

# ***ESTIMATING THE ECONOMIC IMPACT OF A NEW ORANGE COUNTY GENERAL AVIATION AIRPORT***



## **WORKING PAPER #1**

*Prepared by:*

**TALBERT & BRIGHT**  
Engineering & Planning Consultants

*Prepared for:*

**The University of North Carolina at Chapel Hill Foundation Inc.**

*In Consultation with:*

**Institute for Transportation Education and Research at N.C. State University**

**and the**

**North Carolina Dept. of Transportation, Division of Aviation**

**May 2008**

# **ESTIMATING THE ECONOMIC IMPACT OF A NEW ORANGE COUNTY GENERAL AVIATION AIRPORT**

## **WORKING PAPER #1:**

- Existing Facilities and Users at Horace Williams Airport
- Characteristics of an 'Unconstrained' General Aviation Airport
- Estimated Economic Impact of a New Orange County Airport Based on the 2006 ITRE/North Carolina Division of Aviation Study  
"Economic Impact of Airports in North Carolina"

**Prepared by:**

Talbert & Bright, Inc.

**Prepared for:**

The University of North Carolina at Chapel Hill Foundation Inc.

**In Consultation with:**

Institute for Transportation Research and Education at N.C. State University  
and the  
North Carolina Dept. of Transportation, Division of Aviation

May 15, 2008



### **Executive Summary – Working Paper #1**

While of significant benefit to the AHEC program and several local private users, the Horace Williams Airport is constrained both in terms of its facilities and the restrictions that are placed on non-University users. Only 27 of the 114 aircraft registered in Orange County are based at the Horace Williams Airport, which is a lower ratio than 95% of the counties in North Carolina with general aviation airports. This is an indication that the airport is not able to support or attract non-University users due to its limitations. Even with these constraints, the “2006 Economic Impact of North Carolina’s Publicly Owned Airports” prepared by the Institute for Transportation Research and Education (ITRE) at N.C. State University indicated that the Horace Williams Airport had an annual economic impact of \$10,254,900 to the community. ITRE considers this a conservative estimate due to the limited data on which the economic impact was calculated. Based on discussions with ITRE, this impact did not include the impact from existing private users (based and transient) nor did it include the AHEC program income directly related to Medical Air Operations.

A new ‘unconstrained’ Orange County Airport that could support new business users (both based and transient) and that would support and enhance AHEC’s operations would be expected to have a greater economic impact to Orange County than the Horace Williams Airport. In this first working paper, the data generated for the 2006 North Carolina airports economic impact study was used to prepare a preliminary estimate of the potential economic impact of a new ‘unconstrained’ general aviation airport in Orange County. Based on the analysis described in this report, a new Orange County airport would be expected to have an annual economic impact of **\$40,000,000 to \$53,000,000 per year**. This does not include potential tax revenue from based aircraft. Additional information is being gathered at this time from existing users of the Horace Williams Airport and potential future users of a new airport in order to refine this estimate. The results will be reported in a future Working Paper or Papers.



## Table of Contents

1. Horace Williams Airport – Existing Conditions and Users .....	Page 1
2. Characteristics of an Unconstrained “Business Class” General Aviation Airport.....	Page 3
3. Information Being Gathered to Estimate the Economic Impact of a New Orange County Airport .....	Page 7
4. Results of the 2006 North Carolina Airports Economic Impact Study .....	Page 8
5. Preliminary Estimated Economic Impact of a New Orange County Airport.....	Page 12

## Figures

<u>Figure 1:</u> AHEC Locations .....	Page 1
<u>Figure 2:</u> NCDOA Airport Groups (Red, Blue, Green).....	Page 7

## Tables

<u>Table 1:</u> Standard Development to Accommodate Business Jet Aircraft Per FAA Southern Region Guidance .....	Page 4
<u>Table 2:</u> Annual Economic Impact of North Carolina General Aviation Airports From 2006 ITRE/NCDOA Report “Economic Impact of Airports in North Carolina” .....	Page 10
<u>Table 3:</u> Counties with Populations Similar to Orange County .....	Page 14
<u>Table 4:</u> State-Wide Rank of Orange County and 56 North Carolina Counties with General Aviation Airports for Ten Economic Criteria .....	Page 15
<u>Table 5:</u> Population - Counties in North Carolina with General Aviation Airports.....	Page 19
<u>Table 6:</u> Number of Employees - Counties with General Aviation Airport in NPIAS ..	Page 21
<u>Table 7:</u> Unemployment Rate - Counties with General Aviation Airports in NPIAS...	Page 23
<u>Table 8:</u> High School Graduates as a Percent of Population - Counties with General Aviation Airports in NPIAS .....	Page 25
<u>Table 9:</u> College Graduates as a Percent of Population - Counties with General Aviation Airports in NPIAS.....	Page 27
<u>Table 10:</u> Median Household Income - Counties with General Aviation Airports in NPIAS .....	Page 29
<u>Table 11:</u> Per Capita Personal Income - Counties with General Aviation Airports in NPIAS .....	Page 31
<u>Table 12:</u> Median House Value - Counties with General Aviation Airports in NPIAS .....	Page 33
<u>Table 13:</u> Percentage of Population in Poverty - Counties with General Aviation Airports in NPIAS .....	Page 35
<u>Table 14:</u> Average Weekly Wage - Counties with General Aviation Airports in NPIAS .....	Page 37
<u>Table 15:</u> North Carolina General Aviation Airports Located in Counties that Rank Above the State-Wide Median for 10 of 10 Economic Indicators.....	Page 38



### Charts

<b><u>Chart 1:</u></b>	Population of Counties with General Aviation Airports in NPIAS .....	Page 18
<b><u>Chart 2:</u></b>	Number of Employees - Counties with General Aviation Airports in NPIAS .....	Page 20
<b><u>Chart 3:</u></b>	Unemployment Rate - Counties with General Aviation Airports in NPIAS .....	Page 22
<b><u>Chart 4:</u></b>	High School Graduates as a Percent of Population - Counties with General Aviation Airports in NPIAS .....	Page 24
<b><u>Chart 5:</u></b>	College Graduates as a Percent of Population - Counties with General Aviation Airports in NPIAS .....	Page 26
<b><u>Chart 6:</u></b>	Median Household Income - Counties with General Aviation Airports in NPIAS .....	Page 28
<b><u>Chart 7:</u></b>	Per Capita Personal Income - Counties with General Aviation Airports in NPIAS .....	Page 30
<b><u>Chart 8:</u></b>	Median House Value - Counties with General Aviation Airports in NPIAS .....	Page 32
<b><u>Chart 9:</u></b>	Percentage of Population in Poverty - Counties with General Aviation Airports in NPIAS .....	Page 34
<b><u>Chart 10:</u></b>	Average Weekly Wage - Counties with General Aviation Airports in NPIAS .....	Page 36

### Appendix A

“2006 Economic Impact of North Carolina’s Publicly-Owned Airports”

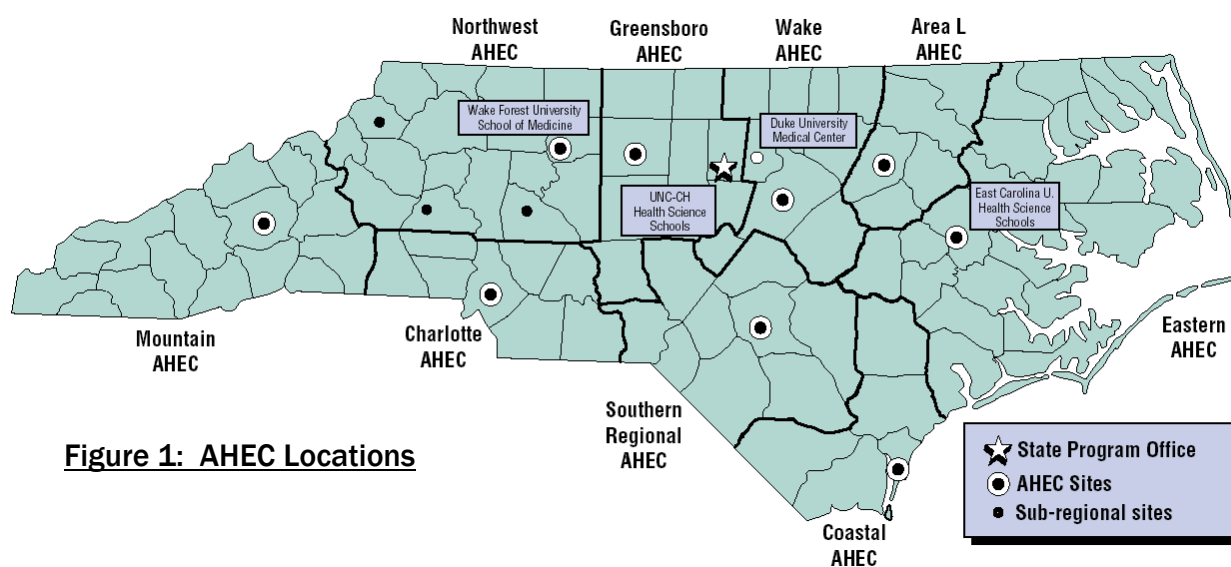


## 1. Horace Williams Airport – Existing Conditions and Users

The Horace Williams Airport (Horace Williams) is owned by the University of North Carolina. The facilities and services available at Horace Williams are relatively limited and UNC-CH has imposed numerous restrictions on the airport's use, primarily in response to community concerns. Horace Williams is not included in FAA's National Plan of Integrated Airport Systems (NPIAS) and is therefore not eligible to receive federal Airport Improvement Program funding.

Existing Users. With 114 registered aircraft, **Orange County ranks 12th in the state compared to all counties, excluding those with air carrier airports, in the number of registered aircraft** per the FAA Aircraft Registry database. Orange County actually has more registered aircraft than two counties with air carrier airports. UNC-CH reports that there are an estimated 27 aircraft based at Horace Williams Airport. **This is a lower ratio of based aircraft to registered aircraft than 95% of the North Carolina counties with general aviation airports, indicating that Horace Williams is not able to support or attract non-University users due to its limitations.** Of the 27 based aircraft, six are owned by AHEC's Medical Air Operations and the remaining 21 aircraft are privately owned.

Horace Williams is the base for AHEC's Medical Air Operations, which transports health science faculty, medical residents, health science students, and University officials throughout the state. Medical Air's fleet of six twin-engine Beech Barons are flown by seven full-time and one part-time professional pilots. In 2005-2006, Medical Air logged more than 526,000 passenger miles, transporting 4,114 passengers to more than 83 locations. These included the nine AHEC centers throughout the state, community hospitals, health departments and universities. In 2006, AHEC reported that Medical Air had logged approximately 18 million passenger miles since its inception in 1968. Medical Air flies between five and seven flights per day, averaging one to three passengers per flight.



**Figure 1: AHEC Locations**



Faculty physicians from both UNC and Duke University use Medical Air Operations to conduct specialty clinics in areas without access to such care. These clinics serve approximately 18,000 patients per year. Many of these patients have life threatening diseases and conditions. Because of Medical Air Operations, AHEC reports that children and families are able to remain in home communities/regions and still receive state of the art care. Approximately 400 continuing education programs taught by faculty flying on Medical Air are attended by over 12,000 health professionals per year. Besides users directly associated with AHEC, other UNC-CH users of Horace Williams include Administration and Athletic Department personnel.

Information on other privately-owned based aircraft and users of Horace Williams is still being gathered. However, based on the limited information to date, existing business users include Blue Rose Capital Partners, the James River Group, Carolina Conservation Resource Management, Vilcom, Environmental Quality Control, and Skysite Aerial Photography. These users indicate that having an airport in Orange County is 'very important' or 'essential' to their business.

**Existing Facilities.** The runway at Horace Williams is 4005' long x 75' wide. The threshold on the east end has been displaced 730' due to tree obstructions off UNC property, resulting in only 3,275' available for landing on Runway 27. There is no parallel taxiway and there are no taxiway turnarounds. The current Airport Layout Plan identifies the need to acquire additional land and avigation easement in order to clear tree obstructions and control the Runway Protection Zone from incompatible uses. Numerous residences are located within 500' of the centerline of the runway.

Facilities and services available at Horace Williams are relatively limited. Hangar space is available for approximately 7-10 aircraft, with all hangars currently occupied. Minimal ramp area is available for transient users, who often must park on the grass as the ramp fills up. Aircraft maintenance is not available at Horace Williams, and no line services are provided. In response primarily to community concerns about aircraft noise, UNC-CH has instituted a number of restrictions on the airport's use. These restrictions include:

- Jet aircraft are not allowed to use Horace Williams except for University users transporting persons on official University business.
- Aircraft over 12,500 pounds in weight are not allowed to use the airport.
- Practice approaches and landings are only allowed with prior permission.
- No recreational or training flights are allowed from 9:00 p.m. to 6:00 a.m.
- No transient aircraft are allowed from 9:00 p.m. to 6:00 a.m. except aircraft on University of hospital business, or with special advance permission from the University.

AHEC reports that the short runway length, approach and departure obstacles and the instrument approach minimums at Horace Williams have created operational issues. For example, they report that the lack of low instrument approach



minimums require them to divert to RDU several times a month, requiring additional time to complete trips, as well as the additional transportation expense of shuttling back and forth to RDU. In addition, several major employers in Orange County have indicated in initial discussions that they are not comfortable using Horace Williams now due to the limited facilities available.

**Annual Economic Impact.** Despite the ‘constrained’ facilities at Horace Williams, the report “2006 Economic Impact of North Carolina’s Publicly Owned Airports” prepared by the Institute for Transportation Research and Education (ITRE) at N.C. State University indicated that the airport had an annual economic impact of \$10,254,900 to the community. Based on discussions with ITRE, this impact did not include the impact from existing private users (based and transient) nor did it include the AHEC program income directly related to Medical Air Operations. ITRE has indicated that the information submitted by the Airport to the North Carolina Department of Transportation, Division of Aviation (NCDOA) consisted solely of the “on-airport” jobs related to Medical Air Operations and airport management. Preliminary information provided by AHEC as part of this current study indicates that the economic impact of AHEC that can be directly attributed to the availability of convenient air transportation via Horace Williams may be significantly higher than the ITRE study results. The economic impact of AHEC attributable to the Medical Air program will be explored in more detail in a subsequent working paper as information is gathered.

Impacts from potential corporate/private users will also be discussed in a future working paper. Only limited information is available at this time on how the use-restrictions and limited facilities at Horace Williams influence the use of the airport by the major private employers in the County and other potential corporate users. Certainly, these ‘constraints’ prevent Horace Williams from reaching its potential as an economic engine for Orange County.

## **2. Characteristics of an Unconstrained “Business Class” General Aviation Airport**

An ‘unconstrained’ general aviation airport that could:

- a. support existing users of Horace Williams (including AHEC’s Medical Air Operations),
- b. support new business users (both based and transient),
- c. have the potential to increase the economic impact of the airport and enhance the recruitment of new business to Orange County, and
- d. be eligible for federal and state funding,

would need to meet certain requirements/recommendations for facilities, services, hours of operation and location. These requirements are discussed below, along with the possible role of a new airport in *The North Carolina General Aviation Airport Development Plan*.

**Facilities.** As a matter of current policy, the NCDOA recommends a minimum runway length of 5000’ to support business/corporate general aviation users. This



is consistent with Medical Air's position that a 5,000' runway is the minimum runway length needed for a full-service all-weather airport. *Regional Guidance Letter RGL 00-1* (August 28, 2002) published by the FAA Southern Region Airports Division identifies recommended standard airport development for "business jet" aircraft, as shown in Table 1. FAA's recommendations include a 5500' to 6500' minimum runway length, depending on the airport's role and most demanding aircraft.

As can be seen in Table 1, Horace Williams does not currently have many of the features (such as minimum runway length) recommended for an airport that can support business jet aircraft. While it may be possible to upgrade Horace Williams to meet the FAA/NCDOA recommendations for an airport that could support more demanding aircraft, it is anticipated that extending the runway to at least 5,000' in length and implementing the associated compatible land use zoning would be challenging.

As discussed in the previous section, several major employers in Orange County have indicated in initial discussions that they are not comfortable using Horace Williams now due to the limited facilities available, but would be supportive of and utilize a new 'unconstrained' general aviation airport in Orange County.

**Table 1: Standard Development to Accommodate Business Jet Aircraft  
Per FAA Southern Region Guidance**

Development	GA Airports	GA Reliever Airports	Horace Williams - Existing Facilities
Minimum Runway Length	5500 ft. <sup>1</sup>	6500 ft. <sup>1</sup>	<b>4005', with 730' Displaced Threshold</b>
Full Parallel Taxiway	Yes <sup>2</sup>	Yes	<b>No</b>
Visual Glide Slope Indicator	Yes	Yes	<b>Yes</b>
Runway End Identifier Lights	Yes	Yes	<b>Yes</b>
Runway Grooving	Yes	Yes	<b>No</b>
Minimum Instrument Approach	Non precision (400' HAT, 1 mile visibility) <sup>3</sup>	Precision (200' HAT, 1/2 mile visibility) <sup>3</sup>	<b>Non precision (410' HAT, 1 mile visibility)<sup>3</sup></b>
Instrument Landing System	VOR, LOC, WAAS	ILS, WAAS/LAAS	<b>VOR/WAAS</b>
Approach Lighting System	No	Yes	<b>No</b>
Automated Weather Observation Station	Yes	Yes	<b>Yes</b>
Blast pads	No	Yes <sup>4</sup>	<b>No</b>
Lighting	MIRL	HIRL	<b>Yes - MIRL</b>
Pilot Controlled Lighting	Yes	Yes	<b>Yes</b>
Ground Communication Outlet (GCO)	Yes	Yes	<b>Yes</b>
Pavement strength	30,000 pound Single Wheel <sup>5</sup>	60,000 pound Dual Wheel <sup>5</sup>	<b>12,500 pound Single Wheel</b>

<sup>1</sup>Runway length should be determined on a case-by-case basis to meet the needs of the design aircraft.



<sup>2</sup>Consider at airports with at least 20,000 annual transient operations and/or with landing minimums less than 1 statute-mile visibility and/or less than 400 feet decision height. For all others, the standard configuration is a turnaround at each end. A minimum runway centerline to parallel taxiway centerline separation of 400 feet should be considered to allow for a future precision instrument approach.

<sup>3</sup>The appropriate approach minimums for the airport should be determined based on the requirements of the airport users and the weather conditions at the airport.

<sup>4</sup>Consider at airports with at least 1,000 annual business jet operations or where erosion problems are likely.

<sup>5</sup>Runway pavement strength should be determined on a case-by-case basis in accordance with the weight and landing gear configuration of the design aircraft.

In order to provide better service in the future, AHEC has ordered two Diamond D-Jet aircraft that are currently undergoing certification testing; these aircraft are scheduled for delivery in late 2009. AHEC reports that the D-Jets will give Medical Air Operations more flexibility in terms of speed and range. Medical Air Operations has reported that a 5,000' runway would be entirely adequate for these aircraft as long as the approach and departure areas are kept clear. Consistent with FAA's

recommendations, AHEC reports that they need precision instrument approaches with low approach minimums for maximum utility and to minimize the requirements for diversions. These types of approaches are not currently available at Horace Williams. AHEC also reports that in the future, AHEC's (and UNC's) air transportation needs may grow along with increases in personnel, population, and health care needs. At that time they would consider additional or different types of aircraft. In the future if a longer



Typical Diamond D-Jet;  
3 on-order by AHEC

runway was available, AHEC anticipates that AHEC/UNC personnel traveling long (out-of-state) distances may find it more efficient to fly in Medical Air airplanes instead of on commercial airliners.

Although information from other existing and potential users is still being developed at this time, preliminary results indicate that several business users of Horace Williams need a longer runway and better quality approaches in order to more reliably use Horace Williams and/or increase their aviation-related business activities in the County.

**Services.** Typical minimum services offered at general aviation airports that support business users include aircraft fueling (100 low lead for piston aircraft and Jet A for turbine/jet aircraft), tie-downs, aircraft maintenance and repair, aircraft charters and rentals, hangar leasing, and rental car leasing. Many GA airports also offer specialty services such as aircraft painting or avionics repair. Preliminary information being developed as part of this study shows that several business users are currently chartering aircraft at other general aviation airports and would like to be able to have this service available in Orange County. One respondent, who would



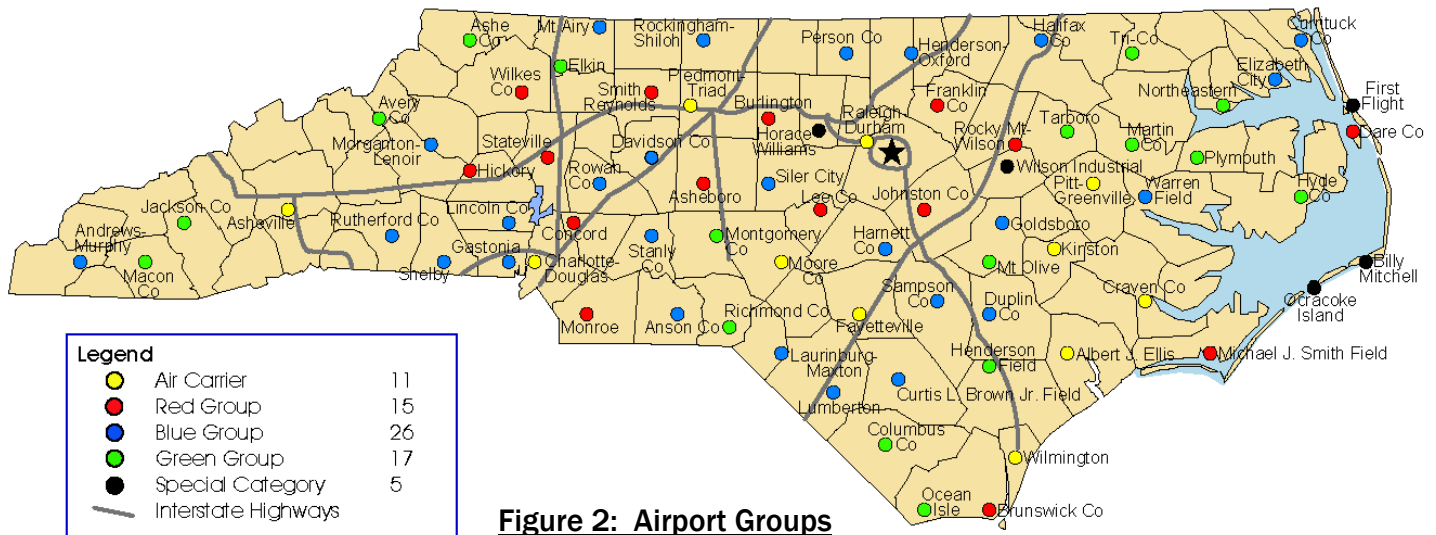
like to relocate his aviation-related business to Horace Williams but cannot due to the limited facilities and services, has indicated that Horace Williams is 'very unfriendly to transients'.

**Hours/types of operation.** An airport that is intended to support business users should be available for use 24 hours per day, seven days a week. The FAA and NCDOA are unlikely to fund a new airport that limits the types of aircraft that can use the airport (such as prohibiting use by jets) and the hours that the airport is open to all users.

**Location.** An airport is considered eligible to receive federal grants under the Airport Improvement Program (AIP) if it meets the requirements to be included in the National Plan of Integrated Airport Systems (NPIAS). If a new airport site meets NPIAS criteria, 90% of the cost of the new airport planning, land acquisition, and most of the construction is eligible to be funded by the AIP. In order for the FAA to include a new general aviation airport in the NPIAS, the airport must be located 30 minutes or more average ground travel time from the nearest existing NPIAS airports (FAA Order 5090.3C "Field Formulation of the National Plan of Integrated Airport Systems"). The NPIAS airports closest to Orange County are the Raleigh-Durham International Airport (RDU); Siler City Airport in Chatham County; the Person County Airport near Roxboro; and the Burlington-Alamance Regional Airport.

AHEC reports that they would prefer operating from a new Orange County Airport rather than from RDU particularly if the airport could be located relatively close to the UNC-CH campus. It is their assertion that a new airport conveniently located would save trip time (both ground and air) which can cause significant delays at RDU because of ever-increasing traffic congestion.

**Role of a New Orange County Airport in the North Carolina General Aviation Airport Development Plan.** In 2004, the NCDOA enacted the "North Carolina General Aviation Airport Development Plan". The primary focus of the plan is to provide the standards and guidelines that will be used by the NCDOA to determine airport infrastructure needs that are eligible for federal and state aid. The Plan focuses on publicly-owned and -operated GA airports that are included in the NPIAS. The Plan divided the GA airports in North Carolina into three groups: **red**, **blue**, and **green**. The NCDOA determined which group each NPIAS airport was in based on community economic development parameters from the N.C. Department of Commerce; the geographic location relative to other airports included in the NPIAS; the regional impacts of the airport; the region's existing and planned transportation system; local industry needs; utility infrastructure; development potential; airspace, geographic and physical constraints; and local support. The Plan also provided recommendations for the airports in each group for planning and design standards, airport zoning, runway approaches, and airport facilities. In general, the **red** airports are '**high activity**' GA airports, the **blue** airports are '**moderate activity**' airports, and the '**green**' airports are '**low activity**' airports.



**Figure 2: Airport Groups**

As can be seen in Figure 2, the green airports are located primarily in the lower population counties in the mountains and the coastal plain, while red and blue airports are typically concentrated in the Piedmont around the major population/economic centers in the state. Given its location, economic characteristics (see Section 5) and high number of registered aircraft (ranking it in the top 25% of all 100 counties), it is anticipated that a new Orange County general aviation airport could be a 'red' group airport.

