Eno Center for Transportation

Aviation Insights

Explaining the modern airline industry from an independent, objective perspective

No. 5 • November 16, 2017

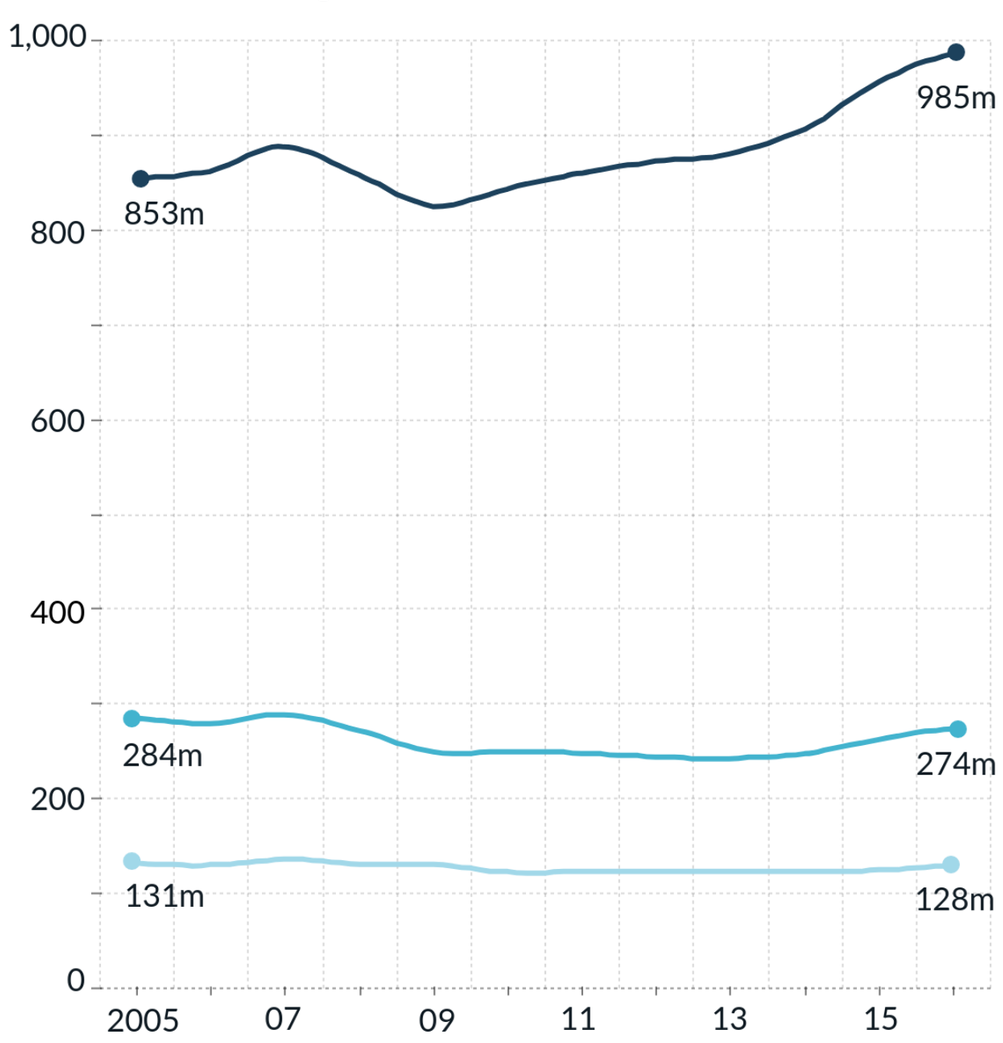
Question: How has air travel in specific metropolitan areas changed in recent years?

Throughout the United States, the average passenger is paying less to fly and is taking more direct flights than 15 years ago.[1] These broad trends are certainly positive for flyers as a whole. However passengers in specific regions often have a much different experience. While traffic is up and fares are down in large metropolitan areas where service is now concentrated, the experience in other places varies quite a bit.

Some regions that were once key centers for major airlines have recently been "de-hubbed," leading to significant cutbacks. Memphis and Cincinnati, former hubs of Northwest Airlines, saw daily flights fall from 240 to 100 and 600 to less than 100, respectively.[2] Cleveland saw United remove nearly 50 non-stop destinations after its merger with Continental.[3] Yet not all medium hub airports have lost out. Some have seen other carriers come in and partially take over the services they once had.[4]

Figure 1 shows that while passenger totals at large hub airports have increased over the past decade, on average, passenger counts at small and medium size hubs have remained relatively the same.[5]

Figure 1. Total number of domestic passengers*



** Total number of domestic arriving and departing passengers (in millions). Source: Bureau of Transportation Statistics, "Airport Snapshot," U.S. Department of Transportation, 2017.*

Hub Airport Defined:

