

Winter 2005

An Approach to Determine the Need for Expanding Small Airports: A Case Study

Jeffrey A. Johnson

Follow this and additional works at: <https://commons.erau.edu/jaaer>

Scholarly Commons Citation

Johnson, J. A. (2005). An Approach to Determine the Need for Expanding Small Airports: A Case Study. *Journal of Aviation/Aerospace Education & Research*, 14(2). <https://doi.org/10.15394/jaaer.2005.1524>

This Article is brought to you for free and open access by the Journals at Scholarly Commons. It has been accepted for inclusion in *Journal of Aviation/Aerospace Education & Research* by an authorized administrator of Scholarly Commons. For more information, please contact commons@erau.edu.

**AN APPROACH TO DETERMINE THE NEED FOR EXPANDING SMALL AIRPORTS:
A CASE STUDY**

Jeffrey A. Johnson

ABSTRACT

Airports play an important role in the economic vitality of communities and surrounding areas. In developing and expanding an airport, there are many different variables that must be taken into account. One fundamental aspect of airport expansion is the need to hangar aircraft. The purpose of this study was to investigate constituent interest in building at least 10 new T-hangars and expanding the Blair Municipal Airport's (K46) services located in rural Blair, Nebraska (Washington County). A descriptive study questionnaire developed specifically for this study was used to collect the data from 1,232 certificated pilots in five surrounding counties of the Blair Municipal Airport.

The study found that interest in developing the Blair Municipal Airport exists. Most of the interest conveyed through the survey questionnaires was from pilots who fly primarily for recreation; however, pilots who fly equal amounts of time for recreation and business trips in addition to pilots flying for business only were a significant reportable part of this study. Major complaints reported from the survey questionnaires include the lack of adequate facilities on the airport itself, substandard hangars, and no availability of maintenance and line services.

INTRODUCTION AND BACKGROUND

Developing and expanding an airport and its associated infrastructure is often an arduous, time consuming task. The capital required for airport development comes at a significant cost and forecasted benefits of such an investment are often the subject of spirited debates. For airports that have scheduled airline service, daily revenue flow is often predictable (Kaps, NewMyer, Lanman & Sigler, 2001) that often provides the potential to justify further airport expansion. Some airport authorities have a preference for larger aircraft that can carry more passengers over smaller, general aviation aircraft (Kovach, 1998). Conversely, airports with no scheduled airline service and consequently, no daily predictable revenue flow, must often face insurmountable and even hostile challenges to grow and expand their existing facilities and services.

In any type of airport development and expansion forecasting program, it is imperative to research projected social, environmental, economic and technical forecasts as it pertains to the airport master plan (Wells, 1996) and for airports with no scheduled airline services, the challenges are even greater. Often times, the non flying public will demand justification of tax dollar expenditures for

developing and expanding an airport that is often perceived as useless or non-applicable to the ordinary citizen. Granted, the primary benefits of an airport is the time saved and cost avoided by travelers who use an airport over the next best available alternative (Federal Aviation Administration, 1992) although there are many other indirect benefits to the non flying public as well. According to Dempsey, Goetz, and Szyliowicz (as cited in Prather, 1998), public support must include citizen education and participation. Convincing the public (especially the non-flying public) that developing and expanding an airport can benefit their local communities is perhaps the most difficult challenge for most airport authority board members to overcome.

During the next six to twenty years as the City of Blair and southern Washington County, northern Omaha/Douglas County continue to grow and develop, a runway capable of accommodating larger business aircraft will become necessary (Coffman Associates, Inc., 2000). In addition to growth, the Blair Municipal Airport Authority has recognized two very important variables that have become quite favorable in developing the airport: geography and marketability. The Blair Municipal Airport, located less than ten statute miles from Interstate 680 (Omaha's northwest

Expanding Small Airports

side), is geographically well positioned to capitalize on overflow general aviation traffic from Omaha's Eppley Airport. (Over eight airlines and freight operators conduct operations out of Eppley making it the busiest civilian airport in Nebraska.) The Millard Airport's single runway, located in southwest Omaha, is less than 4,000 feet and has no room for expansion. The Blair Municipal Airport is primarily surrounded by farmland and has room to grow. Unfortunately, the airport's current condition offers less promise than its future potential. Presently, the Blair Municipal Airport faces some major obstacles in providing high capacity reliever services. The single hard surfaced narrow runway is less than 3,600 feet, the existing hangars are dilapidated to the point that some local pilots have argued in favor of bulldozing them (despite the fact there is a waiting list to rent a hangar), and there is no availability of maintenance and line services. Airline and charter services are also non-existent. Primary users of the airport include an active glider club, pilots engaged in limited flight training, and other pilots who fly for recreational purposes.

