

Forces to Flyers Pilot Training Demonstration Evaluation and Research on Pilot Career Pathways

Final Report

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Forces to Flyers

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List of Abbreviations

Abbreviation	Term
ASTB	Aviation Selection Test Battery
ATP	Airline transport pilot
ATP-CTP	ATP-Certification Training Program
CFI	Certified flight instructor
CFI-Instrument	Certified flight instructor for instrument operations
FAA	Federal Aviation Administration
FAQ	Frequently Asked Questions
GAO	Government Accountability Office
IFR	Instrument Flight Rules
MEI	Multi-engine Instructor
OST	Office of the Secretary of Transportation
PCSM	Pilot Candidate Selection Method
PIC	Pilot in Command
R-ATP	Restricted ATP
SOW	Statement of Work
US DOT	US Department of Transportation
VA	Veterans Administration
VFR	Visual flight rules
Volpe Center	US DOT Volpe National Transportation Systems Center

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Executive Summary

In response to the airline pilot shortage that existed in 2017, which negatively impacted air services to small and rural communities across the country, the Office of the Secretary of Transportation sponsored the Forces to Flyers research initiative, which sought to identify career paths to becoming a pilot for veterans without prior military pilot experience. One portion of the research was the development of a flight training demonstration focused on providing flight training to veterans on an accelerated schedule at vocational flight schools. While the GI Bill provides substantial financial support for veterans undergoing flight training at colleges and universities, there are gaps in the funding available for flight training at vocational schools, which the Forces to Flyers demonstration addressed.

The training centered on veterans earning a commercial pilot certificate, which allows pilots to fly for compensation, along with a multi-engine rating, making them qualified to fly the aircraft typically used by airlines. To further assist veterans in gaining the requisite number of flight hours needed to qualify for the air transport pilot certificate required to pilot for an airline, Forces to Flyers participants were also able to complete training to become a certified flight instructor (CFI) and a certified flight instructor for instrument operations (CFI-Instrument). Working as a flight instructor is the most common way for pilots to earn a living while building flight time.

Statement from US Secretary of Transportation

"The Forces to Flyers flight training demonstration has helped America's veterans transition from military service to find good jobs in the transportation sector."

-Elaine L. Chao
US Transportation Secretary



This evaluation report assesses the demonstration's success in meeting project goals and provides lessons learned for future efforts to assist veterans in obtaining flight training to become airline pilots. In addition, an appendix provides background information on pilot career pathways.

The evaluation findings related to each project goal include the following:

- **Attracting and Enrolling Qualified Participants.** The training demonstration generated a great deal of interest from the veteran community. The flight schools received close to 400 applications for 44 training slots, and more than 2,300 interested parties signed up to receive email updates on the demonstration.
- **Training Efficiency.** Despite unprecedented challenges such as the COVID-19 public health emergency and historic wildfires in the West, the training demonstration resulted in 32 of the 44 veterans earning a commercial pilot's license with multi-engine rating. The commercial pilot's license allows those veterans to start a career as a professional pilot. Further, 25 participants completed the entire training curriculum, becoming certified as flight instructors for instrument operations.

- **Cost Effectiveness.** The use of government contracting resulted in contract line item prices below other estimated prices. Although not all participants completed the entire course of training due to a variety of factors, 86 percent of contract training payments were associated with the 32 participants who earned at least a commercial pilot's license with multi-engine rating.
- **Veteran Employment.** Even though the COVID-19 public health emergency has suppressed demand for pilots, the majority of the flight training demonstration graduates were able to gain employment as pilots (working as flight instructors or in aerial imagery) after completing the training.
- **Creating More Pilots.** The training demonstration produced 32 commercial pilots with multi-engine ratings who can be employed as professional pilots. Some participants indicated they would never have been able to become a pilot without Forces to Flyers. Others said that their training was accelerated because without Forces to Flyers, they would have had to delay training in order to save up the necessary funds.

Although the job market outlook for airline pilots is uncertain due to the COVID-19 public health emergency, the real-world experience of instituting the demonstration produced several lessons learned about the Forces to Flyers initiative to assist veterans in becoming commercial pilots, including the following:

- Providing geographic options for training providers reduces the need for veterans to relocate.
- Strong screening criteria for flying aptitude can help identify candidates most likely to be successful in completing flight training.
- Risk mitigation plans can help training providers prepare for external events in order to minimize training delays.
- A commitment to full-time training can lead to faster training completion times. Trainees need a clear financial plan for supporting themselves (and their families) during training to ensure such a commitment can occur.
- Clear communication of student performance requirements and program responsibilities benefits both trainees and training providers.

The veterans who successfully completed the flight training were grateful for the opportunity. The financial assistance made the otherwise cost-prohibitive flight training financially possible. Participants described the program as "a life changing experience," "a game-changer," and "an incredible opportunity."

I. Introduction

Forces to Flyers is a 3-year research initiative that identified career pathways for military veterans to become airline pilots. The research included the development of a flight training demonstration that supported veterans without prior military pilot experience to become certified as commercial pilots and flight instructors. The training demonstration provided data for this evaluation report, which assesses the demonstration's success in meeting its goals, including training efficiency, cost-effectiveness, and veteran employment, and provides lessons learned for future efforts to assist veterans in obtaining flight training.

The US Department of Transportation (US DOT) Office of the Secretary of Transportation (OST) sponsored the research initiative with additional resources provided by the Federal Aviation Administration (FAA), and US DOT's Volpe National Transportation System Center (Volpe Center) conducted it.¹ The project is composed of the following activities, as detailed in the Statements of Work (SOW) with the Volpe Center (designated with project numbers OR13A1, OR13A2, and OS59A1):

- **Task 1:** Performing project management activities such as monthly reporting;
- **Task 2:** Conducting research on identifying pathways to entering the pilot workforce, including researching current forms of financial aid available to veterans for flight training;
- **Task 3.1:** Designing a flight training demonstration initiative aimed at military veterans;
- **Task 3.2:** Conducting market research, acquisition planning, and contract design;
- **Task 4:** Implementing the flight training demonstration; and
- **Task 5:** Evaluating the demonstration in order to provide lessons learned.

This report presents the results of the Task 5 evaluation of the flight training demonstration. The report is organized as follows: Section 2 provides background on the training demonstration, Section 3 discusses the data and methods used for the evaluation, Section 4 provides findings from the evaluation, Section 5 provides lessons learned and recommendations for future efforts to assist veterans in becoming airline pilots, and Section 6 provides a brief conclusion. In addition, an appendix presents research on pilot career pathways that was conducted under Task 2 of the research initiative.

¹ In a separate effort of behalf of the FAA NextGen Office, the Volpe Center researched whether certain aspects of military experience provide any advantages in flight training success. Funding from FAA was combined with funding from OST to collect data on 44 veteran participants. The combined data resulting from both the OST and FAA funding is used to inform the FAA human factors research (described in a separate report) and the OST research covered in this report.

2. Forces to Flyers Background

In 2017, when the Forces to Flyers training demonstration was conceived, there was evidence that an airline pilot shortage likely existed.² That pilot shortage was, in part, responsible for reductions in air service to small and rural communities, leaving those communities isolated and lacking in economic development opportunities.

In response to that pilot shortage, US DOT developed the Forces to Flyers flight training demonstration aimed at providing flight training to military veterans without prior military flying experience.

Although the COVID-19 public health emergency has reduced the current demand for airline pilots, the Forces to Flyers training demonstration provides lessons learned that can be used to guide potential future efforts aimed at assisting veterans in gaining flight training to become airline pilots.

Veteran Feedback

“... the Forces To Flyers was a life-changing positive experience. I hope this program is available in the future to many more young veterans looking for direction after the military.”



Forces to Flyers

2.1 Design of Flight Training Demonstration

Because geographic diversity was a goal of the demonstration design, the Volpe Center established contracts with the following four [part 141](#) flight schools located in different regions across the country to provide the flight training and collect data on the progress of the participants:

- US Aviation Group, LLC – Denton, Texas
- CTI Professional Flight Training, LLC – Millington, Tennessee
- CTI Professional Flight Training, LLC – Fort Lauderdale, Florida
- Leading Edge Aviation, Inc. – Bend, Oregon

The training centered on veterans earning a commercial pilot certificate, which allows pilots to fly for compensation, along with a multi-engine add-on, making them qualified to fly the aircraft typically used by airlines. While a commercial pilot's license allows a pilot to work in jobs such as banner towing, aerial imagery, or pipeline inspection, it is not sufficient for employment at an airline. Pilots must accrue 1,500

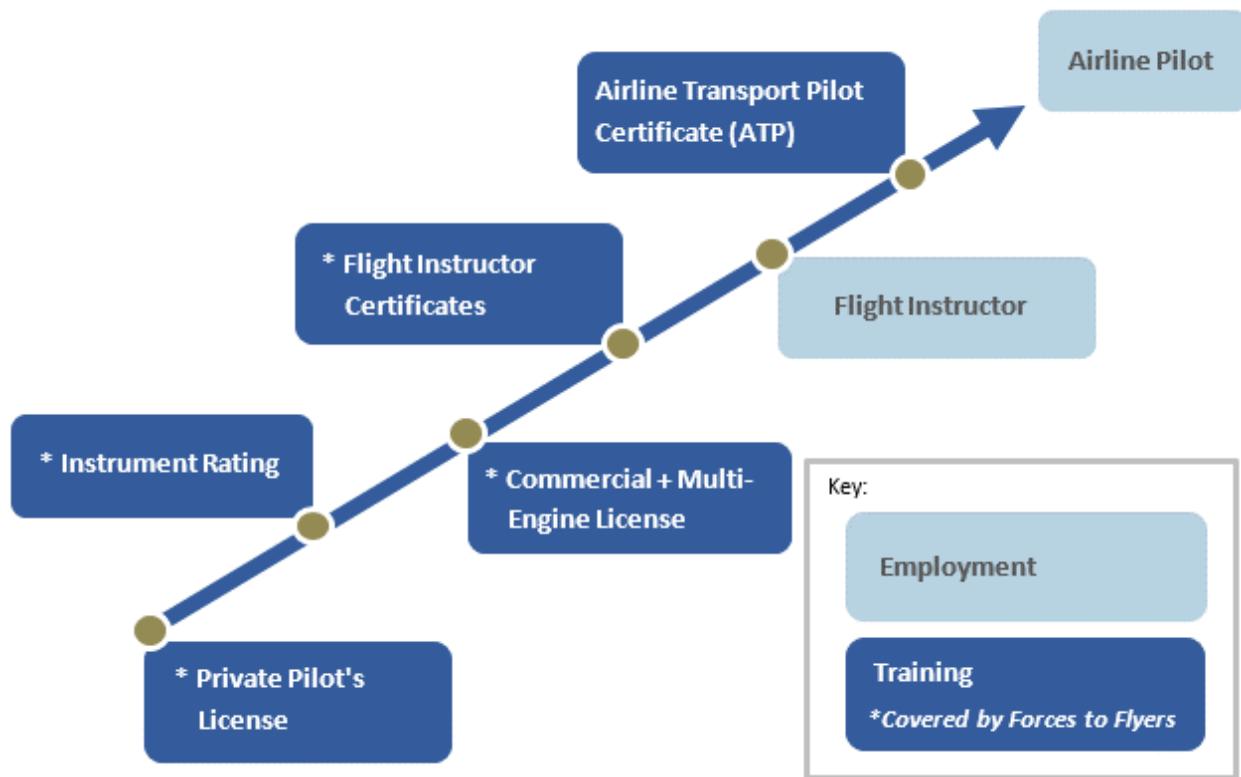
² US Government Accountability Office, “Military Personnel: Collecting Additional Data Could Enhance Pilot Retention Efforts,” [GAO-18-439](#), June 2018. In this report, the Government Accountability Office (GAO) suggests three indicators that a shortage exists in an occupation: low unemployment rate for that occupation, increases in number of people employed in that occupation, and increased wages for that occupation. The GAO found that all three conditions existed at the time of the report. Based on that finding combined with observations from stakeholders, the GAO concluded that an airline pilot shortage likely existed.

hours of flight hours to be eligible for the airline transport pilot (ATP) certificate.³ Working as a flight instructor is the most common way for pilots to earn a living while building that flight time. Therefore, to assist veterans in earning their ATP, Forces to Flyers participants were also able to complete training to become a certified flight instructor (CFI) and certified flight instructor for instrument operations (CFI-Instrument). In total, the Forces to Flyers demonstration provided support for the following certificates and ratings:

1. Private Pilot Certificate
2. Instrument Rating
3. Commercial Pilot Certificate
4. Multi-Engine Rating
5. Certified Flight Instructor Certificate
6. Certified Flight Instructor – Instrument Rating

Those certificates and ratings cover the initial training stages of the standard airline pilot career path, illustrated in Figure 1, below.

Figure 1: Standard Airline Pilot Career Path



³ Pilots who obtain their aviation training at certain institutes of higher learning are eligible for a restricted ATP certificate, which has a lower flight-hour requirement.

In total, 44 participants began training as part of the research initiative. The first wave of 16 participants (four at each of the four flight schools) began training in July 2018. The second wave of 28 participants (seven at each of the four flight schools) began training in November 2018.⁴ The contracts with the flight schools specified that training for all participants would be completed within 18 months. The contracts covered all flight training costs, with the exception of roughly \$13,500, which was to be sourced from participant resources such as the [GI Bill](#) or personal funds.