A hub airport is associated with an airline that established an operational focus there, such as Delta in Atlanta or American in Dallas. From a statistical standpoint, the Federal Aviation Administration (FAA) defines a hub as any airport that carries more than 0.05 percent of all passengers in a given year. Small hubs carry between 0.05 and 0.25 percent of passengers (less than around five million passengers per year), medium hubs carry between 0.25 and 1 percent (around between five million and 15 million passengers per year), and large hubs more than 1 percent of all passengers (around 15 million or more passengers per year).[6]

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[1] *Eno Center for Transportation, "What effect does airline consolidation have on passengers?" Eno Aviation Insights No. 4: November 2017.*
[2] *Ben Mutzabaugh, "Delta to Pull Plug on Memphis Hub after Labor Day," USA Today, June 4, 2013; and Fangwu Wei and Tony Grubesic, "The Dehubbing Cincinnati/Northern Kentucky International Airport (CVG): A Spatiotemporal Panorama," Journal of Transport Geography, Vol 49. 85-98.*
[3] *Susan Glaser, "Cleveland Hopkins Rebounds from United Cuts, Sees Passenger Increase in 2015," Cleveland Plain Dealer February 29, 2016.*
[4] *Some of this is driven by the growth in so-called Ultra Low Cost Carriers. See: Alexander R. Bachwich, "Airline Business Models 2006-2015: Trends and Key Impacts," Massachusetts Institute of Technology, 2017.*
[5] *Eno Center for Transportation, "What effect does airline consolidation have on passengers?" Eno Aviation Insights No. 4: November 2017.*
[6] *Together, large and medium hubs carry around 88 percent of U.S. passengers each year. For a list of airports in each category see: Federal Aviation Administration, "Airport Categories", 2017.*

However, a few airports contribute disproportionally to the decline or growth of the number of passengers carried. Table 1 shows the airports that have the greatest increase or decline in traffic since 2005.[7] Removing Ontario, Memphis and Cincinnati from the mix, medium hubs would have seen a growth of six percent (14 million passengers) over this period, buoyed from Southwest hubs in fast-growing Texas. The decline in passengers at Ontario, Memphis, and Cincinnati is due to specific aspects of these three geographic markets, explored below.

Table 1. Total change in passengers at fastest growing and declining medium and large hubs (2005-2016)

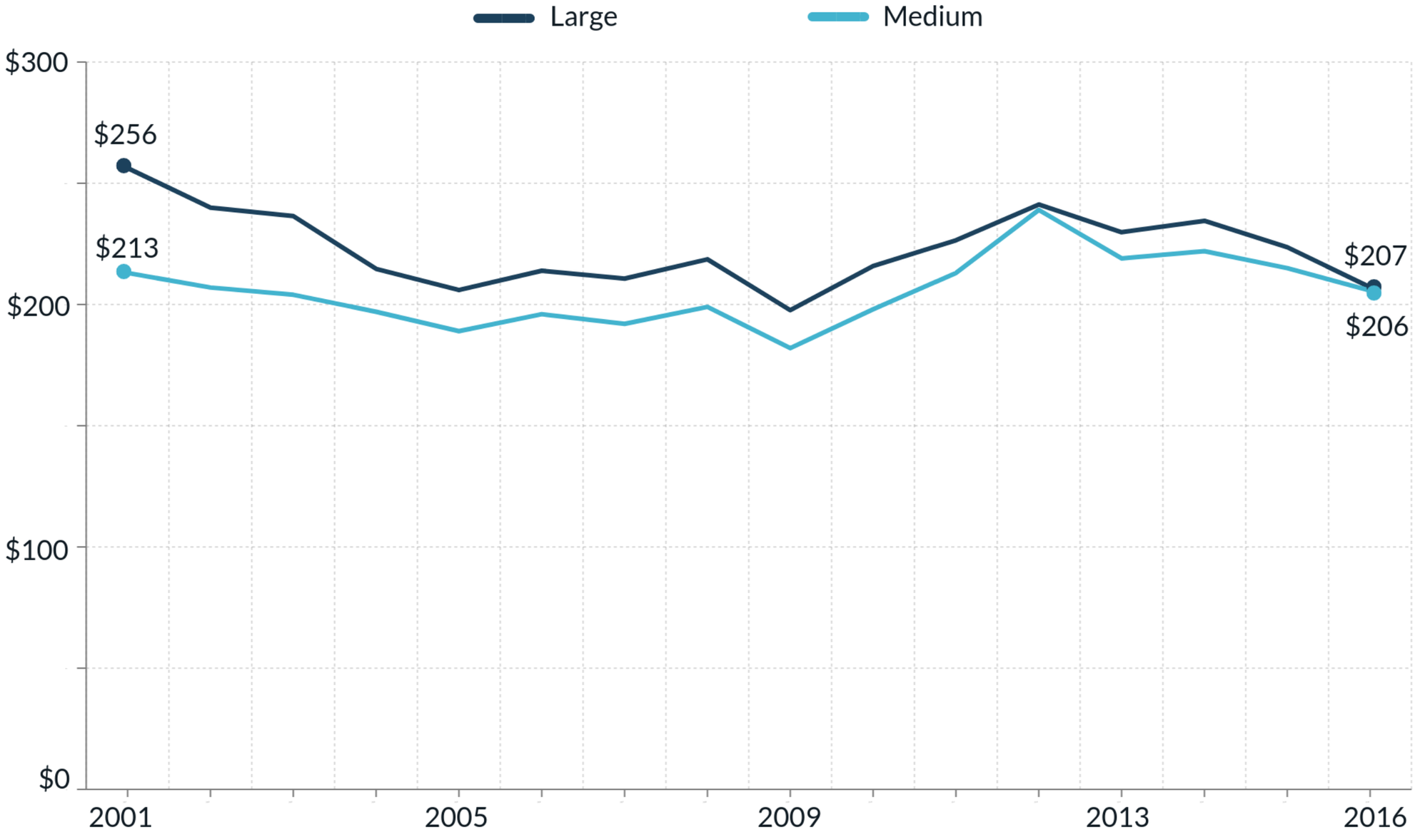
Large hubs average	San Francisco	Charlotte	Seattle	Houston Bush	Philadelphia	Washington Dulles
15%	62%	53%	48%	-5%	-7%	-34%

