Modeling Changes in Connectivity at U.S. Airports: A Small Community Perspective

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Introduction to paper series

This report, *Modeling Changes in Connectivity at U.S. Airports: A Small Community Perspective,* is the second in a series of papers written under the umbrella of the MIT Small Community Air Service White Paper series. The aim of the paper series is to examine and analyze the past, current, and anticipated future trends of small community air service in the United States. The series is intended for a general audience of airline and airport executives, aviation policy makers, the news media, and anyone with an interest in the availability of commercial air service at the nation's smaller airports. The authors of this paper series hope that these reports will serve to inform the policy debate with relevant and accurate statistical analysis, such that those responsible for deciding the future of small community air service will do so armed with factual basis for their actions.

The authors of the MIT Small Community Air Service White Paper series are members of the Massachusetts Institute of Technology's International Center for Air Transportation, one of the nation's premier centers for aviation, airline, and airport research. Financial support for study authors has been provided in part by the MIT Airline Industry Consortium, an interdisciplinary group of airlines, airport councils, manufacturers, suppliers, policy makers, and advocacy groups dedicated to improving the state of the practice of air transportation research in the United States. However, any views or analyses presented in this and all future reports are the sole opinions of the authors and do not reflect the positions of MIT Airline Industry Consortium members or MIT.

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Executive Summary

As the pace of globalization has increased in recent years, commercial air service that provides connections to the global air transportation network has become increasingly important for economic, social, and demographic reasons. While air connectivity is important for communities of all sizes, research has suggested that small communities can obtain significant economic benefits from well-connected commercial air service (Button et al. 2010, Mukkala and Tervo 2012, Kanafani and Abbas 1987). However, recent work (Wittman and Swelbar 2013) has shown that small- and mid-sized airports have been disproportionally affected by cuts in commercial air service in the U.S. over the past six years.

There is currently no industry-standard metric to assess an airport's connection to the global air transportation system. This creates challenges for airport managers and policy-makers in interpreting the effects of gains or losses in flights or seats on an airport's connectivity. On a regional level, it is also valuable to analyze which airports have seen increases or decreases in connectivity over a given period. This discussion paper introduces a new, relatively easy-to-compute metric that can be used to assess these changes in connectivity to global air transportation service at U.S. airports.

The Airport Connectivity Quality Index (ACQI) introduced in this paper computes airport connectivity as a function of the frequency of available scheduled flights, the quantity and quality of destinations served, and the quantity and quality of connecting destinations. Unlike other connectivity models, the ACQI model considers connecting opportunities from a given airport as well as the *quality* of destinations served, such that an additional flight to a large city or a major connecting hub is more valuable than an additional flight to a smaller community with limited connecting options. The analysis also pays particular attention to connectivity at smaller airports, which have been largely ignored in previous work. This report computes ACQI connectivity scores for 462 U.S. airports for each year from 2007-2012; the ACQI scores for these airports are available in several appendices.

Similar to the capacity reductions in flights and seats discussed in Wittman and Swelbar (2013), medium-hub and small-hub airports suffered the greatest losses in connectivity over the last six years. ACQI connectivity scores at medium-hub airports fell by 15.6% on average between 2007 and 2012, compared to a 11.0% decline in connectivity at small-hub airports and a 3.9% decline at large-hub airports. The decline in connectivity can be attributed to airlines cutting capacity and destinations as a result of challenging macroeconomic events and more restrictive capacity management strategies.

It should be noted, however, that percentage changes in connectivity at most airports were less than percentage changes in flights or available seats. This suggests that some of the service cuts as a result of recent "capacity discipline" strategy did not directly harm connectivity, but instead removed redundant flying to secondary hubs. At many small airports, removing a flight to a secondary hub would not result in a substantial loss in connectivity as long as flights to other, larger connecting hubs remain. However, connectivity at the secondary hubs themselves (which are often medium-hub airports) was adversely affected over the last six years. Future changes in connectivity in the United States will largely depend on whether the capacity discipline equilibrium remains in place or if a new capacity management paradigm evolves in response to ongoing changes to the structure of the U.S. airline industry.

Introduction

As described in the first paper in the MIT Small Community White Paper Series (Wittman and Swelbar 2013), the U.S. air transportation system has undergone a series of changes in response to the financial crisis of 2007-2009, high fuel prices, and a new wave of profitability-focused "capacity discipline" airline management strategies. More than 14.3% of yearly scheduled domestic flights were cut from the U.S. air transportation network from 2007-2012, mostly due to actions of the network carriers. Smaller airports were disproportionally affected by the cuts in service, losing 21.3% of their scheduled domestic flights as compared to an 8.8% decline at the 29 largest U.S. airports.

However, simply examining gains or losses in flight volumes does not provide a complete picture of the strength of commercial air service at an airport. For instance, many smaller airports lost service from network carriers from 2007-2012 but saw new service from ultra-low cost carriers (ULCCs) like Allegiant Air or Spirit Airlines. These ULCCs typically serve vacation destinations and offer limited connecting service to other U.S. airports or the global air transportation network. The small airports that lost network carrier service only to receive replacement service from ULCCs may not have seen significant decreases in flight volumes, but their connectivity was likely adversely affected.

An airport's connectivity to the global air transportation network is challenging to measure because it cannot be observed directly through published statistics. There currently exists no industry-standard metric to measure airport connectivity. Any such connectivity metric should be easy to compute and understand, but robust enough to measure changes in the airport's quantity or quality of service. Previous attempts at defining connectivity metrics have often not taken into account the quality of connecting destinations, been too complex for non-technical audiences to understand and adopt, and have often included no analysis of connectivity at smaller airports.

In this discussion paper, we propose a new, intuitive model of gauging an airport's level of connectivity to the global air transportation network that attempts to correct for these deficiencies in the current practice. The Airport Connectivity Quality Index (ACQI) metric is easy to compute and understand while taking into account the relative value of flights to large connecting hubs vis-à-vis flights to smaller destinations. The ACQI allows for comparison of airports across categories such as geographic region or airport size. It also allows for time-series analysis of a single airport to measure the impacts of changes in airline network strategies on connectivity. Additionally, the analysis in this paper pays particular attention to connectivity at smaller U.S. airports instead of focusing exclusively on the largest airports. In all, connectivity scores are computed for 462 U.S. airports on a yearly basis from 2007-2012; the scores for each airport are available in an appendix.

The remainder of the paper is structured as follows: first, a literature review is conducted to examine the current state of the practice in connectivity and accessibility modeling. The goals of the Airport Connectivity Quality Index are then introduced, followed by the specification of the model itself. After verifying that the model satisfies the goals, connectivity scores are computed for 462 U.S. airports. Results are discussed by airport size group, and the relationship between capacity discipline and connectivity is explored. Appendices containing connectivity scores for all airports conclude the paper.

Review of Existing Connectivity Literature

When examining the airport service quality literature, it is important to draw a distinction between models that examine *accessibility* versus models that examine *connectivity*. As Jenkins (2011) suggests, connectivity can be thought of as a supply-side measure that defines how well-integrated a specific **airport** is into a larger network. On the other hand, accessibility can be seen as a demand-side measure that captures how easily passengers in a specific **region** are able to access air transportation, as well as the quality of the service that can be accessed from a specific location. For instance, a connectivity model might look at an airport's level of service to the global air transportation network, whereas an accessibility model might examine the air transportation choices for a passenger in a particular census tract. In some ways, accessibility models might be seen as geographic extensions of connectivity models.

This literature review will examine recent advancements in both accessibility and connectivity modeling.

Accessibility modeling

A common argument for the use of demand-side accessibility models instead of supply-side connectivity models is that connectivity models include itineraries that are too expensive or cumbersome for passengers to actually purchase. Therefore, instead of schedule data, accessibility models often rely on *passenger* data from airline global distribution systems (GDS) or the U.S. Bureau of Transportation Statistics DB1B ticket sample database to complete their analyses. In this way, these models consider only itineraries that were actually purchased, instead of all itineraries that are available. A model by Grubesic and Zook (2007) is an example of this type of analysis, as it uses GDS data to map average ticket cost and itinerary composition (number of connections) across the United States to create a model of accessibility based on average price. However, since the authors use GDS data instead of actual passenger booking data, they may still overstate availability of costly or onerous itineraries since all available itineraries would be considered, instead of just those that were actually booked.

In his MIT masters' thesis, Jenkins (2011) uses actual passenger booking data from the BTS DB1B ticket sample database to compute a "Path Quality Index" (PQI) for several hundred U.S. airports. The PQI captures the quality of each origin-destination (O/D) pair in the DB1B data by weighting the percentage of non-stop, one-stop, and two-stop itineraries taken by actual passengers between those two airports. While this model considers only the routes that passengers actually flew and measures relative service quality on each of those routes, it does not assess the relative quality of the destination and may miss possible itineraries that customers do not fly simply due to low demand (for instance, a potential connecting itinerary between two very small airports).

A seminal study of geographic "locational accessibility" to air transportation in the United States was conducted by Matisziw and Grubesic (2010). Using airline schedule data, the authors computed accessibility for individual census tracts based on the distance to the nearest airports and the number of connections necessary to reach a destination from each airport. They mapped accessibility for each of 64,855 U.S. Census tracts and 431 commercially served airports. This model incorporates distance and other important geographic considerations and creates a valuable list of most and least accessible U.S.

counties, allowing for analysts to consider variations in accessibility between geographic regions. However, the relative quality of connecting destinations was again not taken into account in the Matisziw and Grubesic model—that is, an additional flight to a small, poorly-connected airport was assumed to be as equally valuable as a flight to a well-connected hub airport.

Unlike the connectivity literature described below, the accessibility literature has spent a great deal of attention on the availability of commercial air service at small communities. A recent series of papers by Grubesic and Matisziw (2011), Matisziw, Lee, and Grubesic (2012), Grubesic, Matisziw, and Murray (2012), and Grubesic and Wei (2012) has examined accessibility in small community air service in the United States, with a specific focus on the Essential Air Service (EAS) program, which provides federal subsidies to induce commercial air service in selected small communities in the United States. This series of papers provides a valuable geographic perspective on the factors that influence flight performance at EAS airports, the efficiency of the EAS program, and the identification of potentially redundant EAS airports that could be cut from the subsidy program.

Connectivity modeling

Recent attempts to model airport connectivity can be divided into roughly three categories of research approaches: network theory models that rely on relatively more complex mathematical methodologies; temporal sensitivity models that build itineraries using schedule data to take into account minimum connection times and circuity; and more simple models that Arvis and Shepherd (2011) refer to as "intuitive metrics."

Network Theory Models

As a natural network with well-defined nodes (airports) and arcs (flights), it is intuitive to model the air transportation system using topology and mathematical graph theory. Some of the earliest approaches to connectivity modeling have done exactly that. In one of the first attempts at gauging the connectivity of the U.S. air transportation network, Ivy (1993) constructed origin-destination matrices and used graph theory concepts and linear algebra to measure the connectivity for the largest hub airports in the United States. Later work by Guimerà et al. (2005), DeLaurentis et al. (2008), Xu and Harriss (2008), Wang et al. (2011), and Arvis and Shepherd (2011) have also used graph theory to construct topological networks of the global air transportation system and measure the mathematical qualities of these networks in various countries.

The Arvis and Shepherd paper, published by the World Bank, has received some recent attention. Arvis and Shepherd use flight schedule data and gravity modeling—a traditional form of transportation modeling that takes into account the relative size of origin and destination points and their abilities to attract traffic—to carefully construct an "Air Connectivity Index" (ACI). However, some of the results of the Arvis and Shepherd ACI analysis are unusual: for instance, the United States, which is arguably the country with the most developed and connected air transportation network, is given what the authors describe as a "fairly low" ACI score.

This is because the Arvis and Shepherd model is most focused on international connections, and not domestic connections. To meet the global policy goals of the World Bank, the ACI measures only how

well connected individual *countries* are to the global air transportation system. It would be desirable to apply some of the concepts from the Arvis and Shepherd model to measure the connectivity of individual *airports* within a country.

These papers typically analyze the air transportation network as a theoretical mathematics problem only, often failing to account for the competitive forces within the airline industry that can give rise to different patterns of connectivity. Due to the complexity of the network theory metrics or high data requirements, these papers also generally provide connectivity scores for only a single year, making it challenging to examine how connectivity has changed over time.

Temporal Sensitivity Models

Arguably the most robust method to examine air transportation connectivity is to examine only those connections that are reasonable or feasible for a passenger to take. In other words, potential itineraries that involve lengthy layovers or unreasonably small connection times should be excluded in the computation of any connectivity metric, if possible. However, to actually exclude these unreasonable itineraries requires detailed schedule data and an algorithm for constructing feasible passenger trips.

The temporal sensitivity models of Veldhuis (1997), Bootsma (1997), Burghouwt and de Wit (2005), and others use time-of-day schedule data and "minimum connection time" rules to construct itineraries for passengers at individual airports. The quality of the available itineraries is then compared across airports to compute that airport's connectivity score. The approaches for constructing itineraries vary across these papers; in a thorough literature review, Burghouwt and Redondi (2013) provide a more detailed overview of many temporal sensitivity models. Redondi et al. (2013) have also applied a temporal sensitivity model to compute the change in travel time (and associated monetary cost) of closing small airports in Europe.

While the temporal sensitivity models appear to be a more robust method of computing connectivity as compared to models that use daily or weekly schedule data, these models do have some downsides. Constructing feasible itineraries requires the use of much more detailed datasets, making these models harder to generalize across hundreds of airports in a country, or across multiple years of schedule data. Airline schedules change frequently, making it unclear which days or weeks to select for the itinerary construction. Additionally, it is unclear whether the additional effort to construct feasible itineraries with time-of-day schedule data actually leads to a more informative metric than using daily schedule data alone; the latter approach may include some infeasible itineraries, but the effect of these itineraries on final connectivity scores is likely minimal.

"Intuitive Metrics"

A final category of connectivity metrics falls into a group that Arvis and Shepherd (2011) refer to as "intuitive metrics." These models are often simpler than the network theory and temporal sensitivity metrics, but possess some attractive features. Using a simpler model reduces the data requirements necessary for computing connectivity, making it easier to create connectivity scores for many airports across a number of years. The models are also easier to understand for readers without mathematical

training, and can make more sense when viewed in the context of the strategic decisions made in the airline industry.

The two most appealing intuitive metrics are those created by Pearce (2007) and Reynolds-Feighan and McLay (2006). Both of these metrics contain an essential characteristic that is missing in most network theory models: they measure not only the *quantity* of available service and destinations, but also the *quality* of those destinations. In other words, an additional flight to Hartsfield-Jackson International Airport (ATL) in Atlanta, GA, should be weighted as more valuable than an additional flight to a small airport, all else equal. This is because more connections can be made from Atlanta than the smaller airport to other points in the air transportation network, and because Atlanta is a comparatively more important economic destination for commercial air service.

Most of the previously described models would treat these two destinations as equal, but both the Pearce and Reynolds-Feighan/McLay models include weighting terms that increase connectivity for airports that serve many "valuable" or highly served destinations. These models are computed by calculating the product of some capacity measure (such as available seats per week) and a weighting term for each destination, and then by summing up the scores for all destinations served from a specific airport.

While the simplicity and elegance of the intuitive metrics is appealing, the models by both Pearce and Reynolds-Feighan/McLay have an important limitation: they consider only an airport's non-stop destinations when computing connectivity, neglecting connecting itineraries entirely. While this approach might make sense in limited contexts (such as when computing connectivity for airports that are only served by ultra-low cost carriers, on which passengers generally fly only point-to-point), the advantages of nonstop service to a hub airport are lost when connecting traffic is not considered.

Moving Forward: A New Intuitive Metric

This paper aims to improve on the current state of the practice by introducing a new intuitive metric for connectivity that takes into account the possibility of connecting itineraries. The model retains the benefits of the existing intuitive metrics, as it is easy to compute and apply across many airports and many years of data. Destinations are also weighted by quality, meaning that an additional flight to a smaller airport is worth comparatively less than a flight to a large hub airport. Since the metric is easier to understand than those relying on mathematical graph theory, it is more likely to inform the policy debate.

Furthermore, the analysis of the model in the following sections is completed in the context of broader airline industry trends, helping to better explain the changes in connectivity at certain airports. Unlike much of the research described above (with the exception of the work by Jenkins, Redondi et al., and the many papers by Grubesic et al.), this paper focuses specifically on the changes in connectivity at smaller airports instead of exclusively analyzing the largest hub airports in the U.S.

Introducing the ACQI Model

Model goals

A useful approach for developing a model of airport connectivity is to construct a simple air transportation network and to consider what changes to the network should increase or decrease an airport's connectivity to the rest of the network. For instance, consider the simple air transportation network in Figure 1. We wish to examine the connectivity of the red airport A, which currently has two flights per day to a small airport G and two flights per day to a large hub airport H. Connecting service is available from H to four additional small airports, labeled 1-4.

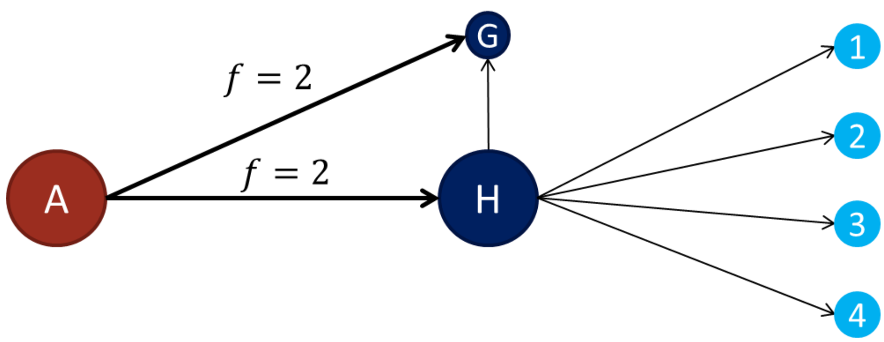

Figure 1: A simple air transportation network

What changes to the network should increase the connectivity of airport A? Clearly, if an airline increases the number of flights per day to one of the destinations that airport A already serves, A's connectivity should increase because passengers now have more time-of-day options to reach that destination. For instance, in Figure 2, the number of flights from airport A to airport H has increased from two to four. This should increase airport A's connectivity score.

