

What's Survivable?

What kind of impact with terrain and/or obstacles is survivable, presuming adequate occupant restraint? As this article's main text explores, one answer involves the rate of negative acceleration (deceleration) over time/distance.

But a 1985 safety report from the NTSB, with the lengthy title, "General Aviation Crashworthiness Project: Phase Two—impact Severity And Potential Injury Prevention In General Aviation Accidents," includes some more detailed answers.

The report includes this definition: "A survivable accident is one in which the forces transmitted to the occupant through the seat and restraint system do not exceed the limits of human tolerance to abrupt accelerations and in which the structure in the occupant's immediate environment remains substantially intact to the extent that a livable volume is provided throughout the crash sequence."

After determining the kinetics of some 535 aircraft accidents, the NTSB concluded, "The resulting boundary of the survivable envelope is depicted...by a line from zero degrees at 75 knots, to 45 degrees at 60 knots, and to 90 degrees at 45 knots." The data plotted in the NTSB report are reproduced above.

Now you know: Stay above and to the left of the red arc in the graph above and your crash likely will be survivable.