Medium hubs average	Dallas Love	Austin	Houston Hobby	Ontario, CA	Memphis	Cincinnati
-4%	157%	64%	49%	-40%	-63%	-71%

Source: Bureau of Transportation Statistics, "Airport Snapshot", U.S. Department of Transportation, 2017.

As an earlier *Eno Aviation Insights* brief shows, the cost of an average airline ticket is near all-time lows. And medium hubs have long been on average less expensive for fliers than domestic flights at larger hubs.[8] However, Figure 2 shows that the gap between ticket prices at large and medium hubs has narrowed. Passengers at the largest hubs, which carry 71 percent of travellers, saw a 3 percent drop in ticket price since 2005 (after the five major airline mergers). But fares at medium hubs rose by 5 percent over this same period.

Figure 2. Average one-way domestic fares at large and mediums hubs



Source: Office of Aviation Analysis, "Domestic Airline Consumer Airfare Report", U.S. Department of Transportation, 2017. Figures in constant dollars.

Table 2 shows the changes in fares and passenger traffic for all medium and large hubs. Almost all of the large hubs have seen both lower fares and higher traffic since 2001. Medium hubs mostly saw declines in traffic and/or increases in ticket prices. Seven airports saw increases in ticket prices above 10 percent over fifteen years (Burbank, Dallas Love Field, Houston Hobby, Jacksonville, Ontario, Sacramento, and

[7] *This research uses 2005 as a starting point because that was when the first of several major airliner mergers occurred. See Eno Aviation Insights No. 4, "What effect does airline consolidation have on passengers," November 1, 2017.*
[8] *Eno Center for Transportation, "What effect does airline consolidation have on passengers?" Eno Aviation Insights No. 4: November 2017.*

San Antonio). Another six airports saw both increases in ticket prices and decreases in domestic traffic: Albuquerque, Buffalo, Burbank, Jacksonville, Oakland, and Ontario.

Table 2. Change in one-way domestic fares and passenger traffic at large and mediums hubs, 2001-2016

↓ Lower Fares, Lower Traffic ↓			
Airport	**Size**	**Fare**	**Traffic**
Cincinnati	M	-30.9%	-71.0%
Philadelphia	L	-29.5%	-6.0%
Milwaukee	M	-28.6%	-6.0%
Memphis	M	-26.4%	-63.0%
Washington Dulles	L	-23.2%	-34.0%
Detroit	L	-18.9%	-3.0%
Pittsburgh	M	-16.1%	-24.0%
Cleveland	M	-15.5%	-26.0%
Houston Bush	L	-11.0%	-6.0%
San Jose	M	-10.3%	-3.0%
Indianapolis	M	-6.7%	-1.0%
Hartford	M	-1.7%	-18.0%
West Palm Beach	M	-0.2%	-12.0%

↑ Higher Fares, Lower Traffic ↓			
Airport	**Size**	**Fare**	**Traffic**
Tampa	L	0.2%	-4.0%
Oakland	M	3.9%	-16.0%
Albuquerque	M	6.9%	-26.0%
Buffalo	M	8.0%	-4.0%
Sacramento	M	9.9%	-4.0%
Jacksonville	M	12.1%	-5.9%
Ontario	M	12.4%	-40.0%
Burbank	M	17.5%	-24.0%

