



June 2014

AIRLINE COMPETITION

The Average Number of Competitors in Markets Serving the Majority of Passengers Has Changed Little in Recent Years, but Stakeholders Voice Concerns about Competition

GAO Highlights

Highlights of [GAO-14-515](#), a report to congressional requesters

Why GAO Did This Study

Since 2007, there have been four major airline mergers. As a result of this consolidation, about 85 percent of passengers in the U.S. flew on four domestic airlines in 2013. Certain industry observers have raised concerns that consolidation could have adverse effects on airline competition, such as higher airfares and reduced service. Others argue that consumers stand to benefit from recent changes in the industry as profitable airlines reinvest in new planes and expand their networks.

To assist Congress in overseeing changes in the airline industry, GAO was asked to examine the state of competition in the domestic passenger airline industry. This report addresses (1) changes to the financial health of the U.S. airline industry since 2007; (2) changes to the structure of the market since 2007; (3) how consumers have been affected by these changes; and (4) views of stakeholders on the key challenges to airline competition and actions the federal government could take to address these challenges.

GAO analyzed airline financial data reported to DOT, as well as DOT passenger itinerary data from 2007 through 2012, the latest year available. GAO interviewed DOT and DOJ officials and 26 stakeholders, selected based on prior work and their expertise in the field, from organizations in sectors such as academia, airlines, consumer advocacy, and finance. Their views are not generalizable, but provide perspectives on a range of competition issues. Both DOJ and DOT provided technical comments on a draft of this report, which were incorporated as appropriate.

View [GAO-14-515](#). For more information, contact Susan Fleming at (202) 512-2834 or flemings@gao.gov.

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What GAO Found

The U.S. passenger airline industry has returned to profitability following the recent economic recession. From 2007 through 2012, the industry generated approximately \$21.7 billion in operating profits despite losing about \$5.6 billion in 2008. U.S. airlines maintained approximately \$13 billion in cash reserves in 2012. Growth in revenue has driven industry profits, aided by increased passenger traffic, “capacity restraint,” (i.e., limiting the supply of available seats in relation to the level of demand), and revenue from ancillary fees for checking bags and other services. For example, baggage and reservation change fees collected by U.S. airlines increased from about \$1.4 billion in 2007 to \$6 billion in 2012. Additionally, unlike prior recoveries when airline capacity growth undermined the ability to charge profitable fares, airlines since 2009 have restrained capacity growth even though demand for air travel has risen with the economic recovery.

In recent years, the average number of competitors has not substantially changed in markets traveled by the majority of passengers, despite several major airline mergers. From 2007 through 2012, the average number of effective competitors (defined as airlines with more than a 5 percent market share) ranged from 4.3 to 4.5 in the markets with the most passengers. During this period, the average number of effective competitors in markets with the fewest passengers decreased slightly from 3.3 to 3 airlines. While these results reflect market changes that have occurred since several airlines merged, the American-US Airways merger occurred after GAO’s analysis. The mergers created larger networks and new connections in some markets. Also, low-cost airlines have expanded since 2007, thereby adding new competitors into some larger markets. The structure of the market will continue to evolve as economic conditions change and the recent airline mergers are fully implemented.

In recent years, consumers have experienced higher airfares, additional fees, and fewer flights in certain markets, but also new services and expanded networks. Consumers paid about 4 percent more in real terms, on average, for air travel in 2012 than in 2007, without considering additional fees. The airline industry has reduced flights, especially to smaller airports, and consolidated service at large airports. Airlines have also invested in new aircraft and introduced new services, such as early boarding and entertainment options, in an attempt to differentiate products and increase revenue.

Most airline stakeholders cited barriers to market entry, especially restrictions on takeoff and landing slots at four U.S. airports—Washington, D.C.’s Reagan National and three New York City area airports—as a major challenge to airline competition. Barriers that make airline entry more difficult can hamper competition and enable incumbent firms to charge and maintain higher prices. In addition, access to capital and the size advantages of major airlines present a formidable challenge for any new airline. Stakeholders suggested addressing challenges to competition by increasing capacity at congested airports, enhancing fare transparency, and allowing states a greater role in consumer regulation of airlines. However, stakeholders differed regarding the role of the federal government in addressing competition challenges, in part because changes to the airline industry due to consolidation are ongoing.

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Abbreviations

DOJ	Department of Justice
DOT	Department of Transportation
FAA	Federal Aviation Administration
HHI	Herfindahl-Hirschman Index
IATA	International Air Transport Association
JFK	John F. Kennedy International Airport
MIT	Massachusetts Institute of Technology
XML	Extensible Markup Language

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June 11, 2014

The Honorable Amy Klobuchar
Chairman
The Honorable Mike Lee
Ranking Member
Subcommittee on Antitrust, Competition Policy and Consumer Rights
Committee on the Judiciary
United States Senate

The Honorable Rick Larsen
Ranking Member
Subcommittee on Aviation
Committee on Transportation and Infrastructure
House of Representatives

Since 2000, the U.S. passenger airline industry has faced a number of major challenges. For example, the industry struggled to recover from the economic recession that began in early 2001 and the aftermath of the events of September 11, 2001. While U.S. airlines partially rebounded from those events, record-high fuel prices, the financial crisis, and ensuing recession of 2007–2009 presented new challenges and led to heavy financial losses, particularly for network airlines—the largest segment of the industry.¹ These challenges contributed to a wave of bankruptcies and airline consolidation through several major airline mergers. Since 2007, six domestic network and two low-cost airlines have consolidated to four major airlines.² As a result, there are fewer major U.S. airlines today than at any time since deregulation in 1978. Furthermore, approximately 85 percent of U.S. passengers traveled on American Airlines, Delta Air Lines, Southwest Airlines, or United Airlines

¹Network (or legacy) airlines were in operation before the Airline Deregulation Act of 1978 (Pub. L. No. 95-504, 92 Stat. 1705) and provide service through hubs from “anywhere to everywhere.” For purposes of this report we have defined Alaska Airlines, American Airlines, Continental Airlines, Delta Air Lines, Hawaiian Airlines, Northwest Airlines, United Airlines and US Airways as network airlines.

²Low-cost airlines generally entered the market after deregulation and tend to operate point-to-point service. We have defined AirTran Airways, Allegiant Air, America West Airlines, Frontier Airlines, JetBlue, Southwest Airlines, Spirit Airlines, and Virgin America as low-cost airlines.

in 2013.³ Some observers have raised questions about the effects consolidation will have on airline competition, suggesting that consumers may ultimately face higher airfares and reduced service. Others argue that consumers can benefit from recent changes in the industry, as profitable airlines reinvest in new planes, improve the quality of on-board services available to passengers, and expand their networks.

The recent merger between American Airlines and US Airways in 2013 prompted further interest in the effects that domestic airline consolidation has had on competition and consumers. In order to assist Congress with oversight of competition policy and consumer rights, you asked us to examine the U.S. airline industry and the impact that recent consolidation has had on consumers. Specifically, this report describes (1) how the financial health of the U.S. airline industry has changed since 2007; (2) changes to the structure of the market since 2007; (3) how consumers have been affected by changes in the financial health and market structure of the U.S. airline industry; and (4) what stakeholders believe are the key challenges to airline competition and actions the federal government could take to address these challenges.

To address these objectives, we conducted analyses using airline industry information reported to the Department of Transportation (DOT), reviewed government and academic studies, and conducted interviews with knowledgeable individuals. Specifically, to evaluate changes to the financial health of the domestic airline industry, we analyzed airline financial data reported to DOT by airlines from 2007 through 2012 as these were the most recent and complete annual data. We also reviewed financial studies and conducted interviews with airline representatives, industry trade associations, industry analysts, and other industry stakeholders. To evaluate changes in the market structure of the airline industry, we analyzed data from DOT's Origin and Destination Survey from 2007 through 2012, which include fare and itinerary information on every 10th airline ticket sold; reviewed academic studies assessing competition; and interviewed DOT officials, airline representatives, and aviation industry stakeholders. This analysis focused on domestic city-pair markets, which are typically viewed as the basic, relevant market for

³We used Department of Transportation (DOT) T-100 data for domestic marketing airlines in 2013 to determine industry market share. According to DOT, the marketing airline issues a flight reservation or ticket either on their aircraft or under a code-share agreement with another airline that may provide the actual transportation.

airline travel in the U.S. A city-pair market represents air transportation between two cities. To determine how consumers have been affected by changes to the airline industry, we assessed DOT data from 2007 through 2012 on service levels to large-, medium-, and small-hub airports, and nonhub airports,⁴ reviewed academic studies, and conducted interviews with academic and research experts, airline representatives, DOT and Department of Justice (DOJ) officials, and representatives from travel and consumer advocacy organizations. To assess the reliability of all DOT data that we used, we reviewed the quality control procedures applied by DOT and interviewed officials responsible for collecting these data, and subsequently determined that the data were sufficiently reliable for our purposes. Finally, to identify what stakeholders believe are the key challenges to competition and what actions the federal government could take to address these challenges, we interviewed six academic and research experts and representatives from five airlines, five travel and consumer advocacy organizations, five industry analysts, four industry trade associations, and one airport authority. We identified and selected these stakeholders based on our prior work and a literature review of relevant academic research. Their views should not be used to make generalizations about the views of all industry stakeholders, but do provide a range of perspectives on issues affecting the industry. Although our report focuses on the domestic airline industry, we have included international issues raised by some stakeholders because they viewed these issues as having implications for competition in the domestic airline industry. For more details on our scope and methodology, see appendix I.

We conducted this performance audit from May 2013 through June 2014 in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

⁴In general, federal statute defines large-hub airports as those commercial service airports that have at least 1 percent of the passenger boardings. Medium- and small-hub airports are defined as having between .25 and 1 percent, and .05 and .25 percent, respectively. Nonhub airports enplaned at least 10,000 passengers, but no more than .05 percent of all passenger boardings. 49 U.S.C. § 40102(29),(31),(42).

Background

The passenger airline industry is primarily composed of network, low-cost, and regional airlines. Network airlines were in operation before the Airline Deregulation Act of 1978 and support large, complex hub-and-spoke operations with thousands of employees and hundreds of aircraft. These airlines provide service at various fare levels to a wide variety of domestic and international destinations. Although this study focuses primarily on domestic competition, network airlines also serve international destinations. By some estimates, nearly 40 percent of network airlines' revenue is from international service, so domestic service is often aligned with their international networks. Low-cost airlines generally entered the market after deregulation and tend to operate less costly point-to-point service using fewer types of aircraft. Low-cost airlines are just beginning to serve international markets, mostly in the Caribbean and Latin America. Some airlines, like Allegiant Air and Spirit Airlines, are referred to as ultra-low-cost because they provide service often to leisure destinations at discount fares, but with higher optional fees, such as for carry-on and checked baggage. Regional airlines operate smaller aircraft—turboprops or regional jets with up to 100 seats—and generally provide service to smaller communities under capacity purchase agreements with network airlines.⁵ Some regional airlines are owned by a network airline, while others are independent. Regional airlines operate about half of all domestic flights and carry about 22 percent of all airline passengers.

We have previously found that the financial performance of the deregulated airline industry has been characterized by extremely volatile earnings.⁶ Despite periods of strong growth and earnings, some airlines have taken advantage of Chapter 11 bankruptcy protection to reorganize and address financial commitments and/or pursued mergers during times of substantial financial distress, although in some cases airlines have

⁵Under a capacity purchase agreement, network airlines contract with regional airlines to provide air service beyond the network airline's route network to increase their capacity and revenue. Agreement terms vary, but network airlines generally take on all commercial functions, such as brand marketing, flight scheduling, and ticket pricing, while the regional airlines are responsible for the aircraft and crews to operate the flights and provide ground and flight operations.

⁶GAO, *Commercial Aviation: Airline Industry Contraction Due to Volatile Fuel Prices and Falling Demand Affects Airports, Passengers, and Federal Government Revenues*, [GAO-09-393](#) (Washington, D.C.: Apr. 21, 2009).

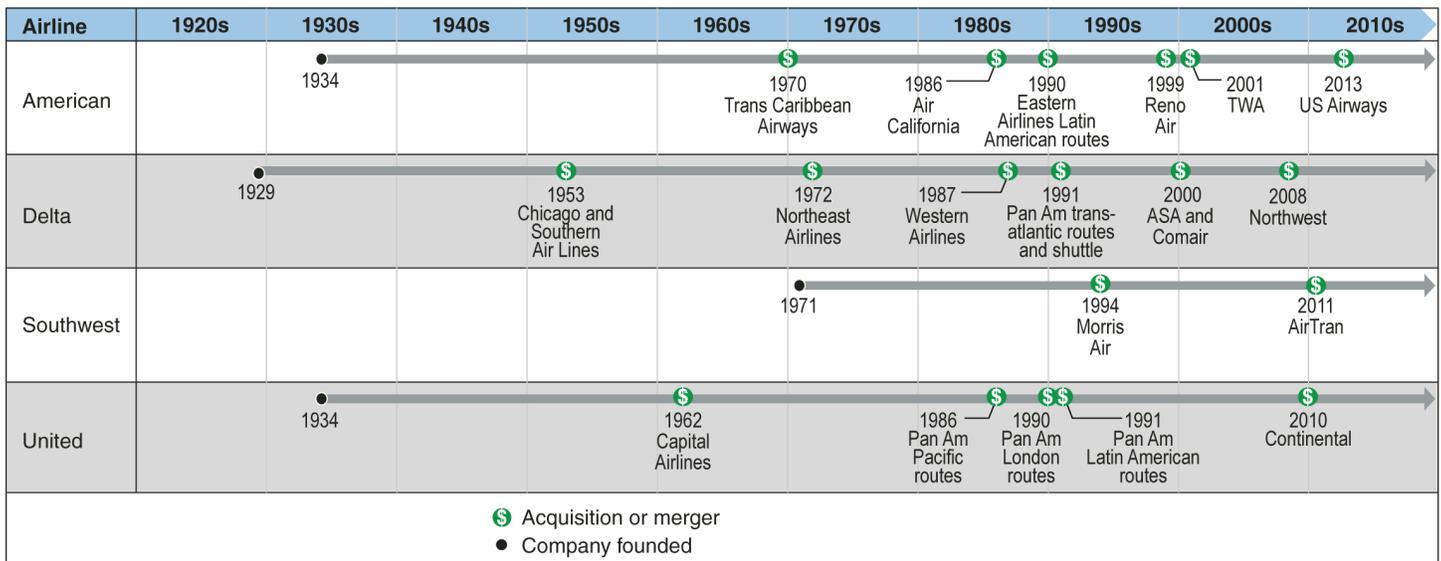
entered Chapter 7 bankruptcy proceedings to cease operations.⁷ Some analysts view the industry as inherently volatile due to key demand and cost characteristics that make it difficult for airlines to quickly reduce capacity in periods of declining demand. For example, airlines have high fixed costs and cannot quickly reduce either flight schedules or employment costs when demand for air travel slows—the latter due in part to commitments made within collective-bargaining agreements and other types of contracts and leases. As we have previously noted, the industry is also highly susceptible to external shocks that decrease demand, such as those caused by wars, terrorist attacks, health events such as the SARS epidemic, or fuel price volatility.

The airline industry has experienced considerable merger and acquisition activity, especially following deregulation in 1978.⁸ Since 2000, economic pressures—including volatile fuel prices, the financial crisis, and ensuing economic recession of 2007–2009—sparked a wave of consolidation across the airline industry. For instance, Delta acquired Northwest in 2008, United and Continental merged in 2010, Southwest acquired AirTran in 2011, and US Airways and American Airlines agreed to merge in 2013 and received U.S. District Court approval for the merger in April 2014. Figure 1 provides a timeline of mergers and acquisitions for the four largest surviving domestic airlines—American, Delta, Southwest, and United—based on the number of passengers served. These four airlines account for approximately 85 percent of passenger traffic in the United States in 2013.

⁷A Chapter 7 proceeding is a court-supervised procedure by which a trustee takes over the debtor's assets, reduces them to cash, and makes distributions to creditors. Debtors that are commercial enterprises desiring continuation of some or all of the debtor's operations ordinarily seek to reorganize under Chapter 11 as a way to satisfy creditor claims. Under Chapter 11, typically the debtor remains in control of the assets. If, however, the bankruptcy court determines that this is not in the best interest of creditors, the court can appoint a trustee to oversee the debtor.

⁸Mergers generally refer to the combination of two companies into one company by mutual consent, while acquisitions (also called takeovers) refer to one company's purchase of assets or equity in another company on friendly or hostile terms.

Figure 1: Selected U.S. Airline Mergers and Acquisitions, 1929–2013



Sources: Cathay Financial and airline company documents.