METHODOLOGY

Subjects

The population for this study included 1,232 certificated pilots residing in the following five counties surrounding the Blair Municipal Airport: Washington (57 pilots), Burt (18 pilots), Harrison (25 pilots), Dodge (82 pilots), and Douglas (1050 pilots). A descriptive type survey questionnaire was developed by the Blair Municipal Airport Authority members and the city administrator to solicit opinions from area pilots. A response rate of 467 surveys (37.9%) was achieved; however, due to the fact that several surveys were not completed, inaccurately completed, or illegible, only 261 surveys (21.2%) were classified as usable for this study. It should be noted that not all the data collected from the 261 surveys were classified as usable. Two key assumptions made about the subjects during the study included: (a) The pilots had reasonable knowledge of the facilities at the Blair Municipal Airport; and (b) the pilots responded to the questionnaire in a sincere manner using their professional and experiential expertise.

Research Instrument

The instrument used to collect the data was a survey questionnaire developed specifically for this study. The survey was distributed by employees of Blair city hall to 1,232 certificated pilots via US mail. The survey was comprised of two sections. The first section incorporated a series of questions posed to the pilots concerning the need for hangar space, aircraft type requiring hangar space, primary type of flying activity, and willingness to build/lease hangar space at the Blair Municipal Airport. In response to the survey questions, respondents were directed to choose from a series of statements ranging from yes/no responses to short answer selection. The second section of the survey instrument incorporated a demographic section. Responses left blank by the respondents were indicated by N/R (No Report) while responses checked as not applicable to a respondent were indicated as N/A. In evaluating the data presented in the following tables, rounding errors should be taken into consideration.

DATA ANALYSIS

Demographics

Data from the survey questionnaires were compiled from the software program, Minitab (1998). The most significant demographic characteristics included gender, age, occupation, highest FAA certificate held, average trip length, and years of experience as a pilot. Of the 261 respondents, 237 (90.8%) are male and 51 (41.0%) are 51 years of age or older.

DATA CROSS TABULATIONS

The data from the study were incorporated into a series of cross tabulations for ease of comparison. Some of the research data illustrated in this section have been cross tabulated with demographic information in an attempt to provide a robust descriptive profile of the respondents. Rounding errors in the tables should be considered.

In Table 1, an overwhelming majority of the respondents are male ($n=237$, 90.8%) in comparison to female respondents ($n=10$, 3.9%). Nearly one-half of all the respondents ($n=121$, 46.4%) are males flying for recreational purposes although collectively, 106 males (40.6%) fly for business or combined recreational/business purposes.

Table 1**Primary Type of Flying Activity vs. Gender**

	Recreation n %	Business n %	Rec/Bus n %	N/A n %	Total n %
Male	121(46.4)	52(19.9)	54(20.7)	10(3.8)	237(90.8)
Female	7(2.7)	2(.8)	0(0.0)	1(0.4)	10(3.9)
N/A	6(2.3)	2(0.8)	2(0.8)	4(1.5)	14(5.3)
Total	134(51.4)	56(21.5)	56(21.5)	15(5.8)	261(100.0)

In Table 2, the highest category flown was in the 25-100 mile range (n=77, 31.5%) by pilots for recreation, business, or a combination of recreation and business flights. Almost one-fifth (n=43, 17.8%) of the respondents fly an average one-way trip of 25-100 miles for recreation. Sixteen

respondents (6.2%) who reported even amounts of flying for recreation and business have flown an average of 25-100 nautical miles. Most of the respondents who fly for business as their primary type of flying activity are concentrated in the 25-100 nautical mile range (n=13, 5.4%).

Table 2***Primary Type of Flying Activity vs. Length of Flight from Respondents' Home Base Airport**

	Recreation n %	Business n %	Rec/Bus n %	N/A n %	Total n %
< 25 NM	20(8.3)	7(2.9)	5(2.1)	2(0.8)	34(14.1)
25-100	43(17.8)	13(5.4)	16(6.2)	5(2.1)	77(31.5)
100-200	18(7.4)	11(4.6)	11(4.6)	3(1.2)	43(17.8)
201-300	15(6.2)	6(2.5)	7(2.9)	1(0.4)	29(12.0)
301-400	6(2.5)	4(1.7)	4(1.7)	1(0.4)	15(6.3)
401-500	9(3.7)	2(0.8)	4(1.7)	0(0.0)	15(6.2)
>500	11(4.6)	9(3.8)	2(0.8)	3(1.2)	25(10.4)
N/R	2(0.8)	2(0.8)	0(0.0)	0(0.0)	4(1.6)
Total	124(51.3)	54(22.5)	49(20.0)	15(6.1)	242(100.0)

*Length of flight is defined as one-way in nautical miles (NM).