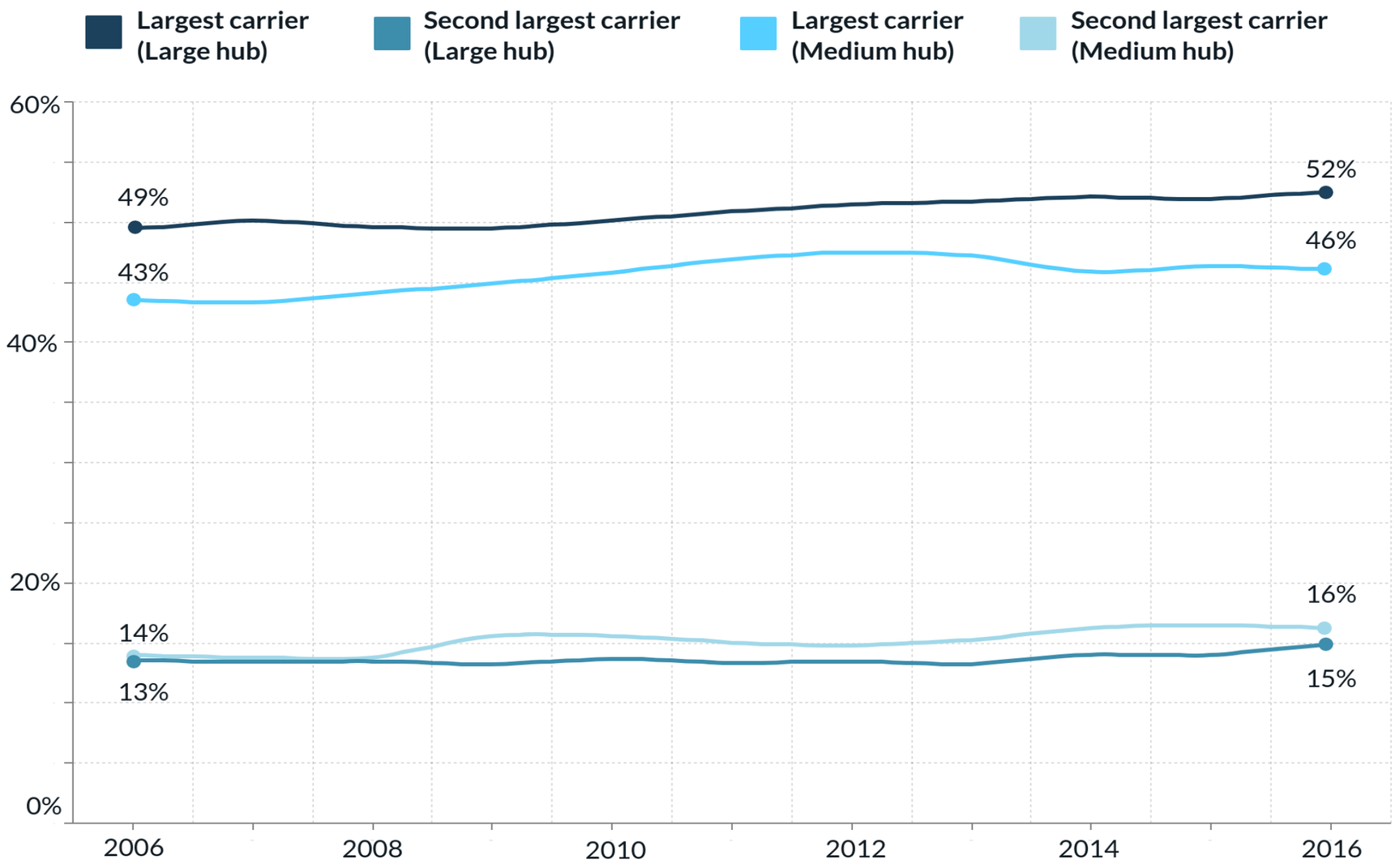
↑ Higher Fares, Higher Traffic ↑			
Airport	**Size**	**Fare**	**Traffic**
Chicago Midway	L	3.2%	29.0%
Nashville	M	4.0%	38.0%
New Orleans	M	7.0%	42.0%
Kansas City	M	9.1%	6.0%
San Antonio	M	14.8%	13.0%
Houston Hobby	M	18.9%	49.0%
Dallas Love	M	22.0%	157.0%

↓ Lower Fares, Higher Traffic ↑			
Airport	**Size**	**Fare**	**Traffic**
Charlotte	L	-40.3%	53.0%
Denver	L	-36.2%	36.0%
Dallas Fort Worth	L	-35.6%	7.0%
Minneapolis	L	-30.1%	1.0%
Chicago O'Hare	L	-29.9%	1.0%
Boston	L	-24.6%	31.0%
Miami	L	-24.2%	35.0%
San Francisco	L	-24.1%	62.0%
Atlanta	L	-21.8%	15.0%
Washington Reagan	L	-21.6%	32.0%
Seattle	L	-19.5%	48.0%
New York La Guardia	L	-18.7%	13.0%
New York Kennedy	L	-16.6%	23.0%
Newark	L	-16.3%	17.0%
Portland	L	-16.2%	33.0%
Los Angeles	L	-14.5%	34.0%
Orange County	M	-13.7%	5.0%
San Diego	L	-8.2%	18.0%
Phoenix	L	-6.0%	2.0%
Fort Lauderdale	L	-5.9%	17.0%
St. Louis	M	-5.7%	0.0%
Orlando	L	-5.1%	13.0%
Omaha	M	-4.4%	4.0%
Raleigh/Durham	M	-4.0%	13.0%
Austin	M	-4.0%	64.0%
Columbus	M	-3.5%	7.0%
Fort Myers	M	-2.7%	11.0%
Salt Lake City	L	-1.7%	3.0%
Las Vegas	L	-0.8%	4.0%
Baltimore	L	-0.2%	24.0%

Source: Office of Aviation Analysis, "Domestic Airline Consumer Airfare Report", U.S. Department of Transportation, 2017 and Bureau of Transportation Statistics, "Airport Snapshot", U.S. Department of Transportation, 2017.

