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Benefits of Preserving Consumers' Ability to Compare Airline Fares¹

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1. Executive Summary

The U.S. airline industry enplaned 766 million passengers last year and flew nearly 900 billion miles.³ For domestic itineraries, travelers paid—before significant and growing ancillary fees⁴—an average fare of \$391.⁵ Approximately 44 percent of travelers booking through online sources typically shop an online travel agency (“OTA”) website (for example, Orbitz, Priceline, CheapOair, or Expedia) or a metasearch travel site (for example, Kayak, TripAdvisor, Google Flights, Hipmunk, Skyscanner, or Fly.com) to compare the prices and schedules offered by competing airlines before purchasing from an OTA or an airline website.⁶ The use of these sites allows consumers to quickly and easily find the lowest prices offered by competing airlines on a desired route, to find the most convenient schedules offered, and to choose the best available option for their travel needs. OTAs and metasearch sites offer price comparison across many different airlines. Metasearch sites permit travelers to compare prices on a variety of online travel company booking sites.

At the same time, the U.S. airline industry has become highly concentrated, in the aggregate as well as on most city-pair routes. After several airline mergers during the past decade, the four largest U.S. airlines—American, Delta, United, and Southwest—now account for about 80 percent of total domestic passenger traffic. While consolidation has strengthened the financial health of the remaining airlines,

³ For the 12 months ended November 2014. U.S. Department of Transportation, Bureau of Transportation Statistics (“BTS”), T-100 Market and Segment.

⁴ One consulting firm, IdeaWorks, estimated total global airline ancillary revenue of \$49.9 billion for 2014, 6.7% of the total projected airline revenue of \$746 billion. According to BTS, baggage fees and change fee revenue alone for U.S. carriers amounted to \$6.5 billion in 2014. BTS, 2014 Airline Financial Data, available at http://www.rita.dot.gov/bts/press_releases/bts022_15.

⁵ For 2014 through Q3, calculated by averaging the average domestic air fare over three quarters of 2014. BTS 3rd-Quarter 2014 Air Fare Data, available at http://www.rita.dot.gov/bts/press_releases/bts006_15; BTS 2nd-Quarter 2014 Air Fare Data, available at http://www.rita.dot.gov/bts/press_releases/bts050_14; and BTS 1st-Quarter 2014 Air Fare Data, available at http://www.rita.dot.gov/bts/press_releases/bts036_14.

⁶ Phocuswright U.S. Online Travel Overview, December 2014, at 25. An OTA website allows the consumer to search for a flight and then to also book the flight directly on the OTA website, through the OTA’s relationships with airlines. Metasearch companies in general show available flights and also list which OTAs and airlines offer those bookings, and at what prices. Generally metasearch sites redirect consumers to an OTA or airline website to make the booking.

competition has suffered as a result. Preserving the competitive benefits of consumers' ability to access comparative and transparent information on prices and schedules of major U.S. airlines is more important than ever.

Yet, at a time when independent, transparent comparison shopping is most needed, some airlines are attempting to restrict access to their fare and schedule information, reduce the ability of consumers to easily compare prices, and drive travelers to their own websites, which do not offer price comparisons with other airlines. For the reasons set out in this report, this combination of airline concentration with heightened attempts to lead travelers away from OTAs and metasearch travel sites is likely to lead to higher average airfares, increase consumers' search costs, make entry into city-pair routes by smaller airlines more difficult, reduce transparency, and strengthen the market power of the major airlines.

This study draws these conclusions:

- A broad cross-section of economic research demonstrates that consumers benefit from pricing transparency and from simple and low-cost ways to compare products, service, and pricing. Among these findings:
 - A study of term life insurance pricing found that the ability to search across many insurance companies online and list results on one page led prices to fall by 8 to 15 percent.⁷
 - A study of prices of books and CDs found that prices were 9 to 16 percent lower on the Internet than in brick-and-mortar bookstores, depending on whether taxes, shipping, and shopping costs are included in the price.⁸
 - A study of transaction prices on new automobiles found that the use of an Internet price referral service that had access to many dealers reduced transaction prices by 2.2 percent.⁹

⁷ Jeffrey R. Brown and Austan Goolsbee, "Does the Internet Make Markets More Competitive? Evidence from the Life Insurance Industry," *Journal of Political Economy*, Vol. 110, No. 3, June 2002, pp. 481-507.

⁸ Erik Brynjolfsson and Michael D. Smith, "Frictionless Commerce? A Comparison of Internet and Conventional Retailers," *Management Science*, Vol. 46, No. 4, April 2000, pp. 563-585.

- A later paper by the same authors, using a different dataset, found that combined information and referral effects lowered new car prices by 1.2 percent, corresponding to 22 percent of dealers' average gross profit margin per vehicle.¹⁰
- A study of consumer electronics found that the ease of search provided by an online comparison shopping site saved consumers an average of 16 percent compared to those purchasing from a representative online store.¹¹ The value of information could range from 11 percent when just two sellers participated to 20 percent when more than 30 did so.
- Restrictions by airlines of broad access to airline information—prices and schedules—substantially reduce consumer welfare. This study estimates the potential reduction in net consumer welfare of limiting airline price and schedule information to only airline websites could exceed \$6 billion per year. Additionally, such restrictions may result in up to 41 million passengers annually choosing not to fly.
- In addition to offering independent price comparisons, OTAs and metasearch travel sites provide consumers with other travel information, such as suggestions for places to go and things to do. Supplementing airline schedule information with complementary information and products expands the market for air travel, further increasing consumer welfare.
- Airline markets are highly concentrated, with significant barriers to entry. The recent merger of American Airlines and US Airways has led to fare increases in affected city-pair markets that are about 4 percent higher than in non-affected

⁹ Florian Zettelmeyer, Fiona Scott Morton, and Jorge Silva-Russo, "Cowboys or Cowards: Why are Internet Car Prices Lower?" *National Bureau of Economic Research*, Working Paper 8667, December 2001.

¹⁰ Florian Zettelmeyer, Fiona Scott Morton, and Jorge Silva-Russo, "How the Internet Lower Prices: Evidence from Matched Survey and Auto Transaction Data," *National Bureau of Economic Research*, Working Paper 11515, June 2005.

¹¹ Michael R. Baye, John Morgan and Patrick Scholten, "The Value of Information in an Online Consumer Electronics Market," *Journal of Public Policy & Marketing*, Vol. 22, No. 1, Spring 2003, pp. 17-25.

markets. In certain city-pair markets in which the merger reduced the number of significant competitors from 3 to 2, or from 2 to 1, fare increases have been 7 to 17 percent. The welfare-enhancing impacts of broad access to airline fare and schedule information may be even larger in duopoly or monopoly city pairs.

- Airline profits globally are at an all-time high, expected to reach \$25 billion for 2015.¹² While airline fuel prices declined nearly 25 percent last year, average domestic airfares have remained flat while ancillary revenue of the major U.S. airlines grew to over \$15 billion in 2014.¹³
- Therefore, actions by government agencies that are designed to maintain broad access to airline prices and schedule information will strongly promote consumer welfare.

2. Consumer Benefits of Price Comparison Websites

2.1. Shopping for and Booking an Airline Ticket

When a consumer decides to travel by airplane, the process of shopping for and booking an airline ticket begins. The shopper is typically interested in knowing which airlines serve the particular route(s) in question, what their flight schedules and seat availability are on those flights, and how much the airfare will cost. Once they choose a particular flight or set of flights, they then proceed to reserve a seat on those flights by purchasing, or “booking,” a ticket.

Several decades ago, to get this information, a customer might call a travel agent or call airlines to ask them if they serve the desired routes, ask them for their flight schedules, seat availability, and prices, and compare the information to choose among the various

¹² “Airline Profitability Improves with Falling Oil Prices,” International Air Transport Association, Press Release, December 10, 2014, available at <http://www.iata.org/pressroom/pr/Pages/2014-12-10-01.aspx>.

¹³ “U.S. Gulf Coast Kerosene-Type Jet Fuel Spot Price FOB,” U.S. Department of Energy, Energy Information Administration, available at http://www.eia.gov/dnav/pet/hist/LeafHandler.ashx?n=PET&s=EER_EPJK_PF4_RGC_DPG&f=M; “Airline Ancillary Revenue Projected To Be \$49.9 Billion Worldwide In 2014,” IdeaWorks Company.com, November 3, 2014, available at <http://www.ideaworkscompany.com/wp-content/uploads/2014/11/Press-Release-92-Global-Estimate.pdf>.

available flights. Of course, since the advent of computerized reservation systems in the 1970s, now referred to as Global Distribution Systems (“GDS”), consumers need not follow such an inefficient process.

2.1.1. Direct Airline Distribution

Travelers have always been able to shop and book directly with an air carrier, either by telephone or at a brick-and-mortar ticket office, such as the airline’s ticket counter at an airport or a city-center ticket office. Since the advent of online shopping, travelers can also shop and book online directly with a carrier on the carrier’s own website, such as AA.com or Delta.com. This type of direct distribution has been growing significantly as carriers have heavily marketed their sites.

From the point of view of the traveling consumer, shopping and booking directly with a single airline implies that the choice of carrier has already been made. That is, direct distribution does not permit comparison shopping across competing airlines. This may make sense for the most loyal customers of a particular airline who wish to consider no alternatives regardless of price or other considerations, and for whom frequent flyer miles often influence the booking decision. It may also make sense in situations in which only one airline serves a desired origin or destination. But most travelers prefer to learn what their available alternatives (e.g., prices, connections, schedules) are across a number of different airlines before making a purchase decision. Those travelers would need to search multiple airline websites to plan their travel.

2.1.2. Shopping and Booking via a Travel Agency

Travelers have also long been able to shop and book with a traditional travel agent, either by phone or by visiting a brick-and-mortar travel agency location. Like in direct distribution, the advent of the Internet gave rise to increased search and booking options for consumers through entities such as Expedia, Priceline, Orbitz, and cheapOair.com, and online sites of brick-and-mortar travel agencies such as AAA.com and thomascook.com.

The indirect distribution through travel agencies (both online and brick-and-mortar) permits comparison shopping across competing airlines. The ability to comparison

shop is, for the most part, powered by a GDS, to which the travel agencies and OTAs subscribe. The GDS allows travel agencies and OTAs to shop for and book the travel services of hundreds of different travel suppliers. The GDS obtains and stores information on the services being offered by travel suppliers.¹⁴ For example, in the case of airlines, the GDS can access all of the flight schedules, prices, and associated restrictions being offered by all of the airlines participating in that GDS. The GDS searches for available flights, available seats, prices, and fare restrictions and displays this information to the travel agent or OTA as available flight itineraries and the corresponding bookable fares. Through direct connections to the internal reservation systems of the airlines, the GDS provides the means for the agent to process bookings and payments for a reservation. The GDS also stores a Passenger Name Record for the booking that coordinates air and other bookings (e.g., hotel) and can be retrieved and modified by the travel agent. The three GDSs that serve U.S. travel agencies are Sabre, Travelport, and Amadeus. Hundreds of airlines currently choose to participate in each of the GDSs.¹⁵ Through each GDS, the airlines' information is distributed to the travel agents that have contracted for that GDS's services.

While business models differ somewhat between types of travel agencies, the typical travel agency business model relies primarily on three sources of income. Agencies earn commissions from airlines for booking certain levels of business on a particular airline. Agencies also earn payments from GDSs in exchange for placing bookings

¹⁴ A GDS aggregates the fare and fare restrictions data from the Airline Tariff Publishing Company ("ATPCO") and direct connections to airline reservation systems, flight schedule information from the Official Airline Guide ("OAG") or Innovata, real time ("last seat") ticket availability information from direct connections to the airlines, and information on other travel services.

¹⁵ Historically, Southwest Airlines has been the notable exception. It participated in only the Sabre GDS until 2007, when it also began to use the Galileo GDS (part of Travelport). In early 2015, Southwest began to offer its flight schedule and fare information through the Amadeus corporate travel booking tool. See "Southwest becomes first major U.S. airline to adopt Amadeus res system," Travel Weekly, May 12, 2014, available at <http://www.travelweekly.com/Travel-News/Travel-Technology/Southwest-Amadeus-IT-deal-could-lead-to-GDS-pact/>; and "Amadeus and Southwest Airlines advance partnership with new corporate travel agreement," Press Release, February 11, 2015, available at <http://www.prnewswire.com/news-releases/amadeus-and-southwest-airlines-advance-partnership-with-new-corporate-travel-agreement-300034269.html>.

through a particular GDS. And agencies may charge fees or markups to consumers for providing travel booking services.¹⁶

OTAs have a sizeable share of airline bookings. Phocuswright reports that, from a survey of travelers purchasing airline tickets, 32 percent indicated that they use OTAs as their typical method to purchase airline tickets.¹⁷ By comparison, 34 percent of these travelers typically used airline websites.¹⁸ Moreover, independent online sites also serve as a source for many online consumers who purchase tickets on an airline's website. In a recent travel survey, 89% of respondents indicated that they "sometimes" "most of the time" or "always" search on a third-party comparison site before ultimately booking through the airline.¹⁹

2.1.3. Shopping a Comparison Site, Booking Elsewhere

During the early 2000s, a number of price comparison websites came online designed to permit travelers to search travel supplier information, including airline price and schedule information, but not directly book their travel. These websites are known in the industry as metasearch sites. Metasearch sites obtain their price and schedule information in a number of ways, including from GDSs or other information providers like Innovata. Similar to OTAs, the metasearch sites provide search and information services and enable comparison shopping across competing airlines and even across OTAs, but unlike traditional travel agents and OTAs, metasearch sites typically do not process bookings. The site sends the traveler either to the airline or to an OTA when

¹⁶ Under the merchant model, the OTA or travel agent receives a net fare from the airline and then charges the consumer's credit card for a marked up retail rate. The OTA or travel agent then pays the airline for the net rate and keeps the markup, or margin, as its compensation. Under the agency model, the OTA or travel agent merely collects the consumer's credit card information and passes it along to the airline, which charges the credit card.

¹⁷ Phocuswright U.S. Online Travel Overview, December 2014, at 25.

¹⁸ Twelve percent of respondents indicated they booked through a metasearch site. The remaining respondents, while not reported, presumably booked off-line.

¹⁹ FlightView, "Travel Data Insights & More Touch Points Key For OTA & Metasearch Engines To Win More Market Share."

she is ready to book.²⁰ The typical business model of a metasearch travel site relies on cost per click (“CPC”) and cost per acquisition (“CPA”) referral fees paid by OTAs or travel suppliers, and on advertising revenues earned from selling advertising space on the metasearch site.

Airlines usually pay low or zero commission for leads from these sites. The result is pro-consumer and efficiency enhancing from a welfare standpoint. The combination allows the consumer to comparison shop, and the airline to pay a low or no booking fee.

2.2. Benefits to Travelers of Online Travel Agents and Metasearch Sites

OTAs and metasearch travel sites provide a number of benefits to consumers, evidenced by the amount of traffic and the number of bookings facilitated through these channels.

First, these price comparison websites offer information from a number of different travel suppliers of all types. These include not only airlines, but hotels, rental car agencies, cruise ships, and other travel products.