A key financial benefit that airlines consider in a merger is the potential for increased revenues generated through additional demand (generated by more seamless travel to more destinations), increased market share, and higher fares on some routes.⁹ Airlines also consider cost reductions that may result from combining complementary assets, reducing or eliminating duplicative activities and operating costs, and reducing capacity when merging with or acquiring another airline. For example, the combined airlines may be able to reduce or eliminate duplicative service, labor, and operations costs or achieve operational efficiencies by integrating computer systems and similar airline fleets.¹⁰

The most recent wave of consolidation has raised new questions about the state of competition in the industry. Economic theory suggests that competition is strongest when there are many firms in a market, and no firm has a substantial share of that market. By contrast, competition may

⁹GAO, *Airline Mergers: Issues Raised by the Proposed Merger of American Airlines and US Airways*, [GAO-13-403T](#) (Washington, D.C.: June 19, 2013).

¹⁰GAO, *Airline Mergers: Issues Raised by the Proposed Merger of United and Continental Airlines*, [GAO-10-778T](#) (Washington, D.C.: May 27, 2010).

be weaker when there are only a small number of firms because they may be able to exercise market power—in general terms, the ability to raise and maintain prices above those that would be set in a competitive market. However, if new firms are able to readily enter the market and effectively compete, they may mitigate the potential anti-competitive effects of a small number of incumbent firms, thus reducing the incumbent firms' market power. The intensity of competition in a market is not solely driven by the number of firms or the ease of entry, however. In some cases, competition can be robust in a market with only a few firms even when entry is difficult.

Although recent mergers have reduced the total number of domestic airlines, consumers are less directly affected by changes at the national level than at the individual route level. Consumers purchase seats for air transportation from one city to another. As such, they are likely to be more concerned about the number of airlines serving any specific route. Thus, a “city-pair,” or traffic between two cities, is typically viewed as the basic relevant market for airline travel, including by DOJ, the agency charged with reviewing U.S. airline mergers. The relevant market in a competitive analysis is one in which the good sold by a set of firms is seen by consumers as having some degree of substitutability, such that if one firm were to raise its prices, some consumers would see the good available from other firms as a reasonable substitute and would choose to buy the good from those other firms. If a person wants to travel from Seattle to Detroit, for example, a ticket from Seattle-Tacoma International Airport to Washington Dulles International Airport would not be a substitute. When there is more than one airport in a metropolitan area for a consumer to choose from, however, the relevant market analysis could focus on an “airport-pair,” instead of a city pair. For example, there are two major airports in the Washington metropolitan area—Washington Dulles International Airport and Ronald Reagan Washington National Airport—and a third nearby airport in Baltimore. Some travelers planning to fly from Seattle to Washington, D.C. could view a ticket to Baltimore/Washington Thurgood Marshall International Airport as a reasonable substitute for a ticket to Ronald Reagan Washington National Airport. In addition, travel can occur through nonstop flights and connecting hubs. While some travelers (mostly business travelers) may be willing to pay more for the convenience of nonstop flights and would view connecting flights as a poor substitute, others might weigh the potential extra cost of nonstop flights more heavily and choose a less expensive connecting option.

A starting point for any assessment of competition in an industry is an evaluation of market structure characteristics, including market concentration and the number of effective competitors.¹¹ These are relevant indicators of the potential degree of competition because, in the absence of new entry, having fewer competitors may lead to adverse competitive effects such as higher prices and reduced consumer choices.¹² We have previously examined a number of these market structure characteristics, including:

- the average number of effective competitors in different segments of the market;
- the types of airlines, including the presence of network and low-cost airlines, in the market;
- airline market share of passengers at the route and airport level; and
- barriers to entry, including practices or conditions that may impede a firm's ability to enter a market.¹³

A full competitive market analysis of the domestic airline industry—which we do not undertake in this report—would include a review of factors beyond solely market structure, including the likelihood that airlines would coordinate their behavior in terms of marketing or pricing, as well as the ease of entry that could negate market power. Additionally, in the case of a merger analysis, possible benefits related to the merger, such as enhanced innovation and economic efficiencies, would also be considered.

Both DOJ and DOT play a role in reviewing airline mergers and acquisitions. DOJ principally uses the analytical framework established in

¹¹For the purpose of this analysis, an effective competitor is any airline that carries at least 5 percent of the traffic in a given market.

¹²Some studies have found that greater market concentration is associated with higher prices and, in the context of federal antitrust enforcement, market concentration remains an important predictor of federal agency action. See Jonathan S. Baker and Carl Shapiro, "Reinvigorating Horizontal Merger Enforcement," in *How the Chicago School Overshot the Mark: The Effect of Conservative Economic Analysis on U.S. Antitrust*, ed. by Robert Pitofsky (Oxford University Press: 2008) and Carl Shapiro, "The Horizontal Merger Guidelines: From Hedgehog to Fox in Forty Years," 77 *Antitrust L. J.* 701 (2010). For additional discussion, see William E. Kovacic and Carl Shapiro, "Antitrust Policy: A Century of Economic and Legal Thinking," *Journal of Economic Perspectives*, vol. 14, no. 1 (Winter 2000).

¹³GAO, *Airline Competition: Effects of Airline Market Concentration and Barriers to Entry on Airfares*, [GAO/RCED-91-101](#) (Washington, D.C.: Apr. 26, 1991).

the Horizontal Merger Guidelines¹⁴ to analyze whether a proposed merger or acquisition involving actual or potential competitors raises antitrust concerns—in other words, whether the proposal will likely create, enhance, or entrench market power or facilitate its exercise.¹⁵ As part of its analysis, DOJ uses the Herfindahl-Hirschman Index (HHI) to assess whether a merger is likely to significantly increase concentration and raise anti-competitive concerns in the markets (principally, city-pairs) in which airlines operate.¹⁶ Within the context of its air-carrier certification responsibilities, DOT also conducts analyses of the merits of any airline merger and acquisition¹⁷ and submits its views and relevant information in its possession to DOJ. DOT also provides some essential data—for example, the airlines’ routes and passenger traffic—that DOJ uses in its review.

¹⁴The Guidelines were jointly developed by DOJ’s Antitrust Division and the Federal Trade Commission and describe the inquiry process the two agencies follow in analyzing proposed mergers. The current version of the Guidelines was revised in August 2010.

¹⁵Most proposed airline mergers or acquisitions must be reviewed by DOJ. In particular, under the Hart-Scott-Rodino Antitrust Improvements Act of 1976 (Pub. L. No. 94-435, 90 Stat. 1383), any acquisition of voting securities or assets above a set monetary amount must be reported to DOJ (or the Federal Trade Commission for certain industries) so the Department can determine whether the merger or acquisition raises antitrust concerns. See 15 U.S.C. § 18a(d)(1). DOJ has the lead role in reviewing proposed mergers and acquisitions in the airline industry, given its statutory authority to enforce antitrust laws. DOT also has authority under 15 U.S.C. § 21 to bring administrative proceedings against airline mergers that violate the antitrust laws; however, according to DOT it has not exercised this authority.

¹⁶HHI is calculated by summing the squares of the individual firms’ market shares. In addition to market concentration, DOJ’s review of proposed mergers considers (1) the extent of potential adverse competitive effects of the merger, such as whether the merged entity will be able to charge higher prices or restrict output for the product or service it sells; (2) whether other competitors are likely to enter the affected markets and whether they would counteract any potential anticompetitive effects that the merger might have posed; (3) the verified “merger specific” efficiencies or other competitive benefits that may be generated by the merger and that cannot be obtained through any other means; and (4) whether, absent the merger or acquisition, one of the firms is likely to fail, causing its assets to exit the market.

¹⁷49 U.S.C. § 41110.

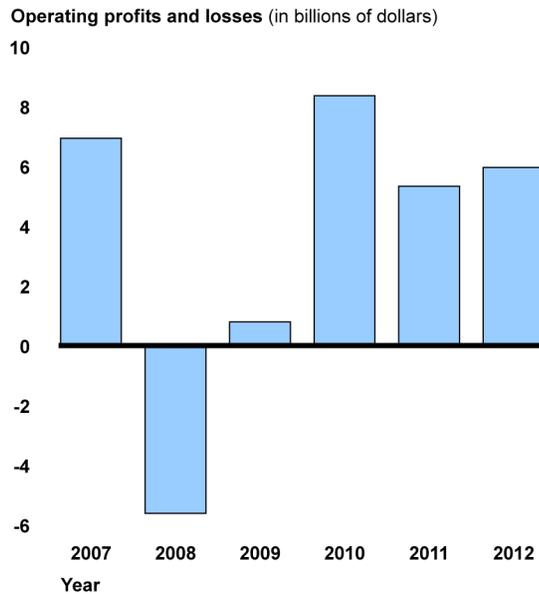
Increased Revenues and Reduced Costs Have Strengthened the Financial Health of the U.S. Airline Industry

The U.S. Airline Industry's Profitability Has Improved since 2009

Sustained airline profits since 2009 have bolstered the financial health of the U.S. passenger airline industry. Our analysis of the latest available financial data reported by airlines to DOT showed that the industry generated operating profits of approximately \$21.7 billion from 2007 through 2012.¹⁸ Although the financial performance of individual airlines differed, network airlines as a whole generated operating profits of approximately \$12 billion from 2007 through 2012, while low-cost airlines and regional airlines generated profits of approximately \$6.1 billion and \$3.6 billion respectively over the same period. This recovery follows operating losses of \$5.6 billion for the U.S. passenger airline industry as a whole in 2008, due largely to the economic recession and volatility in the price of fuel. Figure 2 shows operating profits and losses for U.S. passenger airlines since 2007.

¹⁸The universe of passenger airlines considered for our analysis accounts for almost all U.S. passengers. For example, it accounts for 99 percent of all passengers flying in the U.S. in the fourth quarter of 2012. It excludes charter and cargo airlines.

Figure 2: Operating Profits and Losses, U.S. Passenger Airline Industry, 2007–2012



Source: GAO analysis of DOT data.

Recent efforts by certain airlines to return profits to shareholders are another indication of the industry’s improved financial health since the economic recession of 2007–2009. For example, Delta Air Lines paid a quarterly dividend in 2013—its first since 2003—and plans to pay \$1 billion in dividends to its shareholders over the next several years. The airline also announced a program to repurchase \$500 million in shares of its stock by June 2016 and provided \$506 million in profit-sharing bonuses for its employees in February 2014.¹⁹ Industry analysts we spoke with said that other network airlines would likely follow Delta and introduce dividends in the near term. Additionally, Southwest—the only airline offering a share dividend previously—quadrupled its quarterly dividend in May 2013, increased its share buy-back program, and announced \$228 million in annual profit-sharing with its employees in 2014, an increase from \$121 million in 2013.

¹⁹A repurchase of stock is a distribution in the form of a company buying back its stock from shareholders.

We found that improved profitability has enabled airlines to raise their liquidity in recent years by increasing their total cash reserves. Liquidity levels are especially important in the airline industry because cash balances help the airlines withstand potential industry shocks, such as lower travel demand or more volatile fuel prices, as well as pay down debt and reduce the risk of bankruptcy. U.S. airlines as a whole have increased their cash reserves from approximately \$8 billion in 2007 to approximately \$13 billion in 2012.

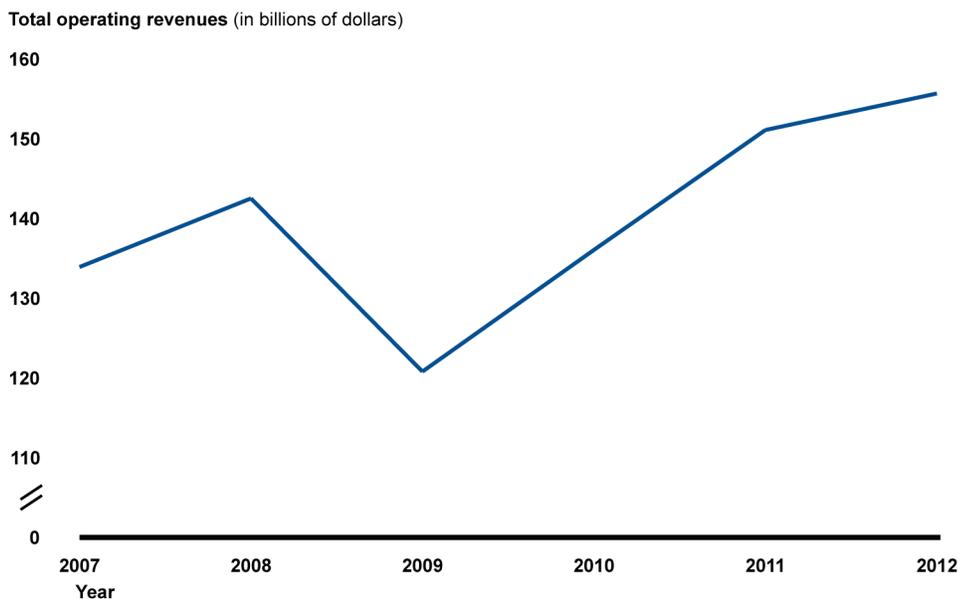
Network airlines have also generally reduced their long-term debt and certain airlines improved their credit position. Network airlines reduced long-term debt 3.7 percent (or approximately \$1.2 billion) from 2007 to 2012, while low-cost airlines saw an increase in their long-term debt of 1.6 percent (or approximately \$97 million) over this period. Debt reduction by network airlines has resulted in some improvement in credit profiles and credit rating upgrades for certain airlines. For example, in June 2013 Fitch Ratings Service revised its ratings outlook for Delta Air Lines from stable to positive, and in March 2014 upgraded the issuer default rating from B+ to BB-.²⁰ Among low-cost airlines, Southwest Airlines remains the only airline with a credit rating that is considered investment grade, which indicates relatively low to moderate credit risk. Fitch affirmed the airline's rating at BBB in September 2013. Improved credit ratings help airlines lower the cost of capital by enabling them to obtain financing—including the refinancing of existing debt—at more advantageous terms. Credit rating analysts we spoke to emphasized, however, that the industry remains significantly leveraged with debt, which may negatively affect their credit ratings.

²⁰According to Fitch, the issuer default rating addresses an entity's relative vulnerability to default on financial obligations. "B" ratings indicate that material default risk is present, but a limited margin of safety remains. Firms with "BB" ratings remain vulnerable to default risk, particularly in the event of adverse changes in business or economic conditions over time; however, business or financial flexibility exists, which supports the servicing of financial commitments. "BBB" ratings represent good credit quality and indicate that expectations of current default risk are low.

Increased Passenger Traffic, Capacity Restraint, and Ancillary Fees Have Improved Airline Revenues since the Economic Recession

Growth in revenues has been a key driver in the U.S. airline industry's improved financial health and profitability. This growth has been aided by three factors: (1) an increase in passenger traffic; (2) capacity restraint (i.e., limiting the supply of available seats in relation to the level of demand), which has contributed to a rise in airfares; and (3) increased revenues from ancillary fees. Total operating revenues decreased by nearly \$22 billion from 2008 to 2009 due largely to the recession, but have since exceeded pre-recession levels. The industry's operating revenues grew 29 percent from approximately \$121 billion in 2009 to \$156 billion in 2012 (see fig. 3). During this period, network airline operating revenues increased 29 percent (from \$92.5 billion to \$120 billion), while operating revenues for low-cost airlines grew 43 percent (from \$19 billion to \$27 billion).

Figure 3: Total Operating Revenues, U.S. Passenger Airline Industry, 2007–2012



Source: GAO analysis of DOT data.

Although airlines' operating revenues have increased in recent years, net profit margins for the industry remain lower than those for most other industries. According to an industry association, for example, operating profits for nine U.S. passenger airlines in 2013 were 4.9 percent of total operating revenues, as compared to the Standard & Poor's 500 Index industry average, which was twice that percentage.

A recovery in domestic passenger traffic since 2009 has been a key factor in the growth in airline revenues and industry profitability. Total domestic airline passenger traffic, as measured by revenue passenger miles (RPMs) (e.g., one fare-paying passenger transported one mile) dropped about 8 percent from approximately 579 billion RPMs in 2007 to 532 billion RPMs in 2009 largely due to the economic recession, and recovered from 2009 through 2012 to approximately 575 billion RPMs.