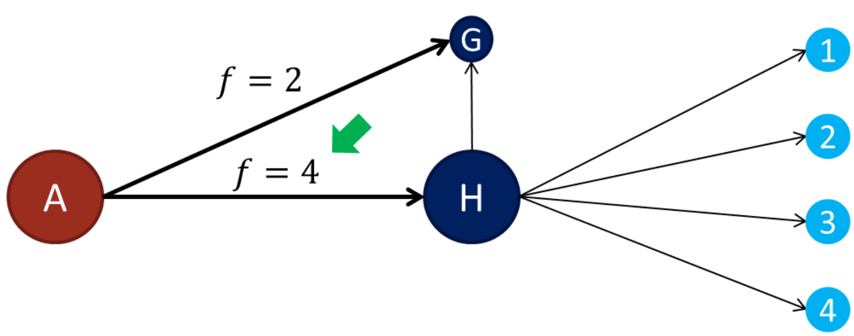

Figure 2: Increasing connectivity by increasing flights to existing destinations

Connectivity at airport A should also increase if more connecting destinations are available in the network. For instance, if an airline introduces service from the hub H to an additional small connecting destination (labeled 5 in Figure 3), Airport A's connectivity should increase. This scenario is shown in Figure 3. Note that the magnitude of the increase in connectivity should depend on the quality of the

new destination. For instance, new connecting service to London should be "worth" more to an airport than new connecting service to a small U.S. city. In this case, the new destination in Figure 3 is a small airport, so the connectivity gains for airport A would be relatively minimal.

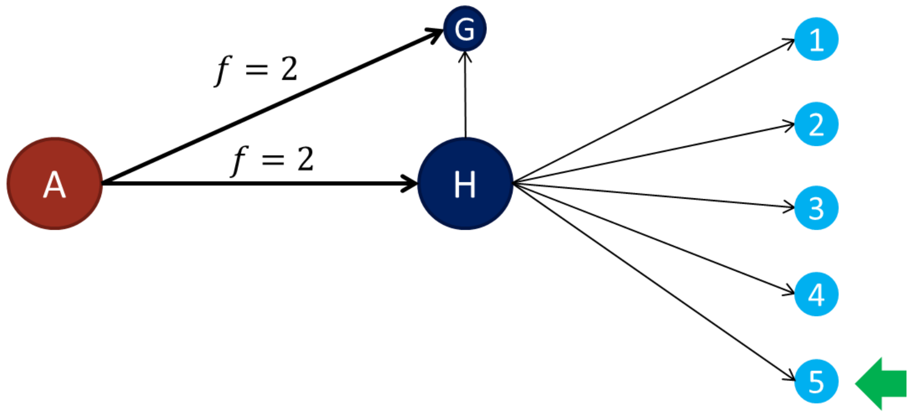

Figure 3: Increasing connectivity by adding a one-stop destination

Finally, connectivity would increase if service to a new nonstop destination is introduced from airport A. Once again, the magnitude of the increase would be related to the quality of the destination and the number of daily flights serving the new destination. It is possible that a new non-stop destination will also allow the possibility of connecting flights to airports that were not previously available. For instance, consider the potential gains in connectivity for a small airport that previously had non-stop United Airlines service to Newark, NJ, if a new United Airlines flight to Denver, CO, was added. The new flight to Denver would allow for connections to many smaller west coast cities that would not have been served directly from Newark.

Figure 4 extends our simple network by introducing a new daily flight to large airport K. Note that connecting service to airport 5 is available through the new destination K. Yet in this case, no net connecting destinations are added, since airport 5 is already served via connecting service from hub H.

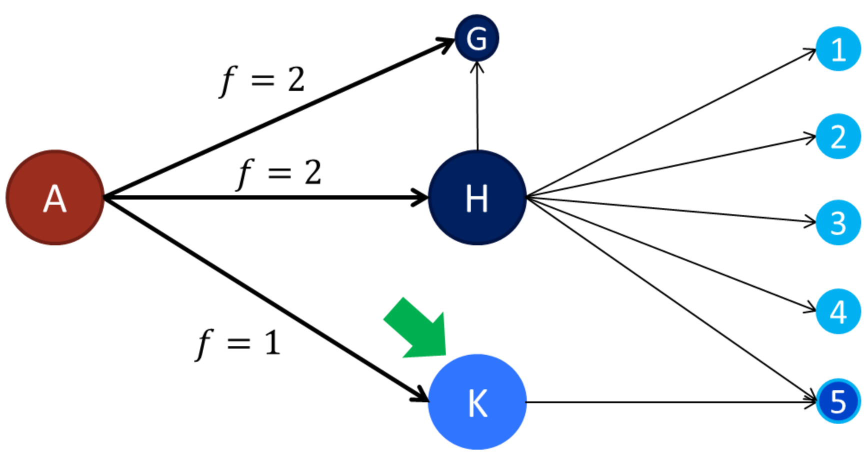

Figure 4: Increasing connectivity by adding a new non-stop destination

To summarize, an airport's connectivity should increase if:

- More flights per day are offered to an existing destination (as in Figure 2);
- The connecting opportunities from current nonstop destinations increases (i.e., more connecting service is available from an existing destination, as in Figure 3);
- The number of non-stop destinations increases (as in Figure 4); or
- The quality of destinations increases (for instance, a flight to a new Large Hub destination should be more valuable than a new flight to a small, Essential Air Service airport).

The Airport Connection Quality Index was constructed to ensure that any of the changes listed above to an airport's level of service would increase that airport's connectivity score within the model.

Model definition

We will first define some notation. Let *A* be a set of origin airports and *H* be a set of airport types. For instance, the set of airport types might include large hub, medium hub, small hub, non-hub, Essential Air Service, and international airports.[1]

Then the Airport Connectivity Quality Index (ACQI) score for an airport $a \in A$ is:

$$ACQI_a = \sum_{h \in H} f_{a,h} d_{a,h} w_h + \alpha \sum_{h' \in H} d'_{a,h'} w_{h'}$$

where:

- $\boldsymbol{f_{a,h}}$ is the average number of daily scheduled flights per destination from airport *a* to airport type *h*
- $\boldsymbol{d_{a,h}}$ is the number of nonstop destinations of type *h* served from airport *a*
- $\boldsymbol{d'_{a,h}}$ is the number of **online** or **codeshare** connecting destinations[2] of type *h* served from airport *a*
- $\boldsymbol{w_h}$ is a weighting factor based on the quality of airport type h
- $\boldsymbol{\alpha}$ is a scaling factor that weights the importance of nonstop destinations vs. one-stop destinations

In words, the connectivity score can be represented as:

$$ACQI_a = (Quality\ of\ nonstop\ service) + Scaling\ Factor * (Quality\ of\ connecting\ service)$$

It is easiest to understand the ACQI equation by looking at each term separately. The first term captures an airport's level of non-stop service, and is computed by multiplying the average number of daily scheduled flights (per destination) to airports of a certain type by the number of destinations served of that type. This product is then multiplied by a weighting term, such that an additional flight to a large

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[1] The FAA classifies each primary commercial service airport in the United States into one of four "hub types" based on their level of enplanements in the previous year. The hub types are large hub, medium hub, small hub, and non-hub. Note that in this context, "hub" refers only to the airport's position as an important link in the air transportation network and does not reflect an airport's status as a connecting hub for a major airline. For instance, Indianapolis International Airport (IND) is defined as a "medium hub," even though IND is not a connecting hub for any major airline.

[2] Airports served via both nonstop and connecting service are counted as nonstop destinations only.

hub is more valuable than an additional flight to a small hub, for instance. This computation is done for each airport type and then summed to yield the total non-stop connectivity score.

The second term captures an airport's quality of connecting service. It is computed by multiplying the number of one-stop online or code-share connecting destinations served of each airport type by a weighting term $\boldsymbol{w_h}$ and then summing these terms across airport types. This product is then multiplied by a scaling term α, which weights the relative importance of a non-stop versus a one-stop destination. For instance, if α = 1, an additional non-stop destination would be as equally valuable as an additional connecting destination. Adding this term to the first term yields the airport's total connectivity score.

This formulation of the ACQI model meets each of the connectivity model goals listed earlier. An airport's ACQI score would increase if more flights are offered to an existing non-stop destination (i.e. $f_{a,h}$ increases); if the number of non-stop destinations increases (i.e. $d_{a,h}$ increases); if more connecting service is available from an existing nonstop destination (i.e. $d'_{a,h'}$ increases); or if the quality of existing nonstop or connecting destinations increases (resulting in a change in w_h or $w_{h'}$).

Selecting Parameters for the ACQI Model

The ACQI model is a function of two parameters: the w_h terms, which reflect the relative quality of a destination airport, and α, which weights the importance of one-stop versus non-stop service. The values of these parameters can change the analytical results of the model, so sensitivity analysis will be important to any outputs of the ACQI model.

The w_h weighting terms were computed using average enplanements at each FAA airport hub type as a proxy for the economic, social, cultural, and political importance of each destination. The w_h values were calculated by finding the average 2011 enplanement levels for each airport type, and then computing a ratio of each type's average enplanement level to the large hub average enplanement level. This method resulted in the following weights:

Airport Type	Weight w_h
Large Hub	1.0
Medium Hub	0.21
Small Hub	0.05
Non-Hub/Essential Air Service	0.01
International	1.0

Table 1: w_h weighting terms for the ACQI model

From these weights, we can observe that on average, a medium hub airport enplaned 21% of the passengers in 2011 of an average large hub airport. Similarly, a small hub airport enplaned about 5% of the passengers of a large hub airport in 2011, on average. Note that international destinations were assigned a weight of 1.0 to reflect the importance that international service plays in the U.S. air transportation system.

The scaling factor α was selected based on the literature regarding the Quality Service Index (QSI), a model used by airlines to compute market share based on path quality. Used in predicting which of

many itineraries a customer will select based on each itinerary's attributes, the QSI model has historically assumed a discounting factor for one-stop or connecting service as compared to nonstop service between two airports. That is, a connecting itinerary is seen as less valuable to a potential passenger than a nonstop itinerary.

The exact scale of this parameter has varied in different QSI models, but has generally fallen between 0.03 and 0.2, according to Jenkins (2011). This would indicate that a non-stop itinerary would be between five and thirty-three times more valuable than a connecting itinerary. However, much of the work on the QSI model was done in the 1980s and 1990s, when non-stop itineraries were common and connecting itineraries were relatively rare. Since past work has shown that direct service between smaller airports has generally been replaced by more service to connecting hubs (Wittman and Swelbar 2013), a value of α that is in the higher range of these values seems to be appropriate. To wit, Emrich and Harris (2008) recently suggested that a non-stop itinerary is "up to eight times more valuable" than a connecting itinerary. Following this logic, an α value of 0.125 has been used in the ACQI model.

Sample Computation of ACQI Score

Suppose that we wish to compute the ACQI score for a small airport at which the only non-stop service is two flights per day to a nearby large hub. At the large hub, onward connections are available to 20 other large hubs, 30 medium hubs, and 50 small hub airports. Then, assuming the weights and scaling factor described in the previous section, this airport's ACQI score would be:

$$\boldsymbol{ACQI_a = \underbrace{(2 * 1 \ * 1.0)}_{\text{Quality of non-stop service}} + \underbrace{0.125 * \big((20 * 1.0) + (30 * 0.21) + (50 * 0.05)\big)}_{\text{Quality of connecting service}} = 5.6}$$

As is shown above, the quality of this airport's nonstop service is computed by multiplying the average daily flights per day to each airport type by the number of nonstop destinations of that airport type and the weighting factor for that airport type. The quality of connecting service is computed by multiplying the number of connecting destinations of each hub type by the appropriate weighting factor, summing these products, and multiplying the sum by the scaling factor α. This results in an ACQI score for this airport of 5.6.

With a score of 5.6, this small airport would have limited connectivity to the global air transportation network. Table 2 provides a rule of thumb for judging an airport's connectivity based on its ACQI score:

ACQI Score Range	Connectivity Quality
0 - 10	Limited connectivity
10 - 50	Moderate connectivity
50 - 150	Good connectivity
> **150**	Excellent connectivity

Table 2: Connectivity quality by ACQI score range

Computing ACQI Scores for U.S. Airports

Data sources

ACQI scores for each of 462 U.S. airports from 2007-2012 were computed using schedule data from the Diio Mi Market Intelligence Portal. The Diio Mi data is sourced from Innovata SRS, which provides up-to-date schedule data for 99% of airlines worldwide.[3] The Diio Mi schedule data includes information about marketing airline, origin, destination, equipment, and number of scheduled flights, seats, and ASMs in a requested period. For the computation of the ACQI score, data was aggregated on a yearly basis (January – December) for each year between 2007 and 2012. Flights that were scheduled fewer than 12 times per year (i.e., less than monthly) were treated as extraneous and removed from the dataset.

Data was collected for all airlines, domestic and international, with scheduled flights from the United States. Code-share connecting destinations were included by grouping appropriate airlines into each of the three major alliances: Star Alliance, Skyteam, and Oneworld. Alliance definitions are current as of March, 2013. However, for data management reasons, schedule data were not loaded for flights originating *outside* of the United States. For instance, if a passenger at JFK were flying an itinerary to Stuttgart, Germany (STR) via Frankfurt, Germany (FRA) on Lufthansa, the ACQI model would capture Frankfurt as a nonstop destination but would not capture Stuttgart as a connecting destination. This may make a difference for larger airports with many nonstop international flights, but since the ACQI model only considers one-stop connecting itineraries, this is less of a concern for smaller airports with fewer direct international flights available.

ACQI Score Overview

Figure 5 shows the average ACQI score in 2007 and 2012 for each airport hub type.

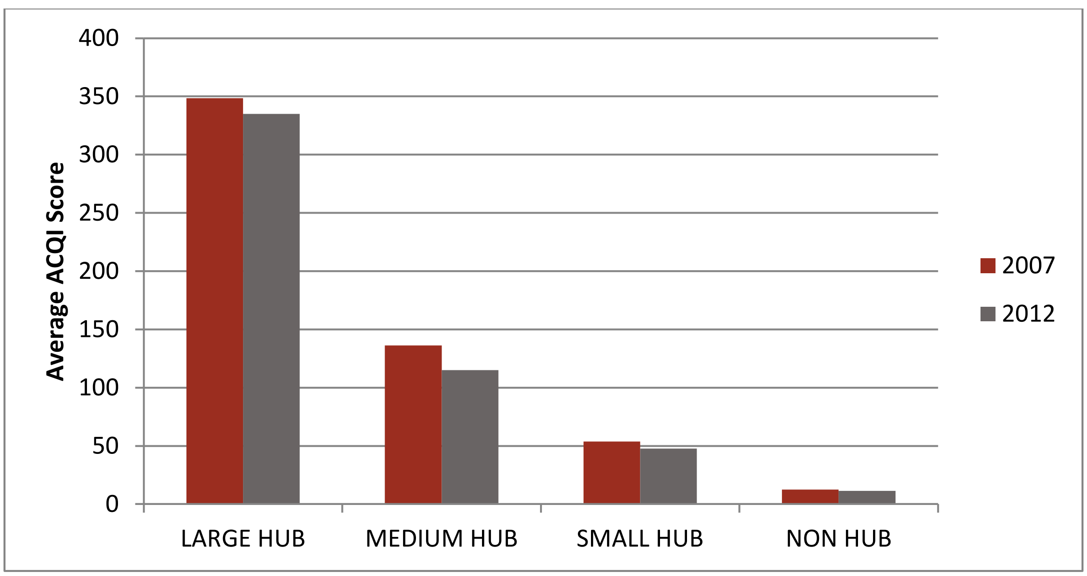

Figure 5: Average ACQI score by airport hub type

[3] http://www.innovata-llc.com/data/data.html

Figure 5 provides some insight into the relative differences in connectivity scores between airport types. In 2012, large-hub airports were roughly three times more connected than medium-hubs, six times more connected than small-hubs, and about fifteen times more connected than non-hubs. Each of the top 25 most connected airports in the U.S. in 2012 was a large hub; Table 3 summarizes the ten most connected airports in the United States in that year, a full list of ACQI scores is available in the appendix.

Airport	ACQI Score (2012)	Rank (2012)
ORD : O'Hare International	**624.47**	1
ATL : Hartsfield Intl	**606.93**	2
LAX : Los Angeles Intl	**565.59**	3
DFW : Dallas/Ft Worth Intl	**457.26**	4
JFK : John F Kennedy Intl	**428.01**	5
SFO : San Francisco Intl	**414.31**	6
DEN : Denver International	**412.48**	7
EWR : Newark Intl	**395.82**	8
IAH : Houston Intcntl	**384.87**	9
LGA : La Guardia	**371.19**	10

Table 3: Top ten most connected airports in the U.S. in 2012

Figure 5 also shows the change in ACQI score for each hub type from 2007 to 2012, after the effects of the economic slowdown, high fuel prices, and capacity discipline began to appear in the U.S. air transportation system. The average ACQI score fell for each airport hub type during the study period, suggesting that airport connectivity as a whole in the United States has declined during the events of 2007-2012. However, just as capacity discipline strategies were not applied evenly across all airport types, all U.S. airports did not feel the reduction in connectivity equally. Table 4 shows the percent change in connectivity for each airport type over the study period, and the next sections will discuss in detail the differences in connectivity changes at large-, medium-, small-, and non-hub airports.

Airport Type	% change in ACQI 2007-2012
Large Hub	-3.9%
Medium Hub	-15.6%
Small Hub	-11.0%
Non-Hub/EAS	-8.2%
Smaller Airports	**-12.8%**
All Airports	**-8.3%**

Table 4: Percent change in ACQI (connectivity) score by airport type, 2007-2012

Connectivity at medium-hub airports fell the most between 2007 and 2012, with these airports' ACQI scores declining by 15.6% over those years. On the other hand, large hub airports did relatively well, only losing 3.9% of their connectivity over the same period. In all, connectivity declined by 8.3% across all airports in the United States between 2007 and 2012, compared to a 12.8% decline in connectivity at smaller airports alone during those years.

Changes in connectivity at large-hub airports

Figure 6 shows how the average ACQI score at large-hub airports changed between 2007 and 2012.