Second, OTAs and metasearch sites offer a “one stop shopping” experience for accessing and comparing travel information that enables consumers to comparison shop in a convenient way across competing travel providers to find the lowest prices, the most convenient schedule, a preferred location, or other features. OTAs and metasearch sites display the flight schedules, prices, and seat availability of competing airlines on a particular route. This convenience reduces consumer search costs. As explained in detail later, the ability of consumers to easily compare prices and other

²⁰ While the ability to process bookings was once considered a defining difference between OTAs and metasearch sites, this distinction has blurred somewhat over time. For example, most metasearch sites will link directly to an airline site to enable consumers to complete a booking. Further, metasearch sites are now beginning to offer booking services that appear to the consumer to be on the metasearch site but which are powered by another entity, such as a travel supplier.. See “The Next Chapter in the Convergence of Booking Sites and Metasearch,” Skift.com, July 21, 2014, and “Kayak Steps Beyond Metasearch and Into Direct Bookings,” Skift.com, August 22, 2012.

service attributes in a quick, clear, and convenient way increases head-to-head competition between airlines.²¹

Third, the sites provide easy-to-use search interfaces and features that enhance a consumer's ability to make competitive comparisons that are most meaningful to her. OTAs and metasearch sites compete with each other to provide the most useful search and display features. For example, these websites typically offer some combination of the following services:

- Ability to check airfares on dates adjacent to the desired dates, in case the traveler has the flexibility to fly on a different date to get a lower fare.
- Ability to check airfares on flights to or from airports that are nearby the desired airport, in case fares might be significantly lower at those airports.
- Matrix-style displays that show at a glance the lowest fares of a number of different airlines across non-stop, 1-stop, and multiple-stop routes.
- Displays that show flight schedules along a timeline, so that take-off and landing times throughout the day can be more easily visualized.
- Various ways to sort search results, for example, by price, by duration, by take-off or landing times, or even by combinations of these. For example, Hipmunk allows sorting according to "agony," a combination of price, number of stops and duration.
- Various ways to filter search results, for example, by airline, or by number of stops, or by available amenities (e.g., on-board WiFi, television, power outlets, flat-bed seats).

Fourth, the OTAs and metasearch search engines have the ability to build and display multi-airline itineraries. These may consist of true interline itineraries that involve multiple carriers, itineraries comprised of one airline on the outbound trip and a different airline on the inbound trip, or so-called 'hacker' fares that involve other combinations of

²¹ These sites also offer information from other types of travel suppliers, but this study addresses only the airline industry.

one-way tickets.²² These multi-airline itineraries may offer the consumer a lower overall price, a more convenient schedule, or perhaps both, especially on international travel.²³

Fifth, OTAs and metasearch sites frequently offer the ability to sign up for email price alerts, which notify the consumer of price changes for itineraries of interest to the consumer, regardless of airline.

Sixth, some sites offer information about the recent trend in airfares for a particular itinerary, or predictions about the direction of future airfares, to help the consumer decide the best time to purchase a flight.

Seventh, these sites often provide information about individual travel suppliers or travel needs. For example, many display the on-time percentage of individual flights, the type of aircraft, the on-board amenities, and the like. SeatGuru reports a “G-Factor” for each flight in a flight search, an index of comfort summarizing things such as legroom, service, and in-flight entertainment.

Eighth, some sites specialize in soliciting user reviews, and then displaying the reviews or summarizing them in convenient ways. For example, TripAdvisor displays user ratings of airlines along a number of dimensions, such as value, check-in experience, punctuality, baggage handling, and seat comfort.

Ninth, some sites provide moderated travel information to help consumers make informed decisions. For example, a site may employ “experts” to write about the best things to do in a particular city. The combination of user reviews and moderated travel information frequently provides much more information than would be provided directly by the travel supplier (e.g., whether a particular hotel or restaurant is “child-friendly”).

²² See, “Hacker Fares: Kayak Helps You Book Two One-Way Flights,” Consumerist.com, August 25, 2011.

²³ Travel and consumer websites often describe the potential savings from “mix and match” itineraries of multiple airlines. See for example, “7 Rules For Saving Money On Holiday Travel, Business Insider, available at <http://www.businessinsider.com/seven-awesome-tips-to-save-on-holiday-travel-and-lodging-2011-9>.

Savings by flying on multiple tickets could reach 30% and is not limited to international travel. However, due to higher overall ticket prices, total savings can be high for international travel. See for example, “A Trick for Cheaper Flights Hiding in Plain Sight,” *Wall Street Journal*, January 23, 2013.

Tenth, many of these sites “inspire” consumers to travel by providing suggestions on places to go or things to see and do (often based on user reviews).²⁴ These suggestions may be available on the site, or sent by email to registered users. In other cases, OTAs and metasearch sites are the first places to go for travelers who know they want a trip, but have not decided where and how to get there and even when to travel. There are many such travelers. One Phocuswright survey found that approximately 19 percent of U.S. travelers are discretionary, in that their travel is optional and the destination is not predetermined.²⁵ Half of U.S. discretionary travelers do not have a single destination in mind when they start their trip planning process.²⁶ Instead, they collect information from online travel sites and other sources and engage in search. Some discretionary travelers responded that they had not been contemplating travel until they were informed about a good travel deal.

For all of these reasons, a large number of consumers have come to rely on OTAs and metasearch sites to meet their travel planning and shopping needs.

2.3. Evidence of Consumer Value

2.3.1. Visitors to Price Comparison Websites

The number of visitors to these sites illustrates the value consumers find in the travel information they provide. Consumers visit both OTAs and metasearch sites for travel information. Each month, millions of potential consumers visit these websites to gather information, plan travel, and book their tickets.

Table 1 below lists several of the largest OTAs based on average monthly desktop traffic in 2014. In addition to the OTAs, there are several metasearch websites providing air travel as well as other travel information. Table 2 lists several of the largest metasearch websites and includes information about visitors, where known.

²⁴ A Google study of traveler decisions found that 61 percent of those shopping for personal travel and using online sources for ideas typically use search engines for inspiration. “The 2014 Traveler’s Road to Decision,” thinkwithgoogle.com, June 2014.

²⁵ “Empowering Inspiration: The Future of Travel Search,” Phocuswright, February 2012, at 2.

²⁶ Ibid., at 24.

Table 1: Most-Visited U.S. Online Travel Agencies

Online Travel Agency	Average Monthly Desktop Traffic 2014
	(000s U.S. Home and Work Locations)
Expedia	11,942
Priceline	8,584
Hotels.com	6,041
Booking.com	6,252
Orbitz	5,024
CheapOair	4,995
Travelocity	5,454
Hotwire	3,319
CheapTickets	2,304

Source: ComScore, includes work and home. Booking.com figure includes hotel only.

Table 2: Visitors to and Views of Selected U.S. Airline Metasearch Sites

Metasearch Site	Traffic and Views October 2014
Kayak	4.8 mil visitors and 57 mil views
Hipmunk	1.5 mil visitors and 4 mil views
TripAdvisor	13.7 mil visitors and 129 mil views
Fly.com (part of Travelzoo)	1 mil visitors and 6 mil views
Momondo	0.2 mil visitors and 1 mil views

Source: ComScore.

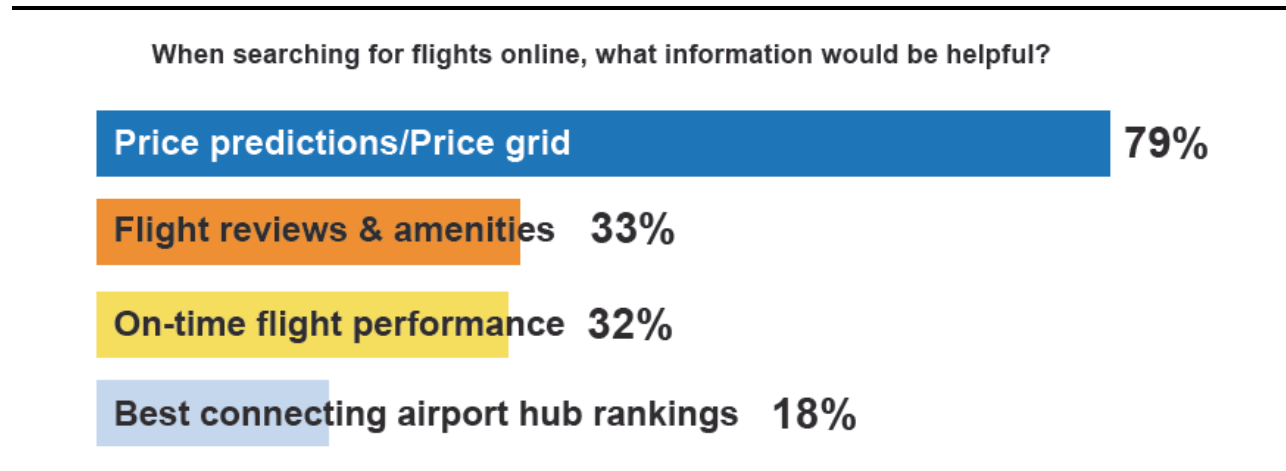
2.3.1. Reasons Consumers Visit Price Comparison Websites

Consumer surveys illustrate the reasons consumers visit OTAs and metasearch sites.

A June 2014 survey of over 2,000 travelers found that, by a large margin, price predictions and price grids are the most helpful type of information when searching for

flights. Other useful types of information included flight reviews and amenities, on-time flight performance, and best connecting airport hub rankings. See Figure 1.

Figure 1: What Kinds of Information do Airline Shoppers Value?



Source: "OTAs and Meta-Search Engines: It's Not Just About Trip Planning," FlightView.com, June 9, 2014.

2.3.2. OTAs and Metasearch Sites Create New Travel Demand

One economic benefit of OTAs and metasearch sites is to expand the size of the travel pie. This creates new economic surplus that benefits both consumers and travel suppliers. These sites expand the market by providing information to consumers that give them reasons to travel. For example, the information enables a better matching of travelers to particular destinations and activities, which creates more opportunities for consumers to choose travel.

These sites offer information on complementary travel products such as air and hotel services. By bringing these different travel services together, consumers spend less time planning travel and may find new opportunities to combine services. The sites sometimes even offer travel bundles such as combined air and hotel packages that save consumers money and drive consumers to participating suppliers. In addition, these sites "inspire" travel by suggesting places to go and things to do, and by notifying

consumers of travel opportunities, promotions, and special pricing that matches their preferences.²⁷

3. The Economics of Information and Search

Consumers make air travel purchase decisions based on information regarding the available flights, schedules, prices, and other relevant information. Part of this decision is the choice of airline. To the extent the consumer can collect information on the flights, schedules, and prices of multiple airlines, the consumer is better equipped to choose among competitive offerings. For example, one airline may have a lower price, but another may have a more convenient schedule or offer a non-stop flight. On the other hand, one of the airlines may be perceived to have better service, more modern aircraft, or be more likely to run on time. These are the dimensions on which carriers compete with one another.

Well-informed travelers and their travel agents—the ones most aware of the breadth of competitive offerings—increase competition among airlines. Were an airline not to provide a compelling price and service offering, travelers would choose a different airline. If information is readily available at low cost and is transparent, clear, and complete, travelers are more likely to be well-informed and airline competition is fiercer. However, if information is more time-consuming and costly to obtain, or is not transparent, clear, or complete, travelers are less likely to be well-informed. This is particularly true for airfares because the information consumers need is constantly changing. Because consumers will be less informed about competitive options, entry or expansion will become less profitable and airlines will have an incentive and enhanced ability to raise prices (or, equivalently, reduce quality).

²⁷ As an example of this type of market expansion, when Delta pulled its flights from three metasearch sites and American Airlines was absent on Orbitz and Expedia in early 2011, the Virgin Islands Tourism Department became concerned of an adverse impact on tourism. The sites “...represent a significant source of packages sold to the territory on these airlines....” The Tourism Department responded by reaching out to media outlets to remind travelers of other ways they can book USVI trips on those airlines. (“American, Delta Pull Flights from Travel Websites,” *Virgin Island Daily News*, January 10, 2011.)

Travelers benefit greatly from the aggregation and display of comparative airline information because it enables them to shop quickly and easily for flights across most major carriers.

3.1. Information is Inherently Costly

Consumers need information about the alternatives available to them to make the best purchase decisions. This is particularly important for an item as expensive as air travel. Having more accurate and more complete information about alternatives could mean a difference of tens, hundreds, or even thousands of dollars in the cost of purchasing airline tickets, particularly international flights. Beyond the cost of the tickets, better information leads to choices that reduce the consumer's costs in other ways, e.g., a more convenient schedule.

But gathering information is inherently costly to the consumer because it takes time. The more time-consuming the search, the more costly is the consumer's search process. For example, the DOT publishes estimates of the hourly value of time savings to be used in their economic analyses. As of 2009, this value was \$42.10.²⁸ Other economic analysis has estimated that the average traveler spends about 30 minutes searching for a flight in the final seven days prior to making a purchase and 44 minutes in the final two weeks prior to purchase.²⁹ In other words, the process of shopping for a flight in the last one to two weeks prior to travel costs about \$21 to \$31.

Economic theory tells us that a rational consumer would continue shopping up until the point that the cost of gathering additional information exceeds the expected benefit of the additional information.³⁰ For example, suppose a consumer visits AA.com and finds a suitable flight for \$400. By visiting another site such as Delta.com, the consumer

²⁸ "The Value of Travel Time Savings: Departmental Guidelines for Conducting Economic Evaluations (Revision 2)," U.S. Department of Transportation, September 28, 2011.

²⁹ The figures reflect average time spent in travel purchase search, of which more than half involved air travel. "Essays on Online Browsing and Purchase," Ciju T.R. Nair, Washington University doctoral dissertation, December 2010.

³⁰ The seminal economics article analyzing how the costs and benefits of search affect the amount of shopping consumers do is by 1982 Nobel Prize winner George Stigler, "The Economics of Information," *Journal of Political Economy*, Vol. LXIX, No. 3 (June 1961).

might expect to find, with some probability, a lower price. But this will take more time, raising the search costs. At some point, the consumer stops searching because they do not expect any additional price decreases to offset the additional search costs. For example, suppose the expected time spent searching is 30 minutes (cost=\$21) and the expected gain is a flight that is \$50 less with probability 1/2 (\$25). The consumer finds it worthwhile to search. Suppose after checking another website the probability of finding a discount drops to 1/4. Now she will stop searching because the expected gain (\$12.50) is less than the cost (\$21).³¹

OTAs and metasearch sites lower the cost of search by enabling consumers to easily and quickly compare prices and schedules across competing airlines. The cost of search drops to almost zero because all prices can be shown on one website with one search. When the information is all in one place, the consumer does not need to continue searching additional sites.

The cost of searching multiple sites one at a time has become even more time-consuming and costly as consumers migrate to using mobile devices. For example, it is more difficult to flip through several screens on a hand-held mobile device than on a large desktop screen. Notwithstanding the drawbacks, the benefits of mobile device usage have driven growth in mobile use in travel planning. One recent survey found that 36 percent of travelers regularly use an OTA mobile app during their trips.³² Similarly, Phocuswright reports that 28 percent of U.S. travelers use mobile devices while shopping for travel.³³

Decades of economic analysis have studied how the costs of information can affect competition and prices. One of the seminal developments in information economics has

³¹ The implicit costs of time likely varies significantly across consumers, so there may be some consumers who would take the time to engage in further searching even if other consumers might not do so.

³² FlightView, "Travel Data Insights & More Touch Points Key For OTA & Metasearch Engines To Win More Market Share," June 2014.

³³ "U.S. Online Travel Overview Fourteenth Edition: Online Travel Agencies," Phocuswright, December 2014.

been the theoretical result known as the Diamond Paradox.³⁴ Simply put, in the absence of easily accessible, publicly posted prices, even a small search cost could lead to monopoly pricing. The intuition is simple. Consumers will continue to search for better prices only if they think they can obtain a price not only lower, but lower by the amount of the search cost. Each seller knows this about consumers and has an incentive to price just above other sellers. Since each seller has the same incentives to raise price, the prices rise to monopoly levels.

Additional research in the economics of information has explored the implications of differences in the information available to various consumers.³⁵ For instance, some consumers may have higher search costs or have less ability to gain information and thus remain uninformed about low prices. As these uninformed consumers become more prevalent, sellers can have an incentive to offer differing prices—low prices for the best informed and higher prices to the less informed. Such models are sometimes called “tourist and natives.” Natives to an area can find low prices more easily, but tourists have less ability or higher costs of finding better prices. Firms may be able to extract higher prices from the tourists who have less information available, higher costs of search, or otherwise more difficulty in searching.

3.2. Airlines Frequently Change Schedules, Prices, and Inventory Availability

Search costs, and mechanisms to reduce them, are particularly important for air travel because airfares and schedules change frequently. Information becomes stale very quickly because a price that was available in the morning may be unavailable in the afternoon. This is due to the practice by airlines of “yield management” or “revenue management.” Yield management, pioneered by American Airlines in the 1980s, involves dynamically changing the availability of different prices for a particular flight

³⁴ The seminal research in the Diamond Paradox is part of general research into the role of search costs and information in prices and competition that led to the 2010 Nobel Prize shared by Peter Diamond. Peter Diamond, “A Model of Price Adjustment,” *Journal of Economic Theory*, Vol. 3, 1971, pp. 158-168.

