



LABOUR MARKET INFORMATION REPORT

AVIATION AND AEROSPACE INDUSTRIES
MARCH 2018



Canadian Council for **Aviation & Aerospace**
For a skilled workforce



Funded by the Government of Canada's
Sectoral Initiatives Program

LABOUR MARKET REPORT

The Canadian Council for Aviation & Aerospace conducted a series of research projects to develop a comprehensive understanding of the labour market requirements of the aviation and aerospace industries in Canada. This report brings together and summarizes the distinct research strands to provide a unique perspective on the current state of the aviation and aerospace labour markets and the medium and long-term outlook over the next decade. The research reported here comprises results from five separate quantitative and qualitative instruments.

We would like to thank the Government of Canada's Sectorial Initiatives Program for funding this important initiative.

This report is one of several produced during the Aviation and Aerospace Labour Market Information project (2014-2018). We would like to thank the Government of Canada for funding this important initiative.

Surveys were administered by the Canadian Council for Aviation & Aerospace with analytic support from Prism Economics and Analysis. In addition, key informant interviews were conducted with twelve aviation and aerospace industry associations and other key informants in August 2017 to further identify labour market and human resources issues in the Canadian aviation industry. This report includes findings from those interviews.



**TODAY, AVIATION TOUCHES NEARLY
EVERY ASPECT OF OUR DAILY LIVES.**

AVIATION & AEROSPACE IN CANADA

Today, aviation touches nearly every aspect of our daily lives. It's not just about vacation travel and tourism; it's about business travel, trade and enabling global supply chains. It's about saving lives through medevacs, air ambulance services, and search and rescue missions. It delivers food and other essential supplies to remote areas. It enables national defence, global security, and peacekeeping. Aviation is an integral part of our society, and there is an increasingly critical need for qualified people in the industry.

Canada's aviation and aerospace industries are comprised of three separate industrial classifications: aerospace manufacturing, air transportation, and support activities for air transportation (see page 86 for NAICS descriptions).

Aerospace Manufacturing includes original equipment manufacturers and producers of components and sub-assemblies. Air transport is scheduled and non-scheduled flight operators including charters, specialty flying services, and helicopter companies. Support activities for air transportation include airports and maintenance, repair and overhaul companies.



It should be noted that maintenance facilities which are part of a flight operator are included in the air transport classification. Markets include civil, defense and space.

When compared with other OECD countries, Canada's aerospace manufacturing industry ranks:

- 3rd in terms of R&D intensity, behind France and the U.S.
- 3rd in terms of global civil aircraft production activity
- 5th in terms of GDP, behind the U.S., Germany, France and the U.K.¹

INDUSTRY NEEDS
55,000 NEW WORKERS
BY 2025

Canada is known for its skilled labour force and quality products and services. Canada specializes in producing regional aircraft, avionics, business jets, commercial helicopters, aircraft engines, flight simulators, landing gear, as well as space systems, and offers extensive Aircraft Maintenance, Repair and Overhaul expertise.²

¹ The State of the Aerospace Industry: 2017 Report, Aerospace Industries Association of Canada

² Aerospace Industries Association of Canada

Employment Demand Outstrips Supply

Industry growth and workforce demographics are driving hiring and employment in these industries. Currently, the Canadian aviation and aerospace industry directly employs 154,000 workers. The industry needs to hire 55,000 new workers by 2025 to keep pace with projected growth and replacement demand (retirements and others leaving the workforce).

Only a quarter of these needed workers, approximately 14,000, will be filled by domestic graduates from secondary and post-secondary institutions, leaving a requirement to find 41,000 additional workers from other industries and from outside of Canada. Aviation and aerospace face stiff competition for the highly specialized skills they need to meet their overall hiring requirements. There is a small pool of potential hires from post-secondary programs. Therefore, encouraging graduates to work in our industry and attracting more students to aviation and aerospace and other STEM programs will need to be a priority to mitigate the skills shortage.

It is projected that the current aviation and aerospace workforce will increase 9% by 2025 in addition to the replacement of retiring workers. Between 2011 and 2016 the industry increased its workforce 6%, adding 9000 workers over this period. However, the need to replace those retiring had not yet reached current or projected levels.

The two occupations with the largest hiring requirements are pilots and aircraft maintenance engineers. Estimates of pilot requirements do not reflect the potential impact of new flight duty time regulations which are currently under consideration. If the proposed measures are implemented as planned it is reported that this will further exacerbate the current shortage and increase the numbers of new pilots already required by almost 30%.

Labour Shortages and Skills Mismatches Challenge Growth Prospects

Over the course of the Labour Market Information project CCAA surveyed the opinions of employers, met with organizations individually, conducted telephone interviews, held focus groups and led two national labour market strategy days.

The resounding message from industry is that the shortage of workers in key occupations is compounded by a growing gap between the skills graduates have, and the skills industry needs, due in part to rapid technological advances.

One key element noted was the “technology” gap between the equipment used in educational training and that used in the modern workplace. However, new technology experience is not the only cause of skills shortages. Among other things, many companies also cite a lack of business skills and soft skills in their new hires.

Employers report that the most significant HR challenge is finding qualified staff. This can be especially difficult when companies need to upskill for new technologies or to accommodate new business or lines of business.

One initiative that is increasingly recognized by the industry as a way to engage students is “work-integrated learning,” including co-operative education and internships. While large companies are accustomed to hiring engineering students for internships, small and medium-sized companies are not as likely to take advantage of this. Also, it is less common for aviation and aerospace companies to use work-integrated learning for other occupations, especially those from college-level programs such as technicians. It can only benefit the industry as a whole for industry and educators to work together to develop a mutually beneficial structure to support work-integrated learning.

Work-integrated learning is key, as it introduces students to the leading-edge equipment that they will be expected to use as well as introducing them to workplace and corporate culture. Companies not only use these placements to identify potential new recruits that would be a good fit for their organization, but also benefit from those new hires becoming productive in a shorter time frame.

Industry Fails to Attract Youth While Demographics Exacerbate Problems

Stakeholders agree that the Aerospace and Aviation industry has the ability to grow over the next five years; however, to do so requires a highly skilled workforce and the industry is not attracting sufficient numbers of young people into the industry-specific education that is currently available.

The industry no longer has the same glamour and appeal to youth. High profile layoffs create an impression of a volatile industry that does not offer secure employment prospects. In fact, this is not the case and with anticipated demand outstripping supply by a factor of 3 to 1, the industry offers secure employment prospects, although the geographical distribution of opportunities requires an element of workforce mobility.

Looming retirements create a key issue for the industry. Hiring to replace retiring workers makes up over 70% of the projected hiring requirements across the entire industry. Aerospace manufacturing has a slightly older workforce than the Canadian average and replacement workers comprise 78% of their hiring requirements. Some companies report that a large portion of their management is close to retirement and they don't have sufficient experienced workers to take over when they leave. Knowledge transfer methods, both formal and informal, are required but most organizations report they have not allocated sufficient priority to this task.

Companies also face the challenge of “generational” differences with older and younger workers having different learning and working styles. Younger workers typically want a sense of ownership in their work and the right to challenge established practices. While some companies are finding innovative ways to connect generations, others report it is an ongoing challenge.

The industry continues to be male-dominated with a workforce that is only 30% female, including administrative positions. Occupations with critical shortages have even fewer women, with only 6% of mechanics and 7% of pilots being female.

HIRING TO REPLACE RETIRED
WORKERS MAKES UP
70% OF PROJECTED HIRING
REQUIREMENTS

Global Demand Further Impacts National Labour Supply

Aviation and Aerospace is a global business and the demand for qualified workers has to be considered in a global context. Most developed nations have similar, or in many cases, even greater projected shortages of qualified workers. Just as Canada may look overseas to meet the needs of its labour shortages, other countries seek to attract Canadian talent to address their own shortfalls.

One trend that has been noted is that increasing global demand, and large company demand, draws supply away from the regional and remote operators who cannot compete on terms of salary or working conditions/opportunities. This creates particular challenges in Canada where remote/Northern operations are a vital lifeline to communities.



Industry Strategy Must Address Multiple Challenges

To address these issues and ensure that the Aviation and Aerospace industry in Canada continues to thrive, a multi-faceted national strategy is required. This will need to be addressed at a Government – Industry level as it requires a long-term industrywide perspective which individual companies cannot provide. Absent such a strategy we see growth coalescing around larger companies in the short term, at the expense of small and medium businesses.

We believe an industry strategy must address, among other things, the ability to reach out to and attract youth. Such an outreach strategy will also need to address the ability to tap into under-represented worker segments to maximize the talent pool we are drawing from. As mentioned previously, women make up only 30% of the aviation and aerospace

workforce, whereas they represent 51.2 % of the general workforce. Indigenous peoples make up 4% of the general workforce, yet only 3% in aviation. Conversely, skilled immigrants represent 26% of this industry's workforce, as opposed to only 23% of the general workforce.

There needs to be greater alignment between educational programs and industry requirements. This must be based upon better industry demand forecasting but also closer collaboration between industry and education to ensure that students are equipped with the right skills mix. The expansion of programs such as Work-Integrated Learning needs to continue, allowing students access to the latest technology, as well as developing their understanding of corporate cultures.

Changing demographics mean companies need help dealing with inter-generational workforces, knowledge transfer and succession planning. There are several aspects to this. Companies often need assistance with developing new/modified programs to successfully onboard and train the next generation workforce, who often have a different style of learning. In addition, many companies report a need to better manage the workplace dynamics of multiple generations. Things which are acceptable for one generation are not always acceptable for other generations. This extends to communication style, attitude, responsibility, and related subjects. Things which motivate the current generation of workers are not necessarily the things which motivate the Gen X, Gen Y and Millennial workers.

Companies also need help with adapting to the challenge of how to transfer knowledge from one generation to the next, ensuring continuity of business as retirements accelerate. This requires a robust succession plan for key functions and skill sets within each organization, which not all companies are equipped to do and which many report they have not yet devoted enough attention to.

Finally, specific targeted measures will be needed to address the most severe shortages before they become even more critical. The first of these should seek to address the pilot and aircraft mechanic shortages.

Insight – Industry Distribution Drives Employment Needs

Key stakeholders in aviation expect economic growth to be accompanied by an expansion in air travel, bringing associated increases in the numbers of flight crews and maintenance personnel required. Overall growth is driven by increased demand worldwide for more airplanes, however actual growth will differ for each sector and region.

Ontario and Quebec aerospace industries expect growth from civil and military markets both nationally and globally. Manitoba will see growth from new aircraft programs and retirements of older equipment. Large defence contracts for maintenance, repair and overhaul

will bring steady growth in Atlantic Canada, while innovative companies in British Columbia are winning new contracts in space, MRO, and general aviation.

Northern aviation could expect an upswing in activity due to increased mining activity and infrastructure spending. However, new flight and duty time rules for pilots may temper this as it could cause an increase in the cost to deliver services to northern and remote communities.

In Alberta growth expectations are tempered as aviation supporting oil and gas activity is expected to have only marginal growth.

Insight – Regional Breakdown

The sub-sectors of the industry are clustered across Canada. Manufacturing employment is concentrated in three distinct areas: 57% of Aerospace Manufacturing employment is in Quebec, with another 25% in Ontario. The remaining 18% is spread across the rest of the country, with a significant portion of that in Manitoba.

The distribution of Air Transportation services employment aligns with the largest cities and most active airports in Canada. Specifically, the largest employment centres are Toronto, Montreal, Vancouver, Calgary, Edmonton, and Halifax. However, Air Transportation employment is also scattered across smaller population centers and remote locations with varied demands for passenger and cargo services. Over half of

employment in the Air Transportation industry is concentrated in Ontario (33%) and Quebec (20%), followed by the West Region (35%).

Ontario (32%) and Quebec (21%) together make up over half of employment in Support Activities for Air Transportation which includes maintenance, while the West Region accounts for one-third (33%) of support activities.

Quebec will need to attract the highest number of workers to fill both growth and replacement demand at 16,800 by 2025. Ontario falls just behind this at 14,500 new workers. Western Canada will need 12,000 new workers. Central Canada and Atlantic region are anticipated to see slower employment growth, both will need just over 3,000 new workers.

