

2004 U.S. Paragliding Accident Summary
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USHGA received 63 reports of paragliding incidents and accidents in 2004, a substantial decrease since 2003. Fifteen of the reports (24%) were about incidents. **Incidents** are broadly defined as any outcome of a flight that was not intended by the pilot but did not result in an injury. Forty-eight of the reports (76%) were for **accidents**, which are defined as any event resulting in an injury to the passenger or pilot.

Tandem Accidents

There were a total of five tandem accidents reported this year, resulting in injuries to five pilots and two passengers. Unfortunately, the first tandem paragliding fatality in the US occurred this year. A highly experienced tandem instructor was taking a good friend on an XC flight. They encountered severe turbulence from a thermal or shear while en route to an LZ. This resulted in a large asymmetric collapse and rapid rotation of the glider at about 250 feet above the ground. The tandem instructor was unable to recover, and unable to deploy the reserve. Inspection of the equipment after the crash revealed that the spreader bar appeared to have failed as a result of the g-forces imposed by the rapid rotation of the glider. The resulting weight shift caused a locked-in spiral from which the tandem instructor was unable to recover. Although the pilot and passenger survived the initial impact, the passenger died from internal injuries before help could arrive. The tandem instructor was seriously injured but recovered.

Another accident occurred when a tandem instructor performed a SAT as a descent technique in high winds. This aerobatic maneuver was initiated at approximately 500 feet over the ground. The maneuver resulted in a collapse and stall, with the pilot and passenger landing on a parked car. The tandem instructor escaped serious injury, but the passenger sustained serious injuries including a fractured back. Witnesses commented that the suspension of the car cushioned the impact and probably prevented more serious injuries. Needless to say, tandem aerobatics with minimal ground clearance is not a good idea.

Two other tandem accidents occurred when the pilots were dragged on launch during inflation, one from a dust devil which occurred just before the passenger was hooked in.

Equipment Failures

Equipment failure played a role in three major accidents this year. In the fatal tandem accident, a spreader bar appears to have failed as a result of g-forces that resulted from a turbulence-induced collapse and spiral. The picture shows the spreader bars in normal flight configuration, and what occurred when the stitching of the spreader bars failed as a result of g-forces.



Figure 1 – Normal spreader bar on left, and failed spreader bar on right showing resulting hang position of passenger after failure.

Another solo pilot had the riser attachment point on the harness fail while using a spiral to descend. The harness was an older model, and inspection after the accident revealed that the nylon webbing on the harness was worn by friction with a metal buckle used to adjust the length of the riser attachments. This also resulted in a locked-in spiral dive, from which the pilot was unable to recover.

Pilots should carefully inspect harnesses for abrasion of webbing and stitching. This is particularly critical at areas where webbing is pinched or bent by buckles. These can significantly weaken the strength of critical points such as riser attachment points or tandem spreader bars. The results of a failure at these points can be catastrophic. Pilots should be aware that the g-forces induced by turbulence or intentional aerobatic maneuvers can exceed the design strength of their equipment, particularly if the equipment has been weakened by use.

Paragliding manufacturers design equipment for the forces that can be expected in routine flight, and they include a safety factor to try and allow for unexpected variances. But no aircraft will survive every imaginable in-flight stress. The pilots of American Airlines Flight 587 demonstrated this in November 2001. They had been trained that while flying at or below the maneuvering speed of the airplane, that they could use full deflection of the rudder pedals in response to turbulence. However, the combination of forces generated by a wing vortex, plus the

force from using full rudder, resulted in the tail breaking off their airplane. Paragliding manufacturers should publish recommendations for how frequently to inspect and replace equipment, and should continue to publish airworthiness directives to pilots if equipment fails unexpectedly.

