Why do helicopter crashes like Kobe Bryant's keep happening?

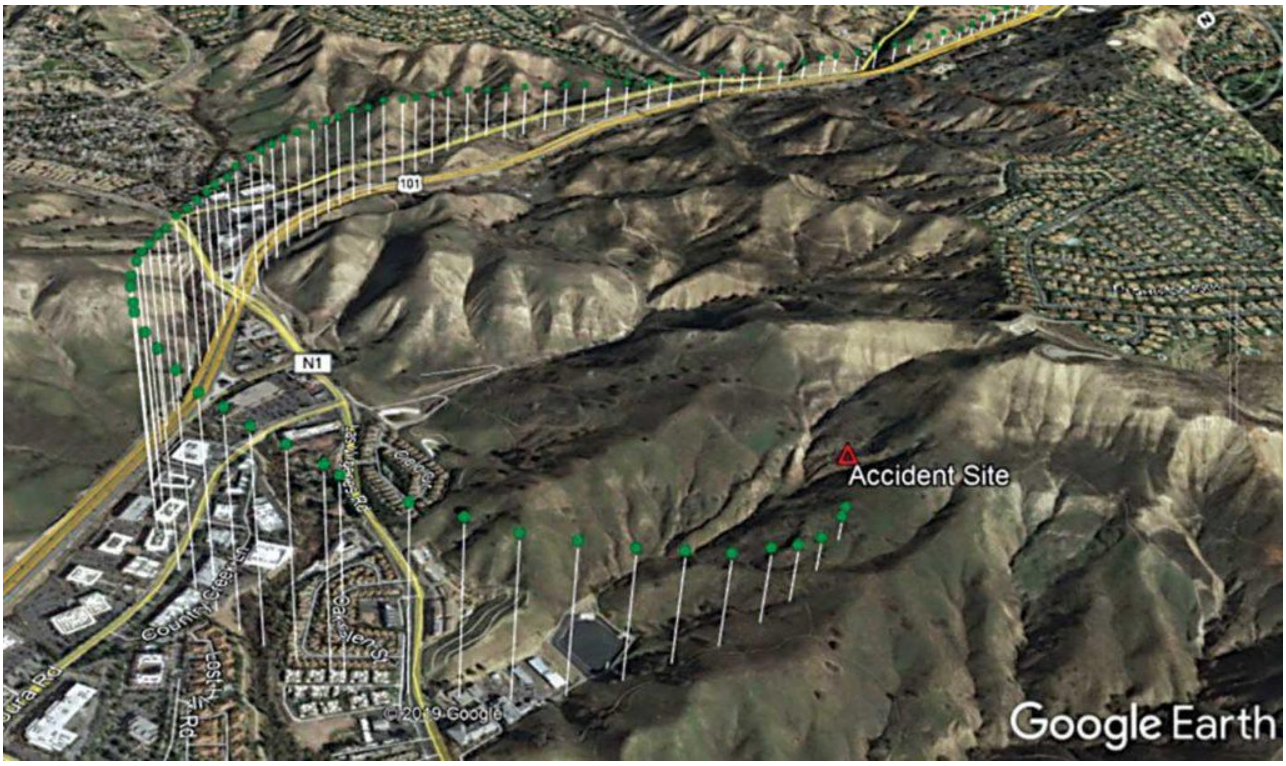
Posted on April 7, 2020 by Elan Head

On the morning of Sunday, Jan. 26, I woke up in a hotel room in Camarillo, California. I had been scheduled to do some flight training out of the Camarillo Airport that day, but canceled the night before after coming down with a head cold. When I looked out the window, I saw that I wouldn't have been doing much flying that morning anyway: the fog was so thick I could barely see across the street.

NTSB investigator Carol Horgan examines the wreckage of the Sikorsky S-76B that crashed near Calabasas, California, on Jan. 26, killing nine people including Kobe Bryant. NTSB/James Anderson Photo

Some time later, at 9:45 a.m., a Sikorsky S-76B helicopter en route to Camarillo from Orange County slammed into a hillside in Calabasas. All nine people on board were killed, including basketball legend Kobe Bryant and his 13-year-old daughter, Gianna.

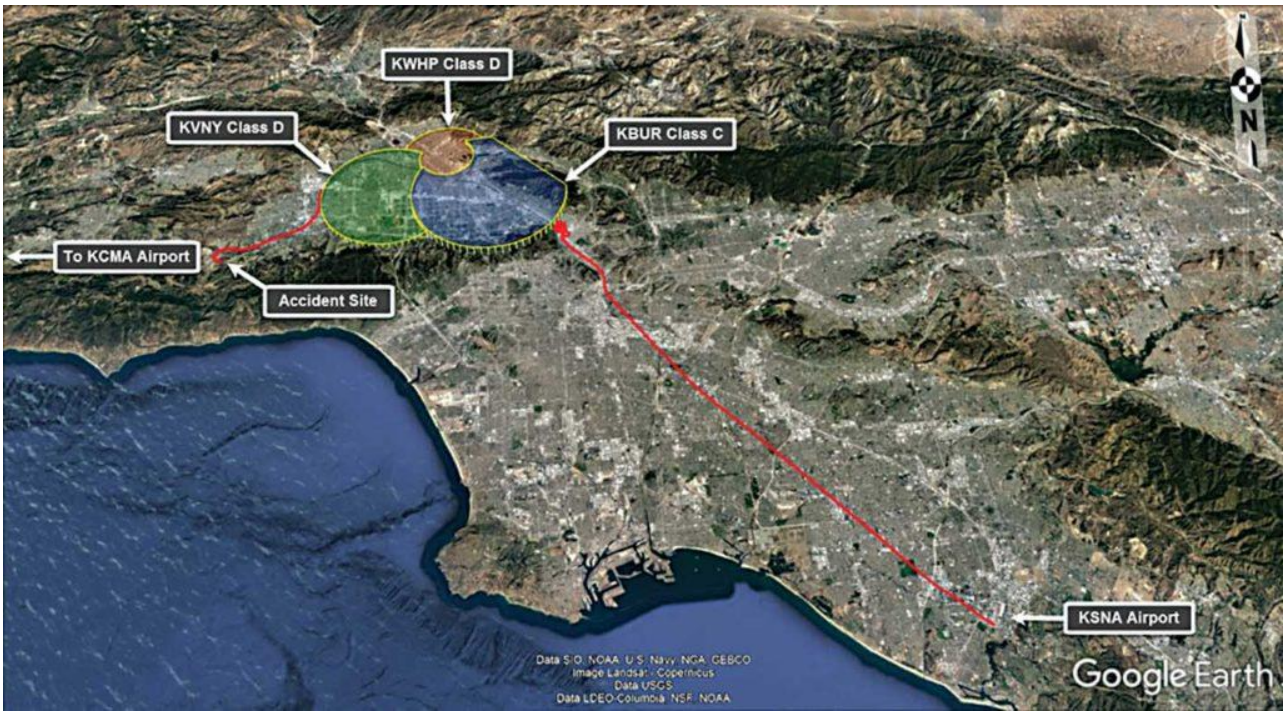
The circumstances of the accident flight have been exhaustively documented by mainstream media outlets and legions of bloggers, thanks to a wealth of publicly available radar data and air traffic control recordings. The National Transportation Safety Board (NTSB) confirmed that the helicopter departed John Wayne Airport at 9:06 a.m., proceeding northwest toward Burbank Class C airspace, which was under instrument flight rules (IFR) at the time. An air traffic controller there asked pilot Ara Zobayan to hold for IFR traffic for 12 minutes, then granted him a special visual flight rules (VFR) clearance to transit the airspace — which is not an unusual clearance for helicopter pilots to receive.



