EFFECTS OF GENERAL AVIATION RENTAL AIRCRAFT CHECKOUT PROCEDURES ON FLIGHT ACTIVITY OF RENTER PILOTS

By

ROBERT WAYNE OHRENBERG

Bachelor of Science in Aviation Sciences
Oklahoma State University
Stillwater, Oklahoma
1994

Master of Science in Aerospace Administration
Southeastern Oklahoma State University
Durant, Oklahoma
2007

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Dissertation Approved:

Dr. Steve Marks

Dissertation Adviser

Dr. Frederick Hansen

Dr. James Key

Dr. Lynna Ausburn

Dr. Toni Ivey

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Title of Study: EFFECTS OF GENERAL AVIATION RENTAL AIRCRAFT CHECKOUT PROCEDURES ON FLIGHT ACTIVITY OF RENTER PILOTS

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Abstract:
The purpose of this study was to gain a better understanding of any effects rental aircraft checkout procedures have on the renter pilot's flight activity. The scope of this study was certificated private and commercial pilots with at least a single engine land (SEL) rating within the Federal Aviation Administration's Southwest Region (AR, LA, NM, OK, and TX). Excluded pilots included student pilots who require flight instructor approval to fly solo, light sport and recreational pilots who make up a limited quantity of certificated pilots, Airline Transport Pilots (ATP) who generally fly professionally, and individuals with flight instructor ratings because they perform the rental aircraft checkout. The methodology included utilizing an instrument to determine the pilots' certificate level, checkout procedures prior to rental, and what effect those procedures had on their flying habits. The data collection utilized a modified three-phase survey administration procedure. The research was applied to two separate sample groups. Randomly selected pilots were sent an initial letter explaining the research and requesting their participation. A week later the research instrument was mailed to the sample group. The following week a reminder postcard was sent to the sample group. The nominal data were analyzed using descriptive statistics to describe the observed outcomes, and then cross-tabulations were used to create a contingency table for data summarization. Chi Square calculated the statistical relationship between variables. When chi square assumptions weren't met, Fisher's Exact Test calculations were used. Limitations of this study included population database restrictions, sample size limitations, and the possibility of skewed or biased responses. The results showed there was no relationship between pilot certificate types, checkout procedures completed, or willingness to accomplish another checkout or participate in a universal checkout. A relationship existed in the pilots' intrinsic decision making process, shown by a relationship between their willingness to accomplish another checkout and their willingness to participate in a universal checkout. This study contributed to the body of knowledge and provided valuable insight for steering future research on this topic as well as in parallel and lateral subject areas.

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CHAPTER I

INTRODUCTION

Imagine soaring with the birds, looking down at the wondrous beauty of the earth, while dancing amongst the clouds. What a great adventure it is to be a pilot and see the earth from a whole different vantage point! That adventure, however, cannot be fulfilled without an airplane to fly. If an individual is not able, for whatever reason, to purchase their own airplane, they must rent one to realize the great adventure of flying. Renting an airplane however, is not as simple as renting a car or other types of transportation or recreational vehicles. Similarly, your license, or more specifically your Federal Aviation Administration (FAA) Pilot Certificate (14 C.F.R. § 61, 2013) as it's referred to in the aviation community, has to be provided to rent an airplane just as you would your driver's license to rent a car. In addition however, documented and practical proof of currency and piloting skills are also required to rent an airplane.

The documented proof of currency mentioned above consists of three different types. There is no particular order of importance for these, because all three are required. A current valid medical certificate is required to show you are healthy enough to rent/fly an airplane. The valid medical certificate is issued by an authorized aviation medical examiner. Additionally, a pilot logbook entry documenting a current flight review (due

every 24 months) and recent flight experience (3 takeoffs and landings in the preceding 90-days) are the other two requirements.

There are three classes of medical certificates; first class, second class, and third class. The pilot may hold any class of medical certificate, but the third class is the minimum required for a private pilot certificate. A third class medical certificate's length of validity is determined by the pilot's age on the date of the examination. A third class medical certificate is valid for 60 months for a pilot who was under age 40 at the time of the exam; otherwise the third class medical certificate is valid for 24 months (14 C.F.R. § 61, 2013).

The flight review is a biennial requirement consisting of a minimum of one hour of both ground and flight training from an authorized instructor, with a logbook entry verifying the review was accomplished (14 C.F.R. § 61, 2013). The recent flight experience consists of at least three takeoffs and three landings within the preceding 90 days, with appropriate logbook entries to verify the experience (14 C.F.R. § 61, 2013).

The practical proof of currency for a rental aircraft is called a "check-out", and consists of any combination of verbal, written, and/or practical examinations. The checkout is a way for those who provide aircraft for rent to determine the renter pilot's practical skills are commensurate with the documented proof of currency to ensure they can safely operate the aircraft (Thurber, 2012). Additionally, the checkout also allows for indoctrinating the renter pilot to any peculiarities of the local area and the aircraft being rented (Durden, 2009).

Aircraft ownership is an expensive undertaking (AOPA, N.D.a; Ohrenberg, 2006), and as a result there are many pilots who fly rental aircraft versus owning an aircraft of their own. There is currently no standardization as to how aircraft checkout procedures are performed or what elements are included; it all appears to be at the whim of the rental aircraft owner or instructor performing the checkout.

This researcher became interested in this topic after he progressed from student pilot to private pilot and became an aircraft renter. He started having to accomplish rental aircraft checkouts for which a [regulatory] requirement didn't exist, at every location he wanted to rent an airplane while traveling. Becoming a pilot is a very structured and well-documented process. The requirements to become a pilot are well-documented and follow a specific flow and order (14 C.F.R. § 61, 2013). Once a person has become a pilot, there is a well-documented and specific flow and order to maintaining pilot currency to fly (14 C.F.R. § 61, 2013). As an aircraft renter, there is no documentation for rental checkouts, there is no specific flow nor is there any standardization of the rental checkout process. From an FAA regulatory perspective, there isn't even a requirement for a checkout if you are already flying the same category and class of aircraft (NTSB, 1995).

Theoretical Framework

This research project is framed around two theoretical frameworks, Herzberg's Motivation and Hygiene (Two-Factor) Theory and Bandura's Social Cognitive Theory. Herzberg first presented his theory in "*The Motivation to Work*" (Herzberg, Mausner, & Snyderman, 1959) when documenting the results of a study of job attitudes of engineers

and accountants around Pittsburgh Pennsylvania. The results of the study indicated different factors were responsible for job satisfaction and job dissatisfaction. Positive feelings (satisfaction) came about through such things as achievement, responsibility, recognition, opportunities for growth, and promotions. Negative feelings (dissatisfaction) came about through such things as job security, relations with coworkers, working conditions, policies, and supervision.

Based on these findings, Herzberg hypothesized positive feelings arise out of what people do while negative feelings arise out of the conditions in which they are done. Factors leading to job satisfaction and increased performance were termed motivation factors and those preventing dissatisfaction were termed hygiene factors (Herzberg, et al., 1959).

Normally we consider satisfaction and dissatisfaction as being opposites on the same scale. Based on the results of the motivation-hygiene theory, satisfaction and the factors that contribute to satisfaction are separate and distinct from dissatisfaction and the factors contributing to it. Satisfaction and dissatisfaction are on separate scales. One scale has satisfaction on one end and no satisfaction on the other end, while the other scale has no dissatisfaction on one end and dissatisfaction on the other end (Herzberg, Majesty, & Winslow, 1969).

The motivation factors, or satisfiers, are on a distinct and separate scale running from satisfaction to no satisfaction. The factors include achievement, responsibility, recognition, opportunities for growth, and promotions. These provide satisfaction of the need for psychological growth and competence within each individual.

The hygiene factors impacting dissatisfaction are on a distinct and separate scale running from no dissatisfaction to dissatisfaction. The factors include job security, relations with coworkers, working conditions, policies, and supervision. These contribute to dissatisfaction, and should be cyclical in nature with short term duration (Herzberg, et al., 1969).

Herzberg also relied on the motivation-hygiene theory while conducting research for the Air Force in 1968 and 1969 to investigate student pilot motivation and attitudes towards the Air Training Command's (ATC's) Undergraduate Pilot Training (UPT) program. The results of that study were documented in "*Motivational engineering for pilot training*" (Herzberg, et al., 1969).

The research results showed for military pilot trainees, the most important factor for motivation and satisfaction was achievement, which was mentioned in over 50% of the satisfying incidents. The next highest factor was recognition, being mentioned in over 22% of the satisfying incidents. The remaining motivation factors of responsibility, work itself, and growth were mentioned at single digit percentage levels.

The top hygiene factor leading to dissatisfaction was supervision (technical), being mentioned in 22% of unsatisfying incidents. That was followed by interpersonal (supervision) at 12%, and policy and administration at 11%. The remaining hygiene factors of work conditions, status, security, interpersonal (peer), and personal factors were mentioned at single digit percentage levels (Herzberg, et al., 1969).

The motivation factors (satisfiers) and hygiene factors (dissatisfiers) in Herzberg's Motivation-Hygiene Theory can easily be translated over to the pilot community as shown by the research with the Air Force. The specific satisfiers and dissatisfiers that apply to general aviation pilots flying recreationally has not been determined; however, as a pilot who flies recreationally, this researcher can see where achievement, advancement, and growth could be top satisfiers, while policies and administrative practices and supervision could certainly be top dissatisfiers.

Bandura's Social Cognitive Theory specifically addresses perceived self-efficacy, which is "a judgment of ones capability to accomplish a certain level of performance" (Bandura, 1986. p.391). Perceived self-efficacy comes into play when an individual decides to begin training to become a certificated pilot, and to continue to upgrade and perfect those skills. As it specifically relates to the subject of this study, rental checkout complexity could be considered a self-efficacy disincentive and performance constraint because the pilot "may possess the constituent skills and a strong sense of efficacy that they can execute them well, but they still choose not to perform the activities because they have no incentives to do so" (Bandura, 1986. p.395). The association between self-efficacy and Bandura's Social Cognitive Theory as it relates to a pilot's perceived barriers to flight and flight activity is visualized in Figure 1 on the next page.

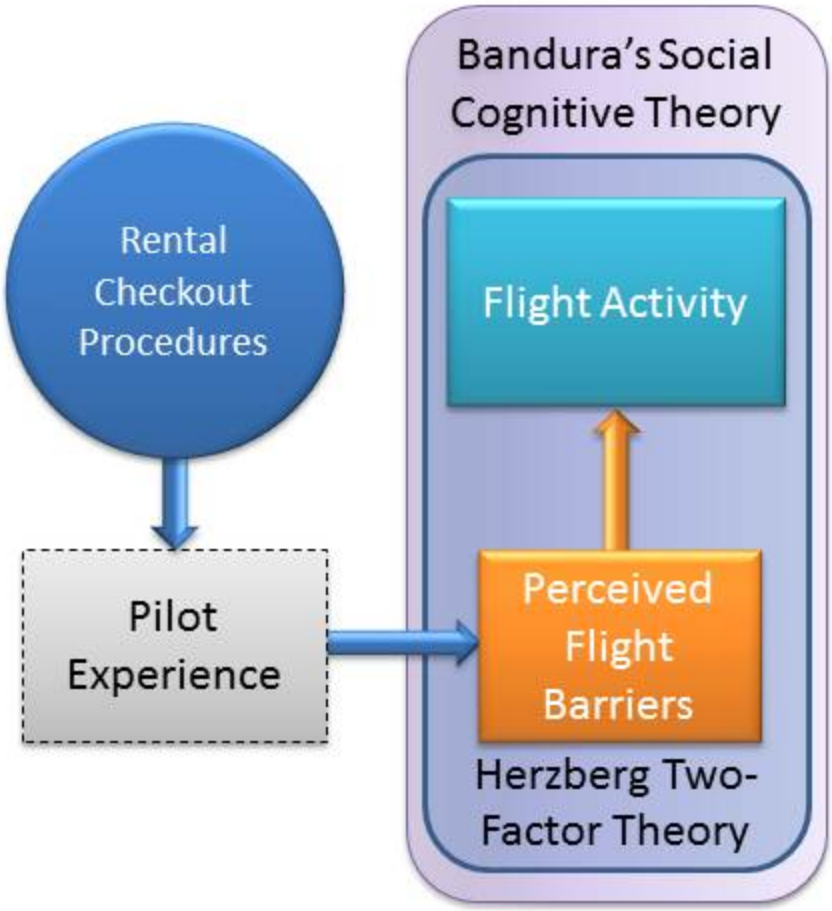


Figure 1. Visualized Theoretical Framework

Statement of the Problem

The problem is there is no regulatory requirement for pilots to accomplish a checkout before renting an aircraft (NTSB, 1995). As a result, procedures are inconsistent among rental facilities. The problem arises because being a pilot is a structured and documented function. The requirements to become a pilot are well-documented and follow a specific flow and order (14 C.F.R. § 61, 2013). Once a person

has become a pilot, there is a well-documented and specific flow and order to maintaining pilot currency to fly (14 C.F.R. § 61, 2013). Then if/when a pilot becomes an aircraft renter, the structure and documentation are gone. There is no documentation for rental checkouts; there is no specific flow nor is there any standardization of the rental checkout process. From an FAA regulatory perspective, a checkout isn't required if you are already flying the same category and class of aircraft (NTSB, 1995).

Most pilots will agree some sort of checkout is needed to familiarize a renter pilot with the aircraft being rented (Crespi, 2011), there is no FAA requirement for a checkout as long as the Pilot-in-Command requirements are met for the aircraft being rented (Dunlap, 1999). The National Transportation Safety Board (NTSB) mentioned in their NTSB Order No. EA-4384, that based on 14 CFR 61.57, "It is undisputed that Mr. Lambon did not need to be checked out in the Tomahawk, because he had recently been checked out (by respondent) in a Cessna 150, an aircraft of the same category and class" (NTSB, 1995, p. 3.) indicating once a person is checked out in any aircraft of a particular category and class, they are qualified to fly any aircraft in that category and class, e.g. airplane is the category and single-engine land is the class in this example. Most businesses that rent aircraft will tell you the checkouts are driven by insurance company requirements, but that is not always the case either (Thurber, 2012).

An internet search for "rental aircraft checkout" provided a multitude of search results for FBOs and Flight Schools that had their checkout procedures, documents, and tests uploaded for potential renters to view and study. The requirements and durations are almost as varied as the number of websites with posted information. Some referred to

it as a “simple checkout”, while others mentioned oral tests, knowledge tests, flight tests, minimum flight times, insurance requirements, and time limits before another checkout would be required.

Purpose of the Study

The purpose of this study was to determine if there was a statistical relationship between the renter pilot, the rental aircraft checkout procedures, the renter pilot’s willingness to accomplish subsequent checkouts based on the procedures of a previous checkout, and the renter pilot willingness to participate in a universal checkout based on specific and predefined criteria. The intended outcome of this research was to develop information useful to the general aviation community to determine and show any statistical correlation between renter pilot experience and rental aircraft checkout procedures that could be translated to continued or stifled flight activity by those pilots.

Significance of the Study

In addition to adding to the body of knowledge, this study provided valuable insight into the perceptions of renter pilots towards differing checkout procedures conducted by different FBOs. Between their flight training and aircraft rental activities, FBOs could be considered at the forefront of promoting general aviation flight activity. This study sheds light on whether checkout procedures deter pilots from continuing to exercise the privileges of their pilot certificate, and at what complexity level, if any, a negative impact began to occur. This study, when coupled with another study researching the relationship between flight experience and pilot error in accidents (Nilsson, 2011),

and further research, could shift what is considered the normal and expected checkout procedures required prior to aircraft rental. The current state is that there are no normal and expected checkout procedures. Pilots have defined and documented requirements from the beginning of the flight training, when they receive their pilot certificate, and afterwards when they exercise the privileges of that certificate. The gap or hiccup to this however, is when a pilot rents an aircraft. Since there is no FAA requirement for a checkout (assuming prior qualification in the same aircraft category and class), and thus no documented procedures or requirements, each FBO and/or flight school is free to individually determine checkout requirements, leaving pilots with no sense of structure or expectation of what will be required.

Research Questions

This research utilized nominal data received from the completed research instrument. Although nonparametric tests were utilized to analyze the data, the data analysis is just as valuable as statistical tests conducted on parametric data (Salkind, 2011). The research was guided by these specific questions:

1. Is there a statistical relationship between a renter pilot's certificate type and the rental aircraft checkout procedure?

$H1_0$ – Pilot certificate type and the aircraft checkout procedure are unrelated.

$H1_A$ – Pilot certificate type and the aircraft checkout procedure are related.