An important goal in designing the flight training demonstration was to **observe results within a 3-year period ending September 24, 2020**. Several activities needed to be performed during that 3-year period. First, the Volpe Center needed to conduct research to design the features of the training demonstration. Next, the Volpe Center had to perform the necessary acquisition activities for obtaining the services of flight schools to provide the training. After contract award, the flight schools would recruit, screen, select, and enroll the chosen participants. Most importantly, the participants must complete the flight training curriculum. Finally, the Volpe Center would need to analyze the results and prepare an evaluation report.

Given that so many activities needed to be completed within the 3-year period, it was important that the flight training demonstration occur on an accelerated schedule. While many pilots undertake flight training through college and university programs, the need to provide the training on an accelerated schedule made vocational flight schools a better fit for Forces to Flyers. Vocational flight schools are well-positioned to provide an accelerated training curriculum because their training does not link to a college degree (which includes additional academic requirements) and is not pegged to a typical academic calendar cycle. Thus, vocational flight training can begin at any time during the year and can take a student pilot from zero flight experience to CFI in 12 to 18 months, provided that a participant can commit to training full time.

The demonstration was also designed so that it would **not duplicate existing training benefits available to veterans**. Previous research found that the GI Bill covers some portions of flight training; however, there are important gaps, especially for veterans pursuing flight training at vocational schools (rather than at a college or university). For vocational students, the Post-9/11 GI Bill (the benefit most commonly used) covers only \$13,526 per year and does not provide a housing stipend (students

Veteran Feedback

“First off, I don’t think I would get the same level of training and commitment from any other training environment. It was truly above and beyond. Second, I do not think I would be able to complete half of what I did without the Forces to Flyers program simply because of the cost and time commitment.”



⁴ The initial amount of funding available was sufficient for training 16 participants. When additional funding became available, a second wave of participants was added to the demonstration.

pursuing a degree are provided a housing stipend). In addition, the GI Bill does not cover the private pilot's license, the first step of pilot training.⁵

The limit of \$13,526 per year also creates incentives for students to stretch out their training over longer periods in order to receive their benefits, which is counter to the goals of this training demonstration. Thus, in order to avoid overlap or duplication of the existing GI Bill training benefits, this training demonstration covered all the tuition costs of the training with 1 year of Post-9/11 GI Bill benefits (\$13,526) deducted. It did not provide a housing stipend or other support for living expenses.

2.2 Flight Training Demonstration Participants

Under the contracts, the flight schools were responsible for recruiting, screening, and enrolling veterans to participate in the training demonstration, according to the eligibility requirements listed in the contract. The sections below describe those eligibility requirements and present the characteristics of the veterans who participated. The efforts by the flight schools to recruit, screen, and enroll participants are covered in Section 4.1 of Evaluation Findings.

2.2.1 Eligibility

The minimum qualifications for the Forces to Flyers training demonstration, listed in Table 1, were intended to identify applicants who could eventually gain employment at a regional airline as an airline transport pilot and were largely based on interviews and internet research focused on the recruitment and hiring practices of regional airlines and FAA requirements for pilots.

Table 1: Minimum Qualifications for Veteran Participants

Minimum Qualification	Explanation
The applicant has a high school diploma or GED.	Having a high school diploma or GED is a basic requirement to be employed as a pilot with a regional airline. Major airlines list a college degree as desirable but not required for pilots.
The applicant can read, write, and speak English fluently.	FAA requires English language abilities in order to earn a private pilot's license.
The applicant will be at least 21 years of age by the end of the 18-month initiative.	Regional airlines require their pilots to be at least 21 years of age. Given that participants are military veterans, this requirement does not likely impose a barrier to otherwise eligible participants.

⁵ The apparent reason for the lack of GI Bill support for private pilot's license is that people can, and often do, obtain a private pilot's license for recreational purposes, not as job training. However, for people who do intend to pursue a career as a pilot, the initial outlay of funds to obtain the training for the private pilot's license can be a critical hurdle to overcome.

Minimum Qualification	Explanation
The applicant currently holds a valid US passport or is qualified to obtain one.	Regional airlines require having a valid US passport.
The applicant has never been convicted of a felony.	Regional airlines require applicants to pass a background check.
The applicant intends to pursue a career as a commercial airline pilot.	An essential goal of the initiative was to address the pilot shortage; thus, this requirement was an attempt to make sure that all participants intended to become airlines pilots upon completion of their training and obtaining the necessary flight hours. Note, however, that the US government only has a contractual arrangement with the flight schools, not the participants. Thus, there is no way to absolutely ensure that participants would actually pursue employment as an airline pilot.
The applicant is a military veteran who received an honorable discharge at the end of their military service.	Receiving an honorable discharge is a requirement of GI Bill education benefits and was similarly adopted for this training demonstration. Form DD-214 was used as documentation that the applicant meets this requirement.
The applicant does not already possess a private pilot's license.	The cost of the private pilot's license was identified as an important barrier because it is not covered by the GI Bill. The demonstration portion of the research initiative was designed to address that barrier. In order to study the impacts from providing that training, the pool of participants could not already have the private pilot's license.
The applicant has a first-class medical certificate.	A first-class medical certificate is an FAA requirement for obtaining an ATP certificate, which is necessary to be an airline pilot.
The applicant has provided a letter of reference from a previous or current commanding officer, teacher/instructor/professor, or supervisor/manager.	Being an airline pilot requires many "soft" skills and character attributes that cannot be reflected in a list of minimum requirements. The letter of reference was intended to provide the people selecting participants with insight into the soft skills and character of the applicants so that the selected participants would be successful at becoming qualified pilots.

In addition to the minimum qualifications listed in Table 1, the training demonstration required that flight schools obtain a signed statement confirming the following. These statements were intended to inform the participants of the conditions of the training demonstration and aid in selection of participants who would successfully complete training and go on to become airline pilots.

- I believe I am able to tolerate the physical stress of flying in the cockpit of a small aircraft.
- I have conducted independent research on the positives and negatives of a career as a commercial airline pilot and feel that it is compatible with my personal commitments, family responsibilities, and life goals.
- I understand that the Forces to Flyers initiative will not cover approximately \$13,526 in training costs that will be incurred within my first 12 months of training and that I, with or without assistance from my training school, must provide these funds. I understand that \$13,526 is the equivalent of the 100 percent benefit level of Post-9/11 GI Bill funding for one (1) academic year of vocational flight training. I may pursue this option to cover the \$13,526 in costs or I may pursue other options including using my own funds. The flight school has also informed me of any additional costs associated with flight training for which I will be responsible.
- The flight school has informed me of the responsibilities and time commitments required of me for flight training.

Veteran Feedback

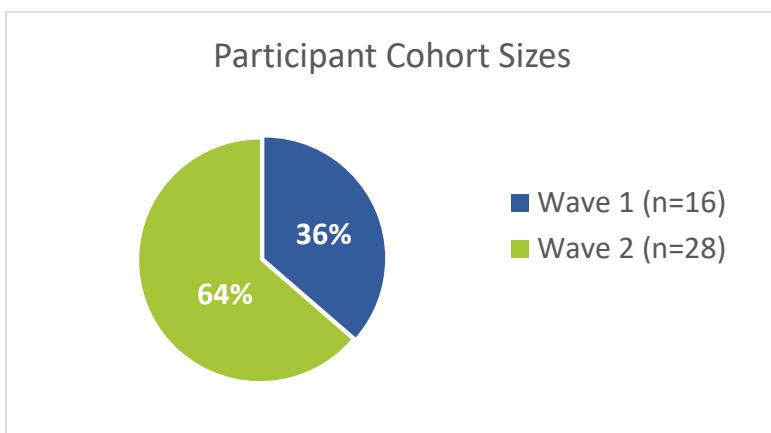
"The training I received was high quality and I am currently working as a full-time flight instructor. The training and culture at [the flight school], coupled with my military background, has prepared me to be a highly effective flight instructor that is focused on safety and the right operational mindset that is required of airline pilots. In spite of the current hiring downturn at the airlines due to COVID-19, I am 100% confident that after serving and growing as a flight instructor, I will still be able to serve the community-at-large as an airline pilot."



2.2.2 Participant Demographic Profiles

Two training cohorts participated in the Forces to Flyers flight training demonstration. Wave 1 consisted of 16 participants who started training in July 2018 (see Figure 2). Wave 2, a larger group of 28 participants, started the program on various dates from November 2018 through January 2019, depending on the flight school. A small number of Wave 2 participants who replaced original participants leaving in the early weeks of training began the program between February and April of 2019.

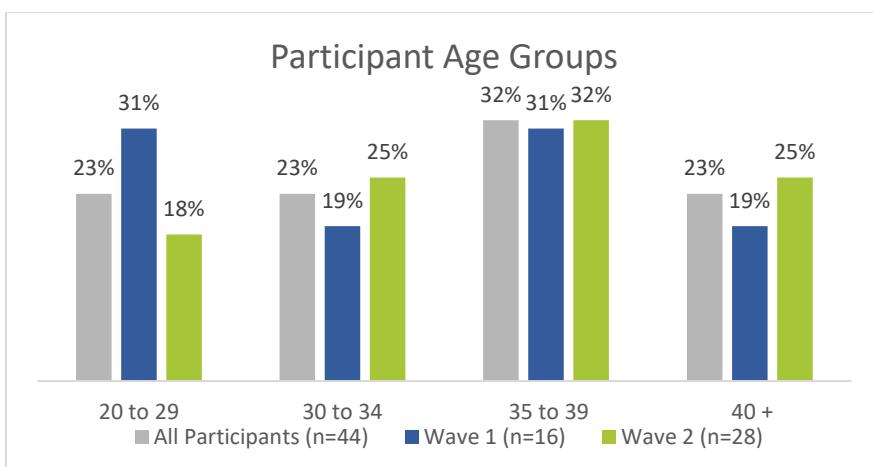
Figure 2: Participant Cohort Sizes (Wave 1 and Wave 2)



The majority of the Forces to Flyers participants were male; 4 of the 44 trainees (9 percent) were female.

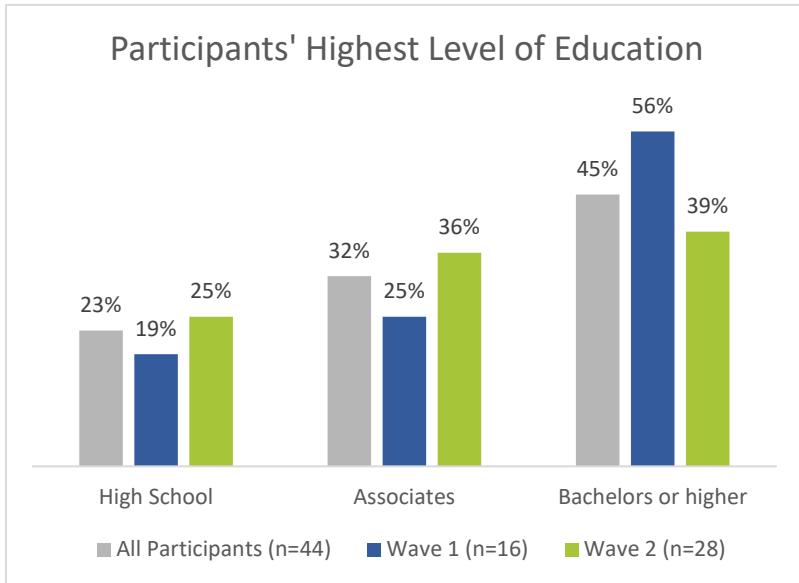
Participants spanned a wide age range, with just under a quarter of participants in their 20s, more than half in their 30s, and roughly another quarter in their 40s or 50s. The first cohort (Wave 1) skewed slightly younger, with a greater percentage of participants in their 20s, while the second (Wave 2) had a larger share who were at least 40 years old (see Figure 3).

Figure 3: Participant Age Groups



The vast majority of veterans entering the Forces to Flyers flight training demonstration came in with a college degree, as shown in Figure 4. Thirty-two percent held an associate's degree, while another 45 percent held a bachelor's or graduate school degree. Wave 1 skewed higher on the percentage of trainees with at least a bachelor's degree.