An overview of the flight path and relevant airspace for the Jan. 26 helicopter flight that carried Kobe Bryant. NTSB Image

Zobayan indicated that he planned to follow Highway 101 westbound and was handed off to a controller at neighboring Van Nuys Airport. As he was passing out of Van Nuys airspace, he reported VFR conditions, and the controller told him to contact Southern California Terminal Radar Approach Control for radar advisory services. But when he checked in with SoCal Approach at 9:39 a.m., he was told that his altitude of 1,500 feet mean sea level (MSL) was too low to maintain radar contact — which is not an unusual thing for helicopter pilots to hear.

Six minutes later, Zobayan again contacted SoCal Approach to advise he was climbing above cloud layers, and requested advisory services. The controller — a different one this time — asked him to identify the flight and state his intentions. In his last radio transmission, Zobayan said he was climbing to 4,000 feet. Indeed, radar data showed the S-76 climbing steadily up to 2,300 feet MSL, which was later revealed to be just 100 feet below the top of a widespread cloud layer.

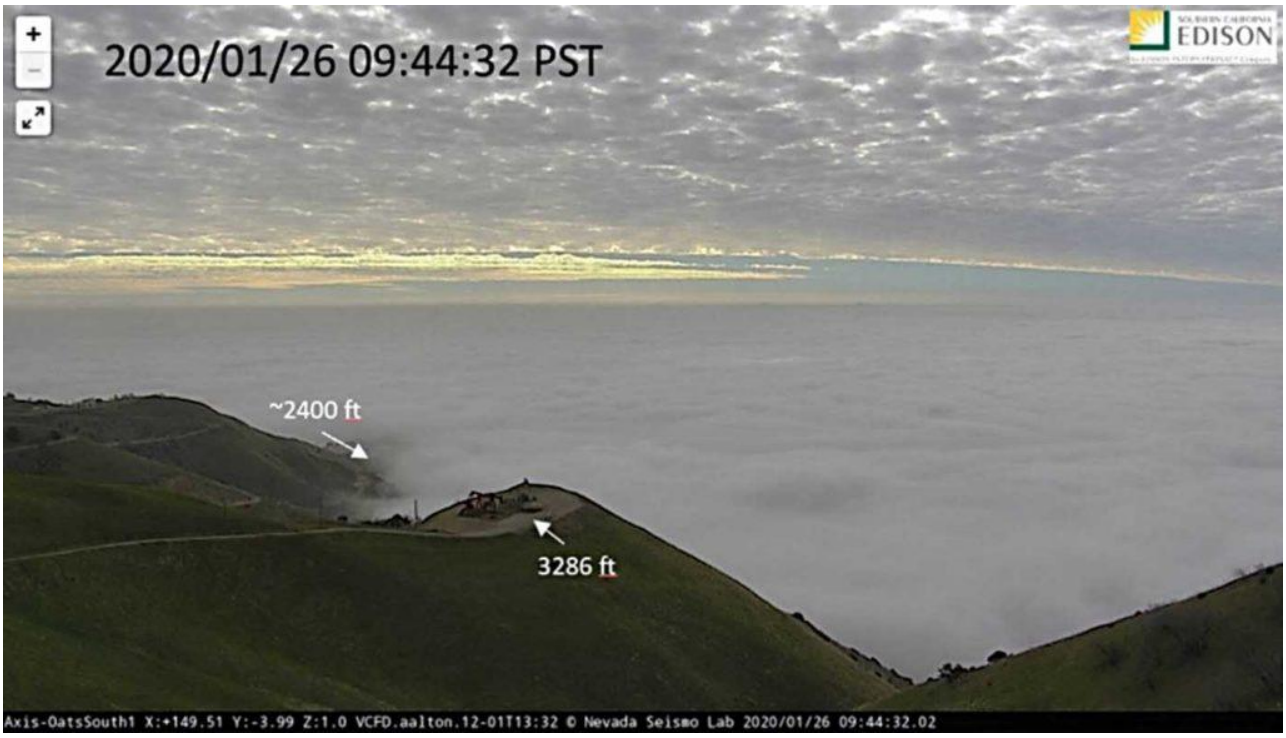


ADS-B returns for the last minute of the flight. NTSB Image

But then the helicopter started a left turn. Eight seconds later, while continuing to turn, it also began descending, eventually reaching an alarming descent rate of over 4,000 feet per minute. A witness on a misty mountain bike trail below saw the blue-and-white helicopter emerge from the clouds on a forward and descending trajectory, roll to the left, then impact terrain about 50 feet (15 meters) below him, carving out an impact crater two feet (nearly a meter) deep.

That's not an unusual thing for helicopters to do, either.

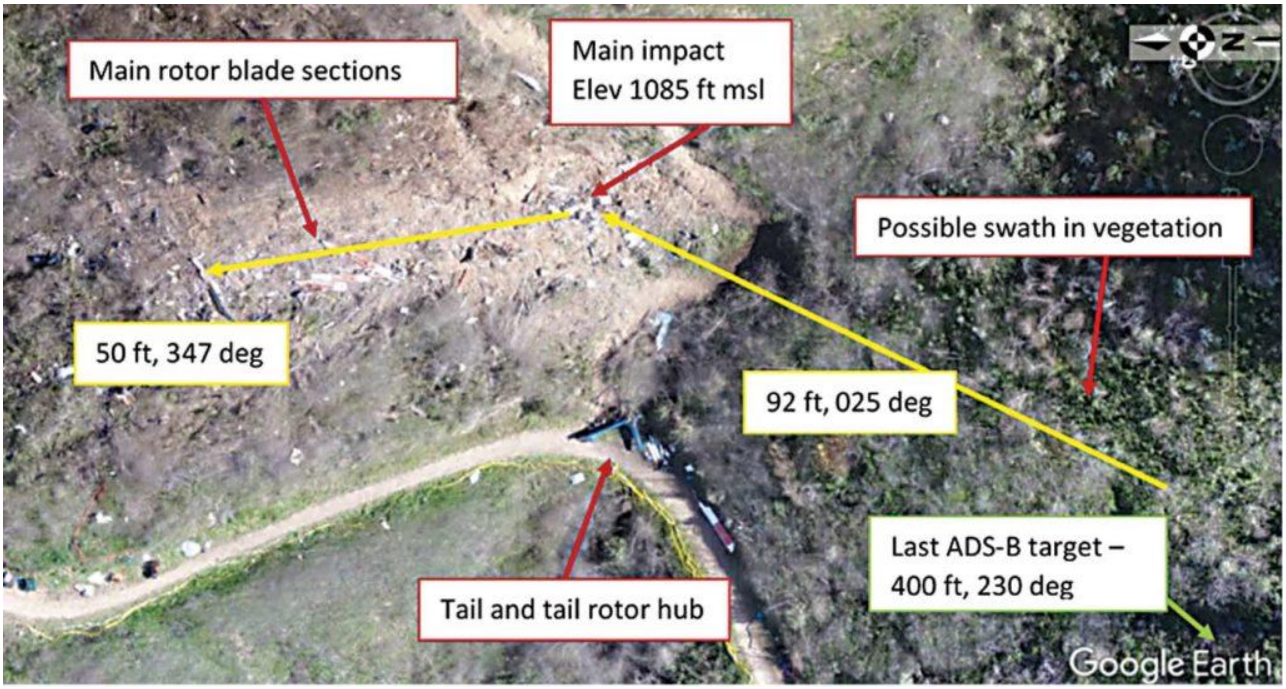
The fact is, whatever the NTSB's investigation may ultimately reveal about the cause of this crash, no one I know in the helicopter industry is particularly perplexed by it. That's because the broad circumstances of the accident — a VFR helicopter flies into clouds, and crashes into terrain a short time later — are all too familiar.