2. Is there a statistical relationship between the renter pilot's certificate type and the renter pilot's willingness to accomplish a subsequent rental aircraft checkout?

$H2_0$ – Pilot certificate type and pilot willingness to accomplish a subsequent rental aircraft checkout are unrelated.

$H2_A$ – Pilot certificate type and pilot willingness to accomplish a subsequent rental aircraft checkout are related.

3. Is there a statistical relationship between a renter pilot's certificate type and the renter pilot's willingness to participate in a rental aircraft universal checkout?

$H3_0$ – Pilot certificate type and pilot willingness to participate in a rental aircraft universal checkout are unrelated.

$H3_A$ – Pilot certificate type and pilot willingness to participate in a rental aircraft universal checkout are related.

4. Is there a statistical relationship between the rental aircraft checkout procedure and the renter pilot's willingness to accomplish a subsequent rental aircraft checkout?

$H4_0$ – The rental aircraft checkout procedure and the renter pilot's willingness to accomplish a subsequent rental aircraft checkout are unrelated.

$H4_A$ – The rental aircraft checkout procedure and the renter pilot's willingness to accomplish a subsequent rental aircraft checkout are related.

5. Is there a statistical relationship between the rental aircraft checkout procedure and the renter pilot's willingness to participate in a rental aircraft universal checkout?

$H5_0$ – The rental aircraft checkout procedure and the renter pilot's willingness to participate in a rental aircraft universal checkout are unrelated.

$H5_A$ – The rental aircraft checkout procedure and the renter pilot's willingness to participate in a rental aircraft universal checkout are related.

6. Is there a statistical relationship between the renter pilot's willingness to accomplish a subsequent rental aircraft checkout and the renter pilot's willingness to participate in a rental aircraft universal checkout?

$H6_0$ – Renter pilot's willingness to accomplish a subsequent rental aircraft checkout and renter pilot's willingness to participate in a rental aircraft universal checkout are unrelated.

$H6_A$ – Renter pilot's willingness to accomplish a subsequent rental aircraft checkout and renter pilot's willingness to participate in a rental aircraft universal checkout are related.

Researcher's Perspective

This researcher received his private pilot certificate in April 2003. Beginning in the days of his flight training and continuing to the present, as an aircraft non-owner he has had to rent an airplane from flight schools and FBOs to enjoy this hobby. Each rental location required a renting pilot to be "checked out" in the specific aircraft to be flown.

The checkout has varied from as little as a quick thirty minute flight around the airport traffic pattern, to a grueling 4-hour session that included an oral, written, and practical flight examination. Once the researcher had completed the checkout, some locations considered it a singular event not requiring accomplishment again as long as their logbook entries show them to be current. Other locations however, required another checkout if he hadn't flown that location's aircraft within a specific timeframe (depending on the location this ranged from 30-days to a year), even though the researcher might be current in the same make and model at other locations.

Throughout the time the researcher has held a pilot certificate, the checkout complexity has played a direct role in the amount of flying he does at a given facility. There are locations the researcher will frequent more often because they are less stringent on the checkout, currency, and required retest requirements. There are other locations the researcher won't accomplish another checkout simply because of the complexity of the previous checkout procedures accomplished, regardless of whether that subsequent checkout would be in a previously qualified make and model, or in a new make and model. There are other locations the researcher is less likely to fly from, or will fly less from, because of the location's currency requirements for their aircraft. Two specific examples of this are discussed below.

The researcher has made several attempts over the years to rent an aircraft in central Missouri near his family and childhood home. His first attempts to get checked out there years ago were stifled because the instructor rate at that location was $50/hr when the rate at other facilities ranged between $20/hr and $25/hr. As a result, the

researcher ended up having to drive an hour away to the Kansas City area be checked out and to rent an aircraft. The checkout at this Kansas City location was good as long as the researcher was current in his logbook. There were times it was well over a year between times an aircraft was rented there, but he was never required another accomplish another checkout. Recently the Kansas City location closed due to the owner's retirement, leaving the researcher again without a rental location in Missouri. When he contacted the first location in central Missouri again, he was told their Cessna 172K required a 5-hour checkout. When the time requirement was questioned, they indicated it was an insurance requirement and was pretty much the industry standard. The researcher thanked them and commented it must be in a different aviation industry than he was in because none of the eleven locations he had received rental checkouts (nine were in the same Cessna 172 model and two were in the same Cessna 172K-series) had specific time requirements for a simple single engine aircraft; e.g. an aircraft with a tricycle landing gear that is not considered a complex or high performance aircraft.

The other example is a flight school the researcher rents an aircraft from when he takes his annual anniversary trip to the east coast with his spouse. Normally he would rent a plane there each year so they could fly up and down the coast and sightsee from the air. That location has a 90-day currency requirement for their aircraft, so by only coming back each year the researcher requires a checkout each year, even though he is current in the same make and model at other locations, and 37% of his total flight time is in that same make and model. The added cost of accomplishing the same checkout year after year in the same plane flown the previous year makes a rental for leisurely sightseeing too costly, the checkout on top of the sightseeing almost doubles the price. Additionally,

their $145/hr rental rate is 33% higher than the cost the researcher pays locally to fly a newer series Cessna 172 (172M versus their 172K), which makes their rental aircraft even less desirable and less affordable.

Assumptions

"An assumption is an assertion presumed to be true but not actually verified" (Gay, Mills, & Airasian, 2012, p. 115). The assumptions for this study were:

- The majority of pilots utilizing rental aircraft do not have additional ratings or endorsements.
- The majority of pilots utilizing rental aircraft do so for recreational purposes.
- Pilots who fly for business or professionally do so with an owned or leased aircraft, not a rental aircraft.
- Rental aircraft checkouts are normally accomplished in a basic aircraft, e.g. single engine with a fixed tricycle landing gear and not considered a complex or high performance aircraft.
- The checkout procedure itself is the focus of the research, therefore the era in which it was accomplished, whether it was last week or 20 years ago, will not be a factor in the research or findings.
- Checkout procedure increasing complexity is primarily defined by the flight time required for the checkout and then secondly by any oral and/or written exams required in addition to the practical flight.
- The more complicated the checkout procedures, the less willing the pilot would be to accomplish them again.

- The pilots with the higher certificate level would be less likely to be deterred by more complex checkout procedures.

Limitations

Limitations are shortcomings, conditions, or influences that cannot be controlled by the researcher. Any limitations that might influence the results should be mentioned. (Drake, 2004) The limitations of this study were based on the following:

- The airman downloadable database contained only those individuals that have not expressly requested they be excluded from that database.
- The study was limited due to the number of participants involved in the study. There was no assurance the participants surveyed fit into the entire spectrum of possible data results.
- The study could possibly be skewed by the participants' failure to provide genuine truthful responses. The non-disclosure statement in itself was not a guarantee that the participants truly believe there would be complete anonymity and confidentiality.
- The study findings were limited by the limited response rate preventing the findings from being generalized to the population.

Delimitations

Delimitations address how a study was narrowed in scope, that is, how it is bounded. It should explain things that are not being done and why they are not being done; e.g. the literature not being reviewed (and why not), the population not being studied (and why

not), the methodological procedures not being used (and why not), etc. Delimitations should be limited to the things a reader might reasonably expect to be done, but for a clearly explained reason have not been done (Pajares, 2007).

- This study was narrowed in scope by only surveying private and commercial pilots. The rationale for this delimitation is discussed in the Scope section of this document.
- This study was further narrowed in scope by only surveying those pilots within the Federal Aviation Administration's Southwest Region (Arkansas, Louisiana, New Mexico, Oklahoma, and Texas). This provided a sample pool large enough to facilitate nominal value statistical analysis while not having a sample pool that was unmanageably large.

Definitions

Aircraft Category – "As used with respect to the certification, ratings, privileges, and limitations of airmen, means a broad classification of aircraft. Examples include: airplane; rotorcraft; glider; and lighter-than-air." (General Definitions, 2016).

Aircraft Checkout – "An instructional program designed to familiarize and qualify a pilot to act as pilot in command of a particular aircraft type" (Federal Aviation Administration, 2008, p. G-1).

Aircraft Class – "As used with respect to the certification, ratings, privileges, and limitations of airmen, means a classification of aircraft within a category having similar

operating characteristics. Examples include: single engine; multiengine; land; water; gyroplane; helicopter; airship; and free balloon." (General Definitions, 2016).

Airport Traffic Pattern – "The traffic flow that is prescribed for aircraft landing at, taxiing on, or taking off from, an airport." (General Definitions, 2016).

Complex Aircraft – "An aircraft with retractable landing gear, flaps, and a controllable-pitch propeller, or is turbine powered." (Federal Aviation Administration, 2004, p. G-4).

Fixed Base Operator (FBO) – "A commercial business granted the right by the airport sponsor to operate on an airport and provide aeronautical services such as fueling, hangaring, tie-down and parking, aircraft rental, aircraft maintenance, flight instruction, etc." (Federal Aviation Administration, 2006, p. 13).

High Performance Aircraft – "An aircraft with an engine of more than 200 horsepower." (Federal Aviation Administration, 2004, p. G-8).

Tailored Design Method – "The development of survey procedures that create respondent trust and perceptions of increased rewards and reduced costs for being a respondent, that take into account features of the survey situation, and that have as their goal the overall reduction of survey error. (Dillman, 2000, p. 4).

Total Design Method – A two part research survey process designed to maximize the quality and quantity of sample responses. The first part is guided by a theoretical view of why people respond to surveys and provides the rationale for shaping each aspect of the

survey process. The second step is an administrative plan to ensure implementation of the survey based on design intentions. (Dillman, 1978).

Universal Checkout – "An instructional program designed to familiarize and qualify a pilot to act as pilot in command of a particular aircraft type" (Federal Aviation Administration, 2008, p. G-1) that is accepted at multiple rental locations without an additional local checkout being required to be accomplished.

CHAPTER II

LITERATURE REVIEW

Pilot Certificate Requirements

The road to being a general aviation pilot begins with training; lots of training. The entry level pilot certificate for powered flight in an airplane is either a recreational pilot certificate, a sport pilot certificate, or a private pilot certificate. The recreational pilot is limited on the distance they can fly from their home base while the sport pilot is limited by the type of aircraft they can fly. The entry level "full privilege" pilot certificate is the private pilot certificate. To earn a private pilot certificate, an individual receives aeronautical knowledge training and a minimum of forty hours of flight proficiency training so they will have the proficiency needed to pass a practical exam (14 C.F.R. § 61, 2013).

The Federal Aviation Administration (2012c) lists the following subject areas and subtasks to complete the practical test standards for a private pilot single engine land rating:

- Preflight Preparation
    - Certificates and Documents
    - Airworthiness Requirements

    - Weather Information
    - Cross-Country Flight Planning
    - National Airspace System
    - Performance and Limitations
    - Operation of Systems
    - Aeromedical Factors
- Preflight Procedures
    - Preflight Inspection
    - Cockpit Management
    - Engine Starting
    - Taxiing
    - Runway Incursion Avoidance
    - Before Takeoff Check
- Airport Operations
    - Radio Communications and ATC Light Signals
    - Traffic Patterns
    - Airport, Runway, and Taxiway Signs, Markings, and Lighting
- Takeoffs, Landings, and Go-Arounds
    - Normal and Crosswind Takeoff and Climb
    - Normal and Crosswind Approach and Landing
    - Soft-Field Takeoff and Climb
    - Soft-Field Approach and Landing
    - Short-Field Takeoff and Maximum Performance Climb

    - Short-Field Approach and Landing
    - Forward Slip to a Landing
    - Go-Around/Rejected Landing
- Performance Maneuver
    - Steep Turns
- Ground Reference Maneuvers
    - Rectangular Course
    - S-Turns
    - Turns Around a Point
- Navigation
    - Pilotage and Dead Reckoning
    - Navigation Systems and Radar Services
    - Diversion
    - Lost Procedures
- Slow Flight and Stalls
    - Maneuvering During Slow Flight
    - Power-Off Stalls
    - Power-On Stalls
    - Spin Awareness
- Basic Instrument Maneuvers
    - Straight-and-Level Flight
    - Constant Airspeed Climbs
    - Constant Airspeed Descents

    - Turns to Headings
    - Recovery from Unusual Flight Attitudes
    - Radio Communications, Navigation Systems/Facilities, and Radar Services
- Emergency Operations
    - Emergency Descent
    - Emergency Approach and Landing (Simulated)
    - Systems and Equipment Malfunctions
    - Emergency Equipment and Survival Gear
- Night Operation
    - Night Preparation
- Postflight Procedures
    - After Landing, Parking, and Securing

In addition, takeoff and landing maneuvers require a speed accuracy of +10/-5 knots while all inflight maneuvers require an accuracy of ±100 feet for altitude, ±10 knots for airspeed, ±5° for bank, and rolling out to a heading within ±10° (Federal Aviation Administration, 2012c).

The practical test standards for the commercial pilot single engine land rating are very similar to the private pilot standards, with a few subject areas removed and several additional subject areas added for this higher rating. The Federal Aviation Administration (2012a) does not list the following subject areas and subtasks from the private pilot standards for the commercial rating standards:

- Takeoffs, Landings, and Go-Arounds
    - Forward Slip to a Landing
- Ground Reference Maneuvers
    - Rectangular Course
    - S-Turns
    - Turns Around a Point
- Basic Instrument Maneuvers
    - Straight-and-Level Flight
    - Constant Airspeed Climbs
    - Constant Airspeed Descents
    - Turns to Headings
    - Recovery from Unusual Flight Attitudes
    - Radio Communications, Navigation Systems/Facilities, and Radar Services
- Night Operation
    - Night Preparation

The Federal Aviation Administration (2012a) added the following additional subject areas and subtasks to complete the practical test standards for a commercial pilot single engine land rating:

- Takeoffs, Landings, and Go-Arounds
    - Power-Off 180° Accuracy Approach and Landing
- Performance Maneuver

    - Steep Spiral
    - Chandelles
    - Lazy Eights
- Ground Reference Maneuvers
    - Eights On Pylons
- Slow Flight and Stalls
    - Accelerated Stalls
- High Altitude Operations
    - Supplemental Oxygen
    - Pressurization

The commercial rating standards for takeoff, landing, and inflight maneuvers have the same accuracy requirements as the private pilot standards (Federal Aviation Administration, 2012a, Federal Aviation Administration, 2012c).

FAA Pilot Currency Requirements

The FAA requires a pilot to have a specific amount of recent flight experience to act as the pilot in command of an aircraft carrying passengers. The pilot must have made a minimum of three take-offs and landings in the same category and class of aircraft. If the aircraft is a conventional tailwheel aircraft, the landings must be to a full stop (14 C.F.R. § 61, 2013). The FAA also recommends each pilot establish an individual currency program, "Pilots should design a currency program tailored to their individual operating environments and needs. In some cases, pilots may integrate currency criteria

with normal operations to reduce the need for separate currency flights" (Federal Aviation Administration, 2012b, p. 2).

In addition to recent experience, FAA regulations require a pilot to complete a flight review every 24 calendar months consisting of a minimum of one hour of ground training and one hour of flight training (14 C.F.R. § 61, 2013). The FAA has indicated the "flight review is not a test or check ride, but an instructional service designed to assess and enhance a pilot's knowledge and skills" (Federal Aviation Administration, 2012b, p. 7). This instructional service is a proficiency based exercise "to ensure that the pilot has the necessary knowledge and skills for safe operation" (Federal Aviation Administration, 2015, p.2).

Insurance Requirements

Normally whenever this researcher has asked a flight school or FBO about their checkout procedures, the answer invariably given seems to be, "The insurance company requires it". While in the literal sense, they do require one, in the specific sense that may not be true. According to a United States Aircraft Insurance Group (USAIG) underwriter, the aircraft insurance carrier requires a renter to be checked out prior to renting the airplane solo, but doesn't dictate the requirements or areas to be covered during the checkout, only the minimum pilot qualifications for the policy to cover the renter pilot flying the specific aircraft (R. Moore, personal communication, April 23, 2014).

To the inverse of that however, according to a Falcon Insurance Agency telephone agent in Austin Texas (personal communication, October 29, 2015) there are numerous insurance related reasons for varying checkout procedures. It depends on the aircraft type, claim history of the customer, and various other negotiated terms. As an example, policy rates could conceivably be reduced by the customer agreeing to a higher "total time in make/model" for a renting pilot, or even increasing the required checkout time to a specific value.