Insight – Pilot Shortage has Multiple Consequences

The Canadian Aviation industries' need for experienced pilots is beginning to outpace the available national supply. Projections show that the industry will need an additional 7,300 pilots by 2025. Less than 1,200 new commercial pilot licenses are issued each year, and in 2016 almost half of these were issued to international students. To compound the issue, only about 70% of these new pilots choose to remain in the industry, which translates to fewer than 500 new pilots being available to Canadian industry each year. If this continues, there will be a shortage of close to 3,000 pilots by 2025. If the new flight duty time regulations are put into effect, this number could almost double.

In terms of recruitment challenges, over half of the flight operators surveyed say that finding qualified and experienced employees is a significant challenge. One third cite pilots with aircraft type training to represent their biggest skills shortage.

With new carriers commencing operations, and established larger airlines experiencing both growth and retirement of senior pilots, there has been an increase in the rate of drawing pilots from regional airlines and smaller operators. This is affecting the regional airlines particularly hard. Smaller airlines are a training ground for young pilots who will normally try to move up to the larger carriers as soon as possible. Historically it would take between 2 to 3 years before a pilot moved on but now this can happen in 18 months and in some cases in as little as 6 months under the current conditions. This trend is forcing some regional carriers to lower their experience levels for new hires in an effort to maintain their operations.

This hurts the regional airlines financially as well. Airlines are often required to train new hires for type endorsement depending on the type of aircraft they will fly. These training costs have

traditionally been amortized over the expected retention period of the pilot. With retention periods dropping from 3 years to six months the economics change dramatically.

Some regional airlines have reported cancellation of flights due to lack of pilots, and higher training costs as they have to replace departing staff, many of which do so with little notice.

The increasing need for more pilots is also causing a faster than normal attrition rate at flying schools. New instructors who would normally work 2 to 3 years before moving on to the airlines or charter jobs are now moving up within 4 to 6 months. This is resulting in flying schools having a serious problem maintaining sufficient numbers of experienced instructors to take on Chief or Senior Flight Instructor roles. This in turn risks further reducing the supply of new pilots.

The largest current impediment to pilot training in Canada is the high cost of training for new commercial pilots combined with the historically low starting salaries in the industry and non-linear career paths. A future issue will almost certainly be the time required for a pilot to complete their training. Canadian pilots are also recruited by airlines outside of Canada where many of these positions can pay more than local airlines offer. Overseas and larger companies draw pilots away from the flying schools and smaller operators. As previously noted this adds strain not only to sensitive Northern Operations, but also to niche operations such as crop spraying and forest fire fighting.

Insight – It's Not Just About Pilots

The industry also has a growing need for experienced aircraft maintenance engineers. It is projected that the industry will need a minimum of 5,300 new aircraft mechanics by 2025 to keep up with growth and retirements.

Aviation specific college programs graduate approximately 600 maintenance technicians per year. Of these, approximately 77% go on to work in the industry; however, there have been examples of other industries snapping up the majority of a graduating class, as they have sought out transferable skills.

More than a quarter of the companies which employ aircraft maintenance engineers have stated that they are experiencing hiring challenges when securing experienced maintenance or structures personnel. This rises to over a third for avionics workers with sufficient experience. Companies need a blend of experienced and younger workers, to maintain a balance of experience and ensure company knowledge is passed on.

Occupations with the largest hiring needs in the industry include pilots, mechanics, avionics, flight attendants, assemblers, air traffic controllers, managers, machinists, and engineers.

Additional occupations that have been cited as being the most difficult to hire for include:

Skilled Trades, Technician, Technologist

- Aircraft Electrical/Electronics/Instrument Component Technician
- Assemblers
- Electricians
- Interior technicians
- Machinists including CNC machinist and operator
- Painters
- Mechanical Engineering Technologist and Technician
- Millwrights
- Non-Destructive Inspection Technician

Information Technology

- Computer Network Technicians
- Computer Programmers
- Information Systems Analysts and Consultants
- Software Engineers and Designers

Managers

- Engineering Managers
- Facilities Operation and Maintenance Managers
- Manufacturing Managers
- Quality Assurance Managers
- Supply Chain Managers

Engineers

- Aerospace Engineers
- Electrical and Electronics Engineers
- Industrial and Manufacturing Engineers
- Mechanical Engineers

It should be noted that while some of these occupations do not represent large numbers they are key skills sets, most with limited training available, such as Non-Destructive Inspection Technician Level 3 and Painter.

There is also a shortage of certain skills and levels of competencies in the industry, for example, companies can find welders but have difficulty finding welders that have the necessary aerospace experience. Other skills shortages include composite repair and fabrication experience, process control skills for engineers and technicians, quality control, lean processes, landing gear, and special processes. Also pilots with specialties such as long-lining skills, float planes, and mountain flight.

The majority of the industry noted a lack of soft skills and business skills in new hires. This includes leadership, critical thinking and communication skills as well as the ability to troubleshoot and make independent decisions, among others. An example of this is business jet operators who require their pilots to have strong customer service skills as they deal directly with high value clients.

See page 72 for further details.



Insight – New Technology and Changing Skill Sets

Technology is rapidly advancing in the sector and new technology implementation can be a challenge for aviation and aerospace recruitment. The rate of change presents a particular challenge for educational institutions. The workforce is increasingly becoming digital with the advent of big data, electronic work orders and online manuals, to name a few.

Academic and training institutions often do not have access to proprietary equipment and current technologies, so the students are not trained on up-to-date equipment. In limited cases industry has addressed this problem by bringing students into plants to learn on new manufacturing equipment (e.g. work-integrated learning). These innovative industry/education partnerships will need to become more common as we seek to address skills gaps and reduce the onboarding time of new employees.

Technology also impacts the range and scope of traditional roles in the industry. Many components in avionics are now of the “plug and play” variety which changes the task requirement from in-depth troubleshooting to being able to correctly diagnose, remove and replace a problem unit. In response to these developments industry is seeking a new breed of technician, one who possesses more than one skill set but is qualified on a smaller number of tasks within each.

CCAA and a consortium of companies and colleges are developing an innovative training program which combines skills for Maintenance Technicians with those of Avionics and Interiors Technicians, together with soft skills and business skills to deliver “Multi-Disciplinary Technicians” to address these new requirements. Other similar programs involving other skills/trades resulting in more multidisciplinary workers is required.

New technologies are also having an impact on hiring requirements. The increased use of composites in aircraft manufacture has been with us for over a decade, yet we still have a shortage of programs to produce qualified students in this field. As technology is changing at an exponential rate we now see a number of new training programs needed by the industry to keep up.

Examples include:

- robotics and programming for robotics
- unmanned vehicles
- additive manufacturing
- 3D printing

To prevent future skills gaps and shortages, it is vital that training organizations expand/adopt programs to teach these and other “new” skills urgently.

See page 79 for further details.



Insight – Training and Education

More students entering the workforce are required due to the looming industry retirements, so training replacements is a priority. The aviation and aerospace workforce has a higher level of education than the average Canadian workforce, with 72% having post-secondary education which exacerbates the issue, as it reduces the pool of available workers.

Also, training organizations report that today, few students enter post-secondary education with hands-on skills and knowledge of tools. While industry reports that graduates from post-secondary institutions generally have good basic knowledge, they lack specific aviation and aerospace skills sets needed by industry. This increases the time needed for them to become independent, productive workers. Increased use of work- integrated learning programs to acquire

hands-on experience is recognized as one effective means of addressing this. This also gives students the opportunity to see if the job is what they expected it to be, and for the employer to evaluate the student for full-time employment.

Lack of apprenticeships in aviation specific occupations is seen as a barrier to attracting students into the industry. Only Manitoba offers traditional apprenticeship programs for the aviation industry with gas turbine repair and overhaul technician, and aviation maintenance journey person (AMJ). Aerospace manufacturing competes with other industries for skilled workers and employs skilled trades apprentices, with the top four being electrician, millwright, metal worker and machinist. Industry sees a need for more apprenticeships, co-ops and internships.

The aerospace industry in Québec works closely with post-secondary institutions, and the schools are responsive to industry needs. Québec has a well-integrated model for apprenticeships and co-ops in the manufacturing sector.

In other areas, educational opportunities are less available and not always aligned with industry needs. Across Canada, approximately 300 Aerospace Engineers graduate per year. British Columbia universities do not have an aerospace engineering program so companies in that region must recruit from other provinces. Very little aviation or aerospace training is offered in Northern Canada.

This has encouraged industry to develop innovative training solutions such as industry-led education in Ontario for structures which includes classroom training by industry experts

followed by hands-on shop floor training within the participating companies. Another example of industry-led training happens in Manitoba with StandardAero partnering with local training providers. Training takes place in both the college and in the company facility, allowing students to learn on the latest equipment.

Pilot training is a priority. Recently airlines have partnered with flight training schools to offer direct pathways into the airline for new graduates and maintain a steady flow of pilots. An example of this is Jazz Aviation LP which has established partnerships with multiple flight schools and offers a direct career path for qualifying graduates, and the opportunity for top-performing graduates to transition to first officer positions at Jazz while providing a pathway for pilots moving up to Air Canada.

Insight - Retirements

An aging workforce and retirements are affecting both aviation and aerospace. Workers delayed retirements after the 2009 economic downturn, but no longer. Retirements are causing a problem across the board. Larger companies are better positioned to handle this issue but have larger numbers of retiring workers to replace. Smaller companies face more of a problem particularly in small sole proprietorships which need to manage succession as the owners prepare to retire. Few smaller companies have robust succession plans in place.

Knowledge transfer from retiring workers is a challenge in all organizations. Some companies are bringing back retirees to mentor their younger workers. In the north, the issue is compounded because older equipment is more commonly used and companies are losing the skills to maintain this type of equipment as older employees retire, while the next generation lacks these skills.

INDUSTRY OUTLOOK AND SURVEY RESPONSES

The follow data is from the Aviation and Aerospace Labour Market Outlook report which is based on in-depth analysis and modeling of Statistics Canada data, as well as two employer surveys and a survey of post-secondary aviation programs.

EMPLOYER SURVEYS

The first survey of employers was completed in the fall of 2015, with 153 respondents completing the survey. Employers who responded to this survey represent 52,000 workers across Canada, approximately 34% of the industry's workforce,

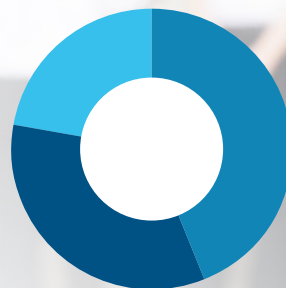
The second survey of employers was completed in November 2017, with 132 respondents completing the survey, 48% of these from the Air Transport sector. Employers who responded to this survey represent 39,000 workers across Canada, approximately 25% of the industry's workforce.

AVIATION AND AEROSPACE EMPLOYMENT

- Aviation and Aerospace employed an estimated 154,000 workers across Canada in 2016.
- Air Transportation accounted for 44% of employment, followed by Aerospace Manufacturing providing 34% of employment, and Support Activities with 22%.