A weather camera image shows the top of the surrounding cloud layer at the approximate time of the crash. NTSB Image

In 2015, I compiled a spreadsheet of such accidents in the United States for the period from 2001 to 2013. (There are also many of these accidents outside the U.S., but the NTSB provides a uniquely comprehensive and searchable database.) I found that helicopter accidents that fit the classic profile of continued VFR flight into instrument meteorological conditions (IMC) — typically associated with loss of control due to spatial disorientation — occur in the U.S. on average around three or four times a year, and are usually fatal.

After the Kobe Bryant crash, I went back and updated my spreadsheet, finding that not much has changed. If anything, 2019 may ultimately prove to have been a particularly deadly year for such "inadvertent IMC" events, depending on the outcome of the NTSB's investigations (which are complete for this set of accidents only through early 2018).



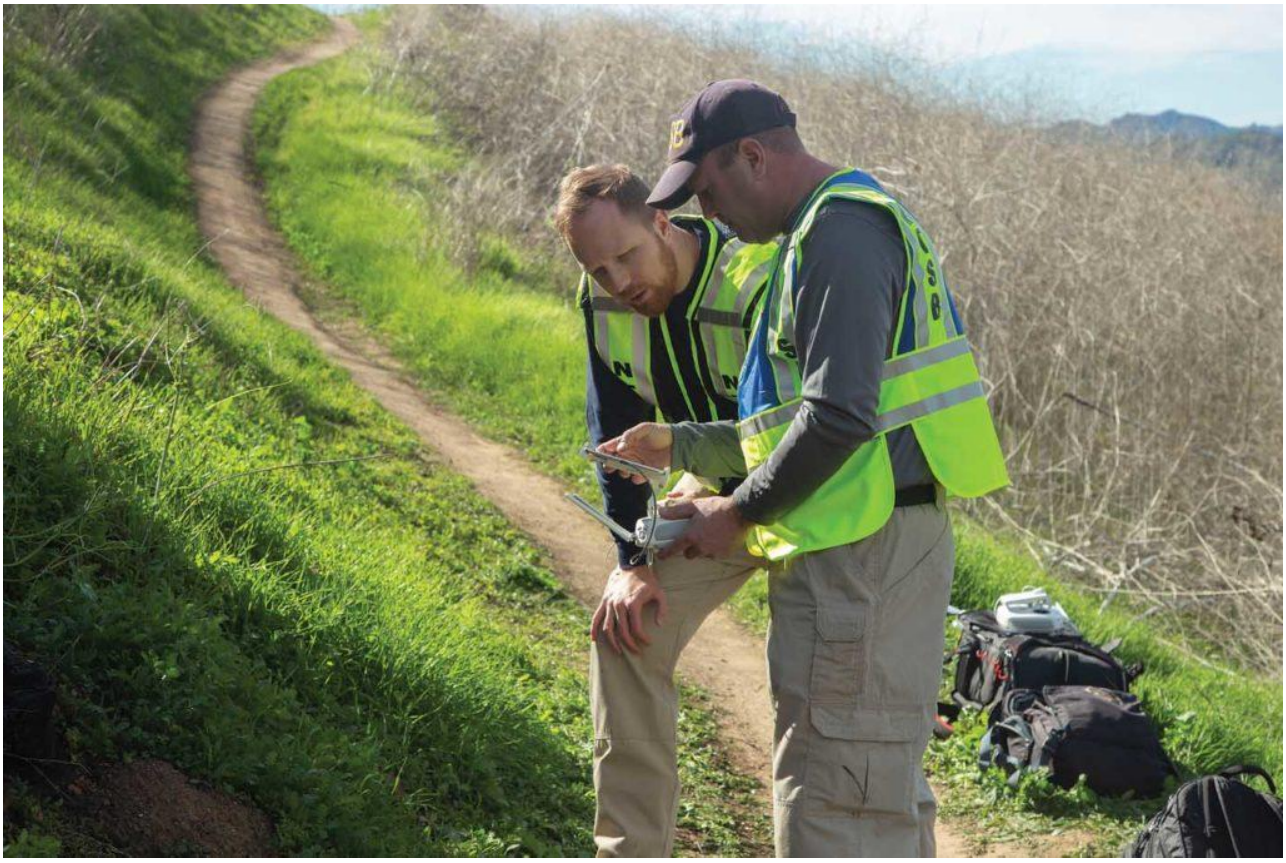
A map of the wreckage area near Calabasas. NTSB Image

That suggests that nothing the Federal Aviation Administration (FAA) and the helicopter industry have done since 2013 has been particularly effective in preventing these accidents from happening. Here's a short list of some of the things we've tried: raising the minimum flight visibility for helicopters to a half mile, requiring air ambulance pilots to hold instrument ratings, requiring air ambulances to have helicopter terrain awareness and warning systems (HTAWS), requiring part 135 helicopters to have radar altimeters and part 135 pilots to be trained for inadvertent IMC recovery, telling pilots to "land the damn helicopter" in deteriorating weather, and, for my own part, writing countless safety-oriented articles like this one.

None of these have worked. Is there something that would? Or is the helicopter industry not actually capable of meaningful change?

