

Glider Accident Rates – Validating the estimates
by Richard Carlson SSF Trustee

In April the SSF published the 2017 Annual Accident Report. As usual, the report contains the number of accidents that occurred during the 12 month period from November 1, 2016 – October 31, 2017. While this report compared the number of accidents in 2017 to those that occurred in previous years, it cannot be used to draw good statistically valid conclusions on the accident rate in the U.S. To do that we need to know the number of flight hours flown during that same time period.

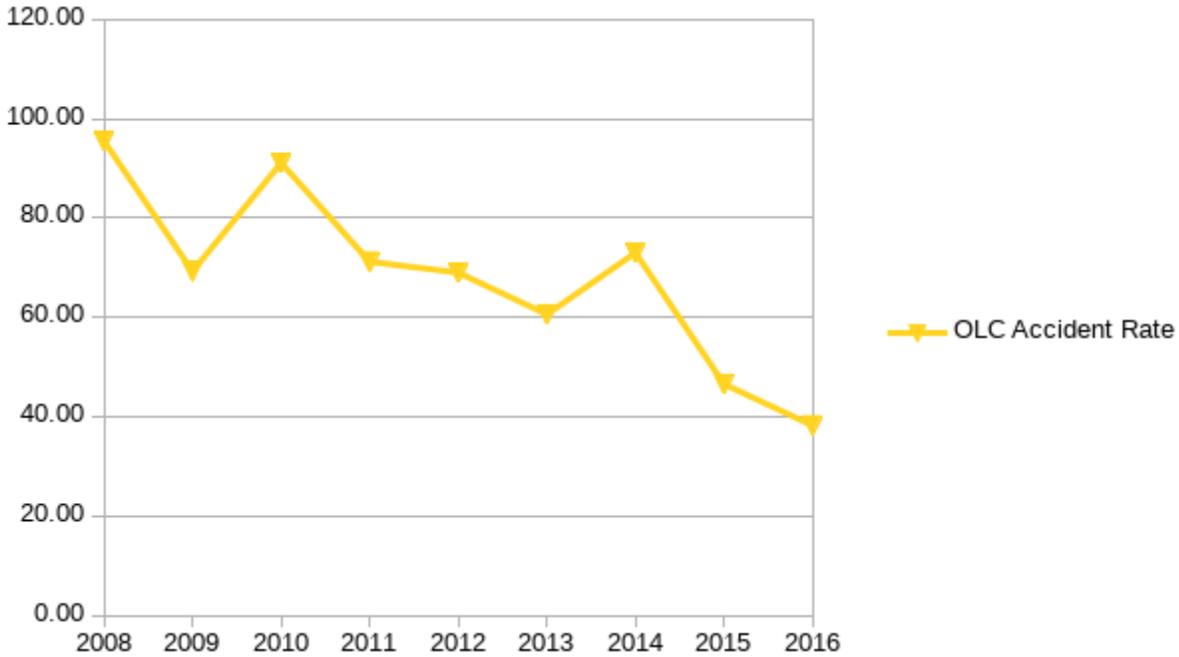
Getting flight hour data has stymied the SSF since it was formed in 1981. Try as we might, the community has been unable to reliably submit flight hours to the SSF. However, getting this data is crucial to understanding if the decline in accident numbers is due to a lower accident rate or just fewer pilots flying fewer hours.

At the 2018 Soaring Convention I gave a presentation on the U.S. glider accident rate, using several proxies and assumptions. The presentation, available on the <http://www.soaringsafety.org/presentations/presssa.html> web page, shows how these proxies and assumptions were generated and what they say about accident rates. The absolute number given by these proxies and assumptions is suspect, or flat out wrong, but all of them show the same trend. The Accident Rate for gliders has been declining for the past few years. Here's a summary of that talk.

