

July 2001

# AVIATION COMPETITION

## Restricting Airline Ticketing Rules Unlikely to Help Consumers





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## Abbreviations

BACK	Back Aviation Solutions
DOJ	Department of Justice
DOT	Department of Transportation
FAA	Federal Aviation Administration
O&D	Origin and Destination Survey
TRB	Transportation Research Board



United States General Accounting Office  
Washington, D.C. 20548

July 31, 2001

The Honorable Ernest F. Hollings  
Chairman  
The Honorable John McCain  
Ranking Minority Member  
Committee on Commerce,  
Science, and Transportation  
United States Senate

The Honorable Don Young  
Chairman  
The Honorable James L. Oberstar  
Ranking Democratic Member  
Committee on Transportation  
and Infrastructure  
House of Representatives

Passengers on the same commercial airline flight—sometimes even those in adjoining seats—may pay fares that vary widely. This fact has led to dissatisfaction by some passengers who believe their ticket prices are too high and that airline ticketing practices are unfair. In an effort to reduce their cost of flying, some passengers have attempted to use “hidden-city” and “back-to-back” ticketing opportunities. Hidden-city ticketing occurs when a passenger books a flight to one city but purposely deplanes at an intermediate city. Though never intending to make the last leg of the flight, the passenger purchases the ticket because it is cheaper than a ticket to the intermediate city. Back-to-back ticketing occurs when a passenger buys two round-trip discounted tickets that include a Saturday night stay but either uses only half the ticket coupons or uses all the coupons out of sequence. This practice results in a lower price than would be possible by purchasing round-trip tickets that did not include a Saturday night stay.

Most airlines expressly forbid the use of hidden-city and back-to-back ticketing. When passengers purchase tickets, they enter into a legally binding contract with the carrier to receive transportation between two locations at specified prices and to use tickets exactly as issued.<sup>1</sup> Tickets

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<sup>1</sup>This agreement is referred to as the “contract of carriage.” The terms of this contract between the passenger and airline are contained by reference in the ticket itself and in a separate document.

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contain a written reference to the terms and conditions set forth in this contract. The airlines view a failure to use tickets exactly as issued—such as by taking advantage of hidden-city and back-to-back opportunities—as a possible breach of contract for which the airlines can demand compensation.

Members of Congress have proposed several bills that would eliminate the prohibition imposed by most U.S. passenger airlines against hidden-city and back-to-back ticketing.<sup>2</sup> The Wendell H. Ford Aviation Investment and Reform Act for the 21st Century (AIR-21) required us to study the potential impact of legalizing these ticketing practices.<sup>3</sup> As agreed with your offices, in response, we assessed (1) the factors that airlines consider when setting fares; (2) the factors that create hidden-city ticketing and the pricing practices that foster back-to-back ticketing practices; (3) the potential effects on airfares and service, especially to consumers in small communities, of a legislative requirement to permit hidden-city ticketing; and (4) the potential effects on airfares and service of a legislative requirement to permit back-to-back ticketing.

To address these objectives, we contacted consumer advocates, travel agency representatives, independent industry experts (e.g., academicians, financial analysts, and consultants), and airline officials. We reviewed relevant literature about airline pricing practices, and used this and other data to analyze how the airlines set prices, and evaluated the viewpoints of officials from major U.S. passenger airlines.<sup>4</sup> We analyzed fare data for selected markets for each airline to determine whether hidden-city

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<sup>2</sup>Several bills proposed in the previous Congress, including H.R. 700, H.R. 2200, H.R. 5347, and S. 2891, included language that would prohibit airlines from penalizing passengers for back-to-back and hidden-city ticketing. These bills had language to the effect that airlines would not be allowed to prohibit a person who purchases air transportation from using only a portion of the air transportation purchased or assess an additional fee or charge to such person or any ticket agent that sold the air transportation to such person. Bills in the current Congress, including H.R. 332, H.R. 384, H.R. 907, and H.R. 1074, contain similar language.

<sup>3</sup>P.L. 106-181, Section 226.

<sup>4</sup>The Department of Transportation (DOT) generally groups airlines based on their total annual operating revenues. Major airlines are those with annual operating revenues of \$1 billion or more. The six major airlines that were the focus of our study were American Airlines (American), Continental Airlines (Continental), Delta Air Lines (Delta), Northwest Airlines (Northwest), United Airlines (United), and US Airways. We also interviewed officials with Southwest Airlines (Southwest).

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ticketing opportunities exist. We also examined the size of communities where those opportunities existed. Because our fare data were not drawn from a statistical random sample, the results are not projectable to all markets. We did not conduct a similar analysis for back-to-back ticketing because the opportunity to use this practice exists in all markets. We provided a copy of our draft to industry experts for review and comment. Additional information on our scope and methodology can be found in appendix I.

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## Results in Brief

Airlines maximize profits by setting fares based on the supply of and demand for travel in each market (i.e., a specific origin and destination) by passengers with different travel objectives. When setting fares for each market, a key factor that airlines consider is the amount of competition from other airlines offering similar “products”—scheduled air travel between two different points. Fares tend to be higher for travel to and from markets in which competition is limited, particularly those markets in which the origin or destination are major carriers’ hubs. Conversely, fares tend to be lower in markets with more competition. Airlines also set fares that respond to passenger demand by differentiating among travelers with varying requirements. In general, airlines charge higher fares for tickets that allow travelers to fly on short notice and retain the flexibility to change or cancel their trip without penalty—generally business travelers. According to industry experts, airlines have economic justification for charging higher fares to these travelers, based on the costs of providing this type of product. In contrast, airlines often charge lower fares for tickets that require passengers to plan further in advance and meet various restrictions (e.g., Saturday night stay)—generally leisure travelers. According to airlines and expert sources, the relationship between fares and costs are complex because most of those costs (e.g., multiyear pilot labor contracts and the capital cost of aircraft) are largely fixed for multiyear periods. As a result, once the schedules are set, the airlines seek to maximize their profits by generating as much revenue as possible in each market and for each passenger.

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Hidden-city and back-to-back ticketing opportunities exist because of the way in which airlines maximize profits by setting fares that differ according to the market and type of passenger. Hidden-city opportunities may arise when a greater amount of competition exists for travel between spoke communities (i.e., destinations located “beyond” a hub airport) than on routes to and from hub communities, and where airfares in those markets reflect such competition. As a result, passengers whose real destination is the hub airport may be able to save money by purchasing a ticket with a lower fare to a spoke community but deplaning at the hub airport. For example, because of the differences in airfares for nonstop travel between Chicago and Dallas and for connecting travel from Chicago to San Antonio, a possible hidden-city opportunity existed for travel to Dallas. The fares for nonstop travel between Chicago and Dallas (available on two airlines) were approximately \$1,085. Five other airlines offered travel from Chicago to San Antonio, connecting at cities other than Dallas, that ranged from \$439 to \$1,108.<sup>5</sup> To compete with those prices, the fare from Chicago to San Antonio on one of the two airlines that connected at Dallas was \$904. Because of the fares and services other competing airlines offered between Chicago and San Antonio, a hidden-city ticketing opportunity existed for travelers between Chicago and Dallas that could allow passengers to save \$181 by purchasing tickets to San Antonio but deplaning in Dallas. Airlines we interviewed could not provide us estimates as to how frequently passengers use hidden-city ticketing but believe that few passengers use this practice because of the measures that airlines have taken to prevent its use.

Back-to-back ticketing opportunities occur because airlines maximize their profits by setting higher fares for purchase by passengers who normally travel during peak times, generally during the week (business passengers), and lower fares for purchase by passengers who travel at off-peak times and stay at their destination over the weekend (leisure passengers). Passengers who would otherwise not qualify for discounted fares may be able to circumvent the airlines’ Saturday night stay requirement to obtain lower fares. For example, rather than paying \$1,490 for a ticket purchased 14 days in advance of a flight for a trip that began on a Monday and returned on Friday, a passenger might purchase 2 roundtrip tickets, each of which includes a Saturday night stay for \$580 and use half of one ticket to depart and half of the other ticket to return. In this case, the passenger

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<sup>5</sup>Fare data obtained on May 30, 2001, for travel beginning May 31, 2001, and returning June 1, 2001, from Expedia.com.

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might be able to save \$910. However, airlines prohibit both back-to-back and hidden-city practices because they consider each travel itinerary sold as a separate product that they have priced according to a variety of factors. Thus, their officials reported that they take various measures to prevent their use. These measures include requiring travel agents who violated their contractual agreement with the airlines by selling tickets that were used by passengers to circumvent airline ticketing rules to compensate them for lost revenue or enforcing the terms of the contract of carriage by requiring reimbursement or confiscating the ticket from the passenger. Some airlines also said that they were working to improve their capacity to detect improper ticketing practices by deploying more sophisticated systems. However, these airlines could not provide us estimates that describe how frequently passengers use these practices.

According to industry experts and airline officials, if legislation required airlines to permit hidden-city ticketing, airfares in certain markets (i.e., for travel between certain spoke communities connecting over a hub) could increase immediately—especially in markets including some smaller communities. Airlines would take these actions to protect their revenues. Our analysis of hidden-city opportunities within selected markets found that the availability of hidden-city ticketing opportunities varied among airlines. However, our analysis indicates that business travelers tend to have a greater opportunity to acquire hidden-city tickets than leisure travelers. For instance, of the markets that we examined, hidden-city ticketing opportunities existed for 16 percent of business markets but only 1 percent of leisure markets. If demand for travel to and from these spoke communities eventually decreased in response to possible higher fares, airlines said that they would consider reducing or eliminating service to these markets. Industry experts agreed that such a reduction in service would be the airlines' likely response to a decrease in demand. While our analysis indicated that hidden-city opportunities existed in communities of all sizes, they were statistically more likely to exist in markets that included smaller communities. Because smaller communities generate relatively less passenger traffic and generally have fewer airlines providing them services, these smaller cities could be more vulnerable to potential service reductions, and possible further fare increases, than larger ones. Some airlines suggested that because permitting this practice would undermine the efficiencies of their hub-and-spoke networks, they would choose to concentrate on providing service on more heavily traveled routes.

Numerous variables—including the difficulty in using back-to-back ticketing and how competition could affect airlines' reaction in individual

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markets—make it difficult to predict the extent to which airlines would or would not increase fares in individual markets. Nevertheless, our discussions with industry experts and airline officials indicate that if back-to-back ticketing were permitted, airlines would likely decrease the attractiveness of such fares to business travelers by increasing fares for tickets designed for leisure passengers, adding more restrictions to their use, and potentially reducing service in some markets. Fares purchased by business travelers are important to airlines because they provide the majority of their revenue. Therefore, there is consensus among experts as well as airline officials that airlines are likely to take actions to reduce potential losses by making discounted fares more difficult for business passengers to obtain. This action could also have the effect of raising fares for leisure passengers, possibly reducing air travel by these price-sensitive passengers. As a result, should the number of leisure travelers decrease, airline officials and industry experts indicated that airlines might reduce capacity (e.g., by operating smaller aircraft or making fewer flights) in markets experiencing a notable decline in passengers. However, the number of leisure passengers who might seek alternative means of transportation would likely depend on the amount of the fare increase and perhaps the willingness of these passengers to plan further ahead to obtain fare discounts.

Based on our analysis of how airlines could react to permitting hidden-city and back-to-back ticketing, we believe that allowing these practices could have unintended consequences, including higher air fares and decreased service, for consumers. Nevertheless, consumer advocates and passengers have legitimate concerns that some fares are higher than what might be expected in a more competitive market. Thus, actions that promote competition would seem to offer long-term promise in assuring that fares reflect competitive pricing and provide some measure of relief from unduly high air fares for some consumers—primarily business consumers.

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## Background

Deregulation of the airline industry in 1978 ushered in an era of intense competition and resulted in a wide variety of fares, including discount fares, and flight options for passengers.<sup>6</sup> The variety of prices was made possible because deregulation allowed airlines to set fares for what airlines consider being distinct “products” (e.g., scheduled air transportation between two locations). For example, airlines consider a last-minute ticket that is available for nonstop jet travel between New York and Chicago to be a different product than a discounted ticket purchased weeks in advance for a flight between those same cities that makes multiple stops and includes turboprop service. Deregulation also brought about unanticipated changes, including the importance of hub-and-spoke networks by major carriers and the increased dominance of individual airlines at some hub airports.

Given the freedom to choose their own route structure and prices after deregulation, most major U.S. passenger airlines began to consolidate further their operations at airports, forming what are known as “hubs.”<sup>7</sup> Today, of the largest U.S. airlines, only Southwest Airlines (Southwest) does not use the hub-and-spoke model. With a hub-and-spoke network, carriers can combine “local” passengers (those originating at or destined to the hub) with “connecting” passengers (those not originating at or destined to the hub but traveling via the hub) on the same flight. In this manner, carriers can serve more cities and offer greater frequency of service with their fleet of aircraft than is possible with point-to-point service.<sup>8</sup>

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<sup>6</sup>See, for example, *Airline Deregulation: Changes in Airfares, Service Quality, and Barriers to Entry* (GAO/RCED-99-92, Mar. 4, 1999) and *Special Report 230: Winds of Change: Domestic Air Transport Since Deregulation*, Transportation Research Board, National Research Council, Washington, D.C., 1991. (See the attached list of related GAO products and selected bibliography.)