³⁵ See for example Stephen Salop and Joseph Stiglitz, “Bargains and Ripoffs: A Model of Monopolistically Competitive Price Dispersion,” *Review of Economic Studies*, 44, 1977, pp. 493-510.

according to demand in order to optimize revenue generated by the flight.³⁶ In simplified form, airlines define many different fare “buckets” for each flight, where each bucket represents a different fare level and a different set of restrictions a traveler must meet to qualify for the fare. For example, one fare bucket may be for \$109 but require a 21-day advance purchase and is available only for flights on certain less-popular days of the week. Another fare bucket may be \$209 and require 14-day advance purchase. A seat on the same flight but in the first-class cabin with no advance purchase requirement and no blackout dates may be in a \$1,700 fare bucket.

In general, the fewer the restrictions on the ticket, the higher the fare. Because only so many seats are available on a given flight, the airline divides up into the different fare buckets in such a way as to attempt to maximize the revenue of the flight. As the flight gets booked, some fare buckets will “fill up,” and those fares are no longer available. Moreover, airlines analyze booking patterns in real time and dynamically adjust the number of seats available in each fare bucket. The end result is that, for a consumer searching for a flight, available airfares are literally changing in real time. Unlike other products for which prices change only infrequently, an airline traveler needs to refresh her price and schedule information on a frequent basis all the way up until the ticket is booked.

Therefore, search costs do not decline appreciably as the consumer gains more experience shopping and booking air travel. This makes search costs more important for air travel. The reduction in those search costs has a more significant impact.

3.3. Reducing the Cost of Search Increases Competition

Economists have recognized the role of Internet comparison shopping in reducing the cost of search for consumers. This comparison shopping has been led by the OTAs and metasearch sites.

The proliferation of online sites that provide information previously limited to travel agents has increased consumers’ awareness of fare availability and fare premiums across carriers and travel

³⁶ Anthony W. Donovan, “Yield Management in the Airline Industry,” *Journal of Aviation/Aerospace Education & Research*, Vol. 14, No. 3, Spring 2005.

*dates. The various search engines (travelocity.com, expedia.com, etc.) have dramatically reduced consumers' search costs, and allowed them to easily find the most desirable flights.*³⁷

Reducing the cost of search by making information transparent, easily available, and comparable increases competition between competing suppliers.

A substantial body of economic research has found, across a range of industries (including airlines), that price information, transparency, and comparability made possible by the Internet have tended to reduce prices.

- A study of term life insurance pricing found that the ability to search across many insurance companies online and list results on one page led prices to fall by 8 to 15 percent.³⁸
- A study of prices of books and CDs found that prices were 9 to 16 percent lower on the Internet than in brick-and-mortar bookstores, depending on whether taxes, shipping, and shopping costs are included in the price.³⁹
- A study of transaction prices on new automobiles found that the use of an Internet price referral service that had access to many dealers reduced transaction prices by 2.2 percent.⁴⁰
- A later paper by the same authors, using a different dataset, found that combined information and referral effects lowered new car prices by 1.2 percent, corresponding to 22 percent of dealers' average gross profit margin per vehicle.⁴¹

³⁷ Steven Berry and Panle Jia, "Tracing the Woes: An Empirical Analysis of the Airline Industry," *American Economic Journal: Microeconomics*, Vol. 2, No. 3, August 2010, pp. 1-43 at 3.

³⁸ Jeffrey R. Brown and Austan Goolsbee, "Does the Internet Make Markets More Competitive? Evidence from the Life Insurance Industry," *Journal of Political Economy*, Vol. 110, No. 3, June 2002, pp. 481-507.

³⁹ Erik Brynjolfsson and Michael D. Smith, "Frictionless Commerce? A Comparison of Internet and Conventional Retailers," *Management Science*, Vol. 46, No. 4, April 2000, pp. 563-585.

⁴⁰ Florian Zettelmeyer, Fiona Scott Morton, and Jorge Silva-Russo, "Cowboys or Cowards: Why are Internet Car Prices Lower?" *National Bureau of Economic Research*, Working Paper 8667, December 2001.

⁴¹ Florian Zettelmeyer, Fiona Scott Morton, and Jorge Silva-Russo, "How the Internet Lower Prices: Evidence from Matched Survey and Auto Transaction Data," *National Bureau of Economic Research*, Working Paper 11515, June 2005.

- A study of consumer electronics found that the ease of search provided by an online comparison shopping site saved consumers an average of 16 percent compared to those purchasing from a representative online store.⁴² The value of information could range from 11 percent when just two sellers participated to 20 percent when more than 30 did so.

Such examples are consistent with the theory that easier, less costly access to comparative shopping information leads firms to offer lower prices; it intensifies price competition. Other research has highlighted how the transparency of pricing—how easy it is for the consumer to understand the prices charged by different sellers—is critical to the price-reducing effects of competition. For example, economists ran an experiment in which the shelf tags on certain grocery store items included the sales-tax-inclusive price shown below the pre-tax price.⁴³ For these items, the tax-inclusive price was more “salient”, as compared to other items for which the sales tax was only added at the register.

The experiment found that the total revenue of products with the more transparent price fell by about 8 percent compared to the total revenue of products with the less transparent price. That is, consumers take less account of price information that is costlier to obtain. The authors also found that state-level increases in excise taxes (which are included in posted prices) reduce aggregate alcohol consumption significantly more than increases in sales taxes (which are added at the register). These results show that, even though it may be possible for consumers to make computations and comparisons to enable them to properly gauge and compare prices, their behavior shows that salience matters. OTAs and metasearch sites provide salience; they make price comparisons among airlines more noticeable and prominent, unlike the airlines’ own websites.

⁴² Michael R. Baye, John Morgan and Patrick Scholten, “The Value of Information in an Online Consumer Electronics Market,” *Journal of Public Policy & Marketing*, Vol. 22, No. 1, Spring 2003, pp. 17-25.

⁴³ Chetty, Raj, Adam Looney, and Kory Kroft, “Salience and Taxation: Theory and Evidence,” *American Economic Review*, 99(4):1145–1177, 2009.

Economists have also studied the impact of the Internet on airline pricing specifically. For example, a 2011 study of airline prices found that rising Internet penetration leads to lower fares.⁴⁴ In particular, each percentage point of Internet penetration in a city is associated with a 2.8 percent to 5.4 percent reduction in average fares from the city. Not surprisingly, the Internet effect was insignificant on monopoly routes without competition. However, on routes with at least three airlines, each percentage point increase in Internet penetration was associated with a 6 percent to 8 percent reduction in average fares.

Other studies have found similar results. A 2006 study found that when controlling for ticket characteristics (class of service, refundability, other ticketing restrictions, etc.), market structure, and airline fixed effects, tickets purchased on the Internet cost about 13 percent less than tickets purchased offline.⁴⁵ A more recent study found that customers classified by the authors as “Clearly Leisure” who purchased an airline ticket via an OTA paid 5.7 percent less than similarly classified customers who purchased from a brick-and-mortar travel agent.⁴⁶ The author concluded that “the Internet created multiple alternative sources for price information and thereby enhanced transparency and enabled accessible public knowledge of fares.”⁴⁷ A third study notes the dramatic decrease in airline price dispersion—the variation in prices from the lowest available price to the highest available price—since 2001, just as Internet search engines arrived, allowing consumers to compare fares independently.⁴⁸ Nobel Prize winner George Stigler noted that “price dispersion is a manifestation—and indeed it is the

⁴⁴ Eugene Orlov, “How Does the Internet Affect Price Dispersion? Evidence from the Airline Industry,” *Journal of Industrial Economics*, Vol. LIX, No. 1, March 2011, pp. 21-37.

⁴⁵ Anirban Sengupta and Steven Wiggins, “Airline Pricing, Price Dispersion and Ticket Characteristics On and Off the Internet,” NET Institute Working Paper #06-07, November 2006, pp. 1–64 at 5.

⁴⁶ William G. Brunger, “The Impact of the Internet on Airline Fares: The ‘Internet Price Effect’,” *Journal of Revenue and Pricing Management*, Vol. 9, No. 1/2, (November 2009), pp. 66–93 at 80.

⁴⁷ *Ibid.*, at 69.

⁴⁸ Severin Borenstein and Nancy Rose, “How Airline Markets Work... Or Do They? Regulatory Reform in the Airline Industry,” University Chicago Press, October 2008, p. 47.

measure—of ignorance in the market.”⁴⁹ The decline in airline price dispersion is evidence of the intensified competition from comparison shopping.

3.4. Revisiting “The Southwest Effect”

Southwest Airlines, one of the original low-cost carriers (“LCCs”) and now the largest U.S. airline by domestic passengers flown, was one of the first airlines to have a website. It was for many years the notable exception to the predominant trend of airlines to fully participate in GDSs and to make their prices widely available to consumers through price comparison websites. It also became known for “The Southwest Effect,” the salutary effects on competition when Southwest Airlines enters a new city-pair market.⁵⁰ Southwest became the model for documenting the increase in competition brought about by airline deregulation. More recent studies have shown that “The Southwest Effect” has declined as the role of new entrant was passed on to other carriers such as JetBlue, Allegiant, and Spirit Airlines.⁵¹

What is less well known is that recent research shows that the lack of easy access to Southwest’s price information on price comparison websites actually makes Southwest prices *higher* under certain circumstances. This study examined whether Southwest, which does *not* make its prices widely available to consumers through OTAs, is able to command higher average fares (despite its reputation as a low-fare carrier).⁵² The author finds that Southwest’s distribution model prevents travelers from immediately observing competing fares from rival airlines. For last-minute bookings (which the author contends have the highest search costs), Southwest has higher fares on its own website than the best available comparable deal obtained from an Internet site (Orbitz) that allows direct comparison of airlines’ offers.

⁴⁹ George Stigler, “The Economics of Information,” *Journal of Political Economy*, Vol. LXIX, No. 3 (June 1961).

⁵⁰ Randall D. Bennett, James M. Craun, “The Airline Deregulation Evolution Continues: The Southwest Effect,” Department of Transportation, Office of Aviation Analysis, 1993.

⁵¹ Michael D. Wittman, William S. Swelbar, “Evolving Trends of U.S. Domestic Airfares: The Impacts of Competition, Consolidation, and Low-Cost Carriers,” MIT Small Community Air Service White Paper No. 3. MIT International Center for Air Transportation, August 2013.

⁵² Volodymyr Bilotkach, “Reputation, Search Cost, and Airfares,” *Journal of Air Transport Management*, Vol. 15, Issue 5, September 2010, pp. 251–257 at 252.

In his 2010 article, Bilotkach studies whether Southwest's less transparent ticket distribution strategy allows it to charge higher prices. Southwest does not significantly distribute via GDSs or OTAs, which makes Southwest fares less easily compared to rival fares. Bilotkach treats this as an increased search cost for travelers looking to compare fares. It is hypothesized that Southwest may rely on its reputation for low fares and the lack of transparency to actually charge higher prices.

Specifically, he studies for each city-pair route flown by Southwest the difference between the lowest fare on Southwest.com and the lowest fare from another carrier based on Orbitz. These fares were collected across 238 Southwest city-pair routes for travel in November 2006 through January 2007.

For last-minute fares (purchases within two days of travel), Southwest had fares averaging \$34 higher than the lowest competing fare on Orbitz. This was about 8 percent of Southwest's average fare. For the 183 city-pair routes with non-stop competitors, the difference was \$31, or 9 percent of Southwest's average fare. Bilotkach attributes the price difference to the higher search costs to compare Southwest fares. These search costs are expected to be higher in the last days before departure than one month in advance.

Interestingly, Southwest's fare premium over its rivals did not extend to 30-day advance purchases. For these fares, Southwest's fares average \$5 lower, or about 3 percent of Southwest's average fare.

Section 6 of this report describes estimates of the potential benefits to consumers from comparison shopping and the potential loss of consumer welfare if that comparison shopping were eliminated. As elaborated in that section, the competition enhanced by comparison shopping potentially saves consumers up to \$6.7 billion as well as encourages 41 million additional consumers to benefit from cost-effective travel due to the resulting competitive prices.

4. Airlines are Engaging in Efforts to Prevent Metasearch Sites from Displaying Airline Information

Metasearch sites were originally configured as a referral business, offering “travel suppliers and OTAs an efficient channel to sell their products and services to a highly targeted audience focused on purchasing travel.”⁵³ The sites refer consumers to travel suppliers and OTAs in exchange for a CPC or CPA fee. This expands the reach of airlines and OTAs, allowing them to grow their airline bookings.

Over the last several years, major airlines have slowly and quietly been taking actions to prevent metasearch sites from obtaining and displaying airline information. Concerns exist that this trend will continue and eventually spread to the largest metasearch sites and OTAs.

The airlines’ actions have included the following:

- Prohibiting metasearch sites from referring consumers to an OTA for booking a flight.
- Prohibiting OTAs from providing airline information to metasearch sites.
- Prohibiting GDSs from providing airline price and schedule information to “unauthorized” metasearch sites.
- Prohibiting onward-distributing flight schedule information to metasearch sites by services such as Innovata.⁵⁴
- Refusing to pay metasearch sites for direct referrals to the airline’s own booking website.
- Prohibiting metasearch sites from displaying price information of the airline.

⁵³ Kayak Software Corporation, SEC Form 10-K for the fiscal year ended December 31, 2012.

⁵⁴ Innovata, part of Flightglobal, is a provider of flight schedule, minimum connect times, and other flight data information accounting for hundreds of airlines accounting for over 99% of flight segments flown worldwide. For more information, see Innovata Supplier Relations, available at <http://www.innovata-llc.com/supplier-relations/>.

As a result, some metasearch sites can no longer display prices and/or schedules of some major airlines in their search displays, depriving consumers of the benefits of transparent price comparisons.

For example, Delta Air Lines has publicly cut off a number of different OTA and metasearch sites. In December 2010, Delta removed its flights from CheapOAir, BookIt.com, and OneTravel.⁵⁵ Weeks later, in January 2011, Delta also cut off CheapAir.com, Vegas.com, AirGorilla, and Globester.⁵⁶ By mid-2011, Delta had “terminated its relationships” with 21 OTAs.⁵⁷

More recently, in 2014, Delta has cut off a number of additional metasearch sites, including TripAdvisor, Fly.com, Hipmunk, and Routehappy.⁵⁸ In early 2015, Delta cut off Skyscanner by preventing OTAs from distributing information related to Delta flights to Skyscanner. In early 2015, we understand they cut off several other smaller European-based OTAs.

Table 3 shows some of the metasearch sites that are known to be unable to display Delta’s prices. A sampling of screenshots from some of these sites, shown in Appendix A, illustrates some of the ways in which different metasearch sites have dealt with the inability to display Delta prices.










⁵⁵ “Delta cites Apple Experience, Exits CheapOair, BookIt.com, OneTravel,” Tnooz, December 22, 2010, available at <http://www.tnooz.com/2010/12/22/news/delta-cites-apple-experience-exits-cheapair-bookit-com-onetravel/>.

⁵⁶ “Delta Removes Flights from CheapAir, Vegas.com, AirGorilla and Globester,” Tnooz, January 10, 2011, available at <http://www.tnooz.com/2011/01/10/news/delta-removes-flights-from-cheapair-vegas-com-airgorilla-and-globester/>.

⁵⁷ “Delta Increases Share by Squeezing Online Travel Agencies and Metasearch,” Tnooz, August 5, 2011, available at <http://www.tnooz.com/2011/08/05/news/delta-increases-share-by-squeezing-online-travel-agencies-and-metasearch/>.

⁵⁸ See, e.g., “Delta Keeps Pruning Website Distribution Relationships,” Skift, June 21, 2014, available at <http://skift.com/2014/06/21/delta-keeps-pruning-website-distribution-relationships/>. In February 2015, Routehappy changed its business model to focus on business-to-business. In doing so, it removed consumer booking links. As such, it is no longer a consumer metasearch site. See, “Routehappy moves to B2B Model,” *Travel Weekly*, February 26, 2015.

