



North Texas Aviation Education Initiative

NORTH CENTRAL TEXAS COUNCIL OF GOVERNMENTS

Aviation Employment Data

July 2009



North Texas Aviation Education Initiative

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AVIATION EMPLOYMENT DATA

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A. GLOSSARY

This section defines acronyms and abbreviations used throughout the document.

Term	Description
BLS	U.S. Bureau of Labor Statistics
BTS	U.S. Bureau of Transportation Statistics
FSS	Flight Service Stations
MSA	Metropolitan Statistical Area
NAICS	North American Industry Classification System
U.S.	United States



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B. INTRODUCTION

The aviation industry encompasses a vast and varied range of activities and ownership sectors. Employment in the aviation industry also is diverse and is represented by many different disciplines and skills. Appendix A contains a detailed discussion regarding employment in air transportation prepared by the U.S. (United States) Bureau of Labor Statistics (BLS).

Aviation employment data has been obtained from a variety of sources for study and inclusion in the North Texas Aviation Education Initiative. The primary and most up-to-date data came from BLS, which publishes detailed annual and quarterly national, state and regional employment data. Data is current up through the third quarter of calendar 2008.

C. INDUSTRY CLASSIFICATIONS

Data for the period 2004 through 2007, and including the first three quarters, has been downloaded from the BLS website and analyzed to extract relevant data on historical aviation employment. The North American Industry Classification System (NAICS) codes specific to aviation-oriented employment are listed in Exhibit 1. Data sets included aviation NAICS codes for the entire U.S., the state of Texas, and the Dallas-Fort Worth-Arlington Metropolitan Statistical Area (MSA) which serves as a regional subset representing North Central Texas.

Exhibit 1: NAICS Codes Relevant to Aviation Employment

336	Transportation Equipment Manufacturing
3364	Aerospace Product and Parts Manufacturing
33641	Aerospace Product and Parts Manufacturing This industry comprises establishments primarily engaged in one or more of the following: (1) manufacturing complete aircraft, missiles, or space vehicles; (2) manufacturing aerospace engines, propulsion units, auxiliary equipment or parts; (3) developing and making prototypes of aerospace products; (4) aircraft conversion (i.e., major modifications to systems); and (5) complete aircraft or propulsion systems overhaul and rebuilding (i.e., periodic restoration of aircraft to original design specifications).
336411	Aircraft Manufacturing This U.S. industry comprises establishment primarily engaged in (1) manufacturing aircraft parts or auxiliary equipment (except engines and aircraft fluid power subassemblies) and/or (2) developing and making prototypes of aircraft parts and auxiliary equipment. Auxiliary equipment includes such items as crop dusting apparatus, armament racks, inflight refueling equipment, and external fuel tanks.
336412	Aircraft Engine and Engine Parts Manufacturing This U.S. industry comprises establishments primarily engaged in one or more of the following: (1) manufacturing aircraft engines and engine parts; (2) developing and making prototypes of aircraft engines and engine parts; (3) aircraft propulsion system conversion (i.e., major modifications to systems); and (4) aircraft propulsion systems overhaul and rebuilding (i.e., periodic restoration of aircraft propulsion system to original design specifications).
336413	Other Aircraft Parts and Auxiliary Equipment Manufacturing This U.S. industry comprises establishment primarily engaged in (1) manufacturing aircraft parts or auxiliary equipment (except engines and aircraft fluid power subassemblies) and/or (2) developing and making prototypes of aircraft parts and auxiliary equipment. Auxiliary equipment includes such items as crop dusting apparatus, armament racks, inflight refueling equipment, and external fuel tanks.



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Exhibit 1: NAICS Codes Relevant to Aviation Employment (continued)