Aviation and Aerospace Employment Distribution, 2016

- Air Transportation; 67,08344%
- Aerospace Manufacturing; 53,010.....34%
- Support Activities for Air Transportation; 34,18022%



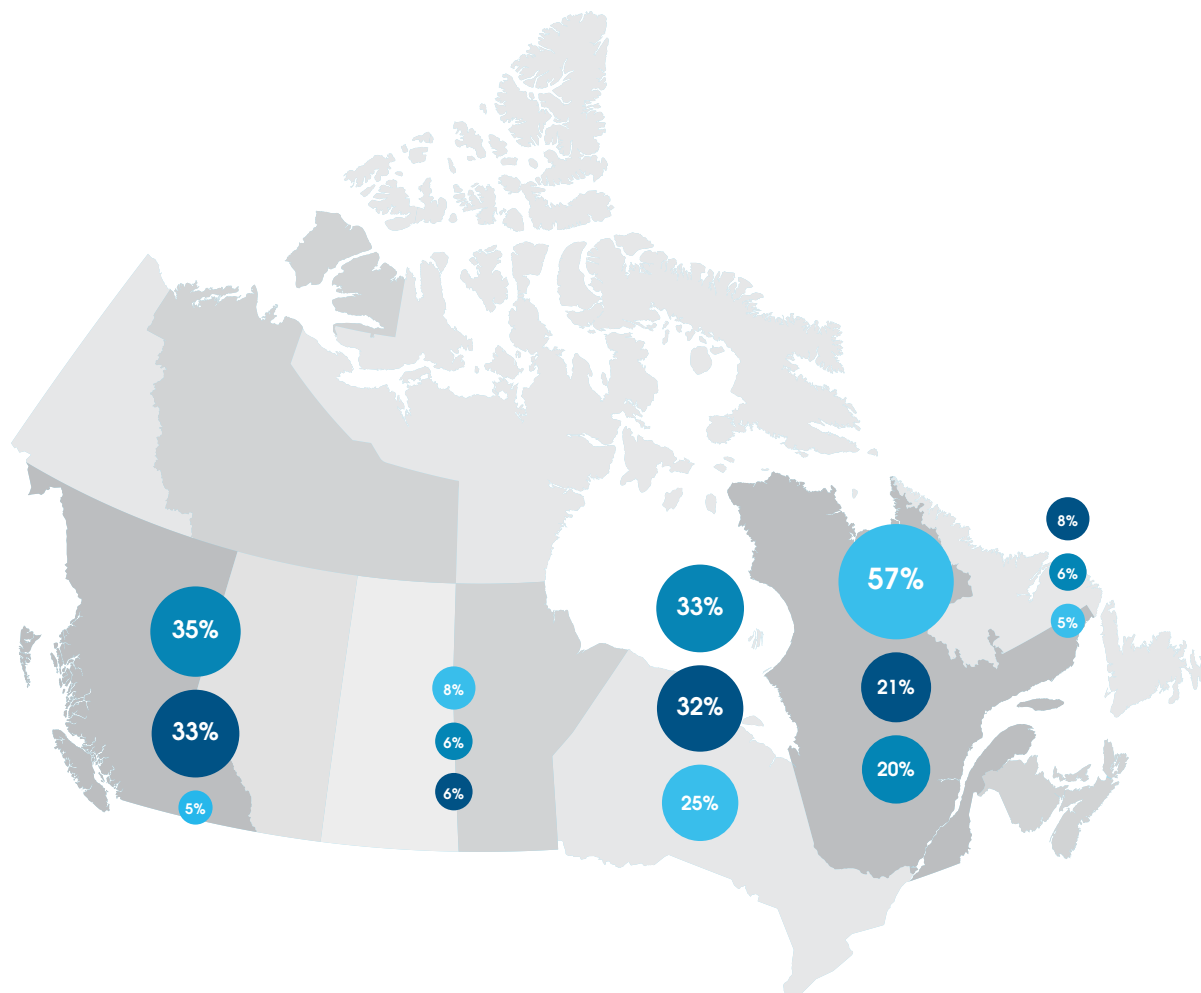
REGIONAL DISTRIBUTION OF EMPLOYMENT

Distribution of Employment in Aviation and Aerospace in Canada

- Air Transport
- Support Services
- Aerospace Manufacturing

Regions

- Atlantic (NS, NB, NL, PEI)
- Quebec
- Ontario
- Central (MB, SK)
- West (AB, BC)



Source: Statistics Canada; Prism Economics and Analysis estimates and forecast, 2017.

AVIATION AND AEROSPACE EMPLOYMENT

Sub-Sector	2011 Employment	2016 Employment	% Change Employment (2011-2016)
Air Transportation	63,300	67,083	6%
Support Activities for Air Transportation	32,465	34,180	5.3%
Aerospace Manufacturing	49,325	53,010	7.5%

EMPLOYER COUNTS BY REGION, AEROSPACE MANUFACTURING, 2016

- Ontario has more Aerospace Manufacturing employers than any other region.
- Quebec has two-thirds the number of employers of Ontario (86 to 130) but more than twice the number of large businesses (12 to 5).
- Nearly 90% of the West Region's establishments are small businesses; none have 500+ employees.
- The Atlantic and Central Regions each have fewer than 25 Aerospace Manufacturing employers.

Business Type (# Employees)	Atlantic	Quebec	Ontario	Central	West
Small (1-99)	16	57	101	7	58
Medium (100-499)	5	17	24	6	8
Large (500+)	1	12	5	2	0
Total	22	86	130	15	66

EMPLOYER COUNTS BY REGION, SUPPORT ACTIVITIES FOR AIR TRANSPORTATION, 2016

- Support Activities employers are also predominantly small businesses; there are fewer than 10 large Support Activities employers in Canada.
- The West Region is home to the most employers of any region.
- Quebec has fewer employers than Ontario or the West Region but more medium-sized businesses than either (17).

Business Type (# Employees)	Atlantic	Quebec	Ontario	Central	West
Small (1-99)	56	141	221	60	334
Medium (100-499)	4	17	16	3	15
Large (500+)	0	2	2	0	6
Total	60	160	239	63	355

EMPLOYER COUNTS BY REGION, AIR TRANSPORTATION, 2016

- The majority of Air Transportation employers in every region are small businesses – the Atlantic Region has the lowest share (78%) while all other regions are above 85%.
- The West Region is home to the most employers of any region, approximately 40% of the national total.
- Ontario has nearly as many large Air Transportation businesses (7) as all other regions combined (8).

Business Type (# Employees)	Atlantic	Quebec	Ontario	Central	West
Small (1-99)	43	121	205	63	322
Medium (100-499)	12	10	12	8	27
Large (500+)	0	3	7	2	3
Total	55	134	224	73	352

EDUCATIONAL ATTAINMENT

Employees with post-secondary education make up the majority of the Aviation and Aerospace industry's workforce with 72.3%.

Compared to only 54.3% in the average Canadian workforce.

These numbers indicate that the workforce of the industry is more educated than the average Canadian workforce.

Educational Attainment	% Share in the Aviation and Aerospace Industry	% Share in Total Workforce
Less than High School Education	5.2%	20.1%
High School Education	22.6%	25.6%
Post-secondary Education	72.3%	54.3%
Total	100%	100%

GENDER DISTRIBUTION

69.8% of the Aviation and Aerospace industry's workforce is composed of male workers.

This percentage is 48.8% for the total Canadian workforce.

Gender	% Share in the Aviation and Aerospace Industry	% Share in Total Workforce
Male	69.8%	48.8%
Female	30.2%	51.2%

AGE DISTRIBUTION

These numbers indicate that the workforce of the Aviation and Aerospace industry is slightly older than the average Canadian workforce.

In addition, the industry has half as many workers under 25 years old, in part due to the higher educational requirements of the skilled workforce.

Age Distribution	% Share in the Aviation and Aerospace Industry	% Share in Total Workforce
< 25 years old	6.5%	13.1%
Between 25 and 45 years old	47.9%	42.4%
> 45 years old	45.6%	44.4%
Total	100%	100%

IMMIGRATION STATUS

These numbers indicate that the workforce of the Aviation and Aerospace industry is composed of about the same share of immigrants as the overall Canadian workforce.

Immigration Status	% Share in the Aviation and Aerospace Industry	% Share in Total Workforce
Non-immigrants	72.9%	75.4%
Immigrants	25.9%	23.5%
Non-permanent residents	1.2%	1.2%
Total	100%	100%

HIRING REQUIREMENT BY SUB-SECTOR, CANADA, 2017-2025

Aviation and Aerospace industries need to attract a total of 55,000 workers from 2017 to 2025 across the three sub-sectors.

Hiring Requirement by Industry, 2017-2025

Sub-Sector	Total Hiring Requirement 2017-2025	As a % of Total Employees at 2015 Baseline
Air Transportation	24,695	37%
Support Activities for Air Transportation	12,008	35%
Aerospace Manufacturing	18,144	34%

AVIATION AND AEROSPACE EMPLOYMENT GROWTH

Sub-Sector	2016 Employment	2025 Projected Employment	% of Change of Projected Employment (2016-2025)
Air Transportation	67,083	73,998	10%
Support Activities for Air Transportation	34,180	37,182	8.7%
Aerospace Manufacturing	53,010	57,002	7.5%

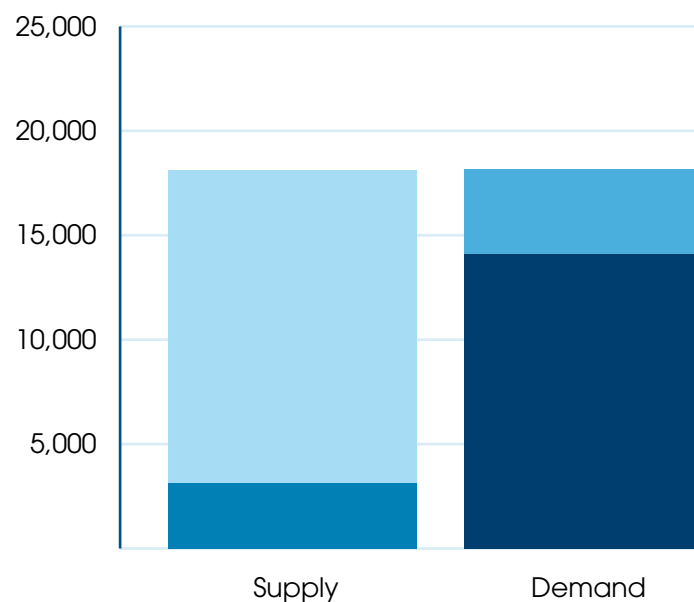
Source: Prism Economics and Analysis estimates and forecast, 2017.

HIRING REQUIREMENT, AEROSPACE MANUFACTURING, 2017-2025

- 78% of total hiring requirement in Aerospace Manufacturing is comprised of replacement demand.*
- 3,200 new entrants* is the projected supply over this 9 year period to the labour force and is only 17% of the required workers by 2025.
- 15,000 workers will be needed from other industries and jurisdictions (recruitment gap).

Change in Aerospace Manufacturing Workforce 2017-2025 Hiring Requirement (18,144)

- Recruitment Gap
- Projected New Entrants
- Expansion Demand*
- Replacement Demand*



* New entrants are defined as all Canadians in the population aged 15-30 entering the workforce for the first time, usually after completing their education. Hiring requirements is comprised of expansion demand (additional jobs as a result of industry growth) and replacement demand (workers needed to replace exits from the labour force due to retirements).

AEROSPACE MANUFACTURING HIRING REQUIREMENT BY REGION, 2017-2025

Aerospace Manufacturing needs to attract over 18,000 workers from 2017 to 2025 across Canada.

Hiring Requirement* by Region, 2017-2025

Region	Total Hiring Requirement 2017-2025	As a % of Total Employees at 2015 Baseline
Canada	18,144	34%
Atlantic	1,018	40%
Quebec	10,602	36%
Ontario	4,612	34%
Central	1,436	33%
West	871	32%

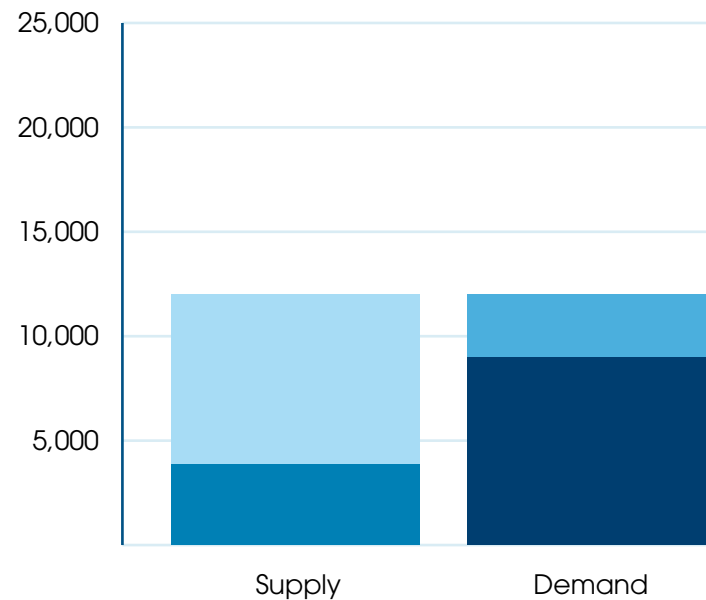
* Hiring requirement is comprised of expansion demand (additional jobs as a result of industry growth), and replacement demand (workers needed to replace exits from the labour force due to retirements).