A third serious accident resulted during experimental aerotowing of a paraglider by a powered ultralight. The paraglider climbed higher than the tow plane, resulting in an “upset” where the tail of the towplane was lifted, causing an unrecoverable dive. The pilot of the tow aircraft was seriously injured. The paraglider pilot landed safely. The investigation pointed out that there was not a weak link in the tow system, although the tow bridle did fail during the incident. Towing paragliders, regardless of the equipment used to tow, should only be done with an appropriately sized weak-link to prevent lockout and excessive tow forces.

Fatalities

There were four paragliding fatalities in 2004, a decline from the previous two years. One fatality was the tandem passenger mentioned above. Another pilot appears to have been incapacitated in flight, perhaps by a medical condition. He was observed flying a coastal ridge in smooth ridge conditions and then landing in the ocean without making any visible inputs on the controls. One pilot was found dead in a field during a competition at a site well known for dust-devils and strong thermals. Although the accident wasn’t witnessed, it appears that the pilot experienced a spin or spiral and was unable to deploy the reserve. Finally, a relatively inexperienced pilot became entangled in his glider and impacted the ground. Although the initiating event in this accident was not witnessed, pilots on the ground saw the canopy plummeting to the ground with the pilot entangled in the canopy.

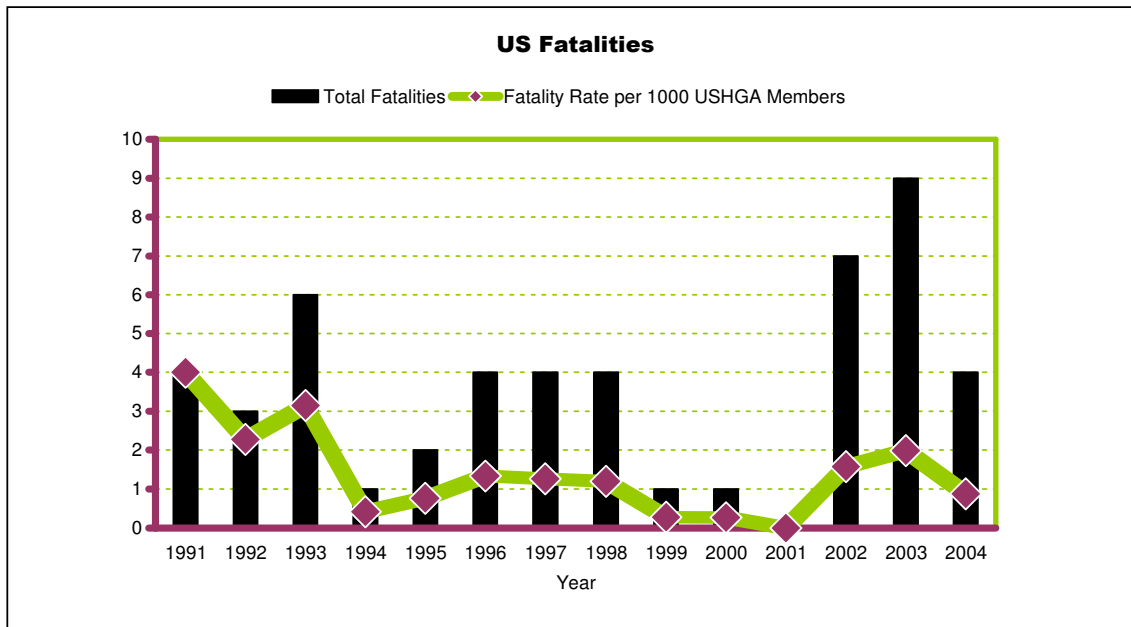


Figure 2 - Fatality rate summary

The average number of paragliding fatalities in the US per year from 1991-2004 is 3.5. Since paragliding is unregulated, we don't have reliable numbers of pilots or flight hours to use as denominator data for calculating accident rates. The number of USHGA paraglider members is the only consistent data we have for calculating accident rates. In 2004, the number of fatalities per 1000 USHGA members was 0.87. This is a decrease from the average of 1.38 since 1991.