481	Air Transportation
4811	Scheduled Air Transportation
48111	Scheduled Air Transportation
481111	Scheduled Passenger Air Transportation This U.S. industry comprises establishments primarily engaged in providing air transportation of passengers or passengers and freight over regular routes and on regular schedules. Establishments in this industry operate flights even if partially loaded. Scheduled air passenger carriers including commuter and helicopter carriers (except scenic and sightseeing) are included in this industry.
481112	Scheduled Freight Air Transportation This U.S. industry comprises establishments primarily engaged in providing air transportation of cargo without transporting passengers over regular routes and on regular schedules. Establishments in this industry operate flights even if partially loaded. Establishments primarily engaged in providing scheduled air transportation of mail on a contract basis are included in this industry.
4812	Nonscheduled Air Transportation
48121	Nonscheduled Air Transportation
481211	Nonscheduled Chartered Passenger Air Transportation This U.S. industry comprises establishments primarily engaged in providing air transportation of passengers or passengers and cargo with no regular routes and regular schedules.
481212	Nonscheduled Chartered Freight Air Transportation This U.S. industry comprises establishments primarily engaged in providing air transportation of cargo without transporting passengers with no regular routes and regular schedules.
481219	Other Nonscheduled Air Transportation This U.S. industry comprises establishments primarily engaged in providing air transportation with no regular routes and regular schedules (except nonscheduled chartered passenger and/or cargo air transportation). These establishments provide a variety of specialty air transportation or flying services based on individual customer needs using general purpose aircraft.
488	Support Activities for Transportation
4881	Support Activities for Air Transportation
48811	Airport Operations
488111	Air Traffic Control This U.S. industry comprises establishments primarily engaged in providing air traffic control services to regulate the flow of air traffic.
488119	Other Airport Operations This U.S. industry comprises establishments primarily engaged in (1) operating international, national, or civil airports, or public flying fields or (2) supporting airport operations, such as rental of hangar space, and providing baggage handling and/or cargo handling services.
48819	Other Support Activities for Air Transportation
488190	Other Support Activities for Air Transportation This industry comprises establishments primarily engaged in providing specialized services for air transportation (except air traffic control and other airport operations).

Source: www.bls.gov/data



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D. EMPLOYMENT DATA

Exhibits 2, 3, and 4 contain the annual tabulation of detailed aviation employment for 2007 and comparative data with among the U.S., Texas and North Central Texas regions. Data for years 2004 through 2007 is included in Appendix B, C and D. Besides employment, the data includes the number of employers, and total wages for each NAICS category. Average weekly and annual wages were derived from the employment and total wage data.

Exhibit 2 presents national aviation employment by NAICS codes. On average, employment in the aviation industry represents 0.83 percent of the total U.S. employment, whereas aviation employers represent only 0.18 percent of the country's total employers. Average annual wages for aviation employment is consistently 17 percent higher than average U.S. wages, an indication that aviation employment involves higher paying jobs.

Exhibit 2: National Aviation Employment Characteristics

2007 U.S. Employment						
NAICS Code	Description	Employers	Employment	Total Wages	Avg/Week	Avg/Annual
336411	Aircraft Manufacturing	706	232,919	19,325,635,799	1,596	82,971
336412	Aircraft Engine and Engine Parts Manufacturing	621	85,024	6,309,642,615	1,427	74,210
336413	Other Aircraft Parts and Auxiliary Equipment Manufacturing	1,366	97,343	5,924,571,200	1,170	60,863
481111	Scheduled Passenger Air Transportation	2,277	432,449	25,789,230,086	1,147	59,635
481112	Scheduled Freight Air Transportation	726	12,225	690,610,954	1,086	56,492
481211	Nonscheduled Chartered Passenger Air Transportation	2,314	35,450	2,254,683,779	1,223	63,602
481212	Nonscheduled Chartered Freight Air Transportation	583	7,835	448,952,230	1,102	57,301
481219	Other Nonscheduled Air Transportation	423	3,366	166,184,391	949	49,371
488111	Air Traffic Control	718	25,403	1,997,113,945	1,512	78,617
488119	Other Airport Operations	2,056	93,071	3,178,939,303	657	34,156
488190	Other Support Activities for Air Transportation	4,466	91,832	4,453,147,668	933	48,492
Total U.S. Aviation		16,256	1,116,917	70,538,711,970	1,164	60,519
Total U.S. Employment		8,971,897	135,366,106	6,018,089,108,081	855	44,458
AvJobs as % of U.S. Total		0.18%	0.83%	1.17%		1.17%

Source: www.bls.gov/data



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Texas employment characteristics are presented in Exhibit 3. Aviation employment represents a significant higher percentage of total Texas employment (1.34 percent) while only 0.24 percent of employers fall within the aviation employment categories. Average annual wages for aviation employment are 34 percent higher than average total wages, and are slightly higher than U.S. employment (2.2 percent). Over 8 percent of aviation employers are located in Texas and include 12.2 percent of U.S. aviation jobs.