Competition between airlines at an airport can enable more destination and price options as well as better customer service, and airline consolidation could potentially increase the shares of dominant carriers.[9] But Figure 4 shows that despite mergers, the average share of traffic by the top two airlines at each medium and large hub grew only slightly over the past ten years (in terms of domestic passengers carried).

Figure 4. Share of passenger traffic for the first and second largest carriers at large and medium hubs



Source: Bureau of Transportation Statistics, "Airport Snapshot", U.S. Department of Transportation, 2017.

Looking at specific locations, Figures 5 and 6 show more nuances in individual airports with respect to the share of passenger traffic of the largest airlines.[10] The six airports with the greatest domestic traffic growth in the 2006-2016 period (Figure 5) fall into one of two categories. In the case of Dallas Love and Houston Hobby, the growth is entirely from the dominant airline (Southwest in both cases). For Austin, San Francisco, Seattle, and Charlotte, all had several airlines with a significant presence and all of the airlines have expanded their presence.

The six airports with the greatest domestic traffic decline in the 2006-2016 period (Figure 6) fall into one of three categories. The first includes places like Memphis, Cincinnati, and Cleveland that lost their hub status as airlines merged and passenger levels shrank. The second refers to airports that saw significant competition from other nearby airports. For instance, Washington Reagan and Los Angeles both grew substantially, taking traffic from Washington Dulles and Ontario, respectively. Only one airport is in the third category–Albuquerque–where passenger volumes decreased in large part due to the repeal of the Wright Amendment. That obscure federal law had prohibited flights to and from Dallas Love Airport beyond Texas and its neighboring states. Therefore, Southwest had been using Albuquerque as a stopover between Dallas and popular west coast destinations. Once the law was repealed in 2014, the airlines cut flights.[11]

Where medium hubs have grown, data shows that it is often from an increase in Southwest traffic. The company's business model often targets medium-sized airports, which has helped it to become the largest carrier at Buffalo, Burbank, Columbus, Fort Myers, Indianapolis, Kansas City, New Orleans, Oakland, Omaha, Ontario, Pittsburgh, Saint Louis, San Jose, and Orange County. Southwest is now the largest carrier in all but nine of the 32 medium hubs (Table 3). Three of the medium hubs where Southwest is not the largest carrier are not in the continental United States (Anchorage, Kahului, and San Juan).

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[9] *FAA/OST Task Force, "Airport Business Practices and Their Impact on Airline Competition," U.S. Department of Transportation, 1999.*
[10] *The section does not explore changes in GDP and population in these cities, it purely looks at the aviation markets.*
[11] *Jessica Dyer, "Southwest Cutting 6 Flights for Albuquerque", ABQ Journal, May 19, 2014.*

Figure 5. GROWTH: Share of passenger traffic for the first and second largest carriers at the six airports that had most passenger growth*

