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Career Change Theory: An Analysis Of Second Career Pilots Pursuing The Aviation Profession

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CAREER CHANGE THEORY: AN ANALYSIS OF SECOND CAREER PILOTS PURSUING
THE AVIATION PROFESSION

by

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Bachelor of Science, University of North Dakota, 2011
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A Dissertation

Submitted to the Graduate Faculty

of the

University of North Dakota

in partial fulfillment of the requirements

for the degree of


Doctor of Philosophy


Grand Forks, North Dakota

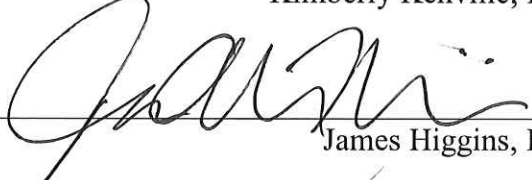
August 2019


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This dissertation, submitted by Alex Nikle in partial fulfillment of the requirements for the Degree of Doctor of Philosophy in Aerospace Sciences from the University of North Dakota, has been read by the Faculty Advisory Committee under whom the work has been done and is hereby approved.


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Degree Doctor of Philosophy

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Alex R. Nikle
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ABSTRACT

The United States regional air carrier industry has recently undergone a substantial transformation in pilot salaries and hiring practices. Regional airlines are employing professional aviators at unprecedented rates in response to economic growth, regulatory reform, and legacy air carrier retirements. The resulting demand for professional pilots has drawn a new category of aviators into the airline industry, identified in this research as “second career” pilots. The following study used a mixed method design to examine the backgrounds of survey participants at two US flight training programs and determine their transition motivations. Through chi-square tests, *t*-tests, and correlation analysis, this study examined relationships among the participating individuals’ career change motivations. This study also involved interviewing selected second career pilots to obtain additional details surrounding their career transitions. The results of this study suggest that individuals pursuing a second career as a professional pilot primarily did so to achieve self-fulfillment, obtain better compensation, and reduce dissatisfaction with their previous occupation aligning with the theoretical findings of the Vocational Education Training Career Change Study. The concepts that emerged from this research were also tested against the Transtheoretical Model of Change. The goal of this research is to help US air carriers and educational institutes gain a better understanding as to the professional backgrounds of pilots entering the aviation industry. Understanding these factors will help ensure that air carriers are appropriately staffed as aviator attrition and resulting demand continues to increase.

CHAPTER I

INTRODUCTION

The United States air carrier industry has experienced significant change throughout its century-long history. Technological advancements, government regulatory reform, economic fluctuations, and erratic oil prices have created a volatile environment, resulting in periods of both substantial profits and financial losses for all US air carriers (Vasigh et al., 2013). This economically unstable atmosphere in which US airlines operate has led to many industry bankruptcies and air carrier consolidations. The associated demand for professional aviators follows a similar trend that mimics the historical growth and recession of the US economy and aerospace industry.

Despite several downturns, US air carriers have seen recent success and significant gains in revenue. Airline passenger load factors, a measurement relating to the percentage of seats occupied by paying customers, have increased from approximately 66 percent in 2000 to an average of 82.8 percent in 2018, representing greater capacity efficiencies (Vasigh et al., 2013; IATA, 2019). These increased load factors, in combination with a reduction in worldwide oil prices and a strengthening economy, have recently resulted in the largest financial profits in the history of US air carriers (A4A, 2018). The subsequent growth associated with the improving stability of the airline industry has increased the need for aviation professionals.

Even though the US airline industry has historically undergone several pilot hiring surges, a new factor relating to pilot attrition is adding pressure to staffing demands. An

estimated 30,000 US mainline pilots are expected to retire between 2017-2027 (Higgins et al., 2016). In response to these forecasted retirements and air carrier growth, airlines are hiring pilots at unprecedented rates. Over 20,000 pilots have already been hired at mainline carriers from 2014-2018 (FAPA, 2019). As regional pilots represent a significant portion of the mainline new hires, attrition rates at all US regional air carriers have increased as well (US GAO, 2014). To compensate for this pilot attrition and attract airline qualified aviators, US regional air carriers have implemented new hiring incentives to include: salary increases, retention bonuses, and legacy airline employment flow agreements. This rise in pilot compensation and employment opportunities has drawn a new category of aviators into the airline industry identified in this study as “second career” pilots.

Purpose of Study & Research Questions

While similar studies have attempted to analyze pilot flight experience backgrounds and performance during training, this study focuses on pilots who have pursued aviation as a second career and the motivations surrounding their career transitions. The goal of this research is to help US airlines obtain a better understanding as to the professional backgrounds of pilots entering the aviation industry and what motivational factors influence their career decisions. This study is not intended to investigate the number of pilots available to fulfill regional airline demand, but rather to determine why the second career individuals chose to pursue the airline pilot profession using a sequential mixed methods design. Phase I of the study involves the quantitative analysis of pilots in training at two participating flight schools, using a survey designed to assess educational and professional career backgrounds. Phase II identifies the motivations surrounding career transitions through the process of interviewing select individuals from each flight school. This study is designed to meet the following research objectives:

1. Identify the educational and professional backgrounds of the second career pilots surveyed at the participating flight training programs
2. Conduct an analysis of the survey data and identify any significant statistical relationships
3. Conduct interviews with second career individuals to determine which motivational factors were most influential for those who underwent a career change
4. Test the theoretical relationships between the study results and literature review to obtain an understanding of the professional pilot career transition process and how it relates to the Transtheoretical Model of Change (TTM) cycle
5. Provide recommendations to flight training programs and air carriers to support a stable supply of professional aviators

The resulting data gained from this research will promote a greater understanding of the motivations among industry professionals who pursue the pilot profession. It is important for legacy airlines to recognize what factors affect the pilot supply of their regional partners, as a large portion of their flights are operated under regional fixed-fee agreements. Understanding these factors will help ensure that regional air carriers are appropriately staffed as aviator attrition and resulting demand continues to increase.

Definitions and Acronyms

ALPA – Air Line Pilots Association

ATP – Air Transport Pilot

ATP/CTP – Air Transport Pilot Certification Training Program

CAB – Civil Aeronautics Board

CFI – Certified Flight Instructor

Codeshare – The process of two or more airlines jointly marketing their capacity by assigning their designators to a common flight (Gerlach et al., 2013).

FAA – Federal Aviation Administration

FOQ – First Officer Qualification

IRB – Institutional Review Board

Legacy Air Carrier – A US airline that established interstate routes prior to the enactment of the Airline Deregulation Act of 1978 (Vasigh et al., 2013). Although Alaska and Hawaiian meet this criterion, this report defines legacy air carriers as one of the following: American, Delta, and United.

Major (mainline) Airline – Include those US airlines that have annual revenues of over \$1,000,000,000 (A4A, 2018). These airlines often partner with regional air carriers under fixed-fee agreements.

Part 61 Flight School – A flight school providing the basic pilot certification requirements established by the Code of Federal Regulations (CFR) (e-CFR, 2019).

Part 121 Air Carrier – An airline that is certificated by the Federal Aviation Administration to operate under the rules of 14 CFR Part 121. Carriers that run scheduled operations with either turbojet aircraft, aircraft with 10 or more seats, or aircraft with a payload capacity over 7,500 pounds must be certificated under 14 CFR Part 121 (FAA, 2016).

Part 141 Flight School – A flight school certified under the Code of Federal Regulations often allowing for internal examining authority, increased training syllabus structure, and modified hourly training requirements for pilot certification (e-CFR, 2019).

R-ATP Certificate – Restricted Airline Transport Pilot Certificate

Regional Airline – A regional airline provides short and medium-haul scheduled flights that generally connect small communities with larger cities. Regional airlines typically have contractual agreements with major airline partners to fly routes for them with maximum specified passenger capacities (A4A, 2018).

History of the US Air Carrier Industry

The aviation industry has grown significantly since Orville and Wilbur Wright took flight on December 17th, 1903. The advancements made throughout the 20th century have evolved commercial air travel into an efficient, affordable, and safe method of transportation. However, during the early years of aviation, passenger air travel was not a feasible service due to the limited capabilities of available aircraft. Adverse weather, a lack of navigation equipment, night flying restrictions, as well as aircraft speed and payload limitations prevented a practical means of using aircraft for commercial transport (Vasigh et al., 2013). To promote the design and development of aircraft capable of hauling greater payloads at increased speeds, the Air Mail Act of 1925 and subsequent Air Commerce Act of 1926 were implemented. These congressional bills provided subsidies and government contracts to the private sector of aviation (Forbes & Lederman, 2007). In 1930, the Watres Act once again spurred the advancement of aircraft technology by offering subsidies based on payload mileage rather than weight. This enticed manufacturers to design larger planes with extended ranges, thus leading to the development of aircraft that could effectively transport passengers (Heppenheimer, 2001).

Even though the aircraft developed during the 1930s had the capabilities to transport passengers effectively, the reliability of these piston driven planes during the early phases of expansion resulted in many accidents and an unacceptable safety record. In response to these

growing pains, the United States Congress passed the 1938 Civil Aeronautics Act, which created the Civil Aeronautics Authority, later renamed the Civil Aeronautics Board (CAB). This organization was formed to promote safety throughout the industry, encourage economic growth, and to regulate route entry and exit, fares, mergers and acquisitions, as well as government subsidies (Kaps, 2011). Throughout the next 40 years, the aviation industry developed an infrastructure capable of handling the increasing demand for commercial air travel. A standard for navigation, airport facilities, and traffic management was designed and implemented to promote safety throughout the United States national airspace system (Goetz & Vowles, 2009).

By the mid-1970s, the United States aviation infrastructure had reached a level where commercial air travel flourished. However, every aspect of airline operations was regulated. Route entry, aircraft acquisitions, fares, and mergers were all government controlled (Morrison & Winston, 1995). Airlines were not able to adjust prices for competition and were given a set profit for providing transportation using a cost-based price structure. This resulted in economic inefficiencies due to the inability for airlines to optimize their own routes and company organization (US GAO, 2005). Although no carrier ever went bankrupt under this regulation, they were also heavily controlled by the governing authority of the CAB. To promote competition and lower passenger air fares, as well as increase flights available for greater passenger traffic, the Airline Deregulation Act of 1978 was signed into law by President Carter on October 24th, 1978 (Goetz & Vowles, 2009). This Act forever changed the commercial air carrier industry by reducing government intervention and introducing the concepts of capitalism and free enterprise into the commercial aviation market.

The post-deregulated airline industry could be characterized by intense competition and cyclical demand with an increased vulnerability to external shocks (US GAO, 2005). New

market entries triggered fare wars that had a significant impact on airline revenue and profitability. A primary problem faced by air carriers after deregulation was the inability to defer the high costs of the labor contract structure. These labor contracts, governed under the Railway Labor Act (RLA), did not allow for an adjustment to the rapidly changing environment (Kaps, 2011). The financial burden associated with the labor contracts further stressed the financial stability of US airlines. In response to the newly evolved and highly competitive air carrier environment, many airlines consolidated operations. By 1987, there were 51 airline mergers and acquisitions within the United States airline industry. The result of these consolidations was the creation of six legacy carriers that accounted for 80 percent of the US air travel market (Dempsey, 1990).

The 1980s and 1990s were associated with fluctuations in airline profitability directly correlated to the United States economy, which included a large uptick in pilot hiring during the 1980s and a significant reduction in the late 1990s (Goodman, 2008). On September 11th, 2001 a terrorist attack involving the hijacking of four US airliners imposed a new stress to the airline industry which had not occurred before. The repercussions resulting from these attacks included the furlough of aviators at nearly all US air carriers (Fraher & Gabriel, 2014). After a brief financial recovery in the mid-2000s, the industry was once again struck by an economic downturn and a substantial rise in fuel costs. Between 2002 and 2013, jet fuel prices more than quadrupled from an average of \$0.72 to \$2.98 per gallon. During this time, fuel became the largest component of US air carrier operating expenses, increasing from 13 percent to 28 percent of total operating costs (US GAO, 2014).

The compounding effects of 9/11, the cost of oil, and economic downturn eventually resulted in the bankruptcy of United/Continental (2002), Delta/Northwest (2005), and

American/US Airways (2011). Between 2001 and 2010, 200,000 airline employees lost their jobs including over 14,000 pilots, a 29 percent reduction in workforce (Fraher & Gabriel, 2014). Once again, US air carriers had to restructure their operational costs and staffing needs to cope with the volatile industry conditions. By declaring bankruptcy, the legacy air carriers could renegotiate labor agreements, thus bypassing RLA laws, to reduce operational fixed costs (Ciliberto & Schenone, 2012). Despite the industry hardships experienced from 2001-2011, consistent economic gains since 2014, in combination with reduced oil prices and record passenger load factors, have contributed to the largest financial profits in the history of US air carriers (A4A, 2018). As a result, US airlines are once again employing aviators at a staggering pace.

More than 20,000 pilots have been hired at mainline carriers from 2014-2018, which has been primarily attributed to air carrier growth (FAPA, 2019). The demand for qualified pilots is further amplified by the mandatory 30,000 mainline retirements forecasted to occur between 2017-2027 (Higgins et al., 2016). These mandatory retirements are the result of the Age 65 Rule, which was implemented on December 13, 2007. This 14 CFR Part 121 regulation requires that air carrier pilots retire upon reaching their 65th birthday (Babbitt, 2009). Prior to the Age 65 Rule, air carrier pilots were forced to retire at age 60. The implementation of this regulation delayed the need for qualified aviators to replace the large number of retiring mainline pilots.

Historically, the military and regional airlines have been a primary source of pilots to fulfill this demand. However, the GAO (2014) noted that the military now only provides approximately 30 percent of airline pilots compared to a previous peak of 70 percent. In response to the hiring surge at mainline carriers, regional airlines have reported difficulty in recruiting airline qualified aviators (GAO, 2014). To fully understand the current state of the regional

airline industry and the highly debated supply of professional pilots, the history of regional air carriers must be explored further.

What is a “Regional” Airline?

The origin of regional airlines can be traced to the mid-1940s, when the CAB initiated government subsidy programs to provide air service to smaller communities. The newly created local service or “feeder airlines” could offer air transportation to cities that weren’t economically feasible for legacy airlines (Forbes & Lederman, 2007). However, the costs associated with local service carriers far outweighed the revenue generated. In response to the increased cost structure, the CAB allowed for the local service carriers to modify their route structure in attempt to generate greater revenue. These route modifications resulted in the termination of 133 local service destinations, thus reducing the communities served. By the late 1940s, legacy and feeder airlines no longer provided flight transportation to many of these smaller cities (Levine, 1987).

A third category of commercial air service emerged in 1949, known as scheduled air taxis or “commuter airlines”. These air carriers did not require CAB operational certification provided that the aircraft flown did not exceed 12,500 lbs. This weight limitation was an attempt to prevent the commuter airlines from competing directly with the local service carriers. The newly created commuter airlines could fulfill the demand that resulted from the termination of the local service carrier routes, while maintaining a sustainable revenue (Davies & Quastler, 1995). However, after the implementation of the Airline Deregulation Act of 1978, commuter airlines could operate aircraft with increased seating capacities and weights exceeding the previous 12,500 lb. limitation (Civic Impulse, 2017). The removal of this restriction allowed for the rapid growth of commuter airlines and the transformation of the regional air carrier industry.

The birth of the modern regional airline occurred in 1967, when Allegheny Airlines, later renamed US Airways, established the Allegheny Commuter Program. Under this program Allegheny retained the routes, flight numbers, reservation service, and ground handling while an independently owned commuter airline provided the transportation service (Levine, 1987). These air carrier agreements paved the way for the modern structure of the US regional airline industry. The Airline Deregulation Act of 1978 also shaped the modern route structure with the introduction of the “hub-and-spoke” system. This form of airline service included a central hub airport where feeder traffic could congregate into a single location. The result of this style of route design allowed for greater efficiency in relation to aircraft load factors and aircraft utilization. The hub-and-spoke system also offered customers a larger range of destinations by enabling access to additional routes through a centralized location (Chaison, 2007). Many of the feeder routes associated with the hub-and-spoke system were and currently are supported by regional airlines that operate under the legacy carrier brand using fixed-fee agreements.

The modern codeshares that emerged from the Airline Deregulation Act of 1978 generally follow two organizational structures: revenue-sharing or fixed-fee arrangements. Under revenue-sharing agreements, the legacy and regional carriers negotiate a proration formula, where the regional airline receives a percentage of ticket revenues for the transported passengers. All costs associated with the regional airline flight are assumed by the regional carrier (Gillen et al., 2015). Under a fixed-fee arrangement, the regional airline receives a fixed payment for each departure that it operates on behalf of the legacy carrier. The regional carrier is responsible for staffing and the execution of the flight; while the legacy carrier accepts the costs of fuel, ticket sales, baggage handling, and other costs separate from the direct operation of the flight. Fixed-

fee arrangements are the most common form of codeshare found throughout modern airline operations (Forbes & Lederman, 2007).

In 1993, another transformation occurred within the regional air carrier industry. The Regional Jet (RJ) was introduced to US carriers when Comair, a regional partner of Delta Air Lines, took delivery of their first jet powered small passenger aircraft (Forbes & Lederman, 2007). The introduction of the RJ combined the best features of a turboprop with the range, speed, and passenger comfort of a jet. Additionally, the RJ helped airlines improve the quality of their existing product by increasing flight frequencies as well as the route structures offered (Brueckner et al., 2009). While the RJ has a higher cost per available seat mile (CASM) when compared to a turboprop, the service advantages of the RJ make it a valuable resource to smaller markets (Dresner et. al, 2002). The adaptation of the RJ redefined the historically accepted role of regional aircraft. The product provided by these aircraft mimicked the service that was previously only attainable by legacy aircraft. The speed, comfort, and capacities that previously distinguished regional and legacy aircraft became less transparent to the paying passengers.

After the Airline Deregulation Act of 1978, regional airline contracts became increasing popular among legacy carriers. These contracts allowed for an increased market route structure while reducing total operating costs. Much of these costs were attributed to the lower labor compensation rates found within regional airlines. However, these lower pay scales found throughout the regional carriers raised concern among the legacy carrier employees (Kaps, 2011). To prevent a two-tier wage system, legacy air carrier employee unions negotiated scope language to limit the number of passengers that could be carried by regional airlines. These “scope clauses” are found among all current legacy carriers and restrict the total number of regional aircraft as well as passenger capacities operated by the regional airlines (Forbes &

Lederman, 2007). Despite the implementation of the legacy airline scope agreements, a significant portion of US domestic flights are now operated by regional air carriers. In 2016, 42 percent of the total US scheduled commercial flights were operated by regional airlines (RAA, 2017).

The introduction of the RJ transformed the regional airline industry by providing a passenger service that mimicked a legacy air carrier experience. The low passenger capacity turboprops historically used throughout all regional airlines began to be phased out and replaced by faster, high capacity RJs, capable of hauling increased passenger loads. Even though the RJ transformed the definition of a regional aircraft, the contractual agreements between legacy and regional airlines surrounding pilot compensation remained relatively unchanged. For example, in 2012 a new hire First Officer at a regional air carrier could expect to receive an average yearly salary of \$19,800 (ALPA, 2017). However, a similar new hire First Officer at a legacy carrier could expect to receive an average yearly salary of \$49,560 (Steinbeck & Hamrick, 2012). The compensation rates for second year pilot pay and beyond divide significantly when comparing regional to legacy carriers, which does not include other additional employment benefits.

The high earning potential at legacy air carriers makes them an attractive career goal for most regional airline pilots and aspiring aviators (Lutte & Lovelace, 2016). Unfortunately, the events of 9/11 and the economic downturn of 2008, in combination with increased oil prices resulted in financial hardships throughout all US airlines. During this period, there was a reduction in pilot hiring at legacy air carriers thus stagnating career progression for pilots in training, active flight instructors, and pilots at regional air carriers. However, the airline industry has recovered in recent years, resulting in a significant increase in pilot hiring at all US air carriers. This hiring boom is forecasted to continue for the next 15 years as legacy air carrier

retirements take effect (Lutte, 2014). The economic principles surrounding a limited supply and increased demand for pilots throughout the industry has triggered a significant shift in pilot salaries at regional air carriers.