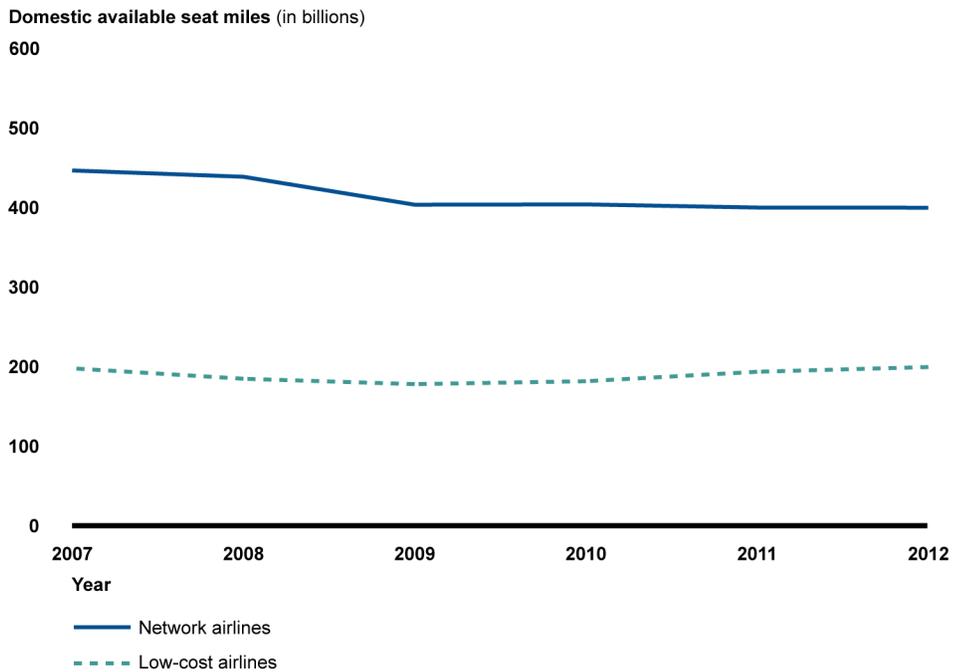
Restraint in airline capacity—as measured by the supply of available seat miles—has also contributed to industry profitability since 2007 by allowing increased revenues at lower costs. Until recently, it was common in the U.S. airline market for any reduction in capacity to be quickly replaced. For example, we have previously found that although one airline may reduce capacity or leave the market, capacity has tended to return relatively quickly through new airline entry or expansion by an existing airline.²¹ In fact, we found in 2008 that some U.S. airline industry recoveries stalled because airlines grew their capacity so quickly—either by adding additional flights or flying larger aircraft with more seats in an effort to gain market share—that their ability to charge profitable fares was undermined.²² This dynamic appears to be changing in recent years, however. Several industry experts told us that network airlines responded to high fuel prices and declining demand during the economic recession, as expected, by reducing the supply of available seats. For example, network airline domestic capacity decreased nearly 10 percent from 446 billion available seat miles in 2007 to 403 billion available seat miles in 2009. However, unlike after other industry downturns, network airlines have not responded to rising demand for air travel in the last few years by increasing capacity, as available seat miles essentially remained flat (a decline of about 1 percent) from 2009 through 2012 as shown in figure 4 below.²³

²¹[GAO-13-403T](#).

²²[GAO-08-845](#).

²³Available seat miles are the number of seats offered by an airplane multiplied by the number of scheduled miles flown. This is a typical measure of capacity in the airline industry.

Figure 4: Domestic Available Seat Miles, Network and Low-Cost Airlines, 2007–2012



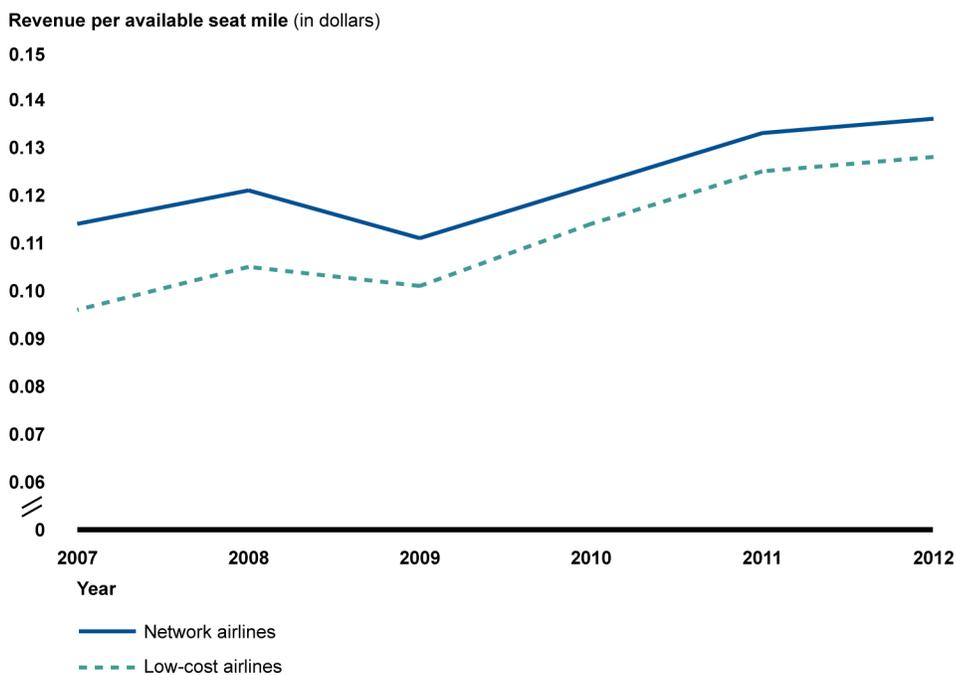
Source: GAO analysis of DOT data.

Domestic capacity has remained flat while domestic RPMs have increased since 2009, contributing to an increase in unit revenues.²⁴ Unit revenues rose for network and low-cost airlines from 2007 to 2008 and then fell from 2008 to 2009 largely due to the economic recession. From 2009 to 2012, unit revenues for both segments increased. Specifically, as shown in figure 5, over that 4-year period, network airlines' unit revenues increased 23 percent (from approximately \$0.11 to \$0.14 per available

²⁴Unit revenues are the operating revenues airlines earn per available seat mile.

seat mile), while low-cost airline unit revenues rose approximately 27 percent (from approximately \$0.10 to \$0.13).²⁵

Figure 5: Unit Revenues, Network and Low-Cost Airlines, 2007–2012



Source: GAO analysis of DOT data.

Note: Unit revenues, or revenue per available seat mile, are calculated as operating revenues excluding transport revenues divided by total available seat miles.

As demand has increased, capacity restraint has resulted in higher airfares. For example, average one-way domestic fares not including taxes or other fees increased approximately 9 percent from \$184.92 in 2007 to \$201.00 in 2012 for network airlines, and approximately 17 percent from \$117.37 to \$137.00 for low-cost airlines.

²⁵We did not adjust unit revenue and unit cost figures for stage length, which is the average distance flown per aircraft departure. Adjusting for stage length standardizes the inherent differences in route structures among airlines and allows for more even comparisons of unit revenue and cost differences. Although, in general, network airlines have had longer stage lengths than low-cost airlines, average stage length for low-cost airlines, especially Southwest Airlines, has been increasing since 2007 and therefore stage length adjustments have less of an effect.

Network airlines have readjusted capacity to add available seats on more profitable routes, particularly those to international destinations. In 2007, approximately 63 percent of network airlines' available seat miles were domestic and 37 percent were international. In 2012, network airlines' international available seat miles represented 42 percent of their total capacity. Network airlines are shifting their focus to international routes, in part, because they are more profitable and in these markets they face less competition from low-cost airlines, which provide predominantly domestic service. In addition, as we found in 2008, international routes provide additional passenger flow and revenue because passengers often travel through network airlines' domestic networks to reach the departure airport for their international connection.²⁶

Airline revenues have also been supplemented by the growth in ancillary fees for optional services. These include fees for services that were previously included in the price of airfare, such as checked bags, early boarding, seat selection, and meals, and for new services that were not previously available like Wi-Fi access and other entertainment options.²⁷ In addition, Delta, United, and American have increased their ticket-change fees on nonrefundable tickets to as much as \$200. According to industry experts, ancillary fees have been beneficial for airlines by enabling them to collect revenues that are related to the costs imposed by individual passengers, in contrast to the previous approach in which airlines spread the costs associated with these services equally across all travelers through fares, regardless of whether all passengers actually used the specific services. Ancillary fees comprise an increasing proportion of airline operating revenues, although the total amount is unclear because airlines are only required to report their checked bag and reservation change fees.²⁸ In 2012, the U.S. airline industry generated approximately \$6 billion in checked baggage and reservation change fees, up from approximately \$1.4 billion in 2007. Revenues from checked baggage and reservation change fees reported by network airlines have

²⁶[GAO-08-845](#).

²⁷Charging fees for services is also known as unbundling charges, offering a la carte pricing, or charging ancillary fees. See GAO, *Commercial Aviation: Consumers Could Benefit from Better Information about Airline-Imposed Fees and Refundability of Government-Imposed Taxes and Fees*, [GAO-10-785](#) (Washington, D.C.: July 14, 2010).

²⁸Specifically, DOT only requires airlines to report excess baggage and reservation change fees in separate accounts; other ancillary fees are commingled with other revenue accounts.

grown from about 1 percent of total operating revenues in 2007 to approximately 4 percent in 2012. Checked baggage and reservation change fees collected by network airlines increased from approximately \$1.2 billion in 2007 to \$5.1 billion in 2012. Over the same period, checked baggage and reservation change fees reported by low-cost airlines increased from approximately \$183 million (about 1 percent of total operating revenues) in 2007 to approximately \$892 million (about 3 percent) in 2012. Ultra low-cost airlines like Allegiant Air and Spirit Airlines that offer low fares are particularly reliant on ancillary fees. For example, revenues from checked baggage and change fees reported by Spirit Airlines grew from nearly 3 percent of total operating revenues in 2008 to almost 15 percent in 2012.

Cost Reduction Measures Have Also Contributed to Improved Financial Health for Network Airlines, While Low-Cost Airline Costs Have Risen

Efforts by network airlines to reduce costs have also been a key factor in the improved financial performance of the U.S. airline industry. We have previously found that bankruptcy restructuring during the last decade played a key role in enabling network airlines to reduce costs.²⁹ The bankruptcy process enabled Delta Air Lines and American Airlines to cut their costs by negotiating contract and pay concessions from their labor unions and through bankruptcy restructuring and personnel reductions. Bankruptcy restructuring also allowed some large airlines to significantly reduce their pension expenses by terminating their pension obligations and shifting claims to the Pension Benefit Guarantee Corporation.³⁰

²⁹[GAO-08-845](#).

³⁰The Pension Benefit Guarantee Corporation was established under the Employee Retirement Income Security Act of 1974 (ERISA) (Pub. L. No. 93-406, 88 Stat. 829, 1003) and set forth standards and requirements that apply to defined benefit plans. It was established to encourage the continuation and maintenance of voluntary private pension plans and to insure the benefits of workers and retirees in defined benefit plans should plan sponsors fail to pay benefits. The corporation's operations are financed, for example, by insurance premiums paid by sponsors of defined benefit plans, investment income, and assets from pension plans trusted by the corporation, and recoveries from the companies formerly responsible for the plans. See GAO, *Airline Mergers: Issues Raised by the Proposed Merger of American Airlines and US Airways*, [GAO-13-403T](#) (Washington, D.C.: June 19, 2013). During bankruptcy, United and US Airways terminated their pension plans and shifted \$9.7 billion in claims to the corporation. As a result, plan participants lost \$5.3 billion in benefits (in constant 2005 dollars). See GAO, *Commercial Aviation: Bankruptcy and Pension Problems are Symptoms of Underlying Structural Issues*, [GAO-05-945](#) (Washington, D.C.: Sept. 30, 2005).

Network airlines have also accomplished cost reductions by more efficiently managing capacity. As previously mentioned, there have been four mergers and acquisitions involving major airlines since 2007, including Delta-Northwest (2008), United-Continental (2010), Southwest-AirTran (2011), and American-US Airways (2013). These mergers and acquisitions allowed the airlines to achieve efficiencies by reducing redundant capacity and eliminating inefficient operations at hub airports.³¹ Prior to their merger, for example, Delta used Cincinnati as a hub for air traffic in the Midwest, while Northwest relied on Memphis as its hub in the Southeast. Through its merger with Northwest, however, Delta gained a more attractive hub for Midwestern traffic in Detroit to accompany its hub in Atlanta and subsequently downsized Cincinnati and Memphis as hubs in its network.

Low-cost airlines have not achieved the same cost reductions since 2007 that network airlines have accomplished, and instead have experienced rising unit costs. For example, fuel costs rose for both network and low-cost airlines during the recent recession, and now comprise a greater percentage of airlines' operating costs. From 2007 through 2012, for example, fuel costs grew from 31 to 38 percent of operating costs for low-cost airlines, and from 26 to 29 percent of network airline operating costs. Much of this growth for low-cost airlines can be attributed to Southwest Airlines, the largest low-cost airline. Southwest's fuel costs grew from 30 percent of operating costs in 2007 to 37 percent in 2012.³² According to an industry analyst's report, the impact of higher fuel prices has been greater for low-cost airlines.³³ This has occurred, in part, because low-cost airlines have reduced aircraft utilization, or the average number of hours that an aircraft is in flight in a 24-hour period. For example, higher fuel prices have made off-peak flying—i.e., flights that depart in the early

³¹[GAO-08-845](#).

³²The cost of fuel for airlines reflects both the price of fuel at any given time and airline fuel hedging strategies. Airlines have used fuel hedges—contracts that are designed to provide more certainty over the future price of fuel—to reduce the effects of fuel price volatility on their earnings. However, airlines incurred substantial losses because of the downside risk to their hedges (i.e., exposure to financial losses) when fuel prices fell in 2008. For example, Southwest's average fuel cost per gallon, including hedging, increased 35.6 percent in 2008 and contributed to a \$342 million, or 43.2 percent, decrease in the company's operating income that year.

³³Bank of America Merrill Lynch, *Airlines Primer: Changing dynamics improve supply discipline*, by Glenn D. Engel and David van der Keyl (New York: 2013).

morning or late evening carrying fewer passengers—less attractive for low-cost airlines as these flights are less profitable, and unit costs increased as a result.

Non-fuel unit costs, measured as cost per available seat mile excluding fuel costs, have also steadily increased for low-cost airlines since 2007, while network airlines' non-fuel unit costs have only slightly increased. A 2008 academic study found that the non-fuel cost advantage (excluding fuel and transport expenses) low-cost airlines have had over network airlines narrowed from 2000 to 2006, and we found that this trend has continued to 2012, as shown in figure 6 below.³⁴ Non-fuel unit costs for network airlines increased about 14 percent from approximately \$0.08 per available seat mile in 2007 to \$0.09 in 2012, while low-cost airline non-fuel unit costs rose nearly 24 percent from approximately \$0.06 to \$0.08.³⁵ An industry analyst report attributes the increase in low-cost airlines' non-fuel unit costs to the effects of the recent recession, which, by slowing low-cost airline growth, led to increased average compensation and maintenance costs for low-cost airlines as their fleets and workforce have matured.³⁶ Although the gap between network and low-cost airlines' non-fuel unit costs has narrowed since 2007, some academic experts point to a structural gap in costs between network and low-cost airlines that is unlikely to reduce further, as the costs associated with the extensive networks and air-transportation service network that airlines provide are inherently greater than those for low-cost airline service.³⁷

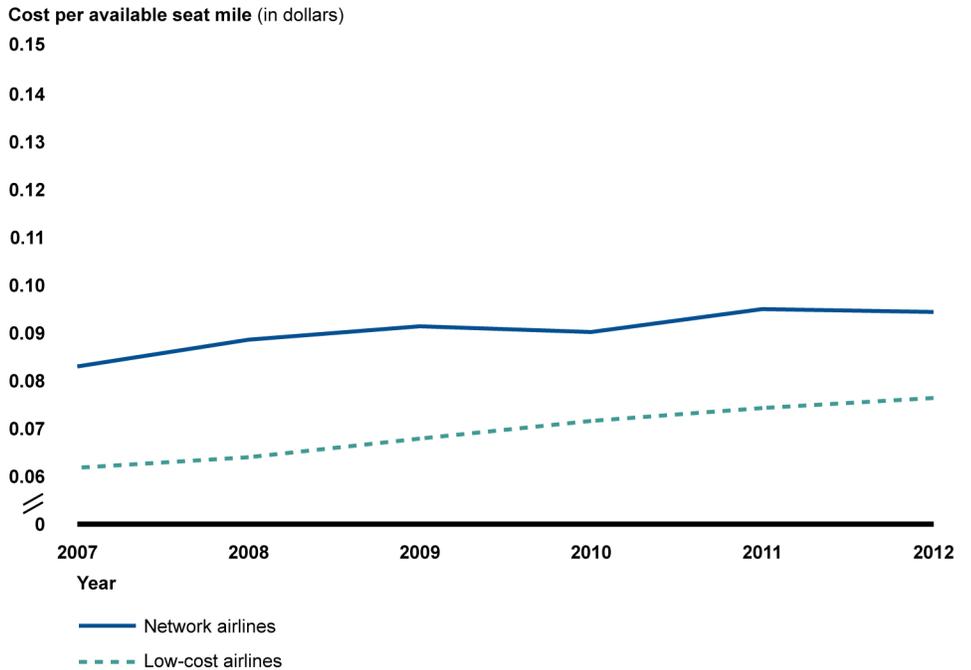
³⁴Gerassimos Tsoukalas, Peter Belobaba, and William Swelbar, "Cost Convergence in the US Airline Industry: An Analysis of Unit Costs 1995-2006," *Journal of Air Transport Management*, vol. 14 (2008).

