlines.

A. DIFFERENCES WHICH MAY INFLUENCE AIRLINE SERVICE AND FARES

The New Site alternative places much higher costs on the airlines serving the Airport. Based on the HNTB passenger forecasts and the estimates of airport costs prepared by John F. Brown Company, charges to the airlines would be higher by $11.48 per enplaned passenger ($18.97 vs. $7.49 at the Existing Site) in 2005. While this difference is expected to fall back to about six dollars by 2020, the New Site alternative would continue to mean higher operating costs for the airlines throughout the study timeframe.

On the other hand, the New Site alternative provides greater airfield capacity, with six runways compared to three at the Existing Site. Analysis by HNTB concluded that this would translate by 2020 into an average flight delay of less than one minute at the New Site, compared to three minutes on average at the Existing Site. The analysis also determined, however, that ground taxi times would be longer at the New Site. In net terms, then, total ground time would be two minutes greater at the New Site than at the Existing Site. The extra two minutes of block time on each flight would create an additional, albeit relatively minor, cost for the airlines.

B. DIFFERENCES WHICH MAY INFLUENCE TRAVELER USAGE OF AIRPORT

Metro Council studies indicate that the New Site alternative moves the Airport 17 miles further away from downtown Minneapolis and that user access time would be increased by about 20 minutes. Associated with this increased access time are not only higher out-of-pocket transportation costs, whether by private auto, limousine, or taxi, but also the opportunity cost of the additional travel time for business passengers in particular.

Although the reduction in flight delays under the New Site alternative would be lower by two minutes on average, there would actually be an improvement of more than two minutes at peak times and less than two minutes at less-congested times. In practical terms, however, it is questionable whether this magnitude of difference in delay time would affect air passenger usage.

Table 1
DIFFERENCES BETWEEN DUAL TRACK ALTERNATIVES
WHICH COULD HAVE AN IMPACT ON AIR SERVICE, FARES AND TRAFFIC
MINNEAPOLIS-ST. PAUL INTERNATIONAL AIRPORT

Feature	Difference, At New Site		Existing Site		New Site	
Airport Location[1]						
- Average ground distance from downtown Minneapolis	**17 more miles**					
- Average access time, in 2020						
Peak	**20 minutes longer**		26 minutes		46 minutes	
Off-peak	**19 minutes longer**		22 minutes		41 minutes	
Airfield[2]						
- Configuration	**3 more runways**		3 runways		6 runways	
- Average delay per operation, in 2020	**2 minutes less per flight**		Average 2.9 minutes		Average 0.7 minute	
Airport-related costs for airlines[3]						
	2005	2020	2005	2020	2005	2020
- Landing fees (per 1,000 lbs. MLW)	**+ $ 1.50**	**+ $ 2.79**	$ 3.06	$ 2.57	$ 4.56	$ 5.36
- Total cost per enplaned passenger	**+ $ 11.48**	**+ $ 6.20**	$ 7.49	$ 16.84	$ 18.97	$ 23.04

SOURCES: [1] DOT/FAA, *Dual Track Airport Planning Process, Draft Environmental Impact Statement*, December 1995
[2] HNTB, working papers presented to MAC
[3] Estimates prepared by John F. Brown Company, Inc.

IV. AIRLINE SERVICE AND FARES UNDER DUAL TRACK ALTERNATIVES

In this section, we summarize the key factors affecting airline decision-making regarding service and fares. (See Appendix B for a more detailed discussion of this subject.) We then assess the degree to which the differences between the Dual Track alternatives are likely to affect airline service and fares at Minneapolis-St. Paul. We conclude that there would be no material difference in service and fares under the two alternatives.

A. AIRLINE DECISION-MAKING REGARDING SERVICE AND FARES

Similarly to other business enterprises, an airline aims to allocate its resources in ways that they will produce the maximum overall return. Since an airline's productive assets are mobile, they can be shifted relatively easily from one market to another. In doing so, airline management seeks to ensure that no alternative allocation of those resources elsewhere in its system will produce a better return.

Because fixed costs account for a significant portion of its expenses, an airline is highly sensitive to its operating margin on each route, i.e., the difference between the average revenue received for each seat and the average cost to transport that seat over the route. The airline attempts to maximize that revenue-cost difference.

Generation of revenue by an airline takes place within the context of an overall commercial strategy which may be defined along a number of marketing and operational parameters. Its pricing strategy seeks the balance between lower fares that generate traffic and the need to produce an acceptable return on its assets. Fare increases aimed at generating higher unit revenues can cause a reduction in the number of passengers, particularly in competitive city-pair markets. In the absence of fare increases, the use of mechanisms to increase seat occupancy can achieve overall revenue gains for the airline.

Air fares tend to increase with distance; other than this, air fares do not correlate closely with airline costs. Rather, fare levels tend to be largely a function of competitive conditions in the marketplace. For example, fares tend to be higher at airports and on routes that are dominated by one or two airlines.

Market factors largely determine the level of service in a given city-pair market. Key determinants of the level of service are the magnitude and nature of passenger demand in the market, the extent to which serving that city-pair is compatible with each airline's overall route system, and the degree of competition for passengers in the market.

Airlines are increasingly finding that a critical element in maintaining their competitiveness is to keep their costs as low as possible. For a business that is both capital- and labor-intensive, and prone to cutting its prices in order to sell its excess capacity, unit costs that are lower than those of competitors equip an airline with a degree of freedom to initiate, and respond to, competitive action without endangering its profitability.

Generally, airport costs are not a determinant of either fare or service levels. Studies have shown that airport costs represent a relatively small proportion (from 4 to 5 percent) of an airline's total costs. Hence, a 20-to-25 percent increase in all of its airport costs would produce only a 1 percent increase in a major airline's cost base.

Faced with a sizable airport cost increase, an airline does not typically increase its fares on all routes from that airport. Rather, an airline's decision to increase fares is usually made on a systemwide basis with the objective, among other things, of recovering cost increases that may have occurred at airports throughout its network.

An airline has several ways to mitigate the impact of increased charges at an airport on its unit operating costs. These include a reduction in the number of gates or amount of space rented, improved utilization of existing facilities, and an increase in the level of flight activity at that airport.

B. DIFFERENTIAL EFFECT OF DUAL TRACK ALTERNATIVES

The reduction in the average flight delay that airlines would experience at the New Site over the Existing Site is so minor that it is unlikely to have any effect on service or fares at Minneapolis-St. Paul.

The primary factor that could affect service and fares differently, then, is the greater operating cost per enplaned passenger at the New Site. The remainder of this section of the report addresses the potential impact on three groups of carriers serving the Airport, namely, the major domestic airlines, regional carriers, and international airlines. We conclude that the additional costs associated with the New Site would not cause the airlines to change either their flight schedules or air fares to a material extent.

Major Domestic Airlines

Given that it enplaned 80 percent of all passengers at MSP in the first half of 1995, Northwest Airlines will carry a significant portion of the cost increases allocable to the airlines, regardless of which Dual Track alternative is selected. The additional cost (averaging $11.45 per enplaned passenger in 2005) of the New Site alternative represents about $9.50 in 1995 dollars. Since MSP accounted for roughly 20 percent of all passengers enplaned by Northwest at U.S. airports in 1995, the New Site alternative would itself add $1.90 to the average cost of all the airline's domestic boardings, representing about one percent of its current average domestic fare revenue.

Theoretically, then, implementation of the New Site alternative could prompt Northwest to initiate a one-percent systemwide fare increase just to recover its additional airport cost at Minneapolis-St. Paul. More likely, however, Northwest would absorb the additional cost into its overall cost base and offset that cost, at least partly, by operating efficiencies at the new airport.

As a result, we believe that the additional costs associated with the New Site alternative are not sufficient to cause Northwest to change either its flight schedule or fare levels at Minneapolis-St. Paul to a material extent.

For the other major airlines serving MSP, the Airport represents a very small proportion of their system boardings. For this reason, and in the absence of a fare increase by their major competitor (Northwest), the other major airlines would likely just accept the higher additional costs associated with the New Site alternative.

Regional Carriers

Seven out of every eight regional carrier flights at MSP in January 1996 were operated by the Northwest Airlink operators, Mesaba and Express I. In the combined route system of those two carriers, 17.4 percent of all passenger boardings in the 12 months ended March 31, 1995 were at MSP. The additional cost (averaging $11.45 per enplaned passenger) of the New Site alternative would represent an extra $1.65 (in 1995 dollars) of cost for each passenger enplaned systemwide by the two Airlink carriers. As was the case with Northwest itself, this would be unlikely to trigger either a reduction in service at the Airport or a fare increase applicable to all Mesaba and Express I Airlink markets.

The remaining regional service at MSP was operated by Great Lakes Aviation under a codesharing agreement with United Airlines. MSP does not rank high on the list of all points served by Great Lakes and hence accounts for only a small proportion of its total boardings. Like the other major airlines, Great Lakes could be expected to absorb the additional costs associated with the New Site alternative.

International Airlines

KLM and Air Canada were the only major international scheduled airlines serving MSP during 1995. Airlines such as these serve international airports in other countries where the airport charges are as high, or higher, than those that would be in effect under the New Site alternative. Consequently, neither the incumbents nor other interested international airlines are likely to be deterred from introducing new service simply by the higher costs at the New Site.

V. TRAVELER USAGE OF AIRPORT UNDER DUAL TRACK ALTERNATIVES

Although we have just concluded that there will be no material difference in the supply of air service (i.e., flight frequency and timing, the availability of seats, the level of air fares), it is possible that there may still be grounds for a differential in the realization of traffic demand at the Airport under the two Dual Track alternatives. We address this question by considering arguments related, first, to O&D travelers (who comprised 56 percent of all enplanements at MSP in 1995) and, secondly, to passengers making flight connections (the remaining 44 percent) at Minneapolis-St. Paul. For each category of travelers, we conclude that the volume of traffic under either Dual Track alternative would be the same.

A. O&D PASSENGERS

In Section 2, we described the relationship between the realization of passenger demand in a city-pair market and the cost and convenience of making a trip between the two cities. The three classes of cost/convenience factors were identified as air service quality, air fares, and airport accessibility.

The discussion in Section 4 concluded that the airlines would be no more likely to reduce service or raise fares to any material extent when faced with the higher costs associated with the New Site alternative than under the Existing Site alternative. On that basis, it appears that the first two of the three cost/convenience factors will not differ regardless of which Dual Track alternative is implemented.

The third cost/convenience factor relates to the time, cost, and perceived convenience of ground access and other actions required by departing passengers in traveling from their place of origin to the airport boarding area and by arriving passengers in traveling from their point of deplanement to their destination. For most travelers, access to and from the New Site will be more time-consuming, more costly, and less convenient than to and from the Existing Site. The question is what effect the higher cost and lower level of convenience will have on O&D passenger usage of the Airport.

HNTB studied the issue of traveler access to the Airport and concluded that the location of the New Site and the associated higher costs of traveler access will have no material effect on the realization of passenger demand. This conclusion is reflected in the passenger forecasts prepared by HNTB and adopted as part of the Dual Track Plan: the same volume of passengers was forecast for both Dual Track alternatives.

B. CONNECTING PASSENGERS

Passengers make flight connections at MSP for a variety of reasons, with the primary reasons being the following:

a) They are traveling to or from a community which is linked to the U.S. air service network only via MSP.

b) Air fares available in their desired class of service between their origin and destination were lowest via MSP.

c) Flight schedules operating via MSP between their origin and destination either best coincided with their desired departure and arrival times, or produced the shortest overall elapsed travel time, or both.

d) They preferred to use the services of Northwest Airlines due to their participation in its WorldPerks frequent flyer program.

The use of MSP as a connecting point, then, is not typically a conscious choice by travelers as much as it is the result of their other travel criteria being met by flights that operate to and from the Airport.

Travelers using MSP for reason (a) above, of course, have no choice of other connecting airports. If, as we concluded in Section 4, the level of service and fares will be no different under either Dual Track alternative, then travelers using MSP for reason (b) and (c) above will have available generally the same service and fare options. And as long as Northwest maintains its hubbing operations at Minneapolis-St. Paul, travelers using MSP for reason (d) above will continue to be able to accumulate mileage credits by making flight connections at the Airport, on whichever site it is located.

Therefore, as was the case for O&D passengers, there is nothing to suggest that the volume of connecting passenger traffic at the New Site will be significantly different from that at the Existing Site.

VI. THE DENVER EXPERIENCE

In the course of determining the potential impact of the Dual Track alternatives on service, fares, and traffic at Minneapolis-St. Paul, we examined the recent experience in Denver with the opening of its new international airport.

The new facility at Denver is the only new airport in the United States since Dallas/Ft. Worth was built in the mid-1970s. Moreover, the Denver air travel market is comparable in many ways to that at Minneapolis-St. Paul, and each airport serves as a system hub for a major domestic airline. Consequently, we felt that the Denver experience would serve as a useful case study of the concepts and conclusions presented in the previous sections of this report. The detailed memorandum that we prepared and submitted to MAC on this investigation is attached as Appendix C.

The lengthy delay and eventual opening of the new Denver airport on February 28, 1995 was widely-covered in the media. Critics were quick to relate the traffic declines and fare increases that occurred in the spring and summer of 1995 to the higher operating costs for airlines at the new facility. However, on the basis of our examination which covered the months leading up to and immediately following the airport opening, we concluded that the higher airport charges at Denver did not result in a deterioration in the level of either service or fares.

A. DISMANTLING OF THE CONTINENTAL AIRLINES HUB

One key finding was that construction of the new Denver airport (DEN) was not the primary factor in the decision by Continental Airlines to dismantle its hubbing operation there.

In the early 1990s, Continental was in a financial struggle for survival; the airline emerged from 29 months of Chapter 11 bankruptcy protection in April 1993. In the fall of that year, the airline launched its low-fare 'Continental Lite' service and began shifting both aircraft and human resources from its more westerly markets to the eastern United States. This involved downsizing its DEN operation somewhat.

During its time under Chapter 11, Continental lost considerable market share at DEN to United, which had undertaken a significant expansion of its hubbing operation. In addition, over the three years from 1991 to 1993, Continental attributed $500 million in losses to its DEN hub. By mid-1994, the airline had announced its decision to dismantle completely its hubbing operation at DEN. Compared to a peak of 246 daily flight departures in 1987, Continental's flight activity by September 1995 consisted of only 14 daily departures from DEN to its three major hubs.

In the face of a formidable competitor (United), declining market share, and heavy losses from its Denver operation, Continental's decision to pull down its service at Stapleton reflected a corporate strategy to deploy its resources where it could compete most profitably. Rates, fees, and charges at Stapleton do not appear to have been a major factor in this decision. While it is not

possible for outsiders to conclude with certainty, the evidence strongly suggests that Continental would have pulled down its hub at DEN even if the new airport had not been built.

B. REPORTED DETERIORATION IN SERVICE, FARES, AND TRAFFIC

A number of negative reports appeared in the media in the months immediately following the opening of the new airport at Denver. The reportage created the general impression that the high operating costs for airlines at the new airport had caused a reduction in service, an increase in fares, and a loss of passenger traffic.

Our examination of the facts behind each of the changes described below left us with a much more optimistic impression of the aftermath of the new airport's opening than was created by many of the media reports then and since.

The reported changes, and the associated facts as we determined them, were as follows:

(i) *Jet service declined at DEN.*

Continental eliminated its service very rapidly throughout 1994 and into early 1995. Despite considerable expansion of their flight schedules at DEN, United and the other airlines were unable to replace the lost service at the same rate, primarily due to a lack of surplus aircraft capacity. Most markets that were formerly served by nonstop jet flights continued to be served but, in some cases, at reduced frequency.

(ii) *Regional air service was lost.*

Virtually all regional service at DEN was formerly provided by carriers affiliated with either United (United Express) or Continental (Continental Express). One of the primary roles of these carriers was to carry to and from DEN passengers who were making connections with the respective major airlines. The dismantling of the Continental hubbing operation caused a considerable fall-off in traffic for Continental Express, and the carrier terminated operations at DEN in September 1995. While United Express added service in several markets, the carrier was unable to replace capacity as rapidly as it was eliminated by Continental Express. The most significant impact was the loss of carrier competition on some of the regional routes.

(iii) *Air fares went up.*

O&D travelers to and from DEN benefited from a substantial drop in air fares throughout much of 1994, due to sizable fare cuts initiated by Continental as a means of maintaining adequate cash flow while it was downsizing its operations at the airport. With the essential completion of Continental's downsizing activity in the spring of 1995, United initiated a round of fare increases in an attempt to restore fares to their former levels; the other carriers followed suit. Given that the timing coincided with the opening of the new airport, the fare increases tended to be accompanied by an announcement that they were

necessitated by higher costs at the new facility. The degree to which the higher costs were the reason, or simply a convenient scapegoat, for the fare increases is unclear. In any case, in the months that followed, competitive factors resulted in the rolling back of many of these increases.

(iv) *O&D passengers shifted to low-fare services at Colorado Springs Airport.*

Passenger traffic at Colorado Springs (COS) increased by 150 percent in the second half of 1995, stimulated primarily by a new start-up airline, Pacific Western Airlines. The airline's management group selected COS as the base for the new venture largely on the basis of the state of Colorado's air travel market, i.e., the dismantling of Continental's hub at DEN, the resulting shortfall in seat capacity in many DEN markets, and the minimal activity by low-fare airlines serving Colorado. COS offered the airline a new terminal building, adequate gate capacity at relatively low cost, and an opportunity to recapture some of the local O&D traffic which historically had used surface modes to fly from DEN. Neither the choice of COS as home base for Western Pacific, nor the timing of the airline's start-up, was predicated on the opening of the new airport at Denver.

(v) *Connecting passengers were diverted to other airports.*

At least 60 percent of the passengers formerly making flight connections on Continental at DEN were 'lost' by the airport. The traffic was not diverted by higher fares, since connecting fares, on average, did not move upward in the first several months after the new airport opened. Rather, the passengers either used Continental services via its other hub airports or traveled on other airlines over other routings.

(vi) *Total passenger enplanements dropped by about 10 percent.*

The particularly-low discount pricing that occurred at DEN during 1994 caused a surge in O&D passenger traffic at the airport. Despite a return to more-typical pricing in the following year, O&D traffic increased nearly 3 percent in the second quarter of 1995 compared to the same period in 1994. Due to the dismantling of the Continental hub, however, connecting traffic at DEN was down from the previous year, by a greater amount than the O&D traffic had grown. The net result was a year-over-year drop in passengers enplaned during the months immediately following the opening of the new airport.

The airport's critics and media reporting tended to draw the conclusion that the changes listed above were caused by the increased costs for airlines to operate at the airport. The airlines, perhaps understandably, did little to dispel that perception.

With the possible exception of the fare increases described in (iii), all of the above changes at DEN were brought about primarily by the massive downsizing of Continental's hubbing operation and the resulting response from both the other airlines and the travel marketplace. They were only tangentially related, if at all, to the higher airport charges levied on the airlines.

C. OUR ASSESSMENT OF SERVICE, FARES, AND TRAFFIC

On the basis of our investigation of Denver's recent experience with the opening of its new airport, we conclude that the city continues to be well-served by scheduled passenger flights, air fares have remained generally competitive, and passenger traffic continues to grow. The impact of the new facility on service and fares has been minimal; most of the changes that have occurred were brought about by market forces.

Airline Service

United not only maintained but substantially expanded the scale of its operation at DEN in 1994 and 1995, mostly to fill the slack left by the cuts in service by Continental. United reported in October 1995 that its operation at the new airport was profitable and that the airline planned to add more capacity as aircraft become available.

All other major domestic airlines at DEN expanded, or at least maintained, their level of service following the opening of the new airport.

Three airlines discontinued service at DEN in late 1994 and early 1995. For two of those airlines (Midway Airlines and Markair), their reasons for terminating service were unrelated to the new facility. The third airline (Morris Air) was acquired by Southwest Airlines which decided not to continue the five daily flights at DEN due to the high costs of operating at the new airport. Notably, Southwest decided not to continue serving Colorado Springs as well.

Two airlines introduced service at DEN in the months leading up to the opening of the new airport. Both companies (Vanguard Airlines and Frontier Airlines) offered low-fare service to a variety of cities, with Frontier operating from a base at DEN. Furthermore, both airlines started serving DEN with full knowledge of the impending move to the new airport and the higher operating costs that would be associated therewith.