Expanding Small Airports

The data in Table 3 illustrate that almost one-half ($n=129$, 49.4%) of all the respondents report they are hangaring their aircraft at an airport other than the Blair Municipal Airport. Over one-quarter ($n=74$, 28.4%) of the

respondents hangaring aircraft at an airport other than the Blair Municipal Airport fly for recreational purposes. A large response rate ($n=77$, 29.5%) was categorized as N/A.

Table 3***Primary Type of Flying Activity vs. Present Hangar Tenants at Other Airports**

	Recreation n %	Business n %	Rec/Bus n %	N/A n %	Total n %
Yes	74(28.4)	24(9.2)	25(9.6)	6(2.3)	129(49.4)
No	26(10.0)	16(6.1)	10(3.8)	3(1.2)	55(21.1)
N/A	34(13.0)	16(6.1)	21(8.1)	6(2.3)	77(29.5)
Total	134(51.4)	56(21.4)	56(21.5)	15(5.8)	261(100.0)

*Are you presently hangaring your aircraft at an airport other than the Blair Municipal Airport?

Table 4 presents an overview of the primary type of flight activity and hangar consideration needs. Over one-third of the respondents ($n=38$, 14.6%) state they would consider hangaring their aircraft at the Blair Municipal Airport. An additional 42 more respondents (16.1%) report they would consider moving their aircraft to Blair only if new hangars are built. Collectively, that accounts for 80

respondents (30.7%) who are interested in hangaring their aircraft at the Blair Municipal Airport. Approximately one-half of the respondents fly for recreational purposes while the remainder fly for business or an equal combination of recreation and business. Almost one-fifth of the respondents ($n=49$, 18.8%) who fly for recreational purposes responded N/A while only 16 (6.0%) fly for business.

Table 4***Primary Type of Flying Activity vs. Blair Municipal Airport (K46) Hangar Consideration Needs**

	Recreation n %	Business n %	Rec/Bus n %	N/A n %	Total n %
Yes	20(7.7)	7(2.7)	10(3.8)	1(0.4)	38(14.6)
Yes**	22(8.4)	11(4.2)	8(3.1)	1(0.4)	42(16.1)
Have K46 hangar	6(2.3)	4(1.5)	4(1.5)	1(0.4)	15(5.8)
No	37(14.2)	18(6.9)	22(8.4)	7(2.7)	84(32.2)
N/A	49(18.8)	16(6.0)	12(4.6)	5(1.9)	82(31.3)
Total	134(51.4)	56(21.3)	56(21.4)	15(5.8)	261(100.0)

*Would you consider hangaring your aircraft at the Blair Municipal Airport?

**Yes, but only if new hangars are built.

In Table 5, there is a relatively even distribution of respondents who need hangar space at the Blair Municipal Airport ranging from 2-12 years. This accounts for 70

respondents (26.8%). Collectively, almost one-half of the respondents ($n=46$, 17.6%) who need hangar space are in the *Recreation* category.

Table 5***Primary Type of Flying Activity vs. Blair Municipal Airport (K46) Hangar Time Consideration Needs**

	Recreation n %	Business n %	Rec/Bus n %	N/A n %	Total n %
up to 1 yr.	0(0.0)	1(0.4)	2(0.8)	0(0.0)	3(1.1)
2-5 years	16(6.1)	4(1.5)	2(0.8)	0(0.0)	22(8.4)
6-10 years	13(5.0)	2(0.8)	3(1.2)	0(0.0)	18(6.9)
11-15 years	7(2.7)	6(2.3)	5(1.9)	0(0.0)	18(6.9)
16-20 years	6(2.3)	2(0.8)	4(1.5)	0(0.0)	12(4.6)
>20 years	4(1.5)	0(0.0)	5(1.9)	0(0.0)	9(3.5)
N/A	88(33.7)	41(15.7)	35(13.4)	15(5.8)	179(68.6)
Total	134(51.3)	56(21.5)	56(21.5)	15(5.8)	261(100.0)

*If you already have (or would like to have) hangar space at the Blair Municipal Airport, how long do you continually need (or would like to have) hangar space at the Blair Municipal Airport?