HIRING REQUIREMENT, SUPPORT ACTIVITIES FOR AIR TRANSPORTATION, 2017-2025

- 75% of total hiring requirement in Support Activities for Air Transportation industry is comprised of replacement demand.*
- 3,900 new entrants* is the projected supply over this 9 year period to the labour force and is only 32% of the required workers by 2025.
- 8,200 workers will be needed from other industries and jurisdictions (recruitment gap).

**Change in Support Activities for Air Transportation Workforce
2017-2025 Hiring Requirement (12,008)**

- Recruitment Gap
- Projected New Entrants
- Expansion Demand*
- Replacement Demand*



* New entrants are defined as all Canadians in the population aged 15-30 entering the workforce for the first time, usually after completing their education. Hiring requirements is comprised of expansion demand (additional jobs as a result of industry growth) and replacement demand (workers needed to replace exits from the labour force due to retirements).

SUPPORT SERVICES HIRING REQUIREMENT BY REGION, 2017-2025

Support Activities for Air Transportation needs to attract 12,000 workers from 2017 to 2025 across Canada.

Hiring Requirement* by Region, 2017-2025

Region	Total Hiring Requirement 2017-2025	As a % of Total Employees at 2015 Baseline
Canada	12,008	35%
Atlantic	736	27%
Quebec	2,020	30%
Ontario	3,195	30%
Central	547	28%
West	3,688	33%

* Hiring requirement is comprised of expansion demand (additional jobs as a result of industry growth), and replacement demand (workers needed to replace exits from the labour force due to deaths and retirements).

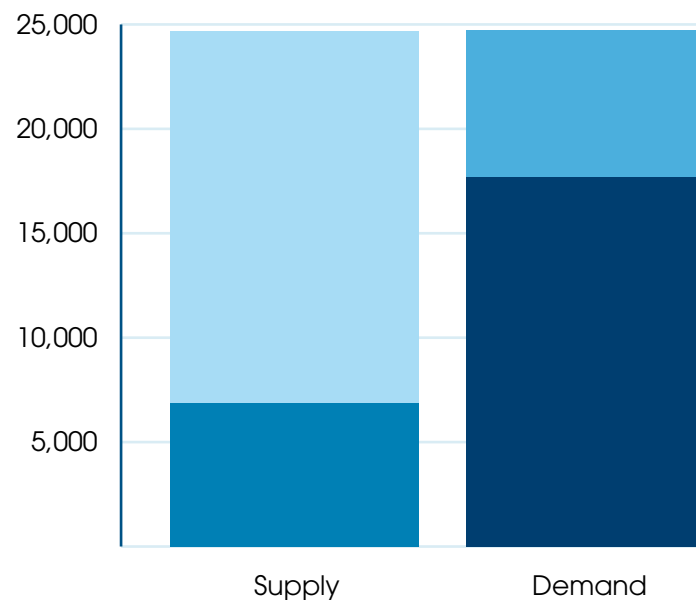
Source: Prism Economics and Analysis estimates and forecast, 2017.

HIRING REQUIREMENT, AIR TRANSPORTATION, 2017-2025

- 72% of total hiring requirement in Air Transportation industry is comprised of replacement demand.*
- 6,900 new entrants* is the projected supply over this 9 year period to the labour force and is less than 30% of the required workers by 2025.
- 17,800 workers will be needed from other industries and jurisdictions (recruitment gap).

Change in Air Transportation Workforce 2017-2025 Hiring Requirement (24,695)

- Recruitment Gap
- Projected New Entrants
- Expansion Demand*
- Replacement Demand*



* New entrants are defined as all Canadians in the population aged 15-30 entering the workforce for the first time, usually after completing their education. Hiring requirements is comprised of expansion demand (additional jobs as a result of industry growth) and replacement demand (workers needed to replace exits from the labour force due to retirements).

AIR TRANSPORTATION HIRING REQUIREMENT BY REGION, 2017-2025

Air Transportation needs to attract nearly 25,000 workers from 2017 to 2025 across Canada.

Hiring Requirement* by Region, 2017-2025

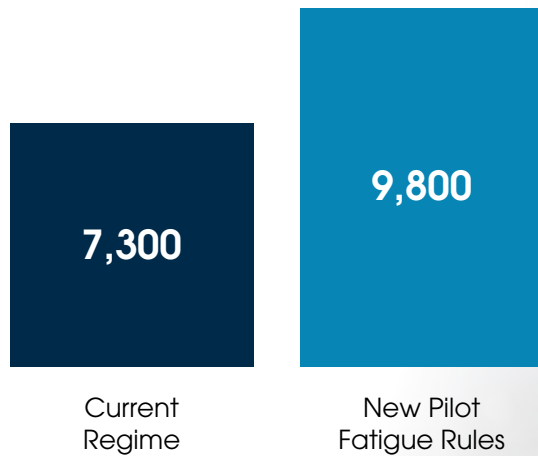
Region	Total Hiring Requirement 2017-2025	As a % of Total Employees at 2015 Baseline
Canada	24,695	37%
Atlantic	1,342	35%
Quebec	4,128	32%
Ontario	6,688	32%
Central	1,175	29%
West	7,437	33%

* Hiring requirement is comprised of expansion demand (additional jobs as a result of industry growth), and replacement demand (workers needed to replace exits from the labour force due to deaths and retirements).

Source: Prism Economics and Analysis estimates and forecast, 2017.

EFFECT OF PILOT FATIGUE RULES ON HIRING REQUIREMENT, 2017-2025

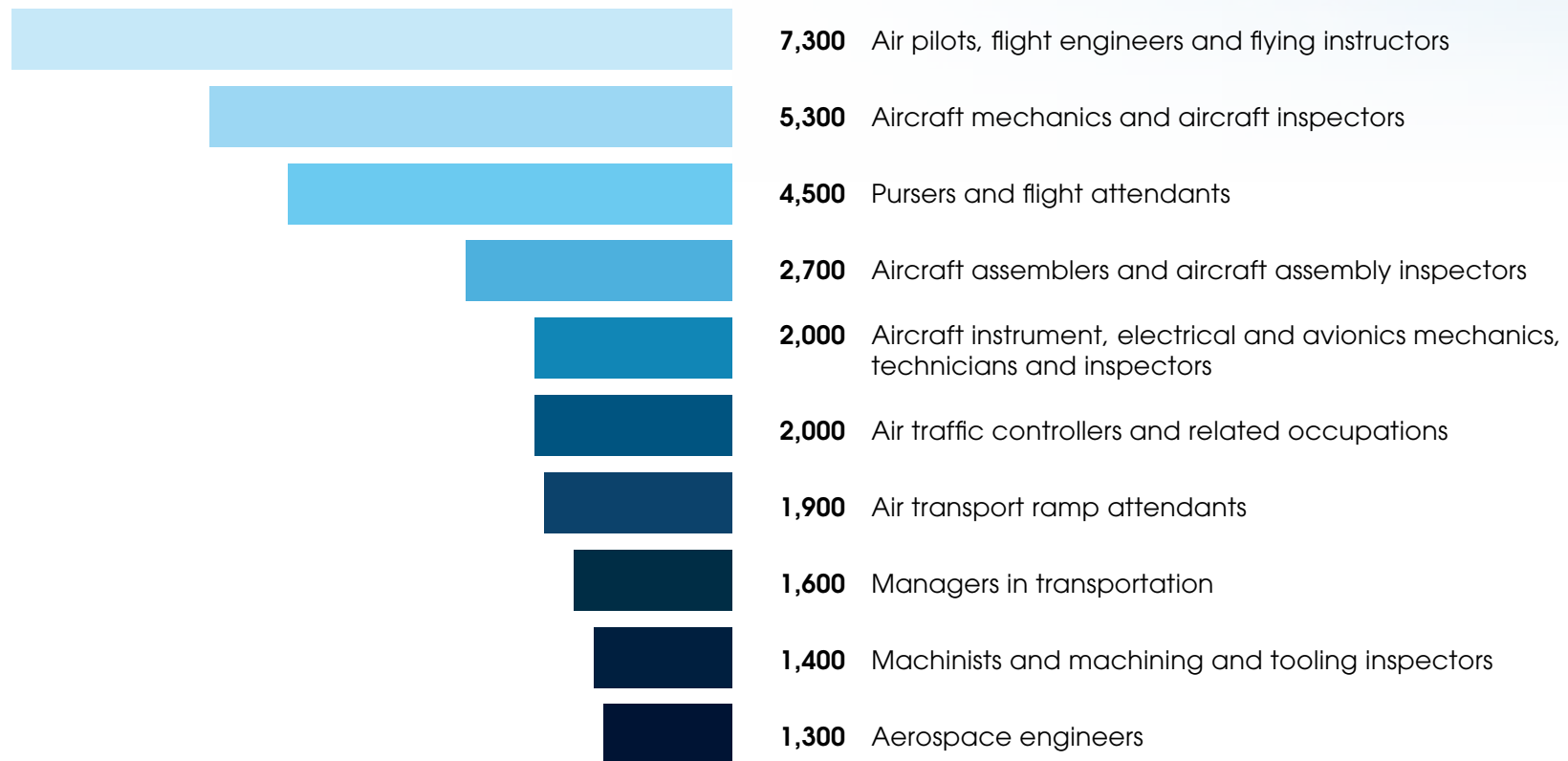
- Proposed federal regulations would cut the number of consecutive hours pilots are allowed to fly, increase the duration of mandatory rest time between flights, and reduce the total number of hours pilots can fly annually.
- Key stakeholders and industry trade associations estimate that enforcement of the proposed regulations would increase projected hiring requirements over the next decade from 7,300 to 9,800, a 26% increase.



Source: Prism Economics and Analysis estimates and forecast, 2017.

OCCUPATIONS MOST IN DEMAND IN AVIATION AND AEROSPACE INDUSTRIES, CANADA

Hiring Requirements 2017 to 2025



Source: Prism Economics and Analysis estimates and forecast, 2017.

DRIVERS OF EMPLOYMENT DEMAND

Aviation – Air Transportation, and Support Services (MRO)

- The Air Transportation segment of the Aviation and Aerospace industry refers to the transportation of freight and persons via aircraft through scheduled or unscheduled services. Air Transportation activity is a function of the amount of demand for personal and business air travel and the level of national and international trade (cargo).
- The demands for air travel and cargo are highly sensitive to changes in personal incomes, household spending, business spending and GDP growth.
- The demand for support services output is determined by factors including the age of the existing fleet, fleet sizes, air miles flown by the current fleet and the number, size and capacity of airport infrastructure. Growth in Air Transportation (flights) is also a determining factor for the support services sector.
- At the national level, employment growth of 9% in Air Transportation and 8% Support Activities is expected between 2016 and 2025.

DRIVERS OF EMPLOYMENT DEMAND

Manufacturing

- The demand for Aerospace Manufacturing output has three main components: civil, defence, and space manufacturing. Aerospace Manufacturing in these three segments is closely tied to the global demand for new airplanes and airplane parts, engines and engine parts, training and simulation, and space technology.
- Employment demand in Aerospace Manufacturing is closely tied to the changes in demand for manufacturing output and impacted by productivity growth.
- Airbus and Boeing deliveries are expected to witness a strong growth of 5% each year in 2017 and 2018, and continue to rise at an annual rate of close to 2% until 2024; on the other hand, Bombardier production, while rising in 2017, is anticipated to decline afterwards.
- Another driver of demand is workforce demographics, which drives replacement demand due to exits and retirement. Replacement demand is a significant factor in Aerospace Manufacturing given the relatively older workforce in this sector.
- Employment in the Aerospace Manufacturing segment is expected to grow by 7% between 2016 and 2025.



