



2016

AOPA AIR SAFETY INSTITUTE

YEAR IN REVIEW



The background features a large, semi-transparent watermark of the AOPAS logo. The logo is circular and contains the text 'SAFETY' at the top, 'AOPAS' in the center, and 'SAFE PILOTS' at the bottom. The text 'SAFETY' and 'SAFE PILOTS' are curved along the top and bottom edges of the circle, respectively. The central 'AOPAS' text is in a bold, sans-serif font. The entire logo is rendered in a light orange color that blends with the background.

The staff at ASI is proud of its part in industry-wide efforts that contribute to the declining accident rate, and we don't take it for granted.



SUMMARY

OF THE YEAR TWO THOUSAND SIXTEEN

Last year was another record-breaking

year for the Air Safety Institute (ASI), with more than 2.5 million uses of its online and in-person safety programs. Accident numbers revealed in 2016, for activity that occurred in 2014, were also record-breaking. The general aviation accident rate experienced an all-time low of 5.25 per 100,000 hours for fixed-wing aircraft in non-commercial activity.

While there's always more work to be done, ASI's staff is proud of its part in industry-wide efforts that contribute to the declining accident rate. This is something ASI does not take for granted as demonstrated by its commitment to provide insightful research, analysis, and engaging safety education to general aviation pilots. Among ASI's new programs in 2016, two online courses were converted to HTML to make them more accessible on mobile devices; personal minimum contracts for VFR and IFR flights were produced to encourage pilots to utilize critical decision-making skills before they even leave the ground; 10 safety videos were created; nearly 22,000 pilots attended in-person community-based seminars; and more than 8,000 flight instructors renewed their certificates through ASI's online and in-person Flight Instructor Refresher Courses (FIRC's).

Over several decades, ASI has solidified its reputation as the leader in aviation safety education among general aviation pilots and enthusiasts. That expertise is also recognized outside the aviation industry, as members of the media contact AOPA seeking information regarding safety of flight in general aviation. ASI was also featured in reporting by Bloomberg, Fast Company, and Newsday, which have over 20 million combined unique visitors.

In 2017, ASI will continue to provide life-saving information to pilots through videos, courses, newsletters, quizzes, seminars, FIRC's, and publications. ASI will also research new technology and media platforms to help increase outreach to help the community.

Most importantly, the Air Safety Institute is grateful for the support of our donors, without which none of our work or accomplishments would be possible. From all of us at the Air Safety Institute, thank you.

SUMMARY OF NOTABLE ACCOMPLISHMENTS

- ASI's online education, seminars, publications, accident databases and maps, and CFI renewal courses were used more than 2.5 million times
- Seminars were presented more than 200 times nationwide to a combined audience of nearly 22,000 pilots and aviation enthusiasts
- More than 8,300 flight instructor certificates were renewed through online and in-person Flight Instructor Refresher Courses (FIRC's)
- Two Flash-to-HTML5 online course conversions improved access on mobile devices
- PDF-to-web safety advisor conversions for optimal mobile viewing
- 10 safety videos addressed top GA safety topics
- 25th *Joseph T. Nall Report* and *GA Accident Scorecard* detailed accident analyses for GA activity in 2014
- Customizable fuel cards promoted fuel safety awareness
- Personal minimums contracts for VFR and IFR flights provided tools to improve pilot decision making
- Quarterly *CFI to CFI* and *USAIG Premium on Safety* newsletters offered unique aviation safety content customized for subscribers

MEDIA COVERAGE

BLOOMBERG **Bloomberg**

“Fatalities in crashes of small private planes have fallen to the lowest levels in decades as industry and government work to address an area of aviation that has lagged behind jetliners in dramatic safety improvements.”

ASI worked with Bloomberg to inform a large audience about how improvements in pilot training, including ASI’s nationwide safety seminars and technological advances, have contributed to a decline in general aviation accidents.

NEWSDAY **Newsday**

Headline: *“Air Safety Institute head calls for more modern equipment.”*

ASI provided a seminar in the New York region and worked with local media to set the record straight on general aviation safety with regard to modern technology and more that can be done to improve safety.

FAST COMPANY **FASTCOMPANY**

“Pilot associations like AOPA unsurprisingly tend to argue that while automation has made flight safer (last year there were fewer aviation fatalities than ever before), it is still quite necessary to have capable human pilots on board.”

Publications like Fast Company know that ASI is a leading voice on technology and safety, and they turn to that expertise to help inform their readers.



