



# PIPELINE REPORT

DECEMBER 2017

# OVERVIEW

Each year the Aviation Technician Education Council (ATEC) compiles information about Federal Aviation Administration (FAA) air-frame and powerplant (A&P) mechanic certificate holders, the educational institutions that prepare the majority of those individuals for careers in aviation maintenance, and the companies that employ maintenance professionals.

The purpose of this year's report is to illustrate the certificated aviation maintenance technician (AMT) career path, identify demographics and trends for the current and entering workforce, and detect opportunities to meet the growing workforce demand.



PHOTO COURTESY OF  
NATIONAL AVIATION ACADEMY

The report's key conclusions:

- Mechanics are retiring faster than they are being replaced. New entrants make up 2% of the population annually, while 30% of the workforce is at or near retirement age. Using ATEC's model, the mechanic population is projected to decrease 5% in the next 15 years.
- Schools have the capacity to double production of A&P candidates. While institutions are ramping up recruitment activities and expect enrollment to increase, there is significant opportunity for industry employers to help define career paths and attract more students into the pipeline.
- Aviation must increase its focus on retaining A&P candidates. Twenty percent of candidates pursue careers outside of the industry and only 60% elect to take the FAA mechanic certification test.
- While the percentage of female A&Ps is increasing, it remains low, at less than 3%. This presents an opportunity to help address a looming shortage.

The survey's results and related conclusions help guide council activities and priorities, support industry recruitment programs and initiatives, and shape legislative and regulatory efforts that will benefit aviation maintenance.



# DATA SOURCES

Aviation Maintenance Technician School (AMTS) data was gathered through an ATEC-conducted survey of educational institutions with airframe and powerplant (A&P) programs certificated by the FAA through Title 14 Code of Federal Regulation part 147.

While all schools with technical programs were eligible to participate in the AMTS survey, most questions focused on A&P graduate demographics.

In total, 61% of all FAA-certificated AMTS participated in the questionnaire; a list of contributing institutions is included in

Appendix 1. Seventy-five percent of respondents submitted complete answers subsequently used in this report.

Additional data was gathered from the [National Center for Education Statistics College Navigator](#) and FAA sources including the [AMTS database](#), [US Civil Airmen Statistics](#), [Regional Active Airman Tables](#), [FAA data downloads](#) and the [airman certification database](#).

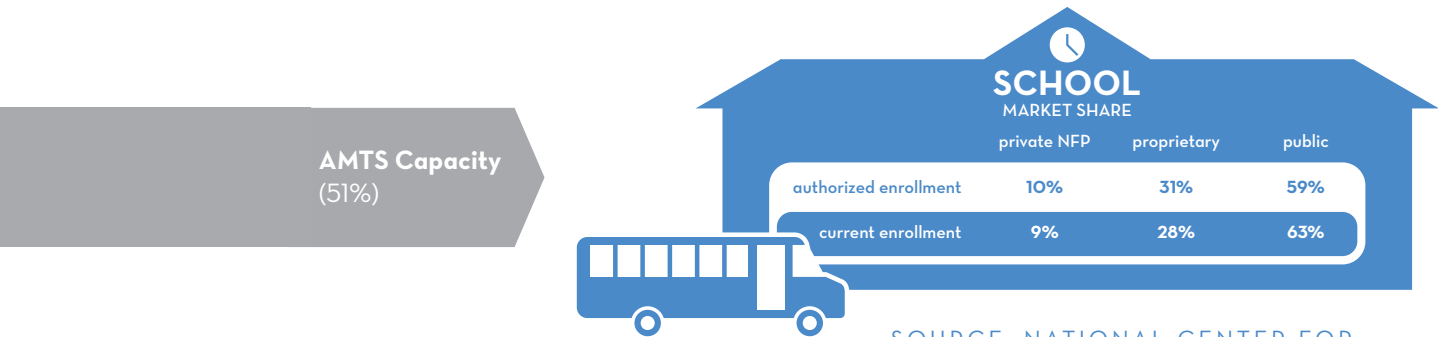
The information in this report is based on data available as of Nov. 15, 2017.