<sup>7</sup>For the purposes of this report, we are defining “hub” airport in terms of how airlines utilize airports to distribute passengers within their service network. In contrast, the Federal Aviation Administration (FAA) uses the term hub to refer to geographical areas that are based on the percentage of total passengers enplaned (boarded) in the area. For FAA purposes, a hub could include several airports.

<sup>8</sup>See, for example, Alfred E. Kahn, “The Competitive Consequences of Hub Dominance: A Case Study,” *Review of Industrial Organization*, Vol. 8, No. 4 (1993). Kahn developed an example illustrating that an airline with 10 aircraft serving 10 cities can serve 10 routes offering point-to-point service. He noted that if the airline operated flights to and from an intermediate hub, those same aircraft could serve 70 markets—5 destinations for each of the 10 cities plus 20 (in both directions) between each of the spoke cities and the hub.

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Major U.S. airlines generally operate hubs in several airports. For example, United has hubs in Chicago (at O'Hare International Airport), Denver, Los Angeles, San Francisco, and Washington, D.C. (at Dulles International Airport). As shown in figure 1, as of May 2001, United provided scheduled nonstop service from Chicago O'Hare to 115 destinations throughout the continental United States.

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**Figure 1: Markets Served by United Airlines From Its Chicago O'Hare Hub**



Source: GAO's presentation of data from the Kiehl Hendrickson Group.

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Airlines operating hub-and-spoke networks use comprehensive systems to set a wide variety of fares for each market (i.e., a specific origin and destination).<sup>9</sup> For each market, airlines might offer 25 or more different fare classes representing a variety of full-fare and discount tickets. Tickets within each fare class, especially discounted tickets, may be subject to different purchase requirements, such as requiring that a passenger buy a ticket a certain number of days before the departure date<sup>10</sup> and requiring travelers to stay at their destination over Saturday night. Airlines use their systems to determine the mix of full-fare and discounted fares that will produce the most revenue. Likewise, because many flights carry both local and connecting passengers, airlines use these systems to determine the mix of passengers that will generate the most revenue.

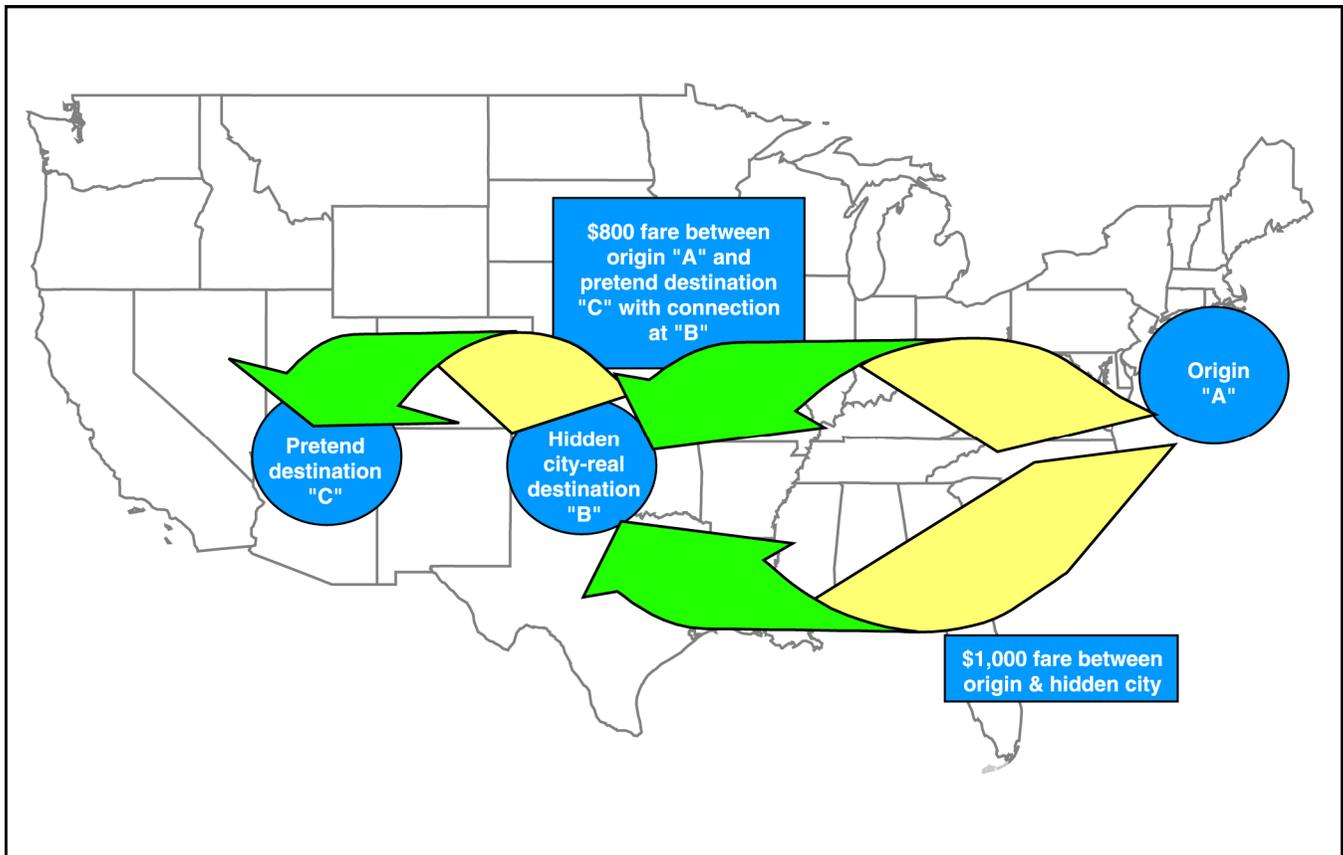
Hidden-city ticketing occurs when passengers purchase tickets with stopovers or connecting flights at a hub airport, intending to begin or end their travel at the hub airport and not the origin or final destination listed on the ticket. The hidden city is the hub airport. There are many ways in how passengers may attempt to use hidden-city ticketing. For example, passengers may attempt to use this ticketing practice when fares to a spoke community beyond the hidden city cost less than travel to the hidden city itself. A hidden-city opportunity exists, as illustrated in figure 2, if the fare between origin airport A and hub airport B is \$1,000 and the fare between airport A and airport C with a stop at hub airport B is \$800. In this case, a passenger could attempt to reduce the cost of travel from A to B by booking a ticket to airport C but departing the flight at hub airport B.

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<sup>9</sup>This definition is consistent with that applied in analyses of the airline industry. For example, the Department of Justice (DOJ), in its analyses of the possible effects of proposed mergers in the airline industry, defines the relevant market as scheduled airline service between a point of origin and a point of destination. This is often, but not always, defined as a city-pair. In addition, DOJ recognizes that nonstop service between cities is important because business travelers are less likely to regard connecting service as a reasonable alternative.

<sup>10</sup>The number of days prior to a flight that a passenger must purchase a ticket to obtain a discount is known as an “advance purchase requirement.”

Figure 2: Example of How a Hidden-City Ticketing Opportunity Might Arise



Source: GAO's presentation.

Passengers use back-to-back ticketing to circumvent the airline's practice of limiting the availability of more deeply discounted fares to passengers who stay at their destination on Saturday nights. Airlines normally offer passengers who make advance purchases and stay on Saturday nights discounts off of the full fare. Smaller discounts are generally available to passengers who purchase tickets in advance but who do not remain through Saturday night. As indicated in table 1, a passenger who purchases a ticket 28 days in advance could save \$1,240 by staying over on Saturday night.

**Table 1: Example of Fares Available for Passengers Booking Tickets With a Saturday Night Stay Restriction**

	Advance purchase requirement to obtain a round-trip fare between Dallas/Fort Worth and Los Angeles				
	1-day	7-day	14-day	21-day	28-day
Fare without a Saturday night stay restriction	\$2,006	\$1,490	\$1,490	\$1,490	\$1,490
Fare with a Saturday night stay restriction	\$2,006	\$1,490	\$290	\$250	\$250
<b>Difference</b>	<b>\$0</b>	<b>\$0</b>	<b>\$1,200</b>	<b>\$1,240</b>	<b>\$1,240</b>

Source: American Airline's Internet Web site. Fares obtained on April 24, 2001, for travel departing on April 25, May 1, May 8, May 15, and May 22, 2001.

Numerous variations exist for using back-to-back ticketing. For instance, passengers who need to travel to the same location on consecutive weeks could purchase two discounted round-trip tickets that meet airlines' requirements for a Saturday night stay. These passengers could then save money by using the departure and return portions of both round-trip tickets, provided they use the ticket coupons out of sequence. To do so, one round-trip ticket must have as its origin the passenger's real point of origin, and the other round-trip ticket must have as its origin the passenger's real point of return. As shown in table 2, a passenger could purchase two 14-day advance tickets for \$580 and save \$1,200 on each trip, or \$2,400 in total.

**Table 2: Example of Using Back-to-Back Ticketing to Obtain Lower Fares on Two Trips**

	Departure	Return	14-day advance purchase fares (with Saturday stay over)	14-day advance purchase fares (without Saturday stay over)
<b>Real ticket itineraries</b>				
A to B to A	Mon. May 7, begin trip #1	Fri. May 11, return trip #1	N/A	\$1,490
A to B to A	Mon. May 14, begin trip #2	Fri. May 18, return trip #2	N/A	\$1,490
<b>Purchased ticket itineraries</b>				
A to B to A	Mon. May 7, begin trip #1	Fri. May 18, return trip #2	\$290	N/A
B to A to B	Fri. May 11, return trip #1	Mon. May, 14 begin trip #2	\$290	N/A
<b>Total</b>			<b>\$580</b>	<b>\$2,980</b>

Legend: N/A=not applicable

Source: American Airlines' Internet Web site. Fares obtained on April 24, 2001.

Another variation could be where a passenger uses only the departure coupons of each round-trip and throws away the unused coupons. For example, this same passenger could purchase two 14-day advance tickets for \$290 each (\$580 total), discard the unused portions, and still save \$910 from the \$1,490 14-day advance purchase fare.

## Airlines Base Fares Primarily on Competition in Distinct Markets

Airlines set their fares in individual markets based on a complex mix of economic and financial factors, but primarily on the supply of and demand for air transportation by passengers with different travel requirements. For each market, competition from other airlines is an important factor affecting fare levels. Airlines generally charge higher fares to business passengers and lower fares to leisure passengers based on their differing travel needs, along with passengers' differing abilities and willingness to pay for travel. Airlines do not directly set fares based on the costs of providing individual flights. Because most of the costs of operating an airline are fixed, an airline's ability to earn profits depends on its ability to maximize passenger ticket revenues.

## Major Airlines Assess the Supply of Air Travel in Setting Fares

Airlines set fares for travel between specific origins and destinations based largely on the competitive amount of transportation services from other airlines offering similar services. Different airlines may supply transportation services in a given market, although the service they provide

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can vary (e.g., nonstop as opposed to connecting flights). Passenger demand for those products likewise varies, depending on a traveler's particular objectives.

Airlines may compete for passengers in a market through various ways—for example, through price and service quality. Service quality may differ according to various dimensions, but can generally be expressed in terms of the type of aircraft used (jet or turboprop), connections made on a flight (nonstop or connecting), and service quantity.<sup>11</sup> The quantity of service supplied is a reflection of the number of seats available for purchase in a market, which depends both on the size of the aircraft operated and how frequently service is provided in the market.

The amount of competition from other airlines supplying similar service is a key factor in determining the price of an airline ticket. Markets where competition is limited tend to have higher fares than markets with more competition. Many markets to and from airlines' hubs—which are usually dominated by those airlines—often have relatively little nonstop competition.<sup>12</sup> This is especially true in markets between a carrier's hubs. Some research has shown that fares in those markets tend to be relatively higher than fares in other markets. For example, in January 2001, DOT concluded that market power exercised by major airlines at their hubs led

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<sup>11</sup>We have traditionally measured service quality using these criteria. See, for example, *Airline Deregulation: Changes in Airfares, Service Quality, and Barriers to Entry* (GAO/RCED-99-92, Mar. 4, 1999). That report noted that there are other measures of service quality as well, such as on-time performance.

