Age Differences in Helicopter Accidents: A Preliminary Investigation

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Age differences in helicopter accidents: A preliminary investigation

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Abstract

This study utilized the NTSB database from 2006 to 2016 to examine differences in severity of accidents by age for helicopter operations.

There were 1023 cases included in the data (97.1% male and 2.9% female). The average age for helicopter pilots in the database was 47.00 years (SD=13.78). The average number of flying hours was 5447.98 (SD=6825.90, sk=1.982).

An ANOVA was used to examine the effects of age on damage to the aircraft and injury to aircraft occupants. There was not a significant difference in pilot ages across the damage categories of none, minor, substantial, and destroyed, F(3,1019)=7.763, p=.515, with average ages of 46.64, 46.04, 46.86, and 49.58 across the categories.

To examine further the apparent conundrum that injuries went up with age while damage did not, additional analyses were conducted looking particularly at helicopter pilots between 50 and 59 and 60 and 69. For the two groups, there was not a significant difference by age for damage or injury (F(3,234)=.784, p=.504, F(3,234)=7.745, p=.526, F(3,1880)=1.355, p=.246, F(3,188)=.173, p=.915 respectively).

Discounting reporting anomalies, when proportional damage was examined (for age >60 pilots) 86.44% of aircraft sustained substantial damage; in the same age group, 95.31% of aircraft sustained substantial damage or destroyed resulting in 35.42% of those accidents involving serious injury or loss of life.

Results

An ANOVA was used to examine the effects of age on damage to the aircraft and injury to aircraft occupants. There was not a significant difference in pilot ages across the damage categories of none, minor, substantial, and destroyed, F(3,1019)=7.763, p=.515, with average ages of 46.64, 46.04, 46.86, and 49.58 across the categories. There was a significant difference in age across injury categories of none, minor, serious, and fatal. (F(3,1019)=7.549, p=.001, with average ages of 45.64, 46.13, 50.74, and 49.91 across the categories.

To examine further the apparent conundrum that injuries went up with age while damage did not, additional analyses were conducted looking particularly at helicopter pilots between 50 and 59 and 60 and 69. For the two groups, there was not a significant difference by age for damage or injury (F(3,234)=.784, p=.504, F(3,234)=7.745, p=.526, F(3,1880)=1.355, p=.246, F(3,188)=.173, p=.915 respectively). Discounting reporting anomalies, when proportional damage was examined (for age >60 pilots) 86.44% of aircraft sustained substantial damage; in the same age group, 95.31% of aircraft sustained substantial damage or destroyed resulting in 35.42% of those accidents involving serious injury or loss of life.

Conclusions

We do know that helicopter accidents and injuries occur but we do not have a grasp on the effects. This preliminary study attempted to start building the literature on helicopter pilot age related declines and its impact on aviation safety. It is suggested that further studies on the relationships of age to accident rates should be conducted to continue to enhance flight safety, and educate the industry on the effects of an accident sequence to the body at different ages.

Additionally, study in this area may inform on experience level and accident rates. An ancillary benefit may help alleviate helicopter pilot shortages.