OLC Data:

The international On-Line Contest (OLC) web site has downloadable files that can be filtered to show the number of flights and miles flown by U.S. pilots. There is also a file that contains the best flight for each contestant, which includes the task speed and distance for that flight. This allows us to calculate the number of hours the contestant flew. Using that data, and making an assumption that the rest of the flights made by each pilot are 80% shorter, then it is possible to estimate the average number of hours OLC pilots flew per year from 2007 to 2016. Using this number, approximately 30,000 hours/year, as a proxy we see an glider accident rate as shown in figure 1 (accident rate per 100,000 hours vs year).

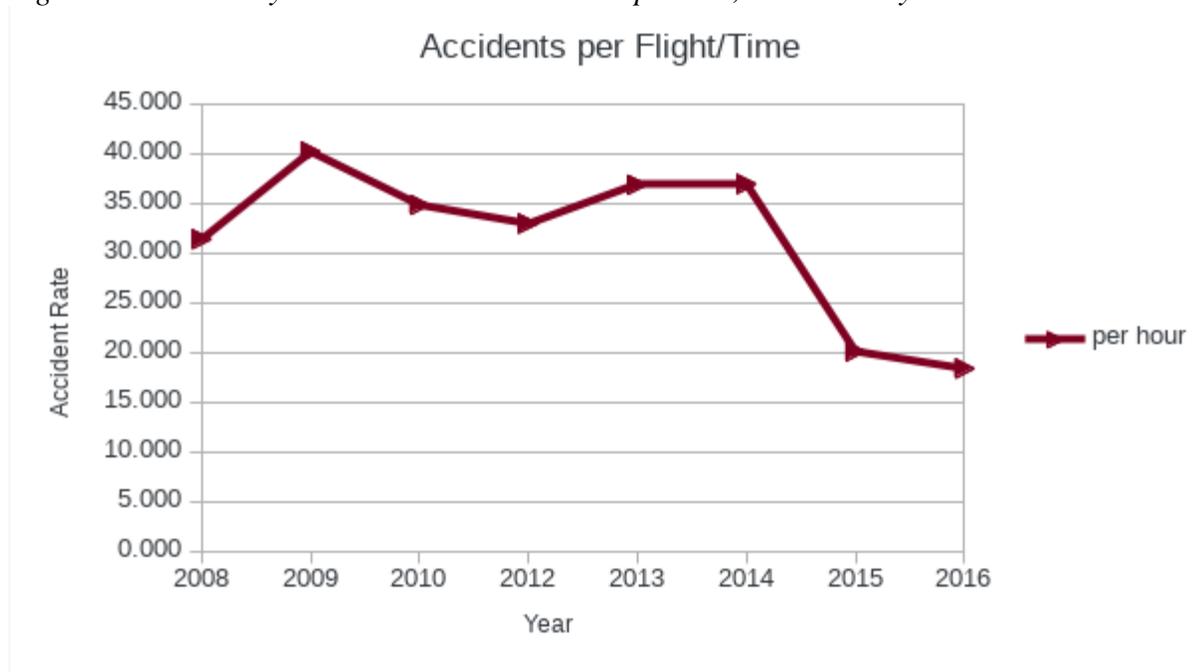
Figure 1: OLC data derived accident rate per 100,000 hours vs year



FAA Survey Data:

Every year the FAA sends a random subset of glider pilots, clubs, and commercial operators, a post card requesting that they go on-line and fill out a usage survey. This survey data is then placed on the FAA web site and the files can be downloaded for review. Using this data, approximately 90,000 hours/year are flown by U.S. glider pilots. As a 2nd proxy we can again we can plot the glider accident rates for the U.S. glider population. This data is shown in figure 2 (accident rate per 100,000 hours vs year).