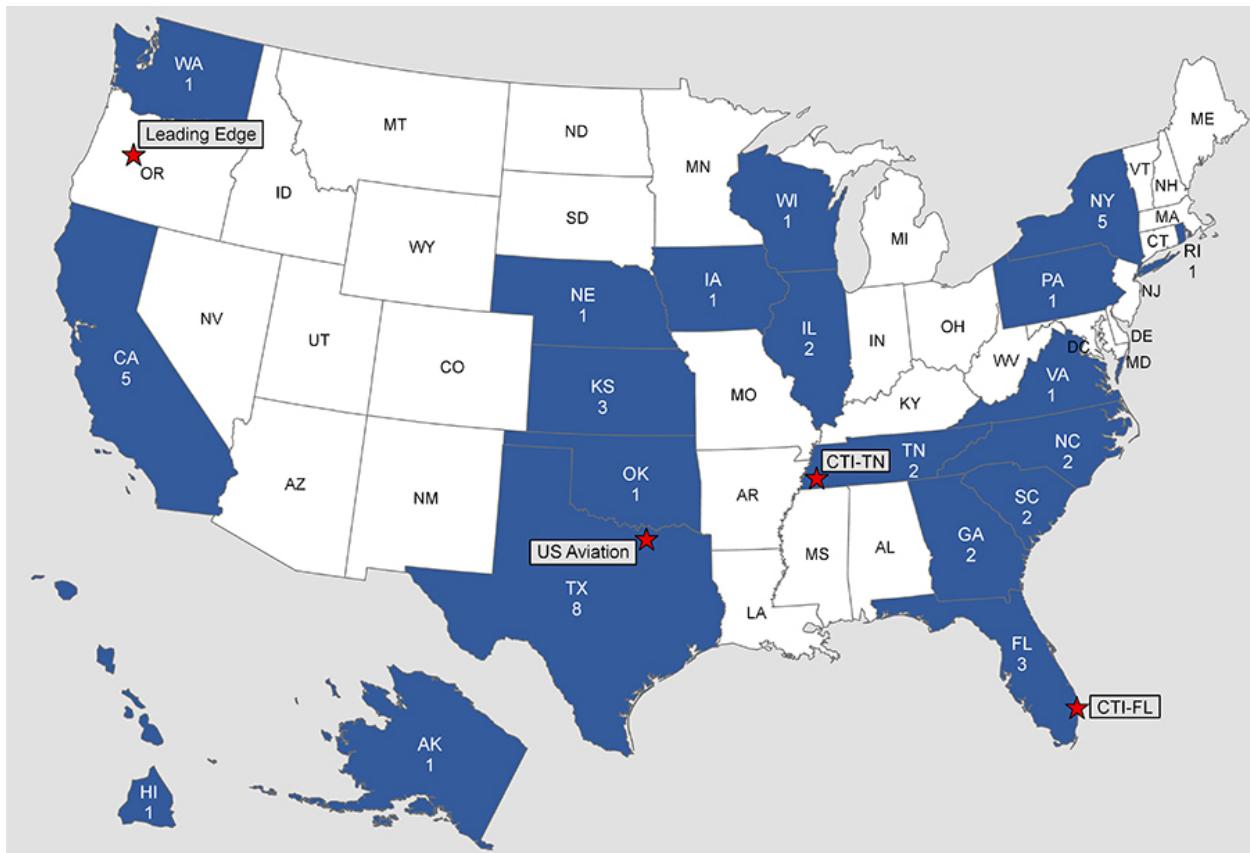
Figure 4: Participants' Highest Level of Education



2.2.3 Geographic Diversity

Geographic diversity was a goal of the demonstration design to allow veterans from all over the country the opportunity to gain flight training. This goal was met, with participants coming from as far away as Hawaii and Alaska, as shown in Figure 5.

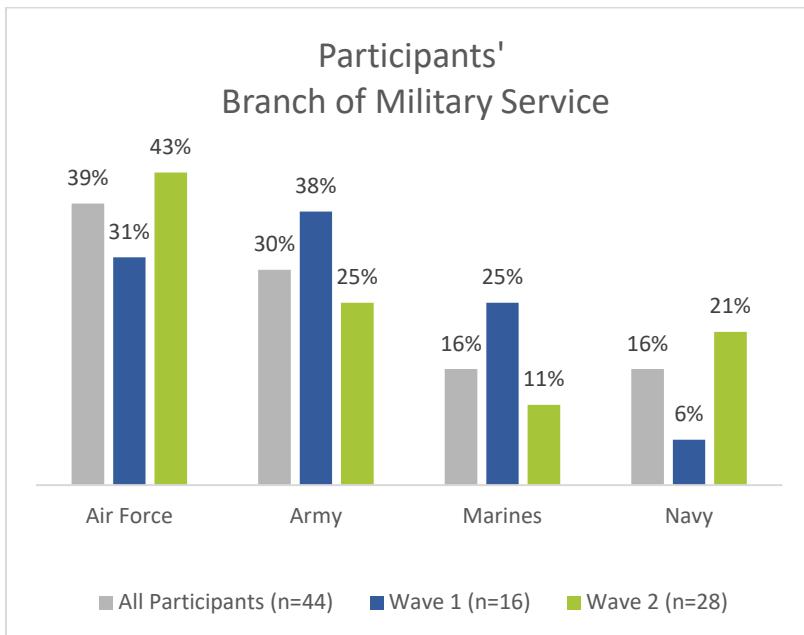
Figure 5: Home States of Participants and Locations of Flight Schools



2.2.4 Military Profile

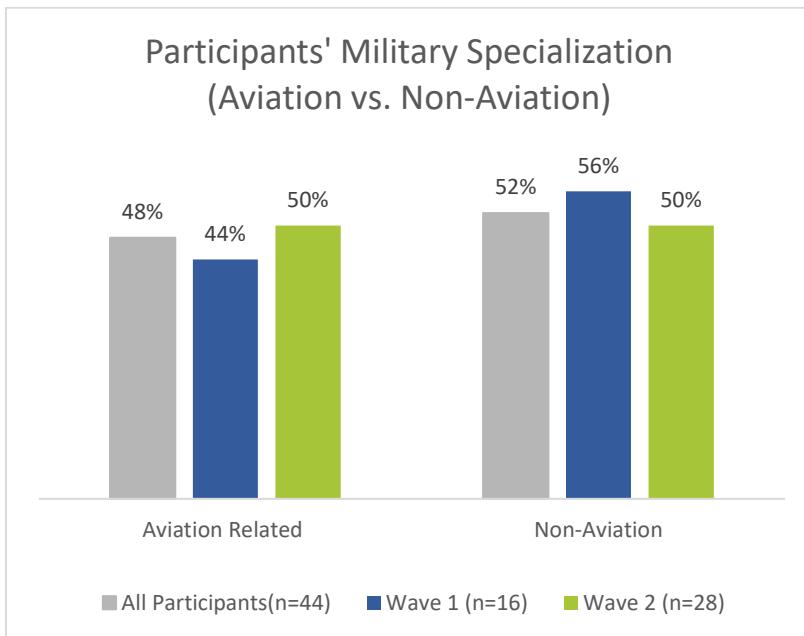
Four United States military branches were represented in the Forces to Flyers training demonstration, with Air Force and Army veterans (39 percent and 30 percent, respectively) outweighing those from the Navy and Marines (both at 16 percent), as shown in Figure 6, below. Each wave of the training demonstration saw a different mix of participants from the four branches.

Figure 6: Participants' Branch of Military Service



The two waves were relatively consistent on the share of participants with aviation-related military specializations (see Figure 7). Examples of aviation-related specializations include aircraft loadmaster, aircraft maintenance, and inflight refueler.

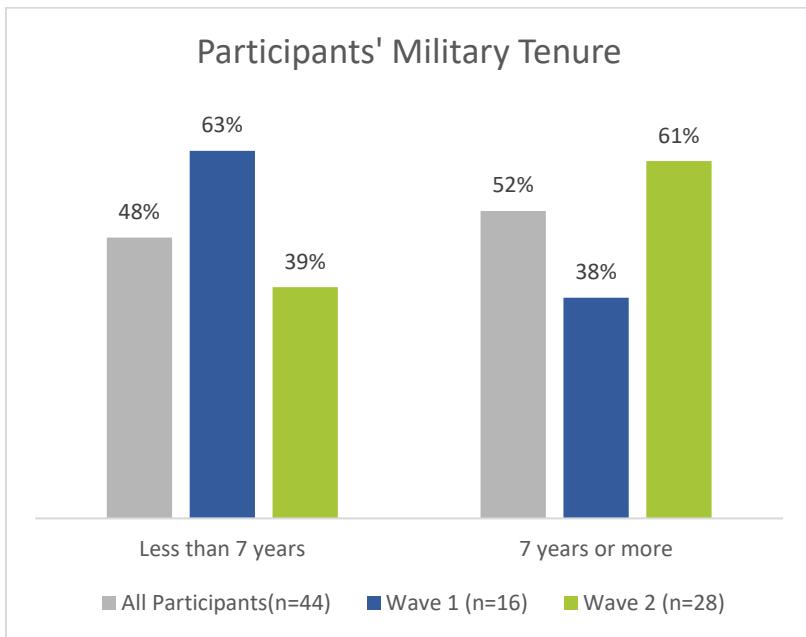
Figure 7: Participants' Military Specialization – Aviation-Related vs. Non-Aviation-Related



When combining waves, participants were split relatively evenly between those with lower military tenure (< 7 years of military service) and those with higher tenure (7+ years of military service). The two

waves, however, differed significantly on the military tenure of participants, as shown in Figure 8. Wave 1 had a higher share (63 percent) of those with tenure of less than 7 years, while Wave 2 had a higher share (61 percent) of those with higher tenure (7+ years of military service).

Figure 8: Participants' Military Tenure



3. Flight Training Demonstration Performance Evaluation

After the Volpe Center finalized the design of the Forces to Flyers flight training demonstration, the team developed an evaluation plan, creating a series of evaluation questions linking training demonstration objectives to short- and long-term outcomes. Throughout the demonstration period, the Volpe Center collected data to inform the evaluation from flight schools, demonstration participants, and other sources.

3.1 Evaluation Questions

The evaluation questions cover a diverse set of program objectives, including attracting a set of highly qualified veterans to the training demonstration, efficiently training participants, and ensuring that veterans completing the full training curriculum were on a path to jobs as regional airline pilots.

Table 2 below displays key program objectives with the evaluation questions that would inform the progress made towards them.

The original evaluation plan set forth an ambitious set of evaluation questions and measures that would be used to inform them. However, given the realities of the training demonstration—including a longer-than-expected training period, lower-than-expected completion rates, and differences in the organization and content of training phases across flight schools—some changes were required. Nonetheless, this evaluation provides extensive information regarding the success of Forces to Flyers in meeting key objectives related to overall demonstration goals.

Table 2: Key Training Demonstration Objectives and Evaluation Questions

Key Objectives	Evaluation Questions
Attract a highly qualified set of veterans to participate in the Forces to Flyers flight training demonstration	<ul style="list-style-type: none">Was there sufficient publicity to attract a diverse set of qualified applicants?Were the flight schools able to screen and enroll the required number of participants?
Move participants efficiently through the Forces to Flyers training demonstration to ensure completion within the contract period	<ul style="list-style-type: none">What percentage of the Forces to Flyers training demonstration participants completed the training in the contract period?Did the flight schools move participants through the training efficiently?What factors helped or hindered the training efficiency of flight schools?

Key Objectives	Evaluation Questions
Demonstrate that Forces to Flyers training is as cost effective as other training programs	<ul style="list-style-type: none"> • How do the Forces to Flyers training costs compare to the other flight training programs?
Provide participants with sufficient training to secure jobs that will lead to ATP certification	<ul style="list-style-type: none"> • How successful were Forces to Flyers graduates in gaining employment that can lead to ATP certification after completing the training?
Create new pilots to ease the pilot shortage and thereby preserve or increase air service to small and rural communities	<ul style="list-style-type: none"> • Did the Forces to Flyers training demonstration train pilots who otherwise would not have completed flight training?

3.2 Data and Methods

The data used to inform the evaluation questions comes from the following sources provided by the flight schools that delivered flight training:

1. **Participant selection sheets** that provide the following characteristics of each participant: age, military specialization, military branch, years of military experience, education attainment, state of residency, and whether the participant will be using GI Bill funds for their portion of the training expenses.
2. **Monthly progress reports** that describe the progress of each participant toward each of the six certificates and ratings and any events or circumstances expected to impact the progress of the participants either individually or in aggregate.
3. **Comparison data** describing the progress of a group of non-veteran students in other training programs offered by the flight school. The type of alternate training program offered differed by flight school.
4. **Participant feedback** on the training they received. Each flight school gathered feedback from participants at the end of the training period.
5. **Debriefing interviews** with flight schools. At the end of the contract period, the Volpe Center interviewed the flight school staff to learn more about the factors contributing to training successes and shortfalls of the participants. In addition, the employment statuses of the participants were discussed.

Veteran Feedback

"Not having to worry about financing flight training made it possible to complete it as quickly as we did, even with our minor setbacks. So often I hear folks saying they started training but had to put it on hold due to cost and never went back. The Forces to Flyers initiative removed that barrier and allowed us participants to focus on our training."

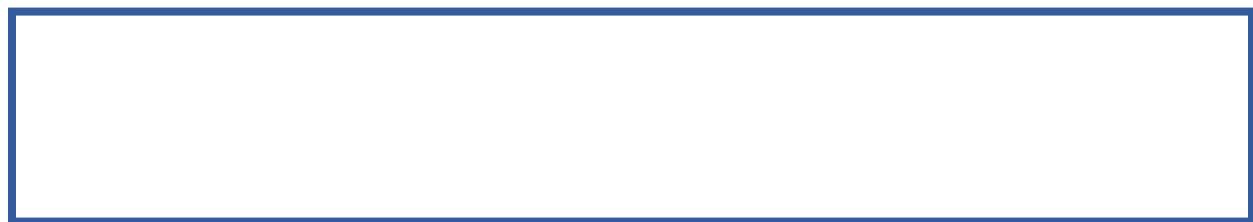


Forces to Flyers

4. Evaluation Findings

The discussion below presents the findings of the evaluation analysis related to the goals and objectives of the Forces to Flyers flight training demonstration.

4.1 Attracting and Enrolling Qualified Participants



Both the efforts of US DOT and the contracted flight schools supported the goal of attracting a highly qualified set of training demonstration participants. US DOT supported the initiative with a strong effort to publicize the Forces to Flyers flight training demonstration, while the flight schools created a structured application screening and selection program and supported applicants as they transitioned to the flight schools.

4.1.1 Publicity

Evaluation Question: Was there sufficient publicity to attract a diverse set of qualified applicants?