AVIATION AND AEROSPACE GRADUATES

AVIATION, COLLEGE GRADUATES BY PROGRAM, CANADA

- Between 2010 and 2014, college graduates across the Aviation and Aerospace programs totaled over 7,600 across Canada – approximately 1500 per year.
- Each year approximately 650 graduates were from the aircraft maintenance technician program, 150 from the avionics program and 130 from the structures technician program.
- Aviation employs an estimated 77%* of Aviation and Aerospace new entrants*; therefore, the sector has hired approximately 5,890 college graduates over the five year period of 2010 to 2014.

* Based on the proportion of Aviation and Aerospace new entrants in Air Transportation and Support Activities industries.

New entrants are defined as all Canadians in the population aged 15-30 entering the workforce for the first time, usually after completing their education.

Program	Total Graduates (2010-2014)	% Change (Ave. Annual)
Aircraft Maintenance Engineer – Maintenance, AME-M	3,044	9%
Aircraft Structural Assembly (French + English)	963	-3%
Aircraft Avionics Engineers AME-E/Technicians	753	10%
Aircraft Maintenance Engineer – Structures, AME-S	646	6%
Cables and Circuits – French and English (Electrical Assembly)	323	-2%
Aircraft Mechanical Assembly (French)	275	-5%
Aerospace Engineering Techniques/Tec. Genie Aero French	270	11%
Sheet Metal Technicians	198	0%
Gas Turbine	190	4%
Aircraft Maintenance Technician and Avionics Technician	161	20%
Other programs including: Composite Fabrication, Machining Technique, Aircraft Maintenance Journeyman, Aerospace Manufacturing Engineering Technician and Technologist, and Basic Manufacturing	803	N/A
Total	7,626	

Source: Prism Economics and Analysis estimates and forecast, 2017; CCAA Aviation & Aerospace Programs Survey.

AVIATION PROGRAMS, COLLEGE GRADUATES, BY REGION

- 38% of all Aviation and Aerospace college students graduated in Quebec over the five year period from 2010 to 2014, followed by nearly 29% in Ontario, 20% in the West (British Columbia and Alberta), 8% in Central Canada and 5% in the Atlantic region.
- The total number of college graduates is expected to grow at an average annual rate of 0.9% until 2025.

* Based on the proportion of Aviation and Aerospace new entrants in Air Transportation and Support Activities industries.

Source: Prism Economics and Analysis estimates and forecast, 2017; CCAA Aviation & Aerospace Programs Survey.



AEROSPACE ENGINEERING, UNIVERSITY GRADUATIONS, CANADA

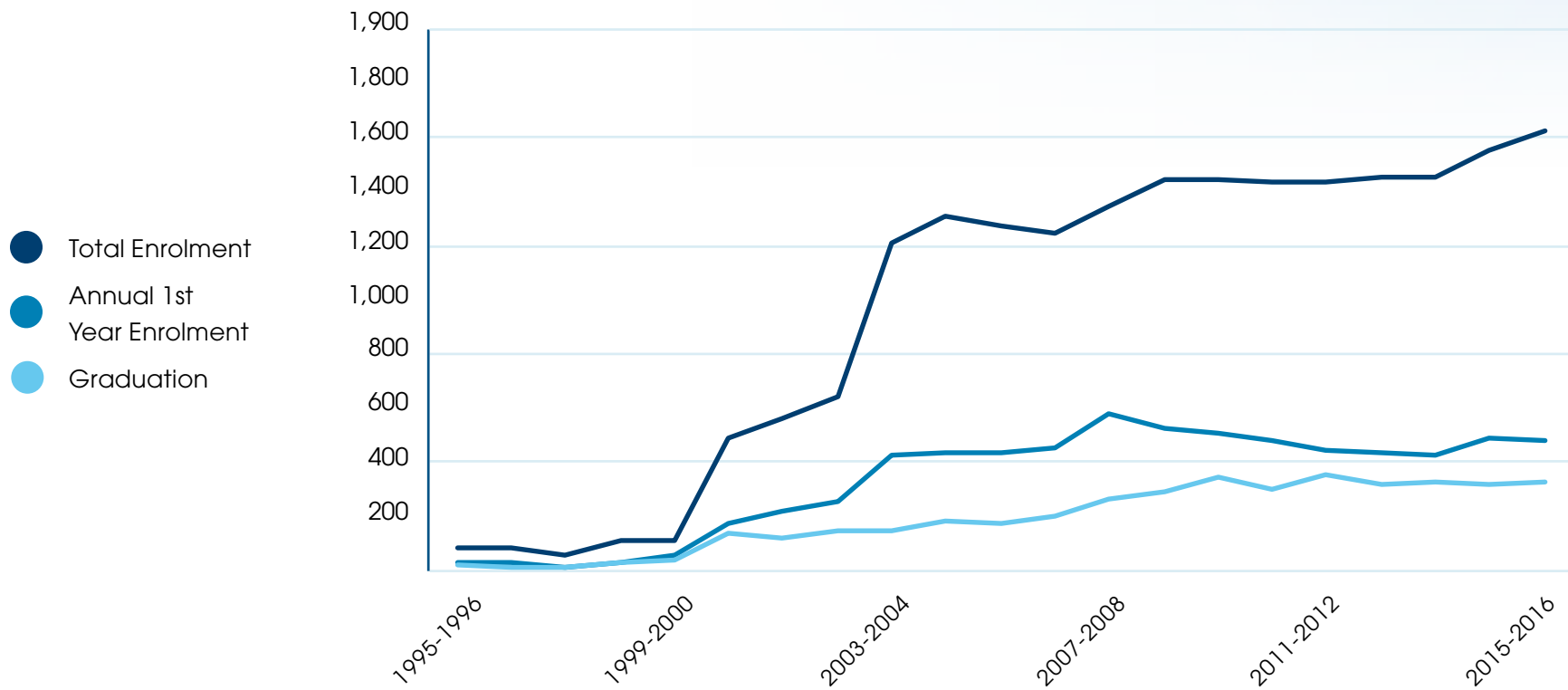
- Aerospace engineering graduations have totaled nearly 4,100 individuals since 1995-96.
- Nationally, graduations had early periods of strong growth as more universities began to offer aerospace engineering programs.
- Over the past five academic years (2011-12 to 2015-16) the average annual growth in graduations has been just 2%.

	Pre 2001-2002	2001-2002 to 2005-2006	2006-2007 to 2010-2011	2011-2012 to 2015-2016	Total
Number of Graduates	261	774	1,411	1,646	4,092
Average Annual Growth		6%	19%	2%	3%

AEROSPACE ENGINEERING, UNIVERSITY ENROLMENTS AND GRADUATIONS, CANADA

- There were more than 1,600 aerospace engineering students across all academic levels in 2015-16, over 1,400 of which were in Ontario.
- More than 300 graduated in the same year.
- New enrolments have plateaued since peaking in 2007-08 – over the past seven academic years new enrolments have declined by an average of 2% annually.

	2015-2016 Count	Average Annual Growth, 2008-2009 to 2015-2016
Total Enrolment	1,628	2%
1st Year Enrolment	484	-2%
Graduations	326	3%

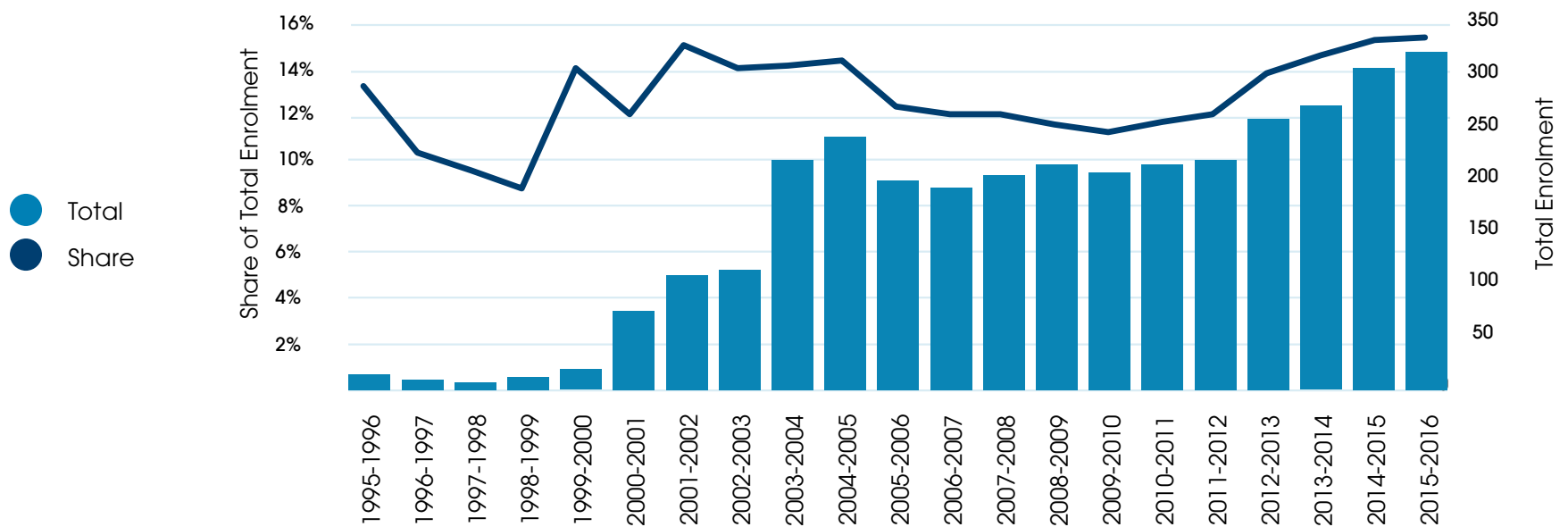


Source: Prism Economics and Analysis estimates and forecast, 2017; CCAA Aviation & Aerospace Programs Survey.

AEROSPACE ENGINEERING, UNIVERSITY ENROLMENTS, CANADA

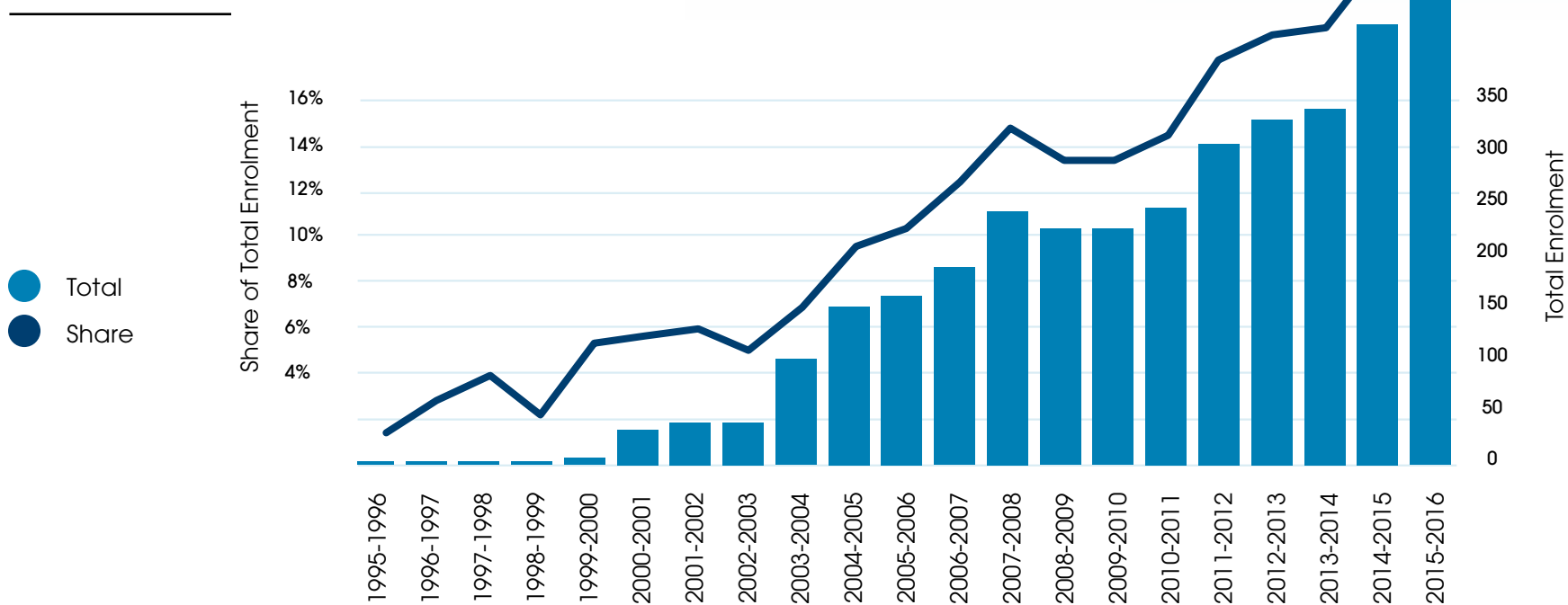
- International students account for 19% of total enrolment as of 2015-16.
- The international enrolment share has risen steadily since 1995-96.
- Female students account for 16% of total enrolment as of 2015-16.
- The female enrolment share has mostly remained in the 10-15% range.