### **3. Information Being Gathered to Estimate the Economic Impact of a New Orange County Airport**

This first working paper provides an estimate of the economic impact of a new Orange County Airport based on the impact of GA airports in communities with economic characteristics similar to Orange County. This evaluation is based on the results of the 2006 "Economic Impact of Airports in North Carolina" report by ITRE, and is described in detail in the following sections. The UNC Foundation is in the process of gathering information from existing users of the Horace Williams airport and potential users of a new airport to further refine the potential economic impact of a new Orange County Airport. These user groups are discussed below.

The UNC Foundation is gathering information from the following existing users of the Horace Williams Airport:

- AHEC.
- Duke University.
- Other current UNC users.
- Private users.



These groups are being asked to provide information both on their current use of Horace Williams and how their aviation uses might be changed by construction of a new 'unconstrained' Orange County airport.

Information will also be solicited from potential new users of an Orange County Airport including:

- The 114 owners of aircraft that are registered in Orange County, most of which are based at airports outside Orange County.
- Major employers in Orange County.
- University related users, such as: UNC/private research firm partnerships, UNC hospitals and their clinical research/pharmaceutical and biotechnology partners, and other transient users visiting UNC-CH on business.
- Carolina North partners.
- The Research Triangle Regional Partnership and tenants of the Research Triangle Park.
- Other businesses, if any, identified by the local Chambers of Commerce.

The Institute for Transportation Research and Education (ITRE) at N.C. State University (ITRE) will quantify the economic impacts of these users using the IMPLAN model, which is discussed in the following section. The information gathered from these groups and the associated economic impacts will be discussed in a later working paper or papers.

#### **4. Results of the 2006 North Carolina Airports Economic Impact Study**

In 2006, the Institute for Transportation Research and Education (ITRE) at N.C. State University completed a study of the economic impact of airports in North Carolina. The study was commissioned by the NCDOA. The purpose of the study was to examine and report the current economic impact of aviation services for the 74 publicly-owned airports in North Carolina, both on the statewide and the local/county levels. The results of the study were documented in a technical report, a brochure, and a digital video. The "2006 Economic Impact of North Carolina's Publicly Owned Airports" final report is attached in Appendix A. The study methodology followed accepted economic impact assessment techniques and was consistent with the recommended methodology from the Federal Aviation Administration.

The primary source of data for the study was obtained from airport managers, tenants, and major users responding to ITRE/NCDOA surveys. ITRE input only collected data or documented information into the model; airport tenants or business users that did not respond to the survey were excluded from the study. This approach resulted in a 'conservative' approach to estimating the economic impacts of the State's airports. **In addition, the impacts of the expenditure of public**



**funds on airport capital improvement projects (which are primarily indirect and induced effects) were not included in the study.**

The project team used IMPLAN, an economic model provided and used by the N.C. Department of Commerce, to estimate the impact of aviation in North Carolina. The IMPLAN model is based on current economic theory principles and includes relevant standards set forth by the U.S. Bureau of Economic Analysis. The report describes three types of economic impacts from airports: direct, indirect, and induced. Direct impacts result from the economic activities of tenants who have a direct involvement in aviation. 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 services from hotels, restaurants, and retail shopping. Induced impacts result from successive spending and are the multiplier effects of the direct and indirect impacts. Indirect and induced impacts were calculated based on county, state, and national data from sources such as the U.S. Department of Commerce, the Bureau of Labor Statistics, and the Bureau of Economic Analysis. As recommended by the North Carolina Department of Commerce, ITRE selected type SAM (Social Accounting Matrix) multipliers within IMPLAN to estimate the impacts of the airports. The project team developed a separate IMPLAN model for each airport to take into effect the surrounding local economy. The study also included an estimate of the payroll, jobs impacts, property tax value of based GA aircraft, and the number of visitors generated for each airport.

Table 2 shows the study findings of the annual direct, indirect, and induced economic impacts for all general aviation airports in the NPIAS in North Carolina. Airports with scheduled air carrier service are not included. The estimated employment impacts, tax revenues and payroll impacts are shown in the report in Appendix A. One of the study findings was that the 'red' group general aviation airports generated the highest impact per airport on average compared to the other general aviation airports.



**Table 2: Annual Economic Impact of North Carolina General Aviation Airports  
From 2006 ITRE/NCDOA Report "Economic Impact of Airports in North Carolina"**

County	Airport	Airport Group	2006 Annual Economic Impact (Direct, Indirect and Induced)
Alamance	Burlington-Alamance Regional Airport	Red	\$ 46,006,700
Anson	Anson County Airport	Blue	\$ 3,005,500
Ashe	Ashe County Airport	Green	\$ 133,872,700
Avery	Avery County-Morrison Field	Green	\$ 5,985,200
Beaufort	Warren Field	Blue	\$ 6,174,800
Bladen	Curtis L. Brown Field	Blue	\$ 5,045,200
Brunswick	Brunswick County Airport	Red	\$ 26,178,600
Brunswick	Ocean Isle Beach Airport	Green	\$ 6,806,600
Burke	Morganton-Lenoir Airport	Blue	\$ 10,562,000
Cabarrus	Concord Regional Airport	Red	\$ 110,003,500
Carteret	Michael J. Smith Field	Red	\$ 40,737,500
Catawba	Hickory Regional Airport	Red	\$ 50,450,900
Chatham	Siler City Municipal Airport	Blue	\$ 9,932,200
Cherokee	Andrews-Murphy Airport	Blue	\$ 8,159,800
Chowan	Northeastern Regional Airport	Green	\$ 4,964,800
Cleveland	Shelby Municipal Airport	Blue	\$ 6,246,200
Columbus	Columbus County Airport	Green	\$ 4,104,000
Currituck	Currituck County Airport	Blue	\$ 24,452,600
Dare	Dare County Airport	Red	\$ 25,353,200
Davidson	Davidson County Airport	Blue	\$ 10,819,000
Duplin	Duplin County Airport	Blue	\$ 9,598,800
Edgecombe	Tarboro-Edgecombe Airport	Green	\$ 3,214,700
Forsyth	Smith Reynolds Airport	Red	\$ 137,125,800
Franklin	Franklin County Airport	Red	\$ 12,944,300
Gaston	Gastonia Municipal Airport	Blue	\$ 8,942,100
Halifax	Halifax County Airport	Blue	\$ 10,777,500
Harnett	Harnett County Airport	Blue	\$ 21,110,900
Hertford	Tri-County Airport	Green	\$ 4,661,600
Hyde	Hyde County Airport	Green	\$ 2,108,900
Iredell	Statesville Municipal Airport	Red	\$ 46,934,500
Jackson	Jackson County Airport	Green	\$ 17,581,500
Johnston	Johnston County Airport	Red	\$ 42,810,200
Lee	Sanford-Lee County Airport	Red	\$ 280,270,100
Lincoln	Lincoln County Regional Airport	Blue	\$ 8,626,500
Macon	Macon County Airport	Green	\$ 7,979,200
Martin	Martin County Airport	Green	\$ 3,335,400
Montgomery	Montgomery County Airport	Green	\$ 1,387,300
Moore <sup>1</sup>	Moore County Airport	Red	\$ 86,334,300
Nash	Rocky Mount-Wilson Regional Airport	Red	\$ 27,030,200



**Table 2 (continued): Annual Economic Impact of North Carolina General Aviation Airports**

County	Airport	Airport Group	2006 Annual Economic Impact (Direct, Indirect and Induced)
Orange <sup>2</sup>	Horace Williams Airport	n/a	\$ 10,254,900
Pasquotank	Elizabeth City Regional Airport	Blue	\$ 17,405,300
Pender	Henderson Field Airport	Green	\$ 25,908,800
Person	Person County Airport	Blue	\$ 5,113,900
Randolph	Asheboro Municipal Airport	Red	\$ 10,246,400
Richmond	Richmond County Airport	Green	\$ 2,326,400
Robeson	Lumberton Municipal Airport	Blue	\$ 11,852,800
Rockingham	Rockingham County/Shiloh Airport	Blue	\$ 7,037,100
Rowan	Rowan County Airport	Blue	\$ 22,915,500
Rutherford	Rutherford County Airport	Blue	\$ 12,034,000
Sampson	Sampson County Airport	Blue	\$ 4,880,100
Scotland	Laurinburg-Maxton Airport	Blue	\$ 34,000,700
Stanly	Stanly County Airport	Blue	\$ 22,663,800
Surry	Elkin Municipal Airport	Green	\$ 34,458,600
Surry	Mount Airy-Surry County Airport	Blue	\$ 386,998,300
Union, NC	Monroe Airport	Red	\$ 22,890,500
Vance	Henderson-Oxford Airport	Blue	\$ 7,255,500
Washington	Plymouth Municipal Airport	Green	\$ 3,109,800
Wayne	Goldsboro-Wayne Municipal Airport	Blue	\$ 14,552,500
Wayne	Mt. Olive Airport	Green	\$ 3,972,200
Wilkes	Wilkes County Airport	Red	\$ 9,749,100

<sup>1</sup> Since the 2006 study, Moore County Airport has lost air carrier service and is now a general aviation airport.

<sup>2</sup> Horace Williams is not in the NPIAS and has not been classified as a red, blue or green airport in the state's development plan.



## **5. Preliminary Estimated Economic Impact of a New Orange County Airport**

Talbert & Bright, in consultation with ITRE and the NCDOA, has prepared a preliminary estimate of the annual economic impact of a new 'unconstrained' general aviation airport in Orange County based on the results of the 2006 ITRE/NCDOA study "Economic Impacts of Airports in North Carolina."

While detailed information is still being gathered from specific users as discussed in Section 3, three approaches to comparing a new Orange County airport to existing airports were reviewed:

1. Estimate the economic impact of new general aviation airport in Orange County based on the economic impact of 'red' airports. As described in Section 2, it is anticipated that a new Orange County Airport could be a red airport.
2. Estimate the economic impact of new general aviation airport in Orange County based on the economic impact of airports in counties of a similar size (population).
3. Estimate the economic impact of new general aviation airport in Orange County based on the economic impact of airports in counties with characteristics that are similar to Orange County. In consultation with ITRE, TBI identified ten primary criteria reported by the N.C. Dept. of Commerce that could be an indicator of the economic impact of a county's general aviation airport. These criteria were:
  - Population
  - Number of employees
  - Unemployment rate (counties with the *lowest* unemployment rates having a *higher* rank)
  - High school graduates as a percentage of the population
  - College graduates as a percentage of the population
  - Median household income
  - Per capita personal income
  - Median house value
  - Percentage of population in poverty (counties with the *lowest* rate of poverty having a *higher* rank)
  - Average weekly wage

This data (most recent available) was obtained from the N.C. Department of Commerce for the 56 counties that have general aviation airports in the National Plan of Integrated Airport Systems (NPIAS) and for Orange County.

It should be noted that:

- For all ten of the criteria, Orange County ranks above the state-wide median for all 100 counties.
- Orange County ranks in the top 20% of all 100 counties for eight of the ten criteria.



- Orange County is in the top 10% of all 100 counties for seven of the ten criteria.
- Compared to all 100 counties in North Carolina, Orange County has the highest number of college graduates, the lowest unemployment rate and the highest median house value.

The results of these three approaches are discussed below.

#### *Estimated Impact Based on Impacts of “Red” Airports*

Given its location, economic characteristics, and high number of registered aircraft (ranking it in the top 20% of all 56 counties with publicly-owned general aviation airports), it is anticipated that a new Orange County general aviation airport could be a ‘red’ group airport.

The median and average economic impact of the 16 ‘red’ airports in North Carolina are \$42,000,000/year and \$61,000,000/year, respectively. This group of airports represent communities that are very diverse, ranging from the retirement and tourism dominated communities of Brunswick, Carteret and Dare Counties along the coast, to the airports clustered around the Triangle area and Charlotte. A comparison based simply on airport category may not adequately reflect the characteristics (setting, population and economic characteristics) specific to Orange County.

#### *Estimated Impact Based on County Population*

The estimated 2006 population of Orange County is 123,762. Table 3 shows the population of the North Carolina counties with general aviation airports that are within +/-25% of the population of Orange County and their economic impacts.

The median economic impact of these 13 airports is \$23,000,000/year and the average economic impact is \$27,000,000/year. The median economic impact ‘per person’ is \$204, and the average economic impact ‘per person’ is \$211. Multiplying these ‘per person’ impacts by the population of Orange County results in a estimated economic impact for a new Orange County Airport ranging from \$25,000,000/year to \$26,000,000/year. Given that the Horace Williams Airport, with its significant limitations on usage and relatively limited facilities conservatively generates over \$10,000,000 in economic impacts per year per ITRE, this comparison appears to understate the potential economic impact of a new unconstrained airport in Orange County. This apparent understatement may be due to the fact that several of these counties have very different economic characteristics than Orange County. For example, Robeson County has an almost identical population to Orange County, but ranks in the bottom 10% statewide in six of the ten economic indicators described above, while Orange County ranks in the top 10% for seven of the ten criteria.



**Table 3: Counties with Populations Similar to Orange County  
(Population +/-25% of Orange County Population)**

County	Airport	Population	State-Wide Population Rank	Airport Annual Economic Impact
Orange		123,762	22	
Davidson	Davidson County	155,343	13	\$ 10,819,000
Johnston	Johnston County	151,589	14	\$ 42,810,200
Catawba	Hickory Regional	151,126	15	\$ 50,450,900
Iredell	Statesville Municipal	145,232	17	\$ 46,934,500
Alamance	Burlington-Alamance Regional	139,786	18	\$ 46,006,700
Randolph	Asheboro Municipal	138,582	19	\$ 10,246,400
Rowan	Rowan County	134,538	20	\$ 22,915,500
Robeson	Lumberton Municipal	129,054	21	\$ 11,852,800
Wayne	Goldsboro-Wayne Municipal	114,920	23	\$ 18,524,700
Harnett	Harnett County	103,717	24	\$ 21,110,900
Cleveland	Shelby Municipal	96,720	26	\$ 6,246,200
Brunswick	Brunswick County	94,964	28	\$ 32,985,200
Nash	Rocky Mount-Wilson Regional	92,223	29	\$ 27,030,200

#### *Estimated Impact Based on Counties with Similar Economic Profiles*

The most effective method for identifying the potential economic impact of a new Orange County Airport using the State's study information may be to identify those counties/airports that are most similar to Orange County in terms of the ten economic indicators listed previously: population, employees, unemployment rate, high school graduates, college graduates, median household income, per capita personal income, median house value, poverty rate, and average weekly wage. Following identification of the most similar counties/airports, an adjustment is then made based on population of the similar counties compared to Orange County.

Table 4 shows the state-wide rank of all 56 counties with general aviation airports and Orange County for these ten criteria. Tables 5 through 14 and Charts 1 through 10 show the actual figures for each individual criteria.

Like Orange County, eight counties in the state with general aviation airports are above the state-wide median in all ten categories reviewed. These counties are Alamance (Burlington-Alamance Regional Airport), Cabarrus (Concord Regional Airport), Chatham (Siler City Airport), Forsyth (Smith-Reynolds Airport), Iredell (Statesville Municipal Airport), Johnston (Johnston County Airport), Moore (Moore County Airport) and Union (Monroe Airport). Seven of the eight airports are red, and one (Siler City in Chatham County) is blue. These counties' populations, airports and annual airport economic impacts are shown in Table 15. As can be seen in Table 15, the population of the eight counties vary significantly from 57,700 in Chatham County to over 331,800 in Forsyth County. The annual economic impact of the airports in these eight counties range from \$9,932,200 in Chatham County to \$137,125,800 in Forsyth County.



Table 4: State-Wide Rank of Orange County and 56 North Carolina Counties with General Aviation Airports for Ten Economic Criteria

Number of Criteria in Top 50 Statewide	County	Airport	Economic Indicators - Rank Compared to All 100 Counties in N.C.									
			Population	Employment	% Unemployment (Lowest to Highest)	High School Graduates	College Graduates	Median Household Income	Per Capita Personal Income	Median House Value	% Poverty (Lowest to Highest)	Average Weekly Wage Rank
10	Orange		22	18	1	3	1	10	6	1	33	3
10	Alamance	Burlington-Alamance Regional Airport	18	19	46	34	21	21	22	23	18	20
10	Cabarrus	Concord Regional Airport	12	11	33	25	22	4	10	13	3	10
10	Chatham	Siler City Municipal Airport	43	37	13	27	10	5	3	10	10	38
10	Forsyth	Smith Reynolds Airport	4	4	33	16	8	13	5	14	36	5
10	Iredell	Statesville Municipal Airport	17	12	43	23	25	15	15	17	11	12
10	Johnston	Johnston County Airport	14	16	19	37	37	12	26	21	16	30
10	Moore	Moore County Airport	32	35	36	11	11	20	4	12	28	29
10	Union	Monroe Airport	10	10	22	20	18	2	21	8	6	16
9	Brunswick	Brunswick County Airport	28	27	46	24	33	40	58	25	35	35
9	Carteret	Michael J. Smith Field	39	38	20	13	19	18	24	16	23	93
9	Catawba	Hickory Regional Airport	15	17	65	43	28	27	14	26	26	18
9	Franklin	Franklin County Airport	46	44	33	45	52	37	32	43	42	14
9	Lee	Sanford-Lee County Airport	47	46	69	36	26	26	29	32	44	11
9	Rowan	Rowan County Airport	20	20	85	44	45	29	34	35	46	9
8	Gaston	Gastonia Municipal Airport	8	9	84	59	45	46	19	38	30	23
8	Nash	Rocky Mount-Wilson Regional Airport	29	29	56	38	26	32	28	42	59	25
8	Randolph	Asheboro Municipal Airport	19	15	40	70	73	47	38	39	40	33
8	Stanly	Stanly County Airport	41	41	51	47	59	45	47	48	46	39
7	Currituck	Currituck County Airport	77	72	2	29	49	6	25	24	4	66
7	Dare	Dare County Regional Airport	67	56	40	2	9	7	16	4	1	90
7	Davidson	Davidson County Airport	13	13	65	54	56	25	17	30	20	36
7	Lincoln	Lincoln County Regional Airport	36	33	65	58	54	14	43	29	16	40
6	Harnett	Harnett County Airport	24	25	46	40	56	39	66	53	54	47
6	Jackson	Jackson County Airport	65	55	4	22	14	44	73	28	63	42
6	Macon	Macon County Airport	68	67	19	30	31	50	51	22	34	67
6	Person	Person County Airport	63	61	75	42	87	36	50	44	29	31
6	Wayne	Goldsboro-Wayne Municipal Airport	23	23	40	31	41	52	61	65	63	41
5	Pender	Henderson Field Airport	52	52	33	32	48	35	68	37	51	86
5	Wilkes	Wilkes County Airport	37	40	65	91	70	57	37	54	47	50
4	Ashe	Ashe County Airport	73	70	27	79	63	79	44	36	50	83
4	Burke	Morganton-Lenoir Airport	31	31	75	86	56	65	52	63	40	32
4	Cleveland	Shelby Municipal Airport	26	26	78	52	49	54	53	64	68	28
4	Pasquotank	Elizabeth City Regional Airport	60	65	43	32	29	51	77	61	71	37
4	Rockingham	Rockingham County/Shiloh Airport	30	28	75	77	79	58	60	62	42	27



Table 4 (continued): State-Wide Rank of Orange County and 56 North Carolina Counties with General Aviation Airports for Ten Economic Criteria

Number of Criteria In Top 50 Statewide	County	Airport	Economic Indicators - Rank Compared to All 100 Counties in N.C.									
			Population	Employment	% Unemployment (Lowest to Highest)	High School Graduates	College Graduates	Median Household Income	Per Capita Personal Income	Median House Value	% Poverty (Lowest to Highest)	Average Weekly Wage Rank
4	Sampson	Sampson County Airport	38	39	17	76	73	64	82	78	73	49
3	Beaufort	Warren Field Airport	54	57	69	40	35	62	57	75	70	46
3	Chowan	Northeastern Regional Airport	88	89	88	50	29	60	48	66	75	61
3	Surry	Mount Airy-Surry County Airport	35	36	84	88	64	61	40	59	54	57
2	Avery	Avery County-Morrison Field Airport	86	84	51	64	44	73	45	58	59	95
2	Columbus	Columbus County Airport	48	53	78	79	89	97	62	84	97	48
2	Duplin	Duplin County Airport	50	51	36	92	84	84	76	87	83	68
2	Edgecombe	Tarboro-Edgecombe Airport	51	49	98	93	98	93	63	88	95	26
2	Robeson	Lumberton Municipal Airport	21	22	92	97	69	99	96	98	100	80
2	Rutherford	Rutherford County Airport	40	42	80	67	60	67	67	70	54	69
1	Anson	Anson Airport	74	75	93	68	95	89	74	92	87	44
1	Cherokee	Andrews-Murphy Airport	72	77	75	48	77	85	95	67	55	75
1	Halifax	Halifax County Airport	45	54	92	95	73	94	89	91	99	74
1	Hertford	Tri-County Airport	76	79	65	93	73	92	94	96	85	43
1	Martin	Martin County Airport	75	73	59	63	66	87	80	90	86	45
1	Scotland	Laurinburg-Maxton Airport	64	69	100	59	37	81	81	89	96	51
0	Bladen	Curtis L. Brown Field	69	68	88	64	70	91	71	94	93	84
0	Hyde	Hyde County Airport	99	99	53	82	82	80	93	93	80	97
0	Montgomery	Montgomery County Airport	71	74	92	98	91	69	64	77	79	56
0	Richmond	Richmond County Airport	53	62	99	74	89	88	84	95	89	85
0	Vance	Henderson-Oxford Airport	56	64	96	84	81	78	75	72	87	63
0	Washington	Plymouth Municipal Airport	90	90	86	71	66	86	86	85	91	96

# County ranks above the median state-wide  
Highest rank state-wide among the 56 Counties shown



The annual average and median economic impact 'per person' generated by the general aviation airport in each of the eight counties is as follows:

- The median annual economic impact for the eight airports was \$326/person.
- The average economic impact for the eight airports was \$425/person.

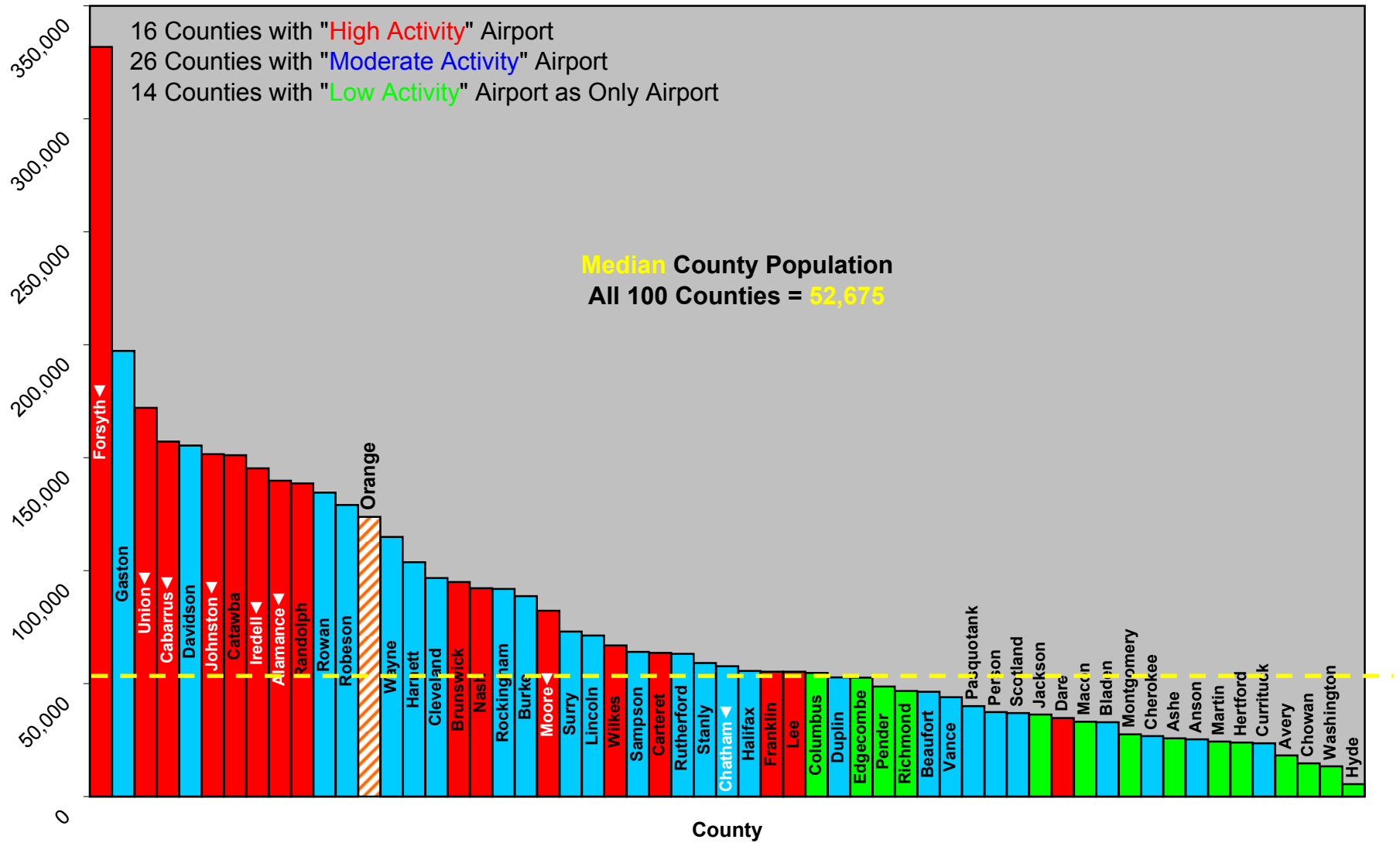
The average and median 'per person' impacts for the eight airports in these eight similar communities were multiplied by the 2006 population of Orange County (123,762) to obtain a preliminary estimate of the economic impact of a new Orange County Airport. **Based on this method, which compares Orange County to communities with similar characteristics, it can be estimated that the annual economic impact of a new 'unconstrained' Orange County Airport would range from approximately \$40,000,000 to \$53,000,000 per year.**

This method results in an estimated economic impact for a new Orange County Airport that is *lower* than a comparison to all 'red' airports in the state, and an estimated economic impact that is *higher* than a comparison to airports located in counties with similar populations to Orange County. Of the three methods described, this method appears to most closely reflect those actual characteristics of Orange County that would be expected to strongly influence the economic potential of a new airport.