Instrument ratings don't help

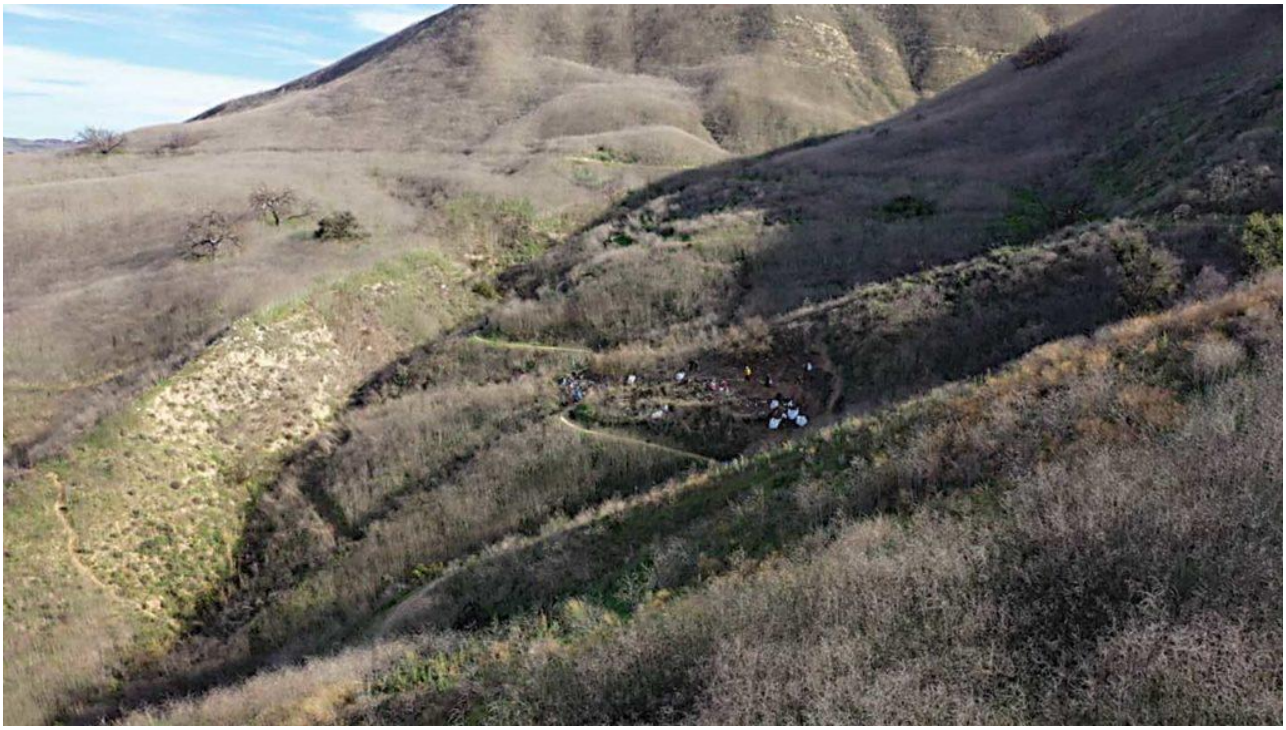
The motivation for my original spreadsheet was to determine how often VFR-into-IMC accidents involved pilots who, like Zobayan, held helicopter instrument ratings. Requiring instrument ratings is often held up as one solution to the problem — as is currently the case in Hawaii, where state lawmakers are advocating for all helicopter tour pilots to hold instrument ratings.



NTSB investigators Aaron Sauer and Josh Lindberg prepare a drone for mapping the debris field from the Jan. 26 helicopter crash. NTSB/James Anderson Photo

As regularly as these accidents occur, they're mercifully still too rare to invite rigorous statistical analysis, so my conclusions were limited. But I observed that fully half of the pilots involved in VFR-into-IMC helicopter crashes in the United States between 2001 and 2013 held helicopter instrument ratings, and the pilots in another six accidents held airplane instrument ratings. Moreover, because these pilots tended to be commercially employed and carrying passengers or crewmembers, they were responsible for 22 more fatalities that non-instrument-rated pilots, who were often private pilots flying personal aircraft.

When I looked at VFR-into-IMC accidents from 2014 through January 2018, I found that the percentage of these pilots with a helicopter instrument rating was even higher — over 70 percent — and that they were responsible for 23 fatalities, compared to five fatalities for the non-helicopter-instrument-rated pilots. This likely reflects the fact that an instrument rating has become an increasingly common employment requirement for helicopter pilots, as through the FAA's 2014 rule requiring them for helicopter air ambulance pilots.



A still image from a drone video duplicating the accident helicopter's flight path. The image captures the position and altitude of the last ADS-B target of the helicopter. NTSB Image

In the immediate aftermath of the Kobe Bryant crash, many fixed-wing pilots expressed regret that Zobayan, who was flying an IFR-certified helicopter, had not chosen to file IFR (only later did the FAA confirm that his employer, Island Express Helicopters, was certified for VFR operations only). But as I pointed out in the 2015 article for which I compiled my original spreadsheet, a helicopter instrument rating means something very different in the U.S. than an airplane instrument rating does. An instrument-rated airplane pilot has almost certainly flown in actual IMC, and almost certainly has an IFR-certified airplane at their disposal. An instrument-rated helicopter pilot, not so much.

Take my own example. Like Zobayan, I hold not only a helicopter instrument rating, but also an instrument instructor rating. That means I am qualified to train students for helicopter instrument ratings, and have actually done so. But I have exactly zero actual instrument time. Even at my sharpest, I had very little experience in the IFR system and very little familiarity with the autopilots that are typically required for actual IFR flight. At this point, it has been years since I've even done an instrument proficiency check.

Security camera footage captured the S-76 (circled in red) flying into clouds shortly before it impacted terrain. Photo courtesy of NTSB

The FAA has tolerated this double standard for instrument training because it is the only remotely cost-effective way to introduce pilots to helicopter IFR flight. And this is partly the FAA's fault. Helicopters have always been more difficult than airplanes to manage in the clouds because of their inherent instability: take your hands off an airplane's yoke for a few seconds and it will probably keep flying; take your hands off an unstabilized helicopter's cyclic for the same amount of time and it will probably crash. So helicopter autopilot technology demands a certain baseline level of sophistication, and the weight penalty associated with older automatic flight control systems and gyroscopic instruments made them generally impractical in light, single-engine helicopters.

In 1999 and 2001, however, revisions to FAA policy guidance made IFR certification of single-engine helicopters even more impractical. First, the FAA incorporated numerical safety analysis methods into its certification policy for normal category rotorcraft, defining the term "extremely improbable" as less than one event in a billion flight hours (1E-9). Then, it required that helicopter manufacturers substantiate loss-of-function or hazardously misleading indication of attitude, airspeed, and barometric altitude in IFR to the "extremely improbable" standard, something that could cost-effectively be done only in multi-engine, transport-category rotorcraft.

A photo taken the day after the accident occurred shows the extent of the debris field. NTSB/James Anderson Photo

Given that instrument flight instruction in an entry-level twin-engine helicopter runs well over $2,000 per hour — compared to something like $200 in a Cessna 172 — the FAA got used to letting flight schools do instrument training in VFR-only helicopters. I did my own instrument training and flight instruction in a Robinson R22 equipped with old-fashioned "steam gauges" — an aircraft that has no actual business flying in clouds.

In June 2015, a group of industry associations — including Helicopter Association International (HAI), American Helicopter Society International (now the Vertical Flight Society), General Aviation Manufacturers Association, and Aircraft Electronics Association — published a white paper calling on the FAA to revise its policy guidance to open the door to IFR certification of single-engine helicopters. The white paper cited a staggering number of helicopter accidents related to inadvertent IMC or controlled flight into terrain due to low-level flight to avoid weather: nearly 250 worldwide between 2001 and 2013, responsible for the deaths of hundreds of people. While most of these involved single-engine helicopters, 40 of them involved multi-engine rotorcraft whose pilots, like Zobayan, were attempting to fly under VFR.

A witness captured this photo of the post-crash fire at the scene of the accident. NTSB investigators have indicated that the crash was likely not survivable. Photo courtesy of NTSB

"What is not captured in the accident data are the near misses of obstacles and terrain that occurred trying to avoid weather, or the near losses of control that occurred attempting to exit [inadvertent IMC]," the associations wrote. "The erratic year-to-year data is indicative of a broader issue where a high-risk practice of 'scud running' is prevalent and what is captured in the data are the aircraft that failed in the gamble."