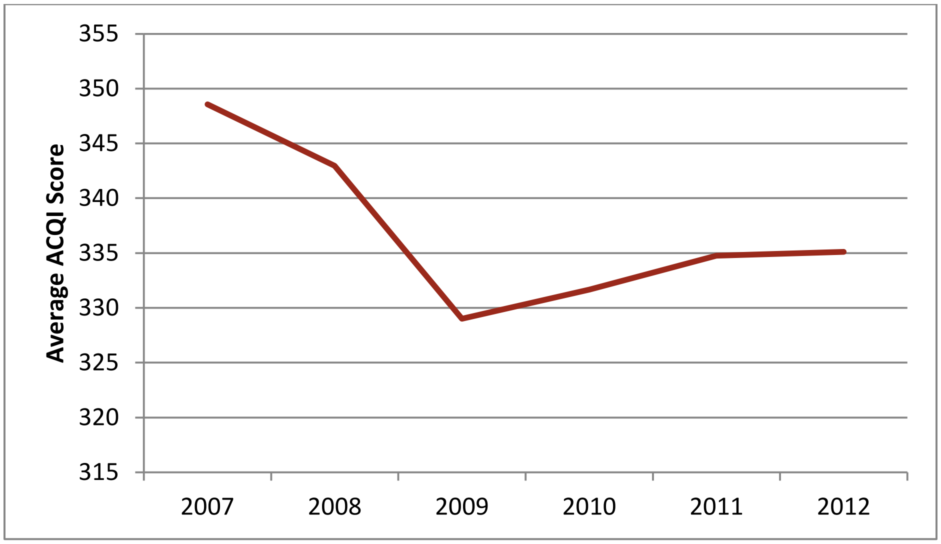

Figure 6: Average ACQI score for large hubs, 2007-2012

The average ACQI score for large hubs declined from 348.55 in 2007 to a low of 329.01 before recovering to 335.10 by 2012. The effects of recent macroeconomic events and industry strategies can be seen in the "v-shaped" pattern of the average ACQI score. The decline in connectivity from 2007-2009 can be associated with the beginning of the U.S. recession and the transition to a period of high and unstable fuel prices. These factors caused airlines to cut capacity across the air transportation system, resulting in a decline in connectivity. Fueled by increased airline consolidation at larger airports, large hubs recovered slightly from 2010-2011, but the effects of airline capacity discipline strategies limited the rebound and caused connectivity to remain essentially unchanged between 2011 and 2012. This "v-shaped" pattern is common among large hub airports and can be seen when examining changes in connectivity or capacity at many of the largest airports in the United States.

Large hub case study: SFO shows impressive growth

For each of the airport hub types, we will examine an airport that either typifies the changes in connectivity common among airports of that type or presents uncommon behavior that is worth exploring in depth. For instance, while most large hub airports lost connectivity between 2007 and 2012, there were four large hubs at which connectivity improved during those years. The most salient example is San Francisco International Airport (SFO). Despite an average 3.9% decline in ACQI among large hub airports, SFO's ACQI score increased by 22.8% between 2007 and 2012. Table 5 summarizes the changes in SFO's connectivity score over the last six years, as well as the number of nonstop and one-stop destinations served from SFO during those years.

Year	2007	2008	2009	2010	2011	2012
ACQI Score	337.47	370.94	363.70	368.17	388.12	414.31
Nonstop destinations	96	104	100	103	106	109
One-stop destinations	470	462	444	444	418	421

Table 5: ACQI scores and destinations served from SFO, 2007-2012

As Table 5 shows, San Francisco's increase in connectivity over the last six years was mostly as a result of an increase in nonstop destinations served, coupled with additional capacity to other large hub airports as a result of service consolidation. The reduction in one-stop destinations is typical among large hub airports, since adding nonstop service to a new airport will result in the removal of that destination as a one-stop destination in the model.

As we will see in the next section, San Francisco's increase in connectivity came at the expense of nearby medium-hub airports in Oakland, CA, (OAK) and San Jose, CA (SJC). This pattern has repeated itself in several multi-airport regions, including Boston, Los Angeles, and Phoenix. Secondary airports have started to lose service as a result of Southwest Airlines cutting services at those airports and network carriers consolidating their flights at large hubs within the region. This is one of the most important factors driving the significant loss of connectivity at medium-hub airports over the last six years.

Changes in connectivity at medium-hub airports

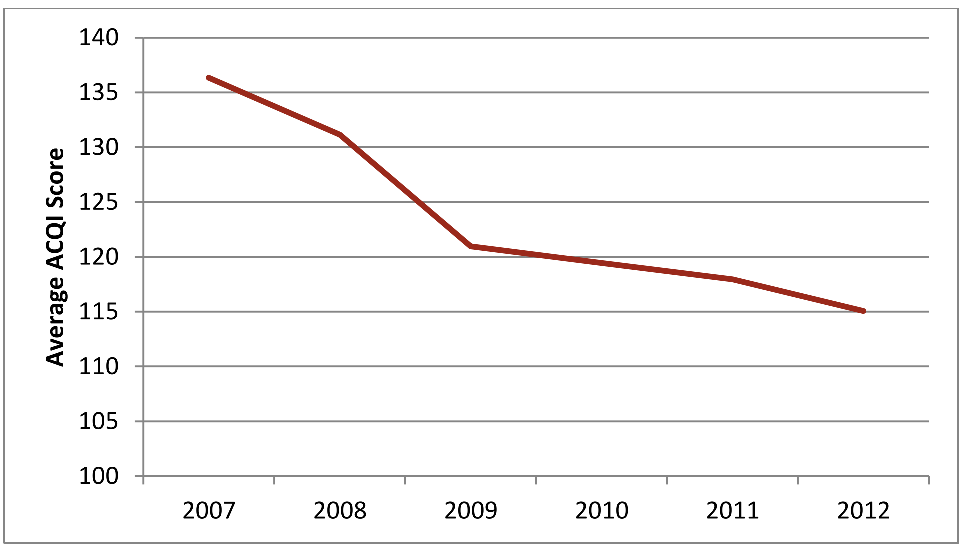

Figure 7: Average ACQI score for medium-hub airports, 2007-2012

As Figure 7 shows, the pattern of connectivity of medium-hub airports is different than that of large-hub airports. While both large-hubs and medium-hubs lost connectivity during the economic slowdown of 2007-2009, medium-hub airports did not undergo the same recovery in 2010 and 2011 that large-hub airports did. Instead, connectivity at medium-hubs continued to fall after 2010 as a result of capacity discipline strategies that targeted these airports as a primary focus for service reductions.

Case study: TUS typifies the challenges faced by medium-hubs

From 2007-2011, Tucson International Airport (TUS) in Tucson, AZ, was classified as a medium-hub. TUS had enjoyed relatively strong growth in Southwest Airlines service in the early 2000s as the airline attempted to build TUS as a secondary airport in the Arizona Sun Belt. At the same time, other network carriers began to exit TUS, as they were unable to compete on frequency or price with Southwest.

However, once Southwest's cost advantages through fuel hedging and low crew costs started to slowly evaporate in the late 2000s, even Southwest started to cut service to TUS and other medium-hubs, adding to service reductions by the network carriers. With the set of nonstop destinations out of TUS shrinking, passengers living in Tucson became accustomed to making the two-hour drive to take a direct flight from Phoenix Sky Harbor International Airport (PHX) in Phoenix instead of purchasing a connecting itinerary that left from TUS. Airport managers at TUS have struggled to attract airlines or passengers alike to fly from the airport (Hatfield 2012), and connectivity has suffered. Table 6 shows the decline in connectivity and nonstop destinations at TUS from 2007 through 2012.

Year	2007	2008	2009	2010	2011	2012
ACQI Score	94.30	91.07	78.69	80.02	77.58	74.66
Nonstop destinations	29	30	16	15	16	16
One-stop destinations	444	459	412	408	408	401

Table 6: ACQI scores and destinations served from TUS, 2007-2012

As the table shows, TUS lost nearly half of its nonstop destinations over the last six years, along with nearly 20 points of its ACQI score. In the most recent FAA hub definitions released in late 2012, TUS was reclassified as a small hub, emphasizing how much capacity has been cut from TUS in recent years. This phenomenon at TUS, as well as similar patterns at current or former medium-hubs OAK and SJC (near SFO), ONT (near LAX), and MHT and PVD (near BOS) suggests that today's medium-hubs will likely begin to functionally resemble small-hubs in size, service, and level of connectivity over the next five years.

Changes in connectivity at small-hub airports

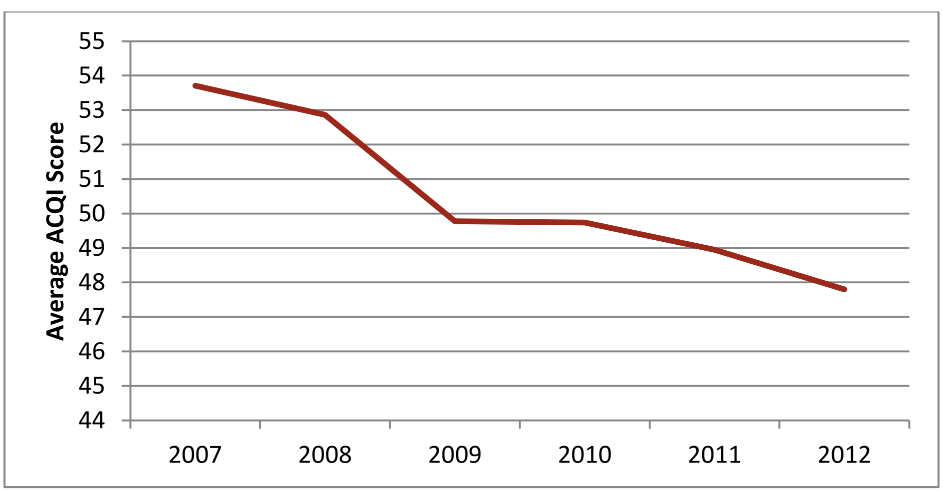

Figure 8: Average ACQI score for small-hub airports, 2007-2012

Small-hubs have also been hit hard by airline capacity discipline. As with medium-hub airports, small-hubs are retaining their scheduled domestic service to large-hubs (albeit at reduced frequencies) while losing direct service to other smaller destinations. Much of this previous point-to-point service between nearby smaller airports has started to disappear as the network carriers and Southwest continue to consolidate service at their hubs. However, the number of destinations reachable with a one-stop connecting itinerary has increased over the last six years at many airports.

Small-hub case study: moderate decline in service at TUL

Year	2007	2008	2009	2010	2011	2012
ACQI Score	78.11	75.95	70.71	73.63	72.77	71.50
Nonstop destinations	23	25	18	18	18	18
One-stop destinations	420	440	425	438	441	441

Table 7: ACQI scores and destinations served from TUL, 2007-2012

Like many small-hub airports, Tulsa International Airport (TUL) in Tulsa, OK, lost service to many nonstop destinations over the last six years. Nonstop destinations decreased from a high of 25 in 2008 to 18 in 2012. However, one-stop destinations accessible from TUL actually increased over the same period, reflecting an increase in the number of connecting options available from the airports that TUL serves nonstop. Yet overall, TUL's connectivity score fell by 8.5% despite its increase in connecting destinations. This is due in part to the low value of α in the ACQI model definition. If one-stop destinations were judged to be relatively more valuable in the model, airports like Tulsa could well see an increase in their ACQI score in a sensitivity analysis. For small changes in α, however, the model is robust in both the percent change in ACQI scores and the rankings of airports relative to their peers. That is, making small changes to the scaling factor results in relatively small changes to the model's results.

Changes in connectivity at non-hub and Essential Air Service (EAS) airports

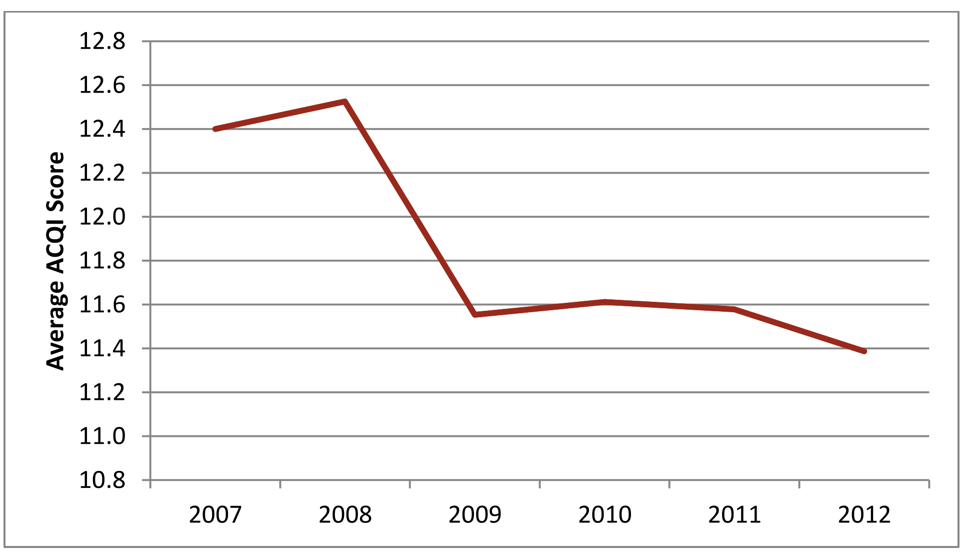

Figure 9: Average ACQI score for non-hub and Essential Air Service airports, 2007-2012

In the aggregate, fluctuations in connectivity at non-hub and Essential Air Service airports have been relatively minor compared to the significant decreases in ACQI at medium- and small-hubs. The average ACQI score at non-hub and EAS airports decreased by 8.2% from 2007-2012, compared to a 15.6% decline at medium-hubs and an 11.0% reduction at small hubs. This is likely due to federally mandated levels of air service at Essential Air Service airports; these airports have so far avoided the wide-spread capacity cutting that occurred at slightly larger airports.

However, the relatively flat slope of the aggregate ACQI score decline for non-hubs and EAS airports masks some significant changes in connectivity at individual airports. Some of these smallest airports were successful in luring one or more network carriers to start service between 2007 and 2012, increasing their connectivity by many multiples. Other small airports lost all network carrier service over these years, causing a devastating drop in connectivity to an ACQI score of 0 in some years. Many of these airports have been able to win back service in recent years, often from an ultra-low cost carrier like Allegiant Air or Spirit Airlines. However, the resulting level of connectivity with ULCC service is often less than with network carrier service, since ULCCs generally provide point-to-point service to vacation destinations with few connecting itineraries available. The appendices of this report show how some airports gained or lost significant portions of their connectivity score throughout the last six years, highlighting the volatility that small airports face and the importance of each and every flight and destination in maintaining attractive levels of connectivity for potential passengers.

Non-hub case study: entrepreneurial growth in service at COU

In 2007, Columbia Regional Airport (COU) in Columbia, MO, appeared like many other small airports. A US Airways affiliate provided Beechcraft service to in-state airports in Kansas City (MCI) and St. Louis (STL), from which only limited connecting service was available on Star Alliance partners to the rest of the United States. However, in 2011 and 2012, COU hired a consulting firm to aggressively campaign for additional service in future years (Zagier 2012). By offering a combination of revenue guarantees, waived landing fees, and exclusive radio advertising, COU was able to attract new American Airlines, Frontier Airlines, and Delta Air Lines service from COU to each airline's hub, starting in 2012 and 2013. The increase in connectivity for COU passengers has been substantial, as shown in Table 8.

Year	2007	2008	2009	2010	2011	2012
ACQI Score	2.07	5.10	5.30	5.02	4.56	14.85
Nonstop destinations	2	2	1	1	1	2
One-stop destinations	22	98	99	91	84	230

Table 8: ACQI scores and destinations served from COU, 2007-2012

Through their aggressive campaigning, COU was able to increase their connectivity eightfold, representing an increase of nearly 620% from its low in 2007. Additional service coming online in 2013 will likely continue to boost COU's connectivity. COU is a good example of a non-hub airport using an incentive-based strategy to attract or retain service. Airlines looking for new profitable routes have seemed willing to sample service in markets like COU as long as they have enough revenue guarantees to cover their bases. However, these airlines are usually equally willing to pull out of such small markets

if demand is not strong enough to maintain profitability. Hence, an incentive-based strategy can be a risky one for a small airport, as airlines are liable to quickly discontinue service if the economics are not there to support it. Airport managers may wish to consider adding length-of-tenancy requirements to new incentive packages to help ensure that airlines do not quickly enter and exit these airports.

For many small airports, a status quo of stagnant or dwindling service is enough incentive to take a gamble on revenue guarantees to lure in a new airline and see how local passengers will respond. It remains to be seen how Columbia, MO, passengers will react to additional service at their hometown airport, and whether they will start flying locally instead of driving hours to Kansas City or St. Louis for more direct options. In what is perhaps a hint at the answer to this question, Frontier Airlines decided in May 2013 to end their service from Columbia to Orlando after just six months of operation.

Capacity discipline and airport connectivity

As a final question, it is worthwhile to examine the extent to which capacity discipline in the form of reductions in scheduled domestic flights and available seats has directly impacted connectivity. If there is a direct correspondence between capacity discipline and connectivity, we should expect to see decreases in connectivity similar to the declines in flights and seats at these airports. Table 9 shows how the percentage change in ACQI compares to changes in capacity metrics like scheduled domestic flights and available domestic seats on those flights from 2007-2012.

Airport Type	% change in ACQI, 2007-2012	% change in seats, 2007-2012	% change in domestic flights, 2007-2012
Large Hub	-3.9%	-7.2%	-8.8%
Medium Hub	-15.6%	-21.4%	-26.2%
Small Hub	-11.0%	-14.3%	-18.7%
Non-hub/EAS	-8.2%	-9.9%	-15.4%

Table 9: Changes in connectivity and capacity by airport type, 2007-2012

For each airport type, the percent change in connectivity was significantly less than the percent change in both domestic seats and domestic flights over the study period. This suggests that a significant portion of the airlines' capacity discipline strategies did not directly decrease passengers' access to the global air transportation network, and instead involved cutting redundant service. Service could be called redundant if the connecting options from one hub overlap nearly completely with connection options from another hub that is already served. For instance, if passenger at a small airport can reach the same set of airports connecting on Delta service via Atlanta or Memphis, direct service to Memphis could ostensibly be cut without a large decrease in connectivity. In the aggregate, these repeated cuts of redundant service at "duplicate hubs" explain the large decrease in connectivity at Memphis, Salt Lake City, Pittsburgh, and Cincinnati over the last six years.

The table also shows the trend of upgauging aircraft, particularly in the regional jet (RJ) space as carriers shift from 50-seat to 76-seat regional jets. Since the percent change in seats was lower than the percent change in domestic flights at all airport types, we can infer that airlines were upgauging as they cut service, further limiting some of the impacts of capacity discipline on passengers.

Conclusions: Future Trends in Small Airport Connectivity in the U.S.

The Airport Connectivity Quality Index (ACQI) developed in this report provides a straightforward way to compare connectivity between multiple airports or at a single airport over a period of time. Airport managers and policy makers will likely be interested in examining the appendices of this report, which show how the connectivity scores and rankings of their local airports have changed over the past six years. In the aggregate, however, what trends can we extrapolate from the ACQI to anticipate changes in connectivity over the next five years?