This preliminary estimate may not adequately reflect the economic impact that NC AHEC has on Orange County and the State. As additional information from existing users of Horace Williams (including AHEC) and potential future users of a new general aviation airport in Orange County is gathered (see Section 3), a future working paper(s) will refine the preliminary estimate.

It is also important to note that it may not be possible to assign an economic value to many of AHEC's activities that rely on convenient access to an airport; nevertheless, these activities have significant social value to the state. These activities include improving the distribution and retention of healthcare providers, enhancing the quality of medical care and improving health care outcomes throughout the state, and addressing the health care needs of underserved communities and populations. It is not known at this time how the dislocation of AHEC's Medical Air Operations to an airport other than Horace Williams will affect these activities.

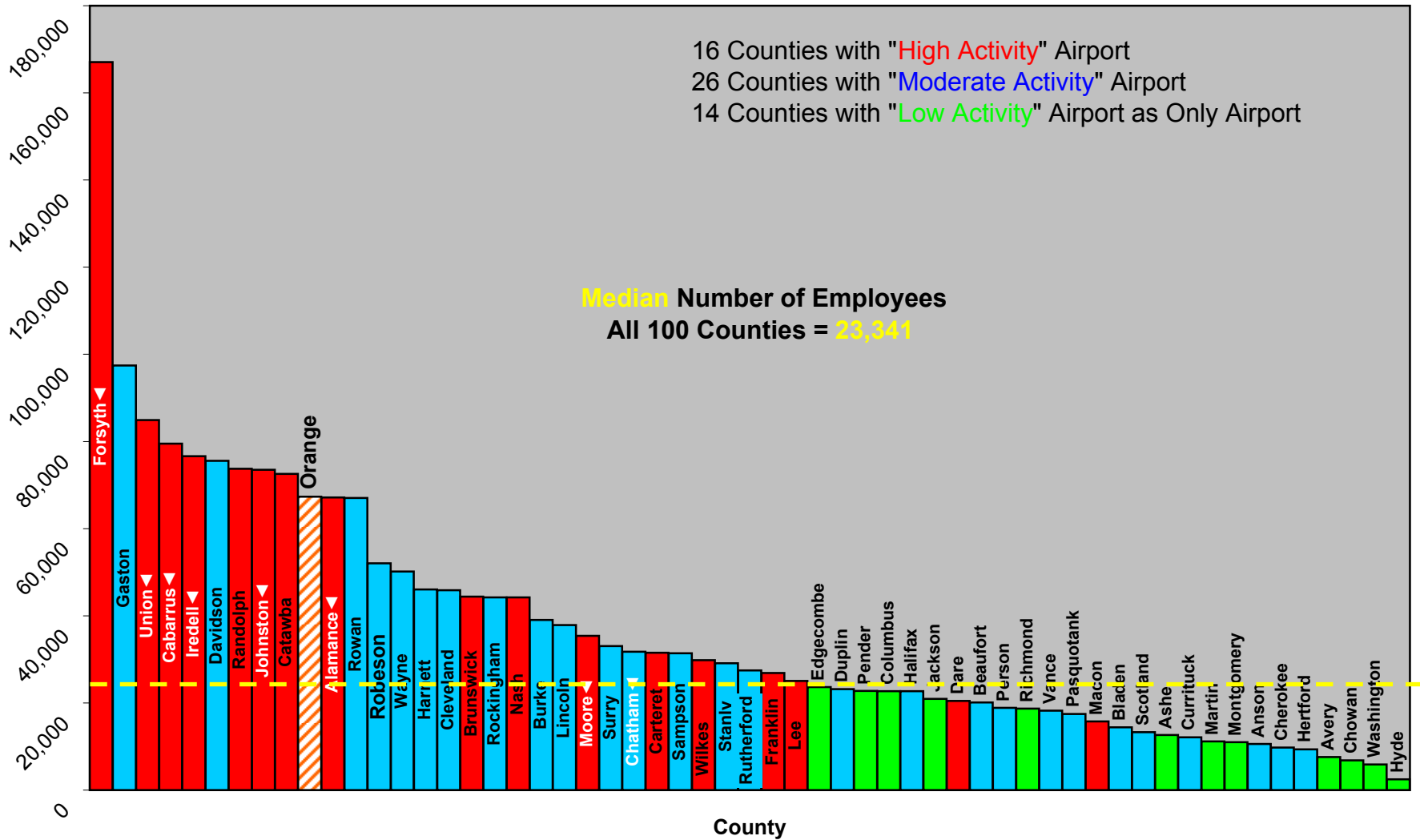
**Chart 1: Population of Counties with General Aviation Airports in NPIAS**



**Table 5: Population -  
Counties in North Carolina with General Aviation Airports**

County	Airport	Population	Rank Statewide
Forsyth ◀	Smith Reynolds	331,851	4
Gaston	Gastonia Municipal	197,232	8
Union ◀	Monroe	172,094	10
Cabarrus ◀	Concord Regional	157,176	12
Davidson	Davidson County	155,343	13
Johnston ◀	Johnston County	151,589	14
Catawba	Hickory Regional	151,126	15
Iredell ◀	Statesville Municipal	145,232	17
Alamance ◀	Burlington-Alamance Regional	139,786	18
Randolph	Asheboro Municipal	138,582	19
Rowan	Rowan County	134,538	20
Robeson	Lumberton Municipal	129,054	21
Orange		123,762	22
Wayne	Goldsboro-Wayne Municipal	114,920	23
Harnett	Harnett County	103,717	24
Cleveland	Shelby Municipal	96,720	26
Brunswick	Brunswick County	94,964	28
Nash	Rocky Mount-Wilson Regional	92,223	29
Rockingham	Rockingham County/Shiloh	91,840	30
Burke	Morganton-Lenoir	88,664	31
Moore ◀	Moore County	82,288	32
Surry	Mount Airy-Surry County	73,000	35
Lincoln	Lincoln County Regional	71,298	36
Wilkes	Wilkes County	66,924	37
Sampson	Sampson County	64,048	38
Carteret	Michael J. Smith Field	63,557	39
Rutherford	Rutherford County	63,177	40
Stanly	Stanly County	59,126	41
Chatham ◀	Siler City Municipal	57,708	43
Halifax	Halifax County	55,601	45
Franklin	Franklin County	55,316	46
Lee	Sanford-Lee County	55,282	47
Columbus	Columbus County	54,666	48
Duplin	Duplin County	52,708	50
Edgecombe	Tarboro-Edgecombe	52,641	51
Pender	Henderson Field	48,726	52
Richmond	Richmond County	46,699	53
Beaufort	Warren Field	46,344	54
Vance	Henderson-Oxford	43,925	56
Pasquotank	Elizabeth City Regional	39,968	60
Person	Person County	37,440	63
Scotland	Laurinburg-Maxton	36,993	64
Jackson	Jackson County	36,312	65
Dare	Dare County	34,730	67
Macon	Macon County	33,078	68
Bladen	Curtis L. Brown Field	32,872	69
Montgomery	Montgomery County	27,505	71
Cherokee	Andrews-Murphy	26,727	72
Ashe	Ashe County	25,778	73
Anson	Anson	25,372	74
Martin	Martin County	24,396	75
Hertford	Tri-County	23,901	76
Currituck	Currituck County	23,580	77
Avery	Avery County-Morrison Field	18,174	86
Chowan	Northeastern Regional	14,677	88
Washington	Plymouth Municipal	13,364	90
Hyde	Hyde County	5,511	99

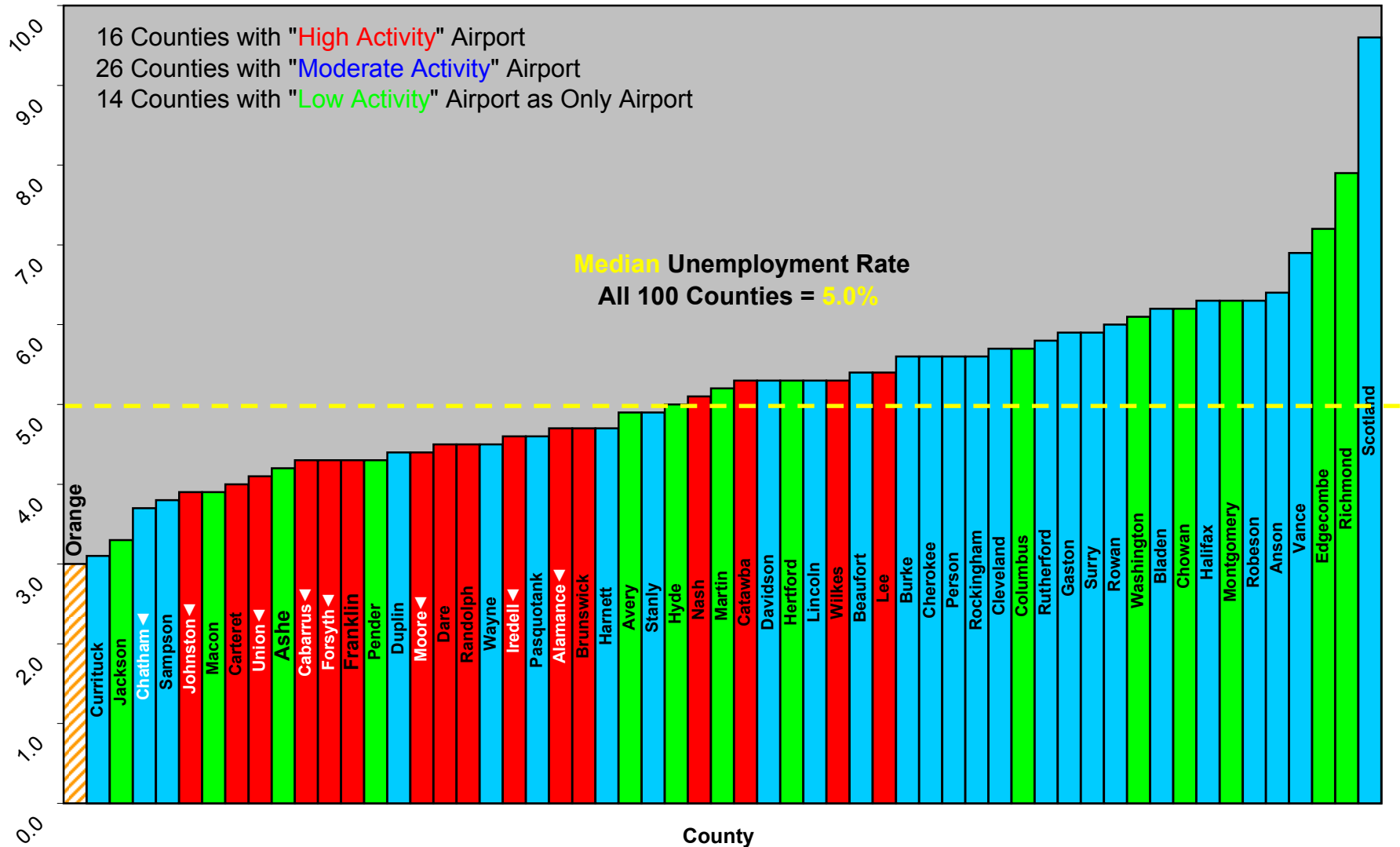
**Chart 2: Number of Employees -  
Counties with General Aviation Airports in NPIAS**



**Table 6: Number of Employees -  
Counties with General Aviation Airports in NPIAS**

County	Airport	Number of Employees	Rank Statewide
Forsyth ◀	Smith Reynolds	167,057	4
Gaston	Gastonia Municipal	97,445	9
Union ◀	Monroe	84,915	10
Cabarrus ◀	Concord Regional	79,480	11
Iredell ◀	Statesville Municipal	76,617	12
Davidson	Davidson County	75,584	13
Randolph	Asheboro Municipal	73,752	15
Johnston ◀	Johnston County	73,499	16
Catawba	Hickory Regional	72,587	17
Orange		67,317	18
Alamance ◀	Burlington-Alamance Regional	67,183	19
Rowan	Rowan County	67,029	20
Robeson	Lumberton Municipal	52,065	22
Wayne	Goldsboro-Wayne Municipal	50,183	23
Harnett	Harnett County	46,029	25
Cleveland	Shelby Municipal	45,869	26
Brunswick	Brunswick County	44,416	27
Rockingham	Rockingham County/Shiloh	44,247	28
Nash	Rocky Mount-Wilson Regional	44,217	29
Burke	Morganton-Lenoir	39,070	31
Lincoln	Lincoln County Regional	37,842	33
Moore ◀	Moore County	35,394	35
Surry	Mount Airy-Surry County/Elkin Municipal	33,077	36
Chatham ◀	Siler City Municipal	31,734	37
Carteret	Michael J. Smith Field	31,536	38
Sampson	Sampson County	31,384	39
Wilkes	Wilkes County	29,829	40
Stanly	Stanly County	29,105	41
Rutherford	Rutherford County	27,475	42
Franklin	Franklin County	26,864	44
Lee	Sanford-Lee County	25,078	46
Edgecombe	Tarboro-Edgecombe	23,621	49
Duplin	Duplin County	23,144	51
Pender	Henderson Field	22,776	52
Columbus	Columbus County	22,705	53
Halifax	Halifax County	22,675	54
Jackson	Jackson County	20,951	55
Dare	Dare County/Billy Mitchell/First Flight	20,483	56
Beaufort	Warren Field	20,126	57
Person	Person County	18,852	61
Richmond	Richmond County	18,711	62
Vance	Henderson-Oxford	18,238	64
Pasquotank	Elizabeth City Regional	17,484	65
Macon	Macon County	15,746	67
Bladen	Curtis L. Brown Field	14,432	68
Scotland	Laurinburg-Maxton	13,261	69
Ashe	Ashe County	12,670	70
Currituck	Currituck County	12,123	72
Martin	Martin County	11,192	73
Montgomery	Montgomery County	11,018	74
Anson	Anson	10,559	75
Cherokee	Andrews-Murphy	9,782	77
Hertford	Tri-County	9,350	79
Avery	Avery County-Morrison Field	7,588	84
Chowan	Northeastern Regional	6,798	89
Washington	Plymouth Municipal	5,877	90
Hyde	Hyde County	2,454	99

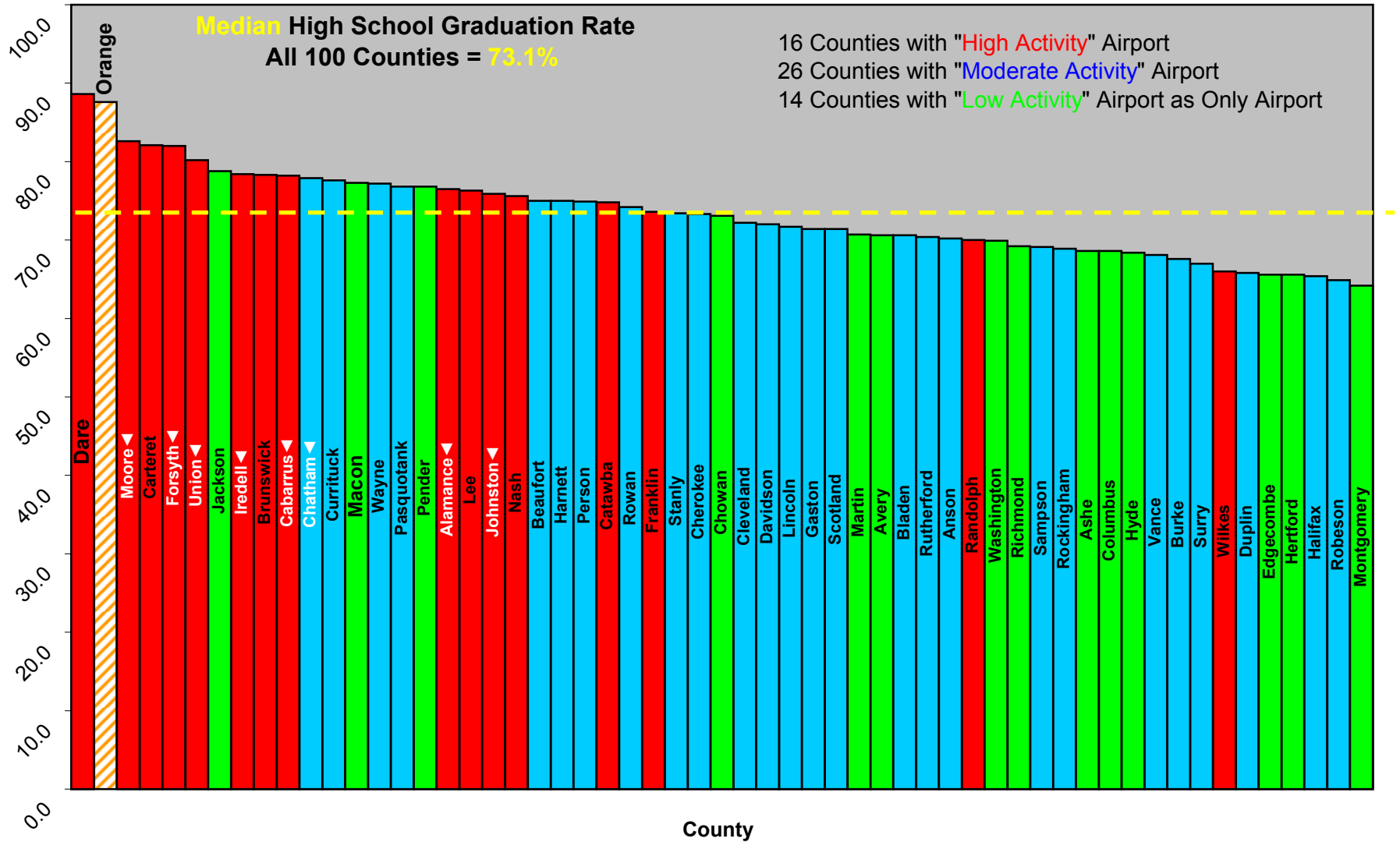
**Chart 3: Unemployment Rate -  
Counties with General Aviation Airports in NPIAS**



**Table 7: Unemployment Rate -  
Counties with General Aviation Airports in NPIAS**

County	Airport	Unemployment Rate (percent)	Rank Statewide
Orange		3.0	1
Currituck	Currituck County	3.1	2
Jackson	Jackson County	3.3	4
Chatham ◀	Siler City Municipal	3.7	13
Sampson	Sampson County	3.8	17
Johnston ◀	Johnston County	3.9	19
Macon	Macon County	3.9	19
Carteret	Michael J. Smith Field	4.0	20
Union ◀	Monroe	4.1	22
Ashe	Ashe County	4.2	27
Cabarrus ◀	Concord Regional	4.3	33
Forsyth ◀	Smith Reynolds	4.3	33
Franklin	Franklin County	4.3	33
Pender	Henderson Field	4.3	33
Duplin	Duplin County	4.4	36
Moore ◀	Moore County	4.4	36
Dare	Dare County/Billy Mitchell/First Flight	4.5	40
Randolph	Asheboro Municipal	4.5	40
Wayne	Goldsboro-Wayne Municipal	4.5	40
Iredell ◀	Statesville Municipal	4.6	43
Pasquotank	Elizabeth City Regional	4.6	43
Alamance ◀	Burlington-Alamance Regional	4.7	46
Brunswick	Brunswick County	4.7	46
Harnett	Harnett County	4.7	46
Avery	Avery County-Morrison Field	4.9	51
Stanly	Stanly County	4.9	51
Hyde	Hyde County	5.0	53
Nash	Rocky Mount-Wilson Regional	5.1	56
Martin	Martin County	5.2	59
Catawba	Hickory Regional	5.3	65
Davidson	Davidson County	5.3	65
Hertford	Tri-County	5.3	65
Lincoln	Lincoln County Regional	5.3	65
Wilkes	Wilkes County	5.3	65
Beaufort	Warren Field	5.4	69
Lee	Sanford-Lee County	5.4	69
Burke	Morganton-Lenoir	5.6	75
Cherokee	Andrews-Murphy	5.6	75
Person	Person County	5.6	75
Rockingham	Rockingham County/Shiloh	5.6	75
Cleveland	Shelby Municipal	5.7	78
Columbus	Columbus County	5.7	78
Rutherford	Rutherford County	5.8	80
Gaston	Gastonia Municipal	5.9	84
Surry	Mount Airy-Surry County/Elkin Municipal	5.9	84
Rowan	Rowan County	6.0	85
Washington	Plymouth Municipal	6.1	86
Bladen	Curtis L. Brown Field	6.2	88
Chowan	Northeastern Regional	6.2	88
Halifax	Halifax County	6.3	92
Montgomery	Montgomery County	6.3	92
Robeson	Lumberton Municipal	6.3	92
Anson	Anson	6.4	93
Vance	Henderson-Oxford	6.9	96
Edgecombe	Tarboro-Edgecombe	7.2	98
Richmond	Richmond County	7.9	99
Scotland	Laurinburg-Maxton	9.6	100

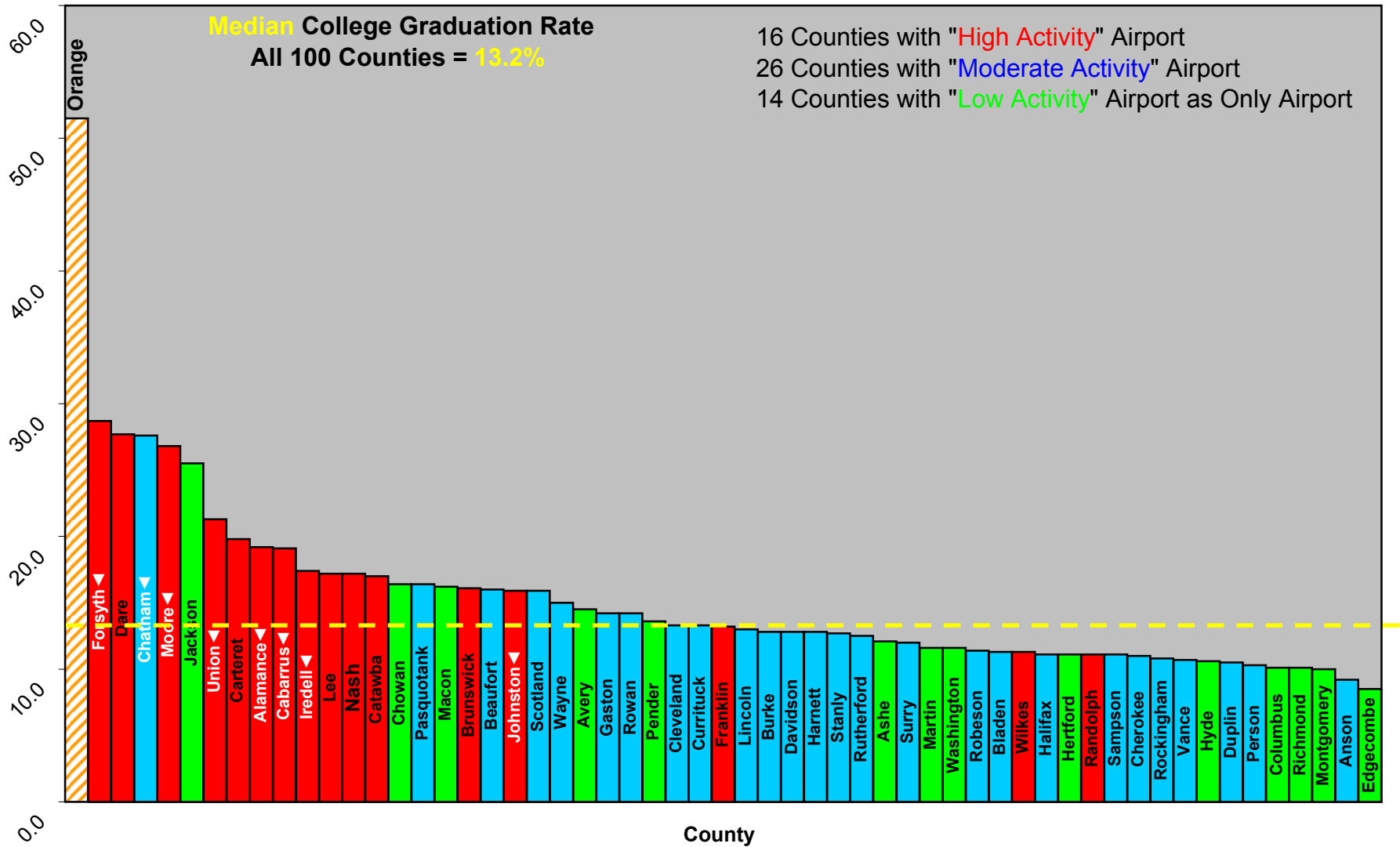
**Chart 4: High School Graduates as a Percent of Population -  
Counties with General Aviation Airports in NPIAS**