The remains of Ron Rosepink, who disappeared in 2003 and was presumed dead, were located in California this year. Scotty Marion, who disappeared in the Alps last year, has not been located.

Location & Severity of Injuries

Forty-four pilots or passengers were injured. Of these, 37 received treatment in a hospital, and 27 were hospitalized overnight. Injuries were distributed as follows:

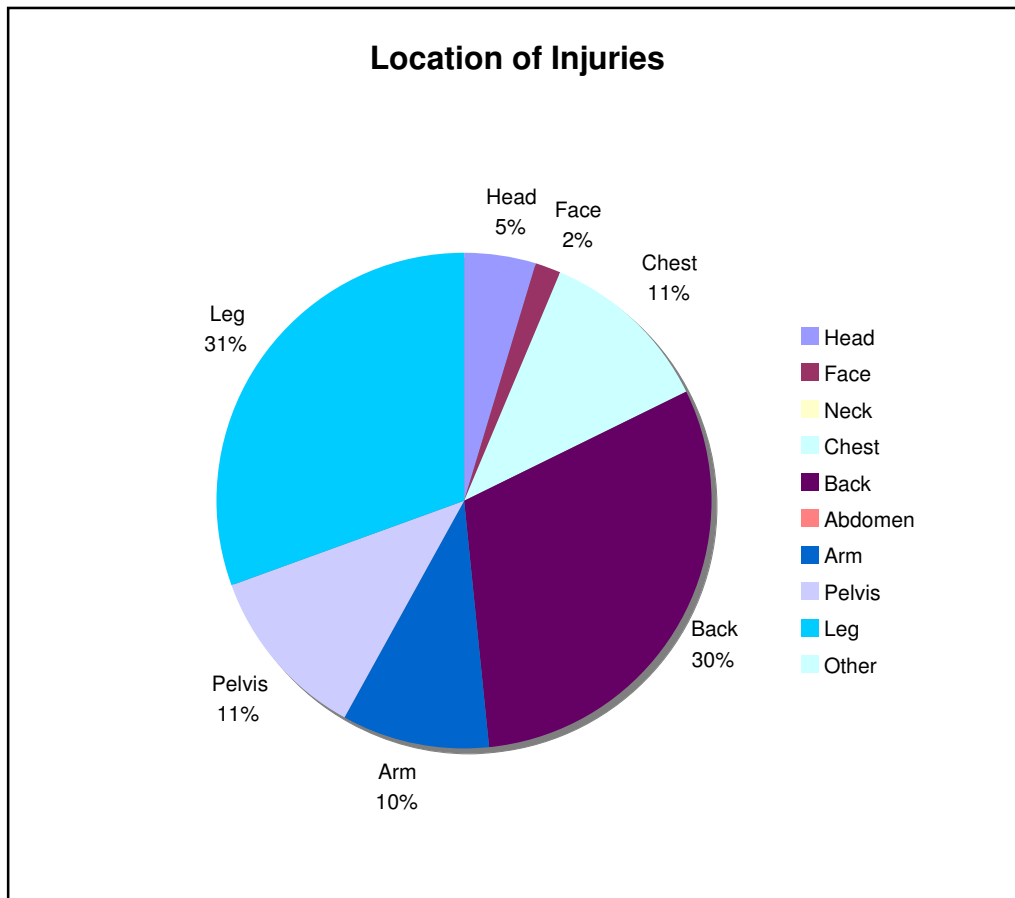


Figure 3 - Location of injuries

Of the 19 back injuries, 12 (63%) were fractures. The same percentage of leg injuries resulted in fractures. Spine and leg fractures remain the most common causes of long-term disability for pilots.