In an effort to attract a large pool of interested and qualified veterans to participate, US DOT used several methods to publicize the flight training demonstration:

- US Secretary of Transportation Elaine L. Chao announced the plans for the research initiative at an event at US DOT headquarters in Washington, DC, on November 16, 2017.⁶
- The flight school contract awards announced on May 15, 2018, were publicized using press releases, the Forces to Flyers mailing list, and social media.⁷ Those announcements notified interested veterans which schools to contact in order to apply to participate in the demonstration.
- A new email account, forcestoflyers@dot.gov, was created to disseminate information regarding Forces to Flyers. People who wanted to receive updates could email the account to

⁶ See the [Secretary's remarks](#), the [accompanying press release](#), and a compendium of [industry support for the research initiative](#).

⁷ See the [press release announcing the contract awards](#).

be added to the mailing list. As of October 2020, the list included more than 2,300 interested parties.

- The Volpe Center hosted a web page (www.volpe.dot.gov/forcestoflyers) with materials relevant to flight schools and veterans interesting in the training demonstration. As of the end of October 2020, the website received 59,746 total page views and 48,733 unique page views.
- The [web page](#) included materials for the following purposes:
 - To disseminate information to flight schools relevant to the solicitation
 - To present the list of flight schools awarded contracts
 - To disseminate information on the eligibility requirements to interested veterans so they could obtain materials (e.g., letter of recommendation, first-class medical certificate)
 - To display frequently asked questions (FAQ) for veterans related to Forces to Flyers

The Forces to Flyers training demonstration also benefited from publicity generated outside of US DOT. Several media outlets focused on the airline industry and the military posted information on the initiative. Additionally, one major media outlet published a story about Forces to Flyers.⁸

The contracted flight schools posted Forces to Flyers training demonstration information on their websites and social media pages, but upon seeing the overwhelming response to the initiative, they deemed it unnecessary to further publicize the training. One school reported receiving more than 200 inquiries for the four initial Wave 1 training slots they had open, while another reported 350 contacts showing interest.

4.1.2 Applicant Screening and Enrollment

Evaluation Question: Were the flight schools able to screen and enroll the required number of participants?

The initial publicity attracted a large number of qualified participants. Close to 400 applications were submitted across all four schools for the 16 training slots available for Wave 1. Of these, 225 were deemed eligible, meaning they met the eligibility criteria listed in Table 1 and submitted all the materials requested in the application. Due to the abundance of interest in training, the flight schools offered applicants the opportunity to stay in the application pool to be considered for one of the 28 training spots in Wave 2. The applicant pool for Wave 2 was supplemented with veterans who contacted the

⁸ Examples of news articles posted about Forces to Flyers from third-party media sources include the following:

- Military.com, “[New Program Provides Free Pilot Training for Veterans](#)”
- Flyingmag.com, “[‘Forces to Flyers’ Puts Veterans on the Flight Deck](#)”
- Fox News, “[Government’s ‘Forces to Flyers’ program trains veterans to become airline pilots](#)”

schools after the Wave 1 application period.

After reviewing the application materials, the flight schools selected a small set of highly qualified candidates for interviews. Factors assessed during the interviews included the following:

- Long-term interest in aviation or aviation-related job experience
- Work ethic, including the ability to handle challenging or stressful situations
- Experience instructing or leading others
- Commitment to training full time
- Ability to fund living expenses during the training

Veteran Feedback

"I could not have asked for a better program and appreciate the opportunity given to me."



Discussing the candidates' educational background and work experience enabled the flight schools to assess interest, work ethic, and experience factors, but the flight schools indicated that it was difficult to truly assess the candidates' commitment to training full time or the reality of their financial situation (and thus their ability to fund living expenses) during these conversations.

Using the screening information assembled, each flight school selected its Wave 1 and Wave 2 participants following the interview process.

Each of the four flight schools dealt with accepted veterans who chose not to enroll in the training demonstration. During the selection process, flight schools were flooded with applications, not just from their own regions, but from across the country, as shown in Table 3.

Table 3: Number of Applications and Offers

	Total Applications	Eligible Applications (Qualified/Complete)	Offers Required to Fill 4 Slots in Wave 1	Offers Required to Fill 7 Slots in Wave 2
US Aviation	85	70	4	11
Leading Edge	90	45	5	7
CTI Tennessee	208*	110	8	10
CTI Florida			6	8
Total	383	225	23	36

*CTI candidates had the option of applying to both the Tennessee and Florida locations.

For many, enrolling in the training meant relocating to a different city or state within a matter of weeks. This led to several applicants in each wave declining their spot in the training. Specific factors such as securing a leave of absence, getting other family members on board, and securing local housing impacted the decision. When an accepted applicant declined, the flight schools had to go back to the applicant pool to select another qualified veteran. One flight school attempted to avoid this issue by giving preference to applicants who lived in close proximity to the flight school. Overall, the flight schools reported accepting 59 applicants to fill 44 spots. The large pool of interested applicants allowed the schools to easily find other interested and qualified veterans.

Despite the need to replace some applicants, all of the flight schools were able to enroll the contracted number of participants. The schools were also able to replace three applicants who were removed from the training in early weeks due to personal or performance issues.

Key Takeaways:

Due to the efforts of US DOT to publicize the Forces to Flyers flight training demonstration and the additional support provided by the media, a large number of veterans expressed interest in participating in the training demonstration. The schools were able to recruit, screen, and enroll the number of participants specified in their contracts.

The flight schools did face a few challenges in getting accepted applicants started in the training demonstration, however. The short timeframe between acceptance and the start of the program made it difficult for some veterans to commit to the program. Factors such as securing a leave of absence, getting other family members on board, and securing local housing in a short period of time were noted as reasons candidates declined their spots or left the training in the early weeks. Even with these challenges, however, each school was able to start 11 participants on the training.

Although applicants were plentiful, representatives from the flight schools regretted that due to the eligibility requirements for participants, they could not consider veterans with a private pilot's license or a helicopter license, as these candidates had already shown a high level of interest in aviation.

4.2 Training Efficiency

Training efficiency is assessed by looking at participant completion rates by training wave and in comparison to similar training programs. It is also assessed by looking at the length of time needed to complete the training, in comparison to the expected time to complete and in comparison to similar training programs. Factors that helped or hindered training demonstration efficiency are also discussed.

The original contracts allowed 18 months for participants in both waves to complete the flight training. Due to special circumstances such as aircraft mechanical issues, the COVID-19 public health emergency, and wildfires,⁹ the training period in the contracts were extended as shown in Table 4, below. On average, this extended the Wave 1 training period to roughly 26 months (112 weeks) and the Wave 2 training period to roughly 21 months (90 weeks).

Table 4: Training Period in Contracts

Training Period	Wave 1	Wave 2
Planned training period length	18 months (78 weeks)	18 months (78 weeks)
Actual training period length (average of participants)	26 months (112 weeks)	21 months (90 weeks)

4.2.1 Training Completion Rates

Evaluation Question: What percentage of the Forces to Flyers training demonstration participants completed the training in the contract period?

Table 5 displays the final progress of the Forces to Flyers participants, reported at the end of the extended contract period. In total, 32 participants (73 percent) completed training through a commercial pilot's license with multi-engine rating.¹⁰ This license enables one to be employed as a pilot,

⁹ Further details on these schedule delay issues are provided in Section 4.2.3.

¹⁰ Due to the training curriculum of three of the four flight schools, Forces to Flyers participants needed to complete both the commercial and multi-engine levels before obtaining a commercial pilot's license.

performing activities such as banner towing, aerial imagery, or pipeline inspection.¹¹ A smaller number of participants, 25 in total (57 percent), completed the full training, earning both CFI and CFI-Instrument ratings. Those completing the full training could gain employment as a certified flight instructor, earning a living while also getting the flight hours necessary to qualify for the ATP certificate.

Table 5: Final Progress of Forces to Flyers Participants

Total Certificates Completed	Wave 1 (16 participants)	Wave 2 (28 participants)	All Participants
Private Pilot's License	16	100%	23
Instrument Rating	16	100%	21
Commercial + Multi-Engine Rating	16	100%	16
CFI	15	94%	12
CFI-Instrument	13	81%	12
Complete	13	81%	12
			25
			25
			57%

Not all of the training demonstration participants were able to earn the certificates and ratings needed to gain employment as a pilot. Notably, five participants (11 percent) were removed from the training for poor performance before completing their private pilot's license. Another seven participants completed some training levels, but slow training progress due to a variety of factors, discussed in Section 4.2.3 of the report, hampered their ability to earn a commercial pilot's license with multi-engine rating during the contract period.

Completion rates differ significantly by wave. All 16 Wave 1 participants completed through the commercial with multi-engine rating, while just over half of the 28 Wave 2 participants (57 percent) achieved the same milestone. Similarly, 81 percent of Wave 1 participants completed the full curriculum, compared to only 43 percent of Wave 2 participants. A shorter contract period for Wave 2, along with a number of low-performing Wave 2 trainees who were removed from the demonstration, accounts for the difference. If Wave 2 participants had additional weeks to complete the training, it is likely that they would have seen higher completion rates.

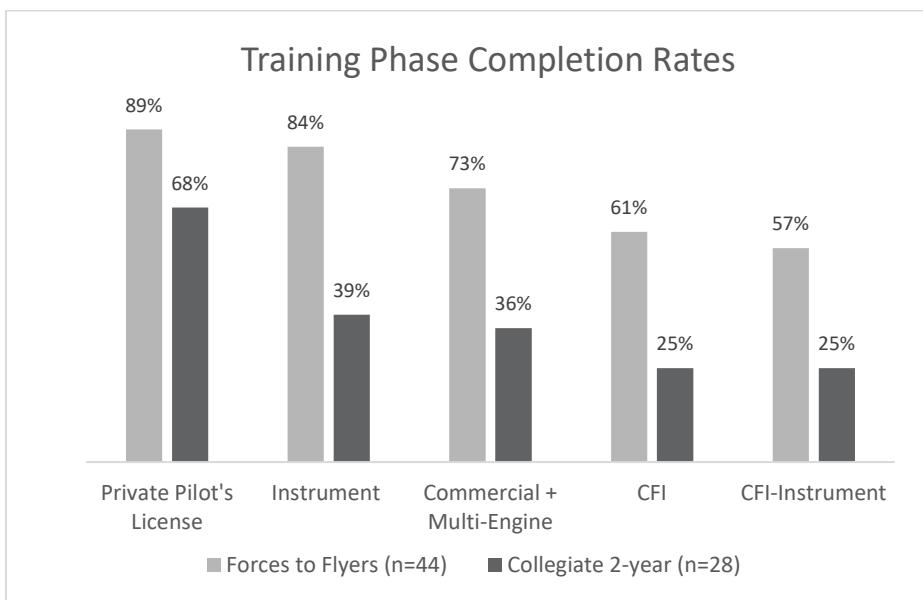
Other factors that impacted training completion rates are discussed in Section 4.2.3.

Comparison of Completion Rates

As an additional assessment of training efficiency, the Forces to Flyers completion rates are compared to the completion rates of non-veterans in a collegiate 2-year degree program (Collegiate 2-year). The results show that **Forces to Flyers completion rates exceed those of a collegiate 2-year flight training program** (see Figure 9).

¹¹ Additional training and flight hours are needed to work as an airline pilot.

Figure 9: Training Phase Completion Rates – Forces to Flyers and Collegiate 2-Year Program



The percentage of Forces to Flyers participants who completed a particular training phase is higher than that of the non-veterans in a collegiate 2-year program across all training phases. In total, 57 percent of Forces to Flyers participants completed the full curriculum through CFI-Instrument compared to 25 percent of non-veteran students in the 2-year collegiate program. Both sets of data show that only a fraction of the students who start a flight training program complete the challenging curriculum.

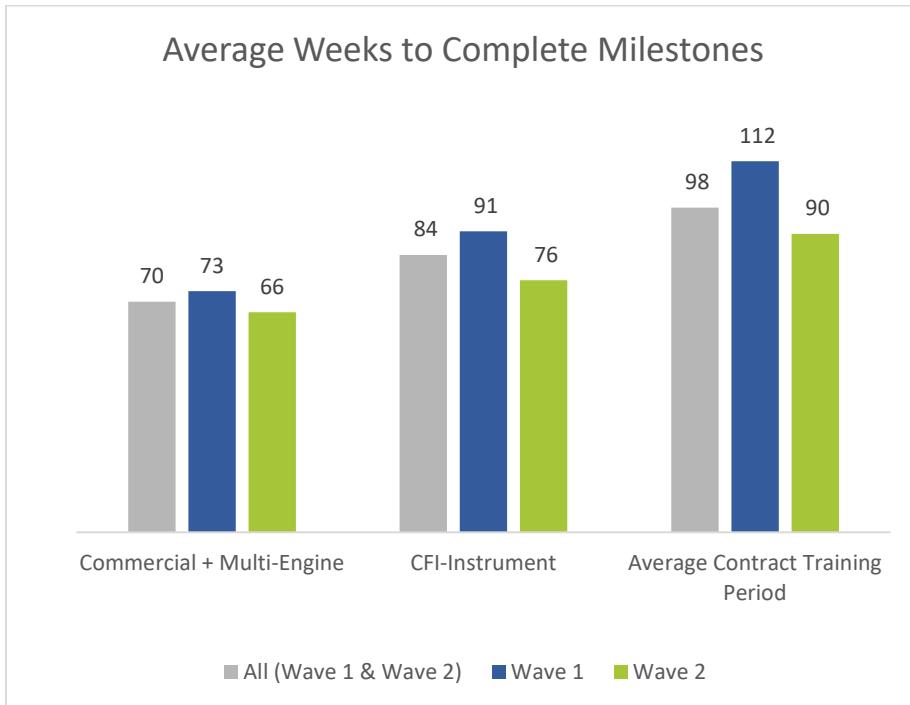
4.2.2 Time to Completion

Evaluation Question: Did the flight schools move participants through the training efficiently?