The associations argued that permitting IFR certification of single-engine helicopters would make IFR operations more affordable and therefore widespread, increasing safety in the process. After all, the entire IFR system was invented precisely to avoid accidents like these, with aircraft flying known routes at known safe altitudes, and controllers there to keep them from running into each other.

A Bell 407GXi arrives for HAI Heli-Expo 2020 in Anaheim, California, on Jan. 24. The single-engine model was certified for IFR operations just last year. Skip Robinson Photo

The associations optimistically predicted that "successful and safe completion of missions under IFR will have a snowball effect throughout the industry," as "single-engine operators will begin to mandate operations under IFR when conditions do not support safe VFR operations once a practical means-of-compliance for IFR certification is established."

Two years later, in June 2017, the FAA published a policy statement that eased numerical safety analysis requirements for various classes of part 27 rotorcraft, although it did not address single-engine IFR requirements directly. But helicopter manufacturers weren't strongly motivated to certify any single-engine helicopters for IFR until last year, when Leonardo Helicopters and Bell certified the TH-119 (a variant of the AW119) and the Bell 407GXi, respectively, in order to compete for the U.S. Navy's lucrative training helicopter contract. Bell didn't announce the first commercial customers for its IFR-certified 407GXi until this year's HAI Heli-Expo — a couple of days after the Kobe Bryant crash — and Leonardo has yet to confirm any.

The cockpit of the Bell 407GXi equipped for IFR operations. Skip Robinson Photo

Although it took fully four years from the date of the white paper to certify a single-engine helicopter for IFR, the "snowball effect" the associations predicted will likely take even longer, if it happens at all. That is because, as the white paper acknowledges, affordable and practical IFR-certified helicopters are a necessary but not sufficient element for establishing the type of IFR culture that is prevalent in the fixed-wing world. We also need IFR infrastructure that is useful to helicopters — which often fly to destinations other than airports, and typically have less range and endurance than airplanes do — as well as instrument-rated pilots who are current and proficient in actual IFR flight.

While IFR helicopter operations and proficient instrument helicopter pilots certainly exist, the helicopter industry has largely evolved to take advantage of not flying like airplanes. In the U.S., we're permitted to fly much lower than airplanes, with much less separation from people and structures. Airplanes are never allowed to fly VFR with less than one mile visibility, but until 2014, helicopters could legally operate in uncontrolled airspace with no minimum visibility requirement at all, provided they remained clear of clouds and operated at a speed slow enough to see other aircraft and obstructions in time to avoid a collision. (How do you know if you're not slow enough? You hit something.)

The cockpit of Leonardo's IFR-certified TH-119, which was selected by the U.S. Navy as its next helicopter trainer. Leonardo Photo

Helicopter operators have exploited this leeway for the full spectrum of operations: from life-saving search-and-rescue missions to decidedly less critical operations like frost control, which entails hovering over crops on cold nights to prevent them from freezing. When the FAA proposed to raise the minimum visibility requirement for helicopters in uncontrolled airspace to one-half mile — still only half of what is required for airplanes — some helicopter operators were supportive, but others perceived it as an existential threat.

In comments submitted to the FAA during the rulemaking process, numerous operators opposed the minimum visibility change, arguing that helicopter pilots should be the ones to decide whether visibility is adequate. The Experimental Aircraft Association was particularly outspoken in its opposition, arguing that "to impose a visibility limit shows the FAA does not truly understand the entire scope of what commercial and private helicopter missions are and their combined effect on the national economy."

Only one commenter, Safety and Flight Evaluations International, suggested that a minimum visibility requirement of a half mile was still too low to have much impact on safety, and should actually be raised to something higher. The FAA chose to proceed as planned, stating that "implementing more restrictive visibility minimums than those proposed would be outside of the scope of the proposed rule."

Better lucky than good?

In my 15 years of flying helicopters, I've only experienced true spatial disorientation once, while undergoing an instrument proficiency check at night over unlighted Arizona desert. The condition crept up on me: one minute I was fine, and the next minute I felt like I was toppling over the edge of a cliff. The experience bore no resemblance to anything I had previously encountered under a view-limiting hood. This was not losing track of my instrument scan and drifting through a few hundred feet of altitude; it was entering a terrifying new world in which gravity was acting on me from a direction that I didn't recognize as down.

Joby Aviation's S4 eVTOL prototype, which is backed by more than $720 million in funding from investors including Toyota. The aircraft will initially be piloted by incorporate high levels of automation and envelope protection. Joby Photo

In that case, I was able to claw myself back from the brink, possibly by tilting my head up far enough to see the lights of Phoenix on the horizon. Although I had dutifully memorized and recited all of the aeromedical factors related to spatial disorientation, and indoctrinated my students in the same, not until that evening did I fully appreciate how quickly things could go sideways in an unstabilized helicopter on a dark night or in the clouds.

Since then, I've gone through and written about a number of courses intended to prepare helicopter pilots for recovery from inadvertent IMC. Some of these have been in simulators, some in real helicopters, and all have been excellent training experiences (far superior, I suspect, to what passes for inadvertent IMC training at most part 135 helicopter operations). But my own brush with spatial disorientation reinforced how infinitely harder it is to trust your instruments when your senses lose their grip on reality. Indeed, I've written about several VFR-into-IMC helicopter accidents in which the pilot's first impulse was to reach up and cage their attitude indicator — convinced it was their instrument, and not their understanding of the world, that was wrong.

In the absence of rigorous, routine practice in instrument flight, recovery from inadvertent IMC is largely a matter of luck. You're lucky if your helicopter is in stable straight-and-level flight when you enter the clouds and you have an extra moment to transition to instruments. You're lucky if you break through a cloud layer before you lose your nerve to keep climbing straight ahead, and attempt to turn around.

Since 2013, the Sikorsky Autonomous Research Aircraft (SARA) has logged over 300 hours of autonomous flight time. The aircraft is a modified S-76B — the same model that crashed with Kobe Bryant on board. Sikorsky Photo

Once you surrender to spatial disorientation, I believe, all bets are off, because at that point you are not processing information correctly. An HTAWS screaming "Terrain! Terrain!" will likely further confuse you. Your only hope is to recover some sense of a horizon while you still have enough altitude to regain control of the aircraft. An autopilot will help, of course, but only if you retain enough mental processing power to remember how to use it.

Obviously, the best cure for spatial disorientation is to never get into it in the first place. But as long as VFR helicopters are permitted and even expected to poke around at low altitudes in marginal visibility, some non-zero percentage of them will stray into IMC, and some non-zero percentage of their pilots will be unlucky.

Unwise, too, perhaps — but as someone who has actually had to "land the damn helicopter" on multiple occasions to wait out weather, I can attest that the decision point for a precautionary landing is rarely obvious. Are the clouds a little thinner in that direction, or is that just an illusion? Is the front passing, or stalling out? Such judgments are always fraught with uncertainty, and commercial or mission-related pressure to fly can influence those judgments in ways we don't always recognize.