<sup>12</sup>Following definitions applied by us in earlier reports, an airport is considered “dominated” if a single airline carries more than 50 percent of passenger enplanements there. For example, in 2000, US Airways dominated Pittsburgh International Airport, as it carried about 86 percent of passenger enplanements there. Passenger enplanements represent the total number of passengers boarding an aircraft.

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to high fares at those dominated hub airports.<sup>13</sup> In addition, we reported earlier this year that major airlines dominated 16 of the 31 largest U.S. airports, at which about 260 million passengers traveled in 1999. Many of these airports also serve as airline hubs. Low-fare airlines competed at less than one-fourth of these airports.<sup>14</sup> Conversely, airfares tend to be lower in markets where more airlines compete. Thus, airlines operating hub-and-spoke networks compete directly with one another for passengers flying between spoke communities, but connecting over their own hubs.<sup>15</sup> For example, nine airlines provide competing service between Baltimore, Maryland, and Portland, Oregon, via hubs such as Dallas/Fort Worth, Texas and Atlanta, Georgia.

Airlines also set fares based on the advantage of maintaining or increasing a flow of passengers through their hub airports. Consolidating a greater number of passengers on individual flights at hub airports reduces an airline's costs of serving each passenger. This practice also helps make possible more frequent departures to a large number of cities, thereby making the airline's services more attractive to travelers.<sup>16</sup> The Transportation Research Board (TRB), in its 1999 report on competition in the airline industry, observed that flight frequency is especially important

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<sup>13</sup>*Domestic Aviation Competition Series: Dominated Hub Fares*, U.S. Department of Transportation, Office of the Assistant Secretary for Aviation and International Affairs, (Jan. 2001). Based on a comparison of fares at 10 dominated hub airports, DOT estimated that 24.7 million passengers in hub markets with no low-fare competitor paid on average 41 percent more than those flying in hub markets with low-fare competitors. DOT concluded that lack of low-fare price competition, not other factors such as a concentration of high-fare business travelers, resulted in these higher prices. The Transportation Research Board noted that relatively higher fares at hubs may also reflect the costs of serving larger numbers of business passengers, including those costs associated with schedule frequency, but that the higher proportion of business passengers may also provide hubbing airlines the opportunity to raise fares above the cost of efficiently providing frequent service.

<sup>14</sup>See *Aviation Competition: Challenges in Enhancing Competition in Dominated Markets* (GAO-01-518T, Mar. 13, 2001).

<sup>15</sup>Anming Zhang, "An Analysis of Fortress Hubs in Airline Networks," *Journal of Transport Economics and Policy*, Vol. 30, No. 3 (1996), pp. 293-308.

<sup>16</sup>Oum, Tae Hoon, and others, "Airline Network Rivalry," *Canadian Journal of Economics*, Vol. 28, No. 4a (1995).

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to business travelers because many fly rather than drive to save time.<sup>17</sup> Thus, airlines may set fares in some markets at levels designed to stimulate passenger traffic into their hubs, thereby benefiting their network as a whole, as well as many passengers and communities.

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### Airlines Assess the Demand for Travel by Passengers With Different Needs When Setting Fares

Airlines also take into account passengers' demands for their different products when setting fares. The prices of airline tickets reflect not just differences in the type of service provided, as discussed above, but also various conditions or restrictions that reflect different passengers' travel requirements. For example, some tickets allow passengers to obtain a full refund or to make changes to their itinerary without penalty, while other tickets include more restrictions on their use. The prices that airlines charge for such different tickets vary accordingly.

The industry generally segments potential passengers into two categories—those traveling for business purposes and those traveling for leisure purposes. These groups of passengers have different travel requirements. For instance, because business travelers must often make travel arrangements at the last minute, they value the ability to purchase tickets on short notice, make changes to their itineraries, and cancel reservations. Conversely, because leisure passengers are traveling for personal reasons, they tend to make reservations further in advance and keep such plans fixed. Leisure travelers also tend to be more sensitive to the cost of travel and are more likely to forego travel that does not fit in their budgets. Figure 3 identifies some of the assumptions that airlines make when distinguishing between types of passengers.

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<sup>17</sup>*Special Report 255: Entry and Competition in the U.S. Airline Industry: Issues and Opportunities*, Transportation Research Board, National Research Council, Washington, D.C., 1999.

**Figure 3: Characteristics Associated With Business and Leisure Travelers**



Source: GAO's summary of information provided by major airlines and economic literature.

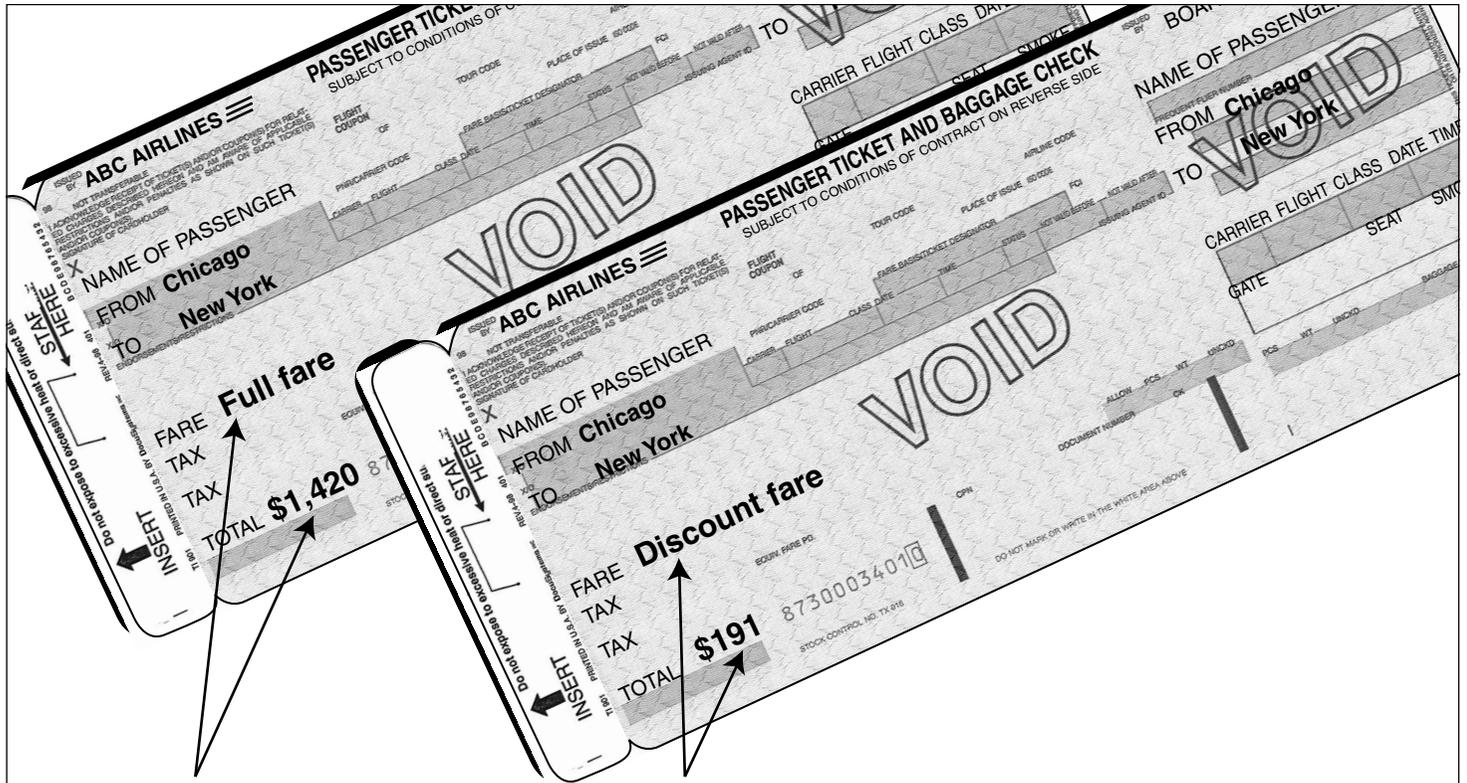
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In general, business travelers tend to place greater value on tickets that (1) can be bought at the last minute to meet urgent needs, (2) entitle them to nonstop travel to their destination at the times they want or need to arrive, and (3) can be exchanged or cancelled without penalty.<sup>18</sup> These characteristics are typical of those demanded by business travelers, who tend to be less sensitive to airfare costs. Conversely, a ticket that allows a passenger to travel between two points but on connecting flights at off-peak times represents a different product for which airlines may charge a lower price. Airlines price the fares for tickets with these different features accordingly—setting higher fares for tickets with no restrictions, which they consider more valuable to business travelers and providing discounts on tickets that carry other restrictions or conditions, which are designed to appeal to leisure travelers. Figure 4 identifies the different characteristics of full-fare and discounted tickets.

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<sup>18</sup>TRB's 1999 report noted that fares paid by travelers in the same market can vary widely because of differences in the cost of traveling at different times of the day or week. Higher fares should be expected for travel during peak times when demand is greatest and resources are tight. *Special Report 255: Entry and Competition in the U.S. Airline Industry: Issues and Opportunities*, Transportation Research Board, National Research Council, Washington, D.C., 1999.

**Figure 4: Characteristics of Full and Discounted Fares**



Full Fare: Chicago–New York = \$1,420	Discount Fare: Chicago–New York = \$191
<ul style="list-style-type: none"> <li>• No advance purchase requirements</li> </ul>	<ul style="list-style-type: none"> <li>• 14-day advance purchase requirement</li> </ul>
<ul style="list-style-type: none"> <li>• <i>Last seat availability</i> on all flights</li> </ul>	<ul style="list-style-type: none"> <li>• Good, but limited, availability</li> </ul>
<ul style="list-style-type: none"> <li>• No minimum stay requirements</li> </ul>	<ul style="list-style-type: none"> <li>• Minimum stay requirement (Saturday night)</li> </ul>
<ul style="list-style-type: none"> <li>• Fully refundable and exchangeable</li> </ul>	<ul style="list-style-type: none"> <li>• Nonrefundable and nonexchangeable</li> </ul>
<ul style="list-style-type: none"> <li>• No travel restrictions</li> </ul>	<ul style="list-style-type: none"> <li>• Fee required to change travel times</li> </ul>

Source: GAO’s summary of information provided by major airlines and economic literature. Fares and fare rules obtained through Expedia.com on April 2, 2000.

Because business travelers do not want to stay at a business destination over a weekend, airlines generally use a Saturday-night stay requirement to distinguish them from leisure travelers. According to some airline officials, airlines consider this distinction to be a more powerful tool than the advance purchase requirement to segment the market between business

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and leisure travelers. Given the requirements of business travel, business passengers often have no choice but to pay the fares set by the airlines. Business passengers generate a high percentage of the airlines' revenue. Estimates vary, but industry experts generally estimate that business travelers account for 30 to 50 percent of the passenger traffic and between 60 to 80 percent of industry revenue.

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### Airlines Have Some Economic Justification for Charging Higher Fares to Some Passengers

Since airlines primarily account for the supply of and demand for air transportation services when setting fares, the relationship between fares and the cost that an airline may incur to operate a particular flight is complex. This relationship depends upon (1) consumer demand for different types of air service, (2) the cost of providing these services, and (3) the level of competition for these services in each market.

A large portion of airlines' costs are fixed in advance, varying relatively little by flight or by the total distance flown. As a result, airlines can maximize profits best by maximizing the total amount of revenue they generate through each passenger ticket. For airlines, this also means charging higher airfares for products they consider more expensive to supply.

Experts generally agree that there are economic justifications for airlines to charge higher fares for tickets that permit travelers to fly at the last minute, receive a refund for unused tickets, and change reservations without penalty. To keep seats available for passengers who book seats at the last minute, generally business travelers, airlines may limit the availability of discount fares for passengers who may have wanted to buy those seats several weeks before the flight's departure. At the same time, however, the airlines risk not selling these seats at all.<sup>19</sup> Thus, when airlines price full-fare tickets, they take into consideration the high "opportunity cost" of not selling those seats. Simply put, then, airlines may charge business passengers higher fares, in part, because they are more expensive to serve.

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<sup>19</sup>For this reason, airlines view seats as perishable products—that is, a product that loses all of its value, if it remains unused. An airline cannot sell unfilled seats once an aircraft pushes back from the gate. Other businesses, such as hotels, sell products with similar characteristics.

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From an airline's perspective, this approach makes sense because of the relationship between fares and their costs. According to industry experts and airline officials, a high percentage of airline costs are fixed in advance of a flight's departure.<sup>20</sup> Some of these fixed costs include capital costs (e.g., purchasing aircraft and operating airport facilities), labor costs (e.g., multiyear pilot contracts), and overhead. These costs change little, regardless of whether an aircraft is flying with a full load of high-fare passengers during peak business times or flying nearly empty late at night with leisure passengers. Because airline costs are largely predetermined, once schedules are set, airlines focus on generating as much revenue as possible from each passenger in each market rather than trying to cover these costs.