Table 3: Selected Price Comparison Websites Unable to Display Delta Prices

Delta posts the following “Carrier Distribution Policy” on its website:

1. *No Redistribution of Carrier Flight Data*

No agent shall (a) provide access to, display or otherwise distribute, directly or indirectly, any of Carrier “Flight Data” to any other party, including without limitation any “Metasearch Operator,” (b) receive any referral, web page click-through or link from any webpage of any Metasearch Operator in connection or associated with any search result on such webpage that is attributed to any Carrier product or service to any webpage used by agent, including, without limitation, any advertising link or other hyperlink, or (c) place or otherwise have any advertising link on any Metasearch Operator webpage in connection or associated with any search result on such webpage that is attributed to any Carrier product or service in such search result, in each case, without the prior written consent of the applicable Carrier or pursuant to a definitive written agreement in effect with such Carrier.

In addition, each agent acknowledges and agrees that, as between the agent and a Carrier, the Carrier owns, controls and retains all right, title and interest in and to its Flight Data and all copyright, database and other intellectual property rights relating thereto.⁵⁹

Other airlines have instituted comparable policies regarding the redistribution of price and schedule data, sometimes called “content” by the airlines. For example, American Airlines publishes restrictions on in its agency agreements with ARC-accredited agencies to prevent redistribution of price and schedule information.⁶⁰ United Airlines includes similar language in its Booking and Ticketing Policy:

Redistribution - Travel Service Provider shall not, without United's prior written consent, redistribute, share or in any other manner make United's content of any kind provided hereunder, available (collectively, "Redistribute") to any: (i) GDS, (ii) OTA or travel agency, including a white labels of an OTA, travel agency or travel company with an IATA license or actually selling flights, (iii) Metasearch Site or (iv) Unsuitable Web Page (each a "Restricted Entity"). Travel Service Provider shall not, without prior written consent, accept United's content from any Restricted Entity, nor shall Travel Service Providers allow Restricted Entities to link to the Travel Service Provider for United's content.⁶¹

4.1. Airlines Want to Force Leisure Consumers into Direct Shop and Book

Some airlines have indicated that an ultimate goal is to charge intermediaries for their data. For example, in 2009, American Airlines' then-CEO spoke of:

"...a day – and maybe I am dreaming here – where those folks who are the intermediary between us and our customers have to pay for access to our product rather than us paying them to distribute our product."⁶²

Shortly thereafter, Delta's CEO made reference to the same aspiration:

⁵⁹ Available at http://www.delta.com/content/www/en_US/agency/useful-resources/carrier-distribution-policy.html.

⁶⁰ See, e.g., Sections 8(b) and 8(c) of American Airlines Addendum to the Governing Travel Agency Agreements, available at http://www.aa.com/i18n/agency/Agency/Agency_Addendum.jsp.

⁶¹ See, e.g., Article III Number 22 of United Airlines Booking & Ticketing Policy, December 2014, available at <http://www.united.com/web/format/pdf/agency/bookticket/UA-Booking-Ticketing-Policy.pdf>.

⁶² See, <http://www.thebeat.travel/post/2009/04/17/Arpey-Not-Making-Friends-Among-Agents.aspx>.

“Over time, the industry has to evolve to more of the model of other industries where people pay us for our content rather than us paying them to take our content, because our content is very rich.”⁶³

This statement confuses the issue: airlines are not in the product information or “content” provision business; rather, they sell transportation services. How much and what type of transportation consumers want to buy is a difficult and complex decision. Consumers need to have the information necessary to make that decision. What the airlines appear to be attempting would be like entering a Walmart store and seeing half-empty shelves with no prices shown. To get the prices to show the customer, Walmart has to pay the manufacturers to turn on the shelf tags. The empty spaces on the shelves belong to manufacturers whose products are not displayed at all. In order for the customer to compare prices on those products, the customer must leave and enter a specific manufacturer’s store down the street to see their products and prices. Indeed, it is difficult to think of an industry that charges consumers for simply viewing their prices and product offerings.

Airlines have cut off small metasearch sites to whom they pay a zero acquisition fee from displaying price and schedule information. However, airlines still distribute to large OTAs and the GDSs where airlines pay ticket commissions or bookings fees. Further, the price and schedule information that is cut off is not confidential. It is publicly available through a variety of other channels, including the airlines’ websites, as well as flight tracker websites such as www.flightstats.com (schedule only), and OAG guides. However, unlike OTAs and metasearch sites, these channels do not provide comparison shopping for consumers and can even be difficult for consumers to use.

The airlines’ strategy of cutting off distribution through smaller OTAs and metasearch sites appears designed to avoid serving lower-margin leisure travelers and focusing on filling their capacity with time-sensitive, high-margin business customers. Airlines reduced capacity throughout the recession of 2008-2009, and have not increased it with the subsequent economic recovery. According to the Department of Justice (“DOJ”)

⁶³ See, <http://www.thebeat.travel/post/2009/04/21/Adding-To-Arpey-Remarks-Deltas-Anderson-Says-Over-Time-People-Pay-Us-For-Content.aspx>.

lawsuit filed against the proposed merger of American Airlines and US Airways, the latter airline sought to quash American Airlines' plans to grow its way out of bankruptcy by increasing the number of flights and destinations served.

The strategy of restricting capacity is widely discussed among the large airlines and has been the subject of many recent statements by top airline executives. For example, the CEO of United Airlines told analysts and reporters that:

*"We're going to run the airline for profit maximization, and we're very focused on capacity discipline ... We will absolutely not lose our capacity discipline."*⁶⁴

The CEO of Delta Air Lines stated when discussing 2014 earnings that:

*"We are not making any changes to our 2015 capacity plan in light of the lower fuel prices... In fact, we continue to trim capacity on the margin to maintain yields and our RASM premium... You've got to run the company conservatively, and we're trimming capacity as we speak."*⁶⁵

The CFO of American Airlines has similarly stated that it is not changing its capacity plans:

*"You won't see any changes from us in the near future."*⁶⁶

When capacity is limited, airlines can fill the available seats at higher average prices. Fewer customers are served at higher prices, and overall consumer welfare is lower. In this context, cutting off smaller price comparison sites that disproportionately serve leisure travelers is nearly costless to the airlines. But consumers are harmed.

Achieving the goal of charging all distribution sites for airline data requires that after succeeding with small OTA and metasearch sites, the airlines will cut off larger price comparison sites. The fact that a major airline has now removed the ability of some price comparison sites to display their price and schedule information, *even when those sites refer customers directly to the airline's website for zero referral fee*, suggests that the airlines stated reasons for limiting distribution do not tell the full story. It seems

⁶⁴ "Maintaining capacity discipline," Air Transport World, January 28, 2015, available at <http://atwonline.com/blog/maintaining-capacity-discipline>.

⁶⁵ Ibid.

⁶⁶ Ibid.

likely that airlines' end-game strategy is to force consumers shopping for leisure and unmanaged business travel to shop and book only on the airline's own website and thereby forgo comparison shopping. As explained in the next section, this can be expected to reduce competition and increase consumer costs of air travel.

4.2. Elimination of Comparison Shopping Reduces Competition

Channeling consumers into shopping and booking directly on the airline's website enables the airline to increase revenue from consumers in at least three ways.

First, shopping on the airline's website allows the airline to avoid the consumer seeing prices of competing airlines on the same page. While the consumer can search for flight schedules and seat availability on a desired route, the search results include only the information for that one airline (or in the case of some international flights, interline itineraries with the airline's codeshare or alliance partners). The consumer can access information about competing airlines, but needs to go to another site to do so .

Second, by asking for shoppers to enter a frequent flyer number or sign-in to the website, the airline has a greater opportunity to price discriminate on a consumer-by-consumer basis. That is, the airline may use information about the consumer—(e.g., past purchasing behavior, rewards-level, or preferences on file)—to show or highlight selected information to the consumer in response to a search. This includes the use of “big data” to determine travelers' propensity to buy certain products based on their prior purchases, searches, and destinations across the Internet.⁶⁷

Third, the airline can attempt to upsell the customer on various ancillary amenities, such as preferred seat locations or seats with extra legroom, checked baggage, bonus frequent-flyer miles, and in-flight services, such as Wi-Fi or meals. To the extent that metasearch sites funnel traffic directly to airline websites, the airline already has this opportunity to upsell customers.

Perhaps the most significant of these in competitive terms is the ability (or lack thereof) of consumers to compare prices across airlines. Transparent and easily accessible

⁶⁷ “For the Airline Industry, Big Data is Cleared for Takeoff,” *Fortune*, June 19, 2014.

comparison shopping for airline prices enhances competition between airlines and ultimately benefits consumers.

The Internet has, for many products and services, reduced the cost to the consumer of comparing prices and offerings of competing suppliers. Economic theory predicts that this reduction in search costs will lead to intensified price competition. In turn, the greater price competition may lead firms to increase product differentiation in order to command a price premium over competitors.

Airline executives have recognized that increased price transparency has increased airline price competition. For instance, in testimony before the Senate to support the Delta-Northwest merger, Northwest's then-CEO, Douglas Steenland, stated:

"Over the past several years, online sites such as Orbitz, Expedia, and Travelocity have been created to enable customers to compare airline offerings directly. . . . These tools have provided enormous benefits to consumers and have increased the price competitiveness of the airline industry. In fact, there are few businesses in which there is as much pricing transparency."⁶⁸

4.3. OTAs and Metasearch Sites Aid Entry of New Airlines into City-Pair Markets

If consumers are impeded from comparison shopping, the result is increased cost of search and more difficult entry. In the absence of access to complete information on competitive airline offerings, consumers are more likely to choose incumbent airlines even if they are charging higher prices, simply because they have not learned about the lower-priced alternatives.⁶⁹ This raises customer acquisition costs for entrants and raises entry barriers. An OTA or metasearch site informs consumers of all available alternatives in their market.

The health insurance exchanges recently created by the Affordable Care Act offer a case study of whether easily accessible, comparative information encourages entry by new suppliers. Early results suggest this may be the case. For example, one study found that in California, the implementation of exchanges reduced concentration (as

⁶⁸ Statement of Douglas M. Steenland, CEO of Northwest Air Lines, Inc., before the Senate Judiciary Committee Subcommittee on Antitrust, Competition Policy & Consumer Rights, April 24, 2008.

⁶⁹ See (e.g., George Stigler, "The Economics of Information," *Journal of Political Economy*, Vol. LXIX, No. 3) (June 1961).

measured by the Herfindahl-Hirshman Index, or “HHI”) from 3,052 to 2,418, reduced the market share of the largest insurer from 47 percent to 30 percent, and increased the number of insurers with more than a 5 percent market share from 3 to 4.⁷⁰

As comparison shopping has reduced search costs and intensified competition, economic research has found that firms have sought new strategies to limit that competition. For example, a study of Internet retailing of computer memory modules found that price search technologies can dramatically reduce search costs, making consumers more price-sensitive.⁷¹ Price search technologies not only stimulated intense competition but also led firms to choose new strategies to obfuscate and increase search costs to lessen the impact of search technologies lowering prices. Another study in information economics found that price competition is diminished in markets where firms can effectively eliminate comparison shopping or increase search costs and still attract naïve or uninformed buyers.⁷²

The role of Internet comparison shopping in creating and enhancing competition in airline travel has not been lost on the industry. One article summarizing the past few decades of airline competition argued that “What this has done to airfares is obvious: Transparency accelerated the competition for the lowest prices.”⁷³ According to Henry H. Harteveldt, a travel industry analyst with Atmosphere Research, Internet comparison shopping has “allowed cheap airlines like Southwest, JetBlue, and Spirit to enter the market and grow.”⁷⁴

⁷⁰ Cynthia Cox, Rosa Ma, Gary Claxton, and Larry Levitt, “Sizing Up Exchange Market Competition,” *The Henry J. Kaiser Family Foundation*, March 1, 2014.

⁷¹ Glenn Ellison and Sara Fisher Ellison, “Search, Obfuscation, and Price Elasticities on the Internet,” *Econometrica*, Vol. 77, No. 2, March, 2009, pp. 427-452.

⁷² Luke Garrod, “Price Transparency and Consumer Naivety in a Competitive Market,” Centre for Competition Policy, University of East Anglia, Working Paper 07-10.

⁷³ “How Airline Ticket Prices Fell 50% in 30 Years (and Why Nobody Noticed),” *The Atlantic*, February 28, 2013.

⁷⁴ Ibid.

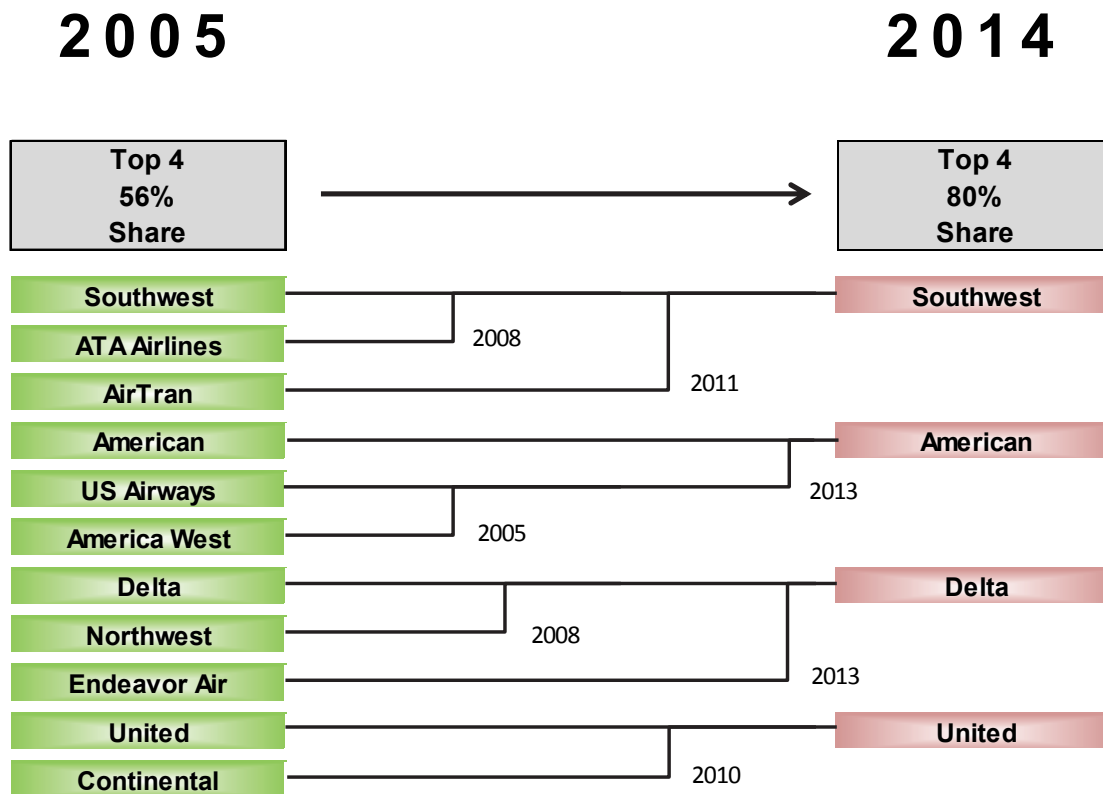
5. Consolidation in the Airline Industry Has Reduced Competition

Maintaining the ability of consumers easily to obtain and compare price and schedule information is particularly important given the level of consolidation that has occurred in the airline industry over the past decade. Comparison shopping allows smaller airlines and new entrants on a route to compete on a level playing field. Offering low prices can attract consumer attention and sales even when consumers would otherwise not know or have a hard time finding the smaller airline. By enabling competition by smaller competitors and entrants, comparison shopping can exhibit some of its most profound effects in the most concentrated markets where dominant players and entry barriers otherwise lead to supra-competitive pricing. It is precisely in these concentrated markets where there is the most scope for competition to lower prices. Conversely, city-pair routes where small non-dominant airlines already compete are also among the most vulnerable to price increases after the elimination of easily accessible comparison shopping.