**Table 8: High School Graduates as a Percent of Population -  
Counties with General Aviation Airports in NPIAS**

County	Airport	% High School Graduates	Rank Statewide
Dare	Dare County/Billy Mitchell/First Flight	88.6	2
Orange		87.6	3
Moore ◀	Moore County	82.6	11
Carteret	Michael J. Smith Field	82.1	13
Forsyth ◀	Smith Reynolds	82.0	16
Union ◀	Monroe	80.2	20
Jackson	Jackson County	78.8	22
Iredell ◀	Statesville Municipal	78.4	23
Brunswick	Brunswick County	78.3	24
Cabarrus ◀	Concord Regional	78.2	25
Chatham ◀	Siler City Municipal	77.9	27
Currituck	Currituck County	77.6	29
Macon	Macon County	77.3	30
Wayne	Goldsboro-Wayne Municipal	77.2	31
Pasquotank	Elizabeth City Regional	76.8	32
Pender	Henderson Field	76.8	32
Alamance ◀	Burlington-Alamance Regional	76.5	34
Lee	Sanford-Lee County	76.3	36
Johnston ◀	Johnston County	75.9	37
Nash	Rocky Mount-Wilson Regional	75.6	38
Beaufort	Warren Field	75.0	40
Harnett	Harnett County	75.0	40
Person	Person County	74.9	42
Catawba	Hickory Regional	74.8	43
Rowan	Rowan County	74.2	44
Franklin	Franklin County	73.6	45
Stanly	Stanly County	73.4	47
Cherokee	Andrews-Murphy	73.3	48
Chowan	Northeastern Regional	73.1	50
Cleveland	Shelby Municipal	72.2	52
Davidson	Davidson County	72.0	54
Lincoln	Lincoln County Regional	71.7	58
Gaston	Gastonia Municipal	71.4	59
Scotland	Laurinburg-Maxton	71.4	59
Martin	Martin County	70.7	63
Avery	Avery County-Morrison Field	70.6	64
Bladen	Curtis L. Brown Field	70.6	64
Rutherford	Rutherford County	70.4	67
Anson	Anson	70.2	68
Randolph	Asheboro Municipal	70.0	70
Washington	Plymouth Municipal	69.9	71
Richmond	Richmond County	69.2	74
Sampson	Sampson County	69.1	76
Rockingham	Rockingham County/Shiloh	68.9	77
Ashe	Ashe County	68.6	79
Columbus	Columbus County	68.6	79
Hyde	Hyde County	68.4	82
Vance	Henderson-Oxford	68.1	84
Burke	Morganton-Lenoir	67.6	86
Surry	Mount Airy-Surry County/Elkin Municipal	67.0	88
Wilkes	Wilkes County	66.0	91
Duplin	Duplin County	65.8	92
Edgecombe	Tarboro-Edgecombe	65.6	93
Hertford	Tri-County	65.6	93
Halifax	Halifax County	65.4	95
Robeson	Lumberton Municipal	64.9	97
Montgomery	Montgomery County	64.2	98

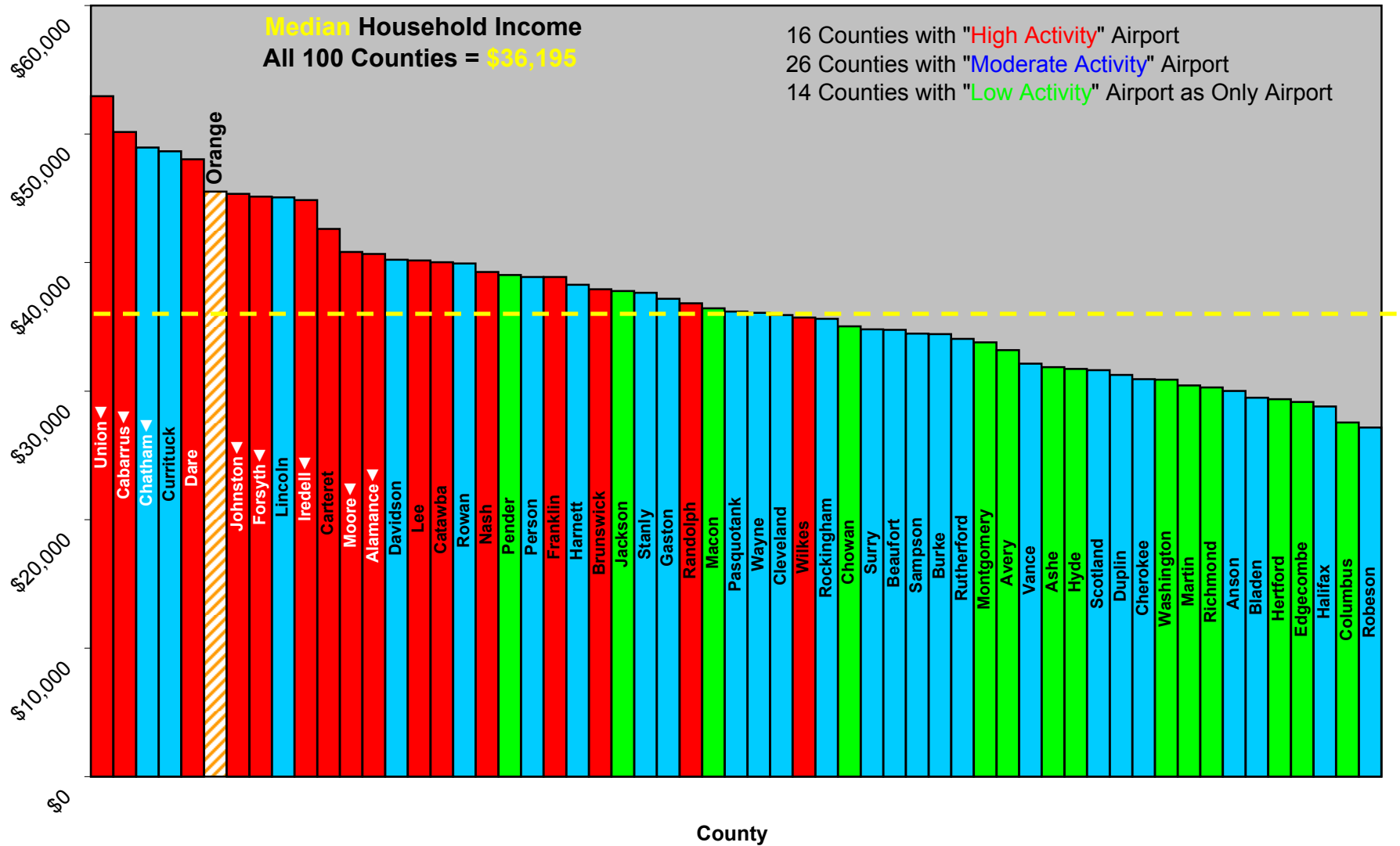
**Chart 5: College Graduates as a Percent of Population -  
Counties with General Aviation Airports in NPIAS**



**Table 9: College Graduates as a Percent of Population -  
Counties with General Aviation Airports in NPIAS**

County	Airport	% College Graduates	Rank Statewide
Orange		51.5	1
Forsyth ◀	Smith Reynolds	28.7	8
Dare	Dare County/Billy Mitchell/First Flight	27.7	9
Chatham ◀	Siler City Municipal	27.6	10
Moore ◀	Moore County	26.8	11
Jackson	Jackson County	25.5	14
Union ◀	Monroe	21.3	18
Carteret	Michael J. Smith Field	19.8	19
Alamance ◀	Burlington-Alamance Regional	19.2	21
Cabarrus ◀	Concord Regional	19.1	22
Iredell ◀	Statesville Municipal	17.4	25
Lee	Sanford-Lee County	17.2	26
Nash	Rocky Mount-Wilson Regional	17.2	26
Catawba	Hickory Regional	17.0	28
Chowan	Northeastern Regional	16.4	29
Pasquotank	Elizabeth City Regional	16.4	29
Macon	Macon County	16.2	31
Brunswick	Brunswick County	16.1	33
Beaufort	Warren Field	16.0	35
Johnston ◀	Johnston County	15.9	37
Scotland	Laurinburg-Maxton	15.9	37
Wayne	Goldsboro-Wayne Municipal	15.0	41
Avery	Avery County-Morrison Field	14.5	44
Gaston	Gastonia Municipal	14.2	45
Rowan	Rowan County	14.2	45
Pender	Henderson Field	13.6	48
Cleveland	Shelby Municipal	13.3	49
Currituck	Currituck County	13.3	49
Franklin	Franklin County	13.2	52
Lincoln	Lincoln County Regional	13.0	54
Burke	Morganton-Lenoir	12.8	56
Davidson	Davidson County	12.8	56
Harnett	Harnett County	12.8	56
Stanly	Stanly County	12.7	59
Rutherford	Rutherford County	12.5	60
Ashe	Ashe County	12.1	63
Surry	Mount Airy-Surry County/Elkin Municipal	12.0	64
Martin	Martin County	11.6	66
Washington	Plymouth Municipal	11.6	66
Robeson	Lumberton Municipal	11.4	69
Bladen	Curtis L. Brown Field	11.3	70
Wilkes	Wilkes County	11.3	70
Halifax	Halifax County	11.1	73
Hertford	Tri-County	11.1	73
Randolph	Asheboro Municipal	11.1	73
Sampson	Sampson County	11.1	73
Cherokee	Andrews-Murphy	11.0	77
Rockingham	Rockingham County/Shiloh	10.8	79
Vance	Henderson-Oxford	10.7	81
Hyde	Hyde County	10.6	82
Duplin	Duplin County	10.5	84
Person	Person County	10.3	87
Columbus	Columbus County	10.1	89
Richmond	Richmond County	10.1	89
Montgomery	Montgomery County	10.0	91
Anson	Anson	9.2	95
Edgecombe	Tarboro-Edgecombe	8.5	98

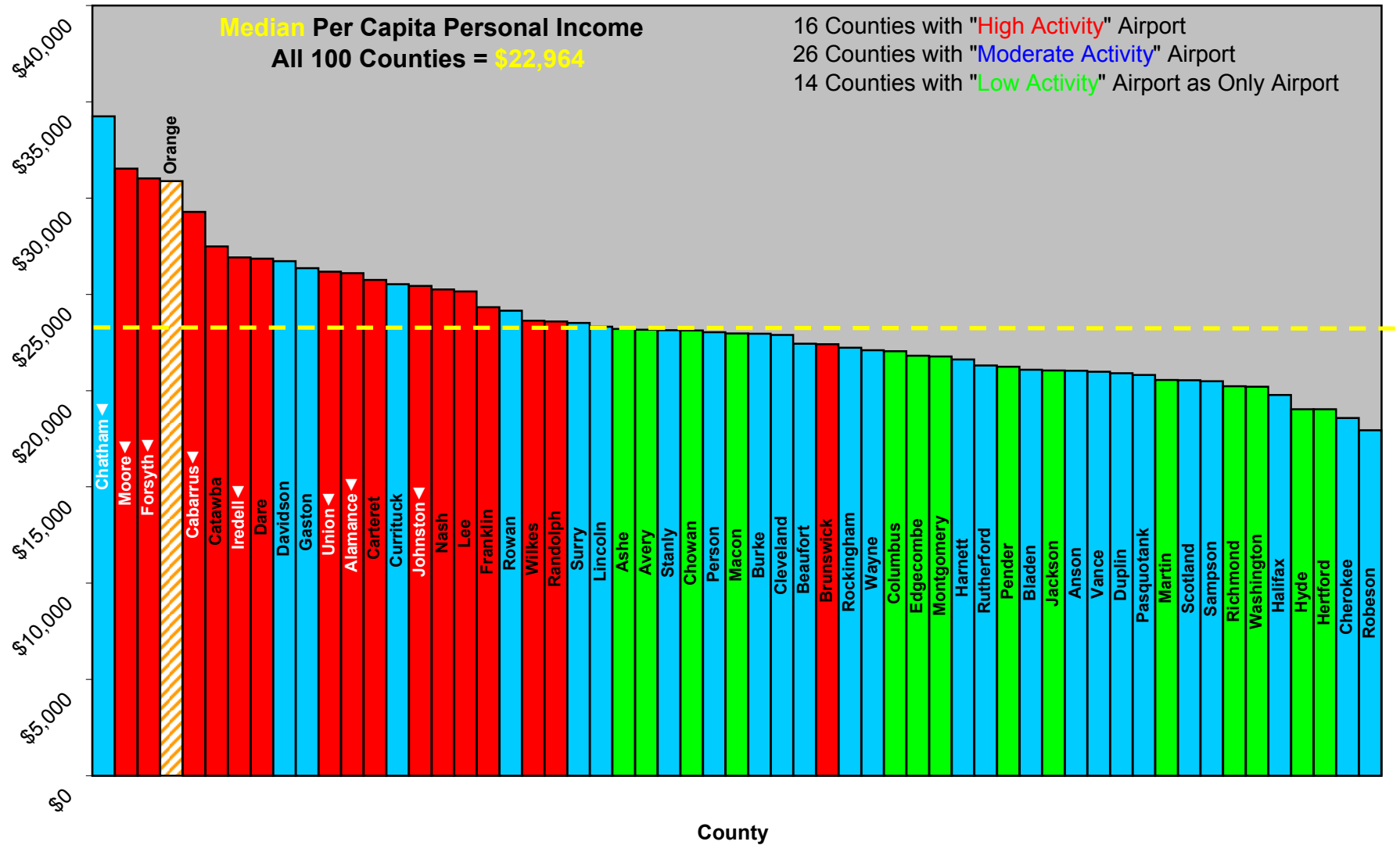
**Chart 6: Median Household Income -  
Counties with General Aviation Airports in NPIAS**



**Table 10: Median Household Income -  
Counties with General Aviation Airports in NPIAS**

County	Airport	Median Household Income	Rank Statewide
Union ◀	Monroe	\$52,947	2
Cabarrus ◀	Concord Regional	\$50,154	4
Chatham ◀	Siler City Municipal	\$48,946	5
Currituck	Currituck County	\$48,654	6
Dare	Dare County/Billy Mitchell/First Flight	\$48,036	7
Orange		\$45,527	10
Johnston ◀	Johnston County	\$45,342	12
Forsyth ◀	Smith Reynolds	\$45,123	13
Lincoln	Lincoln County Regional	\$45,068	14
Iredell ◀	Statesville Municipal	\$44,868	15
Carteret	Michael J. Smith Field	\$42,615	18
Moore ◀	Moore County	\$40,821	20
Alamance ◀	Burlington-Alamance Regional	\$40,675	21
Davidson	Davidson County	\$40,219	25
Lee	Sanford-Lee County	\$40,163	26
Catawba	Hickory Regional	\$40,017	27
Rowan	Rowan County	\$39,926	29
Nash	Rocky Mount-Wilson Regional	\$39,262	32
Pender	Henderson Field	\$39,029	35
Person	Person County	\$38,872	36
Franklin	Franklin County	\$38,867	37
Harnett	Harnett County	\$38,272	39
Brunswick	Brunswick County	\$37,921	40
Jackson	Jackson County	\$37,789	44
Stanly	Stanly County	\$37,642	45
Gaston	Gastonia Municipal	\$37,177	46
Randolph	Asheboro Municipal	\$36,824	47
Macon	Macon County	\$36,432	50
Pasquotank	Elizabeth City Regional	\$36,195	51
Wayne	Goldsboro-Wayne Municipal	\$36,096	52
Cleveland	Shelby Municipal	\$35,906	54
Wilkes	Wilkes County	\$35,712	57
Rockingham	Rockingham County/Shiloh	\$35,620	58
Chowan	Northeastern Regional	\$35,035	60
Surry	Mount Airy-Surry County/Elkin Municipal	\$34,797	61
Beaufort	Warren Field	\$34,765	62
Sampson	Sampson County	\$34,469	64
Burke	Morganton-Lenoir	\$34,430	65
Rutherford	Rutherford County	\$34,058	67
Montgomery	Montgomery County	\$33,795	69
Avery	Avery County-Morrison Field	\$33,188	73
Vance	Henderson-Oxford	\$32,133	78
Ashe	Ashe County	\$31,853	79
Hyde	Hyde County	\$31,725	80
Scotland	Laurinburg-Maxton	\$31,622	81
Duplin	Duplin County	\$31,248	84
Cherokee	Andrews-Murphy	\$30,932	85
Washington	Plymouth Municipal	\$30,878	86
Martin	Martin County	\$30,430	87
Richmond	Richmond County	\$30,280	88
Anson	Anson	\$30,017	89
Bladen	Curtis L. Brown Field	\$29,488	91
Hertford	Tri-County	\$29,370	92
Edgecombe	Tarboro-Edgecombe	\$29,152	93
Halifax	Halifax County	\$28,809	94
Columbus	Columbus County	\$27,557	97
Robeson	Lumberton Municipal	\$27,159	99

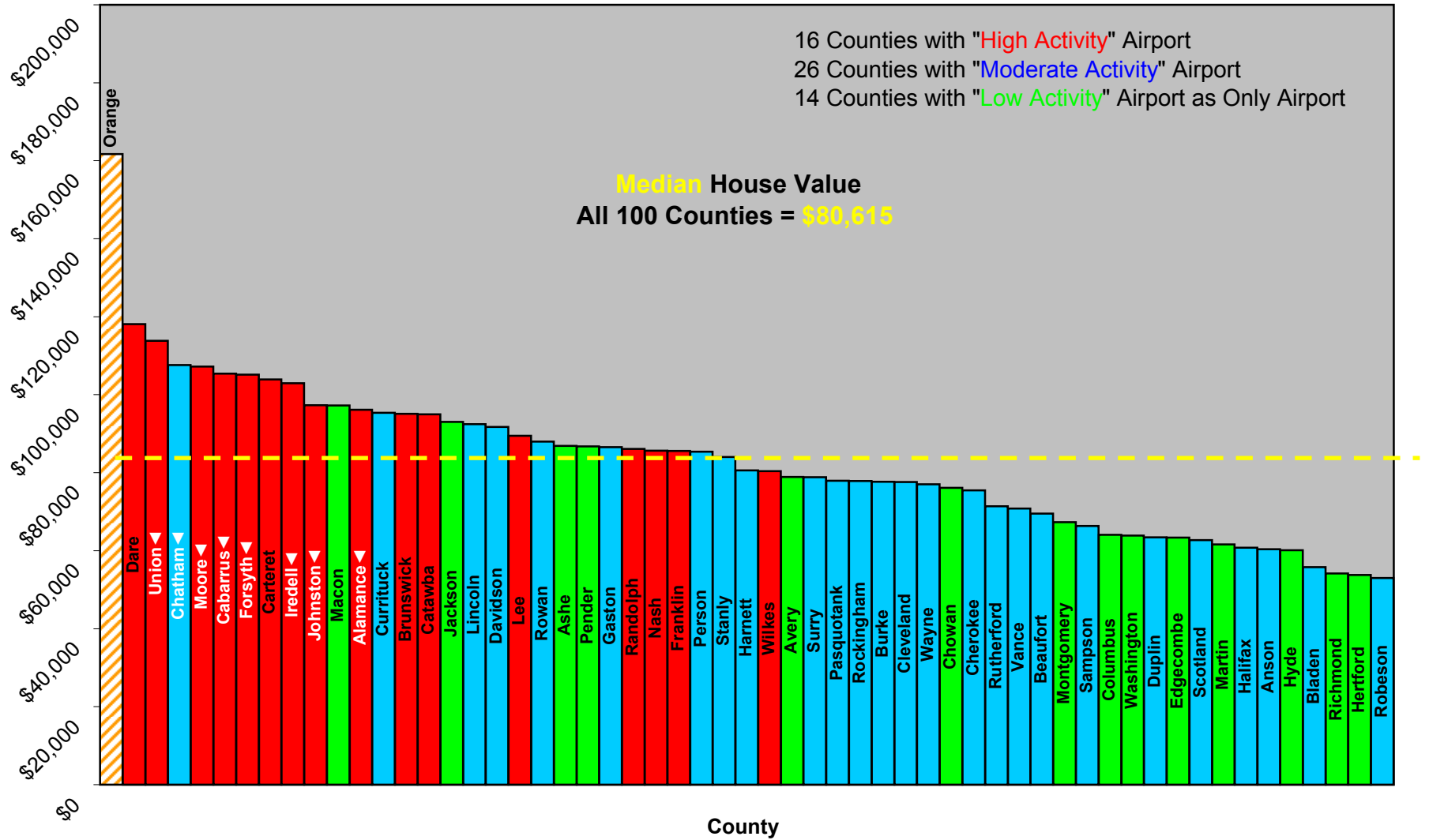
**Chart 7: Per Capita Personal Income -  
Counties with General Aviation Airports in NPIAS**



**Table 11: Per Capita Personal Income -  
Counties with General Aviation Airports in NPIAS**

County	Airport	Per Capita Personal Income	Rank Statewide
Chatham ◀	Siler City Municipal	\$34,242	3
Moore ◀	Moore County	\$31,534	4
Forsyth ◀	Smith Reynolds	\$31,019	5
Orange		\$30,885	6
Cabarrus ◀	Concord Regional	\$29,280	10
Catawba	Hickory Regional	\$27,483	14
Iredell ◀	Statesville Municipal	\$26,914	15
Dare	Dare County/Billy Mitchell/First Flight	\$26,853	16
Davidson	Davidson County	\$26,723	17
Gaston	Gastonia Municipal	\$26,364	19
Union ◀	Monroe	\$26,175	21
Alamance ◀	Burlington-Alamance Regional	\$26,102	22
Carteret	Michael J. Smith Field	\$25,755	24
Currituck	Currituck County	\$25,522	25
Johnston ◀	Johnston County	\$25,442	26
Nash	Rocky Mount-Wilson Regional	\$25,249	28
Lee	Sanford-Lee County	\$25,154	29
Franklin	Franklin County	\$24,329	32
Rowan	Rowan County	\$24,157	34
Wilkes	Wilkes County	\$23,627	37
Randolph	Asheboro Municipal	\$23,594	38
Surry	Mount Airy-Surry County/Elkin Municipal	\$23,508	40
Lincoln	Lincoln County Regional	\$23,316	43
Ashe	Ashe County	\$23,200	44
Avery	Avery County-Morrison Field	\$23,164	45
Stanly	Stanly County	\$23,135	47
Chowan	Northeastern Regional	\$23,124	48
Person	Person County	\$23,037	50
Macon	Macon County	\$22,964	51
Burke	Morganton-Lenoir	\$22,961	52
Cleveland	Shelby Municipal	\$22,892	53
Beaufort	Warren Field	\$22,441	57
Brunswick	Brunswick County	\$22,416	58
Rockingham	Rockingham County/Shiloh	\$22,233	60
Wayne	Goldsboro-Wayne Municipal	\$22,093	61
Columbus	Columbus County	\$22,048	62
Edgecombe	Tarboro-Edgecombe	\$21,808	63
Montgomery	Montgomery County	\$21,767	64
Harnett	Harnett County	\$21,616	66
Rutherford	Rutherford County	\$21,304	67
Pender	Henderson Field	\$21,244	68
Bladen	Curtis L. Brown Field	\$21,089	71
Jackson	Jackson County	\$21,047	73
Anson	Anson	\$21,035	74
Vance	Henderson-Oxford	\$20,976	75
Duplin	Duplin County	\$20,901	76
Pasquotank	Elizabeth City Regional	\$20,814	77
Martin	Martin County	\$20,550	80
Scotland	Laurinburg-Maxton	\$20,544	81
Sampson	Sampson County	\$20,487	82
Richmond	Richmond County	\$20,225	84
Washington	Plymouth Municipal	\$20,198	86
Halifax	Halifax County	\$19,777	89
Hyde	Hyde County	\$19,037	93
Hertford	Tri-County	\$19,026	94
Cherokee	Andrews-Murphy	\$18,576	95
Robeson	Lumberton Municipal	\$17,935	96

