



Identification and Validation of a Predicted Risk-Taking Propensity Model Among GA Pilots

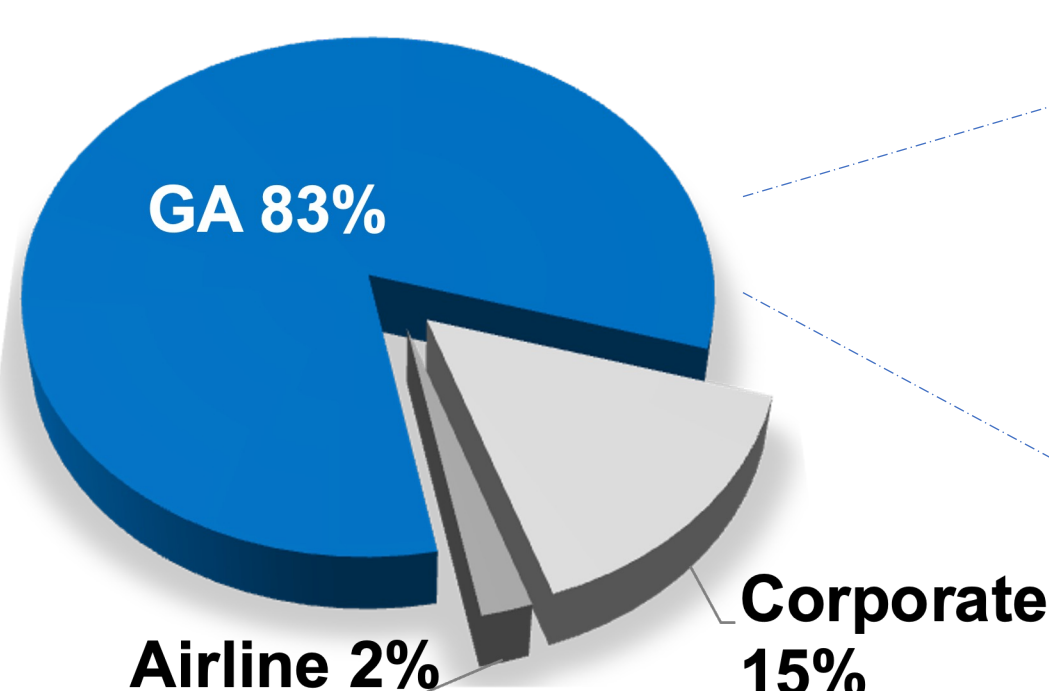


Abstract

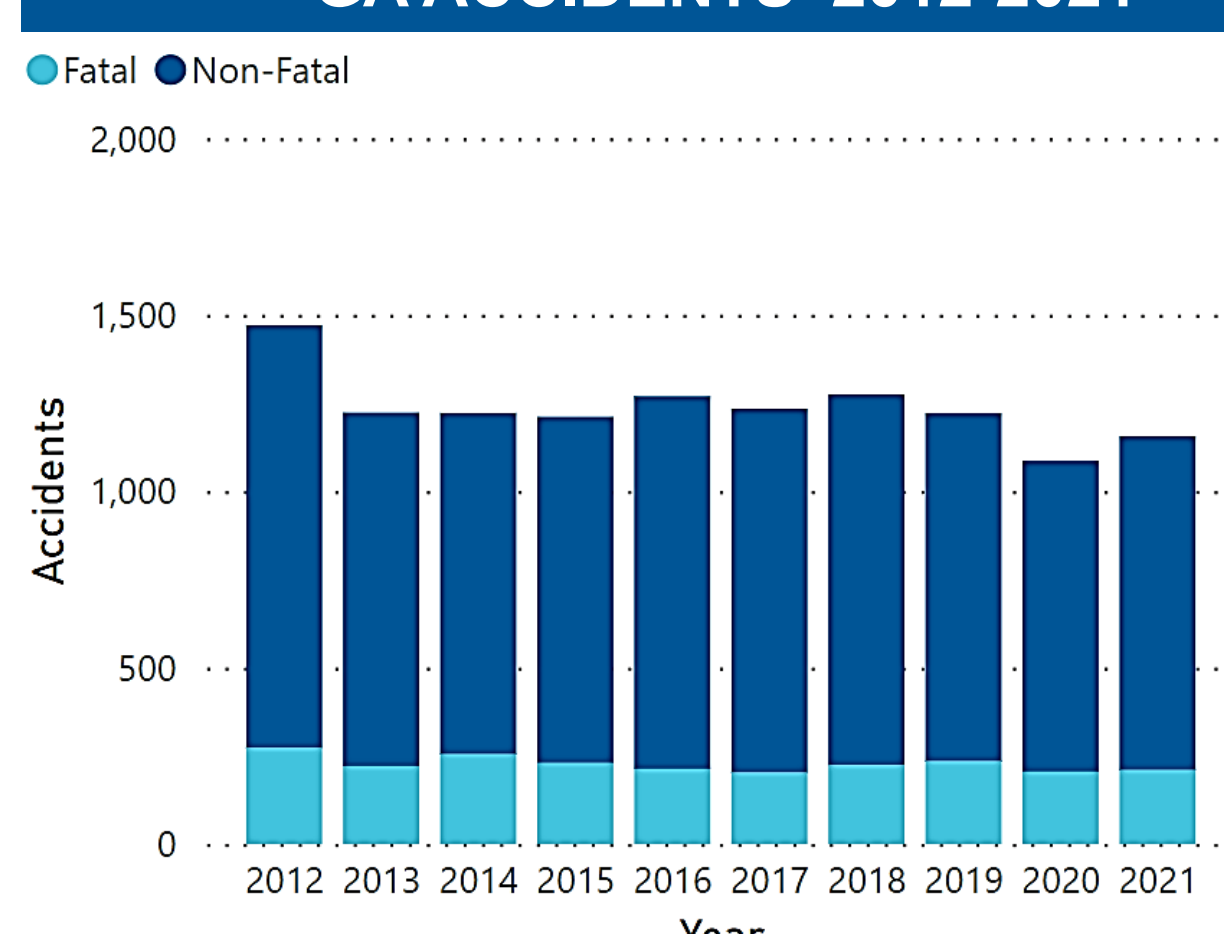
Risk-taking, a persistent topic of interest and concern in aviation, has been linked with unsafe behaviors and accidents. However, Risk-taking Propensity is a complex construct that encompasses numerous factors still being researched. Even