5.1. The Airline Industry is “Highly Concentrated”

As an industry, there are seemingly many airlines in the U.S. However, only a few handle the majority of all passengers flown, and the number of them has fallen consistently over time. In 2005, there were still six major network carriers in the U.S., in addition to a number of large low cost and regional carriers. By 2014, mergers reduced the number of major network carriers to just three ever-larger airlines.

As shown in Figure 2, airline mergers and acquisitions have brought the top four airlines in the U.S. from 56 percent of one-way and round trip passengers to 80 percent of them. Among the larger mergers and acquisitions are US Airways-America West in 2005, Delta-Northwest in 2008, United-Continental in 2010, Southwest-AirTran in 2011, and American-US Airways in 2013.

Figure 2: Major U.S. Airline Mergers, 2005-2014

Source: Department of Transportation, Database 1B Origin & Destination Survey for ticketing carriers Q2 2005 and 2014.

The number of nationwide carriers still can overstate competition for individual travelers. For travelers desiring to fly between two particular cities, there are typically only a few airlines offering service on that city pair. Often there are but one or two options and flights to entirely different cities are simply not a substitute. A common way to summarize and indicate market concentration is the HHI. The HHI is the sum of the squared market shares of all the firms in the market. This measure is commonly used by the DOJ in its analysis of potential anticompetitive effects from mergers and market conduct. In the context of mergers, the DOJ identifies “highly concentrated” markets as those with an HHI above 2,500. Mergers that create high levels of concentration raise significant competitive concerns and often warrant scrutiny.

Table 4 reports a summary of U.S. airline concentration (HHIs) for domestic city pair markets in the third quarter of 2014.⁷⁵ The summary concentrates on those passengers and routes involving one way or roundtrip travel with one or fewer layovers. Nearly 97 percent of city pair markets are highly concentrated and well over half have HHIs in excess of 4,000. Some of those city pairs involve small cities. Yet, nearly 90 percent of all passengers traveled on city-pairs with HHIs above 2,500, and about 40 percent of city pairs have HHIs in excess of 4,000.

Table 4: City Pair-Level U.S. Airline Concentration

HHI Range	Routes	Passengers
5,000 – 10,000	36.5%	23.0%
4,000 – 5,000	21.0%	17.7%
2,500 – 4,000	39.3%	49.2%
1,800 – 2,500	3.1%	10.1%
<= 1,800	0.0%	0.0%
Total Routes and Passengers	3,144	8,588,793

Source: Department of Transportation, Database 1B, Origin & Destination Survey, 2014 Q3.

As Table 4 shows, passengers typically have few options when booking an airline for any given trip. The average passenger flew on a city pair with HHI of 4,202.

Increased airline concentration over the past decade in the U.S. has come hand-in-hand with the disappearance of several smaller, low cost U.S. airlines. In particular, America West merged into US Airways. And AirTran and the assets of ATA Airlines were acquired by Southwest. The only new domestic airline to enter during this decade was Virgin America. Outside of the largest four U.S. airlines, the share of the remaining

⁷⁵ A city pair refers to the cities at each end of the flight. Most cities have but one relevant airport. However some cities, such as New York, have multiple airports that travelers may substitute. For New York, these include LaGuardia (LGA), John F. Kennedy (JFK), and Newark (EWR). For these cities, airline offerings from any of the associated airports are included as competitive offerings. For the purposes of this report, multiple airport cities were identified based on Brueckner, *et al.* (2014). See Brueckner, Jan K., Darin Lee and Ethan Singer, "City-Pairs vs. Airport-Pairs: A Market-Definition Methodology for the Airline Industry," *Review of Industrial Organization*, Vol. 44, 1-25, 2014.

smaller carriers, including the remaining low cost carriers, has been stagnant over the decade. Table 5 shows that airlines outside of the current top four have remained only 19 to 20 percent of ticketed passengers over 2005 to 2014.

Table 5: Share of U.S. Domestic Ticketed Passengers

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Largest Four U.S. Airlines	79%	81%	79%	79%	78%	78%	79%	81%	80%	79%
Remaining U.S. Airlines	21%	19%	21%	21%	22%	22%	21%	19%	20%	21%

Source: Department of Transportation, Database 1B, Origin & Destination Survey.

This contrasts with the situation in Europe, for example, where low cost carriers have been flourishing. Their recent share in Europe is double that of the smaller U.S. carriers, reaching 38 percent of intra-European seat capacity in 2012, and projected to have grown to 45 percent by last year. This share reflects substantial growth over the 21 percent share of intra-European seat capacity these airlines comprised in 2005. This group of successful low-cost carriers in Europe includes the Irish carrier, Ryanair, British carrier, EasyJet, Wizz Air, based in Hungary, Norwegian Air Shuttle, and others. These smaller European carriers are potential entrants into the U.S. market, although restrictions on U.S. citizenship and cabotage prevent their domestic U.S. competition, which are further barriers to entry.

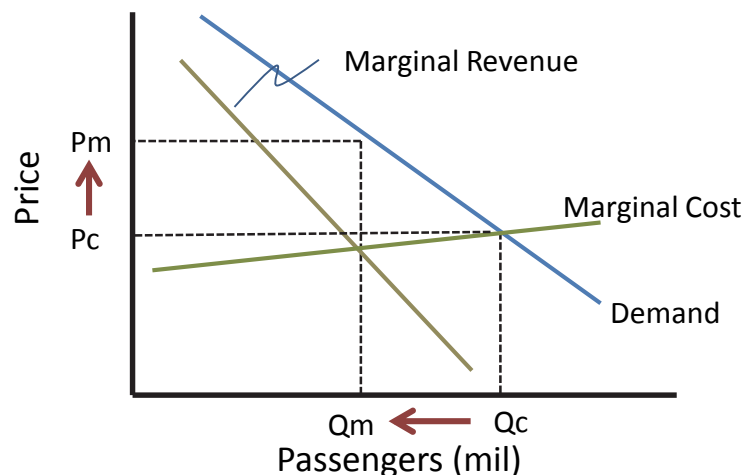
It is important for U.S. airline competition that smaller carriers have an opportunity to share “shelf space” next to the large network carriers. If smaller carriers are permitted to fly to the US, they will gain share more quickly if consumers can find their products online next to the incumbent carriers. This is the role that fare comparison websites play.

5.2. Airlines Have Substantial Market Power

Airline executives have recently made statements about pricing “to demand,” rather than to costs. This is a statement about market power. Under perfect competition, price is equal to marginal cost. Falling marginal cost is largely passed through in the form of lower prices. A monopolist, on the other hand, prices to the demand curve and

above marginal cost. Figure 3 shows a comparison of competitive and monopoly pricing. Under competition, the market price (P_c) and a total of Q_c passengers are carried. This competitive price and quantity is found where the marginal cost line intersects the demand curve. That is the marginal cost of transporting to last passenger equals the competitive price. In contrast, a monopolist charges a higher price (P_m) that is above marginal cost. Due to higher prices, fewer passengers (Q_m) are carried than under competition.

Figure 3: Competitive and Monopoly Pricing



Thus, when the President of American Airlines, Scott Kirby, says “We always have and always intend to price to demand as opposed to cost,” he is making a statement about having and exercising market power.⁷⁶ American Airlines’ chairman and CEO agreed, saying “And pricing simply goes with demand, I keep saying. So when demand is strong, you see prices move accordingly. When demand drops, you see pricing move accordingly.”⁷⁷ In other words, they respond as little as possible to cost changes, especially when costs are falling. In the context of lower fuel prices, Delta’s chief

⁷⁶ “American Airline Execs: Demand Determines Our Fares, Not Our Costs,” *The Dallas Morning News*, Airline Biz Blog, Terry Maxon, January 27, 2015.

⁷⁷ Ibid.

revenue officer "...said that the company does not want to turn the airline into a 'commoditized' business that is just about lower prices."⁷⁸

Given the few large airlines remaining after recent mergers and the overall concentration in the industry, it is not surprising that these large airlines enjoy considerable market power. For economists, market power is generally defined as an ability to raise and sustain price above incremental cost. There is no specific level as to what constitutes enough to establish market power. However, sustained high margins above incremental cost, together with high market shares and significant barriers to entry, are often viewed as persuasive indicators of significant market power.

Section 5.1 provides an account of the high market shares and concentration exhibited in U.S. domestic flights. While this concentration is one metric that can indicate the existence of market power, economic research into the airline industry has shown that high market shares and concentration in a city pair is linked to high prices.⁷⁹ High prices are a direct measure of market power.

The high prices are not measured solely on individual city pairs. The legacy network airlines operate with a "hub-and-spoke" system. Where a direct flight is unavailable, passengers are routed through one of the airline's hub airports via a layover. Previous economic research has found that the legacy network airlines have been able to charge sizable fare premiums for city-pair markets involving these hubs. One seminal study in airline market power found that American Airlines' average fare at its Dallas-Fort Worth ("DFW") hub was 42 percent higher than its fares at other airports.⁸⁰ In addition, American Airlines' average fare at DFW was 19 percent higher than the average fare for

⁷⁸ "Delta Air Lines is Saving \$2 Billion on Fuel," *CNN.com*, January 20, 2015.

⁷⁹ Severin Borenstein and Nancy Rose, "How Airline Markets Work... Or Do They? Regulatory Reform in the Airline Industry," University Chicago Press, October 2008, at 15; Gregory Call and Theodore Keeler, "Airline Deregulation, Fares, and Market Behavior: Some Empirical Evidence" in *Analytic Studies in Transport Economics*, Andrew F. Daughety, ed., Ch., 9, Cambridge University Press, 1985, p. 244.

⁸⁰ Severin Borenstein, "Hubs and High Fares: Dominance and Market Power in the U.S. Airline Industry," *RAND Journal of Economics*, Vol. 20, No. 3, Autumn 1989, 344–365, at 356.

other carriers at DFW.⁸¹ Another study found that American Airlines' average fare for routes at DFW was 31 percent higher than its average fare for all other domestic routes.⁸²

There are substantial barriers to entry that help prevent competition from alleviating these high fares. These barriers slow or prevent the erosion of market power and have proven to be both substantial and durable. There are three broad categories of barriers—operational barriers, marketing barriers, and strategic conduct to deter entry.

5.2.1. Operational Barriers

Operational barriers include access to takeoff and landing slots, airport gates, and other airport services.⁸³ They also include the very hub-and-spoke structure used by legacy airlines. These operational barriers serve to inhibit the entry of new competitors and the expansion of existing competitors. In so doing, they contribute to higher airfares on certain routes. One economic analysis of airline market power explained:

*"Airlines need ticket counters, baggage check-in rooms, baggage claim areas, and, most importantly, enplaning/deplaning gates to provide service at an airport. However, access to these airport facilities is typically regulated by long term exclusive contracts between airlines and airports. Thus, new entrants typically can only gain access to an airport by paying sublease fees."*⁸⁴

Under a "hub and spoke" model, carriers concentrate traffic by combining "local" traffic (passengers originating or terminating at the hub) with "connecting" traffic (passengers traveling between spoke cities and connecting at the hub). By concentrating traffic at a hub, carriers benefit from economies of scope and scale that reduce operating costs.⁸⁵ Additionally, hub carriers generally obtain a share of passengers that is greater than

⁸¹ Similarly, Delta's average fare at its Atlanta (ATL) hub was 56% higher than at other airports. Delta's average fare at ATL was 13% higher than the average for other carriers at ATL.

⁸² Darin Lee and Maria Jose Luengo-Prado, "The Impact of Passenger Mix on Reported 'Hub Premiums' in the U.S. Airline Industry," *Southern Economic Journal*, 72(2) (2005), 372–394, at 380.

⁸³ A slot is a right for a plane to take-off or land during a certain period of time.

⁸⁴ Federico Ciliberto and Jonathan Williams, "Limited Access to Airport Facilities and Market Power in the Airline Industry," *Journal of Law and Economics*, Volume 53, No. 3, August 2010, pp. 467–495.

⁸⁵ Jan K. Brueckner and Pablo T. Spiller, "Economies of Traffic Density in the Deregulated Airline Industry," *Journal of Law and Economics*, Vol. 37(2), October 1994, pp. 379–415 at 380.

their share of capacity, in part because travelers value the additional flexibility provided by the frequent departures and arrivals in a dense network.⁸⁶ These advantages are difficult for an entrant to overcome.

Access to slots, gates, and other airport facilities at hubs can also present a formidable operational barrier to entry, because dominant carriers have an incentive to withhold access in order to maintain their market power.⁸⁷ The power of these barriers is evident in empirical studies that have found fare premium at network airline hubs. For example, one study found a 14 percent fare premium on routes departing an airline's large hubs.⁸⁸

Airport facility restrictions are prevalent in many of the largest airports. Several of the busiest U.S. airports, including New York JFK, New York LaGuardia, and Newark, currently have capacity control systems in place, which limit the number of operations per hour.⁸⁹ Still, others like ORD and LAX, face gate capacity demands limiting access to competitors.⁹⁰ With the repeal of the Wright Amendment, Southwest has announced plans to take over 18 of 20 gates at Dallas Love Field, where it now has over 96 percent of scheduled operations.⁹¹ At these airports, it is difficult for a new entrant airline to establish flights or a limited incumbent airline to add flights, since unallocated slots or gates are not generally available. Prior economic research has found that, while slot

⁸⁶ John. E. Kwoka, "Networks and Natural Monopoly," Topic 1 in *Network Access, Regulation and Antitrust*, Diana L. Moss, ed., 2007.

⁸⁷ Severin Borenstein, "Hubs and High Fares: Dominance and Market Power in the U.S. Airline Industry," *RAND Journal of Economics*, Vol. 20, No. 3, Autumn 1989, 344–365.

⁸⁸ Mara Lederman, "Are Frequent-Flyer Programs a Cause of the 'Hub Premium'," *Journal of Economic and Management Strategy*, Vol. 17, No. 1 (Spring 2008), pp. 35–66 at 53.

⁸⁹ "Airline Slots – The Building Blocks of Air Travel," *Airlines International*, August 2010, available at <http://www.iata.org/pressroom/airlines-international/august-2010/pages/06.aspx>; "Operating Limitations at New York LaGuardia Airport; Technical Amendment," 77 FR 30585, May 23, 2012; and Steven Morrison, "Airline Deregulation and Fares at Dominated Hubs and Slot-Controlled Airports," Statement before Hearing before the Committee on the Judiciary United States House of Representatives, November 5, 1997, p. 1.

⁹⁰ Ibid.

⁹¹ "Southwest Airlines adds nonstop service to 8 new cities from Love Field," Dallas Business Journal, February 26, 2015, available at <http://www.bizjournals.com/dallas/news/2015/02/26/southwest-airlines-adds-nonstop-service-to-8-new.html>.

restrictions are designed to reduce congestion, they also reduce competition at the constrained airports. For example, average fares for flights involving certain slot constrained airports in 1996 were found to have fare premia of 11 percent to 15 percent over comparable other routes.⁹²

Empirical economic studies show slot and gate restrictions are major barriers associated with increases in airfare.⁹³ For example, one study found that an increase from 10 percent to 30 percent of gates controlled by a carrier was associated with a 3 percent price increase.⁹⁴ In airports where slots are scarce, airlines with a dominant share of slots can deter entry by a competitor.⁹⁵

Similarly, if a single carrier controls a majority of gates at an airport, then it can prevent entry by refusing to sell or lease the facilities to competitors.⁹⁶ For example, Virgin

⁹² Steven Morrison, "Airline Deregulation and Fares at Dominated Hubs and Slot-Controlled Airports," Statement before Hearing before the Committee on the Judiciary United States House of Representatives, November 5, 1997, p. 4.

⁹³ Dresner et al. discuss the effects of slot controls, gate constraints, and gate utilization during peak operating periods on yields (price per passenger mile) and entry. The authors find that gate constraints from exclusive leasing arrangements, slot controls, and high utilization of gates during peak operating times contribute to higher yields. Martin Dresner, Robert Windle, and Yuliang Yao, "Airport Barriers to Entry in the US," *Journal of Transport Economics and Policy*, Vol. 36, Part 2 (September 2002), pp. 389–405 at 391.