PHOTO COURTESY OF  
PITTSBURGH INSTITUTE OF AERONAUTICS



# AMTS DEMOGRAPHICS

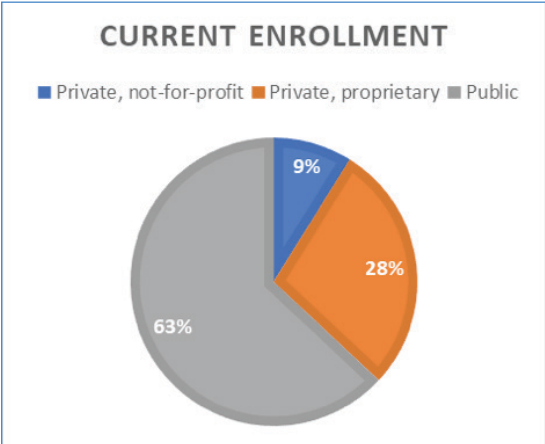
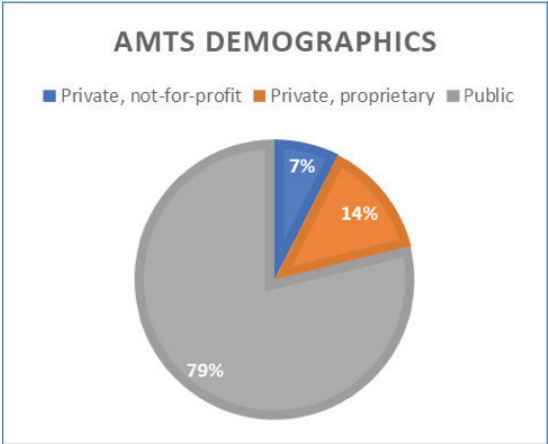
There are 171 active AMTS. Total current enrollments for all A&P programs is 17,791. With an FAA-approved system capacity of 34,284, the current AMTS load factor is 51%.



SOURCE: NATIONAL CENTER FOR EDUCATIONAL STATISTICS AND THE FAA AMTS DATABASE

While A&P program capacity increased by 2% in the last 18 months, enrollment also decreased by 2%.

The vast majority of educational institutions with A&P programs—nearly 80%—are public institutions. But while private schools make up only 21% of the population, they enroll nearly 40% of all A&P students.

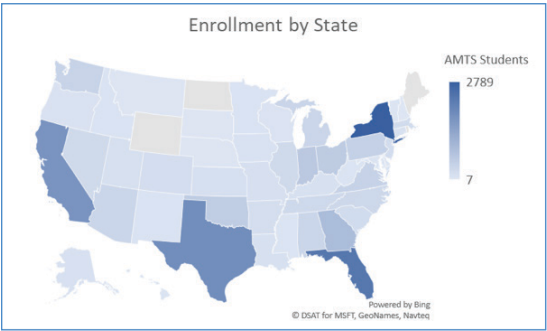


SOURCE: NATIONAL CENTER FOR EDUCATION STATISTICS

# AMTS DEMOGRAPHICS

A few schools dominate overall enrollment. Nearly 40% of all A&P students are enrolled at the 10 largest institutions. The AMTS community is therefore composed mostly of smaller institutions, with half of AMTS reporting fewer than 50 enrolled students.

Fifty percent of A&P students reside in New York, Florida, Texas or California.



SOURCE: FAA AMTS DATABASE

State	AMTS Students
NY	2789
FL	2324
TX	1876
CA	1742
GA	895
IN	631
OH	575
OK	536
PA	462
VA	437
WA	419
MI	379
AL	369
AZ	367
NC	310
TN	277

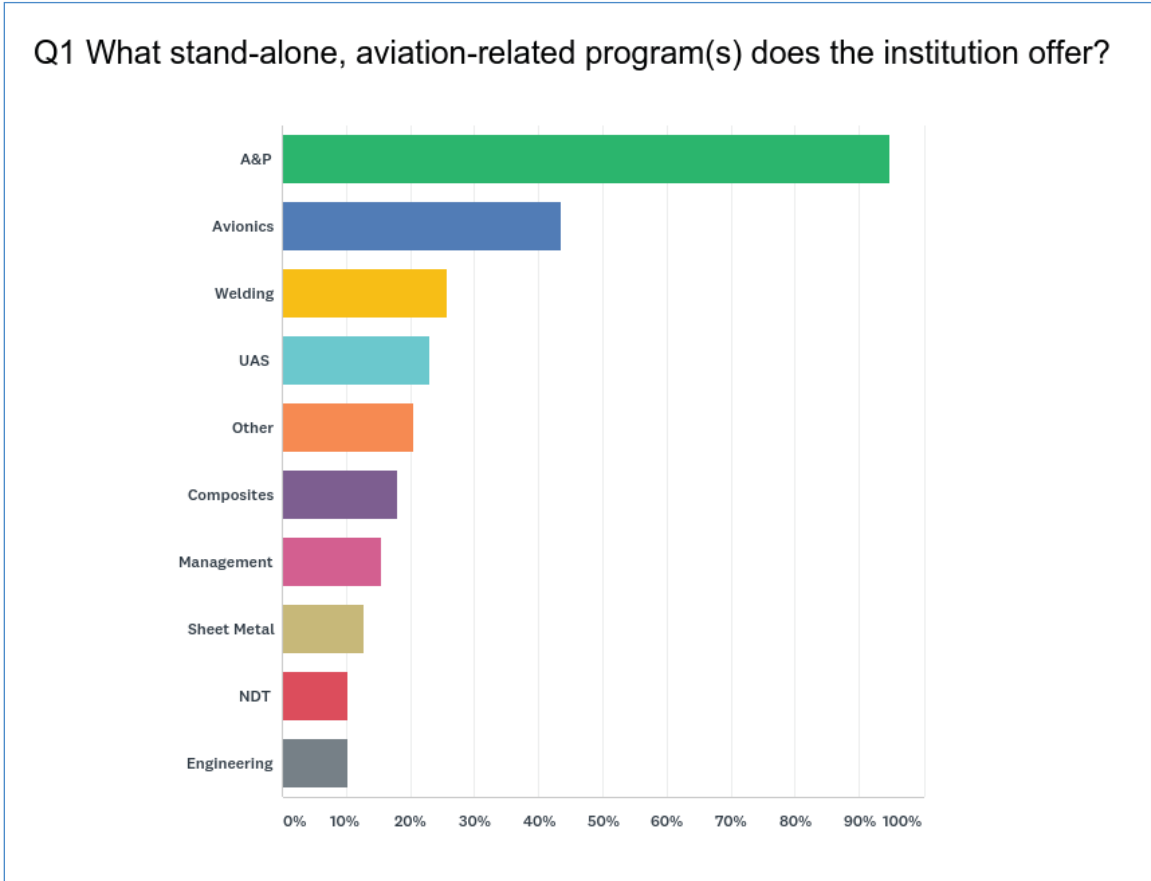
State	AMTS Students
IL	266
NV	265
MA	231
SC	229
NJ	200
CO	193
AR	186
KS	158
UT	146
MO	140
LA	130
KY	125
AK	101
CT	98
IA	81
OR	77