DID YOU KNOW

2014 SAW A CONTINUATION OF THE MARKED IMPROVEMENT IN NON-COMMERCIAL FIXED-WING SAFETY FIRST NOTED IN 2013.

While the volume of GA flight activity has stabilized—declining less than one-half of one percent from the year before—the number of accidents fell more than one percent. This led to a slight reduction in the accident rate yet again in 2014. However, a higher proportion of the accidents were fatal. The fatal accident rate ticked up 15 percent but remained one of the three lowest of the past decade. In 2015, fixed-wing non-commercial activity actually *increased* by about five percent while the number of accidents fell to a new low of 912. This brought the total accident rate down to a record low of 5.25 per 100,000 flight hours; the fatal accident rate of 1.08 per 100,000 hours was the second lowest on record. Non-commercial helicopter flights also saw improvements in both years. 2014-2015 set record lows for the rates of commercial fixed-wing accidents, while commercial helicopter accident rates remained stable and near their long-term averages.



+ | DID YOU KNOW

AOPA Air Safety Institute's online flight instructor refresher course is tablet-friendly, so CFIs can work through the course no matter where they are.

OUR ACHIEVEMENTS

“ Wonderful! I've been to a few AOPA CFI refresher courses—all very good. For me, these 16 courses were excellent, I learned some new things, and it was a great review. I plan to take more courses as well. I've already recommended some of the courses to a couple of pilots. Thanks again for your helpful support.

—Terry ”

RENEWING FLIGHT INSTRUCTORS

ASI's flight instructor refresher courses (FIRC)s—both online and in-person—renew more flight instructors each year than any other CFI renewal program in the industry. In 2016 we renewed over 8,300 flight instructor certificates while providing high quality, engaging, and insightful education that promotes safer flight training practices. A new UAS module was added to the in-person FIRC and a similar module will be added to the eFIRC in 2017. These modules will help CFIs understand how they can help certificated pilots and non-certificated pilots obtain FAA Remote Operator certificates and operate safely within the National Airspace System.

[\[airsafetyinstitute.org/firc\]](http://airsafetyinstitute.org/firc)

PERSONAL MINIMUMS CONTRACTS

Personal minimums and decision-making criteria are best defined on the ground, free of external pressure and the workload of flying the aircraft. Writing them down makes it much easier for pilots to resist the temptation to “mentally negotiate” themselves into a tight spot, allowing their decision making to be clouded in the heat of the moment by emotion and hope. These new documents define the contract pilots make with themselves, their passengers, and their families.

[\[airsafetyinstitute.org/vfrcontract\]](http://airsafetyinstitute.org/vfrcontract)

[\[airsafetyinstitute.org/ifrcontract\]](http://airsafetyinstitute.org/ifrcontract)

AOPA FUEL CARDS

Misfueling accidents are easily preventable if pilots take some simple precautions. To make sure pilots and those responsible for fueling their aircraft have no doubt about the type, location (tanks), and amount of fuel needed, ASI developed a variety of fuel cards that pilots can personalize with information specific to their aircraft. The cards, which can be ordered from Vistaprint, help pilots, line service personnel, and FBO customer service representatives clearly communicate and confirm fuel orders to help prevent misfueling.

[\[airsafetyinstitute.org/fuelcard\]](http://airsafetyinstitute.org/fuelcard)

LEARN & EARN SAFETY CHALLENGE

The second year of ASI's Learn & Earn Safety Challenge offered a fun and engaging way to promote ASI's online courses, Accident Case Studies, and Real Pilot Stories to help pilots refresh their safety knowledge. The interactive safety challenge matched students and pilots to courses tailored specifically to their experience level and flying style, and automatically entered them into a quarterly prize drawing upon completion of any eligible safety program. One winner was announced after the end of each quarter.

[\[airsafetyinstitute.org/learnandearn\]](http://airsafetyinstitute.org/learnandearn)

PROMOTING SAFETY THROUGH SOCIAL MEDIA

Today ASI's Facebook presence engages 185,000 pilots and aviation enthusiasts from across the world with weekly posts on safety-related products and thought-provoking discussions. More than 24,000 people subscribe to ASI's YouTube video channel—contributing to over 2,300,000 total views in 2016.

[\[facebook.com/airsafetyinstitute\]](https://facebook.com/airsafetyinstitute)

[\[youtube.com/airsafetyinstitute\]](https://youtube.com/airsafetyinstitute)

ONLINE COURSES

AIRSAFETYINSTITUTE.ORG/COURSES



ESSENTIAL AERODYNAMICS: STALLS, SPINS AND SAFETY

Made possible by the Aviation Education Foundation

This online course settles the debate over whose theory about lift is right: Bernoulli or Newton. Users also learn what defines critical angle of attack and why an airplane can stall at any airspeed and attitude. Pilots are encouraged to broaden their understanding of aerodynamic principles involving maneuvering flight and share it with others through the course's social media links.