There was no evidence that the new airport at DEN stimulated air service growth in the months following the opening. The increases in service that did occur, as described above, were driven by market factors and by the downsizing of Continental operations in particular.

Air Fares

The airlines adjusted their fare levels at DEN more than once after the new airport opened. Many of the fare increases that were implemented in the spring of 1995 were subsequently adjusted downward due to competitive forces in the travel marketplace. Reaction in communities linked to DEN by regional service was so negative that Mesa Airlines, operating as United Express, rolled back its fare hike.

Low-fare airlines at DEN had a moderating influence on fares charged by the other airlines in the markets they served. In addition, by October 1995, the growth of low-fare service at COS

had prompted United and some of the other airlines operating at DEN to common-rate their DEN fares with those they were charging at COS.

Industry fare data, published to date by DOT, indicates that the average domestic fare paid by passengers at DEN in the second quarter of 1995 was nearly four dollars lower than that paid two years before, when two major airlines were competing for traffic at the airport.

Passenger Traffic

Monthly passenger enplanement figures at DEN, which had been down by as much as 11 percent from the previous year throughout the spring and summer of 1995, showed a negative variation of only two percent in November 1995. This is explained by the surge in traffic that occurred throughout much of 1994 in response to the fare cuts initiated by Continental. By late 1994, Continental had reduced its presence in the Denver market to the extent that traffic volumes had subsided to more typical levels.

As stated earlier, DOT traffic data for the second quarter of 1995 showed that O&D passengers at DEN increased by nearly 3 percent over 1994. Data for the rest of 1995 was not yet available at the time of preparation of this report.

The finding that O&D traffic did not decline immediately following the opening of the new airport is particularly significant. The DEN experience demonstrates that the realization of market demand in the form of O&D passenger traffic occurred in spite of a significant increase in the level of airport charges.

O&D passenger traffic accounted for about 56 percent of all enplanements at DEN in 1994 (roughly the same percentage as at MSP). The remainder (44 percent) was made up of connecting passengers.

Total connecting traffic at DEN in the first quarter of 1995 was down 15 percent from the previous year, due in large part to the dismantling of Continental's hub. It is worth noting that connecting traffic was also down in the second quarter of 1995 (the first calendar quarter following the opening of the new airport), by no more than 15 percent. The opening of the new airport clearly had no direct impact on the volume of connecting traffic at DEN.

VII. CONCLUSION

We project no materially adverse or beneficial impact on service or fares from either of the Dual Track alternatives.

At the same time, it is important to note that we are not predicting, nor are we in a position to predict, what action Northwest Airlines may take in the event that either Dual Track alternative is implemented. A shift of some or all of Northwest's aircraft maintenance activity away from Minneapolis-St. Paul, while it would have significant economic impact on the community, would have a relatively minor direct impact on service and fares. On the other hand, a reduction in Northwest's flight operations, through a shift of some hubbing activity to its other hub airports, for example, would clearly affect the level of service at Minneapolis-St. Paul; it is questionable whether the other airlines would fully replace the service lost, particularly if the main consequence of the service cut was a loss of connecting traffic. Fewer connecting passengers would mean lower total enplanements, thereby increasing the unit operating cost difference between the Dual Track alternatives and enhancing the likelihood of fare increases under the New Site alternative.

Ultimately, service levels and the level of air fares at Minneapolis-St. Paul will be driven by market factors. Primary among those factors is the degree of airline competition for passenger traffic at the airport. Given that both Dual Track alternatives provide similar capacity for additional airlines, they are neutral with respect to their impact on airline competition.

APPENDIX A

THE AIR TRAVEL MARKET

This Appendix presents our basic conceptual framework with respect to air travel demand and the factors affecting the realization of that demand in the form of traffic, i.e., air passengers, under the following major headings:

- Air Travel Potential
- Air Traffic: Realization of Air Travel Potential
- U.S. Airline Industry
- Capacity of Aviation Infrastructure

Air Travel Potential

The need, willingness, and ability of persons to utilize air transportation services create the underlying demand for air travel. The extent to which this travel potential is realized (i.e., converted into air travelers) depends upon factors discussed under the next heading.

The *need for air travel* is derived from the community of interest between cities—that is, the commercial and institutional needs of businesses, governments, universities, etc., and the personal and recreational needs of individuals. Interurban travel demand can also be served by surface modes or by travel substitutes (e.g., mail, facsimile, telephone, teleconference, etc.).

The *willingness to travel by air* instead of using other transportation modes or using travel substitutes is primarily a function of various tradeoffs which businesses and individuals make among need, time, cost, convenience, and safety considerations.

The *ability to travel by air* is primarily a function of income, access to airline service, and governmental restrictions on travel, if any. Prevailing economic conditions as reflected in rates of employment, earnings, inflation, interest, foreign exchange, and other economic variables affect both the need for business travel and the ability of businesses and individuals to afford air travel.

Air Traffic: Realization of Air Travel Potential

All interurban travel is ultimately discretionary, regardless of whether business or personal needs are being served. If the cost and inconvenience of making a trip outweigh the need to travel, a trip can be re-scheduled, consolidated with another trip, replaced by a travel substitute, or canceled.

The realization of air travel potential between two airports, then, is inversely related to the cost and inconvenience of making a trip between them. Lower costs and greater convenience stimulate air travel, and vice versa.

There are three classes of cost/convenience factors: quality of air service, level of air fares, and airport accessibility.

Air service quality is related to airline scheduling. It includes, among other aspects, the availability of scheduled airline service to (and from) desired destinations, frequency of such service (in case a flight is missed), schedule convenience relative to desired arrival and departure times (in both directions), number of enroute stops, on-line or inter-line connections, and type of aircraft (e.g., jet or prop). Improved service quality tends to stimulate passenger traffic. For a given base of demand, for example, nonstop service produces more passengers than one-stop service, which produces more passengers than multi-stop or connecting service.

Air fares are the effective ticket prices for air travel. Other things being equal, lower fares stimulate traffic and higher fares depress traffic. Frequent travel reward programs have two fare-related effects on air travel. First, as air fares fluctuate, these programs have served to reduce the extent of 'brand switching' by passengers. Secondly, such programs have stimulated air travel by creating a new category of travelers made up of passengers redeeming their trip credits.

Airport accessibility is related to the time, cost, and perceived convenience of ground access, parking, and other actions required by departing passengers in traveling from their place of origin to the airport boarding area and by arriving passengers in traveling from their point of deplanement to their destination. Studies have demonstrated a positive relationship between the ease of airport accessibility and the volume of both short-haul and long-haul passenger traffic.

In multi-airport regions, air travelers have a choice of airports at which to depart and arrive. Generally, travelers tend to use the airport that is most accessible (i.e., nearest in distance or time) when service quality and fares compare favorably with those available at more distant airports. However, when service and fare advantages at a more distant airport outweigh the accessibility advantages of the nearer airport, travelers will use the more distant airport. Passenger diversion (and recapture) depends upon the interplay of cost/convenience factors in the context of specific city-pair travel decisions by individuals.

The development of airline hubs has also created a choice for passengers who must make flight connections enroute to their destinations. In addition to airline service and air fare factors described above, the convenience of making intra- and inter-terminal transfers at an airport can influence passenger decisions to make flight connections at one airport rather than another. Passengers may also choose to make flight connections at one carrier hub airport or another in order to accumulate frequent flyer program mileage, even though such routing decisions may add considerable circuity to their travel.

U.S. Airline Industry

Costs, Pricing, and Competitive Advantage

A high degree of operating leverage characterizes the U.S. airline business. Small fluctuations in revenue yield per revenue passenger-mile (RPM) and cost per available seat-mile (ASM) can significantly affect operating results. Operating results tend to reflect disproportionately variations in seasonal traffic levels, labor and fuel costs, and general economic conditions.

The industry has in recent years become increasingly competitive in its pricing. Low-cost carriers like Southwest Airlines have been price leaders, implementing fare initiatives that have stimulated traffic. Higher-cost airlines serving the same routes have been obliged either to match the low fares or else to cede some or all of the traffic to their low-fare competitors. For these airlines, however, the increased traffic has not been sufficient to offset the dilution in yields produced by lower fares and, as a result, passenger revenues have declined.

Reducing costs and increasing utilization of productive resources—principally, labor, fuel, and aircraft—have become key objectives of airline managements. To achieve these objectives, airlines have adopted various strategies, including decisions to reduce capacity, furlough personnel, defer aircraft orders, sell assets (aircraft, aircraft delivery positions, international routes, slots, facilities), and seek bankruptcy protection.

Labor is the largest category of airline operating expense. Labor relations with pilots, mechanics, and flight attendants have proven to be important not only to airline performance but even to company survival in some cases. Although they vary widely from airline to airline, real labor costs per ASM have declined since deregulation as a result of wage cuts, two-tiered wage scales, reduced crew size, and cross-utilization of personnel under new work rules.

Fuel is the second largest expense category, ranging from 15 percent to 30 percent or more of total operating costs. Airlines with fleets of older, less fuel-efficient aircraft are particularly vulnerable to rapid and unexpected price increases such as those precipitated by world events in 1973, 1979, and 1990.

Airlines are capital-intensive businesses. They require substantial investments in *aircraft* and facilities. Newer aircraft offer advantages such as improved fuel efficiency, less maintenance, smaller crew requirements, greater range, increased seating capacity and payload, and compliance with Stage 3 noise requirements. Aircraft built by the same manufacturer often provide the benefit of simplified pilot and maintenance training, cross-utilization of flight crews, and reduced parts inventories. The age, compatibility and fuel-efficiency of aircraft in an airline's fleet are key factors in achieving competitive advantage during the 1990s.

In addition to the use of price, most major carriers seek to gain competitive advantage with passengers through their route structures, code-sharing programs (which serve consumer preferences for single-carrier service), and frequent flyer programs. Carriers also seek competitive advantage through computer reservation systems, commission structures for travel agents, yield

management systems, and controlling interest in critical components of the aviation infrastructure (such as airport gates or slots at capacity-controlled airports). It is generally believed that a carrier's competitive advantage increases with the number and the appeal of the destinations that it serves, which partly explains the industry trends toward corporate consolidation and, more recently, to marketing alliances that are international in scope.

During the 1980s, most of the major carriers developed close commercial relationships with, and often made equity investments in, smaller regional airlines. The primary objective was to develop feed traffic into the major carriers' networks from points that either were not sufficiently distant or did not generate enough traffic, or both, to make large jet operations viable. For marketing reasons, the relationships often involved codesharing (designation of the smaller carrier's flight by the major airline's two-letter code). Although the transfer of shorter-haul, lower-volume routes from the major airlines to their regional affiliates has created considerable traffic growth for the smaller carriers, the rate of growth of those operators is slowing.

Route Structure: Hub-and-Spoke vs. Linear

A hub-and-spoke network allows an airline (1) to provide high-frequency connecting service to a large number of low-density city pairs that do not in themselves generate enough passengers to support nonstop or direct service, (2) thereby reducing dependence on particular markets, and (3) to realize higher-than-average fares on nonstop routes where it is the dominant carrier. The array of various carriers' hub-and-spoke networks provide travelers from some 'spoke' cities a greater choice of travel routings via alternative connecting hubs.

The operation of hub-and-spoke networks generally contributes to increased airline concentration at connecting hubs, decreased competition in city-pairs from hub cities, increased competition from spoke cities through alternative connecting hubs to points beyond such hubs, and increased congestion and delay at the connecting hub airports. Moreover, passengers in concentrated "monopoly" markets generally pay more than those in competitive markets. For airlines, a hubbing operation requires a substantial investment in physical and human resources. The constraints of hub operations can actually result in relatively low utilization of aircraft, facilities, equipment, and personnel. Hubbing strategies for major airlines have changed in recent years, tending toward retrenchment from regional hubs and consolidation at their primary domestic system hubs. At the same time, many of the major airlines have moved to capitalize on their cost-competitiveness on international routes by shifting resources to their international gateway airports.

By contrast, Southwest Airlines has chosen to operate a system of linear route patterns without significant hub airport operations. High-frequency service and low fares are critical elements of this point-to-point strategy which, along with rigid attention to cost controls, a cordial but low-frills approach to customer service, and a one-type fleet of aircraft, has helped the airline achieve steady growth and a consistent record of profitability. Other airlines, notably United, Delta, and several new entrants, have announced, or already mounted, operations that attempt to emulate the Southwest model. Although Southwest and its emulators have focused primarily on short-haul, and to only a limited extent on medium-haul, routes, the traffic diversion created by the

rapid growth of this sector of the industry could have a negative impact on the future viability of the major carriers' domestic hub-and-spoke systems.

Capacity of Aviation Infrastructure

Aviation infrastructure includes both airspace and airport systems. In the United States, the airspace system is operated by the federal government, whereas local proprietors, ranging from semi-autonomous operating authorities to municipal government departments, provide and maintain the components of the airport system.

The development of the U.S. hub-and-spoke route system has concentrated the demands on aviation system capacities during peak times, leaving excess capacity during off-peak times. Delays at hub airports can affect on-time performance of airlines throughout the national system of airports. Congestion delays within this system impose costs on airlines and air passengers.

Improvements in terminal area air traffic control would reduce congestion by allowing more arriving and departing flights to be accommodated at an airport in a given period of time. By contrast, a 1988 study by the Congressional Budget Office found that very little congestion is caused by enroute air traffic control. Modernization of the air traffic control system is scheduled for completion in year 2000, with major elements coming on stream prior to that date.

Airports are commonly regarded as the major source of congestion delays. Improvements in the number of airports, the number and configuration of runways and taxiways, and in the passenger-processing capability of terminal buildings would help reduce congestion. Due to noise and other environmental concerns, insufficient land, and land-use restrictions, expanding capacity at many existing airports is becoming increasingly difficult.

APPENDIX B

AIRLINE DECISION-MAKING REGARDING SERVICE AND FARES

Outlined below are five fundamental characteristics of airline decision-making which typically shape the passenger services and air fares that they offer. These characteristics form a basic analytical framework used by John F. Brown Company in analyzing the market environment in which the MSP Dual Track Planning is taking place.

1. Similar to other business enterprises, an airline aims to allocate its resources in ways that they will produce the maximum overall return.

Unlike most other businesses, however, an airline's productive assets are mobile. They can therefore be shifted relatively easily from one market to another.

In the past, an anticipated incremental profit on a new route was sufficient justification for the proposed change in service. Now the airline must also satisfy itself that no alternative allocation of those resources elsewhere in its system will produce a better return.

One of the keys to profitable airline operation is high utilization of aircraft, other equipment, and human resources. Pursuit of this goal prompts most airlines to favor longer routes over shorter ones, less-congested airports to delay-prone ones, and quick turnarounds to lengthy layovers. At a given level of resource utilization, airlines prefer to operate routes that yield the highest revenue per flying hour, i.e., routes with heavier traffic volumes, high O&D-to-connecting passenger ratios, and high revenue yields per mile on average.

Major Airlines

Few air routes can be considered in isolation. An airline is by definition a network, a system of routes and nodes. Each route produces flow traffic that affects the other routes; this is particularly the case for airlines operating hub-and-spoke routing patterns. Hence, any route decision is usually a system decision.

A major airline's costs at an airport are mostly fixed; the variable cost of adding another flight tends to be relatively low. An airline prefers to add service from airports where facilities and staffing are already in place, rather than introducing service at airports where the needed infrastructure must be created from scratch. Similarly, pressures to reduce service will typically result first in service cuts at airports where the scale of the airline's operations is smaller.

The evolution of concentrated hub airports, where a single major airline accounts for well over half of all operations, is a good illustration of airline asset allocation. By focusing many of its ground resources at a few hub airports and designing its schedule so that its mobile resources flow to and from those hubs, an airline seeks high utilization and maximum return on its fixed-cost

assets. The return is further enhanced as a result of the dominant market presence that such a concentration of resources creates; competition from other airlines at the airport is inhibited, allowing the hubbing airline to charge higher fares than would otherwise be the case.

Regional Carriers

Regional carriers that do not codeshare with other airlines make their service decisions independently, largely on the basis of the market opportunities available.

A carrier that codeshares with a major airline, however, typically has contractual service obligations that are based upon the major airline's need for connecting feed traffic. Some regional carriers are partially- or wholly-owned by their codesharing partners which tend to make, or at least strongly influence, most of the regional carriers' key service decisions.

By contrast with major airlines, the airport operating costs for many regional carriers are usually highly variable with a small fixed component. These carriers typically pay a per-turnaround fee for passenger processing and aircraft handling. On a relative basis, then, the addition or termination of even a single flight has a more significant impact on the airport operating costs of a regional carrier than it does for a major airline.

2. An airline normally makes fare and service decisions that are consistent with its basic commercial strategy.

The commercial strategy of an airline can usually be described as occupying a specific position along the scale of each of the following strategic variables:

Type of service	Nonscheduled (Charter) ——————————Scheduled
Primary role	Connector ——————————Mainline
Target customer	Leisure ——————————Business Budget ——————————Upscale
Geographic focus	Intrastate ——— Regional ——— Transcon ——— International
Stage length	Short-haul ———— Medium-haul ———— Long-haul
Routing pattern	Linear ———— Hub-and-Spoke ———— Multiple Hubs
Type of aircraft	Turboprop — Mixed Fleet — Narrowbody Jet — Widebody Jet
Fare levels	Low———— 'Average' ———— Premium
Customer service	Budget ——————————Full-service

Airlines tend to work within a consistent set of commercial parameters due to the high cost of the rather-specialized investment in infrastructure that underlies their operation. Acquisition of specific types of aircraft for the purpose of certain proposed types of flying missions, and the accompanying investment in staff training, inventory, and support systems, create an obligation for management to produce a return on those resources. The decision to make a significant change in an airline's commercial strategy involves working with tools that are not ideally suited to the task and giving up profit opportunities during an often-substantial transition period while the necessary 'retooling' is accomplished.

Major Airlines

The commercial strategies of major airlines are often highly complex and, hence, not easily or quickly changed.

Due to the sheer size of their networks, though, the major airlines are in a position to experiment with limited trials of new service ideas. Failure of a given experiment usually does not pose a threat to the airline's overall financial viability. However, a trial must typically produce very successful results before the airline will decide to execute a 'turn of the battleship.'

Regional Carriers

The commercial strategies of regional carriers, on the other hand, tend to be relatively simple and can be altered much more readily. An example would be the changing of a carrier's codesharing arrangement from one major airline to another. Within a given codesharing arrangement, however, the regional carrier is typically assigned a relatively narrow strategic role by its major airline partner. That role tends to leave little flexibility for the regional carrier to make substantive shifts in strategy.

3. An airline constantly strives to improve, or at least maintain, its market positioning vis à vis competitors' current and anticipated service offerings.

Air travelers typically want nonstop jet service to and from their destinations at their desired times of day and at low fares. No one airline can satisfy all of these demands, of course, but the closer it can approximate that ideal level of service, the more passengers it will attract.

When planning their trips, travelers weigh the tradeoffs in flight timings, frequency, type of aircraft, and total trip cost in choosing between competing services. Consequently, airlines that are deficient in one or more ways (in operating only turboprop aircraft, for example) tend to compensate in one or more other ways (say, by offering a high frequency of flights).

Most airlines seek to achieve a dominant position in the city-pair markets they serve. As an airline increases its share of passengers traveling in a given market, so does the power of the airline

to 'control' that market (i.e., to establish fare levels, put pressure on competitors, and intimidate possible new entrants).

Airlines display a strong tendency to match competitors' commercial initiatives (e.g., flight frequency increases, aircraft upgrades, discount fare 'sales'), even in cases where supply-and-demand economics would suggest such moves would be unwise. While this could be interpreted as one sign of a highly-competitive industry, it also has the undesirable effect of inhibiting airlines from improving service or reducing fares because they recognize that their competitors will match their actions and no competitive advantage will have been gained as a result.

The effort to gain competitive advantage often extends beyond service features into the distribution channels. Airlines employ a variety of tactics to encourage travel agents to 'sell' customers on using their services, including the use of computerized reservation systems (CRS) which tend to present the CRS owners' flights as more appealing and easier to book than competing services.