Capacity discipline does indeed appear to be a dampening force on airport connectivity, particularly for smaller airports. On the whole, small community airports have struggled to gain back connectivity since airline capacity discipline started in earnest in 2011, as airlines kept domestic capacity deliberately restricted despite the start of macroeconomic recovery in the country and stability in fuel prices. Barring any significant positive or negative macroeconomic shock, the downward trend in connectivity at small- and medium-size airports will likely continue, but the pace will most likely slow as airlines have already removed most redundant flying from their networks. However, the American Airlines/US Airways merger could place further downward pressure on connectivity as schedule and route redundancies are removed from the combined airline's new network.

This assumes that airlines will continue to practice capacity discipline strategies by adding little net nonstop service over the next five years. However, the question certainly remains whether capacity discipline is a stable competitive equilibrium. In a game theoretic context, capacity discipline could be examined in a classic prisoner's dilemma construct. It would appear that individual airlines each have an incentive to deviate from the capacity discipline equilibrium and increase capacity in order to gain more market share and, ostensibly, increase profits. It is possible that in the near future, an airline will decide to bolster capacity in key markets, breaking with capacity discipline and perhaps causing other airlines to feel compelled to follow suit to avoid losing market share. However, if all airlines shift to a capacity expansion strategy, too much capacity will likely be introduced into the market, leading to lower profits across the industry.

In this outcome, connectivity at smaller airports would likely increase as airlines begin to compete once again on the sizes of their networks. However, this scenario currently appears unlikely. Airlines have been able to return to profitability as a result of capacity discipline, and as of early 2013 appear unlikely to break with the strategy in the near term in an effort to gain market share. Yet it only takes one airline making a move to add capacity to cause the entire equilibrium to destabilize.

Hence, we expect to see small community airport connectivity to continue to stagnate in the near future. Individual airports may, through clever packages of incentives, continue to induce airlines to provide new service, boosting connectivity on a case-by-case basis. However, only service that can prove itself to be profitable will remain a long-term part of the U.S. air transportation network. Airports that win new service should expect to see their connectivity continue to fluctuate as airlines evaluate the economic merits of the new flights and incentive packages.

Extensions of the ACQI model and resulting impacts on connectivity

The connectivity index described in this discussion paper is a simple model that aims to capture changes in airline capacity and destinations served over the study period. However, certain future extensions to the model may allow it to better reflect changes in airport connectivity. For instance, international destinations are currently all weighted equally at 1.0 each. This means that an additional direct flight to London Heathrow (LHR) is weighted as equally valuable as a direct flight to a vacation destination like Nassau, Bahamas (NAS) or to a smaller international city like Saskatoon, Saskatchewan (YXE). This may understate connectivity at larger airports that connect to large international cities and overstate connectivity at small airports with flights to international vacation destinations.

Hence, it may be desirable to extend the model to introduce a more nuanced weighing scheme for international flights. For instance, important international connecting hubs like LHR could be identified and weighted separately from smaller international destinations. Alternatively, Canadian airports could be assigned “artificial” U.S. hub type definitions based on their level of enplanements in the previous year and treated as if they were U.S. cities. This would limit the impact of smaller Canadian cities like Saskatoon on airport connectivity compared to the base model.

It may also be desirable to expand the model to include connecting opportunities for which the connecting point is an international destination. For instance, consider a route in which a Chicago O’Hare (ORD) passenger connects to Riga, Latvia (RIX) via a direct flight to Frankfurt, Germany (FRA). Since the model currently contains schedule data from only flights that depart from the United States, RIX would not be included as a possible connecting destination for ORD passengers. Loading full international schedule data into the model would likely result in an increase in connectivity for larger airports with direct flights to international connecting hubs like FRA, but likely no change in connectivity to smaller airports without such direct service. The index could also be extended to consider itineraries with multiple connections, but such a model would likely require a temporal component to avoid overstating the number of available itineraries.

Several of these proposed extensions to the ACQI model have been implemented in separate model runs that are not included in this discussion paper. In most cases, the changes in airport connectivity rankings as a result of changes to the model architecture are minimal. This is usually due to the low value of the weighting term α; since α is small, changes to the classification or weighting of connecting destinations result in little to no change in the connectivity rankings. Any extensions to the simple ACQI model will thus have to trade-off the value of the enhanced explanatory power of the index with the additional data requirements and complexity that the extension introduces.

Appendix A – References

Arvis, J.F. and B. Shepherd. 2011. "The Air Connectivity Index: Measuring Integration in the Global Air Transport Network." The World Bank. Policy Research Working Paper No. 5722.

Bootsma, P.D. 1997. "Airline flight schedule development: analysis and design tools for European hinterland hubs." University of Twente, Utrecht. Ph.D. Thesis.

Burghouwt, G. and J. de Wit. 2005. "The temporal configuration of airline networks in Europe." Journal of Air Transport Management 11(3). 185-198.

Burghouwt, G. and R. Redondi. 2013. "Connectivity in Air Transport Networks: An Assessment of Models and Applications." Journal of Transport Economics and Policy 47(1). 35-53.

Button, K., S. Doh, and K. Yuan. 2010. "The role of small airports in economic development." Journal of Airport Management 4 (2). 125-136.

DeLaurentis, D., E.P. Han, and T. Kotegawa. 2008. "Network-Theory Approach for Analyzing Connectivity in Air Transportation Networks." Journal of Aircraft 45(5). 1669-1679.

Emrich, R.M. and F.H.deB. Harris. 2008. "Share shift and airport substitution in origin-destination markets with low-cost entrants." International Journal of Revenue Management 2(2). 109-122.

Grubesic, T.H. and T.C. Matisziw. 2011."A spatial analysis of air transportation access and the essential air service program in the United States." Journal of Transport Geography 19 (1). 93-105.

Grubesic, T.H., T.C. Matisziw, A.T. Murray. 2012. "Assessing geographic coverage of the essential air service program." Socio-Economic Planning Sciences 46(2). 124-135.

Grubesic, T.H. and F. Wei. 2012. "Evaluating the efficiency of the Essential Air Service program in the United States." Transportation Research Part A: Policy and Practice 46(10). 1562-1573.

Grubesic, T.H. and M.A. Zook. 2007. "A ticket to ride: Evolving landscapes of air travel accessibility in the United States." Journal of Transport Geography 15(6). 417-430.

Guimerà, R., S. Mossa, A. Turtschi, and L.A.N. Amaral. 2005. "The worldwide air transportation network: Anomalous centrality, community structure, and cities' global roles." Proceedings of the National Academy of Sciences 102(22). 7794-7799.

Hatfield, D. 2012. "Airport hires consultant to boost air service." Inside Tucson Business. Tucson, AZ.

Ivy, R.L. 1993. "Variations in hub service in the US domestic air transportation network." Journal of Transport Geography 1(4). 211-218.

Jenkins, J.J. 2011. "The Evolution of Passenger Accessibility in the US Airline Industry, 1980-2010." Massachusetts Institute of Technology, Cambridge, MA. Masters Thesis.

Kanafani, A. and M.S. Abbas. 1987. “Local air services and economic impact of small airports.” Journal of Transportation Engineering 113 (1). 42-55.

Matisziw, T.C. and T.H. Grubesic. 2010. “Evaluating locational accessibility to the US air transportation system.” Transportation Research Part A 44. 710-722.

Matisziw, T.C., C.L. Lee, and T.H. Grubesic. 2012. “An analysis of essential air service structure and performance.” Journal of Air Transport Management 18. 5-11.

Mukkala, K. and H. Tervo. 2012. “Regional airports and regional growth in Europe: which way does the causality run?” RSA European Conference, Delft, Netherlands, 13th May – 16th May 2012.

Pearce, B. 2007. "Investing in Air Transport Connectivity to Boost National Productivity and Economic Growth." In J. Blanke and T. Chiesa ed. *The Travel and Tourism Competitiveness Report 2007: Furthering the Process of Economic Development*. Davos: World Economic Forum.

Redondi, R., P. Malighetti, and S. Paleari. 2013. “European connectivity: the role played by small airports.” Journal of Transport Geography 29. 86-94.

Reynolds-Feighan, A. and P. McLay. 2006. “Accessibility and attractiveness of European airports: A simple small-community perspective.” Journal of Air Transport Management 12. 313-323.

Veldhuis, J. 1997. “The competitive position of airline networks.” Journal of Air Transport Management 3(4). 181-188.

Wang, J., H. Mo, F. Wang, and F. Jin. 2011. “Exploring the network structure and nodal centrality of China’s air transport network: A complex network approach.” Journal of Transport Geography 19. 712-721.

Wittman, M.D. and W.S. Swelbar. 2013. “Trends and Market Forces Shaping Small Community Air Service in the United States.” MIT Small Community White Paper Series No. 1. ICAT Report 2013-02. Massachusetts Institute of Technology, Cambridge, MA.

Xu, Z. and R. Harriss. 2008. “Exploring the structure of the U.S. intercity passenger air transportation network: a weighted complex network approach.” GeoJournal 73. 87-102.

Zagier, A.S. 2012. “Small Airports Gamble with Revenue Guarantees.” Associated Press.

Appendix B – Connectivity Scores for Large Hub Airports

The following tables summarize connectivity scores for each of 462 U.S. airports. Enplaned passenger data from 2011, sourced from the FAA, is provided, along with the airport's ACQI score for each of the years 2007-2012. The percent change in ACQI is then compared to the percent change in capacity (here measured in domestic flights and seats) between 2007 and 2012. The ordinal rank of each airport among all 462 airports in the sample is also provided for both 2007 and 2012, allowing for comparison of the relative change in connectivity of various airports between those years. Airports are ordered by 2012 rank, from most connected to least connected, for each hub type.

Airport	Enplaned Pax (2011)	ACQI (2007)	ACQI (2008)	ACQI (2009)	ACQI (2010)	ACQI (2011)	ACQI (2012)	% Change in ACQI (07-12)	% Change in Flights (07-12)	% Change in Seats (07-12)	Rank (2007)	Rank (2012)
ORD : O'Hare International	31,892,301	641.99	627.89	598.49	613.83	625.05	624.47	-2.7%	-7.4%	-15.6%	2	1
ATL : Hartsfield Intl	44,414,121	643.05	648.59	617.16	611.68	603.35	606.93	-5.6%	-6.0%	-1.1%	1	2
LAX : Los Angeles Intl	30,528,737	584.96	561.55	516.97	530.63	568.92	565.59	-3.3%	-7.3%	-1.7%	3	3
DFW : Dallas/Ft Worth Intl	27,518,358	472.66	450.95	434.08	439.32	448.60	457.26	-3.3%	-6.3%	-5.3%	4	4
JFK : John F Kennedy Intl	23,664,832	433.22	447.75	429.98	420.23	431.61	428.01	-1.2%	-18.7%	-10.6%	5	5
SFO : San Francisco Intl	20,056,568	337.47	370.94	363.70	368.17	388.12	414.31	22.8%	20.9%	22.1%	16	6
DEN : Denver International	25,667,499	424.71	421.00	417.08	427.75	419.48	412.48	-2.9%	0.6%	3.3%	6	7
EWR : Newark Intl	16,814,092	396.77	397.66	382.24	386.40	381.40	395.82	-0.2%	-9.4%	-10.6%	8	8
IAH : Houston Intcntl	19,306,660	420.86	409.60	386.77	391.15	374.68	384.87	-8.6%	-20.3%	-14.6%	7	9
LGA : La Guardia	11,989,227	353.71	344.98	328.38	347.41	355.45	371.19	4.9%	-8.7%	-2.0%	12	10
MIA : Miami International	18,342,158	351.51	344.96	336.57	352.18	365.86	364.83	3.8%	1.1%	5.8%	13	11
PHX : Sky Harbor Intl	19,750,306	387.08	368.05	346.14	345.22	359.04	350.62	-9.4%	-14.0%	-13.7%	10	12
BOS : Logan International	14,180,730	365.67	351.88	344.63	358.34	365.30	344.57	-5.8%	-11.5%	-4.4%	11	13
PHL : Philadelphia Intl	14,883,180	343.48	345.19	345.99	346.97	345.31	341.12	-0.7%	-8.7%	-15.0%	14	14
CLT : Charlotte-Douglas Intl	19,022,535	305.76	314.26	309.77	322.56	327.47	337.40	10.3%	9.7%	12.5%	19	15
LAS : Mccarran Intl	19,872,617	388.83	370.32	339.39	322.56	332.23	327.59	-15.7%	-18.9%	-16.9%	9	16
DTW : Wayne County	15,716,865	339.38	331.43	314.30	318.93	315.55	313.14	-7.7%	-7.8%	-16.4%	15	17
MSP : Minneapolis-St Paul	15,895,653	313.45	305.49	308.96	311.00	308.69	311.08	-0.8%	-6.5%	-11.8%	18	18
MCO : Orlando Intl	17,250,415	318.33	307.31	286.66	287.88	291.76	286.36	-10.0%	-18.9%	-13.2%	17	19
DCA : Washington National	9,053,004	268.86	267.17	265.82	268.84	272.73	265.57	-1.2%	1.7%	-0.8%	23	20
SEA : Seattle/Tacoma Intl	15,971,676	271.79	281.05	260.62	259.58	262.20	258.87	-4.8%	-11.0%	-5.8%	22	21
FLL : Ft Lauderdale Intl	11,332,466	281.73	268.47	248.30	244.78	243.34	250.11	-11.2%	-7.8%	-4.0%	21	22
IAD : Dulles International	11,044,383	284.66	276.15	266.87	265.36	255.27	248.91	-12.6%	-19.5%	-20.3%	20	23
BWI : Baltimore/Wash Intl	11,067,319	224.83	217.09	215.16	223.44	222.43	216.69	-3.6%	-2.9%	-2.5%	26	24
SAN : Lindbergh Field	8,465,683	226.17	225.53	212.29	204.19	199.99	201.15	-11.1%	-19.8%	-12.3%	25	25
SLC : Salt Lake City Intl	9,701,756	216.91	217.26	216.96	206.80	200.44	192.41	-11.3%	-22.8%	-15.6%	28	26
MDW : Midway	9,134,576	196.58	175.25	176.30	171.46	173.17	173.43	-11.8%	-13.6%	-10.1%	32	30
TPA : Tampa International	8,174,194	205.68	197.73	175.95	174.13	172.18	167.87	-18.4%	-24.3%	-17.7%	31	31
HNL : Honolulu Intl	8,689,699	107.91	100.74	95.90	97.36	98.25	105.30	-2.4%	-24.0%	-19.6%	54	50

Appendix C – Connectivity Scores for Medium Hub Airports

Airport	Enplaned Pax (2011)	ACQI (2007)	ACQI (2008)	ACQI (2009)	ACQI (2010)	ACQI (2011)	ACQI (2012)	% Change in ACQI (07-12)	% Change in Flights (07-12)	% Change in Seats (07-12)	Rank (2007)	Rank (2012)
STL : Lambert International	6,159,090	**231.97**	**226.91**	**202.23**	**186.72**	**187.19**	**184.33**	**-20.5%**	**-27.2%**	**-20.3%**	24	27
RDU : Raleigh-Durham	4,462,508	**210.40**	**198.02**	**187.13**	**181.79**	**181.92**	**180.19**	**-14.4%**	**-23.3%**	**-16.1%**	30	28
CLE : Hopkins Intl	4,401,033	**213.02**	**203.73**	**182.42**	**183.81**	**178.17**	**176.04**	**-17.4%**	**-25.8%**	**-23.6%**	29	29
BNA : Nashville Metro	4,673,047	**174.46**	**167.91**	**162.61**	**163.67**	**162.90**	**166.58**	**-4.5%**	**-8.1%**	**-10.2%**	36	32
PDX : Portland Intl	6,808,486	**185.39**	**182.08**	**162.01**	**164.30**	**161.38**	**164.04**	**-11.5%**	**-15.7%**	**-9.5%**	34	33
MCI : Kansas City Intl	5,011,000	**183.61**	**172.86**	**163.96**	**163.03**	**161.83**	**157.73**	**-14.1%**	**-30.2%**	**-24.6%**	35	34
PIT : Pittsburgh Internation	4,070,614	**190.40**	**178.55**	**160.43**	**159.99**	**162.95**	**155.83**	**-18.2%**	**-39.7%**	**-27.8%**	33	35
IND : Indianapolis Intl	3,670,396	**168.30**	**167.94**	**159.99**	**154.52**	**149.73**	**150.26**	**-10.7%**	**-20.6%**	**-18.5%**	38	36
CVG : Cincinnati/No. KY	3,422,466	**217.89**	**209.17**	**181.74**	**160.46**	**158.40**	**146.84**	**-32.6%**	**-64.4%**	**-61.7%**	27	37
CMH : Port Columbus Intl	3,134,379	**166.12**	**156.94**	**149.40**	**147.28**	**150.10**	**144.61**	**-12.9%**	**-21.2%**	**-17.8%**	39	38
SJU : Luis Munoz Marin Int	3,983,130	**155.48**	**147.27**	**140.88**	**137.59**	**128.02**	**139.35**	**-10.4%**	**-3.3%**	**-19.6%**	40	39
MKE : General Mitchell Fld	4,671,976	**148.95**	**151.26**	**153.74**	**167.42**	**153.60**	**134.88**	**-9.4%**	**-36.9%**	**-8.4%**	43	40
AUS : Austin-Bergstrom	4,436,661	**121.47**	**127.57**	**121.49**	**124.51**	**126.30**	**130.26**	**7.2%**	**-10.6%**	**-2.9%**	47	41
MSY : New Orleans Intl	4,255,411	**112.27**	**119.09**	**115.84**	**120.52**	**123.54**	**123.74**	**10.2%**	**4.5%**	**9.5%**	51	42
SAT : San Antonio Intl	3,992,304	**116.37**	**123.37**	**118.52**	**122.28**	**121.49**	**121.66**	**4.5%**	**-13.6%**	**-10.3%**	50	43
SMF : Sacramento Intl	4,370,895	**140.28**	**133.87**	**121.00**	**118.84**	**120.96**	**117.92**	**-15.9%**	**-24.2%**	**-23.7%**	44	44
MEM : Memphis Intl	4,344,213	**152.79**	**151.82**	**145.34**	**142.27**	**131.50**	**116.69**	**-23.6%**	**-40.6%**	**-41.7%**	42	45
SNA : John Wayne Airport	4,247,802	**131.90**	**123.45**	**126.50**	**121.03**	**118.03**	**115.30**	**-12.6%**	**-23.7%**	**-20.0%**	45	46
BUF : Buffalo Niagara Intl	2,582,597	**116.64**	**119.97**	**116.25**	**114.55**	**114.79**	**111.75**	**-4.2%**	**-8.9%**	**-4.9%**	49	47
SJC : San Jose Municipal	4,108,006	**155.27**	**143.05**	**122.06**	**112.18**	**112.55**	**108.82**	**-29.9%**	**-33.2%**	**-27.5%**	41	48
BDL : Bradley Intl	2,772,315	**122.98**	**117.18**	**104.32**	**107.00**	**114.82**	**107.21**	**-12.8%**	**-24.1%**	**-24.0%**	46	49
JAX : Jacksonville Intl	2,700,514	**117.89**	**110.56**	**102.20**	**105.16**	**106.52**	**99.25**	**-15.8%**	**-25.8%**	**-22.1%**	48	51
OAK : Metro Oakland Intl	4,550,526	**173.15**	**148.39**	**105.23**	**106.39**	**98.65**	**97.99**	**-43.4%**	**-36.6%**	**-35.8%**	37	52
HOU : William P Hobby	4,753,554	**88.29**	**88.88**	**88.28**	**85.38**	**92.31**	**95.42**	**8.1%**	**-2.2%**	**-0.6%**	66	55
RSW : Southwest Florida	3,748,366	**106.66**	**101.40**	**94.54**	**96.37**	**93.82**	**93.62**	**-12.2%**	**-15.4%**	**-12.9%**	57	56
ABQ : Albuquerque Intl	2,768,435	**112.21**	**112.21**	**104.27**	**102.94**	**100.49**	**91.74**	**-18.2%**	**-25.9%**	**-26.0%**	52	58
OMA : Eppley Airfield	2,047,055	**98.61**	**95.27**	**92.78**	**93.66**	**90.44**	**88.85**	**-9.9%**	**-18.6%**	**-14.1%**	60	59
PBI : Palm Beach Intl	2,877,158	**108.77**	**98.96**	**85.24**	**86.09**	**84.87**	**81.41**	**-25.2%**	**-24.7%**	**-21.0%**	53	60
PVD : T Francis Green St	1,920,699	**107.33**	**101.64**	**92.40**	**88.85**	**86.55**	**76.15**	**-29.1%**	**-37.6%**	**-35.7%**	55	65
OGG : Kahului	2,683,933	**85.70**	**71.33**	**74.71**	**68.11**	**66.41**	**71.29**	**-16.8%**	**-1.7%**	**-12.3%**	71	70
RNO : Reno/Tahoe Intl	1,821,051	**86.92**	**82.76**	**69.76**	**73.70**	**71.18**	**67.05**	**-22.9%**	**-31.3%**	**-35.1%**	68	74
ONT : Ontario Intl	2,271,458	**94.21**	**83.08**	**70.78**	**69.93**	**68.49**	**62.14**	**-34.0%**	**-49.0%**	**-43.4%**	63	80
BUR : Hollywood-Burbank	2,144,915	**75.82**	**72.38**	**65.05**	**62.98**	**62.52**	**60.18**	**-20.6%**	**-24.8%**	**-27.8%**	76	82
DAL : Love Field	3,852,886	**46.94**	**47.52**	**41.99**	**36.80**	**38.92**	**44.53**	**-5.1%**	**-13.5%**	**-6.6%**	113	105
ANC : Anchorage Intl	2,354,987	**53.16**	**53.97**	**48.17**	**50.18**	**47.10**	**43.79**	**-17.6%**	**-11.7%**	**-12.5%**	102	106