TRB's 1999 report on competition in the airline industry also stated that airlines may not be able to cover the total cost of providing frequent service without the ability to charge different fares to different passengers, particularly higher fares to business passengers.<sup>21</sup> In industries such as commercial aviation, which is characterized by relatively high fixed costs and low marginal costs, uniform prices set at marginal costs may not recover an airline's total costs unless it is able to charge different prices to different buyers (an economic action known as "market segmentation"), reflecting those passengers' different sensitivities to airfare costs. If an airline were not able to use market segmentation (i.e., differentiating between business and leisure passengers), it might not be able to cover the total cost of providing frequent and extensive service. As a result, certain groups of passengers—whether business, leisure, some combination of both, or those in particular communities—who valued the service would not, for instance, be able to fly as frequently. Thus, the ability of airlines to use market segmentation may be advantageous to airlines and some consumers.<sup>22</sup> However, there is debate among experts about the extent to

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<sup>20</sup>These estimates vary. For instance, as indicated by one set of experts, approximately 80 to 90 percent of total airline costs may be fixed far in advance of individual flights. See Paul Stephen Dempsey and Laurence E. Gesell, *Airline Management: Strategies for the 21<sup>st</sup> Century* (Chandler [Ariz.]: Coast Aire Publications, 1997).

<sup>21</sup>Special Report 255: Entry and Competition in the U.S. Airline Industry: Issues and Opportunities. Transportation Research Board, National Research Council, Washington, D.C., 1999.

<sup>22</sup>TRB's 1999 report notes that price discrimination in the airline industry might not be particularly desirable in the long term unless it can be tested by open entry and competition.

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which such price differentiation is beneficial to consumers, and whether less price dispersion would be more beneficial.

At the same time, however, TRB's 1999 report noted that airlines may have become too skilled at identifying passengers who are less sensitive to paying high prices—business passengers—and too eager to charge them “excessive” fares above the level necessary to provide service. The report also notes that a protection against an airline's ability to charge excessive fares is the ability of new airlines to enter those markets and compete.

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### Challenges Remain to Effectively Oversee and Promote Competition

Relatively high airfares are a reflection, in part, of how individual airlines dominate airports and markets. As noted earlier, in 1999, major airlines dominated 16 of the 31 largest U.S. airports, facing low-fare competition at just 3 airports.<sup>23</sup> Although dominance at an airport, in and of itself, is not anticompetitive, research has shown that routes to and from dominated airports tend to have higher airfares than routes to and from airports that have more competition from other airlines. In addition, dominant carriers often have exclusive access to essential facilities at airports, as well as sales and marketing practices, which combine to limit the ability of new entry carriers to enter markets and compete with them.

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<sup>23</sup>Consistent with previous reports on airline competition, we adopted DOT's definition of a competing airline as one with a market share of 10 percent or more. See, for example, *Aviation Competition: Issues Related to the Proposed United Airlines—US Airways Merger* (GAO-01-212, Dec. 15, 2000). In this report, we adapted that definition to include only airlines with 10 percent or more of available scheduled seating capacity.

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As we reported in March 2001, the federal government faces significant challenges in enhancing competition, particularly in dominated markets. In a recent case involving alleged predatory practices, DOJ exercised its authority under the Sherman Antitrust Act to prevent monopolization by filing a complaint against American Airlines. DOJ alleged that American violated the Sherman Act by attempting to monopolize service out of Dallas-Fort Worth by increasing capacity and reducing fares "well beyond what makes business sense," to drive new competitors, such as Vanguard and Western Pacific Airlines, out of the market. However, in April 2001, the federal district court in Kansas granted summary judgment for American.<sup>24</sup> DOJ has since announced that it is appealing that ruling.

DOT generally has not taken enforcement action against airlines for alleged anticompetitive behavior concerning airline mergers and predatory practices.<sup>25</sup> This includes the period during the 1980s when DOT approved a wave of mergers, such as Trans World Airline's (TWA's) acquisition of Ozark, as well as more recently, with respect to DOT's authority to prohibit unfair methods of competition (e.g., predatory practices). While DOT is not required to take action to ensure or enhance competition, it has taken some actions more recently to enhance competition, such as using its authority to grant more slots to new entrants. DOT has used this authority to investigate several complaints of predatory practices by major air carriers against new entrants. Based on these complaints, in April 1998, DOT proposed guidelines for the use of DOT authority over predatory practices. However, DOT did not finalize or implement those guidelines, since the DOT Secretary decided that DOT should adopt standards through

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<sup>24</sup>In another case dealing with an airline merger, DOJ successfully opposed the proposed Northwest-Continental merger using its authority under the Sherman and Clayton Antitrust Acts and the Hart-Scott-Rodino Act to review airline mergers and prohibit anticompetitive behavior. Proposed in 1998, this acquisition would have given Northwest 51 percent of the voting rights in Continental. In January 2001, DOJ withdrew its lawsuit when Northwest agreed to divest all but 7 percent of its voting interest in Continental. However, according to Continental officials, Northwest still retains the right to block certain change of control transactions.

<sup>25</sup>DOT has no current authority to approve mergers, but it does have general authority under 49 USC 41712 to act against what it considers to be an unfair or deceptive practice or an unfair method of competition in air transportation.

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a case-by-case approach.<sup>26</sup> The extent to which DOT's authority under section 41712 applies to predatory practices is unclear.<sup>27</sup> Because DOT has not exercised its authority in the area of predatory practices, the way in which this provision will be interpreted and applied is unclear.

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## Airlines' Pricing Practices, Coupled With Varying Consumer Demand and Competition, Produce Hidden-City and Back-to-Back Ticketing Opportunities

Hidden-city and back-to-back ticketing opportunities exist because of the way in which airlines maximize revenue by setting fares that vary according to market and type of passenger. Hidden-city opportunities may occur when airfares in markets between spoke communities are less than in markets to and from airline hub airports. Differences in the amount and type of competition from other airlines often explain variations in fares. In turn, back-to-back ticketing opportunities occur because airlines are able to charge different fares to business and leisure passengers. The contract of carriage allows the airlines to prohibit certain uses of tickets, thus letting the airlines differentiate between types of passengers.

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## Limited Competition From Other Airlines Into Hub Airports Contributes to the Creation of Hidden-City Opportunities

The extent and type of competition in various markets—and particularly the differences in fares that result from that competition—help create the conditions under which hidden-city ticketing opportunities may occur. If an airline faces little or no competition for nonstop service in markets to or from one of its hubs, especially from low-fare carriers, it may set airfares in that market at high levels. As noted earlier, many markets to and from airlines' hubs often have relatively little nonstop competition. Conversely, in markets between spoke cities, where more competition exists from other carriers for connecting service, fares may be relatively lower. As a result, the combination of competition in two markets—first, to an airline's

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<sup>26</sup>The Secretary stated in January that DOT's review of the TRB report on the proposed guidelines, along with additional analyses, confirmed that airlines engage at times in unfair competitive practices designed to eliminate or reduce competition and that it should take action to prevent such practices.

<sup>27</sup>Under 49 U.S.C. 41712, DOT has the authority and the responsibility to prohibit an unfair or deceptive practice or an unfair method of competition in the airline industry, which allows DOT to block anticompetitive practices that violate antitrust principles. This authority was intended to protect consumers from trade practices, which are unfair, misleading, contrary to recognized public policy, or a violation of antitrust laws or principles. Acting under this authority, DOT has promulgated regulations and taken enforcement actions in such areas as computer reservation systems, airline advertising, and the notice that airlines must give passengers of contractual terms between the passenger and the carrier.

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hub where less competition may exist for nonstop service and second, to another location that may be served by numerous airlines with competing service—can create a hidden-city ticketing opportunity at an airline’s hub.

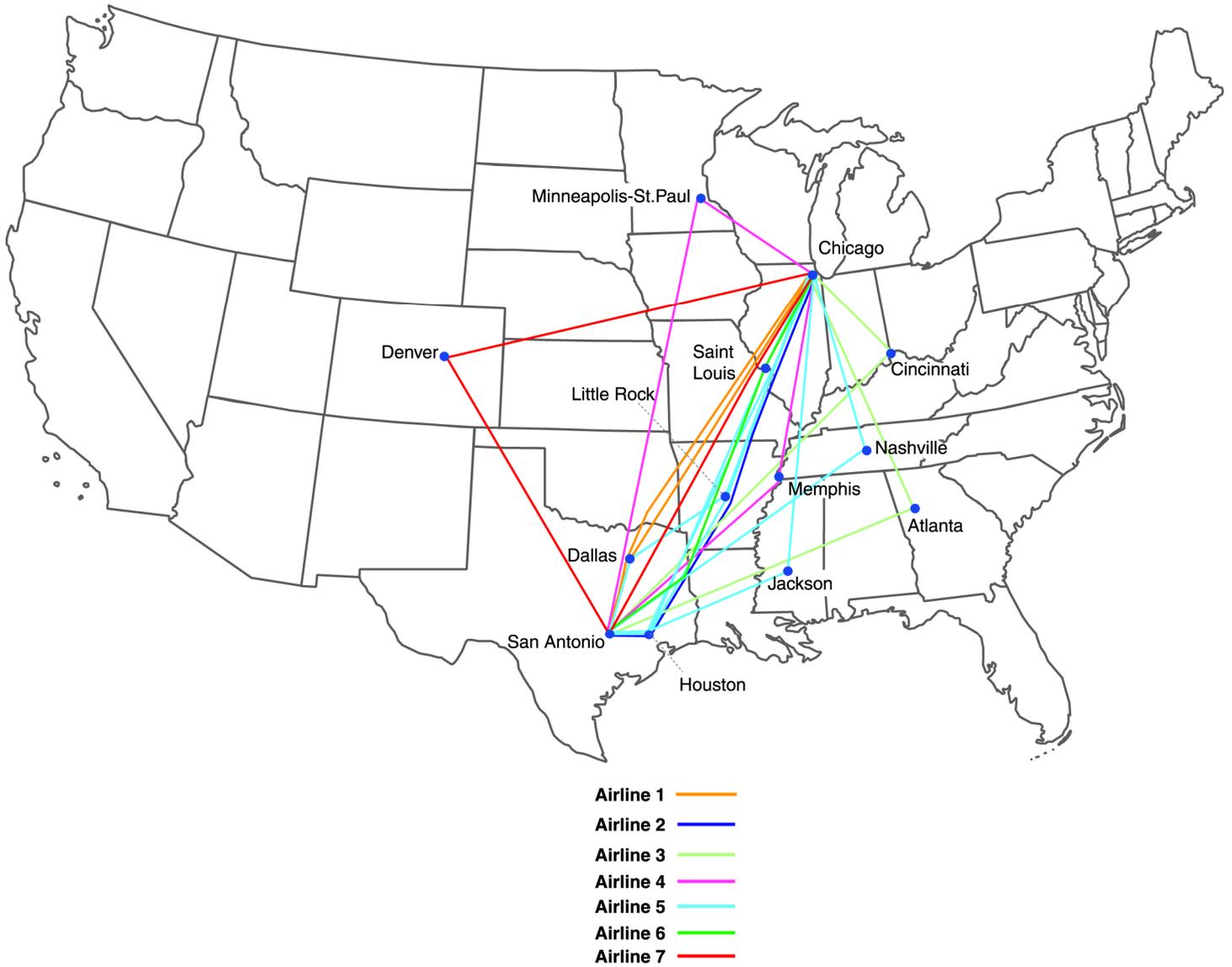
Figure 5 illustrates that the degree to which competition exists in different markets can create a hidden-city ticketing opportunity. It shows the various routes through which passengers could have traveled from Chicago (O’Hare) to Dallas/Fort Worth, and from Chicago (O’Hare) to San Antonio that connected at Dallas/Fort Worth and other airlines’ hubs. Because of the differences in airfares for nonstop travel between Chicago and Dallas and for connecting travel from Chicago to San Antonio, a hidden-city opportunity may exist for travel to Dallas. The fares for nonstop travel between Chicago and Dallas (available on two airlines) were \$1,085. Five other airlines offered travel from Chicago to San Antonio, connecting at cities other than Dallas, that had fares ranging from \$739 to \$1,108.<sup>28</sup> To compete with those prices, the fare from Chicago to San Antonio on an airline that connects at Dallas was \$904. (Southwest also provided connecting service to San Antonio, but its flights originated at Chicago’s Midway Airport.<sup>29</sup>) Because of the fares and services other competing airlines offered between Chicago and San Antonio, a hidden-city ticketing opportunity exists for travelers on one air carrier between Chicago and Dallas.

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<sup>28</sup>Fare data obtained on May 30, 2001, for travel beginning May 31, 2001, and returning June 1, 2001, from Expedia.com.