The 25 participants (57 percent) who completed the full Forces to Flyers training curriculum did so, on average, in 84 weeks (around 19 months), shown in Figure 10. This is 6 weeks (around 1.5 months) longer than originally anticipated.¹² The average time to earn the commercial pilot's license with multi-engine rating was below the 18-month (78-week) target, and 24 of the 32 participants who completed that training phase were able to do so within that timeframe, as shown in Table 6 (page 25).

¹² Special circumstances that impacted the length of the training demonstration are discussed in Section 4.2.3.

Figure 10: Average Weeks to Complete Milestones



Wave 1: Commercial with Multi-Engine completes (n=16), Full Curriculum (CFI-Instrument) completes (n=13)

Wave 2: Commercial Multi-Engine completes (n=16), Full Curriculum (CFI-Instrument) completes (n=12)

A greater proportion of Wave 1 participants completed through the commercial with multi-engine and CFI-Instrument milestones compared to Wave 2 participants (as indicated in Table 5 in Section 4.2.1), but Wave 2 participants completed these levels at a faster pace (as Figure 10, above, shows). On average, Wave 2 participants completed the commercial with multi-engine at 66 weeks (versus 73 weeks for Wave 1) and the full curriculum (through CFI-Instrument) at 76 weeks (versus 91 weeks for Wave 1).

The difference is due, in part, to the different training period lengths. Wave 1 participants had, on average, 112 weeks to complete the training demonstration (see Table 4), which was 22 weeks longer than Wave 2 participants had (90 weeks). As a result, more slower-progressing Wave 1 participants were able to complete to commercial multi-engine or CFI-Instrument during the contract period, increasing the average number of weeks to complete these levels. In comparison, Wave 2 participants had to complete all training within 90 weeks, on average. By the end of the training period, only the faster-progressing Wave 2 students had completed to commercial multi-engine or CFI-Instrument, leading to a lower average number of weeks to complete.

Original 18-Month Training Window

Table 6 shows the number of Forces to Flyers participants who were able to complete the training within the original 18-month period. While more than half of participants (55 percent) were able to

complete through the commercial with multi-engine within 18 months, only a small proportion (16 percent) completed the full curriculum through CFI-Instrument. Those finishing within the 18 months represent the high performers of the cohorts.

Table 6: Training Complete through 18 Months

Training complete through 18 months (78 weeks)	All Waves	Wave 1 (n=16)	Wave 2 (n=28)
Commercial Multi-Engine	24 (55%)	12 (75%)	12 (43%)
CFI-Instrument (Full)	7 (16%)	1 (6%)	6 (21%)

4.2.3 Factors Impacting Efficiency

Evaluation Question: What factors helped or hindered the flight schools' success in training participants during the contract period?

There are several circumstances and events that impacted the ability of participants to successfully complete the training in the original time frame for the flight training demonstration. The training periods in the contracts were extended due to the following issues.

Personal Circumstances of Participants

Personal characteristics as well as personal and family circumstances that arose during the training period derailed the success of several participants. Five participants were removed from the training for poor performance before completing their first certificate, the private pilot's license. It became clear early on to the contracted flight schools that these participants did not have the aptitude and/or the drive to complete the flight training. Even at later stages of the training, some participants withdrew when it became clear that they could not complete the training curriculum during the contract period. Students withdrawing later generally had the aptitude to complete the training but other personal and family circumstances delayed training progress.

In exit interviews, the flight schools across the board stated that the single largest factor in people successfully completing the flight training demonstration was being able to commit to training full time. The flight school monthly progress reports identified several factors impacting training time:

- Part-time or full-time employment
- Long-distance commutes
- Leaves for family issues including birth of a child or family member illness
- Leaves for active-duty deployments

Even though participants indicated during the application process that they would be available to train full time, financial strain, family issues, and military commitments limited many participants' ability to maintain a full-time training schedule.

"The daily expenses such as rent, food, insurance, gas, etc. made outside jobs a priority. I had to prioritize eating over studying sometimes because I lacked the time to work a full-time job and study/fly."

"The personal cost to me as a participant, even while using my GI bill, was significant. Since it was an accelerated program, I was unable to work at all throughout the course, and had to rely on personal savings to support myself for the duration."

Aircraft Mechanical Issues

Two flight schools had mechanical problems with their twin-engine aircraft. After failed attempts to repair the aircraft and lease replacement aircraft, the flight schools ultimately purchased new aircraft from a different manufacturer. These efforts were time consuming and resulted in a period of 5 to 6 months during the second half of 2019 when multi-engine aircraft were not consistently available at both schools.

Those aircraft mechanical issues particularly impacted the Wave 1 participants who were at the multi-engine phase in their training during that time. Those participants could not work on their CFI training, which required a commercial license, because the flight schools used a curriculum that combines the multi-engine add-on with the commercial license. Under normal situations, this curriculum provides a cost savings from reducing the total number of flight hours needed. But in this case, it had a downside of preventing participants from being able to continue training since they had not yet earned their commercial pilot's license.

In participant feedback, some participants mentioned frustration at limitations on opportunities for training flights. Likely some of these limitations were due to these aircraft mechanical issues or other issues outside the control of the schools, but it is also possible the flight schools could have done more to mitigate risks and provide more consistent flying opportunities for students.

"I understand that there are maintenance issues that arise with aircraft after working on them while in the military, but the several-month-long break took a toll on me and my family."

"[T]he school needs a contingency plan for when there are aircraft maintenance issues on a pivotal aircraft. The school has 10 single-engine aircraft and only one twin. When that twin goes down the training stops and

creates a backlog of students. I would look at having access to a backup aircraft..."

"To be quite honest, I am fortunate to have been selected for this program, but I think if I had gone elsewhere, I would have finished by now [due to training delays]."

COVID-19

By the end of March 2020, three of the four flight schools had closed due to state and city executive orders restricting activities due to the COVID-19 public health emergency. Only the school in Texas continued to operate, albeit with delays. The closures lasted approximately 2.5 months. Even after the school re-openings in early June, some schools had periodic short-duration closures when a trainee or staff member showed symptoms. In addition to flight school closures, COVID-19 also resulted in uncertain availability of the flight examiners to perform check rides for the CFI and CFI-Instrument certificates marking the completion of those training phases.¹³

To facilitate the completion of training for the veteran participants, the periods of performance for the contracts with three of the flight schools that closed due to COVID-19 were extended by 4 months.

Accident

An aviation accident unrelated to the Forces to Flyers program caused delay for some participants. During the contract period, one flight school experienced a flying accident that resulted in the tragic deaths of a student (**not a Forces to Flyers participant**) and a flight instructor.¹⁴ The school shut down temporarily as part of the National Transportation Safety Board investigation and to perform mechanical checks of all the aircraft at the school.

Weather and Wildfires

Periods of bad weather that disrupted flying were reported by all schools at various times during the training period. These should generally be expected and normally would not require an adjustment to the 18-month time frame stipulated in the original contracts. However, when combined with the other unexpected events, the weather disruptions did appear to impact the total time frame for training.

¹³ Uncertain availability of flight examiners was an issue prior to COVID-19 but became more pronounced as a result of the public health emergency.

¹⁴ Associated Press, "[2 Killed in North Texas Plane Crash Identified](#)," Fort Worth Star-Telegram, July 29, 2019.

Of particular note were the historic wildfires in the West that created a period of unsuitable flying conditions for the school in Oregon in the summer of 2020. That flight school was granted a 3-week extension to allow more time for participants to complete their training.

Key Takeaways:

The Forces to Flyers training demonstration was subject to many unique circumstances—such as the COVID-19 public health emergency, wildfires, and aircraft mechanical issues at two schools—that were significant challenges to completing an accelerated training course. Nonetheless, the demonstration has shown that it is possible for the fastest progressing veterans to complete the training in 18 months.

The demonstration design was based on the expectation that people would train full time in order to meet the ambitious training schedule. In some instances, veteran participants struggled with completing the flight training on schedule because they were balancing outside commitments, such as full- or part-time jobs or ongoing military commitments. In contrast, the most successful participants were those people who committed to full-time training.

Given the unique circumstances occurring during the training demonstration, it was shown that a longer training period could help those facing a range of training delays complete the curriculum. However, given that 5 participants did not complete the first stage of training, a longer training period would not ensure success for all participants.

4.3 Cost Effectiveness

Evaluation Question: How do the Forces to Flyers training costs compare to other flight training programs?

Under this flight training demonstration, the cost of flight training services is roughly \$57,500, of which roughly \$13,500 is provided using student resources such as the GI Bill. The \$57,500 cost compares extremely favorably to the \$150,000 price tag (shown in Table 7) quoted in popular press articles discussing pilot training costs.¹⁵ A significant portion of that cost differential is due to the choice to aim the training demonstration at vocational flight schools, rather than flight schools affiliated with colleges or universities.

The average cost of the flight training demonstration is quite close to the estimated cost derived from the initial research effort under Task 2, which found \$62,000 to be a representative cost to complete the specified training series based on web research (see the appendix for further details). The market research completed as part of the procurement process that relied on responses to a Sources Sought notice placed on FBO.gov¹⁶ found an average cost of approximately \$60,000.

Table 7: Cost of Flight Training by Program Type

Program Type	Source of Information	Cost Estimate
Forces to Flyers	Final Contracts	\$57,500
Bachelor's Degree	Press Articles	Up to \$150,000
Vocational	Websites, Interviews	\$62,000
Vocational	Sources Sought notice on FBO.gov	\$60,000

An additional factor contributing to achieving attractive pricing was the use of federal contracting procedures for full and open competition and firm fixed-price contracts. The low costs for the contracts

¹⁵ See for example the Jan. 19, 2016, *Travel Weekly* article “[Training rule blamed for pilot shortage](#)” and the April 16, 2016, *New York Times* article “[Plenty of Passengers, but Where Are the Pilots?](#)”

¹⁶ FBO.gov was the website used for federal contracting opportunities at the time the Forces to Flyers contracts were issued.

can also be attributed in part to the high quality of the contracting documents that clearly identified the services to be performed and the terms and conditions of the contracts. When faced with uncertainty, businesses will typically increase their prices to cover unforeseen events.

As explained in Section 4.2, some participants did not complete the full curriculum; however, the flight schools were paid for the certificates that the participants completed. In addition, some reimbursement was made to flight schools for costs incurred related to participants who did not complete the private pilot's license.

In total, **\$1.348 million** (86 percent of contract training expenditures) **was spent on the 32 participants who earned at least a commercial pilot's license with multi-engine rating**. Of these, 25 completed the entire curriculum through CFI-Instrument. An additional \$180,000 (11 percent of contract training expenditures) was spent on completed private pilot's license and instrument ratings for participants who did not eventually earn a commercial multi-engine pilot's license. Finally, \$48,500 (3 percent of contract training expenditures) was paid to flight schools as reimbursement for costs related to participants who did not earn the private pilot's license, the first stage in the training curriculum.

Key Takeaway:

The use of government contracting resulted in contract line item prices below other estimated prices. Although not all participants completed the entire course of training, 86 percent of contract payments were associated with the 32 participants who earned at least a commercial pilot's license with multi-engine rating.

4.4 Veteran Employment

Evaluation Question: How successful were Forces to Flyers graduates in gaining employment that can lead to ATP certification after completing the training?

According to information provided by the flight schools during debriefing interviews, **16 of 25 participants (64 percent) who completed the entire training through CFI-Instrument were employed as pilots at the end of the training demonstration**. Many of the participants worked as flight instructors

at the school where they trained, though others moved back home and became flight instructors at other schools. Still others were employed at aerial imaging companies.

These jobs will allow graduates to build flight hours while earning an income in order to qualify for the ATP certificate that is required to be a pilot at an airline.

In debriefing interviews, the flight schools mentioned that if not for COVID-19, the number of former participants employed as flight instructors would have been higher. They mentioned receiving three to four times the number of typical resumes for open flight instructor positions, demonstrating the higher-than-usual availability of certified flight instructors searching for work.

Veteran Feedback

"I am very grateful to have had the opportunity to be a part of the Forces to Flyers program. I am the 1st person in my family to ever become a pilot and it gave everyone something to be proud of, especially during recent turbulent times."



Key Takeaway:

Even though the COVID-19 public health emergency has suppressed demand for pilots, the majority of the flight training demonstration participants were able to gain employment as pilots after completing the training. These jobs will allow graduates to build flight hours while earning an income in order to qualify for the ATP certificate that is required to be a pilot at an airline.

"Without a doubt, COVID-19 has had a significant impact on my plans for a career in the aviation industry. It has become very difficult to find employment as a flight instructor due to the pandemic that has afflicted the industry. This was of course an unforeseen circumstance during the Forces to Flyers initiative, but a severe impact nonetheless."

"Employment opportunities I believed were available for me after I graduate have been lost. The reasoning I've heard for this is because there are less students to instruct so demand for instructors is low, and COVID is the cause. My overall goals have not changed: get to the airlines, and hope the industry will recover sooner rather than later."

4.5 Creating More Pilots

Evaluation Question: Did the Forces to Flyers training demonstration train pilots who otherwise would not have completed flight training?

In the end, **the flight training demonstration resulted in 32 new commercial multi-engine pilots.** These pilots can be employed as pilots in jobs such as banner towing, aerial imagery, or pipeline inspection. They will need to continue to build flight hours and undergo additional training to qualify for ATP certification required for employment at an airline. Of those 32 new pilots, 27 earned CFI credentials and can earn an income while giving flight lessons while building the required number of flight hours (25 also earned CFI-Instrument certifications while 2 did not). The time span of this project is not long enough to learn how many of these participants will eventually be hired at a regional airline.