State	AMTS Students
MN	75
NM	67
ID	64
WI	60
MS	55
WV	54
MD	50
HI	49
VT	33
DE	31
SD	25
NE	25
MT	24
DC	8
NH	7

# AMTS DEMOGRAPHICS

To meet the growing demand for specialized services, nearly half of AMTS provide stand-alone, aviation-related programs outside the A&P, including avionics, unmanned aircraft systems, welding, sheet metal, and composites.

The fastest-growing non-A&P programs over the last two years were avionics and unmanned aircraft systems.



SOURCE: ATEC AMTS SURVEY

# AMTS GRADUATE DEMOGRAPHICS

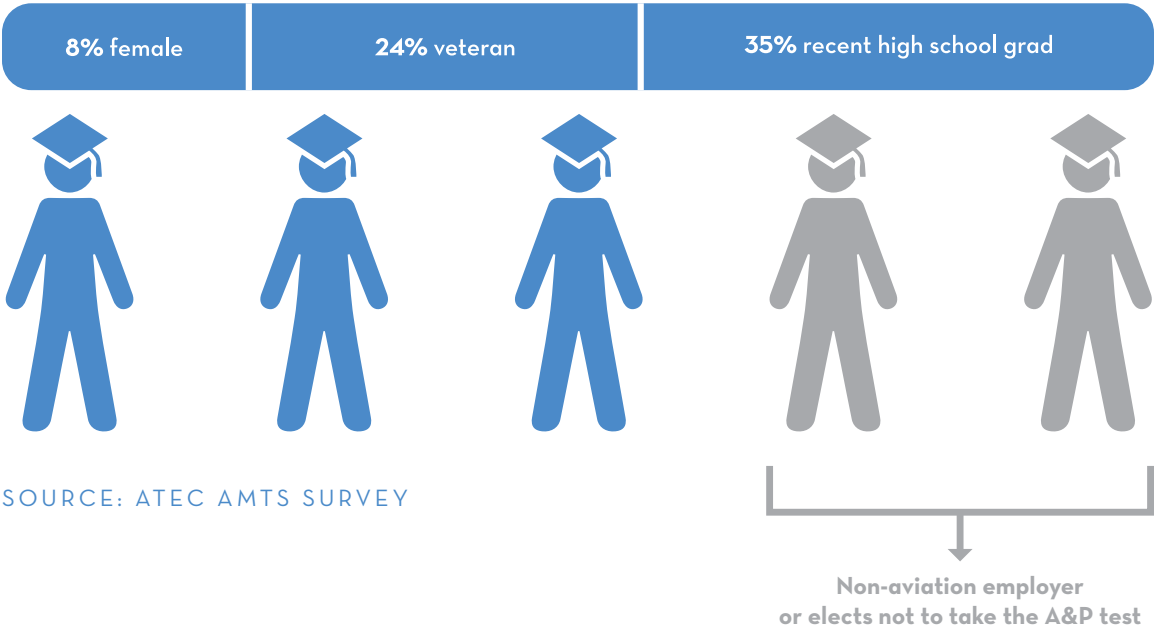
The average graduation rate for an A&P student is 78%. Twenty-four percent of AMTS graduates are veterans, 35% were in high school or attended high school within 12 months of enrollment, and 8% are female. Of those eligible for placement, 71% had a job upon graduation.

New AMTs are willing to relocate for their careers, nearly 40% took a job outside the school's geographic location.

The workforce bleed is real. AMTS respondents estimate that 20% of graduates pursue careers outside of aviation, and only 60% elect to take the FAA test for A&P mechanic certification.