³⁵To compare costs across airline segments, we excluded (1) transport-related expenses, as these are primarily payments made by network airlines to regional airlines for service to smaller cities on their behalf, and (2) fuel expenses, as reported fuel costs are not always comparable due to the use of fuel hedging strategies.

³⁶Bank of America Merrill Lynch, *Airlines Primer: Changing dynamics improve supply discipline*.

³⁷Tsoukalas, Belobaba, and Swelbar, "Cost Convergence in the US Airline Industry."

Figure 6: Unit Costs, Excluding Fuel and Transport Expenses, Network and Low-Cost Airlines, 2007–2012



Source: GAO analysis of DOT data.

Note: Unit costs, or cost per available seat mile, are calculated as operating expenses divided by total available seat miles.

Despite Industry Consolidation, the Average Number of Competitors Has Not Substantially Changed in the Markets Traveled by the Majority of Passengers

Since 2007, there has been little change in the average number of competitors in the most heavily traveled domestic markets. In addition, the markets serving the most passengers were less concentrated than the markets serving the fewest passengers. These results do not factor in market changes from the 2013 merger between American Airlines and US Airways, but they do account for some of the market changes that may have occurred through the other three mergers that occurred from 2008 to 2011. The effect of airline mergers on the structure of individual city-pair markets may not be immediate as it can take years for merging airlines to fully integrate. Fewer competitors might have been expected in some markets as a result of the merger activity, and although we did find fewer competitors in some markets, in other markets we found that the number of competitors actually increased. The latter results may have occurred in part due to growth in network size and new connections created since the mergers. In addition, we found that since 2007, low-cost

airlines have expanded into the largest passenger markets, adding new competitors in some markets where mergers may have reduced competition.

Analysis of City-Pair Market Quintiles

To perform our market structure analysis, we used DOT's Origin and Destination Survey data, which is a 10-percent quarterly sample of all airline tickets sold. We assessed approximately 91,000 U.S. markets with passenger traffic each year from 2007 through 2012; therefore, several mergers were completed during the time period covered by this analysis. We filtered the data to include only those markets with at least 520 one-way passengers or 1,040 round-trip passengers because markets with fewer passengers would be too small to ensure statistical accuracy. We also excluded markets in Alaska and Hawaii.³⁸ This filter removed 6 percent of the passengers from the full dataset.³⁹ We primarily used the city-pair market as our unit of analysis, meaning that travel between two metropolitan areas is the relevant market.⁴⁰ For each of the 6 years, we then categorized the markets into quintiles based on the total number of passengers in our sample, and for every year, traffic was segregated so that each quintile contained approximately 20 percent of the total passengers for that year. However, because the passenger traffic is not evenly distributed across all city-pair markets, the corresponding number of city-pair markets in each quintile differs substantially (see table 1).

³⁸These are the same minimum passenger counts we have used as a threshold for our analyses in previous reports. We excluded Alaskan and Hawaiian destinations because cost and competitive conditions involving these destinations are likely to be considerably different than routes within the continental U.S.

³⁹While this analysis retained 94 percent of all passengers, it only retained 14 percent of the routes as defined by a specific combination of two endpoint airports after applying the passenger-count filter screen. As we noted, data on routes with very few passengers are not robust enough to ensure statistical accuracy. Moreover, such cases may be indicative of errors in the data, or routes that are travelled so rarely that they are not representative of the industry more broadly and are thus not appropriate to include in this analysis.

⁴⁰If there was more than one airport in a metropolitan area, we aggregated traffic from those airports. Thus, for the New York City to Chicago city-pair market, all traffic between the two major commercial airports in Chicago and the three major commercial airports in the New York City area were aggregated to include all city-pair traffic.

Table 1: Example of Number of City-Pair Markets and Passengers per Quintile, 2012

Market Segment	Number of City-Pair Markets	Number of Passengers
1st quintile	37	82,965,329
2nd quintile	99	81,452,273
3rd quintile	237	81,980,327
4th quintile	682	82,009,532
5th quintile	9,379	82,099,635
Total	10,434	410,507,096

Source: GAO analysis of DOT data.

Because certain routes carry many more passengers than others, the first quintile includes the most heavily traveled city-pair markets, while the fifth quintile includes the least-traveled city-pair markets in the sample. For instance, in 2012, about 83 million passengers—or about 20 percent of the approximately 411 million passengers in our sample—traveled in 37 city-pair markets in the first quintile. We refer to the markets in the first quintile as the largest markets. Examples include New York to Los Angeles and Washington, D.C. to Boston. Conversely, approximately 82 million passengers in the fifth quintile spread their flying across more than 9,300 markets, meaning that these city-pair markets are some of the least-traveled domestic routes. Likewise, we refer to the markets in the fifth quintile as the smallest markets. Examples include Pittsburgh, Pennsylvania to Bangor, Maine, and Spokane, Washington to Billings, Montana.

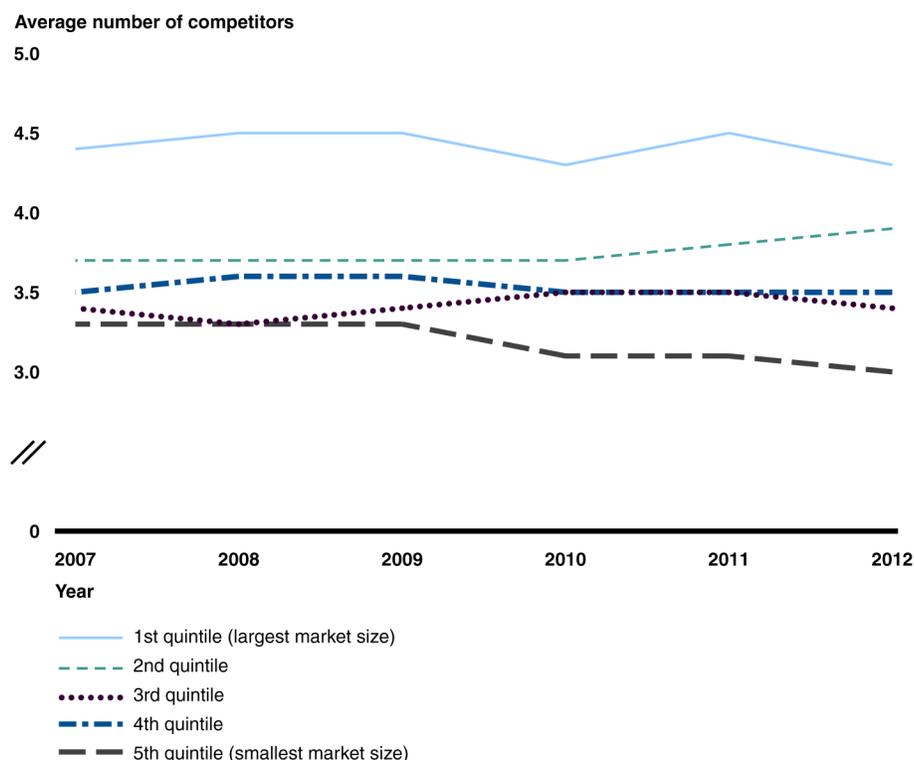
Since 2007, the Average Number of Competitors Has Changed Little in the Most Heavily Traveled Markets

We found that there has been little change in the average number of effective competitors across the markets in our analysis from 2007 through 2012.⁴¹ For example, during this period, the average number of effective competitors each year ranged from 4.3 to 4.5 in the markets represented in the first quintile (see fig. 7). The average number of effective competitors in the markets represented in the second quintile increased slightly from 3.7 in 2007 to 3.9 in 2012. On the other end of the spectrum, there has been a small decrease in the average number of effective competitors serving the smallest markets represented in the fifth

⁴¹As previously noted, we define an effective competitor as any airline that carries at least 5 percent of the traffic in a given market.

quintile. Specifically, the average number of competitors fell from 3.3 to 3 between 2007 and 2012 in these small markets.⁴² See appendix II for the full results of our analysis.

Figure 7: Average Number of Effective Competitors in U.S. Passenger Airline Industry by City-Pair Market Size, 2007–2012



Source: GAO analysis of DOT data.

Note: Each quintile contains approximately the same number of passengers, but the number of city-pair markets differs. For example, in 2012 the first, second, third, fourth, and fifth quintile contained 37, 99, 237, 682, and 9,379 city-pair markets, respectively, each with 20 percent of the 411 million passengers in our sample.

⁴²To further assess trends in the smallest markets, we also categorized the markets into quintiles based on the total number of markets—rather than by passengers—in our sample. As such, each quintile contained 20 percent of the total *markets*, but the corresponding number of *passengers* in each quintile differed. For instance, each quintile contained about 2,087 markets in 2012, but the first quintile contained about 367 million passengers or about 89 percent of the total, while the fifth quintile contained about 3 million passengers or less than one percent of all passengers. When analyzed this way, we found that the average number of effective competitors in the smallest markets represented in this fifth quintile had fallen only slightly from 2.2 in 2007 to 2.1 in 2012.

Across all city-pair markets in our sample, we also observed a small increase in the percentage of dominated markets—in which one airline has at least 50 percent of all passenger traffic—but at the same time, a decrease in the percentage of monopoly markets, which are markets with only one provider. In 2007, approximately 72 percent of all city-pair markets were dominated markets; however, about 77 percent of all markets were dominated in 2012. Consequently, while the average city-pair market quintile may have between 3 and 4.5 effective competitors, as shown in the figure above, more than three-quarters of markets are dominated by a single airline. Although there were more dominated markets by the end of 2012, further analysis shows that the number of monopoly markets decreased from 1,712 in 2007 to 1,566 in 2012 (approximately a 9 percent decrease). Overall, we found that nearly all of the monopoly markets were the least-traveled markets, which is not surprising as markets with lower demand would be less likely to support more than one airline.⁴³

We also calculated the Herfindahl-Hirschman Index (HHI) to measure trends in market concentration in city-pair markets. HHI is calculated by summing the squares of the individual firms' market shares, and thus gives proportionately greater weight to the larger market shares.⁴⁴ Thus, if a market is characterized by one large firm and many small firms, the HHI will capture that the market is fairly concentrated, even though there are many firms. HHI results can range from close to zero (least concentrated) to 10,000 (most concentrated). DOJ generally classifies markets into 3 types: (1) un-concentrated markets have an HHI below 1,500; (2) moderately concentrated markets have an HHI between 1,500 and 2,500; and (3) highly concentrated markets have an HHI above 2,500. According to DOJ, measuring market concentration through the HHI is a means to measure trends in market structure, which can provide some evidence of the extent of competition in the market, but is not an end in itself. Notably,

⁴³When we evaluated the number of monopoly markets using airport-pairs as the relevant market definition, we found similar results. For example, nearly all of the monopoly markets were found in the least-traveled markets and the percentage of monopolies in the most-heavily traveled markets decreased from about .08 percent in 2007 to about .05 percent in 2012.

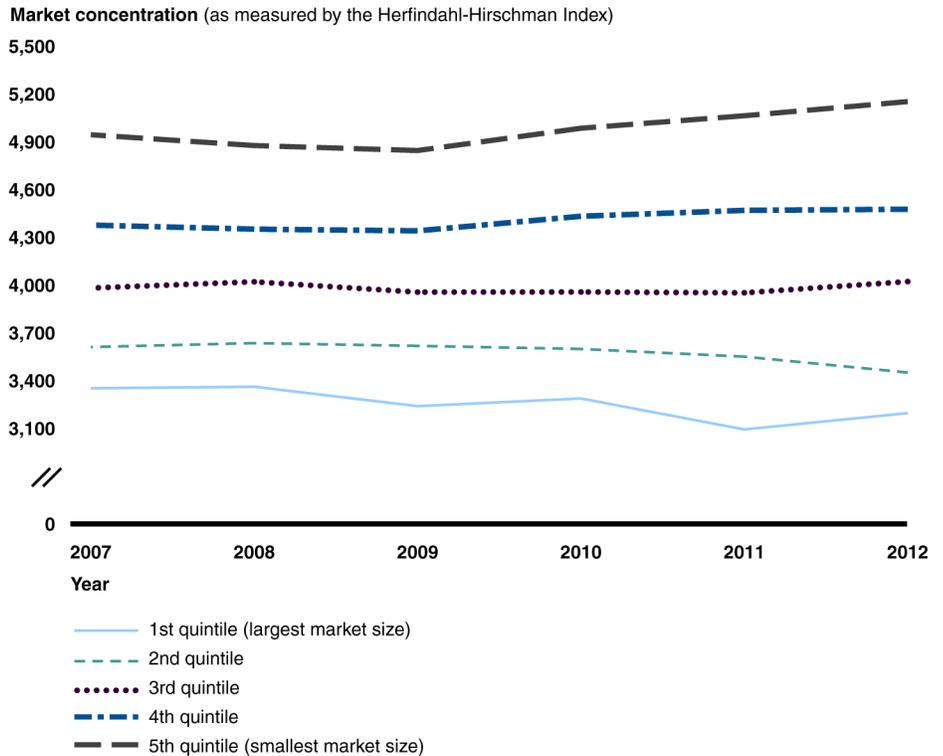
⁴⁴For example, a market consisting of four firms—two of which have market shares of 30 percent and two of which have market shares of 20 percent—has an HHI of 2,600 ($30^2 + 30^2 + 20^2 + 20^2 = 2,600$). Although it is desirable to include all firms in the calculation, information about firms with small shares is not critical because such firms do not affect the HHI significantly.

concentration may not fully reflect the competitive significance of firms in the market, or the extent to which other factors—such as entry conditions—might also influence the extent of competition in the market.

We found that the markets serving the most passengers were less concentrated than the markets serving the fewest passengers. Moreover, there was a slight reduction in concentration in the highest-traveled markets represented in the first quintile from 2007 through 2012 (see fig. 8). The notable exception to that trend is the slight increase in concentration in those markets beginning in 2011. This corresponds to the slight decrease in effective competitors in those markets during this same time period and may represent the effect of recent airline mergers as consolidation has reduced the number of competitors overall. In the smallest passenger markets represented in the fifth quintile, market concentration as measured by the HHI has increased from 2009 through 2012.⁴⁵

⁴⁵As mentioned previously, we also categorized the markets into quintiles based on the total number of markets—rather than by passengers—in our sample. When analyzed this way, we found that the smallest markets represented in the fifth quintile were much more concentrated than the largest markets in the first quintile and concentration as measured by the HHI increased from 2009 through 2012.

Figure 8: Market Concentration in U.S. Passenger Airline Industry by City-Pair Market Size, 2007–2012



Source: GAO analysis of DOT data.

Note: Each quintile contains approximately the same number of passengers, but the number of city-pair markets differs. For example, in 2012 the first, second, third, fourth and fifth quintile contained 37, 99, 237, 682, and 9,379 city-pair markets, respectively, each with 20 percent of the 411 million passengers in our sample.

Because our analysis of effective competitors and market concentration is an average over a large number of markets, substantial changes that have occurred in some markets since 2007 may be obscured. Several examples help illuminate some of the changes in the number of competitors in certain markets:

- New York City (JFK) to Los Angeles (LAX):** The number of effective competitors offering direct or connecting service in this first-quintile market increased from three to five between 2007 and 2012, as new low-cost airlines entered this market. In 2007, this market was dominated by one airline, but by 2012 no airline had more than 28 percent of the total passenger traffic.

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- **Salt Lake City (SLC) to Memphis (MEM):** The number of effective competitors offering direct or connecting service in this fifth-quintile market fell from six to two between 2007 and 2012,⁴⁶ in part, because of airline consolidation and changing airline business strategies, such as decisions to reduce service to former hubs. In 2007, no airline had more than 44 percent of the market share; however, by 2012 Delta Air Lines had over 80 percent of the market, reflecting a high degree of concentration.
 - **Boise, Idaho (BOI) to Bozeman, Montana (BZN):** The number of effective competitors offering direct or connecting service in this fifth-quintile market fell from three to one from 2007 to 2012.

Despite greater consolidation in the U.S. airline industry and restraint on the part of airlines in managing capacity, two factors may help explain why many markets maintained approximately the same number of effective competitors:

- **Mergers created new connections:** When two airlines merge and combine their networks, the merged airline can connect consumers to more destinations within its network than previously possible. One rationale given for the mergers between Delta Air Lines and Northwest Airlines and United Airlines and Continental Airlines was the greater scope and scale of the combined network. We found in 2010 that merging two networks expands choice by increasing the number of possible routings served by a network, as well as the number of passengers who can be served, and the ways that they can be served.⁴⁷ For example, we found in 2010 that the combination of United and Continental created a new effective competitor in 173 markets affecting 9.5 million people. For example, before the merger, United provided service to Hector International Airport in Fargo, North Dakota, and Continental provided service to Rick Husband Amarillo International Airport in Amarillo, Texas, but there was no connection between these two communities on either United or Continental. Beginning in 2012, the new United Airlines began providing connecting service via Denver International Airport.