Regional Airline Pay Scale Changes

In response to the uptick in pilot demand, regional airlines have implemented new incentives to attract qualified aviation professionals. These incentives include: hourly pay increases, sign-on bonuses, and legacy employment flow agreements. The following section analyzes the specific First Officer year one compensation changes that have occurred from 2007 to 2019 at US regional air carriers.

The 2007-2017 historical hourly pay rate data used for the following compensation analysis was provided by the Administrative Records Department of the Air Line Pilots Association at the request of the authors (Nikle & Bjerke, 2018). Pay rates for 2019 were obtained from the individual regional air carrier websites. The information contained within Table 1 represents the hourly compensation rates at 15 regional air carriers operating under various legacy codeshare agreements. The hourly rates include data from: 2007, 2011, 2014, December 2016, December 2017, and April 2019. This information has been transposed into a graph illustrated in Figure 1, indicating the overall change in pay rates for each of the provided years. Figure 2 represents the average hourly pay change for the associated years.

Table 1

Regional Airline First Year Hourly Pay Rates (ALPA, 2017)

Regional Airline	2007	2011	2014	2016	2017	2019*
Air Wisconsin	\$24.53	\$26.03	\$27.22	\$35.00	\$35.53	\$36.06
Compass	\$23.18	\$24.48	\$25.22	\$36.26	\$41.00	\$42.13
Commute Air	\$19.00	\$23.39	\$30.00	\$36.54	\$36.91	\$37.46
Endeavor	\$20.73	\$25.92	\$25.03	\$30.00	\$50.16	\$50.66
Envoy	\$23.91	\$25.45	\$25.84	\$37.90	\$37.90	\$38.28
ExpressJet	\$23.15	\$23.05	\$23.23	\$38.50	\$38.50	\$40.00
GoJet	\$23.00	\$24.41	\$24.78	\$36.50	\$36.96	\$37.42
Horizon	\$28.52	\$29.32	\$30.12	\$31.03	\$40.00	\$40.00
Great Lakes	\$16.00	\$16.24	\$16.24	\$34.00	\$34.00	-
Mesa	\$19.26	\$22.18	\$22.18	\$22.18	\$36.00	\$36.00
Piedmont	\$25.58	\$27.14	\$28.37	\$35.22	\$35.84	\$39.76
PSA	\$22.44	\$23.73	\$24.02	\$38.33	\$38.72	\$50.22
Republic	\$22.95	\$22.95	\$22.95	\$40.40	\$40.81	\$45.00
SkyWest	\$19.25	\$22.00	\$22.00	\$36.50	\$37.23	\$45.00
Trans States	\$22.29	\$23.83	\$24.92	\$36.35	\$36.89	\$37.45
Average	\$22.25	\$24.01	\$24.81	\$34.88	\$38.33	\$39.70

*2019 hourly pay rate data obtained from the individual airline website

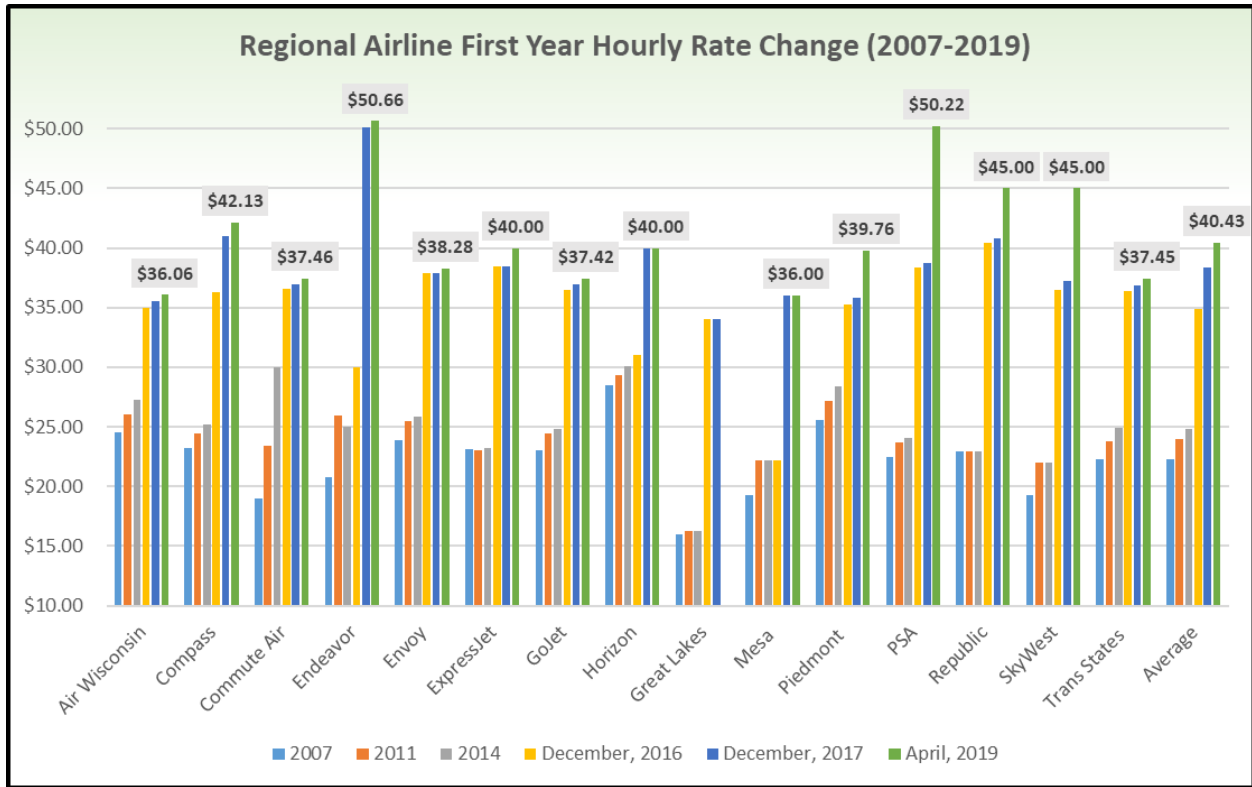


Figure 1. Regional Airline First Year Hourly Pay Rate Change 2007-2019

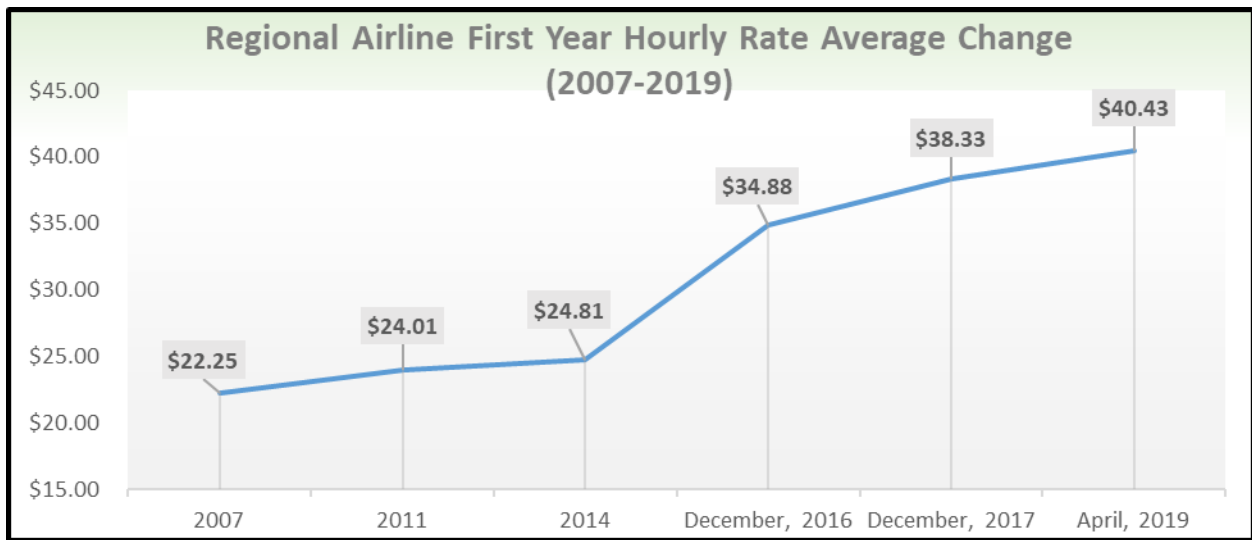


Figure 2. Regional Airline First Year Hourly Pay Rate Averages 2007-2019

Airline pilot hourly pay rates differ from most conventional occupations in that they do not correspond to a typical “40 hour” work week. Most air carriers do not begin compensating

the associated crew members until the aircraft boarding door is closed and the aircraft parking brake is released. This action starts the compensation clock and continues until the aircraft boarding door opens at the destination. Therefore, much of the time spent on duty is not included in pilot compensation. FAA duty limits and rest regulations also limit the amount of flight time that a pilot can work in a given period. For example, US Part 121 air carrier pilots are limited to a maximum of 100 flight hours in 672 consecutive hours (28 days), and 1,000 flight hours in any 365 consecutive-day period (ALPA, 2018). Therefore, it is not legal to conduct a typical “40 hour” work week.

Flight frequency varies throughout the year based on consumer demand. This factor directly affects the number of pilots required to operate the associated airline flight schedules. However, airlines must maintain a relatively stable quantity of pilots. This is partially due to the time required to train pilots in addition to ensuring a stable work environment for those employed. As part of the varying demand in flight schedules, airlines also establish “monthly hourly guarantees” to maintain a consistent minimum compensation among airline pilot groups. This compensation system is unique when compared to other industries. The effective wages illustrated in Figure 4 have been calculated using the associated regional airline minimum hourly pay guarantees, with the average ranging from 75-76 hours per month (ALPA, 2017). This minimum monthly hourly compensation can be used to determine a regional pilot yearly salary by multiplying the regional specific hourly guarantee with the associated regional pay rate at an interval of 12 months.

In response to the recent increased demand for regional pilots, additional incentives have been offered to attract qualified aviators to regional airlines. The additional incentives

represented in Figure 3 include: signing, training, and retention bonuses as well as legacy flow agreements. Benefits such as retirement savings, per diem, and other hiring incentives are not provided in this analysis.

Regional Airline First Year Additional Incentives 2016, 2017, & 2019			
Regional Airline	2016 Additional Incentives (1)	2017 Additional Incentives (1)	2019 Additional Incentives (1)
Air Wisconsin		\$5,000 first month, \$26,000 completion of IOE, \$10,000 after 1 year, \$8,000 ATP & type-rating (+12,500 lbs.)	\$5,000 first month, \$26,000 completion of IOE, \$10,000 after 1 year, \$8,000 ATP & type-rating (+12,500 lbs.)
Compass	4 commuting hotels/month	4 commuting hotels per month, \$7,500 after IOE, \$2,500 after 9 months, \$7,500 after 12 months	4 commuting hotels per month, \$7,500 after IOE
Commute Air	\$7,000 signing bonus, \$8,000 bonus 121 time	\$22,100 signing bonus, CPP to United	\$22,100 signing bonus (\$45,000 if CA qualified), CPP to United
Endeavor	\$10,000 completion of training bonus, \$20,000 annual retention bonus, Delta SSP	\$10,000 after IOE, Delta Guaranteed Interview (DGI)	\$10,000 after IOE, Delta Guaranteed Interview (DGI)
Envoy	\$22,100 signing bonus, American Flow	\$22,100 signing bonus, American Flow	\$22,100 signing bonus (\$45,000 if CA qualified), 4 commuting hotels per month, American Flow
ExpressJet		\$10,000 signing bonus, \$7,500 type-rating, United Pilot Career Path Program (CPP)	\$22,000 signing bonus, \$5,000 type-rating CPP to United
GoJet	\$12,000 signing bonus, \$3,000 bonus for CL-65 type-rating	\$12,000 signing bonus, \$3,000 bonus CL-65 type-rating	\$26,000 signing bonus (\$45,000 if CA qualified), \$5,000 bonus CL-65 type-rating
Horizon		E175: \$20,000 bonus, Q400: \$25,000 bonus, Alaska Flow	E175: \$20,000 bonus, Q400: \$25,000 bonus, Alaska Pilot Pathways Program
Great Lakes	\$3,000 annual retention bonus	BE1900 CA: \$5,000/year, EMB120 CA: \$7,500/year, EMB120 FO: \$3,000/year	**Discontinued Service 03/26/2018**
Mesa	\$5,000 completion of IOE, \$5,000 annual retention bonus	\$22,500 completion of IOE, \$5,000 500hrs part 121 EMB145 or EMB175, \$2,500 part 121 CL-65 type-rating	\$22,500 completion of IOE, \$5,000 500hrs part 121 EMB145 or EMB175, \$2,500 part 121 CL-65 type-rating
Piedmont	\$16,200 signing bonus, \$5,000 signing bonus (121 experience), American Flow	\$16,200 signing bonus, \$5,000 Part 121 experience, American Flow, 4 commuting hotels per month	\$16,200 signing bonus (\$23,000 CA qualified) \$5,000 Part 121 experience, American Flow, 4 commuting hotels per month
PSA	\$16,520 signing bonus, \$5,000 CL-65 type-rating, \$3,000 hotels in base/year, American Flow	\$16,520 signing bonus, \$5,000 CL-65 type-rating, \$3,000 hotels in base/year, American Flow	\$10,000 signing bonus, \$3,000 hotels in base/year, American Flow
Republic	\$12,500 signing bonus	\$15,000 signing bonus, \$2,500 current Part 121 pilots	\$15,000 signing bonus, \$2,500 current Part 121 pilots
SkyWest	\$7,500 signing bonus (121 experience)	\$7,500 bonus Part 135 or type rating > 12,500lbs. Soft Landings pay match	\$7,500 bonus Part 135 or type rating > 12,500lbs. Soft Landings pay match
Trans States	\$7,500 signing bonus	\$10,000 after IOE, \$12,000 after 1 year, No interview required if at Part 121 airline	\$15,000 after IOE (+ \$10,000 type rating), \$15,000 after 1 year, 4 commuting hotels per month Frontier Flow (no interview)

(1) Retrieved from airline specific website (see references for website link)

Figure 3. Regional Airline First Year Additional Incentives

Figures 4 and 5 provide the “effective wage” at each associated regional carrier. The effective wage includes the calculated yearly salary plus any monetary bonuses that are provided at each carrier throughout the first year of employment as a new hire First Officer. As mentioned previously, this does not include per diem or other benefits. The total effective wage change denoted in the far-right column of Table 2 represents the associated percent increase in effective wage from 2007-2019. An illustration provided by Figure 5 indicates the total effective wage changes and the overall average compensation transformation for all regional carriers.

Table 2

Regional Airline Effective Wage 2007-2019

Regional Airline Effective Wage	2007 (1)(2)	2011 (1)(2)	2014 (1)(2)	2016 (1)(2)(3)	2017 (1)(2)(3)	2019 (1)(2)(3)	Effective Wage Change (07-19)
Air Wisconsin	\$22,077	\$23,427	\$24,498	\$31,500	\$76,977	\$77,454	251%
Compass	\$20,862	\$22,032	\$22,698	\$32,634	\$54,400	\$45,417	118%
Commuter Air	\$17,100	\$21,051	\$27,000	\$43,886	\$55,319	\$55,814	226%
Endeavor	\$18,657	\$23,328	\$22,527	\$57,000	\$55,144	\$55,594	198%
Envoy	\$21,519	\$22,905	\$23,256	\$56,210	\$56,210	\$56,522	163%
ExpressJet	\$20,835	\$20,745	\$20,907	\$34,650	\$48,400	\$60,500	190%
GoJet	\$19,320	\$20,504	\$20,815	\$44,160	\$44,546	\$62,178	222%
Horizon	\$29,535	\$30,364	\$31,192	\$32,135	\$63,924	\$58,500	98%
Great Lakes	\$14,400	\$14,616	\$14,616	\$28,582	\$29,082	-	-
Mesa	\$17,526	\$20,183	\$20,183	\$30,183	\$57,759	\$57,832	230%
Piedmont	\$23,022	\$24,426	\$25,533	\$50,398	\$50,956	\$54,484	137%
PSA	\$20,196	\$21,357	\$21,618	\$53,517	\$53,868	\$55,198	169%
Republic	\$20,655	\$20,655	\$20,655	\$48,860	\$52,979	\$56,750	175%

SkyWest	\$17,408	\$19,895	\$19,895	\$36,757	\$37,418	\$44,790	157%
Trans States	\$20,061	\$21,447	\$22,428	\$40,215	\$55,201	\$68,705	242%
Average	\$20,212	\$21,796	\$22,521	\$41,379	\$52,812	\$57,779	184%

(1) Effective wage determined using the hourly reserve guarantee at each regional + incentives up to one year (ALPA, 2017)

(2) Retirement contributions, per diem, and tuition reimbursement not included

(3) Averaged range of first year salaries at each individual carrier + incentives

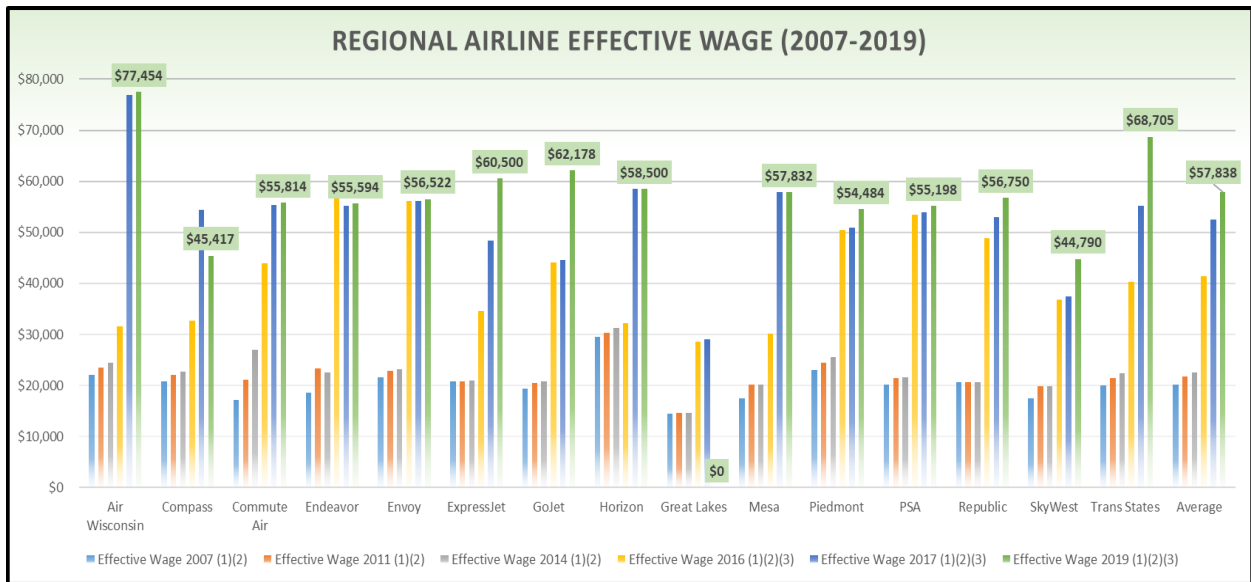


Figure 4. Regional Airline Effective Wage 2007-2019

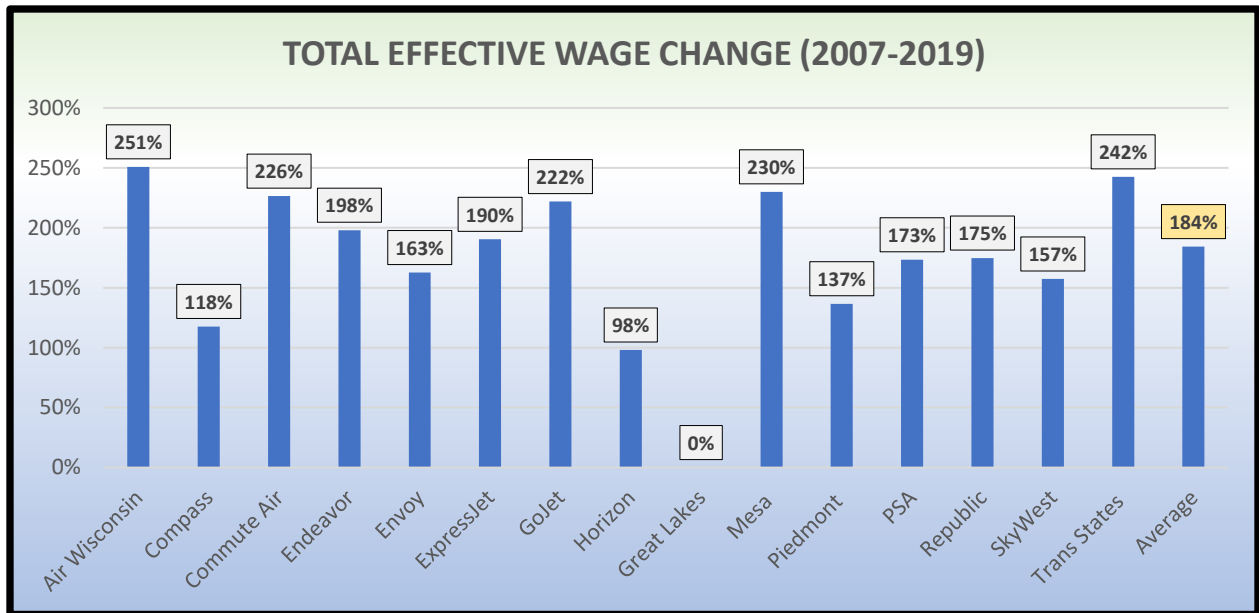


Figure 5. Total Effective Wage Percentage Change 2007-2019

The data represented in Figures 4 and 5 illustrate the significant first-year compensation changes that have occurred throughout all US regional airlines from 2007-2019. The increased demand for airline qualified professional aviators has resulted in substantial effective wage changes and associated pay rates. In 2007, the first-year regional airline pilot average effective wage was \$20,212. As of April 2019, first-year effective wages have nearly tripled to \$57,838 with the largest gains occurring in the past four years. This 184 percent average effective wage change is an attempt to draw new aviators to the regional airline industry. Although there is an ongoing debate as to the available supply of ATP qualified pilots, it is apparent that the demand has risen. The increased hiring trends at US air carriers are expected to continue as the large amount of legacy retirements begin to take effect.