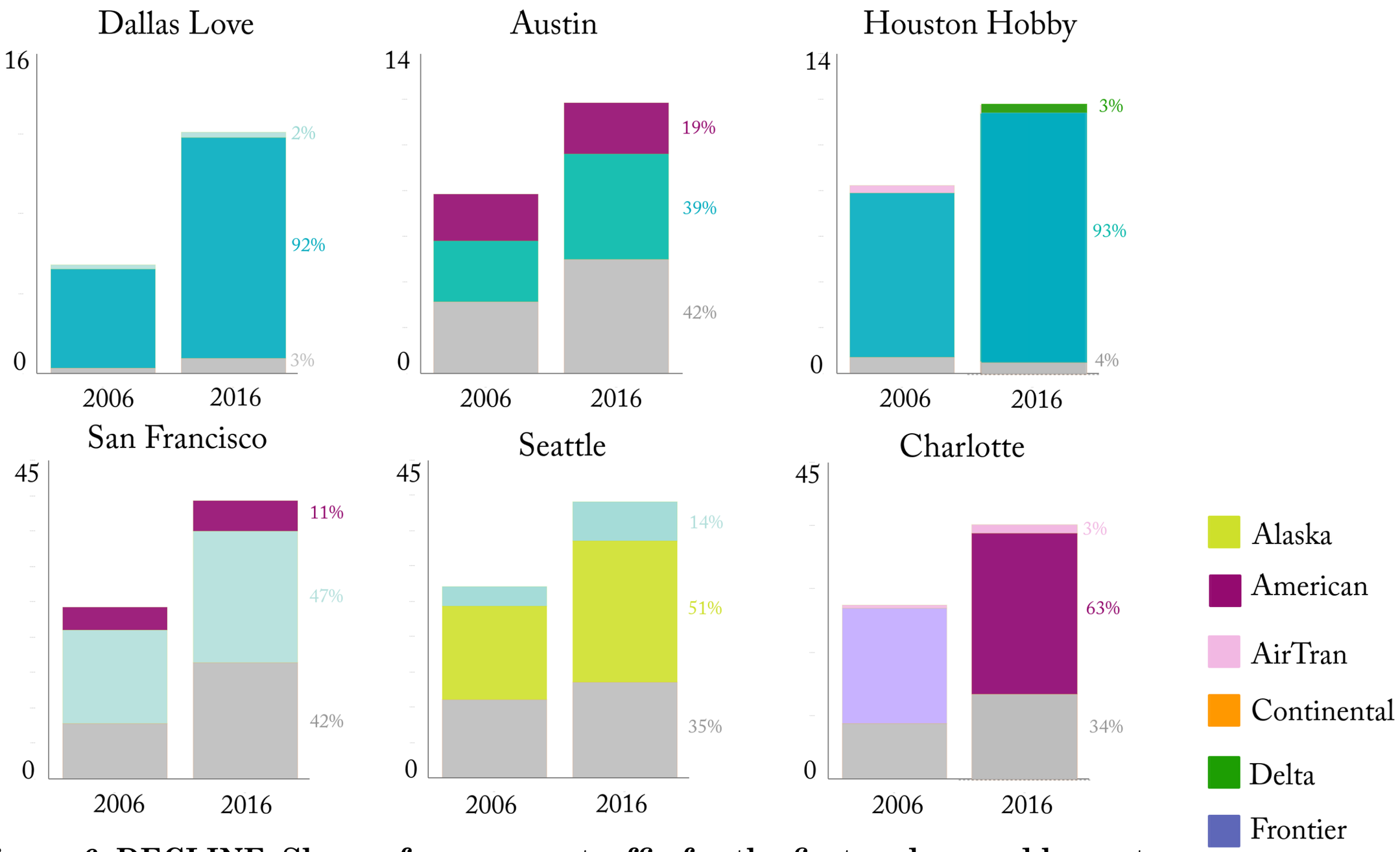
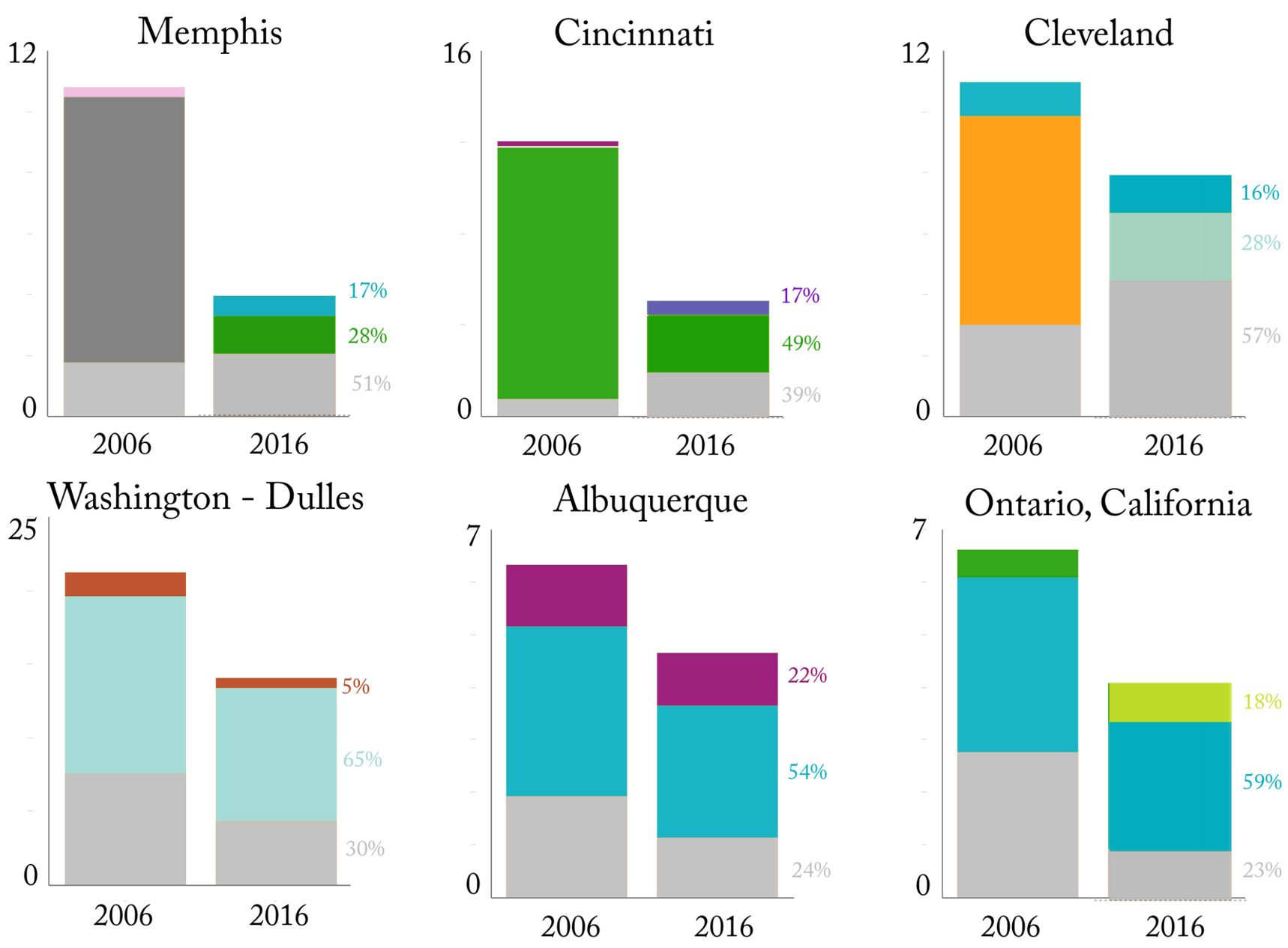