⁴⁶Several competitors on the Salt Lake City-Memphis route had less than 5 percent market share and therefore were not included in our analysis.

⁴⁷[GAO-10-778T](#).

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- **Low-cost airlines have expanded into new markets:** Based on our analysis, we found that low-cost airlines expanded most rapidly into the largest passenger markets between 2007 and 2012. For example, in 2007 there was an average of 1.7 low-cost airlines in the largest passenger markets represented in the first quintile of our analysis, but by 2012 there were 2.3 low-cost airlines on average in those markets. For example, low-cost airline entry provided new competitors in the New York-to-Los Angeles market. In the smallest passenger markets, i.e., the fifth quintile, the number of low-cost airlines has essentially remained flat between 2007 and 2012.

Additional changes to the structure of the market may occur after the three recent airline mergers are fully implemented and conditions for approving the fourth and most recent merger are fully met, as well as due to other economic circumstances. We have found that it can take some time for airlines to merge their operations, technologies, and labor forces.⁴⁸ For instance, in 2013 we found that United struggled to integrate computer and reservation systems following its merger with Continental in 2010. Also, pursuant to an agreement with the states that had joined the DOJ action to enjoin the proposed merger between American and US Airways, the new American Airlines agreed to keep seven current hubs for a period of 3 years. Those hubs include Charlotte Douglas International Airport, Chicago O'Hare International Airport, Los Angeles International Airport, Miami International Airport, John F. Kennedy International Airport, Philadelphia International Airport, and Phoenix Sky Harbor International Airport. However, the airline's business strategy could change in the future. For instance, even though in 2010 the state of Ohio and United signed a similar agreement that guaranteed hub-level service at Cleveland Hopkins International Airport, United recently announced that it would no longer be using that airport as a hub.

We also evaluated trends in the number of effective competitors and concentration in terms of the distance of the market. We found that longer-distance markets (greater than 1,000 miles) continue to have more competitors than shorter-distance markets (less than 250 miles) and that the average number of effective competitors from 2007 through 2012 has changed little in each distance category.⁴⁹ For example, we found that in

⁴⁸[GAO-13-403T](#).

⁴⁹Similarly, in July 2008, we found that longer-distance markets are more competitive than shorter-distance markets. See [GAO-08-845](#).

2012 there was an average of 4.1 competitors in markets longer than 1,000 miles, compared to only 3.2 in markets shorter than 250 miles. Based on the HHI, we also found that longer-distance markets are generally less concentrated than shorter-distance markets. The difference exists in large part because longer-distance markets have more viable options for connecting passengers over more hubs. For example, a passenger on a flight from Richmond, Virginia to Salt Lake City, Utah—a distance of about 2,000 miles—could not fly directly, but would have multiple connecting options, including through Hartsfield-Jackson Atlanta International, Chicago O'Hare International, and Dallas/Fort Worth International Airports. By comparison, a passenger from Seattle to Portland, Oregon—a distance of just under 300 miles—has no viable connecting options, nor would connections be as attractive to passengers in short-haul markets.

The Number of Dominated Large- and Medium-Hub Airports Has Generally Remained the Same since 2007

We also found that the number of airlines with a dominant position—carrying at least 50 percent of all domestic passenger traffic—at the largest airports in the U.S. is relatively unchanged from 2007 through 2012. For example, 13 of the 29 large-hub airports in 2012 were dominated by a single airline, up from 12 in 2007.⁵⁰ The majority of the large-hub airports were dominated by network airlines and at some of these airports, the dominant airline increased its market share. For example, Delta Air Lines increased its proportion of passenger traffic at Hartsfield-Jackson Atlanta International Airport from about 53 percent in 2007 to nearly 62 percent in 2012. However, American Airlines' dominant position at Dallas/Fort Worth International Airport declined from about 70 percent to 65 percent from 2007 through 2012 owing to multiple factors, including the entry of low-cost airlines at that airport. Low-cost airlines were dominant at two large-hub airports in 2012. For example, Southwest Airlines increased its dominant position at Chicago Midway International Airport from 74 percent of passenger traffic to 85 percent from 2007 through 2012. Airlines also increased their dominant position at medium-hub airports. In 2012, 15 of the 35 medium-hub airports were dominated by a single airline, up from 11 in 2007, and most of these airports were dominated by low-cost airlines. Nineteen of the 74 small-hub airports in

⁵⁰The groups of large-, medium-, and small-hub airports in this analysis are based on 2012 data. We used the same group of airports for each year from 2007-2012 in order to compare across years.

2012 were dominated by a single airline, up from 13 in 2007, and most of these airports were also dominated by low-cost airlines.

Generally, the average market share of the largest airline that operates at the nation's large-, medium-, and small-hub airports has not changed substantially since 2007. We found that since 2007, the average market share of the largest airline at the 29 large-hub domestic airports increased about 8.5 percent overall, from about 43 percent to just over 46 percent of passenger traffic. However, on average, the largest airline at the nation's 35 medium-hub airports held about 43 percent of the passenger traffic in 2007 and just over 46 percent in 2012. The average market share of the largest airline at the 74 small-hub airports grew the most from approximately 28 percent in 2007 to over 45 percent in 2012. Similarly, using the HHI measure of concentration, we found that larger airports have on average become less concentrated, while smaller airports have become on average slightly more concentrated during the same time period.⁵¹

Consumers Have Experienced a Rise in Fares, Additional Fees, and Fewer Flights in Certain Markets, but Benefit from New Services and Expanded Networks

⁵¹Specifically, larger airports with the most passenger traffic experienced about a 14.5 percent reduction in concentration, driven by an increase in the number of competitors in these markets from 2007 to 2012. Most of those increases are due to low-cost airline entry. For smaller airports, concentration levels generally remained flat or increased slightly. For airports in the smallest quintile, for example, the HHI increased about 6 percent from 2007 to 2012.

Domestic Fares Have Recently Risen

As the economy has been slowly recovering from the recent recession, demand for air travel has also been recovering. As noted previously, increased demand, along with airline capacity restraint, has contributed to higher fares. We found that consumers paid approximately 4 percent more in real terms, on average, for air travel in 2012 than they did in 2007. For instance, according to DOT, in 2007, the average one-way, inflation-adjusted domestic fare was \$182.72 and in 2012 was \$190.10. A recent study found that average one-way, inflation-adjusted airfares increased the most at medium-hub airports, and to a lesser extent at large- and small-hub airports from 2007 through 2012.⁵² Fares include only the price paid for the ticket purchase and do not include taxes or other fees, such as baggage fees. Specifically, average fares at medium-hub airports, which also experienced the greatest capacity cuts, increased nearly 12 percent, whereas they increased by 8.7 percent on average at large-hub airports and 5.7 percent at small-hub airports over the 6-year period. Fares have continued to rise since 2012. According to DOT, the average domestic airfare increased 5 percent from the third quarter of 2012 to the third quarter of 2013, the latest time period for which data were available.

Two factors likely have contributed to higher average airfares from 2007 through 2012:

- **Capacity restraint:** As discussed above, beginning in 2007, network airlines reduced domestic capacity in response to challenging economic conditions, and since 2009, available seat miles have not rebounded despite increased demand for air travel. As a result, domestic airlines have been flying fuller flights. According to well-established principles of supply and demand, a reduction in supply with constant or increasing demand will typically lead to higher prices. Medium-hub airports, which have lost the most service, have also seen the greatest airfare increases. In particular, several academic and research experts we spoke to said that airlines are now managing their growth carefully in an attempt to reduce costs and raise yields, which are the average fares paid per passenger mile. Additionally, according to several network airline representatives, airlines are

⁵²See Michael D. Wittman and William S. Swelbar, *Evolving Trends of U.S. Domestic Airfares: The Impacts of Competition, Consolidation, and Low-Cost Carriers*, Massachusetts Institute of Technology International Center for Air Transportation (Aug. 2013).

prioritizing high-yield markets. That is, instead of operating at pre-recession levels throughout their networks, network airlines are allocating capacity across markets in order to maintain more capacity on the most profitable routes and limit capacity in markets that are less profitable. According to several academic and research experts we spoke with, the reduction in the number of network airlines as a result of consolidation has made it easier for the remaining airlines to maintain this strategy.

- **Low-cost airlines are exerting less pressure on fares:** While low-cost airlines continue to offer lower fares on average than network airlines,⁵³ recent trends suggest that the fare-reducing effect of entry by the largest low-cost airline in certain markets may be waning.⁵⁴ Typically, this phenomenon, which has been referred to as the “Southwest effect,” occurs when a low-cost airline enters or is present in a market and offers lower fares than incumbent airlines, which in turn causes those incumbent competitors to respond by lowering prices in that market. These lower fares may also stimulate new demand and additional traffic. However, a recent Massachusetts Institute of Technology (MIT) study found that Southwest Airlines no longer seems to have the price disciplining effect it once had.⁵⁵ From 2007 through 2012, according to the study, fares increased the most

⁵³Prior studies have demonstrated the effect of airline competition on airfares and shown that the presence of low-cost airlines in a market is associated with lower fares for all passengers in that market. For a recent comprehensive analysis of airline competition and domestic airfares, see Jan K. Brueckner, Darin Lee, and Ethan S. Singer, “Airline Competition and Domestic U.S. Airfares: A Comprehensive Reappraisal,” *Economics of Transportation*, vol. 2 (2013). See also John Kwoka, Kevin Hearle, and Phillippe Alepin, “Segmented Competition in Airlines: The Changing Role of Low-Cost and Legacy Carriers in Fare Determination,” *Social Science Research Network* (2013); Mehdi Ben Abda, Peter Belobaba, and William Swelbar, “Impacts of LCC Growth on Domestic Traffic and Fares at Largest U.S. Airports,” *Journal of Air Transport Management*, vol. 18 (2012); Steven Morrison, “Actual, Adjacent, and Potential Competition: Estimating the Full Effect of Southwest Airlines,” *Journal of Transport Economics and Policy*, vol. 35 (2001); and Martin Dresner, Jiun-Sheng Chris Lin and Robert Windle, “The Impact of Low-Cost Carriers on Airport and Route Competition,” *Journal of Transport Economics and Policy*, vol. 30 (1996).

⁵⁴DOJ and DOT’s analysis of merger impacts have relied on an expectation that entry by low-cost airlines, especially Southwest Airlines, would check airline fare increases following a merger. We found recently that Southwest expansion has slowed and its acquisition of Air Tran, a low-cost rival, may challenge post-merger fare increases. See [GAO-13-403T](#).

⁵⁵Wittman and Swelbar, *Evolving Trends of U.S. Domestic Airfares*.

at three airports where a significant percentage of flights were operated by Southwest, including Chicago Midway International Airport, Love Field in Dallas, and William P. Hobby Airport in Houston. Since capacity changes at these airports were relatively low, the study suggested that Southwest had demonstrated a widespread pattern of fare increases, but noted that two of the airports saw large increases in average passenger itinerary distance as Southwest expanded the types of markets served from William P. Hobby Airport and Love Field from 2007 through 2012, a change that could explain the higher fares. Nevertheless, the MIT study also noted that average fares increased 23 percent at Chicago Midway International Airport despite a negligible change in passenger itinerary distance. Moreover, Southwest's strategy has evolved since 2007 as the airline has started to move into larger airports and business markets, thereby contributing to an increase in its costs and average fares.

Consumers Are Paying More in Ancillary Fees, but those Fees Are Not Always Fully Disclosed at Time of Purchase

Another trend affecting consumers is the widespread and increasing use of ancillary fees by airlines. As previously discussed, airlines have imposed a variety of ancillary fees on a range of optional services, such as checked and carry-on bags, meals, blankets, early boarding and seat selection. Many airlines rely on these ancillary fees as a substantial portion of their operating revenues. "Unbundling" airfares through the use of ancillary fees can be advantageous from the airlines' perspective by allowing them to better differentiate their products, boost revenue, and build passenger loyalty. Ancillary fees enable airlines to collect revenues in a manner that, in some cases, more closely matches passengers' use of airline services to the costs of providing those services. For example, providing service for checked bags is costly for airlines, but only certain customers use the service, so charging for checked bags imposes those costs only on those who choose to use the service. Ancillary fees may also be used as a means to differentiate among passengers and gain more revenues by charging for amenities that some customers may value more highly—and are more willing to pay for—than other customers, even though the cost of providing the amenity may be negligible. For example, by charging a fee to choose a more desirable seat on the aircraft, airlines are able to earn more revenue by providing an enhanced product offering to certain consumers, even though, in this case, the cost of providing the more highly valued seat is negligible.

For certain consumers, the ability to pay for particular services they desire, such as Wi-Fi or in-flight entertainment, may represent a positive development. For other consumers, however, certain ancillary fees may not seem truly optional and may increase the overall cost of flying. For

example, a family of five traveling on vacation may pay in excess of \$100 for checked bags that they could not carry on board in addition to the base airfare. A recent study that investigated the impact of bag fees on airfares between 2008 and 2009 found that when airlines introduced bag fees in 2008, fares fell by about 3 percent, but the total cost of travel was higher for passengers who checked bags.⁵⁶ According to our analysis of DOT data, the U.S. airline industry collected nearly \$6 billion in baggage fees and reservation cancellation charges in 2012, but, as noted above, the total ancillary revenue collected from passengers is unknown as these fees are not reported separately to DOT. Moreover, consumers may not have full information about the true cost of air travel at the time they purchase their ticket. We previously found that information about ancillary fees is not fully disclosed through all ticket distribution channels used by consumers, making it difficult for them to compare the total cost of flights offered by different airlines.⁵⁷ This issue is discussed further in the next section of this report.

By Reducing Service to Medium- and Small-Hub Airports, U.S. Airlines Offer Consumers Fewer Domestic Flights

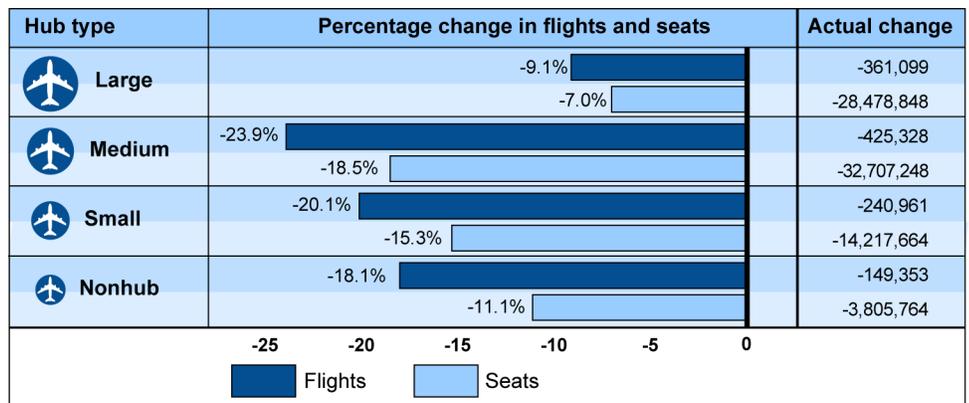
U.S. airlines, in particular network airlines, have reduced the number of flights they offer passengers in certain markets. For instance, according to our analysis of DOT data, about 1.2 million scheduled domestic flights were eliminated from 2007 through 2013 at large-, medium-, and small-hub, and nonhub airports. Scheduled departures at medium-hub airports decreased nearly 24 percent between 2007 and 2013, compared to a decrease of about 9 percent at large-hub airports and about 20 percent at small-hub airports over the same time period (see fig. 9). Medium-hub airports also experienced the greatest percentage reduction in air service as measured by available seats. As we discussed previously, mergers—which have allowed airlines to reduce redundant capacity and eliminate hub airports—and capacity restraint have resulted in a reduction of flights across the country. In addition, we recently found that air service to small

⁵⁶Jan K. Brueckner, Darin N. Lee, Pierre M. Picard, and Ethan Singer, “Product Unbundling in the Travel Industry: The Economics of Airline Bag Fees,” *Journal of Economics and Management Strategy* (Forthcoming). The study tested the hypothesis that, other things being equal, fares are lower after the adoption of bag fees than before and showed business fares are less affected than leisure fares by the imposition of bag fees.

⁵⁷GAO, *Commercial Aviation: Consumers Could Benefit from Better Information about Airline-Imposed Fees and Refundability of Government-Imposed Taxes and Fees*, [GAO-10-785](#) (Washington, D.C.: July 14, 2010).

communities has declined since 2007 due, in part, to higher fuel costs, consolidation, and reduced demand from declining populations and as a result of some passengers opting to drive to larger markets with more attractive service (i.e. larger airports in larger cities).⁵⁸ A recent MIT study on domestic air service trends reported similar results and found that the prolonged economic downturn, high fuel prices, and capacity restraint contributed to a reduction in service.⁵⁹ The study concluded that airlines have been consolidating service at the nation's largest airports, while cutting back on service to medium- and small-hub airports.

