

Pre-College Aviation Student Recruitments: Strategies, Challenges, and Lessons Learned

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Introduction and Background

According to Boeing [1], the estimated long-term demand of new pilots from 2025 – 2044 is 660,000. As the aviation industry faces pilot and management personnel shortage, early engagement and targeted recruitment at the pre-college level become the strategies many collegiate aviation programs implement to build awareness and encourage participation of the students. This study discusses pre-college student recruitment at a new aviation program and an established aviation program from the perspective of the faculty. This study focuses on key areas such as program size and structure, local and national feeder high schools, recruitment activities and strategies, student interests, and enrollments.

In this paper, faculty experiences of outreaching local high schools will be discussed to analyze the effectiveness of different recruitment strategies. This research aims to discuss different strategies used during pre-college aviation recruitment and how do these strategies affect student enrollments, retention, and program growth. Factors in promoting student enrollment and engagement including sustained relationships with education partners and visibility of aviation industry in the community are also explored.

This study also discusses challenges that faculty encountered during the recruitment process such as limited institutional resources, lack of name recognition, issues with under-prepared, minority or first-gen students, seeking partnership with flight schools, and competition from other STEM and technical institutions. The findings of this study may be useful to collegiate aviation programs in constituting an effective recruitment framework in either satisfying short-term enrollment or long-term goals. This study may also benefit aviation program administrators and faculty in seeking possible solutions to address their recruitment needs and ultimately achieve sustainable aviation programs.

Literature Review

The aviation industry is currently navigating a high demand for qualified flight personnel, driven by a confluence of demographic shifts, mandatory retirements, and regulatory interventions. Previous studies have explored the recruitment challenges in aviation programs. Regulatory changes, particularly the First Officer Qualification (FOQ) requirement mandating 1,500 flight hours for airline employment, affected the traditional collegiate pilot pipeline [2]. The increased time and financial investment required to reach airline eligibility reshaped how students evaluate the viability of an aviation career. Lutte and Lovelace [2] found that students' perceptions regarding compensation, career progression, and quality of life within the regional airline sector influence both entry into and persistence within the collegiate pathway.

Concurrently, regional airlines have experienced hiring challenges, which have required modifications to hiring and wage strategies [3]. Higher entry-level wages and signing bonuses are strategies industry stakeholders have employed to relieve pipeline pressure; however, they directly affect downstream hiring than upstream recruitment efforts. Fowler et al. [4] also found

that although the overall population of certificated pilots has grown, population diversity within the supply pipeline has grown at a much slower rate. Lutte and Fowler et al. [3-4] suggest that recruitment into aviation programs is shaped not only by student interest; broader regulatory and labor-market structures may also influence perceptions of risk, cost, and career stability.

Beyond macro-level pressures, recruitment effectiveness may be influenced by how prospective students select aviation institutions. Research conducted by Jin [5-7] offers insights into the flight school selection process and the choice of flight training programs. Across these studies, interpersonal communication consistently emerges as a dominant influence. Personal interaction with CFIs and university representatives ultimately plays a strong role in influencing enrollment decisions [7]. These conclusions shed light on possible weaknesses with enrollment marketing efforts that focus exclusively on online student acquisition strategies, especially among domestic students. The distinction between domestic and international audiences was further illustrated by Jin [6], who showed marked differences between how each segment accesses and uses information. Domestic students placed greater importance on interpersonal channels and physical campus tours, while international students were limited by distance and relied more on electronic and virtual channels such as email and university websites.

Aviation students who enroll at a younger age, such as high school students pursuing flight training, base their decision on a combination of their expected training quality, the school's reputation, and costs [5]. This finding also shows how influential parents are in their child's decision-making, emphasizing the need for effective recruitment targeting not just students but also parents. Watts et al. [8] found that there are two layers to the motivation for becoming a pilot. The initial layer is exposure to aviation, which sparks interest. The second and more long-term layer is what they believe will gain from their career. Salary, travel, and lifestyle were among the reasons people chose to pursue aviation as a career. These two studies showed that recruitment strategies should build strong connections with people and back them up with reputable institutions that provide students with what they are looking for in a career.

Existing research suggests recruitment starts before students even get to college. In his research on formal aviation outreach programs, such as Young Eagles or Girls in Aviation Day, Lutte (2018a) proposed an aviation outreach model comprising four phases: preparation, engagement, sustainment, and evaluation. Programs such as these outreach efforts have helped many students gain exposure at an early age. Lutte [3] identified a limitation in aviation outreach programs: the lack of longitudinal outcome tracking to measure the transition from outreach participation to collegiate enrollment. These students typically become interested through mentoring or firsthand experience. Watts et al. [8] reinforce the importance of early exposure, reporting that initial aviation career interest frequently develops during childhood/adolescence, often through mentorship or direct experiential contact. Similarly, Jin [5] stated that teenagers are most impacted by experiential learning and trusted adults.