Exhibit 3: Texas Aviation Employment Characteristics

2007 TX Employment						
NAICS Code	Description	Employers	Employment	Total Wages	Avg/Week	Avg/Annual
336411	Aircraft Manufacturing	105	34,973	2,822,967,882	1,552	80,718
336412	Aircraft Engine and Engine Parts Manufacturing	48	5,213	277,482,045	1,024	53,229
336413	Other Aircraft Parts and Auxiliary Equipment Manufacturing	95	9,034	674,969,295	1,437	74,714
481111	Scheduled Passenger Air Transportation	130	56,528	3,786,825,609	1,288	66,990
481112	Scheduled Freight Air Transportation	59	740	40,261,091	1,046	54,407
481211	Nonscheduled Chartered Passenger Air Transportation	168	5,224	309,072,055	1,138	59,164
481212	Nonscheduled Chartered Freight Air Transportation	104	1,766	89,204,825	971	50,512
481219	Other Nonscheduled Air Transportation	38	1,033	21,990,239	409	21,288
488111	Air Traffic Control	26	1,843	253,329,532	2,643	137,455
488119	Other Airport Operations	123	5,000	120,637,869	464	24,128
488190	Other Support Activities for Air Transportation	480	15,248	883,701,208	1,115	57,955
Total TX Aviation		1,376	136,602	9,280,441,650	1,190	61,869
Total TX Employment		569,541	10,231,906	457,310,432,773	860	44,695
AvJobs as % of TX Total		0.24%	1.34%	2.03%	138.43%	138.43%
TX Total as % of U.S. Total		6.35%	7.56%	7.60%	100.53%	100.53%
TX Avjobs as % of U.S. Avjobs		8.46%	12.23%	13.16%	102.23%	102.23%

Source: www.bls.gov/data



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The BLS data for regional aviation employment characteristics is inconsistent and incomplete, but Exhibit 4 still provides some meaningful information regarding certain North Central Texas aviation employment categories. For NAICS Code “33641 - Aerospace Product and Parts Manufacturing”, the data is complete and demonstrates that employment is significant (nearly 35,000 jobs) with commensurately higher annual wages than U.S. and state wages. Regional employment data for NAICS Code “481111 - Scheduled Passenger Air Transportation” is only available for 2007; this, however, shows 42 employers with employment at nearly 31,600 positions.

Exhibit 4: North Central Texas Regional Aviation Employment Characteristics

2007 Regional Employment						
NAICS Code	Description	Employers	Employment	Total Wages	Avg/Week	Avg/Annual
336411	Aircraft Manufacturing	50	25,138	2,170,950,153	1,661	86,361
336412	Aircraft Engine and Engine Parts Manufacturing	20	1,453	96,193,166	1,273	66,203
336413	Other Aircraft Parts and Auxiliary Equipment Manufacturing	60	7,968	631,535,420	1,524	79,259
481111	Scheduled Passenger Air Transportation	42	31,598	2,219,118,782	1,351	70,230
481112	Scheduled Freight Air Transportation	14	311	17,314,061	1,071	55,672
481211	Nonscheduled Chartered Passenger Air Transportation	53	1,138	77,841,922	1,315	68,402
481212	Nonscheduled Chartered Freight Air Transportation	25	-	-		
481219	Other Nonscheduled Air Transportation	13	-	-		
488111	Air Traffic Control	1	-	-		
488119	Other Airport Operations	34	-	-		
488190	Other Support Activities for Air Transportation	170	4,412	273,993,838	1,194	62,102
Total Regional Aviation		482	72,018	5,486,947,342	1,341	69,747
Total Regional Employment		148,221	2,882,016	143,026,185,616	954	49,627
AvJobs as % of Regional Total		0.33%	2.50%	3.84%	140.54%	140.54%
Regional Total as % of TX Total		26.02%	28.17%	31.28%	111.04%	111.04%
Regional Avjobs as % of U.S. Avjobs		2.97%	6.45%	7.78%	115.25%	115.25%

Source: www.bls.gov/data

Exhibit 5 presents comparative data on national, state and regional aviation employment growth. U.S. aviation employment has risen 3 percent during the 2004-2007 period, with the greatest gains in aircraft manufacturing (11%), other parts and equipment manufacturing (18.8 %) and other support activities for air transportation (19.3%). The greatest declines were in air traffic control (32.3%), and scheduled passenger air transportation (5.5%). The significant decline in air traffic control may be partially explained by the completion in the transition in staffing Flight Service Stations (FSS) with contractors instead of federal employees.