Figure 9: Percentage Change in Number of Flights and Available Seats by Airport Category, 2007–2013



Source: GAO analysis of DOT data.

Note: Large-hub airports have at least 1 percent of all passenger boardings. Medium-hub and small-hub airports are defined as having between 0.25 and 1 percent, and 0.05 and 0.25 percent, respectively. Nonhub airports enplaned at least 10,000 passengers, but no more than 0.05 percent of all passenger boardings. The groups of large-, medium-, and small-hub and nonhub airports in this analysis are based on 2012 data.

We previously found that the percentage of flights that are canceled or diverted has been higher at airports in small rural communities than in large metropolitan areas.⁶⁰ One side effect of this trend is long travel

⁵⁸GAO, *Commercial Aviation: Status of Air Service to Small Communities and the Federal Programs Involved*, [GAO-14-454T](#) (Washington, D.C.: Apr. 30, 2014).

⁵⁹Michael D. Wittman and William S. Swelbar, *Trends and Market Forces Shaping Small Community Air Service in the United States*, Massachusetts Institute of Technology International Center for Air Transportation (May 2013).

⁶⁰See GAO, *Airline Passenger Protections: More Data and Analysis Needed to Understand Effects of Flight Delays*, [GAO-11-733](#) (Washington, D.C.: Sept. 7, 2011).

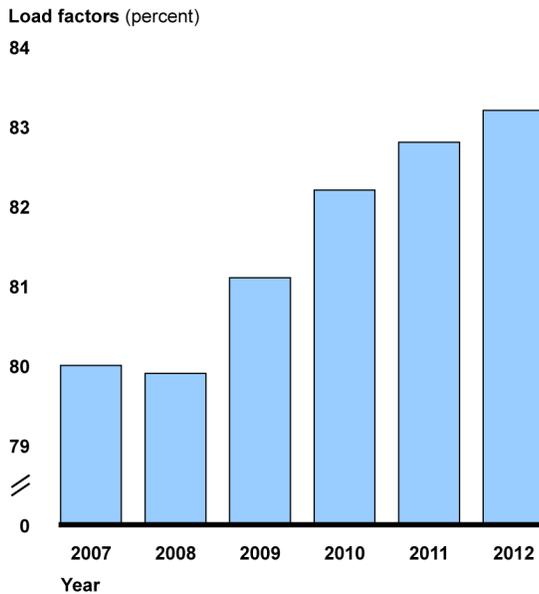
delays. According to one academic study, the overall delay time in 2010 for passengers on canceled flights was about 5 hours.⁶¹ This effect is further exacerbated by the increase in domestic passenger load factors from 2007 through 2012 (see fig. 10 below).⁶² Flight disruptions, including delays and cancellations, are costly for passengers, airlines, and the economy.⁶³ In recent years, roughly a quarter of all commercial flights have been delayed or canceled. Given that most flights in recent years tend to have fewer empty seats available, passengers on delayed or canceled flights often have limited opportunities to rebook on other flights, amplifying the disruptions and associated costs. These disruptions may be particularly challenging for smaller communities that have infrequent service.

⁶¹Lance Sherry, "Passenger Trip Delay Statistics for 2010," *Transportation Research Board*, 2012.

⁶²Load factors represent the proportion of airline output that is actually consumed and are calculated by dividing revenue passenger miles by available seat miles.

⁶³The DOT Inspector General (IG) has recently found that when airline markets became less competitive both the average length of flight delays and percentage of late flights increased. See DOT IG *Reductions in Competition Increase Airline Flight Delays and Cancellations*, CR-2014-040 (Washington, D.C.: Apr. 23, 2014).

Figure 10: Passenger Load Factors, U.S. Passenger Airline Industry, 2007–2012



Source: GAO analysis of DOT data.

Note: "Load factor" represents the proportion of available seats that are actually occupied by passengers.

Reduced service at certain airports can be attributed to several factors, including:

- **Elimination of hubs:** Merging airlines expect to rationalize their combined networks, including hub locations, over time, in order to achieve economies of scale and reduce inefficiencies.⁶⁴ For example, in 2010 we found that the combined United and Continental Airlines would be unlikely to retain eight domestic hubs, especially given the considerable overlap between markets served by United out of Chicago and Continental out of Cleveland. On February 1, 2014, United officially announced that it was substantially reducing operations at the Cleveland Hopkins International Airport, citing lower demand at that airport. Similarly, following its merger with Northwest Airlines, Delta has substantially reduced operations through Memphis International Airport, which had been a hub for Northwest and is located near Hartsfield-Jackson Atlanta International Airport, Delta's

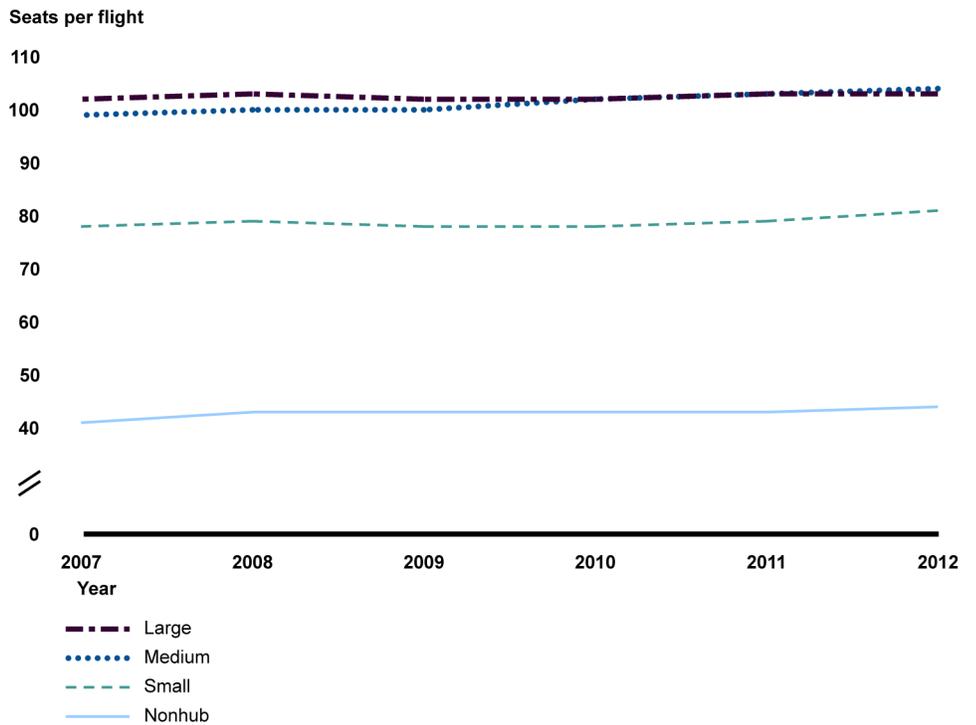
⁶⁴[GAO-10-778T](#).

largest hub. Airline strategies that reduce or limit service to certain airports can have consequences for the local communities. For instance, losing connectivity to major domestic and international markets may reduce the vitality of the local economy. In addition, fewer flights can make it more difficult for airports to cover the costs of their infrastructure.⁶⁵

- **Less frequent flights and “up-gauging” aircraft:** As discussed above, in some instances, airlines have reduced the frequency of flights on certain routes that are less profitable. Instead of flying multiple daily flights to certain airports on smaller regional aircraft, airlines are flying less frequently but using larger aircraft (referred to as “up-gauging” service) and routing that traffic to large-hub airports. As shown above in figure 9, the percentage reduction in the number of flights exceeds the reduction of available seats from 2007 through 2012, particularly for smaller airports. In other instances, airlines may be eliminating flights altogether on some routes that used smaller planes. According to one airline executive we spoke with, up-gauging may be less convenient for consumers who value frequent flights, but it can be beneficial if the consumer seeks to connect through major hub airports. It can also reduce congestion, leading to fewer flight delays. Our analysis of DOT data shows that the average number of seats per flight has increased slightly for all airports in the country, with the trend of up-gauging most notable at medium- and small-hub airports (see fig. 11).

⁶⁵Funding for airport capital development comes from four primary sources: federal Airport Improvement Program (AIP) grants, passenger facility charges (PFCs), municipal bonds, and state and local grants. Airports vary in their reliance on these sources of funds. The Federal Aviation Administration allocates most AIP grants on the basis of (1) a legislated apportionment formula tied to the number of passengers an airport enplanes in the case of primary airports, and (2) set-aside categories earmarked for specific types of airports and projects. PFCs, which are collected from passengers, were introduced in 1990 to finance local airport infrastructure projects at commercial airports. In 2000, the Wendell H. Ford Aviation Investment and Reform Act for the 21st Century (AIR-21) raised the cap on PFCs from \$3.00 to \$4.50 per boarding passenger. Pub. L. No. 106-181, § 105, 114 Stat. 61, 71 (2000). Airports have long sought to increase the PFC cap, arguing that it has not been adjusted for inflation, but airlines oppose any PFC rate increase that inhibits the demand for air travel.

Figure 11: Average Seats per Flight by Airport Category, 2007–2012



Source: GAO analysis of DOT data.

Additionally, reduced service at certain airports has resulted in lost connectivity to the air transportation network for some small communities. According to an MIT study, 23 airports in small communities lost all service between 2007 and 2012.⁶⁶ The study found that network airline service at some of the smaller airports was quickly replaced by service from ultra-low cost airlines like Allegiant Air and Spirit Airlines. According to the study, for instance, after US Airways and Northwest Airlines ended service from Arnold Palmer Regional Airport in Latrobe, Pennsylvania, Spirit Airlines entered the airport to provide periodic, non-stop service primarily to leisure destinations in the Southeast.

⁶⁶Wittman and Swelbar, *Trends and Market Forces Shaping Small Community Air Service in the United States*.

Some Consumers May Benefit As Airlines Attempt to Offer New Services and Expanded Networks

U.S. airlines are seeking to provide greater differentiation between the products they offer by enhancing the travel experience and establishing customer loyalty to a specific airline rather than viewing the product as a commodity. Airlines are increasingly competing on service by investing in technology to enhance their websites, upgrading their fleets and airport lounges, and providing the types of services and on-board amenities that consumers may value. Network airlines are marketing their ability to offer travelers access to more global destinations through expanded networks. Network and low-cost airlines are also purchasing new airplanes as evidenced by new aircraft orders in 2013. Higher fuel prices are driving the demand for newer, more fuel-efficient aircraft, in addition to U.S. airlines' desire to replace older fleets. Passengers may benefit from these new planes because they are quieter and offer enhanced entertainment options and other in-flight amenities. Some airlines, for example, offer flat-bed seats, premium economy seats, faster Wi-Fi, and larger overhead bins. For certain passengers, some airlines are introducing premium services such as limousine pick-up at the gate. Some airlines are also waiving certain ancillary fees, such as bag fees, in an attempt to increase loyalty to their brand. Moreover, by introducing new technology, including mobile applications, airlines hope to make it easier than ever to purchase tickets from their websites. However, according to both consumer advocacy organizations we spoke with, as network and low-cost airlines compete more on service, attempt to differentiate their brands, and take steps to increase consumer loyalty, an adverse effect is that consumers have less ability to comparison shop and airlines compete less on price.

Airline Stakeholders Identified Several Challenges to Airline Competition and Proposed Limited Federal Actions to Address Them

We interviewed 26 stakeholders representing different facets of the airline industry—including academic and research experts, airline representatives, industry trade associations, industry analysts from credit rating agencies and financial services firms, an airport authority, organizations representing the travel industry, and consumer advocacy organizations—to help identify challenges to competition in the airline industry (see app. I for a complete list). Although our analysis found that since 2007 the structure of the market, with respect to the average number of effective competitors and average concentration levels, has not substantially changed in the highest-traffic city-pair markets, many stakeholders we spoke to stressed that there are competition concerns beyond the number of effective competitors and level of concentration. Stakeholders identified a number of challenges, which we categorized into four challenges to airline competition: (1) barriers that prevent airlines from entering the industry or specific markets; (2) the lack of transparency in airline fare and fee disclosure; (3) the effects of consolidation on

competition; and (4) emerging international competition concerns. Certain stakeholders also suggested several actions the federal government could take that in their view would help address these challenges—including removing slot controls, which limit the number of takeoffs and landings per hour at four capacity-constrained airports; eliminating airline loyalty programs; and encouraging the completion of federal regulations that would provide consumers greater transparency in fares and fees.

Most Stakeholders Cited Barriers to Entry as a Challenge

A majority of the stakeholders we interviewed cited barriers to entry as a key challenge to competition in the domestic passenger airline industry. Barriers to entry are practices or conditions that impede a firm's ability to enter either an industry or specific markets within the industry. As entry, or the threat thereof, may have a disciplining effect on incumbent firms' behavior, barriers that make entry more difficult can hamper competition and enable incumbent firms to charge higher prices without fear that doing so will attract new competitors. The last major airline to enter the U.S. market was Virgin America in 2007. We grouped the entry barriers stakeholders identified into three primary categories: barriers to airport access, diminished cost advantages and access to capital for new airlines, and advantages held by network airlines.

- **Airport access:** The inability to obtain access and secure a foothold at some key airports was identified as a major entry barrier by 10 of the 26 stakeholders we interviewed. These stakeholders drew attention to slot controls that are in place at four major congested airports.⁶⁷ We have previously found that slot controls allow airports to manage congestion; however, they also limit access for new entrants to some of the busiest airports in the country.⁶⁸ According to one industry analyst, difficulty in obtaining landing rights at these airports makes it harder for new airlines to compete for the most lucrative business travelers. As we found in September 2012, airlines that hold

⁶⁷Slot controls are limits imposed by FAA through regulations or orders on the number of takeoffs and landings airlines may make per hour at Ronald Reagan Washington National Airport in Washington, D.C., and the three major airports in the New York metropolitan area: John F. Kennedy International, LaGuardia, and Newark Liberty International Airports.

⁶⁸GAO, *Slot-Controlled Airports: FAA's Rules Could be Improved to Enhance Competition and Use of Available Capacity*, [GAO-12-902](#) (Washington, D.C.: Sept. 13, 2012).

slots might underutilize⁶⁹ them by, for example, using smaller aircraft instead of giving the slots up, thereby reducing access by new-entrant airlines that could use the slots to offer new service or lower fares and also limiting passenger growth at these airports. In addition to slot controls, 5 stakeholders, including academic and research experts and travel and consumer advocacy organizations pointed to limited access to gates and facilities at other airports as an entry barrier. According to DOT, consolidation has made it increasingly difficult for certain airports to secure financial approvals for infrastructure projects that could allow greater access for new entrants (e.g., by building new gates). According to DOT officials, many airports are bound by majority-in-interest provisions, which in effect give the largest airlines at airports the ability to veto or delay major capital infrastructure projects.⁷⁰

The federal government has taken steps to begin to address both slot and airport-access challenges. For example, the DOJ's settlement approving the American-US Airways merger required the merging airlines to divest slots and open up gates and other facilities to facilitate competition from low-cost airlines at seven key airports around the country.⁷¹ Specifically, American Airlines and US Airways surrendered 104 slots at Ronald Reagan Washington National Airport that have been divested to low-cost airlines Southwest, JetBlue, and Virgin America. The airlines also divested 34 slots at New York's LaGuardia Airport to Southwest and Virgin America. The settlement is intended to mitigate any anticompetitive effects of the merger by allowing low-cost airlines to expand into new markets and provide the opportunity for more competition to the remaining major network

⁶⁹Existing slot control rules require airlines to operate their slots at least 80 percent of the time, which allows airlines not to schedule some of their allocated slots. 14 C.F.R. Part 93, subparts K and S; 76 Fed. Reg. 18618 (Apr. 4, 2011); 76 Fed. Reg. 18616 (Apr. 4, 2011); 76 Fed. Reg. 18620 (Apr. 4, 2011).

⁷⁰Majority-in-interest clauses are provisions in an airport's general use agreement with an airline that typically give those airlines performing a majority of the operations at the airport veto power over airport expansion when those airlines would be responsible for paying the cost of that expansion.

⁷¹Airports affected by the settlement include Washington Reagan National Airport, LaGuardia Airport, Boston Logan International Airport, Chicago O'Hare International Airport, Dallas Love Field, Los Angeles International Airport, and Miami International Airport. See "*United States of America, et al. v. US Airways Group, Inc. and AMR Corporation*," No. 1:13-cv-01236 (D.D.C., Apr. 25, 2014).

airlines. The Federal Aviation Administration (FAA) is also developing a new rulemaking to replace the current temporary orders limiting scheduled operations at John F. Kennedy International Airport, LaGuardia Airport, and Newark Liberty International Airport and address congestion and delay issues at each of these airports. The draft notice of proposed rulemaking is currently under review at the Office of Management and Budget.⁷² Additionally, DOT's Office of the Secretary of Transportation and FAA attempt to advance airline competition at larger commercial service airports through their review of airport competition plans.⁷³ Large- or medium-hub airports, at which one or two airlines control 50 percent or more of the passenger boardings, are required to submit competition plans to demonstrate how their leasing and financing practices will provide competitive access to airlines attempting to initiate service at those airports. DOT officials reported that the agency reviews approximately 40 airport competition plans or plan updates annually, and since 2011, seven airports became newly subject to competition plan requirements. One stakeholder we spoke with, however, highlighted concerns with the efficacy of competition plans at slot-controlled airports.