KNOW BEFORE YOU GO: NAVIGATING TODAY'S AIRSPACE

Made possible by an anonymous donor

During nice weather it's tempting to hop in the cockpit, fire up the GPS, and blast off to your destination. What could be more fun? But today's complex airspace can trip pilots up. This course offers interactive challenges and scenarios that will prepare pilots to deal with any roadblocks in the sky.



DEVICE-FRIENDLY

FLASH-TO-HTML5 ONLINE COURSE CONVERSIONS

ASI converted two of its popular Flash-based online courses to a format that's optimized for viewing on mobile tablets.

“ You guys do a great job supporting pilots, and with so much safety info there would be a gap if you did not exist.

— Kitty ”

SAFETY SEMINARS

AIRSAFETYINSTITUTE.ORG/SEMINARS



EMERGENCY! GETTING IT RIGHT WHEN THINGS GO WRONG

Made possible by the FAA Safety Team, the Col. Jim Wesley Memorial Endowment Fund, the Virginia Department of Aviation, and the Kentucky Department of Aviation

Pilots spend time training for real-world emergencies, but they are so rare that it's easy to get complacent. Emergencies don't always happen to "other pilots" and preparation can make a big difference when things don't go as planned.

- What if you lose 500 rpm during takeoff, but the engine is running smoothly?
- What if the ammeter drops to zero during a flight in IMC?
- What if your left aileron develops a strong vibration in flight?

This seminar is full of expert tips on handling those up-here-but-wishing-you-were-down-there scenarios. The presentation focuses on how to keep abnormal situations from becoming full-blown emergencies, offers suggestions on keeping critical problems under control, and gives advice for making successful off-airport landings.

TRIVIA NIGHT!

Made possible by AOPA Insurance, the FAA Safety Team, the Col. Jim Wesley Memorial Endowment Fund, the Jack Serrell Seminar Endowment Fund, the Virginia Department of Aviation, the Kentucky Department of Aviation, and the Maryland Aviation Administration

This seminar tests pilots' knowledge of the arcane while also exploring safety issues behind the trivia.

For example, we ask attendees:

- How long did Lindbergh fly without sleep during his transatlantic flight?
- How many drinks does it take to degrade performance equal to a poor night's sleep?
- What piece of equipment "caused" Eastern Air Lines Flight 401 to crash?

From vintage nav aids to aerodynamics and little-known aircraft, the collection of questions are sure to put pilots' knowledge to the test—and make them safer.




SAFETY VIDEOS

AIRSAFETYINSTITUTE.ORG/SAFETYVIDEOS



This is to let you know how appreciative I am of your educational programs and your dedication to make us safer pilots. I found your videos outstanding, from the real pilot stories to the topical videos. I love them. You are doing an absolutely fantastic job. Thank you.

—Laurent 

▶ FEATURED VIDEOS

Clips from AOPA Air Safety Institute's safety videos including *Margins of Safety: Low Altitude Maneuvering* (left) and *Taming the Twin: Four Rules for Safe Multiengine Flying* (right).



MARGINS OF SAFETY: AVOIDING TRAFFIC PATTERN STALLS

Made possible by the Tom Davis Fund

Despite repeated practice of stall recognition and recovery in primary training, unintended stalls continue to be a leading cause of fatal accidents among GA pilots. One major reason is that the stalls that are practiced in training often look and feel different than stalls in real-world scenarios. This video discusses the various complexities of the traffic pattern, and the ways in which distraction, poor pattern discipline, and sloppy stick-and-rudder flying can land pilots in hot water when they are at an altitude where an inadvertent stall or spin may be unrecoverable.

MARGINS OF SAFETY: LOW ALTITUDE MANEUVERING

Made possible by the Tom Davis Fund

Maneuvering an aircraft at low altitude is something pilots do on every flight, without giving it much thought. While it's not much different from maneuvering at altitude, the slow speed and low altitude decrease the margins for error. In this video, pilots learn how to safely maneuver aircraft down low.

TAMING THE TWIN: FOUR RULES FOR SAFE MULTIENGINE FLYING

Made possible by the Canadian Owners and Pilots Association (COPA) and the Donner Canadian Foundation

Multiengine airplanes offer better performance and greater safety. Those benefits, however, come with strings attached. This video explores some of the proactive things pilots can do to ensure a safe outcome on every multiengine flight.