Airline Pilot Career Path

Prior to analyzing second career individuals, it is important to understand how one pursues the airline pilot career. The following section provides a brief introduction into the

training and certifications needed to become a professional pilot. The time and monetary commitments required to pursue an airline pilot career can be a significant hurdle for those contemplating a career change. This aspect of becoming an airline pilot will be further examined during Phase II of this report.

There are several paths an aspiring aviator can take to become a professional airline pilot. The CFRs define the specific experience requirements needed to legally operate as a 14 CFR Part 121 Air Transport Pilot (ATP). Prior to August 2013, an air carrier First Officer needed a commercial pilots license with a multi-engine and instrument rating. However, in response to the 2009 Colgan Air Flight 3407 accident, new regulations were passed that President Obama signed into Law on August 1st, 2010 (PL 111-216; Lutte & Lovelace, 2016). Under 14 CFR Part 121.436, also known as the First Officer Qualification (FOQ) Rule, all second-in-command (First Officers) must hold an ATP certificate, which became effective on August 1st, 2013. The additional flight time requirements to become a Part 121 First Officer have impacted the supply of airline qualified aviators. This section describes the implications of Public Law 111-216 and the various paths to pursuing an airline pilot career.

Under 14 CFR Part 61.159, a person applying for an ATP certificate must have a minimum of 1,500 hours of total flight time as a pilot that includes at least: 500 hours of cross-country flight time, 100 hours of night flight time, 50 hours of multi-engine flight time of which a maximum of 25 hours may be conducted in a full-flight simulator, 75 hours of instrument flight time, and 250 hours of flight time as pilot in command (FAA, 2017). Prior to Public Law 111-216, a Part 121 First Officer needed only a commercial pilots license with a multi-engine and instrument rating, which could be obtained after logging 250 hours of total flight time (FAA,

2013a). Therefore, Public Law 111-216 increased the total time needed for an aviator to become airline qualified.

Additionally, the FOQ rule mandates that prior to obtaining an ATP certificate, an applicant must also complete the Airline Transport Pilot Certification Training Program (ATP-CTP). This training program requires 30 hours of academic course work and ten hours of training in a flight simulator training device; six hours in a Level C or higher full-flight simulator (FFS) and four hours in Level 4 or higher flight training device (AOPA, 2013). Due to the technical complexity of the FFS, these programs often cost in excess of \$5,000 (Bergqvist, 2015).

As part of the newly passed regulations, relief has been granted for those pilots with certain aviation backgrounds under the “restricted” ATP (R-ATP). The R-ATP allows for a pilot to be eligible to operate as a First Officer under 14 CFR Part 121 with less than the required 1,500 hours (Lutte & Lovelace, 2016). The specifics surrounding the required flight experience under the R-ATP are as follows:

- 1,000 hours for a graduate of an accredited aviation bachelor’s degree program with at least 60 semester hours of coursework
- 1,250 hours for a graduate of an accredited aviation associate degree program with at least 30 semester hours of coursework
- 750 hours for military pilots (FAA, 2013b)

There are several avenues that can be taken to become an air carrier qualified applicant. As stated previously, there are benefits to attending an aviation accredited university program or entering the military. However, an aviator may choose to conduct flight training under the standard training guidance of 14 CFR Part 61, such as with a local Fixed Based Operator (FBO) or an accelerated flight training program. Each of these paths are acceptable provided the ATP

experience requirements are met. Depending on the track chosen, an aviator can become airline qualified in approximately two to five years (ATP, 2017; Bjerke & Malott, 2011).

Accelerated flight training programs can have a completed applicant in approximately nine months. Once finished with training, these aviators often instruct as a Certified Flight Instructor (CFI) to acquire the flight time necessary for obtaining the ATP certificate (Templeton, 2017). University programs typically offer a greater depth of training by providing accredited coursework along with flight training. However, applicants that attend these programs often graduate in four years and require an additional 1.5 to 2 years of flight instructing, averaging 446 total flight hours per year, to obtain the required R-ATP flight hours as a flight instructor for a university (Bjerke & Malott, 2011).

An additional consideration for aspiring aviators beyond the time commitment is the financial costs associated with flight training. Unless a military path is chosen, these training expenses often exceed \$100,000 (US GAO, 2014). ATP Flight School, an accelerated flight training program, advertises a minimum cost of \$79,995 for the associated ratings and experience, while university programs generally surpass \$100,000 when tuition and living expenses are included (ATP, 2017).

Despite the time commitment and monetary requirements associated with the professional aviator career path, there are significant opportunities for those wishing to pursue an airline career. These opportunities have drawn a new category of aviators into the industry, referred to in this report as “second career” pilots. To gain a better understanding as to the backgrounds and motivations surrounding these pilots’ career transitions, the ensuing study has been designed.

Phase I of this report will include a quantitative examination of individuals using a survey distributed to two flight training programs, one defined as a university-based flight school and the other as an accelerated academy flight training program. Phase II of this report attempts to identify why these types of professional pilots chose to pursue aviation as an alternative career. An overview as to the methodology of this report is covered in greater detail throughout Chapter III. Before analyzing the second career pilots, it is beneficial to obtain a further understanding of the motivations involved with career transitions. The following section expands on the concepts surrounding career change and the common reasons individuals pursue alternative careers.

CHAPTER II

LITERATURE REVIEW

As the demand for airline qualified aviators continues to increase, it will become advantageous to determine what factors influence individuals to pursue an airline pilot career. Professional air carrier pilots typically have an extensive background in aviation, often stemming from childhood. Many of these individuals began training at a young age and have devoted a significant portion of time and resources to becoming an expert in their field. Until recently, the unstable environment associated with the historical downturns of the air carrier industry limited the employment opportunities available. Many of the air carrier pilot positions were filled by those pursuing aviation as a vocation. However, the recent uptick in demand for qualified airline pilots and resulting salary increases have created new opportunities for those wishing to become professional pilots.

Prior to investigating the specific motivations involved with the pursuit of an airline career, it is important to understand the implications surrounding a career change and what factors affect those involved in the life transition. A career change can be defined as a subset of work role transitions that include a change of employers, in addition to some degree of change in the actual job (Ibarra, 2006). This can be distinguished from a job change, which is a movement to a similar job that is part of a normal career path (Carless & Arnup, 2011). A career change often involves cost for the individual due to the additional training and human investment required (Blau, 2007). This cost can exceed \$100,000 for those attempting to pursue a

professional pilot career (US GAO, 2014). The high cost and significant time commitments required to become an airline pilot can be a risky endeavor for those established in another career with additional financial and family obligations.

Career Change Theory

Historically, generations of American workers have followed the “Traditional” career path; where employability for job security and loyalty; pay, promotion, and status measured success (Chudzikowski, 2012). However, modern age workers have more commonly transitioned to the “Boundaryless” career; where flexible and psychologically meaningful work defines success over status and pay (Sullivan, 1999). This implies that the self-concept of career success and motivation for work transitions have shifted in recent years. For example, people born during the 1960s-1980s averaged two job changes by the age of 32, while present-day youth averages closer to three or four (Doyle, 2018). The specifics surrounding the reasons behind this rise in job transitions is beyond the scope of this research, but the increasing commonality and social acceptance of job change is pertinent to understanding the modern career culture.

Many of the associated motivations surrounding a career transition stem from job satisfaction and personal interpretations of success. Career success can be defined as the accumulated positive work and psychological outcomes resulting from an individual’s work experiences (Seiber et al., 1999). The subjective nature of career success varies from person to person and is not uniformly measurable. According to Super’s Career Development Theory, career success is an active process of improving the match between one’s self-concept and the occupational environment (1957). “To each his own,” is an idiom often used to describe the subjective characteristics of measuring individual success and personal preferences towards an ideal work environment.

The Transtheoretical Model of Change

Individuals who are unsatisfied with their current career choice may contemplate pursuing other occupational avenues. The Transtheoretical Model of Change (TTM) illustrated in Figure 6 represents the fluid states through which individuals move when preparing to undergo a career change (Barclay et al., 2011). The five phases of TTM coincide with Super's Theory of Career Development to include: precontemplation/disengagement, contemplation/growth, preparation/exploration, action/establishment, and maintenance (Prochaska et al., 1992).

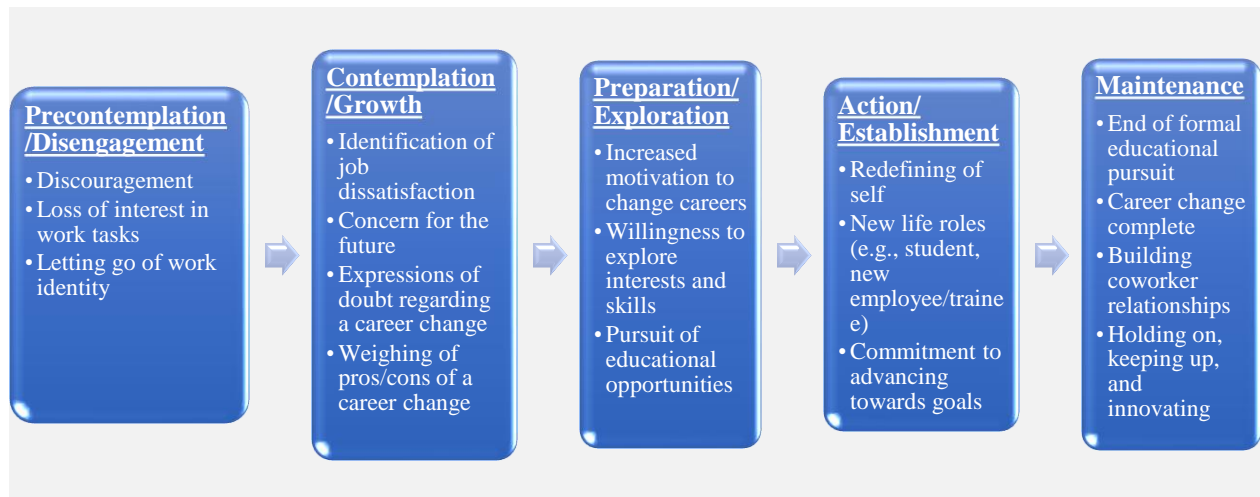


Figure 6. The Transtheoretical Model of Change & Super's Theory of Career Development

During the precontemplation/disengagement stage, the individual has neither the desire for change nor the awareness of a need for change. This phase is identified by a loss in interest for work and a level of dissatisfaction with his/her current occupation (Super et al., 1996).

Prolonged exposure to job dissatisfaction will influence the transition into the contemplation/growth phase. During this period, the individual becomes aware of the sources of dissatisfaction and expresses concern for the future. A person transitioning through this phase is not ready to make a commitment to action but contemplates the advantages and consequences of change (Barclay et al., 2011). This point in the TTM cycle encompasses those who are

unsatisfied with their work environment but are not willing or able to pursue other occupational avenues.

The preparation/exploration stage involves the actual search and pursuit for a new career identity. The individual's motivation for change becomes greater than the motivation to maintain the status quo (Prochaska et al., 1992). Once a new career path has been discovered, the individual transitions into the action/establishment stage. This phase encompasses the commitment towards the established goals, new life roles (e.g. additional schooling, training, etc.), and the redefining of oneself (Super et al., 1996). The underlying factors influencing the transition from preparation/exploration to the action/establishment stage will be the focus of the next section. The motivations influencing these factors will further be examined during the qualitative section of the pilot career change study.

After the individual has established the new career occupation, they enter the maintenance stage of the TTM cycle. Super describes this phase as the point of maintaining what has been achieved by holding on, keeping up, and innovating (1996). This "recycling" process continues for the duration of the selected career. The individual may remain in this phase until approaching retirement or return to the precontemplation/disengagement stage, thus pursuing other career fields (Barclay et al., 2011). The TTM process encompasses the overall lifecycle of a career. However, this model does not explain the motivations surrounding a career change transition. The following section introduces the Rhodes and Doering Integrated Career Change Model and the underlying factors influencing job satisfaction and the transition to the action/establishment phase of the TTM cycle.

The Rhodes and Doering Integrated Career Change Model

The Rhodes and Doering Integrated Career Change Model illustrated in Figure 7 provides a framework for the identification of an individual's motivation in undergoing a career change and the stages he or she moves through during the process. The structure of this model closely relates to the TTM cycle with a primary focus on the components of job satisfaction to include: organizational factors, personal factors, and perceived personal/organizational correspondence (Rhodes & Doering, 1983). Organizational factors encompass work environment, income, and job security; while personal factors include: age, tenure, gender, education, and career/family role conflict (Martin, 1979; Phillips & Lee, 1980). While the organizational and personal elements of career change affect job satisfaction, which will be further examined and quantified during Phase I and II of this research, the Rhodes and Doering Integrated Career Change Model places emphasis on perceived personal/organizational correspondence.

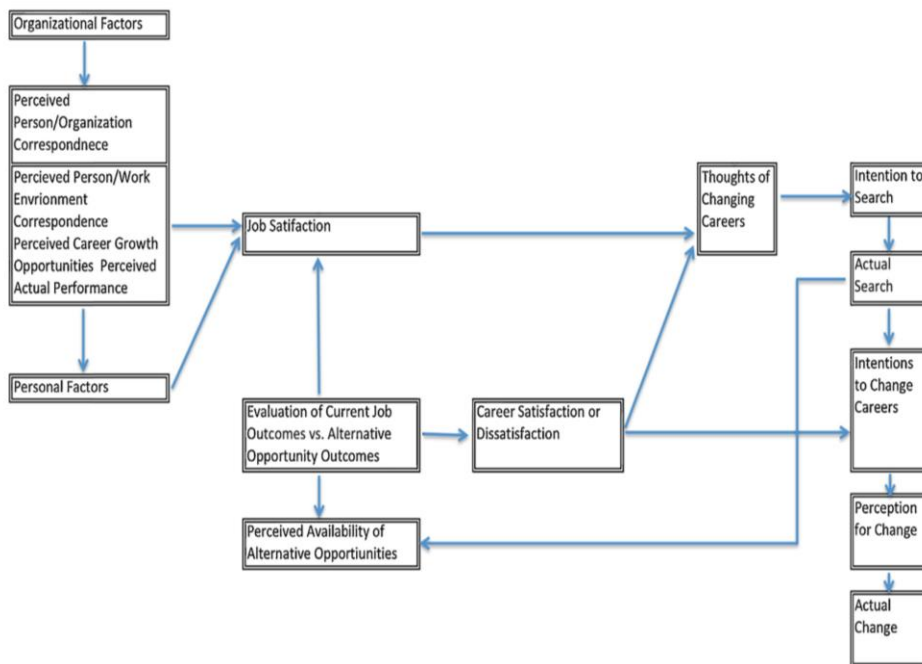


Figure 7. The Rhodes and Doering Integrated Career Change Model

According to Bellah (1985), life and work satisfaction is dependent on the individual's perception of work. Individual perceived personal/organizational correspondence refers to the match between the needs or desires of individuals and their perceptions of the work environment (Dawis et al., 1968). The fulfillment of one's highest needs is often referred to as self-actualization and is one of the key principles affecting job satisfaction (Sagal & Deblasse, 1981). This concept suggests that career satisfaction depends on the individual and whether his or her wants and needs are being met, therefore an ideal working environment can vary from one subject to another.

A study conducted by Wrzeniewski (1997) attempted to quantify and compare work satisfaction among coworkers. The participants of the study were asked to classify their work as one of the following categories: job, career, or calling. Those who reported the highest life and work satisfaction were also the ones who saw their occupation as a calling; even when salary, education, and the occupation of the participants were controlled (Wrzeniewski et al., 1997). The results of this study indicate that satisfaction relating to an occupation is dependent on how an employee sees his or her work rather than on income or occupational prestige. While organizational and personal factors affect job satisfaction, the results of the Wrzeniewski study suggest that personal/organizational correspondence has a greater influence.

The Transtheoretical Model of Change and the Rhodes and Doering Career Change Model describe the stages of career transition and the primary factors affecting job satisfaction. However, neither of these models discuss the specific reasons as to why individuals may decide to pursue other careers. The following section further expands on occupational changes by highlighting common themes identified for triggering career transitions throughout various

studies. These themes will be used to categorize the motivations of the second career pilots throughout the qualitative section of this report.

Career Transition Studies

Even though job satisfaction will vary on an individual basis, people ultimately change careers because they believe it will accrue positive outcomes (Carless & Arnup, 2011). An education and training career study conducted by Masdonati, Fournier, and Lahrizi (2017) investigated the underlying career change motivations of those subjects enrolled in a vocational education training (VET) program with the intention of changing careers. The motivational factors of the participants were divided into two categories: reactive and proactive. Reactive changers were defined as those who pursued a new career with the intention of breaking their current occupational situation in response to a stimulus (Masdonati et al., 2017). For example, the individual was unsatisfied with his/her career and external environment thus leading to an overall lack of job satisfaction.

Contrary to reactive changers, the proactive changers were defined as those who were more future oriented. Therefore, their decision to change careers was less related to their previous occupation. These individuals were not necessarily unhappy with their job but choose alternative careers to attain a desired quality of life, to grow personally, or to pursue a vocation (Masdonati et al., 2017). For example, changing economic conditions could influence a proactive changer to switch careers to attain newly offered working conditions. As discussed previously, this can be seen currently in the US airline industry where a high employee demand has resulted in increased pay rates and hiring incentives.

An additional study conducted by Howes and Goodman (2014) interviewed former police officers and teachers that chose to change careers. The results of the study suggest that the participants primary motivations for making a career change were reactive in that the individuals made a change in response to circumstances surrounding their work and social environment. In this study, the participants expressed frustrations and disappointments in their previous occupation, often feeling undervalued. Many of these individuals reported reaching a rupture point, where a combination of factors resulted in their turnover (Lee & Mitchell, 1994). The participants experienced unfair treatment and a lack of support from their employing organization. These events led the participants to feel that the career was no longer going to be able to provide the context in which they could make meaningful contributions (Howes & Goodman, 2014). This study is an example of how work stress combined with negative social surroundings can promote a career change, thus classifying it as a reactive change to the work environment.

The final study included in this report involved the examination of midlife career changers. Barclay, Stoltz, and Chung (2011) conducted an analysis of midlife career change individuals. Middle adulthood, often referred to as midlife or middle age, is defined as a period of a person's life span between the ages of 35 and 65 (Dacey & Travers, 2004). These individuals were already established in their careers and voluntarily chose to pursue another field often undergoing a midlife renewal. A midlife renewal is a time during which middle-age individuals take stock of themselves and reevaluate where they are going and what they are doing with their life (Super, 1957). The following factors were identified as some of the primary reasons midlife career changes occur.