Aerospace Engineering, Female Enrolment



Source: Prism Economics and Analysis estimates and forecast, 2017;
CCAA Aviation & Aerospace Programs Survey.

Aerospace Engineering, Foreign Student Enrolment

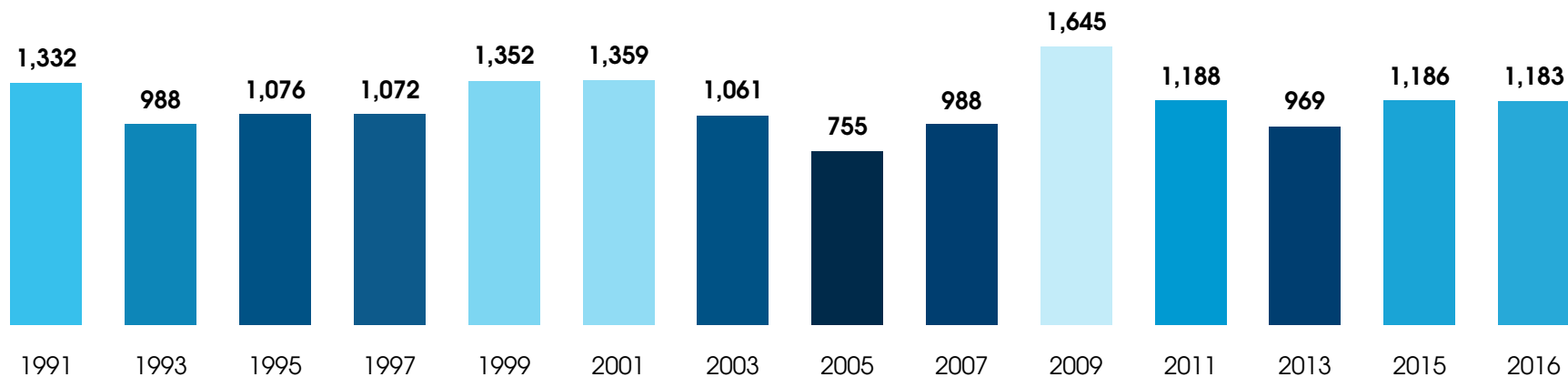


Source: Prism Economics and Analysis estimates and forecast, 2017; CCAA Aviation & Aerospace Programs Survey.

FLIGHT TRAINING STATISTICS, CANADA

- The number of commercial pilot licenses issued per year peaked in 2009, reaching 1,645.
- In 2016, less than 1,200 commercial pilot licenses were issued; a drop of 28% from the 2009 peak.
- Of the 1,183 commercial pilot licenses issued in 2016, 45% of these were to foreign students.

Commercial Pilot Licenses Issued



Source: Air Transport Association of Canada.

WAGES FOR AVIATION AND AEROSPACE OCCUPATIONS MOST IN DEMAND

Occupation	Annual Average Hourly Starting Wage	Annualized Wage*
Aircraft mechanics and aircraft inspectors	\$23.80	\$49,504
Air traffic controllers and related occupations	\$20.98	\$43,628
Air transport ramp attendants	\$12.58	\$26,156
Aircraft instrument, electrical and avionics mechanics, technicians and inspectors	\$23.51	\$48,906
Facility operation and maintenance managers	\$33.12	\$68,883
Air pilots, flight engineers and flying instructors	\$34.13	\$70,980
Pursers and flight attendants	\$14.95	\$31,096
Managers in transportation	\$40.43	\$84,084
Aircraft assemblers and aircraft assembly inspectors	\$15.98	\$33,228
Machinists and machining and tooling inspectors	\$19.81	\$41,210
Aerospace engineers	\$32.60	\$67,808

* Assumes 40 work hours per week and 52 work weeks per year.

Source: Job Vacancy and Wage Survey, Q3 2015 – Q2 2016.



SURVEY RESULTS

ANTICIPATED GROWTH

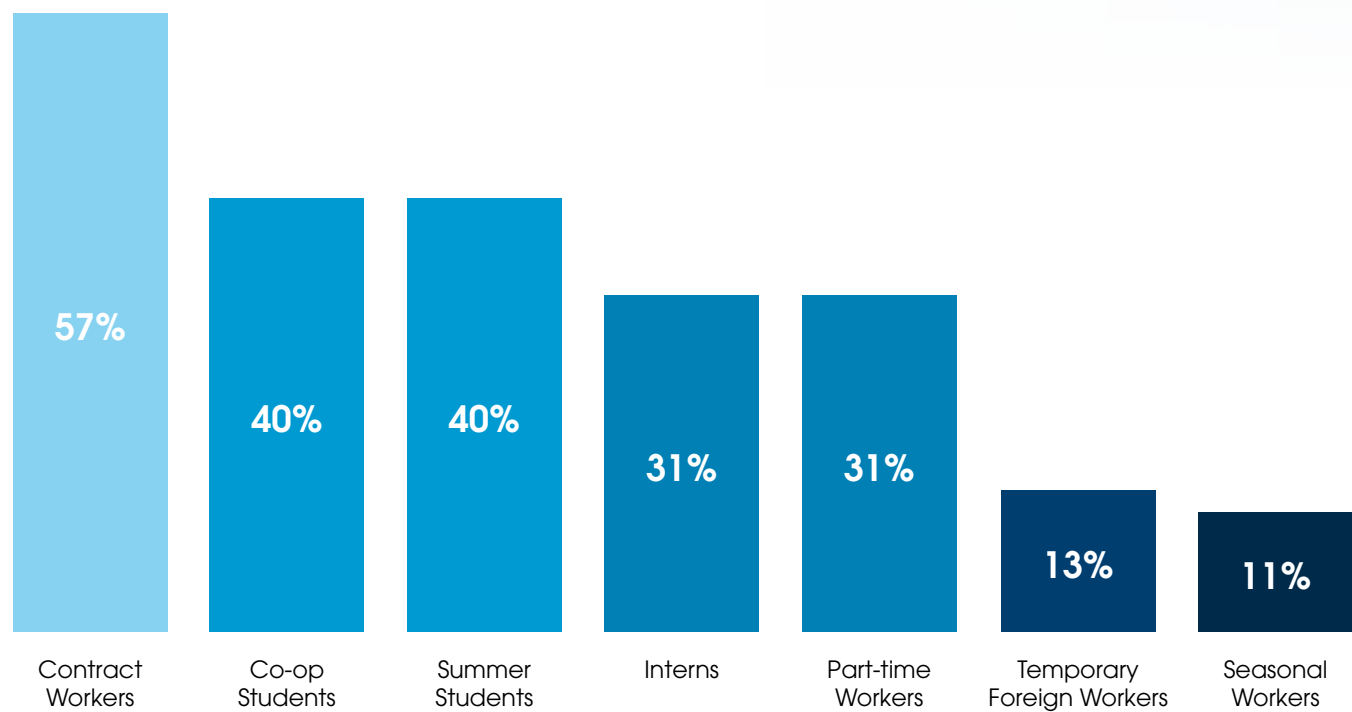
Across all Sub-Sectors

	Survey Fall 2015	Survey Fall 2017
Growth in the next year	57%	54%
Growth in 5 years	83%	80%
Decline in the next year	6%	8%
Decline in 5 years	1%	3%

ALTERNATIVE AND TEMPORARY EMPLOYEE BASE

“Over the last year, did your company hire any of the following?”

Survey, Fall 2015

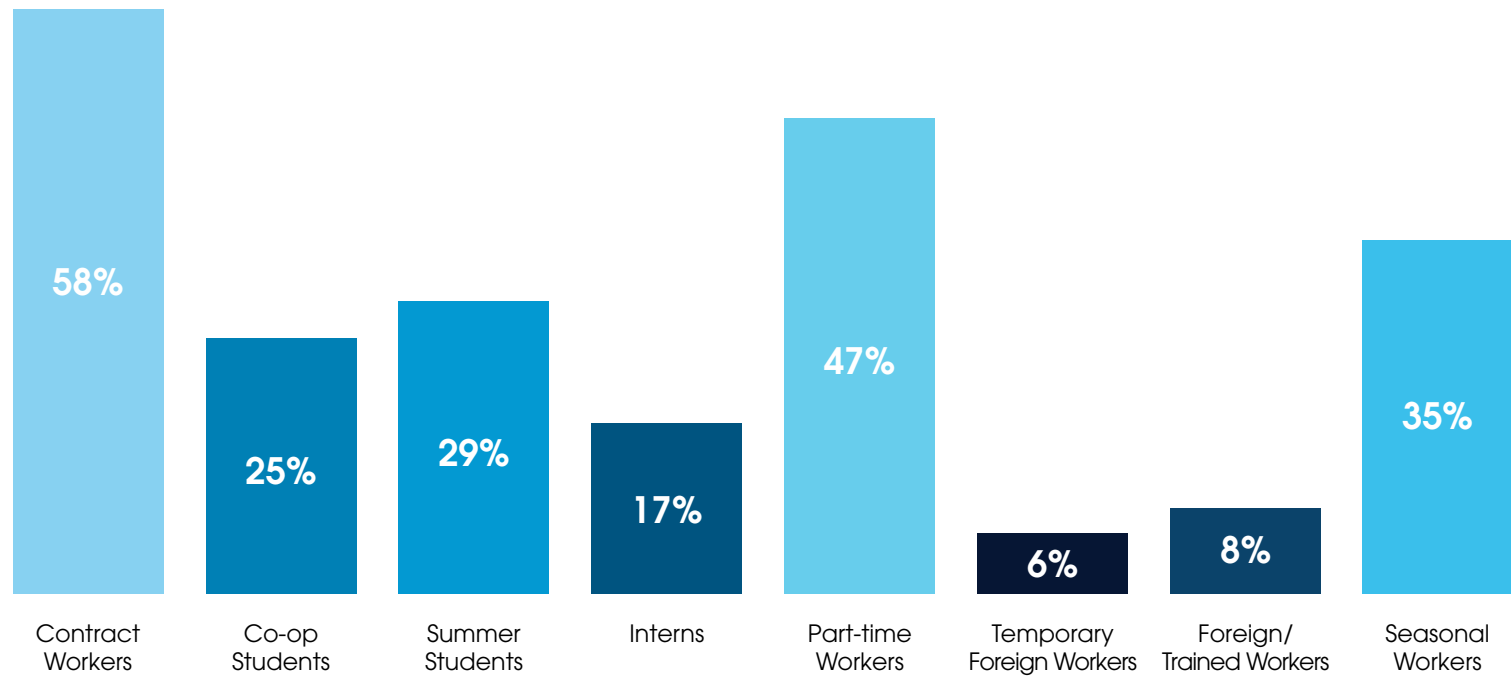


Source: CCAA Aviation & Aerospace Labour Market Survey, Fall 2015.

ALTERNATIVE AND TEMPORARY EMPLOYEE BASE

“Over the last year, did your company hire any of the following?”

