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

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“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