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IMPACTS OF FLIGHT DELAYS AND CANCELLATIONS ON TRAVEL FROM SMALL
COMMUNITY AIRPORTS

by

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INTRODUCTION & NEED FOR STUDY

During recent years, airlines have used “capacity discipline” to reduce the number of flights, contributing to airlines’ profits profit by increasing load factors on remaining flights. These capacity reductions have hit smaller airports more than the larger hubs. Domestic flights from the 29 largest United States airports were cut by 8.8 percent from 2007 to 2012. However, smaller airports lost 21.3% of their flights, including 15.4% at “non-hub” airports (Wittman & Swelbar, 2013b). Since 2012, many small communities have lost all commercial air service, including Chico (CA), Klamath (OR), Modesto (CA), Telluride (CO), and Topeka (KS).

The president of the Regional Airline Association recently argued that “in today’s global economy, the only two things a community must have are an Internet connection and scheduled air service” (Kaufman, 2013). If air service is a benefit to a local community, investigating attributes, trends, and challenges in air service to small communities may help cities to better understand how travelers use small community airports and perhaps lead to strategies to retain or increase the number of passengers flying from these airports.

This paper investigates flight delays and cancellations at some of the nation’s smallest airports with commercial air service. In particular, it addresses the net impact of flight delays and cancellations for travelers departing from these airports.

REVIEW OF LITERATURE

Small community airports which are not subsidized by the federal Essential Air Service (EAS) program face many challenges in maintaining air service. Decisions about where to fly are up to the airlines, and airlines have given many reasons for eliminating air service to small communities. One major demand-driven reason is that there were not enough passengers flying from the local airport (Valine, 2014a; Urseny, 2014). Other reasons are supply-driven. New regulations require pilots to have more flight hours and longer rest periods, resulting in a need for more pilots and a pilot shortage (Hall, 2014; Valine, 2014a). This has caused some air carriers to reduce operations and pull out of some small airports (Ford, 2014).

Airports benefit small cities, and loss of air service is important to cities because it may also affect attraction of businesses and employees as well as the city’s image (Button, Doh, & Yuan, 2010; Kaufman, 2013). Attempting to regain lost service can be costly, as cities must pay for market studies and often provide large incentives for airlines to return due to an “imbalance of bargaining power” in which air carriers control whether to serve an airport (Wittman, 2014).

Air travel demand is important to small airports’ success, but many travelers choose to drive to larger airports instead of flying from a small community airport for many reasons, especially availability of non-stop flights or cheaper fares (Des Garennes, 2014). However, another reason is perceived reliability of service. Consultants and local leaders have pointed to a large number of delays and cancellations as reasons for low passenger totals (Valine 2014b). After Chico Municipal Airport lost commercial service, Chico’s newspaper wrote that “passengers could never be assured that the promised flights would actually occur.” (*Editorial*, 2014). Researchers (e.g. (Wittman & Swelbar, 2013a, 2013b) have considered the number of flights and overall connectivity in small communities, but do not appear to have investigated the effect of flight delays and cancellations on small community air travelers.

The government reports flight delays from most commercial airports (BTS, 2014a). However, the effect of these flight delays on actual travel times is less clear. Because connections are usually necessary when traveling from small airports, departure delays may lead to missed connections. In the case of a cancellation, need to wait several hours (often overnight)

for the next flight due to the small number of daily departures. This paper investigates the impact of delays and cancellations at small community airports by determining the final arrival delay due to flight disruptions at the initial airport.

METHODS

The goal of this study was to determine how delays and cancellations affect air travelers from small cities. The airports studied were the smallest non-EAS airports with daily, year-round connecting service from a major airline alliance (such as United Express) with current flight delay data available from the Federal government (BTS, 2014b; FAA, 2014). Four small airports, with service to four different hub airports, were investigated: Redding, California (Airport code RDD) with service to San Francisco; Elko, Nevada (EKO) to Salt Lake City; Longview, Texas (GGG) to Dallas-Fort Worth; and Albany, Georgia (ABY) to Atlanta.

Using flight times from airline websites, itineraries were produced from each origin airport to twelve airports: an airport from the largest metro areas (LGA, LAX, ORD, DFW, IAH, PHL, DCA), three vacation destinations (LAS, MCO, HNL), America's busiest airport (ATL), and a randomly-chosen large non-hub (IND). Therefore, there were twelve city-pairs originating from each small airport. Multiple itineraries were possible in each city-pair. For example, two daily flights from Redding resulted in 24 (12x2) itineraries. However, not all departing flights offered connections to all of destinations. Flights on a non-weekend departure day (Monday, March 23, 2015) were chosen. Airfares were not analyzed.