A definite answer to the question of whether these individuals would have become pilots in the absence of Forces to Flyers cannot be given. In participant feedback, some said they would never have been able to become a pilot without Forces to Flyers. Others said that their training was accelerated because they would have had to delay training to save up funds.

“[Without Forces to Flyers] I would never have pursued flight training on a full-time basis, which means I would never have pursued a professional flying career.”

“I have no doubt that I would have never pursued a career in aviation, if not for the Forces to Flyers initiative. I imagine I would have pursued my private pilot certificate, but no further ratings beyond that.”

Key Takeaway:

The training demonstration produced 32 commercial multi-engine pilots who can be employed as professional pilots. Some participants indicated they would never have been able to become a pilot without Forces to Flyers. Others said that their training was accelerated because without Forces to Flyers they would have had to delay training in order to save up funds.

5. Lessons Learned

At the time when the Forces to Flyers flight training demonstration was conceived, the US Government Accountability Office (GAO) concluded that an airline pilot shortage likely existed.¹⁷ Now, in fall 2020, the job market outlook for airline pilots has changed dramatically. Due to the COVID-19 public health emergency, demand for passenger air travel has declined significantly, and airlines have furloughed workers and offered early retirement in order to reduce their payroll obligations.¹⁸ Thus, in the near term at least, a pilot shortage no longer exists.

Nonetheless, the experience of implementing the Forces to Flyers flight training demonstration provided the following lessons learned:

- Some eligible participants who were offered slots in the training demonstration chose not to accept the offered slot due, in part, to concerns related to needing to relocate closer to the flight school that offered the position. Some participants did decide to relocate to live closer to school, and that move presumably required additional financial resources and inconvenience. Providing geographic options for training providers reduces the need of veterans to relocate.
- Although the flight schools carefully screened applicants, not all participants successfully completed the flight training. Strong screening criteria for flying aptitude can help identify candidates most likely to be successful in completing flight training. Examples of screening tools used in the military—including the Pilot Candidate Selection Method (PCSM) used by the Air Force and the Aviation Selection Test Battery (ASTB) used by the Navy, Marine Corps, and Coast Guard—contain tests related to psychomotor skills, cognitive abilities, and aviation knowledge.
- Numerous external events related to weather and wildfires, aircraft mechanical problems, and the COVID-19 public health emergency caused delays in the training of the participants. Having flight schools prepare risk mitigation plans that outline the measures they would use to accommodate any anticipated external events, such as equipment failures or instructor shortages, can minimize training delays.
- Flight training is most efficient when done on a full-time basis. In some instances, veteran participants struggled with completing the flight training on schedule because they were balancing outside commitments such as full- or part-time jobs or ongoing military commitments. Trainees need a clear financial plan for supporting themselves (and their

¹⁷ US Government Accountability Office, “Military Personnel: Collecting Additional Data Could Enhance Pilot Retention Efforts,” [GAO-18-439](#), June 2018.

¹⁸ Chappel, Bill and David Schaper, “[United and American Airlines Tell 32,000 Employees They’re Now on Furlough](#),” NPR.org, October 1, 2020; Reed, Dan, “[Stay or Go? Older Pilots’ Decisions on Early-Out Offers Will Impact the Futures of Thousands of Their Colleagues and Their Airlines](#),” Forbes.com, July 14, 2020.

families) during training to ensure that they can commit to the full-time training needed for an accelerated training curriculum.

- The foundation of the Forces to Flyers training demonstration was contracts between US DOT and the flight schools to deliver training. The expectation was that flight schools would develop agreements with the trainees that explained what was required from the trainees in order to participate and what the trainees would receive from participating in the demonstration. However, participants indicated the desire for more information regarding the obligations of the flight schools to provide sufficient opportunities for training flights and to understand the parameters for both advancement and termination. Clear communication of trainee performance requirements and training provider responsibilities can benefit both parties by setting expectations in advance and specifying how any shortcomings will be identified and addressed.

6. Conclusion

The Forces to Flyers flight training demonstration generated a great deal of interest from the veteran community. Despite unprecedented challenges, such as the COVID-19 public health emergency and historic wildfires in the West, the demonstration resulted in 32 of the 44 veterans earning a commercial pilot's license with multi-engine rating. The commercial multi-engine pilot's license allows those veterans to start a career as a professional pilot. Further, 25 participants completed the entire training curriculum through CFI-Instrument. Working as a certified flight instructor is the most common way to gain the flight hours necessary to qualify for the ATP certificate (necessary to pilot for an airline).

The veterans who successfully completed the flight training were grateful for the opportunity, describing the flight training demonstration as "a life changing experience," "a game-changer," and "an incredible opportunity."

The financial assistance made the otherwise cost-prohibitive flight training financially possible. The completion rates were better than a comparison flight training program, while the costs of the flight training for the demonstration were lower than the typical cost of flight training.

For both veterans and non-veterans, the high cost of flight training is likely to remain an important barrier to people interested in becoming airline pilots. The cost of vocational flight training, from zero experience to becoming a flight instructor for regular and instrument operations, is approximately \$62,000 (not including housing or other expenses). In addition to public policy options, the airlines and private-sector operators themselves may be in a better position to recruit, screen, and train future pilots as the needs of the labor market change.

7. Appendix: Research on Pilot Career Pathways

This appendix presents research on pilot career pathways conducted as part of the 3-year Forces to Flyers research initiative. The research was used to better understand the barriers to becoming an airline pilot during the pilot shortage that existed at the time the project was conceived and to develop a flight training demonstration that would effectively prepare veteran participants for a career as an airline pilot. While the research was originally conducted in the 2017-2019 period, in some areas, it has been updated to address developments in the labor market for pilots that occurred after the initial research was conducted.

This research addresses the following topics, with attention paid to special circumstances of veterans:

- The training path of an airline pilot;
- Types of flight schools;
- The costs of flight training; and
- Airline-sponsored training programs.

7.1 Training Path of an Airline Pilot

The career path to becoming an airline pilot includes not only satisfying the requirements through instruction, but also through qualifying flight experience. Major milestones in the training sequence and career progression of an airline pilot are described in more detail below.

As a general overview, a student pilot first undergoes a series of flight training stages ending with the commercial pilot's license. The commercial pilot's license allows one to undertake paid employment as a pilot. However, to be employed as an airline pilot (as opposed to being employed in flight instruction, crop-spraying, pipeline inspection, air tours, etc.), one must gain additional flight hours and undertake additional training. Thus, after earning a commercial pilot's license, many people will become qualified as flight instructors in order to gain more flight hours while earning an income by giving flying lessons.

Once pilots have gained the necessary flight hours and earned their airline transport pilot (ATP) certificate, pilots take first officer positions with regional airlines as the first step in their airline pilot careers. As they build up experience and seniority, they may have an opportunity to be promoted to captain, with additional pay and responsibilities. Serving as a captain with a regional airline also brings the potential to be recruited by a major carrier. Often there is a formal relationship between the major carrier and its regional partners or subsidiaries (for example, between Endeavor Air and its corporate parent, Delta Air Lines).

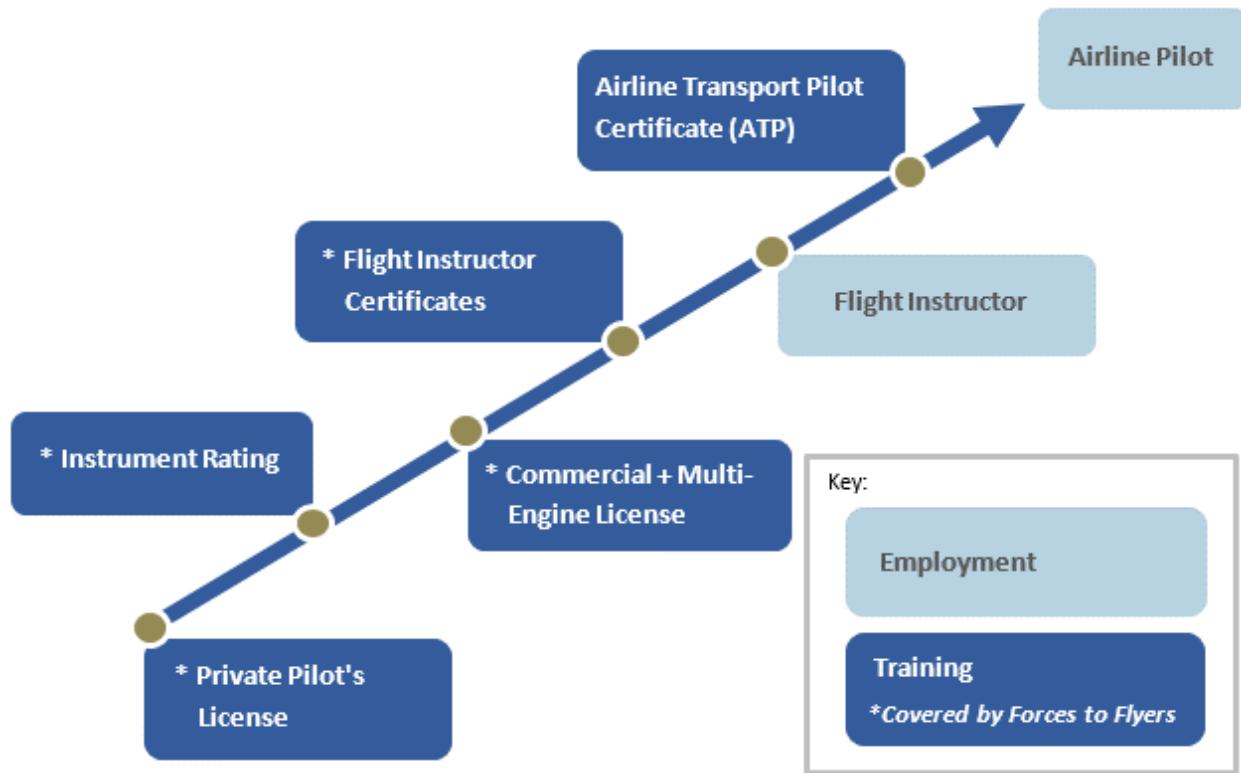
The transition from a regional to a major carrier means returning to the first officer position, but first officer positions at the major carriers are still widely sought after due to their excellent pay and benefits.

In addition, there can be lifestyle factors that make flying with a major airline more attractive, such as the ability to fly long-haul flights with larger aircraft, increased job protections, and greater choice of flying routes and base location. After attaining the requisite seniority with a major airline, a pilot can then be promoted to captain.

There can be many exceptions to the general sequence described here, as well as alternate career paths that involve flying cargo or private aircraft, business jets, or working for an air carrier overseas.

The training and career path of a pilot is depicted in Figure 11, below (and can be found in Section 2.1 in the body of this report). Training stages are indicated with dark blue boxes and employment stages are indicated with light blue boxes. Each of these stages is described in more detail below.

Figure 11: Standard Airline Pilot Career Path



The FAA requirements for various certificates and ratings reflect a minimum number of hours of qualifying flight time. The requirements may also specify a minimum number of hours for certain types of flight time such as solo flight or cross-country. Some of those flight hours may be accumulated via flight simulators. To receive a particular certificate, a pilot must pass the FAA Airmen Knowledge test for that certificate and also pass a check ride, which is akin to a practical exam, whereby the candidate demonstrates proficiency in certain tasks. Check rides are administered by an FAA inspector or an FAA

Designated Pilot Examiner for a fee.¹⁹ The requirements to earn certain ratings, such as the instrument rating and multi-engine rating, do not have any written exams, only an oral examination and check ride upon accumulating the minimum number of hours.

The first certificate a pilot trainee earns is the private pilot's license, which is the most limited in terms of what privileges it grants. Requirements include passing an Airmen Knowledge test, at least 35 flight hours (number of hours depends on the type of flight school), and a third-class medical certificate. A private pilot's license allows pilots to fly single-engine fixed-wing aircraft below 18,000 feet with the ability to carry passengers (without compensation), but only under weather conditions that allow one to fly under visual flight rules (VFR), meaning no restrictive ceiling or visibility. The pilot must also obtain the type-rating for the aircraft they are piloting. Pilots then earn their instrument rating, which allows them to operate aircraft under instrument flight rules (IFR). IFR is necessary when flying in low ceiling and/or low visibility settings. Obtaining an instrument rating requires an additional 35 flight hours using instruments or navigation systems, an oral exam, and a check ride. A pilot may use simulators for some portion of the flight time requirements.

The next certificate a pilot can earn is the commercial pilot's license, which requires an additional 120 hours of flight training (190 cumulative), a written exam, an oral exam, and a check ride. The commercial pilot's license allows the pilot to be compensated for flying. The multi-engine add-on rating can be done at any point following receipt of the private pilot's license, but it is usually done simultaneously with the commercial pilot's license or immediately afterwards. The multi-engine certificate allows pilots to operate fixed-wing aircraft with multiple engines and requires at least 15 hours of flight training as pilot-in-command of a multi-engine aircraft, an oral exam, and a check ride.