Survey, Fall 2017

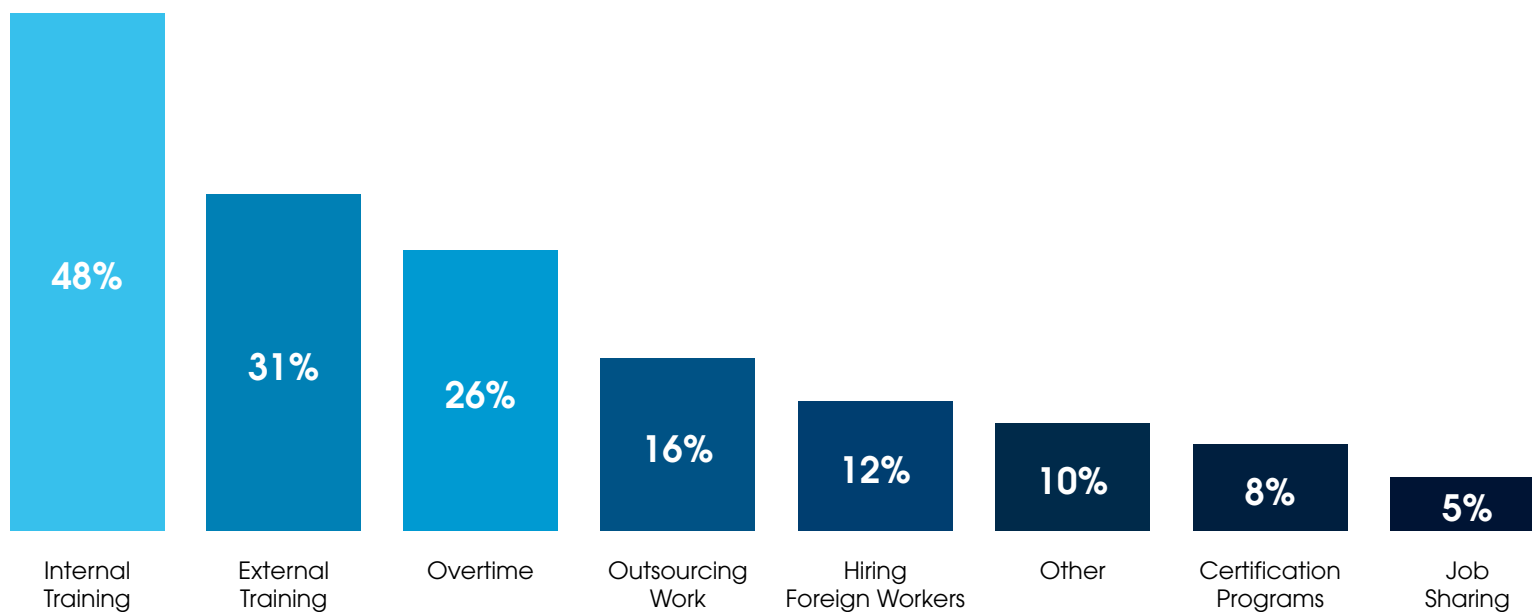


Source: CCAA Aviation & Aerospace Labour Market Survey, Fall 2017.

STRATEGIES TO DEAL WITH LABOUR CHALLENGES

“If you are experiencing any labour challenges, please indicate what strategies you have for dealing with them.”

Survey, Fall 2015

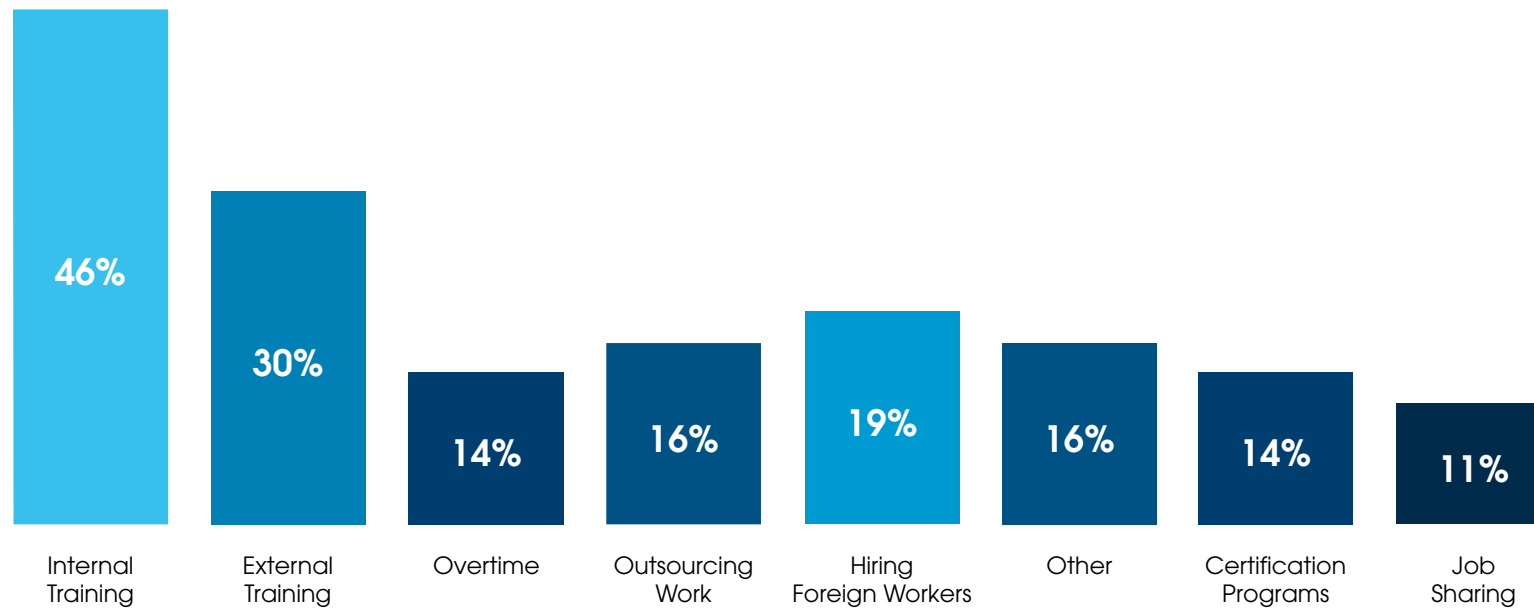


Source: CCAA Aviation & Aerospace Labour Market Survey, Fall 2015.

STRATEGIES TO DEAL WITH LABOUR CHALLENGES

“If you are experiencing any labour challenges, please indicate what strategies you have for dealing with them.”

Survey, Fall 2017



Source: CCAA Aviation & Aerospace Labour Market Survey, Fall 2017.

RECRUITMENT CHALLENGES

“Over the last year, we have experienced immediate and persistent challenges recruiting skilled and qualified workers to the extent that vacant positions go unfilled.”

While the participants were not the same in both surveys, the important point to note is that one third or more of the respondents in both surveys indicate that their company is experiencing recruitment challenges.

Survey Fall 2015	Survey Fall 2017
42%	33%

HIRING CHALLENGES – ENGINEERING

Survey participants were asked to identify the occupations their companies had difficulties hiring for, as well as the associated technical and non-technical skills that are difficult to find in new hires.

Occupations:

- Aerospace Engineers
- Industrial and Manufacturing Engineers
- Mechanical Engineers
- Electrical and Electronics Engineers

Technical Skills:

- Industry knowledge
- Avionics
- Testing and analysis software
- Software development
- Structural analysis
- Systems engineering
- Practical hands-on experience

Non-Technical Skills:

- Leadership
- Coaching
- Open to feedback
- Communication
- Problem solving
- Teamwork

HIRING CHALLENGES – FLIGHT OPERATIONS

Survey participants were asked to identify the occupations their companies had difficulties hiring for, as well as the associated technical and non-technical skills that are difficult to find in new hires.

Occupations:

- Pilots, both Fixed Wing and Rotor
- Flying Instructors with “high time”
- Aviation Maintenance Engineers

Technical Skills:

- Pilots with sufficient experience and flight hours
- Aircraft specific certification
- Specialties such as long lining skills, float planes, mountain flight
- Mechanical skills for ground operations
- Logistical planning for air operations

Non-Technical Skills:

- Communication
- Interpersonal skills
- Conflict resolution skills
- Flexibility
- Teamwork
- Leadership
- Problem solving
- Creativity
- Business acumen
- Management skills

HIRING CHALLENGES – MANAGEMENT AND SUPERVISORS

Survey participants were asked to identify the occupations their companies had difficulties hiring for, as well as the associated technical and non-technical skills that are difficult to find in new hires.

Occupations:

- Manufacturing Managers
- Engineering Managers
- Facilities Operation and Maintenance Managers
- Quality Assurance Managers
- Supply Chain Managers

Technical Skills:

- Project Management
- Operations
- Engineering/technical
- Industry experience and knowledge such as standards, regulations, best practices and trends
- Quality assurance and control
- Lacking in lean knowledge

Non-Technical Skills:

- Negotiation skills
- Leadership
- Communication
- Problem solving
- Organizational skills
- Coaching/mentoring
- Conflict management

HIRING CHALLENGES – TECHNICIANS, TECHNOLOGISTS, AND MECHANICS

Survey participants were asked to identify the occupations their companies had difficulties hiring for, as well as the associated technical and non-technical skills that are difficult to find in new hires.

Occupations:

- Aircraft Maintenance Engineer – Maintenance - licenced
- Aircraft Maintenance Engineer – Avionics - licenced
- Aircraft Maintenance Engineer – Structures - licenced
- Aircraft Structures Technician – non licenced
- Non-Destructive Inspection Technician
- Mechanical Engineering Technologist and Technician
- Aircraft Electrical/Electronics/Instrument Component Technician

Technical Skills:

- Aircraft type experience
- Composites experience
- Repair and overhaul skills
- Avionics
- Electronic design
- Mechanical skills
- Industry experience
- Troubleshooting
- Non-destructive testing, level three
- Linux skills

Non-Technical Skills:

- Problem solving
- Work ethic
- Time management
- Communication
- Eligible for security clearance
- Technical writing
- Teamwork
- Organizational ability
- Ability to think independently

HIRING CHALLENGES – SKILLED TRADES

Survey participants were asked to identify the occupations their companies had difficulties hiring for, as well as the associated technical and non-technical skills that are difficult to find in new hires.

Occupations:

- Aviation Machinist
- Aviation Painter
- Sheet Metal Worker
- Electricians
- Millwrights

Technical Skills:

- Possess a Valid Certificate of Qualifications
- Industry experience
- Five axis machining
- CNC/CMM programming
- “Good” welding techniques
- Painting experience of components and aircraft
- Ability to use tools

Non-Technical Skills:

- English literacy
- Mature, experienced workers
- Leadership
- Reliability
- Communication
- Professionalism
- Work ethic

HIRING CHALLENGES – PRODUCTION OR ASSEMBLY

Survey participants were asked to identify the occupations their companies had difficulties hiring for, as well as the associated technical and non-technical skills that are difficult to find in new hires.

Occupations:

- Aircraft Structures Assembler
- Electrical/Electronic Assembler
- Aircraft Mechanical Assembler
- Cabinetmakers
- Interior Technician
- Upholsters

Technical Skills:

- Industry experience
- IPC certified (Institute for Interconnection and Packaging Electronic Circuits)
- Specialities such as hydraulic and landing gear assembly
- Small component expertise

Non-Technical Skills:

- Essential skills – reading and writing
- Troubleshooting
- Detail oriented
- Communication
- Reliability
- Leadership
- Work ethic
- Teamwork
- Interpersonal skills

HIRING CHALLENGES – INFORMATION TECHNOLOGY

Survey participants were asked to identify the occupations their companies had difficulties hiring for, as well as the associated technical and non-technical skills that are difficult to find in new hires.

Occupations:

- Computer Programmers
- Software Engineers and Designers
- Information Systems Analysts and Consultants
- Computer Network Technicians

Technical Skills:

- Practical hands-on skills
- 3D platforms
- Transact-SQL
- .net coding
- Analytics
- Extract, transform, load (ETL)
- Relational database management system
- Microsoft SQL Server Integration Services

Non-Technical Skills:

- Business communication
- Business acumen
- Problem solving
- Security clearance
- Leadership

EMERGING TECHNOLOGIES

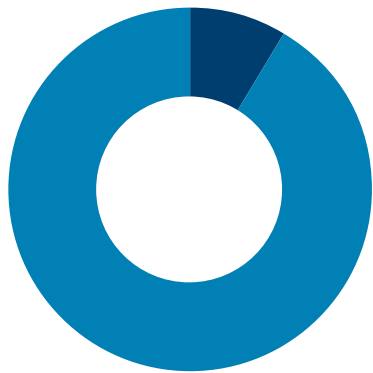
“Which emerging technologies have affected the skills/occupations that your organization requires?”

