ABSTRACT

FINDLEY, DANIEL JONATHAN. Economic Impact of Publicly-Owned General Aviation Airports in North Carolina. (Under the direction of Dr. John R. Stone).

The economic impact of a general aviation airport may be substantial and can be an attraction for economic activity in the local community. This research applies a methodology for calculating the county-level economic impacts of general aviation airports that serve private business and personal aircraft, not scheduled passenger service. The research also examines the relationship between the economic impact and various parameters of the airport and the local county economy. The results of the analysis of these aspects provide other information for decision makers who have the difficult task of awarding grants for airport projects. Such information can supplement decisions on allocating limited financial resources for airport grants. The goal is to help decision makers determine which projects create the most economic impact.

The methodology for calculating the economic impact is based on a widely used and accepted input-output model, IMPLAN. The input data, employment or revenue, for the model were gathered from surveys to airport managers, tenants, and, major users of each airport. The output from IMPLAN gave direct, indirect, and induced values for economic output, employment, and value-added impacts. The IMPLAN impacts were supplemented with data from the hotel industry, visitors to the region using the airport, and tax revenue generated by the airport. IMPLAN calculates the direct impact in 2006 for North Carolina's general aviation airports to be $990 million in output, 7,400 jobs, and $287 million in payroll. The total economic impacts, including indirect and induced impacts are:

approximately $1.8 billion in output; total employment impact of approximately 14,000 jobs; and total payroll impact of approximately $400 million. Besides economic impacts, the research estimated the annual property tax revenues per year for the aircraft based at North Carolina's general aviation airports to be approximately $6.0 million.

This research determined that the economic impacts of North Carolina publicly-owned general aviation airports increased from 1996 to 2006. This finding supports the recommendation to maintain or increase the funding at these airports. The types of projects that provide the most economic impact are capacity expansion projects at the smaller general aviation airports. The Division of Aviation should continue to use the IMPLAN model for future updates to the study for consistency and accuracy. An update to the study every five years would provide better information on cost efficiency of the various improvement projects.

Economic Impact of Publicly-Owned General Aviation Airports in North Carolina

by

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Approved by:

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DEDICATION

This thesis is dedicated to my family and the educators I have had throughout my life. My family has supported me in all of my academic and extracurricular activities, for which I am eternally grateful. Their support and encouragement has created an exceptional foundation for learning, growing, and maturing. I would like to particularly thank my parents, Frank and Jan, my sisters, Amy and Julie, my grandmothers, Barbara and Jane, and my fiancé, Rachel for their unconditional love and support.

I have had the privilege of attending a wonderful school system in the mountains of Graham County, North Carolina. These exemplary educators prepared me academically and socially to meet the challenges of life beyond elementary, middle, and high school. The curriculum and activities that the school system provided helped me become a well-rounded individual, which helped make my transition from the small, rural town of Robbinsville to Raleigh much easier. My academic career at North Carolina State University was full of remarkable educators as well, during my undergraduate and graduate coursework. As a graduate student, I have the opportunity to work closely with some of the top transportation researchers in the United States.

BIOGRAPHY

Daniel Findley is currently a graduate student in Civil Engineering at North Carolina State University. Daniel is the son of Frank and Jan Findley. He was raised in Robbinsville, NC and graduated as the valedictorian of Robbinsville High School. After high school, Daniel attended North Carolina State University and graduated Summa Cum Laude with a Bachelor of Science in Civil Engineering degree. The author was a recipient of the 2005 Transportation Founder's Fund Scholarship and the 2006 Roy D. Williams Memorial Scholarship for the North Carolina Section of the Institute of Transportation Engineers.

Daniel is an active member in the student chapter of the Institute of Transportation Engineers, serving as vice president in 2005-2006. He has had some very rewarding work experience in the field of transportation engineering. He worked on several research projects for the North Carolina Department of Transportation (NC DOT) as an undergraduate and graduate student. He has spent two summers interning with Kimley-Horn and Associates and three summers with NC DOT Division of Highways.

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I would like to acknowledge the help and support of numerous individuals who assisted in the completion of my research. Dr. John R. Stone, PhD. served as the chair for my thesis and was instrumental in guiding my ideas and energy in a constructive manner. Dr. Billy M. Williams and Dr Joseph E. Hummer were committee members on my thesis board. I appreciate the time and effort each of my committee members have demonstrated.

I am grateful for the opportunity I had at the Institute of Transportation Research and Education (ITRE) to work on economic impact study for the North Carolina Department of Transportation's Division of Aviation. I had the opportunity to work with many inspiring engineers, researchers, aviation professionals, and economists. The guidance and responsibility given from the Associate Director of ITRE, Robert S. Foyle, PE was important for my growth as an engineer and researcher. I would also like to thank Shannon J. Fain, PE for his help as a member of the ITRE research team.

I had the privilege to work with the staff at the Division of Aviation and the North Carolina Department of Commerce. The Division of Aviation was supportive in collecting and providing data for the ITRE study and my thesis. I would like to thank everyone I worked with at the Division of Aviation, including: Ted Alman, Rick Barkes, Dave Thomas, Bobby Walston, and Bill Williams. The staff at the Department of Commerce provided me with the tools to learn and use the IMPLAN model successfully. I would like to thank Tim Aylor, Tammy Lester, and Sara Nienow for their support of my research and invaluable training.

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TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

PREFACE

This thesis is the combination of teamwork and individual work. The basis for this thesis resulted from the study and research conducted by a research team at the Institute of Transportation Research and Education (ITRE) for the North Carolina Department of Transportation's Division of Aviation. The research team included: Shannon J. Fain, P.E., Daniel J. Findley, E.I., and Robert S. Foyle, P.E. Among other aspects, this study estimated the output and employment impact at all publicly owned North Carolina airports including general aviation and air carrier airports. The ITRE research project focused on reporting the economic impact of all publicly owned airports and developing a brochure and video for use by the Division of Aviation.

This thesis will expand on the general aviation airport analysis that was accomplished by the ITRE study and add some analysis about investment decisions that have been made over the past ten years, operations at the airport, and employment in the county. The specific purpose of this thesis research is to document the methodology for general aviation airports and to examine the economic impacts of project-level funding decisions that have been made as well as make a recommendation for the most efficient future allocation of general aviation funding.

1. INTRODUCTION

1.1 BACKGROUND

Airports are primarily categorized into three types: commercial, military, and general aviation. General aviation airports, the focus of this research, are airports that do not fit the other two categories; therefore, a general aviation airport does not have regular, scheduled flights and is not an airport established for exclusive military use. In the United States, there are an estimated 20,000 airports, of which over 5,000 airports are open to the public. About half of the airports that are open to the public are designated as general aviation airports and are part of the Federal Aviation Administration's National Plan of Integrated Airport Systems [1].

Many public officials have recognized general aviation airports as a benefit to the local economy. General aviation airports provide access to air transportation for local companies to ship their products or services and transport their employees. These airports can also serve as relievers to larger commercial airports, by diverting general aviation traffic from commercial service airports in the area. The increase in business aviation in the aviation market has increased the demand on general aviation airports. The number of companies that operated a business aircraft grew over sixty percent from 1991 to 2003, to over 10,000 companies. Figure 1 shows the growth in number of companies that operate their own aircraft and the number of aircraft that are used [2]. General aviation airports typically support a significant workforce in the community as well.

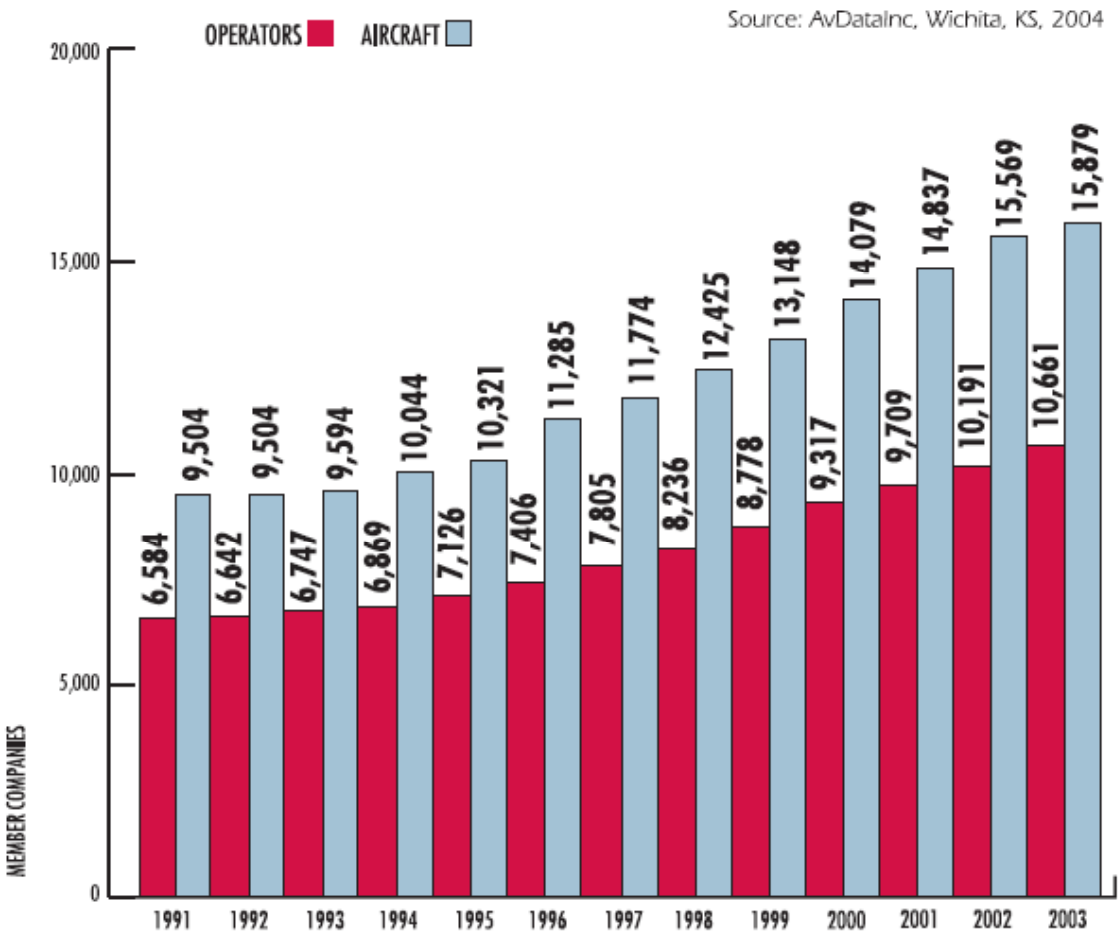


Figure 1: United States Companies Operating Fixed-Wing Turbine Aircraft and Number of Aircraft [2]

General aviation airports also serve the local community in times of need, including hurricane and other natural disaster relief. These airports also play a large role in: tourism, agriculture, corporations, flight training, local business shipping, drug detection, biological surveys, fire detection and fighting, medical evacuation, insect control spraying, military activities, search and rescue, and law enforcement. As a result, general aviation airports create jobs and have an impact on local economies.

The North Carolina Department of Transportation's Division of Aviation has categorized the general aviation airports in the state into three color-coded categories: red, blue, or green. In order to group the airports, the division used data provided by the North Carolina Department of Commerce to objectively rank the airports based on economic development parameters. These parameters included total population, population growth rate, annual per capita income, annual unemployment rate, and tourism revenues versus gross retail sales. The economic ranking was then filtered by airport data to create the final groupings. Some of the filters included geographic proximity to other airports, development potential, regional transportation systems, and other aspects [3]. Overall, out of the three categories of general aviation airports, the red airports have more aviation traffic and longer runways and the green airports have the least aviation traffic and shorter runways. The red airports are typically located in the vicinity of interstate corridors, while the blue and green airports are further from access-controlled ground transportation facilities. The airports within each group share many similar parameters, including demand, operation levels, and economic climate; therefore, the analysis in this thesis will focus on evaluating each group independently.

1.2 PROBLEM STATEMENT

There is a finite amount of money that can be spent on transportation infrastructure in the state of North Carolina. The general aviation airports in North Carolina need a way to quantify their benefits in order to justify past investments and to effectively compete for adequate funding for future improvements. Therefore, an accurate methodology for calculating the benefits of general aviation airports is vital to the ongoing health of the general aviation system.

The Division of Aviation and other government agencies at various levels administer a significant amount of money through grants to the publicly-owned general aviation airports in the state. A better understanding of the economic impact of the airports on the local economy will help assess whether the investment decisions have been productive and cost effective. More importantly, investigation into the types of projects that were funded could provide information on where and how future money should be invested.

Therefore, the purpose of this thesis is to determine an appropriate and acceptable methodology to estimate the impacts of North Carolina's publicly-owned general aviation airports and determine the types of projects that provide the best economic return on investment. This thesis will explore several important issues:

- Which type of projects and category of airports provide the most "bang for the buck" or the highest economic return? The results of this research will support decision-making with recommendations about the allocation of funding various types of improvement projects and general aviation airport categories.
- Are the "rich getting richer" or are the smaller general aviation airports receiving their fair share of the funding? The assessment of previous funding will determine how well the money is dispersed among the categories of airports.
- Do airport improvements lead to the generation of economic impacts in a "build it and they will come" scenario or does a company's location decision drive the airport improvements and economic impacts? The broad examination of general aviation

airport funding and corresponding economic impacts may lead to a possible explanation about the main force of economic impacts generated by the airports.

1.3 SCOPE

The scope of this project is limited to publicly-owned general aviation airports in North Carolina, excluding a university airport (Horace Williams), an industrial airport (Wilson Industrial) and three air strips that are owned by the National Park Service (First Flight, Billy Mitchell, and Ocracoke Island). This leaves only the red, blue, and green airports which include 57 airports (Table 1).

Table 1: Publicly-Owned Red, Blue, and Green General Aviation Airports in North Carolina [3]

Airport ID and Name		Type	Airport ID and Name		Type
HBI	Asheboro Municipal	Red	MRN	Morganton-Lenoir	Blue
SUT	Brunswick County	Red	MWK	Mount Airy / Surry County	Blue
BUY	Burlington-Alamance Regional	Red	TDF	Person County	Blue
JQF	Concord Regional	Red	78N	Rockingham County / NC Shiloh	Blue
MQI	Dare County Regional	Red	RUQ	Rowan County	Blue
LHZ	Franklin County	Red	FQD	Rutherford County-Marchman Field	Blue
JNX	Johnston County	Red	CTZ	Sampson County	Blue
MRH	Michael J Smith Field	Red	EHO	Shelby Municipal	Blue
EQY	Monroe Airport	Red	5W8	Siler City Municipal	Blue
RWI	Rocky Mount-Wilson Regional	Red	VUJ	Stanly County	Blue
TTA	Sanford-Lee County	Red	OCW	Warren Field	Blue
INT	Smith-Reynolds	Red	GEV	Ashe County	Green
SVH	Statesville Municipal	Red	7A8	Avery County / Morrison Field	Green
UKF	Wilkes County	Red	CPC	Columbus County Municipal	Green
RHP	Andrews-Murphy	Blue	ZEF	Elkin Municipal	Green
AFP	Anson County	Blue	ACZ	Henderson Field	Green
ONX	Currituck County	Blue	7W6	Hyde County	Green
EYF	Curtis L Brown Jr. Field	Blue	24A	Jackson County	Green
EXX	Davidson County	Blue	1A5	Macon County	Green
DPL	Duplin County	Blue	MCZ	Martin County	Green
ECG	Elizabeth City CGAS / Regional	Blue	43A	Montgomery County	Green

Table 1 Continued

Airport ID and Name		Type
AKH	Gastonia Municipal	Blue
GWW	Goldsboro-Wayne Municipal	Blue
RZZ	Halifax County	Blue
HRJ	Harnett County	Blue
HNZ	Henderson-Oxford	Blue
MEB	Laurinburg-Maxton	Blue
IPJ	Lincoln County Regional	Blue
LBT	Lumberton Municipal	Blue

Airport ID and Name		Type
W40	Mount Olive Municipal	Green
EDE	NorthEastern Regional	Green
60J	Ocean Isle	Green
PMZ	Plymouth Municipal	Green
45J	Rockingham-Hamlet	Green
ETC	Tarboro-Edgecombe	Green
ASJ	Tri-County	Green

In this thesis, an economic model, IMPLAN [4], estimates the economic impacts of these airports on their regional economy. The regional economy includes the county that contains the airport and any other counties that influence or are influenced by the airport. An analysis of the cost-effectiveness of airport improvement projects is also conducted. This thesis documents the process of estimating the economic impacts and the results of the analysis of capital improvement projects.

1.4 RESEARCH OBJECTIVES

The purpose of this research and thesis is to supplement the existing study that was conducted by the Institute of Transportation Research and Education for the NCDOT Division of Aviation on the economic impact of North Carolina Airports [5]. This project will supplement that study by examining the effects of airport improvement projects on North Carolina's general aviation airports. The specific objectives of this thesis are the following:

- To define the methodology explicitly for calculating economic impacts at North Carolina's publicly-owned general aviation airports.

- To determine if the public funds that have been invested in airport projects during the past ten years were productive. Particularly, whether or not the increase in economic impacts was greater than the investments over the time period.
- To recommend a future prioritization of airport project funding by analyzing the relationship of economic impacts between various airport characteristics and local conditions.
- To recommend factors and information that should receive special attention during the prioritization and funding selection of airport projects.

2. LITERATURE REVIEW

The literature review examines resources in the area of economic impact of airports. The review identifies the state of the practice for estimating economic impacts for airports and examines the methods used by other states to conduct economic impact studies of aviation. The results of the literature review will help justify the selection of an economic impact methodology for North Carolina. The goal of the literature review is to determine a methodology that is acceptable, affordable, available, and with reasonable data requirements.

2.1 METHODS FOR ESTIMATING ECONOMIC IMPACTS

The ITRE team identified two distinct methods for estimating economic impacts: the Federal Aviation Administration (FAA) method and economic output-input models.

Federal Aviation Administration Method

This guide to estimate regional economic significance of airports is a revision of a 1986 report and was prepared by Stewart E. Butler and Laurence J. Kiernan [6]. According to the report, there are two major indicators of an airport's importance: economic impact and transportation benefit. The economic impacts include the regional economic activity, employment, and payroll that are either directly or indirectly created by the airport. The transportation benefits that the report focuses on are travel time savings and cost avoided. The report provides several rules of thumb that can be used for estimating the economic significance of an airport. A table in the report estimates the benefits for various levels of airport activity, such as based aircraft or commercial passengers.

Economic impacts consist of three types: direct, indirect, and induced impacts. Direct impacts result from economic activities that result from tenants who have a direct involvement in aviation. An example of a direct impact is the local payroll of an aircraft maintenance company. Indirect impacts result from economic activities that typically take place away from the airport, but are still attributable to the airport. Some examples of indirect impacts include the services from hotels, restaurants, and retail shopping. Induced impacts result from successive spending and are the multiplier effects of the direct and indirect impacts. An example of an induced impact occurs when aircraft maintenance company employees spend their money locally which creates income for other individuals who in turn spend their money locally.

Although the report provides detailed steps for calculating the economic impacts at either commercial or general aviation airports. The steps are generally more applicable to commercial airports, but provide valuable conceptual information on the economic impacts of airports. The report was published prior to many of the recent changes in services and operation of general aviation airports. The use of general aviation airports for corporations and other aviation users has changed drastically since 1992.

Economic Model Methods

The report by the Center of Economic Forecasting and Analysis compared the economic input/output models RIMS II, IMPLAN, and REMI using transportation projects [7]. The

researchers described each model and some of their differences. Although each of the models is slightly different, the underlying data sets are comparable. Each model measures the output, employment, and income impacts. The various transportation case studies showed that the results were relatively close [7]. None of the models yielded consistently larger output results than the others with each case study indicating varying relative results. Appendix A contains the complete table of comparisons between the models.

This report is important to the literature review by establishing the state of the industry in economic models. RIMS II, IMPLAN, and REMI are three models that have acceptable and comparable methodologies. Through several case studies, the results indicated that each model sufficiently estimated economic impacts.

IMPLAN

IMPLAN is a regional input-output model that follows the accounting conventions that are set forth by the Bureau of Economic Analysis [4]. The model can perform three main tasks: data retrieval, data reduction and model development, and impact analysis. The underlying database of the IMPLAN System consists of a national technology matrix and estimates of sectorial activity that are summed on county, state, and national levels [4].

The North Carolina Department of Commerce provided the training and accessibility to the IMPLAN model, along with their recommendation for its use in the study. The data requirements of IMPLAN are appropriate. The first step is to define the county or counties that are included in each airport's influence area. After setting up the model basis, the events

are input. Events are either revenue or employment values for businesses. The businesses are classified by a sector code. Finally, the model is processed for the economic impacts. Overall, IMPLAN is an economic model with an acceptable methodology, reasonable data requirements, and was accessible to the ITRE team.

2.2 Existing State Economic Impact of Aviation Studies

The ITRE team identified numerous states that have conducted economic impact studies for their aviation systems. A study of the economic impact of aviation in North Carolina was conducted in 1996. The literature review also contains information from twenty other states who conducted economic impact studies.

1996 North Carolina Economic Impact Study

The study examined all 74 publicly owned commercial and general aviation airports in North Carolina for their economic impact [8]. The report was prepared in 1996 by the Department of Geography and Earth Science at the University of North Carolina at Charlotte. The economic impacts are made up of expenditures, earnings, and jobs. The methodology included the use of RIMS II multipliers to calculate the induced impacts.

The study used the methodology presented in the report produced by the Federal Aviation Administration "Estimating the Regional Economic Significance of Airports." To gather the data for the study, airports, airlines, and tenants were asked to complete a survey. General aviation users were also asked to complete a survey for the study.

At the time of the report, the publicly owned airport infrastructure consisted of fourteen commercial and sixty general aviation airports. The total expenditures at all of North Carolina's publicly-owned airports were $9.1 billion and over 181,000 jobs were supported by the aviation industry. The share of total expenditures attributable to North Carolina's publicly-owned general aviation airports was $143 million and over 2,000 jobs were supported by the aviation industry [8].

Other States' Economic Impact of Aviation Studies

The research team obtained data from twenty-one states about the economic impacts of their aviation systems. Of the eleven studies that clearly stated the economic model they employed, six utilized IMPLAN, one used REMI exclusively, one used IMPLAN and REMI, and three used RIMS II. The economic activity, payroll, and jobs are listed in Table 2 along with the number of airports in each state's system. The economic activity and payroll have been adjusted to 2006 dollars based on the consumer price index [40]. The population of each state, according to the 2000 census is also included in the table [9].

Table 2: Summary of State Aviation Economic Impact Reports [5]

State	Ref. No.	Date	Economic Activity (in billions)	Payroll (in billions)	Jobs	Airports: General Aviation/ Commercial	State Population (2000 Census)
Arizona[1]	[10]	2003	$42.75	$16.32	470,708	69 / 13	5,130,632
California[2]	[11]	2003	$122.91	N/A	1,704,680	223 / 29	33,871,648
Colorado	[12]	2003	$26.09	$10.88	280,156	65 / 13	4,301,261
Florida[3]	[13]	2000	$56.00	$14.31	559,395	109 / 20	15,982,378
Idaho	[14]	1998	$1.62	$0.75	24,127	67 / 7	1,293,953
Indiana	[15]	2002	$5.34	$0.56	18,700	101 / 5	6,080,485
Iowa[1]	[16]	2000	$0.89	$0.34	9,865	103 / 10	2,926,324
Massachusetts[3]	[17]	1999	$1.10	$0.37	9,918	35 / 6	6,349,097
Mississippi	[18]	2004	$0.64	$0.21	10,347	71 / 7	2,844,658
New Jersey	[19]	2005	$4.78	N/A	70,500	44 / 3	8,414,350
New Mexico[1]	[20]	2003	$46.96	$1.11	49,099	50 / 11	1,819,046
New York[1]	[21]	2003	$39.30	$5.55	111,553	58 / 18	18,976,457
North Carolina[3]	[8]	1996	$11.74	$5.91	181,214	62 / 12	8,049,313
North Dakota	[22]	1999	$0.85	$0.12	8,818	82 / 8	642,200
Oklahoma[1]	[23]	1999	$14.25	$5.72	143,700	135 / 5	3,450,654
Ohio	[24]	1995	$9.85	$4.39	137,892	103	11,353,140
Pennsylvania	[25]	2002	$14.02	$6.23	288,765	126 / 16	12,281,054
Vermont[1&2]	[26]	2003	$0.67	$0.22	9,531	15 / 2	608,827
Virginia	[27]	2004	$11.60	$5.16	164,091	59 / 7	7,078,515
Wisconsin	[28]	1998	$2.61	$1.00	41,458	91 / 9	5,363,675
Washington[1]	[29]	2001	$20.73	$4.57	171,311	109 / 20	5,894,121

[1]Uses IMPLAN for economic impact calculations

[2]Uses REMI for economic impact calculations

[3]Uses RIMS-II for economic impact calculations

The ITRE team reviewed the detailed results from studies conducted in Iowa, New York, Vermont, and Washington. These detailed results provided some comparisons between the relative relationships of direct, indirect, and induced impacts. Appendix B contains tables with the output impact, employment impact, and the payroll impact for each of the states.

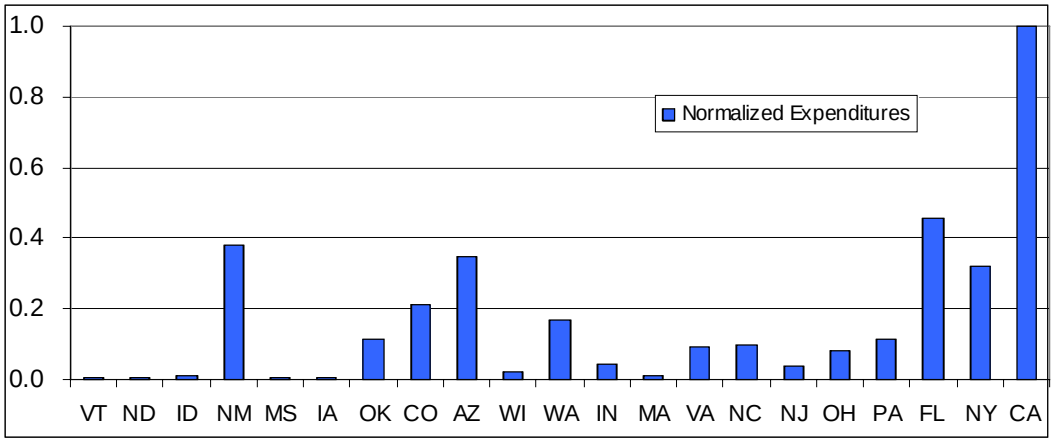


Figure 2: Summary of State Economic Impact of Aviation Studies in Order of Population

Figure 2 demonstrates the normalized expenditures from the twenty-one states organized in order of population from Vermont to California. The 1996 North Carolina study is similar in economic impact and population to the states of Virginia, Ohio, and Pennsylvania. The literature review of other states provides the project team with a background of reasonable values to compare results.

2.3 LITERATURE REVIEW SUMMARY

The literature review established that an economic input/output model should be employed to estimate the economic impacts of North Carolina's general aviation airports. Three models are found in recent use in aviation impact estimation: RIMS II, IMPLAN, and REMI. One third of the states in the literature used IMPLAN either exclusively or as part of their economic impact methodology. Thus, the ITRE team followed the recommendation of the North Carolina Department of Commerce to use its available model IMPLAN.

3. ECONOMIC IMPACT METHODOLOGY

Based on the results of the literature review, the most appropriate methodology for this research on GA airports is IMPLAN. IMPLAN is formed on an acceptable data set of national, state, and local economic information. The data requirements are consistent with survey data that was collected by the project team. It is also accessible through the North Carolina Department of Commerce. Figure 3 demonstrates a flowchart of the economic impact methodology.

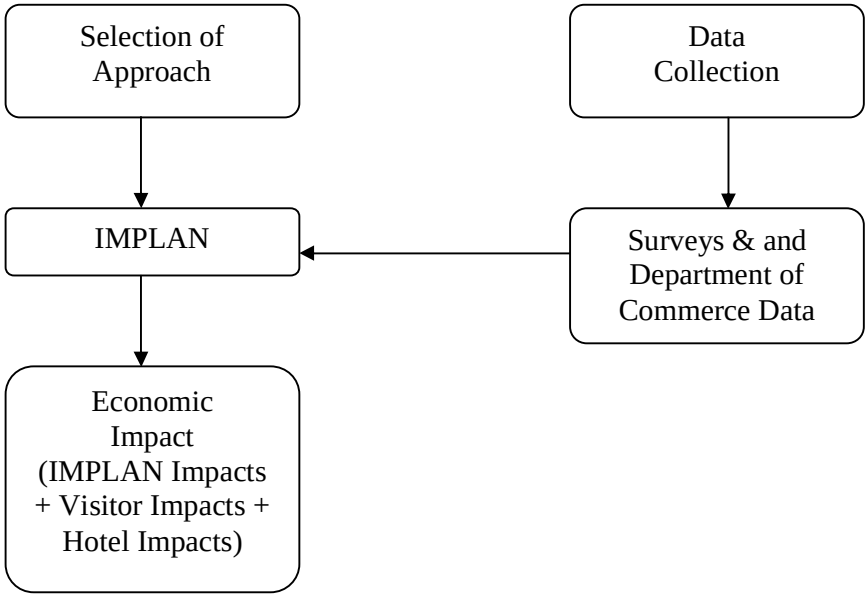


Figure 3: Economic Impact Methodology Flowchart

3.1 SELECTION OF APPROACH

The first decision that the ITRE team confronted was the choice of various economic models. The ITRE team considered each of the top three commonly used economic models: REMI, RIMS II, and IMPLAN. Lynch compared these three models with their underlying methodology, data sets, and examples. The three models are input-output based that function

on the same set of national and local data. The examples suggested that each model predicts different, but similar economic impacts [7]. The ITRE team concluded that this report validated the use of any of these models, so other decision criteria were considered.

The ITRE team used two other sources to aid in the selection of the economic model to implement for the project: the North Carolina Department of Commerce and other state departments of aviation. The North Carolina Department of Commerce recommended the use of the IMPLAN model for economic impacts. The ITRE team conducted an extensive literature review of other states that have completed economic impact studies of aviation. Since 1999, seven states have used IMPLAN to estimate the economic impact of aviation on their state. These seven states are: Arizona, Iowa, New Mexico, New York, Oklahoma, Vermont, and Washington. Based on the NC Department of Commerce recommendation and other states' studies, the ITRE team decided that IMPLAN would be an appropriate and accurate selection for the economic model [5].

3.2 DATA COLLECTION

The primary sources of data for this project were airport managers, tenants, and major users. Each airport manager was contacted by phone to explain the reason for the study and the importance of their support. After the phone conversation, each manager was provided with a survey (Appendix C). The survey asked numerous questions on topics including: airport use, tax value, services offered, operating revenue, operating expenses, airport tenants, jobs, commercial service, general aviation service, ground transport, major airport users, and aerospace industries. The survey response rate from airport managers was 100%.

The next step in the data collection was to contact each of the tenants, major users, and businesses that use the airport. The contact information was acquired through the airport manager's survey. Each contact was called to explain the reason for the study and the importance of their support. After the phone conversation, each tenant or major user was provided with a survey (Appendix D). The survey asked numerous questions on topics including: use of the airport, type of business, employees, and revenue. Appendices C and D contain examples of each type of survey [5]. The response rate for the tenants and major users was 24%, which calculated by the number of completed surveys divided by the tenants or major users who were contacted by phone.

3.3 Estimating Impacts Using IMPLAN

The ITRE team used IMPLAN, an economic model provided by the North Carolina Department of Commerce, to estimate the impact of aviation in North Carolina. The model consists of county, state, and national data from sources such as U.S. Department of Commerce, Bureau of Labor Statistics, and Bureau of Economic Analysis and was used to calculate indirect and induced impacts. The indirect and induced impacts are sensitive to multipliers utilized by the IMPLAN software. Direct impacts were collected by surveys sent to individual tenants and major users of the airports and were used as an input for the IMPLAN model. The direct impacts at the county level were input into IMPLAN either as an employment figure or a revenue figure. Revenue figures were input into IMPLAN if available from the survey. However, in most cases, they were not reported, so employment

data were used. The survey asked the respondents to provide the proportion of their total revenues or sales that they would attribute to the existence of this airport. This proportion was used by the ITRE team to separate the economic impact due to aviation from the impact due to other sources.

The surveys completed by the air managers, tenants, and major users asked for the number of full-time and part-time employees. Part-time employees are assumed to work 30 hours/week in order to convert to full-time employees, except for part-time airport authority employees who are assumed to work 10 hours/week. These assumptions are based on conversations with employers and NCDOT Division of Aviation staff.

The ITRE team developed a separate IMPLAN model for each airport in order to provide a comprehensive evaluation. Each airport was analyzed on a county basis, which includes the county in which it is located and other influenced counties if applicable. Appendix E provides a list of the counties that were included in each airport's model. The counties were selected based on geographic location and knowledge of NCDOT staff. Figure 4 is a map of the North Carolina airport system.

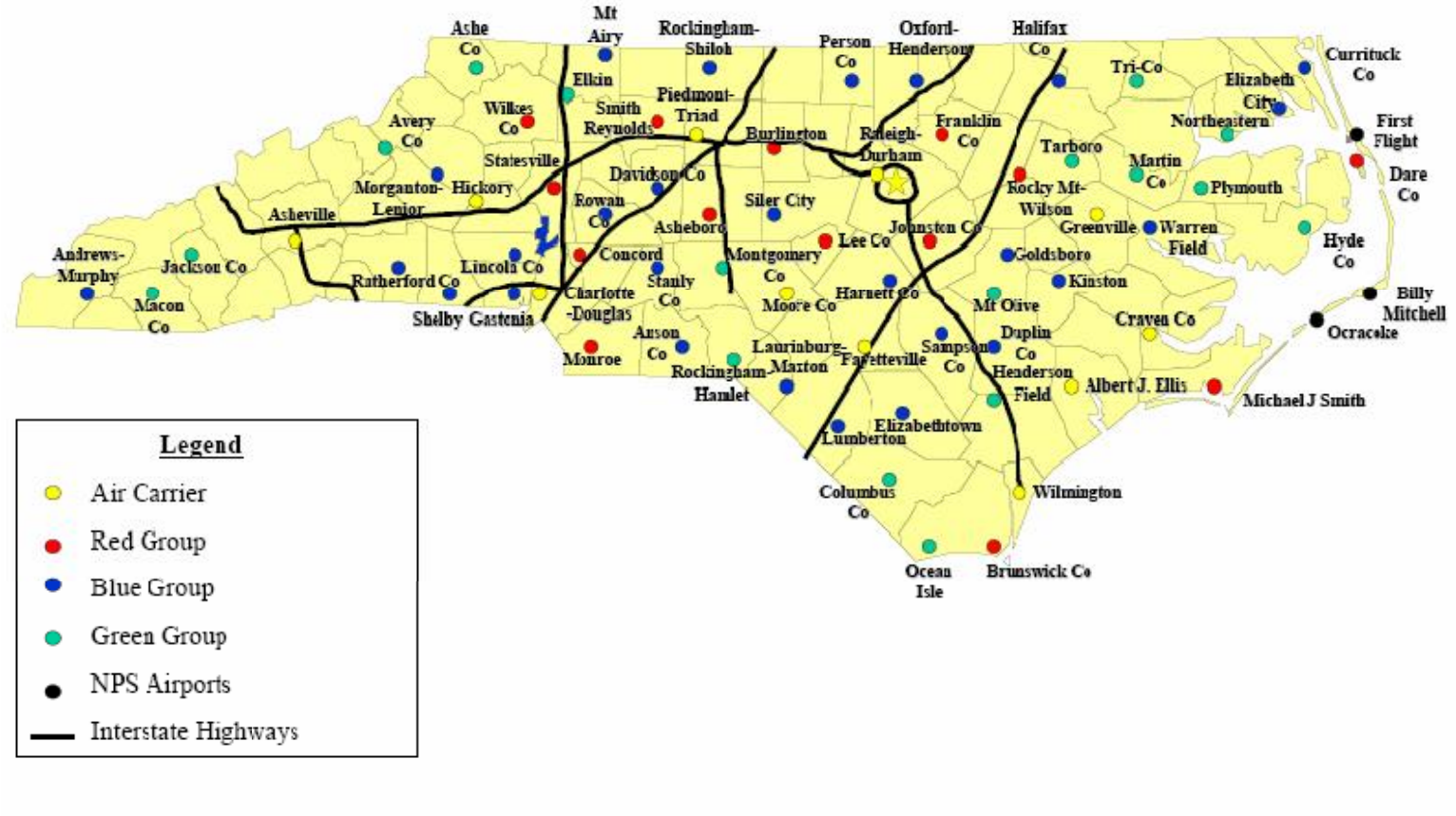


Figure 4: Publicly Owned Airports in North Carolina [3]

Type SAM (Social Accounting Matrix) multipliers were used to estimate the impacts of the airports. The North Carolina Department of Commerce recommended the use of Type SAM multipliers for the analysis. This type of multiplier is an extension of a traditional input-output model. The Type SAM multipliers were developed to include non-market flows along with the market flows. Market financial flows occur between producers and consumers, while non-market financial flows include inter-institutional transfers [30].

Tenants and major users of the airport that returned survey data to the research team were classified into the IMPLAN data sectoring scheme that correspond to Bureau of Economic Analysis sectors. In some cases, the industry sector for an airport did not exist in the model. The exclusion could be a result of an insufficient data or confidentiality reasons due to a lack of data reported. The sector was generated manually as it did not exist in IMPLAN. The study area data were entered based on a state-wide average of similar facilities (i.e. green, blue, and red airports) [5].

3.4 SUPPLEMENTING IMPLAN IMPACTS

The ITRE team recognized the need to supplement the impact that was estimated using IMPLAN. IMPLAN was used to calculate the impact of tenants and major users of the airports, while the lack of other data created the need for the supplemental impact. The ITRE team used standard economic estimation methods for estimating the impact of visitors using the airports and hotels. The estimated tax value of based aircraft was also produced by the ITRE team.

General aviation airports serve the transportation needs of many visitors to an area. The visitors to the airport were based on the number of operations that were reported by the airport manager. The types of operations include: air carrier, regional carrier, air taxi, generation aviation local, general aviation itinerant, and military. At a general aviation airport, the only types of operations that generate visitors, assumed to be half of the number of passengers, are air taxi and general aviation itinerant trips. Passengers per general aviation operation were based on DOT/FAA/PP-92-6: single engine with less than four seats has 1.4 passengers, a single engine aircraft with greater than or equal four seats has 2.4 passengers, and a multi-engine aircraft has three passengers [6]. The study estimated that Person County Airport had no visitor impact because no operations data were received from the airport.

The estimated expenditures per visitor were $333 per trip from North Carolina Department of Commerce data. The value was calculated from a weighted average by trip purpose. The average expenditure, based on 2004 data, for a business traveler was $370 per trip and for a leisure traveler was $307 per trip. The breakdown of "purpose of trip" for air travelers was 41% business travelers and 59% leisure travelers [31]. See Appendix F for the estimated number of visitors at each airport.

The impact of the aviation industry on the hotel industry was also considered. The impact was calculated externally, while still using IMPLAN values for output per employee, in order to use the impact as an indirect value, not as a direct value. The ITRE team was unable to contact each hotel in the influence area of the airport due to time and cost restrictions. The percentage of employees attributable to aviation was estimated based on conversations with

the North Carolina Department of Commerce. An initial list of employees per county in the industry was obtained from the North Carolina Department of Commerce. In counties with general aviation airports, 20% of the employees in the hotel industry were attributed to the presence of the airport(s). This percentage was estimated by the ITRE team based on conversations internally and with industry professionals. The IMPLAN value of output per employee was multiplied by the number of employees. The ITRE team multiplied the resulting indirect value by the appropriate industry multiplier for each airport to estimate the indirect output value [5].

3.5 TAX REVENUE IMPLICATIONS

Along with economic impacts, the ITRE team estimated tax revenues that were generated by the airports. The tax revenue that is collected is direct revenue that the collecting agency expects in a given year. The tax values that the ITRE team estimated were not added to the IMPLAN values. These values are meant to stand-alone as a type of economic impact that is collected by the government. The survey asked the airport managers for the number of aircraft based at their airport. Based aircraft were classified in the following groups: single engine, multi-engine, jet, helicopters, gliders, military, and ultra-lite (Appendix G). The study found that there were over 2,500 total based aircraft at the general aviation airports in North Carolina. Table 3 contains the estimated value of each type of aircraft based on assessment data from multiple North Carolina airports. The total value of the aircraft was calculated for each airport, except Hyde County, which has no based aircraft. Appendix H contains the tax rate, total aircraft, total aircraft value, and estimated tax revenue for each airport.

Table 3: Estimated Value of Aircraft [5]

Type of Aircraft	Estimated Value
Single Engine	$100,000
Multi Engine	$250,000
Jet	$4,500,000
Helicopters	$850,000
Gliders	$35,000
Ultra-Light	$15,000

The estimated tax revenue generated at all airports was estimated at almost $6 million, based on the total value of the aircraft and each county's tax rate. The total value of the aircraft based at all of North Carolina's general aviation airports was over $900 million. General aviation based aircraft result in property taxes being paid into the local county revenue departments. The total may seem low, but not all aircraft residing at an airport are registered for tax purposes within that county. Some corporate aircraft are registered in other states because of the location of that business, mainly for tax purposes. This practice results in a decrease in tax revenue collected by local North Carolina governments. No data exist for an estimate of how much tax revenue is potentially lost.