PHOTO COURTESY OF  
WAYNE COMMUNITY COLLEGE



SOURCE: ATEC AMTS SURVEY

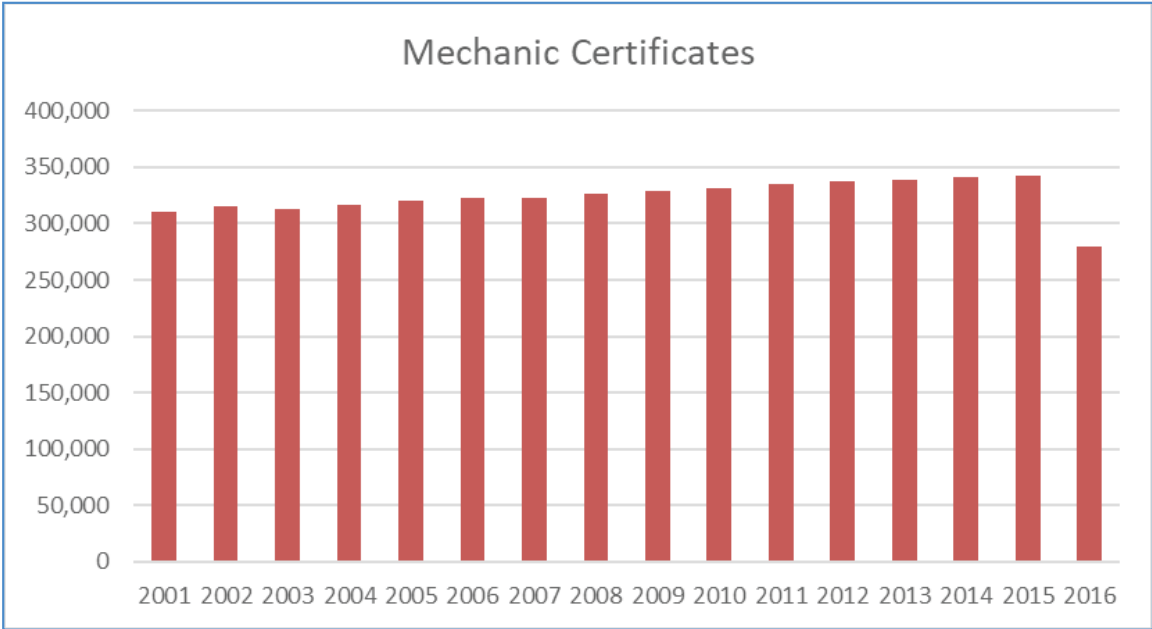
# CURRENT WORKFORCE DEMOGRAPHICS

The FAA airman database includes 285,782 certificated mechanics. Females make up 2.3% of the certificate mechanic workforce. This figure has steadily increased from 1.7 percent in 2001.

The agency does not track whether certificate holders are actively performing maintenance, or working within the U.S. (though we do know that 8% of active mechanics applied for a certificate using an international address). Certificated mechanics are removed from the airman database only when the agency receives notification of death, the certificate is suspended or revoked, or the mechanic turns 90 years of age. Therefore, the number of mechanics actively working in

the industry is likely significantly lower than the number derived from the data source.

Up until 2015, the total number of certificated mechanics steadily increased. The number dropped nearly 20% in 2016 after the agency removed all mechanics that had not applied for the required plastic certificate (see § 65.15(d)). Thus, the 2016 number is likely a more accurate reflection of the current population (though it still does not account for retirees or those working outside the industry or country).



SOURCE: FAA US CIVIL AIRMAN STATISTICS



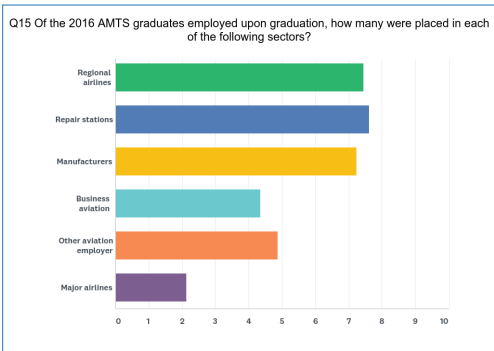
# CURRENT WORKFORCE DEMOGRAPHICS

While the airman database is an important source of information for identifying and analyzing trends, a more accurate representation of the current workforce may be derived from air operator and repair station employee reports.

Around 41% of all individuals with an FAA mechanic certificate are employed by repair stations, air carriers<sup>1</sup>, general aviation<sup>2</sup> and AMTS. (The other half is presumably employed by other industry segments such as design and manufacturing, works outside of the aviation industry, or is otherwise inactive.) Repair stations employ half of all certificated mechanics working in these segments.

Certificated mechanics make up 81% of the air operators maintenance workforce, and 21% of the repair station workforce.