Occupational Dissatisfaction

These individuals are generally unhappy with their current career status. A study by Brown (1995) used a value-based approach to facilitate career transitions. As values provide standards of behavior, people who are unable to engage in work that they deem important tend to become dissatisfied with their occupation. To properly accept a work role, an individual must identify and prioritize his or her own values. If these established values align with the occupational duties associated with a given job, satisfaction is more likely to occur (Brown, 1995).

Lack of Challenge

These people often exhibit discontent with their occupation due to the perceived monotonous and unrewarding tasks associated with their work. For a job to be satisfying it must allow for the individuals to engage in activities that they deem worthwhile, which in turn allows for them to compare themselves favorably with others (Donohue, 2007). When an individual is challenged by their work environment, satisfaction is increased (Vander Zanden, 2000).

Lack of Career-Related Identity

According to Meijers (1998), a career identity is a basis of meanings in which the individual links his or her own motivation, interests, and competencies with acceptable career roles. In other words, this relates to whether the individual's occupation matches and fulfills his or her personal values, thus contributing to one's overall development. This concept is often referred to as a form of self-actualization, where one's highest level of needs are met (Dacey & Travers, 2004).

Stress and Anxiety

This encompasses those who are uncertain as to the stability of their current occupation and associated future. Individuals who experience high levels of career concerns are more likely to change occupations than those with fewer career concerns (Donohue, 2007). A study conducted by Tivendell and Bourbonnais (2000) surveyed 71 federal employees during a government downsizing period to determine what effects the reduction in staffing had on their career decisions. The results of the study indicated that the downsizing contributed to the prediction of one's intention to quit (Tivendell & Bourbonnais, 2000). Therefore, the threat of job insecurity suggests the increased chance of a work role or career transition.

Conflicts Between Work and Other Life Roles

Personal commitments outside of the work environment and the inability to maintain an appropriate balance between the demands associated with work and family can lead to the pursuit of an alternative career. Unplanned transitions, such as a personal event or change in physical status, often come as a shock to the individual resulting in a negative effect. The impact of this effect may reflect on one's ability to pursue other goals and the forced transition to a new career (Brown, 1995).

Each of these midlife career change motivations can be classified as a reactive change to the work environment. As discussed earlier, reactive changers pursue a new career with the intention of breaking their current occupational situation. Phase II of this report includes the identification of the motivational factors involved in those who chose an airline pilot occupation as their second career. These factors are classified as reactive or proactive as seen in the

Masdonati et al. (2017) study in attempt to gain a greater understanding of those entering the aviation industry.

A Collegiate Analysis of the Airline Pilot Supply

The studies discussed in this chapter thus far have involved career transitions outside of the aviation industry. Even though there is a limited supply of research specifically involving airline pilot career transitions, one study attempted to identify what factors influence collegiate students to pursue an airline pilot career path. The following report examines how the First Officer Qualification (FOQ) implementation affected the career goals of the associated collegiate aviation flight students (Lutte & Lovelace, 2016).

As discussed previously, the FOQ rule changed the requirements needed to act as a Part 121 First Officer by mandating that all airline pilots possess an ATP certificate. The authors of this 2015 study surveyed various aviation college students to determine how the FOQ rule influenced their future career path decisions. Additionally, the study attempted to identify what motivates students to target specific regional airlines over one another for employment.

A total of 820 individuals from 49 different flight training programs completed the survey. The average flight time for the respondents was 388 hours, with 25 percent possessing a CFI certificate. Approximately 69 percent of the surveyed pilots had an original career goal of becoming an airline pilot. After the enactment of the FOQ rule, 60 percent of these pilots indicated the same desire to enter the air carrier industry (Lutte & Lovelace, 2016). This nine percent reduction suggested that the FOQ rule negatively affected the number of pilots desiring to pursue an airline career.

To further understand this change, the survey inquired as to the reason for the change in career aspirations for those who modified their original airline pilot career goal. Approximately 50 percent of these students cited the FOQ rule change as the primary cause. However, an additional 30 percent of respondents indicated that salary and lifestyle concerns were responsible for their career goal shift (Lutte & Lovelace, 2016). These results indicate that the time commitment required to become a professional airline pilot in addition to the low compensation rates at regional airlines have deterred students from pursuing an airline career.

The second objective of the study was to identify what factors influence a student's decision to choose one regional air carrier over another. The participants were directed to choose their top three choices from a list of seven. The resulting data indicated that salary (68 percent of respondents), location of base (58 percent of respondents), and upgrade time (54 percent of respondents) were the top choices for students (Lutte & Lovelace, 2016). It is interesting to note that bonus incentives only accounted for 16 percent of the respondents' choices, which as discussed earlier have been a primary incentive for attracting new pilots to individual regional air carriers.

A final open-ended section was included within the study, which asked the students what single most effective action regional airlines could take to recruit them as pilots. Approximately 59 percent of the respondents identified salary and financial support as the primary factor affecting their career decisions. Quality of life concerns and a desire for a clear path to a major airline accounted for another 33 percent of the responses (Lutte & Lovelace, 2016). These results support the concerns surrounding compensation rates throughout the regional airline industry.

The collegiate airline pilot supply study was conducted in 2015, prior to the implementation of the increased pay rates and bonus incentives found at nearly all regional air

carriers today. As discussed earlier, the average effective wage throughout US regional air carriers has increased 184 percent since 2007. This increase in salary has been an attempt to draw qualified pilots into the regional airline industry. One of the primary objectives of this report is to determine if these compensation increases have drawn professionals from other career fields into the airline industry; and if so, what motivational factors influenced their decisions. To answer these questions, the following study was created.

CHAPTER III

METHODOLOGY

Sequential Mixed Methods

The following study uses an explanatory sequential mixed methods approach to identify second career pilots and analyze their underlying career transition motivations. This type of mixed methods research design involves the collection and analysis of both quantitative and qualitative data in response to a research question or hypothesis (Creswell, 2014). The sequential format requires the creation of two separate segments as illustrated in Figure 8. Phase I of this study involves the collection of quantitative data using a survey to identify second career individuals and measure his or her associated career change motivations. The resulting data from the survey was analyzed and used to design Phase II, the qualitative segment. In this design, both the quantitative and qualitative aspects are analyzed separately. The primary purpose of this mixed methods approach is to have the qualitative data help explain in more detail the quantitative results.

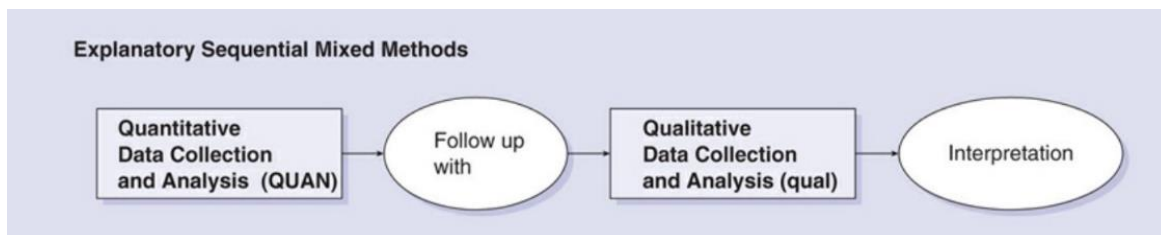


Figure 8. Explanatory Sequential Mixed Methods Design (Creswell, 2014)

Quantitative Study

Phase I of this research involves a quantitative analysis of pilots at two selected flight training programs located in the United States. To protect the information of those involved, the flight schools and participating subjects have been deidentified in accordance with the University of North Dakota Institutional Review Board (IRB) human subjects research requirements. The selected pilot training schools operate under different hourly certification protocols established by the FAA. The Academy based flight program provides an accelerated form of structured training under the guidance of 14 CFR Part 61. This school does not qualify for the restricted ATP minimums established by the FAA and requires flight school graduates to obtain 1,500 flight hours before the individuals are qualified to operate as Part 121 air carrier First Officers. The University flight school operates under the guidance of 14 CFR Part 141. University training graduates who obtain their Bachelor of Science Aerospace degree are eligible for a Restricted ATP certificate. This certificate allows for the individual to operate as a Part 121 air carrier First Officer with a reduced 1,000 flight hours (FAA, 2013a).

Each of the associated training programs at the Academy and University offer flight training that meet the certification standards established by the FAA. However, the individuals that attend these schools may differ depending on their associated education and career backgrounds. Those individuals seeking an airline pilot career who already possess a 4-year degree, a hiring requirement established at most legacy air carriers, may choose a flight training path that will expedite his or her path to Part 121 employment. The Academy program caters to these individuals by provided an accelerated flight training program that can have a newly enrolled student complete all required FAA pilot ratings in as little as 9 months. These students

often become flight instructors for the flight school to obtain the required 1,500 flight hours for airline employment.

The University flight school provides the required flight training to the enrolled students, who concurrently complete University based courses that will earn them a bachelor's degree. Most of the associated flight training courses require a college semester of study to complete. An enrolled student at the University will generally take longer to obtain his or her ratings when compared to the Academy flight school, but they will also qualify for the Restricted ATP minimums established by the FAA. As with the Academy program, graduates of the University often instruct for the associated training program in effort to build flight time and meet the required 1,000 flight hours for their Restricted ATP certificate.

Using Qualtrics, a survey design and distribution software platform, a custom survey was created to assess the educational and career backgrounds of students at both flight schools. The survey was also designed to comply with the standards established by the IRB. The data obtained from the participating individuals was collected via the Qualtrics website and stored on the associated website server. Only the principle investigators had access to this data, which was password protected to ensure confidentiality for those who participated. The resulting data was then downloaded from the Qualtrics server, organized using an Excel document, and analyzed using IBM's SPSS software platform. All the associated raw data was stored on a password protected computer.

The format of the survey was designed to obtain an understanding of the participating individuals' flight training progress, educational and career backgrounds, and motivations for changing careers, if applicable. Depending on the responses chosen, up to 22 questions were

presented throughout the survey. A deidentified copy of the distributed survey questions has been provided in the appendix section of this study.

Due to the lack of literature surrounding what specifically defines “second career”, the following definition has been established: An individual who pursued a different career occupation external to aviation for a period greater than five years after completing high school or obtaining a college degree. If the survey participant selected “yes” to this question, he or she was then presented with a list of various motivational career changing factors as identified in the literature review. The following career change motivations were chosen for this study:

- Pursuit of a vocation (passion for aviation)
- Flexibility in work schedule
- Compensation
- Stress related to previous career
- Conflicts between work and other life roles
- Better alignment between personal values and organizational priorities
- A lack of challenge during previous career
- Occupational dissatisfaction with previous career
- Career advancement

A Likert scale was presented for each motivation, which allowed for the participant to choose how influential each factor was in his or her decision to switch careers to include: very influential, influential, neutral, not very influential, or not influential at all. Additionally, year of birth and gender demographic questions were presented at the end of the survey. Upon completion of the survey, the participants were asked if they would be willing to be contacted for

additional information surrounding their responses. If they selected yes, the participants were directed to a separate Qualtrics survey where they could provide additional contact information. This additional step was necessary to ensure the separation of the participant's survey answers from his or her contact information. The quantitative phase of the study was designed to answer the following research questions:

1. What are the background characteristics of the survey participants?
2. Do any of the associated background characteristics of the participants relate to the type of flight school chosen?
3. Are there any statistical relationships between second career survey participants and the selected career change motivations?
4. Which career change motivations ranked highest among second career survey participants?

Qualitative Study

Phase II of this research involves a qualitative analysis of the second career individuals identified in Phase I. This aspect of the study is classified as a basic qualitative design, which was created to understand the career change motivations for those involved, and how the associated individuals interpreted his or her personal experiences (Merriam & Tisdell, 2016). The non-probability sample used for this portion of the study was comprised of the defined second career Phase I survey participants who provided contact information upon the completion of the survey. Additionally, two network sample participants were chosen to participate in the qualitative study due to their second career attributes. These individuals did not attend either of

the associated schools in which the survey was distributed. However, their selected training paths qualified them as second career participants as defined in Phase I of the study.

Invitation emails were sent out to 17 of the survey participants that qualified as second career individuals who provided additional contact information. In total, 12 phone interviews were conducted between May 14th and June 3rd, 2019. The qualitative study was designed to answer the following questions and research objectives:

1. Analyze each participant career change using the following interview research questions:
 - What were the various motivations surrounding the second career pilot's decisions to pursue a new career in aviation?
 - What kinds of challenges did the interviewee experience when making the decision to change careers?
 - Why didn't the interviewee pursue aviation earlier in life?
 - What factors influenced the interviewees decision when deciding on a flight training program?
 - Would the career change interviewees have changed anything if they were to repeat the process and what advice do they have for others?
2. Did the interviewee career change motivations response rate relate to the proactive/reactive frequencies of the VET study?
3. Using the TTM model, describe each participant's transition through the associated stages of a career change and highlight which factors influenced these transitions.

The semi-structured interviews included a total of nine questions that focused on obtaining the participant's underlying motivations surrounding his or her career change decisions. Follow up questions were asked based on the respondent's answers if additional information was needed. Patton (2015) suggests the use of six types of questions when conducting an interview: experience and behavior, opinion and values, feelings, knowledge, sensory, and background questions. The questions chosen for this study were designed using the guidelines of Patton with an emphasis on avoiding yes-or-no questions, or any style that would lead the interviewee's responses. An example of the questionnaire used can be found in the appendix section of this report.

A standard interview protocol was created for the interview portion of this research. This protocol included the following: interviewee information, date and time stamp for when the interview was conducted, the nine questions for the study, additional probes or follow up questions based on the respondent's answers, and a concluding thank you for participation in the study. This protocol allowed for standardization among interviews conducted while providing some flexibility for addition information using the semi-structured interview design.

The interviews were conducted and recorded using the Trint application, which is an audio transcribing platform. Trint uses automated transcribing software to convert voice to text. The IOS application provides a recording feature that uses Voice over Internet Protocol (VoIP) to improve recording quality, which is necessary to ensure transcription accuracy. The IOS phone application was used to conduct, record, and automatically transcribe the interviews upon completion. To protect the information and identities of the interviewees, the Trint platform uses a completely automated process for transcribing the recorded data. Only the principal

investigator had access to the recordings and information within. An additional description of Trint transcribing security can be found using the following link: <https://trint.com/data-security/>.

Once the data was transcribed, the principal investigator manually edited the transcripts using the Trint software. This platform allows for the audio to be replayed while each word from the recorded conversation is highlighted. The combination of the audio and text feature of the application provides additional accuracy and expedited review of the data within. Once the transcription was audited by the principal investigator, the identities of the interviewees were removed prior to coding and analysis of the data. This ensured that the information for each participant was separated from the transcription, thus eliminating any form of bias pertaining to name, gender, background, or answers that could arise during the analysis phase of the research.

The constant comparative method was used during the coding analysis of the interview transcripts. This method involves comparing one segment of data with another to identify any relationships among the information. These relationships are grouped together through the process of coding and organized to create common themes. Coding is the process of organizing data by bracketing segments of information and then assigning a word to that data (Creswell, 2014). Once coding was complete, the principal investigator determined the frequency of the codes, relationships among the codes, and the underlying concepts. The overall objective was to identify patterns, form relationships, and build grounded theory by analyzing the results (Charmaz, 2014).

Upon completion of the transcription review, the text from each interview was uploaded into NVivo, a qualitative data analysis software tool used for the organization and coding of interview data. This application platform provides a method of manually reviewing the associated interview transcripts and selecting various codes from the raw interview transcripts.

Different themes can then be created as patterns emerge from the interview data. NVivo has several tools that assist in the detection of codes, thus preventing any omission of pertinent data throughout the transcripts. Focused search functions, visualizations, and classification tools allow for an organized method of data analysis. An example of this is illustrated in Figure 9, which shows the use of the “Word Tree” search function of NVivo; where a specific term can be searched for and the various branches of words associated with the term throughout the interview transcripts are provided for analysis.

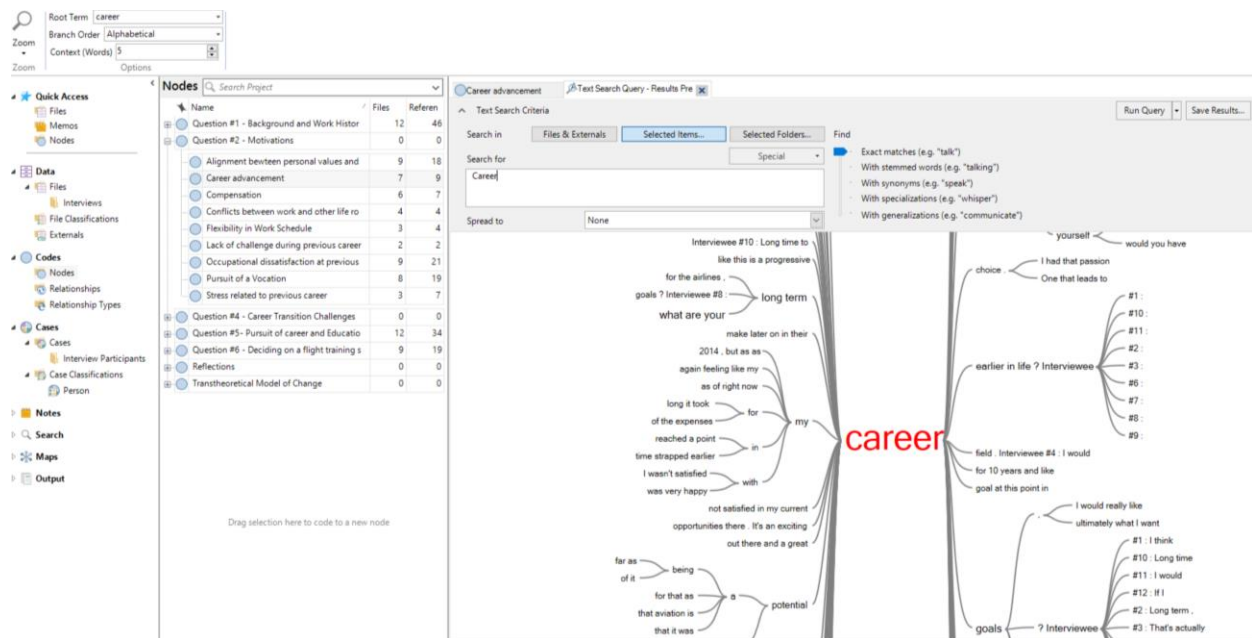


Figure 9. NVivo Analysis Software

Several methods were implemented when conducting the interview data analysis to obtain validity and reliability. An audit trail was included throughout the analysis which described how the data were collected, categories derived, and associated decisions were made. This information was recorded on a separate Word document that could be referenced during the coding process. Additionally, the process of triangulation was incorporated to increase validity by obtaining multiple sources of data, which could then be cross-checked (Merriam & Tisdell,

2016). Obtaining 12 interviews from participants that trained at different flight schools increased the credibility and quality of the study rather than limiting the data to a sole source or single investigation.

Qualitative reliability requires that the researcher's approach be consistent, and that findings can be replicated (Merriam & Tisdell, 2016). This was obtained by creating a standard format and interview protocol for the interviews conducted. A limitation of qualitative analysis is that human behavior is never static and varies among individuals. This study attempted to overcome this limitation by conducting a higher quantity of interviews and obtaining interviews from multiple sources and various perspectives. Additionally, the methods surrounding the coding process, as described previously, ensured that the analysis of the data was consistent throughout. Implementing these procedures during the data analysis improved the validity and reliability of the research results.

Qualitative research is a form of interpretative research and therefore the principle investigator ultimately introduces his or her own previous experiences and bias into the study (Creswell, 2014). It is the goal of this research to make these potential biases transparent to the reader by providing a brief personal overview of the author's education and work history. Although the author will attempt to remove any of this bias from the study, providing a general personal background will give the reader a better understanding of the author's personal interests in the research.

The author began his aviation career at the University of North Dakota in 2007, graduating with a Bachelor of Science in Aeronautics, majoring in Commercial Aviation. After flight instructing at the University for two years, the author was hired as a Pilot, First Officer at a 14 CFR Part 121 regional air carrier in the Spring of 2011. In 2012, a corporate flight department

opportunity became available, which allowed for the author to pursue a career goal of flying for the private sector of aviation in his home town. However, due to the rapidly improving conditions throughout the regional air carrier industry and long-term benefits associated with an airline career, the author transitioned back to a Part 121 regional air carrier in 2015. While employed at the regional air carrier as a Captain, the author also worked in the pilot recruiting department to assist in the screening and hiring of aviation professionals.