LOOK OUT! AVOIDING TERRAIN & OBSTRUCTIONS

Made possible by the Canadian Owners and Pilots Association (COPA) and the Donner Canadian Foundation

For many pilots, accidents involving terrain and obstructions fall into the "can't happen to me" category. But getting caught in a tight situation is easier than they think, and escape can be difficult or impossible. This video aims to raise awareness of the risks and help pilots recognize potentially dangerous situations before it's too late.

ENGINE OUT! FROM TROUBLE TO TOUCHDOWN

Made possible by the Canadian Owners and Pilots Association (COPA) and the Donner Canadian Foundation

Responding to a simulated engine-out during training is one thing. Responding to a real engine-out is another. This video looks at best practices for responding to an engine failure in cruise and on takeoff, as well as ways to help prevent an engine failure from happening in the first place.



▶ FEATURED VIDEOS

Clips from AOPA Air Safety Institute's safety videos *Weather Wise: Mistakes We Make* (left) and *Go/No Go and Beyond* (right).

WEATHER WISE VIDEO SERIES

Made possible by the National Oceanic and Atmospheric Administration (NOAA) National Weather Service (NWS)

Weather is the biggest variable in flying. It's also one of the things pilots find most challenging to handle out in the real world. This series of short videos—the first four released in 2015—takes a fresh, user-friendly approach to the topic of weather decision making, from the earliest stages of planning all the way to challenging in-flight situations.

WEATHER WISE: MISTAKES WE MAKE

One of ASI's major roles is accident analysis and helping pilots learn from real-world mistakes. In this video, ASI manager of safety analysis David Kenny talks about the types of weather most dangerous for pilots. He also answers the question about whether technology (the internet, better forecasts, cockpit weather, etc.) has lowered the GA accident rate.

WEATHER WISE: GO/NO-GO AND BEYOND

Pilots are usually able to make fairly solid go/no-go decisions well in advance of a planned flight. But when conditions are marginal, the decision to launch, postpone, or cancel can be tricky. This video looks at factors to consider when the weather complicates plans.

WEATHER WISE: AWARENESS ALOFT

In-flight weather monitoring is a critical component of good decision making. In this video, ASI looks at how to maintain strong situational awareness with respect to weather and using that awareness to make good decisions should things not go as planned.

WEATHER WISE: THE FUTURE OF WEATHER

We're living in the golden age of flying in weather—and things are only going to get better. So what can pilots expect in the years to come? In this final installment of the Weather Wise video series, ASI takes a look at how technology will change the experience of weather planning and flying.

FLY-IN VIDEOS

The AOPA regional fly-ins provide pilots from around the country the opportunity to interact with other pilots and AOPA staff, while sharing their passion for aviation. To help provide a safe, efficient flow of inbound traffic, ASI created a video for each fly-in that graphically depicted the NOTAM procedures and gave pilots a step-by-step guide to flying to the events.

ACCIDENT CASE STUDY

AIRSAFETYINSTITUTE.ORG/ACS



ACCIDENT CASE STUDY: UNINTENDED CONSEQUENCES

Brought to you by AOPA Insurance

Repetition can increase complacency. Performing the same tasks in the same way may lead pilots to overlook things, potentially ending in disaster. In this accident case study, ASI analyzes why a twin-engine airplane flew into a mountain at night on what should have been a routine flight.



PUBLICATIONS

AIRSAFETYINSTITUTE.ORG/PUBLICATIONS



The recent Safety Advisor was an excellent review. I've been airborne for 44 years and just wanted to let you know the usefulness and sometimes lifesaving information you provide.

– Jerald



CONVERTING PDF SAFETY ADVISORS TO WEB

In 2016, ASI began the conversion of safety advisor and safety brief publications from PDF to a web-compatible HTML format. This optimizes the publications for mobile devices of any screen size and provides an excellent platform for viewing videos and incorporating courses and other ASI products relevant to the advisors' subjects. The new format's table of contents also allows readers to easily jump to the section of most interest. Four advisors and two briefs were updated and converted to the new format in 2016.

COLLISION AVOIDANCE

Readers learn how to identify potential collision threats and lessen the risks of such mishaps. The advisor includes the updated *Terrain Avoidance Plan* safety brief and incorporates the *Collision Avoidance* video series among other videos.

EMERGENCY PROCEDURES

This advisor examines critical situations and how to handle them as safely as possible. It includes the *Engine Out! From Trouble to Touchdown* video and the updated *Electrical Fires* safety brief. Relevant material from the *Survive: Beyond the Forced Landing* safety advisor and video are also among the ASI products highlighted.

