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Differences in the Severity of General Aviation Accidents by Age: A Preliminary Examination

Brandi N. Drye  
*The Citadel*, bdrye@citadel.edu

Karina Mesarosova  
*University of Zilina*, km@flightresearch.eu

Robert Walton  
*Embry-Riddle Aeronautical University - Worldwide*, waltonr@erau.edu

P. Michael Politano  
*The Citadel*, politanom@citadel.edu

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Differences in the severity of aviation accidents by age: A preliminary examination

¹Drye, B. N., ²Mesarosova, K., ³Walton, R. O., and ¹Politano, P. M.

¹The Citadel; ²University of Zilina; ³Embry-Riddle Aeronautical University
“I’m the schmuck that landed on the taxi way”

• 74 year old Harrison Ford (Star Wars star) told FAA after landing on a taxiway at John Wayne Airport in Orange County, California (in February 2017)

• Was this incident age related?
Background

• Research examined age issues with pilots
• Industry continues to deal with pilot shortages
  • Allowing older pilots to fly past mandatory retirement age could reduce the impact
  • However, this brings up the question of flight safety, and if older pilots are indeed a risk.

• Purpose: Examine differences in the severity of accidents by age
More Background

- Limited literature on the subject
- Most concerned with acute incapacitation
  - But age related mental and physical declines need to also be considered
- Problem is that everyone ages differently and at different rates
Methods

• NTSB aviation accident and incident database (1982 – 2014)
• Accidents separated by Commercial and General Aviation (fixed wing)
  • Excluded home built aircraft, helicopters, gliders...
  • 74,686 total entries in data set
  • 7,203 commercial
  • 61,363 GA accidents
• Damage to the aircraft and injury of crew/passengers as a function of pilot age was examined separately using ANOVA for commercial and GA
Results

- Commercial
  - Male pilots 97.4%, (mean age = 41.75, \(SD=10.88\))
  - Female pilots 2.6%, (mean age of 43.51, \(SD=9.71\))
    - Ages were significantly different, \(t(7009)=8.76, p<.001\)

- GA
  - Males 91.8%
  - Females at 3.7% (4.5% missing)
  - Average age for pilots was 45.29 (\(SD=14.63\))
Results

• Commercial operations
  • Damage levels of none, minor, substantial, and destroyed produced a significant difference by age, $F(3, 7197)=40.558, p<.001$
  • All levels were significantly different with the exception of none and minor
  • Age decreased across the levels of damage from an average of 43.38 for none to 39.76 for destroyed
  • Highest level for damage was substantial, making up 47.26% of reports with an average age of 40.75

• GA
  • Damage level was also significant, $F(3,60302)=4.06, p=.007$
  • Significant differences between no damage and substantial ($p=.001$) and destroyed ($p=.005$) but no other levels
Discussions/Conclusions

• Study indicated that there are differences in the degree of damage related to aviation accidents based on age.

• Additional examination of the causes of accidents, and at what age the increase is observed, is needed to ensure aviation safety for aging pilots.