Appendix D – Connectivity Scores for Small Hub Airports

Airport	Enplaned Pax (2011)	ACQI (2007)	ACQI (2008)	ACQI (2009)	ACQI (2010)	ACQI (2011)	ACQI (2012)	% Change in ACQI (07-12)	% Change in Flights (07-12)	% Change in Seats (07-12)	Rank (2007)	Rank (2012)
RIC : Richard E Byrd Field	1,571,155	**106.80**	**107.98**	**103.04**	**100.64**	**100.30**	**96.92**	**-9.2%**	**-20.0%**	**-17.1%**	56	53
ORF : Norfolk Intl	1,606,695	**105.82**	**102.78**	**98.36**	**100.73**	**99.26**	**96.44**	**-8.9%**	**-19.1%**	**-13.1%**	58	54
SDF : Standiford Field	1,650,707	**99.49**	**96.93**	**91.63**	**93.64**	**92.88**	**92.64**	**-6.9%**	**-22.8%**	**-17.7%**	59	57
OKC : Will Rogers World	1,738,438	**85.70**	**84.77**	**77.58**	**80.52**	**79.48**	**81.38**	**-5.0%**	**-14.6%**	**-4.4%**	70	61
ROC : Monroe County	1,190,967	**91.44**	**89.70**	**85.92**	**84.34**	**79.87**	**79.86**	**-12.7%**	**-20.8%**	**-20.2%**	64	62
DAY : Dayton International	1,247,333	**88.88**	**87.16**	**81.47**	**82.86**	**80.69**	**79.21**	**-10.9%**	**-21.5%**	**-12.9%**	65	63
CHS : Charleston Afb Muni	1,247,459	**76.89**	**78.26**	**76.16**	**75.99**	**79.57**	**79.15**	**2.9%**	**-3.9%**	**6.5%**	75	64
TUS : Tucson International	1,779,679	**94.30**	**91.07**	**78.69**	**80.02**	**77.58**	**74.66**	**-20.8%**	**-25.5%**	**-23.4%**	61	66
GSO : Piedmont Triad Intl	894,290	**87.55**	**83.49**	**76.83**	**75.94**	**73.43**	**73.83**	**-15.7%**	**-27.6%**	**-21.4%**	67	67
SYR : Clarence E Hancock	982,709	**82.32**	**79.65**	**75.94**	**76.93**	**74.90**	**73.22**	**-11.1%**	**-21.9%**	**-20.6%**	72	68
TUL : Tulsa International	1,346,122	**78.11**	**75.95**	**70.71**	**73.63**	**72.77**	**71.50**	**-8.5%**	**-26.4%**	**-19.8%**	74	69
ALB : Albany County	1,216,626	**85.90**	**81.29**	**76.61**	**74.29**	**77.06**	**71.15**	**-17.2%**	**-17.6%**	**-18.9%**	69	71
BHM : Birmingham Muni	1,429,282	**79.54**	**78.37**	**74.10**	**75.44**	**71.15**	**70.67**	**-11.2%**	**-17.8%**	**-14.8%**	73	72
TYS : Mc Ghee Tyson	841,237	**74.81**	**73.15**	**73.78**	**76.36**	**73.84**	**69.30**	**-7.4%**	**-19.2%**	**-16.9%**	77	73
GSP : Greenville/Spartanbg	880,994	**71.18**	**68.78**	**62.84**	**63.38**	**66.24**	**65.12**	**-8.5%**	**-14.5%**	**10.0%**	79	75
GRR : Gerald R. Ford Intl	1,126,552	**64.47**	**64.00**	**62.46**	**65.93**	**66.73**	**64.99**	**0.8%**	**-8.7%**	**2.5%**	86	76
DSM : Des Moines Airport	932,828	**69.98**	**70.31**	**65.90**	**62.21**	**64.64**	**64.92**	**-7.2%**	**-21.7%**	**-3.7%**	81	77
ELP : El Paso Intl	1,458,965	**64.64**	**64.96**	**65.28**	**65.80**	**64.08**	**63.33**	**-2.0%**	**-10.7%**	**-17.9%**	85	78
LIT : Adams Field	1,063,673	**69.01**	**65.20**	**66.96**	**67.66**	**64.42**	**62.29**	**-9.7%**	**-19.7%**	**-11.6%**	82	79
MHT : Manchester Boston	1,342,308	**94.28**	**85.66**	**75.62**	**71.79**	**68.77**	**60.21**	**-36.1%**	**-41.2%**	**-45.0%**	62	81
SAV : Savannah Intl	785,251	**65.69**	**65.09**	**62.97**	**64.70**	**62.40**	**59.25**	**-9.8%**	**-18.7%**	**-23.4%**	84	83
MDT : Olmsted State	655,294	**59.08**	**59.61**	**57.11**	**60.35**	**62.59**	**58.99**	**-0.2%**	**-6.6%**	**-2.3%**	93	84
HPN : Westchester County	972,385	**70.35**	**65.93**	**62.36**	**62.91**	**62.24**	**58.45**	**-16.9%**	**-12.4%**	**-11.5%**	80	85
XNA : Northwest Arkansas	538,850	**63.49**	**64.01**	**60.69**	**60.42**	**58.96**	**57.59**	**-9.3%**	**-13.8%**	**-15.3%**	88	86
PWM : Portland Intl Jetprt	833,005	**64.04**	**65.80**	**63.75**	**61.57**	**60.28**	**56.66**	**-11.5%**	**-18.6%**	**-7.3%**	87	87
COS : Peterson Field	828,516	**66.56**	**68.31**	**65.54**	**62.74**	**56.79**	**56.16**	**-15.6%**	**-23.9%**	**-14.0%**	83	88
MSN : Truax Field	741,365	**58.28**	**58.35**	**54.40**	**54.03**	**55.80**	**56.10**	**-3.7%**	**-20.9%**	**-15.0%**	96	89
PNS : Pensacola Regional	750,190	**58.29**	**55.53**	**50.76**	**56.69**	**55.78**	**55.43**	**-4.9%**	**-16.4%**	**-13.9%**	95	90
CAE : Columbia Metro	487,474	**63.02**	**64.48**	**60.98**	**57.23**	**54.24**	**53.64**	**-14.9%**	**-27.7%**	**-23.3%**	89	91
ICT : Mid-Continent	740,675	**61.98**	**63.20**	**57.87**	**55.34**	**53.05**	**51.48**	**-16.9%**	**-26.0%**	**-17.8%**	91	92
PSP : Palm Springs Muni	759,510	**59.07**	**52.92**	**47.35**	**47.57**	**45.77**	**51.44**	**-12.9%**	**-11.3%**	**-8.5%**	94	93
HSV : Madison County	614,601	**53.82**	**55.02**	**54.03**	**56.83**	**56.00**	**51.29**	**-4.7%**	**-17.5%**	**-1.7%**	101	94
GEG : Spokane Int'l	1,487,913	**62.49**	**61.10**	**53.76**	**58.50**	**51.74**	**50.36**	**-19.4%**	**-26.5%**	**-20.3%**	90	95
CID : The Eastern Iowa	431,874	**52.81**	**51.52**	**51.27**	**41.92**	**48.77**	**49.63**	**-6.0%**	**-17.0%**	**-16.3%**	104	96
BTV : Burlington Intl	636,019	**60.91**	**62.10**	**58.78**	**54.54**	**54.22**	**49.50**	**-18.7%**	**-24.4%**	**-18.0%**	92	97
BOI : Boise/Gowen	1,395,554	**71.99**	**70.59**	**63.31**	**56.48**	**55.40**	**49.40**	**-31.4%**	**-39.9%**	**-33.8%**	78	98
LEX : Blue Grass	533,952	**54.21**	**54.07**	**50.32**	**54.20**	**54.64**	**49.30**	**-9.1%**	**-18.5%**	**-4.4%**	100	99
KOA : Keahole	1,295,389	**55.91**	**52.80**	**54.00**	**47.26**	**48.35**	**48.42**	**-13.4%**	**-7.6%**	**-18.7%**	98	100

Airport	Enplaned Pax (2011)	ACQI (2007)	ACQI (2008)	ACQI (2009)	ACQI (2010)	ACQI (2011)	ACQI (2012)	% Change in ACQI (07-12)	% Change in Flights (07-12)	% Change in Seats (07-12)	Rank (2007)	Rank (2012)
CAK : Akron/Canton Reg'l	814,243	**48.99**	**49.41**	**48.70**	**48.49**	**47.54**	**48.04**	**-2.0%**	**-4.1%**	**15.8%**	107	101
FAT : Fresno Yosemite Intl	615,320	**58.25**	**54.33**	**49.99**	**49.34**	**47.62**	**47.92**	**-17.7%**	**-25.1%**	**-16.9%**	97	102
LIH : Lihue	1,203,525	**52.97**	**52.05**	**50.17**	**45.12**	**43.61**	**45.82**	**-13.5%**	**-12.7%**	**-14.5%**	103	103
JAN : Allen C Thompson Fld	615,622	**54.61**	**53.60**	**51.31**	**50.40**	**47.46**	**45.61**	**-16.5%**	**-19.9%**	**-21.5%**	99	104
STT : Cyril E. King Airport	596,832	**36.33**	**42.18**	**44.61**	**41.87**	**38.34**	**43.56**	**19.9%**	**-9.4%**	**-8.4%**	136	107
BTR : Ryan	396,403	**48.13**	**46.98**	**42.92**	**43.61**	**43.91**	**43.14**	**-10.4%**	**-18.5%**	**-23.7%**	110	108
MLI : Quad-City	412,470	**48.00**	**48.73**	**47.20**	**44.84**	**42.73**	**41.57**	**-13.4%**	**-19.4%**	**-20.9%**	111	109
SBA : Santa Barbara Muni	367,328	**50.07**	**48.02**	**42.98**	**42.13**	**40.72**	**40.92**	**-18.3%**	**-25.4%**	**-21.4%**	106	112
MYR : Myrtle Beach Afb	848,230	**47.11**	**46.01**	**45.51**	**45.72**	**41.30**	**40.05**	**-15.0%**	**-14.7%**	**-9.2%**	112	114
VPS : Ft. Walton Beach	434,455	**39.01**	**42.01**	**40.32**	**40.54**	**39.66**	**39.04**	**0.1%**	**-4.0%**	**-9.0%**	124	116
LGB : Long Beach Municipal	1,512,212	**38.79**	**38.38**	**39.11**	**41.37**	**41.69**	**38.51**	**-0.7%**	**1.3%**	**1.1%**	126	117
FSD : Joe Foss Field	423,288	**36.94**	**34.98**	**35.26**	**38.33**	**40.09**	**38.44**	**4.1%**	**3.9%**	**0.3%**	134	118
ABE : Allentown/Bethl'hem	428,332	**43.06**	**41.89**	**40.31**	**41.72**	**42.40**	**38.39**	**-10.9%**	**-25.5%**	**-18.1%**	120	119
BZN : Gallatin Field	397,870	**35.64**	**37.35**	**35.24**	**36.25**	**34.03**	**35.90**	**0.7%**	**-8.7%**	**3.8%**	140	124
ILM : New Hanover County	395,156	**35.68**	**37.60**	**35.59**	**36.33**	**37.06**	**35.57**	**-0.3%**	**2.8%**	**-1.9%**	139	128
GPT : Gulfport Biloxi Intl	395,350	**38.54**	**41.80**	**36.52**	**37.33**	**35.13**	**33.66**	**-12.7%**	**-24.5%**	**-29.9%**	127	132
PHF : Newport News	516,789	**43.75**	**43.94**	**42.38**	**41.60**	**39.94**	**33.47**	**-23.5%**	**-30.1%**	**-45.7%**	119	133
SRQ : Sarasota-Bradenton	657,157	**46.47**	**45.58**	**35.72**	**33.07**	**32.10**	**31.69**	**-31.8%**	**-37.9%**	**-24.1%**	114	137
FNT : Bishop	473,113	**40.40**	**41.99**	**38.53**	**36.42**	**34.49**	**31.07**	**-23.1%**	**-34.1%**	**-28.8%**	123	141
MAF : Midland-Odessa Regl	474,423	**27.19**	**27.37**	**27.59**	**29.65**	**28.68**	**29.72**	**9.3%**	**-4.8%**	**-11.8%**	178	146
AMA : Amarillo Intl	392,815	**30.02**	**29.64**	**28.68**	**28.65**	**29.14**	**29.39**	**-2.1%**	**-18.7%**	**-17.7%**	161	150
LBB : Lubbock Intl	503,580	**29.81**	**29.66**	**29.24**	**28.23**	**29.33**	**28.59**	**-4.1%**	**-16.9%**	**-24.0%**	165	156
GUM : Agana Field	1,369,586	**25.45**	**25.04**	**24.00**	**27.80**	**26.91**	**28.19**	**10.8%**	**-4.5%**	**0.4%**	185	158
ISP : Long Islnd Macarthur	781,396	**52.42**	**46.46**	**34.15**	**31.29**	**30.09**	**27.74**	**-47.1%**	**-46.4%**	**-47.0%**	105	160
BIL : Logan Intl	407,375	**29.99**	**30.02**	**35.09**	**28.78**	**26.31**	**26.47**	**-11.8%**	**-14.7%**	**-9.1%**	163	163
ITO : Hilo International	605,251	**27.93**	**23.66**	**24.73**	**20.50**	**25.70**	**26.27**	**-6.0%**	**-37.4%**	**-25.0%**	175	165
ECP : NW Florida Beaches	417,902	**0.00**	**0.00**	**0.00**	**22.89**	**27.58**	**25.76**	**N/A**	**N/A**	**N/A**	457	168
EUG : Eugene, Oregon	393,504	**30.52**	**27.89**	**22.69**	**22.38**	**22.54**	**23.04**	**-24.5%**	**-20.1%**	**-3.7%**	157	180
BGR : Bangor International	391,597	**35.80**	**33.50**	**31.28**	**24.69**	**22.32**	**21.26**	**-40.6%**	**-31.1%**	**3.0%**	138	189
BLI : Bellingham Muni	515,402	**15.34**	**14.54**	**11.72**	**12.28**	**14.24**	**16.59**	**8.1%**	**20.4%**	**108.0%**	243	217
ACY : Atlantic City Intl	668,930	**24.82**	**24.25**	**15.29**	**17.83**	**16.25**	**14.44**	**-41.8%**	**-4.5%**	**22.5%**	186	236
FAI : Fairbanks Intl	438,188	**14.25**	**15.55**	**13.65**	**14.11**	**14.14**	**14.31**	**0.5%**	**-1.8%**	**-5.7%**	248	237
SPN : Saipan International	382,386	**6.93**	**8.39**	**8.08**	**8.82**	**7.57**	**8.31**	**20.0%**	**-1.7%**	**-4.7%**	308	307
AZA : Williams Gateway	521,437	**0.31**	**0.63**	**0.84**	**0.89**	**0.94**	**7.86**	**2447.3%**	**2236.4%**	**2286.3%**	415	311
SFB : Central Florida Region	768,938	**1.71**	**3.50**	**2.94**	**2.35**	**2.91**	**2.39**	**39.5%**	**48.8%**	**51.7%**	394	373
PIE : St. Petersburg Intl	417,223	**6.16**	**5.26**	**2.00**	**3.62**	**3.29**	**0.78**	**-87.3%**	**-1.4%**	**-6.1%**	322	409