Morrison and Winston found that an increase in the percentage of gates unavailable to others was associated with higher yields (i.e., raised airfares). Steven Morrison and Clifford Winston, "The Remaining Role for Government Policy in the Deregulated Airline Industry," *Deregulation of Network Industries*, Sam Peltzman and Clifford Winston, ed., AEI-Brooking Joint Center for Regulatory Studies, the American Enterprise Institute for Public Policy Research, and the Brookings Institution (2000), at 34.

⁹⁴ Ciliberto and Williams found the control of gates leased on an exclusive basis by an airline was a key determinant of the hub premium. The authors also found that the price increase was larger at congested airports than at airports where gates were not scarce. Federico Ciliberto and Jonathan Williams, "Limited Access to Airport Facilities and Market Power in the Airline Industry," *Journal of Law and Economics*, Volume 53, No. 3, August 2010, pp. 467–495 at 469.

⁹⁵ Severin Borenstein, "Hubs and High Fares: Dominance and Market Power in the U.S. Airline Industry," *RAND Journal of Economics*, Vol. 20, No. 3, Autumn 1989, 344–365.

⁹⁶ Ibid.

America struggled for three years before getting a gate at Chicago's O'Hare International airport.⁹⁷

Additional operational barriers have been studied, including majority-in-interest clauses in airport agreements and code-sharing agreements between airlines.⁹⁸ In 1991, the Government Accountability Office ("GAO") found the presence of slot restrictions, majority-in-interest clauses, and code-sharing agreements were associated with increases in airfares:

Fares were higher on routes when any one of three barriers to entry was present. In particular, fares were, on average, 4 percent higher when slot restrictions were present at an airport on a route. The presence at an airport of a majority-in-interest clause was associated with, on average, 3 percent higher fares on routes involving that airport. A major airline's fares were, on average, 2 percent higher on routes when the airline had a code-sharing agreement at either endpoint of the route. Neither noise restrictions nor airport expansion impediments had a statistically significant impact on fares.

*Two or more of these barriers are often present together on a route. For example, two or more of the barriers that influence fares were present on 844, or 51 percent, of routes in our sample, affecting 64 percent of the passenger trips in the sample. In these situations, because the effects of these barriers were additive in this model, fares were higher on average by 5 to 9 percent.*⁹⁹

As noted by the GAO, airline alliances and code-sharing agreements have been found to be associated with higher airfares. Today, nearly all major airlines have joined one of

⁹⁷ "The Challenge of Starting an Airline," *New York Times*, May 25, 2012, available at http://www.nytimes.com/2012/05/26/business/start-up-airlines-face-big-obstacles.html?_r=2&ref=airlinesandairplanes.

⁹⁸ Some airports have included majority-in-interest clauses in airline agreements. These give the signatory airlines special rights to approve airport capital improvement plans, including those involving gate expansions. A code-sharing agreement allows two airlines to both market and ticket the same flight. The flight is operated by one airline but can be booked under a different flight number through the code-share partner airline. "Airport Business Practices and Their Impact on Airline Competition," FAA/OST Task Force Study, October 1999, pp. 43–44; Gustavo Bamberger, Dennis Carlton, and Lynette Neumann, "An Empirical Investigation of the Competitive Effects of Domestic Airline Alliances," National Bureau of Economic Research, 2001, pp. 2–3.

⁹⁹ Government Accountability Office, "Airline Competition: Effects of Airline Market Concentration and Barriers to Entry on Airfares," 1991, p. 5. See also, Ciliberto and Williams, who explain that American Airlines has a majority-in-interest agreement with DFW, although the impact of these agreements on fares was ambiguous in their analysis. *Ciliberto and Williams (2010)*, at 472–473, 484–485.

three code-sharing alliances. Table 6 below lists some of the primary members of each of the alliances and the total annual passengers flown.¹⁰⁰

Table 6: Major Airline Alliances and Selected Member Airlines

Oneworld	Sky Team	Star Alliance
512 million passengers	612 million passengers	654 million passengers
American Airlines	Delta Air Lines	United
US Airways	Air France/KLM	Air Canada
Iberia	China Southern	Lufthansa
British Airways	China Eastern	Air China
Cathy Pacific	Alitalia	Turkish Airlines
11 others	15 others	22 others

Sources: Oneworld (<http://www.oneworld.com/>); Sky Team (<http://www.skyteam.com/>); Star Alliance (<http://www.staralliance.com/>).

5.2.2. Marketing Barriers

Marketing barriers encourage loyalty among travelers and soften price competition. Loyalty programs are used at several stages of distribution, including travel agency commission overrides, corporate accounts, and frequent flyer loyalty programs. These programs can bind repeat travelers to a particular airline and make price less relevant to the choice of airline.

Frequent flyer programs encourage loyalty by offering free flights, upgrades, and other incentives to passengers who accumulate miles flown on the airline. The programs can create a barrier to entry and soften price competition across carriers by creating switching costs for travelers considering an alternative airline.¹⁰¹ The programs are structured such that the incentive to remain loyal to a particular airline increases with

¹⁰⁰US Airways belonged to Star Alliance prior to its merger with American Airlines.

¹⁰¹Severin Borenstein and Nancy Rose, "How Airline Markets Work... Or Do They? Regulatory Reform in the Airline Industry," University Chicago Press, October 2008, at 19.

each flight.¹⁰² They provide an incentive to consumers to concentrate their travel with the frequent flyer program airline.¹⁰³ The frequent flyer programs have the ability to compound the market power enjoyed at hub airports. A consumer at such an airport is more likely to choose the local hub airline, as it offers the most opportunities to redeem the rewards. The loyalty induced by frequent flyer programs is valuable to airlines. One study found that frequent flyer programs accounted for 25 percent to 37 percent of the 14 percent fare premium received by the dominant hub carrier in hubs.¹⁰⁴

Loyalty programs are not limited to end consumers. The airlines have also created programs to encourage loyalty among travel agencies. Airlines pay travel agency override commissions that typically increase in value as the travel agency provides more revenue to the airline.¹⁰⁵ As Borenstein explains, “the programs can effectively ‘attach’ travel agents to certain airlines.”¹⁰⁶ During 2013, Delta paid \$558 million in travel agent passenger override and up-front commissions.¹⁰⁷

5.3. The Recent American Airlines-US Airways Merger Has Led to Further Price Increases

As noted earlier, a wave of major airline mergers over the past decade has markedly increased the concentration in the U.S. airline industry. As airlines merge and consolidate, the concern is that they can eliminate the competition between them with a greater ability and incentive to raise prices. This concern for rising airline prices has been warranted. The most recent airline merger has been American Airlines and US

¹⁰²Severin Borenstein, “Hubs and High Fares: Dominance and Market Power in the U.S. Airline Industry,” *RAND Journal of Economics*, Vol. 20, No. 3, Autumn 1989, 344–365.

¹⁰³Mara Lederman, “Are Frequent-Flyer Programs a Cause of the ‘Hub Premium’,” *Journal of Economic and Management Strategy*, Vol. 17, No. 1 (Spring 2008), pp. 35–66 at 36.

¹⁰⁴*Ibid.* at 38.

¹⁰⁵Severin Borenstein, “Hubs and High Fares: Dominance and Market Power in the U.S. Airline Industry,” *RAND Journal of Economics*, Vol. 20, No. 3, Autumn 1989, 344–365.

¹⁰⁶*Ibid.*

¹⁰⁷U.S. DOT, Form 41 Schedule P-6 data for 2013.

Airways, which was completed on December 9, 2013.¹⁰⁸ The merger instantly made American Airlines the world's largest airline. Since that merger, the airfares offered by American Airlines and US Airways have risen faster on the routes where substantial competitive overlap was eliminated by the merger.

Prior to the merger, there was substantial overlap in the flights offered by American Airlines and US Airways and reason for concern that price would rise as a result of the merger. Table 7 summarizes the results of an analysis of the average fares charged by American Airlines and US Airways on the routes they flew in 2013 Q4 and 2014 Q4. Passengers, routes, and fares are obtained from the Department of Transportation Database 1B Origin and Destination survey.¹⁰⁹ Passengers included in the analysis were those that paid for service on American Airlines and US Airways routes involving one way or roundtrip travel with one or fewer layovers. The two airlines offered competing services across 2,616 city pairs for which there were approximately 8.0 million surveyed passengers in 2014 Q4.

¹⁰⁸"American, US Airways complete merger, United Airlines loses title as world's largest airline," Chicago Tribune, December 9, 2013, available at http://articles.chicagotribune.com/2013-12-09/business/chi-american-airlines-merger-20131209_1_us-airways-ceo-ceo-doug-parker-united-airlines.

¹⁰⁹The Origin and Destination ("O&D") survey reflects a quarterly random sample of 10% of all tickets sold for flights within the U.S. The data identify the airline that sold the ticket, the airports included in the flights, and the fare. The tickets include both direct flights and those including layovers.

Table 7: American-US Airways Fare Changes Across Routes

Summary of Routes and Passengers 2014 Q4		
	City Pair Routes	Survey Passengers
Substantial Overlap (Change in HHI > 150)	650	1,688,969
Low or No Overlap (Change in HHI ≤ 150)	1,966	6,264,789
Post-Merger Percentage Change in Average Fares 2014 Q4 Year-over-Year		
	Average Route	Average Passenger
Substantial Overlap	8.1%	7.0%
Low or No Overlap	3.9%	2.2%

Source: Department of Transportation, Database 1B, Origin & Destination Survey, 2013 Q4 and 2014 Q4.

Routes were distinguished by the extent of American Airlines and US Airways overlap prior to the merger in 2013 Q4. Routes were identified as having substantial overlap where the expected change in the concentration measured by HHI was higher than 150 points.¹¹⁰ These are routes where one would have expected greater post-merger fare increases.

Average passenger fares changed more in the routes classified as Substantial Overlap. The average Substantial Overlap route had an 8.1 percent year over year fare increase. In contrast, the average route with Low or No Overlap had only a 3.9 percent fare increase. The difference in the average fare increase was even more pronounced for larger routes. The average passenger on a Substantial Overlap route had a 7.0 percent fare increase, compared to just 2.2 percent for the average passenger on a Low or No Overlap route.

Many of the routes where American Airlines and US Airways had substantial overlap only had two or three significant competitors in the first place. On these routes where

¹¹⁰In the context of mergers, the DOJ generally applies a standard that a change in HHI of less than 100 points is a “small change in concentration”. In highly concentrated markets with high HHIs, the standard is a change in HHI of 200 points.

the merger reduced the number of significant competitors from 3 to 2 or from 2 to 1, it is not surprising to see very large year-over-year fare increases after the merger. As an example, consider the leisure-oriented route from US Airways' hub in Charlotte to St. Thomas, Virgin Islands. Here, the merger was 2 to 1, in that there were two significant competitors before and just one after.¹¹¹ Before the merger, American Airlines and US Airways were the only significant airlines, and accounted for 95 percent of passengers.¹¹² On this route, the average American Airlines and US Airways fare rose 11 percent year over year.

Similar fare increases occurred on other leisure routes dominated by American Airlines and US Airways. Some examples are listed below.¹¹³ In each of these routes, American Airlines and US Airways were the principal competitors before the merger.

- On Dallas to Fort Myers, FL, these airlines accounted for 90 percent of passengers before the merger. Among significant competitors, competition fell from 3 to 2 firms. Average fares increased 9 percent year over year after the merger.
- On Philadelphia to St. Thomas, these airlines accounted for 94 percent of passengers. Among significant competitors, competition fell from 2 to 1 firm. Average fares increased 17 percent year over year.
- On Dallas to Lihue, HI, these airlines accounted for 89 percent of passengers. Among significant competitors, competition fell from 3 to 2 firms. Average fares increased 9 percent year over year.

American Airlines and US Airways also dominated many routes less associated with leisure travel. For example, on Charlotte to Dallas traffic between these airlines' hubs, they were head-to-head competitors accounting for 89 percent of passengers. The

¹¹¹Significant competitors in this context are those with at least 5% passenger share.

¹¹²In 2013 Q3, American Airlines accounted for 12% and US Airways accounted for 83% of round trip and one way passengers with direct flight or one stop tickets.

¹¹³Figures reflect round trip and one way passengers with direct flight or one stop tickets. Average fares are those of American Airlines and US Airways.

merger took the number of significant competitors from 2 to 1. On this route, their average fares rose 7 percent year-over-year.

The results of this analysis are consistent with those of prior economic research, finding that mergers or higher levels of industry concentration can lead to higher airline fares. For example, a study of six completed airline mergers found that average fare changes post-merger ranged from under 8 percent to almost 30 percent.¹¹⁴ Another study in 2011 of Internet penetration and air fares found that fares were 1.6 percent to 4 percent higher on duopoly routes and 4.7 percent to 11 percent higher on monopoly routes.¹¹⁵ Other economic research has found that the type of airline matters in predicting the effect of competition on average air fares. A 2013 study found that, while competition between the major legacy network airlines had weak effects on average fares, the presence of low cost airlines had a substantial impact on average fares.¹¹⁶

These studies analyze airline fares only. They do not include ancillary fees, which have risen greatly during the same time period. These are discussed in the next section.

5.4. Airline Profits are at an All-time High

5.4.1. Trends in Airline Profitability

U.S. airlines reported net income of \$12.2 billion in 2013, and \$7.5 billion in 2014.¹¹⁷ Airline profits are expected to reach record levels during 2015. First quarter 2015 profits for the major airlines were more than double a year earlier.¹¹⁸ The International Air Transport Association (“IATA”) forecasts that airline profits are expected to reach \$25

¹¹⁴Craig Peters, “Evaluating the Performance of Merger Simulation: Evidence from the U.S. Airline Industry,” *Journal of Law and Economics*, Vol. 49, No. 2, October 2006, pp. 627-649.

¹¹⁵Eugene Orlov, “How Does the Internet Affect Price Dispersion? Evidence from the Airline Industry,” *Journal of Industrial Economics*, Vol. LIX, No. 1, March 2011, pp. 21-37.

¹¹⁶Jan Brueckner, Darin Lee, and Ethan Singer, “Airline Competition and Domestic U.S. Airfares: A Comprehensive Reappraisal,” *Economics of Transportation*, Volume 2, Issue 1, March 2013.

¹¹⁷“2014 Airline Financial Data,” Department of Transportation, Bureau of Transportation Statistics, Press Release No. BTS 22-15, May 5, 2015.

¹¹⁸“The Airline Industry Posts a Giddy First Quarter,” *The New York Times*, April 24, 2015.

billion in 2015, up 26 percent from 2014.¹¹⁹ As IATA notes, the strongest profit performance has been among North American airlines that are expected to see net after-tax profits in 2015 of \$13.2 billion. Net profit margins are expected to exceed the peak reached back in the 1990s. IATA states that the higher profits in North America are driven in part by airline consolidation, lower fuel costs, and increased ancillary fees on passengers.

A significant part of the increased profit has been not only fare increases, but has come from ancillary fee revenues that have grown nearly 1,200 percent between 2007 and 2013.¹²⁰ These fees include checked baggage, in-flight meals, preferred seat assignments, and priority boarding. Many of these services formerly were included within the base airfare but now sometimes are sold at a separate price. **Table 8** shows the top 10 airlines that reported ancillary revenues for 2013. The list includes all of the remaining major U.S. airlines (American, Delta, Southwest, and United), as well as several of the largest European airlines. These airlines garnered a substantial amount per passenger ranging from roughly \$12 to nearly \$46 in 2013.

¹¹⁹ "Airline Profitability Improves with Falling Oil Prices," International Air Transport Association, Press Release, December 10, 2014, available at <http://www.iata.org/pressroom/pr/Pages/2014-12-10-01.aspx>.

¹²⁰ "2013 Airline Ancillary Revenue Lifts to \$31.5 Billion – Up Nearly 1200% Since 2007," IdeaWorks, July 16, 2014, available at <http://www.ideaworkscompany.com/wp-content/uploads/2014/07/Press-Release-89-Ancillary-Revenue-Top-10.pdf>.