Airlines are increasingly finding that a critical element in maintaining their competitiveness is to keep their costs as low as possible. For a business that is both capital- and labor-intensive, and prone to cutting its prices in order to sell its excess capacity, unit costs that are lower than those of competitors equip an airline with a degree of freedom to initiate, and respond to, competitive action without endangering its profitability.

Major Airlines

Major airlines in the 1990s have learned that they cannot be all things to all people. They have refocused their operations and selected areas of specialization in which they can compete most effectively. Rather than simply shedding their weaker elements, though, the airlines have entered into commercial alliances with both domestic and international carriers to preserve and extend their market coverage.

With the growth of their 'fortress' hub operations, major airlines have created an additional type of competition in the air travel marketplace, namely, the attraction of longer-haul air travelers who must make flight connections enroute. New-entrant carriers have also entered the fray by operating nonstop service between the major airlines' 'spoke' cities.

Regional Carriers

Service frequency is the major competitive weapon for regional carriers. While high-frequency service offers the traveler a choice of departure times and an expanded set of connections on the codesharing partner's flights, this tactic is often at odds with demands by many regional carrier customers for service on larger, more comfortable aircraft. Each carrier must weigh the benefit of operating fewer flights with larger equipment, including the potential capture of additional passengers who simply refused to travel on the smaller aircraft, against the added capital cost and the implications of reduced frequency.

While a commercial agreement with a major airline is the regional carrier's other significant competitive tactic, it is not entered into without a cost to the smaller operator. A codesharing relationship ties the regional carrier's future growth to that of the major airline, it often restricts the markets that the carrier can serve, and it reduces the flexibility of the regional carrier to respond to opportunities that arise in the marketplace.

4. An airline sets fare levels, establishes multi-tiered fare structures, and manages customer access to those fares with the intent of maximizing the passenger revenue on each flight it operates.

Fares that are too high will result in favorable per-passenger yields but lower load factors. Conversely, fares set too low will attract more traffic but not provide sufficient revenue. An airline's pricing strategy seeks the balance between lower fares that generate traffic and the need to produce an acceptable return on its assets.

Air fares tend to be related generally to distance traveled, in that longer-haul fares are usually higher than shorter-haul fares. There are economies of scale in transporting passengers by air, deriving from the primarily fixed-cost nature of attracting, ticketing, and boarding the travelers and getting the aircraft off the ground and setting it down again, and the variable cost of carrying the passengers across the miles to their destinations. The per-mile cost, then, tends to decline as the passengers' length of haul increases.

Other than as described above, however, air fares do not correlate closely with airline costs. Rather, fare levels tend to be largely a function of competitive conditions in the marketplace. This has been documented in a number of studies conducted by the federal General Accounting Office which showed that domestic air fares tend to be higher under the following conditions:

i) at 'concentrated' airports where one airline boards at least 60 percent of the passengers or where two airlines together board at least 85 percent of the passengers;

ii) at airports where a majority-in-interest clause gives an airline veto power over airport expansion;

iii) on airlines that have a codesharing agreement with feeder carriers at that airport;

iv) on routes where at least one end is a hub airport for a major airline;

v) on routes dominated by a single airline.

Between any two cities in an airline's service network, there is a spectrum of travel demand with an accompanying range of price thresholds. For example, there are business travelers, professional persons, and people with urgent personal-travel requirements who place a high value on saving time. There are other travelers who are more flexible with respect to time but are highly

sensitive to price. In addition, some travelers may find travel substitutes (e.g., teleconferencing) to be satisfactory alternatives if the cost of travel, in terms of both time and money, exceeds a certain threshold. The challenge for an airline is to convert the underlying demand into air passengers, with each passenger paying a fare that is as close as possible to his or her maximum acceptable price.

This is accomplished by offering several fares at increasing levels of discount and governed by increasingly-restrictive 'fences' to limit the use of the lower fare levels by the customers who are least price-sensitive. The ultimate objective is to attract a mix of passengers paying a variety of different fares who together will generate the required level of revenue on each flight.

In general, a 'local' passenger (i.e., one whose journey originates at one end of a route and terminates at the other end) contributes more to the total flight revenue than a 'flow' passenger (i.e., one whose journey originates at a behind city and/or terminates at a beyond city). This is due to the fact that in order to fairly allocate the 'flow' passenger's fare revenue, it must be spread over two or more route legs. From this standpoint, then, it is in the airline's best interest to transport its passengers with as few enroute stops as possible.

The design of a hub-and-spoke system would at first appear at odds with this objective of minimizing enroute stops, since many passengers using the system will travel over at least two flight legs between their origin and destination. On further consideration, however, the power of the hubbing system to enhance an airline's revenue becomes clearer. The addition of each new 'spoke' has several results, including the following:

i) The number of city-pair markets served by the hub grows not by one, but rather, by the number of existing spokes.

ii) The additional feed passengers increase the traffic flowing on each spoke, thereby adding to the profitability of those routes.

iii) The potential viability of new nonstop service on certain lower-volume routes improves.

iv) The competitive strength of the hubbing carrier at that airport is enhanced.

5. An airline continually seeks to enhance its profitability through a combination of additional revenue, lower costs, and operating efficiencies.

As discussed above, improvement in an airline's level of service will typically attract more traffic and boost its revenue. Such improvement may take the form of additional flights, flight timings that better match market demand, upgraded aircraft, fewer enroute stops, better connections, new destinations, or enhanced onboard passenger service, to name a few. Associated with each of these improvements is a cost, of course, and the additional revenue must exceed that cost by a certain margin in order for the service changes to be justified.

Without altering its level of service, an airline can produce additional passenger revenue by increasing the amount that its passengers pay on average for transportation on its aircraft. The most obvious way that an airline achieves this is through either an across-the-board increase of all fares or a more selective adjustment of fares on an individual city-pair basis. Constraining the airline in such action are two strong and opposing forces:

i) the ability and willingness of passengers to pay the higher fares;

ii) the propensity for competitors to offer similar service at lower fares.

Alternatively, an airline can maintain its existing economy/coach fares and simply maximize passenger revenue using yield management. This involves a combination of increases to discount fare levels and the selective restriction of discount-fare seat availability on flights to and from the airport. Since more than 70 percent of all travelers use discount fares, this can be an effective but subtle way for an airline to increase its fare yields. On the other hand, it relies primarily on discretionary travelers to bear the brunt of higher fares, and it could result in the diversion of a portion of such traffic to other airlines.

Major passenger airlines seek to increase cargo revenue on their flights. Unless they have dedicated all-cargo aircraft in their fleets, these airlines must rely on making maximum use of the belly compartments and (on wide-body aircraft only) the main-deck container space. Although there are some weight tradeoffs that must be made under certain operating conditions, the pursuit of passenger and cargo revenue are generally mutually-exclusive activities. Cargo typically represents about 10 percent of an airline's revenue, but the fact that airline profit margins are often extremely thin means that often cargo revenue makes the difference between a profitable and a losing route.

Ancillary (i.e., non-flying) activity represents an often-lucrative source of revenue for major airlines. This includes such services as CRSs, aircraft maintenance, third-party ground handling, aircraft catering, and crew training. Revenue earned in this manner is often more stable and less subject to swings in the economy than the more-volatile passenger and cargo revenue.

A regional carrier has two additional possible sources of increasing revenue that are not available to the major airlines, namely:

i) If it is already providing Essential Air Service or it is the only carrier on a given route, the carrier can apply to the federal government to provide (or raise) a route subsidy. This action poses the risk that another carrier may be assigned under the EAS program to serve the route in place of the incumbent carrier.

ii) If it is operating codesharing service, the carrier can negotiate with its major airline partner to adjust the arrangement for sharing of joint-fare revenue or to reduce other payments (e.g., for ground handling) made between the two parties.

One of the ways that an airline ensures that it is operating at the lowest possible unit cost is through negotiation. Most of the resources employed by an airline are acquired through

negotiated contracts, including its unionized labor force, fuel, catering, aircraft, parts, and supplies, and other outside services. Airlines have also become more adept at lobbying government bodies, both at the federal and local level, for more cost-effective public sector spending, lower taxes, and improvements in ATC and FIS services. Throughout this process, however, an airline must guard against the dangers of lowered morale, degradation in customer service, a drop in flight reliability, poorer-quality supplies and services, and a lowering of the margin of safety in its operations.

Negotiated alliances with other carriers has become a common practice for airlines in recent years. The commercial benefits of such arrangements are numerous, including an increase in the number of 'on-line' destinations, lower (joint) fares between cities in the two carriers' networks, entry into a new origin market in another region, country, or continent, and access to the other carrier's base of frequent flyers. Carrier alliances present opportunities for cost reduction as well. These include shared handling services at airports served in common, pooled purchasing for greater volume discounts, reciprocal training arrangements, marketing representation in each other's service area, and swapping of aircraft to cover contra-seasonal market demands.

In conjunction with the revenue-building and cost-cutting measures described above, an airline is constantly in search of ways to make its operation more efficient. Among the various efficiencies sought are reductions in the airline's operating cost per revenue passenger-mile (RPM) flown and its cost per available seat-mile (ASM) flown.

In order to reduce its costs per RPM, an airline will typically attempt to increase the load factor on its flights to and from the airport. This can be accomplished in three ways, as follows:

i) by reducing its flight frequency on several routes without increasing the size of aircraft flown, resulting in fewer seats available to accommodate the passenger demand;

ii) by maintaining its flight frequency but operating those flights using smaller-gauge aircraft, again reducing available seating capacity;

iii) by consolidating nonstop services into multi-stop routings.

Although such moves have the effect of reducing the cost of carrying the airline's passengers, the resulting lower level of service risks the loss of traffic.

In order to lower its costs per ASM, an airline can maintain its capacity (i.e., number of seats offered) by operating larger, more efficient aircraft at reduced frequency. Depending on the type and size of aircraft operated, traffic benefits can result from improved on-board service and increased passenger satisfaction; this would be the case in particular for a regional carrier. However, a reduction in frequency on some routes can also reduce the number of flights below the minimum required, both for local and connecting travelers, and traffic loss can result.

In this quest for greater efficiency, two further risks arise for the airline. The airline's overall operating efficiency can decline with the addition of other types of aircraft to the fleet. In addition, if the airline reduces its level of service in order to achieve greater efficiency, other

airlines may capitalize on the opportunity by mounting new competing services in the affected markets.

Conclusion:

Because airport charges represent a relatively-low proportion of the cost structure of most airlines, such charges tend not to have a significant influence on service and fares.

The major airlines tend to lease significant amounts of terminal building space at many of the airports they serve. Consequently, they are affected by increases in both landing fees and rental charges. By contrast, regional carriers tend to rent little or no terminal building space, instead buying ground handling services from their codesharing partners, other airlines, or from FBOs. They are usually affected directly, then, only by increases in landing fee rates. However, their ground handlers may increase their charges to recover a portion of the space rental increases that were levied upon them.

A 1993 study of airport costs by Airports Council International - North America found that "on average for the U.S. airline industry, approximately 4 percent of total airline costs are paid for airport rents, fees, and charges." The Air Transport Association uses a figure of 5 percent. Hence, a 20-to-25 percent increase in all of its airport costs would produce about a 1 percent increase in a major airline's cost base; a doubling of airport costs would hike the airline's cost base by 4-to-5 percent.

Faced with a sizable airport cost increase, an airline will consider instituting a fare increase. Even when the increased airport costs result from only a few airports in its service network, an airline usually will seek to recover those costs through systemwide operations, rather than through operations at only those specific airports.

All things being equal, based upon our understanding of fare elasticity, a fare increase in the order of 4 percent will likely have only a minor impact on the level of traffic across the airline's system. It can, however, have more significant negative effects at certain airports and on certain routes where competition from other airlines is particularly strong; taken together, these effects can sometimes outweigh the revenue benefit of the fare increase.

In this event, unless the airline can find operating efficiencies to offset the increased airport costs, the airline may be forced to absorb the increases. Given that the traditional profit margin of most airlines is well below 4 percent, such a move could make the difference between profit and loss. In that event, after subjecting each of its routes to a thorough profitability analysis, incorporating the costs levied by the airports at both ends of each route, the airline will make a decision to cut service on, or perhaps exit entirely from, its poorest-performing city-pair markets.

The potential indirect impact of increased airport rates and charges on airline profitability is often overlooked. If the increased airport charges derive from capital expenditures made to relieve congestion and provide needed expansion of airfield or terminal capacity, for example, then

new carriers may decide to serve the airport. Low-fare competition from new entrants may have a more adverse effect on profits than an increase in airport charges.

An airline's response to a sizable increase in a particular airport's rates and charges, then, may range from simply absorbing the increase into its cost base, to recovering the additional costs through fare increases, to reduction or even termination of service at the airport. That response can only be determined by the airline's specific financial and competitive situation and is therefore difficult for outsiders to predict with accuracy.

JOHN F. BROWN COMPANY, INC.
AIRPORT MANAGEMENT CONSULTANTS

Memorandum

TO: Jeffrey Hamiel
Lynn Richardson
Robert Stassen
Nigel Finney
Denise Kautzer

FROM: Paul McKnight
Mike Brown

DATE: December 12, 1995

SUBJECT: **Analysis of Changes in Air Service and Traffic at Denver, in light of the Opening of its New International Airport**

---

1. INTRODUCTION

Purpose

This memorandum describes the changes in airline service, passenger traffic, and air fares at the Denver International Airport (hereinafter, DEN or the Airport) over the past ten years, with emphasis on those that have occurred during 1995. This document also presents our assessment of the degree to which those changes were caused, directly or indirectly, by the opening of the new Airport on February 28, 1995.

Over the past few years, there has been a great deal of governmental review and media reporting of events surrounding the delayed opening of the new Airport. The air service situation at Denver has also been under close scrutiny during this time and, in particular, since the facility opened for business. As is perhaps inevitable in cases such as this, there has been a variety of interpretations of the changes that have occurred. This document presents the factual outcomes to date and seeks to identify the key factors underlying those outcomes.

The relevance of Denver's experience to the Minneapolis-St. Paul International Airport (MSP) Dual Track Planning process derives from several factors, including the following:

i) The profile of airline service, air fares, and passenger traffic at DEN closely resembles that at MSP.

ii) Like MSP, DEN is located in the Midwest, at a considerable distance from prime travel destinations on the east and west coasts, and the two airports experience similar climatological conditions.

iii) Whereas other U.S. airports have undertaken sizable capital projects in recent years to upgrade and expand their airfield and terminal facilities, DEN is the only example of a completely new large airport.

Outline

Section 2 of this document first examines the comparability of air service and passenger traffic at the two airports.

Section 3 explores the extent to which the opening of the new Airport has influenced each of the following:

Section 3.1 Airport costs per enplaned passenger for the airlines serving the Airport

Section 3.2 The decision by Continental to dismantle its hubbing operation at the Airport

Section 3.3 Domestic scheduled jet service by United, the main hubbing airline at the Airport

Section 3.4 Domestic scheduled jet service by airlines other than Continental

Section 3.5 Air service to and from smaller communities in the DEN air service region

Section 3.6 The level of air fares to and from the Airport

Section 3.7 Passenger enplanement volumes since the Airport's opening

Section 3.8 Establishment and rapid growth of low-fare service at Colorado Springs Airport

2. COMPARABILITY OF MINNEAPOLIS-ST. PAUL AND DENVER MARKETS

Finding

The air travel markets served by MSP and DEN exhibit more similarities than differences. Key similarities are the population of metropolitan areas served, the capacity offered by regional turboprop flights, and the proportion of total enplanements accounted for by connecting passengers. The scale of the main hubbing carrier's operations at each airport is also notably similar.

On the other hand, the roller-coaster traffic pattern experienced by DEN over the past decade contrasts with the steady growth in enplaned passengers at MSP. By mid-1995, scheduled domestic jet flights serving DEN were somewhat greater in number, operated using slightly larger aircraft, and flew longer distances on average than at MSP. In addition, O&D passengers at DEN make longer domestic trips but pay lower fares on average than at MSP.

The recent changes in airline service, passenger traffic, and air fares at DEN, however, are related far less to the size or nature of its air travel market than to the change in the way in which that market has been served.

Since mid-1993, the DEN market has transitioned from one served by two major airlines, each with extensive and competing networks of jet operations hubbing at the Airport and supported by dedicated regional feeder services, to one dominated by a single major airline which continues to expand its hub and feeder operations at DEN. This transition has accounted for many of the effects that have been incorrectly attributed to the opening of the new Airport.

Discussion

Airport Service Areas

Both airports serve large metropolitan areas that include more than half of the population of the states in which they are located. (See Table 1.) Each of the metropolitan areas served comprises nearly one percent of the population of the United States.

Table 1
COMPARISON OF 1995 POPULATION AND INCOME
MINNEAPOLIS-ST. PAUL AND DENVER MARKETS

Market Area	Population, in Millions	Median Household Effective Buying Income
State of Colorado	3.7	$36,770
Denver-Boulder-Greeley (CMSA)	2.2	40,172
Denver (PMSA)	1.8	40,587
State of Minnesota	4.6	$38,076
Minneapolis-St. Paul (MSA)	2.7	44,377
United States total	262.2	$37,070

SOURCE: *Sales & Marketing Magazine*, 1995 Survey of Buying Power.

Measured by 1995 median household Effective Buying Income (EBI), the Minneapolis-St. Paul metro area is somewhat more prosperous than Denver ($44,377 vs. $40,587). But the median household EBI of both metro areas far exceed that of their respective states and the nation as a whole. Out of 317 metro areas in the country, Minneapolis-St. Paul ranks 29th and Denver ranks 67th by this measure.

Both cities are situated at least seven hours by road from the nearest other major urban centers. Minneapolis-St. Paul is 465 highway miles northwest of Chicago and 440 miles north of Kansas City. Denver is 615 miles west of Kansas City and 493 miles east of Salt Lake City.

Each city serves not only as state capital but also as the commercial, financial, health, and education center for a regional area extending beyond its state boundaries. Consequently, air service is a critical factor in the economy of both Minneapolis-St. Paul and Denver.

Air Service Offered

In June 1995, airlines scheduled more jet flights per day at DEN (425) than MSP (398) and operated more seats per jet flight at DEN (141) than MSP (128). (See Table 2.) Accordingly, daily scheduled jet capacity at DEN (59,760 seats) was about 17 percent greater than at MSP (50,925). Scheduled turboprop capacity was approximately the same at the two airports; that is, approximately 170 daily departures averaging 25 seats per flight.

Table 2
COMPARISON OF DAILY DOMESTIC SCHEDULED FLIGHTS
MINNEAPOLIS-ST. PAUL vs. DENVER INTERNATIONAL AIRPORTS
(Monday through Friday, June 1995)

	Minneapolis-St.Paul (MSP)	Denver (DEN)
Jet Aircraft:		
Number of flight departures	398	425
- narrow body aircraft	385	404
- wide-body aircraft	13	21
Number of departing seats	50,925	59,760
- average seats per flight	128	141
Average flight stage length	729 miles	839 miles
Top 3 cities served (no. of deps.)	Chicago (54) St. Louis (18) New York (16)	Dallas/Ft.Worth (24) Chicago (21) Salt Lake City (17)
Turboprop Aircraft:		
Number of flight departures	169	173
- 20 seats or more	58	48
- 19 seats or less	111	125
Number of departing seats	4,158	3,949
- average seats per flight	25	23
Average flight stage length	213 miles	256 miles

SOURCE: *Official Airline Guide*, June 1995.