Over the past year, I've spent much of my time writing about the emerging electric vertical takeoff and landing (eVTOL) industry, which is developing novel air taxis that can take off and land like helicopters, but will ostensibly be clean and quiet enough to deploy in cities by the thousands. Helicopter manufacturers including Bell and Airbus are enthusiastically embracing this "urban air mobility" vision, and some helicopter operators are, too, but others regard the entire enterprise with blistering contempt. Much of this disdain relates to the perceived hubris of companies like Uber, which claims it will launch its first eVTOL air taxi services in 2023. Given that it took several years just to convince the FAA to let an already certified helicopter like the Bell 407 fly in the clouds, some skepticism regarding Uber's ambitious timeline is understandable.

I suspect, however, that the conventional helicopter industry also resents the high levels of autonomy that are being designed into these aircraft. Uber and other companies plan to employ large numbers of pilots at the outset, but eventually do without pilots altogether as autonomous technologies mature. Even early eVTOL models should be much simpler to fly than conventional helicopters, with much greater envelope protections, making the specialized skillsets of today's helicopter pilots less relevant. Autonomy is also finding its way into conventional helicopters, as with the Sikorsky Autonomy Research Aircraft — a modified S-76B that can be flown by non-pilots

using a tablet — and Sikorsky's optionally piloted Black Hawk. These are not simply aircraft that fly a pre-determined route from point A to point B; they are vehicles that can sense their environments and "decide" how to avoid traffic and obstacles.

Autonomous passenger-carrying aircraft still have a long way to go to prove themselves, let alone achieve certification, so some skepticism is warranted here, too. But one thing has been amply proven: that human pilots are terrible at controlling helicopters in the clouds, except for under the regimented conditions of actual IFR flight. Unless the helicopter industry chooses to adapt its business models to fully embrace IFR operations in conditions of marginal weather, a certain number of VFR-into-IMC accidents seems inevitable, at least until technology makes human pilots irrelevant.

Our choice then is, quite literally, to adapt or die. So far, we've chosen to die.

18 thoughts on "Why do helicopter crashes like Kobe Bryant's keep happening?"

1. **Philip carey** says:

   April 7, 2020 at 10:12 am

   Good article, Randy Maines published my brush with death a few years ago. IMC in a helicopter is asking for trouble, you can equip the aircraft with a plethora of instruments like some of these ill-informed politicians were calling for and it won't matter a dot.

   Reply

2. **M Babineau** says:

   April 7, 2020 at 10:14 am

   One of the best articles I have read about helicopters and spatial disorientation. Sharing your own experience really illustrates how quickly this can happen and should wake up all helicopter pilots to the reality of the problem. Thank you!

   Reply

3. **OVL** says:

   April 7, 2020 at 11:01 am

   First. Thanks for an excellent Down-to-Earth Article.

   Being a Fixed Wing Instrument Rated Pilot with frequent exposure to actual IMC conditions, while also being a Commercially Certified Non-Instrument Rated Pilot for Rotary Wing, I can assure, first hand, that Rotary Wing Flights in IFR conditions are inherently extensively more demanding than Fixed Wing Aircraft Flights.

   The IFR World, and its inherent Regulations, Procedures, etc. etc. etc. was, from its very beginning, designed with the Fixed Wing Operation in mind. If you look at today's FAA Regulations, those for Rotary Wing Operations do not exist as a separate set of clearly exposed guidelines/regulations. Instead, they are intertwined within the Fixed Wing Regulations Set, many times treated as exceptions. which can be confusing, to say the least.

   Fixed Wing Aircraft, regularly will land at airports, which are facilities designed with a Fixed Wing Aircraft in mind. Helicopters typically don't. Helos were born to provide point to point transportation, not necessarily meaning, airport to airport transportation. Therefore, helos will typically depart, approach and land at locations, not prepared at all for air operations, (no wind-sock, no ATIS, no-approach plates, obstacle separation considerations,, etc. etc. etc.). So it takes a lot of analysis and effort from the pilot, in order to perform adequate and sound risk analysis and flight planning. Typically Rotary wing PIlots do not get into this degree of detail and analysis. Why?, because we

typically operate in a Visual Reference World. Then, when IMC conditions come into play, we recur to very simplistic solutions, like: let's follow the road, etc. etc.)

The results are very clearly stated in your article. Thanks.

Now, here comes automation. I am pro-automation 300%. But, and it is a big BUT. Automation requires a lot of training, to acquire a deep understanding of what the system can do and can not do. It is said that with automation, the role of the pilot is that of becoming the supervisor of the system, while the system actually flies the aircraft. I believe this is true probably 90% of the time and for me that is excellent. Now, if the pilot is to be the supervisor of the system, then the pilot needs to acquire a very sound understanding of the specific system he/she flies, to determine when the system is not doing what is supposed to do, and manual intervention or re-programming/set-up is required. From a technical point of view, modern systems can do marvels, but the pilot and the system must be a matched-pair from an operational point of view. The case of Autopilots is specifically critical. Rotary Wing A/P's are inherently more complex than their counterparts in the Fixed Wing World. Aerodynamically, the Helo is a lot more complex machine than a Fixed Wing Aircraft. Therefore, autopilots exhibit this characteristic.

Furthermore. To achieve the degree of proficiency to fly in actual IMC conditions with a relatively high degree of safety, requires a continuous training program. The moment you stop practicing your skills are diminished. This constant practice is a never-ending effort.

Due to the inherent type of operation, the Rotary Wing World is not conducent to achieve this degree of proficiency without a significant cost attached to it.

Thanks again for an excellent article

Reply

4. **Glenn Roberts** says:

April 7, 2020 at 11:02 am

If more helicopter pilots would file and fly IFR as a daily routine when operating in VMC conditions, these inadvertent flights into IMC would be a non-event. I overheard a helicopter CFI say "Once I finish my instrument rating, I'm never going to fly instruments again if I can help it." It is completely the wrong attitude. You should file and fly IFR whenever you can, so you are familiar with the ATC system, and they are used to working with helicopters. You can file IFR but still remain clear if clouds. Then you will always have ATC on your side as a resource, not an adversary trying to catch you scud running.

Reply

5. **Will Tompson** says:

April 7, 2020 at 11:04 am

Excellent relevant and no BS articule. Land the damn helicopter being the operative advice. Spending my entire career in the Bush there were a few uncomfortable times sitting on the ground in miserable weather keeping a fire going wishing I was back in my bed. But still here to congratulate the author.

Reply

6. **MikeG** says:

April 7, 2020 at 11:06 am

To say I'm absolutely astonished at the fact an instrument instructor can train students For their IR rating, having never flown in IMC conditions and having never done any training under full IFR IMC conditions, well, is an understatement . How can that even be morally correct never mind legal?
An instrument rating isn't an add-on tick the box exercise to look cool on your resume!

I'm
Gaps I went through the UK system which, whilst seemingly expensive and overkill, means I feel competent enough to deal with full IMC flight.
One thing I didn't see mentioned in the article. Why no two crew mention. Two people working together making decisions and properly planned out flight? I do it every day with two crew. Do the operators not want to pay for two properly rated and trained pilots? Save yourself a few hundred bucks a day and charge $000's for the aircraft. If people can afford the aircraft then they can afford the (non) luxury of the extra trained pilot surely?