Figure 6. DECLINE: Share of passenger traffic for the first and second largest carriers at the six airports that had most passenger decline*



** In millions*

Source: Bureau of Transportation Statistics, "Airport Snapshot", U.S. Department of Transportation, 2017.

Table 3. Largest carriers at medium hubs (2016)

Carriers	Number of medium hubs where carrier has highest market share
Southwest	23
Delta	5
Alaska	1
Hawaiian	1
JetBlue	1
United	1

Source: Bureau of Transportation Statistics, "Airport Snapshot", U.S. Department of Transportation, 2017.

Another factor that indicates the level of service is the frequency of flights in and out of metropolitan areas. Table 4 groups large and medium airports by metro area, and uses number of flights as a proxy for level of service. More flights indicate more destinations and more frequent, competitive service. The table calculates the number of flights relative to the metro area's gross domestic product (GDP), demonstrating the size of the regional economy and the service that attracts.

To accommodate the growth in passengers, airlines have handled more passengers on fewer aircraft.[12] In fact, between 2006 and 2016, the 47 largest metro areas (all those served by medium and large hub airports) saw a decline of 11.3 percent in departing flights. Only seven (Austin, Charlotte, Miami, New Orleans, San Francisco, Seattle, and Tampa) saw an increase in total flights.

Table 4 tells very different stories for different metro regions, and regions fall in one of five distinct categories:

- **Major hubs for major airlines.** Regions like Charlotte, Denver, Atlanta, Phoenix, Chicago, and San Francisco have significantly more flights per regional GDP than the national median. In each of these cases, the airport is a major hub for one or more of the largest airlines in the United States. In these cases, many of the passengers at the airports are connecting to other flights.
- **Major tourist destinations.** Tourism accounts for nearly 50 percent of all flyers in the United States.[13] Many of the airports that have more flights per regional GDP than the national median include popular destinations such as Las Vegas, Fort Myers, Orlando, and Nashville. These places would have higher flights per GDP regardless of consolidation due to their demand, shown by the diversity of airlines that serve them.[14]
- **Large international gateways.** Several large regions, such as Los Angeles, New York, Houston, and Washington, have fewer flights per regional GDP than the national average. This is in large part because the data only shows domestic flights, and each of these are major international gateway airports. Airports in the New York region as well as Washington Reagan and Los Angeles are also constrained for runway capacity, unlike other international hubs in Denver, Chicago, and Atlanta.[15]
- **De-hubbed or de-emphasized airports.** From 2006 to 2016 as airlines reduced flights at former hubs such as Cleveland, Pittsburgh, and Cincinnati, they all went from having flights per regional GDP above the national median, to significantly below it. Other cities that were not necessarily hubs experienced a loss in service as airlines de-emphasized traffic at those locations, including Philadelphia, Kansas City, Indianapolis, and Buffalo.
- **Loss to nearby major hubs.** Regions that include San Jose, Ontario, Milwaukee, and Hartford experienced declines in traffic as airlines consolidated service at larger airports nearby.