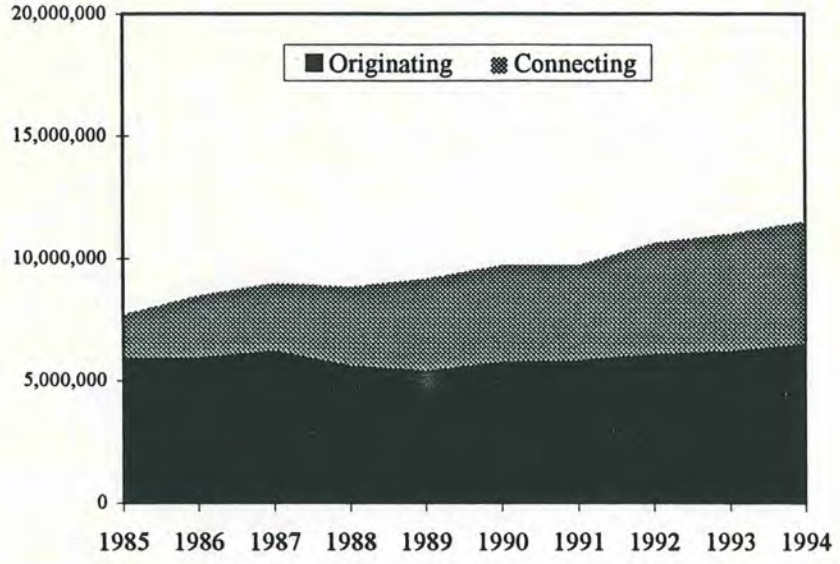
Jet operations averaged longer stage lengths at DEN (839 miles) than at MSP (729 miles), indicating that DEN's primary markets are more distant on average. Likewise, turboprop operations averaged longer stage lengths at DEN (256 miles) than at MSP (213 miles), indicating the larger geographic territory served by DEN's regional flights.

Most of the passenger flights at the two airports are operated on a scheduled basis. Of all departures by U.S. certificated airlines in 1994, for example, nonscheduled flights (i.e., charters) accounted for only 4.4 percent at MSP and 3.2 percent at DEN.

Passengers Enplaned

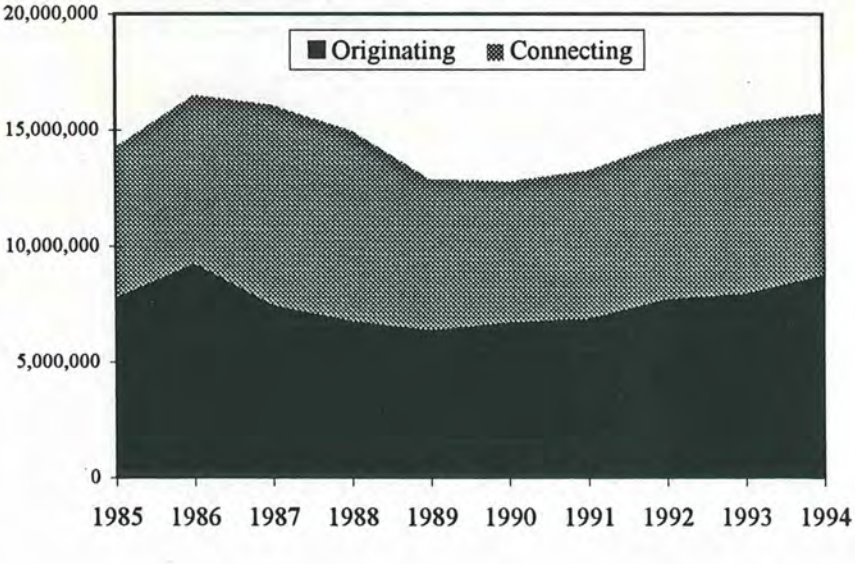
In 1985, airlines enplaned 7.7 million passengers at MSP and 14.3 million at DEN, a ratio of 54 passengers at MSP for every 100 at DEN. By 1994, enplanements had increased 49.6 percent at MSP to 11.5 million, and only 10.3 percent at DEN to 15.7 million, a ratio of 73 passengers at MSP for every 100 at DEN. Moreover, the number of passengers enplaned at MSP over the past ten years has grown steadily, while enplanements at DEN have followed a roller-coaster pattern. (See Figures 1 and 2.)

Figure 1
TEN-YEAR HISTORY OF REVENUE PASSENGERS ENPLANED
MINNEAPOLIS-ST. PAUL INTERNATIONAL AIRPORT



SOURCE: DOT, Schedule T-3; 298C Schedule T-1; INS data; *Air Passenger Origin-Destination Survey.*

Figure 2
TEN-YEAR HISTORY OF REVENUE PASSENGERS ENPLANED
DENVER INTERNATIONAL AIRPORT



SOURCE: DOT, Schedule T-3; 298C Schedule T-1; INS data; *Air Passenger Origin-Destination Survey.*

Originating passenger traffic at MSP showed only modest but steady gains during the 1985-94 period, increasing 9.4 percent (556,000) from 5.9 million to 6.5 million originating passengers. The major source of enplanement growth at the airport was connecting traffic which nearly tripled from 1.8 million to 5.1 million connecting passengers, thereby increasing the connecting share of total enplaned passengers from 23.4 percent to 44 percent.

DEN also achieved only modest gains in originating passenger traffic during the 1985-94 period, increasing just 12.8 percent (986,000) from 7.7 million to 8.7 million originating passengers. Unlike MSP's steady pattern of growth, however, traffic at DEN dipped and spiked. Originating passenger traffic peaked in 1986, fell off significantly in subsequent years, and by 1994 had not quite regained its former peak level. Connecting traffic peaked in 1987, at 54 percent of all enplanements, and then declined until 1994 when it accounted for 44.7 percent of all enplanements at the Airport. By 1994, the connecting passenger ratios at MSP and DEN were approximately the same.

Ninety-five percent of all domestic passengers at each airport were enplaned on flights operated by jet aircraft; the remainder boarded turboprop flights. (See Table 3.)

Table 3
COMPARISON OF PASSENGERS ENPLANED ON DOMESTIC SCHEDULED FLIGHTS
MINNEAPOLIS-ST. PAUL & DENVER INTERNATIONAL AIRPORTS
(for the six months ended June 30, 1995)

	Minneapolis-St.Paul (MSP)	Denver (DEN)
Main Hubbing Airlines:		
Northwest		
Jet operations	4,247,002	
Turboprop codesharing operations	238,257[1]	
NW Group Total	4,485,259	
United		
Jet operations (incl. Air Wisconsin)		5,042,201
Turboprop codesharing operations		297,200[1]
UA Group Total		5,339,401
Domestic Enplanements by Main Hubbing Airlines	**4,485,259**	**5,339,401**
All Other Airlines:		
Jet Services:		
Continuing operations	778,393	1,721,473
New carriers since 1992	30,194	427,743
All Other Airlines - Jet Total	808,587	2,149,216
All Other Airlines - Turboprop Total	29,114[1]	34,600[1]
Domestic Enplanements by All Other Airlines	**837,701**	**2,183,816**
TOTAL DOMESTIC ENPLANEMENTS - ALL AIRLINES	**5,322,960**	**7,523,217**
Enplanements by Equipment Type:		
Jet	5,055,589	7,191,417
Turboprop	267,371	331,800
- Percentage Enplaned on Jets	*95.0%*	*95.6%*

SOURCES: DOT, Schedule T-100 and 298C Schedule T-1, unless otherwise noted.
NOTE: [1]Estimated from enplanement data reported to the airports by the airlines.

At MSP, new entrant carriers enplaned only 0.6 percent of total passengers during the first half of 1995.[1] By comparison, new entrant carriers enplaned nearly six percent of passengers at DEN.

[1] We use the term "new entrant carrier" here to mean any airline which began operating at either MSP or DEN on or after July 1, 1992.

Airline Hubbing Activity

At MSP during the first half of 1995, Northwest, along with its Airlink affiliates, enplaned 4.5 million passengers, accounting for about 84 percent of all passengers enplaned at MSP. At DEN, United and its Express carriers enplaned 5.3 million passengers, accounting for 71 percent of the total at DEN. Northwest (and its codeshare partners) enplaned on average 84 passengers at MSP for every 100 passengers enplaned by United (and its codeshare partners) at DEN.

In June 1995, domestic hubbing operations conducted by the two airlines at their respective airports were notably similar. (See Table 4.) During that month, Northwest enplaned 97 passengers at MSP for every 100 passengers enplaned by United at Denver.

Table 4
COMPARISON OF DAILY DOMESTIC FLIGHT ACTIVITY LEVELS OF THE MAIN HUBBING AIRLINES AND THEIR CODESHARING CARRIERS AT MINNEAPOLIS-ST. PAUL & DENVER INTERNATIONAL AIRPORTS
(Monday through Friday, June 1995)

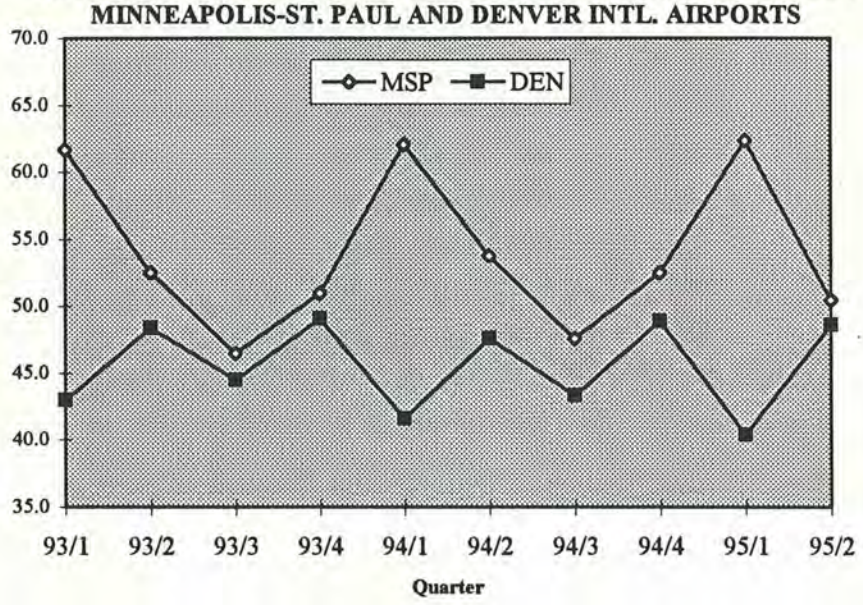
	Northwest (NW) at Minneapolis-St.Paul (MSP)	United (UA) at Denver (DEN)
Daily flight departures	444	445
- jet aircraft	302	312
- turboprop aircraft	142	133
Number of daily connecting 'banks'	9	9
Daily departing seats	44,572	46,273
- jet aircraft	41,089	42,893
- turboprop aircraft	3,483	3,380
Average seats per flight		
- jet aircraft	136.0	137.5
- turboprop aircraft	24.5	25.4

SOURCE: *Official Airline Guide*, June 1995.

Originating Passengers

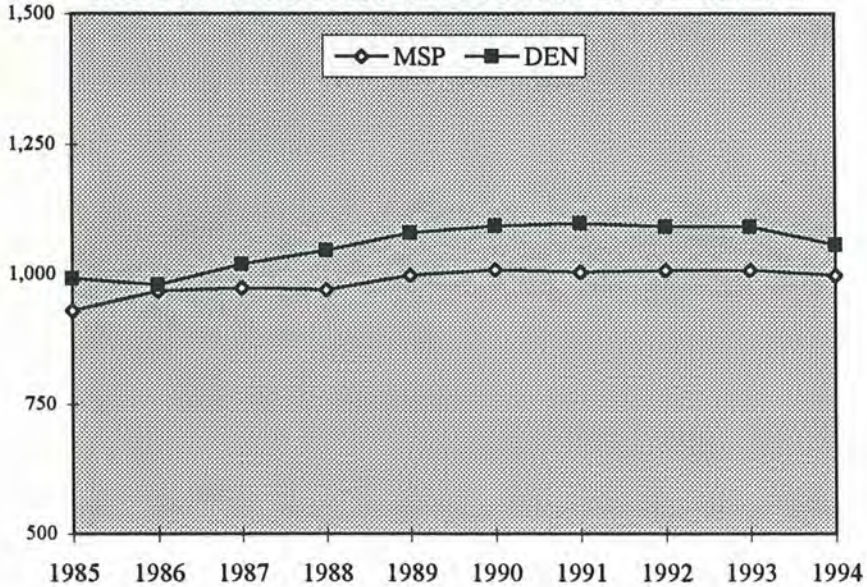
Historically, MSP has been predominantly an outbound air travel market, in which more than half of the origin-destination (O&D) traffic originated locally. By contrast, DEN has been primarily an inbound travel market, with more than half of the O&D passengers originating elsewhere. Viewing this aspect of the two airports on a seasonal level provides insight into the nature of their originating passengers. The tendency of many Minneapolis residents to travel to warmer climes in the winter months is clearly shown in the graph in Figure 3. Over the past few years, more than 60 percent of all originating passengers at MSP have originated locally in the winter, compared to only about 47 percent in the summer when Minnesota tends to attract vacationers. DEN, on the other hand, has been an inbound market year-round, albeit moreso in the peak winter and summer tourist seasons.

Figure 3
PERCENTAGE OF TRIPS INITIATED AT AIRPORT, BY QUARTER
MINNEAPOLIS-ST. PAUL AND DENVER INTL. AIRPORTS



SOURCE: DOT, *Air Passenger Origin-Destination Survey.*

Figure 4
AVERAGE DOMESTIC PURE O&D PASSENGER TRIP, IN MILES
MINNEAPOLIS-ST. PAUL AND DENVER INTL. AIRPORTS

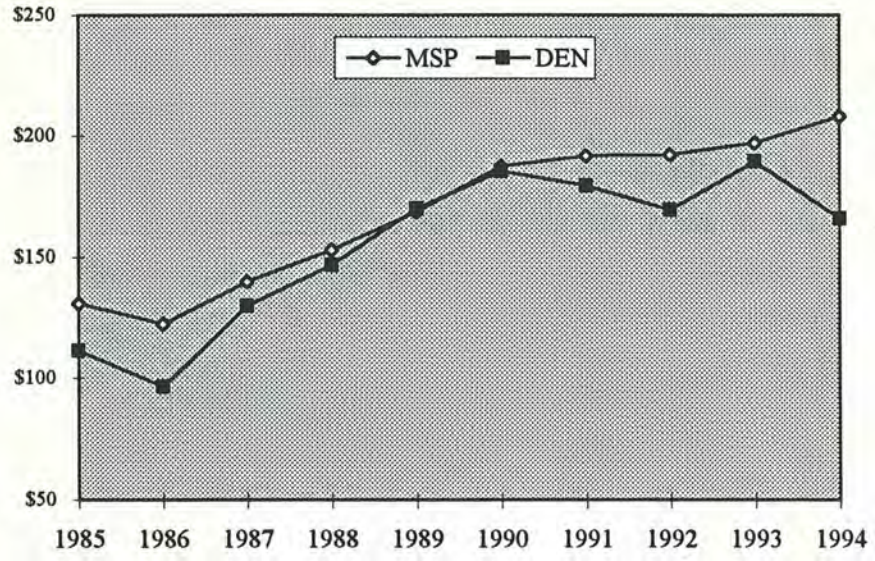


SOURCE: DOT, *Air Passenger Origin-Destination Survey.*

On average, domestic O&D passengers at MSP have made slightly shorter trips than their counterparts at DEN, as shown by the graph in Figure 4.

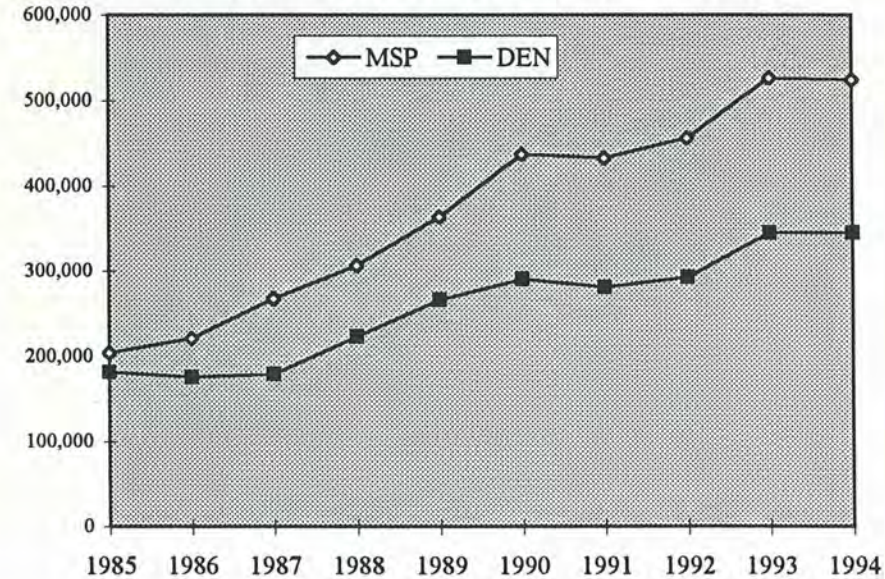
The fare paid on average by O&D passengers at MSP rose relatively steadily from 1986 to 1994. (See Figure 5.) Over the same period, the average fare paid by O&D passengers at DEN followed a more erratic pattern, with significant declines in 1986, 1992, and 1994. These timeframes correspond to periods of high competitive activity at DEN, involving Continental, United, and Frontier in 1986, the widespread 'fare war' during the summer of 1992, and both the pull-down of the Continental hub and the step-up of new-entrant activity at DEN during 1994. Other than a minor decline in 1986, the record of average fares paid at MSP has shown no comparable downward moves.

Figure 5
AVERAGE DOMESTIC PURE O&D PASSENGER FARE PAID
MINNEAPOLIS-ST. PAUL AND DENVER INTL. AIRPORTS



SOURCE: DOT, *Air Passenger Origin-Destination Survey.*

Figure 6
INTERNATIONAL PASSENGERS ENPLANED (ON DOM. FLTS.)
MINNEAPOLIS-ST. PAUL AND DENVER INTL. AIRPORTS



SOURCE: DOT, *Air Passenger Origin-Destination Survey.*

The graph in Figure 5 shows, as well, that the average domestic fare paid at MSP has tended to be higher than that paid at DEN. However, the "average fare paid" at an airport is significantly influenced by the passenger mix.[2] Airlines attempt to draw leisure (discretionary) travelers with lower fares from which they wall off business travelers through advance purchase and Saturday night stay requirements. Thus, the average fare paid tends to be lower when leisure travelers comprise a higher proportion of the passenger mix than business travelers. The average fare paid is also affected by the average length of haul. Higher fares are correlated with longer trip distances. Passenger trips at DEN are somewhat longer than at MSP, on average, and may also differ significantly in terms of passenger mix (i.e., DEN may have a higher proportion of leisure travelers). Therefore, one cannot conclude (based upon average fare paid data alone) that airlines charge less at DEN than at MSP.

Due to the small number of scheduled international flights operating from both airports, most international O&D passengers have used domestic flights at MSP and DEN to connect with international flights at other U.S. gateway airports. From 1985 to 1994, this international O&D passenger traffic showed significantly higher growth at MSP (up by 156 percent) than at DEN (up by 90 percent). (See Figure 6.)

In 1994, passengers beginning international journeys on domestic flights numbered 524,000 at MSP and 345,000 at DEN, a ratio of 152 passengers at MSP for every 100 at DEN. Airlines may someday introduce nonstop international service that will eliminate the domestic portion of these international itineraries.

Connecting Passengers

During 1994, passengers connecting between domestic flights numbered 5.1 million at MSP and 7.0 million at DEN, a ratio of 72 connecting passengers at MSP for every 100 at DEN. (See Table 5.)

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[2]The measure of 'average fare paid' used here is derived by dividing the total fares paid (by domestic O&D passengers enplaning at the airport) by the number of passengers paying those fares. Passengers traveling on frequent flyer program reward tickets are not included in the calculation. The resulting figure, then, is determined both by the level of the various fares offered in each market and by the mix of passengers (generally, business and leisure) who purchased those fares; changes in either factor can affect the 'average fare paid'. In two markets with identical fare offerings, for example, if the mix of passengers in one market made greater use of the higher, business-oriented fares and lesser use of the lower, leisure-oriented fares, then the 'average fare paid' in that market would be higher than in the other market.