Reply

7. **Dean** says:

April 7, 2020 at 12:19 pm

I'm an ex helicopter pilot, I flew in the U.K. professionally for 20 years 1997 – 2017. Unfortunately this was happening long before I started flying and will probably continue long after I stopped.

We use to call it CFIT in the U.K. I think we still do and it seems to happen to pilots of all abilities irrespective of flight hours.

Pilots need to learn that if the weather is not good enough then they should not be flying it's really that simple.

If the forecast weather is not good enough to fly don't take off in the first place.

If the weather has gone below limits on route, then turn around and divert to another landing site or just land in a field and wait for the weather to improve.

What can the industry do to help?
Encourage an environment where the pilot feels it's ok to say no and when the pilot makes the decision to land or not to fly in the first place. The company management needs to back them up in this decision and not question or pressure them as to why.

Reply

8. **Roscoe** says:

April 7, 2020 at 1:15 pm

Consider this. No helicopter SVFR unless instrument rated AND current. Next, educate paying passengers. You have to listen to a seatbelt/ safety briefing when you fly commercial. For helicopters include " We regret the possibility of landing short of our destination due to weather. If that should occur we'll do our best to find alternative ground transport" . I'm sure nobody thinks that pressure to complete this sad flight, whether applied by the customer or self imposed by the pilot, was anything less than a huge factor in the outcome.

Reply

9. **John S** says:

April 7, 2020 at 2:01 pm

Interesting article. I also wondered how an instrument instructor could have no actual IFR time.
Well written.

If anyone wants to get many hours of actual IFR time, join the U.S. Coast Guard for a while.

Reply

10. **Dideriksen** says:

April 7, 2020 at 3:33 pm

I Roscoe is getting close to an issue that is a bigger threat than inadvertently going IMC.
The fact that the society is getting more and more used to threatening people on their livelihood maybe even total existence within a certain way of life. Most people hold two jobs, have kids in some sort of education program, have a mortgage and cars to be able to move around in order to get where they need to.
Imagine that I pilot is being pressured into doing something he does not really want to do because he's whole existence is being threatened to be taken away. The pure stress in that situation is enough to cause wrong decisions. Personally I do not have a lot of years behind my career as a CPL-H but I at least have the money age and security to be able to say " I'm sorry this will not possible sir/ma'am" I have heard my fair share of people saying that they have to go now and if not there will be hell to pay.
I do not really have a bullet proof solution, but one item should be on the list, and that is a contract that forbids anyone to blacklist or ruin pilots life for taking the safe and right decision. And that has to be done before the employment starts. It is far to late when the client is arguing over the radio being afraid that the are going to mis whatever meeting they have, and they are being threatening and abusive not knowing the consequences of that action.
Part of the whole education in the aeronautical business is about safety, but whom in this forum have ever been given the choice to evaluate if the flight is going to be carried out or not, while under basic training. I was given this opportunity several times during my training in Denmark and Sweden. But I know others that actually never had to make this sole decision until they where employed in a company.
Now having said this I would like to point out that i can only speculate how the Kobe Bryant flight was carried out, and I have only heard good words about the pilots skills. But we need to learn from this, and it just seem like we do not learn.
A lot of pilotes come from flight training struggling to build up hours. So they will try anything to get the demanded hours. 1000hrs 250 on the type instrument rating etc. This does not mean anything if you are not able to withstand pressure. We all cave in sometimes, to our wife's, kids, employer. But normally that is not deadly, this situation was. Coming out of the academy some people have maybe 150hrs. Why does the industry not make sure these pilots get a seat in an helicopter that has dual controls but only using one pilot. You get so much more experience this way. A Sikorsky S76 or a AW109 would normally have setup that would really give a novice pilot a lot of extra training, provided the captain is qualified. And most people could only dream of getting in one of these helicopters. How come so many helicopters are only flown single pilot then. Do not tell me that it is because the cost of a novice pilot at maybe 20 dollars an hour is going to overthrow the budget. They build quality hours and can give the extra breathing room for the captain. The novice might also ask the question "is this the right thing to do" bringing us back to the ironclad contract that will force the employer to be safe rather than sorry, maybe dead. Think about it !

Reply

11. **Harold Coghlan** says:

April 7, 2020 at 3:48 pm

I agree with most of the author's article, although my experience biases me somewhat. I am a military trained dual category IFR pilot, instructor and flight examiner (but have flown 30+ yrs of airline FW as well as corporate, IFR helicopters, like the SK-76). I have about 400 hrs of actual (not hooded) RW IMC time, mostly as an Instrument Instructor and Examiner, and was very comfortable flying an IFR helicopter in IMC, taking off with 1/2 mi to 1/4 mile (so long as we had alternates) and flying to places we would end up with a low weather PAR radar or ILS approach to again, 1/2 to 1/4 mi viz.
But my experience taught me that the best pieces of avionics in that aircraft was another IFR qualified, current, and competent pilot. I I don't mean someone that just meets the basic 6 IFR approaches in six months, I mean, a guy that flies his helicopter and does approaches every few days. Autopilots are great, and I have flown them in a variety of IFR helicopters, but are still not a valid replacement for a well trained, current and experienced other pilot. Do you see where we are going here?
The Industry is not willing to pay, normally, for top level safety, period. It's normally all talk and no bark. And the customers appear unwilling to pay the actual price to be safe. No one wants to bite the bullet and demand a higher standard of equipment (fully IFR certificated helicopter, with an autopilot), of crew (2 experienced IFR pilots, not two guys with IFR certificates but no actual IFR
experience…), and be willing to pay more to be SAFE.
So basically, both the Industry and the Customer's are willing to fly and die by being too cheap. Sorry, it's the truth, and truth hurts.
I flew a SK-76 for a number of years in a corporate setting, where the Senior Executive understood the dangers of flying, and the savings provided by flying SAFE. We only operated with two pilots, both ATP in the helicopter (we were also both jet rated ATPs flying the corporate jets), both IFR current, and we routinely filed and flew IFR in IMC conditions. That company never, ever, had a helicopter incident, much less an accident, whether VFR or IFR. But Safety is not Free. The Option is change, or just keep dying.
I have been flying safely for 45 yrs and over 25,000 hours in everything from military, to airline, EMS and corporate, and that is my humble opinion.

Reply

12. **Pascal DELAUNAY** says:

April 7, 2020 at 5:09 pm

This is the way training is done at every level ! Do you think somebody who just got its licence and instructor rating has any knowledge about flying ? Most people are trained to fly from guys who have no experience, so it is the same for an IFR rating. You are trained to know how to do an IFR flight on a stupid little aircraft, you are checked by a guy who has not flown IFR for years and does not remember what it is and….that's it ! And every year or every 2 years, you will do a check on the same irrelevant machine. The day you switch to a real IFR aircraft and do real IFR flight, you understand that it is a very different game, easier actually since you have 2 pilots, force trim, autopilot, etc…The same apply to night rating who is a joke. Doing pattern around a town is not what is a night flight. How many people have died during a night flight because pilots are losing control, are involved in CFIT, lose control after take-off because they end-up in total dark area ??? It is the same ! What has been done to change that ?? What you gone do on your single engine aircraft when you end IFR if you do not have autopilot ??? how are you gone manage radios, finding your approach plate, orient yourself and fly the aircraft manually ??? Good luck with that !