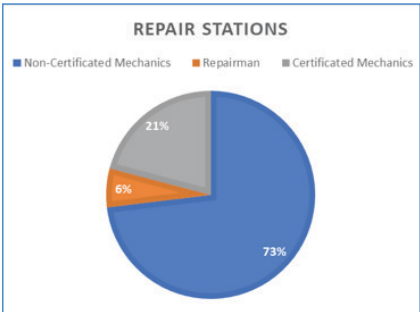
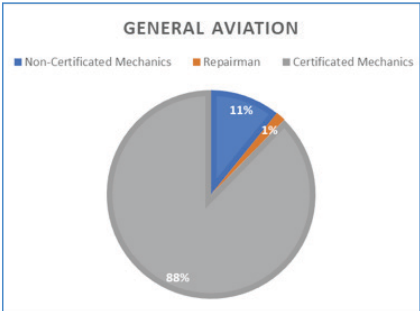
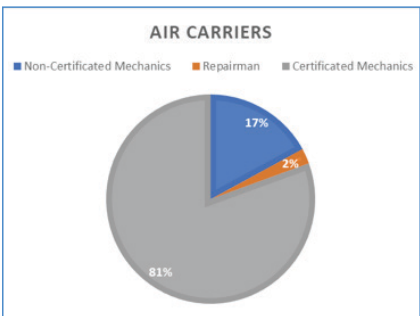
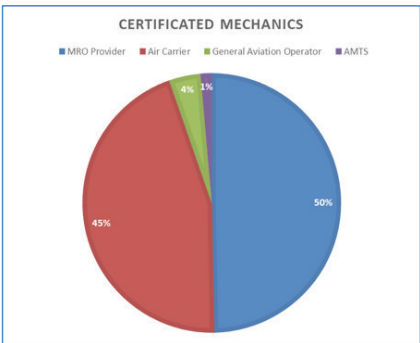
For entry-level positions, AMTS report that the top aviation employers are repair stations, followed closely by regional airlines.



SOURCE: ATEC AMTS SURVEY

<sup>1</sup> Includes entities certificated under 14 CFR parts 121, 125, 129 and 135

<sup>2</sup> Includes entities certificated under 14 CFR parts 91, 33 and 37



SOURCE: FAA DATA DOWNLOAD FOR REPAIR STATIONS AND AIR OPERATORS

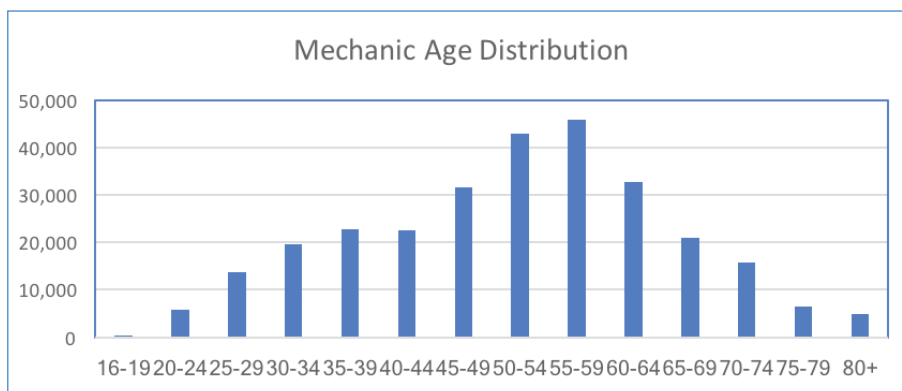
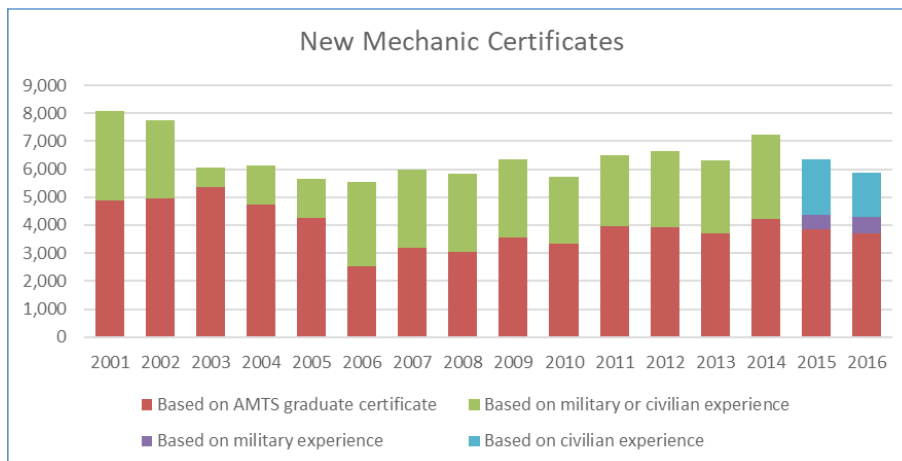
# CURRENT WORKFORCE DEMOGRAPHICS

Of particular concern is the age demographics of the current workforce. The average age of an FAA mechanic is 51, with 27% of the mechanic population age 64 and above.