Then, delays and cancellations were investigated using government data (BTS, 2014a). Based on average delays on each of the routes originating at the small airport, it was determined which delayed flights would result in a missed connection (less than 40 minute connection time). If a connection would be missed, the next possible flight on the same airline was chosen. Original arrival times and delayed arrival times were compared.

Cancellations would also affect travelers. Total arrival delays as a result of cancelled flights were calculated by comparing original itineraries with itineraries altered by cancellations. The research made many assumptions: seats would be available on the next flight, airlines would only rebook only on their own flights, and connecting flights would operate on time. Diverted flights (<0.03% of flights in this study) were ignored. Based on the percentage of flights cancelled and delayed, net effects of the delays and cancellations were calculated.

RESULTS

Overall, 3,999 flights operated from these four airports in 2013. The percentage of delayed flights varied by airport, ranging from 8% of all flights from Elko being delayed to 24% from Redding. Across the four airports, more than one in six flights (17.5%) was delayed, with an average delay of about 75 minutes (ranging from 65 min. at Albany to 84 min. at Longview). Cancellations also affected these airports, with 3.3% of flights cancelled in 2013. Redding had the highest percentage of cancellations (4.94%), while Albany had the lowest (2.79%).

In total, there were 99 possible itineraries (including 94 with connecting flights) to the 12 destinations from the four airports. Each possible itinerary was analyzed individually to determine, if an originating flight was delayed by the average, would a flier miss the connecting flight to each of the 12 destinations. Overall, when faced with the average delay, 72.3% of the connecting itineraries would face a missed connection, with the highest percentage from Longview (94.7% missed connections) and Albany (84.4%). Therefore, it appears that delays resulted in not just late arrival times, but also missed flights and potential additional costs.

In 26 of the 94 connecting itineraries, a delayed flight would not cause a missed connection. In the 68 remaining itineraries, missed connections would result, leading to flight changes and later arrivals. Twenty delays would result in arriving at least two hours late at the final destination, while nine itineraries resulted in arriving at a destination at least four hours late. Across all airports, if the passengers' flight was delayed by the average time at the origin airport, they would arrive at their destination on average much later than their original itinerary: 45 minutes late (0:45) (Redding), 1:35 late (Albany), 1:48 late (Elko), and 3:29 late (Longview). The final number is the most startling, as over 20% of flights are delayed from Longview by an average of 84 minutes. In the 19 connecting Longview itineraries, passengers would face an average arrival delay of nearly 3 ½ hours, primarily due to missed connections.

Because of the few daily flights from small airports, cancellations lead to long (often overnight) delays. After a cancelled flight, the shortest average delay was 7:56 from Albany, but the average delay at the other three airports was over twelve hours, with an average arrival delay of 14:37 from Redding. Cancellation of the last daily flight would require an overnight wait until the next flight. While only 1.45% to 4.94% of flights were cancelled from each airport, a single cancellation resulted in large disruptions as there were limited rebooking options.

Combining the percentage of flights facing a delay from each airport and the likelihood of a missed connection, it appears that about one in six (15.98%) itineraries to major domestic airports from these four airports would face a missed connection or cancellation. This chance of a missed connection ranged from 7.4% of analyzed itineraries (Albany) to 23.37% of itineraries (Longview). The total missed connection percentage was calculated by taking the percentage of itineraries that would face a missed connection due to initial flight delay (68 of 94 itineraries) multiplied by the percent chance of having a delayed flight (17.5%). This number was added to the percentage of flights that were cancelled (3.32%), resulting in 15.98%.

CONCLUSION

Reliability has been anecdotally cited as a challenge to small community air travelers. This research indicates that high delay and cancellation rates at small airports may lead to further travel difficulties to travelers. Considering non-stop and connecting itineraries from small community airports, departure delays and cancellations led to extensive arrival delays with limited options for rebooking. This study found that approximately one in six itineraries from small community airports to several major airports would result in a missed connection based on average cancellation and delay statistics. Across itineraries, 7 of 10 itineraries from small airports would miss a connecting flight if the initial flight faced an average delay. A cancelled flight led to arrival delays averaging from 7 hours 56 minutes to 14:37 depending on the airport.

This research is of great importance to small airports because this unreliability could cause more travelers not to fly from a local airport. And, if passenger numbers drop at small airports, airlines may remove commercial service from the community. This has effects for local residents as well as the tourism industry, as a lack of flights may impact tourism development. The results indicate that small communities need to be aware of cancellation and delay statistics for their airports. It also suggests small community airport managers should engage with airline representatives to reduce or eliminate many of these delays and cancellations. Further research could expand this study to more airports in other regions, as well as to compare the small airport data with large airport data. Finally, passenger survey data should be used to determine their perceptions of small airport reliability on flight bookings.

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