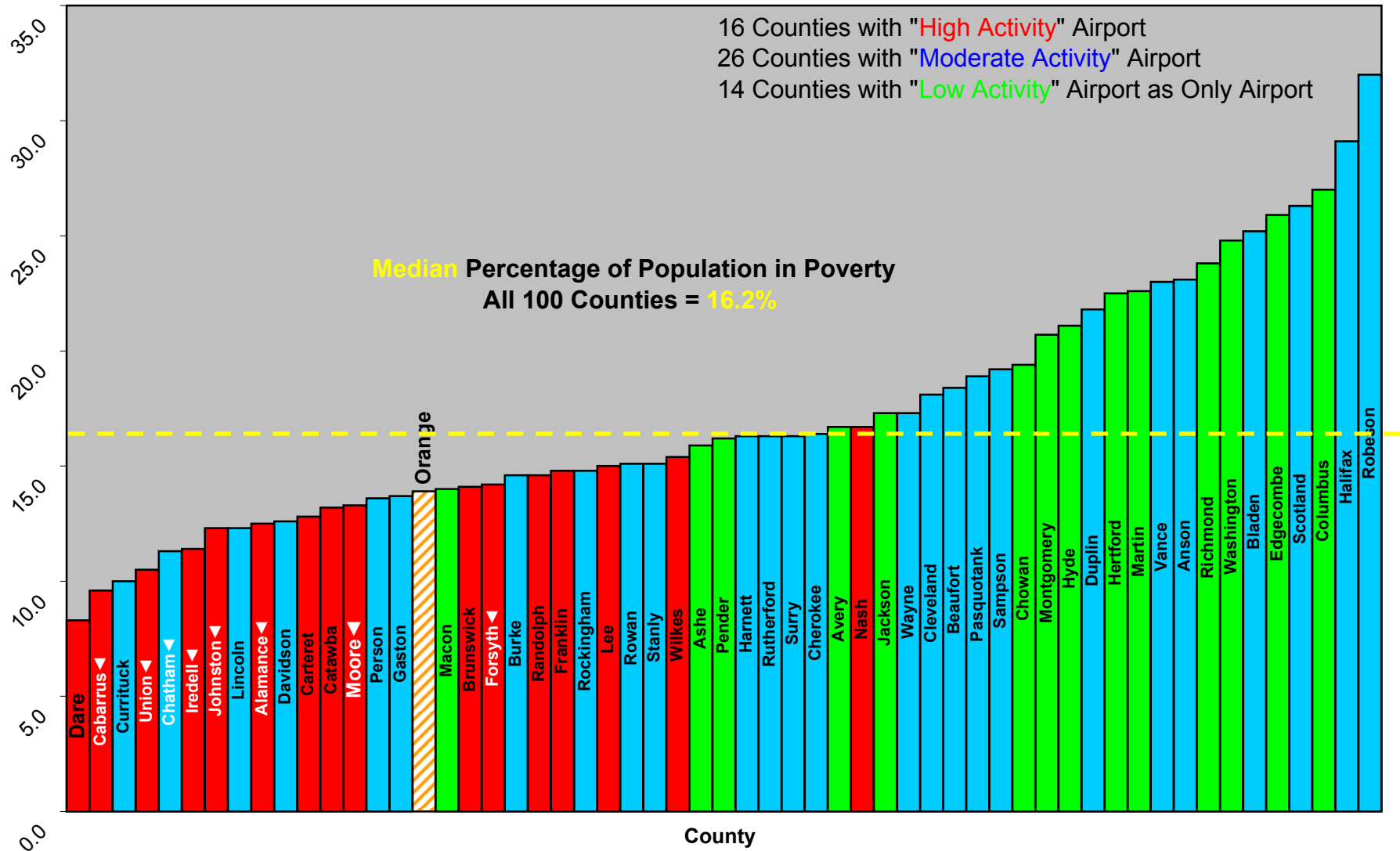
**Chart 8: Median House Value -  
Counties with General Aviation Airports in NPIAS**



**Table 12: Median House Value -  
Counties with General Aviation Airports in NPIAS**

County	Airport	Median House Value	Rank Statewide
Orange		\$161,721	1
Dare	Dare County/Billy Mitchell/First Flight	\$118,111	4
Union ◀	Monroe	\$113,846	8
Chatham ◀	Siler City Municipal	\$107,613	10
Moore ◀	Moore County	\$107,209	12
Cabarrus ◀	Concord Regional	\$105,430	13
Forsyth ◀	Smith Reynolds	\$105,182	14
Carteret	Michael J. Smith Field	\$103,903	16
Iredell ◀	Statesville Municipal	\$102,958	17
Johnston ◀	Johnston County	\$97,329	21
Macon	Macon County	\$97,276	22
Alamance ◀	Burlington-Alamance Regional	\$96,174	23
Currituck	Currituck County	\$95,396	24
Brunswick	Brunswick County	\$95,078	25
Catawba	Hickory Regional	\$94,970	26
Jackson	Jackson County	\$93,032	28
Lincoln	Lincoln County Regional	\$92,441	29
Davidson	Davidson County	\$91,729	30
Lee	Sanford-Lee County	\$89,448	32
Rowan	Rowan County	\$87,988	35
Ashe	Ashe County	\$86,877	36
Pender	Henderson Field	\$86,751	37
Gaston	Gastonia Municipal	\$86,587	38
Randolph	Asheboro Municipal	\$86,111	39
Nash	Rocky Mount-Wilson Regional	\$85,644	42
Franklin	Franklin County	\$85,565	43
Person	Person County	\$85,391	44
Stanly	Stanly County	\$84,041	48
Harnett	Harnett County	\$80,615	53
Wilkes	Wilkes County	\$80,383	54
Avery	Avery County-Morrison Field	\$78,893	58
Surry	Mount Airy-Surry County/Elkin Municipal	\$78,821	59
Pasquotank	Elizabeth City Regional	\$77,962	61
Rockingham	Rockingham County/Shiloh	\$77,869	62
Burke	Morganton-Lenoir	\$77,678	63
Cleveland	Shelby Municipal	\$77,590	64
Wayne	Goldsboro-Wayne Municipal	\$77,042	65
Chowan	Northeastern Regional	\$76,103	66
Cherokee	Andrews-Murphy	\$75,451	67
Rutherford	Rutherford County	\$71,387	70
Vance	Henderson-Oxford	\$70,797	72
Beaufort	Warren Field	\$69,547	75
Montgomery	Montgomery County	\$67,343	77
Sampson	Sampson County	\$66,314	78
Columbus	Columbus County	\$64,091	84
Washington	Plymouth Municipal	\$63,866	85
Duplin	Duplin County	\$63,422	87
Edgecombe	Tarboro-Edgecombe	\$63,346	88
Scotland	Laurinburg-Maxton	\$62,744	89
Martin	Martin County	\$61,585	90
Halifax	Halifax County	\$60,800	91
Anson	Anson	\$60,351	92
Hyde	Hyde County	\$60,122	93
Bladen	Curtis L. Brown Field	\$55,793	94
Richmond	Richmond County	\$54,161	95
Hertford	Tri-County	\$53,769	96
Robeson	Lumberton Municipal	\$53,012	98

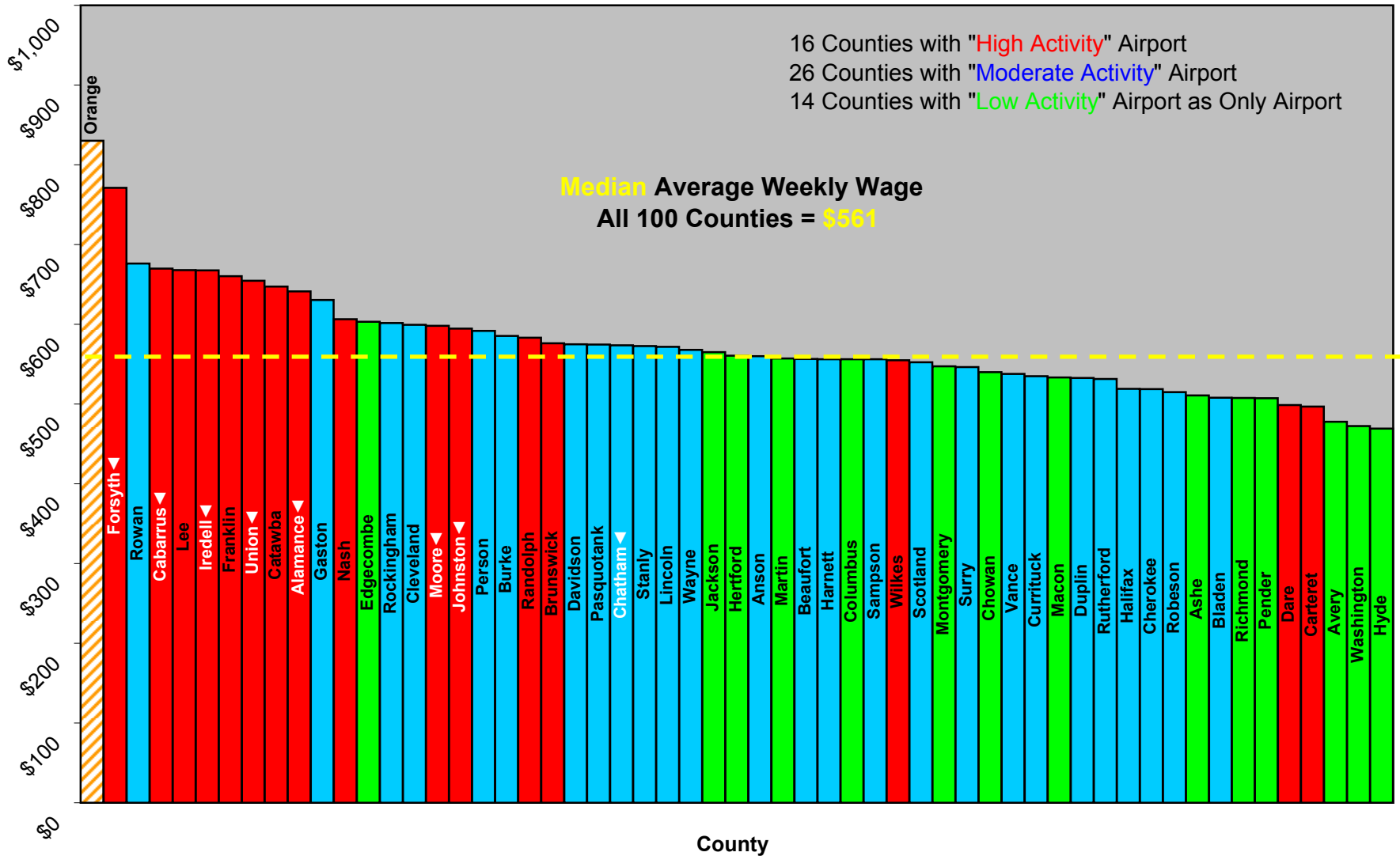
**Chart 9: Percentage of Population in Poverty -  
Counties with General Aviation Airports in NPIAS**



**Table 13: Percentage of Population in Poverty -  
Counties with General Aviation Airports in NPIAS**

County	Airport	Percentage of Population in Poverty	Rank (Low to High) Statewide
Dare	Dare County/Billy Mitchell/First Flight	8.3	1
Cabarrus ◀	Concord Regional	9.6	3
Currituck	Currituck County	10.0	4
Union ◀	Monroe	10.5	6
Chatham ◀	Siler City Municipal	11.3	10
Iredell ◀	Statesville Municipal	11.4	11
Johnston ◀	Johnston County	12.3	16
Lincoln	Lincoln County Regional	12.3	16
Alamance ◀	Burlington-Alamance Regional	12.5	18
Davidson	Davidson County	12.6	20
Carteret	Michael J. Smith Field	12.8	23
Catawba	Hickory Regional	13.2	26
Moore ◀	Moore County	13.3	28
Person	Person County	13.6	29
Gaston	Gastonia Municipal	13.7	30
Orange		13.9	33
Macon	Macon County	14.0	34
Brunswick	Brunswick County	14.1	35
Forsyth ◀	Smith Reynolds	14.2	36
Burke	Morganton-Lenoir	14.6	40
Randolph	Asheboro Municipal	14.6	40
Franklin	Franklin County	14.8	42
Rockingham	Rockingham County/Shiloh	14.8	42
Lee	Sanford-Lee County	15.0	44
Rowan	Rowan County	15.1	46
Stanly	Stanly County	15.1	46
Wilkes	Wilkes County	15.4	47
Ashe	Ashe County	15.9	50
Pender	Henderson Field	16.2	51
Harnett	Harnett County	16.3	54
Rutherford	Rutherford County	16.3	54
Surry	Mount Airy-Surry County/Elkin Municipal	16.3	54
Cherokee	Andrews-Murphy	16.4	55
Avery	Avery County-Morrison Field	16.7	59
Nash	Rocky Mount-Wilson Regional	16.7	59
Jackson	Jackson County	17.3	63
Wayne	Goldsboro-Wayne Municipal	17.3	63
Cleveland	Shelby Municipal	18.1	68
Beaufort	Warren Field	18.4	70
Pasquotank	Elizabeth City Regional	18.9	71
Sampson	Sampson County	19.2	73
Chowan	Northeastern Regional	19.4	75
Montgomery	Montgomery County	20.7	79
Hyde	Hyde County	21.1	80
Duplin	Duplin County	21.8	83
Hertford	Tri-County	22.5	85
Martin	Martin County	22.6	86
Vance	Henderson-Oxford	23.0	87
Anson	Anson	23.1	87
Richmond	Richmond County	23.8	89
Washington	Plymouth Municipal	24.8	91
Bladen	Curtis L. Brown Field	25.2	93
Edgecombe	Tarboro-Edgecombe	25.9	95
Scotland	Laurinburg-Maxton	26.3	96
Columbus	Columbus County	27.0	97
Halifax	Halifax County	29.1	99
Robeson	Lumberton Municipal	32.0	100

**Chart 10: Average Weekly Wage -  
Counties with General Aviation Airports in NPIAS**



**Table 14: Average Weekly Wage -  
Counties with General Aviation Airports in NPIAS**

County	Airport	Average Weekly Wage	Rank Statewide
Orange		\$830	3
Forsyth ◀	Smith Reynolds	\$771	5
Rowan	Rowan County	\$676	9
Cabarrus ◀	Concord Regional	\$670	10
Lee	Sanford-Lee County	\$668	11
Iredell ◀	Statesville Municipal	\$668	12
Franklin	Franklin County	\$660	14
Union ◀	Monroe	\$655	16
Catawba	Hickory Regional	\$647	18
Alamance ◀	Burlington-Alamance Regional	\$641	20
Gaston	Gastonia Municipal	\$630	23
Nash	Rocky Mount-Wilson Regional	\$606	25
Edgecombe	Tarboro-Edgecombe	\$603	26
Rockingham	Rockingham County/Shiloh	\$602	27
Cleveland	Shelby Municipal	\$599	28
Moore ◀	Moore County	\$598	29
Johnston ◀	Johnston County	\$595	30
Person	Person County	\$592	31
Burke	Morganton-Lenoir	\$585	32
Randolph	Asheboro Municipal	\$583	33
Brunswick	Brunswick County	\$576	35
Davidson	Davidson County	\$575	36
Pasquotank	Elizabeth City Regional	\$575	37
Chatham ◀	Siler City Municipal	\$574	38
Stanly	Stanly County	\$573	39
Lincoln	Lincoln County Regional	\$572	40
Wayne	Goldsboro-Wayne Municipal	\$568	41
Jackson	Jackson County	\$565	42
Hertford	Tri-County	\$561	43
Anson	Anson	\$560	44
Martin	Martin County	\$557	45
Beaufort	Warren Field	\$556	46
Harnett	Harnett County	\$556	47
Columbus	Columbus County	\$556	48
Sampson	Sampson County	\$556	49
Wilkes	Wilkes County	\$555	50
Scotland	Laurinburg-Maxton	\$552	51
Montgomery	Montgomery County	\$547	56
Surry	Mount Airy-Surry County/Elkin Municipal	\$546	57
Chowan	Northeastern Regional	\$540	61
Vance	Henderson-Oxford	\$538	63
Currituck	Currituck County	\$535	66
Macon	Macon County	\$533	67
Duplin	Duplin County	\$533	68
Rutherford	Rutherford County	\$532	69
Halifax	Halifax County	\$519	74
Cherokee	Andrews-Murphy	\$519	75
Robeson	Lumberton Municipal	\$515	80
Ashe	Ashe County	\$511	83
Bladen	Curtis L. Brown Field	\$508	84
Richmond	Richmond County	\$508	85
Pender	Henderson Field	\$507	86
Dare	Dare County/Billy Mitchell/First Flight	\$499	90
Carteret	Michael J. Smith Field	\$497	93
Avery	Avery County-Morrison Field	\$478	95
Washington	Plymouth Municipal	\$472	96
Hyde	Hyde County	\$469	97



**Table 15: North Carolina General Aviation Airports Located In Counties that Rank Above the State-Wide Median for 10 of 10 Economic Indicators**

County	County Population	Airport	Airport Group	2006 Annual Economic Impact (Direct, Indirect and Induced)	Annual Economic Impact Per Person
Alamance	139,786	Burlington-Alamance Regional Airport	Red	\$ 46,006,700	\$ 329
Cabarrus	157,176	Concord Regional Airport	Red	\$110,003,500	\$ 700
Chatham	57,708	Siler City Municipal Airport	Blue	\$ 9,932,200	\$ 172
Forsyth	331,851	Smith Reynolds Airport	Red	\$137,125,800	\$ 413
Iredell	145,232	Statesville Municipal Airport	Red	\$ 46,934,500	\$ 323
Johnston	151,589	Johnston County Airport	Red	\$ 42,810,200	\$ 282
Moore	82,288	Moore County Airport	Red	\$ 86,334,300	\$1,049
Union	172,094	Monroe Airport	Red	\$ 22,890,500	\$ 133

## **APPENDIX “A”**

### **2006 ECONOMIC IMPACT OF NORTH CAROLINA’S PUBLICLY-OWNED AIRPORTS**

# **2006 Economic Impact of North Carolina's Publicly-Owned Airports**

## **FINAL REPORT**

### **NCDOT Project HWY-0716**

Prepared by

Daniel J. Findley, E.I., Graduate Student

Department of Civil, Construction & Environmental Engineering

and

Robert S. Foyle, P.E., Associate Director

The Institute for Transportation Research and Education

North Carolina State University

Raleigh, NC

Prepared for

The Division of Aviation

North Carolina Department of Transportation

Raleigh, NC

November 5, 2007

# TECHNICAL REPORT DOCUMENTATION PAGE

1. Report No. <b>FHWA/NC/2007-_____</b>	2. Government Accession No.	3. Recipient's Catalog No.	
4. Title and Subtitle <b>2006 Economic Impact of North Carolina's Publicly-Owned Airports</b>		5. Report Date <b>November 5, 2007</b>	
		6. Performing Organization Code	
7. Author(s) Daniel J. Findley, Robert S. Foyle		8. Performing Organization Report No.	
9. Performing Organization Name and Address <b>North Carolina State University</b>  <b>The Institute for Transportation Research and Education</b> <b>Raleigh, NC 27695</b>		10. Work Unit No. (TRAIS)	
		11. Contract or Grant No.	
12. Sponsoring Agency Name and Address <b>North Carolina Department of Transportation</b> <b>Division of Aviation</b> <b>1050 Meridian Drive</b> <b>RDU Airport, NC 27623</b>		13. Type of Report and Period Covered <b>Final Report</b>  <b>October 1, 2005 –</b> <b>December 31, 2006</b>	
		14. Sponsoring Agency Code <b>HWY-0716</b>	
Supplementary Notes:			
<p>16. Abstract</p> <p>The N.C. Division of Aviation last conducted a statewide study of the economic impact of airports in North Carolina in 1996. Significant investment of local, state, and federal dollars for infrastructure improvements at the airports has occurred over a 10-year span. The Division of Aviation wanted to ascertain what change in economic impact had occurred since the previous study given these infrastructure improvements and other changes in aviation patterns and visible growth, particularly for general aviation airports.</p> <p>This project examined the current economic impact of aviation services for the 74 publicly-owned airports in North Carolina, both on the statewide and the local, county levels. The results of the study show that 88,423 jobs contribute \$11.81 billion in economic impact to local, regional, and statewide economies. These impacts include direct, indirect, and induced impacts. Of these impacts, approximately 16 percent (14,970 jobs, \$1.88 billion) are associated with the 63 general aviation airports and 84 percent (73,453 jobs, \$9.93 billion) are associated with the 11 commercial (or scheduled air carrier) airports.</p> <p>Extensive use of electronic survey distribution, gathering, and coding into linked spreadsheets enabled the entire team to manage and tabulate all survey information. All relevant data from the surveys were entered into an economic model created for each airport. IMPLAN was used to generate some of the indirect and all of the induced impacts through cooperation with the North Carolina Department of Commerce. Supplemental data was also provided from UNC researchers who had recently conducted economic impact studies for Charlotte Douglas International and Raleigh-Durham International airports.</p> <p>The overall project scope included the production of a 10 minute digital video, titled "North Carolina Aviation Soars!", which showcases the importance of aviation activities for the state. In addition, a four-color, 12-page brochure was created that documents the findings of this study and incorporates some of the critical services accommodated through access to these 74 airports.</p>			
17. Key Words <b>Economic Analysis, Economic Impacts, Airports, Aviation</b>		18. Distribution Statement	
19. Security Classif. (of this report) Unclassified	20. Security Classif. (of this page) Unclassified	21. No. of Pages ...120...	22. Price

## **DISCLAIMER**

The contents of this report reflect the views of the authors and not necessarily the views of the North Carolina Department of Transportation. The authors are responsible for the facts and the accuracy of the data presented herein. The contents do not necessarily reflect the official views or policies of the North Carolina Department of Transportation, the Federal Aviation Administration, or North Carolina State University at the time of publication. This report does not constitute a standard, specification, or regulation.

## ACKNOWLEDGEMENTS

The research team wishes to thank the Division of Aviation of the North Carolina Department of Transportation for supporting this project. It is the team's hope that this study will become a benchmark for documenting the change in benefit over time of aviation services in North Carolina.

The research team greatly appreciates the tremendous support and efforts received from Ted Alman, Dave Thomas, Bobby Walston, and Rick Barks at the Division of Aviation. Special recognition is given to Carla Faulkner, a student intern with the Division of Aviation, who provided exceptional support on the data collection of the surveys and the coding in of responses via electronic linking within the master spreadsheet. Special appreciation is also given to Bill Williams, Director of the Division of Aviation, and former Deputy Secretary David King for their valuable support of the study.

The research team received important technical support from the North Carolina Department of Commerce in using IMPLAN, the economic model used by them in estimating the economic impact of businesses and industries throughout North Carolina. Special thanks are extended to Tammy Lester, Timothy Aylor, and Sarah Nienow for their support and guidance in using the IMPLAN model.

The research team also expresses thanks to Lisa Gullette, former Communications Director at ITRE, and to the DELTA team (Larry Evans and Darren Ley) at NC State University for developing the brochure and video, respectively, for use by NCDOT and airport managers, relevant council members, and community officials and leaders in documenting the benefits of aviation services across the state.

The team also appreciates the efforts of graduate student Daniel J. Findley, who did an outstanding job throughout the project and was vital to its completion. He was especially valuable in creating and running the economic model for each airport. Appreciation is given to Shannon Fain, a former research associate at ITRE, who worked on the economic analysis methodology and development of the brochure layout.

The team wishes to thank the UNC researchers who conducted the economic impact studies for Charlotte-Douglas and Raleigh Durham International airports for providing the raw data from their surveys collected from tenants and business users within their study boundaries. This data certainly expanded the information collected under this project and resulted in better impact figures for these two airports.

Without the help of all the above individuals, this project could not have been successfully accomplished.

## EXECUTIVE SUMMARY

---

The Division of Aviation last conducted a statewide study of the economic impact of airports in North Carolina in 1996. Significant investment of local, state, and federal dollars for infrastructure improvements at the airports has occurred over a 10-year span. The Division of Aviation wanted to ascertain what change in economic impact had occurred since the previous study given these infrastructure improvements and other changes in aviation patterns and visible growth, particularly for general aviation airports.

This project examined the current economic impact of aviation services for the 74 publicly-owned airports in North Carolina, both on the statewide and the local, county levels. The results of the study show that 88,423 jobs contribute \$11.81 billion in economic impact to local, regional, and statewide economies. These impacts include direct, indirect, and induced impacts. Of these impacts, approximately 16 percent (14,970 jobs, \$1.88 billion) are associated with the 63 general aviation airports and 84 percent (73,453 jobs, \$9.93 billion) are associated with the 11 commercial (or scheduled air carrier) airports.

The Division of Aviation provided significant staff support for this project. Extensive use of electronic survey distribution, gathering, and coding into linked spreadsheets enabled the entire team to manage and tabulate all survey information and look for gaps. Follow-up calls were made to gather as much missing information as possible. All relevant data from the surveys were entered into an economic model created for each airport. IMPLAN was used to generate some of the indirect and all of the induced impacts through cooperation with the North Carolina Department of Commerce. Supplemental data was also provided from UNC researchers who had recently conducted economic impact studies for Charlotte Douglas International and Raleigh-Durham International airports.

The overall project scope included the production of a 10-minute digital video, titled *North Carolina Aviation Soars!*, which showcases the importance of aviation activities for the state. In addition, a four-color, 12-page brochure was created that documents the findings of this study and incorporates some of the critical services accommodated through access to these 74 airports.