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Exhibit 5: Regional/State/National Aviation Employment Growth Characteristics

Regional Aviation Employment Growth						2004-2007	
NAICS	Description	2004	2005	2006	2007	Employees	Net Change
336411	Aircraft Manufacturing	25,367	25,975	26,009	25,138	(229)	-0.9%
336412	Aircraft Engine and Engine Parts Manufacturing	1,422	1,470	1,354	1,453	31	2.2%
336413	Other Aircraft Parts and Auxiliary Equipment Manufacturing	7,606	7,957	8,327	7,968	362	4.8%
481111	Scheduled Passenger Air Transportation	-	-	-	31,598		
481112	Scheduled Freight Air Transportation	589	-	-	311		-47.2%
481211	Nonscheduled Chartered Passenger Air Transportation	1,024	1,040	1,033	1,138	114	11.1%
481212	Nonscheduled Chartered Freight Air Transportation	864	-	-	-		n/m
481219	Other Nonscheduled Air Transportation	-	-	25	-		n/m
488111	Air Traffic Control	-	-	-	-		
488119	Other Airport Operations	-	-	-	-		
488190	Other Support Activities for Air Transportation	3,467	3,858	4,319	4,412	945	27.3%
Total		40,339	40,300	41,067	72,018	1,223	n/m
Texas Aviation Employment Growth						2004-2007	
NAICS	Description	2004	2005	2006	2007	Employees	Net Change
336411	Aircraft Manufacturing	33,903	34,940	35,499	34,973	1,070	3.2%
336412	Aircraft Engine and Engine Parts Manufacturing	4,030	5,055	5,067	5,213	1,183	29.4%
336413	Other Aircraft Parts and Auxiliary Equipment Manufacturing	8,505	8,954	9,388	9,034	529	6.2%
481111	Scheduled Passenger Air Transportation	58,809	55,444	55,493	56,528	(2,281)	-3.9%
481112	Scheduled Freight Air Transportation	882	736	709	740	(142)	-16.1%
481211	Nonscheduled Chartered Passenger Air Transportation	4,532	4,777	4,964	5,224	692	15.3%
481212	Nonscheduled Chartered Freight Air Transportation	1,663	1,729	1,734	1,766	103	6.2%
481219	Other Nonscheduled Air Transportation	1,051	1,030	1,027	1,033	(18)	-1.7%
488111	Air Traffic Control	1,972	1,837	1,836	1,843	(129)	-6.5%
488119	Other Airport Operations	5,275	4,859	5,280	5,000	(275)	-5.2%
488190	Other Support Activities for Air Transportation	12,393	13,938	14,696	15,248	2,855	23.0%
Total		133,015	133,299	135,693	136,602	3,587	2.7%



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Exhibit 5: Regional/State/National Aviation Employment Growth Characteristics (continued)

US Aviation Employment Growth						2004-2007	
NAICS	Description	2004	2005	2006	2007	Employees	Net Change
336411	Aircraft Manufacturing	209,884	214,096	224,509	232,919	23,035	11.0%
336412	Aircraft Engine and Engine Parts Manufacturing	78,354	81,607	83,783	85,024	6,670	8.5%
336413	Other Aircraft Parts and Auxiliary Equipment Manufacturing	81,929	86,845	91,194	97,343	15,414	18.8%
481111	Scheduled Passenger Air Transportation	457,848	441,992	424,712	432,449	(25,399)	-5.5%
481112	Scheduled Freight Air Transportation	12,315	12,946	12,452	12,225	(90)	-0.7%
481211	Nonscheduled Chartered Passenger Air Transportation	33,750	34,865	34,065	35,450	1,700	5.0%
481212	Nonscheduled Chartered Freight Air Transportation	7,182	7,601	7,695	7,835	653	9.1%
481219	Other Nonscheduled Air Transportation	3,127	3,054	3,215	3,366	239	7.6%
488111	Air Traffic Control	37,506	36,293	28,680	25,403	(12,103)	-32.3%
488119	Other Airport Operations	85,425	86,879	90,884	93,071	7,646	9.0%
488190	Other Support Activities for Air Transportation	76,985	84,236	88,262	91,832	14,847	19.3%
Total		1,084,305	1,090,414	1,089,451	1,116,917	32,612	3.0%

Notes: n/m - not meaningful
Source: www.bls.gov/data

Texas aviation employment has also increased in the 2004-2007 period. With a net increase of nearly 3,600 employees, the greatest gains were in aircraft and parts manufacturing and support activities for air transportation. The most significant decrease was in scheduled passenger transportation.