Reply

13. **xrotorcop** says:

April 7, 2020 at 6:15 pm

Excellent article. I'm not sure of the author since there is no by-line, but whoever wrote the article is spot on. Although I no longer fly, my career in aviation spanned some 40-years in both military and civilian public safety operations. I was an instrument rated helicopter pilot and logged nearly 40 hours of AI (actual instrument) time flying in the military; zero AI in public safety. The big difference? In the military we flew with two fully qualified, instrument rated pilots. All of my AI time was flown either as PIC or CP in a UH-1H with steam gauges, single VOR/localizer, NDB and sometimes an ILS. The crew coordination required to successfully manage these flights was intensive, but that's how we trained, and we were very successful. So why can't this model be used in Part 135 operations and even some Part 91 applications? Cost you say? Maybe, but what is the cost compared to a fully instrumented S-76 with full auto pilot required for single-pilot IFR that is rarely, if ever used? It's time the commercial operators woke up to the fact that human lives are more valuable than their profit margin. Safety First? Really, if safety were truly first, we would not continue to see the vast number of accidents such as these throughout our industry. I realize that we are moving with breakneck speed toward pilot less aircraft. Maybe that's the answer. But until we do, a better approach to our current situation may be to add a second pilot in the cockpit rather than continuing to fool ourselves in believing that one pilot in marginal or IFR weather conditions is sufficient. Good enough, rarely is.

Reply

14. **Steve Greene** says:

April 7, 2020 at 9:51 pm

Retired ATP, rotary-wing pilot for forty-seven years. Army trained during the Vietnam war. Instrument training in the TH-13 (military Bell 47). Fifty hours instrument training out of about two hundred required to become an Army Aviator. No autopilot, steam gauges, partial panel (needle, ball, airspeed, vertical speed and altimeter) autorotations under the hood, no actual IMC. After Vietnam, where I flew about fifty hours IMC, not just an IFR flight plan, but in the clouds, shooting GCA approaches, I trained for a standard instrument rating, then instrument examiner. Actual IMC in Hueys with no autopilot in the NAS, mostly surrounded by airplanes on IFR flight plans. Separated from the Army with commercial license and helicopter instrument rating.

Fast forward twenty years flying VFR only rotary-wing aircraft. There is having an instrument rating, being current in instruments, but most importantly, being proficient as an IFR pilot. Big Difference. Having an instrument rating means squat if you are not proficient. This means flying in the system all the time.

I was a training captain and check airman in several helicopters for both VFR and IFR operations. Our company had VFR only and IFR bases, all flying IFR certified, twin-engine, aircraft with either three axis or four axis autopilots. All the pilots used the autopilot whether VFR or IFR and were proficient. A technique I taught all our

pilots was to use the go around button. If your found yourself spinning out of control in a cloud, engage attitude mode on the flight director then hit the go around button. The aircraft levels its ‘wings’, assumes best rate of climb airspeed, increases power on the four axis ships or the flight director advises you to pull in collective to climb on the three axis ship, and the autopilot flies you out of harms way. It always resolved the problem and allowed you time to come up with a plan.

As was stated in other comments, two pilots, two engines and a redundant, autopilot flight director system would fix most CFIT disasters. Obviously that cannot be done with all helicopters today. Training to proficiency in IFR conditions, and autopilots on all helicopters would mitigate this deadly condition.

Reply

15. **Jon moore** says:

April 8, 2020 at 6:56 am

This is a good article, why will nothing change because you get those who listen and those few who don’t listen, either through apathy or ignorance.

I teach instrument flying in the UK Military to Helicopter pilots, the first thing they All have to be current in is Aviation Medicine which includes a portion on Spatial Disorientation which includes a practical session in the Disorientation Simulator this opens a lot of eyes!

Every year during the Instrument Rating Test the candidates have to complete an autorotation on instruments, a recovery from Unusual Positions (or attitudes if you prefer) and recovery from low level Inadvertent Entry into IMC. The first 2 exercises are conducted under the hood and depending on the experience of the pilot can have wildly different results to the Instructor conducting the test (they are practiced VFR with a god horizon), the latter is conversion from visual to IFR and the student goes back under the hood once it is safe to do so.

Finally the other thing we do is regulate the currency, every 6 months the pilot must achieve 1 hour actual instrument flying, it doesn’t matter if it’s a short hop through a cloud or an epic 3 hr sortie but it must involve flight purely on instruments.

I think with all our experience of CFIT in the UK this is probably the best compromise you can ask for in order to maintain operational output versus cost.

Maybe now is the time to look at other options than just hoisting in more limits?

Reply

16. **Mike C** says:

April 8, 2020 at 10:15 am

Elan,

Great insight from you as usual. You hit many of the big issues such as training/proficiency, equipage, and regulations, but you also have to look at low level airway and approach infrastructure issues. The lack of structured low level IFR GPS airways and IFR helipad approach infrastructure in the NAS needs a deep dive. These can protect you from things like obstructions and terrain when you can’t see them and would be used more by the rotary wing community if available. It’s also a precursor to any AI flying passenger drones or drone package delivery in the future. The other thing that is present is the persistent human factor in this accident. I’m betting, giving the status of the passengers, that there was pressure, whether actual or perceived, to get the pax to their destination because of who they were. How many of our HEMS accidents have that same pressure?

Reply

17. **Roscoe** says:

April 8, 2020 at 10:56 am

No byline? Look again. Elan Head, you'll pardon the pun has hit the nail on the head. I'm sure there are exceptions but pointing out that she had zero actual instrument time while teaching instruments is not something that most pilots I know would put in print to make a point. In the civilian world it is more common than you'd think.
Kudos to all you ex- military guys who have flown all those hours and managed to have 2 pilots and the equipment and training to make it work. It can be done, and as pointed out it is the best way to do things. That said, the root cause for the Bryant crash is not lack of a second pilot, training, equipment or external pressure. The root cause, unless the NTSB pulls an odd colored rabbit out of their hat, is poor judgement. It would appear that the pilot made some cascadingly bad choices. In accidents like these, surviveable experience is what you need when you don't have it. I've scared myself flying probably half a dozen times; I mean really scared, hair on the back of my neck standing. I'd rather read about what really bad things happened and what bonehead mistakes you made, than about your 25k hours of accident free aviating and what things need to be in the helicopter like 4 axis auto pilots, competent co-pilots, or bosses who actually have a clue that you can get killed doing this. Judgement and some feeling about what things in life are more important that getting where you are supposed to be. Yeah, we need more of that.

One thing that always confuses me is why there are so many "training accidents". If it's training, shouldn't that be the safest environment of all. Judgent should be not just included in all training but be a major part of all training. Yes, things can conspire against you but mostly it is you conspiring against yourself.

Reply

18. **JOSE CENDEJAS** says:

April 8, 2020 at 11:48 am

Luis Cendejas
I have been reading all this comments and just my opinion is that everyone know its own limitations and its own history of how they were trained and how they became a helicopter pilot. For whatever the reason we are trained different and have different skills. . I think pre flight planning its the key -not to put yourself in a situation when there is no way of turning back. And as you do this pre.flight planning keep in mind this own limitations. Because you can keep your life and the life of others.