Table 8: Top 10 Airlines by Ancillary Revenue 2013 (USD)

Airline	Ancillary Revenue	Ancillary Revenue per Passenger
United	\$5,703,000,000	\$40.97
Delta	\$2,528,183,000	\$15.35
American	\$2,079,000,000	\$19.12
Air France / KLM	\$1,714,598,496	\$22.19
Ryanair	\$1,689,457,120	\$20.68
Southwest	\$1,623,500,000	\$12.19
EasyJet	\$1,385,021,933	\$22.78
Lufthansa	\$1,282,738,470	\$12.26
Qantas	\$1,273,430,400	\$45.67
US Airways	\$1,102,700,000	\$12.97

Figures reflect information for fiscal periods that ended in calendar year 2013.

Source: The CarTrawler Yearbook of Ancillary Revenue, 2014, Ideaworks.

5.4.2. Significantly Lower Fuel Costs Have Not Led to Lower Prices

Airline profits are at record highs in part because of falling jet fuel prices. Yet, airline industry observers do not expect these fuel cost savings to translate to lower air fares for travelers. As Senator Charles Schumer recently observed:

“At a time when the cost of fuel is plummeting and profits are rising, it is curious and confounding that ticket prices are sky-high and defying economic gravity. The industry often raises prices in a flash when oil prices spike, yet they appear not to be adjusting for the historic decline in the cost of fuel; ticket prices should not shoot up like a rocket and come down like a feather.”¹²¹

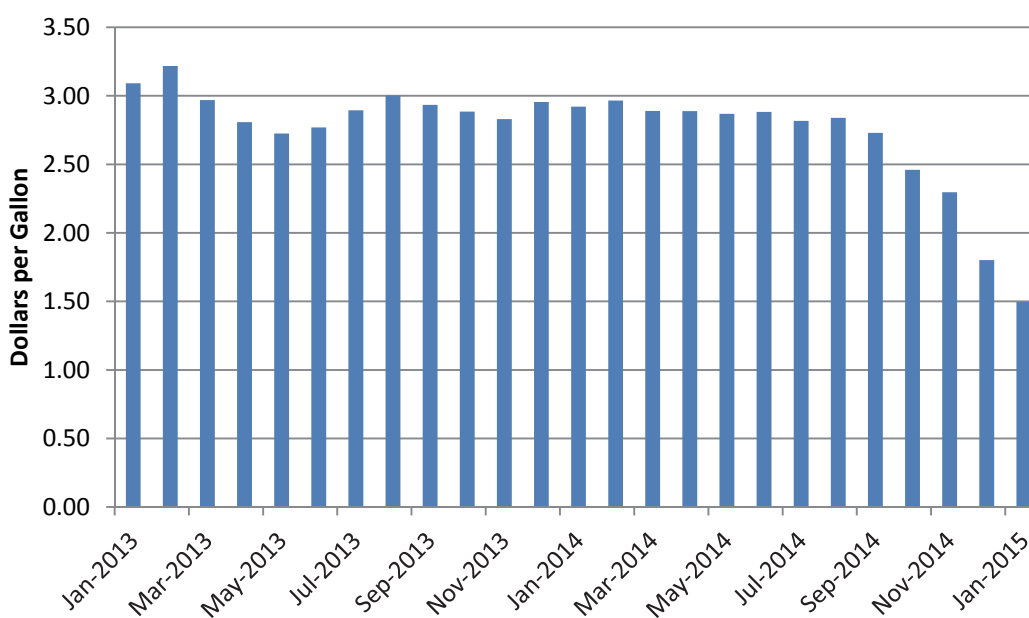
As described elsewhere in this report, the industry is highly concentrated and competition for travelers is low on many or most routes. Airlines have little competitive reason to pass on falling fuel prices to travelers in the form of lower prices. As stated by

¹²¹“As Oil Prices Fall, Airfares Still Stay High,” *New York Times Dealbook*, Andrew Ross Sorkin, March 23, 2015.

Tom Parsons, CEO of BestFares.com, “If people keep coming and filling the airplanes at this price point, why would they lower the prices?”¹²²

The fall in jet fuel prices has been notable, especially toward the end of 2014. Figure 4. By December 2014, U.S. jet fuel prices fell by 42 percent from their level two years earlier in January 2013. Jet fuel is a significant marginal cost of flying a route and of adding passengers on a route. Declining fuel prices, therefore, effectively increase airlines’ margins.

Figure 4: U.S. Gulf Coast Kerosene-Type Jet Fuel Spot Price






Source: U.S. Department of Energy, Energy Information Agency.

Despite the falling jet fuel prices, airline data confirms what travelers have seen for themselves. Airfares are rising rather than falling (at the same time that ancillary fees are rising). Table 9 compares the year over year changes in the average fares and costs for major U.S. airlines. From 2013 Q4 to 2014 Q4, the major airlines raised the average fare per mile by 0.5 percent. While the fares were rising, jet fuel spot prices fell

¹²²“Airfare is still going up, even as costs go down,” CNN Money, November 25, 2014, available at <http://money.cnn.com/2014/11/25/news/companies/plane-ticket-prices/index.html>.

by nearly a quarter or 24.4 percent. In addition to the fuel prices, the non-fuel operating expenses of these airlines have fallen by 2.9 percent.

Table 9: Rising Airline Fares But Declining Airline Costs

	2013 Q4	2014 Q4	% Change	
Average Fare ¹	\$0.157	\$0.158	0.5%	
Jet Fuel ²	\$2.890	\$2.186	-24.4%	
Non-Fuel Operating Expenses ¹	\$0.162	\$0.158	-2.9%	

¹ Figures reflect amounts per passenger mile.

² Figures reflect U.S. Gulf Coast Jet Fuel Spot Price per Gallon.

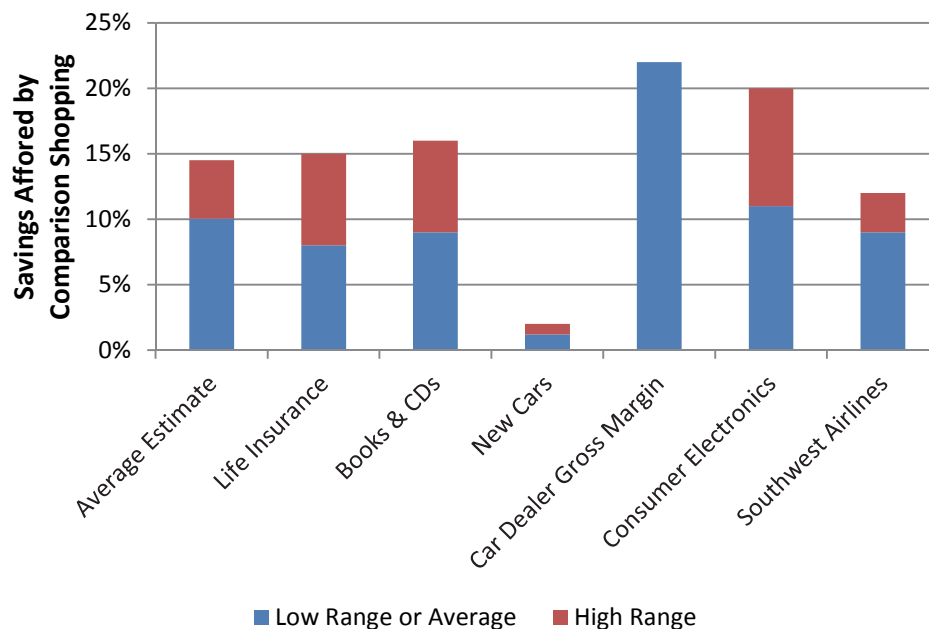
Source: Department of Transportation Form 41 Schedules T-1, P-1.2, P-6; Department of Energy, Energy Information Agency.

6. Potential Consumer Welfare Effects of Foreclosing Price Comparison Sites

Consumers benefit from reduced search costs afforded by Internet comparison shopping. These benefits both lead to lower prices and spur additional passengers to travel.

Section 3.2 describes several empirical economic studies showing that comparison shopping can result in substantially lower prices. Figure 5 summarizes the consumer price savings found in these economic studies. These studies found that comparison shopping can reduce prices for a range of products by 1.2 percent to 22 percent.¹²³ Each bar reflects the range of estimates in one of the economic studies. The blue section shows the lower end, while the total bar reflects the high end. Across the six economic studies, the average low estimate is 10 percent and the average high estimate is 15 percent.

¹²³Note that the low end of this range reflects an estimate of the reduction in the total price of new automobiles. Internet search has greatly impacted the gross margins charged by new automobile dealers. However, the reduction in gross margin reflects but 1% to 2% of the total new automobile price.

Figure 5: Estimates of Consumer Price Savings from Internet Search

Leisure and unmanaged business travelers are among the consumers most benefitting from Internet comparison shopping. These consumers bear the cost of their own search and, for leisure travelers, bear the expense of the travel. In 2013, Phocuswright estimates that the total U.S. airline revenue from leisure and unmanaged travel booked online was about \$71 billion.¹²⁴

According to the U.S. Bureau of Transportation Statistics, the airfare associated with the average itinerary in 2013 was \$381.95.¹²⁵ The average fare was adjusted to estimate the average leisure and unmanaged business fare. As a proxy for leisure fares, the 25th percentile fare was used. In 2013, the median one way fare was \$191, while the 25th

¹²⁴Phocuswright published figures sufficient to calculate the \$71 billion figure. In 2013, the U.S. online travel market was \$307 billion, of which 43% or \$132 billion was the airlines. Likewise, the U.S. online leisure and unmanaged business travel market was \$132 billion, of which 54% or \$71 billion was from airlines. The online leisure and unmanaged business travelers thus accounted for 54% ($=\$71 / \132) of U.S. online airline revenue. Phocuswright U.S. Online Travel Overview, December 2014.

¹²⁵This figure reflects the average fare for a domestic U.S. itinerary in 2013 based on the Database 1B Origin and Destination Survey. See BTS at <http://www.transtats.bts.gov/AverageFare/>.

percentile was \$135.¹²⁶ The ratio of 25th percentile to median was 0.71, resulting in an adjusted average itinerary fare of \$269.95. This lower figure approximates the average fare of leisure and unmanaged business travelers. There were approximately 264 million leisure and unmanaged business passengers that booked online in 2013.

To estimate the savings to leisure and unmanaged business travelers, the remainder of this exercise will assume the 10 percent average of the low estimates for the average price savings from Internet comparison shopping. Absent transparent and easily accessible search, consumers would face a price 11.1 percent higher, namely \$300.08.¹²⁷ This is \$30.11 higher than the consumer paid in the original transparent environment. Fewer leisure and unmanaged business consumers would choose to fly if the average fare were to rise 11.1 percent. In economics, the sensitivity of the quantity demanded for a change in price is called the own price elasticity of demand. A study for the International Air Transport Association by Intervistas found that the price elasticity of demand for long-haul North American routes is negative 1.4.¹²⁸ That is, for a 1 percent increase in industry price, there is a consequent 1.4 percent decrease in quantity demanded. In the current context, the 11.1 percent increase in the average fare absent comparison shopping would lead to a 15.6 percent (11.1 percent times 1.4) decrease in passenger volume. Thus, U.S. leisure and unmanaged business passengers booking online would fall from 264 million to 223 million, a difference of 41 million passengers.

How do airlines make this decline in passengers profitable? First, airlines are earning an extra \$30 on each remaining traveler. Secondly, by cutting off price comparison websites, they are driving away travelers who contribute little or no profit to the airline (though they may contribute revenue). Third, by simultaneously forcing more purchases

¹²⁶Fares were tallied based on the Department of Transportation Database 1B Origin and Destination Survey Market data. Fares \$5 and under were excluded.

¹²⁷If average price is 10% lower due to comparison shopping, the price without that shopping would be $11.1\% = 1 / (1 - 10\%)$ higher than what was observed.

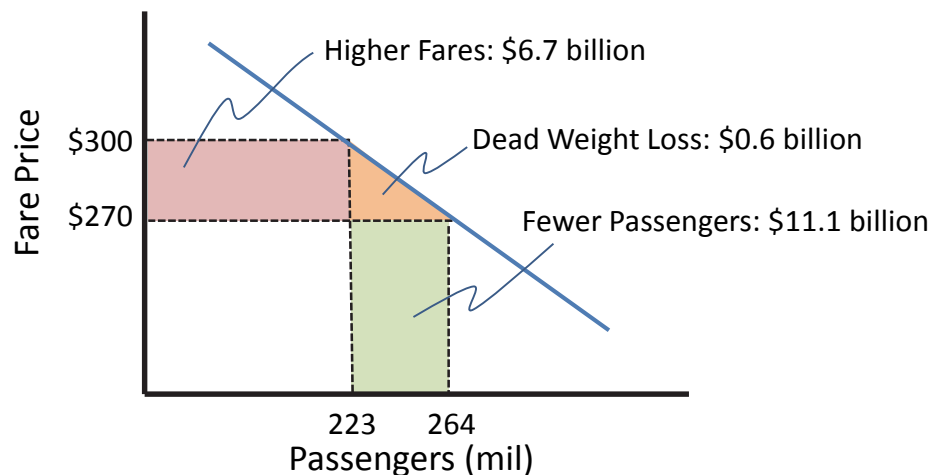
¹²⁸This figure reflects what is known as the “inverse elasticity of demand,” in that it measured the sensitivity of quantity to a change in price rather than the other way around. Estimating Air Travel Demand Elasticities, Intervistas, December 28, 2007.

through the airline website, the airline raises profit by price discriminating and earning fees by selling seat upgrades, rental cars, insurance, and other ancillary products to more travelers.

The forgoing exercise in estimating the effects of elimination of Internet comparison shopping can be used to calculate the overall effect in dollar terms on consumers.

Figure 6 shows a graphical depiction of the elimination of comparison shopping via an increase in price and consequent fall in passenger volume.

Figure 6: Graphical Depiction of Welfare Loss



There are three areas of focus to see the full extent of the change in gross consumer surplus in dollar terms.

- **Higher Prices:** After the price increase, 223 million leisure and unmanaged business consumers still choose to travel. Those consumers pay \$6.7 billion more per year, reflecting 223 million passengers times the \$30.11 increase in average fares. This is a pure increase in profits for airlines.
- **Fewer Passengers:** A total of 41 million leisure and unmanaged business consumers choose not to travel. For these consumers, airline revenues fall by \$11.1 billion per year, reflecting 41 million passengers times the \$269.96 average fare prior to the elimination of comparison shopping. This represents a loss in

revenue to airlines, but a much smaller loss in profits because these represent low-margin customers.

- **Dead Weight Loss:** There is one last source of loss that is not recovered by either consumers or the airlines. In economics, this is called dead weight loss (“DWL”) and reflects a loss of welfare to the entire market. The DWL is the shaded triangle in Figure 6. This loss is \$600 million per year, calculated as the area of the shaded triangle.¹²⁹

The total net consumer welfare impact of losing the ability to compare fares easily is, under these assumptions, potentially \$7.3 billion annually.

¹²⁹The area is one-half of the quantity 41 million lost passengers times \$30.11 change in average fare.