Appendix E – Connectivity Scores for Non-Hub and Essential Air Service Airports

Airport	Enplaned Pax (2011)	ACQI (2007)	ACQI (2008)	ACQI (2009)	ACQI (2010)	ACQI (2011)	ACQI (2012)	% Change in ACQI (07-12)	% Change in Flights (07-12)	% Change in Seats (07-12)	Rank (2007)	Rank (2012)
AVL : Asheville Municipal	361,617	**42.19**	**43.45**	**41.96**	**46.87**	**46.44**	**41.40**	**-1.9%**	**-3.5%**	**6.4%**	120	110
CRW : Yeager	282,704	**44.86**	**44.22**	**42.20**	**43.80**	**44.62**	**41.08**	**-8.4%**	**-26.7%**	**-12.6%**	117	111
TLH : Tallahassee Muni	305,686	**48.44**	**48.92**	**45.89**	**43.91**	**39.92**	**40.14**	**-17.1%**	**-34.7%**	**-30.9%**	105	113
ROA : Roanoke Municipal	320,961	**46.00**	**45.90**	**43.20**	**42.62**	**40.94**	**39.87**	**-13.3%**	**-20.4%**	**-16.9%**	116	115
SGF : Springfield Branson	349,091	**45.40**	**46.34**	**43.14**	**42.07**	**37.80**	**37.31**	**-17.8%**	**-31.3%**	**-28.1%**	114	120
EYW : Key West Intl	335,603	**48.56**	**42.86**	**36.19**	**37.50**	**34.67**	**37.11**	**-23.6%**	**-28.1%**	**12.2%**	111	121
CHA : Lovell Field	304,399	**35.51**	**38.00**	**35.11**	**35.72**	**37.06**	**36.91**	**4.0%**	**-7.8%**	**-2.5%**	110	122
SHV : Shreveport Regional	265,104	**44.29**	**44.70**	**41.17**	**39.45**	**37.21**	**36.78**	**-17.0%**	**-23.5%**	**-15.3%**	130	123
AVP : Wilkes-Barre/Scrantn	228,367	**31.91**	**34.40**	**35.58**	**33.54**	**37.11**	**35.82**	**12.2%**	**-1.9%**	**5.4%**	153	125
CHO : Albemarle	216,957	**37.34**	**37.85**	**36.21**	**35.50**	**36.19**	**35.79**	**-4.1%**	**-10.5%**	**-1.0%**	132	126
MOB : Mobile Municipal	288,461	**37.72**	**39.01**	**37.65**	**37.41**	**36.92**	**35.58**	**-5.7%**	**-13.4%**	**-10.8%**	134	128
PIA : Greater Peoria	249,898	**36.97**	**38.57**	**36.36**	**28.75**	**29.64**	**35.49**	**-4.0%**	**-0.8%**	**1.5%**	125	129
FWA : Ft Wayne Muni/Baer	272,796	**38.89**	**39.67**	**35.66**	**33.57**	**34.52**	**34.74**	**-10.7%**	**-33.2%**	**-21.8%**	126	130
LFT : Lafayette Regional	222,795	**34.98**	**35.33**	**34.61**	**32.89**	**33.15**	**33.85**	**-3.2%**	**-11.5%**	**4.2%**	133	131
GRK : Gray Aaf	219,753	**36.57**	**37.06**	**35.96**	**35.79**	**33.92**	**32.23**	**-11.9%**	**-17.3%**	**-7.1%**	136	134
FAY : Fayetteville Muni	259,445	**29.02**	**29.64**	**30.94**	**33.21**	**34.22**	**32.19**	**10.9%**	**24.3%**	**31.0%**	166	135
RAP : Rapid City Regional	254,292	**26.56**	**27.11**	**26.93**	**31.17**	**29.83**	**31.94**	**20.3%**	**5.5%**	**0.9%**	177	136
AGS : Bush Field	267,631	**27.40**	**29.22**	**30.64**	**32.77**	**33.92**	**31.60**	**15.3%**	**31.9%**	**52.3%**	174	138
ASE : Aspen	221,256	**27.70**	**37.52**	**35.55**	**35.83**	**31.94**	**31.39**	**13.3%**	**-2.2%**	**16.2%**	173	139
SBN : St Joseph County	305,386	**37.53**	**38.49**	**34.39**	**33.31**	**32.16**	**31.33**	**-16.5%**	**-36.4%**	**-25.1%**	131	140
JAC : Jackson Hole	279,065	**28.95**	**31.67**	**30.55**	**28.48**	**27.64**	**30.64**	**5.8%**	**-9.8%**	**-5.6%**	167	142
GNV : J R Alison Municipal	177,282	**28.50**	**27.64**	**25.97**	**27.64**	**28.41**	**30.55**	**7.2%**	**18.0%**	**15.4%**	169	143
ATW : Outagamie County	242,346	**38.36**	**37.18**	**34.86**	**34.69**	**31.96**	**30.16**	**-21.4%**	**-43.6%**	**-26.3%**	128	144
GRB : Austin-Straubel Fld	352,157	**41.07**	**40.58**	**31.71**	**32.24**	**34.19**	**29.98**	**-27.0%**	**-31.7%**	**-39.0%**	122	145
FAR : Hector Field	346,459	**27.98**	**28.12**	**28.51**	**30.71**	**29.85**	**29.70**	**6.2%**	**15.1%**	**12.2%**	171	147
MGM : Dannelly Field	188,177	**30.05**	**30.61**	**28.21**	**28.89**	**29.87**	**29.61**	**-1.5%**	**-0.9%**	**-5.1%**	151	148
CRP : Corpus Christi Intl	322,903	**38.15**	**37.45**	**31.23**	**31.21**	**30.56**	**29.54**	**-22.6%**	**-20.6%**	**-18.9%**	129	149
ACK : Nantucket Memorial	169,352	**31.31**	**31.79**	**29.98**	**30.13**	**29.82**	**29.37**	**-6.2%**	**-16.7%**	**-13.5%**	154	150
EVV : Dress Regional	169,426	**32.50**	**33.18**	**29.98**	**28.29**	**30.44**	**29.36**	**-9.7%**	**-39.3%**	**-35.0%**	143	151
BMI : Bloomington/Normal	284,852	**34.51**	**34.79**	**32.31**	**32.33**	**31.99**	**29.03**	**-15.9%**	**-25.4%**	**-22.0%**	144	153
EGE : Eagle County Regl	189,276	**32.50**	**32.89**	**29.89**	**30.54**	**29.85**	**28.85**	**-11.2%**	**-35.9%**	**-21.1%**	150	155
MFE : Miller International	332,706	**35.01**	**31.68**	**24.39**	**23.76**	**29.27**	**28.72**	**-18.0%**	**-20.9%**	**-22.5%**	142	156
AEX : Alexandria Intl	188,286	**30.66**	**30.91**	**30.03**	**29.20**	**29.48**	**28.53**	**-6.9%**	**-22.2%**	**-10.8%**	148	157
TRI : Tri City Arpt, Tn-Regi	220,586	**31.37**	**31.95**	**31.02**	**30.84**	**30.95**	**27.85**	**-11.2%**	**-33.1%**	**-19.7%**	149	159
GJT : Walker Field	217,988	**23.09**	**27.65**	**27.22**	**25.54**	**29.37**	**27.70**	**20.0%**	**-12.1%**	**17.9%**	190	160
MRY : Monterey Peninsula	181,640	**33.65**	**30.12**	**27.83**	**26.23**	**25.68**	**26.82**	**-20.3%**	**-29.7%**	**-17.0%**	147	161
OAJ : Albert J Ellis	170,118	**26.55**	**26.70**	**26.79**	**26.55**	**26.49**	**26.46**	**-0.4%**	**16.4%**	**21.6%**	176	162
MLU : Monroe Municipal	107,290	**30.01**	**29.49**	**27.92**	**27.56**	**27.45**	**26.26**	**-12.5%**	**-34.8%**	**-14.9%**	152	164

Airport	Enplaned Pax (2011)	ACQI (2007)	ACQI (2008)	ACQI (2009)	ACQI (2010)	ACQI (2011)	ACQI (2012)	% Change in ACQI (07-12)	% Change in Flights (07-12)	% Change in Seats (07-12)	Rank (2007)	Rank (2012)
MTJ : Montrose County	87,228	**29.86**	**30.34**	**29.70**	**29.21**	**28.68**	**26.14**	**-12.4%**	**-34.1%**	**-16.4%**	164	167
HDN : Yampa Valley	106,534	**30.37**	**30.81**	**27.64**	**26.72**	**26.42**	**25.75**	**-15.2%**	**-33.3%**	**-20.1%**	159	169
ITH : Tompkins County	121,733	**21.53**	**26.92**	**27.66**	**27.30**	**26.74**	**25.27**	**17.4%**	**-4.5%**	**7.5%**	204	170
BFL : Meadows Field	148,347	**29.40**	**22.52**	**19.44**	**19.17**	**18.34**	**25.13**	**-14.5%**	**-27.2%**	**-23.4%**	166	171
SCE : State College	144,054	**29.05**	**29.37**	**25.18**	**25.05**	**28.97**	**24.92**	**-14.2%**	**-10.8%**	**-7.4%**	167	172
SWF : Newburgh Stewart	209,966	**35.90**	**32.12**	**26.38**	**25.31**	**26.10**	**24.84**	**-30.8%**	**-49.1%**	**-64.9%**	137	173
FCA : Glacier Natl Park	179,064	**28.13**	**29.57**	**26.70**	**26.78**	**25.21**	**24.30**	**-13.6%**	**-25.1%**	**-18.6%**	173	174
PSC : Tri-Cities	327,008	**21.45**	**21.11**	**23.79**	**25.46**	**24.68**	**24.29**	**13.2%**	**-11.1%**	**23.3%**	205	175
MSO : Johnson-Bell Field	292,501	**26.29**	**26.55**	**25.04**	**25.96**	**23.86**	**24.08**	**-8.4%**	**-27.6%**	**-12.1%**	182	176
TVC : Cherry Capital	170,977	**30.52**	**25.89**	**25.72**	**25.28**	**23.80**	**23.92**	**-21.6%**	**-2.0%**	**-17.6%**	156	177
EWN : Simmons Nott	124,085	**24.32**	**25.86**	**25.04**	**24.61**	**23.88**	**23.48**	**-3.5%**	**10.8%**	**9.4%**	190	178
ELM : Celmira/Corning Regl	152,582	**19.96**	**20.35**	**19.59**	**18.74**	**20.20**	**23.31**	**16.8%**	**-5.7%**	**28.8%**	209	179
STX : Alexander Hamilton	184,331	**24.46**	**24.66**	**24.44**	**24.01**	**23.59**	**22.64**	**-7.4%**	**-15.5%**	**-16.7%**	188	181
LAN : Capital City	186,341	**30.64**	**22.89**	**21.85**	**22.48**	**23.16**	**22.51**	**-26.5%**	**-16.2%**	**-20.6%**	155	182
MFR : Jackson County	301,742	**28.84**	**26.54**	**22.39**	**22.47**	**22.05**	**22.22**	**-23.0%**	**-38.6%**	**-18.2%**	170	183
SBP : San Luis Obispo Cty	132,692	**30.39**	**26.98**	**20.48**	**22.28**	**21.95**	**22.16**	**-27.1%**	**-30.3%**	**-31.1%**	158	184
BIS : Bismarck Municipal	197,181	**17.43**	**17.66**	**21.67**	**23.12**	**21.36**	**22.14**	**27.0%**	**24.3%**	**6.0%**	233	185
BGM : Link Field/Broome	108,172	**30.76**	**23.83**	**23.82**	**23.39**	**23.41**	**22.03**	**-28.4%**	**-19.8%**	**-21.3%**	153	186
DRO : La Plata	175,649	**17.49**	**19.52**	**19.43**	**19.44**	**23.01**	**21.81**	**24.7%**	**2.5%**	**48.8%**	232	187
DAB : Daytona Beach Regl	274,166	**34.41**	**30.71**	**24.18**	**23.26**	**22.24**	**21.33**	**-38.0%**	**-25.3%**	**-21.6%**	145	188
CSG : Columbus Airport	78,718	**19.13**	**20.54**	**19.90**	**20.72**	**22.17**	**21.23**	**11.0%**	**51.0%**	**23.6%**	215	190
CWA : Central Wisconsin	135,965	**25.53**	**27.48**	**27.44**	**26.50**	**22.48**	**21.23**	**-16.9%**	**-37.4%**	**-21.3%**	183	191
MVY : Marthas Vineyard	49,095	**13.12**	**12.88**	**12.38**	**12.78**	**21.94**	**21.00**	**60.1%**	**2.7%**	**4.5%**	252	192
CLL : Easterwood Field	71,555	**23.87**	**23.05**	**21.76**	**22.03**	**22.08**	**20.84**	**-12.7%**	**-30.2%**	**-8.3%**	191	193
FSM : Fort Smith Municipal	84,136	**23.13**	**24.66**	**22.67**	**14.92**	**14.55**	**20.81**	**-10.1%**	**-30.6%**	**-23.6%**	192	194
TYR : Pounds Field	72,602	**22.41**	**22.52**	**21.50**	**21.31**	**21.18**	**20.72**	**-7.5%**	**-20.9%**	**0.8%**	200	195
AZO : Battle Creek Intl	148,634	**34.00**	**26.90**	**21.84**	**22.77**	**22.23**	**20.48**	**-39.8%**	**-38.0%**	**-39.2%**	146	196
MLB : Cape Kennedy	207,829	**22.45**	**22.42**	**21.05**	**22.87**	**21.55**	**20.48**	**-8.8%**	**18.8%**	**30.0%**	199	197
MBS : Tri City	136,594	**22.96**	**22.59**	**22.52**	**22.38**	**21.41**	**20.39**	**-11.2%**	**-7.1%**	**-32.2%**	195	198
DLH : Duluth International	146,620	**17.77**	**16.98**	**19.13**	**21.84**	**20.42**	**20.18**	**13.5%**	**-1.2%**	**-21.6%**	228	199
LRD : Laredo Intl	101,780	**21.01**	**20.58**	**20.03**	**20.47**	**20.58**	**20.08**	**-4.4%**	**-13.9%**	**-6.4%**	207	200
BQN : Borinquen	230,556	**23.04**	**21.10**	**21.20**	**21.00**	**20.22**	**19.80**	**-14.1%**	**3.1%**	**5.6%**	194	201
BRO : South Padre Isl Intl	85,244	**18.71**	**18.95**	**19.51**	**19.66**	**19.83**	**19.78**	**5.7%**	**-0.8%**	**2.6%**	218	202
LCH : Lake Charles Muni	61,325	**17.91**	**18.42**	**19.75**	**20.56**	**21.20**	**19.62**	**9.5%**	**15.3%**	**30.3%**	226	203
LNK : Lincoln Municipal	135,647	**24.34**	**24.25**	**29.04**	**21.02**	**19.68**	**19.59**	**-19.5%**	**-24.9%**	**-30.0%**	189	204
ACT : Waco Municipal	61,164	**22.70**	**21.99**	**20.13**	**20.19**	**20.12**	**19.21**	**-15.4%**	**-38.5%**	**-9.6%**	197	205
HRL : Valley International	359,166	**20.13**	**20.35**	**19.56**	**19.52**	**19.50**	**18.74**	**-6.9%**	**-27.1%**	**-28.5%**	208	206
SPI : Springfield Capital	71,862	**17.89**	**17.64**	**16.76**	**17.09**	**18.87**	**18.38**	**2.8%**	**-19.2%**	**-4.0%**	227	207
LWB : Greenbrier Valley	17,281	**17.65**	**17.56**	**16.35**	**19.13**	**19.30**	**18.25**	**3.4%**	**-33.1%**	**-10.1%**	230	208
MOT : Minot International	151,424	**10.46**	**10.71**	**10.84**	**13.94**	**15.16**	**18.19**	**73.9%**	**268.1%**	**144.1%**	276	209
LSE : La Crosse Municipal	102,958	**19.34**	**19.54**	**20.18**	**20.42**	**19.48**	**17.87**	**-7.6%**	**-15.0%**	**-29.4%**	214	210