During his employment as a Pilot Recruiter, the author discovered a shift in the backgrounds and employment histories of the professional pilot applicants. This trend became the basis for the current research and investigation into those pursuing the professional pilot occupation as a second career. In February of 2017, the author was hired at a legacy airline where he currently resides as a Pilot, First Officer. It is the goal of the author to contribute further knowledge to the aviation profession through the results of this dissertation study.

CHAPTER IV

RESEARCH RESULTS & FINDINGS

This chapter contains a summary and analysis of the quantitative and qualitative findings of the professional pilot career change study. The first section of this chapter provides an overview of the survey results and various statistical tests that were conducted using the data collected. Each of the associated research objectives and questions described in the methodology section of this report are analyzed and discussed. Upon completion of the quantitative analysis, this chapter includes the qualitative interview data obtained from each of the study participants. Various themes are identified and tied to the research objectives discussed previously.

The purpose of this study was to obtain a better understanding as to the professional backgrounds of second career pilots entering the aviation industry by ascertaining what motivational factors influenced their career decisions. The resulting data gained from this research promotes a greater understanding of the motivations among industry professionals pursuing the pilot profession. It is important for legacy airlines to recognize what factors affect the pilot supply of their regional partners. Understanding these factors will help ensure regional air carriers are appropriately staffed to meet the forecasted demand for qualified aviators.

Quantitative Results

Phase I of this study involved the distribution of a survey designed to target the educational and professional backgrounds of pilots who have changed professions from a non-

pilot career. Additionally, the survey obtained data surrounding these individuals' motivations for changing careers to pursue the pilot profession. Upon completion of the survey, participants were asked to provide contact information, which was then used for the qualitative phase of this study.

As discussed previously, the survey was distributed to the two participating flight schools, both of which follow a structured training curriculum. The Academy program used for this study trains pilots at an increased pace, also known as a "fast-track program", when compared to University based programs. The University flight training program provides the associated students with a bachelor's degree upon completion of flight training. Both flight training programs provide training to meet the requirements established by the FAA.

The survey was distributed to the Academy flight school on March 12th, 2019 and the University on March 19th, 2019. A total of 42 respondents from the Academy and 21 respondents from the University participated in the survey, which was closed for analysis on May 12th, 2019. To properly identify individuals pursuing aviation as a secondary career path, a definition of "second career" was incorporated into the survey. As discussed previously, second career is defined in this study as an individual who pursued a different career occupation external to aviation for a period greater than five years after completing high school or obtaining a college degree.

Additionally, due to the significant size of the University flight training program, a targeted group of individuals age 25 and older were provided with the survey. This method of selectively identifying participants ensured that the survey was targeted to the appropriate individuals that potentially qualified as second career pilots. Had this technique not been implemented, the survey would have gone out to a significant number of individuals who were

not the focus of the study. Therefore, a higher proportion of University flight school aviators met the definition of second career as defined by this study.

In total, 31 percent of the Academy survey participants (13 of 42) qualified as second career when compared to 67 percent of the University participants (14 of 21). The individuals that selected “yes” to the second career question were directed to the motivations section of the survey, which was used to determine which factors influenced their career transition decisions. It is the focus of this study to analyze the results provided by the individuals that qualify under the definition of second career. It is also important to note that 28 of the 42 Academy survey participants (67 percent) possessed an associate or bachelor’s degree in a non-aviation field. Therefore, it is possible that a larger portion of the Academy survey participants were second career individuals than what was indicated by the associated results. However, due the limitations of this study, only those who selected “yes” to the second career question, as defined in this study, were analyzed in the following discussion.

Quantitative Research Question 1

The first research question of the quantitative study was to obtain, organize, and analyze the background characteristics of the survey participants. Each survey participant was presented with questions surrounding educational, work history, and basic age/gender demographic information. The frequencies and demographics for the second career participants are included in the following discussion.

A total of 12 males and 1 female from the Academy flight school and 11 males and 3 females from the University selected “yes” to being a second career individual. In total, males consisted of 85 percent of the surveyed flight schools, while females accounted for 15 percent, as

depicted in Table 3. The survey also included a section that allowed the participant to select his or her highest level of education and specific type of education or degree. Table 4 includes the data associated with each of the survey respondents.

Table 3

Flight School Gender Distribution

Gender	Academy	University	Percentage
Male	12	11	85
Female	1	3	15
Total	13	14	100

Table 4

Flight School Highest Level of Education

Education	Academy	University	Percentage
High School Diploma	3	7	37
Associate Degree	1	3	15
Bachelor's Degree	8	4	44
Master's Degree	1	0	4
Total	13	14	100

Age distribution data was also obtained from the survey participants. In summary there were no participants under the age of 25, seven participants ages 25-29, ten participants ages 30-34, six participants ages 35-39, two participants ages 40-44, and two participants age 45 and older. Table 5 includes the distribution of ages among the participating individuals at each flight

school. The mean for both the Academy and University participants was 33 years of age, while the median for the Academy was 32 years of age and the University 31 years of age.

The participant age groupings from each flight school are identical for those ages 35-39, 40-44, and 45 and older. The Academy flight school had one more individual from the 25-29 group, while the University flight school had two more individuals from the 30-34 group. It is important to note the nearly identical age distributions between flight schools. This equally represented non-probability sample increases the reliability of the quantitative results by providing equal representation from all age groups at each flight school.

Table 5

Flight School Participant Age

Age Group	Academy	University	Percentage
Under 25	0	0	0
25-29	4	3	26
30-34	4	6	37
35-39	3	3	22
40-44	1	1	7.5
Over 45	1	1	7.5
Total	13	14	100

Quantitative Research Question 2

Do any of the associated background characteristics of the participants from research question 1 correspond to the type of flight school chosen? A chi-square test of significance is the statistical method used to determine if there is a relationship between two categorical variables.

This test compares the observed frequencies for a set of data to the frequencies one would expect to see by chance (Field, 2013).

The first chi-square test used in the survey data was to determine if there was a relationship between degree held and the flight school chosen for training. A hypothesis for this study was that a student would choose a flight school based on the education background of the individual. This is based on the concept that most legacy air carriers require a 4-year degree to be eligible for hire as a Pilot, First Officer. Therefore, the data obtained surrounding highest level of education was transformed to separate those who have obtained a 4-year degree from those who have not.

The resulting transformed data is illustrated in Table 6. There were four individuals from the University that possessed a 4-year college degree when compared to nine individuals from the Academy. In contrast, 10 individuals from the University did not possess a college degree when compared to four individuals from the Academy. The resulting data from the chi-square test indicated that there was a significant relationship between individuals who possessed a 4-year college degree and the flight school chosen for training ($X^2 = 4.46, p = .035$).

Table 6

Relationship Between Degree Held and Flight School Chosen

		Academy	University
No College Degree	Expected/Observed	6.7/4	7.3/10
4-year College Degree	Expected/Observed	6.3/9	6.7/4

$X^2 (1, N=27) = 4.46, p = .035$

To determine whether there was a relationship between the two categorical variables of flight school and gender, a Fisher’s exact test was conducted using SPSS. This test is generally used in place of a chi-square test when the frequencies in each cell are five or less (Field, 2013). The results of the Fisher’s exact test suggest that there was not a significant relationship between the gender of the survey respondents and the flight school chosen ($p = .596$, *Fisher’s exact test*).

Table 7

Relationship Between Gender and Flight School Chosen

		Academy	University
Male	Expected/Observed	11.1/12	11.9/11
Female	Expected/Observed	1.9/1	2.1/3

($p = .596$, *Fisher’s exact test*)

Quantitative Research Question 3

Are there any statistical relationships between second career survey participants and the associated career change motivations? The first statistical test conducted involves determining if there is a relationship of career change motivations between the two flight schools. This relationship can be tested using an independent-samples t -test. The following t -tests compare the means of each motivational response between the flight school participants to determine if there are any significant relationships. Due to the limitations of the independent samples t -test, Levene’s test for equality of variance was included in the analysis. If the associated significance value was less than .05, homogeneity had been broken and therefore, the category “equal variances not assumed” was used in the t -test report.

The results of the *t*-test suggest no significant relationship between the individual flight schools and the career change motivations selected. The associated motivational *t*-test results were as follows: pursuit of a vocation $t(25) = -.20, p = .842$; flexibility in work schedule $t(25) = -1.44, p = .163$; compensation $t(25) = -.91, p = .372$; stress related to previous career $t(25) = -1.33, p = .195$; conflicts between work and other life roles $t(25) = -.40, p = .690$; alignment between personal values and organizational priorities $t(25) = .88, p = .385$; lack of challenge at previous career $t(25) = -.41, p = .686$; dissatisfaction at previous career $t(25) = 1.19, p = .245$; career advancement $t(25) = -.12, p = .909$. These results represented in Table 8 suggest that the participants of each flight school had similar motivational career change factors, indicating no significance among resulting means. Therefore, the data surrounding career change motivations for Phase II of this study will assume equality among interview participants from both the Academy and University flight schools.

Table 8

Independent Samples t-test: Flight School and Career Change Motivations

	<i>t</i>	df	Sig. (2-tailed)
Vocation	-.200	25	.842
Flexibility	-1.440	25	.163
Compensation	-.910	25	.372
Stress	-1.330	25	.195
Conflicts	-.400	25	.690
Alignment	.880	25	.385
Lack of Challenge	-.410	25	.686
Dissatisfaction	1.190	25	.245

The next statistical analysis conducted using the survey results included a correlation comparison among career change motivations. The ordinal data obtained from the Likert scale analysis can be analyzed using Kendall's tau, which is more appropriate for smaller data sets when compared to Spearman's rho (Field, 2013). The resulting data is represented in Table 9, indicating significant correlations between the following career change motivations: pursuit of a vocation and career advancement $r(27) = .464, p < .05$; flexibility in work schedule and better alignment between personal values and organization priorities $r(27) = .360, p < .05$; flexibility in work schedule and career advancement $r(27) = .394, p < .05$; stress related to previous career and conflicts between work and other life roles $r(27) = .577, p < .05$; better alignment between personal values and organizational priorities and lack of challenge during previous career $r(27) = .316, p < .05$; lack of challenge during previous career and career advancement $r(27) = .367, p < .05$; occupational dissatisfaction with previous career and career advancement $r(27) = .334, p < .05$).

Table 9

Correlations Among Career Change Motivations

		Flexibility	Compensation	Stress	Conflicts	Alignment	Lack of challenge	Dissatisfaction	Career Advancement
Vocation	Correlation (r)	.311	-.073	.286	.032	.213	.213	.279	.464
	Sig. (2-tailed)	.065	.673	.087	.848	.205	.197	.097	.006
Flexibility	Correlation (r)		.268	.133	.206	.360	.292	.000	.394
	Sig. (2-tailed)		.113	.415	.210	.028	.070	1.000	.017
Compensation	Correlation (r)			.130	.195	.163	-.092	-.188	-.024
	Sig. (2-tailed)			.439	.247	.333	.578	.264	.886
Stress	Correlation (r)				.577	.070	-.114	.107	.078
	Sig. (2-tailed)				.000	.667	.478	.510	.632

Conflicts	Correlation (r)	.108	-.294	.150	.094
	Sig. (2-tailed)	.509	.067	.360	.567
Alignment	Correlation (r)		.316	.229	.098
	Sig. (2-tailed)		.049	.162	.551
Lack of Challenge	Correlation (r)			.300	.367
	Sig. (2-tailed)			.062	.023
Dissatisfaction	Correlation (r)				.334
	Sig. (2-tailed)				.042

*N = 27 throughout all motivation correlations

Quantitative Research Question 4

Which career change motivations ranked highest among second career survey participants? The survey participants that were identified as second career individuals were presented with nine career change motivations as identified previously in the literature review. A Likert scale was provided for each of the nine motivations that allowed the participant to select one of the following in relation to how the motivational factor influenced his or her career change decision: very influential, influential, neutral, not very influential, or not influential at all.

The resulting data was organized and analyzed using an Excel spreadsheet as illustrated in Table 10. To properly rank the associated motivations, a method of quantifying the Likert results was implemented. This transformation of motivations assigned a weight to each of the levels of influence using the Likert results. The weights were assigned as follows: very influential (5), influential (4), neutral (3), not very influential (2), and not influential at all (1). The category tally for each level of influence was multiplied by the weight to give a total score for the associated category. This weighted total is represented by the “score” row in Table 10. The weighted total was then divided by the number of survey participants to get a weighted average for each category.

Table 10

Participant Career Change Motivations

	Vocation	Flexibility	Compensation	Stress	Conflicts	Alignment	Lack of Challenge	Dissatisfaction	Career Advancement
Very Influential	14	8	13	9	4	7	4	11	11
Influential	8	10	8	7	9	6	5	7	7
Neutral	2	5	5	6	9	10	7	3	5
Not Very Influential	2	2	1	3	3	2	6	4	1
Not Influential at All	1	2	0	2	2	2	5	2	3
Weighted Score	113	101	114	99	91	95	78	102	103
Weighted Average	4.19	3.74	4.22	3.67	3.37	3.52	2.89	3.78	3.81
Rank	2	5	1	6	8	7	9	4	3

The resulting weighted averages among career change motivations represented in Table 10 ranked as follows: compensation (rank = 1, $M = 4.22$), pursuit of a vocation (rank = 2, $M = 4.19$), career advancement (rank = 3, $M = 3.81$), dissatisfaction with previous career (rank = 4, $M = 3.78$), flexibility in work schedule (rank = 5, $M = 3.74$), stress related to previous career (rank = 6, $M = 3.67$), alignment between personal values and organizational priorities (rank = 7, $M = 3.52$), conflicts between work and other life roles (rank = 8, $M = 3.37$), lack of challenge at previous career (rank = 9, $M = 2.89$).

Qualitative Results

The objective of Phase II of this mixed method design was to obtain a greater depth of information surrounding those who pursued the professional pilot career as an alternative work endeavor in life. The results gained from this portion of the study were analyzed and compared to the quantitative results from Phase I using the sequential mixed methodology. The qualitative study was designed to understand the career change motivations for the selected individuals. The

non-probability sample used for this portion of the study was comprised of the defined second career survey participants who provided contact information upon the completion of the survey. The coding process used for this section was described in the methodology section of this report and included three levels of analysis: open coding, selective coding, and theoretical coding. The constant comparative method was used during the coding analysis of the interview transcripts, which involved comparing one segment of data with another to identify any relationships among the information.

Sample

A total of 12 interviews were conducted between May 14th and June 3rd, 2019. Five subjects were interviewed from the flight Academy and five subjects from the University. The additional two network sample interviewees were chosen to participate in the qualitative study due to their second career attributes. These individuals did not attend either of the associated schools in which the survey was distributed. However, their selected training paths qualified them as second career participants as defined in Phase I of the study.

In total, there was a 22-year age gap (26-48) among the twelve interviewee participants, nine males (75 percent) and three females (25 percent). The five University interviewees consisted of three females (60 percent) and two males (40 percent), while the five Academy and two external interviewees were all male (100 percent). Seven of the twelve interviewees possessed a 4-year college degree (58 percent). Of those who possessed a college degree, four interviewees were located at the Academy school (57 percent), and two from the University (28 percent). Four of the twelve participants had a military background (25 percent), of which three of the four chose the University flight school (75 percent).

There was a vast range of work experience among the interview participants. Previous career professions included the following: biologist, emergency medical technician, corrections officer, computer engineer, entrepreneur, information and technology, insurance sales, law enforcement, linguist, journalist and anchor, marketing and sales, and maintenance technician. To protect the identities of the participants, specific education and work history information associated with the participating individuals was not included in this analysis. However, each of the associated work backgrounds were analyzed during the interviews and applied to the various themes and research questions in the following section.

Qualitative Research Question 1

What were the various motivations surrounding the second career pilots' decisions to pursue a new career in aviation? To answer this question, the participants were asked what motivated them to change careers from their previous occupations to become professional pilots. The associated answers were automatically transcribed using the Trint software, edited for accuracy using the NVivo platform, and coded manually. Each segment of text was assigned a various code depending on the participant answer using open coding.

Upon completion of the manual coding, the individual codes were transferred into one of the four motivational themes using selective coding. The NVivo platform provides a word-count tool, which was used to verify that the codes were placed in the appropriate motivational categories. Once the codes were transferred into the motivational categories, various themes emerged surrounding the codes within. This theoretical coding linked the final phase of the coding process, where relationships among the coded data could be formed.

Career Opportunities

This theme included codes relating to career advancement and compensation, which was identified in eight of the twelve interview respondents (67 percent). Many of the interviewees referenced opportunity in the industry and the recent changes that have occurred regarding pilot demand and the associated pay increases. Common codes included: pilot shortage, investment in future, stability, and money. The following excerpts taken from the interviewees encompass the associated career opportunity codes:

There's a lot of talk about a pilot shortage... with that lack of pilots comes pay incentives, quick movement, getting a job with a desired salary, and ultimately ending up where you want to be. (Interviewee 3)

I'd be lying if I didn't say the pilot shortage played a role, knowing that a job was waiting for me out there with good pay and good benefits. (Interviewee 6)

I could make a better investment for my future with a bigger reward in the end... A big draw to changing careers was I needed something with a little bit more financial stability. (Interviewee 5)

I'm looking forward to the money eventually. (Interviewee 7)

The resulting analysis of the interviewee responses suggests that improvements surrounding compensation rates throughout the industry affected their career change decisions. Opportunity with future employment, stability among air carriers, and long-term financial rewards were prominent in the respondents' answers. This information supported the high number of word counts associated with the career opportunity codes. An additional Mind Map

was created as illustrated in Figure 10. This represents the Career Opportunity theme and the associated codes.

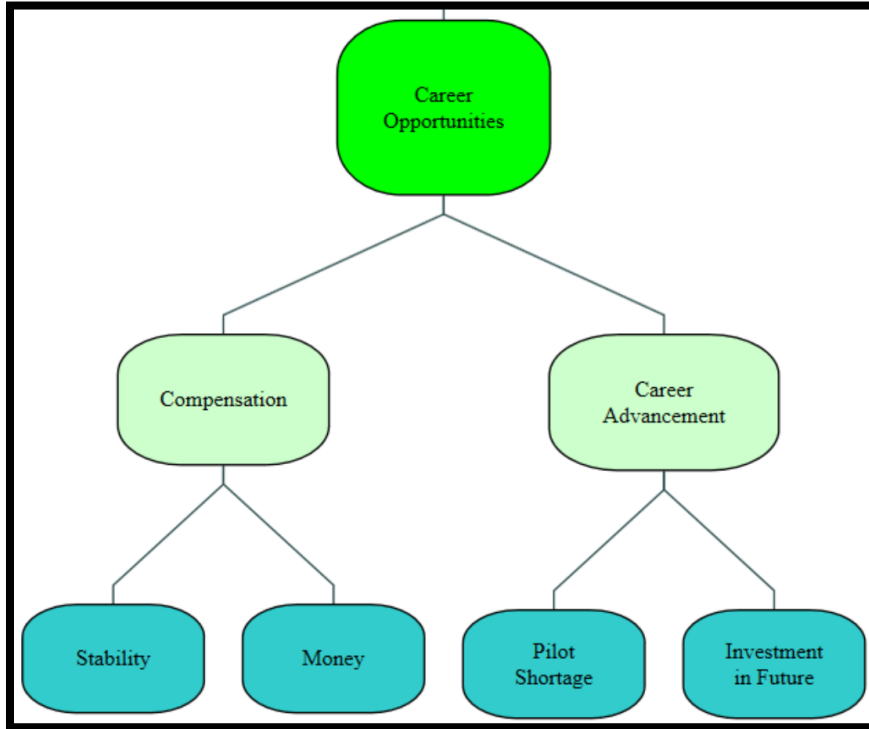


Figure 10. Career Opportunities Mind Map

Self-Fulfillment

This motivational theme included codes relating to the pursuit of a vocation and self-actualization. To properly accept a work role, an individual must identify and prioritize his or her own values. If these established values align with the occupational duties associated with a given job, satisfaction is more likely to occur (Brown, 1995). The common codes that emerged from this categorical theme included: desire for travel/adventure, passions, life goals, and aspirations. Ten of the twelve interview respondents (83 percent) referenced these codes when answering the career change motivation questions.