Table 6 represents a comparison between primary type of flight activity and the respondent's aircraft type which requires hangar space. Over one-half ($n=156$, 59.8%) are N/A respondents. Over three-fourths ($n=79$, 30.4%) reported

they need hangar space for single engine aircraft followed by 16 (6.2%) needing hangar space for multi engine aircraft. Aside from N/A categories, the largest category is the recreational user flying single engine aircraft ($n=41$, 15.8%).

Table 6***Primary Type of Flying Activity vs. Aircraft Type**

	Recreation n %	Business n %	Rec/Bus n %	N/A n %	Total n %
Ultralight	3(1.2)	0(0.0)	3(1.2)	0(0.0)	6(2.4)
Glider	2(0.8)	0(0.0)	0(0.0)	0(0.0)	2(0.8)
Single Engine	41(15.8)	13(5.0)	21(8.1)	4(1.5)	79(30.4)
Multi-Engine	7(2.7)	6(2.3)	3(1.2)	0(0.0)	16(6.2)
Rotorcraft	1(0.4)	0(0.0)	0(0.0)	0(0.0)	1(0.4)
Jet	0(0.0)	1(0.4)	0(0.0)	0(0.0)	1(0.4)
N/A	80(30.5)	36(13.6)	29(11.1)	11(4.2)	156(59.8)
Total	134(51.4)	56(21.3)	56(21.5)	15(5.8)	261(100.0)

*If you need hangar space at the Blair Municipal Airport, what type of aircraft would you like to hangar at the airport?

Expanding Small Airports

Table 7 indicates the willingness to rent a new T-hangar for a rate of approximately \$140 per month at the Blair Municipal Airport. Only 19 respondents (7.3%) indicate they would be willing to rent a new hangar. An additional 32 (12.3%) indicated they might be willing to rent a new hangar. The *yes* responses and the *maybe* responses account

for a total of 51 respondents (19.6%) who are/might be willing to rent a new hangar. However, most of the respondents ($n=110$, 42.2%) report they are unwilling to rent a new hangar at \$140 per month. The data do not suggest any rationale as to why some respondents are unwilling.

Table 7***Primary Type of Flying Activity vs. Willingness to Rent a Hangar at the Blair Municipal Airport**

	Recreation n %	Business n %	Rec/Bus n %	N/A n %	Total n %
Yes	4(1.5)	9(3.5)	4(1.5)	2(0.8)	19(7.3)
No	55(21.1)	28(10.7)	20(7.7)	7(2.7)	110(42.2)
Maybe	23(8.9)	4(1.5)	5(1.9)	0(0.0)	32(12.3)
N/A	52(19.9)	15(5.8)	27(10.3)	6(2.3)	100(38.2)
Total	134(51.4)	56(21.4)	56(21.4)	15(5.8)	261(100.0)

*I would be willing to rent a new T-hangar for approximately \$140 per month at the Blair Municipal Airport.

The data in Table 8 is very similar to the data in Table 7. Percentage wise, the willingness to build a new T-hangar for \$22,000 at the Blair Municipal Airport is almost identical. In Table 7, 7.3% of the respondents were willing to rent vs. 7.2% are willing to build a hangar. Conversely,

101 respondents (38.7%) indicate they would not be willing to build a \$22,000 hangar. Collectively, almost one-quarter ($n=62$, 23.7%) indicate they are/might be willing to build a hangar.

Table 8***Primary Type of Flying Activity vs. Willingness to Build a \$22,000 Hangar**

	Recreation n %	Business n %	Rec/Bus n %	N/A n %	Total n %
Yes	8(3.1)	5(1.9)	5(1.9)	1(0.4)	19(7.2)
No	47(18.1)	24(9.2)	27(10.3)	3(1.2)	101(38.7)
Maybe	24(9.2)	7(2.7)	9(3.5)	3(1.2)	43(16.5)
N/A	55(21.1)	20(7.7)	15(5.8)	8(3.1)	98(37.6)
Total	134(51.5)	56(21.5)	56(21.5)	15(5.9)	261(100.0)

*I would be willing to pay \$22,000 to build a new T-hangar at the Blair Municipal Airport for a 15 year usage at no additional costs (equates to approximately \$123/month for 15 years).