<sup>29</sup>Not all travelers may regard alternative airports in the same metropolitan area as substitutes for one another. This is particularly true for more time-sensitive business travelers, who may consider alternative airports to be less convenient for the purposes of their trip. See, for example, *Reagan National Airport: Capacity to Handle Additional Flights and Impact on Other Area Airports* (GAO/RCED-99-234, Sept. 17, 1999).

**Figure 5: Example of How Competition to a Spoke Community May Create a Hidden-City Ticketing Opportunity**



Source: GAO's presentation of May 2001 schedule data from the Kiehl Hendrickson Group.

## Back-to-Back Ticketing Opportunities Result From Airlines' Pricing Practices and Ticketing Restrictions, Which Vary by Market

The potential for back-to-back ticketing is created by the ability of airlines to maximize their profits by charging different fares to different consumers on the same flight. More specifically, this opportunity exists because airlines use the Saturday night stay requirement to prevent business passengers from obtaining fare discounts typically reserved for leisure passengers. Because major network airlines can use this requirement to differentiate their fares in all markets, this ticketing opportunity potentially exists in all markets.

The savings that a passenger could realize by using back-to-back ticketing varies by market and by airline. Table 3 shows that passengers traveling between Atlanta, Georgia and Dallas/Fort Worth, Texas who booked tickets less than 6 days in advance of travel could have saved \$368 by booking a ticket with a Saturday night stay requirement. The amount of potential savings generally increases the further in advance of the travel that a passenger purchases the ticket. Table 4 shows that a passenger traveling between Pittsburgh, Pennsylvania, and Charlotte, North Carolina, who booked tickets 1 day in advance would have saved nothing. On the other hand, travelers who booked 2 weeks in advance could have saved \$253, and those who booked 4 weeks in advance could have saved \$645.

**Table 3: Roundtrip Fares for Travel Between Atlanta and Dallas/Fort Worth**

	Advance purchase requirement to obtain discount round-trip fares for nonstop service between Atlanta and Dallas/Fort Worth				
	1-day	7-day	14-day	21-day	28-day
Fare without a Saturday night stay over	\$775	\$625	\$625	\$625	\$625
Fare with a Saturday night stay over	\$407	\$309	\$203	\$203	\$203
<b>Difference</b>	<b>\$368</b>	<b>\$316</b>	<b>\$422</b>	<b>\$422</b>	<b>\$422</b>

Source: These data were obtained from the Delta's Web site on May 31, 2001, for departures on June 4, June 11, June 18, June 25, and July 2, 2001. These fares reflect those available to passengers willing to purchase fares at various time intervals (e.g., 14 days) prior to departure and may be subject to various other restrictions (e.g., nonrefundable). The time intervals represent full business days, not calendar days.

**Table 4: Roundtrip Fares for Travel Between Pittsburgh and Charlotte**

	Advance purchase requirement to obtain discount round-trip fares for nonstop service between Pittsburgh and Charlotte				
	1-day	7-day	14-day	21-day	28-day
Fare without a Saturday night stay restriction	\$902	\$902	\$902	\$902	\$902
Fare with a Saturday night stay restriction	\$902	\$902	\$649	\$257	\$257
<b>Difference</b>	<b>\$0</b>	<b>\$0</b>	<b>\$253</b>	<b>\$645</b>	<b>\$645</b>

Source: These data were obtained from the US Airways' Web site on May 31, 2001, for departures on June 4, June 11, June 18, June 25, and July 2, 2001. These fares reflect those available to passengers willing to purchase fares at various time intervals (e.g., 14 days) prior to departure and may be subject to various other restrictions (e.g., nonrefundable). The time intervals represent full business days, not calendar days.

These tables also illustrate that, because of differences in the amount of potential savings, a traveler's ability to circumvent the Saturday night requirement can be more difficult in one market than in another because of the need to book tickets further in advance.

### Enforceable Fare Rules Allow Airlines to Prevent Passengers From Using Hidden-City and Back-to-Back Ticketing

Most major airlines attempt to restrict passengers from using hidden-city and back-to-back ticketing. Southwest, however, does not prohibit or penalize passengers from using back-to-back and hidden-city ticketing. According to Southwest officials, because it largely prices its tickets based on travel between two points, and it is a carrier that seeks to use its low fares to stimulate travel by people who might not otherwise fly, Southwest's fares are more closely aligned with the distance traveled by a passenger. Thus, the fare differentials that could motivate passengers to use hidden-city and back-to-back ticketing on other major airlines are less likely to exist on Southwest.

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The six airlines that are the focus of our data analysis prohibit the use of hidden-city and back-to-back opportunities and told us that they take actions to discourage passengers from using them. These airlines prohibit the use of such practices in their contracts of carriage. These contracts set out the terms and conditions that passengers must follow when they purchase a ticket, which incorporates the terms of these contracts by reference.<sup>30</sup> The contract also establishes the terms under which the airlines must transport the passenger. For example, these contracts include provisions that establish liability limits for lost baggage, passenger entitlements when flights are delayed or canceled, and prohibitions against back-to-back and hidden-city ticketing practices. Terms and conditions of this contract are legally binding on both the airline and the passenger and may be enforced by either party in court. Therefore, if a passenger fails to comply with these restrictions on how a ticket may be used, the airline has the right to cancel or confiscate the unused portion of the passenger's ticket or demand the passenger or the travel agent who sold the ticket to pay the difference in value—that is, airlines have the right to receive the full-fare cost of the ticket.

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<sup>30</sup>For example, United's Rule 100 indicates that valid tickets entitle a passenger to transportation only between the points of origin and destination specified by the ticket, via the designated routing, and that flight coupons will be honored only in the order in which they are issued and only if all unused flight coupons and the passenger's coupons are presented together.

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Airline officials told us that they use various systems to detect hidden-city and back-to-back ticketing but most could not supply us with estimates describing how often passengers have used such opportunities. Although they did not provide us estimates, airline officials believe that few passengers use hidden-city opportunities because most airlines automatically cancel the balance of a passenger's reservation whenever a passenger fails to use one portion of a ticket. For example, if a passenger flies round-trip from the East Coast to Los Angeles via Pittsburgh and deplanes at Pittsburgh rather than Los Angeles, an airline would cancel the balance of the passenger's reservation because it considers that passenger a "no-show." While most airlines did not provide data on the extent to which back-to-back ticketing occurs, five airlines appeared to have or referred to some data on the extent to which this ticketing practice was occurring.<sup>31</sup> Officials representing airlines that could detect the use of this practice reported that they had or were willing to take measures to obtain revenue lost due to use of this practice. For example, these officials reported that they would require travel agents who violated their contractual agreement with the airlines by selling tickets that were used by passengers to circumvent airline ticketing rules to compensate them for revenue lost due to these practices. Airlines, however, did not have data to show us how often this was done. Some airlines also reported that they were in the process of developing technology that would allow them to more rigorously monitor the use of back-to-back ticketing.

Various consumer advocates recognize that passengers who use back-to-back and hidden-city ticketing can be potentially identified and penalized by the airlines. While these advocates generally believe that consumers should be able to use these practices, none recommended that passengers attempt to circumvent the current fare rules.

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<sup>31</sup>This information was not available for us to report because the airlines considered these data to be proprietary. See app. I for additional information on the agreements that we made with airlines pertaining to the use of information considered to be "business confidential."

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## Requiring Airlines to Allow Hidden-City Ticketing Could Result in Higher Fares and Possibly Decreased Service, Especially to Smaller Communities

According to industry experts and airline officials, if legislation required airlines to permit hidden-city ticketing, airfares in certain markets could increase immediately—especially those to and from some smaller communities. Our analysis of hidden-city opportunities within selected markets found that the availability of those opportunities varied among airlines. However, our analysis indicates that business travelers tend to have a greater opportunity to acquire hidden-city tickets than leisure travelers. Furthermore, more markets between communities of all sizes could offer hidden-city ticketing opportunities, but those markets with smaller communities were more likely to offer such fares. According to industry experts, if passenger traffic subsequently fell because of higher airfares, carriers could decrease or eliminate service from some or all of those smaller community markets. Our analysis suggests that because smaller communities generally have fewer airlines than larger communities, they could be more vulnerable to decreased or lost air service.

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## Hidden-City Opportunities Vary Among Carriers and Markets

Both industry and airline officials acknowledged that hidden-city ticketing opportunities exist throughout each carriers' network. These officials also noted that business travelers might find saving money through the use of hidden-city ticketing attractive to them. Even business travelers who have corporate rates with a particular carrier might use these opportunities.<sup>32</sup>

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<sup>32</sup>Airlines sometimes enter into agreements with corporate clients (known as corporate incentive agreements) that represent offers by airlines for fares that are discounted from the prices that are otherwise applicable. They may be stated as percentage discounts from specified published fares.

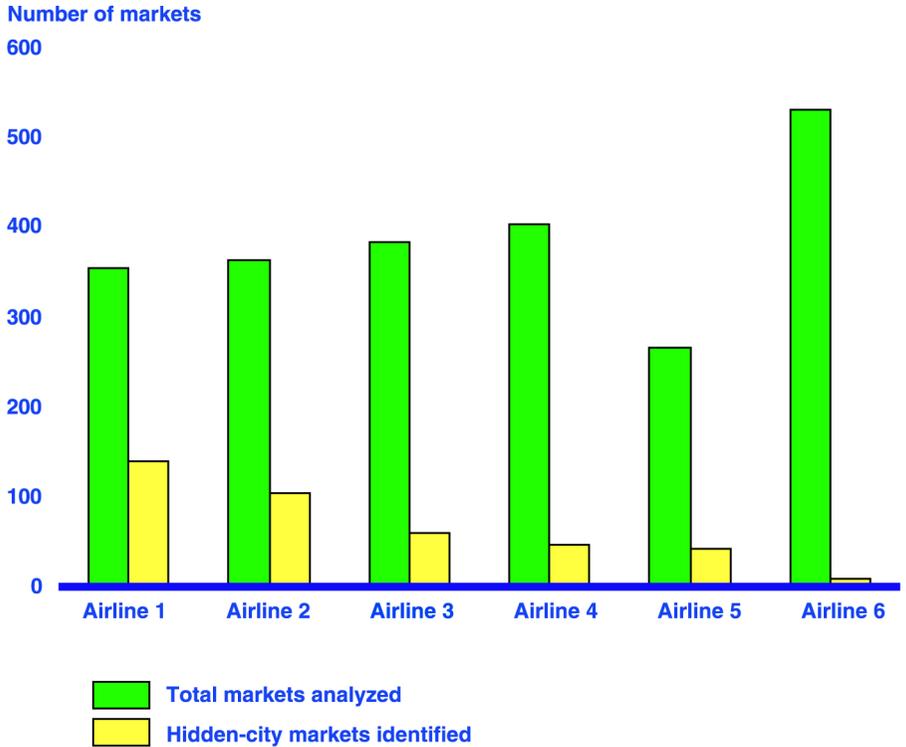
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Our analysis of fare data on selected markets for six major U.S. passenger airlines supported what both industry and those airline officials stated about the availability of hidden-city opportunities. Of the 2,302 markets we examined, 398 (17 percent) provided such opportunities.<sup>33</sup> We found that hidden-city fares existed on each airline's network, although the number varied widely among carriers. As figure 6 illustrates, the number of hidden-city ticketing opportunities ranged from 140 (nearly 35 percent) for one carrier to 9 (about 2 percent) for another.

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<sup>33</sup>Our review was evenly divided between business and leisure travelers with 1,151 markets examined for each type of traveler. We defined a hidden-city ticketing opportunity to exist for business travelers if the difference in airfares between the hub market and the spoke airport was \$100 or more. For leisure passengers, we defined a hidden-city ticketing opportunity to exist if the difference in airfares was \$50 or more. See app. I for further details on the methodology used for this review.