Again, the lack of complete regional data prevents a detailed evaluation on growth though employment growth appears to reflect the trends of both the U.S. and Texas. While aircraft manufacturing is down (0.9%), the "other" categories for manufacturing and air transportation have grown during the 2004-2007 period. The region received an additional 1,223 employees for those categories, according to reporting data.

Additional data, specific to the airline industry, is available to the public from the U.S. Bureau of Transportation Statistics (BTS). Airlines are required to report employment levels by area of responsibility. Exhibit 6 presents historical airline employment for the 2004-2008 period and demonstrates that employment has declined 4.5 percent over the past five years. In the last two years (2007-2008), employment declined 3.1 percent which is indicative of current economic conditions.



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Exhibit 6: Airline Employment

						Period Growth Rate	Current Growth Rate
Description	2004	2005	2006	2007	2008	(2004-2008)	(2007-2008)
General Manager	7,332	7,787	7,198	7,479	7,783	6.2%	3.9%
Pilots & Co-Pilots	73,395	76,078	75,737	74,812	75,715	3.2%	1.2%
Other Flight Personnel	1,794	2,309	2,081	1,742	1,344	-25.1%	-29.6%
Passenger/General Services & Administration	95,079	93,904	94,466	96,057	92,772	-2.4%	-3.5%
Maintenance	57,689	52,894	52,538	52,616	54,036	-6.3%	2.6%
Aircraft & Traffic Handling	1,193	1,369	3,253	487	729	-38.9%	33.2%
General Aircraft & Traffic Handling	65,539	62,255	37,408	35,466	42,789	-34.7%	17.1%
Aircraft Control	6,409	4,897	5,046	6,532	6,610	3.1%	1.2%
Passenger Handling	77,916	70,645	92,795	101,491	93,865	20.5%	-8.1%
Cargo Handling	40,526	42,012	37,499	37,651	36,636	-9.6%	-2.8%
Trainees & Instructor	4,234	3,721	3,590	4,655	3,528	-16.7%	-31.9%
Statistical	22,152	20,889	19,803	20,749	19,580	-11.6%	-6.0%
Traffic Solicitors	8,887	8,567	8,032	7,879	7,328	-17.5%	-7.5%
Other	38,322	36,120	34,012	35,425	34,436	-10.1%	-2.9%
Transport Related	84,434	92,746	91,672	92,960	89,345	5.8%	-4.0%
Total	584,819	576,194	565,134	576,005	558,491	-4.5%	-3.1%

Source: U.S. Bureau of Transportation Statistics

Aviation Job Descriptions

Because of the dynamic nature of the aviation industry, there is a plethora of aviation jobs that the task of collecting descriptions could be overwhelming. At the same time, the industry is distinctly divided into public and private sectors which presents challenges, particularly regarding private sector industry (i.e, aircraft manufacturing) which does not generally provide public access to detailed employment practices. On the other hand, public sector jobs (i.e, airport management, air traffic control) are transparent, both with description of various jobs and typical wage information.

In addition, typical career paths followed by those employed in the public/private sectors appear to be significantly different. Public sector aviation employment tends to provide entry level positions specifically targeted for technical knowledge and an identifiable path for advancement to the next level of responsibility. Private sector employment is more diverse and subject to unpredictable business decisions of individual businesses. For example, airline management (other than for pilots) tend to have entry level positions starting with basic operational responsibilities (e.g., ramp operations, customer service representative, etc.). One rationale for this approach is how the culture of an organization holds that management level staff must understand the “business” by starting at the bottom and working upwards into increasing levels of responsibilities. (See Appendix E for airline career path examples).



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Openly advertised airline positions generally require a graduate level education such as a Master's of Business Administration, combined with a specific level of experience. Aircraft manufacturing appears to have a similar approach toward entry level employment although skilled labor (e.g., aircraft mechanics, avionics technicians, etc.) can be observed moving upwards through the ranks into management positions.

While these are not absolutes, the situation presents a difficulty in identifying detailed job descriptions relevant to college graduate entry level career positions. For the descriptions that could be identified, Appendix F contains a list of typical positions that illustrate the general responsibilities, required knowledge and skills and other information. It is important to note that many of these job descriptions may require some specific knowledge about aviation but do not appear to require an aviation-specific education.

The diversity among aviation sectors and jobs is also reflected in relative pay ranges, Appendix G illustrates the range of annual salaries and hourly wages for a variety of different jobs currently available on the market. A cursory review of data tends to corroborate the BLS data suggesting aviation jobs enjoy a higher level of compensation compared to jobs in non-aviation sectors.