Aircraft Rental Checkout

Even with the certification and currency requirements listed above, aircraft rental locations still require individuals to prove they can safely pilot an aircraft, despite the documented certification, flight reviews, and flight currency. Checkout procedures and verbiage is almost as varied as the number of facilities that rent aircraft. Some locations indicate renting is a breeze because "the checkout is built around industry and insurance company standards" (Oklahoma Aviation, N.D.). Others indicate they rent to qualified pilots after meeting some basic check-out requirements; which in one instance consisted of minimum total flight time and flight time in the specific aircraft make and model, an hour and a half flight review consisting of specific maneuvers and instrument maneuvers to Private Pilot practical test standards, and completion of an aircraft specific written ground review checklist (Aviator's Wing, 2014). Other locations simply refer to it as an insurance checkout (Monarch Air, 2012).

Aircraft rental checkout procedures are not totally undefined though. If you head north and cross the border, there is an aircraft rental location in Windsor Ontario Canada

that defines their aircraft rental checkout procedures. Windsor Flying Club (2014) has defined their rental pilot checkout procedures:

> Circuit Check: A Circuit Check shall consist of at least 3 takeoffs and landings, and should when possible, include a crosswind landing.
>
> County Check: A County Check shall consist of all the exercises in the circuit check with the addition of slow flight, stall, steep turns and a forced landing from an altitude of at least 2000' AGL. A review of the applicable emergency procedures shall be included with any check. Credit will be given for flying done on the same type of aircraft at another facility, but a circuit check will still be required. (p. 10)

Additionally, in subsequent paragraphs Windsor Flying Club (2014) goes on to define which checkout type is required based on pilot certificate type, total flight time, additional ratings held, and recent flight experience:

> Student Pilots must fly at least once every 14 days or a dual flight is required prior to any solo flight.
>
> Private Pilot License with less than 100 hours total time:
>
> i) Must fly at least once every 45 days or circuit check is required.
>
> ii) If more than 6 months since last flight a county check is required.

iii) If current on one type, must have flown other type within 6 months or county check is required.

Private Pilot License with more than 100 hours total time:

i) Must fly within 3 months or a circuit check is required.

ii) If more than 1 year since last flight a county check is required.

iii) If current on one type must have flown other type within 6 months or circuit check is required.

Commercial Pilot License or current Instrument Rating

i) Must fly within 6 months or a circuit check is required.

ii) If more than 1 year since last flight a county check is required.

iii) If current on one type must have flown other type within 6 months or circuit check is required. (p. 10)

Universal Checkout Initiative

OpenAirplane is a relatively new company, established in 2012 in Chicago, with a published goal to make it easier to find, book, fly, and pay for rental aircraft through a network of participating FBOs and Flight Schools utilizing a universally accepted (at the participating facilities) checkout procedure (OpenAirplane, n.d.). Their website indicates that based on a survey of US Pilots in September 2001, 96% of pilots would fly more if it

was simpler to rent, 51% of pilots hate the checkout process and don't rent, and 28% of pilots find it too hard to find airplanes (OpenAirplane, n.d.). The statistics look impressive, but there is no background given on the survey type, methodology, sample group or size, etc. to assess the validity of the findings provided. Their universal checkout is a pass/fail event consisting of at least one hour on the oral examination followed by an hour and a half or more on the flight examination (OpenAirplane, n.d.) As a certificated pilot, this level of checkout complexity would be a negative incentive for this researcher to consider participating in this program. For the program to be a benefit to this researcher in general though, OpenAirplane would have to have aircraft rental partners at the few specific locations this researcher travels to on a frequent basis.

Rental Aircraft Locations

Finding an aircraft to rent can sometimes create a problem in itself. How do you find an airplane to rent? As technology continues to evolve, word of mouth is no longer the only or even main method of finding an airplane. Some airport searches done on the internet will include search results for services at the airport, to include flight instruction and aircraft rentals (AOPA, N.D.b). This has evolved to websites whose sole purpose is to provide a search capability for rental airplanes by location and even by aircraft type (rentplanes.com, 2012).

Renting Other Modes of Transportation

Although possessing a license (certificate) in itself may not be enough to rent an aircraft, it is sufficient for other modes of transportation. An individual renting a

motorcycle, car, van, pickup, or truck merely needs to possess a license commensurate with the vehicle being rented. There is no need to have the rental clerk climb into the vehicle with you while you drive around the block to verify you can in fact operate that vehicle.

Most locations renting boats don't advertise any requirements prior to renting a boat or personal watercraft (Arkansas Department of Parks and Tourism, 2014; Beavers Bend Marina, N.D.; Lost Bridge Marina, 2009). There are, however, some places that do require boating experience, depending on the type of boat an individual is renting (Marina Del Sur, 2013).

Renting a recreational vehicle (RV) is even based on age, a license, and a credit card. Even if you don't meet the age requirement, you could still qualify for an additional fee. According to CruiseAmerica (2014), to drive a motorhome:

> All you need is to be 25 years of age or older and possess a valid driver's license and a major credit card. No special endorsement is needed. Temporary licenses are not accepted. Authorized operators 21-24 years of age may drive a motorhome subject to $25/day fee. In some instances credit and employment references or a foreign passport are required prior to rental and will be verified. All drivers must be present, listed on and sign the Rental Agreement and will be bound by Terms and Conditions of the Rental Agreement at vehicle pick up.

Summary

An individual has received a minimum of forty hours of proficiency training flying an airplane, in addition to receiving aeronautical knowledge training and passing a written test, before they are eligible to receive a practical exam from a Designated Pilot Examiner (DPE). During that examination, they demonstrate their aeronautical knowledge and flight proficiency to a predefined level of accuracy. After successful completion, they are issued a pilot certificate. Once they receive their certificate however, they are still required to maintain a defined level of currency (3 takeoffs and landings in the preceding 90 days) to be considered current to carry passengers. In addition, they must also complete a biennial flight review with an authorized flight instructor every 24 months, consisting of at least one hour of ground/knowledge training, and a minimum of one hour of flight training.

Insurance companies define minimum pilot qualifications for coverage to apply to the pilot of the aircraft. They don't normally define the requirements for an aircraft checkout prior to renting an aircraft; just that one must be completed with an authorized flight instructor to ensure the individual has the appropriate level of proficiency to safely pilot the aircraft. They may however, negotiate some requirements to adjust policy rates.

A checkout is not required by the FAA if the pilot is already qualified in the same category and class of aircraft. As a result, there are no predefined checkout requirements for an aircraft checkout. The checkout requirements and procedures are defined by either the FBO or flight school renting the aircraft, or even the flight instructor giving the checkout. Some Canadian flight schools define both the content of the rental checkout

and the minimum checkout requirements based on the pilot's certificate type, flight time, ratings held, and recent flight experience.

There is an initiative in place to establish a predefined checkout that is universally accepted at participating locations. On the surface this seems like a viable initiative; digging deeper though, the universal checkout must be completed once a year, the requirements are greater than the FAA required flight review that must be completed every two years, and the standards are stricter than the practical test standards the pilot was tested against to originally receive their pilot certificate.

The only mode of transportation that requires practical proof of proficiency is those that take individuals into the air. There is no known ground or water based vehicles that require anything similar to the checkout required in an aircraft. Motorcycles, automobiles, pickups, vans, trucks, and even recreational vehicles only require a license of the appropriate class to rent, hop inside or on, and drive away. Most boats and personal watercraft don't require any proof of proficiency in their operation. The few exceptions, like ocean sailing, only require proof of the required boating experience, through a course completion certificate.

CHAPTER III

METHODOLOGY

Introduction

The purpose of this study was to determine if there was a statistical relationship between the renter pilot, the rental aircraft checkout procedures, the renter pilot willingness to accomplish subsequent checkouts based on their previous checkout experience, and the renter pilot willingness to participate in a universal checkout based on specific and predefined criteria.

This chapter (1) describes the research design of this study, (2) describes the population, (3) explains the sample selection, (4) describes the research instrument, its design, and how its validity and reliability were determined, (5) describes the procedures for data collection, and (6) explains the statistical procedures used to analyze the data.

Research Design

This study was based on descriptive research, sometimes referred to as survey research, because it attempted to obtain information concerning the current status of the topic to describe what exists with respect to the situation's variables or conditions and how subgroups view topics and issues (Gay, Mills, & Airasian, 2008; Key, 1997). It involved collecting data in order to test hypotheses or answer questions concerning the

current status of the subject of the study. (Gay, 1996, p. 14). The data collection and study were quantitative in nature and utilized simple random probability sampling. A research instrument was utilized to determine first if the pilot was or had been an aircraft renter, and if so their experience level, which was measured by certificate type, the checkout procedures completed to rent an aircraft, their willingness to accomplish subsequent checkouts based on their previous checkout experience, and their willingness to participate in a universal checkout based on specific and predefined criteria. The sample was obtained from the publicly available September 9, 2014 monthly update to the FAA's Downloadable Airman Database (Federal Aviation Administration, 2014).

The Downloadable Airman Database was created as a result of Public Law 106-181, enacted on April 5, 2000 and commonly referred to as the *Wendell H. Ford Aviation Investment and Reform Act for the 21st Century*. Section 715 of the act amended 49 U.S.C. § 44703 to require airman certificate information, limited to the airman's name, address, and ratings held, to be made available to the public unless the airman elected to have the information withheld (Wendell H. Ford Aviation Investment and Reform Act for the 21st Century, 2000).

The downloadable database as a whole was a listing of over 762,000 different airman certificates issued to individuals, including both foreign and domestic pilots, flight engineers, and flight instructors. The total number of domestic pilots in all rating categories was just over 533,000 (Federal Aviation Administration, 2014).

Population

The population for this research project consisted of domestic pilots located within the Federal Aviation Administration's Southwest Region. The Southwest Region includes the states of Arkansas, Louisiana, New Mexico, Oklahoma, and Texas. The Southwest Region pilot population was filtered down to a population subset of only pilots with private and commercial certificates that did not hold flight instructor ratings. The other pilot and certificate rating types were excluded as follows:

- Individuals with an Airline Transport Pilot (ATP) certificate were excluded because the rating requires a minimum of 1,500 hours of flight time (14 C.F.R. § 61, 2013) and is generally obtained by individuals who do or plan to fly professionally.
- Individuals with Light Sport and Recreational certificates were excluded because they represent less than 1% of total certificated pilots. There are also specific limitations on the type of aircraft and/or where they can fly.
- Student pilots were excluded because their aircraft renting was limited to the flight school where their training was being conducted, and their ability to fly solo was based on a solo endorsement from their flight instructor requiring renewal every 90 days.
- Pilots that possessed a flight instructor rating were excluded because they represent part of the group that defined and accomplished the rental aircraft checkouts being studied.

There were almost 65,000 certificated pilots in the FAA's Southwest Region. Of those, 21,360 individuals held private pilot certificates, 13,104 individuals held commercial pilot certificates, for a total overall population of 34,464. There were 3,369 commercial pilots that also held an instructor rating. Once those with instructor ratings were excluded, this lowered the commercial pilot group to 9,735 and lowered the total population (N) for the purposes of this research to 31,095 (Federal Aviation Administration, 2013a). The quantity of excluded certificate categories included 16,514 airline transport pilot certificates, 12 recreational pilot certificates, 520 sport pilot certificates, and 13,436 student pilot certificates (Federal Aviation Administration, 2013a).

Sample Selection

The downloadable database consisted of two data files. One data file contained the pilots' basic information (e.g. address) and the other contained their certificate information (e.g. ratings). To accomplish sample selection, the certificate information had to be matched up with the basic information by merging the basic and certificate information together from the two data files.

Each individual listed in the data files had a unique identifier number assigned by the FAA. The unique identifier was used with Microsoft Excel's® VLOOKUP (vertical lookup) function to merge the data together from the two files. After the data were merged, the columns containing the data transferred using VLOOKUP were then copied and the Paste Special [Values] command was used to overwrite the VLOOKUP formula in each cell with the data VLOOKUP had placed in each cell. This replaced the

VLOOKUP formula in the individual cells with the actual data values so Excel® didn't attempt to accomplish the VLOOKUP data migration each time the spreadsheet was manipulated. With the basic and certificate information merged together into a single file, the filter function within Excel® was used on the overall population data to filter the set by removing anyone who was not a domestic pilot, in the southwest region, holding a private or commercial certificate, without an instructor rating. The end result was the filtered population subset.

With the filtered population subset created, a random sample sort was accomplished to randomize the order. A new column entitled "Random" was created and Excel's® RAND function was inserted into each cell of that column. The RAND function created a random number between 0 and 1 in each cell. After all the rows had a random number in the cell, the Copy and Paste Special [Values] command was used to overwrite the RAND function in each cell with the random number it had created. With that accomplished, the researcher simply sorted the data file by the "Random" column to randomize the population order. With the population now completely randomized, groups could be CUT and PASTED into new Excel® workbooks as needed during the research process.

The sample size needed to generalize the results of the 31,095 filtered pilot population with 95% confidence was calculated using the Krejcie & Morgan known population size formula (Krejcie & Morgan, 1970). The Krejcie & Morgan formula indicated the sample size needed for generalizing results to the population with 95% confidence was 380. To attempt to obtain a sample size of that quantity, an offset for

nonresponses was factored in. Historically, mail surveys that utilized Dillman's total design method (TDM) for mail survey creation and accomplishment, were less than five pages in length, and were administered to a specialized population, could reasonably expect a response rate of 76% (Dillman, 1978). Based on this expected response rate, the sample size was adjusted from 380 to 500 (380 ÷ 76%) to offset the expected non-responses.

As technology evolved and the internet became a more widely used form of communication however, the total design method was modified into a tailored design method. As a result of the technology advance, response rates for the same type of mail surveys dropped to 53% (Dillman, 2000). Based on this lowered response rate, the sample size was adjusted from 380 to 717 (380 ÷ 53%) to offset the expected non-responses.

Throughout the course of this research project, from instrument test-retest reliability testing to actual instrument mail out, this researcher experienced an average response rate of 25% (range of 20% to 41%). Based on that average rate for offset calculations, the sample size had to be increased again, this time to 1,520 (380 ÷ 25%) to generalize the results to the population with 95% confidence.

It was decided to forego attempting a third sample group following an initial group of 504 sample subjects (n_1) and a secondary sample group of 500 (n_2). It was unlikely results from a third sample group (n_3) could be collected within the bounds of reasonable time and costs, and there was a low probably of receiving enough sample responses to reach a 95% confidence interval. Based on these factors, the first and second

sample groups were combined to create an overall sample group of 1,004 (n) for the research.

Instrument Description

The instrument for this quantitative research study was a mailed questionnaire consisting of 5 questions. The instrument questions were driven by the following research questions:

1. Is there a statistical relationship between a renter pilot's certificate type and the rental aircraft checkout procedure?

2. Is there a statistical relationship between the renter pilot's certificate type and their willingness to accomplish a subsequent rental aircraft checkout?

3. Is there a statistical relationship between a renter pilot's certificate type and their willingness to participate in a rental aircraft universal checkout?

4. Is there a statistical relationship between the rental aircraft checkout procedure and the renter pilot's willingness to accomplish a subsequent rental aircraft checkout?

5. Is there a statistical relationship between the rental aircraft checkout procedure and the renter pilot's willingness to participate in a rental aircraft universal checkout?

6. Is there a statistical relationship between the renter pilot's willingness to accomplish a subsequent rental aircraft checkout and their willingness to participate in a rental aircraft universal checkout?

The first three instrument questions were demographic in nature, determining first if the pilot fell into the group of pilots that had rented an aircraft. This research was only applicable to the individuals in the sample group who had rented an aircraft versus those that strictly owned an aircraft. The downloaded FAA airman database did not contain ownership or rental information, therefore the first question on the research instrument was used as a filter question to determine if the instrument respondent was an aircraft renter or had rented an aircraft. If so, it continued by asking their certificate level and the type of rental checkout procedures accomplished prior to aircraft rental.

The final two questions were subjective in nature, asking for their level of willingness to accomplish another checkout with the same type of checkout procedures, and their willingness to accomplish a single universal checkout based on predefined and listed requirements that would be honored at multiple locations. The pilots' willingness was measured using a Likert-type nominal scale. The responses were coded from positive to negative with verbiage in lieu of numerals, with the available responses ranging from very willing to very unwilling. The verbiage responses were given a nominal numeric value ranging from 1 to 5 for performing statistical calculations, with the lower values indicating a higher level of willingness. Since the values were completely nominal having no ordinal or scale value, the numeric value order was of no consequence. Items were coded 1 through 5 from positive response to negative response

with the following values; 1 = Very Willing, 2 = Somewhat Willing, 3 = Willing, 4 = Somewhat Unwilling, and 5 = Very Unwilling.