Phase of Flight

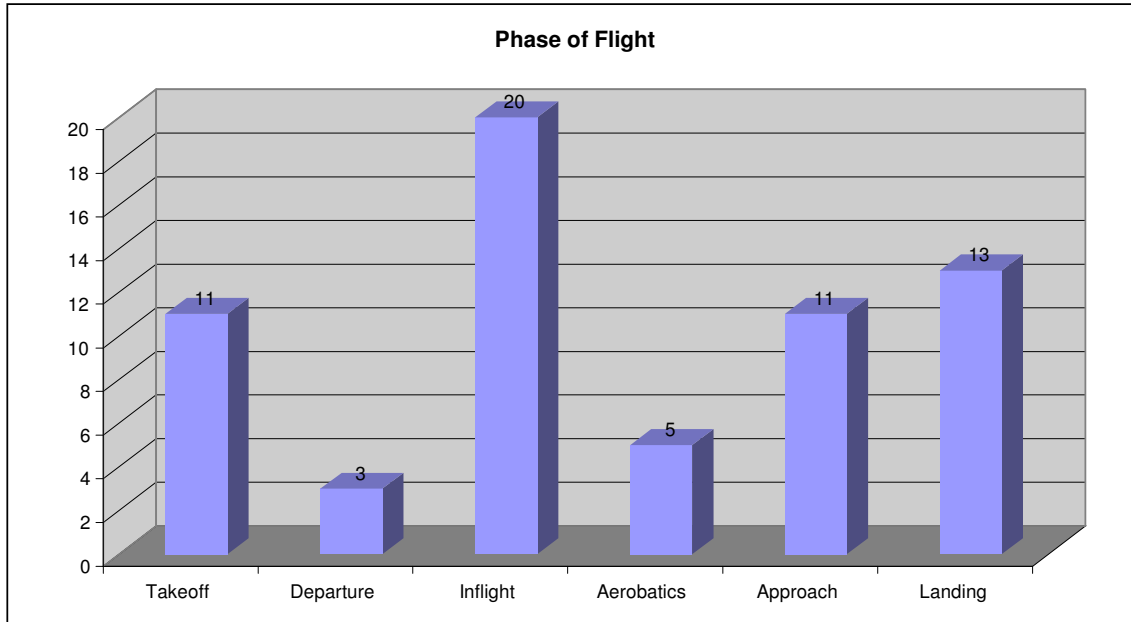


Figure 4 - Phase of Flight

Twenty-four reports (38% of the reports received) were for accidents occurring during approach or landing phases of flight. This remains the highest risk phase of flight. There were fewer reports of launch incidents and accidents this year. Twenty reports were received about in-flight events. This was an increase in the percentage of accidents attributed to in-flight events.

Contributing Factors

There are a total of 37 unique contributing factors reported. The twenty most common contributing factors are summarized in the table below. The percentages in the table are the total percent of reports that cited that factor as a cause. Since most accidents have several contributing factors, so the percentages add up to more than 100%.

Thermal Turbulence	13	21%
Outside LZ	10	16%
Rotor	9	14%
Too close to Ground	8	13%
Poorly Inflated Takeoff	7	11%
Under Instruction	7	11%
Preflight Error	6	10%
Aerobatics	5	8%
Strong Wind	5	8%
Turning in LZ	5	8%
Asymmetric Deflation	5	8%
Stall	4	6%

Launch obstacle	4	6%
Line Tangle	4	6%
No Brake Flare	3	5%
Equipment Failure	3	5%
Negative Spin	3	5%
Dragged by wind	3	5%
dust devil	3	5%
Obstacle in LZ	2	3%
Mid-Air Collision	2	3%
Spiral Dive	2	3%
Water landing	2	3%
Power Lines	2	3%
Reserve Not used/too late	2	3%
Tow launch	2	3%

Figure 5 - Contributing factors

A few of these factors deserve special mention. The majority of incidents occurring in-flight and on approach cited thermal or rotor turbulence resulting in asymmetric spirals close to the ground. Of the approach and landing accidents, five of the thirteen accidents cited turning close to the ground to avoid obstacles. There were two power line accidents this year, neither resulted in serious injuries.