Recruitment strategies must also be considered in light of persistent demographic disparities within aviation education and the profession. Ison et al. [9] document long-term trends in minority participation within collegiate aviation, identifying statistically significant increases among some minority groups alongside stagnation or decline among others. While some minority populations have experienced gains, participation among women and certain

underrepresented groups has remained comparatively stagnant. Ison [10] extends this analysis by identifying a “leaky pipeline” phenomenon across certification stages. Although women increasingly enter aviation at the student pilot level, representation declines at advanced certification levels such as Airline Transport Pilot (ATP). Fowler et al. [4] project that without substantial intervention, demographic composition will change only gradually under current trajectories.

Johnson [11] provides qualitative insight into these patterns through a phenomenological study of Black collegiate aviation students. Participants report experiences of isolation, heightened visibility as one of the few minoritized individuals in their cohort, and reliance on supportive communities and student organizations. Albelo et al. [12] further indicate that students perceive diversity, equity, and inclusion (DEI) training as contributing to professional readiness and crew resource management when implemented meaningfully. Together, these studies suggest that recruitment of underrepresented students cannot be separated from institutional climate, mentorship, and visible support structures.

Schools have formed partnerships with employers in response to internal staffing pressures and budgetary constraints. Examining airline–higher education partnerships, Lutte and Mills [13] focus specifically on cadetship and pathway programs aimed at preparing students to enter airlines and thus act as recruiting initiatives. Examples of such initiatives included airlines sharing detailed career paths for certain positions and offering recruits conditional job offers. Potential barriers mentioned by Lutte and Mills [13] centered on misalignment between higher education recruitment messaging and recruiting efforts from partnered corporations. Recruitment may be paired with inclusive curricula and a supportive school environment to retain partnered students.

Research exists around demographics, school choice variables, outreach models, and airline–college partnerships. However, three areas of study appear to be less explored. Recruitment has been researched from the viewpoint of currently enrolled students [5-7, 11] and job hiring practices [3, 13] but less so from how collegiate programs execute pre-college outreach on an institutional level. Outreach models include early exposure as a key element [8, 14]. There has been limited research connecting faculty-led efforts and community outreach/partnerships to tangible enrollment numbers. The literature defines barriers and discusses overall strategies but lacks specificity when determining how collegiate programs foster and maintain local pipelines at different types of institutions (e.g., newly developed vs. well-established aviation programs). This study seeks to explore recruitment efforts from a faculty perspective and pipeline development at the regional level. Recruiting efforts will be compared across two institutional environments to provide research-backed recommendations on how collegiate aviation programs can attract students before they apply by creating partnerships in their local communities and converting exposure into enrollments.

Institutional Background

Bowling Green State University

The Bachelor of Science in Aviation Studies at Bowling Green State University is structured as a 4-year, cohort-based degree program with two specializations – Flight Technology and Operations (FTO) and Aviation Management and Operations (AMO) – designed to prepare students for professional pilot and aviation management careers in general and commercial aviation [15]. The program is AABI accredited and requires a minimum of 122 credit hours, including 4–12 hours of cooperative education, a 21-credit professional core, 42–46 credits of specialization coursework, additional required courses, a supplemental focus, technical electives, and general education (“BG Perspectives”) [15].

The FTO specialization is structured to educate and train professional pilots by combining academic instruction with structured flight training conducted under Federal Aviation Administration (FAA) Part 141 regulations, enabling students to pursue commercial pilot certification with reduced flight-time requirements compared to Part 61 pathways [16]. Flight operations in the FTO program are delivered through a long-standing operational partnership between BGSU and Bowling Green Flight Center, and are conducted at the University’s on-campus airport facility. To train over 1,100 students per year, the facility includes multi-building complex (over 40,000 sq. ft.), support staff of over 120 members [17], dedicated academic classrooms, dispatch facilities, simulator resources, aircraft maintenance support, an on-site PSI testing center for FAA written exams [16], and a fleet of Piper Archer, Piper Seminole, and Cessna 152 [18].