Instrument Development

A review of literature and prior studies was conducted to determine and find any previous instruments available. Through that review, a suitable instrument was not found that would fit into the research being conducted by this study. In the absence of a suitable instrument for this research study, one had to be designed, created, and tested (Creswell, 2011).

A nominal scale questionnaire was created and revised based on the researcher's experience as a pilot and aircraft renter. Following creation and revision, the draft instrument was tested for validity and reliability, with further modifications and corrections being made during those phases.

Instrument Validity and Reliability

Once designed and revised, the draft instrument was reviewed for reliability and validity (Creswell, 2011). Reliability measured consistency (Huck, 2008), while validity was based on the relationship between the test content and what it is intended to measure (AERA, APA, NCME, 1999; Huck, 2008).

A panel of experts consisting of FBO owners and flight instructors compared the content of the draft instrument against the specifics of the instruments claimed domain (Huck, 2008). When they reviewed the instrument, they were asked to pay particular

attention to any poorly worded questions, questions or responses that didn't make sense, or questions that appeared to be leading. Based on their feedback and suggestions received, the question concerning total flight time was considered to be redundant because it followed a question concerning certificate type, and was therefore removed from the instrument. This process constituted pilot testing of the instrument to determine its content validity (Creswell, 2011).

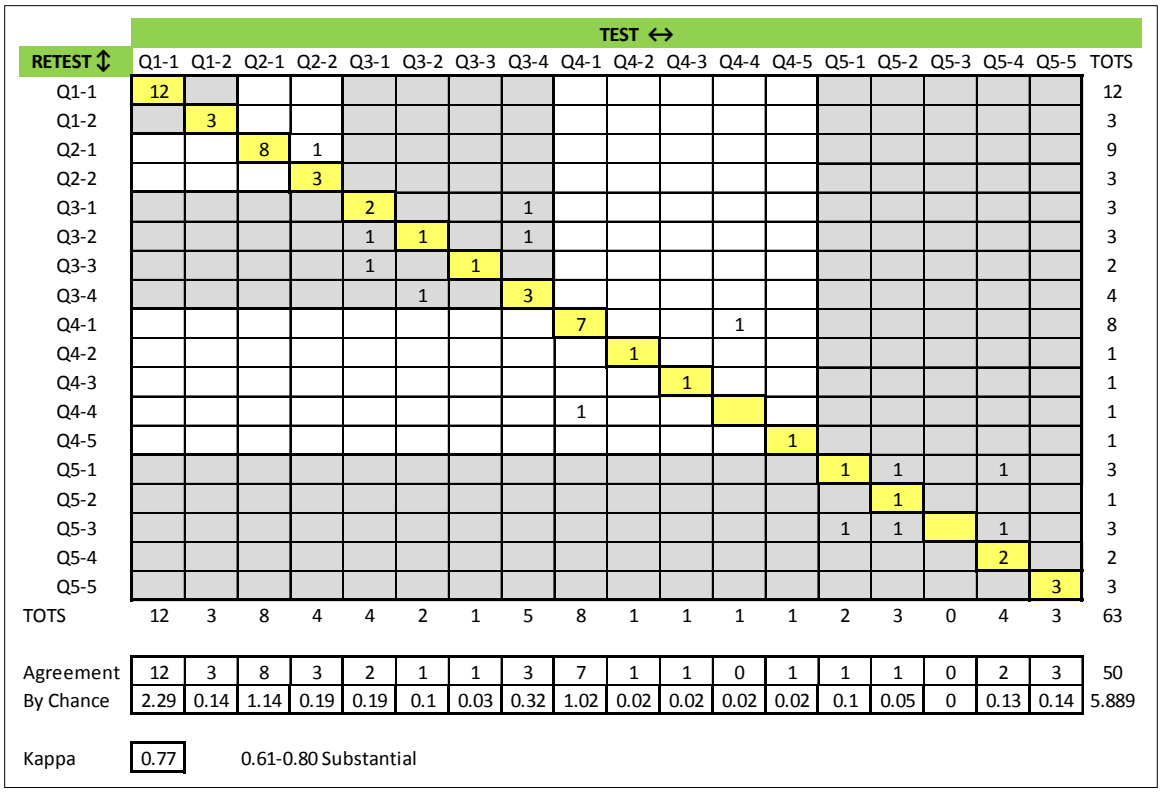
A test group was extracted from the already randomly sorted research population. This sample group was removed from the research population list to preclude their being randomly selected a second time for participation in the actual research project. After initially completing the draft research instrument, the test group participants were administered the draft instrument a second time to ensure there was a positive correlation between the first and second administered instrument responses (Creswell, 2011). Fifteen respondents completed and returned both instrument mailings. The time between test and retest response receipt ranged from 7 to 57 days. The mean value for receipt was 37 days with a standard deviation of 13 days. The median value for receipt was 41 days while the mode was 42 days.

Reliability values were calculated using Cronbach's Alpha to determine an internal consistency value, and using Cohen's Kappa to determine interrater reliability. George and Mallery (2003) provided the following rules of thumb for Cronbach's Alpha internal consistency value ranges: "$\alpha > 0.9$ – Excellent, $\alpha > 0.8$ – Good, $\alpha > 0.7$ – Acceptable, $\alpha > 0.6$ – Questionable, $\alpha > 0.5$ – Poor, and $\alpha < 0.5$ – Unacceptable" (p.231)

Intrarater reliability calculated agreement between ratings made by the same subject on 2 or more occasions (Sim & Wright, 2005). It could be calculated through several calculations, including a percent-agreement measure and Cohen's Kappa. The Cohen's Kappa formula was used when the data are nominal (Huck, 2008), because it required specific statistical methods to assess reliability, and the kappa (κ) statistic was commonly used for this purpose (Sim & Wright, 2005). Cohen's Kappa (κ) was the most important and most widely accepted measure of intrarater reliability when the outcome of interest was measured on a nominal scale (Sun, 2011).

Landis & Koch (1977) provided the following labels to describe the relative strength of agreement associated with kappa statistic ranges: " < 0.00 - Poor, 0.00 to 0.20 - Slight, 0.21 to 0.40 - Fair, 0.41 to 0.60 - Moderate, 0.61 to 0.80 - Substantial, and 0.81 to 1.00 - Almost Perfect" (p. 165).

Figure 2 is a visual matrix showing the test and retest response agreements. Values in the yellow cells show the quantity of responses that were in agreement between the test responses and the retest responses. Quantities outside the yellow cells show the quantity of responses that did not agree between the test and retest responses. The individual question agreements and the agreements by chance values are shown under the matrix, as well as the total agreements (50 of 63) and sum of the agreements by chance (5.889) shown to the right. The Cohen's Kappa (κ) statistic was calculated to be 0.77.



	TEST ↔																		
RETEST ↕	Q1-1	Q1-2	Q2-1	Q2-2	Q3-1	Q3-2	Q3-3	Q3-4	Q4-1	Q4-2	Q4-3	Q4-4	Q4-5	Q5-1	Q5-2	Q5-3	Q5-4	Q5-5	TOTS
Q1-1	12																		12
Q1-2		3																	3
Q2-1			8	1															9
Q2-2				3															3
Q3-1					2			1											3
Q3-2					1	1		1											3
Q3-3					1		1												2
Q3-4						1		3											4
Q4-1									7			1							8
Q4-2										1									1
Q4-3											1								1
Q4-4									1										1
Q4-5													1						1
Q5-1														1	1		1		3
Q5-2															1				1
Q5-3														1	1		1		3
Q5-4																	2		2
Q5-5																		3	3
TOTS	12	3	8	4	4	2	1	5	8	1	1	1	1	2	3	0	4	3	63
Agreement	12	3	8	3	2	1	1	3	7	1	1	0	1	1	1	0	2	3	50
By Chance	2.29	0.14	1.14	0.19	0.19	0.1	0.03	0.32	1.02	0.02	0.02	0.02	0.02	0.1	0.05	0	0.13	0.14	5.889

Kappa 0.77 0.61-0.80 Substantial

Figure 2. Cohen's Kappa Calculation Matrix.

As shown in Table 1 on the next page, the kappa values for individual questions showing internal consistency ranged from almost perfect (1.0) to moderate (0.42) and the alpha values showing interrater reliability ranged from Excellent (1.0) to Poor (0.59). The overall instrument showed good internal consistency with an alpha value of 0.86 and substantial interrater reliability with a kappa value of 0.77. Based on those values indicating good internal consistency and substantial interrater reliability, the instrument was considered a reliable instrument for this research project.

Table 1.

Instrument Reliability Values

Instrument Question(s)	Measure	Value	Reliability Level
Have you ever rented an aircraft as a certificated pilot?	Cohen's Kappa	1.0	Almost Perfect
	Cronbach's Alpha	1.0	Excellent
Certificate Type	Cohen's Kappa	0.8	Substantial
	Cronbach's Alpha	0.90	Good
Checkout procedures consisted of the following	Cohen's Kappa	0.42	Moderate
	Cronbach's Alpha	0.59	Poor
How willing would you be to accomplish a checkout of the same level of complexity again?	Cohen's Kappa	0.68	Substantial
	Cronbach's Alpha	0.74	Acceptable
Based on the criteria above, how willing would you be to participate in this type of single checkout for multiple locations?	Cohen's Kappa	0.49	Moderate
	Cronbach's Alpha	0.83	Good
Checkout again and Universal checkout Question Set	Cohen's Kappa	0.65	Substantial
	Cronbach's Alpha	0.83	Good
Checkout Related Question set	Cohen's Kappa	0.63	Substantial
	Cronbach's Alpha	0.78	Acceptable
Overall Instrument	Cohen's Kappa	0.77	Substantial
	Cronbach's Alpha	0.86	Good

Data Collection

The downloaded airman database was a password protected file kept on the researcher's personal laptop. As random sample groups were extracted from the population group, they were placed in separate tabs within the file. A new column was

placed in each tab and a unique sequence number was added to each entry. Instrument questionnaires had that unique sequence number printed in the lower right corner to match the instrument to the sample participant it was mailed to. The purpose of this sequence number was to identify which participants required the second copy of the questionnaire or a reminder postcard (Dillman, 1978).

Sample data were gathered using a modified process similar to the three-phase survey administration procedure discussed by Creswell (2011). The three-phase survey administration procedure consisted of potential sample participants receiving a letter of introduction, followed by the research questionnaire, and then follow-up reminders to non-respondents (Creswell, 2011).

In the modified process used by this researcher, randomly selected sample participants were sent a letter of introduction describing the research study, asking for their participation in the study, and letting them know they would receive a questionnaire. A copy of the adult informed consent document was included with this letter, which included letting them know that returning the completed questionnaire indicated their consent and willingness to participate in this research study.

A week after the introduction letter was sent out, a second mail out was sent with another letter describing the research project. This mailing also included another copy of the informed consent document along with a copy of the questionnaire. A self-addressed stamped envelope was included for returning the completed questionnaire.

The following week a reminder post card was mailed out again asking the sample group for their participation and letting them know they should have received the questionnaire by mail. The researcher's contact information was included in the event they misplaced or didn't receive the questionnaire. The reminder post card was the final contact with the sample group.

The researcher determined during the instrument test-retest phase that additional follow-up and reminder contacts with the slowly responding and nonresponding individuals in the sample group only resulted in an additional 10% of those individuals responding. In lieu of continuing to coax slow and non-respondents to complete and return the questionnaire, a second sample group was created to obtain additional responses and data. The second sample group was extracted from the population, with the same modified process being applied to them.

The first sample group contained 504 individuals from the population. There were 23 questionnaires returned as undeliverable with 132 responses received, for an effective response rate of 27%. The second sample group contained 500 individuals from the population. There were 14 questionnaires returned as undeliverable with 102 responses received, for an effective response rate of 21%.

Once data collection was concluded, the non-personal data entered by the researcher was copied over to a new file for reference and retention purposes. The data copied over included the researcher assigned sequence number, mail return notes, notification letter mail out date, instrument mail out date, postcard reminder mail out date, instrument returned date, the sample's certificate level and their state of residence.

Afterwards, the original password protected database file was destroyed using Eraser software. “Eraser is an advanced security tool for Windows which allows you to completely remove sensitive data from your hard drive by overwriting it several times with carefully selected patterns” (Low, 2013, Para 1.). At that point, there was no longer any way to identify research participants or tie the questionnaires back to specific participants. All retained data and returned questionnaires became completely anonymous at that point.

Data Analysis

Statistical and mathematical procedures were accomplished with the use of computer software based on specific mathematical and statistical formulas. The statistical formulas utilized were for one-way classification (Salkind, 2011), two-way classifications (Salkind, 2011), degrees of freedom (*df*) (Salkind, 2011; Siegel, 1956), Chi-Square (Siegel, 1956), and Fisher’s Exact Test (Kirkman, 1996a).

The researcher segregated the returned instruments based on the response to the first question asking if the participant had or had not rented an aircraft. For those returned instruments where the respondent had rented an aircraft, the researcher compiled the frequency count for the responses from the remaining instrument questions. If the respondent indicated they had no aircraft rental activity, any responses to the follow-on questions, if answered, were ignored and excluded from analysis.

Data in this study were analyzed using PSPP sampled data statistical analysis software (Pfaff, 2014) and server-based Fisher’s Exact Test software (Kirkman, 1996a).

PSPP, which is the software's name and not an acronym, is a statistical analysis program similar to SPSS that can perform descriptive statistics, non-parametric tests, and many other tests, regressions, and analysis (Pfaff, 2014). Cross-tabulations were used to summarize categorical data to create a contingency table. Chi Square was then used to determine the statistical relationship between variables as long as basic assumptions were met. Confidence level values were interpolated from a distribution of chi square probability table (Fisher & Yates, 1948) and chi square table of critical values (Sheskin, 1997). If the chi square basic assumptions were not met, Fisher's Exact Test was used to calculate the *p*-value for the contingency table (Huck, 2008; Siegel, 1956).

Table 2 on the next page is a three column table consisting of a research question column, a data sources column, and a data analysis column. Each row indicates the data sources and data analysis technique used to analyze the results for each research question.

Summary

Although all interviewees randomly selected were within the FAA's Southwest Region the sample size was not adequate to generalize the results to the population with 95% confidence, or to any other population group outside the FAA's Southwest Region. The findings provided valuable insight into the sample group and was an excellent starting point for broader research in the future.

Table 2.

Research Questions, Data Sources, and Statistical Tools for this Study

Research Question	Data Sources	Data Analysis
1. Is there a statistical relationship between a renter pilot's certificate type and the rental aircraft checkout procedure?	Instrument Responses 2, 3	Descriptives & Chi Square
2. Is there a statistical relationship between the renter pilot's certificate type and their willingness to accomplish a subsequent rental aircraft checkout?	Instrument Responses 2, 4	Descriptives & Chi Square
3. Is there a statistical relationship between a renter pilot's certificate type and their willingness to participate in a rental aircraft universal checkout?	Instrument Responses 2, 6	Descriptives & Chi Square
4. Is there a statistical relationship between the rental aircraft checkout procedure and the renter pilot's willingness to accomplish a subsequent rental aircraft checkout?	Instrument Responses 3, 4	Descriptives & Chi Square
5. Is there a statistical relationship between the rental aircraft checkout procedure and the renter pilot's willingness to participate in a rental aircraft universal checkout?	Instrument Responses 3, 6	Descriptives & Chi Square
6. Is there a statistical relationship between the renter pilot's willingness to accomplish a subsequent rental aircraft checkout and their willingness to participate in a rental aircraft universal checkout?	Instrument Responses 4, 6	Descriptives & Fisher's Exact Test

CHAPTER IV

FINDINGS

Introduction

The purpose of this study was to determine if there was a statistical relationship between the renter pilot, the rental aircraft checkout procedures, the renter pilot willingness to accomplish subsequent checkouts based on their previous checkout experience, and the renter pilot willingness to participate in a universal checkout based on specific and predefined criteria.

Basic assumptions needed to be met to perform chi square and contingency coefficient calculations on nominal cross tabulation data. Those basic assumptions were that fewer than twenty per cent (20%) of the cells had an expected frequency of less than five (5), and no cell had an expected frequency of less than one (1) (Cochran, 1954). The response data for this research project was not normally distributed; therefore a Fischer's Exact Test was used on the crosstabs that did not meet the chi square basic assumptions (Huck, 2008; Siegel, 1956).

Fischer's Exact Test was normally used on 2x2 contingency tables when chi square assumptions weren't met, but computer code for a network algorithm for Fisher's exact test was written in double precision FORTRAN 77 for use on larger r x c

contingency tables (Mehta, & Patel, 1986). The original code was later modified and updated, which allowed for quicker calculations and for use on larger than 5 x 5 contingency tables (Clarkson, Fan, & Joe, 1993).