Another tax value that the ITRE team considered was the sales tax that was generated by aircraft dealers from parts and products, excluding aircraft. The sales tax revenue from the aviation products in 2004-2005 was $8.3 million [32]. The sales tax that was generated from the sale of aviation gas and jet fuel in 2004-2005 was $11.8 million [33]. The sales and fuel tax values totals for North Carolina include general aviation and commercial airports. The reporting system does not allow for the revenue for these two sales taxes to be filed for each airport, therefore the commercial and general aviation airport values cannot be separated.

3.6 SUMMARY

IMPLAN was selected as the input/output model to estimate the economic impact of North Carolina's general aviation airports. Input data for IMPLAN was collected from airport managers, tenants, and major users of the airports. Additional data was obtained from the NC Department of Commerce. The total impact of the general aviation airports in this study include the tenant and major user impacts calculated by IMPLAN, hotel industry impacts, and visitor impacts. Tax revenues are reported as a separate value as a potential income for the collection agencies.

4. ANALYSIS

This chapter examines the relationship between the economic impacts and numerous indicators in the aviation industry and the local community. The indicators include: the investments from 1996 to 2006, the employment in the county, the number of annual operations at the airport, the pavement strength at the airport, and the ceiling height at the airport. A statistical analysis was performed with results that are contained in Appendix K. Each parameter was compared to the economic impacts at each airport. The statistical analysis was inconclusive largely due to the variances between each airport. Scatter plots with trend-lines and corresponding R^2 values can be found in the appendix. A qualitative approach was applied after the statistical analysis was conducted. This chapter covers several topics including the results from the ITRE study, a summary of the statistical analysis, the qualitative analysis, the comparison between the 1996 study and the ITRE study, and an overall chapter summary. Table 4 contains the values that were utilized for the analysis.

Table 4: Airport Values Used For Analysis

Airport ID and Name		Total Economic Impact in 2006 (dollars)	Investments from 1996 to 2006 (in 2006 dollars)	2005 Employment	2005 Operations	Pavement Strength (thousands of lbs)	Certified Min. Ceiling Height (feet)
BUY	Burlington-Alamance Regional	$46,007,000	$8,386,750	58,771	60,000	30	200
EQY	Monroe	$22,891,000	$9,348,344	571,261	55,000	25	250
HBI	Asheboro Municipal	$10,246,000	$13,808,630	48,217	17,300	20	547
INT	Smith-Reynolds	$137,126,000	$14,783,096	179,746	65,652	110	200
JNX	Johnston County	$42,810,000	$7,245,663	445,708	28,000	65	200
JQF	Concord Regional	$110,004,000	$27,417,317	582,018	67,426		200
LHZ	Franklin County	$12,944,000	$4,256,031	416,640	51,800	40	250
MQI	Dare County Regional	$25,353,000	$10,748,244	20,022	46,700	48	426
MRH	Michael J Smith Field	$40,738,000	$2,284,283	23,053	43,800	12.5	370
RWI	Rocky Mount-Wilson Regional	$27,030,000	$6,389,332	78,829	27,200	62	200
SUT	Brunswick County	$26,179,000	$12,644,094	25,721	23,800	12.5	457
SVH	Statesville Municipal	$46,935,000	$11,317,437	146,572	36,000	30	200
TTA	Sanford-Lee County	$280,270,000	$17,410,794	433,680	47,000	30	200
UKF	Wilkes County	$9,749,000	$2,592,918	25,196	23,000	45	200
	Red Airports Total	$838,281,000	$148,632,933				

Table 4 Continued

Airport ID and Name		Total Economic Impact in 2006 (dollars)	Investments from 1996 to 2006 (in 2006 dollars)	2005 Employment	2005 Operations	Pavement Strength (thousands of lbs)	Certified Min. Ceiling Height (feet)
5W8	Siler City Municipal	$9,932,000	$935,211	16,681	21,520	25	626
78N	Rockingham County / NC Shiloh	$7,037,000	$3,579,284	30,696	35,150	12.5	392
AFP	Anson County	$3,006,000	$16,026,773	8,236	6,700	12	442
AKH	Gastonia Municipal	$8,942,000	$2,170,364	69,616	30,040	24	563
CTZ	Sampson County	$4,880,000	$3,603,341	18,767	13,010	26	432
DPL	Duplin County	$9,599,000	$8,069,800	19,923	16,500	30	363
ECG	Elizabeth City CGAS / Regional	$17,405,000	$2,794,600	20,722	85,700	100	349
EHO	Shelby Municipal	$6,246,000	$5,146,706	33,421	18,150	21	453
EXX	Davidson County	$10,819,000	$23,631,289	44,622	9,000		200
EYF	Curtis L Brown Jr. Field	$5,045,000	$1,689,414	13,474	14,500	30	357
FQD	Rutherford County-Marchman Field	$12,034,000	$3,385,350	26,726	39,000	12.5	348
GWW	Goldsboro-Wayne Municipal	$14,553,000	$2,144,305	43,611	14,500	30	200
HNZ	Henderson-Oxford	$7,256,000	$1,950,944	34,893	21,100	30	373
HRJ	Harnett County	$21,111,000	$10,555,868	22,997	41,500	13	324
IPJ	Lincoln County Regional	$8,627,000	$6,905,451	19,986	25,600	30	467
LBT	Lumberton Municipal	$11,853,000	$5,314,777	38,501	22,000	15	200
MEB	Laurinburg-Maxton	$34,001,000	$3,281,804	23,850	47,000	25	200
MRN	Morganton-Lenoir	$10,562,000	$11,654,249	63,146	26,300		332
MWK	Mount Airy / Surry County	$386,998,000	$1,587,002	39,106	21,600	10	472
OCW	Warren Field	$6,175,000	$2,100,639	16,844	28,100	30	342
ONX	Currituck County	$24,453,000	$4,939,203	5,388	19,250	20	424
RHP	Andrews-Murphy	$8,160,000	$8,565,141	13,410	16,600	25	2329
RUQ	Rowan County	$22,916,000	$6,471,474	48,226	31,000	16	200
RZZ	Halifax County	$10,778,000	$1,200,074	27,886	31,500	30	745
TDF	Person County	$5,114,000	$6,557,229	70,598	34,750	30	200
VUJ	Stanly County	$22,664,000	$10,445,004	19,568	31,000		213
	Blue Airports Total	$690,163,000	$154,705,296				

Table 4 Continued

Airport ID and Name		Total Economic Impact in 2006 (dollars)	Investments from 1996 to 2006 (in 2006 dollars)	2005 Employment	2005 Operations	Pavement Strength (thousands of lbs)	Certified Min. Ceiling Height (feet)
1A5	Macon County	$7,979,000	$7,513,067	19,059	12,000	30	1000
24A	Jackson County	$17,582,000	$1,177,542	13,605	4,400	12.5	1000
43A	Montgomery County	$1,387,000	$1,638,842	10,639	4,800	11.4	1000
45J	Rockingham-Hamlet	$2,326,000	$3,067,542	15,054	5,250		1000
60J	Ocean Isle	$6,807,000	$1,568,489	25,721	16,500	12	1000
7A8	Avery County / Morrison Field	$5,985,000	$2,686,790	13,174	5,100	12.5	1000
7W6	Hyde County	$2,109,000	$699,578	2,091	4,100	30	423
ACZ	Henderson Field	$25,909,000	$1,926,945	10,444	10,200	12.5	461
ASJ	Tri-County	$4,662,000	$2,379,644	22,594	12,300	35	372
CPC	Columbus County Municipal	$4,104,000	$2,222,815	16,921	10,900	24	511
EDE	NorthEastern Regional	$4,965,000	$3,418,411	7,981	14,200	60	360
ETC	Tarboro-Edgecombe	$3,215,000	$1,310,505	22,529	5,300		710
GEV	Ashe County	$133,873,000	$959,228	11,703	5,320	12.5	844
MCZ	Martin County	$3,335,000	$4,194,884	16,259	7,900	21	404
PMZ	Plymouth Municipal	$3,110,000	$2,334,508	3,436	6,350	25	481
W40	Mount Olive Municipal	$3,972,000	$1,427,393	43,611	13,050	20	532
ZEF	Elkin Municipal	$34,459,000	$1,175,027	42,080	13,350	25	635
	Green Airports Total	$265,778,000	$39,701,210				
	General Aviation Airports Total	$1,794,222,000	$343,039,439				

4.1 ECONOMIC IMPACTS IN 2006

The final result of the ITRE project includes values for economic output, employment, and payroll for all of North Carolina's publicly-owned general aviation airports. The total economic output impact of North Carolina's publicly owned general aviation airports in 2006 is approximately $1.8 billion (Table 5). The gross state product of North Carolina in 2005 was almost $347 billion, which means the economic impact of North Carolina's publicly-owned general aviation airports is responsible for more than 0.5% of the state's gross domestic product [34]. The total employment impact of North Carolina's general aviation airports is approximately 14,000 jobs (Table 6). The total payroll impact of North Carolina general aviation airports is approximately $400 million (Table 7). For detailed output by general aviation airport, see Appendices H, I, J, and N. Several airports have values of zero for some of these economic measures. The lack of direct impacts is a result of missing or unreported data. Indirect and induced impacts could be zero even if direct impacts are present because some of the economic impacts were added to the study externally of IMPLAN.

The NCDOT Division of Aviation has designated a priority system for funding airport improvements in the North Carolina General Aviation Airport Development Plan. The priority list in the development plan places a tremendous amount of emphasis on safety projects including improving the runway approach and runway safety areas. A high level of importance is also placed on maintenance of the airports including pavement maintenance and lighting improvements. The development plan has a minimum and a recommended list for each type of airport (red, blue, and green). A main goal of the Division of Aviation is to

make sure each airport meets the minimum aspects, such as runway length, as defined in the plan [3]. The development plan will help ensure that North Carolina has a safe and reliable system of general aviation airports.

The Division of Aviation's plan for funding prioritization can be generalized as safety, maintenance, and infrastructure projects. Safety and maintenance projects will receive the highest priority because they are critical for safe operations of those utilizing the airport. Infrastructure improvement projects include runway extensions, terminal building expansions, and other types of construction. The Division of Aviation faces the challenging duty of determining when, where, and how infrastructure projects should be funded.

Table 5: Output Impacts [5]

Type of Airport	Output Impact (Dollars)			
	Direct	Indirect	Induced	Total
Red Airports	$456,326,000	$265,483,000	$116,472,000	$838,281,000
Blue Airports	$377,108,000	$237,163,000	$75,892,000	$690,163,000
Green Airports	$156,867,000	$78,738,000	$30,173,000	$265,778,000
General Aviation Airports	$990,301,000	$581,384,000	$222,537,000	$1,794,222,000

Table 6: Employment Impacts [5]

Type of Airport	Employment Impact (Jobs)			
	Direct	Indirect	Induced	Total
Red Airports	3,000	1,990	1,240	6,230
Blue Airports	2,840	1,590	900	5,320
Green Airports	1,560	750	390	2,700
General Aviation Airports	7,400	4,330	2,530	14,250

Table 7: Payroll Impact [5]

Type of Airport	Estimated Payroll (Dollars)			
	Direct	Indirect	Induced	Total
Red Airports	$130,353,000	$35,609,000	$28,917,000	$194,879,000
Blue Airports	$109,602,000	$26,667,000	$17,576,000	$153,845,000
Green Airports	$46,705,000	$8,863,000	$7,061,000	$62,629,000
General Aviation Airports	$286,660,000	$71,139,000	$53,554,000	$411,353,000

The output, employment, and payroll impact values are derived from IMPLAN, except for hotel industry data and visitor impact data. The hotel data were added to output and employment values. Therefore, the payroll impact values were only derived from data that was obtained through the surveys. The hotel industry impact provided about 6% of the total economic impact. The assumption that 20% of the hotel industry is attributable to general aviation airports did not have a large effect on the overall result, although the impact is still significant.

A majority of the general aviation airports, 37 out of 57, had an economic impact of less than $20 million in 2006 (Figure 5). Those 37 airports made up only 16% of the total economic impact (Figure 6). Five airports (Concord Regional, Ashe County, Smith-Reynolds, Sanford-Lee County, and Mt Airy/Surry County) had an economic impact of over $100 million in 2006 which contributed 58% of the total general aviation economic impact. This distribution of the economic impact demonstrates the range in values across the state and the reality that a minority of the general aviation airports generate a majority of the economic impacts. Ashe County, Sanford-Lee County, and Mt Airy/Surry County Airports have a large impact due mostly to the impact of a single company in each case. The other two of the top five airports,

Concord Regional and Smith-Reynolds, provide service to the metropolitan areas of Charlotte and Winston-Salem, respectively, and therefore have impacts generated from a larger population and economic base than other general aviation airports. For example, numerous stock car racing teams utilize the air transportation facilities of Concord Regional Airport.

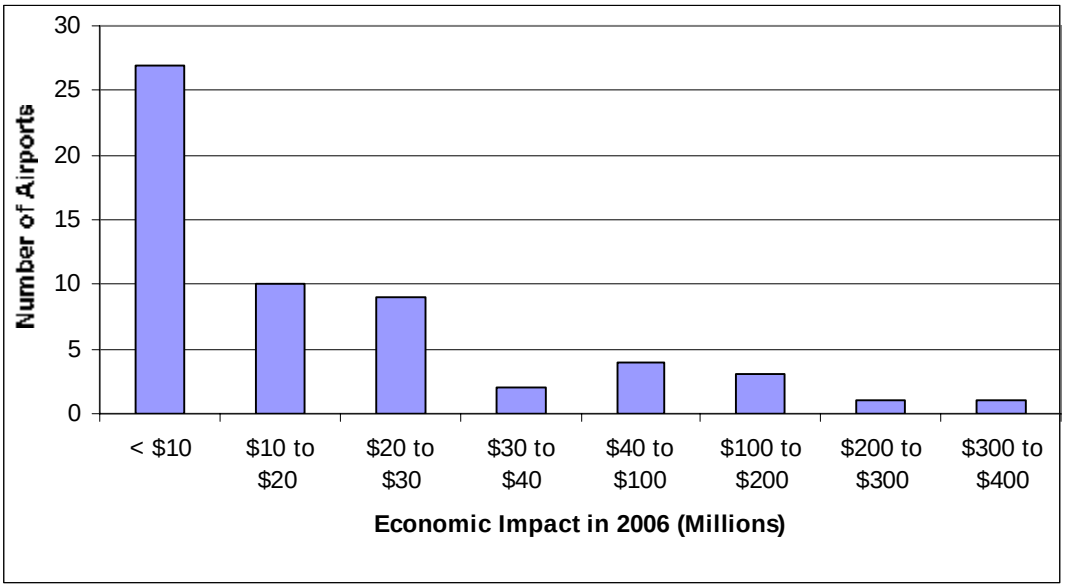


Figure 5: Frequency Distribution of Economic Impacts

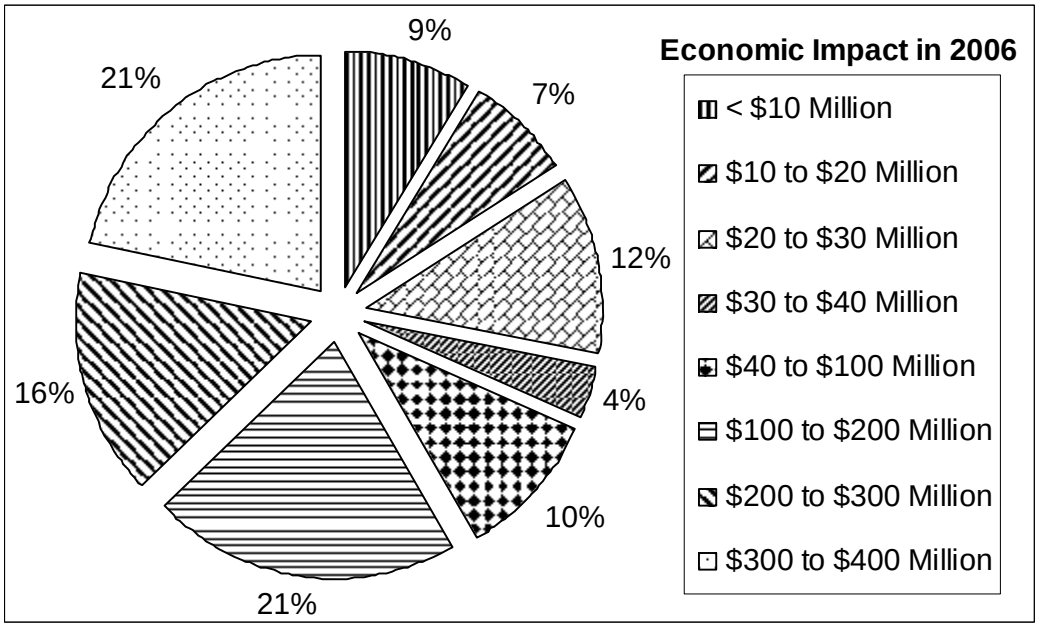


Figure 6: Distribution of Economic Impacts

4.2 STATISTICAL ANALYSIS

The detailed results of the statistical analysis are contained in Appendix K. The scatter plots with a trend-line and corresponding R^2 value and the correlation coefficient can be found in the appendix. Table 7 contains a summary of the correlation coefficients from the statistical analysis. The process for determining the relationship between various parameters and economic impacts at general aviation airports in North Carolina was not represented well by statistical functions. A majority of the correlation coefficients were weak and unconvincing or dominated by a outlier. Therefore, the analysis of the relationships are based on qualitative observations and scatter plots of the data sets.

Table 8: Correlation Coefficients Values from the Statistical Analysis

Correlation Between Economic Impact and:	Correlation Coefficients		
	Red Airports	Blue Airports	Green Airports
Investments at Airports with Capacity Improvements	+ 0.82	- 0.15	+ 0.92
Investments at Airports without Capacity Improvements	+ 0.82	+ 0.63	- 0.26
Employment in the County	+ 0.83	+ 0.02	+ 0.27
Operations at the Airport	+ 0.67	+ 0.44	+ 0.26
Pavement Capacity	+ 0.72	+ 0.07	- 0.19
Ceiling Height (at airports with Instrument Guidance Systems)	- 0.40	- 0.23	+ 0.31

4.3 INVESTMENTS FROM 1996 TO 2006

The economic impact of general aviation airports in North Carolina in 2006, $1.8 billion, has a relatively large effect in many of the small communities that are located around these airports. Decision makers considering funding various airport projects face the tough task of determining where investments should be made. From 1996 to 2006, approximately $343 million (in 2006 dollars) was invested in the public general aviation airports in North Carolina [35]. Clearly, the economic impact of the airports in 2006 exceeded the investments made over the previous ten-year period. The important issue is how future investments can be spent to maximize the economic impact of the general aviation system. Some of the key considerations include the distribution of project funding among red, blue, and green airports and the type of projects that provide the greatest return on the investment.

The financial support from grants over the ten-year time period from 1996 to 2006 was implemented to capture the funding that each airport received. The airport funding over the

time frame can be referred to as the investments that were made at the airport. The two main categories of infrastructure projects at airports are capacity and non-capacity improvements. For this study, a project that adds aviation capacity was either a runway extension or construction of a new runway. The analysis examines the twenty-five airports that had a capacity improvement over the past ten years and thirty-two airports that did not have a capacity improvement (Tables 8 and 9). Within each of those categories, the airports were examined with other red, blue, or green airports. Figures 7, 8, and 9 are graphs of the airports. Refer to Appendix L for values of the investments at each airport. The investments were adjusted for inflation using the consumer price index [36].

Table 9: Airports with Capacity Improvements from 1996-2006

Andrews-Murphy	Anson County	Asheboro Municipal
Currituck County	Davidson County	Brunswick County
Duplin County	Gastonia Municipal	Burlington-Alamance Regional
Harnett County	Avery County / Morrison Field	Concord Regional
Lincoln County Regional	Columbus County Municipal	Dare County Regional
Lumberton Municipal	Macon County	Rocky Mount-Wilson Regional
Morganton-Lenoir	NorthEastern Regional	Statesville Municipal
Person County	Tri-County	Sanford-Lee County
Mt Airy/Surry County		

Table 10: Airports without Capacity Improvements from 1996-2006

Curtis L Brown Jr. Field	Siler City Municipal	Ocean Isle
Elizabeth City CGAS / Regional	Stanly County	Plymouth Municipal
Goldsboro-Wayne Municipal	Warren Field	Rockingham-Hamlet
Halifax County	Elkin Municipal	Tarboro-Edgecombe
Henderson-Oxford	Henderson Field	Franklin County
Laurinburg-Maxton	Hyde County	Johnston County
Rockingham County / NC Shiloh	Jackson County	Michael J Smith Field
Rowan County	Martin County	Monroe
Rutherford County-Marchman Field	Montgomery County	Smith-Reynolds
Sampson County	Mount Olive Municipal	Wilkes County
Shelby Municipal	Ashe County	

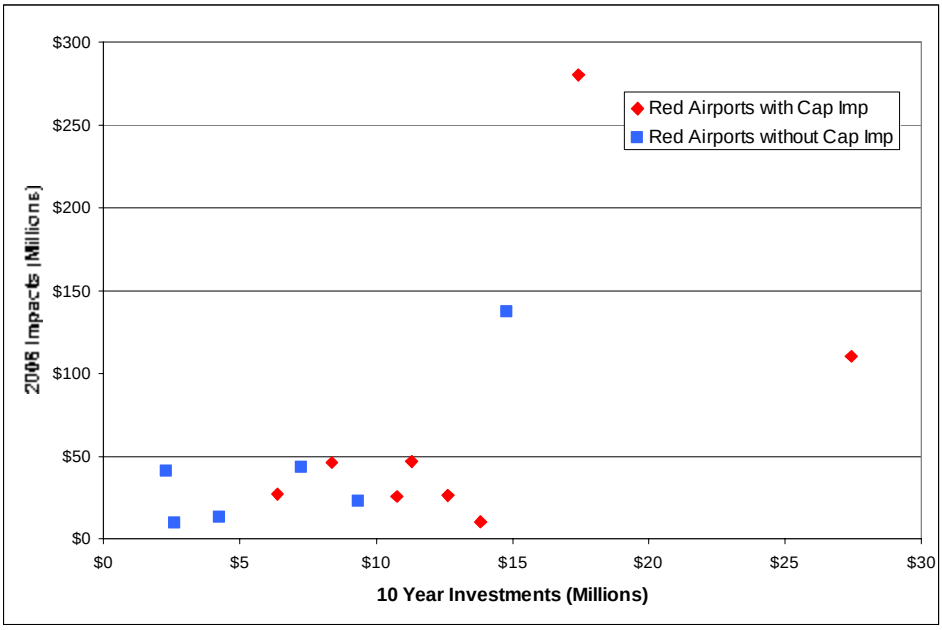


Figure 7: Red Airports: Impacts vs. Investments

Almost $150 million (in 2006 dollars) was invested in red airports from 1996 to 2006. The red airports are generally located in more populated areas and encounter more aviation traffic. There are two types of demand: anticipated demand and known demand. Known demand occurs when a company or industry requests a specific improvement project with an arrangement of locating or expanding their business at the airport. The presence of a known demand is more ideal than only trying to generate an anticipated demand, which is demand that is not overtly stated. In general, the red airports tend to build capacity based on anticipated demand, unlike the green and blue airports that generally construct capacity in response to a known demand or request from a company or industry. Airports that have a relatively low economic impact compared to their investments could be due to the fact that capacity projects can take years to affect the use of the airport depending on each airport's unique users and demands. A few of the points appear to be outliers in this dataset-Concord Regional, Sanford-Lee, and Smith-Reynolds-whose potential causes were discussed

previously. When considering the other data points, the airports with capacity improvement projects appear to have slightly higher annual economic impacts than the airports without capacity improvement projects.

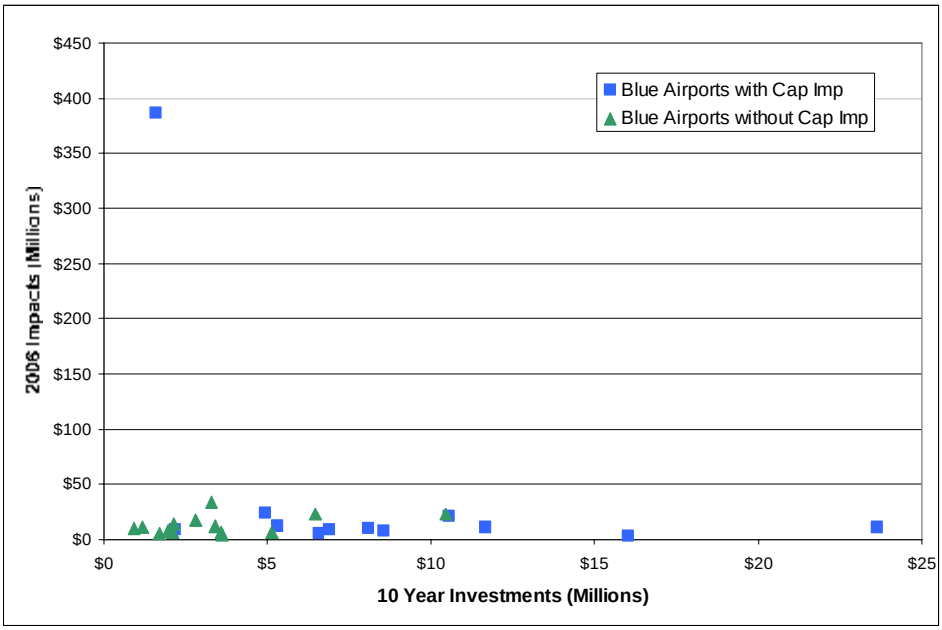


Figure 8: Blue Airports: Impacts vs. Investments

Over $150 million (in 2006 dollars) was invested in blue airports from 1996 to 2006. The majority of blue airports shown in Figure 8 had less than $50 million in economic impacts and less than $15 million in investments. The airport with greater than $50 million in impacts was Mt Airy/Surry County which was dominated by a single company's location decision. The airports with greater than $15 million in investments were Anson County with major new runway construction and Davidson County which was a recently constructed airport. A plausible explanation could be given for the unexpected results. The other airports are scattered with varying impacts probably because capacity projects can take years to affect the local economy. If an airport had recent new runway construction or significant extension, the economic potential of the airport might not have been reached at the time of

the study. Expansion of these facilities has occurred more recently than similar projects at the red airports. The capacity improvements at blue airports were generally initiated in response to a recognized need such as a new company selecting the area for relocation and requesting airport improvement to accommodate their aircraft.

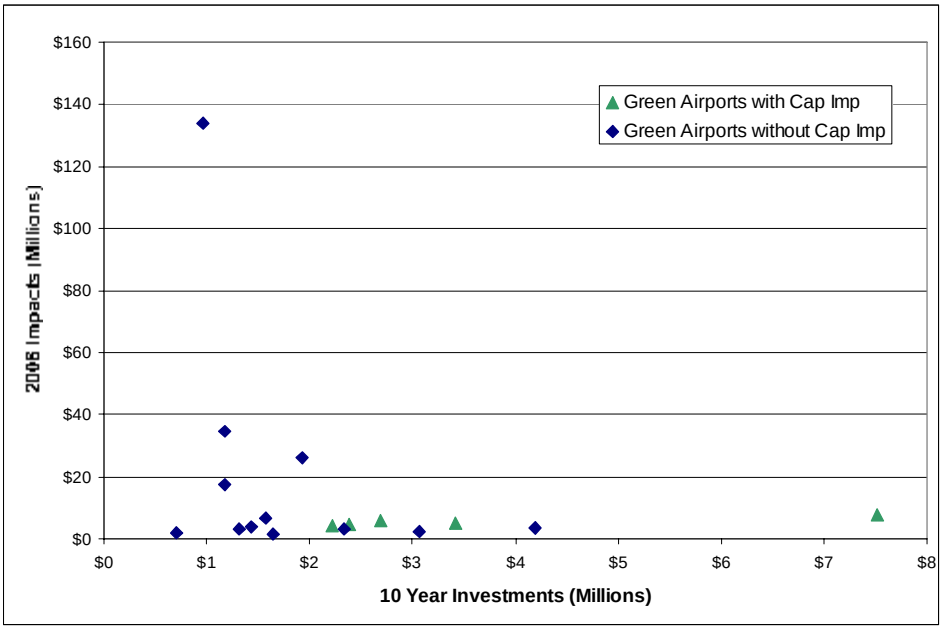


Figure 9: Green Airports: Impacts vs. Investments

Almost $40 million (in 2006 dollars) was invested in green airports from 1996 to 2006. The majority of green airports had less than $40 million in economic impacts and less than $5 million in investments. The airport with greater than $40 million in impacts was Ashe County which was dominated by a single company's location decision. The airport with greater than $5 million in investments was Macon County with a runway extension project that has not been completed at the time of the most recent grant list. The capacity enhancement projects occurred more recently than similar projects at the red airports. Although the green airport capacity improvements were often justified on current demands,

the low impacts at these airports could result from the delay between construction and actual benefit to local companies and workers. The capacity improvements at green airports were generally initiated in response to a acknowledged need such as a new company selecting the area for relocation and requesting airport improvement to accommodate their aircraft.

For insurance purposes, many corporate aircraft require five thousand feet of runway. About a third of the airports in the study have primary runways that are shorter than five thousand feet (Appendix N). Some of these runways face natural environment or existing land use restrictions that make extension infeasible. The insufficient runway length for a portion of corporate aircraft could inhibit the economic growth potential of the airport. Therefore, an airport with a runway greater than five thousand feet would have a significant advantage in attracting companies than an airport with a shorter runway.

4.4 EMPLOYMENT IN THE COUNTY

The employment of a county is a good indicator of the relative size of its economy when compared to other counties. The correlation between economic impacts and employment can be helpful in making funding decisions. The number of employees in the influence area of each airport was based on 2005 data from the North Carolina Department of Commerce [37]. This analysis will compare each airport with the other red, blue, or green airports. Figures 10, 11, and 12 are graphs of the dataset. Appendix K contains the list of all the employees in the county or counties included in the influence area which is included in Appendix E.

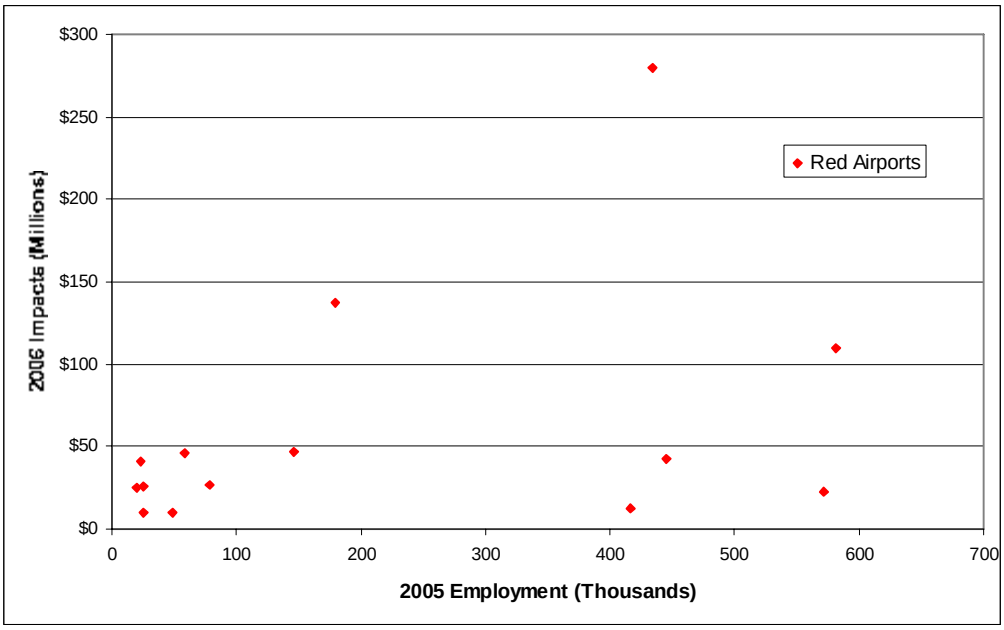


Figure 10: Red Airports: Impacts vs Employment

The red airports are clustered into two groups, the group with larger employment values are in the influence areas of Wake and Mecklenburg Counties, while the remaining airports are in smaller regions. The dataset indicates that the local economy, represented by employment, is not a critical factor in the economic impact of the airport. However, within each of the two clusters, the impacts tend to increase with employment, which could be expected.

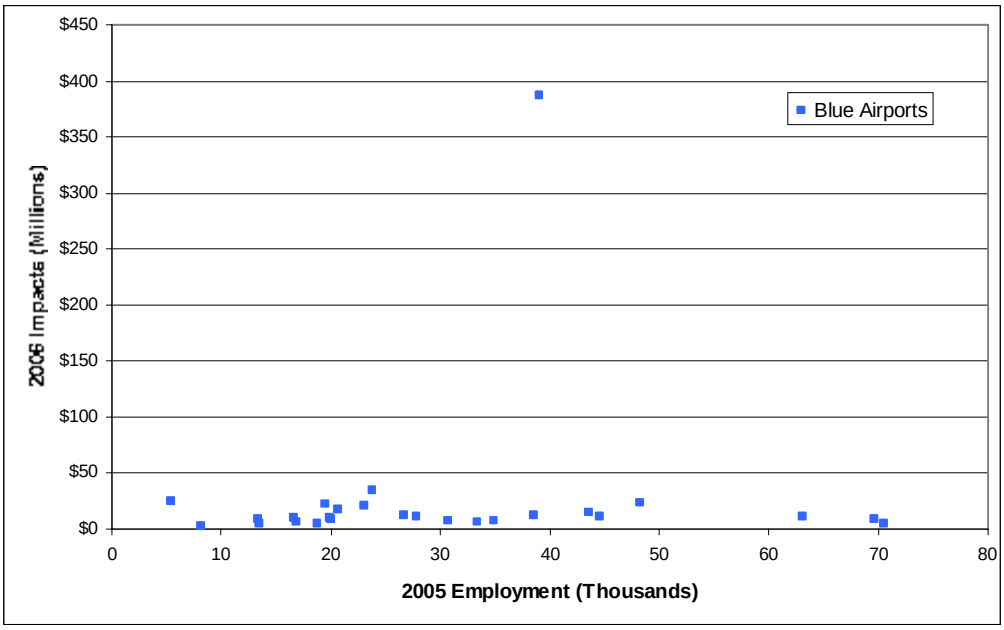


Figure 11: Blue Airports: Impacts vs Employment

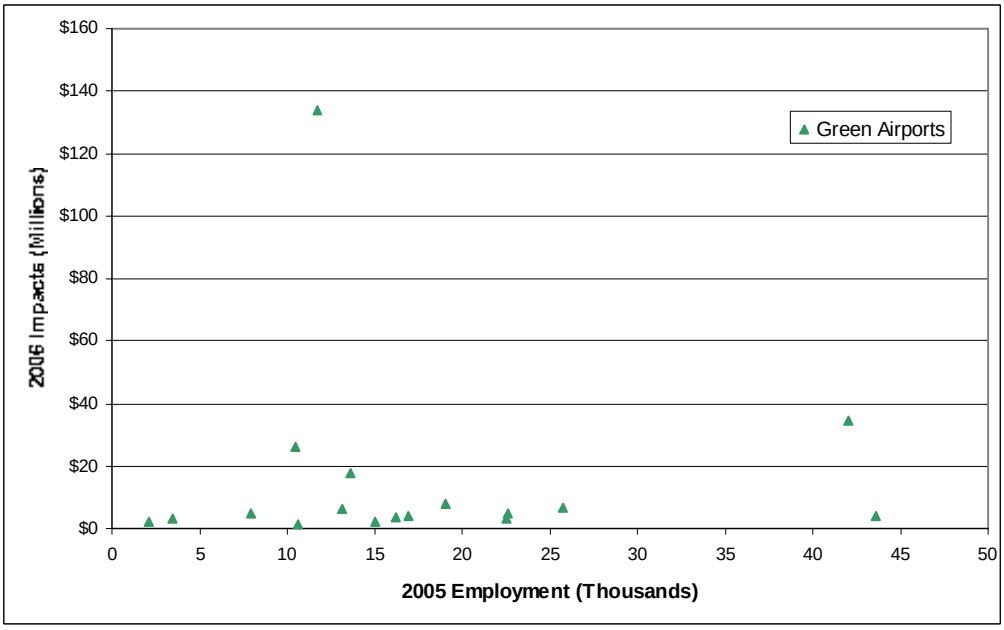


Figure 12: Green Airports: Impacts vs Employment

The blue and green airports have scattered points throughout the extensive range of employment values. The low correlation between economic impact and employment at the

two smaller groups of general aviation airports is intuitive because the relative significance of the airport to the community varies tremendously throughout the state. Some airports have served as the focal point for local industries, while others have had less impact on the market. The numerous types of air transportation services, such as air taxis, air cargo, or recreational activities that a general aviation airport can offer are utilized at different rates among the state's general aviation airports. At the blue and green airports, the economic impacts appear to be independent of the local economy.

4.5 Operations at the Airport

The operations that occur at an airport during a year represent the level of aircraft traffic that uses an airport. An operation is either a take-off or a landing at an airport. The number of operations at each airport during 2005 was obtained through the surveys that were completed by airport managers. See Appendix K for a list of the operations for each airport. Figures 13, 14, and 15 are graphs of the data.

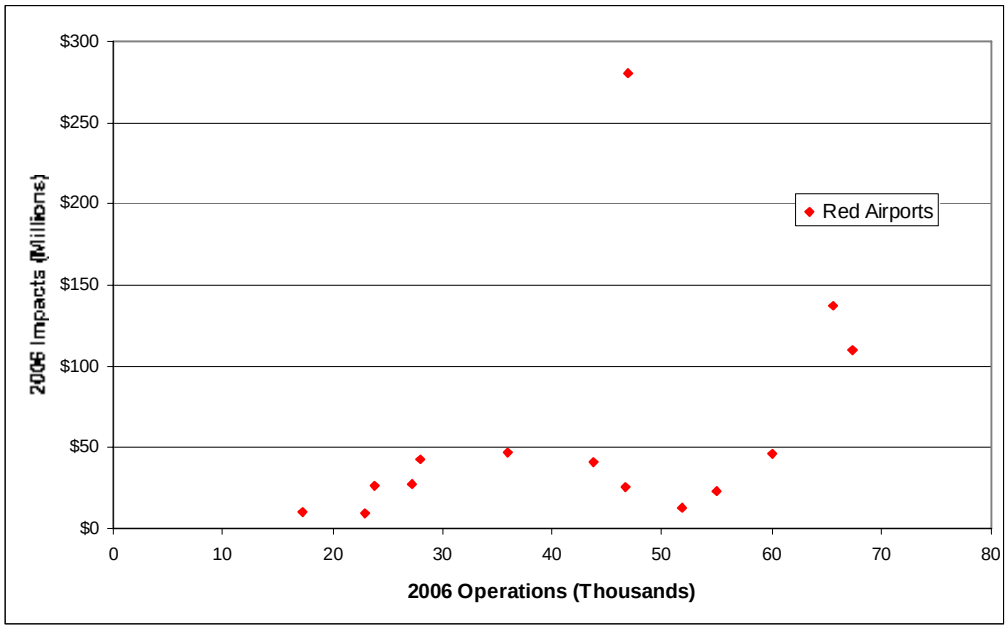


Figure 13: Red Airports: Impacts vs Operations

The red airports in appear to be bunched in two groups, those with less than 40,000 operations and those with more than 40,000 operations. Each of these sub-groups has a positive relationship between economic impacts and operations. The difference in magnitudes of the sub-groups could be indicative of the way the typical company at each airport utilizes the air transportation facilities. The differences could be caused by the relative impact of shipping products or transporting people. For instance, at two airports with equivalent economic impacts, an airport that is primarily used for shipping products might experience more operations than an airport that mainly transports people.