The FTO specialization aligns course sequences to pilot certification milestones, such as Private Pilot Ground School and Private Pilot Flight Instruction, followed by Instrument Ground School and Instrument Flight Instruction, and then Commercial Ground School/Commercial Flight Instruction and multiengine preparation (e.g., Multiengine Ground School) [15]. The curriculum also includes advanced technical coursework to support flight competence (e.g., Advanced Aerodynamics & Aircraft Performance, Advanced Aircraft Systems) and required supporting science content (e.g., Meteorology, College Physics I). The AMO specialization emphasizes the business and operational side of aviation (e.g., law, regulations, planning/design, accounting, economics), and includes an expanded co-op requirement (8-12 credits) [15]). Both specializations in the B.S. in Aviation Studies are AABI accredited with the following student learning outcomes (first two apply to AMO and FTO, third one is specific to FTO): SO1: Solve aviation-related problems using knowledge, skills, and aptitudes gained in the program to assure productive outcomes; SO2: Maintain professional and social relationships with others in developing, conducting, and promoting safe aviation operations; and SO3: Students in the flight technology specialization are expected to plan, organize, conduct, and complete a safe and efficient flight in single-engine aircraft, in accordance with all legal requirements [19].

Texas A&M University - Victoria

Texas A&M University - Victoria established the Bachelor of Science in Aviation primarily to address a significant labor market gap in the state. The program was funded and approved by the state government to provide accessible aviation education in an underserved region currently lacking nearby flight schools. The program is integrated in the College of Natural and Applied Sciences, and the university has reached a partnership with the local regional airport to conduct flight training operations. As a designated Minority Serving Institution (MSI), Texas A&M University - Victoria aims to leverage this program to provide new professional opportunities to underrepresented minorities and first-generation students within the Hispanic community. To support this initiative, the university has allocated geographic and facility assets, including its proximity to the local airport, which offers uncongested airspace and favorable weather for flight training. Academically, the curriculum is integrated within the college related to the STEM field, using a core group of faculties. The program is designed to take advantage of the regional interest, available facilities, generally favorable weather conditions, and growing job market.

The program offers two academic pathways, with a Professional Flight track, and an Aviation Management track. By participating in the Professional Flight track, students can ultimately obtain Certified Flight Instructor (CFI) and certain flight hours by the time of graduation. Aviation Management track students shall gain in-depth knowledge of the aviation industry needed to fill various ground-based roles in the field. The curriculum development in the new program focuses on the fundamental skills and knowledge the students need to obtain flight certification or to understand the industry. The structure of the curriculum includes general STEM courses required to obtain Bachelor of Science such as math and physics. The program also offers ground instruction and flight training to students in the Professional Flight track; and in-depth aviation courses such as Airline Management and Airport Planning Management to students in the Aviation Management track. However, the program has not designed any courses related to the emerging technologies in the aviation industry such as UAS or Artificial Intelligence. It is expected that the program will hire more faculty with related backgrounds for curriculum development when the first cohort of students reach upper division. A partnership has been reached between the university and the local regional airport to use the airport as the major facility for flight training.

To ensure the long-term sustainability of the program, Texas A&M University - Victoria has developed a strategic enrollment plan. The university anticipates an initial cohort of 5 students in the first year, with an expected growth of three additional new students annually over the first five years. This growth strategy assumes a 70% year-over-year retention rate. Based on these projections, the program expects to see its first graduates by Year 4. Table 1 shows the number of undergraduate enrollments of the two universities.

TABLE 1
Number of Undergraduate Enrollments of the Two Universities [20-22]

Bowling Green State University	2020	2021	2022	2023	2024
University Enrollment in Fall semester	14,429	13,871	13,308	13,432	14,207
Aviation Program Enrolled Students	361	359	380	480	638
Texas A&M University - Victoria	Fall 2020	Fall 2021	Fall 2022	Fall 2023	Fall 2024
University Enrollment in Fall semester	3482	3038	2858	2707	2627
Aviation Enrollment	N/A				

Due to data availability, this table presents the number of undergraduate enrollments at Bowling Green State University in Fall semester, and the enrollment of Aviation student by academic year. Bowling Green State University experiences steadiness from 2022 to 2024, with minor decline. On the other hand, Texas A&M University - Victoria had a steady decline from 3482 to 2627 in new student enrollment in the Fall semester.

Recruitment Strategy

Bowling Green State University recruitment strategy

Bowling Green State University recruitment strategy is structured as a coordinated, multi-stage engagement process that combines university-level exposure with aviation-specific immersion experiences. Bowling Green State University integrates large-scale institutional events, targeted program sessions, industry alignment, and active faculty participation to sustain enrollment in both the FTO and AMO specializations.