In contrast, year-over-year, newly-minted mechanics make up only 2% of the entire population. While the distribution of new entrants has held steady in the last decade—around 60% are sourced from AMTS—the total number of original certificates is gradually trending down. In the

last two years alone, new entrants fell from 7,216 to 5,856, a 19% decline.

The typical starting average hourly wage for an AMTS alumna is \$19.29 per hour. The Bureau of Labor Statistics reports median pay for all aircraft mechanics and technicians (both certificated and non-certificated) at \$28.98 per hour.



SOURCE: FAA AIRMEN CERTIFICATION BRANCH

# PIPELINE INFOGRAPHIC

The graphic illustrates data provided in subsequent pages of this report.  
For readability, findings presented are rounded to the nearest whole person.

Anticipated mechanic population by 2032

227,870

Current mechanic population

237,513

## New Mechanics

Sixty percent of AMTS graduates take the FAA mechanic test. Those that pass the test make up 60% of new AMTs. The other 40% qualify for a mechanic certificate based on military or civilian experience.

## AMTS Grads

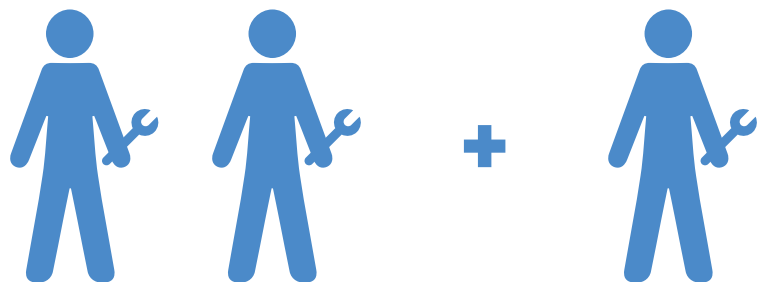
## Military & Civilian Experience

## AMTS Grads

Seventy eight percent of AMTS students graduate, of those, 20% are employed outside aviation.

## AMTS Students

The current AMTS load factor (authorized vs. current enrollment) is 51%. The AMTS infrastructure can accommodate 16,493 more enrollments.



Workforce bleed  
Non-aviation  
employer



# PREDICTING THE FUTURE

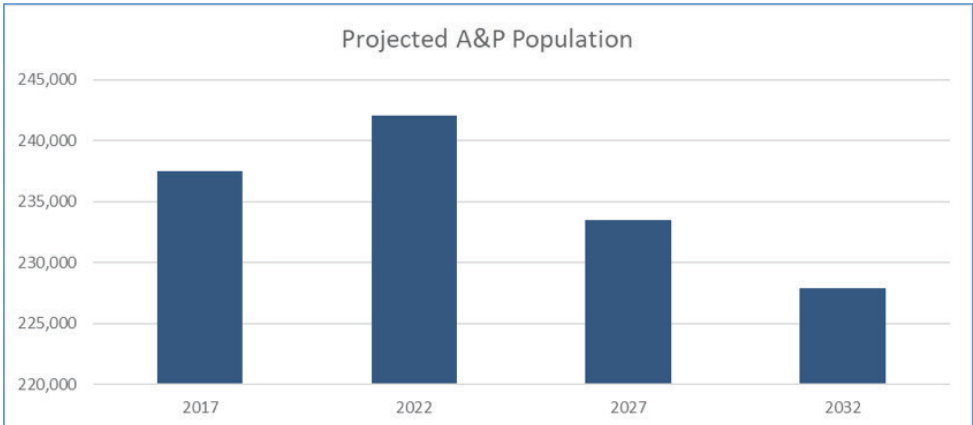
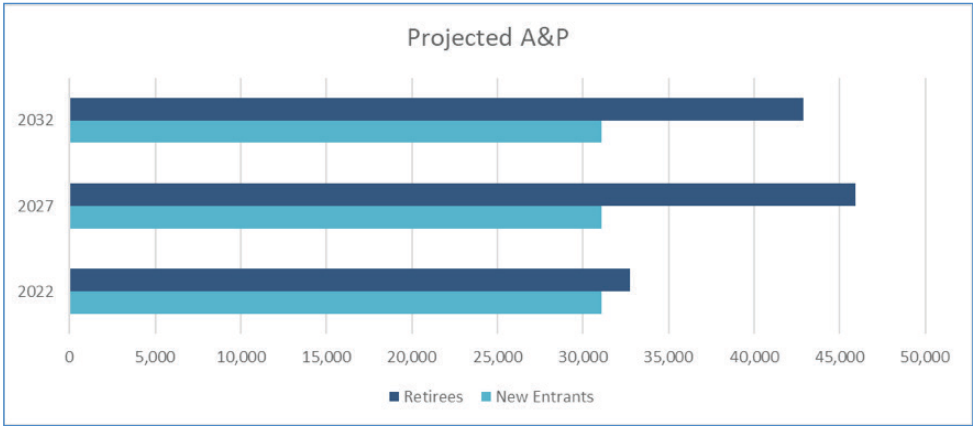
Using the ten-year average of 6,216 new entrants annually, and assuming an average retirement age of 64, new A&Ps will not keep pace with retirements.