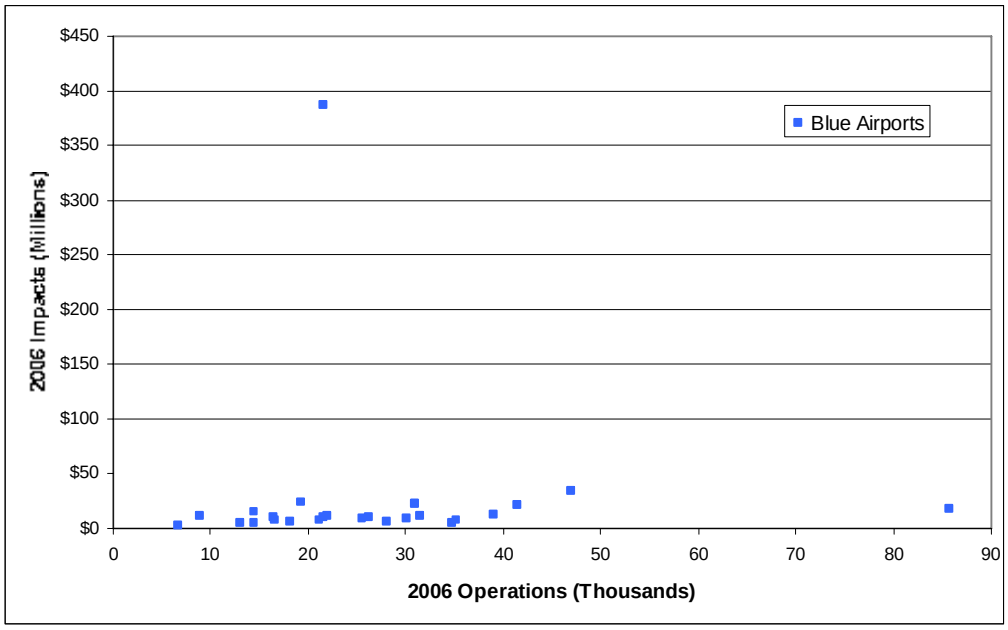


Figure 14: Blue Airports: Impacts vs Operations

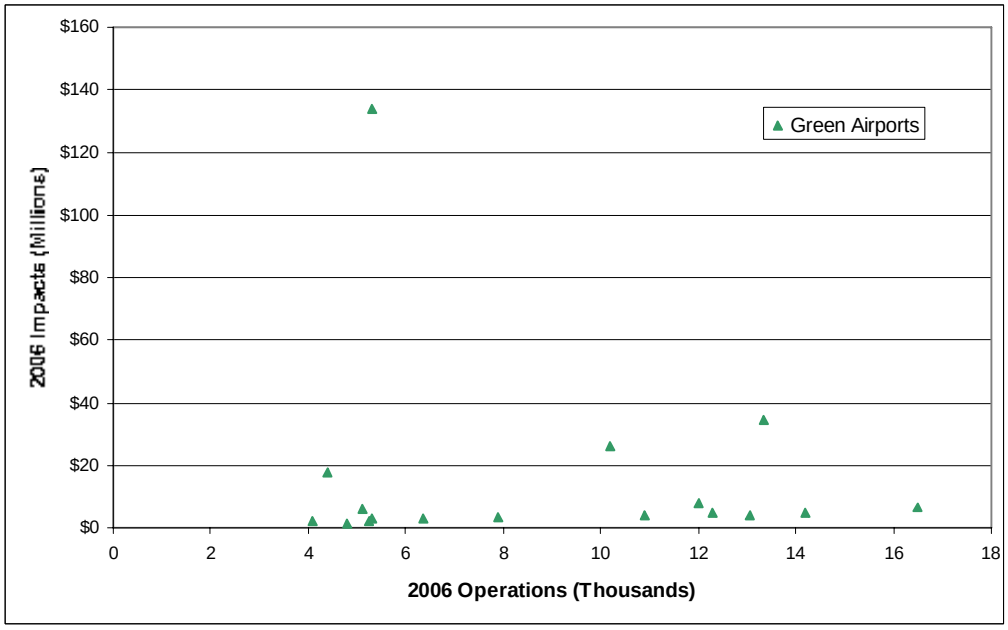


Figure 15: Green Airports: Impacts vs Operations

Overall, there is a small, positive increase in economic impacts as operations increase at the blue and green airports. Elizabeth City Regional is the major outlier, in terms of operations, for the blue airports because its operations are predominantly military related. The slightly positive trend is predictable because an airport that facilitates more operations would seem to have a greater economic impact on the community. The weak, but positive correlation might be explained by the fact that economic impacts are a result of numerous factors. The indirect and induced impacts created by an airport are dependant upon the economic climate in the influence area, which can vary greatly throughout the airports involved in the study. The type of business that is occurring per operation varies across these types of airports which could explain some of the deviations from the typical slope of the data set.

4.6 PAVEMENT STRENGTH

The FAA reports data about most airports in the nation, including the pavement capacity at each airport. The most prevalent pavement capacity value at general aviation airports is the gross weight pavement strength of a single wheel landing gear. The FAA provided no data for this pavement strength of a single wheel landing gear for six airports in the study [38]. This comparison is between the economic impact and pavement strength at each airport where applicable. Appendix K contains a summary of the FAA data on the pavement strength at each airport. Figures 16, 17, and 18 are graphs of the data.

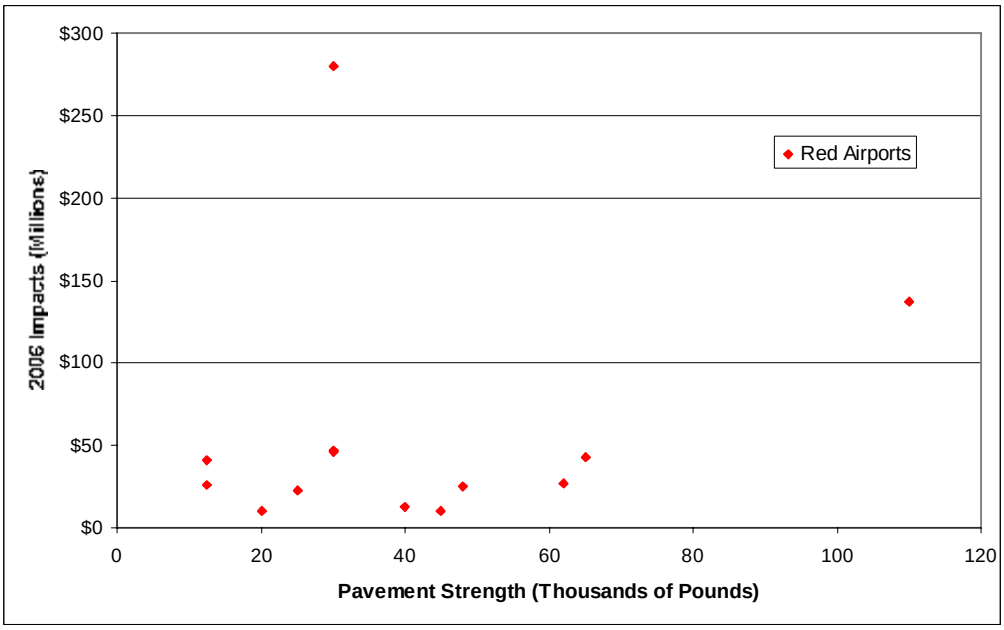


Figure 16: Red Airports: Impacts vs Pavement Capacity

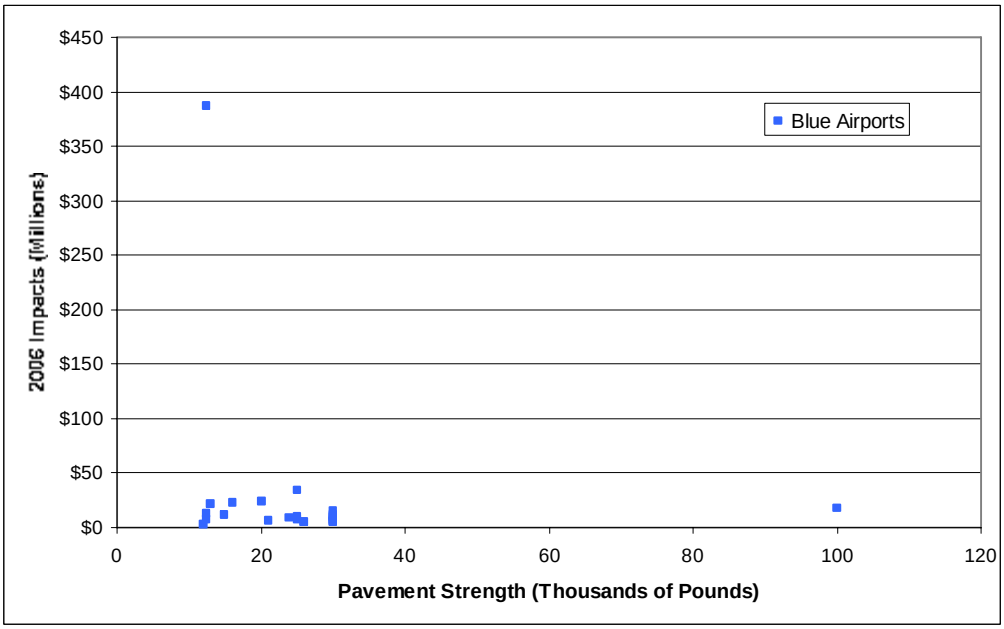


Figure 17: Blue Airports: Impacts vs Pavement Capacity

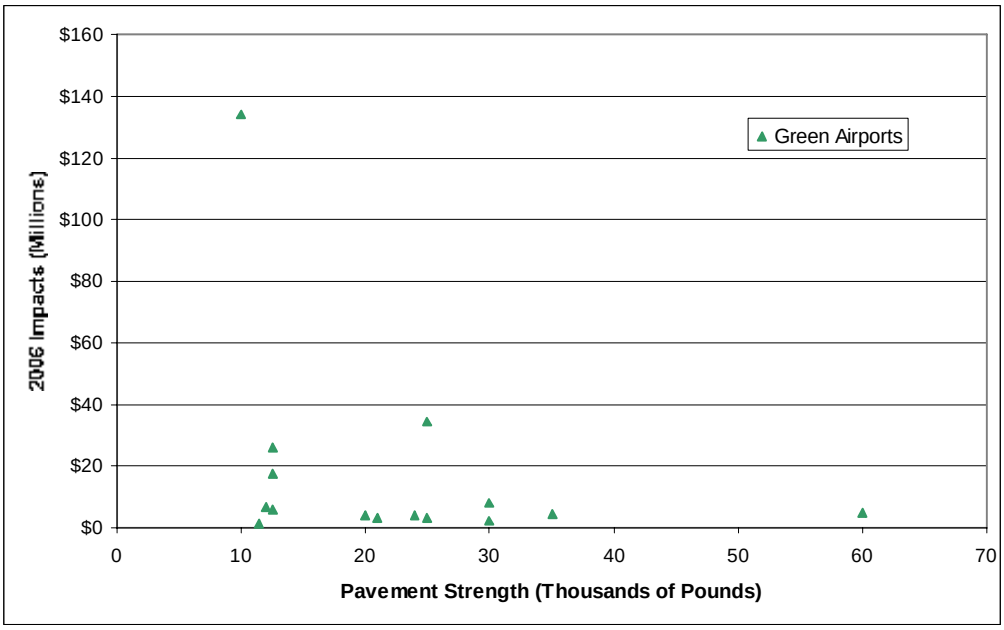


Figure 18: Green Airports: Impacts vs Pavement Capacity

The graphs for the red, blue, and green airports show scattered data sets with no clear trends. The objective of higher pavement strength is to accommodate larger and heavier aircraft at the airport. The overall lack of correlation could demonstrate that there is not a significant demand from companies with heavier aircraft, which could carry potentially more goods and people. Two airports had pavement strengths of 100,000 pounds or greater. One red airport has a pavement strength of over 100,000 pounds, Smith-Reynolds, which was recently a commercial service airport. One blue airport has a pavement strength of 100,000 pounds, Elizabeth City Regional, which is used for partially for military activities. The red airports, excluding Smith-Reynolds, had a range of pavement strengths from 12,500 to 65,000 pounds. The blue and green airports had a comparable array of pavement strengths, with most airports' pavement strength in the range of 10,000 to 30,000 pounds.

4.7 Ceiling Height for Instrument Guidance System

Instrument guidance systems at airports play a significant role in an aircraft's ability to land in various types of weather conditions. The ceiling height is the height above the airport to the bottom of the lowest layer of clouds at the point where a majority of the sky is obscured [39]. A landing at the airport would be considered unsafe if the certified minimum ceiling height for the instrument landing system is greater than the ceiling height under current atmospheric conditions. The minimum ceiling height was based on the type of aircraft that are prevalent at general aviation airports, which have an approach speed of less than 121 knots. Instrument guidance systems include: Area Navigation, Global Positioning Systems, Very High Frequency Omni Directional Range, Localizers, Non-directional Beacons, or Instrument Landing Systems. The instrument approach procedure at each airport with the lowest minimum ceiling height was used for this analysis (Appendix K) [40]. Seven airports do not have instrument guidance systems, which means the aircraft must operate under visual flight rules with a 1,000 feet ceiling height. Figures 19, 20, and 21 are graphs of the data.

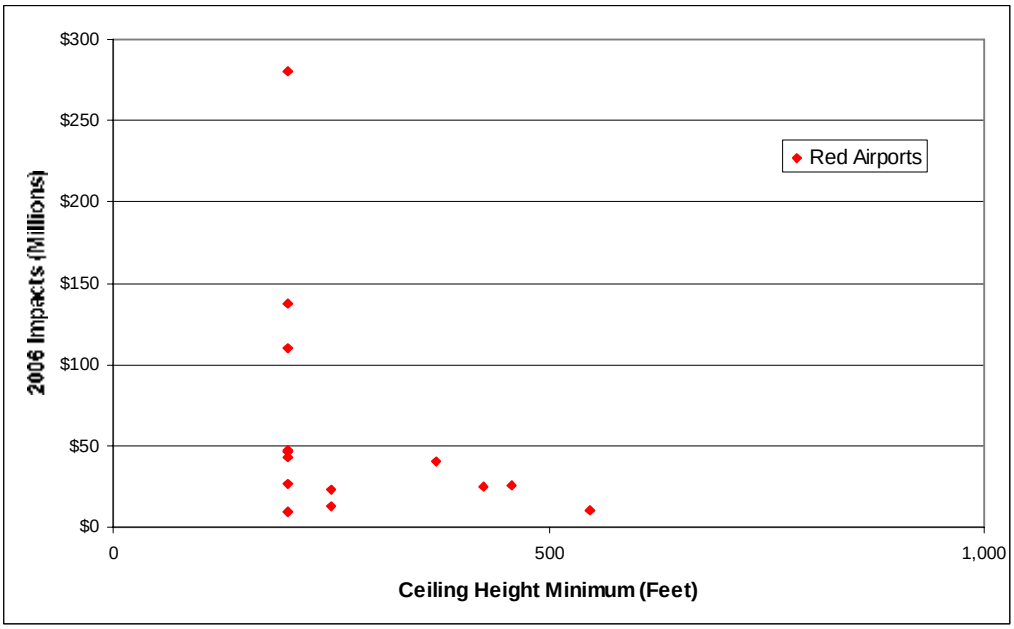


Figure 19: Red Airports: Impacts vs Ceiling Height Minimum

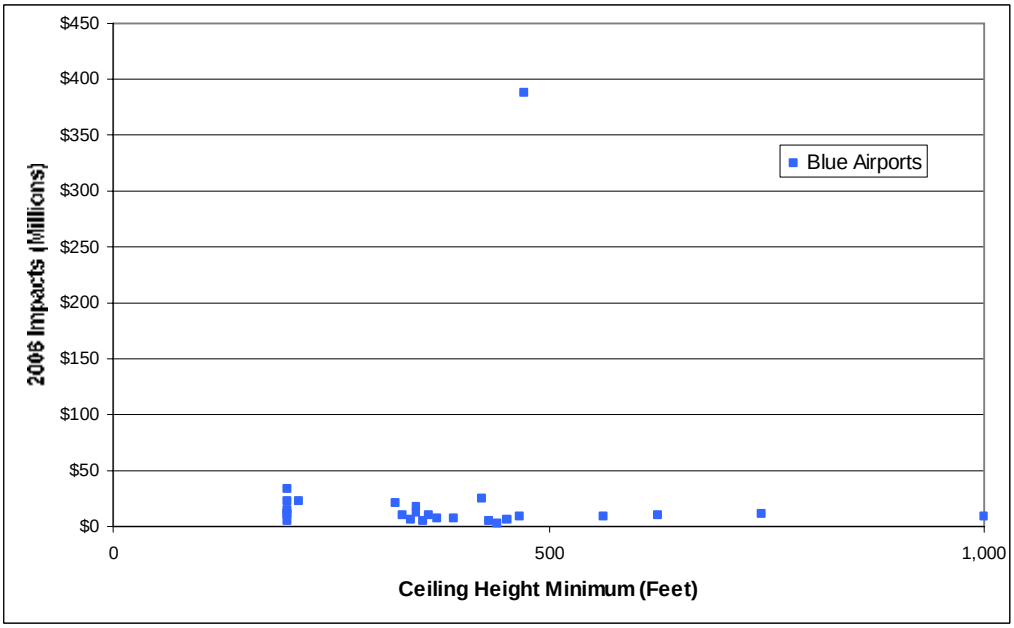


Figure 20: Blue Airports: Impacts vs Ceiling Height Minimum

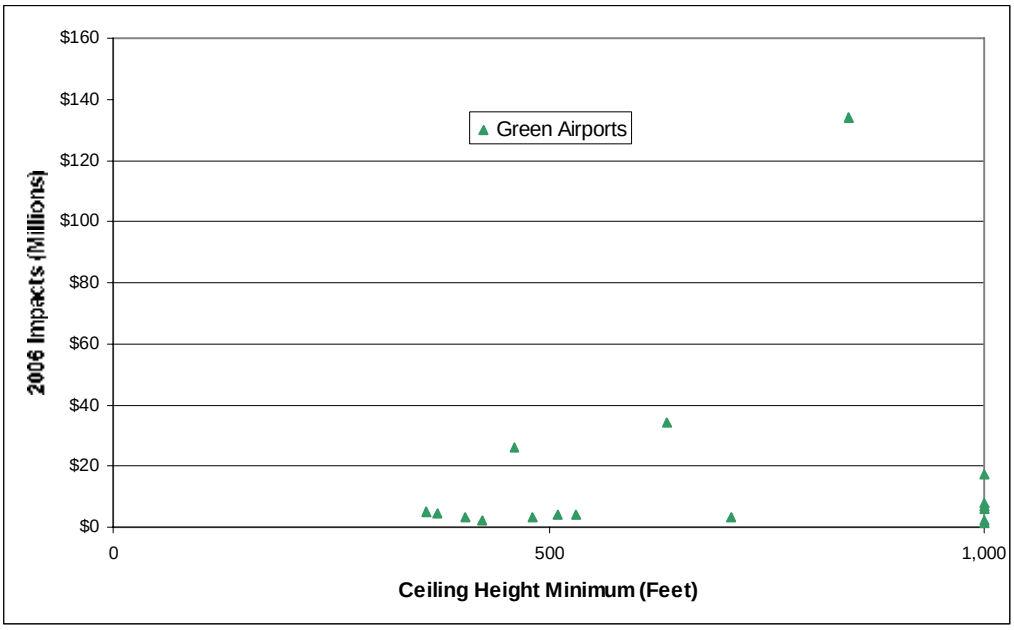


Figure 21: Green Airports: Impacts vs Ceiling Height Minimum

The graphs for the red, blue, and green airports show clusters at up to three areas. The areas of clusters are either at the minimum ceiling height of an instrument landing system (200 feet), visual flight rules (1,000 feet), or in between those two points. The data for each type of airport has a very weak correlation between economic impacts and ceiling height, particularly when excluding the extreme points of ceiling heights, 200 feet and 1,000 feet. The overall lack of correlation could be because of the significant number of airports that similar values of ceiling height, particularly at the extreme points. A cluster of red airports in range of 300 to 600 feet shows a negative correlation of economic impacts to ceiling height. This negative correlation is anticipated because an airport with a lower ceiling height minimum can operate in more weather conditions which would make the airport appear more efficient and attractive to businesses. The variance in the data could also be a result of the relatively mild weather that North Carolina experiences, which allows airports to operate a majority of the time, which diminishes the impact of ceiling height minimums.

4.8 Comparison Between 1996 Study and ITRE Study

The ITRE study was based on FAA concepts while applying the input to the IMPLAN model. The 1996 study was based on the FAA method while determining induced impacts using RIMS II multipliers. Although the 1996 study and the ITRE study used different methods, a comparison can be made due to the similarity of the models and output format. The expenditures or output of each study by airport is compared in Appendix L. The list of airports in the comparison includes only the airports that were considered general aviation airports in both studies. This excludes Smith-Reynolds Airport, Curtis L. Brown Jr. Field, and Hyde County Airport from the comparison.

The 1996 study [8] found a $185 million (in 2006 dollars) impact for general aviation airports. At the time of the 1996 study, Smith-Reynolds Airport was a commercial service airport; therefore its impact of $814 million (in 2006 dollars) was not included in the total for general aviation airports. The total investment in general aviation from federal, state, and local funds over the 10-year period from the 1996 study to 2006 was over $340 million (in 2006 dollars). Figure 22 compares the general aviation results from the 1996 study to the ITRE study. According to the 2006 ITRE study, the total impact is almost $1.65 billion, excluding Smith-Reynolds Airport. The 2006 total economic impact is significantly higher than the 1996 result, with an increase of over $1.3 billion annually at general aviation airports. According to those values, the increase in annual economic impacts is over 700%. The change in economic impacts was almost 400% greater than the investments over the ten-year time period.

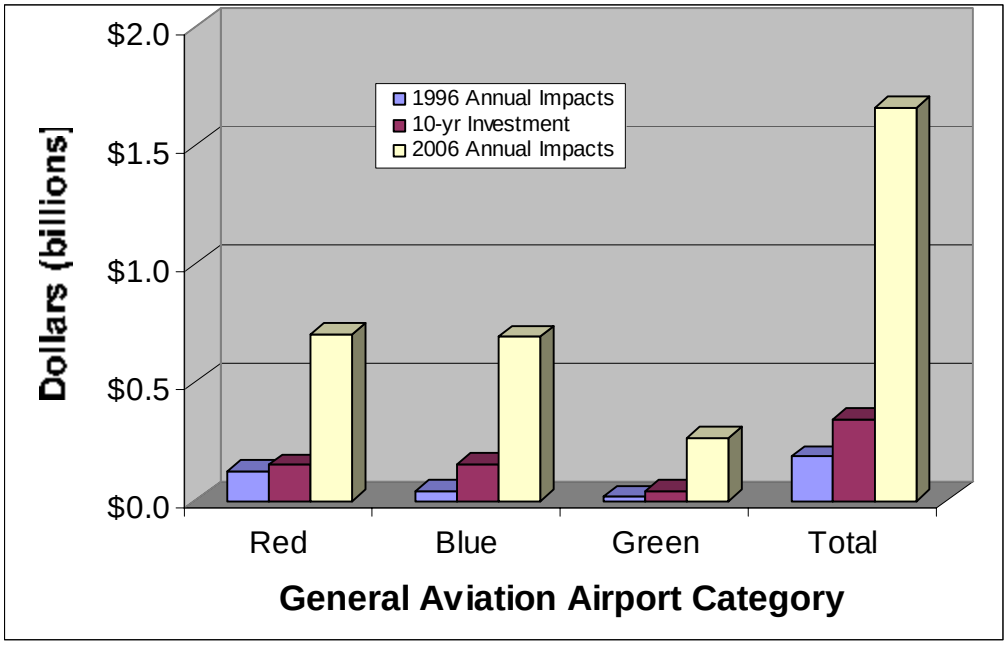


Figure 22: Comparison with 1996 Study of General Aviation Airports [5]

The red airports experienced an overall increase of almost 500% between 1996 and 2006. During the same time period, the blue and green airports had increases of over 1400% and 1500%, respectively. Clearly, the smaller airports (blue and green categories) had a considerably larger increase in economic impacts than the larger airports (red). Only two airports saw a decrease in their estimated economic impacts from 1996 to 2006, Wilkes County Airport and Smith-Reynolds Airport. During the time period, Smith-Reynolds Airport no longer offered commercial airline service, which was predominantly responsible for the decrease in impacts. Appendix M contains comparisons by airport between the 1996 study and the ITRE study.

The index of investment return made from 1996 to 2006 can be calculated using the 1996 study and ITRE study data. The index of investment return for the red airports is

approximately 390%, 415% for the blue airports, and 620% for the green airports. Where, the index of investment return is equal to the difference between the 1996 study and the ITRE study divided by the investments over the time period. The blue and green airports experienced a higher growth in economic impacts between 1996 and 2006 which could explain the larger indicator of investment return.

4.9 SUMMARY

ITRE Study

The estimated economic impact of North Carolina's publicly-owned general aviation airports is $1.8 billion, which is more than 0.5% of the gross state product. These airports support over 14,000 jobs with a payroll over $400 million. For detailed output by general aviation airport, see Appendices H, I, J, and N.

Statistical Analysis

The detailed results of the statistical analysis are contained in Appendix K. The scatter plots with a trend-line and corresponding R^2 value and the correlation coefficient can be found in the appendix. The process for determining the relationship between various parameters and economic impacts at general aviation airports in North Carolina was not represented well by statistical functions. Overall, the correlation coefficients were weak and unconvincing. Therefore, the analysis of the relationships are based on qualitative observations and scatter plots of the data sets.

Qualitative analysis

The qualitative analysis involved a thorough examination of the scatter plots of the data as well as discussion of case studies. This analysis indicated the economic impacts at the red general aviation airports have a relationship with capacity based projects and the employment in the influence area. Overall, the data sets and relationships for the blue and green airports appear scattered. The blue and green airports appear to behave relatively closely to each other in terms of the relationship between economic impacts and the various parameters that the study considered such as investments, employment in the county, operations, pavement strength, and ceiling height.

Comparison Between the 1996 Study and ITRE Study

The comparison between the 1996 study and the ITRE study includes only the airports that were considered general aviation airports in both studies. This excludes Smith-Reynolds Airport, Curtis L. Brown Jr. Field, and Hyde County Airport from the comparison. The 1996 study [8] found a $185 million (in 2006 dollars) impact for general aviation airports. The total investment in general aviation from federal, state, and local funds over the 10-year period from the 1996 study to 2006 was over $340 million (in 2006 dollars). According to the 2006 ITRE study, the total impact is over $1.5 billion, excluding Smith-Reynolds Airport. The 2006 total economic impact is significantly higher than the 1996 result, with an increase of over $1.3 billion annually at general aviation airports. According to those values, the increase in annual economic impacts is over 700%. The change in economic impacts was almost 400% greater than the investments over the ten-year time period. The index of investment return from 1996 to 2006 for the red airports is approximately 390%, 415% for

the blue airports, and 620% for the green airports.

5. FINDINGS, CONCLUSIONS, AND RECOMMENDATIONS

5.1 FINDINGS AND CONCLUSIONS

IMPLAN Analysis

Based on the literature review and the Department of Commerce recommendation, IMPLAN was an appropriate economic impact methodology to implement for the project. The increase in traffic at general aviation airports is consistent with the increase in economic impacts from 1996 to 2006. The input data for IMPLAN was acquired from tenants and major users using the proportion of their business that they attribute to the existence of the airport. Therefore, only the impacts attributable to the airport were considered in the study.

The analysis focused on the relationship between the economic impacts created by red, blue, and green general aviation airports in North Carolina. The analysis also examined what kind of airport improvements yielded the greatest economic impact. The study characterized red airports as having longer runways than blue and green airports, and as being located along interstate corridors.

Generally the smaller, green airports have greater relative impacts on their local economies than the larger red and blue general aviation airports have on their economies. Also, capacity-based improvements for all three types of airports had a greater economic impact than non-capacity project. There appears to be a definitive difference between the red airports and the other general aviation airports in this study. Generally, the difference is characterized by red airports' relationship to capacity based projects and the size of the

economy. The blue and green airports appear to behave relatively closely to each other in terms of the relationship between economic impacts and the various parameters that the study considered such as investments, employment in the county, operations, pavement strength, and ceiling height.

Investments from 1996 to 2006

The red airports with capacity improvements had a slightly higher economic impact than airports without capacity improvements. Therefore, these airports created more economic impacts as the investments increased. The capacity enhancement projects at blue and green airports were generally completed in recent years, which could be a reason the economic impacts seem low. Over a longer time frame, the blue and green airports with capacity projects could expect higher economic impacts than those without capacity projects, similar to the trends with red airports. Since the blue and green airports primarily build capacity based on stated needs, the economic impacts should increase shortly after the projects are completed. According to the Division of Aviation's Development Plan, the red, blue, and green airports have recommended runway lengths of 6,500 feet, 5,550 feet, and 5,000 feet, respectively [3]. A minimum of five thousand feet of runway is important to a general aviation airport in order to accommodate the requirements of most corporate aircraft.

Employment in the County

The weak relationship between economic impacts and employment at red airports indicates that the local economy has a minor effect on the impacts. The scatter plots showed a vague trend of increasing economic impacts as the number of employee in the influence area

increases. The insubstantial relationship between economic impacts and employment at blue and green airport means that the overall size of the economy in the county does not have a considerable effect on the economic impact of the airport. This is a significant result that suggests airports can have an impact even if the local economy is relatively small. Numerous general aviation airports have a greater economic impact than would be expected based on their location, size, or local economic climate. One possible explanation is that an active airport management team, marketing campaign, additional services, and updated or new facilities could help an airport generate higher impacts than an airport in an equivalent economy.

Operations at the Airport

There was weak, but slightly positive relationship between operations and impacts at red, blue, and green airports from observations of the scatter plots. More flights in and out of an airport do not necessarily produce a higher economic impact, although there is some relationship. The fairly scattered data points for operations and economic impacts could be possibly explained by the relative value of the goods or services that are flown by various companies. As a hypothetical example, if one company's goods were more valuable per unit volume, that company might require fewer operations than a company with a more bulky product.

Pavement Strength

At the red, blue, and green airports there appears to be no relationship between pavement capacity and economic impact when examining scatter plots of the data. A possible

explanation could be that these airports do not have a high demand from users of heavier aircraft. The airports could be appropriately meeting the current needs of the users. As a representative of safety and maintenance oriented projects, pavement strength data indicates that these types of projects are not particularly correlated to economic impacts.

Ceiling Height for Instrument Guidance System

The data sets of ceiling height minimums and economic impacts at all the airports were scattered among a short range of values for ceiling heights. The scattered data could be caused by the short range of values or the reduced impact of sophisticated instrument landing systems due to the relatively mild weather that North Carolina encounters. As a surrogate to safety oriented projects, ceiling height minimums data indicates that these types of projects are not particularly correlated to economic impacts.

ITRE Study

The findings of the ITRE study for the red, blue, and green general aviation airports are a substantial contribution to many local economies across the state (Table 10). The total economic output created by North Carolina's publicly-owned general aviation airports is $1.8 billion. The total payroll impact that is credited to the general aviation airports is over $400 million and over 14,000 jobs are supported by the aviation industry. When compared to the 1996 study [8], assuming both studies are accurate and equivalent, the general aviation airports in North Carolina have generated economic growth. The $343 million that has been invested into the airports over the ten year time period appears to have a positive return on

the investment. The investments ($343 million) corresponded with a significant increase in airport-related economic impacts over the ten-year period ($1.5 billion).

Table 11: ITRE Study Results for General Aviation Airports [5]

	Direct	Indirect	Induced	Total
Output Impacts	$990,301,000	$581,384,000	$222,537,000	$1,794,222,000
Employment Impacts	7,400	4,330	2,530	14,250
Payroll Impacts	$286,660,000	$71,139,000	$53,554,000	$411,353,000

Appendix O contains detailed descriptions of each red, blue, and green airport, including maps, characteristics, services, and economic impacts. The summaries also provide the number of tenants or major users that responded to the survey and the tax revenue generated by the airport [5].

Funding Distribution

An important issue with the allocation of any public funds is the distribution of the money to the potential recipients. "Are the rich getting richer?" is a question that is often asked of publicly financed projects. From 1996 to 2006, the red, blue, and green general aviation airports received $149 million, $155 million and $40 million, respectively in airport improvement funding. In terms of funding per operation (takeoffs and landings), the red, blue, and green airports received approximately $280, $290, and $375 per operation, respectively. Therefore, it appears that the smaller general aviation airports are receiving at least their fair share of funding.

Effect of Known and Anticipated Demand on Airport Funding

It is important for general aviation airports to meet the demands of the users. As discussed previously, anticipated demand and known demand for general aviation airports may play a significant role in the funding of airport infrastructure. By examining cases, the research found that anticipated demand and the notion of "build it and they will come," does indeed, encourage business and trade at general aviation airports. Investing on the basis of anticipated demand is especially appropriate if growth in an area is rapid. The guaranteed, known demand means that a project will be utilized as it is completed, which indicates that the funding can be justified with greater confidence.

5.2 RECOMMENDATIONS

Based on this research, there are several recommendations about the funding of improvement projects at North Carolina's red, blue, and green general aviation airports. A preliminary recommendation is that funding levels continue or increase for the airports. The increase in annual economic impacts has been four times greater than the investments over the past ten-year period. Therefore, the investments at the general aviation airports were productive and cost-effective. The rapid growth in economic impact from the general aviation airports over the past ten years is a trend likely to continue. The general aviation airports in the state of North Carolina have become more prominent to business leaders and as relievers to the commercial service airports. Adequate funding could ensure that the growth in economic impact to the communities surrounding these airports will continue to increase.

IMPLAN

This type of economic impact study is important for the aviation community in North Carolina, particularly each airport and airport manager. Future updates, ideally every five years, could provide decision makers with more precise and accurate data on the cost effectiveness of airport projects. IMPLAN should be implemented for future economic impact studies for the Division of Aviation. The use of IMPLAN would create consistency between the results which could be used to generate more conclusive analysis. The ITRE study could be used as a baseline to which future studies can be compared. Particular consideration should be given to the economic effect of capacity, safety, or maintenance oriented projects. The cost effectiveness of projects could be tracked more closely and compared across a longer time frame at smaller intervals. Future studies could also be used to refine the index of investment return for the red, blue, and green airport groups.

Regarding the use of surveys in the planning process, the airport managers, tenants, and major users should become more familiar with the method which could lead to a higher response rate. An elevated responsibility level could also be placed on the airport managers to help ensure that a high percentage of the surveys are returned from tenants and major users. Informational meetings at each airport before the surveys are distributed could also boost public interest as well as the return rate of the surveys. As needs and technology change, the type and priority of projects might fluctuate over time, which could be captured in regular, consistent studies.

The surveys that are distributed to the tenants and major users could be modified to obtain data more specifically related to airport improvements. The ITRE study was developed to estimate the economic impact of the airports in North Carolina, while a future study could attempt to collect data for dual purposes. Potential questions could include:

- What improvements to the airport would help your business grow (runway extension, instrument guidance system upgrades, pavement rehabilitation, terminal building expansion or updates, lighting improvements, etc.)?
- How did access to air transportation affect the location decision of your business?
- Have any limitations to air transportation affected your business?
- Would you be willing to relocate your business near an airport that offered more or better services?

Decision-Making

The NCDOT Division of Aviation has a policy of setting safety and maintenance projects as a top priority. The basis of recommendations for capacity projects relies on the availability of funding after the critical projects are completed. The recommendations from this thesis could be used as another tool in the decision making process. Capacity enhancement projects, particularly runway extensions or new construction, provide a high economic impact for the level of investment. These types of projects might be infeasible at some airports, because of environmental issues or existing land uses surrounding the airport. The five thousand feet of runway is an important threshold for general aviation airports that should be a top consideration for project funding. Capacity expansion projects are the recommendation for the allocation of airport improvement funding by project type.

The green and blue general aviation airports experienced an increase in economic impacts from 1996 to 2006 that averaged about three times greater than increase at red general aviation airports. The green general aviation airports had the largest rate of return on their investments at approximately 620%. Blue general aviation airports had a rate of return of 415% and the red general aviation airports had a rate of return of about 390%. Therefore, the grant money that was invested into green airports had the greatest economic impact. The green airports are typically the smallest and most remote of the airport types, which could be a possible explanation for the high rate of return. The money spent at the smaller airports (green airports) appears to have the largest impact on its respective local economy. The recommendation for allocating general aviation grant funds according to airport classification, from highest to lowest priority, is green, blue, and red. The final recommendation for funding allocation is capacity projects at green general aviation airports in order to provide the greatest "bang for the buck."

5.3 Recommendations for Future Research

An in-depth study of the property tax collection laws, standards, and collection procedures might help increase the tax revenue that government agencies receive from aircraft owners. The tax revenue from the ITRE study appears low to many experts in the aviation industry in North Carolina. Several evasion methods or relaxed collection policies could be to blame for the loss of revenue. A study could help determine if new policies and regulations should be enacted or if the lost revenue is minimal.

The impact of general aviation airports on the hotel industry in North Carolina deserves a more thorough examination. The ITRE project team assumed that 20% of the revenue generated by the hotel industry in a general aviation airport's county is attributable to the airport. The impact of the hotel industry contributed about 6% of the total economic impact. The counties that accommodate a general aviation airport typically have a small hotel industry, which could explain the relatively small impact on the overall economic impact. A research study could determine a value to replace the assumption about the hotel industry revenue attributable to general aviation airports. The research study could involve surveys to hotels and general aviation users or another method.

Catalytic effects are a type of impact that could be valuable to future studies. Catalytic effects can supplement the traditional measures of direct, indirect, and induced impacts that were generated by IMPLAN. Attracting economic activities would be the catalytic impact of an airport. The effect could take the form of impacts on a company's location decision, the advancement of the companies using the airport, or an overall strengthening of the economy through increased competitiveness. A group at the Kenan-Flagler Business School at the University of North Carolina at Chapel Hill, under the direction of Dr. John Kasarda, has done a significant amount of work in this area. Their focus has been in the aviation industry, specifically air cargo as it relates to economic development [41]. The inclusion of catalytic impacts could add to the value of a future study. A clearly defined methodology would need to be developed for general aviation airports, because of their unique role in the local economy.

6. REFERENCES

[1] National Plan of Integrated Airport Systems 2007-2011. Federal Aviation Administration. September 2006. http://www.faa.gov/airports_airtraffic/airports/planning_capacity/npias/reports/media/2007/npias_2007_narrative.pdf

[2] NBAA Business Aviation Fact Book 2004. National Business Aviation Association. 2004. http://web.nbaa.org/public/news/stats/factbook/2004/2004factbook.pdf

[3] North Carolina General Aviation Airport Development Plan. Division of Aviation. North Carolina Department of Transportation. May 2004. http://www.ncdot.org/transit/aviation/what/development/Revised%20NCGAADP.pdf

[4] The IMPLAN Input-Output System. Lindall, Scott A. and Olson, Douglas C. Minnesota IMPLAN Group. http://www.implan.com/library/documents/implan_io_system_description.pdf

[5] Economic Impact of Publicly Owned Airports in North Carolina (draft). Institute of Transportation Research and Education. August 2006.

[6] Estimating the Regional Economic Significance of Airports. Advisory Circular 150/5000-10A. United States Department of Transportation. Federal Aviation Administration. September 1992.

[7] Analyzing the Economic Impact of Transportation Projects Using RIMS II, IMPLAN, and REMI. Lynch, Tim. Center of Economic Forecasting and Analysis. October 2000. http://dlis.dos.state.fl.us/bld/roi/workshop/handouts/ROI_Workshop_Lynch_Report.pdf#search=%22Analyzing%20the%20Economic%20Impact%20of%20Transportation%20Projects%20Using%20RIMS%20II%2C%20IMPLAN%2C%20and%20REMI%22

[8] Economic Impact of Publicly-Owned Airports in North Carolina. Department of Geography and Earth Science. University of North Carolina at Charlotte. Division of Aviation. North Carolina Department of Transportation. June 1996.

[9] 2000 Population Estimates. U.S. Census Bureau, Population Estimates Program. http://factfinder.census.gov/servlet/GCTTable?_bm=y&-geo_id=01000US&-_box_head_nbr=GCT-T1-R&-ds_name=PEP_2005_EST&-format=US-9S

[10] The Economic Impact of Aviation in Arizona. Arizona Department of Transportation – Aeronautics Division. 2002/2003.

[11] Benefits to Our Economy and Way of Life. California Department of Transportation - Division of Aeronautics. June 2003.

[12] The Economic Impact of Airports in Colorado. Colorado Department of Transportation – Division of Aeronautics. 2003.

[13] Technical Summary for the Florida Airports Economic Impact Study. Florida Department of Transportation. August 2000.

[14] The Economic Impact of Airports in Idaho. Idaho Transportation Department - Idaho Division of Aeronautics. 1998.

[15] Indiana State Aviation System Plan - 2003 Update. Indiana Department of Transportation - Aeronautics Section. October 2002.

[16] The Economic Values of Iowa's Air Transportation Industries. Iowa Department of Transportation. August 2000.

[17] Economic Impact of Public-Use Airports in Massachusetts. The Massachusetts Aeronautics Commission. 1999.

[18] State System Plan Update/Economic Impact Study. Mississippi Department of Transportation - Aeronautics Division. 2004.

[19] Fact Book 2005. New Jersey Department of Transportation. June 2005.

[20] Economic Impact of Aviation in New Mexico. New Mexico Department of Transportation – Aviation Division. 2003.

[21] The Benefits of Aviation in New York. New York State Department of Transportation. November 2003.

[22] North Dakota Aviation System Plan. North Dakota Aeronautics Commission. 1999.

[23] Economic Impact of Aviation and the Aerospace Industry in Oklahoma. Oklahoma Aeronautics and Space Commission and Oklahoma Department of Transportation. September 1999.

[24] Aviation Component of the Access Ohio Phase II Transportation Plan – Airport System Economic Impact Analysis. Ohio Department of Transportation – Division of Aviation. June 1995.

[25] The Economic Impact of Aviation in Pennsylvania. The Pennsylvania Department of Transportation - Bureau of Aviation. December 2005.

[26] The Economic Impact of Vermont's Public-Use Airports. Vermont Transportation Department. April 2003.

[27] Virginia Public-Use Airport Economic Impact Study. Virginia Department of Aviation. April 2004.

[28] Wisconsin Aviation Impact Study. Wisconsin Department of Transportation. 1999.