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[12] *Eno Center for Transportation, "How Are Airlines Making Money?" Eno Aviation Insights No. 3: October 2017.*
[13] *John Heimlich, "Status of Air Travel in the USA," Airlines for America, April 2016.*
[14] *Bureau of Transportation Statistics, "Airport Snapshot", U.S. Department of Transportation, 2017.*
[15] *Eno Center for Transportation, "Addressing Future Capacity Needs in the U.S. Aviation System, November 2013.*

Table 4: Comparison of Regional GDP and Flight Frequencies

Metropolitan Area	Regional GDP (2015, $ millions)	Flights from region's large and/or medium airports, 2006	Flights from region's large and/or medium airports, 2016	Flights per $ billion in regional GDP, 2006	Flights per $ billion in regional GDP, 2016
Charlotte	$152,447	211,764	241,117	1389	1582
Las Vegas	$103,343	193,853	163,197	1876	1579
Salt Lake City	$78,950	151,289	119,214	1916	1510
Fort Myers	$25,350	36,242	32,854	1430	1296
Memphis	$71,278	160,678	89,633	2254	1258
Denver	$193,172	274,195	237,236	1419	1228
Atlanta	$339,203	434,633	398,674	1281	1175
Orlando	$121,329	151,843	132,560	1251	1093
Phoenix	$219,968	225,436	187,050	1025	850
Raleigh Durham	$75,756	75,918	61,628	1002	814
Dallas Fort Worth	$485,683	359,912	358,828	741	739
Detroit	$245,607	213,479	177,840	869	724
Chicago	$640,656	511,301	461,444	798	720
Minneapolis	$248,779	200,434	175,944	806	707
Albuquerque	$42,673	46,732	29,138	1095	683
New Orleans	$78,478	35,319	52,340	450	667
San Francisco	$431,704	220,359	272,045	510	630
Nashville	$113,680	69,599	69,331	612	610
Portland	$158,770	96,030	92,956	605	585
Baltimore	$181,419	118,802	104,935	655	578
Seattle	$313,654	148,671	179,291	474	572
Miami	$317,986	170,512	180,721	536	568
Tampa	$133,838	67,106	74,974	501	560
Buffalo	$56,456	39,152	30,125	693	534
St. Louis	$155,077	122,091	82,538	787	532
Indianapolis	$134,081	79,276	66,087	591	493
Austin	$119,949	51,797	57,098	432	476
Jacksonville	$67,557	40,925	31,803	606	471
Washington	$491,042	267,057	230,167	544	469
Houston	$503,311	296,538	231,862	589	461
Omaha	$59,090	33,823	26,915	572	455
Kansas City	$125,618	76,105	56,517	606	450
Sacramento	$118,822	58,170	48,397	490	407
Milwaukee	$102,209	77,288	41,137	756	402
Philadelphia	$411,161	212,226	164,166	516	399
Cincinnati	$127,057	115,008	50,185	905	395
Boston	$396,549	167,148	155,918	422	393
San Diego	$220,573	95,422	85,324	433	387
San Antonio	$108,879	49,154	41,827	451	384
Cleveland	$128,448	110,532	49,245	861	383
Pittsburgh	$138,873	97,805	52,750	704	380
Hartford	$86,113	46,275	32,521	537	378
Columbus	$124,381	56,748	46,708	456	376
Los Angeles	$930,817	292,198	324,693	314	349
New York	$1,602,705	471,710	455,544	294	284
Ontario (Riverside)	$140,637	48,403	31,781	344	226
San Jose	$235,222	63,408	49,434	270	210
		Total: 7,142,366	**6,335,692**	**Median: 606**	**Median: 534**

Sources: Bureau of Economic Analysis, "Regional Economic Accounts", U.S. Department of Commerce, 2017 and Bureau of Transportation Statistics, "Airport Snapshot", U.S. Department of Transportation, 2017.

How has air travel in specific metropolitan areas changed in recent years?

Answers:

- Over the last 15 years, large hubs fared well. Of all the large hubs, only Tampa and Chicago Midway experienced an increase in average fare and Washington Dulles was the only large hub to see a significant decline in domestic passengers.

- Meanwhile, nearly half of medium hubs experienced fare increases since 2001. While it used to be less expensive to fly out of an average medium hub airport, now the average fare for medium and large hubs are equal.

- Airports where traffic grew the most are in regions with robust economies such as San Francisco, Charlotte, and Seattle. Meanwhile airports that were former airline hubs like Cincinnati and Memphis saw dramatic declines in traffic.

- The relationship between the number of domestic flights to the health of each region reveals several different typologies of airports. Some large hubs and international gateways have strong ratios of traffic to GDP as do several popular tourist destinations. Other airports that lost their hub airline fell from having more flights per GDP than the national median in 2006 to significantly below it, except for Memphis, which fell but still has more flights than the median.

- More research is needed to understand the trends that affect air service in individual metropolitan areas. Since 2005, the airline industry has consolidated, the price of fuel has varied dramatically, the U.S. economy suffered and mostly recovered from the Great Recession, regional air lines have dealt with a chronic pilot shortages, and federal rules have changed. Any combination of these factors can affect the levels of service in specific markets.

Eno wishes to acknowledge its Aviation Working Group, a standing advisory body that provides Eno staff with guidance and expertise on all matters related to aviation policy. The opinions expressed are those of Eno and do not necessarily reflect the views of our supporters.

Eno Center for Transportation
1710 Rhode Island Ave., NW Suite 500 Washington D.C. 20036
publicaffairs@enotrans.org • 202-879-4700