

Aircraft safety: An overview for the concerned client

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Your bottom line – There are almost 4x as many accidents on personal planes rather than other kinds of aircraft. We therefore recommend avoiding personal aircraft in favor of flying commercial. Specifically, flight accidents are mostly due to single-engine aircraft such as Cessna and Piper airplanes, not commercial airliners that carry dozens to hundreds of passengers. This report presents additional recommendations to maximize your flight safety.

Method

Our team explored United States National Transportation Safety Board aviation accident data (from approximately 1980 – 2015) by exploring descriptive statistics and creating visualizations on the geography of accidents, the characteristics of flights and planes, as well as accidents over time. Additionally, we examined the most frequent words in a sample of accident probable causes. Here's what we found.

Findings

- Personal aircraft made by Cessna and Piper are the number one makes of plane in this accident dataset (~37k collective accidents, versus ~2k accidents for Boeing, for instance). In fact, 79.56% of all accidents are in single-engine planes, suggesting that flying a personal plane may be more fraught than flying commercial.
- Accidents seem to have unexpected densities around the state of Florida, as well as in the Seattle and California areas. These areas do somewhat correlate with the states with the highest number of Cessna pilots (Florida, California, and Texas).
- Upon visual inspection, the total number of accidents, as well as the total number of fatal, serious, and minor injuries has generally declined over time.
- Most flight accidents occur during landing or takeoff. Furthermore, in a sample of 10% of all probable accident causes, “land” (“landing”) was the third most common word, as well as the word “engine” (tenth most common word). “Power” and “fuel” were also common, as well as “takeoff” and “runway,” which further buttress the idea that takeoff and landing may be the riskiest times in a plane.
- Most flight accidents peak in the summer months, particularly around July, then taper off in the winter months. We hypothesize that this may be due to the increase in personal plane usage during this time of year. If accidents were instead to reflect commercial plane usage, we might expect those numbers to peak during the holiday months as well.

Conclusions & Recommendations

- Avoid personal single-engine aircraft, particularly Cessna and Piper airplanes, in favor of flying commercial.
- Avoid airports with the highest accident load, including private airports, Chicago O'Hare (IL), Centennial Airport (CO), Merrill Field Airport (AK), Denver International Airport (CO), and Wittman Regional Airport (WI). However, avoiding personal flights may account for this somewhat. For instance, Denver's Centennial Airport is one of the busiest private jet airports in the United States.
- Factor into the overall decrease in the total number of accidents per year into your flying decisions. The overall decrease over time in total fatalities, serious injuries, and minor injuries may further increase your sense of security.