CONCLUSIONS

The survey results for this study suggest that respondent opinion is generally favorable in developing an airport expansion plan for the Blair Municipal Airport. Most of the interest in developing the Blair Municipal Airport is from pilots who primarily fly for recreation although 56 respondents ($n=261$, 21.3%) reported their primary type of flying as business related. Of the 261 respondents surveyed, 129 (49.4%) presently hangar their aircraft at other airports than Blair. Currently, there are 15 respondents (5.8%) who hangar their aircraft at the Blair Municipal Airport. With respect to the type of aircraft that need hangar space, 79 respondents ($n=161$, 30.4%) reported a need for single-engine hangar space followed by 16 respondents (6.2%) who need multi-engine hangar space. Despite the fact the largest response was N/A ($n=156$, 59.8%) for hangaring type aircraft, it should be noted that 105 respondents (40.2%) have a need for hanger space. The results also indicated that 42 respondents ($n=261$, 16.1%) would consider the Blair Municipal airport for their hangar needs if new hangers were built. Presently, 15 respondents (5.8%) reported they already have hanger space at the Blair Municipal Airport. Overall, these findings seem to lend credence that demand for developing the Blair Municipal Airport exists.

Although the results of this study indicate favorable response in developing an airport expansion plan for the Blair Municipal Airport, it should be noted the respondents for this study were pilots who lived in relatively close proximity to the airport. Over one-third of the respondents ($n=38$, 14.6%) reported they would consider hangaring their aircraft at the Blair Municipal Airport which indicates a clear vested interest in an airport expansion plan. Other constituents such as the non-flying public who resided in the same five counties of the pilot respondents were not surveyed. External factors not addressed in the study that may impede an airport expansion plan include residents who

complain about airport noise, environmental, political, and economic considerations.

One reason that general aviation will continue to expand is the efficient use of time (Wells, 1999) and the results of this study suggest that area businesses who rely on general aviation would consider relocating their aircraft to the Blair Municipal Airport provided that airport expansion takes place. Many airports with no airline service face an uphill battle to obtain funding for expansion and improvement while facing public scrutiny although it would appear that the Blair Municipal Airport has at least two strong variables in its arsenal. The two very distinct variables that have proven to be very effective for the Blair Municipal Airport Authority to capitalize upon in developing the airport are geography and marketability. These two assets are particularly strong and appear to strengthen the argument that developing the Blair Municipal Airport has great promise because: (a) The airport, predominantly surrounded by farmland, is in close proximity to the Omaha metropolitan area providing reliever services (geography); (b) the potential to provide additional services to Blair and other rural communities shows excellent promise based upon the growing population demographics; (marketability) and (c) the realization that an active airport expansion program in this region of Nebraska can open new markets to other constituents who have not previously considered using the services at the Blair Municipal Airport (marketability).

In an era where general aviation airports are on the decline, the results of this study appear to be very encouraging for the Blair Municipal Airport. Although there are no guarantees of success, the Blair Municipal Airport seems to be well positioned for growth and to meet the needs not only of neighboring communities, but neighboring counties as well. →

Jeffrey Johnson is an assistant professor in the Department of Aviation at St. Cloud State University. He has a Ph.D. in Higher Education Administration from Bowling Green State University, a Master of Aeronautical Science from Embry-Riddle Aeronautical University (Daytona Beach), and Bachelor of Science in Aeronautical Studies from University of North Dakota.

REFERENCES

- Coffman Associates, Inc. (2000, August). Environmental assessment for proposed airport improvements at Blair municipal airport. Kansas City, KS: Author.
- Federal Aviation Administration. (1992). Estimating the regional economic significance of airports (DOT/FAA/PP-92-6). Washington, DC: Author.
- Kaps, R., NewMyer, D., Lanman, R., & Sigler, J. (2001). The need for airport funding. Collegiate Aviation Review, 19(1), 71-91.
- Kovatch, K. (1998). Corporate aviation management (2nd ed.). Dubuque, IA: Kendall-Hunt Company.
- Minitab for Windows 12.2 [Computer Software]. (1998). State College, PA: Minitab, Inc.
- Prather, C. (1998). Denver International Airport: Lessons learned. The Journal of Aviation/Aerospace Education & Research 8(2), 15-21.
- Wells, A. (1996). Airport planning & management (3rd ed.). New York, NY: The McGraw-Hill Companies, Inc.
- Wells, A. (2000). Air transportation: A management perspective (4th ed.). Belmont, CA: Wadsworth Publishing Company.