**Figure 6: Hidden-City Ticketing Opportunities Available From Selected Markets for Six Major U.S. Passenger Airlines**

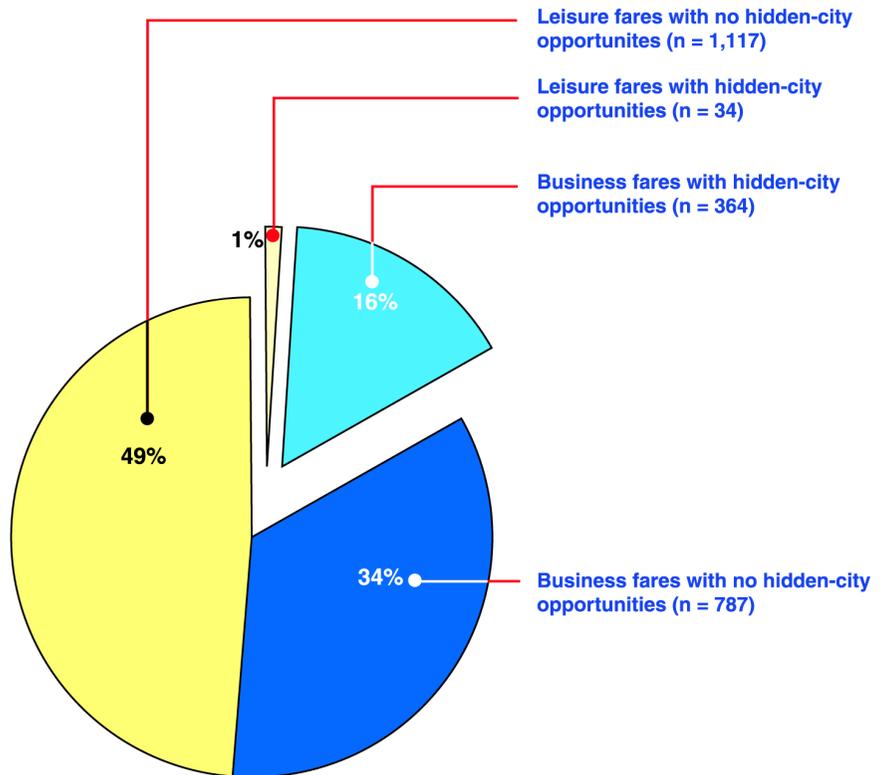


Source: GAO's analysis of airline fare data collected during January and February 2001.

The majority of hidden-city ticketing opportunities existed for business fares.<sup>34</sup> Of the 398 markets in which we found such opportunities, 364 (91 percent) existed only for business travelers and 34 (9 percent) existed for leisure travelers. Figure 7 shows the distribution of the number of hidden-city ticketing opportunities between the 2,302 markets that we reviewed.

<sup>34</sup>For purposes of our analysis, we defined business fares as those purchased for travel beginning the next business day and returning at least 1 day later, but prior to a Saturday. We defined a leisure fare as that purchased at least 21 days in advance and including a Saturday night stay.

**Figure 7: Availability of Hidden-City Ticketing Opportunities to Total Markets Examined**



Source: GAO's analysis of airline data.

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## Analysis of Airfare Data Supports Theory That Competition Creates Hidden-City Opportunities

As noted earlier, economic literature, industry experts, and airline officials suggested that hidden-city ticketing opportunities existed, primarily because of how competition affected airfares in different markets.<sup>35</sup> We statistically analyzed a variety of data for the 2,302 markets to determine whether these explanations were valid and whether other factors might explain the existence of hidden-city opportunities.<sup>36</sup> We found that the extent these factors influenced hidden-city opportunities not only varied among different airlines, but also varied within individual airlines' networks. Our analysis revealed that the amount and type of competition in hub markets, along with the amount and type of competition from other airlines into the spoke markets, were statistically significant for the major carriers we examined.<sup>37</sup> That is, our analysis supported the theory that competition creates the conditions that foster hidden-city opportunities.

For each airline, we analyzed all possible markets to which passengers could connect at the airline's busiest hub airport from the three most heavily traveled inbound routes in 2000. We examined airfares in the markets to the airline's hubs and to the spoke markets. We also examined the competition (in terms of the percentage of capacity scheduled) by all airlines that operated in those markets. Our analysis of data on each airline found that the relationship between competition from other airlines and the existence of hidden-city ticketing opportunities was statistically significant. That is, with each airline, we found that hidden-city opportunities were created by the combination of (a) the lack of competition from other carriers (either other major network airlines or low-fare airlines) into the airline's hub and (b) greater competition from other airlines offering connecting service to the spoke communities. We

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<sup>35</sup>Airline officials also indicated that some other factors independent of competition might cause an airline to price service to a spoke airport less than that to a hub. Those factors include changes in equipment type (e.g., passengers traveling to smaller communities beyond the hub may have to fly on small turboprop aircraft, a perceived inconvenience for which the airline may extend a fare discount) and relatively high degrees of circuity (i.e., forcing a traveler to double-back on a route to reach a destination, such as flying from Albany, New York, to Norfolk, Virginia, but connecting in Atlanta).

<sup>36</sup>We included several different factors in our analysis. These factors included a flight's origin, the population of the destination city, the number of stops on a flight, the dominance of any one carrier on a route, and the competition between major and low-cost carriers between the origin, hub, and final destination of the flight. See app. I for additional information on our methodology.

<sup>37</sup>We excluded one air carrier from this analysis because of the 266 business markets we examined for that airline, hidden-city opportunities existed in only 6.

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also found that for one airline, relatively high levels of competition from a low-fare carrier on one of its three most heavily traveled routes effectively eliminated the existence of hidden-city opportunities by restraining fares in that market. Because competition held down fares in the market to the hub, fares to spoke communities beyond that hub were higher.

Yet we also found situations in which the analysis did not clearly support the theory that competition was responsible for creating hidden-city opportunities. For one airline, for example, we found that low-fare competition into the airline's hub did not have the restraining influence on fares by the hub carrier that economic theory would have predicted. Despite the presence of a low-fare competitor, fares to the hub were still relatively high, thereby creating a situation in which the hub airline's markets beyond the hub still presented large numbers of hidden-city opportunities. For another airline, we found large differences in the number of hidden-city ticketing opportunities potentially available beyond two different hub markets. However, the two hub markets were similar in terms of the competition that the airline faced from low-fare carriers and other major carriers. Thus, competition from low-fare airlines to that carrier's hub did not explain whether the hub airline's pricing strategy presented hidden-city opportunities or not.

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**Airline and Industry Officials Indicate That Airlines May Raise Fares and Decrease Service, Especially to Small Communities, If Hidden-City Ticketing Is Permitted**

Airline officials stated that requiring carriers to permit hidden-city ticketing could produce broad changes throughout their networks. Independent industry experts (financial analysts, academics, and consultants) concurred, noting that requiring airlines to permit hidden-city ticketing could cause airlines to lose revenue, if they did not alter their fares or pricing strategies. However, these same officials stated that the airlines would likely make immediate changes to their pricing strategies, raising fares in markets that now have hidden-city opportunities. If passenger traffic eventually declined in those markets in response to the increased airfares, airlines might decrease or eliminate service to minimize their losses. Our analysis indicated that a disproportionate percentage of cities that might be affected would be small communities.

According to airline and other industry officials, requiring airlines to permit hidden-city opportunities would cause them to lose revenue in two ways. First, it would allow passengers to obtain seats costing less than what the airline intended for a given product. An airline's potential loss of revenue from hidden-city ticketing on business fares could be considerable. For the 398 markets that we identified in which potential hidden-city opportunities

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existed, we found that the difference between the fares for travel to the hidden-city hub airport and fares for travel to the spoke city ranged from a low of \$103 to a high of \$1,954. That is, for each passenger that was able to take advantage of a particular hidden-city opportunity, the airline could lose between approximately \$100 to \$2000, depending on the route and hidden city traveled. Second, the airline may not have sold tickets for flights from the hub to the connecting city because the airline would not be aware of travelers' intentions to deplane at the hidden city. Consequently, the airline may have foregone revenue that it otherwise could have earned because seats that it potentially could have sold for more money to other passengers went vacant. For example, a flight from Chicago to San Antonio with a connection in Dallas could cost \$904, as opposed to \$1,085 from Chicago to Dallas. If the passenger deplanes in Dallas, the hidden city, and the seat is vacant from Dallas to San Antonio, the airline potentially lost about \$594—the fare for travel between Dallas (the hub) and San Antonio (the spoke city)—assuming that the flight otherwise was full—plus another \$181 for the difference between the hidden ticket and the cost of a ticket between Chicago and Dallas.

Industry and airline officials believe that, besides causing potential revenue losses by airlines, permitting hidden-city ticketing would also hinder the airlines' ability to manage their operations, at least in the near term. Until such time as they are able to acquire sufficient data on the extent to which passengers use only part of their tickets, airlines could have problems determining the optimal capacity (i.e., size of aircraft and flight frequency) to schedule in specific markets. To reconcile its capacity with actual passenger traffic in those markets, airlines may change the extent to which they overbook those markets. If unusual numbers of passengers did not deplane at the hidden city on a given flight, then the airline could incur some passengers' dissatisfaction from being denied boarding on the last flight segment. Furthermore, a requirement permitting hidden-city ticketing could also prevent airlines from pricing tickets based, at least in part, on the real demand for travel between specific locations, thereby undermining the airlines' ability to manage their networks profitably.

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To reduce potential losses, airline officials and industry experts stated that airlines would, in all likelihood, immediately increase fares for travelers in markets that formerly presented hidden-city ticketing to eliminate those opportunities. Based on our analysis, we believe that business travelers could be those facing these fare increases. As a result of these fare increases, some travelers, including price-sensitive leisure travelers, might choose not to fly. Thus, in the long term, with less passenger flow to the hub, airline officials told us that they would likely decrease or eliminate the level of service provided to communities with relatively little passenger traffic, opting instead to concentrate on maintaining service to more heavily traveled and profitable markets.<sup>38</sup> Both industry and airline officials concurred that smaller communities would be most likely to experience decreases in service.

Our analysis tends to support the hypothesis that smaller communities would be at risk for decreased air service or might possibly lose service entirely.

- First, while communities of all sizes presented hidden-city opportunities, the relationship between hidden-city opportunities and community size was statistically significant. Our analysis indicates that smaller-city markets were statistically more likely than larger-city markets to present hidden-city ticketing opportunities.<sup>39</sup> This was true for four of the five air carriers analyzed.<sup>40</sup> Table 5 shows the distribution of markets analyzed, by size of spoke communities.

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<sup>38</sup>One expert observed that additional analysis would be necessary to conclusively determine whether service reductions would occur in specific markets. He noted that this determination would require an analysis of flight profitability reports (e.g., reflecting the amount of revenue from nonstop and connecting passengers) for each market.

<sup>39</sup>For presentational purposes, we collapsed the communities into four categories but these categories mask the full range of community sizes that were captured by our statistical analysis. We performed our analysis, and thus our test of statistical significance, prior to collapsing the communities into four categories. We did so to capture the entire variation of community sizes relative to the presence of a hidden-city opportunity. Therefore, while the table may suggest that small communities were not more likely to have a hidden-city opportunity than medium-large ones, we did in fact find a statistically significant relationship when examining this association across the full range of community sizes.

<sup>40</sup>We excluded one air carrier from this analysis because of the 266 business markets we examined for that airline, hidden-city opportunities existed in only 6 markets. See app. I for additional information on how we determined statistical significance.

**Table 5: Size of Communities and Hidden-City Ticket Opportunities in Selected Markets**

<b>Community size</b>	<b>Measure</b>	<b>Hidden-city ticket opportunity</b>	<b>No hidden-city ticket opportunity</b>	<b>Total</b>
Large	Number	122	314	436
	Row percent	28%	72%	100%
Medium-large	Number	129	258	387
	Row percent	33%	67%	100%
Medium	Number	73	133	206
	Row percent	35%	65%	100%
Small	Number	40	82	122
	Row percent	33%	67%	100%
<b>Total</b>	<b>Number</b>	<b>364</b>	<b>787</b>	<b>1,151</b>
	<b>Row percent</b>	<b>32%</b>	<b>68%</b>	<b>100%</b>

Source: GAO's analysis of data from the airlines' Internet Web sites and the U.S. Bureau of the Census.

- Second, smaller communities generally have fewer airlines providing service than larger communities. If an airline that operates to a smaller community would decide to decrease or discontinue its flights, the community would be more vulnerable to monopolized air service.

The 364 business hidden-city ticketing markets represented service to 172 different communities.<sup>41</sup> For 36 of those 172 communities, air service is provided by only 1 air carrier. That is, one airline effectively monopolized service to and from these communities. (No other airline offered 10 percent or more of scheduled capacity.) For the 136 remaining communities, more than one airline provided service. If one of the airlines decided to discontinue service, an additional 49 of those 136 communities would have virtually no airline competition, and another 45 communities would have service from only 2 competitors. (See table 6.) In other words, if one airline eliminated service to those communities, nearly half of them would receive only monopoly air service.

<sup>41</sup>A single community can present multiple hidden-city opportunities, as different airlines can serve the same community over different hubs.

**Table 6: Size of Communities Producing Hidden-City Opportunities and Number of Competing Airlines Serving Those Communities**

Population category of communities presenting hidden-city opportunities	Number of airlines at those communities				Total
	4 or more	3	2	1	
Large	13	17	13	12	55
Medium-large	24	15	11	5	55
Medium	4	9	18	3	34
Small	1	4	7	16	28
<b>Total</b>	<b>42</b>	<b>45</b>	<b>49</b>	<b>36</b>	<b>172</b>

Source: GAO analysis of data from airline Internet Web sites and the U.S. Bureau of the Census.