within the limited research available about the factors affecting pilots' risk-taking propensity, studies have yielded inconsistent results. Therefore, this quantitative study aims to explore both existing and novel factors that predict the propensity for risk-taking among general aviation (GA) pilots in the United States.

Background

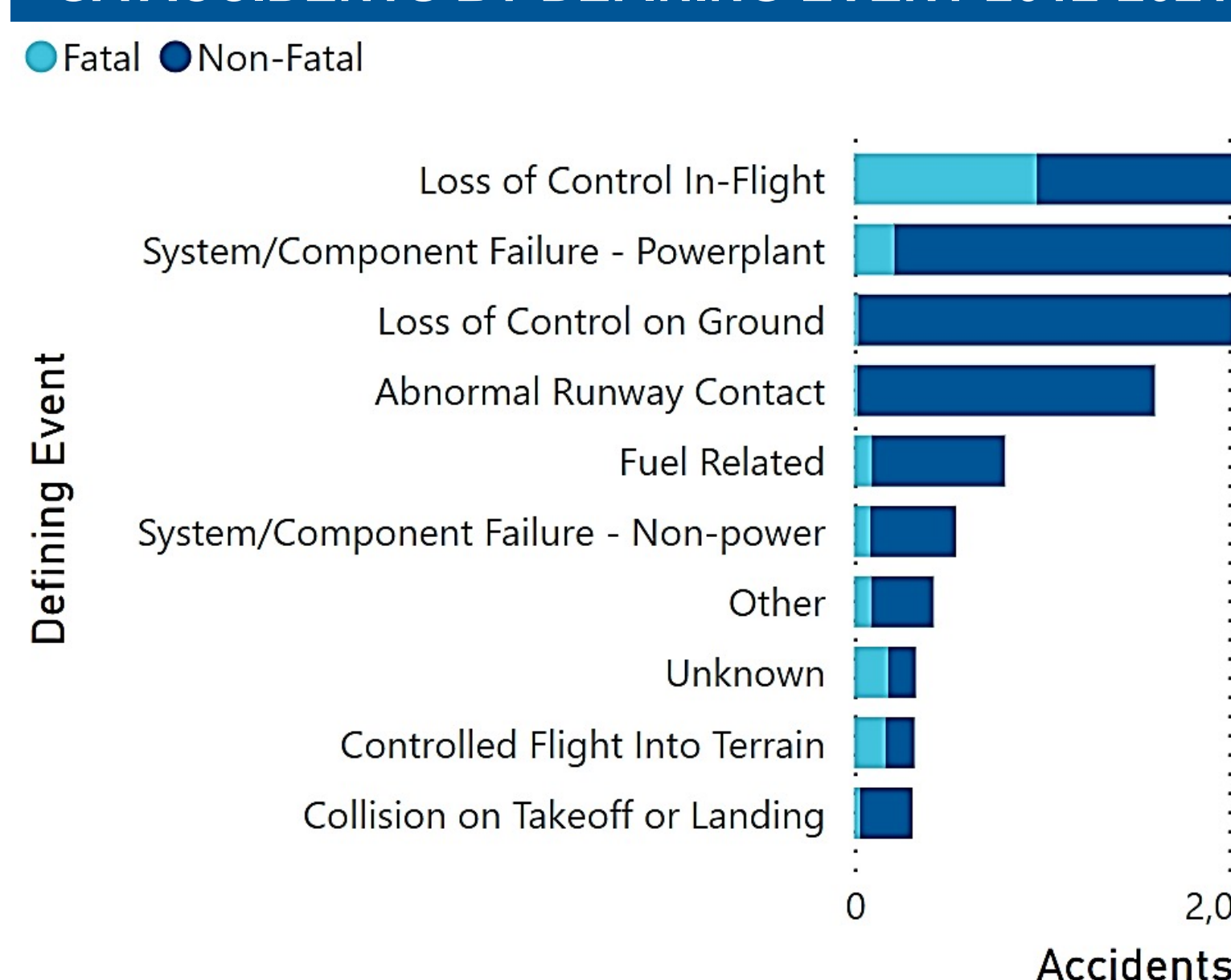
Percentage Of Civil Aviation Accidents 2012 - 2021



