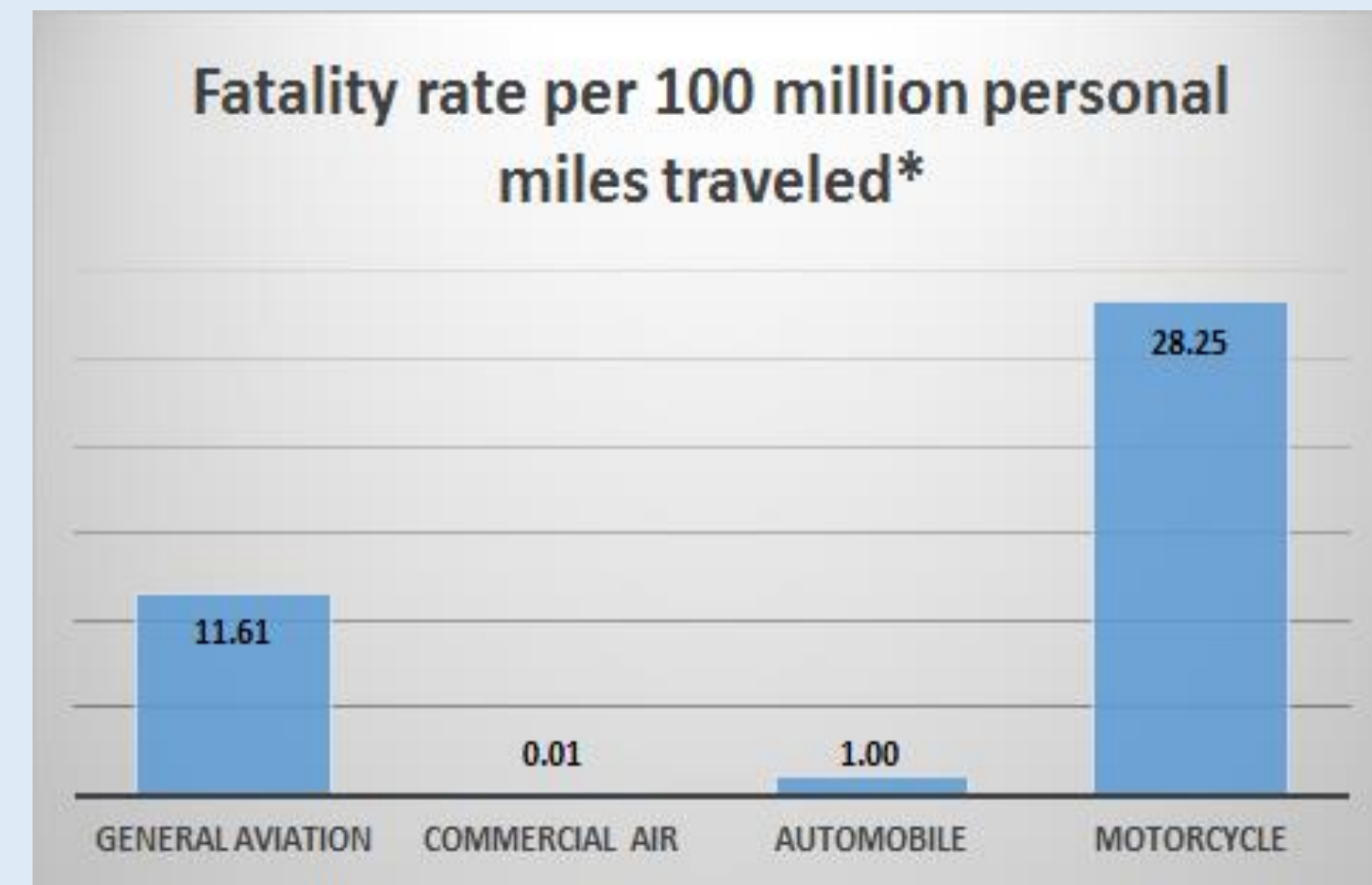


RTA for Small Aircraft and UAS Autopilots

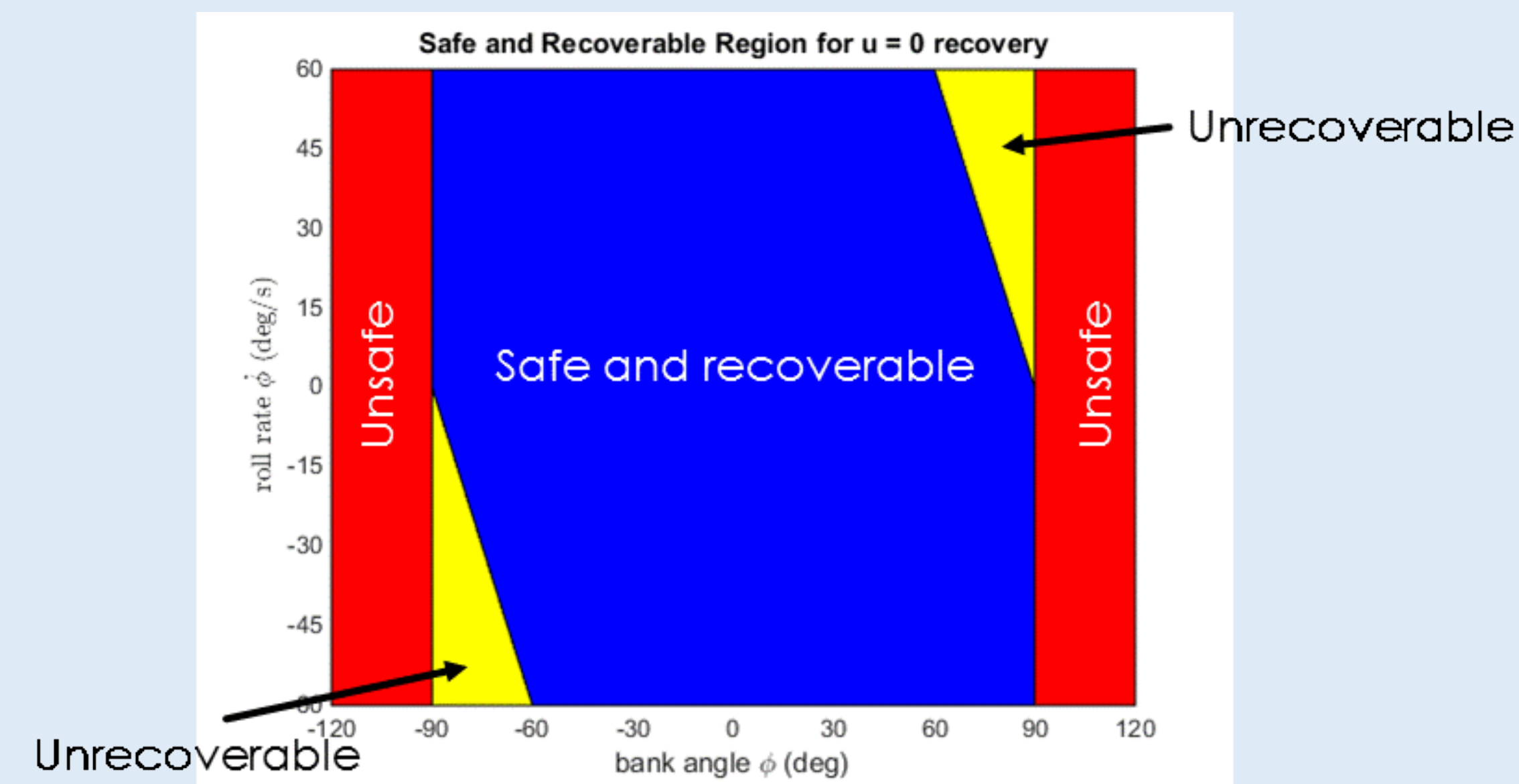
Lloyd Hook, Mark Skoog, Matt Clark, Dave Sizoo, James Brady

General Aviation is statistically safe when compared driving or flying commercially. Automatic systems could help, in fact even simple autopilots could reduce mishaps significantly