# TABLE OF CONTENTS

---

<b>DISCLAIMER.....</b>	<b>i</b>
<b>ACKNOWLEDGEMENTS .....</b>	<b>ii</b>
<b>EXECUTIVE SUMMARY .....</b>	<b>iii</b>
<b>TABLE OF CONTENTS.....</b>	<b>iv</b>
<b>LIST OF EXHIBITS.....</b>	<b>v</b>
<b>INTRODUCTION.....</b>	<b>1</b>
BACKGROUND.....	1
PROBLEM STATEMENT.....	1
SCOPE AND OBJECTIVES .....	1
REPORT OVERVIEW .....	2
<b>2006 ECONOMIC IMPACT RESULTS.....</b>	<b>3</b>
<b>ECONOMIC IMPACT METHODOLOGY.....</b>	<b>6</b>
TEAM MANAGEMENT.....	6
DATA COLLECTION.....	6
ESTIMATING IMPACTS USING IMPLAN .....	7
SUPPLEMENTING IMPLAN IMPACTS.....	10
ADDITIONAL DATA .....	14
FINDINGS.....	14
<b>GENERAL COMPARISON TO THE 1996 STUDY .....</b>	<b>18</b>
<b>RECOMMENDATIONS.....</b>	<b>20</b>
RECOMMENDATIONS FOR IMPLEMENTATION .....	20
RECOMMENDATIONS FOR FUTURE EFFORT .....	20
IMPLEMENTATION AND TECHNOLOGY TRANSFER PLAN.....	20
<b>REFERENCES.....</b>	<b>22</b>
<b>APPENDICES .....</b>	<b>24</b>
APPENDIX A: LITERATURE REVIEW .....	24
APPENDIX B: SAMPLE SURVEYS.....	29
APPENDIX C: AIRPORT SUMMARIES .....	39

## LIST OF EXHIBITS

EXHIBIT 1: SUMMARY OF 2006 ECONOMIC IMPACT RESULTS .....	3
EXHIBIT 2: LOCATION OF THE PUBLIC AIRPORTS IN NORTH CAROLINA .....	4
EXHIBIT 3: ECONOMIC IMPACT FOR GENERAL AVIATION AIRPORTS .....	4
EXHIBIT 4: GA AND AIR CARRIER OPERATIONS AT COMMERICAL AIRPORTS .....	5
EXHIBIT 5: PROPERTY TAX VALUE, PROPERTY TAXES AND OTHER TAXES .....	5
EXHIBIT 6: IMPLAN MODEL COUNTY LIST FOR GA AND COMMERCIAL AIRPORTS .....	8
EXHIBIT 7: ESTIMATED VALUE OF AIRCRAFT.....	11
EXHIBIT 8: AIRCRAFT VALUE AND TAX REVENUE .....	12
EXHIBIT 9: 2006 OUTPUT IMPACT BY AIRPORT .....	15
EXHIBIT 10: 2006 EMPLOYMENT IMPACT BY AIRPORT.....	16
EXHIBIT 11: 2006 PAYROLL IMPACT BY AIRPORT .....	17
EXHIBIT 12: COMPARISON WITH THE 1996 STUDY .....	18
EXHIBIT 13: COMPARISON WITH 1996 STUDY FOR GA AIRPORTS.....	19
EXHIBIT A.1: A COMPARISON OF THE DIFFERENT MODELS .....	26
EXHIBIT A.2: SUMMARY OF STATE AVIATION ECONOMIC IMPACT REPORTS .....	27
EXHIBIT A.3: COMPARISON OF RESULTS FOR SELECTED STUDIES USING IMPLAN.....	28

# INTRODUCTION

---

## **BACKGROUND**

The Division of Aviation last conducted a statewide study of the economic impact of airports in North Carolina in 1996. Significant investment of local, state, and federal dollars for infrastructure improvements at the airports has occurred over a 10-year span. The Division of Aviation wanted to ascertain what change in economic impact had occurred since the previous study given these infrastructure improvements and other changes in aviation patterns and visible growth, particularly for general aviation airports.

The purpose of this project is to examine and report the current economic impact of aviation services for the 74 publicly-owned airports in North Carolina, both on the statewide and the local, county levels. The results of the study will be documented in this technical report, a brochure, and a digital video for use by the Division of Aviation and airport managers and other municipal and elected officials. The division would use these tools to show the existing as well as the future potential impact of aviation activities to various audiences such as the North Carolina General Assembly, the North Carolina Department of Transportation's Board of Transportation, businesses and industries located in North Carolina, as well as businesses and industries that could potentially locate in North Carolina. The division would also distribute the brochure and video to local airport managers for their use in communicating the importance of aviation to their local county commissioners and other municipal and elected officials.

## **PROBLEM STATEMENT**

The NCDOT desires to establish a benchmark measure of the economic impact of aviation services for the 74 public airports in North Carolina. The methodology for the study will be fully-documented and repeatable over time. The methodology will follow accepted economic impact assessment techniques and will be consistent with the recommended methodology from the Federal Aviation Administration.

## **SCOPE AND OBJECTIVES**

This research project will utilize data collected from several surveys targeted to airport managers, airport tenants, and business users of the 74 public airports in North Carolina. The information returned will be entered into an economic model developed for each airport. Output results will be compiled and documented for each airport. Additional educational and marketing materials will be created for use in telling the story of the importance of aviation services throughout North Carolina.

The project will be completed through the following tasks:

1. Review Literature
2. Identify Study Characteristics
3. Identify Study Sites
4. (1) Conduct Field Studies of Airports  
(2) Conduct Field Studies of Companies Associated with Airports
5. Obtain and Analyze Collected Data
6. Develop Format and Arrangement of Brochure and Production of the Video
7. Print and Deliver Brochures/Video and Final Report

## **REPORT OVERVIEW**

The report first presents a summary of the results from this study followed by an explanation of the methodology used in this study with detailed results. A brief comparison to the 1996 study is then presented, and finally recommendations are made for implementation and technology transfer.

Appendices include: (A) the literature review, (B) samples of each survey used for data collection, and (C) one page summaries of results for each airport.

## 2006 ECONOMIC IMPACT RESULTS

---

This study documents the significant economic impact aviation has in supporting and encouraging economic development across the state. The major components of economic impact included are direct, indirect, and induced impacts, payroll, jobs, property tax value for based aircraft, and the number of visitors at each airport. All of these components are defined and explained in more detail in the methodology section of the report.

There is almost \$12 billion in economic impact associated with aviation activities at these 74 airports in North Carolina (Exhibit 1). Airports directly and indirectly support over 88,000 jobs. Aviation is clearly a huge economic engine for the state. While general aviation airports account for about 16% of the impact and jobs, these numbers are up significantly from the 1996 study. As expected, the commercial airports employ and support a large number of jobs and generate \$10 billion in economic impact across the state. Their impacts are also more regional than local.

**Exhibit 1 – Summary of 2006 Economic Impact Results**

	<b>Jobs</b>	<b>% of Total Jobs</b>	<b>Economic Impact per Year</b>	<b>% of Total Impact</b>
<b>General Aviation</b>	<b>14,970</b>	<b>17%</b>	<b>\$1.88 Billion</b>	<b>16%</b>
<b>Commercial</b>	<b>73,453</b>	<b>83%</b>	<b>\$9.93 Billion</b>	<b>84%</b>
<b>TOTAL</b>	<b>88,423</b>	<b>100%</b>	<b>\$11.81 Billion</b>	<b>100%</b>

Commercial airports are defined as those airports with scheduled air carrier service. General aviation airports support commercial activity, such as chartered and on-demand flights, but do not have scheduled air carrier service.

North Carolina's airports are located throughout the state, with most counties having either a commercial or general aviation airport. Exhibit 2 shows the 74 publicly-owned airports located across North Carolina. The 74 airports have been coded into categories representing runway capabilities and activity. The 11 commercial airports are yellow, followed by 15 red category airports, 26 blue category airports, and 17 green category airports. There are five (5) additional special category airports (Horace-Williams and Wilson Industrial and three National Park Service airports).

## Exhibit 2 – Location of the Public Airports in North Carolina



In looking at the impact at each of the general aviation airports, the red airports generate the highest impact per airport on average compared to the other general aviation airports. The distribution of economic impact among these general aviation airports is shown in Exhibit 3. What is significant and will be discussed later is the tremendous growth in economic impact at these airports from the 1996 total of \$0.16 billion to the current total of \$1.88 billion.

## Exhibit 3 – Economic Impact for General Aviation Airports

Airport Category	Jobs	% of Total Jobs	Economic Impact per Year	% of Total Impact
GA – Red (15)	6,724	45%	\$888.7 M	47%
GA – Blue (26)	5,323	36%	\$690.2 M	37%
GA – Green (17)	2,700	18%	\$265.8 M	14%
Special (5)	223	1%	\$32.1 M	2%
<b>TOTAL GA + Special</b>	<b>14,970</b>	<b>100%</b>	<b>\$1.88 Billion</b>	<b>100%</b>

There are general aviation activities at the commercial airports as well. Exhibit 4 shows that about 8% of the impact and jobs at the commercial airports is related to general aviation services. However, the bulk of the impact is clearly due to the air carrier operations that support the everyday business and leisure travelers using these commercial airports.

**Exhibit 4 – GA and Air Carrier Operations at Commercial Airports**

	<b>Jobs</b>	<b>% of Total Jobs</b>	<b>Economic Impact per Year</b>	<b>% of Total Impact</b>
<b>GA Operations</b>	<b>4,800</b>	<b>7%</b>	<b>\$0.75 Billion</b>	<b>8%</b>
<b>Air Carrier Operations</b>	<b>68,653</b>	<b>93%</b>	<b>\$9.18 Billion</b>	<b>92%</b>
<b>TOTAL</b>	<b>73,453</b>	<b>100%</b>	<b>\$9.93 Billion</b>	<b>100%</b>

Another component of the impact aviation has on a local community is the property tax collected on the value of GA-based aircraft located for tax purposes at that airport. While no precise numbers are available, an estimate was made of the property tax value of the reported GA-based aircraft based on type and approximate value. Exhibit 5 shows that GA-based aircraft are valued at over \$1.7 billion resulting in a potential collection of almost \$11.8 million in property taxes based on the current property tax rate for each county.

**Exhibit 5 – Property Tax Value, Property Taxes and Other Taxes**

	<b>Estimated GA-Based Property Tax Value</b>	<b>Estimated GA-Based Aircraft Property Taxes per Year</b>	<b>Fuel Taxes &amp; Parts Sales Taxes (FY 2004-05)</b>
<b>General Aviation</b>	<b>\$988.2 M</b>	<b>\$6.32 M</b>	<b>-----</b>
<b>Commercial</b>	<b>\$753.2M</b>	<b>\$5.42 M</b>	<b>-----</b>
<b>TOTAL</b>	<b>\$1,741.4 M</b>	<b>\$11.76 M</b>	<b>\$20.15 M</b>

Exhibit 5 also includes \$20.15 million collected on aviation fuel sales (\$11.8M) and aviation parts sales (\$8.35M) during Fiscal Year 2004-05. While these taxes go into non-local funds, they are certainly a part of the statewide impact aviation plays in the state's economy. All of the tax values 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.

# ECONOMIC IMPACT METHODOLOGY

---

## TEAM MANAGEMENT

The success of this project can be attributed to the strong support the team received from staff at the Division of Aviation. Weekly meetings helped keep the project on schedule and accomplish work tasks. Email and phone communication allowed team members to share critical ideas and make some decisions prior to the weekly meetings.

Throughout the project, key preliminary results were presented at several meetings of the Aeronautics Council and the Board of Transportation, and to the attendees at the North Carolina Association of Airports annual conference in April 2006. Feedback from these presentations assisted the team in addressing questions concerning the preliminary results.

## DATA COLLECTION

Early in the data collection process, a decision was made to rely exclusively on responses from surveys for input data. The Division of Aviation sent a letter to all airport managers explaining the goal of this survey and asking for support in gathering and returning the surveys. Surveys were either mailed or sent electronically. Following this decision, the team was then able to visit three general aviation airports: Burlington-Alamance Regional, Smith-Reynolds, and Concord Regional. Each airport has unique characteristics which were useful for the team to see. The team also met with the airport manager, FBO manager, and tenant operators at each of the three airports to discuss aviation activities going on at each airport, to tour the airport grounds and to see some tenant operations.

The primary source of data for this project came from airport managers, tenants, and major users responding to surveys. Each airport manager was contacted by phone to explain the reason for the study and the importance for his/her support. After the phone conversation, each manager was sent a spreadsheet survey for ease of data entry and compilation. The survey asked numerous questions on topics including: airport use, tax value of based-aircraft, services offered, operating revenue, operating expenses, airport tenants, jobs, commercial service, general aviation service, ground transport, major airport users, and aerospace industries using that airport. The project team tabulated the information from the airport managers in spreadsheets to use the data in future calculations.

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 for his/her support. After the phone conversation, each tenant or user was sent a spreadsheet survey. The survey asked numerous questions on topics including: use of the airport, type of business, employees, and revenue. Appendix B contains examples of each type of survey.

Every effort was made to collect as much of a 100 percent sample as possible from all airport managers, tenants, and business users. The team decided that only collected or documented information would be input into the model. Any tenants or business users not reporting survey information would be excluded from the study. Thus, no extrapolation techniques were used to expand data for missing information. This is a conservative approach, but one that is highly repeatable over time. The individual impact of any airport can be updated in a short period of time if additional data becomes available from existing or new tenants or business users. Tenant data was confirmed by comparing collected (or missing) job counts to TSA badge issue data for the commercial airports.

## **ESTIMATING IMPACTS USING IMPLAN**

The project team used IMPLAN, an economic model provided and used by the North Carolina Department of Commerce, to estimate the impact of aviation in North Carolina. The IMPLAN model, developed by Minnesota IMPLAN Group, Inc., is based on current economic theory principles and includes relevant standards set forth by the U.S. Bureau of Economic Analysis. The model consists of county, state, and national data from sources such as the U.S. Department of Commerce, the Bureau of Labor Statistics, and the Bureau of Economic Analysis ([http://www.fs.fed.us/institute/economic\\_center/implan\\_data\\_quality.html](http://www.fs.fed.us/institute/economic_center/implan_data_quality.html)) and was used to calculate indirect and induced impacts. 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 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 available, so employment data was 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 project team to separate the economic impact due to aviation from the impact due to other sources. Additionally, air carrier activities were separated from the general aviation activities at commercial airports.

The surveys completed by the airport managers, tenants, and major users asked for employment of full-time and part-time employees. Part-time employees were assumed to work 30 hours/week and were converted to equivalent full-time employees, except for part-time airport authority employees who were assumed to work 10 hours/week. These assumptions are based on conversations with employers and NCDOT staff.

The project team developed a separate IMPLAN Model for each airport to take into effect the surrounding local economy. Each airport was analyzed on a county basis, which includes the county in which it is located and other adjacent influenced counties if applicable. Exhibit 6 provides a list of the counties that were included in each airport's model. The airports that offer commercial service have two models: one for general aviation impacts and one for commercial aviation impacts. The counties for the general aviation impacts were selected based on geographic location and knowledge by NCDOT staff. Air carrier activities had a larger county base because they typically serve a larger geographic area than a general aviation airport. The counties for the commercial aviation airport impacts were selected based on metropolitan and micropolitan statistical areas, and metropolitan divisions defined by the

Office of Management and Budget in December 2005, knowledge by NCDOT staff, and a 60 mile radius around the CLT and RDU airports and a 40 mile radius around the GSO airport.

### **Exhibit 6 – IMPLAN Model County List for GA and Commercial Airports**

Airport Name	ID	Airport Type	Counties Used in IMPLAN
Albert J. Ellis	OAJ	Air Carrier	Onslow
Asheville Regional	AVL	Air Carrier	Buncombe, Henderson, Haywood, Madison
Charlotte Douglas International	CLT	Hub	Mecklenburg, Gaston, Cabarrus, Cleveland, Rowan, Union
Craven County Regional	EWN	Air Carrier	Craven, Pamlico
Fayetteville Regional/Grannis Field	FAY	Air Carrier	Cumberland, Hoke
Kinston Regional Jetport	ISO	Air Carrier	Lenoir
Moore County	SOP	Air Carrier	Moore
Piedmont Triad International	GSO	Hub	Guilford, Davidson, Forsyth, Randolph, Rockingham
Pitt-Greenville	PGV	Air Carrier	Pitt
Raleigh-Durham International	RDU	Hub	Wake, Durham, Franklin, Johnston, Chatham, Orange, Person
Wilmington International	ILM	Air Carrier	New Hanover, Brunswick, Pender
Asheboro Municipal	HBI	Red	Randolph
Brunswick County	SUT	Red	Brunswick
Burlington-Alamance Regional	BUY	Red	Alamance
Concord Regional	JQF	Red	Cabarrus, Mecklenburg
Dare County Regional	MQI	Red	Dare
Franklin County	LHZ	Red	Franklin, Wake
Hickory Regional	HKY	Red	Catawba, Burke, Caldwell, Alexander
Johnston County	JNX	Red	Johnston, Wake
Michael J Smith Field	MRH	Red	Carteret
Monroe Regional	EQY	Red	Union, Mecklenburg
Rocky Mount-Wilson Regional	RWI	Red	Nash, Wilson
Sanford-Lee County Regional	TTA	Red	Lee, Wake
Smith-Reynolds	INT	Red	Forsyth
Statesville Regional	SVH	Red	Iredell, Catawba
Wilkes County	UKF	Red	Wilkes
Ashe County	GEV	Green	Ashe, Alleghany
Avery County/Morrison Field	7A8	Green	Avery, Mitchell
Columbus County Municipal	CPC	Green	Columbus
Elkin Municipal	ZEF	Green	Surry, Yadkin
Henderson Field	ACZ	Green	Pender
Hyde County	7W6	Green	Hyde
Jackson County	24A	Green	Jackson
Macon County	1A5	Green	Macon, Swain
Martin County	MCZ	Green	Martin, Bertie
Montgomery County	43A	Green	Montgomery
Mt Olive Municipal	W40	Green	Wayne
NorthEastern Regional	EDE	Green	Chowan, Perquimans
Ocean Isle	60J	Green	Brunswick
Plymouth Municipal	PMZ	Green	Washington

### Exhibit 6 – IMPLAN Model County List for GA and Commercial Airports (continued)

Airport Name	ID	Airport Type	Counties Used in IMPLAN
Rockingham-Hamlet	45J	Green	Richmond
Tarboro-Edgecombe	ETC	Green	Edgecombe
Tri-County	ASJ	Green	Hertford, Northampton, Bertie
Andrews-Murphy	RHP	Blue	Cherokee, Graham, Clay
Anson County	AFP	Blue	Anson
Currituck Regional	ONX	Blue	Currituck
Curtis L Brown, Jr. Field	EYF	Blue	Bladen
Davidson County	EXX	Blue	Davidson
Duplin County	DPL	Blue	Duplin
Elizabeth City CG Air Station/Regional	ECG	Blue	Pasquotank, Camden, Perquimans
Gastonia Municipal	AKH	Blue	Gaston
Goldsboro-Wayne Municipal	GWW	Blue	Wayne
Halifax County	RZZ	Blue	Halifax, Warren, Northampton
Harnett County	HRJ	Blue	Harnett
Henderson-Oxford	HNZ	Blue	Granville, Vance
Laurinburg/Maxton	MEB	Blue	Scotland, Hoke
Lincolnton-Lincoln County Regional	IPJ	Blue	Lincoln
Lumberton Municipal	LBT	Blue	Robeson
Morganton-Lenoir	MRN	Blue	Caldwell, Burke
Mt Airy/Surry County	MWK	Blue	Surry, Stokes
Person County	TDF	Blue	Person, Orange
Rockingham County/NC Shiloh	78N	Blue	Rockingham
Rowan County	RUQ	Blue	Rowan
Rutherford County/Marchman Field	FQD	Blue	Rutherford, Polk
Sampson County	CTZ	Blue	Sampson
Shelby Municipal	EHO	Blue	Cleveland
Siler City Municipal	5W8	Blue	Chatham
Stanly County	VUJ	Blue	Stanly
Warren Field	OCW	Blue	Beaufort
Billy Mitchell	HSE	NPS	Dare
First Flight	FFA	NPS	Dare
Ocracoke Island	W95	NPS	Hyde
Horace Williams	IGX	Special	Orange
Wilson Industrial Air Center	W03	Special	Wilson

Type SAM (Social Accounting Matrix) multipliers were selected within IMPLAN to estimate the impacts of the airports. The North Carolina Department of Commerce recommended the use of SAM multipliers for the analysis. This type of multiplier is an extension of a traditional input-output model. The 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. A detailed discussion of these multipliers can be found at the following web addresses:

Reference:

[http://www.implan.com/library/documents/elements\\_of\\_the\\_implan\\_sam.pdf](http://www.implan.com/library/documents/elements_of_the_implan_sam.pdf)  
[http://www.implan.com/library/documents/implan\\_io\\_system\\_description.pdf](http://www.implan.com/library/documents/implan_io_system_description.pdf)

Tenants and major users of the airport that returned survey data to the research team were classified into IMPLAN sectors that correspond to Bureau of Economic Analysis sectors. In some cases, the industry sector for aviation activity did not exist in the model for an individual county. This could be a result of a complete lack of data in that county or confidentiality reasons because of not enough census data. The airport industry sector multipliers were generated manually if they did not exist in IMPLAN. The multipliers were based on a state-wide average of similar facilities (i.e. green, blue, or red airports) and entered manually for that individual airport's economic model.

## **SUPPLEMENTING IMPLAN IMPACTS**

The project 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 project team used standard economic estimation methods for estimating the impact of visitors using the airports, hotels, and travel agents. The estimated tax value of based aircraft was also produced by the team. The parameters for these estimations are explained below.

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, general aviation local, general aviation itinerant, and military. At a general aviation airport, the only types of operations that generate visitors are air taxi and general aviation itinerant trips. Passengers per GA operation were based on DOT/FAA/PP-92-6: single engine with <4 seats has 1.4 passengers, single engine with  $\geq 4$  seats has 2.4 passengers, and multi-engine has 3 passengers.

The assumed 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 for a business traveler was \$370 per trip and for a leisure traveler was \$307 per trip (2004 data, [http://www.nccommerce.com/tourism/econ/FastFactsEI\\_04v2.pdf](http://www.nccommerce.com/tourism/econ/FastFactsEI_04v2.pdf)). The breakdown of "purpose of trip" for air travelers was 41% for business travelers and 59% for leisure travelers (N.C. Division of Travel and Tourism). See Exhibit 4 for the estimated number of visitors at each airport.

Airports that offer commercial service also have significant visitor impacts. The number of visitors for commercial airports was calculated as half of the deplanements, excluding internal transfers, at the airport. This takes into account that approximately half of the users of an airport are local residents returning from trips to other locations, while the other half are assumed to be visitors to the area. The value used for expenditures per visitor, \$333, was calculated as it was for General Aviation airports.

The impact of the aviation industry on the hotel industry was also considered for this study. 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. An initial list of employees per county in the hotel industry was obtained from the North Carolina Department of Commerce. In counties with commercial airports, 50 percent of the employees in the hotel industry can be attributed to the presence of the airport(s). In counties with general aviation airports, 20% of the employees in the hotel industry can be attributed to the presence of the airport(s). The IMPLAN value of output per employee was multiplied by the number of employees. The resulting indirect value was then multiplied by the appropriate multiplier for the airport for the induced impacts.

The impact of the aviation industry on the travel agency industry was also considered for this study. The impact was calculated externally of IMPLAN in order to use the impact as an indirect value, not as a direct value. The data was obtained from the North Carolina Department of Commerce which included the number of employees and average wage rate for six counties with commercial aviation service. The wage rate was converted into a yearly figure by multiplying by 2000 work hours per year. The yearly figure multiplied by the number of employees resulted in the assumed total payroll for each county. The payroll was used as a conservative estimate of generated output by the employees to calculate the final values for the industry. In the six counties which had available data, 50 percent of the employees in the travel agency industry can be attributed to the presence of the airport(s), based on conversations with the North Carolina Department of Commerce.

The survey asked the airport managers for the number of based aircraft at their airport. The types of based aircraft were classified in the following groups: single engine, multi-engine, jet, helicopters, gliders, military, and ultra-light. Exhibit 7 contains the estimated value of each type of aircraft based on assessment data from multiple North Carolina airports. The total value of aircraft was calculated for each airport, except Hyde County, Billy Mitchell, First Flight, and Ocracoke Island, which have no based aircraft. The estimated tax revenue generated at each airport was also estimated, based on the total value of the aircraft and each county's tax rate. Exhibit 8 contains the tax rate, total aircraft, total aircraft value, and estimated tax revenue for each airport.