- **Diminished cost advantages and access to capital for new entrants:** Cost challenges—including limited available capital and the cost of jet fuel—were identified as significant obstacles for new airlines seeking to enter the market by eight stakeholders, including academic and research experts, industry analysts, and several airline representatives. Previously, new airlines were often able to compete with incumbents by exploiting certain cost advantages, such as lower operating costs. However, any cost advantage that a new entrant might have had relative to larger airlines has been muted by the price of fuel, which grew to approximately 30 percent of U.S. airlines' operating costs in 2012. While new entrants in the market have relied in the past on purchasing older, cheaper aircraft to establish their fleet, the rising cost of fuel has made these less fuel-efficient aircraft cost-prohibitive. Further, Boeing and Airbus have a backlog of aircraft orders, which makes it more difficult for a new airline to obtain new aircraft. Representatives from two airlines and several industry

⁷²DOT Report on Significant Rulemakings, available at <http://www.dot.gov/regulations/report-on-significant-rulemakings>, April 2014.

⁷³49 U.S.C. §§ 40117(k), 47106(f); FAA Program Guidance Letter 04-08 (Sept. 30, 2004).

analysts told us that another factor limiting entry has been the difficulty new airlines have faced in securing the capital needed to expand their fleets since the most recent recession.

- **Network airline advantages:** Eleven stakeholders, including academic and research experts, representatives from two airlines, a consumer advocacy organization, and two travel industry organizations emphasized that the advantages the three consolidated network airlines maintain relative to smaller airlines are significant obstacles that make entry into the industry and individual new markets challenging. Specifically, according to an industry analyst and representatives from one airline, new entrants are facing a mature market with few domestic routes that are considered underserved. Further, American, Delta, and United have national networks that provide service to most domestic markets and many international destinations. A new airline that does not provide the same level of service in terms of destinations and frequency may not be able to compete with these airlines. Airline loyalty programs and corporate discounts, according to seven stakeholders, also create entry barriers. Representatives from one airline and a travel industry organization said that the corporate account agreements that network airlines create with Fortune 500 companies, which provide these companies discounts in exchange for a percentage of their corporate travel, can place smaller airlines that cannot provide such discounts at a significant disadvantage. Several stakeholders agreed and academic research supports the idea that airline loyalty programs, such as frequent flyer programs, can incentivize consumers to concentrate their flying with one airline to accumulate miles and rewards, even though other airlines' fares may be more competitively priced.⁷⁴ Six stakeholders, including representatives from a low-cost airline, academic and research experts, and an industry trade association, also drew attention to an incumbent network airline's ability to respond to entry, or the threat thereof, in a particular market by dramatically increasing capacity, thereby lowering fares and hindering a new airline's ability to profitably serve the route.

⁷⁴Mara Lederman, "Are Frequent Flyer Programs a Cause of the 'Hub Premium?'" *Journal of Economics & Management Strategy*, vol.17 (2008).

Transparency in Airline Fare and Fee Disclosure Cited as Challenges to Competition

Another key challenge cited by six stakeholders—including an academic and research expert, two consumer advocacy organizations, and three travel industry organizations—is the incomplete information about the total cost of air travel (e.g., taxes, ancillary fees, and surcharges) available to consumers at the time they purchase their ticket. These stakeholders emphasized that competition between airlines is undermined when consumers have limited ability to shop comparatively and make decisions about their air travel purchases without full fare and fee information. In 2011, DOT issued a final rule requiring that an airline’s most prominently advertised airfare must be the full cost of the ticket, with government taxes, mandatory fees, and optional surcharges included.⁷⁵ DOT officials also told us that there has been an increase in complaints regarding ancillary fees since airlines first imposed fees for checked baggage. We previously found, for example, that information about ancillary fees is not fully disclosed through all ticket distribution channels (e.g., online travel agencies like Expedia.com and Travelocity), making it difficult for consumers to compare the total cost of flights offered by different airlines.⁷⁶

We recommended in 2010 that DOT improve the disclosure of baggage fees and policies to passengers by requiring airlines to disclose fees consistently across all ticket distribution channels used by airlines.⁷⁷ In May 2014, DOT issued a notice of proposed rulemaking to, among other things, make airline pricing of ancillary fees more transparent.⁷⁸ Another rulemaking would require more detailed reporting of ancillary fees to

⁷⁵Department of Transportation Office of the Secretary, Final Rule, “Enhancing Airline Passenger Protections,” 76 Fed. Reg. 23110 (Apr. 25, 2011). Legislation introduced recently in Congress would require DOT to issue a final regulation to allow airlines to disclose federal taxes and fees separately from the base airfare. Transparent Airfares Act of 2014, H.R. 4156, 113th Cong. (2014).

⁷⁶[GAO-10-785](#).

⁷⁷[GAO-10-785](#).

⁷⁸DOT issued the Notice of Proposed Rulemaking for the third Enhancing Airline Passenger Protections rule in May 2014. Among other requirements, DOT proposes to require airlines and ticket agents to disclose at all points of sale the fees for certain basic ancillary services associated with the air transportation consumers are buying or considering buying, including first and second checked bags, one carry-on item, and advanced seat selection. Department of Transportation Office of the Secretary, Notice of Proposed Rulemaking, “Transparency of Airline Ancillary Fees and Other Consumer Protection Issues,” 79 Fed. Reg. 29970 (May 23, 2014).

DOT.⁷⁹ The airline industry has generally opposed this effort, arguing that expanded reporting is too complex to be economically justified and could be used to impose new taxes.

Six stakeholders we spoke with also raised concerns with the International Air Transport Association's (IATA) Resolution 787.⁸⁰ Subject to approval by DOT, Resolution 787 proposes a technical standard for the pricing and sale of airline tickets using Extensible Markup Language (XML). Airlines believe the XML template will make it easier for airlines to offer consumers products in a "shopping basket" approach that includes the base fare as well as fees for features such as checked bags, preferred seats, in-flight Wi-Fi, and airport lounge access. However, an academic and research expert, two consumer advocates, and three travel industry organizations we spoke to raised concerns about the extent to which personal data provided by consumers will determine what travel options an airline may offer. Recently, a coalition of approximately 400 travel industry and consumer groups, including several of the stakeholders we spoke with, withdrew their objection to Resolution 787 and reached a negotiated agreement with IATA that limits Resolution 787 to a technical standard that would, if ultimately developed, be transparent and voluntary for the industry. DOT tentatively approved Resolution 787 in May 2014 and found that, subject to certain conditions, approval of IATA Resolution 787 would be in the public interest and directed interested parties to show why DOT should not approve the resolution. DOT's tentative conditions of approval include adding several safeguards to ensure that consumers shopping for air travel could not be required to disclose personal information and specifying that airlines and ticket agents would be obligated to follow their published privacy policies on the sharing and storing of personal information.⁸¹

⁷⁹Department of Transportation Office of the Secretary, Notice of Proposed Rulemaking, "Reporting Ancillary Airline Passenger Revenues," 76 Fed. Reg. 41726 (July 15, 2011).

⁸⁰The International Air Transport Association (IATA) represents the global airline industry and is responsible for establishing standards in many areas of the airline business, including airline ticketing and baggage, that make it possible for passengers to travel from one place to another using two or more airlines. IATA also leads a number of industry initiatives involving safety, security, environment, and passenger rights.

⁸¹Order to Show Cause (Order 2014-5-7). Agreement among Member Carriers of the International Air Transport Association concerning an agreement (Resolution 787) of the Passenger Services Conference, Docket OST-2013-0048 (Department of Transportation, May 21, 2014).

Industry Stakeholders Were Divided Regarding the Effects of Industry Consolidation on Competition

Industry stakeholders were divided with regard to the effect increasing consolidation in the airline industry has had on competition, specifically in light of the merger between American Airlines and US Airways. Seven stakeholders, including several network and low-cost airlines and consumer advocacy organizations, maintain that the settlement allowing the American and US Airways merger to go forward was not in the public interest.⁸² Specifically, while the settlement provides for slot or gate divestitures at seven major airports around the country, several consumer advocacy organizations maintain that the divestitures will not adequately protect against higher fares and fees and reduced service to smaller communities that may result from the merger. Two airlines—network and low-cost—also criticized the DOJ for narrowly focusing on divesting slots at several airports to low-cost airlines, while another stakeholder criticized the settlement’s focus on slot divestitures without the same attention to gate availability. However, five other stakeholders, including two industry trade associations and three industry analysts, strongly supported the US Airways and American merger—along with consolidation in general—as a means to enhance the financial viability of the airlines. For example, one analyst told us that recent mergers are a market response to the financial challenges airlines experienced during the recent recession, and an industry trade association emphasized that the opportunity for airlines to combine operations has been critical to the industry’s recent success.

Several Stakeholders Pointed to International Alliances and State-Sponsored Foreign Airlines as Emerging Competition Issues

Although our analysis focused on domestic airlines and markets, several stakeholders raised concerns about potential international challenges to competition. Two consumer advocacy organizations and two travel industry organizations highlighted the growth of immunized international alliances, whereby an airline may market seats on partners’ flights, as a global development that has implications for domestic competition.⁸³ DOT has exercised its statutory authority to grant certain groups of airlines

⁸²Pursuant to the Antitrust Procedures and Penalties Act (Pub. L. No. 93-528, 88 Stat. 1706 (1974) (codified at 15 U.S.C. § 16), also known as the Tunney Act, the American Antitrust Institute, AirlinePassengers.org, Association for Airline Passenger Rights, Business Travel Coalition, Consumer Travel Alliance, and FlyersRights.org filed comments to object to the settlement of the case of *United States v. US Airways Group Inc. and AMR Corp.*, No. 1:13-cv-01236 (CKK), claiming that it was not in the public interest (Washington, D.C.: Feb. 7, 2014).

⁸³Major airlines worldwide have joined one of three major international alliances—SkyTeam, Star Alliance, and oneworld—to extend their network to foreign countries.

within these alliances immunity from U.S. antitrust laws affecting international transportation, thereby permitting participants, for example, to coordinate on prices, scheduling, and marketing. Grants of immunity are made by the Secretary of Transportation on a discretionary basis.⁸⁴ Several stakeholders we spoke with raised concerns that the antitrust immunity airlines in these alliances have been granted to cooperate in international markets may lead to cooperative behavior in domestic markets. For example, on trans-Atlantic routes where airlines would otherwise offer competing non-stop flights, competition may be limited and consumers adversely affected if the airlines are partners in an immunized alliance. A study by the Transportation Research Board reported that U.S. airlines that are less capable of providing international service could become weaker competitors, as they may be less likely to emerge or survive as challengers to network airlines that are part of international alliances.⁸⁵ According to DOT, since approving the first immunized alliance between Northwest and KLM in 1993, DOT's policy on airline alliances recognizes that, although the industry is among the most inherently global of all network industries, it is still subject to regulations that limit how airlines can adapt to market conditions. Unlike many other global industries, according to DOT, the airline industry cannot pursue mergers among airlines based in different countries due to strict ownership and control laws maintained by many countries around the world.⁸⁶ According to DOT, antitrust immunity is a method for allowing cooperative agreements between U.S. and foreign airlines to achieve public benefits that would otherwise not be possible.

Other stakeholders focused on international competition with regard to the ability of U.S. airlines to compete with foreign airlines. Specifically,

⁸⁴DOT considers a wide range of factors in evaluating whether a transaction is in the public interest, including the availability of a variety of air service, maximum reliance on market forces, the avoidance of unreasonable industry concentration, and opportunities for the expansion of international services. Because each alliance case presents a unique set of circumstances and because the industry environment changes rapidly, the public interest standard is applied on a case-by-case basis. 49 U.S.C. §§§ 41309(b), 41308(b) and 40101(a).

⁸⁵Transportation Research Board National Research Council, *Entry and Competition in the U.S. Airline Industry: Issues and Opportunities*, Special Report 255 (Washington, D.C.: 1999).

⁸⁶The U.S. also has ownership restrictions relating to the navigation of aircraft in the United States. 49 U.S.C. §§ 41102 and 40102(a)(15); In the Matter of the Acquisition of Northwest Airlines, Inc. by Wings, DOT Order 91-1-41, Docket No. 46371 (Jan. 1991).

representatives from an industry trade association and representatives from a network airline told us that U.S. airlines may be at a competitive disadvantage in relation to several airlines in China and the Middle East (e.g., China Airlines, Etihad Airways, and Emirates) that they assert receive government support. Representatives from one network airline told us that by losing traffic to these airlines abroad, domestic network service could be affected as well as the financial health of the domestic airline industry. Additionally, the Future of Aviation Advisory Committee report to the Secretary of Transportation noted that U.S. airlines are facing restrictive aviation agreements in growing markets in Asia and South America and face entry barriers—such as slot restrictions, air space limitations, and local ground-handling rules—that increase their operating costs and stifle competition.⁸⁷

Stakeholders Offered a Limited Range of Potential Federal Actions to Address Challenges, and Differed on Priorities

Stakeholders offered contrasting perspectives regarding the role of the federal government in addressing the competition challenges they identified. Actions recommended by stakeholders who supported a federal role in addressing competition challenges were in most cases directed at narrow issues within the industry, as federal action is inherently limited in a deregulated industry. Further, because the structure of the airline industry is evolving, the full competitive effects of industry consolidation are unknown.

Certain stakeholders we spoke with, including an industry analyst and airline representatives, were opposed to any federal actions to further enhance competition in the market. For example, according to representatives from one network airline, concerns about a competitive environment dominated by four large airlines do not mean that the federal government should interfere with the mechanics of the market.

Conversely, seven stakeholders were supportive of a federal role, but prioritized different actions to address concerns about competition. A majority of stakeholders did not identify any of the potential actions as the most critical for the federal government to take.

⁸⁷U.S. Department of Transportation, *The Future of Aviation Advisory Committee Final Report* (Washington, D.C.: Apr. 11, 2011).

-
- **Reducing barriers to entry:** Several industry stakeholders drew attention to reducing barriers to entry. For example, one airport authority said that slot controls should be removed to maximize capacity and encourage competition at New York and Washington, D.C. airports. We have also recommended that FAA improve its administration of the slot control rules to enhance competition through greater transparency and airline access to slots.⁸⁸ Additionally, two stakeholders supported either eliminating airline loyalty programs or taxing their benefits as a means to increase competition among airlines. The Internal Revenue Service announced in 2002 that it does not plan to pursue a tax enforcement program regarding promotional benefits such as frequent flyer miles. As a result, employees are currently able to keep mileage earned from flights that are paid for by their employer without being taxed for the value.⁸⁹ Taxing benefits from airline reward programs, according to these stakeholders, would enhance competition by enabling airlines to compete route-to-route without regard to the extra benefit of frequent flyer miles.
 - **Increasing fare transparency:** The three travel industry organizations and two consumer advocacy organizations we interviewed supported a stronger federal role in increasing transparency and competition within the industry by encouraging DOT to continue to finalize its proposed rulemaking on reporting ancillary revenue to help ensure that passengers are aware of the full cost of travel—including ancillary fees—at the time of purchasing a ticket.
 - **Mitigating anticompetitive effects of consolidation:** To address any adverse effects industry consolidation has had on competition, two consumer advocacy and travel industry organizations argued that Congress should repeal a preemption provision in the Airline Deregulation Act of 1978, as amended. This provision prohibits states or their political subdivisions from enacting or enforcing any law, regulation, rule, or other provision having the force and effect of law related to the price, route, or service of an airline.⁹⁰ The consumer

⁸⁸[GAO-12-902](#).

⁸⁹IRS Announcement 2002-18, “Frequent Flyer Miles Attributable to Business or Official Travel” (2002). The 2002 Announcement provides, in part, that “IRS will not assert that any taxpayer has understated his federal tax liability by reason of the receipt or personal use of frequent flyer miles or other in-kind promotional benefits attributable to the taxpayer’s business or official travel.”

⁹⁰See 49 U.S.C. § 41713.

advocacy and travel industry organizations argued that such a repeal would allow states to sue airlines to enhance consumer protections. Since the industry was deregulated in 1978, air transportation has been almost exclusively under federal oversight. The Airline Deregulation Act's preemption provision has been interpreted by the U.S. Supreme Court to preempt regulation of airline fare advertising under state consumer protection laws.⁹¹ The consumer advocacy and travel industry organizations argued that lifting this preemption restriction and allowing state attorneys general to sue airlines would increase discipline and benefit consumers. Additionally, one academic and research expert and a travel industry organization we spoke with recommended that DOJ conduct post-merger analyses to determine whether mergers have delivered the benefits, including efficiencies and cost savings, airlines have promised in advance.