There were five reported aerobatics accidents, resulting in three severe injuries, two with back fractures and one a pelvis fracture. All of the aerobatic incidents or accidents occurred while doing aerobatics over the ground with low clearance. There were no aerobatic fatalities

Pilot Rating

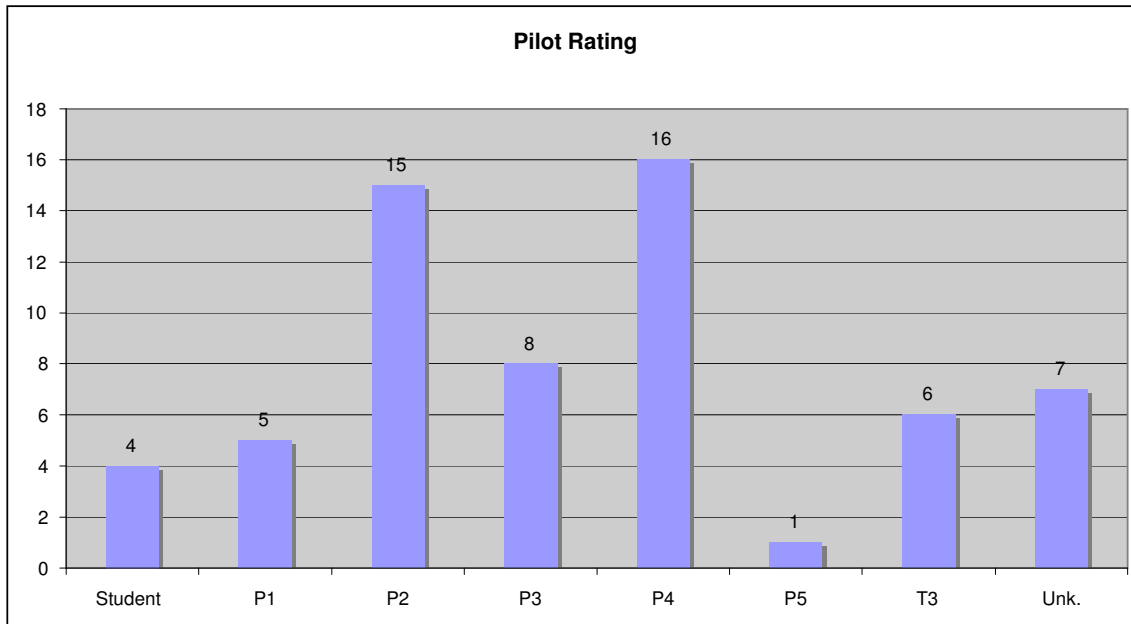


Figure 6 - Pilot Rating

Rating of Wing

<u>DHV</u> <u>Rating</u>	<u>#</u>	<u>%</u>
1	13	21%
1-2	17	27%
2	10	16%
3	2	3%

Reserve Deployments

There were a total of eight reserve deployments. Six pilots landed without injury. Two pilots were injured, one with a fractured back and the other with a fractured pelvis. In both cases, the reserve did not deploy fully prior to impact, either because the pilot was too low or the reserve didn't reach full extension.

Thanks for your reports!

We have seen a gratifying response from pilots to our requests for reports. Worthy of special mention is the San Francisco Bay Area Paragliding Association, as well as the many instructors who encourage students and new pilots to report. Pilots may submit reports online at <http://www.ushga.org/emailacc.asp> or use paper forms available on the website or from USHGA. Although we believe most of the serious injury accidents get reported, we know that many minor and non-injury accidents do not. As a result, this report will tend to overestimate the severity of injuries. These statistics are only meaningful if pilots complete reports. Keep them coming!

Jim Little is a P3 pilot, family physician and FAA Medical Examiner who lives in Portland, Oregon.