#### **Exhibit 7 – Estimated Value of Aircraft**

<b>Type of Aircraft</b>	<b>Estimated Value per Aircraft</b>
Single Engine	\$100,000
Multi Engine	\$250,000
Jet	\$4,500,000
Helicopters	\$850,000
Gliders	\$35,000
Military	\$5,000,000
Ultra-Light	\$15,000

### Exhibit 8 – Aircraft Value and Tax Revenue

Airport Name	Rate	Total Aircraft	Total Value of Aircraft	Tax Revenue from Aircraft	Estimated Number of Visitors
Albert J. Ellis	0.6700	28	\$3,850,000	\$25,795	57,763
Asheville Regional	0.5900	134	\$63,200,000	\$372,880	174,249
Craven County Regional	0.6100	97	\$11,500,000	\$70,150	68,589
Fayetteville Regional/Grannis Field	0.8800	68	\$34,700,000	\$305,360	100,500
Kinston Regional Jetport	0.7900	59	\$56,500,000	\$446,350	26,561
Moore County	0.4550	79	\$18,930,000	\$86,132	17,305
Pitt-Greenville	0.7000	66	\$41,900,000	\$293,300	45,436
Wilmington International	0.6800	101	\$45,700,000	\$310,760	207,947
Charlotte Douglas International	0.8368	176	\$259,865,000	\$2,174,550	1,626,447
Piedmont Triad International	0.6428	117	\$50,550,000	\$324,935	750,786
Raleigh-Durham International	0.6040	228	\$166,450,000	\$1,005,358	2,005,575
Asheboro Municipal	0.5250	59	\$16,350,000	\$85,838	9,075
Brunswick County	0.5400	39	\$12,445,000	\$67,203	17,100
Burlington-Alamance Regional	0.5625	121	\$68,950,000	\$387,844	42,977
Concord Regional	0.6300	182	\$116,050,000	\$731,115	68,877
Dare County Regional	0.2500	55	\$8,050,000	\$20,125	37,709
Franklin County	0.7900	73	\$15,235,000	\$120,357	20,687
Hickory Regional	0.5400	93	\$53,700,000	\$289,980	31,696
Johnston County	0.7800	95	\$15,400,000	\$120,120	14,623
Michael J Smith Field	0.4200	72	\$13,250,000	\$55,650	10,129
Monroe Regional	0.5600	90	\$26,850,000	\$150,360	31,143
Rocky Mount-Wilson Regional	0.6600	28	\$8,550,000	\$56,430	20,000
Sanford-Lee County Regional	0.7900	87	\$22,650,000	\$178,935	7,307
Smith-Reynolds	0.6660	130	\$143,500,000	\$955,710	48,343
Statesville Regional	0.4350	72	\$81,500,000	\$354,525	20,167
Wilkes County	0.6100	30	\$17,700,000	\$107,970	9,556
Ashe County	0.6100	30	\$3,150,000	\$19,215	1,694
Avery County/Morrison Field	0.5300		\$1,815,000	\$9,620	3,600
Columbus County Municipal	0.7300	9	\$1,200,000	\$8,760	9,334
Elkin Municipal	0.6300	18	\$2,250,000	\$14,175	7,500
Henderson Field	0.6500	21	\$3,065,000	\$19,923	6,457
Hyde County	0.7150	0	\$0	\$0	3,518
Jackson County	0.3600	16	\$1,900,000	\$6,840	2,996
Macon County	0.3700	34	\$4,600,000	\$17,020	5,659
Martin County	0.7850	7	\$615,000	\$4,828	6,600
Montgomery County	0.5800	25	\$3,550,000	\$20,590	2,530
Mt Olive Municipal	0.7350	13	\$1,600,000	\$11,760	4,985
NorthEastern Regional	0.7800	28	\$7,330,000	\$57,174	9,618
Ocean Isle	0.5400	25	\$2,500,000	\$13,500	11,880
Plymouth Municipal	0.7900	14	\$1,700,000	\$13,430	4,142
Rockingham-Hamlet	0.7800	18	\$1,800,000	\$14,040	4,425
Tarboro-Edgecombe	0.9300	11	\$1,250,000	\$11,625	3,655
Tri-County	0.9100	10	\$5,315,000	\$48,367	7,950

**Exhibit 8 – Aircraft Value and Tax Revenue, continued**

<b>Airport Name</b>	<b>Rate</b>	<b>Total Aircraft</b>	<b>Total Value of Aircraft</b>	<b>Tax Revenue from Aircraft</b>	<b>Estimated Number of Visitors</b>
Andrews-Murphy	0.5200	56	\$7,850,000	\$40,820	2,632
Anson County	0.8750	27	\$3,560,000	\$31,150	5,550
Currituck Regional	0.3200	33	\$3,580,000	\$11,456	18,810
Curtis L Brown, Jr. Field	0.8600	30	\$4,950,000	\$42,570	11,089
Davidson County	0.5400	60	\$25,100,000	\$135,540	4,511
Duplin County	0.7700	17	\$24,150,000	\$185,955	12,225
Elizabeth City CG Air Station/Regional	0.8400	46	\$5,350,000	\$44,940	37,020
Gastonia Municipal	0.8930	53	\$23,630,000	\$211,016	12,644
Goldsboro-Wayne Municipal	0.7350	43	\$15,135,000	\$111,242	9,505
Halifax County	0.8650	29	\$3,350,000	\$28,978	21,916
Harnett County	0.7350	61	\$6,760,000	\$49,686	30,126
Henderson-Oxford	0.7000	44	\$4,850,000	\$33,950	13,575
Laurinburg/Maxton	1.1000	38	\$39,600,000	\$435,600	12,400
Lincolnton-Lincoln County Regional	0.6100	65	\$14,050,000	\$85,705	18,090
Lumberton Municipal	0.8000	44	\$10,345,000	\$82,760	12,443
Morganton-Lenoir	0.5399	43	\$9,900,000	\$53,450	16,913
Mt Airy/Surry County	0.6300	48	\$22,830,000	\$143,829	12,079
Person County	0.6500	45	\$5,400,000	\$35,100	0
Rockingham County/NC Shiloh	0.6350	62	\$7,400,000	\$46,990	13,626
Rowan County	0.6300	99	\$35,535,000	\$223,871	12,686
Rutherford County/Marchman Field	0.6200	56	\$21,350,000	\$132,370	13,327
Sampson County	0.7700	26	\$2,600,000	\$20,020	9,450
Shelby Municipal	0.5800	40	\$5,050,000	\$29,290	9,093
Siler City Municipal	0.5970	30	\$4,200,000	\$25,074	21,150
Stanly County	0.6450	25	\$2,950,000	\$19,028	20,568
Warren Field	0.6000	32	\$3,500,000	\$21,000	12,900
Billy Mitchell	0.2500	0	\$0	\$0	8,250
First Flight	0.2500	0	\$0	\$0	20,400
Ocracoke Island	0.7150	0	\$0	\$0	4,200
Horace Williams	0.8430	24	\$3,450,000	\$29,084	2,304
Wilson Industrial Air Center	0.7600	30	\$8,000,000	\$60,800	11,922
		3,864	\$1,741,390,000	\$11,759,868	5,978,494

Along with economic impacts, the project team considered the tax revenues that are generated by the airports. The estimated amount of property tax revenues per year for the 3,864 aircraft based at North Carolina airports was approximately \$11.8 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 sitting at an airport are registered for tax purposes within that county. Some corporate aircraft are actually registered in other states because of the location of that business for tax purposes. This practice results in a decrease in tax revenue collected by North Carolina.

Based on previous multipliers for passengers per aircraft type and data for commercial deplanements, the number of visitors was estimated for each airport. A total of about six (6) million passengers arrive and depart through North Carolina's 74 public airports. Visitors spend money for taxis, hotels, meals, entertainment, etc. These expenditures in turn support local jobs and are an important component as input into the economic impact calculations.

The sales tax that was generated by aircraft dealers from parts and products (excluding aircraft) in 2004-2005 was \$8.35 million (Source: State Sales and Use Tax Statistics <http://www.dornco.com/publications/fiscalyearsales.html>). The sales tax that was generated from the sale of aviation gas and jet fuel in 2004-2005 was \$11.8 million (Source: Motor Fuels Division-NCDOR, US Energy Information Administration).

## **ADDITIONAL DATA**

Two recent independent economic impact studies for Charlotte-Douglas International and Raleigh Durham International airports report significantly larger economic impacts than this study. The research team was able to get the raw data from tenant and business users from the researchers for these two studies. This additional information was then merged with the data collected under this project and input again into IMPLAN. Results for Charlotte-Douglas and Raleigh Durham airports showed larger impacts based on this additional data, as expected, but still are far short of the individual study impact values. The biggest contributor to this difference is that the team did not extrapolate any results to like tenants and business users that did not report any information.

## **FINDINGS**

The final result of the project includes values for output, employment, and payroll. The total economic output impact of North Carolina airports is approximately \$11.8 billion. Exhibit 9 provides the breakdown of this by direct, indirect and induced impacts per airport and subtotals by category. The total employment impact of North Carolina airports is approximately 73,500 jobs as shown in Exhibit 10 by airport, with direct, indirect and induced impacts listed separately. The total payroll impact of North Carolina airports is approximately \$2.1 billion (Exhibit 11).

The output, employment, and payroll impact values are derived from IMPLAN, except for hotel and travel agency industry data. The hotel and travel agency data was only added to output and employment values. Therefore, the payroll impact values were only based on survey data.

## Exhibit 9 – 2006 Output Impact by Airport

Airport ID and Name		Type	Output Impact (Dollars)			
			Direct	Indirect	Induced	Total
OAJ	Albert J. Ellis	Air Carrier	\$12,829,800	\$27,889,800	\$3,591,900	\$44,311,500
AVL	Asheville Regional	Air Carrier	\$44,053,000	\$156,311,600	\$37,985,300	\$238,349,900
EWN	Craven County Regional	Air Carrier	\$24,661,100	\$36,345,000	\$7,114,000	\$68,120,100
FAY	Fayetteville Regional / Grannis Field	Air Carrier	\$57,728,400	\$75,975,800	\$14,711,900	\$148,416,100
ISO	Kinston Regional Jetport at Stallings Field	Air Carrier	\$49,652,400	\$15,310,000	\$4,124,500	\$69,086,900
SOP	Moore County	Air Carrier	\$5,714,900	\$68,996,800	\$11,622,600	\$86,334,300
PGV	Pitt-Greenville	Air Carrier	\$16,018,400	\$29,503,400	\$6,174,300	\$51,696,100
ILM	Wilmington International	Air Carrier	\$70,735,900	\$128,548,500	\$33,029,700	\$232,314,100
CLT	Charlotte / Douglas International	Hub	\$2,676,298,000	\$1,468,230,200	\$962,156,300	\$5,106,684,500
GSO	Piedmont Triad International	Hub	\$443,511,000	\$460,607,800	\$230,578,600	\$1,134,697,400
RDU	Raleigh-Durham International	Hub	\$1,103,311,100	\$1,197,644,900	\$453,899,100	\$2,754,855,100
Subtotal:			\$4,504,514,000	\$3,665,363,800	\$1,764,988,200	\$9,934,866,000
HBI	Asheboro Municipal	Red	\$4,251,400	\$4,885,800	\$1,109,200	\$10,246,400
SUT	Brunswick County	Red	\$12,502,700	\$10,737,400	\$2,938,500	\$26,178,600
BUY	Burlington-Alamance Regional	Red	\$16,958,100	\$23,079,600	\$5,969,000	\$46,006,700
JQF	Concord Regional	Red	\$48,767,300	\$39,689,700	\$21,546,500	\$110,003,500
MQI	Dare County Regional	Red	\$4,699,700	\$18,174,300	\$2,479,200	\$25,353,200
LHZ	Franklin County	Red	\$2,526,300	\$8,466,600	\$1,951,400	\$12,944,300
HKY	Hickory Regional	Red	\$18,976,000	\$25,259,800	\$6,215,100	\$50,450,900
JNX	Johnston County	Red	\$24,425,500	\$13,513,500	\$4,871,200	\$42,810,200
MRH	Michael J Smith Field	Red	\$25,505,600	\$12,896,300	\$2,335,600	\$40,737,500
EQY	Monroe	Red	\$4,646,100	\$14,553,000	\$3,691,400	\$22,890,500
RWI	Rocky Mount-Wilson Regional	Red	\$10,159,200	\$13,516,500	\$3,354,500	\$27,030,200
TTA	Sanford-Lee County	Red	\$205,818,000	\$35,649,500	\$38,802,600	\$280,270,100
INT	Smith-Reynolds	Red	\$69,852,700	\$48,511,300	\$18,761,800	\$137,125,800
SVH	Statesville Municipal	Red	\$21,850,900	\$17,296,400	\$7,787,200	\$46,934,500
UKF	Wilkes County	Red	\$4,362,000	\$4,513,000	\$874,100	\$9,749,100
Subtotal:			\$475,301,500	\$290,742,700	\$122,687,300	\$888,731,500
RHP	Andrews-Murphy	Blue	\$3,696,600	\$3,120,800	\$1,342,400	\$8,159,800
AFP	Anson County	Blue	\$468,300	\$2,268,300	\$268,900	\$3,005,500
ONX	Currituck County	Blue	\$13,727,800	\$8,769,400	\$1,955,400	\$24,452,600
EYF	Curtis L Brown Jr. Field	Blue	\$601,500	\$4,046,200	\$397,500	\$5,045,200
EXX	Davidson County	Blue	\$5,958,600	\$3,407,900	\$1,452,500	\$10,819,000
DPL	Duplin County	Blue	\$2,996,500	\$5,871,400	\$730,900	\$9,598,800
ECG	Elizabeth City CGAS / Regional	Blue	\$1,495,600	\$13,594,000	\$2,315,700	\$17,405,300
AKH	Gastonia Municipal	Blue	\$2,659,200	\$4,896,700	\$1,386,200	\$8,942,100
GWV	Goldsboro-Wayne Municipal	Blue	\$6,501,900	\$6,353,200	\$1,697,400	\$14,552,500
RZZ	Halifax County	Blue	\$219,200	\$8,904,500	\$1,653,800	\$10,777,500
HRJ	Harnett County	Blue	\$7,391,700	\$12,170,000	\$1,549,200	\$21,110,900
HNZ	Henderson-Oxford	Blue	\$804,400	\$5,717,200	\$733,900	\$7,255,500
MEB	Laurinburg-Maxton	Blue	\$21,040,700	\$9,870,800	\$3,089,200	\$34,000,700
IPJ	Lincoln County Regional	Blue	\$1,237,300	\$6,434,100	\$955,100	\$8,626,500
LBT	Lumberton Municipal	Blue	\$2,683,200	\$6,738,000	\$2,431,600	\$11,852,800
MRN	Morganton-Lenoir	Blue	\$1,894,100	\$7,336,900	\$1,331,000	\$10,562,000
MWK	Mount Airy / Surry County	Blue	\$273,195,400	\$72,428,100	\$41,374,800	\$386,998,300
TDF	Person County	Blue	\$0	\$5,113,900	\$0	\$5,113,900
78N	Rockingham County / NC Shiloh	Blue	\$827,000	\$5,459,100	\$751,000	\$7,037,100
RUQ	Rowan County	Blue	\$11,314,500	\$8,231,600	\$3,369,400	\$22,915,500
FQD	Rutherford County-Marchman Field	Blue	\$4,048,000	\$6,639,100	\$1,346,900	\$12,034,000
CTZ	Sampson County	Blue	\$820,300	\$3,642,300	\$417,500	\$4,880,100
EHO	Shelby Municipal	Blue	\$1,325,900	\$4,195,400	\$724,900	\$6,246,200
5W8	Siler City Municipal	Blue	\$1,243,300	\$7,838,300	\$850,600	\$9,932,200
VUJ	Stanly County	Blue	\$10,124,500	\$9,329,900	\$3,209,400	\$22,663,800
OCW	Warren Field	Blue	\$832,300	\$4,785,600	\$556,900	\$6,174,800
Subtotal:			\$377,107,800	\$237,162,700	\$75,892,100	\$690,162,600
GEV	Ashe County	Green	\$100,060,000	\$14,600,300	\$19,212,400	\$133,872,700
7A8	Avery County / Morrison Field	Green	\$189,400	\$5,155,000	\$640,800	\$5,985,200
CPC	Columbus County Municipal	Green	\$115,900	\$3,593,500	\$394,600	\$4,104,000
ZEF	Elkin Municipal	Green	\$23,378,800	\$8,677,500	\$2,402,300	\$34,458,600
ACZ	Henderson Field	Green	\$18,250,000	\$7,022,600	\$636,200	\$25,908,800
7W6	Hyde County	Green	\$18,000	\$1,927,000	\$163,900	\$2,108,900
24A	Jackson County	Green	\$10,120,000	\$6,121,700	\$1,339,800	\$17,581,500
1A5	Macon County	Green	\$646,400	\$6,238,300	\$1,094,500	\$7,979,200
MCZ	Martin County	Green	\$113,900	\$2,961,000	\$260,500	\$3,335,400
43A	Montgomery County	Green	\$259,800	\$952,300	\$175,200	\$1,387,300
W40	Mount Olive Municipal	Green	\$980,600	\$2,495,600	\$496,000	\$3,972,200
EDE	NorthEastern Regional	Green	\$497,400	\$3,893,800	\$573,600	\$4,964,800
60J	Ocean Isle	Green	\$140,100	\$5,678,800	\$987,700	\$6,806,600
PMZ	Plymouth Municipal	Green	\$999,500	\$1,746,000	\$364,300	\$3,109,800
45J	Rockingham-Hamlet	Green	\$0	\$2,326,400	\$0	\$2,326,400
ETC	Tarboro-Edgecombe	Green	\$339,300	\$1,892,200	\$983,200	\$3,214,700
ASJ	Tri-County	Green	\$757,600	\$3,455,700	\$448,300	\$4,661,600
Subtotal:			\$156,866,700	\$78,737,700	\$30,173,300	\$265,777,700
IGX	Horace Williams	Silver	\$2,718,100	\$6,460,100	\$1,076,700	\$10,254,900
W03	Wilson Industrial Air Center	Silver	\$786,100	\$4,827,300	\$1,581,900	\$7,195,300
Subtotal:			\$3,504,200	\$11,287,400	\$2,658,600	\$17,450,200
HSE	Billy Mitchell	NPS	\$0	\$3,608,500	\$0	\$3,608,500
FFA	First Flight	NPS	\$0	\$8,932,000	\$0	\$8,932,000
W95	Ocracoke Island	NPS	\$0	\$2,150,100	\$0	\$2,150,100
Subtotal:			\$0	\$14,690,600	\$0	\$14,690,600
<b>TOTALS</b>		<b>74</b>	<b>\$5,517,294,200</b>	<b>\$4,297,984,900</b>	<b>\$1,996,399,500</b>	<b>\$11,811,678,600</b>

## Exhibit 10 – 2006 Employment Impact by Airport

Airport ID and Name		Type	Employment Impact			
			Direct	Indirect	Induced	Total
OAJ	Albert J. Ellis	Air Carrier	112	190	43	345
AVL	Asheville Regional	Air Carrier	338	1,612	516	2,466
EWN	Craven County Regional	Air Carrier	136	265	83	484
FAY	Fayetteville Regional / Grannis Field	Air Carrier	456	869	195	1,520
ISO	Kinston Regional Jetport at Stallings Field	Air Carrier	299	110	54	463
SOP	Moore County	Air Carrier	42	993	243	1,278
PGV	Pitt-Greenville	Air Carrier	94	278	93	465
ILM	Wilmington International	Air Carrier	652	995	356	2,003
CLT	Charlotte / Douglas International	Hub	18,128	9,861	9,372	37,361
GSO	Piedmont Triad International	Hub	3,874	2,826	2,041	8,741
RDU	Raleigh-Durham International	Hub	8,077	6,229	4,021	18,327
Subtotal:			32,208	24,228	17,017	73,453
HBI	Asheboro Municipal	Red	26	33	13	72
SUT	Brunswick County	Red	151	81	29	261
BUY	Burlington-Alamance Regional	Red	85	143	63	291
JQF	Concord Regional	Red	492	203	169	864
MQI	Dare County Regional	Red	46	108	21	175
LHZ	Franklin County	Red	15	21	9	45
HKY	Hickory Regional	Red	108	296	89	493
JNX	Johnston County	Red	155	104	52	311
MRH	Michael J Smith Field	Red	256	158	36	450
EQY	Monroe	Red	24	60	27	111
RWI	Rocky Mount-Wilson Regional	Red	44	116	60	220
TTA	Sanford-Lee County	Red	1,023	292	420	1,735
INT	Smith-Reynolds	Red	418	464	237	1,119
SVH	Statesville Municipal	Red	220	184	91	495
UKF	Wilkes County	Red	48	26	8	82
Subtotal:			3,111	2,289	1,324	6,724
RHP	Andrews-Murphy	Blue	41	45	20	106
AFP	Anson County	Blue	4	4	1	9
ONX	Currituck County	Blue	73	43	22	138
EYF	Curtis L. Brown Jr. Field	Blue	6	8	1	15
EXX	Davidson County	Blue	64	28	15	107
DPL	Duplin County	Blue	11	45	14	70
ECG	Elizabeth City CGAS / Regional	Blue	13	30	10	53
AKH	Gastonia Municipal	Blue	18	8	7	33
GWW	Goldsboro-Wayne Municipal	Blue	45	58	21	124
RZZ	Halifax County	Blue	2	42	13	57
HRJ	Harnett County	Blue	31	35	12	78
HNZ	Henderson-Oxford	Blue	5	32	8	45
MEB	Laurinburg-Maxton	Blue	204	80	38	322
IPJ	Lincoln County Regional	Blue	12	8	3	23
LBT	Lumberton Municipal	Blue	9	71	63	143
MRN	Morganton-Lenoir	Blue	10	33	11	54
MWK	Mount Airy / Surry County	Blue	2,005	704	538	3,247
TDF	Person County	Blue	0	77	0	77
78N	Rockingham County / NC Shiloh	Blue	5	20	6	31
RUQ	Rowan County	Blue	131	67	34	232
FOD	Rutherford County-Marchman Field	Blue	20	42	15	77
CTZ	Sampson County	Blue	5	10	3	18
EHO	Shelby Municipal	Blue	7	27	9	43
5W8	Siler City Municipal	Blue	7	20	4	31
VUJ	Stanly County	Blue	103	35	28	166
OCW	Warren Field	Blue	5	15	4	24
Subtotal:			2,836	1,587	900	5,323
GEV	Ashe County	Green	1,335	184	254	1,773
7A8	Avery County / Morrison Field	Green	1	55	15	71
CPC	Columbus County Municipal	Green	2	11	1	14
ZEF	Elkin Municipal	Green	87	80	37	204
ACZ	Henderson Field	Green	33	69	8	110
7W6	Hyde County	Green	0	16	0	16
24A	Jackson County	Green	41	84	26	151
1A5	Macon County	Green	7	96	19	122
MCZ	Martin County	Green	2	24	2	28
43A	Montgomery County	Green	2	3	1	6
W40	Mount Olive Municipal	Green	7	18	5	30
EDE	NorthEastern Regional	Green	3	10	3	16
60J	Ocean Isle	Green	2	38	8	48
PMZ	Plymouth Municipal	Green	30	11	3	44
45J	Rockingham-Hamlet	Green	0	20	0	20
ETC	Tarboro-Edgecombe	Green	8	9	4	21
ASJ	Tri-County	Green	4	17	5	26
Subtotal:			1,564	745	391	2,700
IGX	Horace Williams	Silver	17	77	19	113
W03	Wilson Industrial Air Center	Silver	4	15	12	31
Subtotal:			21	92	31	144
HSE	Billy Mitchell	NPS	0	18	0	18
FFA	First Flight	NPS	0	45	0	45
W95	Okracoke Island	NPS	0	16	0	16
Subtotal:			0	79	0	79
<b>TOTALS</b>		<b>74</b>	<b>39,740</b>	<b>29,020</b>	<b>19,663</b>	<b>88,423</b>

## Exhibit 11 – 2006 Payroll Impact by Airport

Airport ID and Name			Estimated Payroll (Dollars)			
			Direct	Indirect	Induced	Total
OAJ	Albert J. Ellis	Air Carrier	\$3,064,800	\$940,800	\$383,600	\$4,389,300
AVL	Asheville Regional	Air Carrier	\$13,218,100	\$5,214,000	\$3,740,100	\$22,172,300
EWN	Craven County Regional	Air Carrier	\$6,777,500	\$2,556,900	\$1,188,500	\$10,522,900
FAY	Fayetteville Regional / Grannis Field	Air Carrier	\$14,117,000	\$7,024,500	\$2,762,800	\$23,904,300
ISO	Kinston Regional Jetport at Stallings Field	Air Carrier	\$14,265,600	\$1,650,100	\$1,119,600	\$17,035,200
SOP	Moore County	Air Carrier	\$1,847,700	\$607,100	\$413,000	\$2,867,800
PGV	Pitt-Greenville	Air Carrier	\$4,109,900	\$1,589,900	\$893,700	\$6,593,500
ILM	Wilmington International	Air Carrier	\$21,345,600	\$8,634,200	\$5,310,200	\$35,290,000
CLT	Charlotte / Douglas International	Hub	\$1,006,524,300	\$195,363,900	\$162,600,900	\$1,571,549,600
GSO	Piedmont Triad International	Hub	\$163,193,200	\$53,240,700	\$44,636,500	\$264,110,300
RDU	Raleigh-Durham International	Hub	\$312,877,000	\$75,253,000	\$49,906,000	\$544,900,400
Subtotal:			\$1,561,340,700	\$352,075,100	\$272,954,900	\$2,509,335,600
HBI	Asheboro Municipal	Red	\$1,138,100	\$342,300	\$192,000	\$1,672,500
SUT	Brunswick County	Red	\$4,069,600	\$786,900	\$559,900	\$5,416,400
BUY	Burlington-Alamance Regional	Red	\$4,260,900	\$1,968,400	\$1,115,600	\$7,344,900
JOE	Concord Regional	Red	\$24,245,200	\$4,929,600	\$5,002,500	\$34,177,300
MOI	Dare County Regional	Red	\$1,130,800	\$537,400	\$219,400	\$1,887,600
LHZ	Franklin County	Red	\$665,200	\$405,600	\$211,900	\$1,282,600
HKY	Hickory Regional	Red	\$3,886,000	\$1,848,400	\$1,064,000	\$6,798,400
JNX	Johnston County	Red	\$4,424,500	\$2,002,000	\$1,289,200	\$7,715,700
MRH	Michael J Smith Field	Red	\$4,988,100	\$1,245,700	\$568,700	\$6,802,400
EQY	Monroe	Red	\$1,754,200	\$577,900	\$395,400	\$2,727,500
RWI	Rocky Mount-Wilson Regional	Red	\$3,070,700	\$786,800	\$567,200	\$4,424,700
TTA	Sanford-Lee County	Red	\$50,790,600	\$12,804,700	\$12,650,100	\$76,245,400
INT	Smith-Reynolds	Red	\$20,395,700	\$6,686,300	\$4,147,200	\$31,229,200
SVH	Statesville Municipal	Red	\$7,670,600	\$2,321,800	\$1,853,400	\$11,845,800
UKF	Wilkes County	Red	\$1,748,800	\$213,300	\$144,500	\$2,106,600
Subtotal:			\$134,239,000	\$37,457,100	\$29,981,000	\$201,677,000
RHP	Andrews-Murphy	Blue	\$1,692,900	\$163,400	\$249,700	\$2,106,000
AFP	Anson County	Blue	\$154,100	\$27,900	\$14,600	\$196,500
ONX	Currituck County	Blue	\$3,755,400	\$823,000	\$383,200	\$4,961,700
EYF	Curtis L Brown Jr. Field	Blue	\$199,300	\$17,700	\$14,700	\$231,700
EXX	Davidson County	Blue	\$2,318,000	\$338,100	\$328,400	\$2,984,500
DPL	Duplin County	Blue	\$689,800	\$115,800	\$79,200	\$884,800
ECG	Elizabeth City CGAS / Regional	Blue	\$506,400	\$143,400	\$95,200	\$745,100
AKH	Gastonia Municipal	Blue	\$911,100	\$239,900	\$205,600	\$1,356,600
GWW	Goldsboro-Wayne Municipal	Blue	\$1,890,900	\$723,600	\$369,400	\$2,983,800
RZZ	Halifax County	Blue	\$110,700	\$12,600	\$13,800	\$137,100
HRJ	Harnett County	Blue	\$1,348,000	\$504,600	\$213,700	\$2,066,300
HNZ	Henderson-Oxford	Blue	\$226,700	\$53,500	\$34,200	\$314,400
MEB	Laurinburg-Maxton	Blue	\$5,665,000	\$1,341,400	\$821,000	\$7,827,400
JPJ	Lincoln County Regional	Blue	\$460,400	\$86,800	\$54,000	\$601,200
LBT	Lumberton Municipal	Blue	\$1,568,500	\$120,100	\$254,000	\$1,942,600
MRN	Morganton-Lenoir	Blue	\$516,300	\$193,600	\$111,000	\$821,000
MWK	Mount Airy / Surry County	Blue	\$76,875,700	\$19,493,600	\$12,505,600	\$108,875,000
TDF	Person County	Blue	\$0	\$0	\$0	\$0
78N	Rockingham County / NC Shiloh	Blue	\$237,800	\$54,200	\$37,300	\$329,300
RUQ	Rowan County	Blue	\$4,211,900	\$929,400	\$776,900	\$5,918,200
FOD	Rutherford County-Marchman Field	Blue	\$1,234,400	\$259,900	\$197,600	\$1,691,900
CTZ	Sampson County	Blue	\$224,600	\$37,900	\$27,200	\$289,700
EHO	Shelby Municipal	Blue	\$361,400	\$95,300	\$72,400	\$529,100
5W8	Siler City Municipal	Blue	\$344,700	\$98,500	\$42,700	\$485,900
VUJ	Stanly County	Blue	\$3,917,800	\$742,300	\$643,200	\$5,303,200
OCW	Warren Field	Blue	\$180,100	\$50,300	\$31,300	\$261,800
Subtotal:			\$109,601,900	\$26,666,800	\$17,575,900	\$153,844,800
GEV	Ashe County	Green	\$39,241,000	\$5,064,500	\$5,626,400	\$49,932,000
7A8	Avery County / Morrison Field	Green	\$51,600	\$8,300	\$8,200	\$68,200
CPC	Columbus County Municipal	Green	\$28,700	\$8,600	\$4,800	\$42,100
ZEF	Elkin Municipal	Green	\$3,356,000	\$1,554,300	\$663,600	\$5,573,900
ACZ	Henderson Field	Green	\$375,600	\$1,345,500	\$165,600	\$1,886,700
7W6	Hyde County	Green	\$5,100	\$1,200	\$500	\$6,800
24A	Jackson County	Green	\$1,546,200	\$523,700	\$320,300	\$2,390,100
1A5	Macon County	Green	\$232,400	\$45,000	\$39,200	\$316,600
MCZ	Martin County	Green	\$27,200	\$9,400	\$3,600	\$40,100
43A	Montgomery County	Green	\$140,600	\$12,600	\$12,000	\$165,200
W40	Mount Olive Municipal	Green	\$283,200	\$109,700	\$60,000	\$452,800
EDE	NorthEastern Regional	Green	\$164,800	\$41,400	\$24,200	\$230,300
60J	Ocean Isle	Green	\$60,600	\$14,200	\$9,000	\$83,800
PMZ	Plymouth Municipal	Green	\$646,600	\$42,900	\$42,200	\$731,700
45J	Rockingham-Hamlet	Green	\$0	\$0	\$0	\$0
ETC	Tarboro-Edgewood	Green	\$339,000	\$8,900	\$50,000	\$397,800
ASJ	Tri-County	Green	\$206,500	\$72,900	\$31,000	\$310,500
Subtotal:			\$46,705,100	\$8,863,100	\$7,060,600	\$62,628,600
IGX	Horace Williams	Silver	\$745,500	\$338,300	\$136,500	\$1,220,300
W03	Wilson Industrial Air Center	Silver	\$494,900	\$42,700	\$82,300	\$619,900
Subtotal:			\$1,240,400	\$381,000	\$218,800	\$1,840,200
HSE	Billy Mitchell	NPS	\$0	\$0	\$0	\$0
FFA	First Flight	NPS	\$0	\$0	\$0	\$0
W95	Ocracoke Island	NPS	\$0	\$0	\$0	\$0
Subtotal:			\$0	\$0	\$0	\$0
<b>TOTALS</b>			<b>74</b>	<b>\$1,337,747,600</b>	<b>\$425,443,000</b>	<b>\$327,791,500</b>
						<b>\$2,090,982,100</b>