DO THE RIGHT THING: DECISION MAKING FOR PILOTS

This publication offers practical suggestions to make the right decisions at the right time. Readers can download VFR and IFR personal minimums contracts, watch appropriate videos that highlight the importance of using the correct decision-making process, and access the course and safety spotlight.

MANEUVERING FLIGHT: HAZARDOUS TO YOUR HEALTH?

Maneuvering flight is something pilots do each time they take to the air, like flying in the traffic pattern. This advisor explains the associated risks and provides suggestions to minimize them.



+ FEATURED PUBLICATION

AOPA Air Safety Institute's publication of the *CFItoCFI* Newsletter (PDF version).

CFItoCFI NEWSLETTER

The digital *CFItoCFI* newsletter was distributed four times in 2016 to nearly 58,000 subscribers. The newsletter's feature articles, commentary and opinions, statistical analysis, and operational tips help CFIs refine the knowledge and skills that are necessary for conducting their flight training in a safety-conscious manner. The newsletter can be accessed anywhere, anytime, on a PC or mobile device, and provides readers the ability to instantly share stories, videos, and messages with colleagues and students.

25TH JOSEPH T. NALL REPORT

Made possible by the Manuel Maciel Safety Research Endowment

For the past 25 years, ASI has produced the *Joseph T. Nall Report*, an annual review of recent trends and patterns in general aviation accidents. The report is widely distributed and serves as the definitive source for government, academia, media, and industry on the state of GA safety.

USAIG PREMIUM ON SAFETY NEWSLETTER

Made possible by the United States Aircraft Insurance Group

ASI's quarterly *Premium on Safety* digital newsletter for the United States Aircraft Insurance Group (USAIG) provides its customers authoritative, impartial, and timely information that emphasizes aviation safety education and commentary found nowhere else. The eight-page, full-color newsletter contains features and operational safety tips specifically geared to professional flight departments and their operators, management, and pilots. In addition, *Premium on Safety* includes statistical analysis, accident profiles, ASI safety products, and messages from USAIG executives and the Air Safety Institute.

2014-2015 GENERAL AVIATION ACCIDENT SCORECARD

ASI's 2014-2015 *General Aviation Accident Scorecard*

summarizes GA accidents during those two years. Data include total numbers of accidents, fatal accidents, fatalities, and tabulations of the categories and classes of aircraft involved, pilot qualifications, purposes of the accident flights, and light and weather conditions. The scorecard is intended to provide a snapshot of recent GA accidents while the National Transportation Safety Board completes its investigations.

RUNWAY SAFETY FLASH CARDS

Made possible by AOPA Insurance, AOPA Finance, and AOPA Pilot Protection Services.

ASI's new digital, interactive runway safety flash cards offer students, pilots, and instructors a real-world look at the location and meaning of various signs, markings, and lighting to help them operate safely in the runway environment.

WEBINARS

AIRSAFETYINSTITUTE.ORG / WEBINARS

AFTER THE CRASH: SURVIVING AN AIRCRAFT ACCIDENT

Of the millions of GA flights every year, only a few end with unplanned off-airport landings. Even though the odds of a crash are slim, the potential consequences are harsh—which is why smart pilots prepare and take basic precautions. From route planning and emergency rations to signal mirrors and satellite phones, this webinar discusses a common sense approach pilots can take to maximize their chances of survival and rescue after a crash.

MIND OVER MATTER: STRENGTHENING THE WEAKEST LINK

Being a safe pilot requires more than good stick and rudder skills. In this webinar, pilots learn simple techniques that can increase performance and reduce error. This webinar examines some of the ways pilots in the safest sectors of aviation are “trained to think” about safety. These lessons learned are easily transferable to general aviation pilots and, if followed, can help pilots adopt a safety mindset and decrease human error.

ABOUT ASI

AIRSAFETYINSTITUTE.ORG

ASI serves all pilots—not just AOPA members—by providing free safety education programs, analyzing safety data, and conducting safety research. Pilots throughout the world rely on the products from ASI to help them become safer and better informed. Since 1950, the GA accident rate has decreased by 90 percent—due in large part to the safety education provided to pilots by ASI. From award-winning online courses to in-person seminars, ASI has a lot to offer including:

- Accident Analysis
- Accident Case Studies
- Ask ATC Videos
- In-Person & Online Flight Instructor Refresher Courses (FIRCs)
- In-Person Safety Seminars
- Online Courses
- Pilot Safety Announcements
- Real Pilot Stories
- Safety-to-Go Downloads
- Safety Publications
- Safety Quizzes
- Safety Spotlights
- Safety Videos
- Webinars

These programs are made possible by generous contributions to the AOPA Foundation from pilots like you.



**FIND IT
ONLINE**

airsafetyinstitute.org