

Pilot age and commercial air craft accidents research proposal examples

[Engineering](#), [Aviation](#)



Technical Applied Science: Using the Scientific Method

Problem Statement

In general commercial and non-commercial flights are the two main categories of aviation. Pilot age became a particularly controversial issue in 1959 when the Age-60 Rule was made by the Federal Aviation Administration (FAA). The Age Rule has been lifted to 65 years so pilot's can continue to fly through their early 60s. All factors causing air accidents are seriously investigated. If age is not a factor then time could be better spent resolving the problems that are factors in air accidents. This proposal seeks to evaluate the literature in order to determine whether or not the age of a pilot is a factor in air accidents. It is suspected that age is not an important factor but that experience, weather and other factors play roles in pilot error that more important to address.

Literature Review

Pilot age is a variable often used as an important characteristic in studies of air accidents. Not all studies though regard pilot age as an independent variable though. This literature considers research that has used the pilot's age in relationship to the occurrence of air accidents. Li (et al., 2001) found that pilot age was not “ independently associated with the odds of pilot error” (52). More flight experience in fact, demonstrated ability for less pilot error. The variable of most impact to pilot error was reported as being bad weather conditions (Li et al., 2001, 52;

Wilkening, R. (2002) concluded that there is no reason based on less ability of older pilots that the Age 60 Rule should continue because “ there is no medical, scientific, or safety justification” (194 & 200). Li (et al., 2002) reevaluated assumptions made about older pilots doing less well than young pilots in flight simulators. The researchers report that they could not determine significant changes in pilot performance based on age after comparing ages 40 to 49 years, 50 to 59 years and the early sixties.

Rebok (et al., 2009) evaluated crash records over the twenty year period between 1982 and 2002. Although 70 percent of accidents were due to human the average age of the pilots involved in the event was 38. 9 years. They concluded that “ The patterns of pilot error in air-taxi crashes were similar across age groups” (Rebok et al., 2009, 649). Rebok (et al., 2011) made a statistical evaluation in a case-control study of pilot age and geographic region concerning commuter and air taxi crashes. Interestingly when the pilot age and total flight time were based on the geographic region, mainly took place in Alaska by thirteen times compared to other regions. The researchers suggested that pilot age may have an impact on crash risk for accidents under code 14 CFR Part 135 for the nineteen years 1983 to 2002. This could be due to the pressure from flying and landing during bad weather (Rebok et al., 2011, 111 & 113).

Quinn (et al., 2010) studied the effects of “ age due to declines in cognitive abilities necessary for navigation” (389). They based their evaluation on pilots’ speed of processing information and correct decision making under high pressure conditions. The researchers suggested that older pilots may

need specialized training (Quinn et al., 2010, (495). Yesavage (et al., 2011) studied factors that may impact the reliable prediction of pilots' performance as their age increases. They concluded that the how a pilot performs in daily real life situations can predict the measurement in flight simulators for how fast they can process information.

Taylor (et al., 2007) concluded that the age-based retirement rules are discriminatory and should be replaced with more direct methods of risk assessment. The author found that instead of disadvantages the pilot experiences that come with age are advantages. Both an older pilot's unique experiences and greater degree of knowledge showed good result in flight simulator tests

Broach, Joseph, and Schroeder (2003 & 2004) conducted a review of professional air transport pilot accident rates by the pilot's age. They concluded that different statistical methods need to be developed to better understand how a pilot's age and air carrier accidents are linked.

Methodology

Qualitative and quantitative methods will be incorporated into the research in order to answer the thesis question is whether or not the age of a pilot is a factor in air accidents. The qualitative evaluation will include interviews and observation to learn more about pilot behavior based on age. The behavioral information provided will include the varying experience between younger and older pilots, their training and other cultural influences on pilots.

Quantitative methods will be incorporated into the research by statistical analysis of information from databases.

Data collection

Primary

The qualitative data collection source will be several pilots. A survey will be taken which will include operational observations and interviews with both older and younger pilots. The quantitative data sources will include the accident databases from international airlines. Air accidents will be categorized according to age group of pilots and similarity of accidents.

Secondary

Secondary data collection will be from the classifications of identical accidents by older pilots and the reaction or decision made during an accident event; information from flight data recorders and flight black boxes will be examined. The goal is to compare the results from older pilots with those of younger pilots during similar situations. This will allow offer a better understanding and provide a more detailed from the pilot's frame of reference.

Questions Asked. To better understand the problem the following questions will be asked. (a) How do older pilots react during emergency situations? The two main characteristics to be assessed will be (i) the speed of processing information and (ii) successful decision making. (b) How do older pilots operate highly sophisticated aircrafts during emergency situations? (c) How have older pilots reacted to the transformation to electronic advances aircraft? (d) What was the specific reasons for changing the AGE 60 rule to 65? For example was the change based on the shortage of pilots or other

economic factors such as retirement or was the change based on the research?

Ethics Statement

Technology research, just like all other research, needs to be done in an ethical way. That is why the use of the scientific method is so important. Results of studies are reproducible and reliable when scientific method. There are several steps that used to develop and accomplish an ethical study. First the scientific question to be answered was established and a literature review was done. Next a hypothesis will be decided upon and the experiment will be carried out in order to test the hypothesis. Once the research data has been analyzed and a conclusion from the data has been reach then the researcher has to decide if the hypothesis is true or false. At this point it may be possible to report the results or maybe a new hypothesis can be established. If a new hypotheses is decided upon then the experiment needs to be redone.

Statement of Limitations

The limits of this research are that only data concerning pilot error identified in air crashes will be used and will be considered against the age of the pilot. Pilot's age will be an independent variable in the research. Error, validity, bias, and reproducibility will be reported.

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