## GENERAL COMPARISON TO THE 1996 STUDY

The 1996 study was conducted by researchers at the University of North Carolina Charlotte campus. The researchers used the FAA methodology to estimate the economic impacts for the same airports as this study, although a different approach was used to determine induced impacts. Overall results are presented in Exhibit 12 from their study with a comparison to the 2006 results.

**Exhibit 12 – Comparison with the 1996 Study**

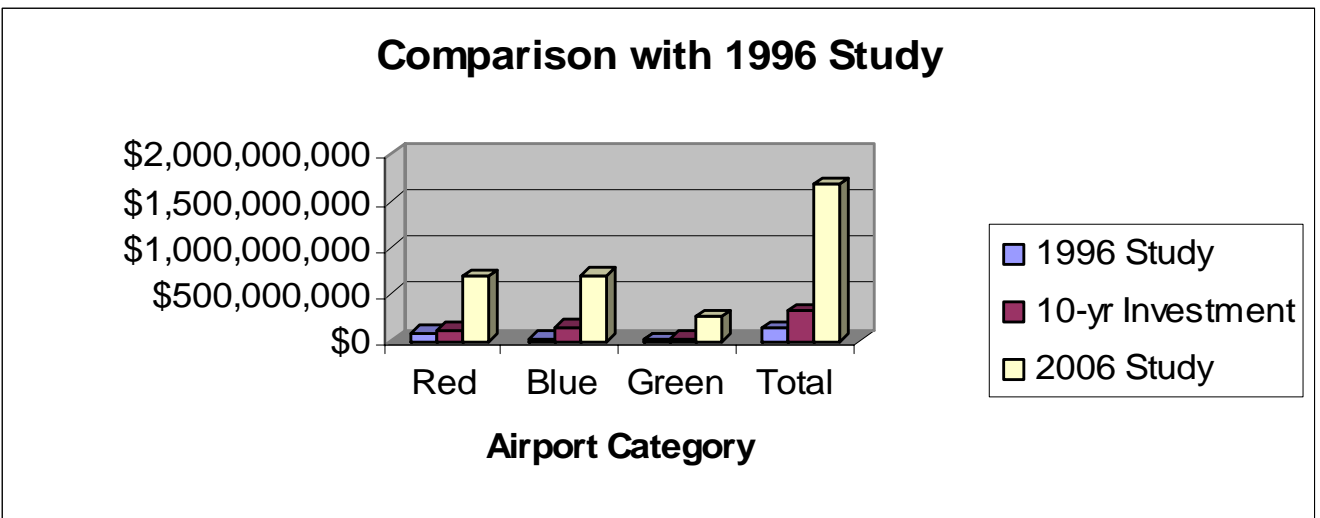
<b>Economic Impact</b>			
<b>Type</b>	<b>1996 Study</b>	<b>2006 Study</b>	<b>% Difference</b>
Direct	\$2.249 B	\$5.517 B	+145%
Indirect	\$2.136 B	\$4.298 B	+101%
Induced	\$4.493 B	\$1.996 B	-56%
Total	\$9.078 B	\$11.811 B	+30%
<b>Employment Impact</b>			
<b>Type</b>	<b>1996 Study</b>	<b>2006 Study</b>	<b>% Difference</b>
Direct	27,593	39,740	+44%
Indirect	57,455	29,020	-49%
Induced	96,166	19,663	-80%
Total	181,214	88,423	-51%
<b>Payroll Impact</b>			
<b>Type</b>	<b>1996 Study</b>	<b>2006 Study</b>	<b>% Difference</b>
Direct	\$0.956 B	\$1.338 B	+40%
Indirect	\$1.867 B	\$0.425 B	-77%
Induced	\$1.745 B	\$0.328 B	-81%
Total	\$4.568 B	\$2.091 B	-54%
<b>Aviation Activity and Property Taxes</b>			
<b>Type</b>	<b>1996 Study</b>	<b>2006 Study</b>	<b>% Difference</b>
No. Based Aircraft	3,220	3,864	+20%
Est. Tax Value	\$0.722 B	\$1.742 B	+141%
Property Taxes	\$7.793 M	\$11.76 M	+51%
No. Visitors	8,259,810	5,978,570	-28%

While overall economic impact is up, many individual values are down from the 1996 study based on three primary reasons. First, the tragedy of 9/11 affected air travel worldwide for many years. Second, the 2006 study did not use extrapolation techniques to capture potential impact from tenants, business users, and travel and hotel agencies. Only returned information was used to generate the 2006 impacts. Third, the IMPLAN economic impact model was generating a lower induced impact multiplier than the technique used in the 1996 study. This did produce significantly different results for all induced impacts when comparing between the two studies. IMPLAN is certainly one of three acceptable economic impact models, yet the

aviation industry may not be well-represented within IMPLAN, thus yielding a lower multiplier for aviation impacts as compared to other industries.

Exhibit 13 compares the general aviation results from the 1996 study to this study. The 1996 study found a total of a \$143 million 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 \$316 million. The yellow (or cream) bars show the 2006 study results. The total impact for the 2006 study is \$1.88 billion. In all cases, the 2006 result is significantly higher than the 1996 result, with an increase of \$1.7 billion annually at general aviation airports. Thus, the investment of \$316 million generated a 5:1 return on investment in growth of economic impact. These numbers clearly show the large benefits that result from infrastructure construction at general aviation airports.

**Exhibit 13 – Comparison with 1996 Study for GA Airports**



# **RECOMMENDATIONS**

---

## **RECOMMENDATIONS FOR IMPLEMENTATION**

The project team recommends that the North Carolina Department of Transportation's Division of Aviation utilize the newly developed DVD and brochure that show the existing as well as the future potential impact of aviation activities to various audiences such as the State General Assembly, the North Carolina Department of Transportation's Board of Transportation, industries located in North Carolina, as well as industries that could potentially locate in North Carolina. The brochure and video will provide easily understood summaries of the impact of aviation while this final report will contain a detailed description of the methodology and results. The Division should also distribute the brochure to the local airport managers for their use with their local county commissioners and existing and potential business clients.

## **RECOMMENDATIONS FOR FUTURE EFFORT**

This economic impact study required a tremendous amount of data collection effort. This type of study is important for the aviation community in North Carolina, particularly each airport and airport manager. A responsibility should be placed on the airport managers to help ensure that a high percentage of the surveys are returned from tenants and major users. From this study, the project team observed that a proactive manager can significantly increase the flow of information and decrease the burden on the research staff.

This study is a conservative estimate of the economic impact of aviation in North Carolina. The project team used survey data that was completed by airport managers, tenants, and major users. While all airport managers completed the survey, some tenants and major users did not, therefore, the impacts from those businesses were not included. A cost-effective method must be used to maximize the number of returned surveys against the amount of time and resources spent collecting the data.

The project team included the impact of aviation on the hotel and travel agency industries. Due to time and cost restrictions, these businesses were not included in the data collection effort, therefore industry data was acquired from the Employment Security Commission. If resources allow, this data could be collected by analysts when preparing future updates of this study.

The expenditure of public funds on capital improvement projects at airports has an impact on the economy. The impacts were not included in this study, but could be estimated in future studies. The effect of construction projects at airports is primarily through indirect and induced impacts.

## **IMPLEMENTATION AND TECHNOLOGY TRANSFER PLAN**

The primary product is a documented economic impact of the 74 public airports on North Carolina's economy. Another primary product is a documented procedure for generating this

economic impact that can be repeated for future studies. These products are described in detail in this report along with a brochure and video for public distribution.

*Brochure and Video* – These two products document aviation activity for the Division of Aviation (DOA) to show the existing and potential economic impact of the 74 airports currently in NC on both a statewide as well as a county specific level. The overall goal is to be able to use these tools, consisting of a brochure and a short video, when addressing various audiences, such as the NC General Assembly, NCDOT's Board of Transportation, current and potential North Carolina industries, and local county commissioners in order to effectively convey the level of impact that aviation has throughout the state. There were 2,000 copies of the brochure printed in full color and 1,000 copies of the DVD reproduced. The brochures and DVD's have been delivered to the DOA for their use and distribution throughout the state and with other selected agencies across the country.

## REFERENCES

---

- 1) Division of Aviation, North Carolina Department of Transportation, *North Carolina General Aviation Airport Development Plan*. Raleigh, NC (May 2004)  
<http://www.ncdot.org/transit/aviation/what/development/Revised%20NCGAADP.pdf>
- 2) Lindall, Scott A. and Olson, Douglas C. Minnesota IMPLAN Group, *The IMPLAN Input-Output System*. [http://www.implan.com/library/documents/implan\\_io\\_system\\_description.pdf](http://www.implan.com/library/documents/implan_io_system_description.pdf)
- 3) Federal Aviation Administration, United States Department of Transportation, *Estimating the Regional Economic Significance of Airports - Advisory Circular 150/5000-10A*. Washington, DC (September 1992)
- 4) Lynch, Tim, Center of Economic Forecasting and Analysis, *Analyzing the Economic Impact of Transportation Projects Using RIMS II, IMPLAN, and REMI*. (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](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)
- 5) Department of Geography and Earth Science, University of North Carolina at Charlotte. Division of Aviation, North Carolina Department of Transportation, *Economic Impact of Publicly-Owned Airports in North Carolina*. (June 1996)
- 6) Population Estimates Program, U.S. Census Bureau, *2000 Population Estimates*.  
[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](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)
- 7) Arizona Department of Transportation – Aeronautics Division, *The Economic Impact of Aviation in Arizona*. (2002/2003)
- 8) California Department of Transportation - Division of Aeronautics, *Benefits to Our Economy and Way of Life*. (June 2003)
- 9) Colorado Department of Transportation – Division of Aeronautics, *The Economic Impact of Airports in Colorado*. (2003)
- 10) Florida Department of Transportation, *Technical Summary for the Florida Airports Economic Impact Study*. (August 2000)
- 11) Idaho Transportation Department - Idaho Division of Aeronautics, *The Economic Impact of Airports in Idaho*. (1998)
- 12) Indiana Department of Transportation - Aeronautics Section, *Indiana State Aviation System Plan - 2003 Update*. (October 2002)
- 13) Iowa Department of Transportation, *The Economic Values of Iowa's Air Transportation Industries*. (August 2000)
- 14) The Massachusetts Aeronautics Commission, *Economic Impact of Public-Use Airports in Massachusetts*. (1999)
- 15) Mississippi Department of Transportation - Aeronautics Division, *State System Plan Update/Economic Impact Study*. (2004)
- 16) New Jersey Department of Transportation, *Fact Book 2005*. (June 2005)
- 17) New Mexico Department of Transportation – Aviation Division, *Economic Impact of Aviation in New Mexico*. (2003)
- 18) New York State Department of Transportation, *The Benefits of Aviation in New York*. (November 2003)
- 19) North Dakota Aeronautics Commission, *North Dakota Aviation System Plan*. (1999)

- 20) Oklahoma Aeronautics and Space Commission and Oklahoma Department of Transportation, *Economic Impact of Aviation and the Aerospace Industry in Oklahoma*. (September 1999)
- 21) Ohio Department of Transportation – Division of Aviation, *Aviation Component of the Access Ohio Phase II Transportation Plan – Airport System Economic Impact Analysis*. (June 1995)
- 22) The Pennsylvania Department of Transportation - Bureau of Aviation, *The Economic Impact of Aviation in Pennsylvania*. (December 2005)
- 23) Vermont Transportation Department, *The Economic Impact of Vermont's Public-Use Airports*. (April 2003)
- 24) Virginia Department of Aviation, *Virginia Public-Use Airport Economic Impact Study*. (April 2004)
- 25) Wisconsin Department of Transportation, *Wisconsin Aviation Impact Study*. (1999)
- 26) Washington State Department of Transportation – Aviation Division, *Economic Impacts of Washington Airports*. (2001)
- 27) Lindall, Scott A. and Olson, Douglas C. Minnesota IMPLAN Group, *Elements of the Social Accounting Matrix. MIG IMPLAN Technical Report TR-98002*.  
[http://www.implan.com/library/documents/elements\\_of\\_the\\_implan\\_sam.pdf](http://www.implan.com/library/documents/elements_of_the_implan_sam.pdf)
- 28) North Carolina State Demographer, *North Carolina State Demographics*. (January 2007)  
<http://demog.state.nc.us/>

## APPENDIX A

### LITERATURE REVIEW

---

The literature review focused on two aspects for this project: (1) the state-of-practice in conducting economic impact studies for airports, and (2) gather results from economic impact studies done in other states for both individual and statewide airport operations. The results are presented below, with resources discussed first.

**1. “Estimating the Regional Economic Significance of Airports,”** Federal Aviation Administration, United States Department of Transportation, September 1992.

The guide to estimate regional economic significance of airports is a revision of a 1986 report and was prepared by Stewart E. Butler and Lawrence J. Kiernan. 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 is presented that estimates the benefits for various levels of activity of an airport.

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 payroll of an airline. 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, as well as travel agencies. Induced impacts result from successive spending and are the multiplier effects of the direct and indirect impacts. An example of an induced impact is when an airline employee locally spends his or her salary which creates income for other individuals who in turn locally spend their salary.

The report provides detailed steps for calculating the economic impacts at either air carrier or general aviation airports. The report also details the steps for preparation of an economic impact assessment.

#### Impact Multipliers

**2. “Economic Impact of Publicly-Owned Airports in North Carolina,”** Division of Aviation, North Carolina Department of Transportation, June 1996.

The study examined all 74 publicly owned airports in North Carolina for their economic impact. The report was prepared by the Department of Geography and Earth Sciences at the University of North Carolina at Charlotte. The economic impacts are made up of expenditures, earnings, and jobs.

The report describes three types of economic impacts: direct, indirect, and induced. Direct impacts (or Aviation Provision Impacts) result from economic activities that result from tenants who have a direct involvement in aviation. Indirect impacts (or Aviation Use Impacts) result from economic activities that typically take place off-site, but are still attributable to the airport. Induced impacts (or Multiplier Impacts) result from successive spending and are the multiplier effects of the direct and indirect impacts.

The study used the methodology presented in the report produced by the Federal Aviation Administration “Estimating the Regional Economic Significance of Airports,” 1992. In gathering 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. The total earnings at the airports were \$ 4.6 billion and over 181,000 jobs were supported by the aviation industry.

#### BEA – RIMS II multipliers

3. **“Analyzing the Economic Impact of Transportation Projects Using RIMS II, IMPLAN, and REMI,”** Center for Economic Forecasting and Analysis, Florida State University, October 2000.

The report compared three nationally accepted economic input/output models (RIMS II, IMPLAN, and REMI) using transportation projects. The researchers described each model and some of their differences (see Exhibit A.1). Although each of the models is slightly different, the underlying basis of the data is comparable. The results from various case studies showed that the results are relatively close.

**Exhibit A.1: A Comparison of the Different Models**

<b>Characteristics</b>	<b>REMI</b>	<b>RIMS II</b>	<b>IMPLAN</b>
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	<a href="http://www.remi.com/">http://www.remi.com/</a>	<a href="http://www.bea.doc.gov/bea/regional/rims/">http://www.bea.doc.gov/bea/regional/rims/</a>	<a href="http://www.miq-inc.com/">http://www.miq-inc.com/</a>

Exhibit A.2 lists some summary information from statewide economic impact studies conducted for airport operations in other states. As an initial comparison, the 1996 study for North Carolina showed a \$9.1 billion economic impact, with 181,000 jobs supported by aviation. In 1996, there were an estimated 7.5 million people living in North Carolina.

## Exhibit A.2: Summary of State Aviation Economic Impact Reports

State	Date	Economic Activity (\$ billions)	Payroll (\$ billions)	Jobs	Airports: General Aviation/ Commercial	State Population: 2000 Census
<b>Arizona</b> <sup>1</sup>	2002/2003	\$ 38.5	\$ 14.7	470,708	69 / 13	5,130,632
California <sup>2</sup>	June 2003	\$ 110.7	N/A	1,704,680	223 / 29	33,871,648
Colorado	2003	\$ 23.5	\$ 9.8	280,156	65 / 13	4,301,261
Florida <sup>3</sup>	Aug. 2000	\$ 50.1	\$ 12.8	559,395	109 / 20	15,982,378
Idaho	1998	\$ 1.3	\$ 0.6	24,127	67 / 7	1,293,953
Indiana	Oct. 2002	\$ 4.8	\$ 0.5	18,700	101 / 5	6,080,485
<b>Iowa</b> <sup>1</sup>	Aug. 2000	\$ 0.8	\$ 0.3	9,865	103 / 10	2,926,324
Massachusetts <sup>3</sup>	1999	\$ 0.9	\$ 0.3	9,918	35 / 6	6,349,097
Mississippi	2004 (?)	\$ 0.6	\$ 0.2	10,347	71 / 7	2,844,658
New Jersey	June 2005	\$ 4.6	N/A	70,500	44 / 3	8,414,350
<b>New Mexico</b> <sup>1</sup>	2003	\$ 42.3	\$ 1.0	49,099	50 / 11	1,819,046
<b>New York</b> <sup>1</sup>	Nov. 2003	\$ 35.4	\$13.4	682,703	58 / 18	18,976,457
North Dakota	1999	\$ 0.7	\$ 0.1	8,818	82 / 8	642,200
<b>Oklahoma</b> <sup>1</sup>	Sep. 1999	\$ 11.7	\$ 4.7	143,700	135 / 5	3,450,654
Ohio	June 1995	\$ 7.4	\$ 3.3	137,892	103	11,353,140
Pennsylvania	Dec. 2002	\$ 12.6	\$ 5.6	288,765	126 / 16	12,281,054
South Carolina						
<b>Vermont</b> <sup>1&amp;2</sup>	April 2003	\$ 0.6	\$ 0.2	8,848	15 / 2	608,827
Virginia	April 2004	\$ 10.8	\$ 4.8	164,091	59 / 7	7,078,515
Wisconsin	1998	\$ 2.1	\$ 0.8	41,458	91 / 9	5,363,675
<b>Washington</b> <sup>1</sup>	2001	\$ 18.6	\$ 4.1	171,311	109 / 20	493,782

<sup>1</sup>Used IMPLAN for economic impact calculations

<sup>2</sup>Used REMI for economic impact calculations

<sup>3</sup>Used RIMS-II for economic impact calculations

Exhibit A.3 shows some detailed impact figures for recent aviation studies that used IMPLAN to generate indirect and induced impacts. Output impact per employment ratios are:

Iowa	\$84,551	
New York	\$51,837	
Vermont	\$65,084	
Washington	\$86,308	
Virginia	\$65,817	[unspecified induced multiplier model]
(North Carolina	\$133,582)	

North Carolina's results appear to be higher than other state results. However, there has been tremendous growth in general aviation activity and associated jobs that are certainly contributing to the results and can explain some of the difference. Also, induced impacts seem to be lower relative to these other studies, resulting in significantly less induced jobs. A lower job total will rapidly increase the ratio when compared to other studies.

### Exhibit A.3: Comparison of Results for Selected Studies Using IMPLAN

State	Output			
	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

State	Employment			
	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

State	Payroll			
	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 B:**

### **SAMPLE SURVEYS**

---

A blank sample of the surveys is included for reference. The two surveys used were:

1. Airport Manager Survey (page 30)
2. Tenant or Major User Survey (page 36)

## AIRPORT MANAGER SURVEY

### 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, you

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 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 and

#### 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 questionnaire? 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	_____	_____
<b>Total Aircraft</b>	_____	_____

- 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	_____	_____
<b>Total Operations</b>	_____	_____

<b>Helicopters</b>	\$ -		850,000
<b>Gliders</b>	\$ -		35,000
<b>Military</b>	\$ -		5,000,000
<b>Ultra-Light</b>	\$ -		15,000
<b>Total Value</b>	\$ -		

**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 revenue and expenses.

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

**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 revenue

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 Name	Telephone	Number of Tenant Jobs "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
<b>Airport Operations:</b>				<b>General Aviation:</b>			
Owner/Sponsor				FBO (1)			
FAA				FBO (2)			
Other				Restaurants			
<b>Total Airport Operations</b>		-	-	Paid Corp. Pilots			
<b>Commercial Aviation-Oriented:</b>				Other Gen. Aviation			
Airlines				<b>Total General Aviation</b>		-	-
Air Cargo				<b>Ground Transport:</b>			
Baggage				Rental Car Agencies			
Ramp Services				Limos/Buses			
Restaurant				Taxis			
Gift Shop				Other			
Catering				<b>Total Ground Transport</b>		-	-
Parking				<b>Total Airport-Related</b>			
Other				Employment		-	-
<b>Total Commercial Aviation</b>		-	-				

*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**

---

## TENANT OR MAJOR USER SURVEY

### 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.

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

---

# TALBERT & BRIGHT

4810 Shelley Drive  
Wilmington, NC 28405  
Phone: (910) 763-5350 Fax: (910) 762-6281  
Email: tbiilm@tbiilm.com

4944 Parkway Plaza Boulevard, Suite 350  
Charlotte, NC 28217  
Phone: (704) 426-6070 Fax: (704) 426-6080  
Email: talbertbright@tbiclt.com

10105 Krause Road, Suite 100  
Chesterfield, VA 23832  
Phone: (804) 768-6878 Fax: (804) 768-6871  
Email: email@tbiric.com

Planning Office:  
1201 Main Street, Suite 1460  
Columbia, SC 29201  
Phone: (803) 933-9290 Fax: (803) 933-9205  
Email: tbicae@bellsouth.net