[29] Economic Impacts of Washington Airports. Washington State Department of Transportation – Aviation Division. 2001.

[30] Elements of the Social Accounting Matrix. MIG IMPLAN Technical Report TR-98002. Lindall, Scott A. and Olson, Douglas C. Minnesota IMPLAN Group. http://www.implan.com/library/documents/elements_of_the_implan_sam.pdf

[31] Travel Industry Association TravelScope® / Directions® by DKSA. North Carolina Division of Tourism, Film and Sports Development.

[32] State Sales and Use Tax Statistics For Fiscal Year 2004-2005. North Carolina Department of Revenue. http://www.dornc.com/publications/fiscalyearsales.html

[33] Monthly Motor Fuels Collections and Gallons. Motor Fuels Division – North Carolina Department of Revenue. US Energy Information Administration.

[34] Gross Domestic Product by State, 2005. Bureau of Economic Analysis. U.S. Department of Commerce. http://bea.gov/bea/newsrel/gspnewsrelease.htm

[35] Grant List. Division of Aviation. North Carolina Department of Transportation. 2006.

[36] Consumer Price Index – Inflation Calculator. Bureau of Labor Statistics. U.S. Department of Labor. http://www.bls.gov/cpi/

[37] Employment and Wages by North American Industry Classification System. North Carolina Department of Commerce. 2005. http://eslmi23.esc.state.nc.us/ew/

[38] Airport Data (5010) and Contact Information. Federal Aviation Administration. September 2006. http://www.faa.gov/airports_airtraffic/airports/airport_safety/airportdata_5010/

[39] Air Traffic Management Glossary of Terms. Federal Aviation Administration. March 2005. http://www.fly.faa.gov/Products/Glossary_of_Terms/glossary_of_terms.html

[40] Jeppesen Airway Manual - Terminal Charts For Civilian Airports Located Within North Carolina. April 13, 2006. http://www.mypilotstore.com

[41] The Catalytic Effect of the Accessibility to Air Cargo Services. Cech, Petr. Kenan-Flagler Business School. University of North Carolina at Chapel Hill. 2004.

APPENDICES

APPENDIX A:

FIGURE A1: COMPARISON OF RIMS II, IMPLAN, AND REMI [7]

Characteristics	REMI	RIMS II	IMPLAN
I. Type			
	Conjoined input-output and behavior model	Regional input-output	Regional input-output
II. General Model Characteristics			
Base Year	1977	1977	1982
Reference Model	National A matrix	National A matrix	National A matrix
Open/closed	Open	Both	Both
III. Sector Scheme			
Disaggregated	493	531	538
Aggregated	53	39	User choice
IV. Regionalization Technique			
Product Mix	Keep at a disaggregated level	Keep at a disaggregated level	Keep at a disaggregated level
Consumption	BLS regional Consumer Expenditure Surveys	Row adjusted for commuting, column adjusted for savings and state tax leakages	Adjusted using RPC
Trade Patterns	Regional purchase coefficients	Regional purchase coefficients	Regional purchase coefficients
V. Impacts Measured			
Output	Yes	Yes	Yes
Employment	Yes	Yes	Yes
Income	Yes	Yes	Yes
VI. Special Features			
	Occupation impacts Pollution impacts		
VII. Computer Requirement			
	IBM PC or Mainframe accessible via modem	IBM PC	IBM PC or Mainframe accessible via modem
VIII. Costs			
Purchase Model		$275 per region	$450 Software State packages (counties + state) for $475-$2200
Customized Simulation	Available	Not Available	Not Available
Other Options	Leasing models is available		
IX. Web Site	http://www.remi.com/	http://www.bea.doc.gov/bea/regional/rims/	http://www.mig-inc.com/

APPENDIX B: DETAILED ECONOMIC IMPACT STUDY RESULTS FROM IOWA, NEW YORK, VERMONT, AND WASHINGTON

Table B1: Detailed Output Impact from Iowa, New York, Vermont, and Washington:

	Output			
State	Direct	Indirect	Induced	Total
Iowa	$528,230,608	$133,202,568	$172,660,726	$834,093,899
New York – Commercial	$22,265,346,600		$12,362,711,800	$34,628,058,400
New York - General Aviation	$487,239,200		$274,045,600	$761,284,800
New York – Total	$22,752,585,800		$12,636,757,400	$35,389,343,200
Vermont - Local/Region	$69,165,394	$270,255,035	$224,017,691	$563,438,120
Vermont – Statewide	$69,165,394	$270,255,035	$236,441,025	$575,861,454
Washington	$1,223,488,447	$271,200,577	$295,457,799	1,790,146,823

Table B2: Detailed Employment Impact from Iowa, New York, Vermont, and Washington:

	Employment			
State	Direct	Indirect	Induced	Total
Iowa	5,753	1,500	2,612	9,865
New York – Commercial	207,767		127,394	$335,161
New York - General Aviation	216,014		131,528	$347,542
New York – Total	423,781		258,922	$682,703
Vermont - Local/Region	891	4,672	2,772	8,335
Vermont – Statewide	891	4,672	3,285	8,848
Washington	18,893	3,352	3,962	26,207

Table B3: Detailed Payroll Impact from Iowa, New York, Vermont, and Washington:

	Payroll			
State	Direct	Indirect	Induced	Total
Iowa	$188,369,729	$43,235,434	$64,568,150	$296,173,314
New York – Commercial	$7,461,196,000		$5,613,393,700	$13,074,589,700
New York - General Aviation	$252,698,100		$115,210,000	$367,908,100
New York – Total	$7,713,894,100		$5,728,603,700	$13,442,497,800
Vermont - Local/Region	$32,103,750	$89,622,554	$75,824,008	$197,550,312
Vermont – Statewide	$32,103,750	$89,622,554	$81,294,808	$203,021,112
Washington	$321,295,770	$91,774,217	$96,668,659	509,738,646

APPENDIX C: AIRPORT MANAGER SURVEY [5]

NORTH CAROLINA AVIATION
ECONOMIC IMPACT ANALYSIS

Commercial Service and General Aviation Airports
Data Request Survey
Form A

2005

The North Carolina DOT Division of Aviation requests your help in completing a general analysis of the economic impact of aviation in North Carolina, and more specifically, how important your airport is to its community. By providing this information, yo

This study will use the latest data available from airports and communities, which we anticipate to be the state fiscal year ending June 30, 2005. It will include the the third and fourth quarter of 2004 and the first and second quarter of 2005.

Results of this study, particularly those which pertain to your airport, will be provided to you. We anticipate this study will be completed by Summer of 2006.

Please complete the study and return it to the Division of Aviation email address provided on the last page of this survey by Friday, September 16th, 2005. The letter from Ted Alman with the Division of Aviation hopefully explained the intent, purpose an

Members of the survey team at the Division of Aviation ask your help in:

1. Reviewing the 11 items in this form, using the "Tab" key to move from question to question;
2. Completing as much of the data requests in this form as possible *(in spaces asking for a quantity or dollar amount, please enter a numerical value. For any multiple choice or "yes/no" questions, please enter an* ***X*** *to mark your selection)*;
3. Correcting any errors in information we have already provided on the form;
4. Returning it to the Division of Aviation email address provided.

BEGINNING OF SURVEY FORM

---

1. AIRPORT NAME: _____ _____

Mailing Address: _____
_____
_____

If elements of the address are incorrect, please correct them.

2. AIRPORT CONTACTS:

This data request was sent to:

Name: _____

Telephone: _____

Is this the person we should meet with if a member of the team needs to follow-up on this questionaire? If not, please provide the name of the appropriate person.

3. AIRPORT USE: We have used official data for your airport that has been reported on FAA Form 5010 to estimate the number of aircraft and aircraft operations during the last year for which a report is available.

The 5010 data is shown in items 3B and 3C below.

3A **In your opinion are these statistics for current numbers of based aircraft and annual number of aircraft operations accurate, or should they be revised?**

Accurate _____ Revised _____ (Place an "X" in one)

If you answered "accurate" skip to Question 4; if you answered "revised" continue with 3B

3B **If the data for current number of based aircraft need revision, please provide revised data where appropriate. Please base your revised estimates on the last four quarters -- i.e., the third and fourth quarter of 2004 and the first and second quarter of**

CURRENT NUMBER OF BASED AIRCRAFT

Data Based On Your Most Recent State or Federal Inspection (5010 DATA)

Statistics Based on Your Revised Estimates*

* Please make estimates based on the last four quarters -- third and fourth of 2004 and the first two of 2005.

Single Engine	_____	_____
Multi Engine	_____	_____
Jet	_____	_____
Helicopters	_____	_____
Gliders	_____	_____
Military	_____	_____
Ultra-Light	_____	_____
Total Aircraft	_____	

3C **If the data for annual number of aircraft operations need revision, please provide revised data where appropriate. Revisions should be based on the last four quarters -- the third and fourth quarter of 2004 and the first and second quarter of 2005.**

ANNUAL NUMBER OF AIRCRAFT OPERATIONS

Data Based On Your Most Recent State or Federal Inspection (5010 DATA)

Statistics Based on Your Revised Estimates*

se use the following line to explain what your estimates are based on. (Type into the cell as much as you need to explain):

Air Carrier	_____	_____
Regional Carrier	_____	_____
Air Taxi	_____	_____
General Aviation:		
Local	_____	_____
Itinerant	_____	_____
Military	_____	_____
Total Operations	_____	_____

4. TAX VALUE

4A

Benefits to the local tax base are another critical part of the impact of airports. Please estimate the current value of based aircraft. Good sources of this information might be county or city tax or insurance records. Estimated values on a per aircra

	Estimated Value Of Current Based Aircraft	Statistics Based on Your Revised Estimates	Estimated value per aircraft based on type
Single Engine	$ -		100,000
Multi Engine	$ -		250,000
Jet	$ -		1,000,000
Helicopters	$ -		850,000
Gliders	$ -		35,000
Military	$ -		5,000,000
Ultra-Light	$ -		15,000
Total Value	$ -		

4B **Is there property on the airport premises, other than that owned by the airport, which is owned by tenants and subject to local property taxes?**

Yes _____ No _____

If you answered yes, please estimate the total assessed tax value of property owned by tenants.

_____

What is the local property tax rate? (2005 rate) _____ per $100.00

5. AVIATION SERVICES PROVIDED ON YOUR AIRPORT

Please identify which of the following aviation services are provided at your airport.
*Check mark with an **X** all that are provided.*

Scheduled Air Carrier	Aircraft Parts Sales	Ultralight	
Charter Aircraft	Jet Fuel	Car Rental	
Air Taxi	Avgas	Restaurant	
General Aviation	Aircraft Repair	Vending	
Military Aircraft	Avionics Repair	Control Tower	
Helicopter	Flight Instruction	Hangar Rental	
Aircraft Rental	Skydiving	Tie Down	
Aircraft Sales	Ballooning	Observation Points	

In the blanks provided below please list any other services you provide that are not included above.

_____ _____ _____

_____ _____ _____

6. AIRPORT OWNER/OPERATOR ECONOMIC IMPACT:

We would like you to estimate the annual costs and revenues of the airport owner/operator, airport authority, city, etc. Either estimate the most current costs and revenues or provide a copy of your airport's most recent annual budget, showing both reven

This information will be treated as *confidential* for the use of the survey team and only then for the statistical models we will use in estimating the economic impact of individual airports. This specific information will not be provided to any entity or

Please use data from quarters 3 and 4 of 2004 and quarters 1 and 2 of 2005.

Airport Owner's Annual Revenues for Fiscal Year 2005
Airport Owner's Annual Expenditures in Airport's Service Area for Fiscal Year 2005

Operating Revenue Source		**Operating Expense Item**	
Aviation Revenue:		**Salaries and Wages**	
Landing Fees		**Maintenance**	
Leases and Rentals		**Buildings**	
Fuel Fees		**Fuel**	
Other		**Insurance**	
Subtotal Aviation Revenue		**Depreciation**	
Concession Revenue		**Interest Expense**	
Parking		**Utilities**	
Other Concessions		**Other Expenses**	
Subtotal Concession Revenue		**Total Annual Expenses**	
Sales and Services			
Other Revenues			
Total Annual Revenues			

7. Airport Tenants:

In order to estimate the economic impact of your airport we need a complete list of any firm or government entity located at the airport which conducts business of any type.

Please list any firm or government entity -- airlines, air cargo, rental cars, caterers, FBO, aircraft maintenance, flight instruction, vending, restaurant, etc., which does business of any type at the airport. Several pages are provided.

The survey team will contact many of these tenants to estimate their impacts.

Please Indicate:

tenant firm's name;
a contact name;
telephone, if possible; and
the number of paid jobs each tenant has at the airport.

Note: Please show an "E" if the number of jobs you list is an estimate.

If you have a tenants list or directory, that could suffice.

Airport Tenant Firms	**Tenant Firm Contact**		**Number of Tenant Jobs**
	Name	**Telephone**	**"E"**

8. JOBS AT THE AIRPORT:

Please estimate how many aviation-related jobs -- both full and part time -- exist at the airport. Your "best estimate" will do since we will verify the estimate with a follow-up call or field visit to your airport.

	CURRENT JOBS			CURRENT JOBS	
	Full Time	Part Time		Full Time	Part Time
Airport Operations:			**General Aviation:**		
Owner/Sponsor			**FBO (1)**		
FAA			**FBO (2)**		
Other			**Restaurants**		
Total Airport Operations			**Paid Corp. Pilots**		
Commercial Aviation-Oriented:			**Other Gen. Aviation**		
Airlines			**Total General Aviation**		
Air Cargo					
Baggage			**Ground Transport:**		
Ramp Services			**Rental Car Agencies**		
Restaurant			**Limos/Buses**		
Gift Shop			**Taxis**		
Catering			**Other**		
Parking			**Total Ground Transport**		
Other					
Total Commercial Aviation	**Total Airport-Related Employment**				

FBO's can include but are not limited to the following business activities: Maintenance Shop, Avionics Shop, Aircraft Rental, Aircraft Sales, Flight Training, Fuel Sales.

9. MAJOR AIRPORT USERS WITH BASED AIRCRAFT:

Please help us locate companies that utilize your airport. List below any companies that have aircraft based at your airport.

Firms That Use Your Airport	Contact Name	City	Telephone

10. BUSINESSES LOCATED OFF AIRPORT PROPERTY WHICH ARE HEAVY USERS:

Please list any businesses located in your airport's service region that you feel are dependent on your airport. These could include significant air users, air freight shippers, local manufacturing companies, etc.

Please note those businesses for whom proximity to the airport was a critical part of the decision to locate in your community.

Airport Dependent User Firms	Contact Name	City	Telephone	Airport Critical?

11 AEROSPACE INDUSTRIES IN YOUR AREA

Do you have knowledge of any industries or product manufacturers in your area that produce materials used in the Aerospace Industry? This may include, but is not limited to, such items as textiles for airport interiors, plastic trays for food services, e

Names of Companies	Contact Name	City	Telephone

Thank you for your assistance.
Results of this study will be provided to you upon completion.

Please return your completed form via email to: **davethomas@dot.state.nc.us**

or mail to: **NCDOT Division of Aviation**
Economic Impact Study
1560 Mail Service Center
Raleigh, North Carolina 27699-1560

If you have any questions, comments or concerns regarding this economic impact analysis, this data request or any other aspect of this study please call Mr. Dave Thomas with the Division at (919) 840-0112.

END OF SURVEY FORM

APPENDIX D: TENANT OR MAJOR USER SURVEY [5]

NORTH CAROLINA AVIATION
ECONOMIC IMPACT ANALYSIS

Private Firm Survey
Form C

2005

LOCATION AIRPORT: _____ **Identifier:** _____

The North Carolina Department of Transportation is conducting an analysis of the economic importance of this state's airports. We are asking each private firm serving, using or being impacted by one of the airports in our study, to complete the following

We appreciate you taking the time to help us by filling out this brief survey. We realize your time is valuable, and the answers you give will help us further develop the usefulness of the airport named above. Your answers should apply to your company a

BEGINNING OF SURVEY FORM

1. Business Name : _____

2. Business Address : _____

_____

3. Business Website : _____

4. Where is your business located? We are interested mainly in that part of the business that is related in some way to the above airport. Please check only one.

- ☐ On the airport's property
- ☐ Adjacent to the airport (on property that touches the airport property)
- ☐ Within one-half mile of the airport by road
- ☐ More than one-half mile of the airport by road

5. What does your company do (its function)? Please check only one.

☐	Agriculture, Forestry, Fishing, Hunting
☐	Mining
☐	Utilities
☐	Construction
☐	Manufacturing
☐	Wholesale Trade
☐	Retail Trade
☐	Transportation and Warehousing
☐	Scheduled Passenger Air Transportation
☐	Scheduled Freight
☐	Non-Scheduled Air Transportation
☐	Communication/Information
☐	Finance and Insurance
☐	Real Estate and Rental and Leasing
☐	Professional, Scientific and Technical Services
☐	Management of Companies and Enterprises
☐	Administrative and Waste Management Services
☐	Travel Agencies
☐	Educational Services
☐	Health Care and Social Assistance
☐	Arts, Entertainment, and Recreation
☐	Accommodation and Food Services
☐	Other Services
☐	Other Electronic Equipment Repair (Avionics)
☐	Commercial and Industrial Equipment Repair (incl. aircraft)
☐	Public Administration

If you know your Business SIC Code, enter here: _____

6. Of the people employed by your firm,

how many work at this airport:	Full-time	_____
	Part-time	_____
	Contractual	_____
	Total	0
how many work elsewhere:	Full-time	_____
	Part-time	_____
	Contractual	_____
	Total	0

7. What was the total annual payroll for employees (including contractual) of your business (including wages, salaries, and benefits)? _____

8. What were the total revenues or sales for your business at this location? _____

9. What proportion of your total revenues or sales would you attribute to the existence of this airport? _____

10. If the information provided is for a fiscal year (FY), please provide the dates covered. _____

11. To what degree do you depend on the above named airport? Please check the box next to the number on the scale below that reflects how important the airport is to your business.

- ☐ **5** Critically Important
- ☐ **4** Very Important
- ☐ **3** Important
- ☐ **2** Somewhat Important
- ☐ **1** Not Important

12. What year was your company started or moved to it's present location? _____

13. Has the existence of this airport helped your company grow since it's inception? _____

14. Please provide the name of a person we may contact should any follow-up be necessary.

Name: _____
Title or Position: _____
E-mail Address: _____
Telephone: _____ Extension: _____

Please return this completed form via E-mail to:
davethomas@dot.state.nc.us

or fax to: **919 840 9267**

or mail to: **NCDOT Division of Aviation**
Economic Impact Study
1560 Mail Service Center
Raleigh, North Carolina 27699-1560

If you have any questions, comments or concerns regarding this economic impact analysis, this data request or any other aspect of this study please call Mr. Dave Thomas with the Division at (919) 840-0112.

END OF SURVEY FORM

APPENDIX E:
TABLE E1: IMPLAN MODEL COUNTY LIST FOR GENERAL AVIATION AIRPORTS [5]

Airport Name	ID	Airport Type	County(ies)
Andrews-Murphy	RHP	Blue	Cherokee, Graham, Clay
Anson County	AFP	Blue	Anson
Ashe County	GEV	Green	Ashe, Alleghany
Asheboro Municipal	HBI	Red	Randolph
Avery County/Morrison Field	7A8	Green	Avery, Mitchell
Brunswick County	SUT	Red	Brunswick
Burlington-Alamance Regional	BUY	Red	Alamance
Columbus County Municipal	CPC	Green	Columbus
Concord Regional	JQF	Red	Cabarrus, Meckenberg
Currituck Regional	ONX	Blue	Currituck
Curtis L Brown, Jr. Field	EYF	Blue	Bladen
Dare County Regional	MQI	Red	Dare
Davidson County	EXX	Blue	Davidson
Duplin County	DPL	Blue	Duplin
Elizabeth City CG Air Station/Regional	ECG	Blue	Pasquotank, Camden, Perquimans
Elkin Municipal	ZEF	Green	Surry, Yadkin
Franklin County	LHZ	Red	Franklin, Wake
Gastonia Municipal	AKH	Blue	Gaston
Goldsboro-Wayne Municipal	GWW	Blue	Wayne
Halifax County	RZZ	Blue	Halifax, Warren, Northhampton
Harnett County	HRJ	Blue	Harnett
Henderson Field	ACZ	Green	Pender
Henderson-Oxford	HNZ	Blue	Granville, Vance
Hyde County	7W6	Green	Hyde
Jackson County	24A	Green	Jackson
Johnston County	JNX	Red	Johnston, Wake
Laurinburg/Maxton	MEB	Blue	Scotland, Hoke
Lincolnton-Lincoln County Regional	IPJ	Blue	Lincoln
Lumberton Municipal	LBT	Blue	Robeson
Macon County	1A5	Green	Macon, Swain
Martin County	MCZ	Green	Martin, Bertie
Michael J Smith Field	MRH	Red	Carteret
Monroe Regional	EQY	Red	Union, Mecklenberg
Montgomery County	43A	Green	Montgomery
Morganton-Lenoir	MRN	Blue	Caldwell, Burke
Mt Airy/Surry County	MWK	Blue	Surry, Stokes
Mt Olive Municipal	W40	Green	Wayne
NorthEastern Regional	EDE	Green	Chowan, Perquimans
Ocean Isle	60J	Green	Brunswick
Person County	TDF	Blue	Person, Orange
Plymouth Municipal	PMZ	Green	Washington
Rockingham County/NC Shiloh	78N	Blue	Rockingham

TABLE E1 CONTINUED

Airport Name	ID	Airport Type	County(ies)
Rockingham-Hamlet	45J	Green	Richmond
Rocky Mount-Wilson Regional	RWI	Red	Nash, Wilson
Rowan County	RUQ	Blue	Rowan
Rutherford County/Marchman Field	FQD	Blue	Rutherford, Polk
Sampson County	CTZ	Blue	Sampson
Sanford-Lee County Regional	TTA	Red	Lee, Wake
Shelby Municipal	EHO	Blue	Cleveland
Siler City Municipal	5W8	Blue	Chatham
Smith-Reynolds	INT	Red	Forsyth
Stanly County	VUJ	Blue	Stanly
Statesville Regional	SVH	Red	Iredell, Catawba
Tarboro-Edgecombe	ETC	Green	Edgecombe
Tri-County	ASJ	Green	Hertford, Northampton, Bertie
Warren Field	OCW	Blue	Beaufort
Wilkes County	UKF	Red	Wilkes

APPENDIX F:
TABLE F1: AIRCRAFT VALUE, TAX REVENUE, AND VISITORS [5]

Airport Name	Tax Rate	Total Aircraft	Total Value of Aircraft	Tax Revenue from Aircraft	Estimated Number of Visitors
Andrews-Murphy	0.5200	56	$7,850,000	$40,800	2,600
Anson County	0.8750	27	$3,560,000	$31,200	5,600
Currituck Regional	0.3200	33	$3,580,000	$11,500	18,800
Curtis L Brown, Jr. Field	0.8600	30	$4,950,000	$42,600	11,100
Davidson County	0.5400	60	$25,100,000	$135,500	4,500
Duplin County	0.7700	17	$24,150,000	$186,000	12,200
Elizabeth City CG Air Station/Regional	0.8400	46	$5,350,000	$44,900	37,000
Gastonia Municipal	0.8930	53	$23,630,000	$211,000	12,600
Goldsboro-Wayne Municipal	0.7350	43	$15,135,000	$111,200	9,500
Halifax County	0.8650	29	$3,350,000	$29,000	21,900
Harnett County	0.7350	61	$6,760,000	$49,700	30,100
Henderson-Oxford	0.7000	44	$4,850,000	$34,000	13,600
Laurinburg/Maxton	1.1000	38	$39,600,000	$435,600	12,400
Lincolnton-Lincoln County Regional	0.6100	65	$14,050,000	$85,700	18,100
Lumberton Municipal	0.8000	44	$10,345,000	$82,800	12,400
Morganton-Lenoir	0.5399	43	$9,900,000	$53,500	16,900
Mt Airy/Surry County	0.6300	48	$22,830,000	$143,800	12,100
Person County	0.6500	45	$5,400,000	$35,100	0
Rockingham County/NC Shiloh	0.6350	62	$7,400,000	$47,000	13,600
Rowan County	0.6300	99	$35,535,000	$223,900	12,700
Rutherford County/Marchman Field	0.6200	56	$21,350,000	$132,400	13,300
Sampson County	0.7700	26	$2,600,000	$20,000	9,500
Shelby Municipal	0.5800	40	$5,050,000	$29,300	9,100
Siler City Municipal	0.5970	30	$4,200,000	$25,100	21,200
Stanly County	0.6450	25	$2,950,000	$19,000	20,600
Warren Field	0.6000	32	$3,500,000	$21,000	12,900
Ashe County	0.6100	30	$3,150,000	$19,200	1,700
Avery County/Morrison Field	0.5300	19	$1,815,000	$9,600	3,600
Columbus County Municipal	0.7300	9	$1,200,000	$8,800	9,300
Elkin Municipal	0.6300	18	$2,250,000	$14,200	7,500
Henderson Field	0.6500	21	$3,065,000	$19,900	6,500
Hyde County	0.7150	0	$0	$0	3,500
Jackson County	0.3600	16	$1,900,000	$6,800	3,000
Macon County	0.3700	34	$4,600,000	$17,000	5,700
Martin County	0.7850	7	$615,000	$4,800	6,600
Montgomery County	0.5800	25	$3,550,000	$20,600	2,500
Mt Olive Municipal	0.7350	13	$1,600,000	$11,800	5,000

TABLE F1 CONTINUED

Airport Name	Rate	Total Aircraft	Total Value of Aircraft	Tax Revenue from Aircraft	Estimated Number of Visitors
NorthEastern Regional	0.7800	28	$7,330,000	$57,200	9,600
Ocean Isle	0.5400	25	$2,500,000	$13,500	11,900
Plymouth Municipal	0.7900	14	$1,700,000	$13,400	4,100
Rockingham-Hamlet	0.7800	18	$1,800,000	$14,000	4,400
Tarboro-Edgecombe	0.9300	11	$1,250,000	$11,600	3,700
Tri-County	0.9100	10	$5,315,000	$48,400	8,000
Asheboro Municipal	0.5250	59	$16,350,000	$85,800	9,100
Brunswick County	0.5400	39	$12,445,000	$67,200	17,100
Burlington-Alamance Regional	0.5625	121	$68,950,000	$387,800	43,000
Concord Regional	0.6300	182	$116,050,000	$731,100	68,900
Dare County Regional	0.2500	55	$8,050,000	$20,100	37,700
Franklin County	0.7900	73	$15,235,000	$120,400	20,700
Johnston County	0.7800	95	$15,400,000	$120,100	14,600
Michael J Smith Field	0.4200	72	$13,250,000	$55,700	10,100
Monroe Regional	0.5600	90	$26,850,000	$150,400	31,100
Rocky Mount-Wilson Regional	0.6600	28	$8,550,000	$56,400	20,000
Sanford-Lee County Regional	0.7900	87	$22,650,000	$178,900	7,300
Smith-Reynolds	0.6660	130	$143,500,000	$955,700	48,300
Statesville Regional	0.4350	72	$81,500,000	$354,500	20,200
Wilkes County	0.6100	30	$17,700,000	$108,000	9,600
	Total	*2,583*	*$923,095,000*	*$5,964,400*	*818,600*

APPENDIX G:
TABLE G1: BASED AIRCRAFT BY TYPE [5]

Airport Name	Single Engine	Multi Engine	Jet	Helicopters	Gliders	Military	Ultra-Light	Total Aircraft
Andrews-Murphy	45	10	0	1	0	0	0	56
Anson County	17	0	0	2	2	0	6	27
Currituck Regional	28	3	0	0	0	0	2	33
Curtis L Brown, Jr. Field	25	3	0	2	0	0	0	30
Davidson County	46	10	4	0	0	0	0	60
Duplin County	9	3	5	0	0	0	0	17
Elizabeth City CG Air Station/Regional	23	2	0	3	0	18	0	46
Gastonia Municipal	41	6	4	0	0	0	2	53
Goldsboro-Wayne Municipal	34	4	2	2	1	0	0	43
Halifax County	26	3	0	0	0	0	0	29
Harnett County	46	4	0	1	8	0	2	61
Henderson-Oxford	41	3	0	0	0	0	0	44
Laurinburg/Maxton	26	4	8	0	0	0	0	38
Lincolnton-Lincoln County Regional	47	16	1	1	0	0	0	65
Lumberton Municipal	36	2	1	2	0	0	3	44
Morganton-Lenoir	38	3	1	1	0	0	0	43
Mt Airy/Surry County	38	4	4	0	0	0	2	48
Person County	39	6						45
Rockingham County/NC Shiloh	54	8	0	0	0	0	0	62
Rowan County	60	10	5	5	0	0	19	99
Rutherford County/Marchman Field	40	12	3	1	0	0	0	56
Sampson County	26	0	0	0	0	0	0	26
Shelby Municipal	33	7	0	0	0	0	0	40
Siler City Municipal	22	8	0	0	0	0	0	30
Stanly County	22	3	0	0	0	0	0	25
Warren Field	30	2	0	0	0	0	0	32
Ashe County	29	1	0	0	0	0	0	30
Avery County/Morrison Field	18	0	0	0	0	0	1	19
Columbus County Municipal	7	2	0	0	0	0	0	9
Elkin Municipal	15	3	0	0	0	0	0	18
Henderson Field	17	2	0	1	0	0	1	21
Hyde County	0	0	0	0	0	0	0	0
Jackson County	14	2	0	0	0	0	0	16
Macon County	30	3	0	1	0	0	0	34
Martin County	6	0	0	0	0	0	1	7
Montgomery County	18	7	0	0	0	0	0	25
Mt Olive Municipal	11	2	0	0	0	0	0	13

TABLE G1 CONTINUED

Airport Name	Single Engine	Multi Engine	Jet	Helicopters	Gliders	Military	Ultra-Light	Total Aircraft
NorthEastern Regional	23	2	1	0	0	0	2	28
Ocean Isle	25	0	0	0	0	0	0	25
Plymouth Municipal	12	2	0	0	0	0	0	14
Rockingham-Hamlet	18	0	0	0	0	0	0	18
Tarboro-Edgecombe	10	1	0	0	0	0	0	11
Tri-County	8	0	1	0	0	0	1	10
Asheboro Municipal	50	6	2	1	0	0	0	59
Brunswick County	34	0	2	0	0	0	3	39
Burlington-Alamance Regional	86	22	12	1	0	0	0	121
Concord Regional	108	45	19	10	0	0	0	182
Dare County Regional	46	7	0	2	0	0	0	55
Franklin County	63	4	1	4	1	0	0	73
Johnston County	84	10	1	0	0	0	0	95
Michael J Smith Field	60	11	1	0	0	0	0	72
Monroe Regional	68	16	3	3	0	0	0	90
Rocky Mount-Wilson Regional	18	9	1	0	0	0	0	28
Sanford-Lee County Regional	79	5	3	0	0	0	0	87
Smith-Reynolds	60	10	30	0	0	0	0	130
Statesville Regional	34	21	16	1	0	0	0	72
Wilkes County	17	10	3	0	0	0	0	30
Total	*1960*	*339*	*134*	*45*	*12*	*18*	*45*	*2583*

APPENDIX H:

TABLE H1: OUTPUT IMPACTS [5]

Airport ID and Name		Output Impact (Dollars)			
		Direct	Indirect	Induced	Total
HBI	Asheboro Municipal	$4,251,000	$4,886,000	$1,109,000	$10,246,000
SUT	Brunswick County	$12,503,000	$10,737,000	$2,939,000	$26,179,000
BUY	Burlington-Alamance Regional	$16,958,000	$23,080,000	$5,969,000	$46,007,000
JQF	Concord Regional	$48,767,000	$39,690,000	$21,547,000	$110,004,000
MQI	Dare County Regional	$4,700,000	$18,174,000	$2,479,000	$25,353,000
LHZ	Franklin County	$2,526,000	$8,467,000	$1,951,000	$12,944,000
JNX	Johnston County	$24,426,000	$13,514,000	$4,871,000	$42,810,000
MRH	Michael J Smith Field	$25,506,000	$12,896,000	$2,336,000	$40,738,000
EQY	Monroe	$4,646,000	$14,553,000	$3,691,000	$22,891,000
RWI	Rocky Mount-Wilson Regional	$10,159,000	$13,517,000	$3,355,000	$27,030,000
TTA	Sanford-Lee County	$205,818,000	$35,650,000	$38,803,000	$280,270,000
INT	Smith-Reynolds	$69,853,000	$48,511,000	$18,762,000	$137,126,000
SVH	Statesville Municipal	$21,851,000	$17,296,000	$7,787,000	$46,935,000
UKF	Wilkes County	$4,362,000	$4,513,000	$874,000	$9,749,000
	Red Airports Total	$456,326,000	$265,483,000	$116,472,000	$838,281,000
RHP	Andrews-Murphy	$3,697,000	$3,121,000	$1,342,000	$8,160,000
AFP	Anson County	$468,000	$2,268,000	$269,000	$3,006,000
ONX	Currituck County	$13,728,000	$8,769,000	$1,955,000	$24,453,000
EYF	Curtis L Brown Jr. Field	$602,000	$4,046,000	$398,000	$5,045,000
EXX	Davidson County	$5,959,000	$3,408,000	$1,453,000	$10,819,000
DPL	Duplin County	$2,997,000	$5,871,000	$731,000	$9,599,000
ECG	Elizabeth City CGAS / Regional	$1,496,000	$13,594,000	$2,316,000	$17,405,000
AKH	Gastonia Municipal	$2,659,000	$4,897,000	$1,386,000	$8,942,000
GWW	Goldsboro-Wayne Municipal	$6,502,000	$6,353,000	$1,697,000	$14,553,000
RZZ	Halifax County	$219,000	$8,905,000	$1,654,000	$10,778,000
HRJ	Harnett County	$7,392,000	$12,170,000	$1,549,000	$21,111,000
HNZ	Henderson-Oxford	$804,000	$5,717,000	$734,000	$7,256,000
MEB	Laurinburg-Maxton	$21,041,000	$9,871,000	$3,089,000	$34,001,000
IPJ	Lincoln County Regional	$1,237,000	$6,434,000	$955,000	$8,627,000
LBT	Lumberton Municipal	$2,683,000	$6,738,000	$2,432,000	$11,853,000
MRN	Morganton-Lenoir	$1,894,000	$7,337,000	$1,331,000	$10,562,000
MWK	Mount Airy / Surry County	$273,195,000	$72,428,000	$41,375,000	$386,998,000
TDF	Person County	$0	$5,114,000	$0	$5,114,000
78N	Rockingham County / NC Shiloh	$827,000	$5,459,000	$751,000	$7,037,000
RUQ	Rowan County	$11,315,000	$8,232,000	$3,369,000	$22,916,000
FQD	Rutherford County-Marchman Field	$4,048,000	$6,639,000	$1,347,000	$12,034,000

TABLE H1 CONTINUED

Airport ID and Name		Output Impact (Dollars)			
		Direct	Indirect	Induced	Total
CTZ	Sampson County	$820,000	$3,642,000	$418,000	$4,880,000
EHO	Shelby Municipal	$1,326,000	$4,195,000	$725,000	$6,246,000
5W8	Siler City Municipal	$1,243,000	$7,838,000	$851,000	$9,932,000
VUJ	Stanly County	$10,125,000	$9,330,000	$3,209,000	$22,664,000
OCW	Warren Field	$832,000	$4,786,000	$557,000	$6,175,000
	Blue Airports Total	$377,108,000	$237,163,000	$75,892,000	$690,163,000
GEV	Ashe County	$100,060,000	$14,600,000	$19,212,000	$133,873,000
7A8	Avery County / Morrison Field	$189,000	$5,155,000	$641,000	$5,985,000
CPC	Columbus County Municipal	$116,000	$3,594,000	$395,000	$4,104,000
ZEF	Elkin Municipal	$23,379,000	$8,678,000	$2,402,000	$34,459,000
ACZ	Henderson Field	$18,250,000	$7,023,000	$636,000	$25,909,000
7W6	Hyde County	$18,000	$1,927,000	$164,000	$2,109,000
24A	Jackson County	$10,120,000	$6,122,000	$1,340,000	$17,582,000
1A5	Macon County	$646,000	$6,238,000	$1,095,000	$7,979,000
MCZ	Martin County	$114,000	$2,961,000	$261,000	$3,335,000
43A	Montgomery County	$260,000	$952,000	$175,000	$1,387,000
W40	Mount Olive Municipal	$981,000	$2,496,000	$496,000	$3,972,000
EDE	NorthEastern Regional	$497,000	$3,894,000	$574,000	$4,965,000
60J	Ocean Isle	$140,000	$5,679,000	$988,000	$6,807,000
PMZ	Plymouth Municipal	$1,000,000	$1,746,000	$364,000	$3,110,000
45J	Rockingham-Hamlet	$0	$2,326,000	$0	$2,326,000
ETC	Tarboro-Edgecombe	$339,000	$1,892,000	$983,000	$3,215,000
ASJ	Tri-County	$758,000	$3,456,000	$448,000	$4,662,000
	Green Airports Total	$156,867,000	$78,738,000	$30,173,000	$265,778,000
	General Aviation Airports Total	$990,301,000	$581,384,000	$222,537,000	$1,794,222,000

APPENDIX I:

TABLE I1: EMPLOYMENT IMPACTS [5]

Airport ID and Name		Employment Impact (Jobs)			
		Direct	Indirect	Induced	Total
HBI	Asheboro Municipal	30	30	10	70
SUT	Brunswick County	150	80	30	260
BUY	Burlington-Alamance Regional	90	140	60	290
JQF	Concord Regional	490	200	170	860
MQI	Dare County Regional	50	110	20	180
LHZ	Franklin County	20	20	10	50
JNX	Johnston County	160	100	50	310
MRH	Michael J Smith Field	260	160	40	450
EQY	Monroe	20	60	30	110
RWI	Rocky Mount-Wilson Regional	40	120	60	220
TTA	Sanford-Lee County	1,020	290	420	1,740
INT	Smith-Reynolds	420	460	240	1,120
SVH	Statesville Municipal	220	180	90	500
UKF	Wilkes County	50	30	10	80
	Red Airports Total	3,000	1,990	1,240	6,230
RHP	Andrews-Murphy	40	50	20	110
AFP	Anson County	0	0	0	10
ONX	Currituck County	70	40	20	140
EYF	Curtis L Brown Jr. Field	10	10	0	20
EXX	Davidson County	60	30	20	110
DPL	Duplin County	10	50	10	70
ECG	Elizabeth City CGAS / Regional	10	30	10	50
AKH	Gastonia Municipal	20	10	10	30
GWW	Goldsboro-Wayne Municipal	50	60	20	120
RZZ	Halifax County	0	40	10	60
HRJ	Harnett County	30	40	10	80
HNZ	Henderson-Oxford	10	30	10	50
MEB	Laurinburg-Maxton	200	80	40	320
IPJ	Lincoln County Regional	10	10	0	20
LBT	Lumberton Municipal	10	70	60	140
MRN	Morganton-Lenoir	10	30	10	50
MWK	Mount Airy / Surry County	2,010	700	540	3,250
TDF	Person County	0	80	0	80
78N	Rockingham County / NC Shiloh	10	20	10	30
RUQ	Rowan County	130	70	30	230
FQD	Rutherford County-Marchman Field	20	40	20	80

TABLE I1 CONTINUED

Airport ID and Name		Employment Impact (Jobs)			
		Direct	Indirect	Induced	Total
CTZ	Sampson County	10	10	0	20
EHO	Shelby Municipal	10	30	10	40
5W8	Siler City Municipal	10	20	0	30
VUJ	Stanly County	100	40	30	170
OCW	Warren Field	10	20	0	20
	Blue Airports Total	2,840	1,590	900	5,320
GEV	Ashe County	1,340	180	250	1,770
7A8	Avery County / Morrison Field	0	60	20	70
CPC	Columbus County Municipal	0	10	0	10
ZEF	Elkin Municipal	90	80	40	200
ACZ	Henderson Field	30	70	10	110
7W6	Hyde County	0	20	0	20
24A	Jackson County	40	80	30	150
1A5	Macon County	10	100	20	120
MCZ	Martin County	0	20	0	30
43A	Montgomery County	0	0	0	10
W40	Mount Olive Municipal	10	20	10	30
EDE	NorthEastern Regional	0	10	0	20
60J	Ocean Isle	0	40	10	50
PMZ	Plymouth Municipal	30	10	0	40
45J	Rockingham-Hamlet	0	20	0	20
ETC	Tarboro-Edgecombe	10	10	0	20
ASJ	Tri-County	0	20	10	30
	Green Airports Total	1,560	750	390	2,700
	General Aviation Airports Total	7,400	4,330	2,530	14,250

APPENDIX J:

TABLE J1: PAYROLL IMPACTS [5]

Airport ID and Name		Estimated Payroll (Dollars)			
		Direct	Indirect	Induced	Total
HBI	Asheboro Municipal	$1,138,000	$342,000	$192,000	$1,673,000
SUT	Brunswick County	$4,070,000	$787,000	$560,000	$5,416,000
BUY	Burlington-Alamance Regional	$4,261,000	$1,968,000	$1,116,000	$7,345,000
JQF	Concord Regional	$24,245,000	$4,930,000	$5,003,000	$34,177,000
MQI	Dare County Regional	$1,131,000	$537,000	$219,000	$1,888,000
LHZ	Franklin County	$665,000	$406,000	$212,000	$1,283,000
JNX	Johnston County	$4,425,000	$2,002,000	$1,289,000	$7,716,000
MRH	Michael J Smith Field	$4,988,000	$1,246,000	$569,000	$6,802,000
EQY	Monroe	$1,754,000	$578,000	$395,000	$2,728,000
RWI	Rocky Mount-Wilson Regional	$3,071,000	$787,000	$567,000	$4,425,000
TTA	Sanford-Lee County	$50,791,000	$12,805,000	$12,650,000	$76,245,000
INT	Smith-Reynolds	$20,396,000	$6,686,000	$4,147,000	$31,229,000
SVH	Statesville Municipal	$7,671,000	$2,322,000	$1,853,000	$11,846,000
UKF	Wilkes County	$1,749,000	$213,000	$145,000	$2,107,000
	Red Airports Total	$130,353,000	$35,609,000	$28,917,000	$194,879,000
RHP	Andrews-Murphy	$1,693,000	$163,000	$250,000	$2,106,000
AFP	Anson County	$154,000	$28,000	$15,000	$197,000
ONX	Currituck County	$3,755,000	$823,000	$383,000	$4,962,000
EYF	Curtis L Brown Jr. Field	$199,000	$18,000	$15,000	$232,000
EXX	Davidson County	$2,318,000	$338,000	$328,000	$2,985,000
DPL	Duplin County	$690,000	$116,000	$79,000	$885,000
ECG	Elizabeth City CGAS / Regional	$506,000	$143,000	$95,000	$745,000
AKH	Gastonia Municipal	$911,000	$240,000	$206,000	$1,357,000
GWW	Goldsboro-Wayne Municipal	$1,891,000	$724,000	$369,000	$2,984,000
RZZ	Halifax County	$111,000	$13,000	$14,000	$137,000
HRJ	Harnett County	$1,348,000	$505,000	$214,000	$2,066,000
HNZ	Henderson-Oxford	$227,000	$54,000	$34,000	$314,000
MEB	Laurinburg-Maxton	$5,665,000	$1,341,000	$821,000	$7,827,000
IPJ	Lincoln County Regional	$460,000	$87,000	$54,000	$601,000
LBT	Lumberton Municipal	$1,569,000	$120,000	$254,000	$1,943,000
MRN	Morganton-Lenoir	$516,000	$194,000	$111,000	$821,000
MWK	Mount Airy / Surry County	$76,876,000	$19,494,000	$12,506,000	$108,875,000
TDF	Person County	$0	$0	$0	$0
78N	Rockingham County / NC Shiloh	$238,000	$54,000	$37,000	$329,000
RUQ	Rowan County	$4,212,000	$929,000	$777,000	$5,918,000
FQD	Rutherford County-Marchman Field	$1,234,000	$260,000	$198,000	$1,692,000

TABLE J1 CONTINUED

Airport ID and Name		Estimated Payroll (Dollars)			
		Direct	Indirect	Induced	Total
CTZ	Sampson County	$225,000	$38,000	$27,000	$290,000
EHO	Shelby Municipal	$361,000	$95,000	$72,000	$529,000
5W8	Siler City Municipal	$345,000	$99,000	$43,000	$486,000
VUJ	Stanly County	$3,918,000	$742,000	$643,000	$5,303,000
OCW	Warren Field	$180,000	$50,000	$31,000	$262,000
	Blue Airports Total	$109,602,000	$26,667,000	$17,576,000	$153,845,000
GEV	Ashe County	$39,241,000	$5,065,000	$5,626,000	$49,932,000
7A8	Avery County / Morrison Field	$52,000	$8,000	$8,000	$68,000
CPC	Columbus County Municipal	$29,000	$9,000	$5,000	$42,000
ZEF	Elkin Municipal	$3,356,000	$1,554,000	$664,000	$5,574,000
ACZ	Henderson Field	$376,000	$1,346,000	$166,000	$1,887,000
7W6	Hyde County	$5,000	$1,000	$1,000	$7,000
24A	Jackson County	$1,546,000	$524,000	$320,000	$2,390,000
1A5	Macon County	$232,000	$45,000	$39,000	$317,000
MCZ	Martin County	$27,000	$9,000	$4,000	$40,000
43A	Montgomery County	$141,000	$13,000	$12,000	$165,000
W40	Mount Olive Municipal	$283,000	$110,000	$60,000	$453,000
EDE	NorthEastern Regional	$165,000	$41,000	$24,000	$230,000
60J	Ocean Isle	$61,000	$14,000	$9,000	$84,000
PMZ	Plymouth Municipal	$647,000	$43,000	$42,000	$732,000
45J	Rockingham-Hamlet	$0	$0	$0	$0
ETC	Tarboro-Edgecombe	$339,000	$9,000	$50,000	$398,000
ASJ	Tri-County	$207,000	$73,000	$31,000	$311,000
	Green Airports Total	$46,705,000	$8,863,000	$7,061,000	$62,629,000
	General Aviation Airports Total	$286,660,000	$71,139,000	$53,554,000	$411,353,000

APPENDIX K: STATISTICAL ANALYSIS

This appendix contains the statistical analysis of the thesis. The indicators include: the investments from 1996 to 2006, the employment in the county, the number of annual operations at the airport, the pavement strength at the airport, and the ceiling height at the airport. The output impact for each airport is located in Appendix H. The analysis of each parameter will be summarized with a graph containing a trend-line and corresponding R^2 value and the correlation coefficient. The type of trend-line (linear, exponential, logarithmic, or power) with the highest R^2 value was selected to represent the data. On each graph, the type of trend-line of each data set is designated in the legend of the graph and the equation of the line and R^2 value is located near the trend-line on the graph. The correlation coefficient ranges from negative one to positive one and was computed using Microsoft Excel ©. A dataset with absolute positive correlation will have a correlation coefficient of 1, while a dataset with absolute negative correlation will have a correlation coefficient of -1.