After earning a commercial pilot's license with instrument rating and a multi-engine rating, a pilot will typically have around 250 flight hours. However, 1,500 flight hours are needed to qualify for the ATP, which is needed to fly as an airline pilot. To gain those flight hours, pilots typically work as a certified flight instructor (CFI). Becoming a CFI requires 40 hours of ground school, of which 20 hours can be waived with a college degree, and a minimum of 25 hours of flight training. Pilots require a CFI-Instrument to provide instruction in instrument training and a Multi-Engine Instructor (MEI) to provide instruction for multi-engine aircraft. The CFI-Instrument does not require any additional hours; however, in order to be prepared for the written exam and check ride, pilots typically attend an additional 10 hours of ground school and take 10 hours of flight training. The MEI certification has the same requirements as the CFI-Instrument, except that it also requires the pilot to have logged 5 hours of Pilot in Command (PIC) status on a multi-engine aircraft.²⁰

While an unrestricted ATP requires 1,500 hours of flight experience, pilots with an aviation-related education are eligible to receive a Restricted ATP (R-ATP) with less flight experience. Pilots with a bachelor's degree and at least 60 hours of relevant classroom instruction require 1,000 total flight

¹⁹ Federal Aviation Administration, “[Designated Pilot Examiners](#),” FAA.gov, last accessed December 19, 2018.

²⁰ Information from interviews with flight school representatives contacted as part of this research.

hours, associate's degree holders with 30 hours of classroom instruction require 1,250 total flight hours, and pilots with military flight experience require 750 total flight hours. Pilots with an R-ATP can only serve as first officers, not captains. After 1,500 flight hours, R-ATP holders can upgrade to the unrestricted ATP. To obtain the R-ATP or ATP certificate, a pilot will also need an additional training course, the ATP-Certification Training Program (ATP-CTP), and pass a knowledge test and check ride.

7.2 Types of Flight Schools

Airline pilots are mostly trained through three sources:

1. FAA-certified flight schools at a college or university, typically through 2- and 4-year degree programs,
2. Non-collegiate vocational schools, and
3. Military service.

Degree-granting flight schools are based at colleges or universities. A student must pay both standard academic tuition and the fees associated with flight training. Some universities integrate the flight school directly, employing flight instructors, owning airplanes, and operating air fields. In other situations, the school simply makes arrangements with a nearby vocational flight school for the additional flight training. An advantage of pursuing flight training at a degree-granting flight school is that the pilot would qualify for an R-ATP with fewer flight hours than someone who went to vocational flight school. There are dozens of degree-granting flight schools that are authorized to certify graduates for the R-ATP.²¹ Degree-granting flight schools typically use a Part 141 flight curriculum.

Vocational flight schools focus solely on providing flight training and do not offer academic degrees. One representative of a vocational flight school described his school as the aviation equivalent of a commercial truck driving school or a cosmetology school. Vocational schools train people who are interested in obtaining a pilot's license for recreation or as a career. Vocational flight schools also provide training under commercial contracts. For example, they train prospective pilots for foreign airlines, former military helicopter pilots who are transitioning to become commercial airline pilots, and newly recruited US military personnel for the beginning stages of flight training. Vocational flight schools may be certified under Part 61 or Part 141 of the FAA regulations. Part 61 flight schools have more flexible curriculums and are usually smaller flight schools that cater to people who wish to earn pilot's licenses for recreation purposes. Part 141 flight schools utilize FAA-approved curriculums and are generally favored by people targeting an efficient training process to pursue a career in aviation.

The **military** branches provide flight training to produce the fighter pilots, helicopter pilots, and cargo pilots needed for the military's readiness goals. After their service commitments are fulfilled, those

²¹ Federal Aviation Administration, "[Institutions Authorized to Certify its Graduates for an Airline Transport Pilot Certificate with Reduced Aeronautical Experience](#)," October 24, 2018.

military-trained pilots can undergo a relatively limited amount of additional training to transition to careers in civil aviation. Previously, the military was the primary source of pilots for civil aviation, accounting for up to 80 percent of airline pilots.²² However, the military is now facing its own challenge related to pilot shortages and has increased the length of service commitments for military pilots, offered substantial bonuses for extending service commitments, and is considering recalling pilots who had already left service to meet the deficit.

There is also a fairly popular hybrid program in which people attend a community college to earn a 2-year degree and take flight training at a nearby affiliated vocational flight school. In that case, they can access federal student loans to cover their flight schools costs, while also gaining the option to qualify for an R-ATP with slightly fewer flight hours.

In choosing between a vocational flight school and a degree-granting flight school, a person would likely consider the following:

- The total cost of the education will be higher when obtaining a degree from a college or university because one must pay for the standard academic tuition in addition to the fees associated with flight training. However, students can access federal student loans for those expenses, which offer lower interest rates than private personal loans.
- Obtaining a degree with the relevant aviation-related course reduces the number of flight hours needed because one can qualify for an R-ATP. Having a bachelor's degree with 60 credit hours of relevant coursework means one needs only 1,000 flight hours to get an R-ATP. Someone with 30 hours of relevant coursework and an associate's degree needs only 1,250 flight hours to get an R-ATP. Someone without a degree needs 1,500 flight hours for a standard ATP.
- The training to earn a commercial pilot's license through a college or university will take longer than through a vocational flight school. Some vocational flight schools claim that a person undertaking full-time training at a vocational flight school can earn a commercial pilot's license in as short as 9 months. An associate's degree and a bachelor's degree usually require 2 and 4 years, respectively.
- Factoring in the time needed for both formal training and the time needed to accumulate flight hours, a vocationally trained pilot could be qualified for an ATP and employment at a regional airline in 2 to 4 years from start to finish. A degree-earning pilot needs 4 years to obtain their degree and certifications up to CFI.²³ A university-trained pilot could be qualified for an R-ATP and employment at a regional airline in 5 to 6 years from start to finish.

²² Van Dam, Andrew, "[What are the odds of a former fighter pilot being at the controls of your plane?](#)" Washingtonpost.com, April 20, 2017.

²³ One of the interviewed institutions schedules their students to complete CFI training in their second year and then hires the third- and fourth-year students as flight instructors for the remainder of their education.

- Although not a requirement at all airlines, major airlines tend to list a preference for bachelor's degrees for first officer positions. Thus, a bachelor's degree has a positive impact on the long-term earning potential of a pilot. However, during the pilot shortage that existed prior to the COVID-19 public health emergency, it was not clear how closely the major airlines were attached to their stated recruitment preferences. For instance, JetBlue had started a training program that guaranteed employment at JetBlue and the only education requirement was a high school diploma or GED.²⁴

7.3 Costs

The price of flight training, starting with zero flight experience through the commercial pilot certification and obtaining certification as a flight instructor, is approximately \$62,000.²⁵ This figure is relevant to both vocational flights schools and the additional fees that someone attending a college or university would spend in addition to academic tuition. A few flight schools publicize prices below \$62,000; the lowest price found via web search was \$48,000.²⁶

Table 8 presents the typical prices of training for the various certificates and ratings earned during the career path towards qualifying for the ATP certificate. Note that the prices assume the FAA minimum number of flight hours to achieve certification and the use of the lowest-cost aircraft available. Some students may require additional hours at additional cost in order to gain proficiency. The cost of training through the commercial license with multi-engine add-on is \$48,500. The flight instructor certificate costs an average of \$8,500 and the add-on for giving instruction for instrument operations costs around \$5,000 for a total cost of \$62,000.

Additional costs that are usually incurred by a student pilot are textbooks, headset, iPad (for storing flight charts), FAA examiner fees, and FAA medical certificates. While not always required, many flight schools require trainees to take out private rental insurance, which covers bodily harm and property damage. The cost is generally \$100-\$200 a year.²⁷

Table 8: Average Flight Training Costs by Course

	Private Pilot's License	Instrument Rating	Commercial License	Multi-Engine Add-on	Certified Flight Instructor (CFI)	CFI – Instrument Add-on	Total
Average Cost	\$10,500	\$11,000	\$22,000	\$5,000	\$8,500	\$5,000	\$62,000

²⁴ JetBlue, “[Gateway Select](#),” JetBlue.com, 2017.

²⁵ The source of this estimate is web research conducted by the Volpe Center as part of this research effort, corroborated through interviews.

²⁶ [Falcon Aviation Academy: Part-141 Flight School](#), last accessed December 19, 2018.

²⁷ AssuredPartners, “[AOPA Renter Insurance](#),” Aopa.org, last accessed December 19, 2018.

7.3.1 Benefits Available to Veterans

Veterans undertaking flight training may be eligible for multiple financial assistance programs via the Veterans Administration (VA). The amount and type of financial support available depends on whether the veteran is in a public degree-granting program, private degree-granting program, or vocational training program. Veterans have the ability to make use of their Post-9/11 GI Bill or Montgomery GI Bill benefits. The Post-9/11 is paid directly to the training institution. The Montgomery Bill is reimbursed to the veteran, requiring the veteran to pay costs upfront. Often, veterans may take out short-term loans to make the tuition payment and pay back the loan when reimbursed by the VA.

The VA benefits available for **vocational flight training** are as follows:²⁸

- The Montgomery Bill provides roughly \$1,900 per month and the veteran is reimbursed for training after completion.
- The Post-9/11 GI Bill provides roughly \$13,000 per academic year and pays the funds directly to the school. If training spans multiple academic years, the student can receive this benefit for up to 4 academic years (36 months).
- Neither offers a housing allowance and neither covers the costs of the private pilot's license, the first step in the training curriculum. The reasoning behind the restriction on paying for private pilot's licenses appears to be that some veterans will obtain a private pilot's license for recreational purposes rather than in pursuit of a career as a pilot.

The VA benefits for **degree-granting flight training** programs are as follows:

- The Post-9/11 GI Bill benefits pay all tuition and fees at a *public* university or college with no limit.
- The Post-9/11 GI Bill will pay for tuition and fees at a *private* university or college up to a limit of \$23,000 per academic year. If the private university participates in the Yellow Ribbon Program, the VA will match any additional financial support offered by the university. Web research found that the Yellow Ribbon program provides veterans with additional funding ranging from \$3,000 to \$20,000 per year, depending on the program.
- The Post-9/11 GI Bill provides a monthly housing allowance. The amount of the housing allowance is determined by the cost of living in different areas. It ranges between \$1,000 and \$4,000 per month for a single veteran and is typically around \$1,600.

The VA's assessment of whether flight training costs are a "fee" and, as such, are eligible for VA benefits varies by institution. One cause for the variability in the treatment of flight training is that VA benefits are administered on a state-by-state basis. Whether certain flight training costs are covered seems to be driven in part by (a) whether the flight costs are counted as "credit hours" in the curriculum and (b)

²⁸ The dollar amounts of the benefits are adjusted annually to keep pace with changes in educational costs over time. The dollar amounts reported here reflect the benefits available in the 2018/2019 time period.

whether the flight program is conducted “in-house” at the school rather than contracted out to a separate flight school. Even if the VA approves funding for the majority of the flight training fees based on the above criteria, the VA may or may not cover the costs associated with the private pilot’s license at a college or university. The private pilot’s license is never covered at a vocational flight school.

7.3.2 GI Bill Benefit Scenarios

While the details of each of the VA programs are complicated, the following scenarios are descriptions of the typical or representative funding gap a veteran faces in obtaining training for the private pilot’s license through commercial pilot’s license to the flight instructor certification including CFI-Instrument.

As noted above, in practice, there is significant variation in cost coverage by school. However, certain observations can be made. Flight training at a vocational school can be accomplished faster than at either a 2-year or 4-year college.²⁹ The top line cost of flight training at a vocational school is lower than the cost of flight training at a 2-year or 4-year college due to not needing to pay tuition for the academic courses that are part of a degree program. However, after accounting for GI Bill benefits available for students at colleges, the final cost to the veteran is generally *higher* at a vocational school. The difference is due to higher levels of coverage for tuition and fees, the existence of a housing stipend, and the possible availability of additional funds via the Yellow Ribbon program for students at institutes of higher learning. Students at vocational schools are not eligible to receive a housing stipend and Yellow Ribbon programs are generally not present at vocational schools. A discussion of the various GI Bill benefits available at different types of flight schools follows.

A veteran training at a vocational flight school would face a typical funding gap of approximately \$62,000. This estimate is derived by assuming a 12-month flight training program, 2 months of which are required for the private pilot’s license, and a monthly housing expense of \$1,600 for a total of \$81,000 in training costs. The veteran would receive 10 months of benefits at \$1,900 per month from the Montgomery Bill (\$19,000 total), leaving a gap of \$62,000. The veteran would have to pay the full tuition up front in some cases and only receive reimbursement after the training was completed. Federal student loans are not available to veterans pursuing vocational flight training.

A veteran pursuing a bachelor’s degree at a public 4-year university would face a typical funding gap of roughly \$30,000 after 4 years. At a public university, all tuition and fees would be covered and a housing allowance provided for full-time students. The GI Bill covers the entirety of public tuition at any public university, regardless of the cost. For some public universities—due to conducting flight training in-house, the flight training being counted as credit hours in a curriculum, or generous Yellow Ribbon

²⁹ Someone who trains at a vocational flight school would require 1,500 flight hours to qualify for an ATP, compared to 1,250 hours for someone who trains as part of an associate’s degree and 1,000 hours for someone who trains as part of a bachelor’s degree (the degrees must include a minimum number of credit hours in certain aviation-related topics). Nonetheless, total time until one is qualified for an ATP is expected to be less for people training at a vocational school than for the other two flight training options discussed.

programs—there is **zero** burden levied onto a veteran related to flight training fees, tuition, and housing. However, this criteria is not met by all public universities. The estimated gap is based on an assumption of full tuition coverage, full housing coverage, flight training costs of \$62,000, and \$8,000 annually in Yellow Ribbon funding over 4 years. The Yellow Ribbon funding totals \$32,000, which can generally be contributed towards offsetting flight costs, bringing the remaining burden of training to \$30,000. Despite the estimated burden, many public universities do manage to get flight training fully covered and federal student loans are available to veterans pursuing training at a university.