Table 5
1994 FLIGHT CONNECTIONS MADE BY DOMESTIC PASSENGERS
MINNEAPOLIS-ST. PAUL vs. DENVER INTERNATIONAL AIRPORTS

		Minneapolis-St.Paul (MSP)		Denver (DEN)	
Between	And	Connecting Passengers	% of Total	Connecting Passengers	% of Total
State	State	530	0.01	3,170	0.02
State	Region	61,640	1.2	211,140	3.0
State	Other	453,430	9.0	1,111,420	15.8
State	All	515,600	10.2	1,325,730	18.8
Region	Region	187,090	3.7	437,910	6.2
Region	Other	2,415,190	47.7	2,746,810	39.0
Other	Other	1,945,350	38.4	2,537,050	36.0
ALL CONNECTIONS		**5,063,230**	**100.0**	**7,047,500**	**100.0**

Definitions used above:

'State'	*All Airports in MN*	*All Airports in CO*
'Region'	*All Airports in ND, SD, NE, IA, WI, and parts of IL & MI*	*All Airports in WY, ID, MT, ND, SD, NE, KS, OK, NM, AZ, UT, and parts of MO, IA & TX*
'Other'	*All Other U.S. Airports*	*All Other U.S. Airports*

SOURCE: DOT, *Air Passenger Origin-Destination Survey.*

While generally similar for the two airports, the makeup of that connecting traffic differed in two key aspects, namely:

i) Passenger travel originating at, or destined for, communities within Minnesota accounted for 10 percent of all connections at MSP. Passengers originating at, or destined for, communities within Colorado accounted for 19 percent of all connections at DEN.

ii) MSP handled a relatively larger connecting flow to and from nearby states than did DEN. For the purpose of this analysis, a surrounding 'Region' was defined for each airport based on the geographical area served by the turboprop carriers providing feeder flights for their codesharing partners. Passengers traveling between airports in the Region served by MSP, on the one hand, and all other U.S. states, on the other, accounted for 47.7 percent of all connections at MSP. Although the Region served by DEN covered a much larger geographic area, passengers traveling between that Region and all other U.S. states accounted for only 39 percent of all connections at DEN.

3.1 IMPACT OF NEW DENVER AIRPORT ON AIRLINE CHARGES

Finding

The City decided to replace Stapleton International Airport with a new airport knowing that airline charges would increase substantially.[3] Since the opening of the new replacement airport on February 28, 1995, airline charges at Denver have been among the highest in the country.

For 1984, the rentals, fees, and charges from scheduled passenger airlines at Stapleton amounted to $23.6 million, accounted for 41.2 percent of operating revenues, and represented average charges per enplaned passenger of $1.72. Landing fees were $0.39 per 1,000 pounds of aircraft landed weight, and the average terminal rental rate was $19 per square foot per year.

For 1995, the estimated rentals, fees, and charges from airlines at the new Denver International Airport amounted to $320 million (before a $20.1 million revenue credit), accounted for 77.4 percent of operating revenue, and represented average charges per enplaned passenger of $19.64.[4] Landing fees were $3.68 for signatory airlines and $4.42 for nonsignatory airlines. The average rental rate per square foot per year in the Terminal Complex amounted to $62 for signatory airlines and $74 for nonsignatory airlines.

For an individual airline, its rentals, fees, and charges per enplaned passenger may deviate substantially from the airport average. Some airlines are able to generate more passengers per unit cost of airport facility (e.g., gate, square foot of exclusive terminal space, etc.) so that they beat the average. Table 6 presents recent estimates of airline costs at DEN. Continental's estimated per-passenger charge is very high due to its much-diminished enplaned passenger base at DEN compared to its contractual obligations to the Airport. On the other hand, it was estimated that the five carriers at the bottom of the table would pay as little as 60 percent of the airport average.

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[3]The early forecasts of airline charges per enplaned passenger were substantially less than the actual charges finally implemented in 1995. For example, a 1991 forecast estimated that airline charges per enplaned passenger would peak at $13.22 ($10.87 in 1991 dollars).

[4]*1995 Airline Rates and Charges, Denver International Airport*, dated February 17, 1995. After taking into account the revenue credit, average charges per enplaned passenger were reduced to $18.55. The charges per enplaned passenger include landing fees, terminal rentals, fees for the peoplemover system, baggage system fees, charges for tenant finishes and equipment, fueling system fees, and deicing facility fees.

Table 6
ESTIMATED ANNUAL AIRPORT COST PER ENPLANED PASSENGER
DENVER INTERNATIONAL AIRPORT
(by airline)

Airline	Net Cost[1] per Enplaned Passenger
Continental	$37.25
TWA	$21.41
Mexicana	20.66
American	18.46
United	18.44
Delta	$16.61
USAir	15.75
Northwest	15.71
Markair	$12.78
Frontier	12.24
GP Express	11.80
Vanguard	11.37
America West	10.63

SOURCE: City of Denver.
NOTE: [1]Rates shown for signatory airlines reflect a forecast revenue credit.

Discussion

While rates at DEN are high, these rates are not so high as to trigger termination clauses negotiated with airlines. Termination clauses contained in the 1991 use and lease agreements with United and Continental were based upon the level of charges per enplaned passenger. An airline could terminate its agreement if the average of the rentals, fees, and charges that it paid in any year at the new airport exceeded $20 per enplaned passenger, based upon 1990 dollars and upon the larger of passengers enplaned in 1989 or in the actual year.[5] Shorter term agreements with other airlines contained a termination trigger based upon $25 per enplaned passenger. Airlines that choose to operate at the new airport without an agreement are subject to nonsignatory rates, which are generally 20 percent higher than the rates paid by signatory airlines.

For airlines, the costs to operate at the new airport are probably substantially higher than they would have been at Stapleton. The relatively high cost per enplaned passenger at the new airport, however, is offset in part by operational savings to the airlines. In 1994, the City estimated that the new airport would result in operational savings to the airlines of $50 to $100 million per year (equivalent to $3 to $6 per enplaned passenger) relative to then-current costs of operating at Stapleton. United, for one, challenged the accuracy of these estimates, contending that operational savings to the airlines would be substantially less.

[5]As a result of renegotiated terms and of Continental's reduced lease commitments and passenger activity, the City believes it to be extremely unlikely that Continental's $20 cap would ever be exceeded.

3.2 IMPACT OF NEW DENVER AIRPORT ON THE DECISION BY CONTINENTAL AIRLINES TO DISMANTLE ITS HUB

Finding

Stapleton played a significant role in Continental's strategic plans until the fall of 1993 when the airline began to downsize its Denver hub and to redeploy its resources to routes east of the Mississippi River. As recently as 1987, Continental had held the largest share of the passenger market at Stapleton (42 percent). As of 1993, however, that share had dwindled to 28 percent, while United had expanded its share to more than 50 percent. By its own reckoning, Continental had failed to earn a profit at Stapleton in 1991, 1992, and 1993.

Accordingly, Continental's decision to pull down its service at Stapleton reflected a corporate strategy to deploy its resources where it could compete more profitably. Rates, fees, and charges at Stapleton do not appear to have been a factor in this decision. While the prospect of higher charges at the new airport may have been a factor, it was probably a marginal factor at most, given that higher airport costs would have affected Continental and it principal competitor at DEN, United, equally.

Discussion

During the early 1980s, Continental, Frontier, and United each held between 20 and 25 percent of the passenger market at DEN. Stapleton was Continental's largest hub after Houston Intercontinental, was Frontier's principal hub as well as headquarters, and was United's largest hub after Chicago O'Hare. Between 1982 and 1985, United expanded its share of the market to nearly 38 percent, primarily reflecting increased flight frequencies. Meanwhile, both Continental and Frontier managed to retain their market share at Stapleton in the face of considerable financial difficulties.

In September 1983, Continental filed for protection under Chapter 11 of the bankruptcy code and ceased all service. Shortly thereafter it resumed operations and undertook measures to increase revenues and reduce operating costs, including restructuring its labor agreements. It was not until 1986, however, that the bankruptcy court approved Continental's reorganization plan.

By early 1987, Continental had acquired money-losing Frontier Airlines and People Express (which operated principally from Newark) and merged the three operations. This produced a significant increase in flight departures and passengers enplaned, and it made Continental the largest operator at the Airport with nearly 46 percent of all scheduled flights in 1987. (See Table 7.) Despite Continental's attempts to rationalize the resulting combined service offering at DEN, however, the merger left a share gap of 4-to-5 percent between its share of seat capacity offered and its actual share of passengers enplaned at the Airport. Continental was not able to close that gap in the years that followed.

Table 7
LEVEL OF SCHEDULED DOMESTIC SERVICE BY CONTINENTAL AIRLINES
DENVER INTERNATIONAL AIRPORT
(scheduled jet operations only)

Year	No. of Cities Served Daily, on Average	Flight Departures Operated	Enplaned Revenue Passengers	Percent of DEN Total Flights	Psgrs.	Share G
1985	28	44,378	3,513,755	25.2%	24.6%	- 0.6
1986	34	60,246	4,747,068	32.3	28.8	- 3.5
1987[1]	62	89,766	6,759,303	45.8	42.0	- 3.8
1988	51	80,855	5,863,483	44.5	39.2	- 5.3
1989	38	59,143	4,264,625	37.3	33.1	- 4.2
1990	38	54,131	4,020,023	36.4	31.5	- 4.9
1991	41	54,200	4,471,706	37.1	33.8	- 3.3
1992	41	56,362	4,699,338	36.3	32.5	- 3.8
1993	39	55,873	4,353,073	32.5	28.4	- 4.1
1994	23	29,577	2,432,880	18.3	15.4	- 2.9
1995 - 1st half	4	2,989	264,480	4.0	3.7	- 0.3

SOURCE: DOT, Schedule T-100.
NOTE: [1]Reflects merger with Frontier and People Express.

By the time Continental had consolidated its operations at DEN in 1989, United had taken over the number one position at the Airport. In April 1990, Continental was still sufficiently confident in its future at Denver to sign a lease for 30 gates at the planned new facility.[6] However, in December 1990, Continental again filed for protection under Chapter 11 of the bankruptcy code.

In November 1991, United agreed to lease 44 gates at the new airport. This agreement coincided with a decision by United to expand substantially its hub operation at DEN. In the next three years, United increased its jet departures at the Airport by nearly 50 percent.

During its time in bankruptcy, Continental held its level of operations at DEN relatively constant. Shortly after emerging from bankruptcy protection in April 1993, however, the airline began to reduce the number of its flight departures at the Airport. Continental and its Express operators enplaned only 33.1 percent of all passengers at DEN in 1993, well behind the 51.3 percent share held by United and its codesharing partners.

A Smith Barney Shearson investment report on Continental Airlines released on March 3, 1994 noted that Continental suffered from a major structural disadvantage in that it lacked a strong fortress hub in its domestic route network. Moreover, at DEN, the fifth-ranking airport in the country, it stated that Continental had only a 36 percent market share and was the number two carrier behind United. The report acknowledged that although West Coast traffic flows "represented fertile ground for low-fare opportunities, the high airport cost [an additional $50 million annually] is likely to pose an enormous hurdle" for Continental to develop that traffic at DEN.

[6]This was amended to 20 gates at a later date, and revised again in 1995 to 10 gates.

A senior Continental official noted in an April 1994 speech to an airport industry conference in Phoenix that the airline was in the process of "refocusing its route system to achieve market dominance." He stated that aircraft which had been reassigned from DEN operations to the new Continental Lite service in the east were much more profitable, and he added that the airline's Continental Express operation was "a big loser." Continental's strategy at DEN, he said, would continue to be one of downsizing, reducing service in smaller markets, and "aggressive pricing."

In a June 1994 letter to shareholders included with the airline's 1993 annual report, Continental's president stated the following:

> We also reduced service out of Denver in 1993 and further reduced such service in 1994. Denver operations lost $130 million in 1993 and $500 million over the past three years. The opening of the new Denver airport will significantly add to our expenses, and we continue to consider the appropriate level of flying there.

Continental commenced a major pull-down of its scheduled flight offering at DEN in the fall of 1993. Continental reduced service from 148 daily flights in January 1994 to 107 flights in March, to 86 flights in July. By October 1995, the airline operated only 14 daily flight departures from the Airport, to its hubs at Houston, Newark, and Cleveland. All codesharing regional service that had been operated by GP Express stopped in September 1995.

3.3 IMPACT OF NEW DENVER AIRPORT ON DOMESTIC SCHEDULED JET SERVICE BY UNITED AIRLINES

Finding

United attributes considerable strategic importance to Denver. Before committing in December 1991 to a 30-year lease for 44 gates with the City, United negotiated for facility design changes and other decisions that helped to promote its interests at the new airport. United's subsequent expansion of service at Denver was consistent with these 1991 contractual commitments. The added service, coupled with Continental's downsizing, appears to be paying off for United at DEN.

Discussion

Jet Service by All Airlines

Over the past five years, scheduled jet service at DEN peaked at over 45,000 flight departures in the third quarter of 1993. (See Table 8) That summer coincided with the most recent peak period for flights by Continental Airlines, after which that company began the rapid pull-down of its hubbing operation at the Airport.

Table 8
DOMESTIC FLIGHT DEPARTURES, BY QUARTER
DENVER INTERNATIONAL AIRPORT
(scheduled jet operations only)

Year - Quarter	United Airlines[1]	Continental Airlines	All Other Airlines	TOTAL
1992 - 1st Qtr.	16,901	13,736	5,999	36,636
- 2nd Qtr.	17,814	13,867	6,220	37,901
- 3rd Qtr.	19,940	14,910	6,447	41,297
- 4th Qtr.	19,656	13,849	6,131	39,636
1993 - 1st Qtr.	20,886	14,113	6,223	41,222
- 2nd Qtr.	22,580	14,305	6,273	43,158
- 3rd Qtr.	24,066	14,593	6,593	45,252
- 4th Qtr.	22,758	12,862	6,918	42,538
1994 - 1st Qtr.	23,207	10,876	7,424	41,507
- 2nd Qtr.	24,218	8,623	7,767	40,608
- 3rd Qtr.	26,086	6,995	8,773	41,854
- 4th Qtr.	25,471	3,083	9,087	37,641
1995 - 1st Qtr.	26,580	1,755	9,698	38,033
- 2nd Qtr.	26,897	1,234	9,435	37,566

SOURCE: DOT, Schedule T-100.
NOTE: [1] Includes United, Air Wisconsin, and in first half of 1993 only, WestAir.

From the beginning of 1992, however, United and the other airlines steadily built up their flight departure activity at DEN. From a combined 22,900 jet departures in the first quarter of 1992, United and the other airlines increased their operations at the Airport to over 36,000 jet departures by the time the new Airport opened three years later.

Total scheduled jet departures at DEN in mid-1995 compared closely with the level of flight departures at Stapleton three years before.

Focusing on the most recent six quarters for which data is available reveals that overall jet service at DEN declined during the final quarter of 1994 but then remained stable through the first half of 1995. (See box in Table 8) Compared to the previous year, the total number of domestic scheduled jet flights operated in the second quarter of 1995 was down 7.5 percent, roughly 33 fewer flight departures per day.

As Continental drew down its capacity at DEN through the third quarter of 1994, United and the other airlines added capacity to essentially offset the loss. In the fourth quarter of the year, however, a massive drop in Continental capacity was not met by additions by United and the other airlines.

In the first quarter of 1995, United and the other airlines operated a combined 36,278 jet departures, an increase of 18.4 percent (5,647 flights) from a year earlier. This first-quarter level did not change in the second quarter of 1995, which represented the first complete calendar quarter of operations for the new Airport.

From the first three months to the second three months of 1995, the frequency of jet service either increased or remained roughly the same from DEN to 28 out of its top 30 nonstop destination cities. Withdrawal of service from the Chicago-Midway market by both Continental and Midway Airlines in March 1995 and the usual seasonal spring reduction in service to Aspen were the only substantive quarter-to-quarter declines in flight frequency at DEN.

Jet Service by United Airlines

Compared to the beginning of 1992, when United, together with its jet-equipped United Express operator, Air Wisconsin, operated 46 percent of all departing scheduled jet flights and seats, the airline increased both its absolute and relative presence at the Airport over the next three years by more than 50 percent. By the second quarter of 1995, United operated 71.6 percent of all jet departures and 72.5 percent of all departing jet seats at DEN. (See Table 9.)

Table 9
DEPARTING DOMESTIC FLIGHTS AND SEATS, BY QUARTER
OPERATED BY UNITED AIRLINES[1] AT DENVER INTERNATIONAL AIRPORT
(scheduled jet operations only)

Year - Quarter	Flight Departures	Percent of Airport Total	Departing Seats	Percent of Airport Total	Average Seats per Flight
1992 - 1st Qtr.	16,901	46.1	2,416,065	46.2	143.0
- 2nd Qtr.	17,814	47.0	2,535,374	46.9	142.3
- 3rd Qtr.	19,940	48.3	2,819,721	47.9	141.4
- 4th Qtr.	19,656	49.6	2,850,498	50.1	145.0
1993 - 1st Qtr.	20,886	50.7	2,962,214	50.0	141.8
- 2nd Qtr.	22,580	52.3	3,186,686	52.1	141.1
- 3rd Qtr.	24,066	53.2	3,368,282	52.7	140.0
- 4th Qtr.	22,758	53.5	3,201,003	53.5	140.7
1994 - 1st Qtr.	23,207	55.9	3,197,080	55.4	137.8
- 2nd Qtr.	24,218	59.6	3,329,005	58.6	137.5
- 3rd Qtr.	26,086	62.3	3,644,352	62.2	139.7
- 4th Qtr.	25,471	67.7	3,605,571	68.3	141.6
1995 - 1st Qtr.	26,580	69.9	3,767,343	70.5	141.7
- 2nd Qtr.	26,897	71.6	3,808,774	72.5	141.6

SOURCE: DOT, Schedule T-100.
NOTE: [1]Includes United, Air Wisconsin, and in first half of 1993 only, WestAir.

United began to build up the scale of its operation at DEN in 1992. Over the next three years, United increased its operations at DEN by nearly 10,000 jet departures per quarter, from 16,901 in the first quarter of 1992 to 26,580 in the first quarter of 1995. It is worth noting that United had added nearly 80 flight departures per day to its DEN schedule by the summer of 1993, which was prior to the beginning of Continental's pull-down of its hubbing operation at the Airport. This was a clear signal to Continental of United's intention to strengthen its hub and fortify its dominant position at DEN.

Equally significant, perhaps, is that in the period following the summer of 1993, United's additions to its capacity at DEN did not keep pace with Continental's capacity reductions. Between the third quarter of 1993 and the second quarter of 1995, Continental reduced its quarterly jet departures by over 13,000 flights representing nearly two million departing seats per quarter. Over that same period, United added only about 2,800 quarterly departures and just over a half million seats.

Roger Gibson, United's regional vice-president in Denver, indicated that United was unable to replace the capacity as fast as Continental removed it, primarily due to lack of aircraft availability. United launched its major 'Shuttle by United' initiative on the West Coast in the fall of 1994, which clearly took priority within the company for aircraft deployment. He described the current status of DEN, consequently, as "somewhat underserved, in the short term", although he

added that United and the other airlines will likely correct that situation over time. He did not indicate whether United intends to introduce its low-fare 'Shuttle' service into the Denver market.

Mr. Gibson described Denver as ideally positioned geographically to serve as a hub for airline operations. He stated that United does not regard its hubbing operations at DEN to have matured yet, and that the airline has identified many further opportunities for growth in both domestic and international flights from the Airport. However, Mr. Gibson indicated that United's new management group is running the airline for "sustained profitability over the long term." This means that United's growth at DEN will continue at a gradual rate, paced by availability of equipment. Specifically, he made reference to plans for use of larger aircraft in United's DEN operations to more adequately serve the perceived demand, although the figures in Table 9 show that United did not immediately up-gauge its equipment at DEN after the opening of the new Airport.

With respect to costs, Mr. Gibson pointed out that United's expenses at DEN are higher than at any other airport in its system. However, since other major U.S. airports are facing sizable capital developments in the near future, he expected that ultimately United's costs at DEN will be comparable to, or even lower than, those at other airports.

In October 1995, United's chief financial officer, Douglas Hacker, announced that the airline's operation at DEN was profitable. Mr. Hacker also stated that United attributed much of its success at DEN to picking up traffic from Continental.

3.4 IMPACT OF NEW DENVER AIRPORT ON DOMESTIC SCHEDULED JET SERVICE BY AIRLINES OTHER THAN CONTINENTAL AND UNITED

Finding

The massive downsizing of Continental's operations at DEN created opportunities for service expansion not only for United but for other airlines as well. In the 18-month period from January 1994 to June 1995, airlines other than Continental and United increased their total daily scheduled jet flights at DEN by 23 daily departures.

The bulk of the increase was accounted for by two new-entrant, low-fare airlines, Frontier Airlines and Vanguard Airlines. Both airlines started service at Stapleton in the latter half of 1994 with full knowledge of the impending move to the new Airport and the higher operating costs that would be associated therewith.