K.1 OUTLIER IDENTIFICATION AND REMOVAL

Although this statistical analysis focuses on the grouping of similar types of airports (red, blue, and green), airports within each category can experience a much different economic climate than other airports. In each category, one airport was identified as an outlier and removed (Table K1). A standard method was used for identifying the outliers; an outlier is a value that is more than two standard deviations away from the mean value of the data set. Each of the outlier airports differed from the other airports in the group because their

economic impact was dominated by a single company. These three airports are not included in statistical calculations.

Table K1: Outlier Identification and Removal

Airport Type	Mean	Standard Deviation	Outlier Airport
Green	$15,634,000	$31,822,000	Ashe County (GEV)
Blue	$26,545,000	$73,894,000	Mount Airy-Surry County (MWK)
Red	$59,877,000	$73,392,000	Sanford-Lee County (TTA)

K.2 INVESTMENTS FROM 1996 TO 2006

Table K2: Airports with Capacity Improvements from 1996-2006

Andrews-Murphy	Anson County	Asheboro Municipal
Currituck County	Davidson County	Brunswick County
Duplin County	Gastonia Municipal	Burlington-Alamance Regional
Harnett County	Avery County / Morrison Field	Concord Regional
Lincoln County Regional	Columbus County Municipal	Dare County Regional
Lumberton Municipal	Macon County	Rocky Mount-Wilson Regional
Morganton-Lenoir	NorthEastern Regional	Statesville Municipal
Person County	Tri-County	

Table K3: Airports without Capacity Improvements from 1996-2006

Curtis L Brown Jr. Field	Siler City Municipal	Ocean Isle
Elizabeth City CGAS / Regional	Stanly County	Plymouth Municipal
Goldsboro-Wayne Municipal	Warren Field	Rockingham-Hamlet
Halifax County	Elkin Municipal	Tarboro-Edgecombe
Henderson-Oxford	Henderson Field	Franklin County
Laurinburg-Maxton	Hyde County	Johnston County
Rockingham County / NC Shiloh	Jackson County	Michael J Smith Field
Rowan County	Martin County	Monroe
Rutherford County-Marchman Field	Montgomery County	Smith-Reynolds
Sampson County	Mount Olive Municipal	Wilkes County
Shelby Municipal		

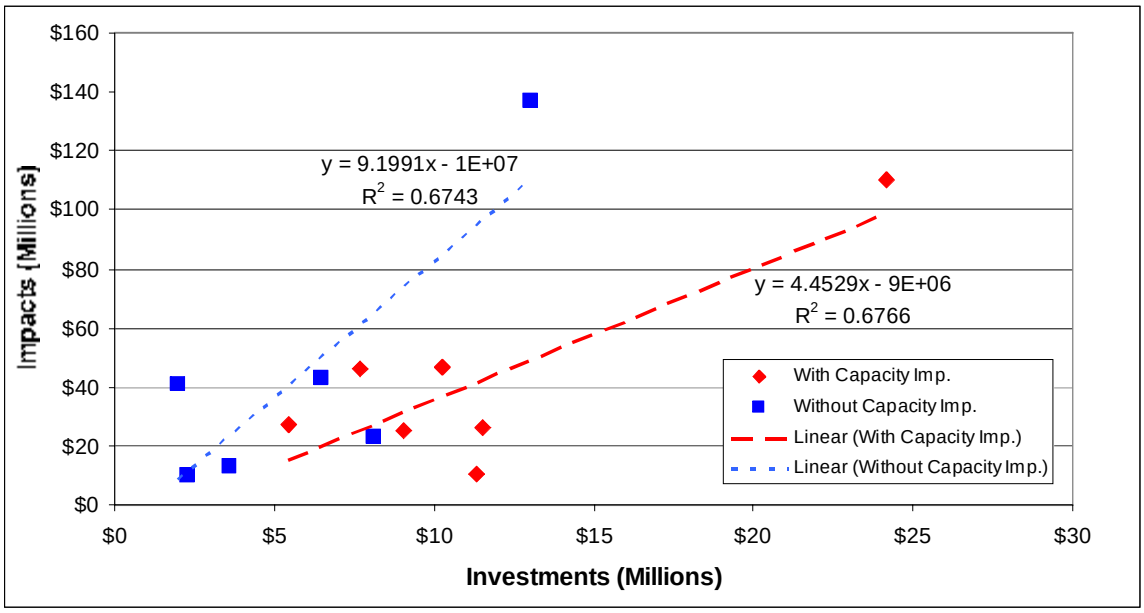


Figure K1: Red Airports: Investments vs. Impacts

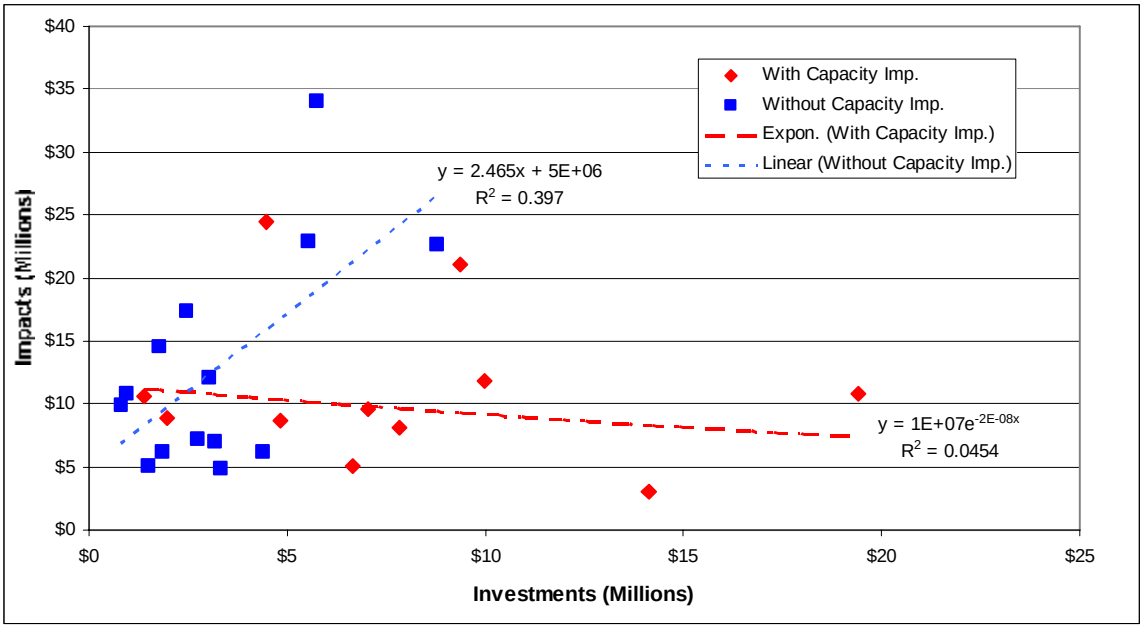


Figure K2: Blue Airports: Investments vs. Impacts

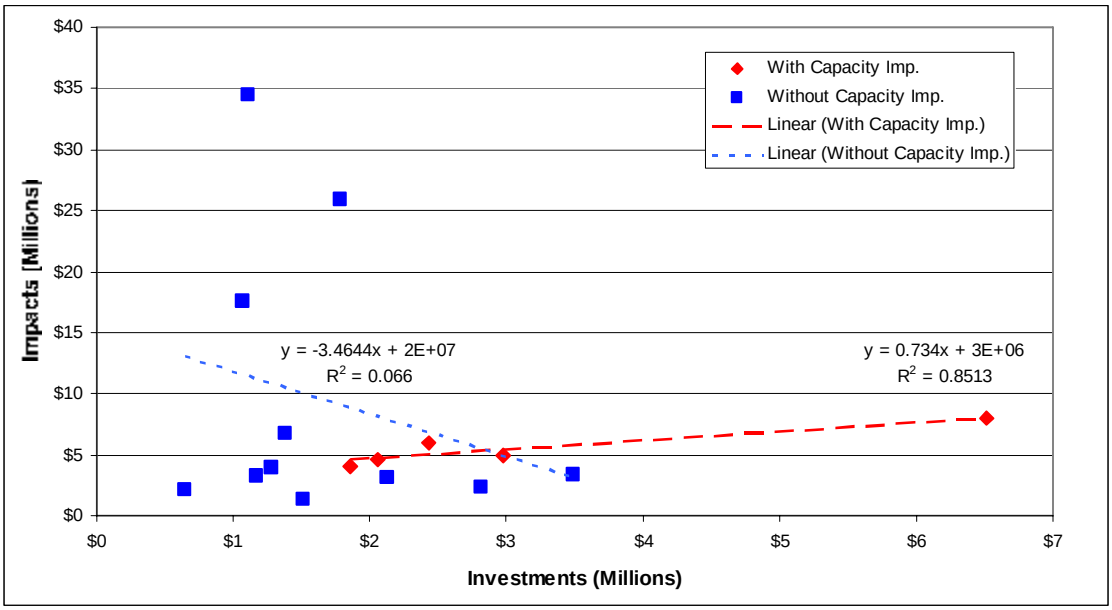


Figure K3: Green Airports: Investments vs. Impacts

K.3 EMPLOYMENT IN THE COUNTY

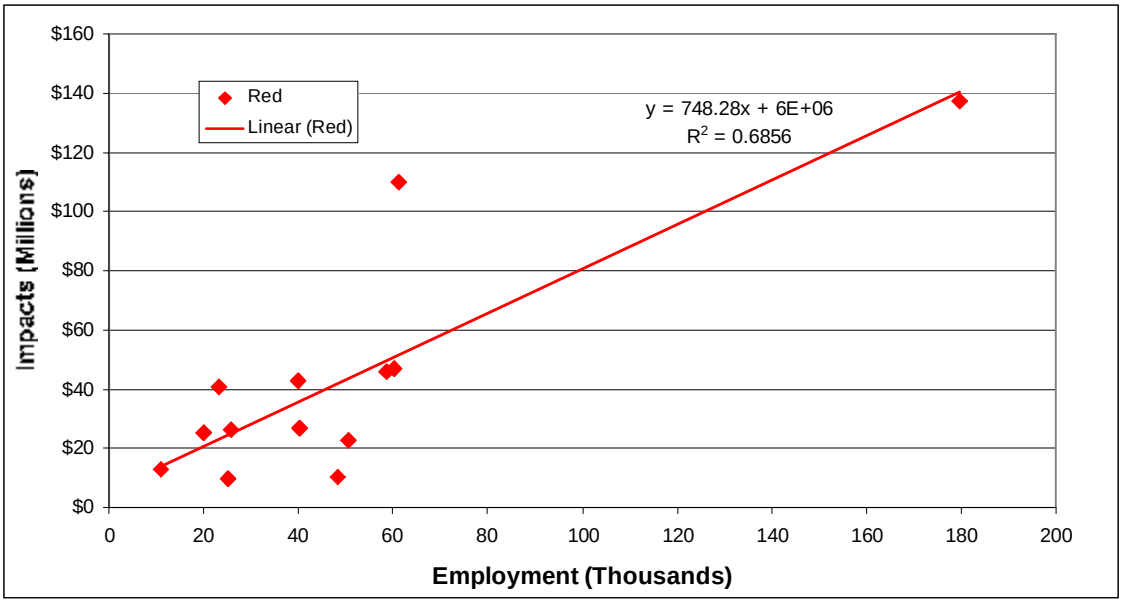


Figure K4: Red Airports: Impacts vs Employment

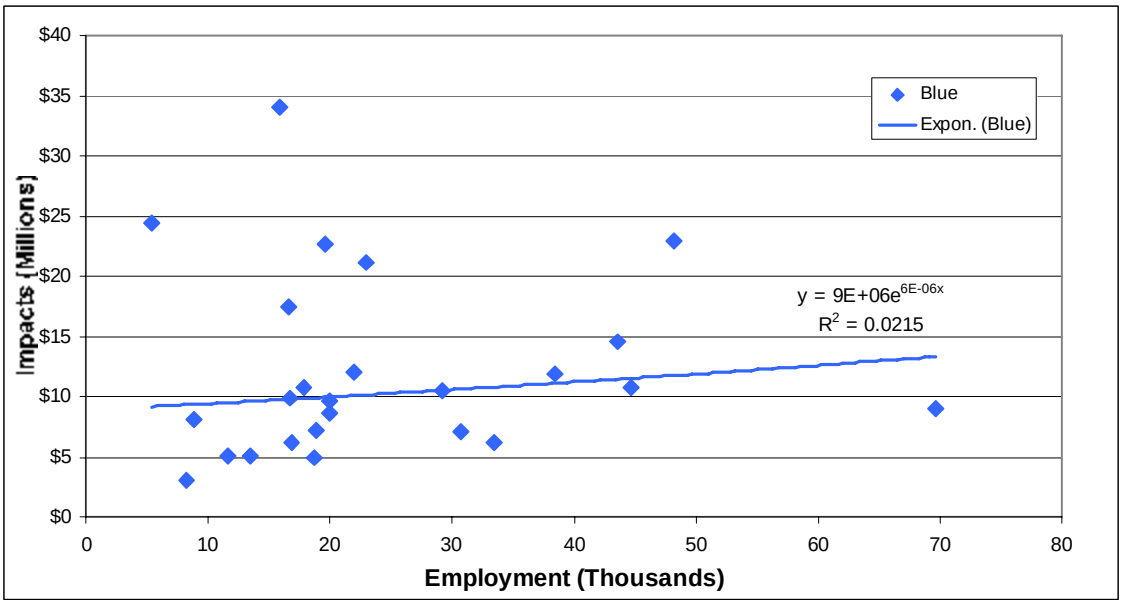


Figure K5: Blue Airports: Impacts vs Employment

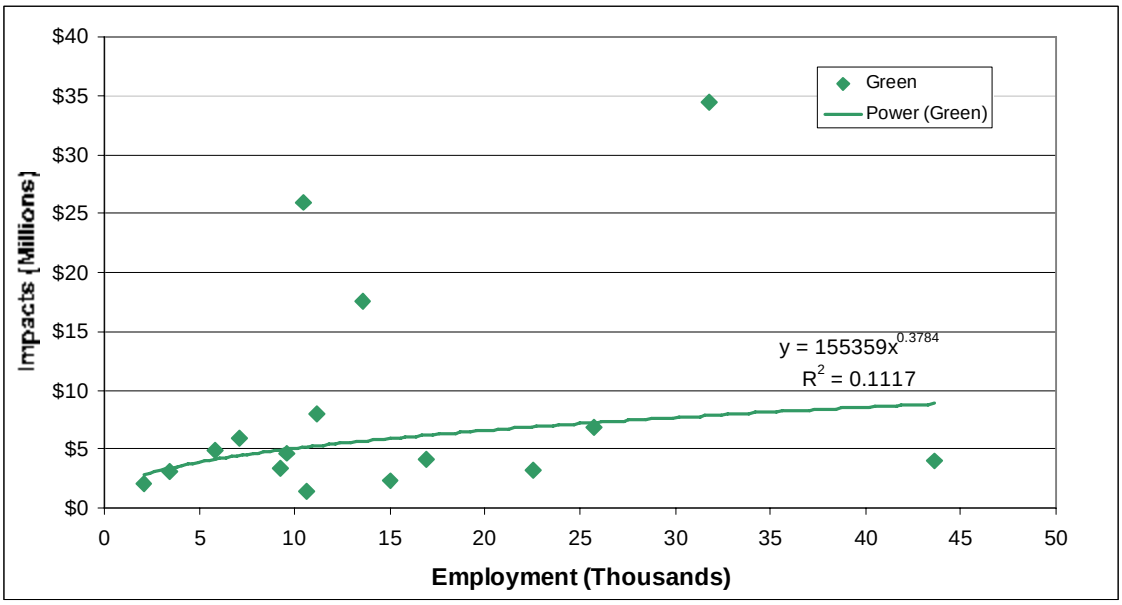


Figure K6: Green Airports: Impacts vs Employment

K.4 OPERATIONS AT THE AIRPORT

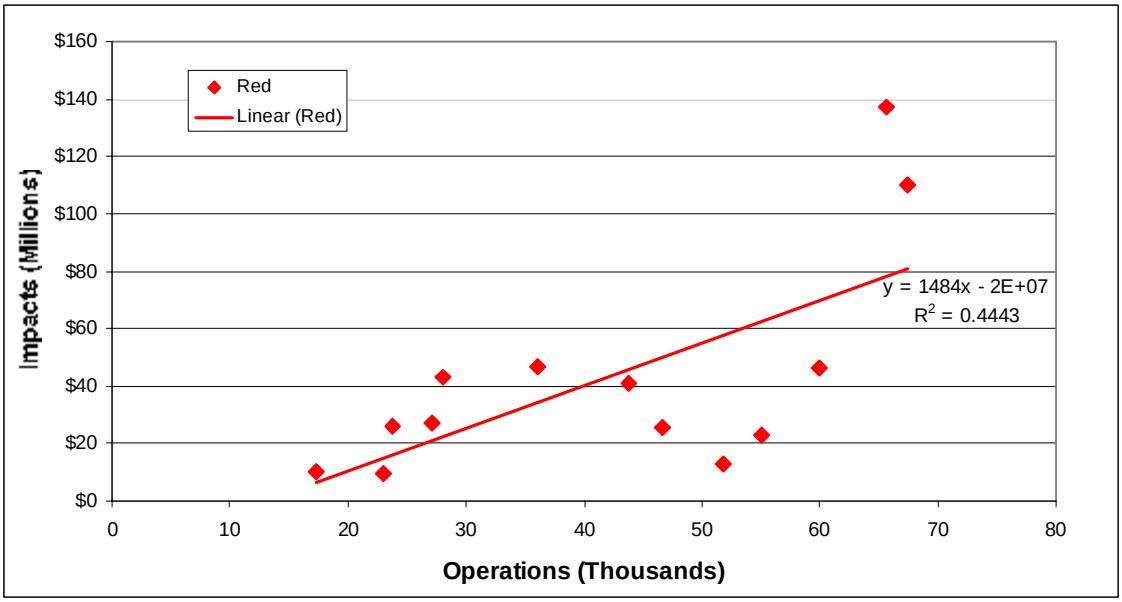


Figure K7: Red Airports: Impacts vs Operations

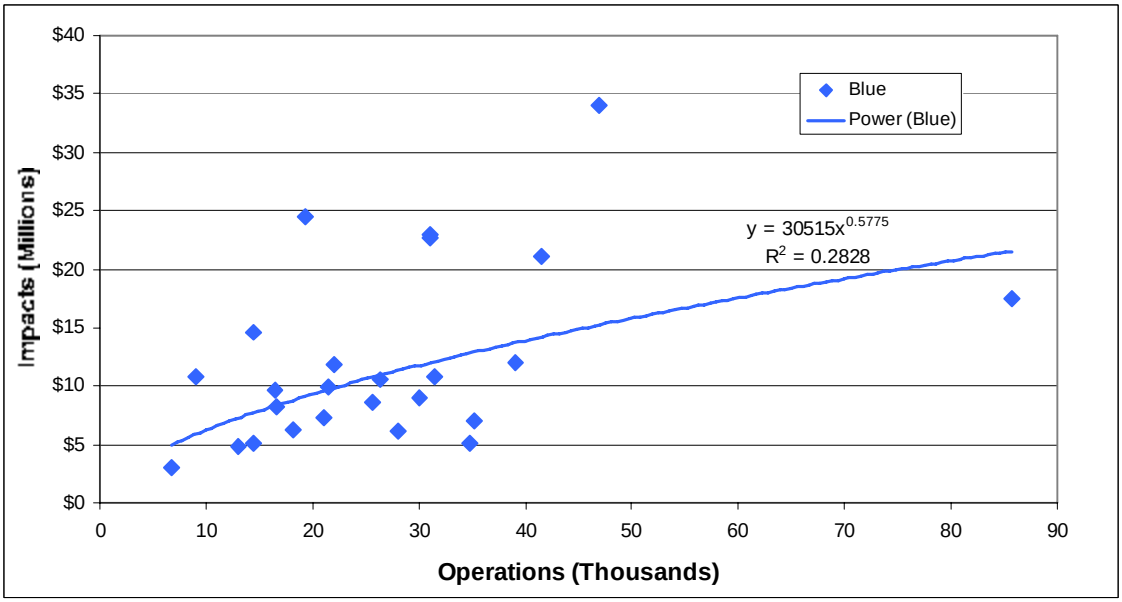


Figure K8: Blue Airports: Impacts vs Operations

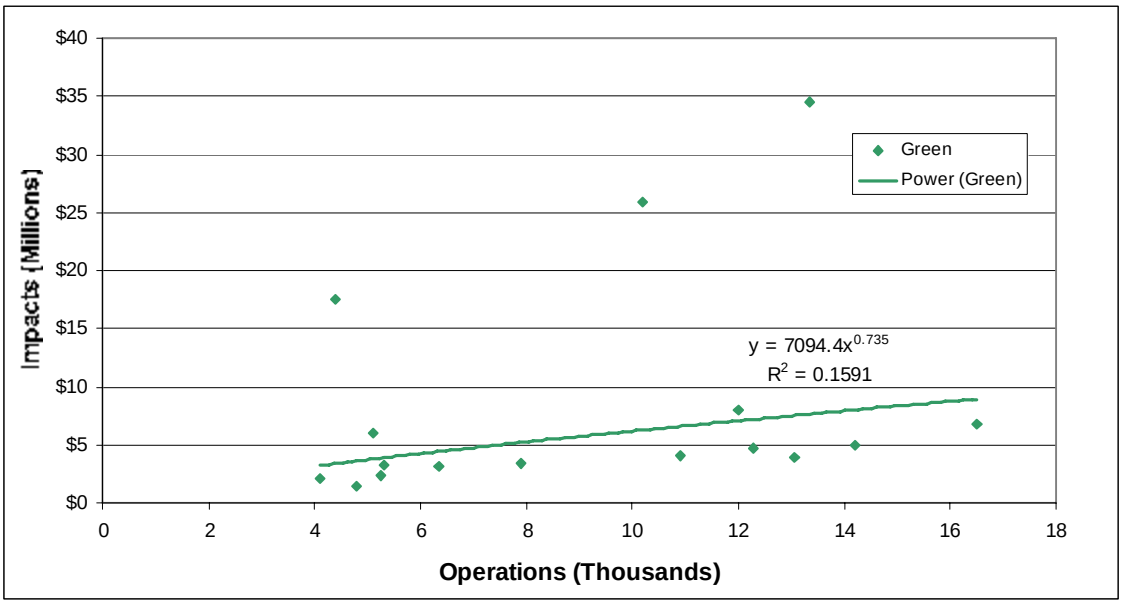


Figure K9: Green Airports: Impacts vs Operations

K.5 PAVEMENT CAPACITY

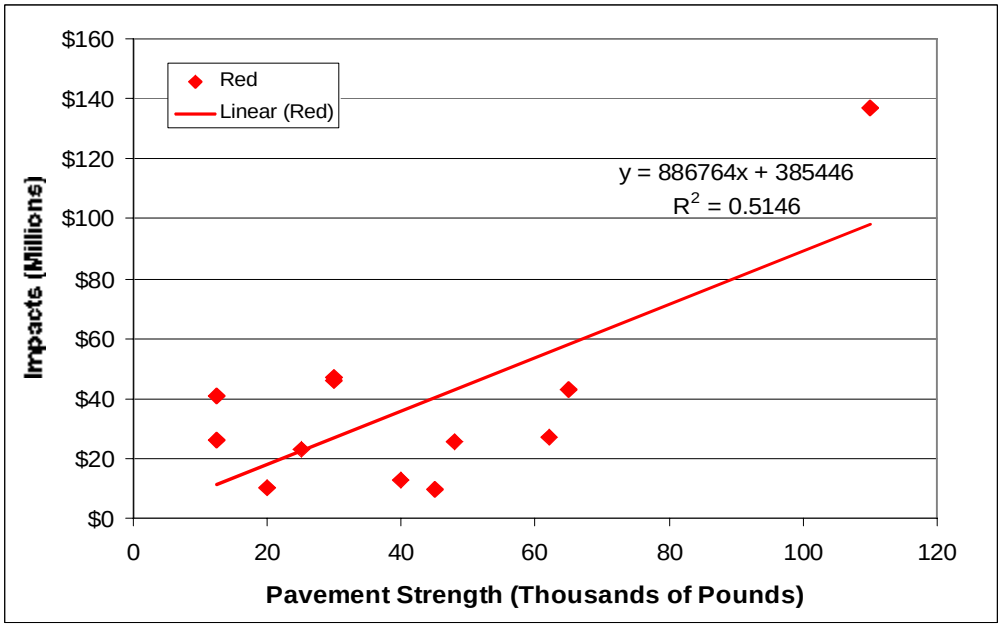


Figure K10: Red Airports: Impacts vs Pavement Capacity

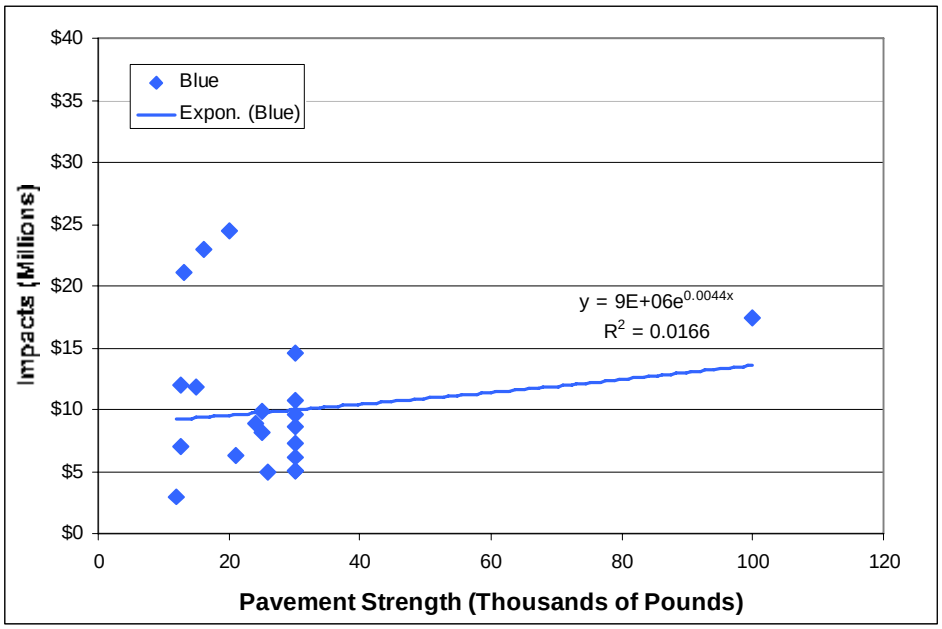


Figure K11: Blue Airports: Impacts vs Pavement Capacity

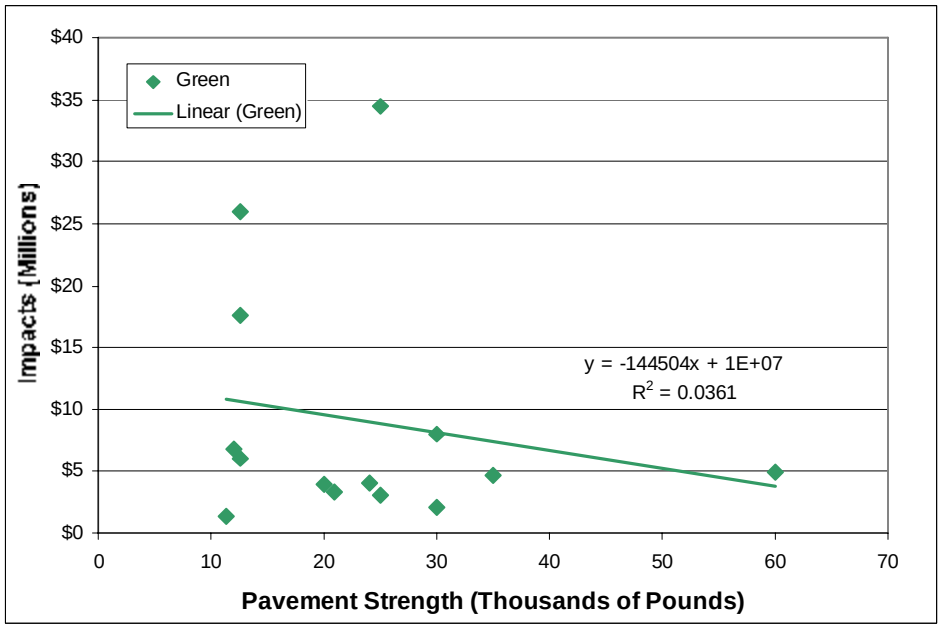


Figure K12: Green Airports: Impacts vs Pavement Capacity

K.6 CEILING HEIGHT FOR INSTRUMENT GUIDANCE SYSTEM

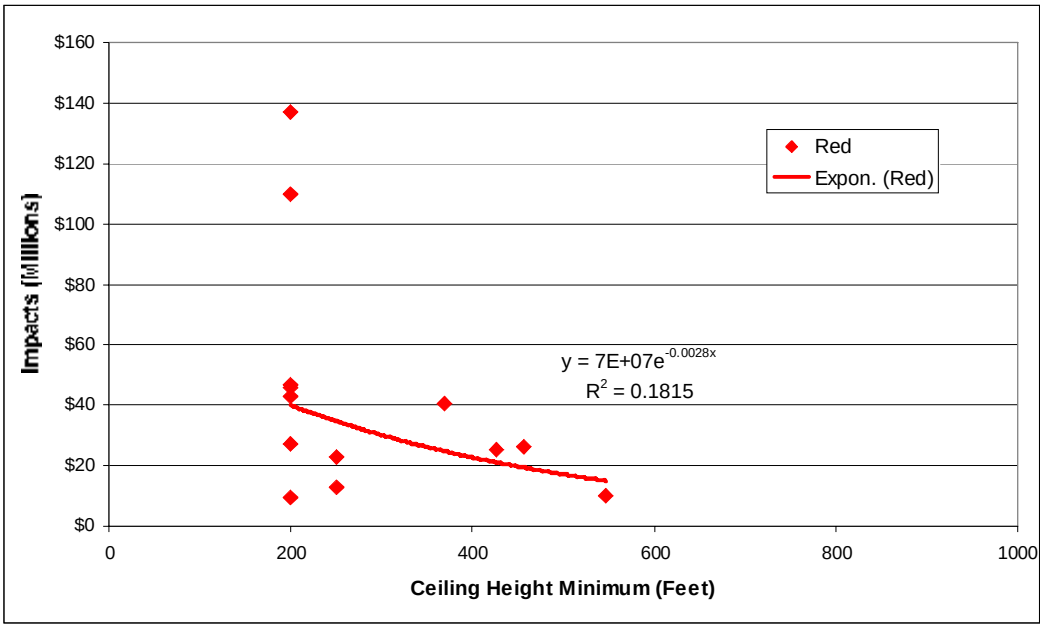


Figure K13: Red Airports: Impacts vs Ceiling Height Minimum

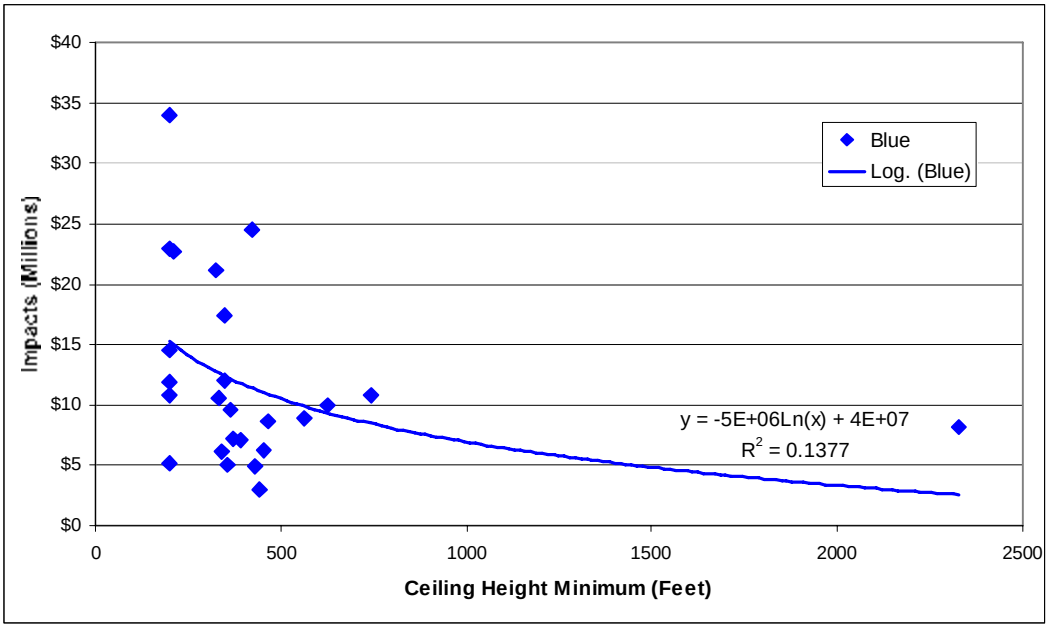


Figure K14: Blue Airports: Impacts vs Ceiling Height Minimum

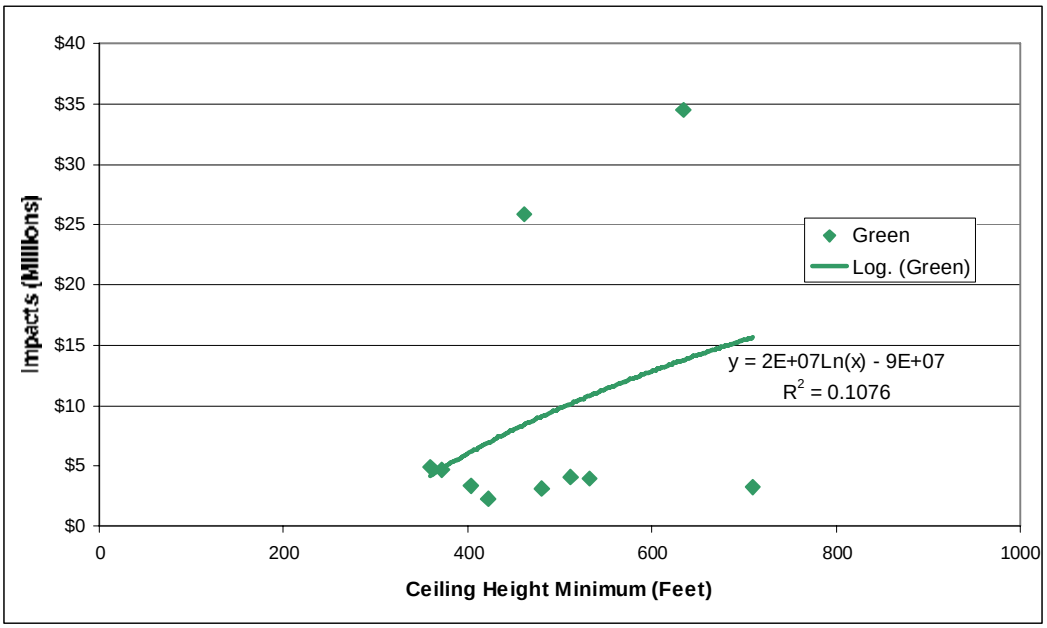


Figure K15: Green Airports with Instrument Guidance Systems: Impacts vs Ceiling Height Minimum