The overall response values and frequencies are shown as descriptive statistics in Tables 3 & 4 on the following pages. Each instrument response in the tables is divided into four different rows. The first column give the instrument response number, a generalization of the question asked, and the instrument responses the sample participant had available to choose from. It also includes a "no response" row to quantify any questions the sample participant didn't answer. The second column gives the nominal value assigned to the response for calculation purposes. The third column indicates the frequency for each response, with the total responses shown at the bottom. The final column shows each response values percentage based on total responses received.

Table 3 on the next page shows the response to the first three instrument questions, which were demographic and definitive in nature. Instrument Response 1 (rented an airplane = yes) was used as the qualifier to determine if the responses to the remaining questions on the instrument would be included in the statistical calculations performed.

Table 3.

Research Instrument Demographic & Definitive Response Totals

Response 1 – Rented An Aircraft

Value Label	Value	Freq.	Pct.
Yes	1	171	73%
No	2	63	27%
(No Response)		0	
Total		234	

Response 2 - Certificate Type

Value Label	Value	Freq.	Pct.
Private Certificate	1	102	60%
Commercial Certificate	2	68	40%
(No Response)		1	1%
Total		171	

Response 3 - Checkout Procedures

Value Label	Value	Freq.	Pct.
Flight ≤ 1 Hr	1	55	32%
Flight ≤ 1 Hr and exam	2	30	18%
Flight > 1 Hr	3	31	18%
Flight > 1 Hr and exam	4	52	30%
(No Response)		3	2%
Total		171	

Table 4 on the next page shows the response to the final two instrument questions, which were subjective in nature, utilizing a Likert type scale to measure the respondent levels of willingness to the questions posed.

Table 4.

Research Instrument Subjective Response Totals

Response 4 - Accomplish Checkout Again

Value Label	Value	Freq.	Pct.
Very Willing	1	92	54%
Somewhat Willing	2	23	13%
Willing	3	39	23%
Somewhat Unwilling	4	10	6%
Very Unwilling	5	6	4%
(No Response)		1	1%
Total		171	

Response 6 - Universal Checkout

Value Label	Value	Freq.	Pct.
Very Willing	1	51	30%
Somewhat Willing	2	40	23%
Willing	3	39	23%
Somewhat Unwilling	4	25	15%
Very Unwilling	5	16	9%
(No Response)		0	
Total		171	

Research Question 1

The first research question asked, "Is there a statistical relationship between a renter pilot's certificate type and the rental aircraft checkout procedure?" The responses received by respondents of both certificate types were similar to the overall descriptive statistics for the instrument questions. Overall, 32% of respondents participated in a checkout that consisted of only a proficiency flight of less than or equal to one hour. Private and commercial pilots were at 33% and 31% respectively. Overall, 18% of respondents participated in either a checkout that consisted of a proficiency flight of less

than or equal to one hour with an oral and/or practical examination, or a proficiency flight of more than one hour. Private and commercial pilots were again almost identical at 19% & 19% and 16% & 18% respectively. Overall, 30% of respondents participated in a checkout that consisted of a proficiency flight of more than one hour with an oral and/or practical examination. Private and commercial pilots were close with 29% and 35% respectively. It is interesting to note that the commercial pilots, who you would expect would have greater flight experience simply by virtue of their higher certificate level, had a higher percentage of occurrences where they completed the most robust of the checkout procedures, the proficiency flight of more than one hour that included an oral and/or practical examination. It could be assumed individuals with the higher experience level would be scrutinized less, not more.

The calculated chi square value was 0.4. The χ^2 value 0.4 was less than $\chi^2_{.05}$ critical value 7.82 and the *p*-value 0.94 was greater than $\alpha = 0.05$, therefore the null hypothesis, "Pilot certificate type and aircraft checkout procedures are unrelated", was accepted. At $\alpha = 0.05$ level of significance, there was not enough statistical evidence to conclude that pilot certificate type and rental checkout procedures were related.

Table 5 on the next page is a two row by four column (2 x 4) contingency table breaking down the certificate types (instrument question 2 responses) in the rows and the checkout requirement (instrument question 3 responses) in the columns. The actual frequencies are shown along with the calculated expected frequencies placed below the actuals. There is a row under the certificate type rows showing column totals and a total column to the right of the checkout requirement column showing row totals. The row

and column intersections that don't meet the chi square basic assumptions are highlighted in red. Underneath the totals is a shaded area containing the statistical measures section showing the chi-square value, the degrees of freedom value, and the asymptotic significance *p*-value calculated from the contingency table.

Table 5.

Research Question 1 Contingency Table

			Checkout Requirement				
Certificate Type			Flt ≤ 1 Hr	Flt ≤ 1 Hr & exam	Flt > 1 Hr	Flt > 1 Hr & exam	Total
	Private	Freq.	34	19	19	30	102
		Expected Freq.	33	18	19	32	102
	Commercial	Freq.	19	10	11	22	62
		Expected Freq.	20	11	12	22	65
Total		Count	53	29	30	52	164
		Expected Freq.	53	29	31	54	167
Statistical Measures							
		Value	df	Asymp.Sig. (2-tailed)			
	Chi-Square	0.4	3	0.94			

Research Question 2

The second research question asked, “Is there a statistical relationship between the renter pilot’s certificate type and their willingness to accomplish a subsequent rental aircraft checkout?” Three of ten (30%) of the expected values were under five, therefore the chi square basic assumptions were not met.

Table 6 below is a two row by five column (2 x 5) contingency table breaking down the certificate types (instrument question 2 responses) in the rows and the willingness to do the checkout again (instrument question 4 responses) in the columns. The actual frequencies are shown along with the calculated expected frequencies placed below the actuals. There is a row under the certificate type rows showing column totals and a total column to the right of the checkout again column showing row totals. The row and column intersections that don't meet the chi square basic assumptions are highlighted in red.

Table 6.

Research Question 2 Original Responses Contingency Table

Certificate Type			Checkout Again					
			Very Willing	Somewhat Willing	Willing	Somewhat Unwilling	Very Unwilling	Total
	Private	Freq.	57	14	22	5	4	102
		Expected Freq.	55	14	24	6	4	102
	Commercial	Freq.	34	9	17	5	2	67
		Expected Freq.	36	9	15	4	2	67
Total		Freq.	91	23	39	10	6	169
		Expected Freq.	91	23	39	10	6	169

Since the chi square basic assumptions were not met, the willingness response values above and below the center willing response value were combined to merge “Very Willing” and “Somewhat Willing” response categories into a “More Than Willing”

category, and merge the “Somewhat Unwilling” and “Very Unwilling” response values into a “Less Than Willing” response category. Based on the combined values, the responses received by respondents of both certificate types were very similar to the overall descriptive statistics for the instrument questions. Overall, 67% of respondents were more than willing to repeat the same type of rental checkout they had previously completed. Private and commercial pilots were close at 70% and 64% respectively. Overall, 23% of respondents were willing to repeat the same type of rental checkout they had previously completed. Private and commercial pilots were again close at 22% and 25% respectively. Overall, only 10% of respondents were less than willing to repeat the same type of rental checkout they had previously completed. Private and commercial pilots were at 8% and 10% respectively. In general, private pilots were slightly more willing to accomplish the same checkout as they had previously accomplished than their commercial pilot counterparts with the higher certificate level.

The calculated chi square value was 0.54. The χ^2 value 0.54 was less than $\chi^2_{.05}$ critical value 5.99 and *p*-value 0.76 was greater than $\alpha = 0.05$, therefore the null hypothesis, “Pilot certificate type and their willingness to accomplish a subsequent rental aircraft checkout are unrelated”, was accepted. At $\alpha = 0.05$ level of significance, there was not enough statistical evidence to conclude that pilot certificate type and their willingness to accomplish a subsequent rental aircraft checkout were related.

Table 7 on the next page is a two row by three column (2 x 3) contingency table breaking down the certificate types (instrument question 2 responses) in the rows and the willingness to do the checkout again (instrument question 4 responses) in the columns.

The actual frequencies are shown along with the calculated expected frequencies placed below the actuals. There is a row under the certificate type rows showing column totals and a total column to the right of the checkout again column showing row totals. Underneath the totals is a shaded area containing the statistical measures section showing the chi-square value, the degrees of freedom value, and the asymptotic significance *p*-value calculated from the contingency table.

Table 7.

Research Question 2 Combined Responses Contingency Table

			Checkout Again			
Certificate Type			More Than Willing	Willing	Less Than Willing	Total
	Private	Freq.	71	22	9	102
		Expected Freq.	70	23	9	102
	Commercial	Freq.	43	17	7	67
		Expected Freq.	46	15	6	67
Total		Freq.	110	37	14	161
		Expected Freq.	115	39	15	169
Statistical Measures						
		Value	df	Asymp.Sig. (2-tailed)		
	Chi-Square	0.54	2	0.76		

Research Question 3

The third research question asked, “Is there a statistical relationship between a renter pilot’s certificate type and their willingness to participate in a rental aircraft

universal checkout?" Table 8 below is a two row by five column (2 x 5) contingency table breaking down the certificate types (instrument question 2 responses) in the rows and the willingness to participate in a universal checkout (instrument question 6 responses) in the columns. The actual frequencies are shown along with the calculated expected frequencies placed below the actuals. There is a row under the certificate type rows showing column totals and a total column to the right of the Universal Checkout column showing row totals.

Table 8.

Research Question 3 Original Responses Contingency Table

Certificate Type			Universal Checkout					
			Very Willing	Somewhat Willing	Willing	Somewhat Unwilling	Very Unwilling	Total
	Private	Freq.	35	21	21	18	7	102
		Expected Freq.	30	24	23	15	10	102
	Commercial	Freq.	15	19	18	7	9	68
		Expected Freq.	20	16	16	10	6	68
Total		Freq.	50	40	39	25	16	170
		Expected Freq.	50	40	39	25	16	170

The chi square basic assumptions were met, but to retain response value consistency across all calculations made from the willingness responses, the willingness response values above and below the center willing response value were combined to merge "Very Willing" and "Somewhat Willing" response categories into a "More Than

Willing" category, and merge the "Somewhat Unwilling" and "Very Unwilling" response values into a "Less Than Willing" response category. Based on the combined values, the responses received by respondents of both certificate types were similar to the overall descriptive statistics for the instrument questions. Overall, 53% of respondents were more than willing to participate in a rental aircraft universal checkout. Private and commercial pilots were close at 55% and 50% respectively. Overall, 23% of respondents were willing to participate in a rental aircraft universal checkout. Private and commercial pilots were at 20% and 26% respectively. Overall, 24% of respondents were less than willing to participate in a rental aircraft universal checkout. Private and commercial pilots were almost identical at 25% and 24% respectively. There were a higher percentage of private pilots indicating they were willing to participate in a rental aircraft universal checkout than commercial pilots. The highest departure from the overall percentages for commercial pilots was in the middle of the road willingness choice.

The calculated chi square value was 0.82. The χ^2 value 0.82 was less than $\chi^2_{.05}$ critical value 5.99 and *p*-value 0.66 was greater than $\alpha = 0.05$, therefore the null hypothesis, "Pilot certificate type and willingness to participate in a rental aircraft universal checkout are unrelated", was accepted. At $\alpha = 0.05$ level of significance, there was not enough statistical evidence to conclude that pilot certificate type and willingness to participate in a rental aircraft universal checkout were related.

Table 9 on the next page is a two row by three column (2 x 3) contingency table breaking down the certificate types (instrument question 2 responses) in the rows and the willingness to participate in a universal checkout (instrument question 6 responses) in the

columns. The actual frequencies are shown along with the calculated expected frequencies placed below the actuals. There is a row under the certificate type rows showing column totals and a total column to the right of the Universal Checkout column showing row totals. Underneath the totals is a shaded area containing the statistical measures section showing the chi-square value, the degrees of freedom value, and the asymptotic significance *p*-value calculated from the contingency table.

Table 9.

Research Question 3 Combined Responses Contingency Table

			Universal Checkout			
Certificate Type			More Than Willing	Willing	Less Than Willing	Total
	Private	Freq.	56	21	25	102
		Expected Freq.	54	23	25	102
	Commercial	Freq.	34	18	16	68
		Expected Freq.	36	16	16	68
Total		Freq.	90	39	41	170
		Expected Freq.	90	39	41	170
Statistical Measures						
		Value	df	Asymp.Sig. (2-tailed)		
	Chi-Square	0.82	2	0.66		

Research Question 4

The fourth research question asked, “Is there a statistical relationship between the rental aircraft checkout procedure and the renter pilot’s willingness to accomplish a

subsequent rental aircraft checkout?" Ten of twenty (50%) of the expected values were under five, therefore the chi square basic assumptions were not met.

Table 10 below is a four row by five column (4 x 5) contingency table breaking down the checkout requirement (instrument question 3 responses) in the rows and the willingness to do the checkout again (instrument question 4 responses) in the columns. The actual frequencies are shown along with the calculated expected frequencies placed below the actual. There is a row under the Checkout Requirements rows showing column totals and a total column to the right of the Checkout Again column showing row totals. The row and column intersections that don't meet the chi square basic assumptions are highlighted in red.

Table 10.

Research Question 4 Original Responses Contingency Table

Checkout Requirement			Checkout Again					
			Very Willing	Somewhat Willing	Willing	Somewhat Unwilling	Very Unwilling	Total
	Flight ≤ 1 Hr	Freq.	31	5	11	5	3	55
		Expected Freq.	30	8	12	3	2	55
	Flight ≤ 1 Hr and Exam	Freq.	14	9	7	0	0	30
		Expected Freq.	16	4	7	2	1	30
	Flight > 1 Hr	Freq.	22	3	6	0	0	31
		Expected Freq.	17	4	7	2	1	31
	Flight > 1 Hr and Exam	Freq.	25	6	14	5	2	52
		Expected Freq.	28	7	12	3	2	52
Total		Freq.	92	23	38	10	5	168
		Expected Freq.	92	23	38	10	5	168

Since the chi square basic assumptions were not met, the willingness response values above and below the center willing response value were combined to merge "Very Willing" and "Somewhat Willing" response categories into a "More Than Willing" category, and merge the "Somewhat Unwilling" and "Very Unwilling" response values into a "Less Than Willing" response category. After combining values, two of twelve (17%) still had an expected value of less than 5; however the 17% was less than the maximum twenty percent (20%) of the expected values being less than 5, so the chi square assumptions had been met.

Overall, 67% of respondents were more than willing, 23% were willing, and 10% were less than willing to accomplish the same type of checkout again. Generally speaking, as the checkout requirement complexity increased, a higher percentage of respondents were more than willing to accomplish the same checkout again. Of respondents whose checkout consisted of a proficiency flight of less than or equal to one hour, 65% were more than willing to accomplish the checkout again. When the checkout procedures increased to a proficiency flight of less than or equal to one hour with an oral and/or practical examination, the number more than willing to accomplish the checkout again increased to 76%. Continuing up the checkout procedures scale to a proficiency flight of more than one hour, the number more than willing to accomplish the checkout increased again to 81%. Interestingly, when compared to the previous percentages, at the most complex checkout level of a proficiency flight of more than one hour with an oral and/or practical examination, the number more than willing to accomplish the checkout dropped to the lowest level of 60%. Also interesting to note, of the checkout procedures in the mid-range, which is the proficiency flight of less than or equal to one hour with an

oral and/or practical examination and the proficiency flight of more than one hour, no respondents were less than willing to accomplish those checkouts again.

The calculated chi square value was 0.82. The χ^2 value 0.82 was less than $\chi^2_{.05}$ value 5.99 and *p*-value 0.66 was greater than $\alpha = 0.05$, therefore the null hypothesis, "Rental aircraft checkout procedure and the renter pilot's willingness to accomplish a subsequent rental aircraft checkout are unrelated", was accepted. At $\alpha = 0.05$ level of significance, there was not enough statistical evidence to conclude that rental aircraft checkout complexity and the renter pilot's willingness to accomplish a subsequent rental aircraft checkout were related.

Table 11 on the next page is a four row by three column (4 x 3) contingency table breaking down the checkout procedures (instrument question 3 responses) in the rows and the willingness to do the checkout again (instrument question 4 responses) in the columns. The actual frequencies are shown along with the calculated expected frequencies placed below the actual. There is a row under the Checkout Requirements rows showing column totals and a total column to the right of the Checkout Again column showing row totals. The row and column intersections that don't meet the chi square basic assumptions are highlighted in red. Underneath the totals is a shaded area containing the statistical measures section showing the chi-square value, the degrees of freedom value, and the asymptotic significance *p*-value calculated from the contingency table.