During the January 1994 through June 1995 period, three airlines terminated service at DEN. Only one of the three service terminations was related to the higher-cost environment at the new Airport, namely, the decision by Southwest to discontinue the five daily flights that had been operated by its newly-acquired Morris Air.

Discussion

Airlines other than United and Continental together increased their scheduled jet departures at DEN by 27 percent, from an average of 81 daily flights in the first quarter of 1994 to 104 daily flights in the second quarter of 1995. (See Table 10.)

Table 10
DOMESTIC SCHEDULED FLIGHT DEPARTURES, BY AIRLINE
DENVER INTERNATIONAL AIRPORT
(jet operations only)

	1994				1995	
Airline	Qtr.1	Qtr.2	Qtr.3	Qtr.4	Qtr.1	Qtr.2
United	**23,207**	**24,218**	**26,086**	**25,471**	**26,580**	**26,897**
United Airlines	*22,099*	*23,626*	*25,213*	*24,774*	*24,924*	*25,218*
United Express/Air Wisconsin	*1,108*	*592*	*873*	*697*	*1,656*	*1,679*
Continental	**10,876**	**8,623**	**6,995**	**3,083**	**1,755**	**1,234**
Other Airlines:						
American	1,562	1,548	1,616	1,620	1,713	1,814
Delta	1,523	1,540	1,552	1,548	1,572	1,633
Frontier	0	0	513	1,073	1,288	1,309
MarkAir	1,083	1,323	1,539	1,595	1,450	1,115
Northwest	879	885	884	870	885	877
TWA	782	741	722	778	783	765
USAir	402	470	610	552	583	659
America West	518	520	528	543	597	606
Vanguard	0	0	0	127	511	482
Midwest Express	179	170	166	166	177	167
Casino Express	19	16	13	30	25	8
Midway	124	169	168	170	114	0
Morris (now Southwest)	353	384	461	15	0	0
Total - Other Airlines	**7,424**	**7,766**	**8,772**	**9,087**	**9,698**	**9,435**
TOTAL DEPARTURES	**41,507**	**40,607**	**41,853**	**37,641**	**38,033**	**37,566**

SOURCE: DOT, Schedule T-100.

Although several airlines increased the scale of their operations at DEN over the period from January 1994 through June 1995, others held their service levels constant, two discontinued service at the Airport entirely, and one DEN-based airline declared bankruptcy. The background to these service changes is provided below.

Airlines Increasing Jet Service at DEN

Four major airlines increased their flights at DEN between early 1994 and early 1995, mostly to their hub cities. American added capacity on its Dallas/Ft. Worth and Chicago-O'Hare routes and shifted some of its Nashville nonstops to Miami. Delta added flights to Atlanta and America West augmented its service to Phoenix with another daily flight. USAir added another daily flight to its Pittsburgh hub and introduced two daily flights to Philadelphia.

Then, in the second quarter of 1995, in spite of higher airport costs resulting from their move into the new Airport at the end of February, all four of these airlines increased their flying from DEN by a further collective 5.5 percent.

Airlines Holding Service Levels Constant at DEN

Three scheduled jet airlines maintained a consistent frequency of flights at the airport from early 1994 to mid-1995. Northwest did not alter service to its three major hubs, Minneapolis-St. Paul, Detroit, and Memphis. TWA held constant its service to Salt Lake City and New York-Kennedy, and shifted its Colorado Springs nonstops to St. Louis. Midwest Express continued to serve Milwaukee twice daily.

In the first four months of operating from the new Airport, then, these three airlines did not make any substantive changes to their DEN service.

Airlines Terminating Jet Service at DEN

Midway Airlines' service at DEN lasted less than 15 months. The airline terminated its twice-daily flights to Chicago on March 3, 1995, the day it moved its hub from Midway Airport to Raleigh-Durham in the wake of American's drastic downsizing of its operations there. Although the timing was coincidental, the decision by Midway Airlines to discontinue its DEN service was influenced little, if at all, by the opening of the new Airport. Indeed, the airline has even eliminated Midway Airport from its service network.

Southwest Airlines had terminated its service at DEN in 1986 for several reasons, not the least of which was the effect that operating delays at Stapleton had on flights throughout the rest of its route system. Since that time, Southwest has shown no indication of plans to return to DEN. It was no surprise, then, that when Southwest acquired Morris Air in 1994, its service at the Airport was discontinued. A Southwest official, contacted during the preparation of this report, stated that the airline's goal is "to stimulate traffic by transferring Southwest's operating efficiencies into low fares for the consumer." In view of "the prohibitive costs of 18 dollars per enplaned passenger" at DEN, he said, Southwest would have had to change its operating philosophy.

Southwest's vice-president of schedule planning, Peter McGlade, confirmed that "cost is the primary issue" in his company's decision not to serve DEN. He also stated that Southwest considered re-establishing service at Stapleton in 1992, but the prospect of having to operate in the high-cost environment of the new Airport caused company management to decide against the move. Mr. McGlade defined a 'high-cost' airport as one charging more than 6-to-7 dollars per enplaned passenger. He indicated that Southwest's system average is 3.50 dollars per enplaned passenger. When asked why Southwest would be reluctant to serve a high-cost airport since, as the lowest-cost operator in the industry, Southwest would still be able to offer the lowest fares in each market, he gave the following three reasons:

i) Southwest has proven that very low prices produce massive stimulation of traffic demand. The resulting high traffic volume permits Southwest to operate high-frequency service which, in turn, both maintains the existing traffic and attracts new passengers. Being forced to set its fares at 10-to-15 dollars more than normal would substantially reduce the degree to which traffic demand is stimulated. This would reduce the frequency of service it could offer and, consequently, its competitive advantage in the market. The situation would pose a higher level of risk for Southwest than other alternative deployments of its aircraft.

ii) Southwest tends to charge the same fares for trips of equivalent distance, with the exception of new service promotions and competitive responses in isolated instances. That pricing regime is predicated entirely upon Southwest's systemwide operating costs and is applied regardless of traffic volume or the level of competitive service in a given market. Introduction of service at a high-cost airport would force Southwest management to depart from this pricing practice, strict adherence to which has been a key ingredient in Southwest's success over the past three decades.

iii) Southwest management philosophy involves an indoctrinated dedication to cost containment by all employees. Southwest's agreement to pay much higher than normal costs at one airport in its system would have two undesirable effects, namely, (a) it would erode the internal cost discipline on which Southwest prides itself, and (b) it would set a precedent that could be seized upon and used by other airports served by Southwest.

MarkAir established its operational base at DEN in the fall of 1993 and moved its corporate headquarters from Anchorage to Denver in the spring of 1995. Company officials indicated that they saw that DEN would be a high-cost airport for all carriers, but that they felt that their low cost structure would give MarkAir a competitive advantage at the Airport. In addition, they saw the dominance of United and the minimal presence of low-fare carriers as signals of both a need for more competition and an opportunity to develop low-fare traffic. The airline's strategy targeted selected midwestern and western markets for low-fare service at a low flight frequency intended to avoid aggressive competitive reaction from other carriers operating on those routes.

MarkAir increased its service at the Airport to a peak in the second half of 1994. Long-standing financial problems which, company officials emphasized, were independent of the higher operating costs at DEN, forced the airline to file for Chapter 11 bankruptcy protection in mid-April 1995, and flights were cut back to early-1994 levels. On October 24, 1995, MarkAir management filed for Chapter 7 liquidation and terminated all service at the Airport.

Airlines Introducing New Service at DEN

While both of the two new-entrant airlines that began service at DEN during the second half of 1994 provide low-frequency flights at relatively low fares, their reasons for serving the Airport and their service strategies differ markedly.

The senior management group of Frontier Airlines includes several individuals who served with the former Frontier Airlines in the early 1980s when it operated a sizable route network centered on DEN. It was not surprising, then, that in the third quarter of 1994, Frontier started twice-daily jet service from DEN to six communities in Montana and North Dakota that were considered by Frontier to be 'underserved markets.' A subsequent shift in the airline's marketing strategy reduced service to those original six points to only one daily flight shared by Bismarck and Fargo. By October 1995, the airline served Albuquerque, El Paso, Omaha, Las Vegas, Chicago-Midway, and Phoenix, and it planned to start service to Minneapolis-St. Paul, Salt Lake City, and San Francisco the following month.

As stated in its September 1995 stock prospectus, Frontier's business strategy is "to provide service at low fares to high-density markets from its hub at Denver International Airport. The strategy is based on the following:

- Filling gaps in flight frequencies in markets that the Company has selected from among the approximately 55 Denver routes vacated by Continental Airlines and other carriers in 1993 and 1994.

- Stimulating demand in selected high-density markets by offering a combination of low fares, quality service, spacious legroom [only 108 seats on its Boeing 737-200] and its own frequent flyer program as well as Continental Airlines' OnePass program.

- Expanding its Denver hub operations and increasing its connecting traffic through the addition of service to other high-density markets."

Officials at Frontier have expressed their intention to expand the airline's hub at DEN. One of the key factors in the carrier's decision to make the Airport its hub was that many of the cities proposed for service were roughly equidistant from DEN, which made for more efficient scheduling of flights in a hub-and-spoke pattern to and from the Airport. Frontier made a major commitment at DEN, entering into a 10-year lease for ticket counter space and four aircraft gates; the airline currently operates three flight banks each day and plans to increase to four daily banks in mid-November 1995. The company estimates that its operating costs at DEN will increase to $11.4 million in its current fiscal year (ending March 31, 1996), compared to an estimated $4.5 million for a budgeted full year of operation at Stapleton. With high fixed costs at the Airport, the company has acknowledged that expansion of service through its DEN hub, and hence greater utilization of its gate positions, is essential for its long-term survival. In October 1995, Frontier ranked second only to United/United Express in the number of daily jet departures at DEN.

By contrast, officials at Kansas City-based Vanguard Airlines were seeking to serve markets where one or both of the following conditions existed:

i) Fares are high, and Southwest does not serve nor is likely to serve.

ii) Jet service is not provided at all, or only minimally.

Denver met those criteria for Vanguard. Continental was in the process of rapidly withdrawing its jet service from DEN in 1994, thereby reducing the competitive discipline on fare levels in many markets. Southwest had shown by its decision to terminate the Morris Air flights that it was not planning to serve DEN in the near future. And due to the speed of Continental's withdrawal, there were a number of markets that, in Vanguard's view at least, were underserved. Vanguard started service at DEN on December 4, 1994 and, by the following October, it operated seven daily flights from the Airport: four to Salt Lake City, two to Kansas City, and one to Wichita.

Vanguard is a low-fare airline with a peak/off-peak fare structure, not dissimilar to that popularized by People Express where many of the company management worked in the early 1980s. The airline operates Boeing 737-200 aircraft in all-economy configuration with 138 seats.

Although Vanguard is not a hub-and-spoke airline and its main focus is point-to-point traffic, it does make provisions for passengers wishing to make on-line connections.

Vanguard officials stated that they have used three strategies to cope with the higher costs at the new Airport, as follows:

i) Minimal fixed-cost commitments.
The airline minimized the amount of office and ticket counter space it used in the terminal building, and it has leased only one gate.

ii) High utilization of facilities.
Vanguard has achieved up to 10 or 11 turnarounds per day on its single gate at DEN, arranging for use of other nearby gates to handle the occasional off-schedule operation. Officials indicated that a commitment to a second gate will be made only when high utilization can be assured.

iii) Higher fares in DEN markets.
Company officials stated that Vanguard's fares were higher at the new Airport than they would have been at Stapleton.

The combined scale of these two airlines' operations at DEN far exceeds that of the two airlines (i.e., Midway and Morris Air) that no longer serve the Airport. More important to note, though, is that new carriers were attracted to Stapleton to serve the Denver market with full knowledge of the higher operating costs that would come with the move to the new Airport.

3.5 IMPACT OF NEW DENVER AIRPORT ON REGIONAL AIR SERVICE

Finding

DEN experienced a significant loss of regional service during 1994, evidenced by a drop in both the number and seating capacity of flights operated by regional carriers and a decrease in passengers enplaned to regional destinations. Most of the decline had occurred by the first quarter of 1995, that is, prior to the opening of the new Airport.

This reduction in regional flight activity was related specifically to the pull-down by Continental of its jet hubbing operation at DEN. Because regional codesharing operators typically rely on feed traffic to and from their major airline partner for at least 50 percent of their passenger load, the Continental Express carriers saw the demand for their flights fall below break-even levels. All Continental Express operations at DEN ended in September 1995 resulting in the loss of competitive (i.e., two-carrier) service at most regional communities served from the Airport. As was the case with jet operations at DEN, United's codesharing partners were unable to replace capacity as rapidly as it was eliminated by Continental Express.

Total regional carrier enplanements at DEN held steady in the months immediately following the opening of the new Airport. Fares went up sharply at first, both for connections via DEN and for regional O&D travel. However, Mesa (United Express) quickly found itself competing against highway modes of travel. In the face of a strong negative reaction in many of its regional markets, Mesa brought down both its connecting fares with United and its local fares, into line with fare levels elsewhere in its system.

Discussion

For 38 regional destinations in Colorado and seven other states, about 15 percent fewer regional flights and nearly 20 percent fewer regional seats were offered at DEN in June 1995 compared to a year earlier. (See Table 11.) The addition of 24 daily flights by United Express during that period did not outweigh the cutting of 56 daily flights by Continental Express.

Table 11
CHANGES IN DAILY SERVICE TO 38 REGIONAL DESTINATIONS AT DENVER INTERNATIONAL AIRPORT BEFORE AND AFTER OPENING OF NEW AIRPORT
(departing Monday to Friday, month of June)

Carrier / Aircraft Type	Seating Capacity	Flight Departures 1994	Flight Departures 1995	Departing Seats 1994	Departing Seats 1995
United Express (UA*)					
Jet	99	10	11	990	1,089
Turboprop	30-37	32	48	960	1,594
Turboprop	19	87	94	1,653	1,786
		129	153	3,603	4,469
Continental Express (CO*)					
Turboprop	46-50	33	0	1,590	0
Turboprop	14-19	48	25	912	455
		81	25	2,502	455
Mesa Airlines (YV)					
Turboprop	19	5	6	95	114
TOTAL		**215**	**184**	**6,200**	**5,038**
Average seats per turboprop flight				*25.4*	*22.8*

SOURCE: *Official Airline Guide*, June 1994 and June 1995.

Table 12 presents the quarterly number of passengers enplaned at DEN on the United Express and Continental Express carriers from early 1994 through mid-1995. The enplanement figures indicate that most of the loss in regional traffic had occurred by the end of 1994: 258,000 passengers in the first quarter of 1994 fell to only 170,000 passengers a year later. From the first quarter of 1995, during which the new airport opened, to the second quarter, however, enplanements on regional carriers at DEN dropped by only 0.4 percent.

Table 12
PASSENGERS ENPLANED ON REGIONAL CARRIERS DENVER INTERNATIONAL AIRPORT

Airline Group / Carrier	1994 Qtr.1	1994 Qtr.2	1994 Qtr.3	1994 Qtr.4	1995 Qtr.1	1995 Qtr.2
United Express (UA*)	**111,654**	**132,927**	**159,898**	**150,940**	**147,477**	**157,669**
Mesa	94,644	113,518	141,436	130,475	128,952	134,771
Great Lakes Aviation	17,010	19,409	18,462	20,465	18,525	22,898
Continental Express (CO*)	**146,192**	**85,016**	**91,829**	**36,185**	**22,260**	**11,369**
GP Express Airlines	3,266	14,392	40,462	36,185	22,260	11,369
Continental Express	142,926	70,624	51,367	0	0	0
TOTAL ENPLANEMENTS	**257,846**	**217,943**	**251,727**	**187,125**	**169,737**	**169,038**

SOURCE: DOT, 298C Schedule T-1.

As Continental wound down its jet operations at DEN during 1994 and early 1995, the volume of connecting traffic to and from its feeder carriers fell off rapidly. Its subsidiary company, Continental Express, discontinued operations at the Airport in September 1994, which left Continental's partner carrier, GP Express, to continue regional operations under the 'CO' designator code.

Traffic continued to decline and on July 31, 1995, GP Express discontinued all service at DEN except for essential-air-service operations to destinations in Nebraska. Reasons given by the carrier for termination of service were "the high operating costs at the new Denver International Airport and declining loads." The publication *Aviation Daily*, in its reporting of the announcement, cited two other reasons, namely "the reluctance of local (i.e., non-connecting) passengers to pay the high fares charged by GP Express and the extra driving time to the new airport."

One week later, the president of GP Express announced that the carrier wanted to terminate the EAS flights as well, saying "the decision was prompted by existing and expected increases in operating expenses linked to government regulations." The regulations referred to in the announcement included proposals requiring regional carriers operating smaller, turboprop aircraft to comply with many of the technical FAA regulations that the major certificated airlines must follow. Also mentioned as factors "having an adverse effect on the Nebraska service" were the increased cost of operating at the new Airport and "competition from low-cost jet carriers, such as Midwest Express and Southwest."

The primary reason for discontinuance of service by GP Express is likely a simpler and more fundamental one: the wind-down of Continental's jet operations at DEN. Regional carriers that codeshare with major airlines typically derive at least half of their traffic from 'feeding' passengers to and from their larger partners. With the dwindling of Continental's flights at the Airport, the feed traffic dried up for a Continental Express carrier, and local traffic on the routes was likely not sufficient to support the remaining GP Express flights.

United's regional vice-president in Denver described the regional service 'problem' at DEN as simply a shortage of capacity: "Continental Express took more capacity out of the DEN regional market than United Express has been able to add, thus far." He indicated that Mesa Airlines (operating as United Express) had grown rapidly at DEN over the past few years and was continuing to expand and upgrade its aircraft fleet.

Of the 38 regional destinations described earlier, 17 were linked to DEN by two carriers, typically United Express and Continental Express, in June 1994. (See Table 13.) By June 1995, eight of those communities had lost competitive flights to DEN, and five more lost their second-carrier service by October 1995. Given that United Express still serves most of the communities, the loss of a competing service to DEN and the higher fares that were seen to have resulted therefrom, appear to be the primary concerns. Unlike the situation in other parts of the country, many of these communities do not have scheduled flights to other airline hubs for the purpose of making connections.

Table 13
CHANGES IN LEVEL OF COMPETITION TO 38 REGIONAL DESTINATIONS AT DENVER INTERNATIONAL AIRPORT BEFORE AND AFTER OPENING OF NEW AIRPORT
(for the month of June)

State	Regional Destinations Served from DEN	No. of Destinations Served from DEN by Two Carriers	
		1994	1995
Colorado	12	7	6
Wyoming	8	6	2
Nebraska	5	2	1
South Dakota	3	1	0
North Dakota	2	0	0
Kansas	3	0	0
New Mexico	2	0	0
Texas	3	1	0
TOTAL	**38**	**17**	**9**

SOURCE: *Official Airline Guide*, June 1994 and June 1995.

On the other hand, the limited volume of local and connecting traffic to DEN from many of the regional communities makes it difficult for another carrier to provide a viable service. Now that DEN has become a one-carrier hub, there is no single major airline serving the Airport that can provide sufficient connecting traffic to a second regional operator.

The answer for some of the regional communities, at least, may lie with a new carrier planning to start a regional service at DEN in the winter of 1995-96. Maverick Air intends to serve several of the Western Slope communities using 50-seat Dash-7 turboprop aircraft. The company plans to have interlining arrangements in place to facilitate passenger connections with several of the major jet airlines at DEN.

Officials at Mesa (United Express) acknowledged that their costs escalated very substantially as a result of the move from Stapleton to the new Airport. Moreover, the cost problem was exacerbated by an airport capacity shortfall for Mesa. When the carrier 'locked in' on facility plans four years ago, it was operating 55 to 60 daily flights at DEN; by December 1995, Mesa operated 128 flights per day, largely due to the pull-out by Continental Express. A mere nine months following the opening of the new Airport, then, additional capacity was being added to accommodate regional operations.

3.6 IMPACT OF NEW DENVER AIRPORT ON THE LEVEL OF AIR FARES

Finding

Origin-Destination Passengers

Air fares in an airport's city-pair markets are more significantly related to the level of competition and to the fare elasticity of passenger demand than to the level of airport charges. In the case of Denver, we did not uncover any compelling evidence that refuted this guiding hypothesis, notwithstanding anecdotes and critics' allegations to the contrary.