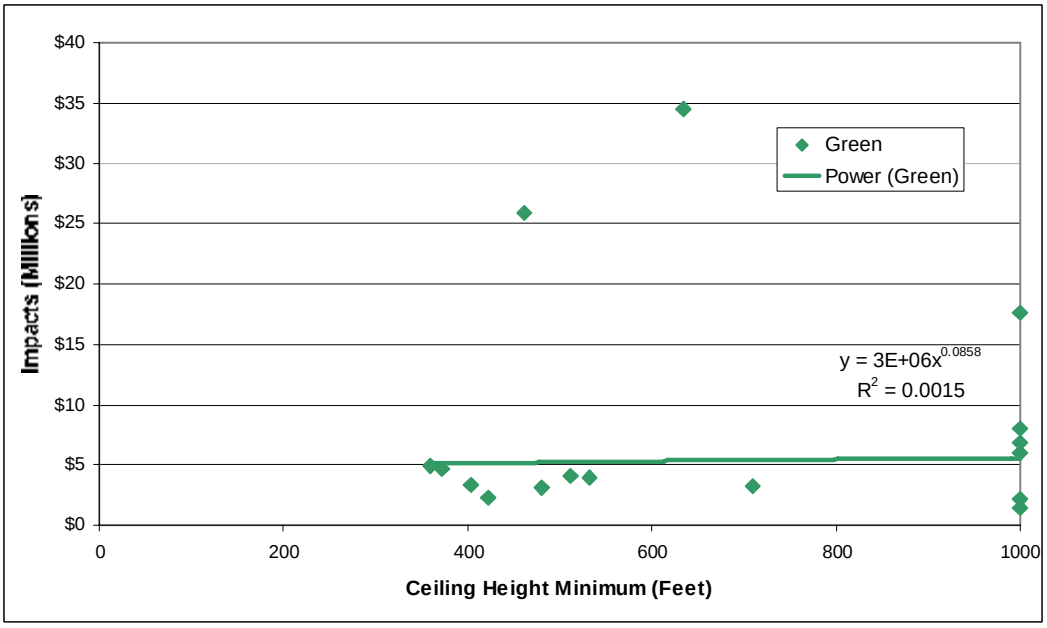


Figure K16: All Green Airports: Impacts vs Ceiling Height Minimum

K.7 R^2 VALUES AND TYPE OF TREND-LINE FROM THE STATISTICAL ANALYSIS

Table K4: Summary Values from Statistical Analysis

Graph of Economic Impact and:	Red Airports		Blue Airports		Green Airports	
	R^2	Type	R^2	Type	R^2	Type
Investments at Airports with Capacity Improvements	0.68	Linear	0.05	Exponential	0.85	Linear
Investments at Airports without Capacity Improvements	0.67	Linear	0.40	Linear	0.07	Linear
Employment in the County	0.69	Linear	0.02	Exponential	0.11	Power
Operations at the Airport	0.44	Linear	0.28	Power	0.16	Power
Pavement Capacity	0.51	Linear	0.02	Exponential	0.04	Linear
Ceiling Height (at airports with Instrument Guidance Systems)	0.18	Exponential	0.14	Logarithmic	0.11	Logarithmic

K.8 CORRELATION COEFFICIENTS

Table K5: Correlation Coefficients for Red General Aviation Airports

Red General Aviation Airports							
	Output Impacts	Employment	Operations	Investments at airports with capacity projects	Investments at Airports without capacity projects	Pavement Strength	Ceiling Height
Output Impacts	1.00	0.83	0.67	0.82	0.82	0.72	-0.40
Employment	0.83	1.00	0.47	0.36	0.91	0.71	-0.32
Operations	0.67	0.47	1.00	0.50	0.66	0.32	-0.42
Investments at airports with capacity projects	0.82	0.36	0.50	1.00	N/A	-0.87	-0.09
Investments at Airports without capacity projects	0.82	0.91	0.66	N/A	1.00	0.78	-0.48
Pavement Strength	0.72	0.71	0.32	-0.87	0.78	1.00	-0.51
Ceiling Height	-0.40	-0.32	-0.42	-0.09	-0.48	-0.51	1.00

Table K6: Correlation Coefficients for Blue General Aviation Airports

Blue General Aviation Airports							
	Output Impacts	Employment	Operations	Investments at airports with capacity projects	Investments at Airports without capacity projects	Pavement Strength	Ceiling Height
Output Impacts	1.00	0.02	0.44	-0.15	0.63	0.07	-0.23
Employment	0.02	1.00	-0.06	-0.04	0.20	-0.16	-0.25
Operations	0.44	-0.06	1.00	-0.55	0.12	0.67	-0.16
Investments at airports with capacity projects	-0.15	-0.04	-0.55	1.00	N/A	-0.65	-0.10
Investments at Airports without capacity projects	0.63	0.20	0.12	N/A	1.00	-0.22	-0.60
Pavement Strength	0.07	-0.16	0.67	-0.65	-0.22	1.00	-0.02
Ceiling Height	-0.23	-0.25	-0.16	-0.10	-0.60	-0.02	1.00

Table K7: Correlation Coefficients for Green General Aviation Airports

Green General Aviation Airports							
	Output Impacts	Employment	Operations	Investments at airports with capacity projects	Investments at Airports without capacity projects	Pavement Strength	Ceiling Height
Output Impacts	1.00	0.27	0.26	0.92	-0.26	-0.19	0.31
Employment	0.27	1.00	0.46	-0.05	-0.27	-0.25	0.62
Operations	0.26	0.46	1.00	0.22	-0.09	0.36	-0.20
Investments at airports with capacity projects	0.92	-0.05	0.22	1.00	N/A	0.07	-0.69
Investments at Airports without capacity projects	-0.26	-0.27	-0.09	N/A	1.00	-0.05	-0.76
Pavement Strength	-0.19	-0.25	0.36	0.07	-0.05	1.00	-0.52
Ceiling Height	0.31	0.62	-0.20	-0.69	-0.76	-0.52	1.00

APPENDIX L:
TABLE L1: INVESTMENTS, EMPLOYMENT, OPERATIONS, PAVEMENT STRENGTH BY AIRPORT, TYPE OF APPROACH, AND CEILING HEIGHT

ID	Airport Name	Investments from 1996 to 2006 (in 2006 Dollars)	2005 Employ-ment	2005 Opera-tions	Pavement Strength (thousands of lbs)	Type of Approach System[1]	Certified Min. Ceiling Height (feet)
5W8	Siler City Municipal	$935,211	16,681	21,520	25	RNAV	626
78N	Rockingham County / NC Shiloh	$3,579,284	30,696	35,150	12.5	GPS	392
AFP	Anson County	$16,026,773	8,236	6,700	12	GPS	442
AKH	Gastonia Municipal	$2,170,364	69,616	30,040	24	RNAV	563
CTZ	Sampson County	$3,603,341	18,767	13,010	26	RNAV	432
DPL	Duplin County	$8,069,800	19,923	16,500	30	GPS	363
ECG	Elizabeth City CGAS / Regional	$2,794,600	20,722	85,700	100	VOR	349
EHO	Shelby Municipal	$5,146,706	33,421	18,150	21	RNAV	453
EXX	Davidson County	$23,631,289	44,622	9,000		ILS	200
EYF	Curtis L Brown Jr. Field	$1,689,414	13,474	14,500	30	GPS	357
FQD	Rutherford County-Marchman Field	$3,385,350	26,726	39,000	12.5	LOC	348
GWW	Goldsboro-Wayne Municipal	$2,144,305	43,611	14,500	30	ILS	200
HNZ	Henderson-Oxford	$1,950,944	34,893	21,100	30	LOC	373
HRJ	Harnett County	$10,555,868	22,997	41,500	13	RNAV	324
IPJ	Lincoln County Regional	$6,905,451	19,986	25,600	30	LOC	467
LBT	Lumberton Municipal	$5,314,777	38,501	22,000	15	ILS	200
MEB	Laurinburg-Maxton	$3,281,804	23,850	47,000	25	ILS	200
MRN	Morganton-Lenoir	$11,654,249	63,146	26,300		LOC	332
MWK	Mount Airy / Surry County	$1,587,002	39,106	21,600	10	GPS	472
OCW	Warren Field	$2,100,639	16,844	28,100	30	RNAV	342
ONX	Currituck County	$4,939,203	5,388	19,250	20	GPS	424

TABLE L1 CONTINUED

ID	Airport Name	Investments from 1996 to 2006 (in 2006 Dollars)	2005 Employ-ment	2005 Opera-tions	Pavement Strength (thousands of lbs)	Type of Approach System[1]	Certified Min. Ceiling Height (feet)
RHP	Andrews-Murphy	$8,565,141	13,410	16,600	25	RNAV	2329
RUQ	Rowan County	$6,471,474	48,226	31,000	16	ILS	200
RZZ	Halifax County	$1,200,074	27,886	31,500	30	GPS	745
TDF	Person County	$6,557,229	70,598	34,750	30	ILS	200
VUJ	Stanly County	$10,445,004	19,568	31,000		ILS	213
1A5	Macon County	$7,513,067	19,059	12,000	30	Visual	1000
24A	Jackson County	$1,177,542	13,605	4,400	12.5	Visual	1000
43A	Montgomery County	$1,638,842	10,639	4,800	11.4	Visual	1000
45J	Rockingham-Hamlet	$3,067,542	15,054	5,250		Visual	1000
60J	Ocean Isle	$1,568,489	25,721	16,500	12	Visual	1000
7A8	Avery County / Morrison Field	$2,686,790	13,174	5,100	12.5	Visual	1000
7W6	Hyde County	$699,578	2,091	4,100	30	GPS	423
ACZ	Henderson Field	$1,926,945	10,444	10,200	12.5	GPS	461
ASJ	Tri-County	$2,379,644	22,594	12,300	35	GPS	372
CPC	Columbus County Municipal	$2,222,815	16,921	10,900	24	GPS	511
EDE	NorthEastern Regional	$3,418,411	7,981	14,200	60	RNAV	360
ETC	Tarboro-Edgecombe	$1,310,505	22,529	5,300		NDB	710
GEV	Ashe County	$959,228	11,703	5,320	12.5	GPS	844
MCZ	Martin County	$4,194,884	16,259	7,900	21	RNAV	404
PMZ	Plymouth Municipal	$2,334,508	3,436	6,350	25	GPS	481
W40	Mount Olive Municipal	$1,427,393	43,611	13,050	20	VOR	532
ZEF	Elkin Municipal	$1,175,027	42,080	13,350	25	GPS	635

ID	Airport Name	Investments from 1996 to 2006 (in 2006 Dollars)	2005 Employ-ment	2005 Opera-tions	Pavement Strength (thousands of lbs)	Type of Approach System[1]	Certified Min. Ceiling Height (feet)
BUY	Burlington-Alamance Regional	$8,386,750	58,771	60,000	30	ILS	200
EQY	Monroe	$9,348,344	571,261	55,000	25	ILS	250
HBI	Asheboro Municipal	$13,808,630	48,217	17,300	20	RNAV	547
INT	Smith-Reynolds	$14,783,096	179,746	65,652	110	ILS	200
JNX	Johnston County	$7,245,663	445,708	28,000	65	ILS	200
JQF	Concord Regional	$27,417,317	582,018	67,426		ILS	200
LHZ	Franklin County	$4,256,031	416,640	51,800	40	ILS	250
MQI	Dare County Regional	$10,748,244	20,022	46,700	48	VOR	426
MRH	Michael J Smith Field	$2,284,283	23,053	43,800	12.5	RNAV	370
RWI	Rocky Mount-Wilson Regional	$6,389,332	78,829	27,200	62	ILS	200
SUT	Brunswick County	$12,644,094	25,721	23,800	12.5	RNAV	457
SVH	Statesville Municipal	$11,317,437	146,572	36,000	30	ILS	200
TTA	Sanford-Lee County	$17,410,794	433,680	47,000	30	ILS	200
UKF	Wilkes County	$2,592,918	25,196	23,000	45	ILS	200

[1]: The following abbreviations from the table represent:
RNAV = Area Navigation
VOR = Very High Frequency Omni Directional Range
ILS = Instrument Landing System
GPS = Global Positioning System
Visual = Visual Approach
LOC = Localizer
NDB = Non-directional Beacon

APPENDIX M:
TABLE M1: COMPARISON OF 1996 STUDY AND ITRE STUDY [5] [8]

ID	Airport Name	ITRE Study [5] Output Impact (dollars)	1996 Study [8] Expenditures (dollars)	% Change
RHP	Andrews-Murphy	$8,159,774	$726,190	1024%
AFP	Anson County	$3,005,508	$360,909	733%
ONX	Currituck County	$24,452,546	$103,037	23632%
EXX	Davidson County	$10,818,986	$427,708	2430%
DPL	Duplin County	$9,598,765	$1,368,724	601%
ECG	Elizabeth City CGAS / Regional	$17,405,420	$2,228,261	681%
AKH	Gastonia Municipal	$8,942,011	$2,979,813	200%
GWW	Goldsboro-Wayne Municipal	$14,552,459	$2,058,536	607%
RZZ	Halifax County	$10,777,453	$363,274	2867%
HRJ	Harnett County	$21,110,973	$989,337	2034%
HNZ	Henderson-Oxford	$7,255,438	$374,698	1836%
MEB	Laurinburg-Maxton	$34,000,693	$2,522,352	1248%
IPJ	Lincoln County Regional	$8,626,608	$1,721,970	401%
LBT	Lumberton Municipal	$11,852,848	$1,770,702	569%
MRN	Morganton-Lenoir	$10,561,951	$5,132,737	106%
MWK	Mount Airy / Surry County	$386,998,333	$3,936,492	9731%
TDF	Person County	$5,113,900	$768,106	566%
78N	Rockingham County / NC Shiloh	$7,037,119	$1,701,854	313%
RUQ	Rowan County	$22,915,477	$3,601,783	536%
FQD	Rutherford County-Marchman Field	$12,034,005	$1,252,153	861%
CTZ	Sampson County	$4,880,126	$306,941	1490%
EHO	Shelby Municipal	$6,246,191	$1,317,507	374%
5W8	Siler City Municipal	$9,932,219	$1,047,483	848%
VUJ	Stanly County	$22,663,873	$3,442,929	558%
OCW	Warren Field	$6,174,869	$1,957,384	215%
GEV	Ashe County	$133,872,699	$171,455	77980%
7A8	Avery County / Morrison Field	$5,985,166	$362,296	1552%
CPC	Columbus County Municipal	$4,104,038	$1,199,850	242%
ZEF	Elkin Municipal	$34,458,593	$1,924,323	1691%
ACZ	Henderson Field	$25,908,779	$2,730,620	849%
24A	Jackson County	$17,581,564	$412,558	4162%
1A5	Macon County	$7,979,142	$4,141,049	93%
MCZ	Martin County	$3,335,438	$305,310	992%
43A	Montgomery County	$1,387,211	$145,669	852%
W40	Mount Olive Municipal	$3,972,224	$96,098	4034%
EDE	NorthEastern Regional	$4,964,767	$1,329,291	273%

TABLE M1 CONTINUED

ID	Airport Name	ITRE Study [5]	1996 Study [8]	% Change
		Output Impact (dollars)	Expenditures (dollars)	
60J	Ocean Isle	$6,806,625	$769,294	785%
PMZ	Plymouth Municipal	$3,109,810	$87,585	3451%
45J	Rockingham-Hamlet	$2,326,408	$1,014,879	129%
ETC	Tarboro-Edgecombe	$3,214,748	$1,562,950	106%
ASJ	Tri-County	$4,661,660	$1,050,576	344%
HBI	Asheboro Municipal	$10,246,427	$5,503,465	86%
SUT	Brunswick County	$26,178,604	$5,372,175	387%
BUY	Burlington-Alamance Regional	$46,006,685	$6,504,054	607%
JQF	Concord Regional	$110,003,493	$8,664,118	1170%
MQI	Dare County Regional	$25,353,228	$18,166,660	40%
LHZ	Franklin County	$12,944,315	$941,521	1275%
JNX	Johnston County	$42,810,284	$25,057,837	71%
MRH	Michael J Smith Field	$40,737,550	$4,842,385	741%
EQY	Monroe	$22,890,451	$5,239,215	337%
RWI	Rocky Mount-Wilson Regional	$27,030,191	$18,845,667	43%
TTA	Sanford-Lee County	$280,270,021	$261,760	106971%
SVH	Statesville Municipal	$46,934,500	$3,602,957	1203%
UKF	Wilkes County	$9,749,012	$22,766,681	-57%
TOTALS		*$1,649,941,179*	*$185,533,177*	

APPENDIX N:
TABLE N1: RUNWAY LENGTH

		Runway Length (Length x Width, feet)								
ID	Airport Name	1st			2nd			3rd		
RHP	Andrews-Murphy	5500	X	75						
AFP	Anson County	5500	X	100						
ONX	Currituck County	5500	X	150						
EYF	Curtis L Brown Jr. Field	5000	X	75						
EXX	Davidson County	5000	X	100						
DPL	Duplin County	6002	X	75						
ECG	Elizabeth City CGAS / Regional	7219	X	150	4519	X	150			
AKH	Gastonia Municipal	3750	X	100						
GWW	Goldsboro-Wayne Municipal	5500	X	100						
RZZ	Halifax County	4006	X	75	2465	X	150			
HRJ	Harnett County	4300	X	75						
HNZ	Henderson-Oxford	5002	X	100						
MEB	Laurinburg-Maxton	6489	X	150	3753	X	150			
IPJ	Lincoln County Regional	5500	X	100						
LBT	Lumberton Municipal	5503	X	150	4998	X	150			
MRN	Morganton-Lenoir	5500	X	75						
MWK	Mount Airy / Surry County	4300	X	75						
TDF	Person County	6000	X	100						
78N	Rockingham County / NC Shiloh	5199	X	100						
RUQ	Rowan County	5500	X	100						
FQD	Rutherford County-Marchman Field	5000	X	75						
CTZ	Sampson County	4220	X	75						
EHO	Shelby Municipal	5002	X	100						
5W8	Siler City Municipal	5000	X	75						
VUJ	Stanly County	5500	X	100	3500	X	75			
OCW	Warren Field	5000	X	150	4000	X	150	5000	X	100
GEV	Ashe County	4293	X	75						
7A8	Avery County / Morrison Field	3000	X	50						
CPC	Columbus County Municipal	5500	X	75						
ZEF	Elkin Municipal	4003	X	75						
ACZ	Henderson Field	3998	X	75						
7W6	Hyde County	4700	X	100						
24A	Jackson County	3003	X	50						
1A5	Macon County	4400	X	75						
MCZ	Martin County	5000	X	75						
43A	Montgomery County	3500	X	60						
W40	Mount Olive Municipal	3697	X	75						
EDE	NorthEastern Regional	6000	X	100						

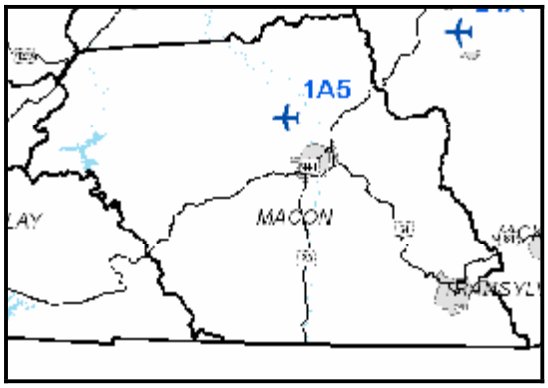
TABLE N1: CONTINUED

		Runway Length (Length x Width, feet)								
ID	Airport Name	1st			2nd			3rd		
60J	Ocean Isle	4000	X	75						
PMZ	Plymouth Municipal	3700	X	75						
45J	Rockingham-Hamlet	5001	X	100	3000	X	500			
ETC	Tarboro-Edgecombe	4000	X	60						
ASJ	Tri-County	4502	X	75						
HBI	Asheboro Municipal	5501	X	75						
SUT	Brunswick County	4000	X	100						
BUY	Burlington-Alamance Regional	5000	X	100						
JQF	Concord Regional	7400	X	100						
MQI	Dare County Regional	4300	X	100	3303	X	75			
LHZ	Franklin County	5500	X	100						
JNX	Johnston County	5500	X	100						
MRH	Michael J Smith Field	4191	X	150	4249	X	100	4000	X	100
EQY	Monroe	5500	X	100						
RWI	Rocky Mount-Wilson Regional	7100	X	150						
TTA	Sanford-Lee County	6500	X	100						
INT	Smith-Reynolds	6655	X	150	3938	X	150			
SVH	Statesville Municipal	7000	X	100						
UKF	Wilkes County	6200	X	100						

APPENDIX O: AIRPORT SUMMARIES [5]

Macon County Airport (1A5) — *Macon County*

Runway: 4,400′ x 75′
Services: Charter Aircraft, Air Taxi, General Aviation, Military Aircraft, Helicopter, Aircraft Rental, Aircraft Parts Sales, Jet Fuel, Avgas, Aircraft Repair, Flight Instruction, Car Rental, Vending, Hangar Rental, and Tie Down.
Tenants/Users Reporting: < 5



Economic impacts consist of three types: direct, indirect, and induced impacts. Direct impacts result from economic activities that result from tenants and other business users who have a direct involvement with the airport. Indirect impacts result from economic activities that typically take place away from the airport, but are still attributable to the airport. Induced impacts result from successive spending and are the multiplier effects of the direct and indirect impacts.

Macon County Airport Economic Impact Summary

Impact Type	Jobs	Economic Impact per Year	Payroll per Year
Direct	7	$646,400	$232,400
Indirect	96	$6,238,300	$45,000
Induced	19	$1,094,500	$39,200
Total Impact	122	$7,979,200	$316,600

The airport also provides the county with a significant source of property tax revenue with 34 based aircraft at a calculated value of $4,600,000, which would result in ad valorem taxes of $17,020 based on the county rate of $0.37 per $100. This study estimated that there were 5,660 visitors to the area that utilized the Macon County Airport.

Jackson County Airport (24A) — *Jackson County*

Runway: 3,003′ x 50′
Services: Avgas, Hangar Rental, and Tie Down.
Tenants/Users Reporting: < 5

Economic impacts consist of three types: direct, indirect, and induced impacts. Direct impacts result from economic activities that result from tenants and other business users who have a direct involvement with the airport. Indirect impacts result from economic activities that typically take place away from the airport, but are still attributable to the airport. Induced impacts result from successive spending and are the multiplier effects of the direct and indirect impacts.

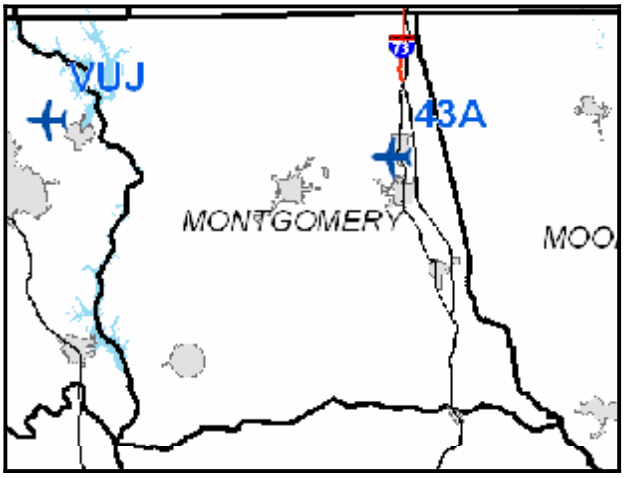
Jackson County Airport Economic Impact Summary

Impact Type	Jobs	Economic Impact per Year	Payroll per Year
Direct	41	$10,120,000	$1,546,200
Indirect	84	$6,121,700	$523,700
Induced	26	$1,339,800	$320,300
Total Impact	151	$17,581,500	$2,390,100

The airport also provides the county with a significant source of property tax revenue with 16 based aircraft at a calculated value of $1,900,000, which would result in ad valorem taxes of $6,840 based on the county rate of $0.36 per $100. This study estimated that there were 3,000 visitors to the area that utilized the Jackson County Airport.

Montgomery County Airport (43A) — *Montgomery County*

Runway: 3,500′ x 60′
Services: General Aviation, Military Aircraft, Helicopter, Aircraft Rental, Aircraft Parts Sales, Jet Fuel, Avgas, Aircraft Repair, Flight Instruction, Vending, Hangar Rental, and Tie Down.
Tenants/Users Reporting: < 5



Economic impacts consist of three types: direct, indirect, and induced impacts. Direct impacts result from economic activities that result from tenants and other business users who have a direct involvement with the airport. Indirect impacts result from economic activities that typically take place away from the airport, but are still attributable to the airport. Induced impacts result from successive spending and are the multiplier effects of the direct and indirect impacts.

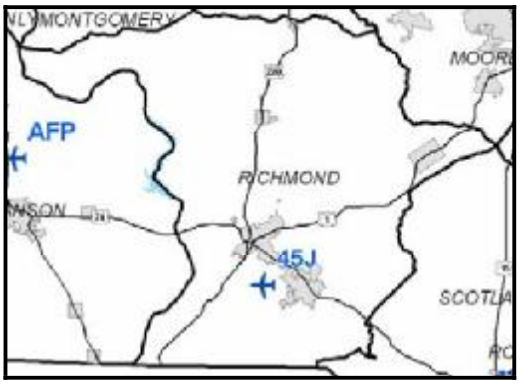
Montgomery County Airport Economic Impact Summary

Impact Type	Jobs	Economic Impact per Year	Payroll per Year
Direct	2	$259,800	$140,600
Indirect	3	$952,300	$12,600
Induced	1	$175,200	$12,000
Total Impact	6	$1,387,300	$165,200

The airport also provides the county with a significant source of property tax revenue with 25 based aircraft at a calculated value of $3,550,000, which would result in ad valorem taxes of $20,590 based on the county rate of $0.58 per $100. This study estimated that there were 2,530 visitors to the area that utilized the Montgomery County Airport.

Rockingham-Hamlet Airport (45J) — *Richmond County*

Runways: 5,001′ x 100′ and 3,000′ x 500′
Services: General Aviation, Military Aircraft, Helicopter, Jet Fuel, Avgas, Ultralight, Vending, Hangar Rental, and Tie Down.
Tenants/Users Reporting: < 5



Economic impacts consist of three types: direct, indirect, and induced impacts. Direct impacts result from economic activities that result from tenants and other business users who have a direct involvement with the airport. Indirect impacts result from economic activities that typically take place away from the airport, but are still attributable to the airport. Induced impacts result from successive spending and are the multiplier effects of the direct and indirect impacts.

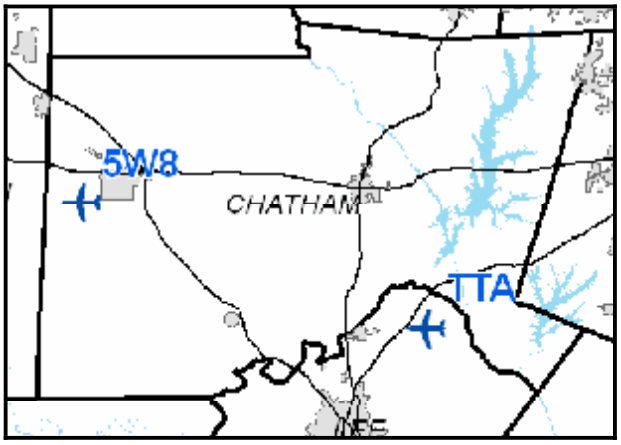
Rockingham-Hamlet Airport Economic Impact Summary

Impact Type	Jobs	Economic Impact per Year
Direct	0	$0
Indirect	20	$2,326,400
Induced	0	$0
Total Impact	20	$2,326,400

The airport also provides the county with a significant source of property tax revenue with 18 based aircraft at a calculated value of $1,800,000, which would result in ad valorem taxes of $14,040 based on the county rate of $0.78 per $100. This study estimated that there were 4,430 visitors to the area that utilized the Rockingham-Hamlet Airport.

Siler City Municipal (5W8) — *Chatham County*

Runway: 5,000′ x 75′
Services: Charter Aircraft, Air Taxi, General Aviation, Aircraft Rental, Aircraft Parts Sales, Jet Fuel, Avgas, Aircraft Repair, Flight Instruction, Car Rental, Vending, Hangar Rental, and Tie Down.
Tenants/Users Reporting: < 5



Economic impacts consist of three types: direct, indirect, and induced impacts. Direct impacts result from economic activities that result from tenants and other business users who have a direct involvement with the airport. Indirect impacts result from economic activities that typically take place away from the airport, but are still attributable to the airport. Induced impacts result from successive spending and are the multiplier effects of the direct and indirect impacts.

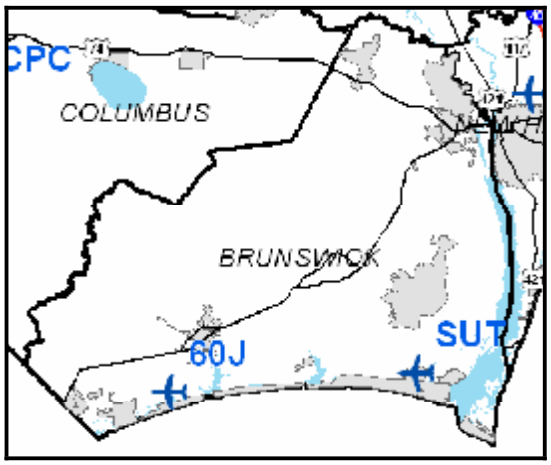
Siler City Municipal Airport Economic Impact Summary

Impact Type	Jobs	Economic Impact per Year	Payroll per Year
Direct	7	$1,243,300	$344,700
Indirect	20	$7,838,300	$98,500
Induced	4	$850,600	$42,700
Total Impact	31	$9,932,200	$485,900

The airport also provides the county with a significant source of property tax revenue with 30 based aircraft at a calculated value of $4,200,000, which would result in ad valorem taxes of $25,070 based on the county rate of $0.597 per $100. This study estimated that there were 21,150 visitors to the area that utilized the Siler City Municipal Airport.

Ocean Isle Airport (60J) — *Brunswick County*

Runway: 4,000′ x 75′
Services: Flight Instruction and Tie Down.
Tenants/Users Reporting: < 5



Economic impacts consist of three types: direct, indirect, and induced impacts. Direct impacts result from economic activities that result from tenants and other business users who have a direct involvement with the airport. Indirect impacts result from economic activities that typically take place away from the airport, but are still attributable to the airport. Induced impacts result from successive spending and are the multiplier effects of the direct and indirect impacts.

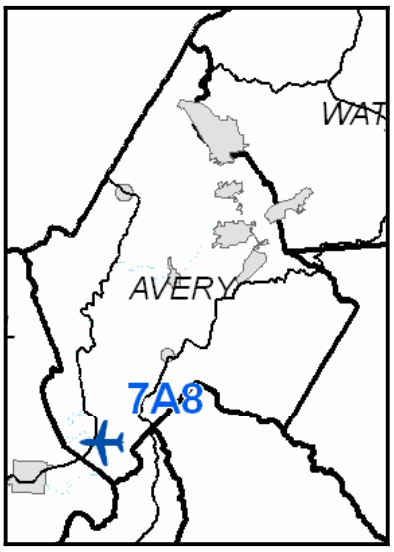
Ocean Isle Airport Economic Impact Summary

Impact Type	Jobs	Economic Impact per Year	Payroll per Year
Direct	2	$140,100	$60,600
Indirect	38	$5,678,800	$14,200
Induced	8	$987,700	$9,000
Total Impact	48	$6,806,600	$83,800

The airport also provides the county with a significant source of property tax revenue with 25 based aircraft at a calculated value of $2,500,000, which would result in ad valorem taxes of $13,500 based on the county rate of $0.54 per $100. This study estimated that there were 11,880 visitors to the area that utilized the Ocean Isle Airport.

Avery County / Morrison Field (7A8) — *Avery County*

Runway: 3,000′ x 50′
Services: General Aviation, Jet Fuel, Avgas, Car Rental, Vending, Hangar Rental, and Tie Down.
Tenants/Users Reporting: < 5



Economic impacts consist of three types: direct, indirect, and induced impacts. Direct impacts result from economic activities that result from tenants and other business users who have a direct involvement with the airport. Indirect impacts result from economic activities that typically take place away from the airport, but are still attributable to the airport. Induced impacts result from successive spending and are the multiplier effects of the direct and indirect impacts.

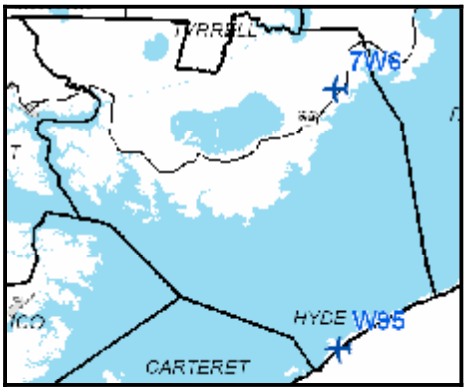
Avery County / Morrison Field Economic Impact Summary

Impact Type	Jobs	Economic Impact per Year	Payroll per Year
Direct	**1**	**$189,400**	**$51,600**
Indirect	**55**	**$5,155,000**	**$8,300**
Induced	**15**	**$640,800**	**$8,200**
Total Impact	**71**	**$5,985,200**	**$68,200**

The airport also provides the county with a significant source of property tax revenue with 19 based aircraft at a calculated value of $1,815,000, which would result in ad valorem taxes of $9,620 based on the county rate of $0.53 per $100. This study estimated that there were 3,600 visitors to the area that utilized the Avery County / Morrison Field.

Hyde County Airport (7W6)) — *Hyde County*

Runway: 4,700′ x 100′
Tenants/Users Reporting: < 5



Economic impacts consist of three types: direct, indirect, and induced impacts. Direct impacts result from economic activities that result from tenants and other business users who have a direct involvement with the airport. Indirect impacts result from economic activities that typically take place away from the airport, but are still attributable to the airport. Induced impacts result from successive spending and are the multiplier effects of the direct and indirect impacts.

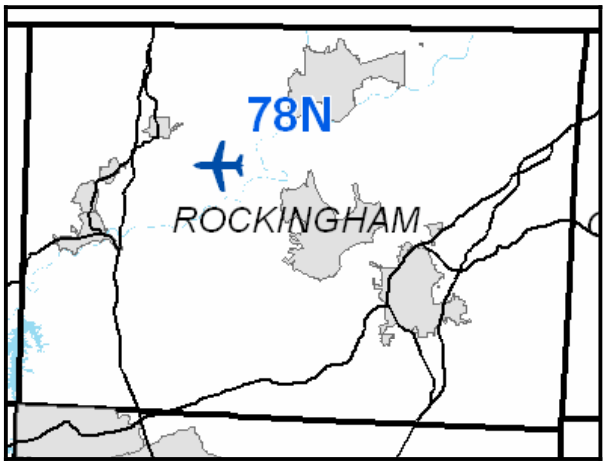
Hyde County Airport Economic Impact Summary

Impact Type	Jobs	Economic Impact per Year	Payroll per Year
Direct	0	$18,000	$5,100
Indirect	16	$1,927,000	$1,200
Induced	0	$163,900	$500
Total Impact	16	$2,108,900	$6,800

This study estimated that there were 3,520 visitors to the area that utilized the Hyde County Airport.

Rockingham County / NC Shiloh Airport (78N) *Rockingham County*

Runway: 5,199′ x 100′
Services: Charter Aircraft, General Aviation, Aircraft Rental, Jet Fuel, Avgas, Aircraft Repair, Flight Instruction, Car Rental, Vending, Hangar Rental, and Tie Down.
Tenants/Users Reporting: < 5



Economic impacts consist of three types: direct, indirect, and induced impacts. Direct impacts result from economic activities that result from tenants and other business users who have a direct involvement with the airport. Indirect impacts result from economic activities that typically take place away from the airport, but are still attributable to the airport. Induced impacts result from successive spending and are the multiplier effects of the direct and indirect impacts.

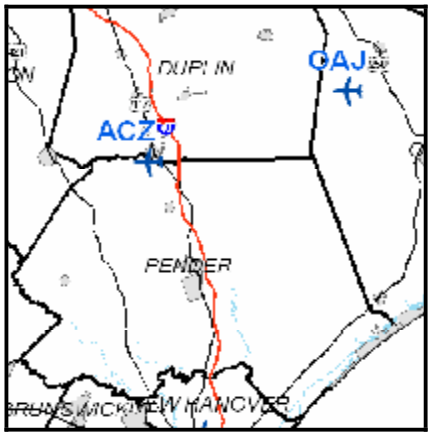
Rockingham County / NC Shiloh Airport Economic Impact Summary

Impact Type	Jobs	Economic Impact per Year	Payroll per Year
Direct	5	$827,000	$237,800
Indirect	20	$5,459,100	$54,200
Induced	6	$751,000	$37,300
Total Impact	31	$7,037,100	$329,300

The airport also provides the county with a significant source of property tax revenue with 62 based aircraft at a calculated value of $7,400,000, which would result in ad valorem taxes of $46,990 based on the county rate of $0.635 per $100. This study estimated that there were 13,630 visitors to the area that utilized the Rockingham County / NC Shiloh Airport.

Henderson Field (ACZ) — *Pender County*

Runway: 3,998′ x 75′
Services: Jet Fuel, Avgas, Hangar Rental, and Tie Down.
Tenants/Users Reporting: < 5



Economic impacts consist of three types: direct, indirect, and induced impacts. Direct impacts result from economic activities that result from tenants and other business users who have a direct involvement with the airport. Indirect impacts result from economic activities that typically take place away from the airport, but are still attributable to the airport. Induced impacts result from successive spending and are the multiplier effects of the direct and indirect impacts.

Henderson Field Economic Impact Summary

Impact Type	Jobs	Economic Impact per Year	Payroll per Year
Direct	33	$18,250,000	$375,600
Indirect	69	$7,022,600	$1,345,500
Induced	8	$636,200	$165,600
Total Impact	110	$25,908,800	$1,886,700

The airport also provides the county with a significant source of property tax revenue with 21 based aircraft at a calculated value of $3,065,000, which would result in ad valorem taxes of $19,920 based on the county rate of $0.65 per $100. This study estimated that there were 6,460 visitors to the area that utilized the Henderson Field.

Anson County Airport (AFP) — *Anson County*

Runway: 5,500′ x 100′
Services: General Aviation, Jet Fuel, Avgas, Aircraft Repair, Avionics Repair, Vending, Hangar Rental, and Tie Down.
Tenants/Users Reporting: < 5

Economic impacts consist of three types: direct, indirect, and induced impacts. Direct impacts result from economic activities that result from tenants and other business users who have a direct involvement with the airport. Indirect impacts result from economic activities that typically take place away from the airport, but are still attributable to the airport. Induced impacts result from successive spending and are the multiplier effects of the direct and indirect impacts.

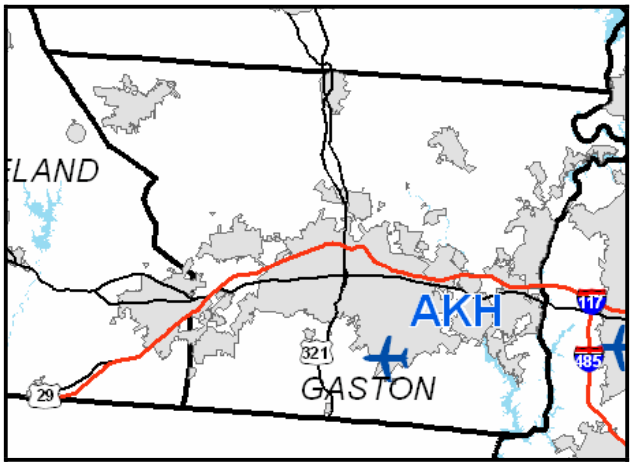
Anson County Airport Economic Impact Summary

Impact Type	Jobs	Economic Impact per Year	Payroll per Year
Direct	**4**	**$468,300**	**$154,100**
Indirect	**4**	**$2,268,300**	**$27,900**
Induced	**1**	**$268,900**	**$14,600**
Total Impact	**9**	**$3,005,500**	**$196,500**

The airport also provides the county with a significant source of property tax revenue with 27 based aircraft at a calculated value of $3,560,000, which would result in ad valorem taxes of $31,150 based on the county rate of $0.875 per $100. This study estimated that there were 5,550 visitors to the area that utilized the Anson County Airport.

Gastonia Municipal Airport (AKH) — *Gaston County*

Runway: 3,750′ x 100′
Services: General Aviation, Jet Fuel, Avgas, Car Rental, Hangar Rental, and Tie Down.
Tenants/Users Reporting: 6 - 10



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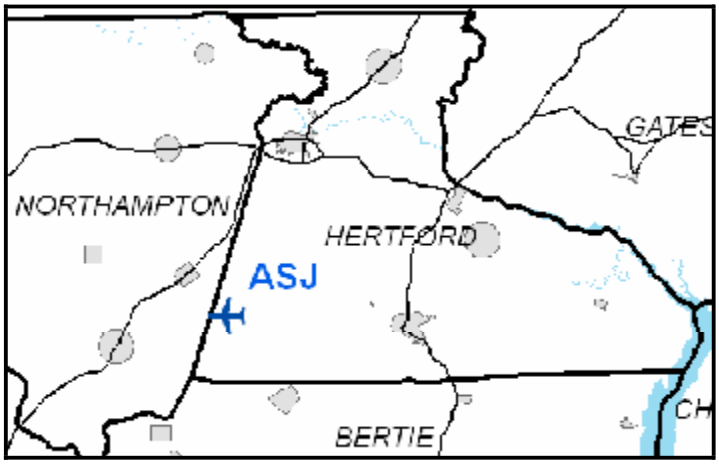
Gastonia Municipal Airport Economic Impact Summary

Impact Type	Jobs	Economic Impact per Year	Payroll per Year
Direct	**18**	**$2,659,200**	**$911,100**
Indirect	**8**	**$4,896,700**	**$239,900**
Induced	**7**	**$1,386,200**	**$205,600**
Total Impact	**33**	**$8,942,100**	**$1,356,600**

The airport also provides the county with a significant source of property tax revenue with 53 based aircraft at a calculated value of $23,630,000, which would result in ad valorem taxes of $211,010 based on the county rate of $0.893 per $100. This study estimated that there were 12,640 visitors to the area that utilized the Gastonia Municipal Airport.