Table 11.

Research Question 4 Combined Responses Contingency Table

Checkout Requirement			Checkout Again			
			More Than Willing	Willing	Less Than Willing	Total
	Flight ≤ 1 Hr	Freq.	36	11	8	55
		Expected Freq.	38	12	5	55
	Flight ≤ 1 Hr and Exam	Freq.	23	7	0	30
		Expected Freq.	21	7	3	30
	Flight > 1 Hr	Freq.	25	6	0	31
		Expected Freq.	21	7	3	31
	Flight > 1 Hr and Exam	Freq.	31	14	7	52
		Expected Freq.	36	12	5	52
Total		Freq.	115	38	15	168
		Expected Freq.	115	38	15	168
Statistical Measures						
		Value	df	Asymp.Sig. (2-tailed)		
	Chi-Square	0.82	2	0.66		

Research Question 5

The fifth research question asked, “Is there a statistical relationship between the rental aircraft checkout procedure and the renter pilot’s willingness to participate in a rental aircraft universal checkout?” Four of twenty (20%) of the expected values were under five, therefore the chi square basic assumptions were not met.

Table 12 on the next page is a four row by five column (4 x 5) contingency table breaking down the checkout requirement (instrument question 3 responses) in the rows and the willingness to participate in a universal checkout (instrument question 6

responses) in the columns. The actual frequencies are shown along with the calculated expected frequencies placed below the actuals. There is a row under the Checkout Requirements rows showing column totals and a total column to the right of the Universal Checkout column showing row totals. The row and column intersections that don't meet the chi square basic assumptions are highlighted in red.

Table 12.

Research Question 5 Original Responses Contingency Table

Checkout Requirement			Universal Checkout					
			Very Willing	Somewhat Willing	Willing	Somewhat Unwilling	Very Unwilling	Total
	Flight ≤ 1 Hr	Freq.	11	14	10	13	7	55
		Expected Freq.	17	13	12	8	5	55
	Flight ≤ 1 Hr and Exam	Freq.	9	7	8	3	3	30
		Expected Freq.	9	7	7	4	3	30
	Flight > 1 Hr	Freq.	9	9	7	4	2	31
		Expected Freq.	9	7	7	5	3	31
	Flight > 1 Hr and Exam	Freq.	22	10	13	5	2	52
		Expected Freq.	16	12	12	8	4	52
Total		Freq.	51	40	38	25	14	168
		Expected Freq.	51	40	38	25	14	168

Since the chi square basic assumptions were not met, the willingness response values above and below the center willing response value were combined to merge “Very Willing” and “Somewhat Willing” response categories into a “More Than Willing” category, and merge the “Somewhat Unwilling” and “Very Unwilling” response values

into a “Less Than Willing” response category. Based on the combined values, overall 53% of respondents were more than willing, 23% were willing, and 24% were less than willing to participate in a rental aircraft universal checkout. Although the null hypothesis was accepted that the two are unrelated, as the checkout procedures increased, the percentages who were more than willing to participate in a rental aircraft universal checkout also increased. Of respondents whose checkout consisted of a proficiency flight of less than or equal to one hour, 45% were more than willing to participate in a rental aircraft universal checkout. When the checkout procedures increased to a proficiency flight of less than or equal to one hour with an oral and/or practical examination, the number more than willing to participate in a rental aircraft universal checkout increased to 54%. With a checkout procedures consisting of a proficiency flight of more than one hour, the number more than willing to participate in a rental aircraft universal checkout increased to 58%. Finally, as the checkout procedures increased to the most intensive proficiency flight of more than one hour with an oral and/or practical examination, the number more than willing to participate in a rental aircraft universal checkout increased to 61%. On the surface, this would tend to indicate as the checkout procedures became more rigorous, the respondents became more inclined to participate in a rental aircraft universal checkout where they participated in a single checkout that was good at multiple locations. This could be considered one-and-done logic on the part of the pilot. Inversely, as the checkout procedures increased, the percentage that were less than willing to participate in a rental aircraft universal checkout followed a decreasing trend, which would be expected if coinciding with the increase on the more than willing side. Speaking in general, one might expect the percentages less than willing to participate to

increase as the requirements increased. As the checkout procedures increased though, the percentage that was less than willing trended down from 37%, to 20%, to 26%, and then to 14%.

The chi square value was calculated as 8.77. The χ^2 value 8.77 was less than $\chi^2_{.05}$ value 12.59 and *p*-value 0.19 was greater than $\alpha = 0.05$, therefore the null hypothesis, "Rental aircraft checkout procedure and the renter pilot's willingness to participate in a rental aircraft universal checkout are unrelated" was accepted. At $\alpha = 0.05$ level of significance, there was not enough statistical evidence to conclude that rental aircraft checkout complexity and the renter pilot's willingness to participate in a rental aircraft universal checkout were related.

Table 13 on the next page is a four row by three column (4 x 3) contingency table breaking down the checkout procedures (instrument question 3 responses) in the rows and the willingness to participate in a universal checkout (instrument question 6 responses) in the columns. The actual frequencies are shown along with the calculated expected frequencies placed below the actual. There is a row under the Checkout Procedures rows showing column totals and a total column to the right of the Universal Checkout column showing row totals. Underneath the totals is a shaded area containing the statistical measures section showing the chi-square value, the degrees of freedom value, and the asymptotic significance *p*-value calculated from the contingency table.

Table 13.

Research Question 5 Combined Responses Contingency Table

Checkout Procedures			Universal Checkout			
			More Than Willing	Willing	Less Than Willing	Total
	Flight ≤ 1 Hr	Freq.	25	10	20	55
		Expected Freq.	30	12	13	55
	Flight ≤ 1 Hr and Exam	Freq.	16	8	6	30
		Expected Freq.	16	7	7	30
	Flight > 1 Hr	Freq.	18	7	6	31
		Expected Freq.	17	7	7	31
	Flight > 1 Hr and Exam	Freq.	32	13	7	52
		Expected Freq.	28	12	12	52
Total		Freq.	91	38	39	168
		Expected Freq.	91	38	39	168
Statistical Measures						
		Value	df	Asymp.Sig. (2-tailed)		
	Chi-Square	8.77	6	0.19		

Research Question 6

The sixth and final research question asked, “Is there a statistical relationship between the renter pilot’s willingness to accomplish a subsequent rental aircraft checkout and their willingness to participate in a rental aircraft universal checkout?” Thirteen of twenty-five (52%) of the expected values were under five, therefore the chi square basic assumptions were not met.

Table 14 on the next page is a five row by five column (5 x 5) contingency table breaking down the willingness to do the checkout again (instrument question 4 responses)

in the rows and the willingness to participate in a universal checkout (instrument question 6 responses) in the columns. The actual frequencies are shown along with the calculated expected frequencies placed below the actual. There is a row under the Checkout Again rows showing column totals and a total column to the right of the Universal Checkout column showing row totals. The row and column intersections that don't meet the chi square basic assumptions are highlighted in red.

Table 14.

Research Question 6 Original Responses Contingency Table

			Universal Checkout					
Checkout Again			Very Willing	Somewhat Willing	Willing	Somewhat Unwilling	Very Unwilling	Total
	Very Willing	Freq.	33	22	18	12	7	92
		Expected Freq.	28	22	21	14	8	92
	Somewhat Willing	Freq.	4	11	3	2	3	23
		Expected Freq.	7	5	5	3	2	23
	Willing	Freq.	11	5	14	8	1	39
		Expected Freq.	12	9	9	6	3	39
	Somewhat Unwilling	Freq.	2	2	2	3	1	10
		Expected Freq.	3	2	2	1	1	10
	Very Unwilling	Freq.	1	0	2	0	3	6
		Expected Freq.	2	1	1	1	1	6
Total		Freq.	51	40	39	25	15	170
		Expected Freq.	51	40	39	25	15	170

Since the chi square basic assumptions were not met, the willingness response values above and below the center willing response value were combined to merge “Very

Willing" and "Somewhat Willing" response categories into a "More Than Willing" category, and merge the "Somewhat Unwilling" and "Very Unwilling" response values into a "Less Than Willing" response category. After combining values, two of nine values (22%) still did not meet the chi square basic assumptions, therefore the Fisher's Exact value was calculated in lieu of a chi square value.

The More Than Willing r x c had the highest frequency, which decreased as the column dropped to Willing and then Less Than Willing. Proportionately, the Less Than Willing r x c had the highest frequency, which decreased as we went up the rows to Willing and then More Than Willing. Those who were more than willing to accomplish a checkout again were more than willing to participate in a universal checkout. Those who were less than willing to accomplish a checkout again were also less than willing to participate in a universal checkout. The relationship seems to be with the individual's intrinsic willingness decision, e.g. part of their individual personality and decision making process, not with the task or checkout in which they are participating.

The calculated Fisher's Exact sum of the probabilities of unusual tables was $p = 0.027$. The Fisher's Exact value $p = 0.027$ was less than $\alpha = 0.05$, therefore the null hypothesis, "Renter pilot's willingness to accomplish a subsequent rental aircraft checkout and their willingness to participate in a rental aircraft universal checkout are unrelated", was rejected. At $\alpha = 0.05$ level of significance, there existed enough statistical evidence to conclude that renter pilot's willingness to accomplish a subsequent rental aircraft checkout and their willingness to participate in a rental aircraft universal checkout were related.

Table 15 below is a three row by three column (3 x 3) contingency table breaking down the willingness to do the checkout again (instrument question 4 responses) in the rows and the willingness to participate in a universal checkout (instrument question 6 responses) in the columns. The actual frequencies are shown along with the calculated expected frequencies placed below the actuals. There is a row under the Checkout Again rows showing column totals and a total column to the right of the Universal Checkout column showing row totals. The row and column intersections that don't meet the chi square basic assumptions are highlighted in red. Underneath the totals is a shaded area containing the statistical measures section showing the Fisher's Exact table of probabilities value and the asymptotic significance *p*-value calculated from the contingency table.

Table 15.

Research Question 6 Combined Responses Contingency Table

			Universal Checkout			
			More Than Willing	Willing	Less Than Willing	Total
Checkout Again	More Than Willing	Freq.	70	21	24	115
		Expected Freq.	62	26	27	115
	Willing	Freq.	16	14	9	39
		Expected Freq.	21	9	9	39
	Less Than Willing	Freq.	5	4	7	16
		Expected Freq.	9	4	4	16
Total		Freq.	91	39	40	170
		Expected Freq.	91	39	40	170
Statistical Measures						
		Table Probability		Asymp.Sig. (2-tailed)		
	Fisher's Exact	1.1×10^{-5}		0.027		

Sample Respondent Comments

It was noted during both the instrument test-retest reliability determination, as well as during the research phase, some respondents felt compelled to provide unsolicited qualitative comments and clarifications in addition to their quantitative instrument responses. Comments have been grouped as either general in nature or associated to an instrument question based on the content of the comment and the location of its placement on the returned research instrument. The original spelling, punctuation, and grammar have been transcribed below as received, even when incorrect, to prevent the comment meaning from being changed based on the researcher's assumption of what was trying to be conveyed by the comment.

General comments received were:

- Best of luck on your research and degree. Aviation has changed so much in my 12 years of privileged flight. . . . Perhaps this research can make it better. Thanks for your service too. 4 yrs on F16s (2A352) & 6 yrs as SatCom (3D153) round out my time. Peace out, stay safe, & God bless.
- I do not rent!
- Note I own my own airplane. The last time I rented was 1995.
- I have owned my current airplane since 1996.
- At 83 yrs 6 mo old, I don't anticipate renting, let alone even flying But thank you for including me.
- Thanks
- I'm glad you sent another letter. I misplaced the first one you sent.

- My love loss of aviation is from the FAA medical branch. I have 2575 tt, C208 pilot. Issues enclosed.
- Participant has owned twin engine aircraft since 1984 and last rented in 1982. Not likely to be a renter.
- Special Note: I do not currently use rental aircraft. I'm a pilot for a private company and only fly the aircraft that we own.
- I have not rented aircraft in 30 yrs. I own one
- Haven't rented the '60's Now own my own plane
- Only as a student

Question 1 (*Have you ever rented an airplane as a certificated pilot*) comments received were:

- But a long time ago
- Many years ago
- I am a glider pilot and belong to a club

Question 3 (*Checkout procedures consisted of the following*) comments received were:

- None
- Varied considerably depending on complexity of aircraft being rented

Question 4 (*How willing would you be to accomplish a checkout of the same level of complexity again*) comments received were:

- I own my own plane

- I hate check-outs Keeps me from flying other aircraft than my own
- if I were ever to rent again
- I have undergone a wide range of checkout procedures from inadequate to overly complex
- Willingness has nothing to do with it. Do what the operator wants or don't fly. Simple as that.

Question 6 (*Based on the criteria above, how willing would you be to participate in this type of single checkout for multiple locations*) comments received were:

- Have owned more than rented, complex high per military
- This would be a large annual expense. Also if a person flew the same make/model 25 or more hours per year a detailed annual would not be worth the time or expense
- If you pass a checkride and every two years after that you basically do it again then that should fill any requirements! Adding yet another checkride every year only serves to increase the cost and burden of flying. STOP! You are killing GA! By the way, I stopped renting airplanes because of the increasing FBO required checkrides. Some FBOs require a new checkride if you haven't flown in 30 days.
- The proposed checkout will absolutely kill the rental market. The checkout should be decided by the instructor. A high time, instrument rated pilot with a recent BFR would require a minimal checkout. The instructor has to sign the logbook and state that the pilot is competent to solo the aircraft.
- Please visit openairplane.com

- This is being addressed by OpenAirplane
- Would be willing if ≤ 2 hrs total w/oral & flight ± as needed. Any CFI worth his salt should know enough in about 15 minutes.
- FYI: I have my own aircraft so haven't rented in years
- Note – I own my own aircraft and really don't ever rent
- Needs to be in the AC that is to be rented they are all different
- Not I own my own plane (Do not rent)
- Confusing form? ulterior motives at hand – for profit ops!
- Join civil air patrol and take an annual checkride to PTS standards. Will that be honored? FAA Wings honors this now.
- Why treat a pilot with 1,000 hrs in make & model the same as a pilot with 0 hours in make & model. This was quite silly!
- FAA is killing general aviation
- Own an aircraft unlikely to rent
- I no longer have a medical
- I own my aircraft and do not rent. However I see great advantage to this proposal.
- Robert, I see flaws in this project. 1. If I was an FBO, I would not use someone elses checkout. (some pilots are not safe & some just have bad/dangerous habits) 2. I have been in business for over 30 yrs & need to make my own decisions. I have been around pilots that can pass marginal tests, but <u>not</u> a capable pilot. I have known pilots that ran out of fuel during a planned 1 hour flt. 3. I own 5 airplanes from T210, Fleet Biplane, J3 Cub & 182 & 175. Received my SEL in 1957, since SE Sea, Inst, & Rotorcraft, Heli. 4. I still use professional flight

instructors to correct any bad habits that I am not be aware of. W/over 2600 hrs we all still need CHECK OUTS

- Own my aircraft
- Only valid for 12 months. . . . No way!
- I have my own plane now so not much need to rent now.
- Good ideas. The thing this leaves out is local terrain/obstacles for each airport & policy on parking/fueling. Additionally the checkout is too long. 1 hr is plenty.
- I am a CFI with over 6,500 hours. . .
- The idea of a universal renters checkout for aircraft is an excellent idea. the requirement to have a checkout at every FBO is the very reason I do not participate. It is a simple reason of expense. I along with many other pilots in the GA world operate on a budget. I personally operate via long term lease of a privately owned aircraft (1976 Grumman Cheetah)
- The only issue I see with the proposal is requiring check out annually. If the FAA BFR is accepted as recurring training, so should a universal aircraft checkout.
- We are looking at an aircraft checkout – not taking a private pilot test. I think ½ hour oral or 3 take offs and landings. More time for each depending on the complexity of the aircraft. Renters insurance should be required. I received my ticket in 1965 and have 2,700+ hours.

Summary

The descriptive statistics provided several specific items concerning the sample responses. The least (Flight ≤ 1 Hr.) and greatest (Flight > 1 Hr. + exam) checkout

procedures were almost double the midrange procedures. Two thirds of the sample pilots renting aircraft were more than willing to accomplish a checkout again with the same requirements previously completed. Over half of the sample pilots renting aircraft were more than willing to participate in a universal checkout.

The statistical results did not show any relationship between pilot certificate type, rental aircraft checkout procedures, or a renter pilot's willingness to accomplish another checkout with the same type of requirements. The single statistical relationship found was between the sample pilots' willingness to accomplish a checkout again with the same requirements previously completed and their willingness to participate in a universal checkout.

CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Summary

The purpose of this study was to determine if there was a statistical relationship between the renter pilot, the rental aircraft checkout procedures, the renter pilot willingness to accomplish subsequent checkouts based on their previous checkout experience, and the renter pilot willingness to participate in a universal checkout based on specific and predefined criteria.

Research Question1: Is there a statistical relationship between a renter pilot's certificate type and the rental aircraft checkout procedure? The responses received by respondents of both certificate types were very similar to the overall descriptive statistics for the instrument questions. Overall, 32% of respondents participated in a checkout that consisted of only a proficiency flight of less than or equal to one hour. Private and commercial pilots were almost identical at 33% and 31% respectively. Overall, 18% of respondents participated in either a checkout that consisted of a proficiency flight of less than or equal to one hour with an oral and/or practical examination, or a proficiency flight of more than one hour. Private and commercial pilots were again almost identical at 19% & 19% and 16% & 18% respectively. Overall, 30% of respondents participated in a checkout that consisted of a proficiency flight of more than one hour with an oral and/or

practical examination. Private and commercial pilots were again close with 29% and 35% respectively. It is interesting to note that the commercial pilots, who you would expect would have greater flight experience simply by virtue of their higher certificate level, had a higher percentage of occurrences where they completed the most robust of the checkout procedures, the proficiency flight of more than one hour that included an oral and/or practical examination. It could be assumed individuals with the higher experience level would be scrutinized less, not more.

Research Question 2: Is there a statistical relationship between the renter pilot's certificate type and their willingness to accomplish a subsequent rental aircraft checkout? The responses received by respondents of both certificate types were again very similar to the overall descriptive statistics for the instrument questions. Overall, 67% of respondents were more than willing to repeat the same type of rental checkout they had previously completed. Private and commercial pilots were close at 70% and 64% respectively. Overall, 23% of respondents were willing to repeat the same type of rental checkout they had previously completed. Private and commercial pilots were again close at 22% and 25% respectively. Overall, only 10% of respondents were less than willing to repeat the same type of rental checkout they had previously completed. Private and commercial pilots were at 8% and 10% respectively. In general, private pilots were slightly more willing to accomplish the same checkout as they had previously accomplished than their commercial pilot counterparts with the higher certificate level.

Research Question 3: Is there a statistical relationship between a renter pilot's certificate type and their willingness to participate in a rental aircraft universal checkout?

The responses received by respondents of both certificate types were again very similar to the overall descriptive statistics for the instrument questions. Overall, 53% of respondents were more than willing to participate in a rental aircraft universal checkout. Private and commercial pilots were close at 55% and 50% respectively. Overall, 23% of respondents were willing to participate in a rental aircraft universal checkout. Private and commercial pilots were at 20% and 26% respectively. Overall, 24% of respondents were less than willing to participate in a rental aircraft universal checkout. Private and commercial pilots were almost identical at 25% and 24% respectively. There were a higher percentage of private pilots indicating they were willing to participate in a rental aircraft universal checkout than commercial pilots. The highest departure from the overall percentages for commercial pilots was in the middle of the road willingness choice.

Research Question 4: Is there a statistical relationship between the rental aircraft checkout procedure and the renter pilot's willingness to accomplish a subsequent rental aircraft checkout? Overall, 67% of respondents were more than willing, 23% were willing, and 10% were less than willing to accomplish the same type of checkout again. Generally speaking, as the checkout requirement complexity increased, a higher percentage of respondents were more than willing to accomplish the same checkout again. Of respondents whose checkout consisted of a proficiency flight of less than or equal to one hour, 65% were more than willing to accomplish the checkout again. When the checkout procedures increased to a proficiency flight of less than or equal to one hour with an oral and/or practical examination, the number more than willing to accomplish the checkout again increased to 76%. Continuing up the checkout procedures scale to a

proficiency flight of more than one hour, the number more than willing to accomplish the checkout increased again to 81%. Interestingly, when compared to the previous percentages, at the most complex checkout level of a proficiency flight of more than one hour with an oral and/or practical examination, the number more than willing to accomplish the checkout dropped to the lowest level of 60%. Also interesting to note, of the checkout procedures in the mid-range, which is the proficiency flight of less than or equal to one hour with an oral and/or practical examination and the proficiency flight of more than one hour, no respondents were less than willing to accomplish those checkouts again.

Research Question 5: Is there a statistical relationship between the rental aircraft checkout procedure and the renter pilot's willingness to participate in a rental aircraft universal checkout? Overall, 53% of respondents were more than willing, 23% were willing, and 24% were less than willing to participate in a rental aircraft universal checkout. Although the null hypothesis was accepted that the two are unrelated, as the checkout procedures increased, the percentages who were more than willing to participate in a rental aircraft universal checkout also increased. Of respondents whose checkout consisted of a proficiency flight of less than or equal to one hour, 45% were more than willing to participate in a rental aircraft universal checkout. When the checkout procedures increased to a proficiency flight of less than or equal to one hour with an oral and/or practical examination, the number more than willing to participate in a rental aircraft universal checkout increased to 54%. With a checkout procedures consisting of a proficiency flight of more than one hour, the number more than willing to participate in a rental aircraft universal checkout increased to 58%. Finally, as the checkout procedures

increased to the most intensive proficiency flight of more than one hour with an oral and/or practical examination, the number more than willing to participate in a rental aircraft universal checkout increased to 61%. On the surface, this would tend to indicate as the checkout procedures became more rigorous, the respondents became more inclined to participate in a rental aircraft universal checkout where they participated in a single checkout that was good at multiple locations. This could be considered one-and-done logic on the part of the pilot. Inversely, as the checkout procedures increased, the percentage that were less than willing to participate in a rental aircraft universal checkout followed a decreasing trend, which would be expected if coinciding with the increase on the more than willing side. Speaking in general, one might expect the percentages less than willing to participate to increase as the requirements increased. As the checkout procedures increased though, the percentage that was less than willing trended down from 37%, to 20%, to 26%, and then to 14%.

Research Question 6: Is there a statistical relationship between the renter pilot's willingness to accomplish a subsequent rental aircraft checkout and their willingness to participate in a rental aircraft universal checkout? Based on the Fisher's Exact calculation, there was enough statistical evidence to conclude these two were related. The More Than Willing r x c had the highest frequency, which decreased as the column dropped to Willing and then Less Than Willing. Proportionately, the Less Than Willing r x c had the highest frequency, which decreased as we went up the rows to Willing and then More Than Willing. Those who were more than willing to accomplish a checkout again were more than willing to participate in a universal checkout. Those who were less than willing to accomplish a checkout again were also less than willing to participate in a

universal checkout. The relationship seems to be with the individual's intrinsic willingness decision, e.g. part of their personality and decision making process, not with the task or checkout in which they are participating.

Conclusions

Six main conclusions can be gleaned from this study based on the research questions:

1. The renter pilot's certificate level was not related to a variation in the rental checkout procedures.
2. The renter pilot's certificate level was not related to the pilot being more or less inclined to accomplish a similar rental checkout.
3. The renter pilot's certificate level was not related to the pilot being more or less inclined to participate in a universal checkout.
4. The rental checkout procedures accomplished was not related to the renter pilot being more or less inclined to accomplish a similar rental checkout.
5. The rental checkout procedures accomplished was not related to the renter pilot being more or less inclined to participate in a universal checkout.
6. The renter pilot's willingness to accomplish a similar rental checkout was related to their willingness to participate in a universal checkout.

General Conclusions

In this sample group the external factors (certificate level, checkout procedures, etc.) showed no statistical significance with the instrument responses received. Nothing

seemed to have a relationship with anything else extrinsically. The only area where a statistical significance found was in the intrinsic decisions each pilot made with regard to their willingness to accomplish or participate in certain tasks. There was significance between their willingness to accomplish subsequent checkouts and their willingness to participate in a universal checkout. The commonality was not between the checkouts, but their levels of willingness, indicating it was based on each pilot's values and decision making thought processes. This brings up the question, is this something specific to a pilot's values and decision making, or is it basic human values and decision making that's not specific to pilot personalities?

Although this was a quantitative research study, many of the qualitative responses received with the survey instrument led the researcher to believe many of the respondents felt there was an agenda behind the research, and thus a "right" and "wrong" answer to the instrument questions. Some of the qualitative comments received that led the researcher to believe this contained verbiage such as proposed/proposal, idea, you are, ulterior motive, etc. as shown below:

- "The proposed checkout will absolutely kill the rental market."
- "I see great advantage to this proposal..."
- "The only issue I see with the proposal is..."
- "Adding yet another checkride every year only serves to increase the cost and burden of flying. STOP! You are killing GA!"
- "...ulterior motives at hand – for profit ops!"
- "The idea of a universal renter's checkout for aircraft is an excellent idea."

The sample respondent responses may have been biased in an attempt to provide the response they felt the researcher was looking for, or in an attempt to further their own personal agenda regarding the topic.

The bottom line for this sample group was there was no relationship between certificate level, checkout procedures, willingness to participate in another checkout, or willingness to participate in a universal checkout. 96% of sample respondents indicated a positive willingness to accomplish another checkout based on the procedures accomplished during their previous checkout and 76% of sample respondents indicated a positive willingness to accomplish a universal checkout, even though the requirements were more stringent than those for originally obtaining their pilot certificates. Do pilots accept the lack of standardization of checkout requirements and procedures because they don't mind, or because they feel they have no choice and that's the only way they can fly?

Either way, one implication is whether the industry should continue without some type of expectation or standardization of procedure? The literature review has shown that although checkouts are commonplace and considered a normal occurrence, by NTSB interpretation, there is no requirement for them. That being said however, pilots also agree some type of checkout should be accomplished to verify an individual's piloting skills are commensurate with what their logbook shows and to indoctrinate the pilot to the local area and to any peculiarities to the specific aircraft being flow. Isn't there, or shouldn't there, be a way to standardize the checkout process to define minimum expected requirements and performance of the pilot, subject to validation by the flight

instructor performing the checkout? The Canadians have been able to successfully do it, defining two levels of checkouts required based on the pilots certificate type, total flight time, and level of currency. Unsuccessful completion of the lower level Canadian checkout causes the checkout to shift to the upper level type, based on the flight instructor's determination. By utilizing a similar definition model in the United States, it would add that missing bit of structure and standardization to coincide with all other areas of piloting. A pilot could go to a flight school or FBO and walk in the door confidently knowing what would be expected of them when they climb into the plane to perform a rental checkout with the local flight instructor.

Recommendations

This is the first known research in this subject area and it has just lightly scratched the surface of this topic. Further research could be conducted in several areas and by differing methods. Based on the unsolicited comments from sample respondents, this study would be a likely candidate for qualitative research to obtain a deeper understanding of renter pilot perceptions, decision making, and personality traits.

The research instrument could also be further refined and modified to expand on the current topic. The certificate level question could be removed and replaced with a total flight time question. Although the higher certificate levels certainly imply a higher level of experience and competency, the experience and competency actually come from additional the flight time. The higher certificate levels are attained after obtaining the experience and competency from the additional flight time, but the additional flight time doesn't necessarily mean the pilot will choose to advance to that next certificate level.

This researcher is a good example of this, having well over the minimum 250 hours of flight time required for a commercial pilot certificate, but not having had the time to complete the training and test with a flight examiner to receive the commercial certificate. Additional questions and responses could be added to clarify the content of the checkout procedures and the types of aircraft flown during the checkout. This would make the data more meaningful being able to associate certain types of checkout procedures to certain types of aircraft, such as a complex or high performance aircraft.

To further expand on the current topic, the population could also be expanded. This research project was delimited to private and commercial pilots only. The delimitation could be removed to sample all pilot groups, from student to airline transport pilots, to get a broader set of research findings, which if the sample size requirements are met, would allow generalizing the results to the overall pilot population.

Additional research could also be conducted with FBO owners to determine if their checkout procedures are based on real or perceived FAA requirements, insurance company requirements or negotiated rates, or any other internal or external factors affecting their decision making process when it comes to determining the required procedures for a rental checkout.

Finally, since there was a flight school in Canada had defined their checkout procedures and defined which procedure would be used based on pilot certificate type, flight time, and currency, research could be conducted to compare checkout procedures of US-based FBOs and Flight School to FBOs and Flight Schools in foreign countries renting to their local pilots. Moving parallel to that, research could also be conducted to

compare pilot certificate and currency requirements between the United State and foreign countries having an active general aviation population.

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APPENDICES

Appendix A – IRB Approval

Oklahoma State University Institutional Review Board

Date:	Wednesday, September 24, 2014
IRB Application No	ED14138
Proposal Title:	Effects of General Aviation Rental Aircraft Checkout Requirements on Flight Activity of Renter Pilots
Reviewed and Processed as:	Exempt

Status Recommended by Reviewer(s): Approved Protocol Expires: 9/23/2017

Principal Investigator(s):

Robert W. Ohrenberg
2120 Ashbrook Dr
Springfield, OH 45502

Steven Marks
300 Cordell North
Stillwater, OK 74078

The IRB application referenced above has been approved. It is the judgment of the reviewers that the rights and welfare of individuals who may be asked to participate in this study will be respected, and that the research will be conducted in a manner consistent with the IRB requirements as outlined in section 45 CFR 46.

■ The final versions of any printed recruitment, consent and assent documents bearing the IRB approval stamp are attached to this letter. These are the versions that must be used during the study.

As Principal Investigator, it is your responsibility to do the following:

1.Conduct this study exactly as it has been approved. Any modifications to the research protocol must be submitted with the appropriate signatures for IRB approval. Protocol modifications requiring approval may include changes to the title, PI advisor, funding status or sponsor, subject population composition or size, recruitment, inclusion/exclusion criteria, research site, research procedures and consent/assent process or forms
2.Submit a request for continuation if the study extends beyond the approval period. This continuation must receive IRB review and approval before the research can continue.
3.Report any adverse events to the IRB Chair promptly. Adverse events are those which are unanticipated and impact the subjects during the course of the research; and
4.Notify the IRB office in writing when your research project is complete.

Please note that approved protocols are subject to monitoring by the IRB and that the IRB office has the authority to inspect research records associated with this protocol at any time. If you have questions about the IRB procedures or need any assistance from the Board, please contact Dawnett Watkins 219 Cordell North (phone: 405-744-5700, dawnett.watkins@okstate.edu).

Sincerely,

Hugh Crethar, Chair
Institutional Review Board

Appendix B – Adult Consent Form

SCHOOL OF
Educational Studies

College of Education
204 Willard
Stillwater, Oklahoma 74078-4045
Ph 405 744 6275
Fax 405 744 7758

ADULT CONSENT FORM
OKLAHOMA STATE UNIVERSITY

PROJECT TITLE:
Effects of General Aviation Rental Aircraft Checkout Requirements on Flight Activity of Renter Pilots

INVESTIGATOR:
Robert Ohrenberg, Oklahoma State University

PURPOSE:
The purpose of this research study is to identify any apparent relationships between the renter pilot, the aircraft checkout, the renter pilot's willingness to accomplish subsequent checkouts based on a previous checkouts complexity level, and the renter pilot's perceived willingness to participate in a "universal checkout" based on a specific set of criteria. The intended outcome of this research will be to develop information useful to the general aviation community to determine and show any statistical correlation between rental pilot experience and rental aircraft checkout complexity that can be translated to continued or stifled flight activity by those pilots.

PROCEDURES:
You will be asked to provide information about your certificate level and total flight time, rental checkout complexity, willingness to accomplish another checkout at the same level of complexity, and willingness to participate in a "universal checkout" based on a predefined set of checkout criteria. This study will take approximately 10 minutes to complete.

RISKS OF PARTICIPATION:
There are no known risks associated with this project which are greater than those ordinarily encountered in daily life.

BENEFITS OF PARTICIPATION:
This research will help us understand perceptions of renter pilots towards differing levels of checkout requirements conducted by different Fixed Base Operators (FBOs). It will also help us understand whether checkout complexities deter pilots from continuing to exercise the privileges of their pilot certificate, and at what complexity level, if any, a negative impact begins to occur.

SCHOOL OF
Educational Studies

College of Education
204 Willard
Stillwater, Oklahoma 74078-4045
Ph 405 744 6275
Fax 405 744 7758

CONFIDENTIALITY:
You may be assured of complete confidentiality. Research records will be stored securely and only researchers and individuals responsible for research oversight will have access to the records. It is possible that the consent process and data collection will be observed by research oversight staff responsible for safeguarding the rights and wellbeing of people who participate in research. Written results will discuss group findings and will not include information that will identify you. The questionnaire has an identification number for mailing purposes only so we know which questionnaires have been returned when mailing out reminder letters. Once the data collection period ends (approximately 6-weeks), the FAA downloadable airman database file used to obtain names and addresses (PII) will destroyed using multi-pass file destruction software.