An article published in early July in the Denver Post, for example, was seized upon and widely quoted by critics of the new Airport. The article used an internal report circulated by American Express Travel which identified a 46 percent year-over-year increase in fares at Denver. The calculation was based on a small and biased sample of travelers which produced a substantial overstatement of the extent of the fare increases that actually occurred.

That competition and demand, more than cost, drive fares does not mean that airlines ignore costs. Rather, it means that rising costs increase the likelihood that the airline will reallocate its resources to a route where it can compete more profitably. Airline efforts to cut costs and rightsize are aimed at being able to offer lower fares at a profit.

Connecting Passengers

Fares charged by an airline to passengers who must travel via an intermediate airport are generally maintained at competitive levels with those offered by other airlines via other intermediate airports. Consequently, an increase in costs at the intermediate airport typically has little effect on fares for passengers connecting there. To date, this has been borne out at the new Airport in Denver.

Discussion

Unlike changes of service frequency and the number of cities served, changes in air fares are not easily measured. And as described in Section 2 of this memorandum, the 'average fare paid' measure is imperfect at best. Consequently, we developed a portrait of fare developments at DEN using information that is both quantitative and qualitative. Our discussion of current air fare levels at DEN worked from the perspective of what happened to air fares at Denver over the past two years.

Origin-Destination Passengers

Although MarkAir introduced service at DEN in 1993, the low-fare effect was not really felt in the Denver air travel marketplace until early the following year with the arrival of Morris Air and Midway Airlines. At the same time as Southwest was preparing to terminate Morris Air's

flights at DEN, Frontier Airlines was starting service at the Airport. And by the time Midway Airlines departed in early March 1995, Vanguard's new service was in place. From early 1994 onward, then, at least three new-entrant carriers offered a low-fare product at DEN.

Compounding the downward pressure on fares was Continental, which introduced its low 'Peanuts' fares on many of its routes from the Airport in early 1994 in order to maintain cash flow during the dismantling of its hub operation. Although this was just a temporary situation, several of the major airlines, notably United, Delta, American, and America West, responded to these moves by Continental by offering lower fares as well.

The net effect of these fare actions was a drop in the average fares paid by O&D passengers at DEN, from the 185-to-190 dollar range in 1993 to less than 160 dollars in the fourth quarter of 1994. (See Table 14.) This in turn created a surge in O&D traffic at the Airport throughout most of 1994.

By early 1995, however, Continental was in the final stages of dismantling its operation at DEN and all airlines were facing the prospect of sharply higher airport costs. United initiated higher fares at DEN in March and April 1995, although there are various versions as to how the airline implemented those fare increases. Some sources indicate that the airline added 20 dollars to each one-way fare (40 dollars for round-trip fares) in all of its DEN city-pair markets. Others state that the increases were not applied across the board, but rather to certain fare types on a market-by-market basis. Still others say that they were applied only to certain unrestricted fares which were targeted at business travelers and which had gotten badly out of line with the rest of United's fare structure.

Table 14
DOMESTIC AVERAGE FARES PAID[1] IN OUTBOUND PURE O&D PASSENGER MARKETS
DENVER INTERNATIONAL AIRPORT
(low-fare airline offerings highlighted, in boxes)

	1993			1994				1995	
Airline	Qtr.2	Qtr.3	Qtr.4	Qtr.1	Qtr.2	Qtr.3	Qtr.4	Qtr.1	Qtr.2
United	187.39	192.26	201.54	185.35	169.36	169.62	167.97	178.20	194.70
Delta	216.13	199.66	205.87	209.41	194.10	189.34	193.05	210.94	217.29
American	184.21	183.75	192.39	167.74	154.04	144.09	148.51	156.58	163.57
Continental	174.16	174.16	178.12	169.21	152.29	148.16	150.98	182.43	190.44
Northwest	171.30	166.46	179.74	175.10	184.12	174.25	154.28	148.00	152.83
Markair	115.43	108.86	111.99	131.24	121.82	96.03	94.12	90.33	94.62
TWA	171.26	157.11	191.70	174.54	174.06	170.29	160.21	163.42	185.60
USAir	213.77	208.74	232.98	252.06	231.06	225.03	201.55	216.09	229.63
America West	161.18	162.31	146.94	135.52	134.14	127.92	123.95	124.96	145.28
Frontier							88.76	99.31	107.57
Vanguard									63.54
Midwest Express	188.32	169.74	181.42	190.21	170.94	161.32	156.82	152.57	172.09
Midway				102.66	75.29	81.64	93.53	96.29	
Morris Air				74.00	73.10	66.10			
AVERAGE FARE PAID - ALL AIRLINES	**184.36**	**184.14**	**190.72**	**178.75**	**166.05**	**162.44**	**158.76**	**169.23**	**180.49**

SOURCE: DOT, *Air Passenger Origin-Destination Survey.*

NOTE: [1]Passengers traveling on frequent travel rewards were not included in calculation of Average Fare Paid.

Whatever the case, United introduced fare increases with the explanation that they were necessary due to the higher costs being borne by the airline at the new Airport. The question remains as to whether United used the airport cost issue to gain market acceptance of a fare hike which it may have made anyway in the wake of the downsizing of its main competitor's operations at the Airport.

Most of the airlines at DEN matched United's fare initiative. A few airlines sought to gain competitive advantage by maintaining their existing fares in certain markets; United reacted quickly, however, and restored its original fares in most of those cases.

Although not all of United's fare increases held as originally implemented, the fare hikes caused the overall average domestic fare paid at DEN to increase by 22 dollars (nearly 14 percent) between the last quarter of 1994 and the second quarter of 1995. A widely-quoted July 8, 1995 Denver Post article which indicated that fares had gone up at DEN by 46 percent overstated the situation by a considerable margin.[8] United's regional vice-president in Denver acknowledged that his company's fares in DEN markets had increased by about 15 percent on average, but he stated that fares had also gone up nationally by between 15 and 17 percent.

It is important, as well, to view the fare increases that occurred in the spring of 1995 in context. The average fare paid in the second quarter of 1995 ($180.49) was still lower than that paid during the same period two years before ($184.36), when two major carriers were hubbing at the Airport and actively competing for traffic in most of the key markets from DEN. (See Figure 7.) In addition, fares went up significantly in many markets across the country during 1995, yet the average fare paid in the second quarter of 1995 at DEN, for example, was still well below the average fare paid at MSP ($208.88).

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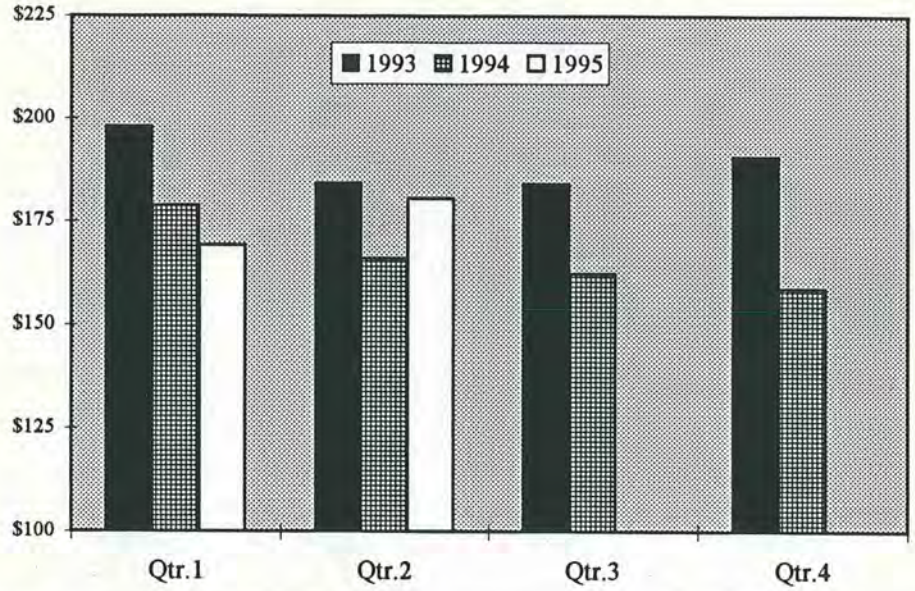
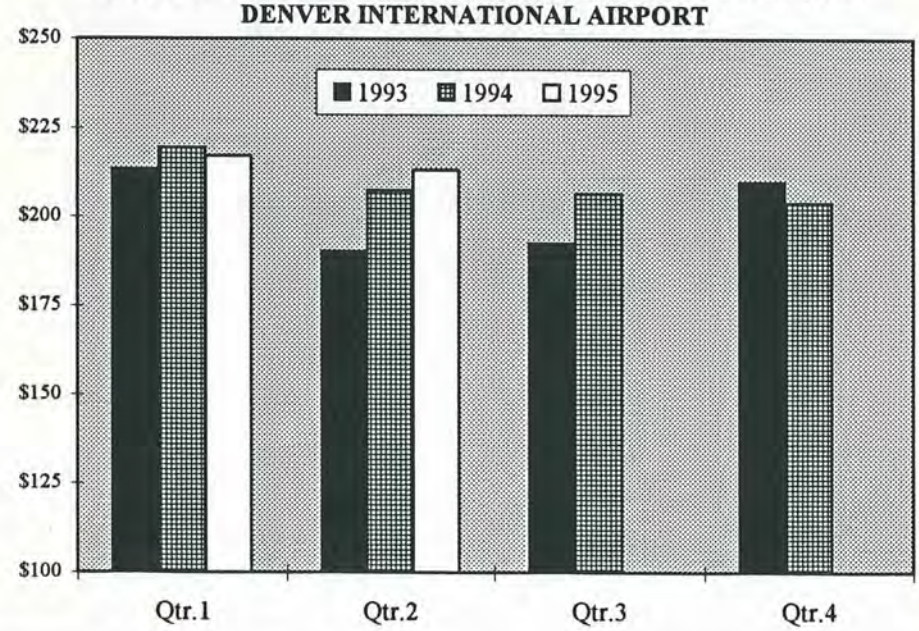
[8]The article was based on a publication entitled "Domestic Fare Index", produced by American Express Travel for its corporate customers. The publication purports to present "the average price paid by all business travelers", but the Index is calculated using the fares paid by all passengers and only those booking their flights at American Express Travel offices. Moreover, unlike the DOT measure of 'average fare paid', the American Express Index applies a proprietary set of fixed weighting factors to the small and biased sample of fares in order to construct its 'Composite Fare' which was used by the Denver Post reporter.

Figure 7
AVERAGE DOMESTIC PURE O&D PASSENGER FARE PAID
DENVER INTERNATIONAL AIRPORT



SOURCE: DOT, *Air Passenger Origin-Destination Survey.*

Figure 8
AVG. FARE PAID BY DOMESTIC CONNECTING PASSENGERS
DENVER INTERNATIONAL AIRPORT



SOURCE: DOT, *Air Passenger Origin-Destination Survey.*

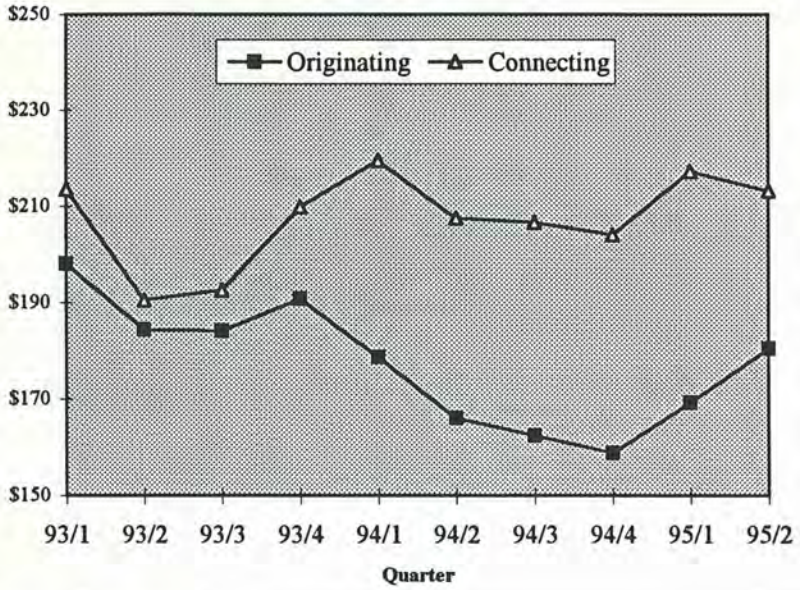
Since the late spring of 1995, the new low-fare Western Pacific Airlines operation at Colorado Springs, and the increased activity by other airlines operating there, has introduced a degree of inter-airport competition for O&D passengers. This has had a moderating effect on the level of fares at DEN. In October 1995, for example, United brought its fares at DEN in line with the lower fares it was offering at Colorado Springs.

Connecting Passengers

Fares paid by domestic passengers making connections at DEN between late 1993 and mid-1995 do not appear to have been affected to a material extent by either the dismantling of the Continental hub or the opening of the new Airport. As shown in the graph in Figure 8, the average connecting fare at DEN showed a small year-over-year decline in the first quarter of 1995 and a minor year-over-year increase in the second quarter.

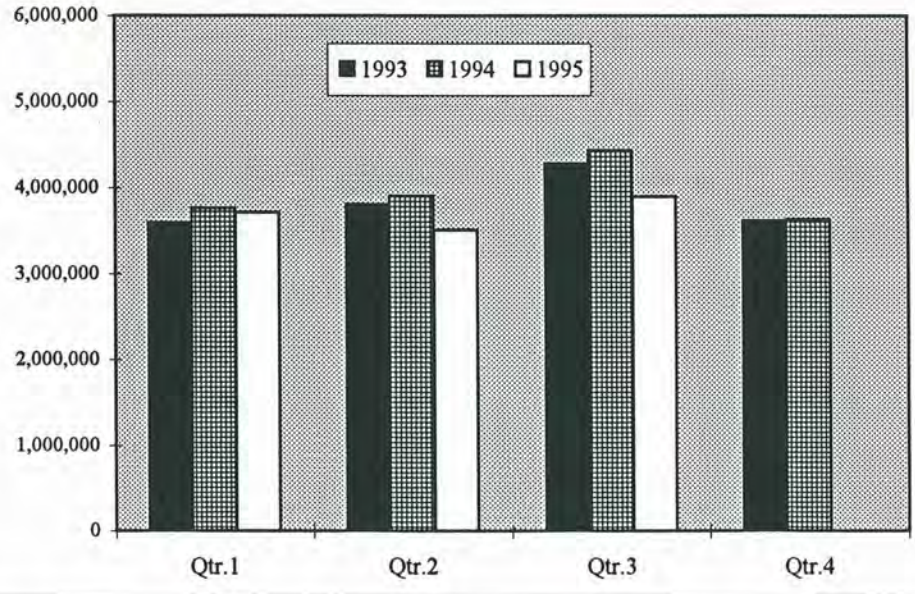
The graph in Figure 9 compares the average fare paid by originating and connecting passengers at DEN, by quarter, from the beginning of 1993 through to mid-1995. Other than a dip in the spring and summer of 1993, connecting fares at the Airport fluctuated within the relatively narrow range of $204.00 to $220.00.

Figure 9
AVERAGE FARE PAID BY DOMESTIC PASSENGERS
DENVER INTERNATIONAL AIRPORT



SOURCE: DOT, *Air Passenger Origin-Destination Survey.*

Figure 10
TOTAL REVENUE PASSENGERS ENPLANED
DENVER INTERNATIONAL AIRPORT



SOURCE: DOT, Schedule T-3; 298C Schedule T-1; INS data.

3.7 IMPACT OF NEW DENVER AIRPORT ON PASSENGER ENPLANEMENTS

Finding

Despite a six-percent drop in total passenger enplanements at DEN in the second quarter of 1995 and an 11-percent drop in the third quarter of 1995 (over the corresponding quarters of 1994), the evidence does not link the traffic decline to the opening of the new Airport.

Rather, the pull-down by Continental of its hubbing operation at the Airport brought about the decline in enplaned passengers, in two ways. First, most of the 1995 decline in traffic represents a loss of Continental's connecting passengers at DEN. Secondly, because traffic at DEN was stimulated by Continental's particularly aggressive pricing throughout much of 1994 (and the other airlines' matching response), year-over-year comparisons show a larger relative drop in passengers in 1995 than would otherwise have been the case.

The strength of the market for air travel to and from Denver is illustrated by the increase of almost three percent in total O&D passenger traffic at DEN in the second quarter of 1995 over the same period in 1994. In addition, the fact that United and the other airlines appear to have captured as much as 40 percent of Continental's former connecting traffic at DEN attests to the Airport's strength as a natural geographic location for connections.

Discussion

An 11 percent drop in the number of passengers reported enplaned at DEN during the third quarter of 1995, over the same period the previous year, has been interpreted by various observers and media reports as proof that the new airport is driving passenger traffic away from Denver. Closer examination, however, reveals a quite different explanation.

Quarterly enplanements by revenue passengers for the most recent 11 quarters at DEN are compared in the graph in Figure 10. The enplanement figure for the third quarter of 1995 (3.9 million passengers) was estimated using the Airport's enplanement total which includes non-revenue passenger boardings during the period. Total revenue passengers enplaned in the first three quarters of 1995 (11.1 million) were down by eight percent from the same period in 1994 (12.1 million) and almost five percent from 1993 (11.7 million). Most of the decline was due to Continental and the departure of its Express operation, and by the loss of Midway Airlines and Morris Air. It is interesting to note that Sun Country's low-fare charter traffic was also down by 30 percent in the first nine months of 1995. Enplanements by all other carriers serving DEN (about 1.5 million passengers) were 17 percent ahead of their combined total during the first nine months of 1994.

Enplanements at an airport are comprised of the following passenger traffic segments:

i) Domestic pure O&D passengers, comprising those passengers traveling to U.S. destinations who either originate their trips at the airport or return to their place of origin after a visit to the airport's service area.

ii) International O&D passengers, which include those who board domestic flights to other U.S. gateway airports where they connect with international flights.

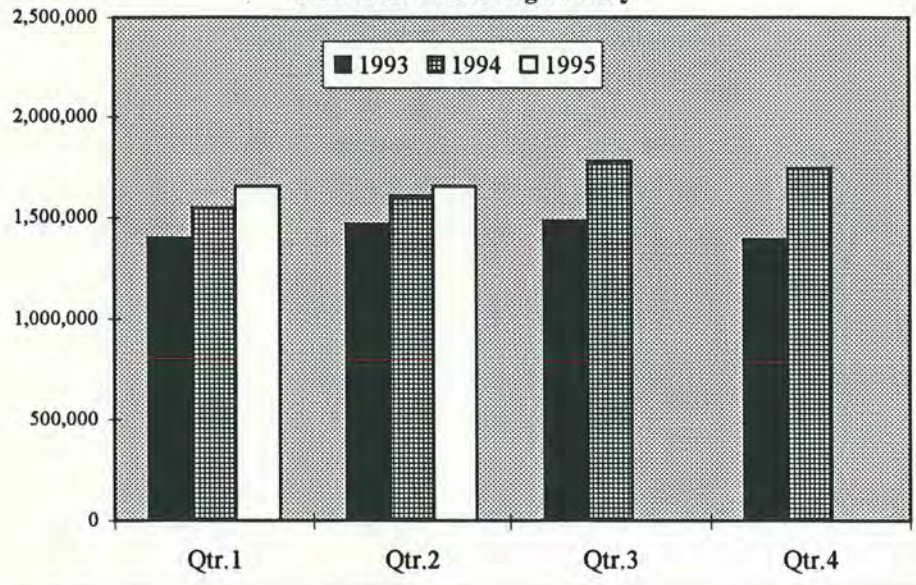
iii) Connecting passengers, i.e., both those making purely domestic trips and those making connections at the airport in the course of international trips.

The results of an examination of recent trends in the three largest components of enplaning traffic at DEN, namely, domestic pure O&D passengers, domestic portions of international trips, and domestic-to-domestic connections, are presented below.