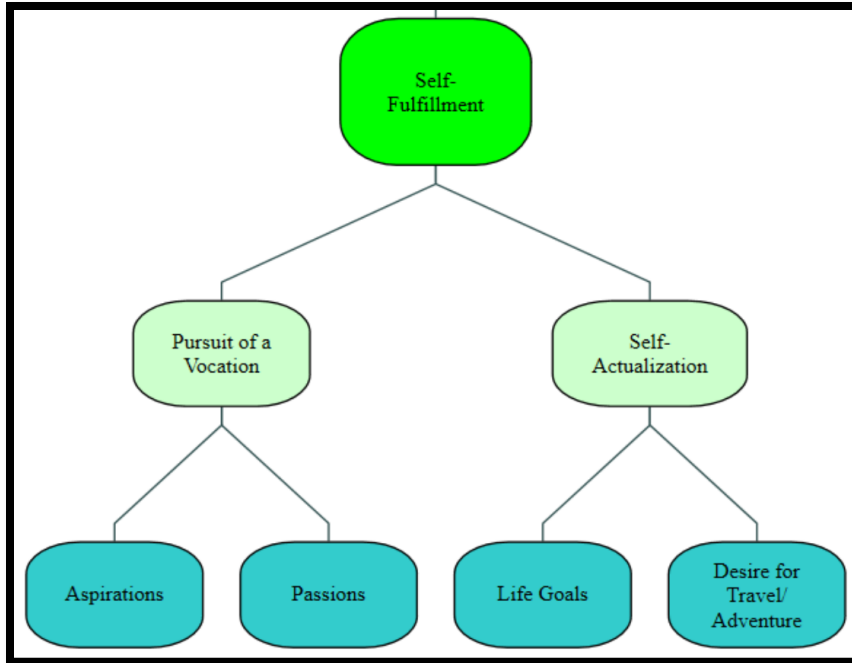


Figure 12. Self-fulfillment Mind Map

Dissatisfaction During Previous Career

This theme included motivations relating to occupational dissatisfaction, lack of challenge during previous career, and stress. Ten of the twelve interview respondents (83 percent) referenced this theme when discussing motivations to change careers. The common codes that emerged from the dissatisfaction category included: stagnation in previous career, boredom, exhaustion, occupational pressures, and work frustrations.

People aren't having to sit in their position for 10 years before they can move, which is exactly what I felt like I was doing. (Interviewee 3)

I just got so bored, I couldn't take it anymore... You go the same route, same road to get to your job, and you get stuck in a building for eight hours a day. It was literally driving me crazy. (Interviewee 1)

There were moments where I was extremely exhausted, not just physically, but mentally
(Interviewee 10)

Working at the government is constrictive, which can be inefficient and frustrating
(Interviewee 2)

A Word Cloud was also created for a visual representation of the most common dissatisfaction themed words used throughout this question of the interview, which is illustrated in Figure 13. Boredom and dissatisfaction with the work environment was often referenced as a push that drove many of the interviewees to change careers. A Mind Map provided in Figure 14 illustrates the coded categories associated with the dissatisfaction theme.



Figure 13. Dissatisfaction Word Cloud

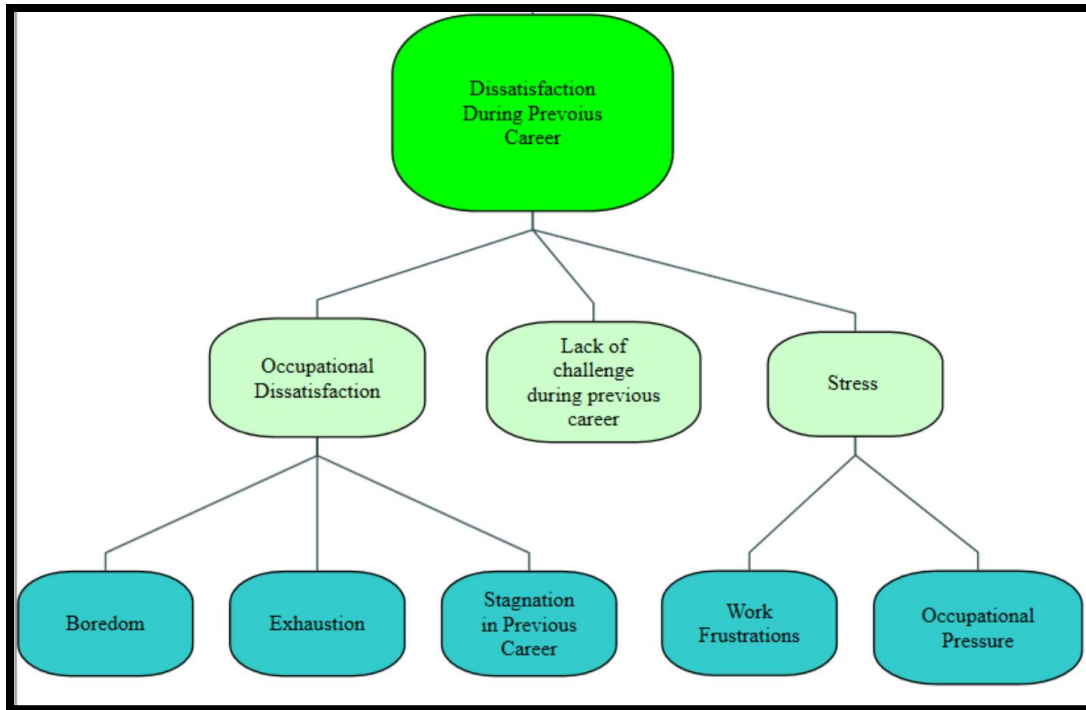


Figure 14. Dissatisfaction Mind Map

Obligations

The final motivational theme identified throughout the interviews was obligations. The categories relating to this theme include conflicts between work and other life roles as well as flexibility in work schedule, which further sub-divide into the following codes: positive obligations, negative obligations, time-off, and other hobbies. Six of the twelve respondents (50 percent) referenced the obligation theme as one of their primary motivations for changing careers.

I had the responsibility of taking care of my family. (Interviewee 1)

I got a lot of pushback from my family and friends. (Interviewee 2)

I have a family now, so eventually aviation is going to provide the time to spend several days in a row at home. (Interviewee 6)

Aviation is a job where you can do interesting work, but you still get a decent amount of time off so that you can pursue things other than your dedicated job. (Interviewee 2)

The obligation theme discussed by the interviewees included both positive influences and negative influences regarding the career change motivation. Some of the interviewees referenced a negative family influence, meaning that they received pushback or thought of their family obligation as a deterrent to changing careers. However, some interviewees referenced family obligations as a form of positive influence with the pilot career providing them additional time for family and other activities. The obligation theme is represented by a Mind Map in Figure 15.

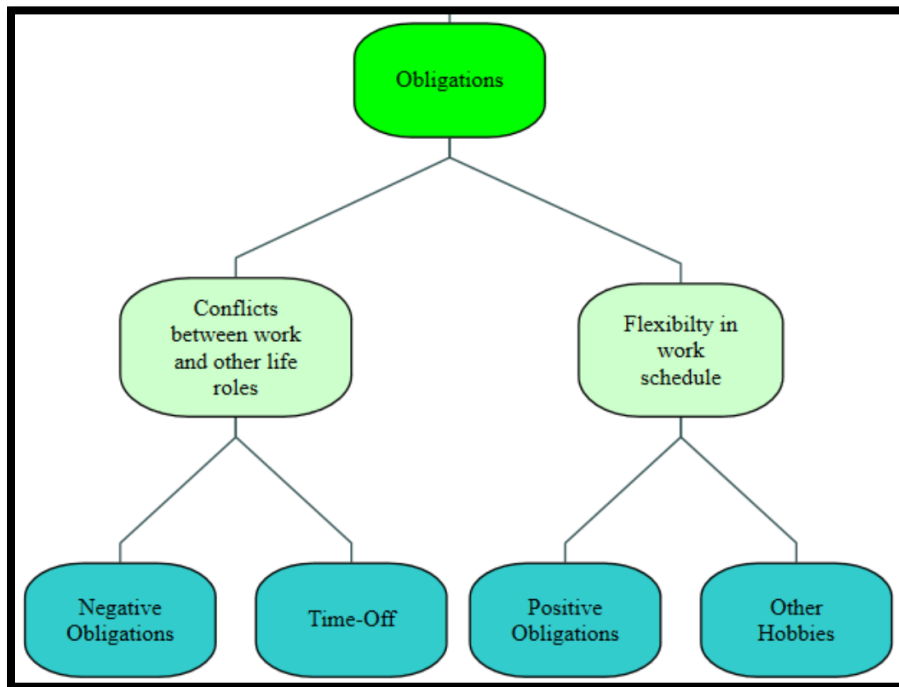


Figure 15. Obligations Mind Map

Qualitative Research Question 2

What kinds of challenges did the interviewee experience when making the decision to change careers? This question focused on identifying any obstacles that the interviewees encountered when deciding to pursue the professional pilot career. Using the coding process

described in question 1, there were three primary themes that emerged from the coded data: family needs/expectations, uncertainty, and finances. Each of these three themes either delayed or hindered the transition of the interviewee.

Family Needs/Expectations

Five of the twelve interviewees (42 percent) referenced family needs/expectations as a significant challenge when making the decision to change careers. *“Sometimes you need the support of the people around you. That was not necessarily something that I had”* (Interviewee 1). Three of the interviewees specifically referenced pushback from their families and friends suggesting that they shouldn’t pursue the professional pilot career.

These individuals had established careers, which often resulted in criticism when presenting the idea to their loved ones. *“I got a lot of pushback from my family and friends. From the outside looking in, they thought my job was all that and a bag of chips, so they were confused why I would throw that away”* (Interviewee 2). Each of the associated interviewees also referenced having a steady income and job security, which they had to forfeit when committing to flight training.

Uncertainty

Seven of the twelve participants (58 percent) referenced some form of uncertainty when making the decision to change careers. Each of these individuals discussed making the jump from a stable career with financial security and benefits. *“It's scary to step away from something that is secure, that is consistent, where you're respected, you're well known and do something that you may fail at”* (Interviewee 6). This is the reality that each of these individuals faced when decided to change careers.

Finances

All twelve of the interview participants referenced financial stability as being one of the biggest obstacles when deciding to change careers. Each of the twelve individuals had a career prior to pursuing the airline profession. Before they could begin training, the participants had to give up their current career and associated income. *“I was making eighty to one hundred grand a year, plus benefits and everything. It's hard to walk away from that income and a little bit scary”* (Interviewee 7). Only one of the interviewees referenced maintaining a part-time occupation relating to his previous career to gain addition income during flight training.

The other major financial obstacle referenced by all twelve of the interviewees was finding the funding to support the training costs. Individuals who were currently attending the University flight school qualified for government loans or GI Bill benefits, if coming from a military background. However, the Academy and Part 61 students required a private loan for financial assistance. *“I wanted to get into aviation, but I didn't have the funding... A lot of people have someone that they can co-sign with, I had to rely on myself”* (Interviewee 12).

This obstacle of obtaining funding and various loans was a common theme among respondents. *“There were zero government loans available and they were all considered personal private loans from those lenders, so the criteria you have to get approved is much stricter”* (Interviewee 2). A Mind Map was created as illustrated in Figure 16, representing the three common themes associated with the interviewee career transition challenges.

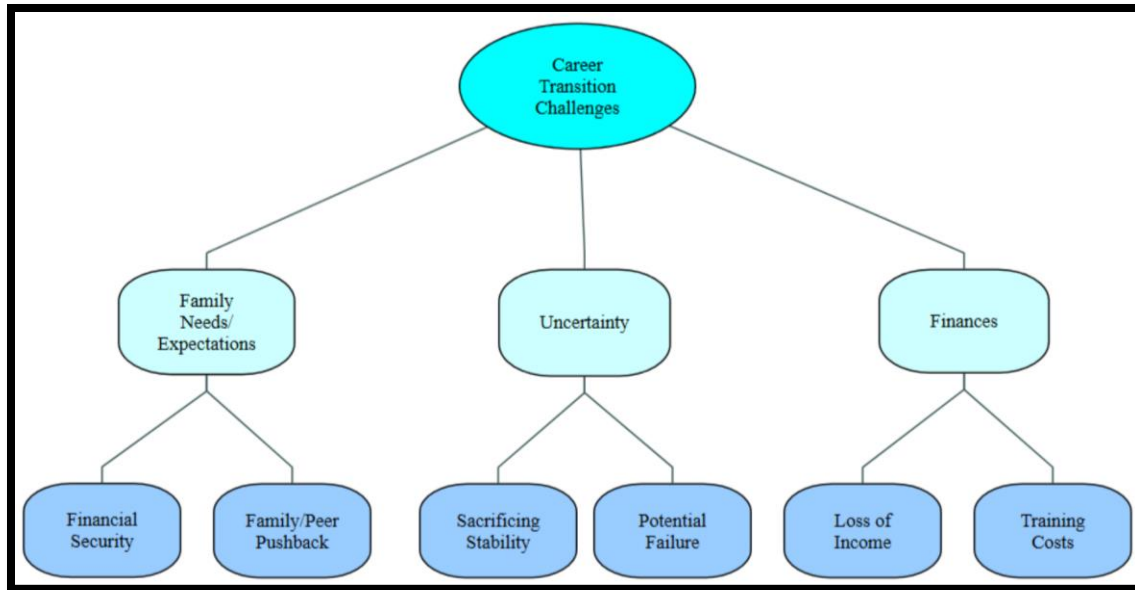


Figure 16. Career Transition Challenges Mind Map

Qualitative Research Question 3

Why didn't the interviewee pursue aviation earlier in life? This follow up question targeted the specific reasons for the career change later in life, versus the challenges faced during the decision and transition, as seen in question 2. There were two common themes that emerged from the data, which included: lack of exposure and unobtainable occupation.

Lack of Exposure

Nine of the twelve interviewees (75 percent) referenced not being aware of the pilot profession during their primary education. *"I was never really exposed to it"* (Interviewee 5). These individuals said that they never encountered anything related to aviation during childhood. *"I didn't really have much exposure to it, so I decided to go the degree route and more of what was known at the time"* (Interviewee 11). Two of the participants also referenced never being on an airplane until college. The resulting data suggests that there is a lack of education for youth surrounding the professional pilot career.

Unobtainable Occupation

Six of the twelve interviewees (50 percent) mentioned that aviation was viewed as an unobtainable occupation. *“What? Be a pilot? That’s not possible; that’s crazy”* (Interviewee 1). The pilot profession was viewed by two of the participants as a hobby or sport rather than a profession. *“I viewed it as either a side interest, hobby for someone who had money, or somehow these airline pilots materialized out of nowhere”* (Interviewee 9). Additionally, two of the respondents made note that they wanted to enter aviation at an earlier point in life, but they did not have the associated funding. One interviewee was medically limited due to the requirement that military pilots needed uncorrected 20/20 vision at that point in time. The Mind Map in Figure 17 illustrates the themes and associated codes relating to the pursuit of aviation later in life.

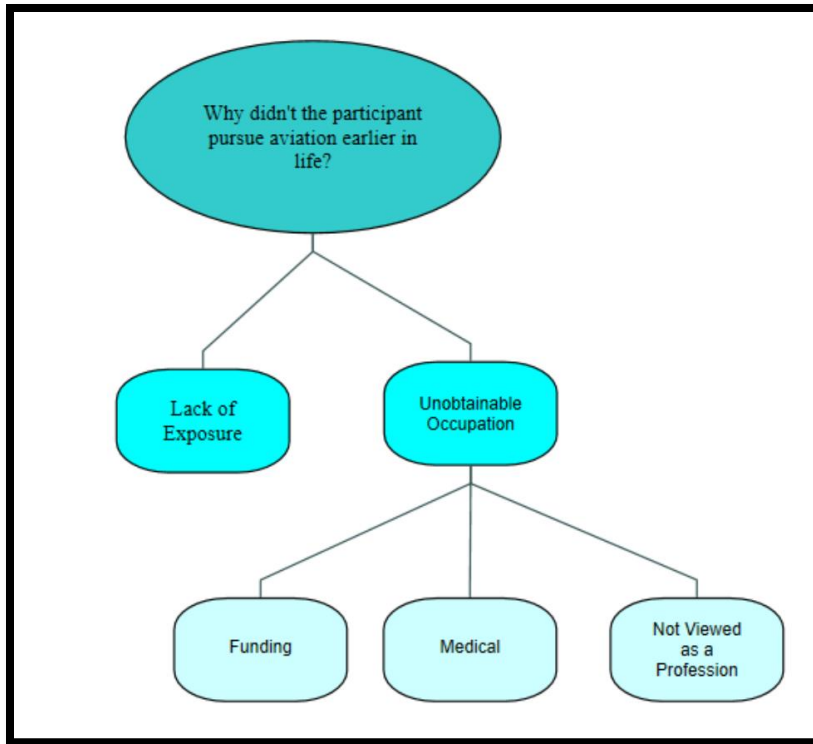


Figure 17. Pursuit of Career Earlier in Life Mind Map

Qualitative Research Question 4

What factors influenced the interviewees decision when deciding on a flight training program? This question focused on identifying the various reasons as to why each participant chose the specific flight school. The question was also designed to test the hypothesis that the participants chose a flight school based on their education background, as suggested by the significant relationship found using the chi-square test from the quantitative study. There were three primary themes that emerged from this data: college degree, time, and funding.

College Degree

Five of the seven Academy and Part 61 interviewees (71 percent) already possessed a 4-year college degree. Of the other two non-university participants; one had an associate degree and the other mentioned the intention to begin online college classes once employed at a regional

air carrier. *“Having a college degree, I didn’t want to go through a collegiate school, because I didn’t need a degree”* (Interviewee 2). Two of the five University interviewees (40 percent) already possessed a 4-year college degree, but specifically stated choosing the University route for the military benefits. The resulting interview data supports the concept that those who possess a college degree chose a non-university route unless they qualified for military benefits.

Time

Training pace was referenced as a primary factor when deciding on a flight school. Many of the interviewees suggested that they wanted to enter the industry as soon as possible, and therefore chose the Academy program over the University flight school. *“I didn’t want to go back to a four-year aviation degree with the loans and the time. I’m trying to get to a paying career as quickly as possible”* (Interviewee 9). The Academy program advertises obtaining all required flight ratings in a period of nine months, which appeals to those who want to spend as little time without an income and who may also have other financial and family obligations.

Funding

Three of the four military interviewees (75 percent) referenced funding as being a primary factor that influenced the school they chose to pursue. *“I had my military benefits, so I needed to find a school that would accept my benefits even though I already had a college degree.”* (Interviewee 11). Two of the non-military interviewees stated that they chose the University route because they needed to qualify for a government loan, which was not obtainable from a non-accredited flight training program. Six of the seven Academy and Part 61 participants referenced finances as one of the primary factors when deciding on a school, thus suggesting that funding is one of the primary challenges that must be mitigated when deciding on a training

program. The associated Mind Map themes for deciding on a flight school are illustrated in Figure 18.