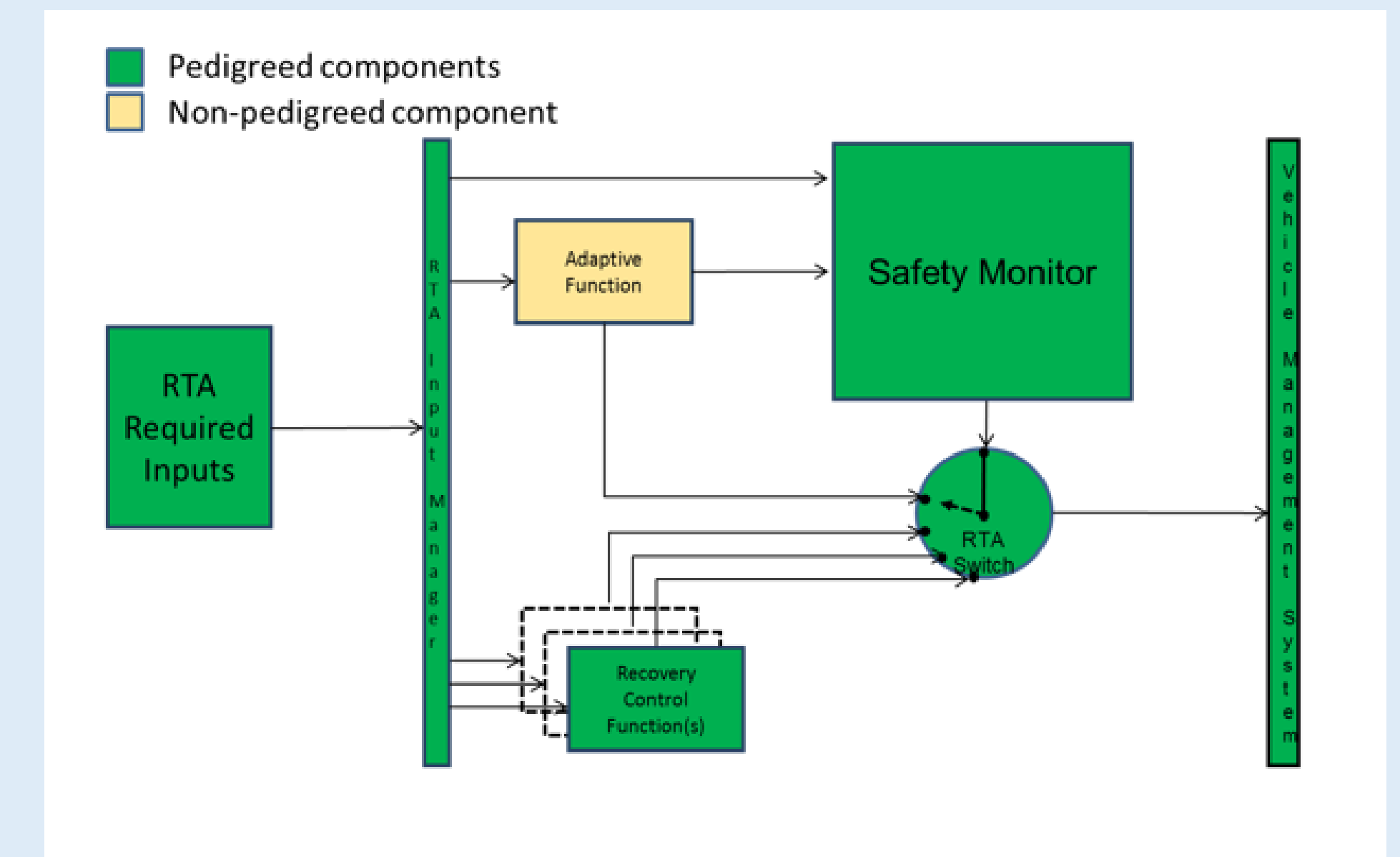
Due in part to overly burdensome certification costs, autopilots can be more expensive than the airplanes upon which they would go on. Can we bound behavior of an autopilot to remove its safety criticality and thus make it cheaper and easier to certify? Can we use the pilot as a "certified backup" to the autopilot?

If the pilot is the recovery controller, how do we take into account his recovery (i.e. reaction time, control input)? For instance, in the case of roll control... A roll controller autopilot, a RTA system, and a manual pilot backup. We will have to adjust the RTA switch to take into account the manual pilot control.



How do we gain acceptance for the use of these techniques as a means of compliance for certification authorities?

ASTM working group 53403 is comprised of members of industry, NASA, and the FAA to recommend best practices which could be used to as a means of compliance for the certification of non-pedigreed autopilot systems.



Exploring the bounds of recovery behavior from immediate optimal recovery to no recovery input. The only way we must change the system is to change the boundary for switching.

