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Willingness to Fly based on First Officer Experience

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ABSTRACT

This study examined passengers' willingness to fly with a first officer whose experience is 500, 1000, or 1500 total flight hours and concluded that there is no difference in passenger's willingness to fly between first officer experience levels.

BACKGROUND

The hour requirements for an Airline Transport Pilot's license are a nationwide debate in the aviation industry. Two studies have shown that passengers are less willing to fly when a significant change is made to the current industry standard. Mehta et al. (2017) discovered passengers were mostly willing to fly in all human pilot scenarios, but willingness to fly significantly decreased when autonomy and automation were introduced. Rice and Winter (2015) discovered passengers were not willing to fly with an autopilot replacing humans.

Todd and Thomas (2012) examined the relationship between flight hours and pilot performance. Two groups were formed in this study; one with pilots of "high experience", presumably with upwards of 15,000 flight hours, and one with pilots of "low experience", presumably around 500-750 flight hours. Several scenarios measured performance across the groups, and the results found "minor differences with regard to nontechnical measures as a function of crew composition" (Todd & Thomas, 2012, p. 776).

Passengers' willingness to fly has not yet been explicitly studied in relation to lower first officer hour requirements, which is a necessity before the FAA considers lowering requirements.

PURPOSE & RESEARCH QUESTIONS

The purpose of this study is to explore passengers' willingness to fly (Rice et al., 2020) with a less-experienced first officer. Participants from Amazon MTurk were given three scenarios where the captain was experienced, but the first officer hours varied: 500 total hours, 1000 total hours, and 1500 total hours for the first officer.

Are passengers' willing to fly with a less experienced first officer?

METHODS

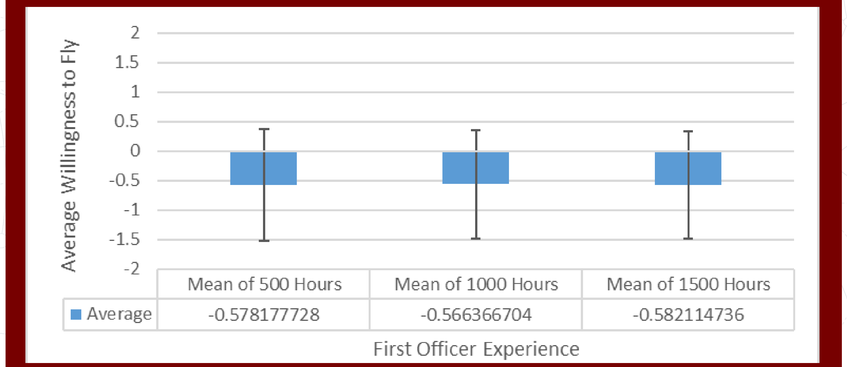
Florida Tech's IRB approved the IRB exemption (23-029). We collected data through an anonymous electronic survey created in Qualtrics and recruited participants on the Amazon MTurk platform. Participants were given three scenarios regarding first officer flight experience: 500 total flight hours, 1,000 total flight hours, and 1,500 total fight hours. In each of these scenarios, the captain of the aircraft is experienced in the aircraft being flown. The Rice et al. (2020) willingness to fly scale was used to measure the dependent variable. For all the statistics, the Likert style responses were coded such that -2 indicates "strongly agree" and 2 indicates "strongly disagree". Cronbach's alpha was calculated to determine internal reliability. Descriptive statistics were calculated in Microsoft Excel. A one-way ANOVA was calculated in R studio.

RESULTS

Two hundred and fifty participants responded to the questionnaire. The participants consisted of United States citizens aged 20 to 59. The average age was 33. The average participant flies just over 6 times a year. The range of travel indicated was between 0 and 50 times per year.

The reported Cronbach alpha was .93 for the 500-hour scenario and .92 for the 1000 and 1500-hour scenarios, indicating high internal reliability and allowing us to use the average willingness to fly for each scenario.

Figure 1: Participant Willingness to Fly Based on First Officer Experience



Error bars show standard deviation in both directions. Note that -2 is Strongly Agree and 2 is Strongly Disagree

Table 1: Descriptive Statistics for Willingness to fly by First Officer Experience

First Officer Experience	Mean	Median	Mode	Range	Standard Deviation
500 hours	-0.58	-0.71	-1.57	-2 to 2	0.93
1,000 hours	-0.57	-0.71	-1.29	-2 to 2	0.91
1,500 hours	-0.58	-0.86	-1.42	-2 to 2	0.91

Note: that -2 is Strongly Agree and 2 is Strongly Disagree.

Table 1 displays the descriptive statistics. Of the three scenarios, the calculated median is closest to -2 (strongly agree) in the 1,500-hour scenario. The calculated mean closest to -2 was also in the 1,500-hour scenario. However, all mean willingness to fly values were extremely close.

A one-way repeated measures ANOVA found no significant difference in the mean willingness to fly between levels of pilot's flight experience: F (2, 768) = 0.002, p = .96. The eta squared was less than 0.001, which indicates a small effect size.

DISCUSSION

The hypothesis stated that there would be a relationship between passengers' willingness to fly and pilot experience, but the data did not support this hypothesis. The results showed that passengers are equally willing to fly in all three scenarios because the mean willingness to fly is nearly the same in all three groups and the ANOVA was not significant. Cronbach's alpha showed a very high internal reliability, which means that the participants were answering consistently. This survey showed that passengers are willing to fly with a less experienced first officer when the captain is experienced in the aircraft. The 1,500 total hour scenario had the highest average willingness to fly, but there was no statistical difference with First officer flight experience.

The non-significant ANOVA means that first officer experience is not affecting passengers' willingness to fly. This could be caused by the general population's lack of understanding of the required experience. Participants may also have a misunderstanding of the amount of workload the first-officer is responsible for on an average flight. Mehta et al. (2017) showed that passengers are willing to fly in most scenarios as long as two pilots are in the cockpit.

The aviation industry has struggled to staff the pilots needed for the demand in passenger air travel. This research can be used in addition to future research if the FAA revisits the minimum hour requirement for Airline Transport Pilot's to help airlines reduce the effects of the pilot shortage. If passengers are willing to fly with less experienced first officers, airlines can consider hiring pilots with lower total flight time, if approved by the FAA.

FUTURE RESEARCH

- Research could be conducted to further explore the public's opinion on airline pilot experience.
- Captains' willingness to pilot with a less experienced first officer can be examined.
- First officers' willingness to pilot with less experience should be evaluated.
- Safety standards could be examined for the same experience scenarios.

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