University-Level and Aviation-Specific Events: Multiple institutional recruitment events are planned each semester, including Preview Days (typically two per semester) and the university's President's Day Open House, one of the largest annual recruitment events. During these events, aviation is represented at a college-level booth located in the student union alongside other departments, as well as aviation-specific programming is conducted at the University's Bowling Green Flight Center airport facility. Separate detailed presentation sessions are offered for FTO and AMO pathways, typically led by the School Director. These sessions address program structure, certification pathways, academic rigor, career trajectories, and financial considerations. Parents frequently engage in extended discussions regarding safety, flight scheduling, certification timelines, and career placement. Simultaneously, aviation student ambassadors conduct guided tours of aircraft, simulation facilities, classrooms, and operational spaces.

Targeted Outreach and Feeder Systems: Beyond large campus events, the School of Aviation conducts recurring online information sessions, particularly for the AMO specialization, to expand awareness and enrollment in the management track. These virtual sessions allow outreach beyond regional geographic limitations and provide structured Q&A opportunities for prospective students. The program also maintains connections with regional school systems, including engagement with the Toledo Public Schools system. These interactions support early exposure to aviation careers and strengthen feeder pipelines from secondary education into collegiate aviation pathways.

Industry Partnerships as Recruitment Drivers: Industry alignment plays an increasingly important role in recruitment messaging. One example is the partnership with Republic Airways' RJet Cadet Program [23], which provides a structured pathway from collegiate flight training to regional airline employment. Such cadet-style partnerships signal industry confidence in the program and provide prospective students with clearly articulated career trajectories. The program is actively developing and strengthening additional airline partnerships.

Active Faculty Engagement: Faculty participation is a central component of the recruitment process. During major recruitment events such as Preview Days and President's Day, at least one aviation faculty member is present at each recruitment location. Tenure-track and instructional faculty routinely engage in extended conversations regarding curriculum sequencing, certification pathways, academic rigor, research opportunities, and career trajectories. Faculty frequently discuss ongoing research initiatives, ranging from aviation technology applications to safety and workforce development. This exposure illustrates the program's scholarly and applied dimensions, and provides prospective students with insight into the academic depth of the program beyond flight training or operational coursework. Given the presence of non-traditional students within the aviation program, recruitment messaging also emphasizes structured advising, mentoring accessibility, and individualized academic support.

Texas A&M University - Victoria recruitment strategy

At Texas A&M University - Victoria, the aviation program is expected to enroll the first cohort of students in 2026. As an MSI, the majority of student enrollments at the universities are in-state students from adjacent high schools. The university coordinates recruitment through a strategic collaboration among the aviation faculty, local airport, and the institutional marketing department.

The Marketing Department: To promote the aviation program, the marketing department at Texas A&M University - Victoria focused on visibility and outreach. The program is publicized through multiple channels, including the university and college websites, social media, and press releases, while print media and catalogs are used to inform prospective students of specific degree requirements. In addition, the department works to establish student pipelines by targeting both existing and potential community college partners through joint admission programs. These marketing efforts are designed to leverage local connections by advertising advantages of the program such as low tuition, localized flight training sites, and uncongested airspace.

Local Airport: The partnership with the local regional airport serves as a cornerstone of the aviation program at Texas A&M University - Victoria in terms of flight training infrastructure and critical facilities that are unavailable in the immediate vicinity. The airport offers the program access to uncongested airspace and favorable weather conditions for consistent flight instruction. Texas A&M University - Victoria and the airport reached agreement to use the airport as the primary facility for flight training operations including ground school and flight labs. The airport also serves as the host of certain promotional activities such as Aviation Day at Texas A&M University – Victoria to attract regional students with interests.

Faculty Effort: The aviation faculty at Texas A&M University - Victoria lead direct recruitment and community engagement efforts to build a sustainable local student pipeline. These efforts focus on intensive outreach, with faculty members visiting many local high schools to build program awareness and encourage early student participation. In addition, faculty delivered targeted presentations at local community college career fairs to educate prospective students on diverse professional pathways, including both pilots and aviation management. To foster long-term enrollment stability, faculty had discussions with local school leaders to explore the development of formalized pipeline programs and feeder systems. Furthermore, faculty has established connections with community-based organizations, such as the local Civil Air Patrol, to further integrate the university into the regional aviation environment. The collaboration of the marketing department, local airport, and the faculty at Texas A&M University - Victoria received significant results. The first Aviation Day event at the local airport attracted over 100 prospective students and families inquiring about the program; at the time of writing, the program expects 8 new enrollments in the Fall 2026. .