Because small and medium-sized communities generally have fewer airlines providing air service, those communities would be more vulnerable to a loss of service. Of the 62 small-and medium-sized communities, 19 receive service from only one airline. Thus, for those medium and small communities currently with air service provided by 2 air carriers, if one of these competing airlines discontinued service, the total number of communities with air service by one carrier would increase by 25. Those communities would thus be more vulnerable to potential fare increases and/or capacity reductions (decreases in service through some combination of a drop in flight frequency and/or the use of smaller aircraft in the market) associated with the exercise of market power, due to the lack of competition.<sup>42</sup>

For example, Dubuque, Iowa—a small community—could be adversely affected by a loss of service if hidden-city ticketing were allowed. Three major carriers provide service to Dubuque. A business traveler flying from Los Angeles to Chicago could book a flight to Dubuque and take advantage of a hidden-city opportunity that could save a traveler \$286. Should any one of the three carriers decide to eliminate the hidden-city opportunity and thus lose passengers on the route, it might discontinue service to

<sup>42</sup>This would appear to illustrate the “other side” of hidden-city ticketing—that it provides some lower airfare benefits to consumers, particularly those in small-and medium-sized spoke cities, relative to those in larger communities for travel to other communities beyond the hub.

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Dubuque because of the lower passenger traffic, leaving Dubuque with only two carriers.

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## Allowing Back-to-Back Ticketing Could Result In Higher Fares for Leisure Passengers

Requiring airlines to allow back-to-back ticketing would, in effect, prevent them from using the Saturday night stay requirement to segment their market between business and leisure passengers. Because business passengers—according to the airlines’ assessment—prefer to return home before the weekend, airlines use this restriction to reserve more steeply discounted fares for leisure passengers. Thus, by design, the desired outcome of permitting back-to-back ticketing would be to allow those business passengers who can purchase tickets in advance and use them out of sequence to take advantage of the reduced fares typically accessible to leisure passengers.

In theory, permitting the use of back-to-back ticketing would appear to allow some business passengers to save money when purchasing tickets. However, according to some airlines, most of their full-fare passengers (e.g., about 70 percent) tend to buy their tickets within 6 days of travel. Thus, use of back-to-back ticketing may only benefit those passengers who can purchase tickets a week or more in advance of travel. For example, business travelers who use this practice for a flight between Atlanta and Dallas/Fort Worth, as shown earlier in table 3, could save money (\$368) without purchasing a ticket in advance. However, in other markets, a business passenger would need to purchase tickets weeks in advance to use this opportunity. For example, passengers traveling between Charlotte and Pittsburgh, as shown earlier in table 4, would have to purchase tickets at least 14 days in advance to save money (\$253). In addition, some business passengers could be dissuaded from using this practice because the tickets they would purchase would not convey all the benefits of a full-fare ticket, such as last-seat availability or the ability to change reservations without a penalty.

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However, if back-to-back ticketing were permitted, those business passengers who could, theoretically, benefit from this practice might not realize these potential savings because airlines would likely respond to their anticipated losses by making discounted fares more difficult to obtain. They might require, for instance, that their more deeply discounted fares be purchased further in advance. Airline officials proposed to us, and industry experts agreed, that airlines would probably increase advance purchase fares or make these fares more difficult for business passengers (and others) to obtain. The officials and experts agreed that allowing back-to-back ticketing could result in an increase in fares for leisure passengers and that such an increase would likely discourage some price-sensitive passengers from flying with these airlines. Should the number of leisure passengers decline sufficiently, some airlines would consider decreasing capacity (e.g., by operating smaller aircraft or making fewer flights) in some markets.<sup>43</sup> Thus, potentially, airlines could lose revenue from two different sources: (1) from business passengers who would benefit from lower fares though the use of back-to-back ticketing and (2) from leisure passengers, because increased fares might prevent these price-sensitive passengers from flying.

For example, one airline estimated that it might lose between \$150 to \$180 million annually if back-to-back ticketing were permitted. These projections were based on two different ways in which the airline could respond. If the airline did not adjust its fare structure, it anticipated losing about \$180 million annually. However, the airline projected that it could lose \$150 million annually, if it increased its advance purchase fares and required that its more deeply discounted fares be purchased further in advance. In response to this hypothetical decision, the airline predicted that these changes would not only be likely to discourage some business passengers from using back-to-back ticketing but would also be likely to discourage price-sensitive leisure passengers from flying with this airline. While we did not have access to the data to verify the legitimacy of these estimates, and thus cannot endorse them, we think that these estimates demonstrate the concerns and options that airlines would consider should back-to-back ticketing be permitted.

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<sup>43</sup>One expert observed that additional analysis would be necessary to conclusively determine whether service reductions would occur in specific markets. He noted that this determination would require an analysis of flight profitability reports (e.g., reflecting the amount of revenue from nonstop and connecting passengers) for each market.

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It is nevertheless difficult to forecast the extent to which permitting back-to-back ticketing would increase fares and potentially discourage leisure passengers from flying. First, as previously discussed, this practice is not easy to use and, in some markets, only business passengers who can purchase their fares in advance would be able to take advantage of this opportunity. For instance, the airline providing the example above estimated that about 70 percent of their full-fare passengers purchase their tickets within 6 days of departure and most would still choose to purchase full-fare products. Second, while airlines advised us that they would increase fares, some also advised us that they would make their decisions on a market-by-market basis, depending on the impact that change had on the demand for air transportation services in a given market. Third, the number of leisure passengers who would seek alternative means of transportation, or not travel at all, would depend on the amount of the fare increase and perhaps the willingness of these passengers to plan further ahead to obtain fare discounts.

Numerous variables, therefore, make it difficult to predict how airlines might respond if back-to-back ticketing were permitted. Still, based on our analysis of how airlines price their products and interviews with industry experts, we believe that airlines would, as their officials indicated, increase fares to some extent in markets where they anticipated losses. We would expect that potential fare increases would be market-specific because airlines would still take into consideration the amount of competition and demand for travel existing in individual markets when they set fares. Airlines did not specify the markets in which these increases would most likely occur. We believe, however, that these airlines would most likely reduce the availability of discount fares in major business markets (e.g., New York-Los Angeles) because business passengers have the greatest incentive to use back-to-back ticketing. In the long run, if revenue decreased for the airlines, they might also decrease the number of flights to some locations experiencing a notable decline in passengers.

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## Conclusions

Restricting the ability of airlines to forbid hidden-city and back-to-back ticketing is unlikely to help consumers. Independent industry experts, along with airline officials, believe that legislating restrictions on airline pricing practices could lead airlines to take action—such as raising airfares and decreasing service—to reduce losses they would be likely to incur. Based on our analyses of fare data and economic literature, we believe that these positions are credible. While the extent of these potential losses would vary by market and airline, permitting passengers to use back-to-

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back and hidden-city ticketing would likely have unintended consequences that could hurt some consumers. Nevertheless, consumer advocates and passengers have legitimate concerns that some fares are higher than what might be expected in a more competitive market.

Actions that promote competition would seem to offer more promise than imposing restrictions in assuring that fares reflect competitive pricing. As has been shown over time with research in the industry, and as is indicated by our analysis here, greater competition drives airfares lower. Research also demonstrated that dominated airports tend to have higher airfares than airports that have more competition from other airlines. These higher airfares provide business passengers the incentive to circumvent the fare rules of major carriers. Our analysis confirms the long-recognized significance of competition in controlling fares and accounting largely for the fare differentiation that gives rise to hidden-city opportunities.

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## Comments

We provided industry experts from the Brookings Institute, College of William and Mary, and Northeastern University and one consulting firm (Microeconomic Consulting & Research Associates, Inc.) the opportunity to review the analysis presented in our draft report. In addition, we provided our draft for evaluation to representatives from the Consumers Union and the American Society of Travel Agents—both of which had previously stated that the use of hidden-city and back-to-back ticketing should be permitted.

The industry experts who reviewed our draft generally agreed with our conclusion that permitting back-to-back and hidden-city ticketing would not help consumers. They also agreed that the most important way to mitigate consumer incentives to use these practices would be to increase competition, especially at dominated hub airports. Where these individuals made comments, they tended to suggest that we revise our discussion of pricing. For example, one expert observed that airlines have a fundamental economic justification for using differential pricing (e.g., setting higher fares for passengers who purchase tickets at the last minute), which benefits both airline efficiency and overall consumer welfare. This expert emphasized that TRB reached the same conclusion. In response to this comment and others, we expanded the report's description of ticket pricing. A representative from Consumers Union, while not supporting the current way in which airlines price tickets, likewise found credible our conclusion that legalizing hidden-city and back-to-back ticketing would be unlikely to help consumers. In contrast, a representative from the

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American Society of Travel Agents said that airlines could take actions to mitigate losses that might occur, in some markets, but that airline actions cannot be predicted at this time. This representative was not aware of any other studies that make such predictions.

After incorporating the views of these experts, we provided copies of sections of our draft report for technical comment to the six major carriers (i.e., American, Continental, Delta, Northwest, United, and U.S. Airways) that we interviewed as part of our study. We also provided DOT with a copy of our draft report for its review and comment. Representatives of the airlines and officials from DOT offered technical comments, which we incorporated into the report as appropriate.

If you or your staff have any questions about this report, please call me or Steve Martin at (202) 512-2834. Other key contributors to this report are listed in appendix IV.

A handwritten signature in black ink, reading "JayEtta Z. Hecker". The signature is written in a cursive style with a large, stylized "J" and "H".

JayEtta Z. Hecker  
Director, Physical Infrastructure Issues

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# Scope and Methodology

The Wendell H. Ford Aviation Investment and Reform Act for the 21<sup>st</sup> Century mandated that we study the potential effects on consumers, especially those in small communities, of a requirement that air carriers permit passengers to use any portion of an airline ticket independently of the other without penalty. As agreed with the staffs of the aviation subcommittees, we assessed (1) the factors that airlines consider when setting fares; (2) the factors that create hidden-city ticketing and the pricing practices that foster back-to-back ticketing practices; (3) the potential effects on airfares and service, especially to consumers in small communities, of a legislative requirement to permit hidden-city ticketing; and (4) the potential effects on airfares and service of a legislative requirement to permit back-to-back ticketing.

To assess the factors that airlines consider when setting fares, we reviewed relevant economic and other literature on competition within the aviation network, airline pricing practices, and the use of hub-and-spoke networks by air carriers. (App. 3 contains a selected bibliography of the literature reviewed.) We also interviewed a broad range of independent industry experts (e.g., academicians and consultants), along with officials from the seven largest U.S. passenger airlines. See table 7 for additional information.

**Table 7: Organizations We Contacted**

**Organizations interviewed**

Airlines	American Airlines (American), Continental Airlines (Continental), Delta Air Lines (Delta), Northwest Airlines (Northwest), Southwest Airlines (Southwest), United Airlines (United), US Airways
Academicians	Northeastern University, Massachusetts Institute of Technology, Harvard Law School, the College of William and Mary
Consultants	Charles River Associates, LECG, Microeconomic Consulting & Research Associates, Inc.
Consumer advocates	Consumers Union, Business Travel Coalition, OneTravel.com
Industry experts	UBS Warberg, CIBC Oppenheimer, The Brookings Institution
Travel agents	American Express, Expedia.com,
Trade organizations	Air Transport Association, American Society of Travel Agents

To assess the factors that create hidden-city and the pricing practices that foster back-to-back ticketing opportunities, we reviewed relevant economic literature, particularly literature containing analyses of airline hub-and-spoke networks, airline pricing, and revenue management systems. We also interviewed industry experts and officials from the seven largest U.S. passenger airlines.

To assess how fares and service could be affected should hidden-city ticketing be allowed, we interviewed industry experts and officials from each of the seven identified airlines. We also analyzed airfare and service data on air traffic markets for six of the seven carriers.<sup>1</sup> We were unable to draw a random sample of market data from industry sources because we could not obtain sufficiently detailed data to perform the type of analyses needed.

We analyzed data for a selected number of markets instead. Consequently, our results are not statistically generalizable to the universe of airline markets. To generate a relatively large data set for analytic purposes, we built our analysis around possible connecting markets for the three most heavily traveled markets for each of the airline's networks.<sup>2</sup> We first identified for each of the airlines the hub facility through which most passengers enplaned.<sup>3</sup> We then identified the three markets in which the largest number of passengers traveled. These markets are the "hub routes" used in our analysis. In some cases, we selected a different hub route to provide greater possible geographic dispersion. Our passenger enplanement data covered the 4 quarters between the fourth quarter of 1999 and the third quarter of 2000—the latest data available at the time of our analysis.

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<sup>1</sup>In the airline industry, a market is generally defined as scheduled airline service between a point of origin and a point of destination. This is often, but not always, defined as a city pair. Some cities are served by more than one commercial airport. These cities include Los Angeles, San Francisco, Chicago, New York, and Washington, D.C. In these cases, the relevant market may be what is termed as an airport pair.

<sup>2</sup>We did not analyze fare data from Southwest because it does not operate a hub-and-spoke network and because it explicitly does not prohibit passengers from using either back-to-back or hidden-city ticketing.