Appendix A: Metasearch Site Screenshots for Airfare Searches Involving Delta Air Lines

Delta operates a number of daily direct flights from Raleigh-Durham, NC (RDU) to Atlanta's Hartsfield-Jackson airport (ATL). This is shown in the following screenshot from Delta.com, showing listings for the outbound portion of a roundtrip from RDU to ATL departing February 25, 2015, and returning March 3, 2015:

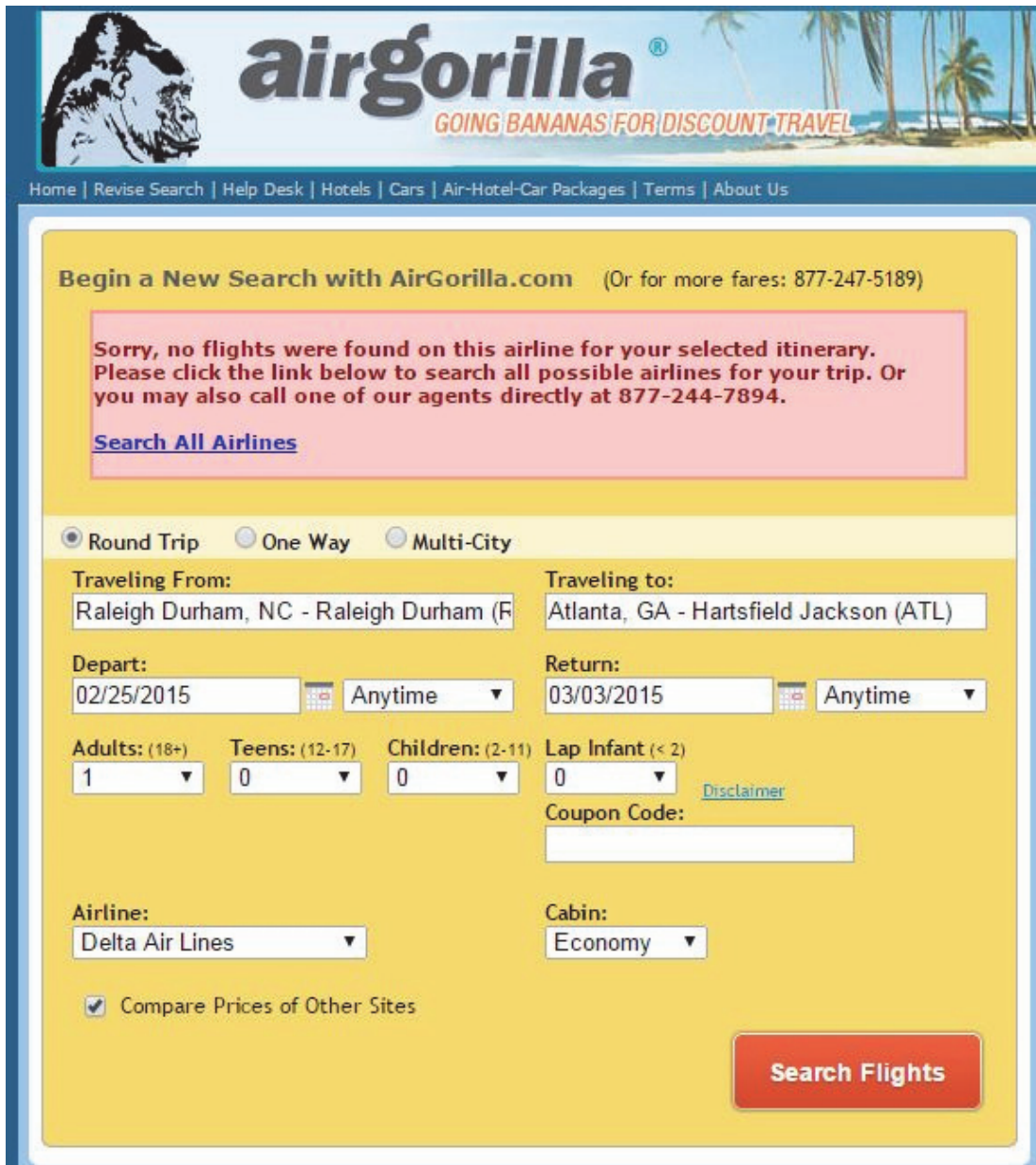
The screenshot shows the Delta.com website interface for booking a trip. The search parameters are: Outbound: RDU to ATL, Wednesday, February 25, 2015, 1 Passenger. The results show 12 of 12 flight results. The flights listed are:

Flight	Class	Fare	Details
DL 1456	Economy (U) from	\$307 ^{.20}	6:00 AM to 7:30 AM, 1h 30m, RDU to ATL, NONSTOP
DL 1456	First (A) from	\$425 ^{.20}	6:00 AM to 7:30 AM, 1h 30m, RDU to ATL, NONSTOP
DL 1482	Economy (U) from	\$307 ^{.20}	7:00 AM to 8:43 AM, 1h 43m, RDU to ATL, NONSTOP
DL 1482	First (A) from	\$425 ^{.20}	7:00 AM to 8:43 AM, 1h 43m, RDU to ATL, NONSTOP
DL 1137	Economy (U) from	\$307 ^{.20}	8:15 AM to 9:55 AM, 1h 40m, RDU to ATL, NONSTOP
DL 1137	First (A) from	\$425 ^{.20}	8:15 AM to 9:55 AM, 1h 40m, RDU to ATL, NONSTOP

The sidebar on the left includes options for modifying the search, viewing the fare comparison chart, and filtering results by total price and in-flight amenities.

The remainder of this Appendix shows screenshots from various fare comparison sites for which Delta has suppressed their information.

The following screenshot from AirGorilla shows that the Delta flights for the same dates are unavailable:



airgorilla®
GOING BANANAS FOR DISCOUNT TRAVEL

Home | Revise Search | Help Desk | Hotels | Cars | Air-Hotel-Car Packages | Terms | About Us

Begin a New Search with AirGorilla.com (Or for more fares: 877-247-5189)


Sorry, no flights were found on this airline for your selected itinerary. Please click the link below to search all possible airlines for your trip. Or you may also call one of our agents directly at 877-244-7894.


[Search All Airlines](#)

☒ Round Trip ☐ One Way ☐ Multi-City

Traveling From:
Raleigh Durham, NC - Raleigh Durham (R)

Traveling to:
Atlanta, GA - Hartsfield Jackson (ATL)

Depart:
02/25/2015  Anytime ▼

Return:
03/03/2015  Anytime ▼

Adults: (18+) 1 ▼ **Teens: (12-17)** 0 ▼ **Children: (2-11)** 0 ▼ **Lap Infant (< 2)** 0 ▼ [Disclaimer](#)

Coupon Code:

Airline:
Delta Air Lines ▼

Cabin:
Economy ▼

☒ Compare Prices of Other Sites

Search Flights

Hipmunk's website tells the consumer, "Delta has made prices and availability only accessible on our partner site," and refers consumers to Travelocity.

The screenshot shows the Hipmunk website interface. At the top, there's a search bar with "RDU ↔ ATL: Feb 20 - Feb 22, 1 person, Coach" and a "Search hotels in Atlanta, GA" button. Below the search bar, there are filters for "Sort", "Agency", "Price", "Duration", "Takeoff", "Landing", "Filter", "Airlines", "Stops", and "Nonstops". A "Fare Alerts" button is also visible. The main content area shows two Delta flight options: "RDU → ATL, Friday, Feb 20" and "ATL → RDU, Sunday, Feb 22". Both flights are marked as "Change Departure" and "Change Return". A message states: "Ready to Book? Delta has made prices and availability only accessible on our partner site." Below this message is a "travelocity" logo and a button that says "See Availability on Travelocity".

Globester displays a flight and a fare for the Delta flight, but labels it only as "Major Airline". The search listing tells the consumer that this booking is "Available only By Phone" and invites the consumer to call a toll-free number.

The screenshot shows the Globester website interface. At the top, there's a search bar with "From: Raleigh Durham International, Raleigh (RDU)" and "To: Hartsfield International, Atlanta (ATL)". The "Depart" date is "02/25/2015" and the "Return" date is "03/03/2015". A "SEARCH" button is next to the search bar. Below the search bar, there are filters for "Filter By Stops", "Filter By Airlines", and "Filter By Price". The "Filter By Stops" section has checkboxes for "Non-Stop", "One-Stop", and "Two-Stop". The "Filter By Airlines" section has checkboxes for "All", "US Airways", and "Major Airline". The "Filter By Price" section shows a price range from "\$298.70" to "\$452.20". The "Search Results" section shows a flight from "RDU" to "ATL" on "Wed, Feb 25" and "Tue, Mar 3". The flight is labeled "Major Airline" and "Economy". The price is "\$328.70 per person includes taxes & fees". A note says "Available only By Phone. Call 888-203-8430 To Book Now!". There are also buttons for "Book" and "Show Flight Details".

Fly.com (a Travelzoo metasearch site) lists Delta flights, but without a fare. It invites consumers to "Check Price" by referring them to Delta.com.

fly.com Flights Today's Best Fares Fare Calendars Deals Hotels Car Rental

Raleigh (RDU) to Atlanta (ATL)
02/25/2015 to 03/03/2015
1 traveler

[Modify Search](#)

144 of 791 results

Filter your results:

Stops

☒ nonstop Best
☒ 1 stop check

Flight Times

Leave
☒ take off ☐ landing
Take off: 5:30a - 7:45p

Return
☒ take off ☐ landing
Take off: 5:50a - 9:45p

Airlines

[select all](#) [clear](#)

☐ American Airlines Best
☒ Delta Air Lines check
☐ Multiple Airlines -
☐ Southwest Airlines -

Lowest Fares **All Airlines**

	All	Delta Air Lines	Multiple Airlines	American Airlines	US Airways	United Airlines
nonstop	check	check				

scroll for more...

Showing only results except American Airlines, Multiple Airlines, Southwest Airlines, United Airlines and US Airways.
[Show all flights](#)

Tip: Southwest is the only airline that flies nonstop on this route. However, the airline does not share its fares with any website for price comparison. [See Southwest Airlines itineraries on Fly.com](#)

Sponsored links

\$101 Atlanta RoundTrip
Cheap Flights to Atlanta Available. Book Today & Save. Limited Seats!

Price (pp) ^	Airline	From	To	Take-off	Land	Duration	Stops	Cabin
Check Price roundtrip w/tax		RDU	ATL	7:45p	9:05p	1h 20m	0	Eco
Go to site		ATL	RDU	4:15p	5:42p	1h 27m	0	Eco
Select from:								
								delta.com
								Show Details
Check Price roundtrip w/tax		RDU	ATL	7:15a	8:45a	1h 30m	0	Eco
Go to site		ATL	RDU	5:30p	6:57p	1h 27m	0	Eco
Select from:								
								delta.com
								Show Details

TripAdvisor lists Delta flights without any fare information, and invites the consumer to “See Price” by visiting either Travelocity or Expedia.

tripadvisor Cheap flights to Atlanta, Georgia (ATL)

Atlanta ▾ Hotels Flights Vacation Rentals Restaurants Things to Do Best of 2015 More ▾ Write a Review

United States ▸ Georgia (GA) ▸ Atlanta Search

Raleigh, NC - Raleigh/Durham ▸ Atlanta, GA - Hartsfield-Jackson 02/25/2015 03/03/2015

Lowest Price \$288
Best price from over 100 airlines

Fly Nonstop
Show nonstop flights

Sorted By Price ▾ Stops ▾ Amenities ▾ Airlines ▾ Airports ▾ Flight Times ▾ Duration ▾

Expedia Book Flight + Hotel & Save. Expedia Guarantees the Best Price! See Raleigh/Durham to Atlanta package deals on Feb 25 - Mar 03 **GO**

	RDU 11:20a	▸ 1 stop	▸ ATL 2:37p	3h 17m	\$288 >
	ATL 1:55p	▸ 1 stop	▸ RDU 5:07p	3h 12m	

AA.com \$288

DETAILS Average Wi-Fi

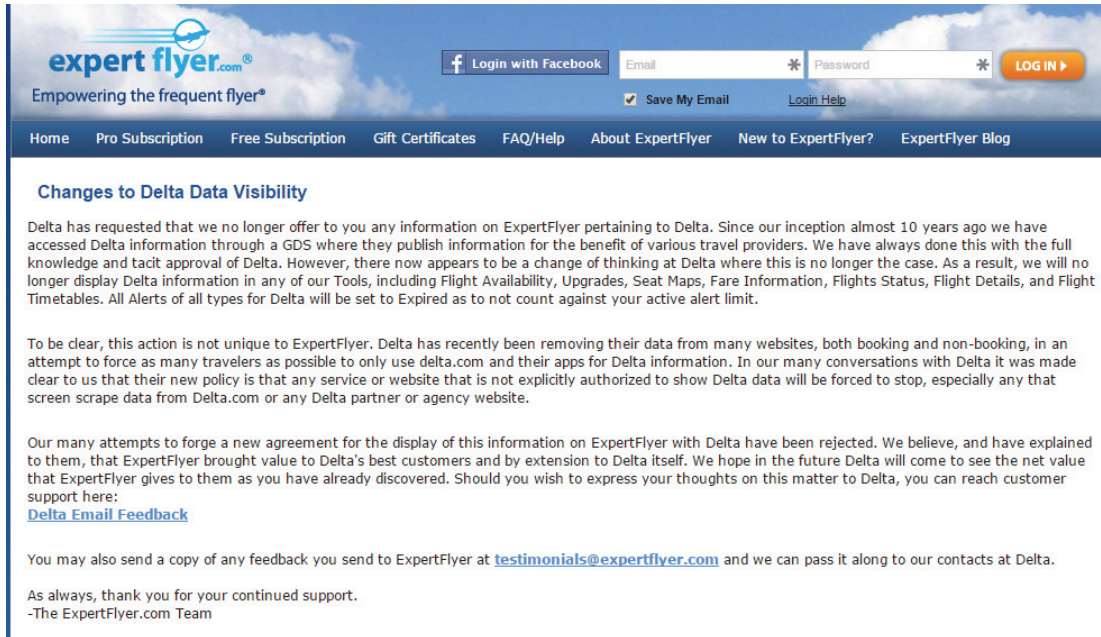
US Airways operates flight #744, #873, #1999, #2056

	RDU 11:10a	▸ Nonstop	▸ ATL 12:38p	1h 28m	See Price
	ATL 8:53a	▸ Nonstop	▸ RDU 10:10a	1h 17m	

Travelocity See price
Expedia See price

DETAILS + Average Extra legroom \$\$\$ Personal Wi-Fi

Expert Flyer has posted the following message to consumers on its website regarding its inability to display Delta flight schedule and fare information.



The screenshot shows the ExpertFlyer.com website interface. At the top, there is a navigation bar with the ExpertFlyer logo, a Facebook login button, and input fields for email and password with a 'LOG IN' button. Below the navigation bar is a menu with links: Home, Pro Subscription, Free Subscription, Gift Certificates, FAQ/Help, About ExpertFlyer, New to ExpertFlyer?, and ExpertFlyer Blog. The main content area features a section titled 'Changes to Delta Data Visibility'. The text in this section explains that Delta has requested that ExpertFlyer no longer display Delta flight information, including flight availability, upgrades, seat maps, fare information, flight status, flight details, and flight timetables. It also mentions that Delta has been removing their data from many websites and that ExpertFlyer has attempted to reach a new agreement with Delta, which has been rejected. A link for 'Delta Email Feedback' is provided. At the bottom, there is a note about sending feedback to testimonials@expertflyer.com and a thank you message from the ExpertFlyer.com Team.

expert flyer.com
Empowering the frequent flyer®

Login with Facebook | Email | Password | LOG IN

Save My Email | Login Help

Home | Pro Subscription | Free Subscription | Gift Certificates | FAQ/Help | About ExpertFlyer | New to ExpertFlyer? | ExpertFlyer Blog

Changes to Delta Data Visibility

Delta has requested that we no longer offer to you any information on ExpertFlyer pertaining to Delta. Since our inception almost 10 years ago we have accessed Delta information through a GDS where they publish information for the benefit of various travel providers. We have always done this with the full knowledge and tacit approval of Delta. However, there now appears to be a change of thinking at Delta where this is no longer the case. As a result, we will no longer display Delta information in any of our Tools, including Flight Availability, Upgrades, Seat Maps, Fare Information, Flights Status, Flight Details, and Flight Timetables. All Alerts of all types for Delta will be set to Expired as to not count against your active alert limit.

To be clear, this action is not unique to ExpertFlyer. Delta has recently been removing their data from many websites, both booking and non-booking, in an attempt to force as many travelers as possible to only use delta.com and their apps for Delta information. In our many conversations with Delta it was made clear to us that their new policy is that any service or website that is not explicitly authorized to show Delta data will be forced to stop, especially any that screen scrape data from Delta.com or any Delta partner or agency website.

Our many attempts to forge a new agreement for the display of this information on ExpertFlyer with Delta have been rejected. We believe, and have explained to them, that ExpertFlyer brought value to Delta's best customers and by extension to Delta itself. We hope in the future Delta will come to see the net value that ExpertFlyer gives to them as you have already discovered. Should you wish to express your thoughts on this matter to Delta, you can reach customer support here:
[Delta Email Feedback](#)

You may also send a copy of any feedback you send to ExpertFlyer at testimonials@expertflyer.com and we can pass it along to our contacts at Delta.

As always, thank you for your continued support.
-The ExpertFlyer.com Team