Airport	Enplaned Pax (2011)	ACQI (2007)	ACQI (2008)	ACQI (2009)	ACQI (2010)	ACQI (2011)	ACQI (2012)	% Change in ACQI (07-12)	% Change in Flights (07-12)	% Change in Seats (07-12)	Rank (2007)	Rank (2012)
RST : Rochester Municipal	110,295	24.50	24.90	22.70	21.57	20.33	17.63	-28.0%	-36.7%	-45.3%	187	211
RDM : Roberts Field	230,395	21.62	20.65	18.60	18.34	17.80	17.51	-19.0%	-33.8%	-14.5%	203	212
CMI : Willard University	83,731	21.24	21.28	19.61	18.78	17.56	17.41	-18.0%	-35.3%	-33.9%	206	213
DHN : Dothan	46,388	19.78	20.31	19.51	18.89	18.21	17.35	-12.3%	-17.4%	-14.8%	211	214
YUM : Yuma International	82,420	18.20	19.90	17.42	18.73	18.69	17.17	-5.6%	-8.9%	9.1%	220	215
ERI : Erie Intl	112,749	26.34	19.32	19.03	18.21	17.80	17.16	-34.9%	-35.0%	-29.8%	181	216
ABI : Abilene Regional	80,434	22.72	21.74	15.68	16.07	16.65	16.52	-27.3%	-33.1%	-25.7%	196	218
VLD : Valdosta Regional	38,066	18.19	19.06	18.58	17.94	17.48	16.48	-9.4%	-2.3%	-5.5%	221	219
GTR : Golden Triangle Regl	35,860	18.05	19.13	18.11	17.42	16.98	16.41	-9.1%	-0.1%	17.9%	222	220
ABY : Dougherty County	33,627	18.89	19.49	18.44	17.89	17.38	16.38	-13.3%	-23.9%	-10.3%	216	221
IDA : Fanning Field	149,315	17.71	17.75	17.13	14.18	16.05	16.37	-7.6%	-24.6%	-11.5%	229	222
BQK : Glynco Jetport	31,655	18.02	19.02	18.33	17.83	17.32	16.26	-9.7%	-4.0%	11.1%	224	223
MHK : Manhattan Muni	58,672	1.87	1.92	10.19	13.30	15.27	16.01	756.6%	32.3%	237.9%	385	224
SBY : Wicomico County	72,568	17.06	16.67	16.60	15.97	16.76	15.92	-6.7%	-18.8%	-5.5%	236	225
GTF : Great Falls Intl	168,158	16.65	20.47	16.19	15.81	15.40	15.77	-5.2%	-7.6%	-7.3%	241	226
MEI : Key Field	18,008	17.15	18.34	17.55	16.93	16.52	15.56	-9.3%	2.7%	2.5%	235	227
HHH : Hilton Head	61,006	25.52	25.68	25.24	24.84	15.99	15.31	-40.0%	-28.6%	-41.0%	184	228
GUC : Gunnison County	36,516	12.70	20.73	20.85	20.98	15.89	15.14	19.3%	-52.8%	-32.5%	257	229
LAW : Lawton Municipal	63,909	15.29	24.85	22.08	15.01	14.61	14.98	-2.0%	-19.8%	18.4%	244	230
COU : Columbia Regional	40,990	2.07	5.10	5.30	5.02	4.56	14.85	619.1%	-26.2%	94.2%	379	231
CYS : Cheyenne Municipal	25,112	6.72	5.86	4.50	14.61	15.82	14.83	120.6%	-19.2%	-20.9%	310	232
SAF : Santa Fe County Muni	43,329	2.83	0.06	10.53	13.52	14.10	14.55	413.5%	32.1%	222.0%	365	233
HTS : Tri-State/Milton	112,522	19.43	11.84	11.83	12.38	15.55	14.52	-25.2%	-5.3%	40.6%	213	234
MSL : Muscle Shoals	7,812	4.42	4.58	16.80	17.08	16.12	14.49	228.1%	-35.3%	-12.8%	341	235
DRT : Del Rio Intl	8,438	14.97	15.16	14.03	14.15	14.31	14.26	-4.8%	-28.8%	-11.0%	246	238
BPT : Jefferson County	13,670	16.93	17.27	16.55	16.54	16.66	14.20	-16.1%	-60.0%	-62.9%	238	239
MKK : Molokai	82,136	18.59	20.04	17.99	19.82	18.58	13.85	-25.5%	-6.7%	-17.6%	219	240
GFK : Grand Forks Intl	118,872	12.06	12.54	12.51	13.45	13.94	13.81	14.5%	32.5%	16.2%	258	241
HLN : Helena	100,695	14.11	15.57	15.76	15.00	14.09	13.74	-2.6%	-19.0%	-0.2%	249	242
SJT : Mathis Field	54,955	19.93	18.95	13.49	14.17	13.48	13.74	-31.1%	-45.3%	-29.3%	210	243
LYH : Preston-Glenn Field	73,821	21.74	21.90	22.45	22.15	20.32	13.69	-37.0%	-11.5%	0.3%	201	244
FLO : Florence Municipal	68,169	21.65	22.81	22.63	22.55	20.67	13.66	-36.9%	-10.8%	1.8%	202	245
VCT : County-Foster	5,200	14.28	14.65	13.97	14.03	14.19	13.54	-5.2%	-40.0%	-49.7%	247	246
ACV : Arcata	70,455	16.02	17.37	15.71	14.11	13.71	13.48	-15.8%	-25.4%	-45.2%	242	247
SPS : Sheppard Afb	37,248	15.23	14.92	12.74	13.82	13.25	13.39	-12.1%	-44.2%	-5.6%	245	248
CLD : McClellan-Palomar	45,518	17.25	15.88	13.10	11.65	12.61	12.98	-24.7%	-13.1%	-16.0%	234	249
SGU : St George Municipal	48,582	19.57	18.43	16.24	11.61	12.73	12.93	-33.9%	-44.1%	-18.6%	212	250
PGV : Pitt-Greenville	62,071	11.71	11.75	11.98	12.59	12.69	12.76	9.0%	-1.4%	6.0%	260	251
TXK : Texarkana Municipal	28,698	17.95	17.89	12.56	13.18	12.82	12.74	-29.0%	-43.9%	-35.8%	225	252
ROW : Roswell Industrial	37,262	9.84	11.79	12.79	13.19	13.32	12.70	29.0%	-11.4%	57.1%	282	253
GCK : Garden City Muni	11,690	4.11	2.90	2.92	3.66	4.27	12.35	200.6%	-33.7%	8.6%	342	254

Airport	Enplaned Pax (2011)	ACQI (2007)	ACQI (2008)	ACQI (2009)	ACQI (2010)	ACQI (2011)	ACQI (2012)	% Change in ACQI (07-12)	% Change in Flights (07-12)	% Change in Seats (07-12)	Rank (2007)	Rank (2012)
CPR : Casper	77,758	**18.76**	**19.88**	**14.73**	**12.61**	**11.91**	**12.27**	**-34.6%**	**-40.8%**	**-11.7%**	217	255
HVN : Tweed-New Haven	40,074	**13.43**	**13.06**	**13.06**	**12.49**	**12.31**	**12.02**	**-10.5%**	**-39.8%**	**-29.1%**	250	256
GRI : Grand Island Air Pk	47,167	**1.85**	**1.56**	**1.03**	**3.04**	**12.19**	**12.01**	**549.0%**	**-42.7%**	**112.9%**	386	257
FLG : Pulliam Field	60,831	**11.19**	**11.78**	**11.43**	**11.56**	**12.36**	**11.93**	**6.6%**	**19.2%**	**40.5%**	266	258
JLN : Joplin Municipal	27,379	**2.52**	**1.86**	**0.60**	**0.58**	**11.67**	**11.85**	**370.9%**	**-49.0%**	**29.0%**	376	259
CMX : Houghton County	23,024	**10.46**	**10.73**	**10.48**	**13.38**	**11.54**	**11.81**	**12.9%**	**-32.3%**	**-13.7%**	277	260
PAH : Barkley Regional	17,978	**4.87**	**5.04**	**5.24**	**12.43**	**11.55**	**11.80**	**142.2%**	**-32.8%**	**-1.1%**	335	261
EAU : Eau Claire Municipal	19,097	**11.44**	**11.61**	**10.48**	**13.22**	**11.53**	**11.80**	**3.2%**	**-62.9%**	**-45.0%**	263	262
MKG : Muskegon County	14,101	**11.18**	**11.07**	**10.39**	**13.10**	**11.60**	**11.80**	**5.5%**	**-69.4%**	**-40.9%**	267	263
ISN : Sloulin Field Intl	28,202	**0.15**	**0.16**	**0.17**	**0.17**	**1.79**	**11.76**	**7742.6%**	**122.9%**	**141.9%**	433	264
GGG : Gregg County	21,112	**11.88**	**11.83**	**10.84**	**11.23**	**11.78**	**11.71**	**-1.4%**	**-37.8%**	**1.0%**	259	265
MQT : Marquette County	52,326	**16.91**	**16.62**	**15.79**	**14.40**	**13.79**	**11.48**	**-32.1%**	**-72.8%**	**-62.0%**	239	266
SHD : Shenandoah Valley	12,033	**10.39**	**10.52**	**10.33**	**10.67**	**11.02**	**11.39**	**9.7%**	**31.6%**	**107.2%**	278	267
SUN : Friedman Memorial	50,885	**16.78**	**16.27**	**13.38**	**13.03**	**12.18**	**11.12**	**-33.8%**	**-48.7%**	**-45.9%**	240	268
IPT : Lycoming County	24,508	**12.94**	**12.63**	**11.52**	**10.85**	**10.95**	**11.10**	**-14.2%**	**-40.1%**	**-43.0%**	253	269
RKS : Sweetwater County	26,219	**4.47**	**11.87**	**11.56**	**11.40**	**10.92**	**11.07**	**147.6%**	**35.5%**	**83.3%**	340	270
TOL : Toledo Express	81,127	**28.28**	**26.91**	**16.60**	**16.53**	**12.10**	**10.94**	**-61.3%**	**-74.9%**	**-63.9%**	172	271
SMX : Santa Maria Public	41,620	**13.40**	**12.99**	**11.29**	**11.09**	**10.68**	**10.73**	**-19.9%**	**-20.0%**	**-14.0%**	251	272
SUX : Sioux Gateway	28,137	**12.70**	**13.74**	**11.84**	**10.30**	**9.74**	**10.64**	**-16.3%**	**-63.1%**	**-57.0%**	256	273
ALO : Waterloo Municipal	22,297	**11.17**	**11.48**	**10.71**	**10.28**	**9.66**	**10.62**	**-4.9%**	**-50.2%**	**-39.9%**	268	274
JST : Johnstown/Cambria	7,956	**3.99**	**9.02**	**8.72**	**9.73**	**10.28**	**10.59**	**165.5%**	**-16.6%**	**-16.6%**	344	275
APN : Alpena County Regl	12,320	**9.67**	**9.80**	**9.83**	**9.98**	**10.16**	**10.59**	**9.4%**	**-43.0%**	**-16.2%**	286	276
GCC : Campbell County	32,846	**4.60**	**12.69**	**12.51**	**12.30**	**11.66**	**10.58**	**130.3%**	**27.8%**	**34.7%**	338	277
RDD : Redding Municipal	38,290	**12.85**	**12.79**	**12.22**	**12.82**	**11.68**	**10.36**	**-19.4%**	**-46.2%**	**-69.7%**	255	278
MCW : Mason City Muni	11,594	**10.09**	**10.35**	**10.11**	**10.02**	**9.45**	**10.27**	**1.7%**	**-30.2%**	**-52.5%**	280	279
CKB : Benedum	12,012	**5.06**	**8.87**	**8.61**	**9.10**	**9.63**	**10.25**	**102.7%**	**17.9%**	**24.6%**	332	280
MGW : Morgantown Muni	10,674	**5.21**	**9.75**	**9.42**	**9.68**	**9.86**	**10.00**	**91.9%**	**-1.9%**	**-1.9%**	329	281
DBQ : Dubuque Municipal	36,148	**11.36**	**14.27**	**13.16**	**9.98**	**10.53**	**9.88**	**-13.0%**	**-28.1%**	**-33.9%**	264	282
PBG : Plattsburgh Intl	139,698	**6.61**	**5.49**	**3.59**	**7.68**	**10.13**	**9.78**	**47.9%**	**186.5%**	**1098.1%**	312	283
MOD : Modesto Municipal	18,683	**17.03**	**14.93**	**10.42**	**10.70**	**9.89**	**9.72**	**-42.9%**	**-57.5%**	**-57.5%**	237	284
CIC : Chico Muni	20,881	**9.82**	**10.11**	**9.63**	**9.82**	**9.85**	**9.69**	**-1.3%**	**-6.4%**	**-6.4%**	285	285
PLN : Emmet County	22,708	**11.01**	**11.27**	**10.84**	**10.67**	**10.46**	**9.68**	**-12.0%**	**-33.7%**	**-18.5%**	269	286
ATY : Watertown Munic	8,984	**9.51**	**9.77**	**9.53**	**9.44**	**9.22**	**9.68**	**1.7%**	**-27.4%**	**-48.3%**	289	287
AOO : Blair County	4,107	**10.25**	**10.04**	**9.29**	**9.04**	**9.21**	**9.67**	**-5.7%**	**-15.7%**	**10.7%**	279	288
PIR : Pierre Municipal	14,802	**1.91**	**9.42**	**8.61**	**9.85**	**10.34**	**9.48**	**395.8%**	**-2.4%**	**-22.8%**	384	289
JMS : Jamestown Municipal	5,355	**0.14**	**8.33**	**8.42**	**8.46**	**8.28**	**9.46**	**6500.1%**	**84.2%**	**37.3%**	436	290
FOD : Fort Dodge Municipal	10,866	**0.15**	**0.15**	**0.15**	**8.57**	**9.22**	**9.44**	**6161.5%**	**7.2%**	**-23.2%**	432	291
CIU : Chippewa County	18,717	**8.34**	**8.81**	**8.84**	**9.72**	**10.19**	**9.44**	**13.1%**	**-10.3%**	**31.9%**	296	292
ESC : Delta County	13,478	**3.23**	**8.45**	**8.85**	**9.37**	**10.21**	**9.39**	**190.5%**	**23.8%**	**225.8%**	357	293
BKW : Raleigh County	2,966	**9.53**	**8.89**	**7.89**	**8.81**	**9.16**	**9.37**	**-1.7%**	**-35.5%**	**4.5%**	288	294
ABR : Aberdeen Municipal	24,503	**11.49**	**11.75**	**11.00**	**9.92**	**9.74**	**9.06**	**-21.2%**	**-69.3%**	**-52.3%**	261	295

Airport	Enplaned Pax (2011)	ACQI (2007)	ACQI (2008)	ACQI (2009)	ACQI (2010)	ACQI (2011)	ACQI (2012)	% Change in ACQI (07-12)	% Change in Flights (07-12)	% Change in Seats (07-12)	Rank (2007)	Rank (2012)
BJI : Bemidji Municipal	23,910	11.28	11.46	11.08	10.79	9.42	9.01	-20.1%	-60.4%	-37.6%	265	296
PPG : Pago Pago Intl	45,486	7.24	5.85	5.82	6.88	7.83	8.93	23.3%	6.8%	6.8%	305	297
BRD : Crow Wing	17,574	10.84	10.78	10.37	9.85	9.37	8.89	-18.0%	-64.3%	-47.4%	272	298
HIB : Chisholm	12,272	9.51	9.76	9.66	10.17	9.89	8.83	-7.1%	-24.7%	10.7%	290	299
ART : Watertown Muni	4,449	7.48	3.28	0.15	0.15	7.61	8.81	17.8%	-70.3%	-31.2%	303	300
OTH : North Bend Muni	22,066	2.55	7.95	8.15	8.56	8.51	8.76	243.9%	25.2%	-35.4%	375	301
COD : Yellowstone Reg'l	28,019	9.83	9.81	9.68	10.07	9.17	8.58	-12.7%	-31.2%	-5.3%	284	302
STS : Sonoma County	102,414	6.46	8.56	8.22	8.23	8.17	8.55	32.2%	92.4%	96.6%	313	303
IPL : Imperial County	6,136	9.94	9.77	8.67	7.86	8.36	8.50	-14.5%	-44.1%	-44.1%	281	304
LAR : General Brees Field	8,493	2.77	2.76	2.75	2.76	2.77	8.45	205.1%	-9.3%	-5.2%	367	305
INL : Falls International	15,157	9.22	9.73	10.07	9.68	9.41	8.37	-9.2%	-38.6%	-17.8%	292	306
MMH : Mammoth/Yosem.	26,201	0.00	1.90	2.26	8.07	8.39	8.20	N/A	N/A	N/A	457	308
CEC : Jack Mc Namara Field	14,887	7.96	8.23	7.71	7.92	7.92	8.09	1.6%	-4.5%	-4.5%	299	309
LWS : Nez Perce County	62,845	10.98	9.68	8.64	8.85	7.98	8.07	-26.6%	-43.6%	-7.6%	271	310
JNU : Juneau Intl	355,499	7.71	7.98	7.51	7.51	7.47	7.70	-0.2%	-25.5%	-9.6%	302	312
LMT : Klamath Falls Airport	15,856	2.42	7.86	8.19	8.32	8.20	7.61	213.8%	-28.4%	-42.0%	378	313
KTN : Ketchikan Intl	102,086	7.12	7.46	7.50	7.47	7.42	7.58	6.6%	16.2%	23.0%	306	314
PSE : Ponce	95,658	22.62	19.07	7.25	7.66	7.75	7.53	-66.7%	-68.2%	-28.7%	198	315
TWF : City County	38,533	11.00	9.93	9.25	9.27	8.35	7.41	-32.7%	-45.6%	-45.4%	270	316
IMT : Ford	11,324	3.27	8.44	8.53	8.46	8.24	7.36	124.9%	-44.7%	45.4%	356	317
EKO : Elko Municipal	23,543	10.57	9.88	9.16	9.05	8.23	7.24	-31.5%	-45.1%	-45.1%	275	318
PIH : Pocatello Municipal	21,566	10.60	10.10	9.21	9.02	8.03	7.21	-31.9%	-50.0%	-41.1%	274	319
YKM : Yakima Air Terminal	55,902	12.94	11.28	7.49	6.86	6.43	7.02	-45.8%	-14.1%	-10.7%	254	320
LNY : Lanai City	43,596	8.78	8.75	5.80	7.62	8.62	7.01	-20.2%	-14.9%	-21.8%	293	321
EAT : Pangborn Field	50,927	7.81	7.76	6.90	6.53	6.39	6.70	-14.2%	-0.1%	40.1%	301	322
PUW : Moscow Regional	39,134	5.05	5.43	5.29	5.38	5.78	6.47	28.1%	-36.1%	31.3%	333	323
BTM : Silver Bow County	24,806	8.19	7.55	7.16	7.42	6.39	6.43	-21.5%	-54.6%	-63.1%	297	324
CDC : Cedar City Municipal	8,690	9.50	8.60	6.98	6.90	6.33	6.27	-34.0%	-58.9%	-9.3%	291	325
PQI : Presque Isle Muni	14,264	6.19	6.37	6.24	6.22	5.82	6.22	0.5%	18.4%	18.4%	319	326
BHB : Bar Harbour	12,510	6.74	7.02	5.60	5.62	5.91	6.18	-8.4%	-18.6%	-14.7%	309	327
PVC : Provincetown Muni	10,967	6.17	6.47	4.99	5.38	6.03	5.99	-2.9%	0.4%	0.4%	321	328
ALW : Walla Walla	32,139	6.18	6.55	5.51	5.53	5.44	5.64	-8.8%	-41.2%	25.0%	320	329
LBE : Westmoreland Cty	36,971	9.66	9.75	8.94	0.00	4.91	5.45	-43.6%	-19.3%	274.9%	287	330
IAG : Niagara Falls Intl	98,982	0.16	0.19	0.20	0.34	5.32	5.39	3302.8%	9666.7%	10266.0%	430	331
ENA : Kenai Municipal	90,806	4.49	4.52	4.73	5.14	5.29	5.31	18.2%	17.0%	4.6%	339	332
WYS : Yellowstone	5,323	6.31	6.28	6.01	5.89	5.26	5.27	-16.5%	5.3%	5.3%	315	333
PVU : Provo Municipal	14,858	0.00	0.00	0.00	0.00	4.47	5.08	N/A	N/A	N/A	457	334
RFD : Greater Rockford	102,559	8.14	7.23	0.76	0.70	4.32	4.99	-38.7%	-46.2%	-19.9%	298	335
FMN : Farmington Muni	16,322	11.44	9.84	3.07	4.26	5.58	4.65	-59.4%	-24.6%	-24.6%	262	336
TUP : Lemons Municipal	12,615	17.57	17.13	16.64	16.11	4.44	4.63	-73.6%	-46.2%	-34.4%	231	337
PKB : Wood County	7,551	5.37	10.21	9.43	10.23	4.87	4.61	-14.1%	52.4%	-14.9%	327	338