- **Addressing global competition challenges:** Several consumer advocacy and travel industry organizations recommended that the federal government place more scrutiny on international alliances by conducting regular reviews to evaluate the effects of antitrust immunity. Two stakeholders supported a federal role in helping U.S. airlines compete in the global market as they assert government support and minimal regulatory burdens in some foreign countries give airlines like Etihad Airways, Emirates, and Qatar Airways from Persian Gulf states a competitive advantage over U.S. airlines. One industry trade association and representatives from one network airline we spoke with were supportive of policies that would enable U.S. airlines to more effectively compete with international airlines. These stakeholders advocated ensuring that U.S. Open Skies policy—agreements that the U.S. signs with other countries to allow airlines access to international markets—contain provisions that support high labor standards and protect U.S. aviation jobs, and reject any new or increased taxes or fees on the airline industry.

⁹¹See e.g., *Morales v. Trans World Airlines, Inc.*, 504 U.S. 374 (1992). The *Morales* Court noted, however, that “some state actions may affect [airline rates or services] in too tenuous, remote, or peripheral a manner” to be preempted. *Id.* at 388, 112 S. Ct. at 2040 (quoting *Shaw v. Delta Airlines, Inc.*, 463 U.S. 85, 100 n. 21, 103 S. Ct. 2890, 2901, n. 21, 77 L. Ed. 2d 490 (1983)).

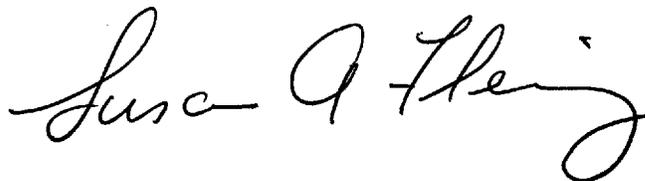
Agency Comments

We provided a draft of this report to DOJ and DOT for review and comment. Both DOJ and DOT provided technical comments that we incorporated as appropriate.

We are sending copies of this report to the Attorney General of the United States, the Secretary of Transportation, and the appropriate congressional committees. In addition, the report will be available at no charge on GAO's website at <http://www.gao.gov>.

If you or members of your staff have questions about this report, please contact me at (202) 512-2834 or flemings@gao.gov. Contact points for our Offices of Congressional Relations and Public Affairs may be found on the last page of this report. Major contributors to this report are listed in appendix III.

Sincerely yours,

A handwritten signature in black ink that reads "Susan A. Fleming". The signature is written in a cursive style with a large, looping "S" and "F".

Susan A. Fleming
Director, Physical Infrastructure Issues

Appendix I: Objectives, Scope, and Methodology

The objectives of this report were to examine (1) how the financial health of the U.S. airline industry has changed since 2007; (2) changes to the structure of the market since 2007; (3) how consumers have been affected by changes in the financial health and market structure of the U.S. airline industry; and (4) what stakeholders believe are the key challenges to airline competition and actions the federal government could take to address these challenges.

To examine changes to the financial health of the domestic airline industry since 2007, we analyzed airline financial and operational data, reviewed relevant studies, and interviewed industry experts. We divided the airline industry into network, low-cost, and regional airlines. While there is variation in the size and financial condition of the airlines within these groups, there are more similarities than differences. The eight network airlines have adopted hub-and-spoke network models, which can be more expensive to operate than point-to-point service. Low-cost airlines are typically smaller, and generally employ a less costly point-to-point service model. The eight low-cost airlines (AirTran Airways, Allegiant Air, America West Airlines,¹ Frontier Airlines, JetBlue, Southwest Airlines, Spirit Airlines, and Virgin America) had consistently lower unit costs than the eight network airlines (Alaska Airlines, American Airlines, Continental Airlines, Delta Air Lines, Hawaiian Airlines, Northwest Airlines, United Airlines and US Airways). We also included the 30 regional airlines that account for 99 percent of passengers on regional airlines in 2012. These airlines operate smaller aircraft and provide service to smaller communities. We utilized Department of Transportation (DOT) Form 41 financial and operational data submitted to DOT by U.S. passenger airlines for the years 2007 through 2012 as these were the most recent and complete annual data. All dollar figures in this report are nominal unless otherwise noted. We analyzed these data using various metrics for airline financial performance identified from our previous work. We obtained these data from Diio, a private contractor that provides online access to U.S. airline financial, operational, and passenger data with a query-based interface. To assess the reliability of these data, we reviewed the quality control procedures used by Diio and DOT, interviewed DOT officials responsible for data collection efforts, and subsequently determined that the data were sufficiently reliable for our

¹Although America West merged with US Airways in 2005, it still reported as a separate entity in 2007.

purposes. We also reviewed government and expert data analyses, research, and studies, as well as our own previous studies. The expert research and studies, where applicable, were reviewed by a GAO economist or were corroborated with additional sources to determine that they were sufficiently reliable for our purposes. Finally, we conducted interviews with airline representatives, industry trade associations, industry analysts at credit rating agencies and financial services firms, and other industry stakeholders (see table 4 below). The analysts and experts were identified and selected based on a literature review, prior GAO work, and recommendations from within the industry. See below for a description of our method for selecting these stakeholders.

To examine how the airline industry's market structure has changed since 2007, we analyzed data from DOT's Origin and Destination Survey, which includes fare and itinerary information on every 10th airline ticket sold; reviewed academic studies assessing competition; and interviewed DOT officials, airline representatives, and aviation industry stakeholders. The data sample comprises approximately 91,000 airport-pair markets for each calendar year 2007 through 2012. We excluded tickets with international, Alaskan, or Hawaiian destinations. We eliminated Alaskan and Hawaiian destinations because cost and competitive conditions involving these destinations are likely to be considerably different than routes within the continental U.S. and therefore it was not appropriate to include these types of routes in our analysis. Since only the airline issuing the ticket is identified, regional airline traffic is counted under the network parent or partner airline. To assess the reliability of these data, we reviewed the quality control procedures used by Diio, our data provider, and DOT, interviewed DOT officials responsible for data collection efforts, and subsequently determined that the data were sufficiently reliable for our purposes. To analyze changes in the number of effective competitors and market concentration, we performed a number of steps to aggregate and filter the data. First, since the ticket data contain one-way-direction ticket information, we combined data on one-way trips traveling in either direction for a given market defined by two cities (or airports). For example, we combined the traffic going from Lehigh Valley International Airport (ABE) to Abilene Regional Airport (ABI) with traffic travelling from ABE to ABI to obtain a total passenger count of all traffic between the two airports. Second, we filtered the data to include only those airport-pair markets with at least 520 passengers in one direction or 1,040 passengers for round-trip traffic because markets with fewer passengers

would be too small to ensure statistical accuracy. This filter removed 6 percent of the passengers from the full dataset.² Next, we defined an effective competitor as an airline with at least 5 percent of total traffic. These are the same minimum passenger and market share filters that we have previously used to assess whether an airline has sufficient presence in a market to affect competition.³ Finally, we created separate market-level data sets based on two different market definitions: 1) airport-pair and 2) city-pair as defined by DOT.⁴ The most straight-forward definition of a market is the airport-pair, or travel between two airports. However, the largest cities often contain several commercial airports that compete for passengers, and are in some cases treated as a single destination. This analysis focused on domestic city-pair markets, which represent air transportation between two cities. City-pair markets are typically viewed as the basic, relevant market for airline travel in the U.S.

For each version of the data, we calculated (1) the proportion of total passengers carried by each airline in the market; (2) the weighted and un-weighted average number of effective competitors (defined as having at least 5 percent of total passenger traffic in the market); and (3) the average Herfindahl-Hirschman Index (HHI), which is a measure of the level of concentration in a market and provides an indication of changes in the level of competition. HHI is calculated by squaring the market share of each airline competing in the market and then summing the results. For example, a market consisting of four firms—two of which have market shares of 30 percent and two of which have market shares of 20 percent—has an HHI of 2,600 ($30^2 + 30^2 + 20^2 + 20^2 = 2,600$). To analyze changes in the average number of effective competitors and concentration based on the size of the passenger markets, we divided

²While this analysis retained 94 percent of all passengers, it only retained 14 percent of the routes as defined by a specific combination of two endpoint airports after applying the passenger count filter screen. As we noted, data on routes with very few passengers are not robust enough to ensure statistical accuracy. Moreover, such cases may be indicative of errors in the data, or routes that are travelled so rarely that they are not representative of the industry more broadly and are thus not appropriate to include in this analysis.

³See [GAO-13-403T](#), [GAO-08-845](#), and [GAO-10-778T](#).

⁴For comparison purposes we also created a separate market-level data-set based on city-pairs as defined in Jan Brueckner, Darin Lee, and Ethan Singer, "City-Pair Versus Airport-Pairs: A Market Definition Methodology for the Airline Industry," *Review of Industrial Organization*, vol. 44 (2014). The results were generally consistent with what we found using DOT's methodology for grouping city-pair markets.

markets into quintiles based on the total passengers across all markets. This means that each quintile had roughly 20 percent of the total passengers, but the number of markets in each quintile varied. These numbers also varied each year. For example, in 2012, we analyzed 10,434 city-pair markets representing about 411 million passengers (see table 2). In addition, we assessed the number of markets dominated by a single airline and the number of non-dominated markets for each quintile.

Table 2: Market Structure Data Based on Total Passengers by Quintiles, 2012

	Airport-Pair		City-Pair (DOT)	
	Markets	Passengers	Markets	Passengers
1st quintile	97	82,394,591	37	82,965,329
2nd quintile	203	81,522,539	99	81,452,273
3rd quintile	408	81,913,364	237	81,980,327
4th quintile	1,085	81,953,082	682	82,009,532
5th quintile	11,136	81,918,396	9,379	82,099,635
Total	12,929	409,701,972	10,434	410,507,096

Source: GAO analysis of DOT data.

We also divided markets into quintiles based on the total number of markets to gain additional understanding of changes in the smallest markets. This means that we assigned markets into quintiles in such a way that there were equal numbers of markets in each quintile, but varying number of passengers, as shown in table 3 below.

Table 3: Market Structure Data Based on Total Markets by Quintiles, 2012

	Airport-Pair		City-Pair (DOT)	
	Markets	Passengers	Markets	Passengers
1st quintile	2,585	353,357,035	2,086	367,070,725
2nd quintile	2,586	33,763,747	2,087	25,674,684
3rd quintile	2,586	12,703,246	2,087	9,955,800
4th quintile	2,587	6,333,036	2,088	4,975,358
5th quintile	2,585	3,544,908	2,086	2,830,529
Total	12,929	409,701,972	10,434	410,507,096

Source: GAO analysis of DOT data.

In addition, to analyze the data by distance, we grouped the markets into five distance categories: 0-250 miles; 251-500 miles; 501-750 miles; 751-1000 miles; and 1,001 miles and over.

To determine changes in the structure of the market at the airport level, we analyzed DOT T-100 enplanement data for 2007 through 2012 to examine changes in passenger traffic among the airlines at each airport. The T-100 database includes traffic data (passenger and cargo) and operational data for U.S. and foreign airlines traveling to and from the United States. These data represent a 100 percent census of all traffic. To assess the reliability of these data, we reviewed the quality control procedures used by DOT, interviewed DOT officials responsible for data collection efforts, and subsequently determined that the data were sufficiently reliable for our purposes. We also evaluated the airlines' shares of total airport passengers and calculated an airport-level HHI.

To determine how consumers have been affected by changes to the airline industry, we also assessed DOT T-100 enplanement data for 2007 through 2012 on service levels to large-, medium-, small-hub, and nonhub airports, reviewed academic studies and expert research, and conducted interviews with DOT and DOJ officials, six academic and research experts, representatives from five airlines, five travel and consumer advocacy organizations, four industry trade associations, and one airport authority (see table 4 below).

Finally, to identify what stakeholders believe are the key challenges to competition and what actions the federal government could take to address these challenges, we interviewed six academic and research experts, representatives from five airlines, five travel and consumer advocacy organizations, five industry analysts, four industry trade associations, and one airport authority. Although the focus of our report is the domestic airline industry, we have included international issues raised by some stakeholders because they viewed these issues as having implications for competition in the domestic airline industry. We identified and selected these stakeholders based on prior GAO work, a review of relevant academic literature, and expertise in their field. The expert research and academic studies, where applicable, were either reviewed by a GAO economist or corroborated with additional sources to determine that they were sufficiently reliable for our purposes. The views of the 26 stakeholders should not be used to make generalizations about the views of all airline competition stakeholders, but do provide a range of perspectives on issues affecting the industry. In addition, we reviewed relevant studies and documentation from these stakeholders, and prior GAO and other government reports.

Table 4: Airline Stakeholders GAO Interviewed

Federal agencies

Department of Justice

Department of Transportation

Academics and expert researchers

Peter Belobaba, Massachusetts Institute of Technology

Severin Borenstein, University of California, Berkeley

Jan Brueckner and Dan Luo, University of California, Irvine

Ken Button, George Mason University

Diana Moss, American Antitrust Institute

Vikrant Vaze, Dartmouth University

Airlines

Alaska Airlines

Delta Air Lines

Republic Airways

Southwest Airlines

Virgin America

Airport authorities

Port Authority of New York & New Jersey

Consumer advocacy and travel industry organizations

American Society of Travel Agents

Business Travel Coalition

Consumers Union

Consumer Travel Alliance

Travel Technology Association

Industry analysts from credit rating agencies and financial services firms

Bank of America Merrill Lynch

Fitch Ratings

J.P. Morgan Securities

Moody's Investor Services

Standard and Poor's Ratings Services

Industry trade associations

Air Line Pilots Association, International

Airlines for America

Airports Council International–North America

Regional Airline Association

Source: GAO.

We conducted this performance audit from May 2013 through June 2014 in accordance with generally accepted auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

Appendix II: Results of Market Structure Analysis for the U.S. Passenger Airline Industry, 2007–2012

Table 5: Average Number of Effective Competitors by Airport-Pair Market Size

	2007	2008	2009	2010	2011	2012
1st quintile (largest market size)	2.8	2.7	2.9	2.9	3	3.1
2nd quintile	2.4	2.4	2.4	2.5	2.6	2.5
3rd quintile	2.5	2.5	2.6	2.6	2.6	2.7
4th quintile	3.1	3.2	3.2	3.1	3.1	3.1
5th quintile (smallest market size)	3.2	3.2	3.2	3	3	2.8

Source: GAO analysis of DOT data.

Table 6: Average Number of Effective Competitors by City-Pair Market Size

	2007	2008	2009	2010	2011	2012
1st quintile	4.4	4.5	4.5	4.3	4.5	4.3
2nd quintile	3.7	3.7	3.7	3.7	3.8	3.9
3rd quintile	3.4	3.3	3.4	3.5	3.5	3.4
4th quintile	3.5	3.6	3.6	3.5	3.5	3.5
5th quintile	3.3	3.3	3.3	3.1	3.1	3

Source: GAO analysis of DOT data.

Table 7: Market Concentration by Airport-Pair Market Size, as Measured by the Herfindahl-Hirschman Index

	2007	2008	2009	2010	2011	2012
1st quintile	4,910	4,783	4,547	4,549	4,295	4,202
2nd quintile	5,311	5,334	5,408	5,411	5,237	5,372
3rd quintile	5,831	5,825	5,816	5,654	5,722	5,693
4th quintile	5,389	5,306	5,343	5,450	5,419	5,490
5th quintile	5,049	5,082	5,023	5,173	5,259	5,375

Source: GAO analysis of DOT data.

Table 8: Market Concentration by City-Pair Market Size, as Measured by the Herfindahl-Hirschman Index

	2007	2008	2009	2010	2011	2012
1st quintile	3,352	3,362	3,240	3,288	3,093	3,196
2nd quintile	3,611	3,636	3,618	3,599	3,551	3,451
3rd quintile	3,981	4,021	3,956	3,957	3,952	4,022
4th quintile	4,377	4,351	4,341	4,432	4,469	4,476
5th quintile	4,944	4,876	4,845	4,985	5,064	5,152

Source: GAO analysis of DOT data.

Appendix III: GAO Contact and Staff Acknowledgments

GAO Contact

Susan Fleming, (202) 512-2834 or flemings@gao.gov

Staff Acknowledgments

In addition to the contact named above, the following individuals made important contributions to this report: Paul Aussendorf, Assistant Director; Amy Abramowitz; Sara Arnett; Jon Carver; Leia Dickerson; Geoff Hamilton; Delwen Jones; Mitch Karpman; SaraAnn Moessbauer; Josh Ormond; Dae Park; and Justin Reed.

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