GA ACCIDENTS 2012-2021



GA ACCIDENTS BY DEFINING EVENT 2012-2021



Roughly 85% of all accidents have been caused by "pilot error" (FAA, 2022).

Most loss of control accidents (LOC-I) are caused by pilot judgment, risk-taking propensity, and decision-making errors (Majumdar et al., 2021).

Literature Review

Risk Propensity - Person's present inclination to take or avoid risks and is seen as an individual attribute that may change as a consequence of experience (Sitkin & Pablo, 1992).

Habituated Action Theory - Engaging in high-risk conduct repeatedly without experiencing a negative consequence increases one's risk-taking inclination of that behavior – risks will be normalized by habit (Kasperson et al., 1988)

Theory of Planned Behavior - A person's behavior is influenced by attitudes, norms, and perceived behavioral control (Ajzen, 1991). Pilots may take risks if necessary for a desired outcome, with support, and if they feel in control.

Theory of Self-Efficacy - Refers to a person's belief in their ability to perform or achieve a specific task (Bandura, 1977). Highly self-efficacious pilots may underestimate the risk, or overestimate their abilities, and expose them to danger.

Social Learning Theory - Belief that an individual's actions have the power to decide their future outcomes (Rotter, 1954). Internal LOC: belief that one can control one's life. External LOC: belief that life is controlled by fate and is beyond the person's influence.

Research Questions

RQ₁: Does age* significantly predict risk-taking propensity scores among general aviation pilots while accounting for all other factors?

*The remaining predictors (gender, ethnicity, marital status, education, flight hours, type of flight training curriculum, number of certificates, locus of control, self-efficacy, and psychological distress) will be included in subsequent research questions not listed here.

Significance

Practical Significance: The study may guide targeted training programs to reduce pilot risk-taking behavior. It may help provide decision-making insights to pilots to foster calculated pre-flight or in-flight decisions. It may guide aircraft builders to add safety systems/warnings that reduce human error.

Theoretical Significance: Examining self-efficacy, locus of control, stress, and hazardous events as risk taking predictors could expand or validate existing theories within aviation.

Methodology

Research Approach: The research method is non-experimental; namely exploratory, cross-sectional research using surveys. Participants must be 18 years of age or above and have at least a private pilot certificate. Multiple Linear Regression (MLR) will be used to develop the risk-propensity model.

Sampling Strategy: Data will be gathered using non-probability convenience sampling at ERAU and local Experimental Aircraft Association chapters in Central Florida.

Design and Procedures: This study uses correlational predictive design. Model validation will be conducted using squared cross-validity coefficient.

References

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