- 3D scanning and 3D printing
- 5 and 7 axis machining, i.e. interior engine parts
- Additive machining
- Automatic Dependent Surveillance-Broadcast – leading edge avionics and engine monitor systems
- Automation, robotics
- Big data
- CAD/CAM software applications for CNC machining
- Computer aircraft needing more IT skills to troubleshoot aircraft
- Flight simulation training
- Glass cockpit technology
- Increased demand for aircraft upgrades and modifications
- Industry weight requirements
- iPads, online manuals and electronic charts
- Laser Technology
- New environmentally friendly processes requiring new equipment
- New lightweight composite structures and new composite manufacturing methods
- New navigation systems
- New technologies in wireless communications and mobile device applications and the skills required to design related products
- Progression towards more integrated systems
- Radio technology
- Software for design and modelling
- Software programs and processes driving business and computer literacy
- Unmanned aircraft design and manufacturing

TRAINING

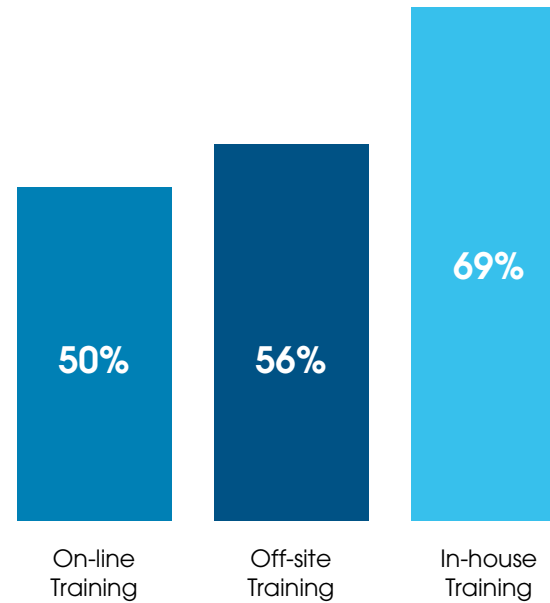
“Does your company provide any training programs?”

Survey, Fall 2015



- Yes 86%
- No..... 8%

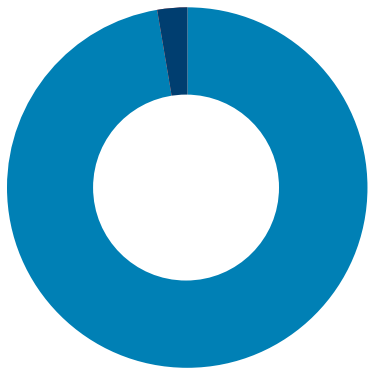
Type of Training Offered



TRAINING

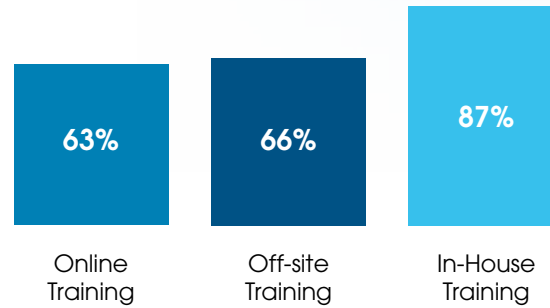
“Does your company provide any training programs?”

Survey, Fall 2017

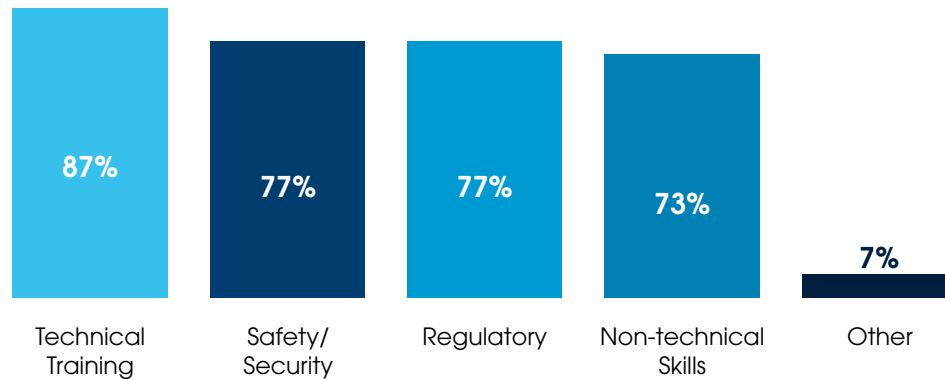


● Yes..... 97% ↑ +11%
● No..... 3%

Types of Training Offered



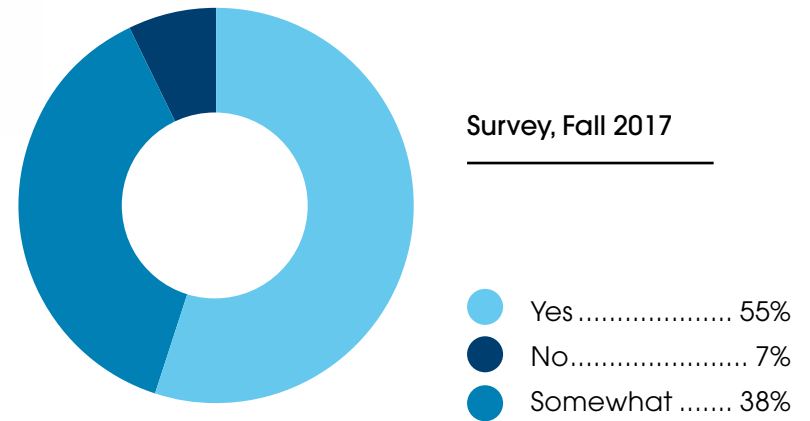
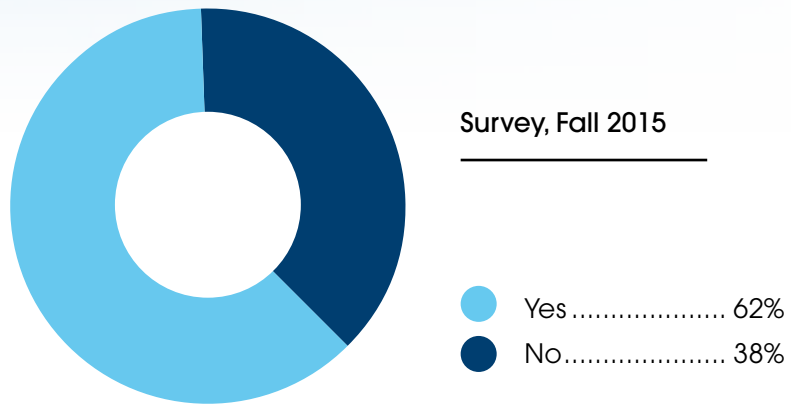
What is This Training For?



Source: CCAA Aviation & Aerospace Labour Market Survey, Fall 2017.

POST-SECONDARY INSTITUTIONS PROVIDING NEEDED SKILLS

“Are post-secondary education and training institutions providing the skills that your company needs?”



TRAINING/EDUCATION

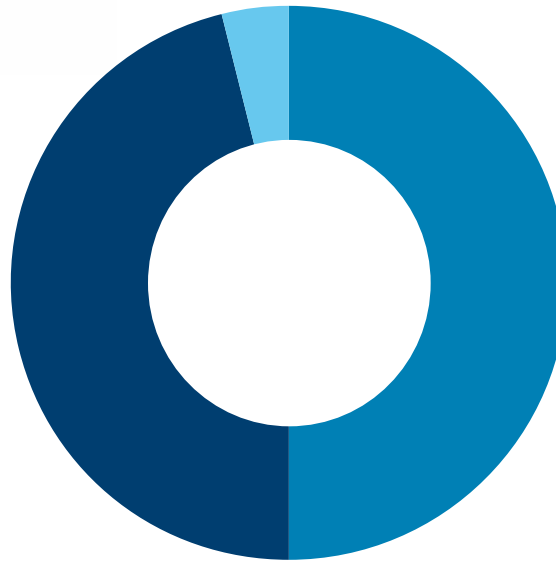
“What additional training/education does our workforce require that is not currently available?”

- Additive manufacturing equipment training
- Aerospace painting
- Aerospace processing
- Aircraft type training available in more than one region
- Analog avionics
- Autoclave
- Basic quality systems for manufacturing training
- Business development and sales training
- CATIA design software
- CNC training
- Complex software systems training (job specific)
- Composite manufacturing processes training
- Cross functional training
- Electroplating anodizing
- Embedded software skills
- Environmental design skills
- Essential skills
- Firefighting
- Ion vapour deposition
- Leadership, Management, Supervisor training
- Lean engineering ethics
- Magnetic Particle Inspection, MPI, training
- Methods planning processes
- Non-destructive inspection, Eddy current training, Ultrasonic testing courses
- Operational/practical experience, at college and university level (work integrated learning)
- Production machines training for manufacturers
- Quality improvement
- Reading technical drawings
- Regulatory training
- Robotics operation and maintenance training
- Supply chain management skills
- Systems engineering
- Technical writing for aerospace
- Troubleshooting training

LESS THAN HALF OF RESPONDENTS USE THE CANADA JOB GRANT FOR TRAINING

“Has your organization used the Canada Job Grant to help pay for training?”

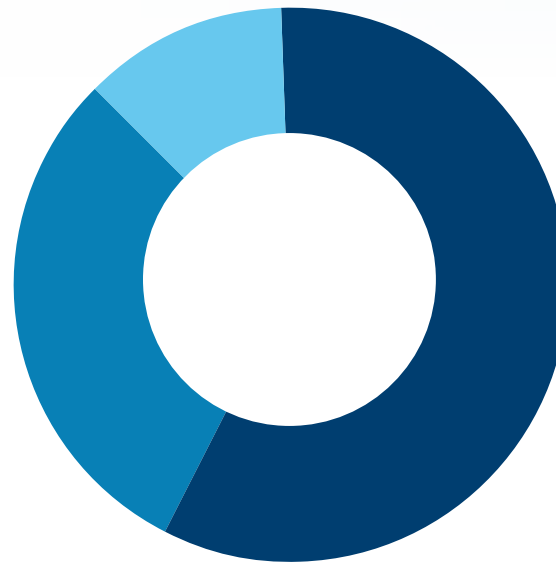
- Yes46%
- No.....50%
- Applied but did not receive funding 4%



MOST RESPONDENTS DO NOT HAVE FORMAL MENTORSHIP PROGRAMS

“Does your company offer mentoring programs for new employees?”

- Yes30%
- No.....58%
- Informal.....12%



NORTH AMERICAN INDUSTRY CLASSIFICATION SYSTEM (NAICS)

The aviation sector refers to the air transportation and support services industries, including airports.

Aerospace refers to activities related to the production and manufacturing of aerospace products and parts, including civil, defense and space aircraft.

The definition of the aviation and aerospace sectors is based on the following four, 4-digit industries defined under Statistics Canada's North American Industrial Classification System Canada 2012.

Figure 1: Aviation and Aerospace Sectors

336 Transportation equipment manufacturing

3364 Aerospace product and parts manufacturing

Comprised of establishments primarily engaged in manufacturing aircraft, missiles, space vehicles and their engines, propulsion units, auxiliary equipment and parts thereof. The development and production of prototypes is classified in this industry, as is the factory overhaul and conversion of aircraft and propulsion systems.

33641 Aerospace product and parts manufacturing

Figure 1: Aviation and Aerospace Sectors (continued)

481 Air Transportation

Comprised of establishments primarily engaged in for-hire, common carrier transportation of people and/or goods using aircraft, such as airplanes and helicopters.

4811 Scheduled air transportation

4812 Non-scheduled air transportation

48121 Non-scheduled air transportation

481214 Non-scheduled chartered air transportation

481215 Non-scheduled specialty flying services

4881 Support activities for air transportation

48811 Airport operations

488111 Air traffic control

488119 Other airport operations

48819 Other support activities for air transportation

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