Using this model, the population of A&Ps is expected to decrease 5% by the year 2032.

But industry needs more than just replacements. Recent workforce studies have focused on the number of *new* technicians needed to maintain a growing fleet. Boeing

[predicts](#) that commercial aviation alone will require 648,000 new technicians by 2036, with 18% of that demand, or 118,000, coming from North America. Airbus [estimates](#) that the commercial fleet will require more than a half million new technicians by 2036, including 78,000 in North America.

And Oliver Wyman [forecasts](#) that by 2027 U.S. demand for maintenance technicians will outstrip supply by 9%.



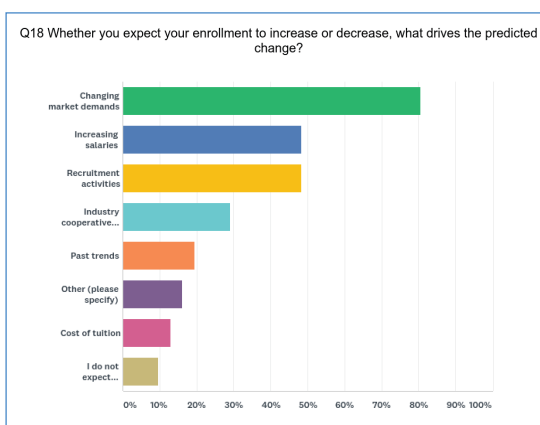


# CHALLENGES AND OPPORTUNITIES

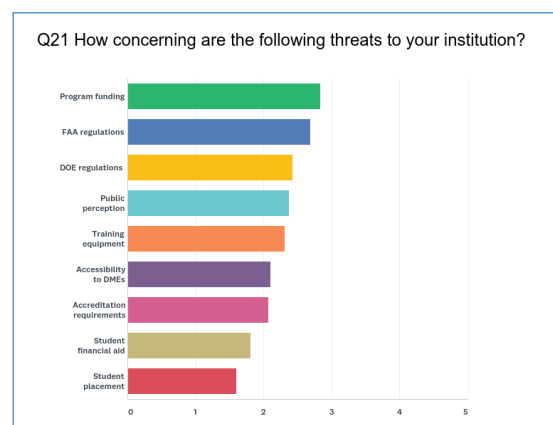
The vast majority of AMTS survey respondents (83%) expect their institution's enrollment to increase—the optimism has markedly increased since the 2015 survey, when only 55% of respondents shared that same expectation.

When asked about the driver for enrollment predictions, the majority of respondents pointed to changing market demands and increases in student-recruitment activities, closely followed by increasing salaries.

When asked about the most concerning threat to their technical programs, AMTS pointed—for the second straight year—to unavailable or inaccessible government funding, followed closely by limited access to training equipment. Coming in as the third and fourth greatest threats respectively were burdensome FAA regulatory requirements and public perception.



SOURCE: ATEC AMTS SURVEY



# CHALLENGES AND OPPORTUNITIES

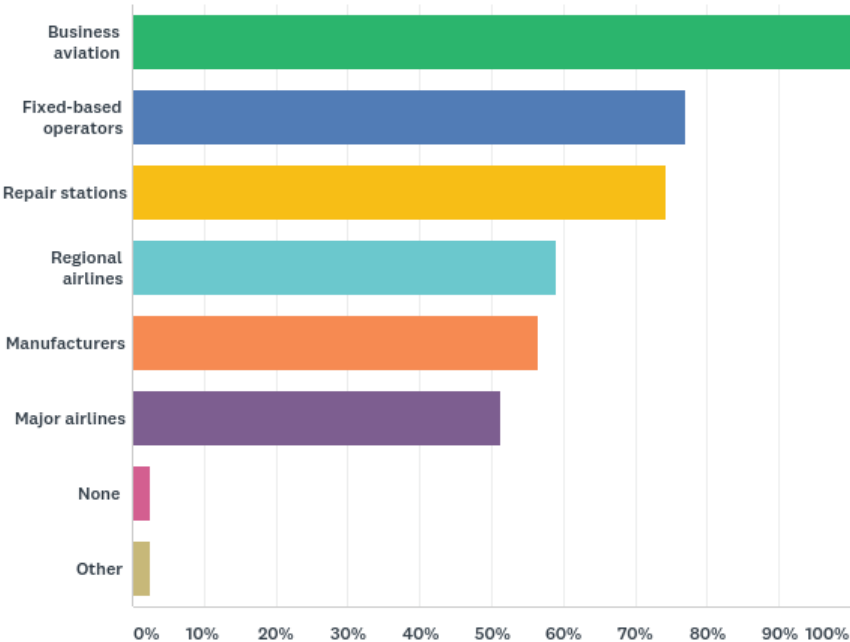
The loss of aviation program graduates to other technical fields—an estimated one in five graduates obtain employment outside of aviation—is a key challenge facing the aviation maintenance community.