Figure 2: FAA Survey data derived accident rate per 100,000 hour vs year

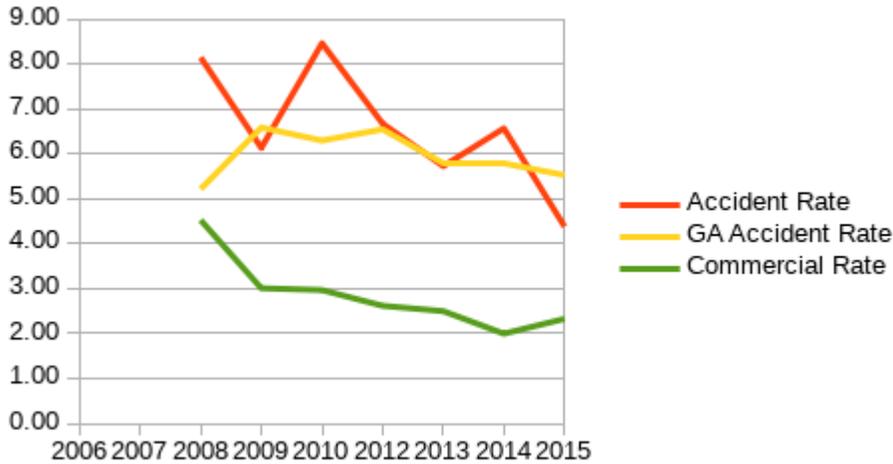


Finally, the FAA has 2 downloadable databases that can be used as a 3rd proxy. The first database contains the number of gliders registered in the U.S. The second database contains the pilot certificate information for individuals with U.S. pilot certificates. Knowing the number of gliders and the number of glider pilots is a good starting point. What we need are a couple of estimates as to how many hours these gliders and pilots can fly each year.

To find an upper bound I assumed that every glider would fly 8 hours a day for 78 days. That would be every weekend day for 9 months. That number is approximately 2 million hours per year. Clearly nobody believes that we actually fly 2 million hours per year, it is simply meant to be an upper limit that will never be reached.

Next I took the pilot population and assumed that 45% of the licensed glider pilots flew each year. I also assumed that 1% flew 200 hours/year, the majority (22%) flew 3 hours/year, and the remainder flew different numbers of hours between these to extremes. I then estimated the number of student pilots who start training each year and further estimated they flew 39 hours each year (1 hour/week for 9 months). This gave me a total of approximately 410,000 hours of flight time per year. Figure 3 show the glider accident rate (accident rate per 100,000 hours vs year) and compares that to the General Aviation accident rate and to the non-airline Commercial aviation accident rate.

Figure 3: SSF estimate data derived accident rate per 100,000 hours vs year



As can be seen from the above graphs, the number of hours shown in the OLC, FAA Survey, and Pilot estimation vary dramatically. To repeat ourselves, the accident rate/100,000 hours values shown in each of the graphs is suspect or flat out wrong. However, it is noteworthy that each graph shows a decline in the accident rate over the past 10 years. While this is encouraging, we still want to know what the real number is!

Now it is time for every club, chapter, and commercial operator to step up and help the SSF obtain this missing data. What is the real glider accident rate in the U.S.? The SSF Board of Trustees has decided to take 2 approaches to get this data.

- 1) We have asked the soaring contest community to provide us with the number of launches and number of flight hours from each sanctioned glider contest. The contest committee will look for ways to easily extract this information and submit it to the SSF.
- 2) The SSF will contact every club, chapter, and commercial operator, via email and US postal mail, in the U.S. asking that they annually submit, on a voluntary basis, the following 6 pieces of information:
 1. The number of gliders located at your field
 2. The number of club/commercial gliders located at your field
 3. The number of tow-planes and/or winches at your field
 4. The number of launches (broken down by type) you gave
 5. The number of club/commercial glider launches you gave
 6. The number of hours your club gliders flew

You will notice that we are not asking for the number of hours the privately owned gliders fly. We realize that the club/commercial operator probably doesn't have that information. The SSF will attempt to obtain that in other ways.

Getting real data from the SSA membership will go a long way towards giving us realistic accident rates. We can then compare these rates to our European colleagues to see how we fair. We can compare the data to General Aviation and Sport Aviation communities to see if there are common elements that we can all work to solve. Most importantly, we can demonstrate to ourselves and our



community that Soaring pilots really are developing the Risk Management skills needed to fly safely while having fun doing so.

So, step up and submit your data. The SSF letter/email will provide details on how to submit your club, chapter, commercial operate data.