Tri-County Airport (ASJ) — *Hertford County*

Runway: 4,502′ x 75′
Services: Aircraft Rental, Jet Fuel, Avgas, Flight Instruction, Ultralight, Car Rental, Vending, Hangar Rental, and Tie Down.
Tenants/Users Reporting: < 5



Economic impacts consist of three types: direct, indirect, and induced impacts. Direct impacts result from economic activities that result from tenants and other business users who have a direct involvement with the airport. Indirect impacts result from economic activities that typically take place away from the airport, but are still attributable to the airport. Induced impacts result from successive spending and are the multiplier effects of the direct and indirect impacts.

Tri-County Airport Economic Impact Summary

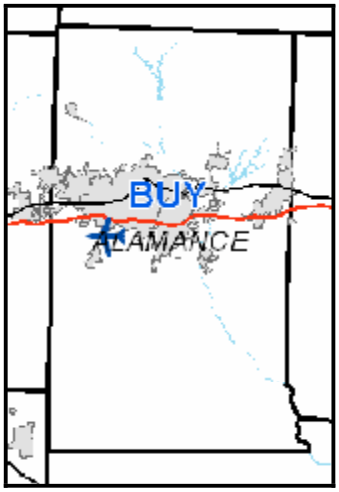
Impact Type	Jobs	Economic Impact per Year	Payroll per Year
Direct	4	$757,600	$206,500
Indirect	17	$3,455,700	$72,900
Induced	5	$448,300	$31,000
Total Impact	26	$4,661,600	$310,500

The airport also provides the county with a significant source of property tax revenue with 10 based aircraft at a calculated value of $5,315,000, which would result in ad valorem taxes of $48,370 based on the county rate of $0.91 per $100. This study estimated that there were 7,950 visitors to the area that utilized the Tri-County Airport.

Economic Impact of North Carolina Airports – 2006 Study

Burlington-Alamance Regional Airport (BUY) *Alamance County*

Runway: 5,000′ x 100′
Services: Charter Aircraft, Air Taxi, General Aviation, Helicopter, Aircraft Rental, Aircraft Sales, Aircraft Parts Sales, Jet Fuel, Avgas, Aircraft Repair, Avionics Repair, Flight Instruction, Car Rental, Vending, Hangar Rental, and Tie Down.
Tenants/Users Reporting: 11 - 15



Economic impacts consist of three types: direct, indirect, and induced impacts. Direct impacts result from economic activities that result from tenants and other business users who have a direct involvement with the airport. Indirect impacts result from economic activities that typically take place away from the airport, but are still attributable to the airport. Induced impacts result from successive spending and are the multiplier effects of the direct and indirect impacts.

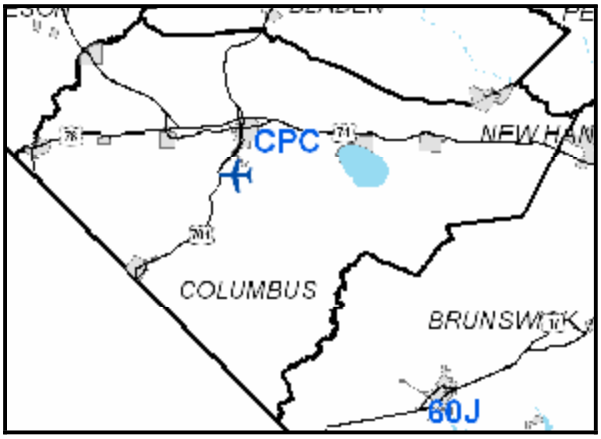
Burlington-Alamance Regional Airport Economic Impact Summary

Impact Type	Jobs	Economic Impact per Year	Payroll per Year
Direct	85	$16,958,100	$4,260,900
Indirect	143	$23,079,600	$1,968,400
Induced	63	$5,969,000	$1,115,600
Total Impact	291	$46,006,700	$7,344,900

The airport also provides the county with a significant source of property tax revenue with 121 based aircraft at a calculated value of $68,950,000, which would result in ad valorem taxes of $387,844 based on the county rate of $0.5625 per $100. This study estimated that there were 42,980 visitors to the area that utilized the Burlington-Alamance Regional Airport.

Columbus County Municipal Airport (CPC) — *Columbus County*

Runway: 5,500′ x 75′
Services: General Aviation, Jet Fuel, Avgas, Car Rental, Vending, Hangar Rental, and Tie Down.
Tenants/Users Reporting: < 5



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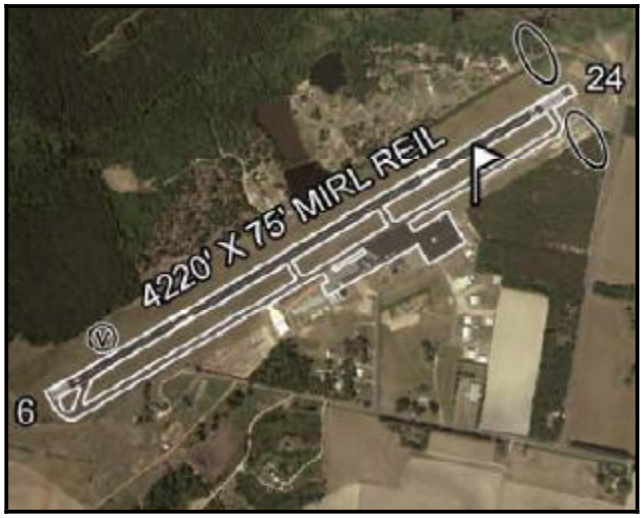
Columbus County Municipal Airport Economic Impact Summary

Impact Type	Jobs	Economic Impact per Year	Payroll per Year
Direct	2	$115,900	$28,700
Indirect	11	$3,593,500	$8,600
Induced	1	$394,600	$4,800
Total Impact	14	$4,104,000	$42,100

The airport also provides the county with a significant source of property tax revenue with 9 based aircraft at a calculated value of $1,200,000, which would result in ad valorem taxes of $8,760 based on the county rate of $0.73 per $100. This study estimated that there were 9,330 visitors to the area that utilized the Columbus County Municipal Airport.

Sampson County Airport (CTZ) — *Sampson County*

Runway: 4,220′ x 75′
Services: Charter Aircraft, General Aviation, Helicopter, Aircraft Rental, Aircraft Parts Sales, Jet Fuel, Avgas, Aircraft Repair, Flight Instruction, Car Rental, Vending, Hangar Rental, and Tie Down.
Tenants/Users Reporting: < 5



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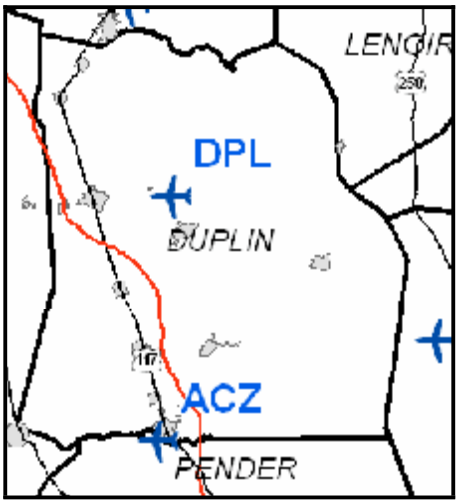
Sampson County Airport Economic Impact Summary

Impact Type	Jobs	Economic Impact per Year	Payroll per Year
Direct	5	$820,300	$224,600
Indirect	10	$3,642,300	$37,900
Induced	3	$417,500	$27,200
Total Impact	18	$4,880,100	$289,700

The airport also provides the county with a significant source of property tax revenue with 26 based aircraft at a calculated value of $2,600,000, which would result in ad valorem taxes of $20,020 based on the county rate of $0.77 per $100. This study estimated that there were 9,450 visitors to the area that utilized the Sampson County Airport.

Duplin County Airport (DPL) — *Duplin County*

Runway: 6,002′ x 75′
Services: Charter Aircraft, General Aviation, Military Aircraft, Helicopter, Jet Fuel, Avgas, Aircraft Repair, Car Rental, Vending, Hangar Rental, Tie Down, and Observation Points.
Tenants/Users Reporting: 6 - 10



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Duplin County Airport Economic Impact Summary

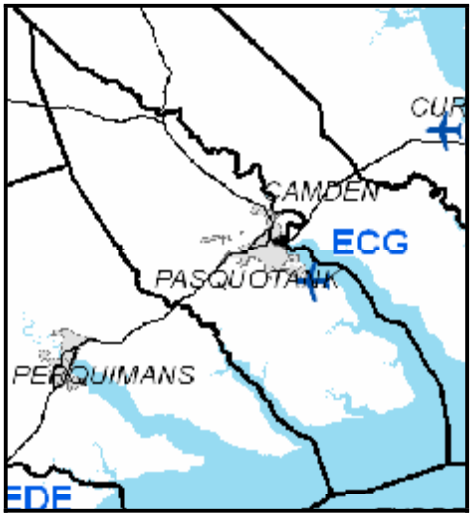
Impact Type	Jobs	Economic Impact per Year	Payroll per Year
Direct	**11**	**$2,996,500**	**$689,800**
Indirect	**45**	**$5,871,400**	**$115,800**
Induced	**14**	**$730,900**	**$79,200**
Total Impact	**70**	**$9,598,800**	**$884,800**

The airport also provides the county with a significant source of property tax revenue with 17 based aircraft at a calculated value of $24,150,000, which would result in ad valorem taxes of $185,960 based on the county rate of $0.77 per $100. This study estimated that there were 12,230 visitors to the area that utilized the Duplin County Airport.

Economic Impact of North Carolina Airports – 2006 Study

Elizabeth City CGAS / Regional Airport (ECG) *Pasquotank County*

Runways: 7,219′ x 150′ and 4,519′ x 150′
Services: Charter Aircraft, General Aviation, Military Aircraft, Helicopter, Aircraft Rental, Jet Fuel, Aircraft Repair, Flight Instruction, Car Rental, Control Tower, Hangar Rental, Tie Down, and Observation Points.
Tenants/Users Reporting: < 5



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Elizabeth City CGAS / Regional Airport Economic Impact Summary

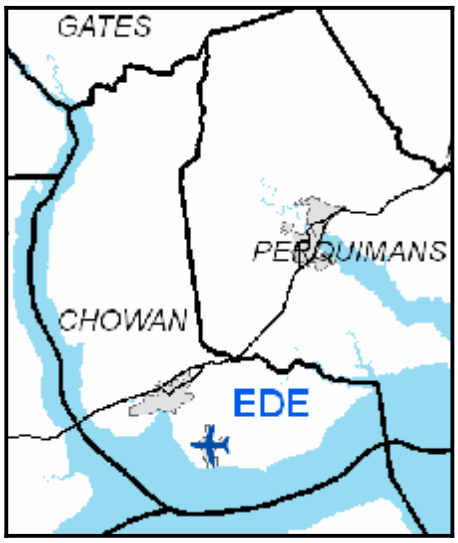
Impact Type	Jobs	Economic Impact per Year	Payroll per Year
Direct	13	1,495,600	$506,400
Indirect	30	$13,594,000	$143,400
Induced	10	$2,315,700	$95,200
Total Impact	53	$17,405,300	$745,100

The airport also provides the county with a significant source of property tax revenue with 46 based aircraft at a calculated value of $5,350,000, which would result in ad valorem taxes of $44,940 based on the county rate of $0.84 per $100. This study estimated that there were 37,020 visitors to the area that utilized the Elizabeth City CGAS / Regional Airport.

Economic Impact of North Carolina Airports – 2006 Study

NorthEastern Regional Airport (EDE) ***Chowan County***

Runway: 6,000′ x 100′
Services: Charter Aircraft, Air Taxi, General Aviation, Jet Fuel, Avgas, Aircraft Repair, Flight Instruction, Ultralight, Car Rental, Vending, Hangar Rental, and Tie Down.
Tenants/Users Reporting: < 5



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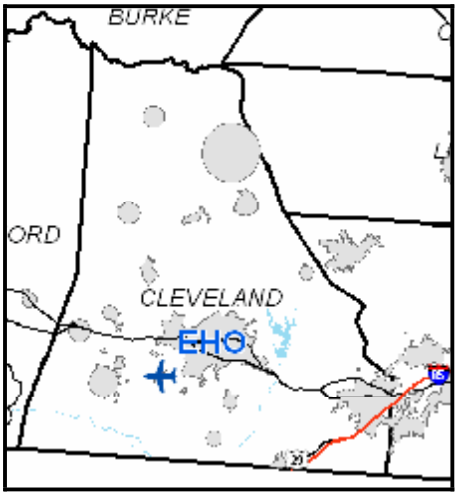
NorthEastern Regional Airport Economic Impact Summary

Impact Type	Jobs	Economic Impact per Year	Payroll per Year
Direct	3	$497,400	$164,800
Indirect	10	$3,893,800	$41,400
Induced	3	$573,600	$24,200
Total Impact	16	$4,964,800	$230,300

The airport also provides the county with a significant source of property tax revenue with based aircraft at a calculated value of $7,330,000, which would result in ad valorem taxes of $57,200 based on the county rate of $0.78 per $100. This study estimated that there were 9,620 visitors to the area that utilized the NorthEastern Regional Airport.

Shelby Municipal Airport (EHO) — *Cleveland County*

Runway: 5,002′ x 100′
Services: General Aviation, Aircraft Rental, Aircraft Sales, Aircraft Parts Sales, Jet Fuel, Avgas, Aircraft Repair, Flight Instruction, Car Rental, Vending, Hangar Rental, Tie Down, and Observation Points.
Tenants/Users Reporting: < 5



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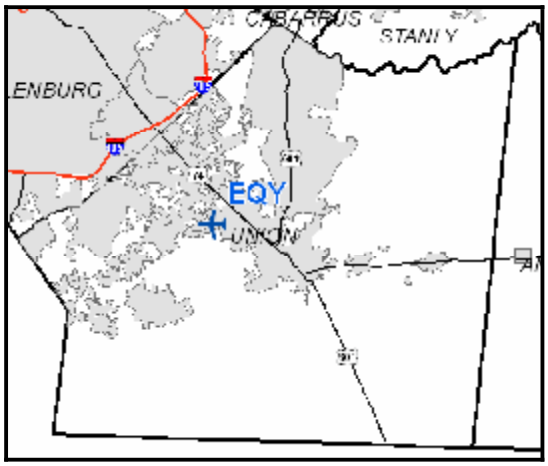
Shelby Municipal Airport Economic Impact Summary

Impact Type	Jobs	Economic Impact per Year	Payroll per Year
Direct	7	$1,325,900	$361,400
Indirect	27	$4,195,400	$95,300
Induced	9	$724,900	$72,400
Total Impact	43	$6,246,200	$529,100

The airport also provides the county with a significant source of property tax revenue with 40 based aircraft at a calculated value of $5,050,000, which would result in ad valorem taxes of $29,290 based on the county rate of $0.58 per $100. This study estimated that there were 9,090 visitors to the area that utilized the Shelby Municipal Airport.

Monroe Airport (EQY) — *Union County*

Runway: 5,500′ x 100′
Services: Charter Aircraft, General Aviation, Helicopter, Aircraft Rental, Aircraft Sales, Aircraft Parts Sales, Jet Fuel, Avgas, Aircraft Repair, Avionics Repair, Flight Instruction, Car Rental, Vending, Hangar Rental, and Tie Down.
Tenants/Users Reporting: 6 - 10



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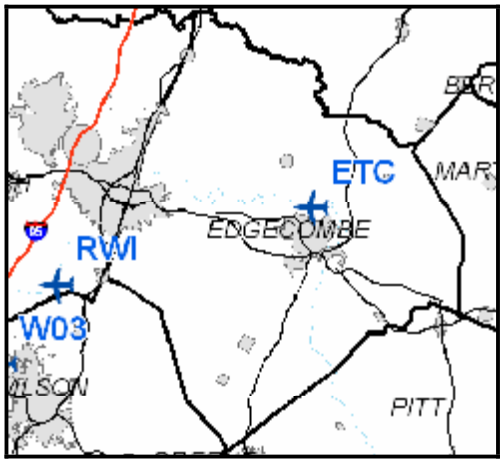
Monroe Airport Economic Impact Summary

Impact Type	Jobs	Economic Impact per Year	Payroll per Year
Direct	**24**	**$4,646,100**	**$1,754,200**
Indirect	**60**	**$14,553,000**	**$577,900**
Induced	**27**	**$3,691,400**	**$395,400**
Total Impact	**111**	**$22,890,500**	**$2,727,500**

The airport also provides the county with a significant source of property tax revenue with 90 based aircraft at a calculated value of $26,580,000, which would result in ad valorem taxes of $150,360 based on the county rate of $0.56 per $100. This study estimated that there were 31,140 visitors to the area that utilized the Monroe Airport.

Tarboro-Edgecombe Airport (ETC) — *Edgecombe County*

Runway: 4,000′ x 60′
Services: Tie Down.
Tenants/Users Reporting: < 5



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Tarboro-Edgecombe Airport Economic Impact Summary

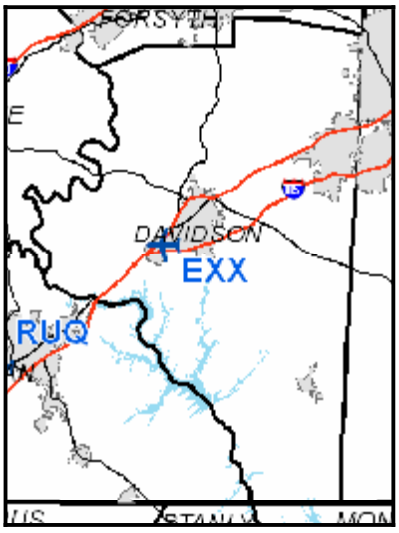
Impact Type	Jobs	Economic Impact per Year	Payroll per Year
Direct	**8**	**$339,300**	**$339,000**
Indirect	**9**	**$1,892,200**	**$8,900**
Induced	**4**	**$983,200**	**$50,000**
Total Impact	**21**	**$3,214,700**	**$397,800**

The airport also provides the county with a significant source of property tax revenue with 11 based aircraft at a calculated value of $1,250,000, which would result in ad valorem taxes of $11,625 based on the county rate of $0.93 per $100. This study estimated that there were 3,660 visitors to the area that utilized the Tarboro-Edgecombe Airport.

Economic Impact of North Carolina Airports – 2006 Study

Davidson County Airport (EXX) ***Davidson County***

Runway: 5,000′ x 100′
Services: General Aviation, Jet Fuel, Avgas, Aircraft Repair, Avionics Repair, Flight Instruction, Car Rental, Vending, Hangar Rental, and Tie Down.
Tenants/Users Reporting: 6 - 10



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Davidson County Airport Economic Impact Summary

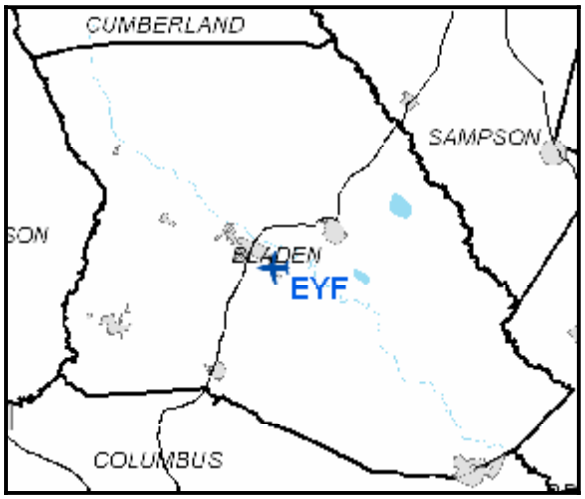
Impact Type	Jobs	Economic Impact per Year	Payroll per Year
Direct	**64**	**$5,958,600**	**$2,318,000**
Indirect	**28**	**$3,407,900**	**$338,100**
Induced	**15**	**$1,452,500**	**$328,400**
Total Impact	**107**	**$10,819,000**	**$2,984,500**

The airport also provides the county with a significant source of property tax revenue with 60 based aircraft at a calculated value of $25,100,000, which would result in ad valorem taxes of $135,540 based on the county rate of $0.54 per $100. This study estimated that there were 4,510 visitors to the area that utilized the Davidson County Airport.

Economic Impact of North Carolina Airports – 2006 Study

Curtis L. Brown Jr. Field (EYF) ***Bladen County***

Runway: 5,000′ x 75′
Services: General Aviation, Jet Fuel, Avgas, Car Rental, Vending, Hangar Rental, Tie Down, and Observation Points.
Tenants/Users Reporting: < 5



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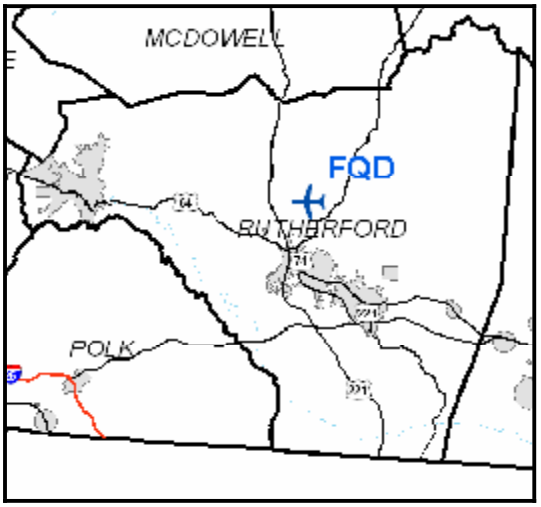
Curtis L. Brown Jr. Field Economic Impact Summary

Impact Type	Jobs	Economic Impact per Year	Payroll per Year
Direct	6	$601,500	$199,300
Indirect	8	$4,026,200	$17,700
Induced	1	$397,500	$14,700
Total Impact	15	$5,045,200	$231,700

The airport also provides the county with a significant source of property tax revenue with 30 based aircraft at a calculated value of $4,950,000, which would result in ad valorem taxes of $42,570 based on the county rate of $0.86 per $100. This study estimated that there were 11,090 visitors to the area that utilized the Curtis L. Brown Jr. Field.

Rutherford County-Marchman Field (FQD) *Rutherford County*

Runway: 5,000′ x 75′
Services: General Aviation, Helicopter, Aircraft Rental, Aircraft Sales, Aircraft Parts Sales, Jet Fuel, Avgas, Aircraft Repair, Flight Instruction, Car Rental, Restaurant, Vending, Hangar Rental, Tie Down, and Observation Points.
Tenants/Users Reporting: 6 - 10



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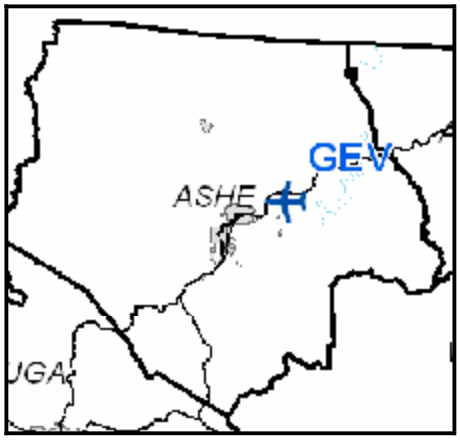
Rutherford County-Marchman Field Economic Impact Summary

Impact Type	Jobs	Economic Impact per Year	Payroll per Year
Direct	**20**	**$4,048,000**	**$1,234,400**
Indirect	**42**	**$6,639,100**	**$259,900**
Induced	**15**	**$1,346,900**	**$197,600**
Total Impact	**77**	**$12,034,000**	**$1,691,900**

The airport also provides the county with a significant source of property tax revenue with 56 based aircraft at a calculated value of $21,350,000, which would result in ad valorem taxes of $132,370 based on the county rate of $0.62 per $100. This study estimated that there were 13,330 visitors to the area that utilized the Rutherford County-Marchman Field.

Ashe County Airport (GEV) — *Ashe County*

Runway: 4,293′ x 75′
Services: General Aviation, Military Aircraft, Helicopter, Aircraft Rental, Jet Fuel, Avgas, Flight Instruction, and Hangar Rental.
Tenants/Users Reporting: < 5



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Ashe County Airport Economic Impact Summary

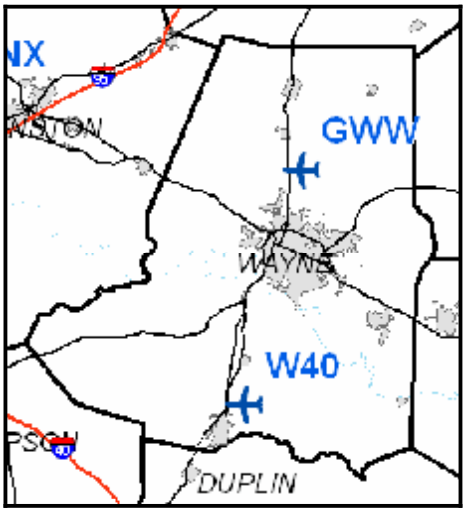
Impact Type	Jobs	Economic Impact per Year	Payroll per Year
Direct	**1,335**	**$100,060,000**	**$39,241,000**
Indirect	**184**	**$14,600,300**	**$5,064,500**
Induced	**254**	**$19,212,400**	**$5,626,400**
Total Impact	**1,773**	**$133,872,700**	**$49,932,000**

The airport also provides the county with a significant source of property tax revenue with 30 based aircraft at a calculated value of $3,150,000, which would result in ad valorem taxes of $19,220 based on the county rate of $0.61 per $100. This study estimated that there were 1,690 visitors to the area that utilized the Ashe County Airport.

Economic Impact of North Carolina Airports – 2006 Study

Goldsboro-Wayne Municipal Airport (GWW) ***Wayne County***

Runway: 5,500′ x 100′
Services: Charter Aircraft, General Aviation, Helicopter, Aircraft Rental, Aircraft Sales, Aircraft Parts Sales, Jet Fuel, Avgas, Aircraft Repair, Flight Instruction, Car Rental, Vending, Hangar Rental, and Tie Down.
Tenants/Users Reporting: 6 - 10



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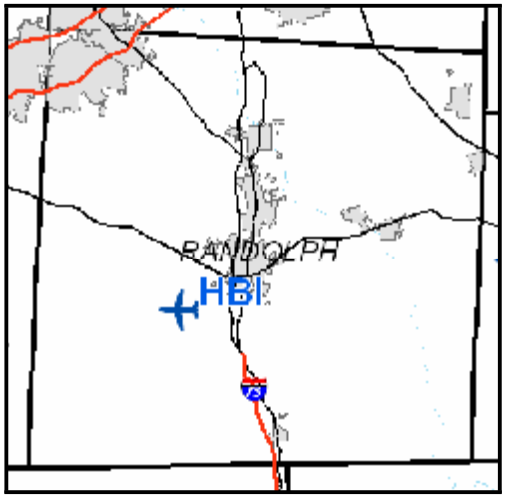
Goldsboro-Wayne Municipal Airport Economic Impact Summary

Impact Type	Jobs	Economic Impact per Year	Payroll per Year
Direct	45	$6,501,900	$1,890,900
Indirect	58	$6,353,200	$723,600
Induced	21	$1,697,400	$369,400
Total Impact	124	$14,552,500	$2,983,800

The airport also provides the county with a significant source of property tax revenue with 43 based aircraft at a calculated value of $15,135,000, which would result in ad valorem taxes of $111,240 based on the county rate of $0.735 per $100. This study estimated that there were 9,510 visitors to the area that utilized the Goldsboro-Wayne Municipal Airport.

Asheboro Municipal Airport (HBI) — *Randolph County*

Runway: 5,501′ x 75′
Services: Charter Aircraft, General Aviation, Helicopter, Aircraft Rental, Aircraft Parts Sales, Jet Fuel, Avgas, Aircraft Repair, Avionics Repair, Flight Instruction, Car Rental, Vending, Hangar Rental, and Tie Down.
Tenants/Users Reporting: 6 - 10



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Asheboro Municipal Airport Economic Impact Summary

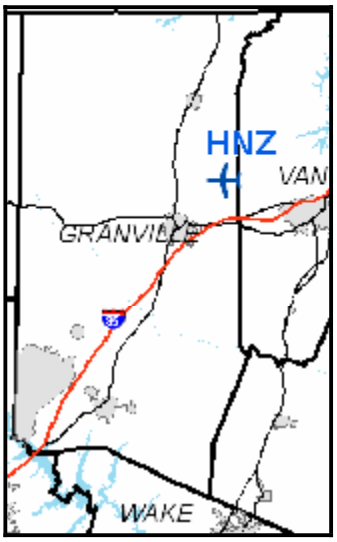
Impact Type	Jobs	Economic Impact per Year	Payroll per Year
Direct	26	$4,251,400	$1,138,100
Indirect	33	$4,885,800	$342,300
Induced	13	$1,109,200	$192,000
Total Impact	72	$10,246,400	$1,672,500

The airport also provides the county with a significant source of property tax revenue with 59 based aircraft at a calculated value of $16,350,000, which would result in ad valorem taxes of $85,840 based on the county rate of $0.525 per $100. This study estimated that there were 9,080 visitors to the area that utilized the Asheboro Municipal Airport.

Economic Impact of North Carolina Airports – 2006 Study

Henderson-Oxford Airport (HNZ) — *Granville County*

Runway: 5,002′ x 100′
Services: General Aviation, Aircraft Parts Sales, Jet Fuel, Avgas, Aircraft Repair, Flight Instruction, Vending, Hangar Rental, and Tie Down.
Tenants/Users Reporting: < 5



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Henderson-Oxford Airport Economic Impact Summary

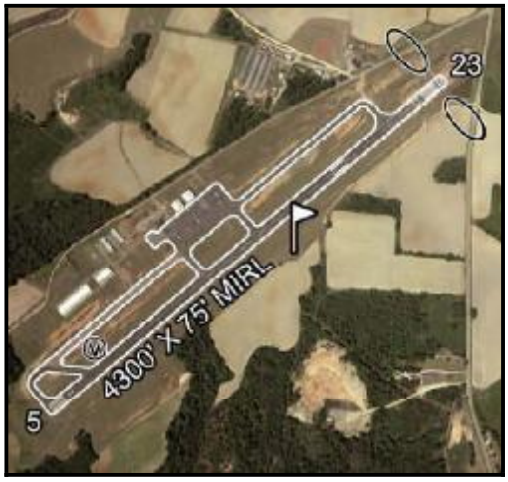
Impact Type	Jobs	Economic Impact per Year	Payroll per Year
Direct	5	$804,400	$226,700
Indirect	32	$5,717,200	$53,500
Induced	8	$733,900	$34,200
Total Impact	45	$7,255,500	$314,400

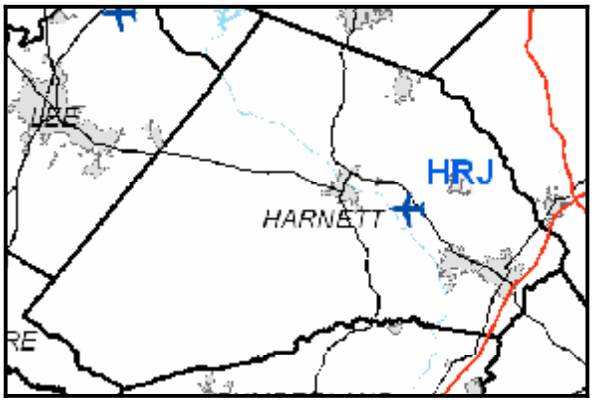
The airport also provides the county with a significant source of property tax revenue with 44 based aircraft at a calculated value of $4,850,000, which would result in ad valorem taxes of $33,950 based on the county rate of $0.70 per $100. This study estimated that there were 13,580 visitors to the area that utilized the Henderson-Oxford Airport.

Economic Impact of North Carolina Airports – 2006 Study

Harnett County Airport (HRJ) ***Harnett County***

Runway: 4,300′ x 75′
Services: Air Taxi, General Aviation, Helicopter, Aircraft Rental, Aircraft Sales, Aircraft Parts Sales, Jet Fuel, Avgas, Aircraft Repair, Flight Instruction, Skydiving, Ballooning, Ultralight, Car Rental, Vending, Hangar Rental, and Tie Down.
Tenants/Users Reporting: 6 - 10





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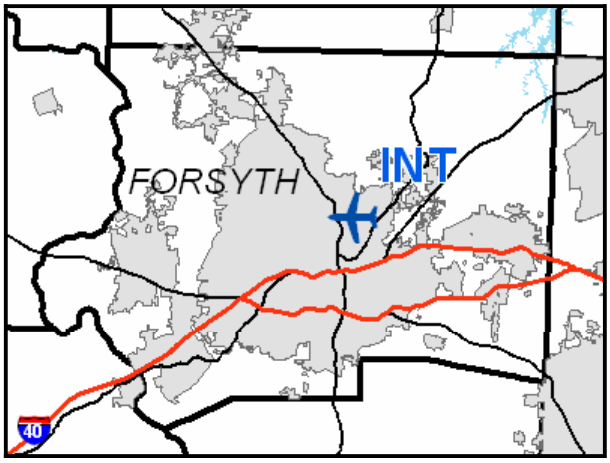
Harnett County Airport Economic Impact Summary

Impact Type	Jobs	Economic Impact per Year	Payroll per Year
Direct	**31**	**$7,391,700**	**$1,348,000**
Indirect	**35**	**$12,170,000**	**$504,600**
Induced	**12**	**$1,549,200**	**$213,700**
Total Impact	**78**	**$21,110,900**	**$2,066,300**

The airport also provides the county with a significant source of property tax revenue with 61 based aircraft at a calculated value of $6,760,000, which would result in ad valorem taxes of $49,690 based on the county rate of $0.735 per $100. This study estimated that there were 30,130 visitors to the area that utilized the Harnett County Airport.

Smith-Reynolds Airport (INT) — *Forsyth County*

Runway: 6,655′ x 150′ and 3,938′ x 150′
Services: Charter Aircraft, Air Taxi, General Aviation, Military Aircraft, Aircraft Rental, Aircraft Sales, Aircraft Parts Sales, Jet Fuel, Avgas, Aircraft Repair, Avionics Repair, Flight Instruction, Car Rental, Vending, Control Tower, Hangar Rental, and Tie Down.
Tenants/Users Reporting: 11 - 15



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Smith-Reynolds Airport Economic Impact Summary

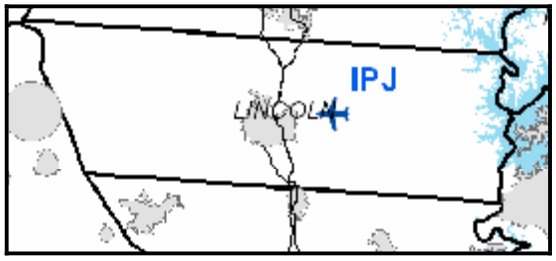
Impact Type	Jobs	Economic Impact per Year	Payroll per Year
Direct	418	$69,852,700	$20,395,700
Indirect	464	$48,511,300	$6,686,300
Induced	237	$18,761,800	$4,147,200
Total Impact	1,119	$137,125,800	$31,229,200

The airport also provides the county with a significant source of property tax revenue with130 based aircraft at a calculated value of $169,000,000, which would result in ad valorem taxes of $955,710 based on the county rate of $0.666 per $100. This study estimated that there were 48,340 visitors to the area that utilized the Smith-Reynolds Airport.

Economic Impact of North Carolina Airports – 2006 Study

Lincoln County Regional Airport (IPJ) *Lincoln County*

Runway: 5,500′ x 100′
Services: General Aviation, Military Aircraft, Helicopter, Aircraft Rental, Aircraft Parts Sales, Jet Fuel, Avgas, Aircraft Repair, Flight Instruction, Car Rental, Restaurant, Vending, Hangar Rental, and Tie Down.
Tenants/Users Reporting: < 5



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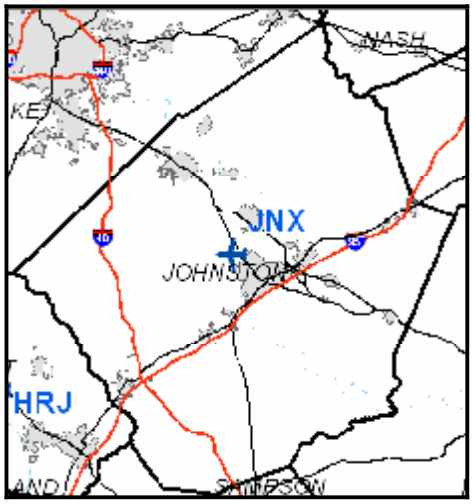
Lincoln County Regional Airport Economic Impact Summary

Impact Type	Jobs	Economic Impact per Year	Payroll per Year
Direct	12	$1,237,300	$460,400
Indirect	8	$6,434,100	$86,800
Induced	3	$955,100	$54,000
Total Impact	23	$8,626,500	$601,200

The airport also provides the county with a significant source of property tax revenue with 65 based aircraft at a calculated value of $14,050,000, which would result in ad valorem taxes of $85,705 based on the county rate of $0.61 per $100. This study estimated that there were 18,090 visitors to the area that utilized the Lincoln County Regional Airport.

Johnston County Airport (JNX) — *Johnston County*

Runway: 5,500′ x 100′
Services: Charter Aircraft, General Aviation, Aircraft Rental, Jet Fuel, Avgas, Aircraft Repair, Avionics Repair, Flight Instruction, Car Rental, Vending, Hangar Rental, and Tie Down.
Tenants/Users Reporting: 6 - 10



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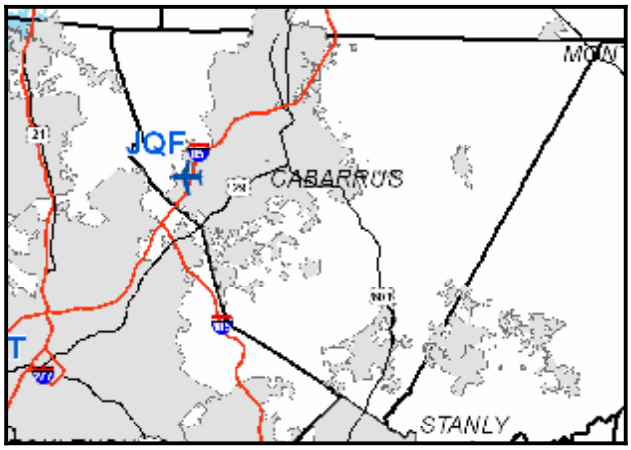
Johnston County Airport Economic Impact Summary

Impact Type	Jobs	Economic Impact per Year	Payroll per Year
Direct	**155**	**$24,425,500**	**$4,424,500**
Indirect	**104**	**$13,513,500**	**$2,002,000**
Induced	**52**	**$4,871,200**	**$1,289,200**
Total Impact	**311**	**$42,810,200**	**$7,715,700**

The airport also provides the county with a significant source of property tax revenue with 95 based aircraft at a calculated value of $15,400,000, which would result in ad valorem taxes of $120,120 based on the county rate of $0.78 per $100. This study estimated that there were 14,620 visitors to the area that utilized the Johnston County Airport.

Concord Regional Airport (JQF) — *Cabarrus County*

Runway: 7,400′ x 100′
Services: Charter Aircraft, General Aviation, Helicopter, Aircraft Rental, Aircraft Sales, Aircraft Parts Sales, Jet Fuel, Avgas, Aircraft Repair, Avionics Repair, Flight Instruction, Car Rental, Vending, Control Tower, Hangar Rental, Tie Down, and Observation Points.
Tenants/Users Reporting: > 20



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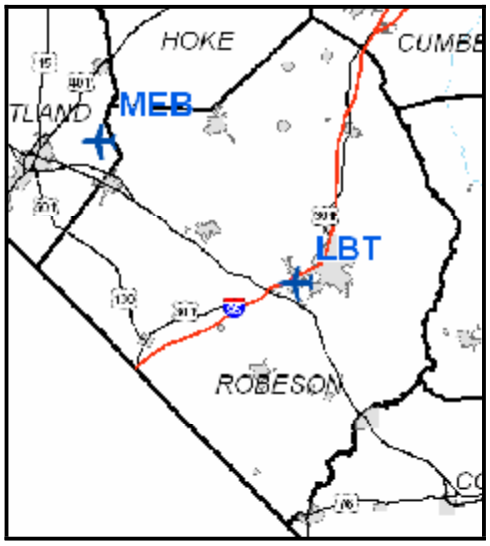
Concord Regional Airport Economic Impact Summary

Impact Type	Jobs	Economic Impact per Year	Payroll per Year
Direct	492	$48,767,300	$24,245,200
Indirect	203	$39,689,700	$4,929,600
Induced	169	$21,546,500	$5,002,500
Total Impact	864	$110,003,500	$34,177,300

The airport also provides the county with a significant source of property tax revenue with 182 based aircraft at a calculated value of $116,050,000, which would result in ad valorem taxes of $731,115 based on the county rate of $0.63 per $100. This study estimated that there were 68,880 visitors to the area that utilized the Concord Regional Airport.