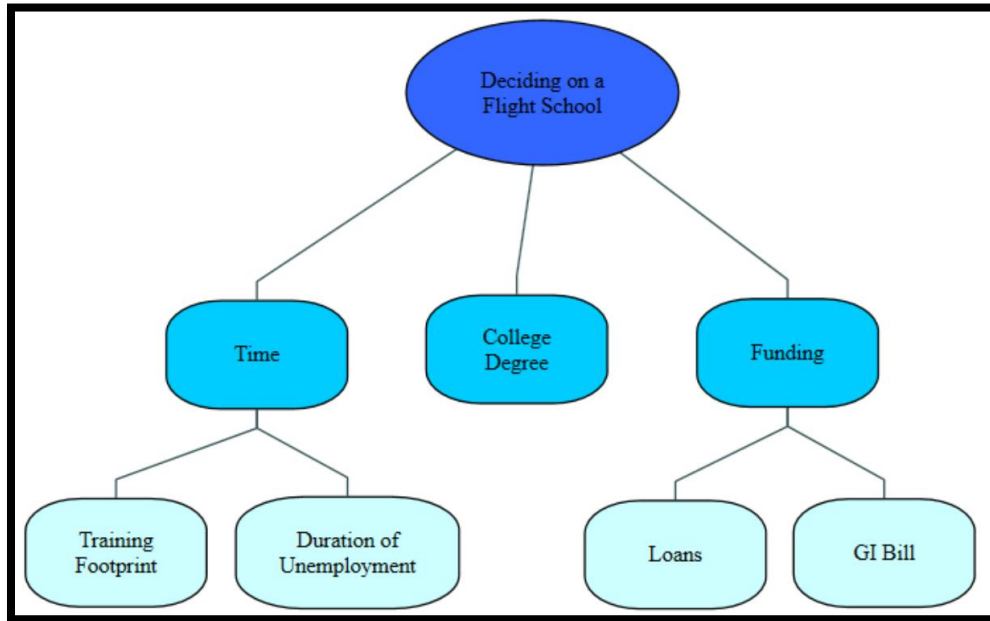


Figure 18. Deciding on a Flight School Mind Map

Qualitative Research Question 5

Would the interviewees have changed anything if they were to do the career change over again and what advice do they have for others? This question was designed to understand how each participant would have approached the career change if given another chance, and what recommendations they would have for peers considering a similar career change decision. There were two main themes related to the repeated career change, which included: pursuing the career earlier in life, and those that were satisfied with the path they took. Additionally, three themes surrounding recommendations for others emerged from the data: research, seek advice, and plan ahead.

Earlier Pursuit of Aviation vs. Satisfied with Career Path

Six of the twelve interviewees (50 percent) said they would have preferred to have started the aviation career path earlier in life. *“The sooner the better and seniority is everything. Now that I decided to make the leap, I absolutely wish I just made the leap two years or three years sooner, just to start building seniority that much sooner.”* (Interviewee 7). Many of the interviewees were limited with other obligations earlier in life. Five of the twelve interviewees (42 percent) stated that they were happy with their career path to this point and would not have done anything different if they had to do it over again.

Advice for Others

There were three common themes that emerged from question nine, which asked if the participants had any advice for others considering a career change: research, seek advice, and plan ahead. The themes surrounding the interviewees reflections on career path and advice for others is illustrated using a Mind Map in Figure 19. Research was a common referenced theme in which the interviewees stressed the importance of doing their own research rather than word-of-mouth advice from non-experts. Three of the twelve interviewees (25 percent) recommended planning ahead for flight training. Many interviewees referenced delays in training and the need to be financially prepared in the event training doesn't go as smoothly as planned.

“There's a lot of common assumptions that people have about things, but until you actually pick up the phone and start getting specific details about how I'm going to do this, that's when you find out the real answers.” (Interviewee 1)

“Plan ahead so you have some way to pay for it. You can get a loan, but you must have some way to pay for your life in the meantime. The loan just covers school. I think the

biggest thing is knowing what you're getting into. Know that it's hard work.”

(Interviewee 6)

Additionally, many of the interviewees suggested finding mentors and seeking advice from experts in the aviation field. Two of the interviewees made specific reference to pilots within the airline industry who gave them advice of what to do going forward and which path would set them up for success. Additionally, four of the twelve interviewees (25 percent) recommended committing to the career change sooner than later.

“It's an exciting career, it builds a lot of confidence and I see that as a very positive career choice. One that leads to both personal satisfaction, professional satisfaction, and as well as financial security. I'd highly recommend it. In terms of career path, I'd certainly recommend that people do it sooner. You've just got to go do it. There's so much opportunity.” (Interviewee 9)

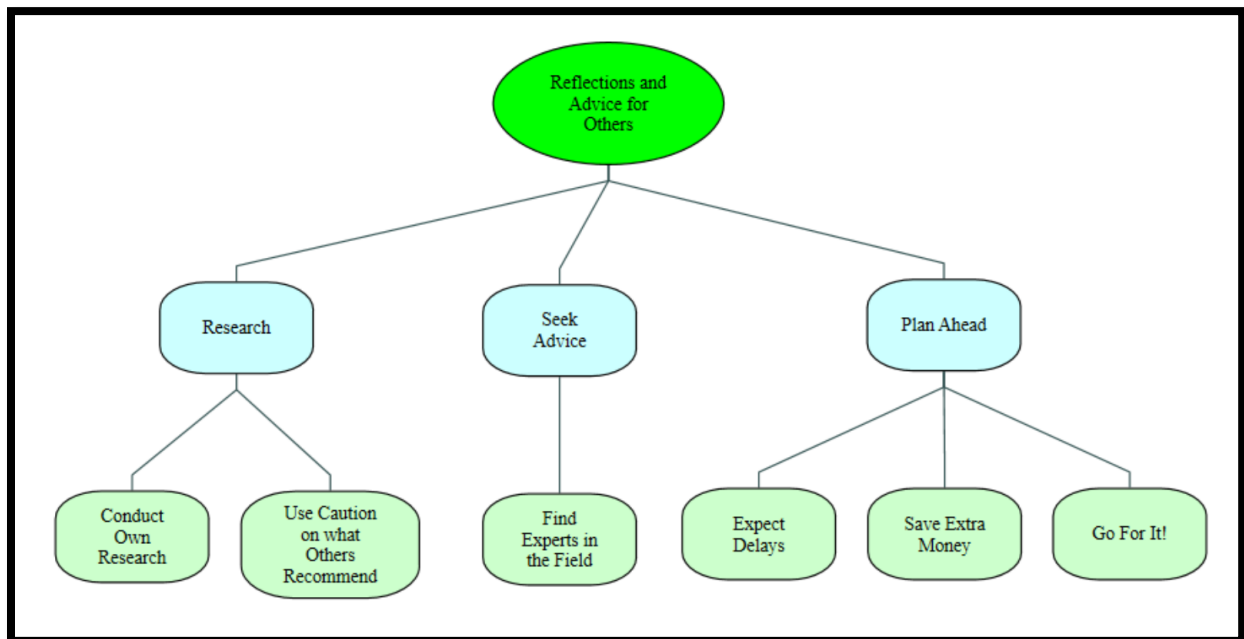


Figure 19. Reflections and Advice Mind Map

The professional pilot career change interviews highlighted several themes associated with the process of changing careers. These interviews provided a greater understanding of the motivations and challenges associated with a significant life transition. Additionally, the interviewees provided answers for why the participants chose the aviation career later in life, what factors influenced their decision on selecting a flight training program, and recommendations for others considering the professional pilot career path.

To further understand the career transition motivations, an additional analysis was conducted to determine if the interviewee participants' motivational category Likert responses accurately represented the total second career survey participants' motivational responses discussed in Phase I. This triangulation aspect of the analysis was designed to increase the validity of the study when comparing the results of the interviewees with the survey respondents. An illustration of the comparison of motivational scores between the interviewees and the survey participants is found in Figure 20. The ranked categories for the interviewees survey responses are as follows:

1. Pursuit of a Vocation
2. Compensation
3. Dissatisfaction with Previous Career & Flexibility in Work Schedule
4. Career Advancement
5. Stress Related to Previous Career
6. Alignment Between Personal Values and Organizational Priorities
7. Lack of Challenge at Previous Career
8. Conflicts Between Work and Other Life Roles

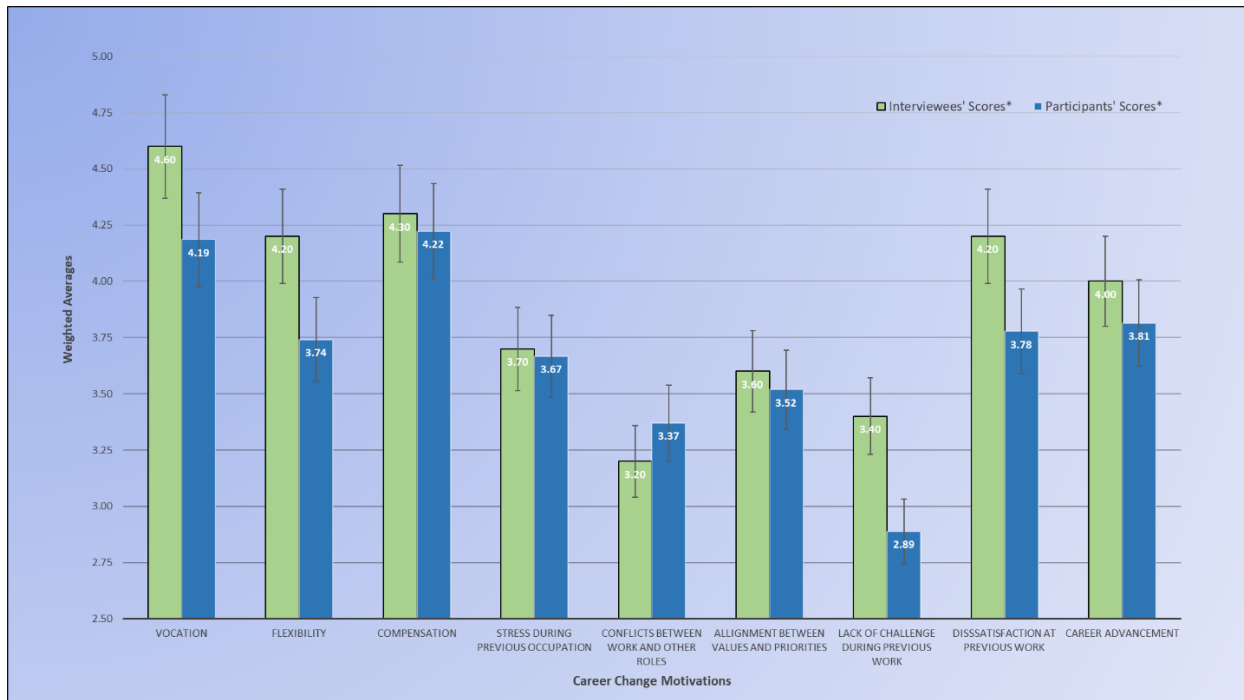


Figure 20. Career Change Motivation Score: Survey Participants vs. Interviewee Participants

The comparison of motivations between the interviewees and total survey participants suggests that the interviewee groups' motivations closely resembled the survey respondents' motivations. To further support this data, an independent samples *t*-test was conducted to compare the means of the interviewee group with the survey participant group. The resulting data in Table 11 indicates no significance between the motivational responses between the two groups. Therefore, the interviewee groups' responses for Phase II of the study accurately represent the entire group of survey participants.

Table 11

Career Change Motivations t-test: Survey Participants vs. Interviewee Participants

	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
						Lower	Upper
Pursuit of a Vocation	1.526	25	.140	.659	.432	-.230	1.548
Flexibility in work schedule	1.573	25	.128	.729	.464	-.225	1.684

Compensation	.342	25	.735	.124	.362	-.621	.868
Stress related to previous career	.103	25	.919	.053	.516	-1.011	1.117
Conflicts between work and other life roles	-.602	25	.553	-.271	.450	-1.197	.656
Alignment between personal values and organizational priorities	.268	25	.791	.129	.482	-.864	1.123
Lack of challenge during previous career	1.562	25	.131	.812	.520	-.259	1.882
Occupational Dissatisfaction	1.271	25	.216	.671	.528	-.416	1.757
Career Advancement	.547	25	.589	.294	.538	-.814	1.402

As discussed previously, the second interview question involved asking the participants to discuss the various motivations surrounding his or her decision to change careers. This aspect of the research was designed to compare the interviewees response frequencies with the VET study and determine any relationships among the data. The VET study identified two types of change themes: reactive and proactive. The reactive changers were subdivided into two categories surrounding the reasons for change: dealing with health problems and reducing dissatisfaction. The proactive changers were subdivided into three categories surrounding the reasons for a career change: attaining attractive working conditions, growing personally, and pursuing a vocation.

The five categories surrounding the reasons for career change in the VET study were used to analyze the present study. However, for the purposes of this research, the “growing personally” category was combined with the “pursuit of a vocation” category under “self-fulfillment.” Additionally, due to the restrictive health limitations of the professional pilot career, the VET category surrounding health problems was modified to the family/personal obligations category.

The number and percentage of interview participants that selected the associated career motivations are listed in Table 12. In summary, the frequencies surrounding the four categories of career change motivations were as follows: 8/12 interviewees referenced career opportunities, 10/12 interviewees referenced self-fulfillment, 10/12 interviewees referenced dissatisfaction during previous career, and 6/12 referenced obligations. A comparison of the VET data and interviewee data from this study are found in Table 12.

Table 12

VET Study vs. Interview Participant Motivation Responses

Motivation Category	VET Study Respondents	VET Study	Current Study Respondents	Current Study
Career Opportunities	20/30	66%	8/12	67%
Self-Fulfillment	23/30	77%	10/12	83%
Dissatisfaction	20/30	66%	10/12	83%
Obligations (health issues)	6/30	20%	6/12	50%

The Mind Map illustrated in Figure 21 provides the organization of the motivational categories used for this study. An associated “R” and “P” have been added to the motivational categories to represent the reactive and proactive changes. Additionally, the specific motivational categories used in this study have been labeled #1-9 in relation to the survey response rank discussed previously.

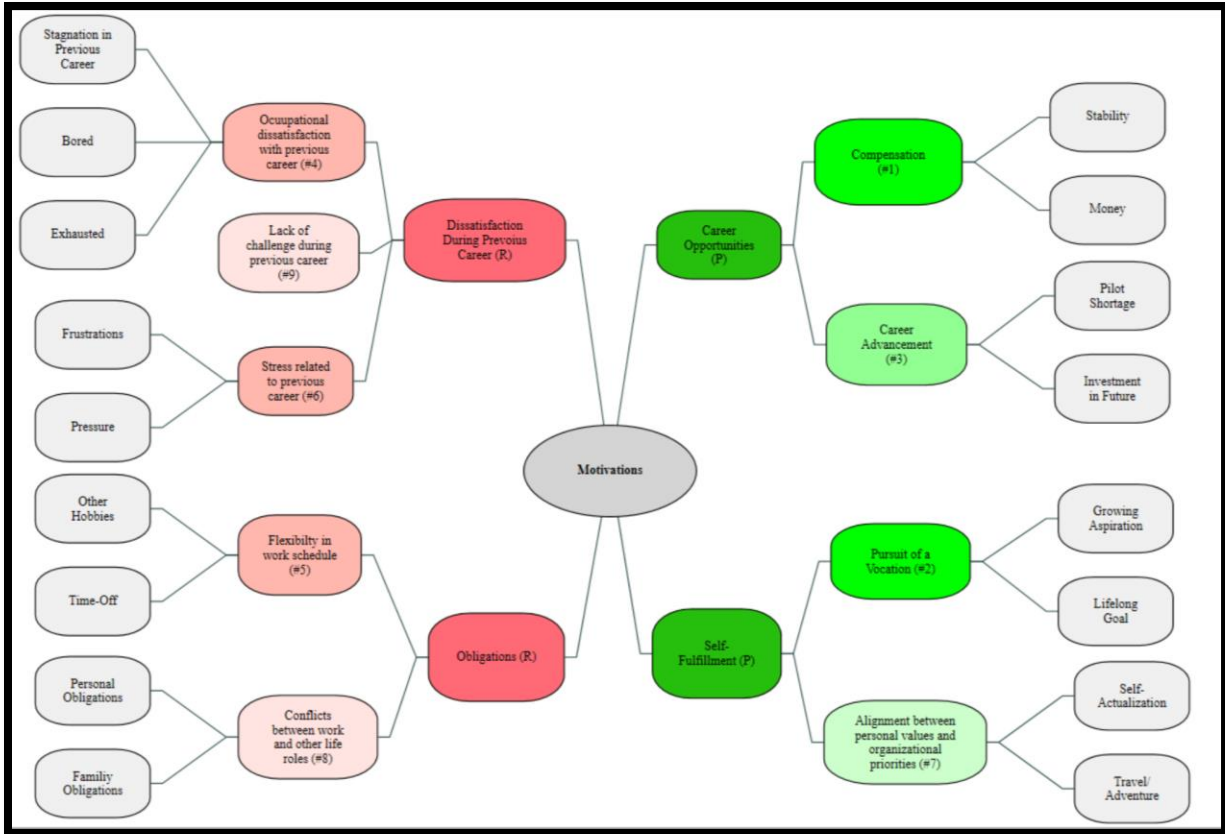


Figure 21. Career Change Motivation Mind Map

CHAPTER V

CONCLUSIONS AND RECOMMENDATIONS

The professional pilot career change study was designed to obtain an understanding as to the professional backgrounds of pilots entering the aviation industry as a second career and to determine what factors influenced these individuals' career change decisions. Additionally, this study attempted to gain an understanding of the career change process and challenges encountered as it relates to the Transtheoretical Model of Change. It is important for airlines to recognize the different variables that affect one's desire to pursue an airline pilot career. Understanding these factors will help ensure that air carriers are appropriately staffed as aviator attrition and resulting demand continues to increase. The data obtained from this study attempted to meet the following research objectives:

1. Identify the educational and professional backgrounds of the second career pilots surveyed at the participating flight training programs
2. Conduct an analysis of the survey data and identify any significant statistical relationships
3. Conduct interviews with second career individuals to determine which motivational factors were most influential for those who underwent a career change

4. Test the theoretical relationships between the study results and literature review to obtain an understanding of the professional pilot career transition process and how it relates to the TTM cycle
5. Provide recommendations for flight training programs and air carriers to support a stable supply of professional aviators

To answer these questions, a sequential mixed methods research design was created. Phase I of this study included a quantitative survey distributed to a University based flight training program as well as an Academy flight school. This survey was designed to target professional pilots who have pursued aviation as a second career, assess the educational and professional backgrounds of these individuals, and discover what motivational factors influenced their career change decision. Phase II of this study involved interviews designed to gain a thorough understanding of the survey participants backgrounds and factors affecting their professional pilot career change transition.

Summary of Findings

A total of 63 respondents completed the quantitative survey; 42 from the Academy flight program, and 21 from the University. A question targeting second career individuals was incorporated into the survey to allow for the identification of individuals specifically pursuing aviation as a secondary career. If the participant selected “yes”, identifying as a second career individual, they were presented with the career change motivations section and asked for contact information upon completion of the survey. A total of 13 survey participants from the Academy flight school and 14 from the University flight school selected “yes” to the associated second career question. As mentioned previously, it is important to note that 28 of the 42 Academy

survey participants (67 percent) possessed a college degree in a non-aviation field. However, due to the limitations of this study, only those who met the associated second career definition were analyzed in the following discussion. The following section summarizes the results from Phase I and II of the career change study.

The first objective of the quantitative study was to obtain, organize, and analyze the background characteristics of the survey participants. As discussed in Chapter IV, there were a total of 12 males and 1 female from the Academy school, while there were 11 males and 3 females from the University that qualified as second career individuals. The age distribution among the survey participants ranged from 25 to 47 years old. Education history varied between the two schools with 9 of the 12 individuals possessing a 4-year college degree at the Academy compared to 4 of the 14 individuals at the University. There was a large range of previous careers and work experience among the survey participants. The data obtained from this objective provided the needed information for the various statistical tests that were subsequently conducted. Additionally, this portion of the survey obtained the needed participants for Phase II of the study.

The next objective of the study was to determine if any relationships existed between the backgrounds of the participants and the associated flight school chosen for training. To examine this, a chi-square test of significance was used to compare the associated categorical variables. This statistical test compares the actual observed frequencies for each category to the frequencies one would expect to see by chance. Due to the low frequencies associated with the male/female dataset, a Fisher's exact test was used in place of the chi-square test.

There was not a significant relationship found between gender and flight school chosen for training when executing the Fisher's exact test. However, there was significance between

education background and flight school chosen $X^2(1) = 4.46, p = .035$. The results of this test suggest that possession of a 4-year college degree related to which flight training program was chosen by the participants. This outcome was hypothesized to occur due to the extended duration of flight training associated with a university-based flight school when compared to an accelerated academy program. Many of the US legacy air carriers require a 4-year degree for employment as a pilot. Therefore, it is advantageous for applicants to choose a school based on meeting this hiring requirement.

In response to this significant correlation, a question was created for the qualitative interview portion of the study to ascertain which factors influenced the interviewees decision when deciding on a flight school. The three primary themes that emerged from the interviewee responses were: college degree, time, and funding. Five of the seven Academy and Part 61 interviewees possessed a 4-year college degree. Several of these participants specifically stated not wanting to go to a collegiate flight training program because they already possessed a degree. The interviewee responses support the hypothesis that having a 4-year degree affects which flight training program is chosen by those undergoing a career change to become a professional pilot.