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LNS : Lancaster	19,001	3.68	0.00	3.88	5.01	5.00	4.51	22.7%	135.0%	12.3%	349	339
SIT : Sitka	9,106	4.00	4.28	4.34	4.21	4.12	4.35	8.8%	-5.6%	-5.6%	343	340
PIB : Hesler/Noble Field	2,908	4.67	4.83	5.12	4.84	4.41	4.33	-7.2%	-12.3%	18.1%	336	341
JHW : Jamestown Muni	55,647	3.48	9.51	4.69	4.54	4.56	4.29	23.4%	3.2%	-42.3%	354	342
DUJ : Jefferson County	11,397	3.82	5.47	4.65	4.51	4.53	4.27	11.6%	15.3%	15.3%	345	343
FKL : Chess-Lambertin	5,618	3.63	5.39	4.65	4.51	4.53	4.27	17.4%	56.4%	56.4%	351	344
DIK : Dickinson	917	2.56	2.71	2.89	2.92	3.47	4.15	62.3%	-13.8%	-13.8%	374	345
LEB : Lebanon Regional	16,680	5.58	5.38	5.83	4.67	4.10	4.13	-26.1%	91.8%	-26.8%	326	346
GLH : Greenville Municipal	23,938	4.67	4.83	5.12	4.84	4.41	4.10	-12.2%	15.1%	53.0%	337	347
BFD : Bradford Regional	5,770	3.68	10.18	4.45	4.30	4.32	4.07	10.6%	-30.5%	-61.2%	348	348
VQS : Vieques	22,470	6.05	3.40	2.72	2.80	3.36	3.92	-35.2%	20.9%	-9.0%	323	349
HYS : Hays Municipal	5,997	3.31	2.31	2.97	3.76	3.76	3.76	13.8%	51.0%	51.0%	355	350
HGR : Washington County	100,596	3.54	0.10	3.22	4.11	4.00	3.74	5.7%	193.6%	132.2%	352	351
MCN : Lewis B. Wilson	7,808	18.02	20.45	4.42	3.74	3.74	3.71	-79.4%	36.4%	-79.8%	223	352
RKD : Knox County Reg'l	9,912	5.60	6.10	3.41	3.55	3.53	3.61	-35.5%	-22.0%	-63.0%	325	353
PGA : Page	13,324	2.77	2.10	2.14	2.14	2.48	3.60	29.7%	67.3%	62.3%	366	354
SLK : Adirondack	14,299	6.65	5.08	2.92	3.16	3.16	3.41	-48.7%	-9.5%	-57.1%	311	355
PUB : Pueblo Memorial	6,989	1.75	1.82	2.44	2.94	3.51	3.21	83.4%	98.1%	134.5%	392	356
RUT : Rutland State	11,019	5.33	2.94	2.92	3.01	3.16	3.17	-40.5%	68.9%	-7.9%	328	357
HYA : Barnstable Municipal	5,611	7.87	7.91	5.99	3.38	3.43	3.13	-60.2%	-22.5%	-27.2%	300	358
DEC : Decatur	3,996	5.16	0.55	0.55	2.87	3.22	3.11	-39.6%	28.7%	-35.9%	331	359
BFF : Scottsbluff County	113,280	2.84	2.94	2.92	3.13	3.00	3.10	9.0%	36.8%	36.8%	363	360
SHR : Sheridan County	10,962	5.17	3.35	3.04	3.51	3.49	3.03	-41.5%	-50.5%	-47.2%	330	361
RIW : Riverton Municipal	7,104	3.10	3.51	2.89	3.07	3.32	2.98	-4.1%	1.3%	-9.1%	358	362
CEZ : Cortez Municipal	4,501	2.65	2.61	2.71	2.53	2.75	2.95	11.3%	21.8%	21.8%	371	363
EAR : Kearney Muni	11,220	2.75	2.72	2.75	2.75	2.71	2.79	1.6%	32.9%	-1.4%	368	364
AUG : Augusta State	5,159	6.38	5.25	6.24	6.36	3.30	2.78	-56.4%	-20.0%	-62.1%	314	365
SOW : Show Low	152,366	2.56	2.31	2.13	2.00	2.91	2.77	7.9%	29.4%	29.4%	373	366
IFP : Laughlin Bullhead Intl	81,149	3.52	3.14	2.99	3.07	0.00	2.72	-22.8%	-99.6%	-99.6%	353	367
LBF : Lee Bird Field	7,020	2.84	2.82	2.75	2.75	2.75	2.70	-4.7%	1.2%	1.2%	364	368
ALS : Alamosa Municipal	2,771	2.61	2.61	2.61	2.61	2.61	2.57	-1.6%	13.1%	13.1%	372	369
ROP : Rota	26,764	2.89	2.77	2.77	2.88	2.88	2.50	-13.7%	-9.0%	-12.4%	360	370
DDC : Dodge City Municipal	11,017	3.03	1.58	1.77	1.71	1.77	2.42	-20.1%	-23.6%	-23.6%	359	371
MBL : Blacker	5,599	2.88	3.09	0.42	0.42	2.89	2.41	-16.5%	-46.3%	-5.6%	361	372
PRC : Prescott Mun	9,181	8.47	7.83	3.85	2.84	1.61	2.23	-73.7%	-28.0%	-28.0%	295	374
BET : Bethel	484	2.04	2.38	2.06	2.02	2.02	2.22	8.6%	200.0%	113.6%	380	375
ADQ : Kodiak Airport	1,810	2.48	2.52	2.33	2.35	2.21	2.17	-12.2%	56.7%	-4.3%	377	376
BRL : Burlington Muni	975	3.71	0.54	0.51	1.89	2.14	2.17	-41.6%	208.0%	53.7%	347	377
VIS : Visalia Municipal	35,863	7.01	5.41	0.55	0.51	1.53	2.13	-69.7%	16.6%	16.6%	307	378
RHI : Oneida County	8,007	10.66	10.59	10.37	10.73	9.20	2.07	-80.6%	-75.1%	-58.0%	273	379
TEX : Telluride	1,655	9.84	8.97	7.43	8.29	8.56	2.06	-79.1%	-46.0%	-52.6%	283	380

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DVL : Devils Lake Muni	5,599	0.14	0.14	7.89	8.45	8.29	2.01	1301.3%	53.0%	-14.5%	436	381
VEL : Vernal	5,645	2.71	2.77	1.79	1.75	1.81	1.94	-28.1%	46.3%	46.3%	369	382
CNY : Canyonlands Field	9,181	2.70	2.63	1.76	1.76	2.08	1.89	-30.0%	51.1%	51.1%	370	383
MCK : Mccook Municipal	1,810	0.07	1.17	1.79	1.79	1.76	1.88	2598.2%	65.5%	65.5%	450	384
IGM : Kingman Municipal	975	5.68	5.32	0.40	1.67	2.04	1.85	-67.4%	-24.8%	-24.8%	324	385
HOM : Homer Municipal	35,863	2.02	2.15	2.05	1.92	1.84	1.82	-9.5%	-14.6%	-8.6%	381	386
LBL : Liberal Municipal	8,007	1.25	1.85	1.92	2.75	2.50	1.75	40.1%	13.7%	13.7%	402	387
AHN : Athens Municipal	1,655	8.73	9.58	4.87	3.19	1.77	1.70	-80.5%	3.8%	-54.7%	294	388
MCE : Merced Municipal	3,181	7.31	6.00	0.26	1.57	2.16	1.68	-77.0%	-17.0%	-17.0%	304	389
AKN : King Salmon	40,345	1.82	1.96	1.73	1.65	1.43	1.61	-12.0%	40.6%	17.5%	389	390
IWD : Gogebic County	3,391	2.88	0.04	0.05	0.05	0.05	1.57	-45.5%	-4.0%	13.2%	362	391
CDR : Chadron Municipal	1,980	0.14	0.38	1.79	2.01	1.13	1.48	940.3%	34.0%	34.0%	439	392
DLG : Dillingham Muni	30,406	1.84	2.03	1.75	1.64	1.49	1.46	-21.0%	-43.4%	-23.5%	388	393
SCK : Stockton Airport	56,044	0.77	0.59	0.60	0.89	1.19	1.42	85.5%	75.5%	78.0%	406	394
OME : Nome	58,892	1.58	1.65	1.46	1.46	1.36	1.35	-14.4%	14.7%	-1.0%	395	395
HON : W W Howes Muni	1,681	1.50	0.14	0.15	0.14	0.14	1.34	-10.8%	-3.6%	-26.5%	398	396
TVF : Thief River Falls Regi	2,418	0.14	0.14	0.14	0.14	0.14	1.30	804.6%	38.2%	27.5%	436	397
MAZ : El Mani	4,961	1.16	1.23	0.97	1.10	1.23	1.22	5.6%	-6.3%	-6.3%	404	398
OTZ : Ralph Wien Memorial	62,738	1.34	1.47	1.28	1.31	1.18	1.16	-13.6%	44.6%	3.3%	400	399
CDV : Mile 13 Field	17,731	1.39	1.48	1.31	1.30	1.19	1.15	-16.9%	-2.1%	-12.0%	399	400
UIN : Baldwin Field	9,083	5.04	0.58	0.65	1.09	1.09	1.09	-78.3%	56.1%	-26.0%	334	401
MWA : Williamson County	10,558	3.82	0.58	0.67	1.09	1.09	1.08	-71.6%	98.4%	-6.0%	346	402
BRW : Barrow Wbas	41,083	1.18	1.29	1.22	1.23	1.08	1.08	-8.3%	13.9%	0.3%	403	403
OWB : Daviess County	17,296	6.19	5.42	0.43	0.81	0.97	1.08	-82.6%	508.6%	984.4%	318	404
VDZ : Valdez Municipal	16,147	0.56	0.58	0.48	0.81	0.96	0.97	72.9%	73.9%	18.1%	409	405
SCC : Prudhoe / Deadhorse	37,711	1.33	1.19	1.01	1.01	0.89	0.91	-31.5%	-12.4%	-18.9%	401	406
ELY : Yelland	589	0.38	5.19	0.13	0.14	0.77	0.90	133.1%	3.8%	3.8%	412	407
TBN : Forney Aaf	6,978	3.66	0.69	0.81	0.57	0.85	0.87	-76.1%	319.1%	98.5%	350	408
HRO : Boone County	2,771	0.37	0.31	0.10	0.60	0.75	0.76	107.4%	27.7%	-39.5%	413	410
AIA : Alliance Municipal	1,730	1.76	1.44	1.10	1.34	1.05	0.73	-58.5%	-11.7%	-11.7%	391	411
CGI : Cape Girardeau Muni	5,940	6.27	5.66	0.45	0.73	0.73	0.73	-88.4%	291.6%	85.5%	316	412
FNL : Ft Collins/Loveland	44,999	0.74	0.71	0.74	0.72	0.69	0.71	-3.5%	1.8%	1.8%	407	413
MKL : Mckellar Field	484	6.19	5.42	0.35	0.70	0.70	0.70	-88.8%	538.8%	214.0%	317	414
PDT : Pendleton Municipal	4,952	1.99	1.95	0.53	0.62	0.67	0.66	-66.8%	16.0%	-71.7%	382	415
FBS : Friday Harbor SPB	N/A	0.17	0.00	0.44	0.28	0.28	0.66	280.2%	-31.8%	-31.8%	429	416
IRK : Kirksville Municipal	5,100	1.99	1.49	0.07	0.40	0.64	0.63	-68.1%	-12.3%	-58.4%	383	417
SVC : Grant County	1,609	0.36	0.36	0.36	0.36	0.36	0.60	64.5%	7.2%	7.2%	414	418
ELD : Goodwin Field	1,803	1.73	0.86	0.10	0.53	0.55	0.55	-68.2%	0.2%	-52.4%	393	419
JBR : Jonesboro Municipal	989	0.14	0.13	0.10	0.53	0.54	0.55	285.5%	50.5%	-26.0%	439	420
SLN : Salina Municipal	2,857	1.54	2.41	0.58	0.51	0.54	0.54	-64.8%	24.4%	-41.1%	397	421
CVN : Clovis Municipal	2,033	0.50	0.36	0.36	0.36	0.36	0.46	-9.1%	-15.6%	-15.6%	411	422

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HOT : Memorial Field	1,543	1.85	0.88	0.10	0.53	0.56	0.40	-78.2%	-12.5%	-58.5%	387	423
UNK : Unalakleet	12,332	0.27	0.45	0.37	0.43	0.43	0.40	46.3%	101.8%	178.1%	417	424
ANI : Aniak	16,217	0.84	0.78	0.64	0.63	0.50	0.39	-52.9%	-32.5%	-24.8%	405	425
CNM : Cavern City Air Term	2,707	0.25	0.40	0.46	0.40	0.39	0.37	47.3%	35.6%	-33.7%	419	426
PGD : Charlotte County	147,698	0.00	0.00	0.33	0.62	0.82	0.36	N/A	N/A	N/A	457	427
MSS : Richard Field	4,396	0.18	0.17	0.15	0.15	0.28	0.28	50.5%	16.6%	-44.8%	426	428
OGS : Ogdensburg Muni	3,589	0.19	0.16	0.15	0.15	0.28	0.28	42.9%	-15.4%	-59.9%	423	428
KSM : Saint Marys	12,415	0.13	0.19	0.23	0.23	0.25	0.26	95.2%	-2.7%	27.4%	442	430
GAL : Galena	10,862	0.25	0.28	0.27	0.30	0.44	0.24	-6.4%	0.7%	-15.6%	418	431
EWB : New Bedford Muni	11,152	0.21	0.21	0.22	0.22	0.23	0.23	10.7%	29.2%	29.2%	421	432
GST : Gustavus	11,537	0.21	0.32	0.19	0.19	0.19	0.21	1.8%	11.3%	27.0%	422	433
LUP : Kalaupapa	520	0.65	0.18	0.18	0.18	0.18	0.18	-72.0%	0.5%	0.5%	408	434
PSG : Petersburg Municipal	18,318	0.19	0.18	0.17	0.18	0.18	0.18	-6.0%	-27.4%	-13.6%	425	435
YAK : Yakutat	10,517	0.18	0.18	0.18	0.18	0.18	0.18	-0.1%	-0.3%	-9.9%	427	436
YNG : Youngstown Muni	37,048	0.10	0.11	0.11	0.35	0.17	0.17	62.9%	212.7%	217.7%	447	437
WRG : Wrangell Airport	11,674	0.15	0.15	0.17	0.15	0.15	0.15	0.0%	0.1%	-12.2%	434	438
SDY : Richard Municipal	5,557	0.15	0.16	0.20	0.21	0.11	0.15	-0.2%	7.3%	7.3%	435	439
GBD : Great Bend Muni	1,021	1.56	0.56	0.34	0.17	0.17	0.14	-90.8%	-18.1%	-18.1%	396	440
WRL : Worland Municipal	3,070	0.14	0.42	1.77	0.47	0.14	0.14	0.6%	-1.8%	-1.8%	439	441
TIQ : Tinian	16,706	0.13	0.13	0.13	0.13	0.13	0.13	-0.7%	-0.4%	-0.4%	443	442
BFI : Boeing Field Intl	34,434	0.52	3.04	1.91	1.36	1.06	0.13	-75.6%	-59.9%	-62.3%	410	443
LWT : Lewistown Municipal	348	0.12	0.16	0.14	0.20	0.16	0.11	-12.2%	0.2%	0.2%	444	444
MLS : Miles City Municipal	591	0.12	0.16	0.16	0.16	0.14	0.11	-13.7%	-8.5%	-8.5%	445	445
OLF : Wolf Point Intl	1,479	0.12	0.02	0.10	0.19	0.16	0.10	-13.7%	-2.5%	-2.5%	446	446
BID : Block Island	10,164	0.07	0.07	0.07	0.07	0.07	0.08	18.8%	19.2%	19.2%	449	447
HNH : Hoonah	10,815	0.08	0.07	0.06	0.06	0.05	0.06	-30.6%	-27.3%	4.7%	448	448
CLM : William R Fairchild	8,242	0.22	0.44	2.87	0.16	0.05	0.03	-85.1%	-65.9%	-67.4%	420	449
FRD : Friday Harbor	11,283	0.19	0.39	2.09	0.15	0.04	0.03	-83.9%	-54.2%	-54.8%	424	450
DUT : Emergency Field	30,048	1.79	1.79	1.60	1.39	0.06	0.03	-98.5%	-60.4%	-81.7%	390	451
GDV : Dawson Community	703	0.03	0.01	0.05	0.17	0.15	0.02	-10.2%	-13.2%	-13.2%	452	452
HVR : Havre City-County	1,025	0.02	0.01	0.08	0.18	0.14	0.02	-0.1%	0.2%	0.2%	454	452
GGW : Glasgow Intl	1,835	0.02	0.01	0.03	0.19	0.15	0.02	-5.5%	-7.2%	-7.2%	454	454
GCW : Grand Canyon West	71,316	0.00	0.01	0.00	0.00	0.01	0.01	247.1%	N/A	N/A	456	455
BLD : Boulder City	190,716	0.03	0.01	0.00	0.00	0.01	0.01	-49.3%	-46.5%	-51.6%	453	455
BED : Hanscom Field	10,893	0.17	0.00	0.00	0.00	0.01	0.00	-97.4%	-90.7%	-85.3%	428	457
GCN : Grand Canyon Natl	331,924	0.03	0.01	0.00	0.00	0.00	0.00	-84.2%	-84.1%	-80.9%	451	458
FOE : Forbes Afb	7,015	0.30	0.00	0.00	0.00	0.00	0.00	-100.0%	-100.0%	-100.0%	416	459
SIG : Isla Grande	20,353	0.15	0.16	0.06	0.07	0.31	0.00	-100.0%	-100.0%	-100.0%	431	459
UTM : Tunica Municipal	41,670	0.00	0.00	0.00	4.02	4.15	0.00	N/A	N/A	N/A	457	459
VGT : North Air Terminal	55,161	0.00	0.00	0.00	0.00	0.00	0.00	N/A	N/A	N/A	457	459