Domestic Pure O&D Passengers

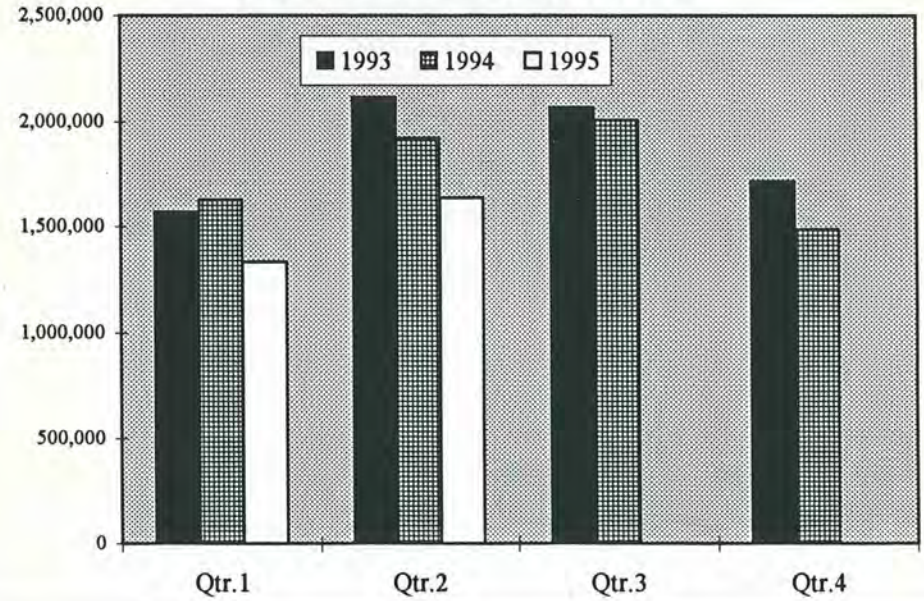
The graph in Figure 11 reveals that in the first complete calendar quarter of operation of the new Airport, domestic O&D travel at DEN actually showed positive growth, by almost three percent compared to the second quarter of 1994. This increase occurred in spite of an 8.7 percent increase in the average fare paid over the same period.

Figure 11
DOMESTIC PURE O&D PASSENGERS ENPLANED
DENVER INTERNATIONAL AIRPORT
On Scheduled Jet Flights Only



SOURCE: DOT, *Air Passenger Origin-Destination Survey.*

Figure 12
DOMESTIC CONNECTING PASSENGERS ENPLANED
DENVER INTERNATIONAL AIRPORT



SOURCE: DOT, *Air Passenger Origin-Destination Survey.*

Although domestic pure O&D passenger volume at DEN declined in the first half of 1995 over the latter half of 1994, it actually grew by nearly five percent over the first half of 1994. As discussed earlier, there was a substantial surge in DEN traffic in mid-1994 when passenger fares dipped on average; traffic levels fell back to more typical levels in early 1995 when many of the lowest fares were either adjusted upward or eliminated.

Table 15 shows the domestic pure O&D passenger enplanements by airline at DEN over the six quarters ending in mid-1995.[9] All carriers saw gains from the spike in DEN traffic during the latter half of 1994; several managed to maintain and even improve on those gains in the first half of 1995.

Table 15
DOMESTIC OUTBOUND PURE O&D REVENUE PASSENGERS, BY AIRLINE
DENVER INTERNATIONAL AIRPORT
(on scheduled jet flights only)

Airline	1994				1995	
Carrier	Qtr.1	Qtr.2	Qtr.3	Qtr.4	Qtr.1	Qtr.2
Airlines showing Growth from 2nd Qtr. 1994 to 2nd Qtr. 1995:						
United	718,860	882,520	924,370	958,640	893,680	893,920
United Airlines	*710,370*	*878,460*	*918,140*	*950,410*	*878,640*	*877,710*
United Express/Air Wisconsin	*8,490*	*4,060*	*6,230*	*8,230*	*15,040*	*16,210*
Delta	140,060	123,320	145,920	142,070	150,400	144,550
American	98,420	99,040	127,100	137,790	135,690	143,630
Northwest	74,960	57,070	74,790	70,600	75,640	75,690
MarkAir	34,640	32,120	36,170	85,000	80,040	58,670
TWA	39,400	40,360	52,770	55,170	51,610	52,280
America West	38,650	37,370	42,240	42,190	47,740	50,470
USAir	30,960	39,790	49,450	40,080	50,970	49,700
Frontier	0	0	170	42,970	40,060	45,320
Vanguard	0	0	0	0	0	43,110
Midwest Express	5,970	5,870	7,540	6,020	7,990	7,140
All Other	3,260	4,110	3,330	3,570	3,320	4,150
Sub-Total	1,185,180	1,321,570	1,463,850	1,584,100	1,537,140	1,568,630
Airlines whose Traffic Declined from 2nd Qtr. 1994 to 2nd Qtr. 1995:						
Continental	348,620	267,890	291,770	153,780	112,080	84,910
Midway	4,510	6,530	10,360	8,860	5,150	0
Morris Air	11,100	11,850	16,320	160	0	0
Sub-Total	364,230	286,270	318,450	162,800	117,230	84,910
TOTAL PASSENGERS	**1,549,410**	**1,607,840**	**1,782,300**	**1,746,900**	**1,654,370**	**1,653,540**

SOURCE: DOT, *Air Passenger Origin-Destination Survey.*

[9]The domestic pure O&D traffic described above does not include those passengers who boarded turboprop flights operated by United Express or Continental Express for purely local flights to and from the regional communities served by those carriers. Enplanement figures reported to DOT by the regional carriers do not distinguish between O&D and connecting passengers. However, in view of the recent termination of Continental Express service, leaving only United Express in most of the markets, it is likely that this segment of passengers enplaned at DEN has declined. These passengers have typically represented less than three percent of all enplanements at the airport.

The quarterly breakdown of O&D traffic by market in Table 16 indicates that the 1994 surge in domestic passengers at the Airport occurred primarily in the top 15 city markets. In the second half of 1994, O&D enplanements at DEN to the top 15 cities accounted for 82 percent of the overall increase (531,000 out of 647,000 passengers) over the second half of 1993. With the rebound of DEN fares in early 1995, traffic subsided to historical norms in most markets. Due to continuing low-fare carrier activity, however, the higher passenger volumes held and average fares remained low between DEN and cities such as Dallas/Ft. Worth, Las Vegas, Salt Lake City, Minneapolis-St. Paul, and Kansas City.

Table 16
TOP 15 DOMESTIC OUTBOUND PURE O&D PASSENGER MARKETS, Ranked by 12 Months ended June 30, 1995
DENVER INTERNATIONAL AIRPORT

Rank	City Market / *Airport*	1993 Qtr.1	1993 Qtr.2	1993 Qtr.3	1993 Qtr.4	1994 Qtr.1	1994 Qtr.2	1994 Qtr.3	1994 Qtr.4	1995 Qtr.1	1995 Qtr.2
1	Los Angeles Area	90,110	99,640	101,780	105,750	121,940	135,140	144,620	151,270	120,370	114,720
	Los Angeles	*49,260*	*52,530*	*54,660*	*66,300*	*92,950*	*92,650*	*103,310*	*105,820*	*76,580*	*72,790*
	Orange County	*19,560*	*21,890*	*23,060*	*19,850*	*15,290*	*22,120*	*20,850*	*23,820*	*23,100*	*22,490*
	Ontario	*12,910*	*15,280*	*14,810*	*11,770*	*8,790*	*12,300*	*12,370*	*12,370*	*12,040*	*11,320*
	Burbank	*8,010*	*9,400*	*8,720*	*7,440*	*4,700*	*7,850*	*7,420*	*8,950*	*8,180*	*7,610*
	Long Beach	*370*	*540*	*530*	*390*	*210*	*220*	*670*	*310*	*470*	*510*
2	Chicago	63,020	77,550	83,370	83,060	100,820	121,280	141,850	120,880	105,220	97,050
	O'Hare	*62,250*	*74,690*	*78,660*	*78,280*	*90,950*	*112,690*	*119,530*	*86,110*	*80,610*	*86,060*
	Midway	*770*	*2,860*	*4,710*	*4,780*	*9,870*	*8,590*	*22,320*	*34,770*	*24,610*	*10,990*
3	San Fran. Bay Area	69,370	85,530	83,470	82,130	89,530	112,990	114,340	101,570	85,940	91,500
	San Francisco	*37,930*	*48,690*	*48,980*	*56,290*	*70,840*	*89,480*	*86,180*	*68,500*	*52,860*	*50,250*
	San Jose	*18,800*	*21,870*	*19,990*	*15,680*	*10,840*	*13,680*	*15,390*	*18,400*	*18,860*	*22,660*
	Oakland	*12,640*	*14,970*	*14,500*	*10,160*	*7,850*	*9,830*	*12,770*	*14,670*	*14,220*	*18,590*
4	New York City	86,650	83,320	91,840	73,760	86,210	80,370	94,420	86,350	89,360	90,700
	LaGuardia	*35,790*	*35,470*	*38,150*	*32,940*	*31,560*	*29,770*	*37,910*	*35,720*	*44,620*	*45,350*
	Newark	*46,300*	*41,790*	*46,270*	*37,030*	*50,790*	*46,320*	*51,130*	*44,590*	*39,480*	*38,680*
	Kennedy	*4,560*	*6,060*	*7,420*	*3,790*	*3,860*	*4,280*	*5,380*	*6,040*	*5,260*	*6,670*
5	Dallas/Ft. Worth	47,120	47,290	47,360	61,760	64,750	56,820	70,080	83,620	83,510	79,680
6	Washington, DC	52,270	57,750	53,020	54,530	59,060	66,040	65,880	56,690	55,040	60,620
	Dulles	*38,970*	*42,720*	*38,630*	*42,960*	*45,920*	*51,740*	*48,430*	*38,030*	*37,230*	*40,860*
	National	*13,300*	*15,030*	*14,390*	*11,570*	*13,140*	*14,300*	*17,450*	*18,660*	*17,810*	*19,760*
7	Phoenix	52,670	45,660	40,210	52,160	62,290	55,290	55,090	65,450	62,360	51,350
8	Las Vegas	31,490	36,630	30,240	35,500	40,430	42,390	45,640	58,770	60,620	55,460
9	Seattle/Tacoma	29,360	40,930	44,990	37,590	40,440	54,800	61,070	49,690	39,000	44,620
10	Atlanta	37,250	29,940	29,820	39,290	49,690	42,260	41,060	47,700	49,900	37,800
11	Houston	45,650	37,490	39,390	34,790	47,170	46,310	51,340	43,900	44,950	35,610
	Intercontinental	*40,600*	*32,960*	*34,930*	*30,090*	*45,200*	*44,680*	*47,910*	*39,410*	*40,570*	*31,270*
	Hobby	*5,050*	*4,530*	*4,460*	*4,700*	*1,970*	*1,630*	*3,430*	*4,490*	*4,380*	*4,340*
12	Salt Lake City	28,400	28,450	30,030	26,210	34,880	44,300	49,210	38,740	27,390	57,660
13	Minneapolis-St. Paul	31,020	33,330	34,610	35,510	38,380	34,410	37,360	43,070	40,360	49,290
14	Kansas City	21,150	22,180	23,660	19,530	24,660	29,320	30,330	33,460	31,370	49,190
15	San Diego	25,590	28,440	26,000	31,860	39,240	39,980	42,080	38,810	28,910	29,330
	Top 15 Markets	**711,120**	**754,130**	**759,790**	**773,430**	**899,490**	**961,700**	**1,044,370**	**1,019,970**	**924,300**	**944,580**
	All Other Markets	690,770	716,040	728,210	620,670	649,920	646,140	737,930	726,930	730,070	708,960
	TOTAL - ALL MARKETS	**1,401,890**	**1,470,170**	**1,488,000**	**1,394,100**	**1,549,410**	**1,607,840**	**1,782,300**	**1,746,900**	**1,654,370**	**1,653,540**

SOURCE: DOT, *Air Passenger Origin-Destination Survey.*

International O&D Passengers

Most passengers originating in Denver and bound for destinations outside the U.S. have been forced to take domestic flights to other U.S. airports and connect there with international flights. These domestic portions of international trips have shown virtually no growth at the Airport over the past two years; 96,600 of these passengers boarded flights at DEN in the second quarter of 1995 compared to 95,700 in the same period of both 1993 and 1994.

Connecting Passengers

The key factor in the recent decline in passenger enplanements at DEN is the loss of connecting traffic. Compared to a drop of nearly five percent (361,000 enplaned passengers) from 1993 to 1994, connecting traffic was down by over 15 percent (nearly 300,000 enplaned passengers) on a year-over-year basis in each of the first two quarters of 1995. (See Figure 12.)

The loss of connecting passengers at DEN, however, was no greater in the second quarter of 1995 than in the first quarter of the year. This suggests that the actual opening of the new Airport had little direct impact on connecting traffic, although it could be argued that anticipation of the new Airport had been one factor in Continental's decision to draw down its hubbing operation at DEN.

Compared to 1988, when roughly 55 percent of all enplaned revenue passengers at DEN were connecting, a substantial shift in the passenger mix had occurred by the second quarter of 1995, when connections accounted for less than 47 percent of all enplanements at the Airport.

With respect to total enplanements at DEN in the first half of 1995, the loss of connecting traffic more than offset the gain in domestic pure O&D passengers. From a purely financial standpoint, it is interesting to note that the revenue generated for the Airport by the additional originating passengers may well have outweighed the revenue lost from the passengers who decided to make their flight connections at other airports.

We estimate that Continental and its codesharing partners enplaned between 600,000 and 800,000 connecting passengers at DEN in each quarter throughout 1993. The fact that the Airport lost only 475,000 connecting passengers between the second quarter of 1993 and the same quarter of 1995 suggests that the other airlines at DEN, and particularly United, picked up as much as 40 percent of Continental's connecting traffic. This reinforces the view expressed by United's regional vice-president that Denver's location makes it a natural hub.

3.8 IMPACT OF NEW DENVER AIRPORT ON RECENT GROWTH OF LOW-FARE SERVICE AT COLORADO SPRINGS AIRPORT

Finding

The latter half of 1995 saw a dramatic increase in air service at Colorado Springs Airport, located only 67 highway miles south of Denver. Compared to 26 daily flight departures in November 1994, there were 71 daily flights a year later and enplaned passengers had more than doubled. This explosive growth was triggered by the start-up of Western Pacific Airlines in April 1995.

The state of Colorado's air travel market, taking into account the dismantling of Continental's hub at DEN, the resulting shortfall of seat capacity and reduction of competition in many DEN markets, and the minimal activity by low-fare airlines serving Colorado, was the key factor in the decision by Western Pacific management to base the airline at Colorado Springs. The availability of immediate terminal and gating capacity at relatively low cost at the new airport in Colorado Springs undoubtedly also influenced the airline's founders.

The opening of the new Airport at Denver, particularly its location north of the city, was certainly fortuitous for the new airline. Some Colorado Springs passengers that previously had driven to DEN began to originate their air trips at the local airport, and Western Pacific reported that it was attracting many customers who live in the suburban areas south of Denver. But it appears that neither the choice of Colorado Springs as home base for Western Pacific, nor the timing of the airline's start-up, was predicated on the opening of the new Airport at Denver.

Discussion

Starting in the spring of 1995, the Colorado Springs Airport (COS) experienced a dramatic increase in air service and passenger traffic. Historically, about 800,000 passengers had boarded flights at COS each year; by the fall of 1995, enplanements were running at an annualized rate of 2 million passengers. The discussion that follows traces the recent history of air service at COS and discusses the basis for this rapid explosion of traffic activity.

Changes in Jet Service through 1994

TWA reduced its service at COS over the summer of 1992, from five to three daily flights, and then to two daily flights in mid-1994. During the same two-year period, Continental eliminated its eight daily departures at the airport as part of the airline's overall redeployment of its aircraft to eastern markets. In concert with its decision not to continue Morris Air's service at DEN, Southwest terminated the carrier's two daily flights at COS in October 1994.

In contrast to these cuts in service, United increased its presence at COS over the 1992-94 period. United added a second daily nonstop flight to Chicago and two more daily flights to DEN.

By November 1994, however, the airport was served by only four jet airlines operating 26 daily departures: eight flights to DEN and the remainder to seven other nonstop destinations. The only destination with competitive (i.e., two-carrier) service was Dallas/Ft. Worth. Fares paid by travelers boarding flights at COS were at levels, on average, that were comparable to those paid by passengers at DEN.

This net decline in service at COS through the end of 1994 does not support the popular theory that airlines were driven by the specter of a soon-to-be-opened high-cost facility in Denver to seek the haven of a lower-cost airport nearby. At the level of fares being charged for travel to and from COS, there was simply a limited volume of travelers, and no airline serving the airport chose to lower its fares in order to stimulate that demand. These conditions continued to prevail through the first quarter of 1995.

Increase in Air Service in 1995

On April 18, 1995, after a brief but attention-getting promotional campaign, Western Pacific Airlines offered its first scheduled flights from its base at COS. Because it introduced its new low-fare service at COS at the same time as airlines at DEN were increasing their fares, Western Pacific was the beneficiary of a great deal of positive media coverage. The flights rapidly attracted passenger traffic, and Western Pacific quickly expanded to several more destinations.

In response, all of the existing airlines at COS matched Western Pacific's fares and increased the frequency of their flights at the airport. In the months that followed, three additional airlines introduced service at COS. Northwest offered three daily flights to its Minneapolis-St. Paul hub. Reno Air launched thrice-daily service to Las Vegas. And Continental, which previously had served COS as simply an add-on to its DEN flights, introduced two daily flights to each of its hubs at Houston and Newark. In mid-October, United lowered its ticket prices on selected flights in 13 city-pair markets from DEN in order to match fares being offered to those destinations by Western Pacific out of COS.

By November 1995, then, COS was served by nine jet airlines operating 71 daily departures to 20 destination cities. Western Pacific offered twenty daily flights to 13 of those cities, while the other airlines provided 51 flights to 12 destinations. Fares on most routes had fallen significantly from earlier in the year, and monthly enplanements at the airport had more than doubled. COS was in the process of constructing three more gates and planning to add an entire new concourse within two years.

Basis for Establishment and Growth of Western Pacific Airlines

Western Pacific accounted for more than one-third of all enplanements at COS by the early fall of 1995. The airline's vice-president of sales and marketing, Tom DeNardin, advised that Western Pacific made a profit on its operations in July and August, lost money in September and October, and was forecasting profits in November and December.

Based on discussions with Mr. DeNardin and a senior airport official at COS, it appears that the primary basis for Western Pacific's choice of COS as its headquarters and operating base, and its subsequent success in developing traffic there, was simply the market opportunity that presented itself. An important but secondary reason was the location of COS and its newly-expanded capacity. Although the opening of the new Denver Airport was a positive factor in the recent growth of traffic at COS, it was not a major element in the selection of COS as home for the new airline.

The founders of Western Pacific identified a sizable untapped potential in the Colorado air travel market. The dismantling of Continental's hub at DEN left a shortfall of seat capacity and a reduced level of competition in many markets. At the same time, airline activity at COS had waned in recent years. Not only were fares comparable at the two airports, but also low-fare airlines had established only a minimal presence in the Colorado market. By its actions following acquisition of Morris Air, Southwest Airlines showed no interest in serving either COS or DEN.

COS represented a favorable location from which a start-up, low-fare airline could operate. The Colorado Springs area (population 400,000) is a substantial O&D market in itself, and it is located within a 75-minute drive from the much larger Denver market. For many years, a certain share of Colorado Springs air travelers had used the highway to originate at DEN, attracted by the greater choice of nonstop services; these travelers represented potential traffic for COS if they could be attracted to a new air service there. Finally, COS had just completed expansion of its runway system and terminal building and was offering its facility to airlines at a lower cost than Stapleton (and subsequently, at a much lower cost than at the new Airport in Denver).

Mr. DeNardin indicated that Western Pacific would have established itself at COS whether or not the new Denver Airport was built, and that the similarity in timing between his company's start-up and the Airport opening was purely coincidental. He acknowledged that Southwest had elected not to return to Denver because it foresaw the high costs that would accompany the new Airport, but he pointed out that Southwest also turned down the opportunity to maintain operations that Morris Air had established at COS. He also stated that relocation of Denver's Airport to the north of the city made flying from COS more attractive to residents of Denver's southern suburbs.