Additionally, the time commitment for the training footprint was also referenced as one of the three themes associated with deciding on a flight training program. Six of the interviewees (50 percent) referenced wanting to enter the industry as soon as possible to obtain an income and also gain better seniority at their future air carrier. The Academy flight school used for this study advertises a 9-month training footprint from the beginning of training to becoming a Certified Flight Instructor. These individuals can be ATP qualified in as little as two years from the original start of training. In comparison, it would take approximately 4 to 5 years to obtain the

same ATP qualified status if attending a University flight training program. The resulting data from both the quantitative and qualitative aspects of this study suggest that training footprint is important to those considering a career change.

The final theme associated with deciding on a flight training program was funding. Three of the five University interviewees stated that they chose the university route based on their associated GI Bill benefits. The remaining two University interviewees referenced not being able to access private loans and therefore had to choose a university flight training program to gain access to a government supported loan. Six of the seven Academy and Part 61 interviewees referenced choosing a flight school that was the most affordable. This suggests that flight costs are a significant driving factor when individuals are pursuing the professional pilot career.

The third objective of the survey was to determine if there were any statistical relationships between the second career survey participants and the career change motivations. This was accomplished by conducting a *t*-test to compare the means of the motivational factor Likert scale responses of the individuals, and then determine if there was correlation among answers using a Kendall's tau test. There were 9 motivational factors used in this study as discussed in the literature review: pursuit of a vocation, flexibility in work schedule, compensation, stress, conflicts between work and other life roles, alignment of personal values with organizational priorities, lack of challenge, dissatisfaction, and career advancement. The participants rated each of these factors based on how influential each one was in relation to their decision to change careers.

The results of the *t*-test indicated no significant relationship between the individual flight school responses and the rated career change motivations. This suggests that the survey participants from each flight school had similar responses in relation to the motivations

surrounding their career change as indicated by the *t*-test comparison. This result was important to the validity of the study as it supported the concept that the participants of both training programs had similar motivational influences when deciding to change careers to become a professional pilot.

Upon determining no significance between the flight school motivational responses, a correlation analysis was conducted involving the specific motivations using a Kendall's tau test. There was significance among correlations for several of the motivational factors suggesting that there was a relationship among survey respondent answers. Pursuit of a vocation and career advancement $r(27) = .464, p < .05$; flexibility in work schedule and better alignment between personal values and organization priorities $r(27) = .360, p < .05$; flexibility in work schedule and career advancement $r(27) = .394, p < .05$; stress related to previous career and conflicts between work and other life roles $r(27) = .577, p < .05$; better alignment between personal values and organizational priorities and lack of challenge during previous career $r(27) = .316, p < .05$; lack of challenge during previous career and career advancement $r(27) = .367, p < .05$; and occupational dissatisfaction with previous career and career advancement $r(27) = .334, p < .05$. These correlations represented a medium to large effect between the associated motivational categories.

The final objective of the survey was to determine which career change motivations ranked the highest among the second career survey participants. As discussed in Chapter IV, the Likert scale results for each motivational category were assigned a weight and then multiplied by the number of responses for each level of influence. The weighted totals were then divided by the number of survey participants to give a weighted average, which allowed the motivational categories to be ranked. The ranked categories were as follows:

1. Compensation
2. Pursuit of a Vocation
3. Career Advancement
4. Dissatisfaction with Previous Career
5. Flexibility in Work Schedule
6. Stress Related to Previous Career
7. Alignment Between Personal Values and Organizational Priorities
8. Conflicts Between Work and Other Life Roles
9. Lack of Challenge at Previous Career

As discussed in Chapter IV, an additional analysis was conducted to determine if the interviewee participants' motivational category Likert responses accurately represented the total second career survey participants' motivational responses. An independent samples t-test was conducted to compare the means of the interviewee group with the survey participant group. The resulting data indicated that there was no significance between the motivational responses of the two groups, thus suggesting that the interviewee groups' motivational responses accurately represented the entire group of survey participants.

The first objective of the qualitative study was to determine the various motivations surrounding the interviewee participants' decisions to pursue the professional pilot career. There were 12 participants that were interviewed for the qualitative study with ages ranging from 25-47. Five subjects were interviewed from the flight Academy and five subjects from the University. The additional two network sample interviewees were chosen to participate in the qualitative study due to their second career attributes. These individuals did not attend either of

the associated schools in which the survey was distributed. However, their selected training paths qualified them as a second career participants as defined in Phase I of the study.

Using the methodology described in Chapter III, various coded themes emerged from the analysis of the motivational data. These themes were categorized and compared to the reactive/proactive motivations associated with the VET career change study. The resulting frequency data referenced previously in Table 12 suggested similar response rates in relation to the career change motivations between the subjects of the VET study and the interview participants of the present research. The authors of the VET study stressed the importance of understanding the subjective reasons behind a career change during adulthood. These factors can be used for the creation of targeted educational programs and recruiting efforts that adapt to the needs of the associated individuals.

Highlighting the various challenges and motivations that individuals encounter when contemplating a career change helps reduce possible barriers that may impede one's decision to pursue the professional pilot career. For example, air carriers and flight training programs can use the proactive and reactive factors referenced in this study to create training pathways and guidance that will assist those contemplating a career transition. The results of the present study indicated that the career opportunities and potential self-fulfillment aspects of the professional pilot career should be targeted for future recruiting efforts. Alleviating any doubts through education will help individuals with the decision and transition to pursue the professional pilot career.

The next objective of the qualitative study was to compare the interviewees' career transitions to the Transtheoretical Model of Change cycle. It is important for flight training schools and airlines to fully understand the career transition process when implementing

programs to recruit professional aviators. The TTM cycle includes the following stages of the career change process: precontemplation/disengagement, contemplation/growth, preparation/exploration, action/establishment, and maintenance. The participants of this study were in the action/establishment phase of the TTM cycle during the course of the interviews. The following four interview questions were created to assess each participant's transition through the stages leading up to the action/establishment phase with the addition of the forthcoming maintenance stage:

1. Precontemplation/Disengagement: What motivated you to change careers from your previous occupation to become a professional pilot?
2. Contemplation/Growth: What kinds of challenges did you experience when making the decision to change careers?
3. Preparation/Exploration: Was there a defining moment that influenced your decision to change careers?
4. Maintenance: What are your long-term career goals?

The precontemplation/disengagement phase of the TTM cycle involves displeasure with one's current career and loss of interest in work. This stage of the TTM cycle was discussed during the VET career motivations section and related to the reactive changers that were not satisfied with their previous career. Occupational dissatisfaction, lack of challenge, stress, and family/personal obligations were highlighted as the primary sources of the precontemplation/disengagement stage of the TTM cycle.

The contemplation/growth phase of the TTM cycle involves the process of weighing the advantages and disadvantages of making a career change. The question surrounding challenges was included in the interview to highlight the various obstacles that the interviewees faced when

contemplating the career change. The primary challenges identified during the qualitative analysis were: finances, uncertainty, and family needs/expectations. These three themes identified by the participants of this study are important factors to consider for those undergoing a career change later in life that many others pursuing aviation as a first career may not encounter. The results suggest that it is important for flight schools and airlines to implement methods that will help individuals overcome these identified barriers. Providing loans and guaranteed future employment will alleviate many of these concerns and mitigate the primary obstacles that prevent a transition to the preparation/exploration and eventual action/establishment phases of the TTM cycle.

The preparation/exploration stage of the TTM cycle occurs when the individual's motivation for change becomes greater than the motivation to maintain status quo. This process is called choosing and was targeted during the interviews through the defining moment question. Three of the twelve respondents stated that a single moment was responsible for their decision to change careers, while the other nine interviewees stated that it was a transition over time. The resulting coded data from this question suggests that many of the interviewees spent a duration of time in the preparation/exploration stage before deciding to engage in the action/establishment stage of the TTM cycle, and that it was not a single moment that resulted in the transition.

As mentioned previously, the action/establishment phase of the TTM cycle relates to when the individual has made a commitment to the career change. The participants of this study were in the action/establishment phase when conducting the interviews. The final aspect of the TTM cycle was to evaluate the future goals of the interviewees, which occurs in the maintenance stage. Nine of the twelve interviewees stated that they wanted to pursue the commercial sector of the airline industry, while two of the twelve had a career goal of cargo operations. Only one

interviewee was undecided on future goals. The data obtained throughout this section of the study suggests that those entering the aviation industry as second career professionals are specifically targeting cargo and major commercial air carriers for future employment.

The Transtheoretical Model of Change represents the fluid states through which individuals move when undergoing a career change (Barclay et al., 2011). This study attempted to assess each participant's experience throughout each TTM stage using the associated interview questions. These questions highlighted the motivations, challenges, defining moments, and future career aspirations of the interview participants. It is important for flight training schools and airlines to fully understand the career change process and factors affecting the transitions through each TTM phase when implementing programs to recruit professional aviators.

There were two grounded theory concepts that arose from the career change study. The first concept emerged in response to the question asking why the interviewees didn't pursue an aviation career earlier in life. Two primary factors were highlighted by the participants: lack of exposure and unobtainable occupation. Nine of the twelve interviewees referenced not being aware of the pilot profession during their primary education. These individuals repeatedly referenced not being exposed to aviation at a young age and therefore never considered it as a potential occupation. Additionally, six of the twelve interviewees mentioned that they viewed aviation as an unobtainable occupation in addition to the lack of exposure. The aviation profession was considered more of a hobby or recreational sport. Several interviewees admitted that they were not aware of where pilots came from and never thought that they could fulfill the role of a professional aviator.

The resulting data gained from this portion of the research highlights the lack of education relating to the aviation profession. 75 percent of the interview participants stated that they were not aware of the career option of becoming a professional pilot when attending their associated primary education. A focus of educating modern youth on the possibilities of the airline career must be emphasized at a younger age to promote the profession and support the future supply of aviators. However, it is also important to note that the youngest of the interviewees attended primary education seven years ago, when the associated airline entry level pay rates were significantly lower than they are today.

The other grounded theory concept that arose from this research relates to the recommendations that the interviewees had for others considering a career change: research, seek advice, and plan ahead. The participants of this study continually stressed the importance of individuals doing their own research when considering a career change to becoming a professional pilot. Additionally, individuals contemplating a career change should seek advice from professional aviators rather than peers. The best source of information comes from those within the industry who have directly experienced the process of becoming a professional aviator. Finally, if considering a career change, be sure to plan ahead and understand the training delays and costs that can and will arise throughout training. All of the interviewees stated that they were happy with their career change decision, but it is essential that proper planning occurs before deciding to pursue a new career.

Recommendations for Future Research

The results of this study have provided a general overview of the different aspects associated with the life transition for those pursuing the pilot profession as a second career. This study was limited to a total of 27 individuals that qualified as second career pilots for the

quantitative survey, and 12 individuals that participated in the qualitative interviews. Therefore, the results of this study are limited to a small group of individuals that may or may not share similar opinions when compared with other peers undergoing a career change.

The first recommendation for further research is to expand a similar study to various universities and flight training academies throughout the United States. A larger scale study would provide additional data needed to support the validity and reliability of the results obtained from this research. This would also increase the statistical power of the data obtained to support the conclusions throughout the study.

The second recommendation for further research would be to access the historical pilot hiring data for US regional air carriers and conduct an analysis of pilot backgrounds. Having access to this data would provide the needed information to determine if there have been any significant changes in the educational and/or occupational backgrounds for those pursuing the professional pilot career. This study was limited to those currently undergoing flight training or flight instructing at the associated flight schools, and therefore did not obtain any historical information surrounding those who are actively working for air carriers.

Finally, this study did not determine whether the specific pay rate increases surrounding the regional air carrier industry were a direct factor influencing those second career individuals who participated in the study. Even though the data surrounding the career change study suggests that compensation was the most influential motivation for the survey respondents and second most influential for the interviewee participants, there was no evidence directly relating the recent regional pay scale changes to the associated career path decisions of the study participants.

Concluding Remarks

The purpose of this study was to obtain an understanding as to the professional backgrounds of pilots entering the aviation industry as a second career and to determine what factors influenced these individuals' career change decisions. It is important for airlines to recognize the different variables that affect one's desire to pursue an airline pilot career. Understanding these factors will help ensure that air carriers are appropriately staffed as aviator attrition and resulting demand continues to increase.

The results of this study included an analysis of the backgrounds of individuals who qualified as second career aviators. Phase I encompassed a survey distributed to the participating flight schools, which was then analyzed for statistical relationships among the data. Significance was found between the educational backgrounds of the participants and the flight school chosen for training. In total, 31 percent of the Academy individuals and 67 percent of the University individuals identified themselves as second career using the definition provided. However, it is important to note that 67 percent of the Academy individuals had a non-aviation college degree. This suggests that two-thirds of the survey participants attending the associated schools were individuals pursuing aviation as a second career.

Additionally, the survey participants' motivations for changing careers were measured using a Likert scale analysis. The resulting motivational data was ranked and analyzed to formulate questions for the qualitative study. Compensation, pursuit of a vocation, career advancement, and dissatisfaction with previous career were the top four motivational factors selected by the survey participants. The results of the survey data support the hypothesis that the increased pay rates implemented throughout all US regional air carriers have impacted the number of individuals pursuing aviation as a second career.

Phase II of this research involved interviews with 12 second career individuals to identify various themes surrounding the career change experience to becoming a professional pilot. These themes were correlated to the career change theory literature discussed throughout Chapter II. Several concepts emerged from the interviewee responses which were then coded and compared to the survey data. Primary motivations as to which factors provided the greatest influence on the career change decisions were identified. These motivations aligned closely with the Phase I survey responses as well as the Vocational Education Training study and should be considered when attempting to recruit future aviators. It is also clear from this research that there was a lack of exposure to the pilot profession at a young age for the participants of the study. It is essential that future generations be provided the knowledge and tools necessary to make the professional pilot career a reality and ensure that air carriers have the required supply of pilots as the demand continues to grow.

APPENDIX A

Professional Pilot Career Survey

Welcome to the Professional Pilot Career Progression survey!

Thank you for taking the time to participate in this survey, which is designed to assess pilot backgrounds and career progression. This survey was created as part of a dissertation study being conducted by the University of North Dakota. This survey should only take 5-7 minutes to complete. All answers you provide will be kept strictly confidential. Please click the arrow on the bottom right corner of the screen to begin.

End of Block: Introduction

Start of Block: Flight Training

Q1 What FAA airmen certificate do you currently hold?

- Student Pilot
- Sport Pilot
- Private Pilot
- Commercial Pilot
- Airline Transport Pilot

End of Block: Flight Training

Start of Block: Private Pilot Holder

Q2a Where did you obtain your Private Pilot certificate?

XXX Flight School

Other (please specify flight school name and location):

Q3a What year did you obtain your Private Pilot certificate?

▼ 1970 ... 2019

End of Block: Private Pilot Holder

Start of Block: Commercial Pilot & ATP Holder

Q2b Where did you obtain your Private Pilot certificate?

XXX Flight School

Other (please specify flight school name and location):

Q3b What year did you obtain your Private Pilot certificate?

▼ 1970 ... 2019

Q5 Where did you obtain your Commercial Pilot certificate?

XXX Flight School

Other (please specify flight school name and location):

Q6 What year did you obtain your Commercial Pilot certificate?

▼ 1970 ... 2019

Q7 Do you hold a current CFI certificate?

Yes

No

End of Block: Commercial Pilot & ATP Holder

Start of Block: Education History

Q8 Please select the highest level of education you have completed.

- High School
- Associate Degree
- Bachelor's Degree
- Master's Degree
- Doctoral Degree

End of Block: Education History

Start of Block: No College Degree

Q9a What year did you obtain your high school diploma?

▼ N/A ... I did not obtain a high school diploma

Q10a After high school but prior to flight training at XXX, did you work a full-time occupation in a non-aviation career field?

- Yes
 - No
-

Q11a Please specify the career field(s).

Q12a How many total years were you employed in the career field(s) listed above? (Please consider all positions held within the career field(s))

▼ Less than 1 ... Greater than 30

End of Block: No College Degree

Start of Block: Associate Degree

Q9b What year did you obtain the associate degree?

▼ 1975 ... 2018

Q13a Please specify the degree major.

Q10b After obtaining your associate degree but prior to flight training at XXX, did you work a full-time occupation in a non-aviation career field?

Yes

No

Q14a Please specify the career field(s) you worked in after obtaining your associate degree.

Q15a many total years were you employed in the career field(s) listed above? (Please consider all positions held within the career field(s))

▼ Less than 1 ... Greater than 30

End of Block: Associate Degree

Start of Block: Bachelor's Degree

Q9c What year did you obtain the bachelor's degree?

▼ 1975 ... 2018

Q13b Please specify the degree major.

Q10c After obtaining your bachelor's degree but prior to flight training at XXX, did you work a full-time occupation in a non-aviation career field?

Yes

No

Q14b Please specify the career field(s) you worked in after obtaining your bachelor's degree.

Q15b How many total years were you employed in the career field(s) listed above? (Please consider all positions held within the career field(s))

▼ Less than 1 ... Greater than 30

End of Block: Bachelor's Degree

Start of Block: Master's Degree

Q9d What year did you obtain your bachelor's degree?

▼ 1975 ... 2018

Q13c Please specify the degree major.

Q16a What year did you obtain your master's degree?

▼ 1975 ... 2018

Q17b Please specify the degree major.

Q10d After obtaining your bachelor's degree but prior to flight training at XXX, did you work a full-time occupation in a non-aviation career field?

Yes

No

Q14c Please specify the career field(s) you worked in after obtaining your bachelor's degree.

Q15c How many total years were you employed in the career field(s) listed above? (Please consider all positions held within the career field(s))

▼ Less than 1 ... Greater than 30

End of Block: Master's Degree

Start of Block: Doctoral Degree

Q9e What year did you obtain your bachelor's degree?

▼ 1975 ... 2018

Q13d Please specify the degree major.

Q16b What year did you obtain your doctoral degree?

▼ 1975 ... 2018

Q17c Please specify the degree major.

Q10e After obtaining your bachelor's degree but prior to flight training at XXX, did you work a full-time occupation in a non-aviation career field?

Yes

No

Q14d Please specify the career field(s) you worked in after obtaining your bachelor's degree.

Q15d How many total years were you employed in the career field(s) listed above? (Please consider all positions held within the career field(s))

▼ Less than 1 ... Greater than 30

End of Block: Doctoral Degree

Start of Block: Second Career?

Q18 What best describes your current career goals?

- Airline Pilot
 - Aerial application work (crop dusting, firefighting, etc.)
 - Air taxi operations (charter, bush pilot, etc.)
 - Corporate Pilot
 - Military Pilot
 - Professional Flight Instructor
 - Other (please specify): _____
-

Q19 Would you consider your current pursuit and/or occupation as a professional aviator a second career? (Second career is defined in this survey as an individual who pursued a different career occupation external to aviation for a period greater than five years after completing high school or obtaining a college degree)

- Yes
 - No
-

Q20 Please rate the following personal motivations for changing careers to become a professional pilot.

	Very Influential	Influential	Neutral	Not Very Influential	Not Influential at All
Pursuit of a vocation (passion for aviation)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Flexibility in work schedule	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Compensation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Stress related to previous career	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Conflicts between work and other life roles	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Better alignment between personal values and organizational priorities	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
A lack of challenge during previous career	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Occupational dissatisfaction with previous career	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Career advancement	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other (please specify):	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

End of Block: Second Career?

Start of Block: Demographics

Q21 Please select your year of birth:

▼ 1954 ... 2004

Q22 Please specify your gender:

Male

Female

End of Block: Demographics

End of Survey

APPENDIX B

Interview Questions

Interviewee

Phone Number

Date and Time

Career Change Questions

1. I understand that you switched careers to become a professional pilot. Tell me about your career path to this point.
2. What motivated you to change careers from your previous occupation to become a professional pilot?
3. Was there a defining moment that influenced your decision?
4. What kinds of challenges did you experience when making the decision to change careers?
5. Why didn't you pursue the aviation career earlier in life?
6. What factors influenced your decision when deciding on a flight training program?
7. What are your long-term career goals?
8. Having experienced a career change, would you have done anything different if you had to do it over again?
9. Do you have any recommendations for others considering a career change to become a professional pilot?

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