Lumberton Municipal Airport (LBT) — *Robeson County*

Runways: 5,503′ x 150′ and 4,998′ x 150′
Services: General Aviation, Aircraft Rental, Aircraft Parts Sales, Jet Fuel, Avgas, Aircraft Repair, Flight Instruction, Car Rental, Vending, Hangar Rental, and Tie Down.
Tenants/Users Reporting: < 5



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Lumberton Municipal Airport Economic Impact Summary

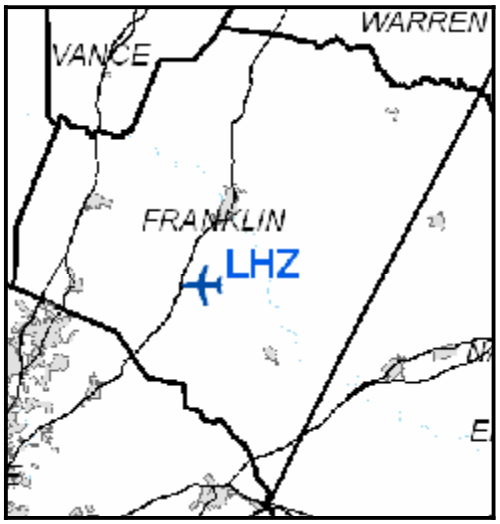
Impact Type	Jobs	Economic Impact per Year	Payroll per Year
Direct	**9**	**$2,683,200**	**$1,568,500**
Indirect	**71**	**$6,738,000**	**$120,100**
Induced	**63**	**$2,431,600**	**$254,000**
Total Impact	**143**	**$11,852,800**	**$1,942,600**

The airport also provides the county with a significant source of property tax revenue with 44 based aircraft at a calculated value of $10,345,000, which would result in ad valorem taxes of $82,760 based on the county rate of $0.80 per $100. This study estimated that there were 12,440 visitors to the area that utilized the Lumberton Municipal Airport.

Economic Impact of North Carolina Airports – 2006 Study

Franklin County Airport (LHZ) ***Franklin County***

Runway: 5,500′ x 100′
Services: General Aviation, Helicopter, Aircraft Rental, Jet Fuel, Avgas, Aircraft Repair, Flight Instruction, Vending, Hangar Rental, Tie Down, and Observation Points.
Tenants/Users Reporting: < 5



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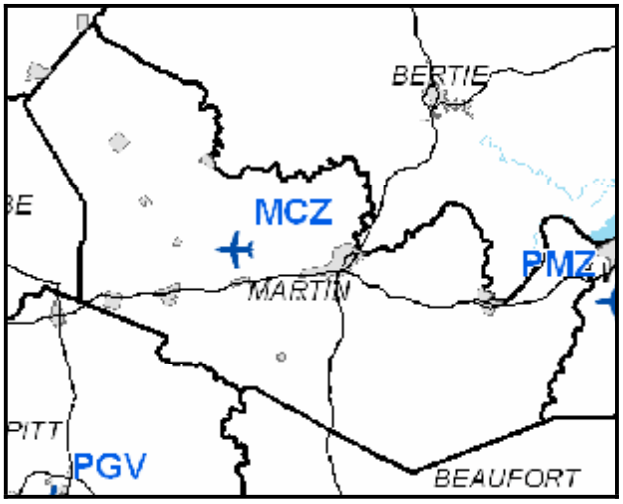
Franklin County Airport Economic Impact Summary

Impact Type	Jobs	Economic Impact per Year	Payroll per Year
Direct	**15**	**$2,526,300**	**$665,200**
Indirect	**21**	**$8,466,600**	**$405,551**
Induced	**9**	**$1,951,400**	**$211,877**
Total Impact	**45**	**$12,944,300**	**$1,282,617**

The airport also provides the county with a significant source of property tax revenue with 73 based aircraft at a calculated value of $15,235,000, which would result in ad valorem taxes of $120,360 based on the county rate of $0.79 per $100. This study estimated that there were 20,690 visitors to the area that utilized the Franklin County Airport.

Martin County Airport (MCZ) — *Martin County*

Runway: 5,000′ x 75′
Services: General Aviation, Avgas, Vending, Hangar Rental, and Tie Down.
Tenants/Users Reporting: < 5



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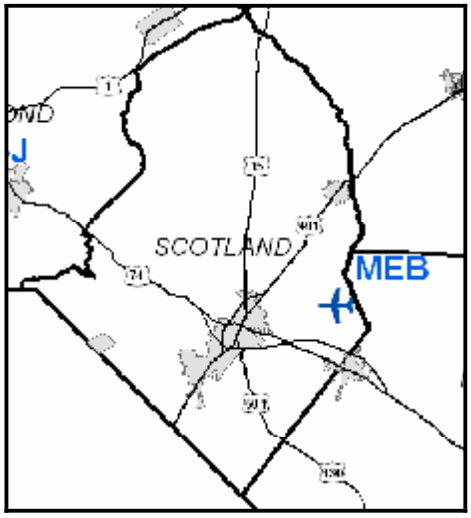
Martin County Airport Economic Impact Summary

Impact Type	Jobs	Economic Impact per Year	Payroll per Year
Direct	**2**	**$113,900**	**$27,200**
Indirect	**24**	**$2,961,000**	**$9,400**
Induced	**2**	**$260,500**	**$3,600**
Total Impact	**28**	**$3,335,400**	**$40,100**

The airport also provides the county with a significant source of property tax revenue with 7 based aircraft at a calculated value of $615,000, which would result in ad valorem taxes of $4,830 based on the county rate of $0.785 per $100. This study estimated that there were 6,600 visitors to the area that utilized the Martin County Airport.

Laurinburg-Maxton Airport (MEB) — *Scotland County*

Runways: 6,489′ x 150′ and 3,753′ x 150′
Services: General Aviation, Military Aircraft, Aircraft Sales, Aircraft Parts Sales, Jet Fuel, Avgas, Aircraft Repair, Flight Instruction, Skydiving, Car Rental, Vending, Hangar Rental, Tie Down, and Observation Points.
Tenants/Users Reporting: 11 - 15



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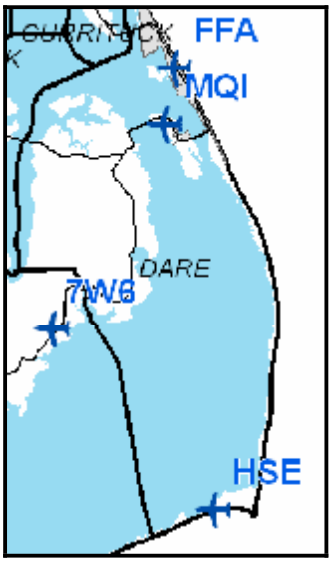
Laurinburg-Maxton Airport Economic Impact Summary

Impact Type	Jobs	Economic Impact per Year	Payroll per Year
Direct	204	$21,040,700	$5,665,000
Indirect	80	$9,870,800	$1,341,400
Induced	38	$3,089,200	$821,000
Total Impact	322	$34,000,700	$7,827,400

The airport also provides the county with a significant source of property tax revenue with 38 based aircraft at a calculated value of $39,600,000, which would result in ad valorem taxes of $435,600 based on the county rate of $1.10 per $100. This study estimated that there were 12,400 visitors to the area that utilized the Laurinburg-Maxton Airport.

Dare County Regional Airport (MQI) — *Dare County*

Runways: 4,300′ x 100′ and 3,303′ x 75′
Services: Charter Aircraft, General Aviation, Helicopter, Aircraft Rental, Jet Fuel, Avgas, Aircraft Repair, Flight Instruction, Car Rental, Vending, Hangar Rental, and Tie Down.
Tenants/Users Reporting: 11 - 15



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Dare County Regional Airport Economic Impact Summary

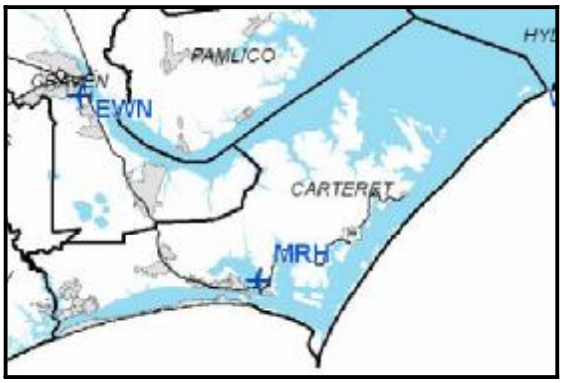
Impact Type	Jobs	Economic Impact per Year	Payroll per Year
Direct	46	$4,699,700	$1,130,800
Indirect	108	$18,174,300	$537,400
Induced	21	$2,479,200	$219,400
Total Impact	175	$25,353,200	$1,887,600

The airport also provides the county with a significant source of property tax revenue with 55 based aircraft at a calculated value of $8,050,000, which would result in ad valorem taxes of $20,125, based on the county rate of $0.25 per $100. This study estimated that there were 37,710 visitors to the area that utilized the Dare County Regional Airport.

Economic Impact of North Carolina Airports – 2006 Study

Michael J. Smith Field (MRH) *Carteret County*

Runways: 4,249′ x 100′, 4,191′ x 150′, and 4,000′ x 100′
Services: Charter Aircraft, General Aviation, Aircraft Rental, Aircraft Parts Sales, Jet Fuel, Avgas, Aircraft Repair, Flight Instruction, Car Rental, Vending, Hangar Rental, and Tie Down.
Tenants/Users Reporting: 6 - 10



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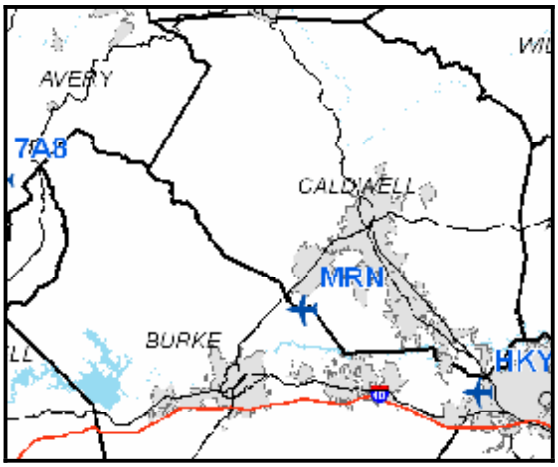
Michael J. Smith Field Economic Impact Summary

Impact Type	Jobs	Economic Impact per Year	Payroll per Year
Direct	**256**	**$25,505,600**	**$4,988,100**
Indirect	**158**	**$12,896,300**	**$1,245,700**
Induced	**36**	**$2,335,600**	**$568,700**
Total Impact	**450**	**$40,737,500**	**$6,802,400**

The airport also provides the county with a significant source of property tax revenue with 72 based aircraft at a calculated value of $13,250,000, which would result in ad valorem taxes of $55,650 based on the county rate of $0.42 per $100. This study estimated that there were 10,130 visitors to the area that utilized the Michael J. Smith Field.

Morganton-Lenoir Airport (MRN) — *Caldwell County*

Runway: 5,500′ x 75′
Services: Charter Aircraft, General Aviation, Military Aircraft, Helicopter, Aircraft Rental, Aircraft Sales, Aircraft Parts Sales, Jet Fuel, Avgas, Aircraft Repair, Avionics Repair, Flight Instruction, Ultralight, Car Rental, Vending, Hangar Rental, Tie Down, and Observation Points.
Tenants/Users Reporting: < 5



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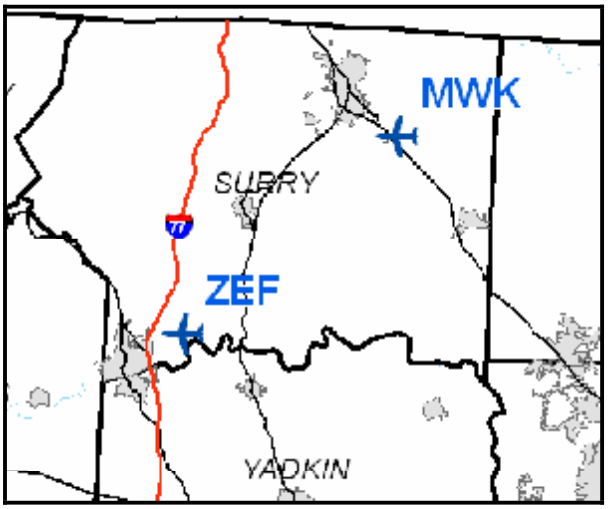
Morganton-Lenoir Airport Economic Impact Summary

Impact Type	Jobs	Economic Impact per Year	Payroll per Year
Direct	10	$1,894,100	$516,300
Indirect	33	$7,336,900	$193,600
Induced	11	$1,331,000	$111,000
Total Impact	54	$10,562,000	$821,000

The airport also provides the county with a significant source of property tax revenue with 43 based aircraft at a calculated value of $9,900,000, which would result in ad valorem taxes of $53,450 based on the county rate of $0.5399 per $100. This study estimated that there were 16,910 visitors to the area that utilized the Morganton-Lenoir Airport.

Mount Airy / Surry County Airport (MWK) — *Surry County*

Runway: 4,300′ x 75′
Services: General Aviation, Aircraft Rental, Aircraft Sales, Aircraft Parts Sales, Jet Fuel, Avgas, Aircraft Repair, Avionics Repair, Flight Instruction, Ultralight, Car Rental, Vending, Hangar Rental, Tie Down, and Observation Points.
Tenants/Users Reporting: 6 - 10



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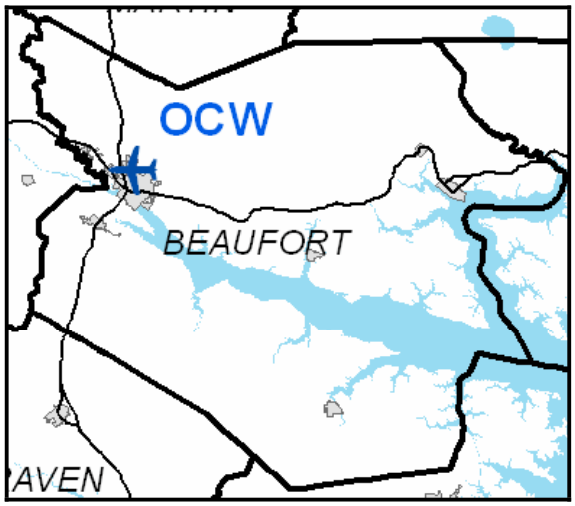
Mount Airy / Surry County Airport Economic Impact Summary

Impact Type	Jobs	Economic Impact per Year	Payroll per Year
Direct	2,005	$273,195,400	$76,875,700
Indirect	704	$72,428,100	$19,493,600
Induced	538	$41,374,800	$12,505,600
Total Impact	3,247	$386,998,300	$108,875,000

The airport also provides the county with a significant source of property tax revenue with 48 based aircraft at a calculated value of $22,830,000, which would result in ad valorem taxes of $143,830 based on the county rate of $0.63 per $100. This study estimated that there were 12,080 visitors to the area that utilized the Mount Airy / Surry County Airport.

Warren Field (OCW) ***Beaufort County***

Runways: 5,000′ x 150′, 5,000′ x 100′, and 4,000′ x 150′
Services: General Aviation, Jet Fuel, Avgas, Aircraft Repair, Flight Instruction, Vending, Hangar Rental, and Tie Down.
Tenants/Users Reporting: < 5



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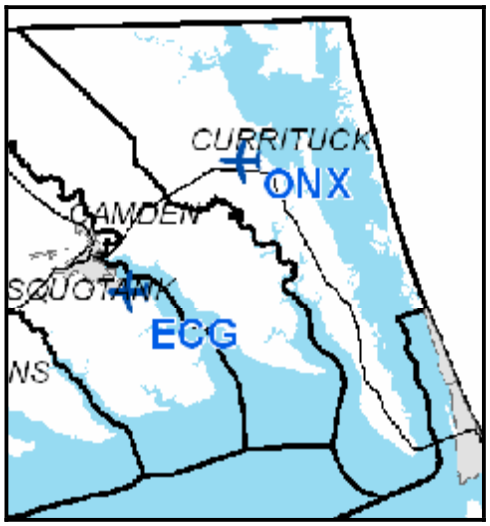
Warren Field Economic Impact Summary

Impact Type	Jobs	Economic Impact per Year	Payroll per Year
Direct	**5**	**$832,300**	**$180,100**
Indirect	**15**	**$4,785,600**	**$50,300**
Induced	**4**	**$556,900**	**$31,300**
Total Impact	**24**	**$6,174,800**	**$261,800**

The airport also provides the county with a significant source of property tax revenue with 32 based aircraft at a calculated value of $3,500,000, which would result in ad valorem taxes of $21,000 based on the county rate of $0.60 per $100. This study estimated that there were 12,900 visitors to the area that utilized the Warren Field.

Currituck County Airport (ONX) — *Currituck County*

Runway: 5,500′ x 150′
Services: Air Taxi, General Aviation, Jet Fuel, Avgas, Flight Instruction, Ultralight, Vending, Hangar Rental, and Tie Down.
Tenants/Users Reporting: < 5



Economic impacts consist of three types: direct, indirect, and induced impacts. Direct impacts result from economic activities that result from tenants and other business users who have a direct involvement with the airport. Indirect impacts result from economic activities that typically take place away from the airport, but are still attributable to the airport. Induced impacts result from successive spending and are the multiplier effects of the direct and indirect impacts.

Currituck County Airport Economic Impact Summary

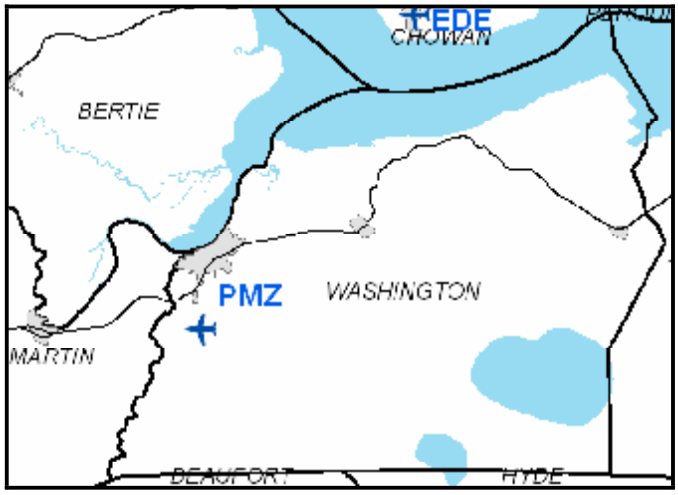
Impact Type	Jobs	Economic Impact per Year	Payroll per Year
Direct	**73**	**$13,727,800**	**$3,755,400**
Indirect	**43**	**$8,769,400**	**$823,000**
Induced	**22**	**$1,955,400**	**$383,200**
Total Impact	**138**	**$24,452,600**	**$4,961,700**

The airport also provides the county with a significant source of property tax revenue with 33 based aircraft at a calculated value of $3,580,000, which would result in ad valorem taxes of $11,456, based on the county rate of $0.32 per $100. This study estimated that there were 18,810 visitors to the area that utilized the Currituck County Airport.

Economic Impact of North Carolina Airports – 2006 Study

Plymouth Municipal Airport (PMZ) ***Washington County***

Runway: 3,700′ x 75′
Services: General Aviation, Military Aircraft, Helicopter, Aircraft Rental, Jet Fuel, Avgas, Flight Instruction, Ultralight, Vending, Hangar Rental, Tie Down, and Observation Points.
Tenants/Users Reporting: < 5



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Plymouth Municipal Airport Economic Impact Summary

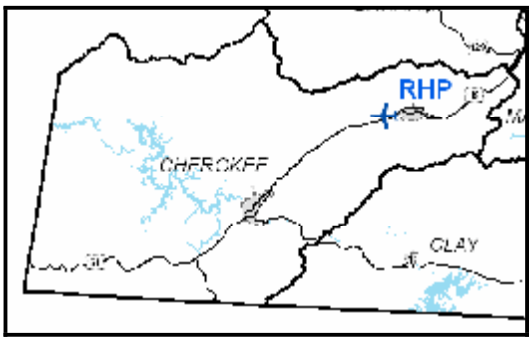
Impact Type	Jobs	Economic Impact per Year	Payroll per Year
Direct	**30**	**$999,500**	**$646,600**
Indirect	**11**	**$1,746,000**	**$42,900**
Induced	**3**	**$364,300**	**$42,200**
Total Impact	**44**	**$3,109,800**	**$731,700**

The airport also provides the county with a significant source of property tax revenue with 14 based aircraft at a calculated value of $1,700,000, which would result in ad valorem taxes of $13,430 based on the county rate of $0.79 per $100. This study estimated that there were 4,140 visitors to the area that utilized the Plymouth Municipal Airport.

Economic Impact of North Carolina Airports – 2006 Study

Andrews-Murphy Airport (RHP) — *Cherokee County*

Runway: 5,500′ x 75′
Services: Charter Aircraft, General Aviation, Military Aircraft, Aircraft Rental, Aircraft Sales, Aircraft Parts Sales, Jet Fuel, Avgas, Aircraft Repair, Flight Instruction, Car Rental, Vending, Hangar Rental, and Tie Down.
Tenants/Users Reporting: < 5



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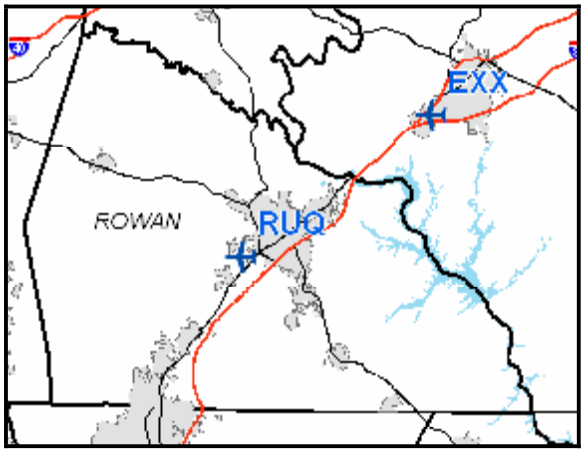
Andrews-Murphy Airport Economic Impact Summary

Impact Type	Jobs	Economic Impact per Year	Payroll per Year
Direct	41	$3,696,600	$1,692,900
Indirect	45	$3,120,800	$163,400
Induced	20	$1,342,400	$249,700
Total Impact	106	$8,159,800	$2,106,000

The airport also provides the county with a significant source of property tax revenue with 56 based aircraft at a calculated value of $7,850,000, which would result in ad valorem taxes of $40,820 based on the county rate of $0.52 per $100. This study estimated that there were 2,630 visitors to the area that utilized the Andrews-Murphy Airport.

Rowan County Airport (RUQ) — *Rowan County*

Runway: 5,500′ x 100′
Services: Charter Aircraft, General Aviation, Military Aircraft, Helicopter, Aircraft Rental, Aircraft Parts Sales, Jet Fuel, Avgas, Aircraft Repair, Avionics Repair, Flight Instruction, Hangar Rental, and Tie Down.
Tenants/Users Reporting: 6 - 10



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Rowan County Airport Economic Impact Summary

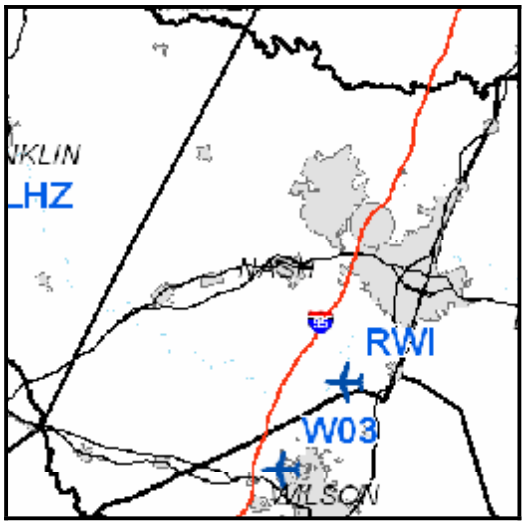
Impact Type	Jobs	Economic Impact per Year	Payroll per Year
Direct	131	$11,314,500	$4,211,900
Indirect	67	$8,231,600	$929,400
Induced	34	$3,369,400	$776,900
Total Impact	232	$22,915,500	$5,918,200

The airport also provides the county with a significant source of property tax revenue with 99 based aircraft at a calculated value of $35,535,000, which would result in ad valorem taxes of $223,871 based on the county rate of $0.63 per $100. This study estimated that there were 12,690 visitors to the area that utilized the Rowan County Airport.

Economic Impact of North Carolina Airports – 2006 Study

Rocky Mount-Wilson Regional Airport (RWI) ***Nash County***

Runway: 7,100′ x 150′
Services: Charter Aircraft, Air Taxi, General Aviation, Military Aircraft, Aircraft Rental, Aircraft Sales, Aircraft Parts Sales, Jet Fuel, Avgas, Aircraft Repair, Avionics Repair, Flight Instruction, Car Rental, Hangar Rental, Tie Down, and Observation Points.
Tenants/Users Reporting: < 5



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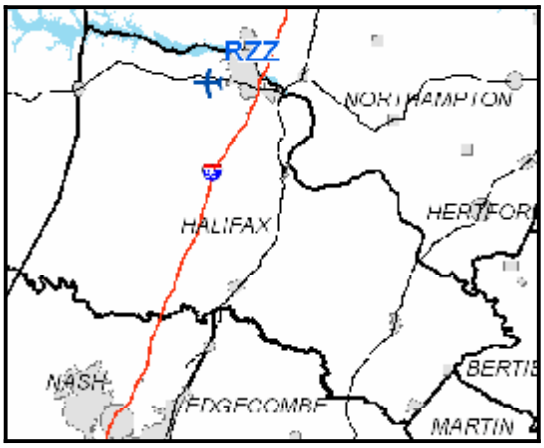
Rocky Mount-Wilson Regional Airport Economic Impact Summary

Impact Type	Jobs	Economic Impact per Year	Payroll per Year
Direct	44	$10,159,200	$3,070,700
Indirect	116	$13,516,500	$786,800
Induced	60	$3,354,500	$567,200
Total Impact	220	$27,030,200	$4,424,700

The airport also provides the county with a significant source of property tax revenue with 28 based aircraft at a calculated value of $8,550,000, which would result in ad valorem taxes of $56,430 based on the county rate of $0.66 per $100. This study estimated that there were 20,000 visitors to the area that utilized the Rocky Mount-Wilson Regional Airport.

Halifax County Airport (RZZ) — *Halifax County*

Runway: 4,006′ x 75′
Services: General Aviation, Military Aircraft, Jet Fuel, Avgas, Flight Instruction, Car Rental, Hangar Rental, and Tie Down.
Tenants/Users Reporting: < 5



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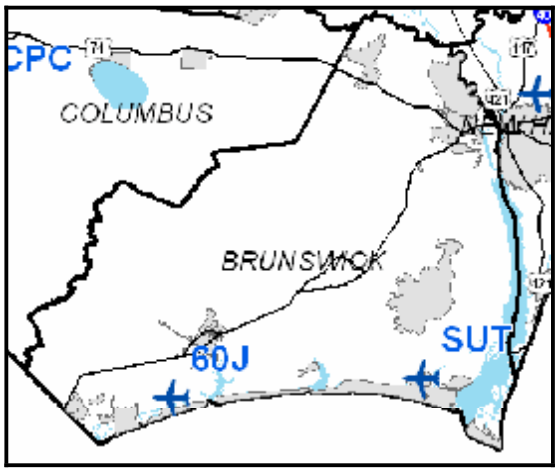
Halifax County Airport Economic Impact Summary

Impact Type	Jobs	Economic Impact per Year	Payroll per Year
Direct	2	$219,200	$110,700
Indirect	42	$8,904,500	$12,600
Induced	13	$1,653,800	$13,800
Total Impact	57	$10,777,500	$137,100

The airport also provides the county with a significant source of property tax revenue with 29 based aircraft at a calculated value of $3,350,000, which would result in ad valorem taxes of $28,980 based on the county rate of $0.865 per $100. This study estimated that there were 21,920 visitors to the area that utilized the Halifax County Airport.

Brunswick County Airport (SUT) — *Brunswick County*

Runway: 4,000′ x 100′
Services: Charter Aircraft, General Aviation, Aircraft Rental, Aircraft Parts Sales, Jet Fuel, Avgas, Aircraft Repair, Flight Instruction, Skydiving, Ultralight, Car Rental, Vending, Hangar Rental, and Tie Down.
Tenants/Users Reporting: 11-15



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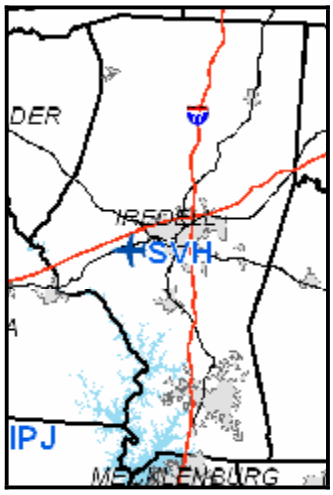
Brunswick County Airport Economic Impact Summary

Impact Type	Jobs	Economic Impact per Year	Payroll per Year
Direct	151	$12,502,700	$4,069,600
Indirect	81	$10,737,400	$786,900
Induced	29	$2,938,500	$559,900
Total Impact	261	$26,178,600	$5,416,400

The airport also provides the county with a significant source of property tax revenue with 39 based aircraft at a calculated value of $12,445,000, which would result in ad valorem taxes of $67,200 based on the county rate of $0.54 per $100. This study estimated that there were 17,100 visitors to the area that utilized the Brunswick Airport.

Statesville Municipal Airport (SVH) — *Iredell County*

Runway: 7,000′ x 100′
Services: Charter Aircraft, General Aviation, Aircraft Rental, Aircraft Sales, Aircraft Parts Sales, Jet Fuel, Avgas, Aircraft Repair, Flight Instruction, Car Rental, Vending, Hangar Rental, Tie Down, and Observation Points.
Tenants/Users Reporting: 11 - 15



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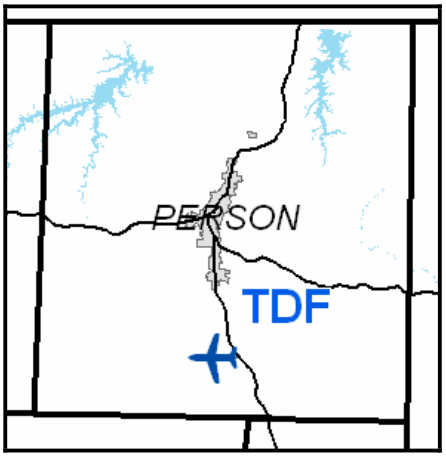
Statesville Municipal Airport Economic Impact Summary

Impact Type	Jobs	Economic Impact per Year	Payroll per Year
Direct	220	$21,850,900	$7,670,600
Indirect	184	$17,296,400	$2,321,800
Induced	91	$7,787,200	$1,853,400
Total Impact	495	$46,934,500	$11,845,800

The airport also provides the county with a significant source of property tax revenue with 72 based aircraft at a calculated value of $81,500,000, which would result in ad valorem taxes of $354,525 based on the county rate of $0.435 per $100. This study estimated that there were 20,170 visitors to the area that utilized the Statesville Municipal Airport.

Person County Airport (TDF) ***Person County***

Runway: 6,000′ x 100′
Services: N/A
Tenants/Users Reporting: < 5



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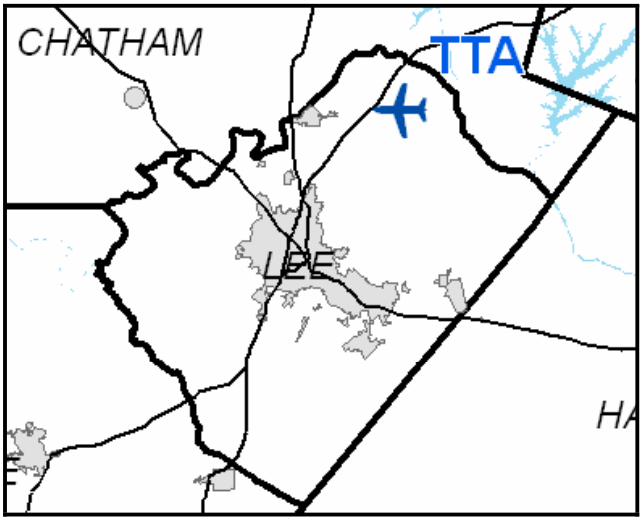
Person County Airport Economic Impact Summary

Impact Type	Jobs	Economic Impact per Year
Direct	**0**	**$0**
Indirect	**77**	**$5,113,900**
Induced	**0**	**$0**
Total Impact	**77**	**$5,113,900**

The airport also provides the county with a significant source of property tax revenue with 45 based aircraft at a calculated value of $5,400,000, which would result in ad valorem taxes of $35,100 based on the county rate of $0.65 per $100.

Sanford-Lee County Airport (TTA) *Lee County*

Runway: 6,500′ x 100′
Services: General Aviation, Helicopter, Aircraft Rental, Aircraft Sales, Aircraft Parts Sales, Jet Fuel, Avgas, Aircraft Repair, Avionics Repair, Flight Instruction, Car Rental, Hangar Rental, Tie Down, and Observation Points.
Tenants/Users Reporting: 6- 10



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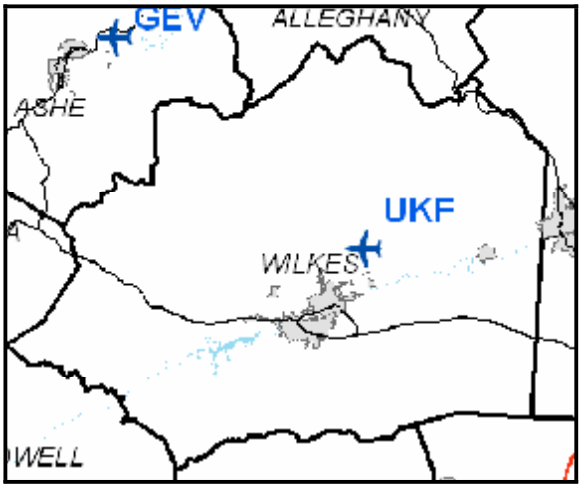
Sanford-Lee County Airport Economic Impact Summary

Impact Type	Jobs	Economic Impact per Year	Payroll per Year
Direct	1,023	$205,818,000	$50,790,600
Indirect	292	$35,649,500	$12,804,700
Induced	420	$38,802,600	$12,650,100
Total Impact	1,735	$280,270,100	$76,245,400

The airport also provides the county with a significant source of property tax revenue with 87 based aircraft at a calculated value of $22,650,000, which would result in ad valorem taxes of $178,935 based on the county rate of $0.79 per $100. This study estimated that there were 7,310 visitors to the area that utilized the Sanford-Lee County Airport.

Wilkes County Airport (UKF) — *Wilkes County*

Runway: 6,200′ x 100′
Services: Charter Aircraft, General Aviation, Military Aircraft, Aircraft Parts Sales, Jet Fuel, Avgas, Aircraft Repair, Car Rental, Vending, Hangar Rental, and Tie Down.
Tenants/Users Reporting: 6 - 10



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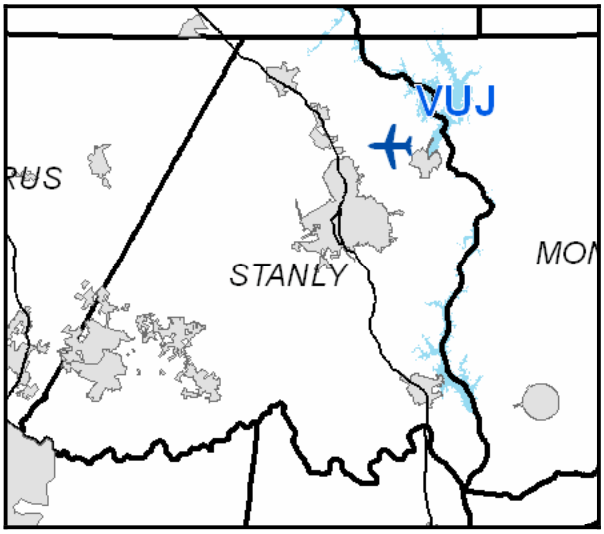
Wilkes County Airport Economic Impact Summary

Impact Type	Jobs	Economic Impact per Year	Payroll per Year
Direct	**48**	**$4,362,000**	**$1,748,800**
Indirect	**26**	**$4,513,000**	**$213,300**
Induced	**8**	**$874,100**	**$144,500**
Total Impact	**82**	**$9,749,100**	**$2,106,600**

The airport also provides the county with a significant source of property tax revenue with 30 based aircraft at a calculated value of $17,700,000, which would result in ad valorem taxes of $107,970 based on the county rate of $0.61 per $100. This study estimated that there were 9,560 visitors to the area that utilized the Wilkes County Airport.

Stanly County Airport (VUJ) — *Stanly County*

Runways: 5,500′ x 100′ and 3,500′ x 75′
Services: General Aviation, Military Aircraft, Jet Fuel, Avgas, Aircraft Repair, Car Rental, Vending, Control Tower, Hangar Rental, Tie Down, and Observation Points.
Tenants/Users Reporting: 6 - 10



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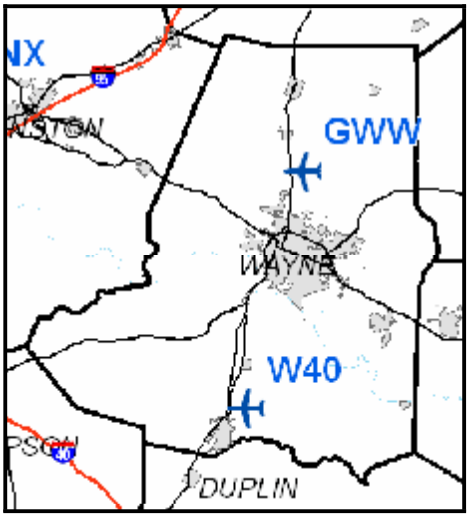
Stanly County Airport Economic Impact Summary

Impact Type	Jobs	Economic Impact per Year	Payroll per Year
Direct	103	$10,124,500	$3,917,800
Indirect	35	$9,329,900	$742,300
Induced	28	$3,209,400	$643,200
Total Impact	166	$22,663,800	$5,303,200

The airport also provides the county with a significant source of property tax revenue with 25 based aircraft at a calculated value of $2,950,000, which would result in ad valorem taxes of $19,030 based on the county rate of $0.645 per $100. This study estimated that there were 20,570 visitors to the area that utilized the Stanly County Airport.

Mount Olive Municipal (W40) — *Wayne County*

Runway: 3,697′ x 75′
Services: Charter Aircraft, General Aviation, Aircraft Rental, Aircraft Sales, Aircraft Parts Sales, Avgas, Aircraft Repair, Flight Instruction, Car Rental, Vending, Hangar Rental, Tie Down, and Observation Points.
Tenants/Users Reporting: < 5



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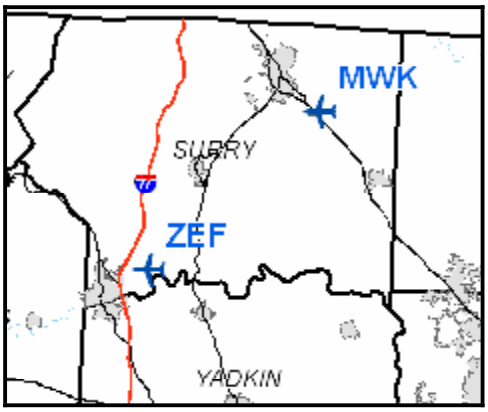
Mount Olive Municipal Airport Economic Impact Summary

Impact Type	Jobs	Economic Impact per Year	Payroll per Year
Direct	7	$980,600	$283,200
Indirect	18	$2,495,600	$109,700
Induced	5	$496,000	$60,000
Total Impact	30	$3,972,200	$452,800

The airport also provides the county with a significant source of property tax revenue with 13 based aircraft at a calculated value of $1,600,000, which would result in ad valorem taxes of $11,760 based on the county rate of $0.735 per $100. This study estimated that there were 4,990 visitors to the area that utilized the Mount Olive Municipal Airport.

Elkin Municipal Airport (ZEF) — *Surry County*

Runway: 4,003′ x 75′
Services: General Aviation, Jet Fuel, Avgas, Vending, Hangar Rental, and Tie Down.
Tenants/Users Reporting: < 5



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Elkin Municipal Airport Economic Impact Summary

Impact Type	Jobs	Economic Impact per Year	Payroll per Year
Direct	87	$23,378,800	$3,356,000
Indirect	80	$8,677,500	$1,554,300
Induced	37	$2,402,300	$663,600
Total Impact	204	$34,458,600	$5,573,900

The airport also provides the county with a significant source of property tax revenue with 18 based aircraft at a calculated value of $2,250,000, which would result in ad valorem taxes of $14,180 based on the county rate of $0.63 per $100. This study estimated that there were 7,500 visitors to the area that utilized the Elkin Municipal Airport.