<sup>3</sup>Passenger "enplanements" represent the total number of passengers boarding an aircraft. Thus, for example, a passenger that must make a single connection between his or her origin and destination counts as two enplaned passengers because he or she boarded two separate flights.

To obtain data on passenger traffic for this report, we contracted with BACK Aviation Solutions (BACK), an aviation consulting firm, which obtains operational and financial information submitted by all U.S. airlines to DOT. These data include the Origin and Destination Survey (O&D) based on a 10-percent sample of tickets containing itinerary and pricing information; T-100 on-flight data;<sup>4</sup> and 298C T-1 data, which supplement the T-100 data with data on commuter and small certified air carriers. BACK makes certain adjustments to these data, such as correcting recognized deficiencies in the air carriers' O&D data submissions, which have not met DOT's standard of 95-percent accuracy. We did not independently assess the reliability of BACK's data.

We then identified the number of U.S. domestic communities to which passengers could connect at those airports from each of the hub routes. We identified those communities using airline flight schedule information submitted by all U.S. airlines for November 2000 that we purchased from the Kiehl Hendrickson Group, an aviation consulting firm. We did not independently assess the reliability of the Kiehl Hendrickson Group's original data. Finally, to categorize spoke communities by size, we used data from the U.S. Bureau of the Census. These categories are: large communities with a population of 1 million or greater; medium-large communities that ranged from 250,000 to 999,999; medium communities that ranged from 100,000 to 249,999; and small communities with populations of less than 100,000. Table 7 summarizes the markets analyzed for the six major U.S. network airlines.

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<sup>4</sup>14 C.F.R. 241 prescribes the collection of scheduled and nonscheduled service traffic data from the domestic and international operations of U.S. air carriers. The schedules submitted by the air carriers to DOT under this requirement collect nonstop segment data and on-flight market information by aircraft type and by service class. This report is known as the "T-100" report.

**Appendix I  
Scope and Methodology**

**Table 8: Routes Into Hubs and Number of Connecting Markets Analyzed for Each Major Carrier**

<b>Airline</b>	<b>Hub airport</b>	<b>Origin of hub routes analyzed</b>	<b>Number of “beyond” points (spoke routes) identified</b>
American	Dallas-Ft. Worth	Los Angeles New York (LaGuardia) Miami	225
Continental	Houston Bush Intercontinental	Newark New Orleans Los Angeles	225
Delta	Atlanta Hartsfield	New York (LaGuardia) Orlando Dallas-Ft. Worth	296
Northwest	Minneapolis—St. Paul	Detroit Boston Seattle	222
United	Chicago O'Hare	San Francisco Denver New York (LaGuardia)	262
US Airways	Charlotte Douglas	Boston Philadelphia Orlando	199
<b>Total</b>			<b>1,429</b>

To determine whether hidden-city ticketing opportunities were more available to business or leisure passengers, we attempted to obtain representative airfares for each of the 1,429 markets from each airline's Internet Web sites. We defined a hidden-city ticketing opportunity to exist for business travelers if the difference in airfares between the hub market and the beyond city was \$100 or more and for leisure passengers, if the difference in airfares was \$50 or more. Of the total 2,858 markets (1,429 for business travelers and 1,429 for leisure travelers), we were only able to acquire fare data for 2,302 markets—1,151 for each type of traveler. To approximate business airfares, we obtained fare data for travel scheduled the next day and chose a return date falling before the upcoming Saturday. To approximate airfares for leisure passengers, we selected fares that the airlines posted for travel beginning at least 21 days in advance and requiring a Saturday night stay. We recognize that this approximation of business and leisure travel is relatively coarse: some business passengers may purchase travel weeks in advance of their scheduled trip and stay over on a Saturday night. Similarly, some passengers traveling solely for leisure purposes may purchase their tickets on the day of the flight and return

prior to a Saturday. Nonetheless, we believe that our method represents a reasonable estimate of business and leisure fares.

To identify the amount of competition that each airline had in each of its hub-route markets and related spoke markets, we analyzed the capacity that other airlines made available in each market. DOT defines an airline “competitor” as one that has a market share of at least 10 percent, and we adopted that definition. Rather than using passenger enplanements as the basis for this calculation, we used scheduled capacity in a market (i.e., the total number of seats available for purchase).

Our analysis of hidden-city ticketing opportunities included data on each flight's origin, the population of the destination city, number of stops on a flight, dominance of any one carrier on a route (i.e., where an airline may offer more than 50 percent of the scheduled capacity in a market) and competition between major and low-cost carriers on both major flight segments to hub cities and on total city-pair markets. We conducted both bi-variate analyses and multiple regressions on these data, excluding records where any data element was missing. Our analysis of data for 1,151 business markets and 1,151 leisure markets identified 364 hidden-city ticketing opportunities for business travelers and 34 for leisure travelers. We defined statistical significance at the 0.05 level.

We also interviewed officials with each of the seven identified airlines to obtain their views on how their airlines would react if a law required them to permit hidden-city ticketing. We then evaluated their responses in light of generally accepted airline economic theory and the results of our analysis.

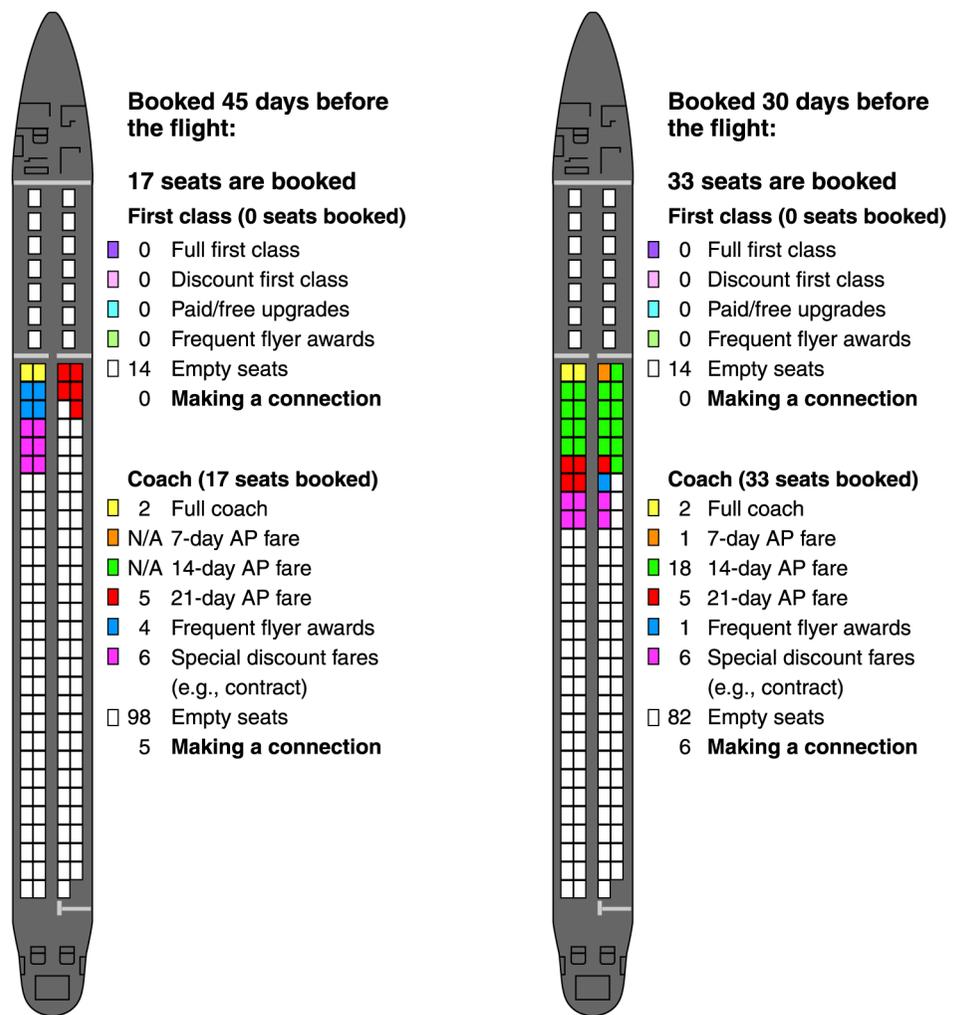
To assess how fares and service could be affected should back-to-back ticketing be allowed, we interviewed industry experts and officials from each of the seven identified airlines. We evaluated their responses in light of generally accepted airline economic theory. Because back-to-back ticketing opportunities are available for use in virtually all markets, and because no data are available on the extent that passengers already engage in this practice—or might do so if it were allowable—we conducted no data analysis of the extent to which the practice could occur, the financial implications for the airlines or passengers, and which size cities could be most affected.

To increase the candidness with which airline officials would discuss these issues and the quantity of information they would be willing to provide, we

provided the airlines with letters pledging confidentiality from relevant committee chairs and ranking members. These letters stated that these members and their staff would not seek to review any confidential business information provided by the airlines. Thus, throughout this report we do not refer to airlines directly by name when presenting information subject to this agreement.

We conducted our work from July 2000 through July 2001 in Washington, D.C., in accordance with generally accepted government auditing standards.

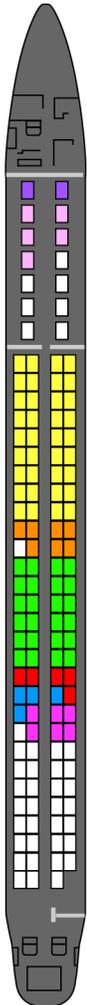
# Airline Inventory Management—Making Seats Available at Different Prices 45, 30, and 7 Days Before Departure and at Takeoff



**Legend:** N/A=not applicable

**Source:** These booking and fare data were provided by an airline that we have not identified at the airline's request. These data reflect travel on a particular day.

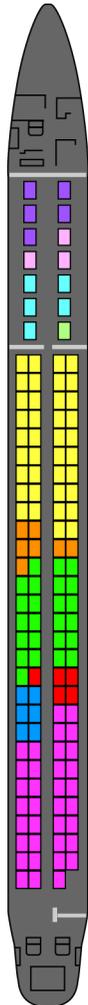
**Appendix II**  
**Airline Inventory Management—Making**  
**Seats Available at Different Prices 45, 30, and**  
**7 Days Before Departure and at Takeoff**



**Booked 7 days before the flight:**

- 89 seats are booked**  
**First class (7 seats booked)**
- 2 Full first class
  - 5 Discount first class
  - 0 Paid/free upgrades
  - 0 Frequent flyer awards
  - 7 Empty seats
  - 1 Making a connection

- Coach (82 seats booked)**
- 36 Full coach
  - 7 7-day AP fare
  - 24 14-day AP fare
  - 5 21-day AP fare
  - 4 Frequent flyer awards
  - 6 Special discount fares (e.g., contract)
  - 33 Empty seats
  - 14 Making a connection



**Booked at takeoff:**

- 129 seats are booked**  
**First class (14 seats booked)**
- 5 Full first class
  - 3 Discount first class
  - 5 Paid/free upgrades
  - 1 Frequent flyer awards
  - 0 Empty seats
  - 0 Making a connection

- Coach (115 seats booked)**
- 38 Full coach
  - 7 7-day AP fare
  - 24 14-day AP fare
  - 5 21-day AP fare
  - 6 Frequent flyer awards
  - 35 Special discount fares (e.g., contract)
  - 0 Empty seats
  - 15 Making a connection

**Who paid what at takeoff:**

5 Full first class	<b>\$909</b>
3 Discount first class	<b>\$529</b>
5 Paid/free upgrades	<b>\$248 (based on coach fares)</b>
1 Frequent flyer awards	<b>N/A</b>
0 Empty seats	
0 Making a connection	
38 Full coach	<b>\$530</b>
7 7-day AP fare	<b>\$ 64</b>
24 14-day AP fare	<b>\$101</b>
5 21-day AP fare	<b>\$186</b>
6 Frequent flyer awards	<b>N/A</b>
35 Special discount fares (e.g., contract)	<b>\$362</b>

**Note:** The fares paid at departure represent the average one-way fare for each class of ticket purchased. Calculation of the average fare was based on local fares for local passengers (i.e., those traveling only between the origin and destination of this flight) and prorated fares for passengers connecting to other flights. For this particular flight, on this day, all the 21-day advance purchase fares were purchased by passengers traveling locally, while almost all the 7-day advance purchase fares were purchased by passengers connecting to other flights. Consequently, the passengers who purchased their fares 7 days in advance, because their fares were prorated, seem to have paid higher fares than the passengers who paid their fares 21 days in advance. However, had all the fares for this flight been based on published fares for travel in the local market, the 7-day advance purchase fares would have exceeded the 21-day advance purchase fares.

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**Appendix III**  
**Selected Bibliography**

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# GAO Contacts And Staff Acknowledgments

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## Staff Acknowledgments

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