Social Foundations

Aviation and Space Education

School Administration

Higher Education Administration

Research, Evaluation, Measurements & Statistics

College Student Development

Educational Technology

Center for School Business Management

COMPENSATION:
There will be no compensation for participation in this study.

CONTACTS :
You may contact any of the researchers at the following addresses and phone numbers, should you desire to discuss your participation in the study and/or request information about the results of the study:

- Robert Ohrenberg, Primary Investigator, 2120 Ashbrook Dr., Springfield, OH 45502, 937-207-0211
- Steven K. Marks, Ed.D., NASA Education Projects, 300 Cordell North, Oklahoma State University, Stillwater OK 74078, 405-744-8125

If you have questions about your rights as a research volunteer, you may contact the IRB Office at 219 Cordell North, Stillwater, OK 74078, 405-744-3377 or irb@okstate.edu

PARTICIPANT RIGHTS:
Your participation is voluntary. There is no penalty for refusal to participate, and you are free to withdraw your consent and participation in this project at any time, without penalty.

IF YOU CHOOSE TO PARTICIPATE:
Returning your completed survey will indicate your consent and willingness to participate in this research study.

Appendix C – Research Instrument

RENTAL CHECKOUT RESEARCH

1) Have you ever rented an aircraft as a certificated pilot?
   - ☐ YES – Please answer the remaining questions.
   - ☐ NO – Survey is complete. Please return in the envelope provided.

2) Certificate Type
   - ☐ Private
   - ☐ Commercial

3) Checkout procedures consisted of the following:
   - ☐ Flight time ≤ 1 Hour
   - ☐ Flight time ≤ 1 Hour, including an oral and or written exam
   - ☐ Flight time > 1 Hour
   - ☐ Flight time > 1 Hour, including an oral and or written exam

4) How willing would you be to accomplish a checkout of the same level of complexity again?
   - ☐ Very Willing
   - ☐ Somewhat Willing
   - ☐ Willing
   - ☐ Somewhat Unwilling
   - ☐ Very Unwilling

Consider the following situation:

Assume there is a single rental checkout procedure in place that would be honored at participating FBOs for the same make/model aircraft based on successfully completing these requirements:

- ✓ Pass fail oral examination lasting one hour or more based on the FAA Private Pilot Practical Test Standards
- ✓ Pass fail flight examination lasting an hour and a half based on the FAA Private Pilot Practical Test Standards
- ✓ Valid for one year, at which time another examination will have to be accomplished
- ✓ Will fulfill the biennial flight review requirement
- ✓ Aircraft renters insurance will be required

6) Based on the criteria above, how willing would you be to participate in this type of single checkout for multiple locations?
   - ☐ Very Willing
   - ☐ Somewhat Willing
   - ☐ Willing
   - ☐ Somewhat Unwilling
   - ☐ Very Unwilling

Appendix D – Initial Notification Letter

SCHOOL OF
Educational Studies

College of Education
204 Willard
Stillwater, Oklahoma 74078-4045
Ph 405 744 6275
Fax 405 744 7758

[DATE]

Dear [PILOT NAME],

As a pilot, you've probably rented an aircraft before. That rental likely included a rental checkout. If you've rented from different places, you probably encountered different checkout requirements. That may have led you to wonder why there is no uniform system for rental aircraft checkouts.

We are conducting research to determine connections between the renter pilot and the aircraft checkout. Our population for this research will be private and commercial pilots in the FAA's Southwest Region.

You will receive a research questionnaire in about a week. We would greatly appreciate your participation in this research. The questionnaire will take about 10 minutes to complete. If you choose to participate, please complete and return the questionnaire within one week (by DD MMM). A self-addressed, stamped envelope will be included. When we receive your completed questionnaire, a second identical questionnaire will be mailed to you in about one week. The first and second questionnaires will be compared to determine "test-retest reliability". This helps ensure the integrity of the research results.

Your participation in this research is voluntary, and your confidentiality and anonymity are assured. If you choose to participate, returning the completed questionnaires to me will be considered your consent to participate. The questionnaire is numerically coded to allow follow-ups with non-respondents, but you will not be individually identified to your questionnaire or to your responses.

We have attached an adult consent form to provide more information about this research project. Thank you in advance for your time and input for this research. We genuinely appreciate your help.

Sincerely,

Robert Ohrenberg

Robert Ohrenberg
Principal Researcher

Attach:
Adult Consent Document

Social Foundations
Aviation and Space Education
School Administration
Higher Education Administration
Research, Evaluation, Measurements & Statistics
College Student Development
Educational Technology
Center for School Business Management

Appendix E – Instrument Cover Letter

SCHOOL OF
Educational Studies

College of Education
204 Willard
Stillwater, Oklahoma 74078-4045
Ph 405 744 6275
Fax 405 744 7758

[DATE]

Dear [PILOT NAME],

Last week a cover letter describing an upcoming aircraft rental research project was mailed to you. Enclosed are the research questionnaire, a return envelope, and another copy of the consent form.

As a reminder, we are conducting this research to determine relationships between the renter pilot and the aircraft checkout.

The population for this research is private and commercial pilots in the FAA's Southwest Region. Your name was randomly drawn through a scientific sampling process. About one out of every 100 pilots was selected to participate in this research. Your participation in this research is of course voluntary, and your confidentiality and anonymity are assured.

We would greatly appreciate your participation in this research. We hope you will take about ten minutes now to complete the questionnaire and return it the self-addressed, stamped envelope.

Thank you in advance for your time and participation in this study. We genuinely appreciate your help.

Sincerely,

Robert Ohrenberg

Robert Ohrenberg
Principal Researcher

Encl:
Rental Checkout Research Questionnaire
Self-addressed stamped envelope
Adult Consent Document

Social Foundations
Aviation and Space Education
School Administration
Higher Education Administration
Research, Evaluation, Measurements & Statistics
College Student Development
Educational Technology
Center for School Business Management

Appendix F – One Week Follow-up Postcard

Last week a questionnaire seeking your opinion about rental aircraft checkouts was mailed to you. Your name was drawn in a random sample of FAA Southwest Region pilots from the FAA's downloadable airman database.

If you have already completed and returned it to us please accept our sincere thanks. If not, please do so today. It has been sent to a small, representative sample of pilots. It is extremely important that yours be included in the study if the results are to accurately represent pilot opinions.

If by some chance you did not receive the questionnaire or it got misplaced, please call me (937-207-0211) or email me (robert.ohrenberg@okstate.edu) and I will get another one in the mail to you today.

Sincerely,

Robert Ohrenberg

Robert Ohrenberg
Principal Researcher

Appendix G – Instrument Responses

"Case" Column

- Numerical sequence number for instrument response management

"Ever Rented?" Column

- 1 = Yes
- 2 = No
- Blank = No Response

"Certificate Type" Column

- 1 = Private
- 2 = Commercial
- Blank = No Response

"Rental Checkout Procedure" Column

- 1 = Flight time ≤ 1 Hour
- 2 = Flight time ≤ 1 Hour, including an oral and/or written exam
- 3 = Flight time > 1 Hour
- 4 = Flight time > 1 Hour, including an oral and/or written exam
- Blank = No Response

"Accomplish Checkout at same complexity" Column

- 1 = Very Willing
- 2 = Somewhat Willing
- 3 = Willing
- 4 = Somewhat Unwilling
- 5 = Very Unwilling
- Blank = No Response

"Accomplish Universal Checkout? Column"

- 1 = Very Willing
- 2 = Somewhat Willing
- 3 = Willing
- 4 = Somewhat Unwilling
- 5 = Very Unwilling
- Blank = No Response

Case	Ever Rented?	Certificate Type	Rental Checkout Procedure	Accomplish Checkout at same complexity	Accomplish Universal Checkout?
304	1	1	2	1	1
304	1	1	2	1	1
309	1	1	1	1	2

Case	Ever Rented?	Certificate Type	Rental Checkout Procedure	Accomplish Checkout at same complexity	Accomplish Universal Checkout?
310	2	1			4
311	1	1	1	2	2
314	1	1	2	3	1
322	1	1	1	1	1
327	1	1	1	3	1
328	2				
329	2				
333	1	1	4	1	1
335	1	1	1	3	3
348	1	1	4	2	2
360	1	1	4	4	1
363	2				
365	1	1	4	5	1
374	1	1	2	2	3
375	1	1	1	1	5
377	1	1	1	1	4
380	1	1	1	1	2
382	1	1	1	3	1
383	1	1	4	1	1
390	1	1	4	3	1
398	1		1	1	1
402	1	1	1	1	2
403	2				
408	1	1	4	1	1
409	1	1	4	3	1
415	1	1	2	1	3
417	1	1	4	3	4
422	2				
426	1	1	2	1	2
433	1	1	2	1	3
439	1	1	3	1	4
444	1	1	3	1	1
446	1	1	4	1	3
451	1	1	1	5	3
452	1	1	2	1	1

Case	Ever Rented?	Certificate Type	Rental Checkout Procedure	Accomplish Checkout at same complexity	Accomplish Universal Checkout?
453	2				
464	1	1	4	1	1
465	1	1	2	2	4
469	1	1	1	4	4
476	1	1	4	4	4
477	2				
479	1	1	4	3	3
480	1	1	3	1	2
481	1	1	1	1	2
482	2				
486	1	1	3	3	3
487	2				
492	2				
496	2				
501	1	1	1	3	3
505	1	1	2	1	3
508	1	1	3	1	2
509	2				
514	1	1	2	1	3
516	1	1	4	1	1
519	2				
523	1	1	2	1	4
526	2				
528	2				
529	1	1	2	1	1
536	2				
540	1	1	3	1	1
545	1	2	3	1	3
549	1	2	1	3	4
550	1	2	3	1	5
551	1	2		5	5
560	1	2	4	3	1
569	1	2	4	1	1
570	1	2	1	2	2
578	2				

Case	Ever Rented?	Certificate Type	Rental Checkout Procedure	Accomplish Checkout at same complexity	Accomplish Universal Checkout?
579	1	2	4	1	4
584	1	2	1	1	5
587	1	2	4	1	2
589	1	2	1	3	3
590	1	2	1	1	4
591	1	2	2	2	2
592	2				
594	1	2	4	3	3
605	1	2	1	1	2
606	1	2	2	3	1
608	1	2	4	4	2
609	1	2	2	1	1
611	1	1	1	1	1
612	1	1	3	1	1
616	2				
619	1	2	4	1	3
620	1	2	4	1	1
622	2				
624	1	2	4	1	1
625	2				
629	1	2	4	3	3
630	1	2			5
638	1	2	4	1	3
642	2				
645	2				
646	1	2	1	3	3
649	1	2	4	1	3
657	1	2		3	3
663	1	2	4	3	2
667	1	2	1	1	4
671	2				
677	1	2	1	1	2
679	2				
681	1	2	3	1	2
682	2				

Case	Ever Rented?	Certificate Type	Rental Checkout Procedure	Accomplish Checkout at same complexity	Accomplish Universal Checkout?
689	1	1	3	1	5
691	1	1	1	2	4
699	1	1	2	1	3
706	2				
711	1	1	4	1	1
718	1	2	4	1	1
719	2				
723	1	1	1	5	5
726	1	1	3	3	1
731	2				
732	1	1	1	1	1
745	1	1	3	1	4
749	1	1	1	1	2
755	1	1	1	1	5
761	1	2	2	1	5
762	2				
765	2				
768	2				
773	1	2	3	3	2
785	1	2	1	1	4
794	2	2		1	1
795	2				
798	1	2	3	1	3
801	1	2	3	2	2
802	2				
2301	1	2	1	2	2
2307	2				
2310	2				
2314	1	1	4	4	3
2315	1	2	4	4	2
2320	2				
2321	1	2	4	1	1
2326	1	2	2	3	3
2332	2				
2345	1	2	1	4	3

Case	Ever Rented?	Certificate Type	Rental Checkout Procedure	Accomplish Checkout at same complexity	Accomplish Universal Checkout?
2349	2	1			
2351	1	1	3	2	1
2353	2				
2354	1	2	2	2	2
2358	1	1	4	1	1
2359	1	2	4	3	3
2360	1	1	1	1	2
2361	2				
2373	1	1	2	1	2
2379	1	2	4	2	2
2380	1	1	4	2	3
2383	2				
2390	2	1			
2394	1	1	3	1	2
2397	2	1			
2406	2	2			
2408	1	1	4	1	2
2409	1	2	4	1	2
2411	1	2	3	1	1
2415	1	1	3	1	1
2419	1	1	4	2	2
2420	1	1	3	1	2
2423	2	1			
2439	1	1	1	2	2
2443	1	2	1	1	1
2450	2				
2451	1	1	1	1	4
2453	2				
2455	1	1	3	3	4
2462	1	2	2	3	2
2469	1	2	2	2	1
2473	1	2	3	1	3
2484	1	1	1	3	1
2485	1	2	1	3	3
2487	1	2	3	3	4

Case	Ever Rented?	Certificate Type	Rental Checkout Procedure	Accomplish Checkout at same complexity	Accomplish Universal Checkout?
2497	1	1	1	4	1
2506	1	1	4	3	2
2511	1	2	2	2	5
2514	2				
2515	1	2	3	1	3
2528	1	2	1	1	1
2539	1	1	1	1	2
2542	1	1	2	2	5
2544	1	1	4	2	1
2546	2				
2548	1	1	3	1	3
2550	1	1	4	5	3
2563	1	1	4	1	1
2570	1	1	4	3	3
2592	2				
2593	1	1	2	1	1
2595	1	1	3	1	2
2596	1	2	1	1	3
2597	1	2	1	1	3
2598	2				
2604	1	1	4	2	5
2622	1	1	1	1	2
2630	2				
2637	2				
2646	1	2	3	1	2
2648	1	1	2	3	3
2650	1	2	4	1	1
2657	2				
2658	1	2	4	1	5
2666	1	1	1	1	4
2667	1	2	3	1	1
2669	1	2	1	4	4
2672	2				
2685	2				
2686	1	1	1	1	3

Case	Ever Rented?	Certificate Type	Rental Checkout Procedure	Accomplish Checkout at same complexity	Accomplish Universal Checkout?
2688	1	1	2	2	1
2691	1	1	3	2	3
2709	2				
2710	1	1	4	3	4
2711	1	1	1	1	4
2722	1	1	4	1	3
2724	1	1	1	3	5
2730	1	2	4	3	1
2740	1	1	4	1	1
2748	1	1	2	3	4
2755	1	1	1	1	1
2758	1	1	3	3	1
2760	2				
2768	1	2	2	2	2
2770	2				
2778	1	2	2	3	2
2780	1	2	1	4	5
2781	1	1	4	3	4
2792	2				
2794	1	1	1	3	4
2795	1	1	1	1	4
UNK[1]	1	2	1	5	5

[1] Returned instrument was missing the lower right corner containing the sequence number.

VITA

Robert Wayne Ohrenberg

Candidate for the Degree of

Doctor of Education

Dissertation: EFFECTS OF GENERAL AVIATION RENTAL AIRCRAFT CHECKOUT PROCEDURES ON FLIGHT ACTIVITY OF RENTER PILOTS

Major Field: Applied Educational Studies

Biographical:

Education:

Completed the requirements for the Doctor of Education in Applied Educational Studies at Oklahoma State University, Stillwater, Oklahoma in May 2016.

Completed the requirements for the Master of Science in Aerospace Administration at Southeastern Oklahoma State University, Duncan, Oklahoma in 2007.

Completed the requirements for the Bachelor of Science in Aviation Sciences – Technical Services Management at Oklahoma State University, Stillwater, Oklahoma in 1994.

Experience:

2013 – Present: Air Force Acquisition Program Configuration and Data Management Specialist, Wright Patterson Air Force Base Ohio
2008 – 2013: Lead Deficiency Reporting Program Manager, Tinker Air Force Base Oklahoma
2003 – 2008: Air Logistics Center Performance Metrics Program Manager, Tinker Air Force Base Oklahoma
1996 – 2003: Deficiency Reporting Quality Assurance Specialist, Tinker Air Force Base Oklahoma
1995 – 1996: Jet Engine Mechanic, Tinker Air Force Base Oklahoma
1990 – 1995: American Airlines Airframe and Powerplant Mechanic, Tulsa Oklahoma
1989 – 1990: Lead Airframe and Powerplant Mechanic, Oklahoma City Oklahoma

Professional Memberships:

Phi Kappa Phi