Major Challenges

The BGSU aviation student recruitment and enrollment process faces some interrelated challenges shaped by both inherent aviation education structural factors and program-specific dynamics. First, the high cost of attendance, driven by tuition and aviation-specific laboratory and flight fees, creates a significant barrier for prospective students. High education costs also intensify the competition for limited scholarship resources; frequently leading students and families to compare the collegiate pathway with alternative training routes such as Part 61 flight training options. Second, the program is experiencing sustained growth in demand, particularly in the Flight Technology and Operations (FTO) specialization. This increased interest has necessitated the implementation of a secondary admissions review process, not as a limitation, but as a quality-control mechanism to strategically shape enrollment, align student intake with available training capacity, and preserve instructional rigor. In this sense, the admissions refinement reflects the program's strong market demand and perceived value among prospective students. Finally, a key strategic challenge is the need to expand and balance enrollment in the Aviation Management and Operations (AMO) specialization. While the FTO pathway operates as a mature and highly attractive pipeline, the AMO program requires enhanced visibility and earlier exposure to aviation management career pathways to strengthen its recruitment pipeline and support balanced, sustainable program growth.

One of the major challenges faced by Texas A&M Aviation faculty in student recruitment is issues with under-prepared, minority, or first-generation college students. Recruiting and

retaining such students may encounter potential issues of financial, cultural, and informational barriers. The cost of the flight training cost is often the financial hurdle that many first-gen and minority students from low-socioeconomic backgrounds faces to become pilots. Such gatekeeping effect is most significant at Texas A&M University - Victoria where students are comprised of significant first gen and minority students.

In addition, the faculty also identified information gaps of students without family history in aviation or higher education. These students tend to struggle with the complex FAA certification regulations and collegiate enrollment process, which eventually resulted in dropping out of the program. Cultural isolation and lack of representation in the cockpit may present an inaccessible sensation to these students. Addressing these issues requires holistic support from the systems, such as summer bridge programs, asset-based mentoring, and intentional community outreach that reframes aviation as a viable and supported career path for all.

The recruitment efforts at Texas A&M University - Victoria are also hindered by several interrelated institutional and external challenges. The faculty must navigate limited institutional resources, often operating under the assumption that necessary infrastructure existed when the program faced certain obstacles and lack of preparedness for the scale of the undertaking. The program also suffers from a lack of name recognition as a newly established one compared to other ABBI-accredited flight training programs at major cities in the state. The university also encountered obstacles in securing partnerships with flight schools. As profit-seeking companies, many flight schools asked for certain guarantees in terms of number of enrollments or flight training hours for relocation of their operations. Finally, the program faces intense competition from other STEM and technical institutions, particularly from high-demand disciplines such as Computer Engineering and Computer Science, which are also competing for the similar pool of technically minded students in the regional market.

Discussion and Lessons Learned

This paper discusses the pre-college student recruitment at one newly established aviation program at Texas A&M University - Victoria and at a mature program at Bowling Green State University. The study discussed institutional background, recruitment strategies, and major challenges encountered at both universities.

The BGSU Aviation recruitment approach highlights that student recruitment in specialized, capacity-constrained programs must be intentionally aligned with program capacity, structure, and long-term strategic goals. The combination of university-level exposure and aviation-specific immersive experiences serves as an effective mechanism for attracting and converting prospective students, particularly when supported by active faculty engagement and clear industry pathways. However, some of the challenges faced indicate that recruitment cannot be approached as a volume-driven process. The high cost of attendance and frequent comparisons with Part 61 flight training alternatives may suggest the need for clearer communication of the value of a collegiate aviation pathway, including structured training, academic integration, and broader career opportunities. At the same time, the sustained demand in the FTO specialization reinforces the importance of maintaining a capacity-aware recruitment strategy, where enrollment is carefully managed through processes such as secondary admissions review to

preserve instructional quality. In contrast, the AMO specialization requires more targeted efforts to build awareness and interest, particularly through earlier exposure to aviation management career pathways and continued engagement with feeder systems. Overall, these observations may suggest that recruitment in collegiate aviation programs should be treated as a coordinated and strategic process, where outreach, conversion, capacity management, and program differentiation are aligned to support balanced and sustainable program growth.

To mitigate the identified recruitment challenges, Texas A&M University - Victoria must adopt a multifaceted strategy that prioritizes community visibility and holistic student support.

Addressing the lack of name recognition requires a sustained presence in the local community through events such as local career fairs and the cultivation of deep-rooted relationships with local feeder high schools. The long-term sustainability of the program relies on student retention, faculty recruitment, and pursuit of third-party accreditation (ABBI) though the program anticipates challenges in faculty staffing, industry relations, and continuous assessment. To remain competitive against other STEM disciplines, the program should emphasize hands-on, experiential learning opportunities and focus on the student experiences such as high faculty to student ratio. To support the high percentage of first-generation and minority students, the university may implement events such as summer bridge programs and asset-based mentoring to help students navigate complex FAA regulations, the admission process, and financial issues.

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