Further indication that A&P graduates are either forfeiting or delaying careers in aviation maintenance is the mind-boggling stat that only 60% of A&P candidates—those already in the aviation career pipeline—do not pursue a mechanic certificate.

One way AMTS and industry are starting to combat these challenges—and to capitalize on the expectation that enrollments will increase—is to better define career paths for students through innovative partnerships.

Indeed, when asked about formal cooperative agreements with employers, 87% of AMTS respondents said they had relationships with industry companies, with repair station partnerships leading the way.

Q2 What segments of the industry does your institution have cooperative agreement(s) with (e.g., internship/apprenticeship programs, part-time job opportunities for students, paid tuition, guaranteed interview, etc.)?



SOURCE: ATEC AMTS SURVEY

# ACTIVITIES AND INITIATIVES

Efforts to grow the pipeline—by size and capacity—are underway.

Through enhanced communications, networking events and strategic partnerships, ATEC is connecting more schools with employers. For instance, in 2016 ATEC held its first employer expo during its annual conference, where recruiters and workforce-development executives met with AMTS instructors and administrators to forge new relationships and strategic partnerships. The [networking event](#) will reemerge at the [2017 annual conference](#).

ATEC is also ramping up efforts to boost AMTS enrollment through AMT branding efforts and enhanced industry-education and recruitment activities at the K-12 level.

For more information on ATEC's initiatives and to learn how you can participate, visit <http://www.atec-amt.org/workforce>.

## **About ATEC**

*ATEC is a partnership of aviation maintenance training schools and employers. The council is dedicated to promoting and supporting technician education through its communications, advocacy programs and networking events.*

# APPENDIX 1: CONTRIBUTING AMTS

Alabama Aviation Center - Ozark	Colorado Northwestern Community College
Andrews University	Connecticut Aero Tech School
Antelope Valley College	Craven Community College
Arkansas State University Mid-South	CV-TEC
Augusta Technical College	Delaware Technical Community College
Aviation High School	Eastern Florida State College
Aviation Institute of Maintenance-Chesapeake	Eastern New Mexico University - Roswell
Aviation Institute of Maintenance-Dallas	Embry-Riddle Aeronautical University
Aviation Institute of Maintenance-Houston	Florida State College at Jacksonville
Aviation Institute of Maintenance-Kansas City	Fox Valley Technical College
Aviation Institute of Maintenance-Las Vegas	Georgia Northwestern Technical College
Aviation Institute of Maintenance-Oakland	Gordon Cooper Technology Center
Aviation Institute of Maintenance-Philadelphia	Greenville Technical College
Aviation Training Institute at Vaughn College	Hallmark University
Baton Rouge Community College	Iowa Western Community College
Big Bend Community College	Kansas State University - Salina
Blue Ridge Community College	Lake Superior College
Boynton Beach Community High School	Lane Community College
Broward College	Lansing Community College
Burlington Technical Center	Lewis University
Central Florida Aerospace Academy	Liberty University
Central New Mexico Community College	Lincoln Land Community College
Chaffey College	Lorenzo Walker Institute of Technology
Chandler Gilbert Community College	Mahoning County Career & Technical Center
Cincinnati State Technical and Community College	Metro Technology Center
Clover Park Technical College	Miami Valley Career Technology Center
Coastal Alabama Community College	MIAT College of Technology - Canton
College of Alameda	MIAT College of Technology - Houston



# APPENDIX 1: CONTRIBUTING AMTS

Middle Tennessee State University	San Joaquin Valley College
Midland College	Savannah Technical College
Minneapolis Community and Technical College	Sinclair Community College
Mohawk Valley Community College	South Louisiana Community College
Moody Bible Institute, Moody Aviation	Southern Illinois University Carbondale
MT San Antonio College	Southwest Technology Center
Nashua Community College	Southwestern Illinois College
National Aviation Academy Inc - Clearwater	Spartan College of Aeronautics and Technology - Denver
North Central Institute	Spartan College of Aeronautics and Technology - Tulsa
North Idaho College	St. Philips College
Northern Michigan University	State Technical College of Missouri
Northland Community and Technical College	Tarrant County College
Northwest Mississippi Community College	Teterboro School of Aeronautics
Pima Community College	Texas State Technical College - Harlingen
Pittsburgh Institute of Aeronautics - Hagerstown	Tulsa Technology Center
Pittsburgh Institute of Aeronautics - Myrtle Beach	University of Alaska Anchorage
Pittsburgh Institute of Aeronautics - Pittsburgh	University of the District of Columbia Community College
Pittsburgh Institute of Aeronautics - Youngstown	Victor Valley College
Portland Community College	Vincennes University Aviation Technology Center
Purdue University	Wayne Community College
Robert C Byrd National Aerospace Education Center	Wichita Area Technical College
Salt Lake Community College	

# THANK YOU

The following aviation employers support technician education through ATEC membership [Join their ranks.](#)