A veteran pursuing an associate's degree at a public 2-year community college would face a funding gap of \$46,000 after 2 years. At a community college, all tuition and fees would be covered and a housing allowance provided for full-time students. The GI Bill covers the entirety of public tuition at any college, regardless of the cost. For some public colleges—due to conducting flight training in-house, the flight training being counted as credit hours in a curriculum, or generous Yellow Ribbon programs—there is **zero** burden levied onto a veteran related to flight training fees, tuition, and housing. However, this criteria is not met by all community colleges. The estimated gap is based on an assumption of full tuition coverage, full housing coverage, flight training costs of \$62,000, and \$8,000 annually in Yellow Ribbon funding over 2 years. The Yellow Ribbon funding totals \$16,000, which can generally be contributed towards offsetting flight costs, bringing the remaining burden of training to \$46,000 after 2 years. Despite the estimated burden, many public community colleges do manage to get flight training fully covered and federal student loans are available to veterans pursuing training at a community college. A further distinction to make for this scenario is that while it is relatively easy to remain full-time at a large university with many course offerings, community colleges are more likely to have gaps in course schedules, which could force veterans to receive limited benefits or delay training in a given semester.

A veteran pursuing a bachelor's degree at a private 4-year university would face a funding gap of approximately \$54,000 after 4 years. At a private university, tuition and fees up to \$23,000 would be covered and a housing allowance received for full-time students. A veteran can expect to face \$62,000 in training costs over 4 years. Based on market research, this scenario assumes a private school annual tuition of \$30,000 and a Yellow Ribbon annual benefit of \$9,000, of which \$7,000 would be used to cover the gap between the private tuition and the GI Bill coverage maximum of \$23,000. Housing is covered under the GI-Bill at institutes of higher learning. The total cost of instruction over 4 years would then be \$182,000 and the total amount of instructional assistance received by the veteran would be \$128,000, leaving a gap of \$54,000. Federal student loans are available to veterans pursuing training at a university, which could help assist with the cost of flight training.

A veteran pursuing a 2-year associate's degree at a private college would face a funding gap of approximately \$44,000 after 2 years. At a private college, tuition and fees up to \$23,000 would be covered and a housing allowance received for full-time students. A veteran can expect to face \$62,000 in training costs over 2 years. Based on market research, this scenario assumes a private school annual tuition of \$22,000 and a Yellow Ribbon annual benefit of \$7,000 to cover flight fees. Housing is covered under the GI-Bill at institutes of higher learning. The total cost of instruction and training over 2 years

would then be \$106,000 and the total amount of instructional assistance received by the veteran would be \$60,000, leaving a gap of \$46,000. Federal student loans are available to veterans pursuing training at a university, which could help assist with the cost of flight training.

Table 9 presents typical financial options for veterans related to five methods of pursuing flight training. While the discussion above relates to typical costs and coverage of different categories of flight schools, there is substantial variation within each category. The variation results from differences in the base tuition, whether the fees are associated with the flight training portion of the degree program, and the existence and generosity of a school's Yellow Ribbon program. To reflect the variation in the costs associated with the different training programs, the final row of Table 9 presents a *range* of typical costs faced by a veteran after accounting for the GI Bill benefits. The ranges found at public schools are due to some schools being eligible for benefit levels that cover the full cost of flight training, while others are not eligible to use any veteran's benefits towards flight training. The ranges at private schools, and their variance, is due to differing Yellow Ribbon levels and the possibility of using more years of Yellow Ribbon funding towards flight training fees during a 4-year program, as opposed to during a 2-year program.

Table 9: Financial Considerations Related to Flight Training Options for Veterans

	Vocational Flight School	Bachelor's Degree (Public)	Bachelor's Degree (Private)	Associate's Degree (Public)	Associate's Degree (Private)
ATP/R-ATP (Airline Transport Pilot) Requirement	1,500 hours	1,000 hours	1,000 hours	1,250 hours	1,250 hours
Time to Complete Training Through Commercial Pilot's License and CFI-I	9-18 months	4 years	4 years	2 years	2 years
Montgomery Coverage	\$1,900 monthly	(not relevant)	(not relevant)	(not relevant)	(not relevant)
Post-9/11 Coverage	\$13,000 annually	All tuition and fees	Tuition and fees up to \$23,000	All tuition and fees	Tuition and fees up to \$23,000
Private Pilot's License Benefits Eligible?	No	In some cases	In some cases	In some cases	In some cases
Housing Allowance	No	Yes	Yes	Yes	Yes
Yellow Ribbon Eligible	No	Yes	Yes	Yes	Yes
Typical Academic Tuition	\$0	\$10,000 per annum	\$30,000 per annum	\$4,000 per annum	\$22,000 per annum
Illustrative Housing Costs³⁰	\$1,600 per month	\$1,600 per month	\$1,600 per month	\$1,600 per month	\$1,600 per month
Typical Flight Training Cost (FAA minimums)	\$62,000	\$62,000	\$62,000	\$62,000	\$62,000
Typical Total Cost of Flight Training, Housing, and Tuition	\$81,200 (12 months)	\$159,600 (36 months)	\$239,600 (36 months)	\$98,800 (18 months)	\$134,800 (18 months)
Typical Veteran's Education Benefits	\$19,000	\$72,000	\$128,000	\$24,000	\$60,000
Typical Veteran's Housing Benefits	N/A	\$57,600	\$57,600	\$28,800	\$28,800
Typical Remaining Costs of Training, Tuition, and Housing after VA Benefits	\$62,200	\$30,000	\$54,000	\$46,000	\$46,000
Range of Remaining Training and Housing Costs (Based on Cost Structures of Selection of Schools)	\$41,000-\$80,000	\$0-\$62,000	\$36,000-\$62,000	\$0-\$62,000	\$40,000-\$62,000

³⁰ These housing costs are based on a single person's VA housing benefit on the east coast of Florida.

7.3.3 Cost of Additional Training

The discussion of costs above relates to the training needed for pilots to start their careers, i.e., those costs related to obtaining the commercial pilot's license and the certificates to become a flight instructor. Those qualifications will allow a new pilot to start earning income while working as a flight instructor and gaining flight hours in order to qualify for the ATP or R-ATP certificate, which is needed to pilot for an airline. To actually earn the ATP or R-ATP requires additional training.

Prior to the COVID-19 public health emergency, when the pilot labor market was tight, pilots were recruited by a regional airline when they neared the relevant flight hour requirement for the ATP or R-ATP. In order to earn the ATP or R-ATP certificate, the pilot must take the ATP-CTP course, which generally costs around \$4,300,³¹ and then sit the ATP exam, which costs \$150.³² It is industry practice for regional airlines to pay for the ATP-CTP for their new hires or to offer tuition reimbursement if the student already paid out of pocket.

A type rating is also required to fly commercial jet airplanes. The type rating training is also provided by the regional airline for the type of aircraft the pilot will operate as first officer and is comprised of simulator training. A type rating undertaken without airline support could cost several thousand dollars.

7.3.4 Sources of Funding and Financing

US airlines have traditionally required pilots to shoulder the cost of training themselves either in the form of enlisting in the military, whereby they would receive flight training, or by paying out-of-pocket for collegiate or vocational flight school. However, some foreign airlines pay the entire training costs of their new recruits in so-called *ab initio* training. The funded *ab initio* cadet programs are more common in the Middle East and China,^{33,34} while Europe takes an approach similar to US airlines. However, there were reports in 2018 and 2019 that more and more airlines world-wide were starting *ab initio* programs, paid for by the airline.³⁵

Student pilots are eligible for federal **student loans** when they undertake their training as part of a degree program at an accredited college or university. However, federal student loans are only available to students at accredited schools. While a few vocational flight schools have accreditation and are thus eligible for federal student loans, most are not.³⁶

Students at vocational flight schools must then use personal loans and the student may need a co-signer such as a parent or spouse. Some students may use a home equity loan for their flight training. There

³¹ Based on an average of six flight schools.

³² Psi, "[FAA Airman Knowledge Testing Exams](#)," Catstest.com.

³³ Qatar Airways, "[Cadet Pilot Program](#)," Qatarairways.com, January 16, 2019.

³⁴ Emmett, Arielle, "[China Needs Pilots](#)," Airspacemag.com, August, 2015.

³⁵ Goh, Brenda, "[Airlines, flight schools try to lure pilots with cheaper - or free – training](#)," Reuters.com, February 9, 2018.

³⁶ Lippe-McGraw, "[Dream of Becoming a Pilot? Here's how to Pay for Flight School](#)," August 2, 2019.

are some special loan programs targeted to flight training that may be made available through a partnership between the loan provider and the flight schools. The best options may delay repayment until training is completed. In all cases, since the loans are not federally backed student loans, they are subject to higher interest rates.

There are some scholarships available to the general public in amounts ranging from \$1,000 to \$10,000. Stripes to Bars is a new non-profit that offers assistance to military veterans who want to undertake flight training.³⁷ Table 10 illustrates some of the available scholarship funding.

At the state government level, in 2017, Florida provided \$2 million to be used as grants to support up to 60 students in obtaining certifications up to the Multi-Engine Instructor and the ATP-CTP. The grants were part of a partnership with Silver Airways and Embry-Riddle Aeronautical University.³⁸

Table 10: Scholarships for Flight Training

Name	Amount	Source
AOPA	\$2,500 to \$10,000	https://www.aopa.org/
James C. Ray Scholarship Fund	\$5,000 to \$20,000	http://www.cfaaf.com/application.html
The LeRoy W. Homer Jr. Scholarships	\$9,000	www.leroywhomerjr.org/
Experimental Aircraft Association	\$5,000+	https://www.eaa.org/eaa/youth/scholarships
The Amelia Earhart Memorial Scholarships and Awards	Up to \$20,000	https://www.ninety-nines.org/
Stripes to Bars	Approximately \$5,000	https://stripestobars.org/

³⁷ Stripes to Bars, <https://stripestobars.org/>.

³⁸ Hanns, Melanie, “[State of Florida and Silver Airways to Provide Career Pathway for Pilots](#),” Lift.Erau.edu, 2017.

7.4 Airline-Sponsored Training Programs

Major and regional airlines have a variety of programs aimed at recruiting student pilots while they are at the training stages of their career development. However, many of these programs have gone dormant due to the drop in demand for air travel associated with the COVID-19 public health emergency.

These “cadet” programs were aimed at high-performing students training at vocational and collegiate flight schools. They had different characteristics, but most featured some sort of career mentoring by current airline pilots, guaranteed interviews upon graduation, positions as CFIs at flight schools to gain flight hours, and preferential seniority rankings. In addition, most regional airlines were offering tuition reimbursement, signing bonuses, payment of tuition, and provision of housing and ground transportation for the ATP-CTP and type rating trainings. However, the latter collection of benefits seemed to be offered to all new recruits, not just those involved in a cadet program.

In addition, airlines had begun to partner with specific flight schools to develop specialized curriculums, set pricing, and offer special financing arrangements through lenders. A brief summary of the JetBlue and American Airlines training programs follows in Table 11. In February 2020, United Airlines purchased a flight training academy (formerly Westwind School of Aeronautics in Phoenix, Arizona) with plans to provide a similar focused training curriculum as part of its Aviate program.

Table 11: Summary of Airline-Sponsored Training Programs

Major Airline	Regional Partners	Flight Schools	Costs and Benefits
American Airlines Cadet Academy	Envoy PSA Piedmont (These regional airlines also provide additional benefits: partial tuition reimbursement, signing bonuses, tuition, and living expenses for the ATP-CTP course)	American Flyers (Dallas, TX; Pompano Beach, FL) CAE (Phoenix, AZ) CTI (Millington, TN)	Set, all-inclusive tuition (\$73,000 - \$89,000 depending on location) Discover Loan Program, for tuition and living expenses up to \$100,000 Flow-through hiring from regional Position as CFI
JetBlue Pilot Gateway Select Program	None	CAE (Phoenix, AZ)	Tuition of \$125,000 Wells Fargo loan for up to \$80,000 JetBlue specific curriculum, including training in Embraer 190s Position as CFI First officer position at JetBlue upon completion

7.5 Summary

The career path to becoming an airline pilot includes not only satisfying the requirements through instruction, but also through qualifying flight experience. Prospective pilots face the obstacle of the high upfront costs of training and the period of time required to build qualifying hours towards an ATP.

The cost of vocational flight training from zero experience to becoming a flight instructor for regular and instrument operations is approximately \$62,000. Students who are enrolled in flight training programs at accredited schools (usually a 2-year community college or a 4-year college or university) can access federal student loans for those costs. However, students enrolled at a vocational school (which are generally not accredited) must use personal or career training loans and may not qualify if they have poor credit. The interest rates on personal and career loans can be two to three times higher than the rate on federal student loans. Although some loans will allow the student to make minimal payments while undertaking training followed by higher payments once they are employed, others do not. As a consequence, students may need to undertake training only on a part-time basis and hold down a job in order to pay their loans and living expenses. Training only part-time delays a pilot's entry into the field.

GI Bill benefits available to veterans can significantly reduce the cost of flight training and may be used at vocational flight schools and degree-granting colleges and universities. While training done at a vocational school can be accomplished faster than at a college, the cost to the veteran after accounting for GI Bill benefits is generally higher. The difference is due to higher levels of coverage for tuition and fees, the existence of a housing stipend, and the possible availability of additional funds via the Yellow Ribbon program for students at institutes of higher learning. Thus, substantial costs for flight training still remain for veterans who train at vocational flight schools.

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