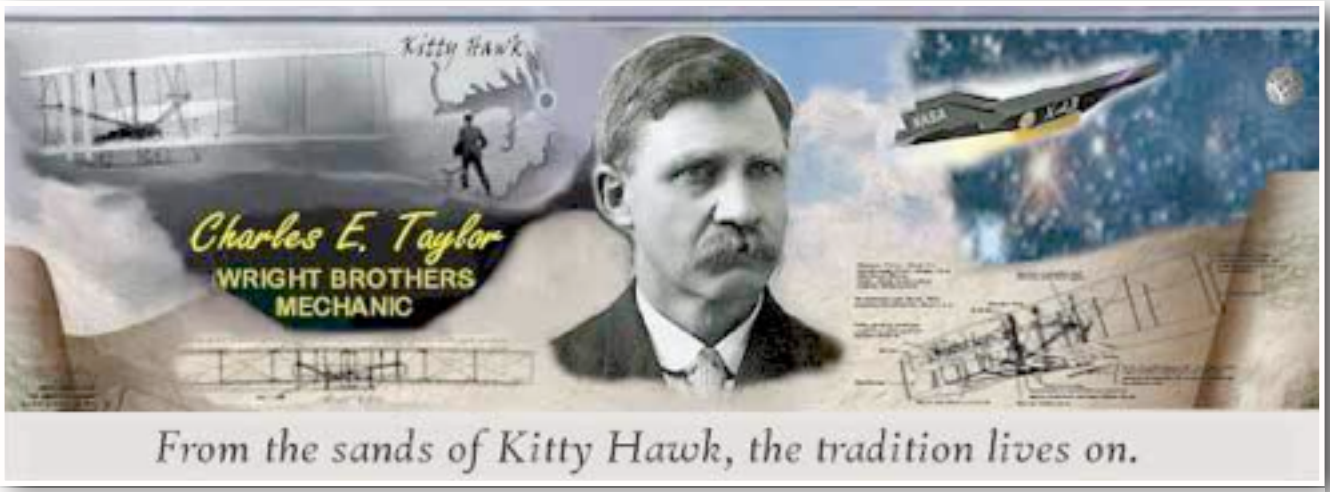
Aviation Human Factors Industry News

Volume XV. Issue 06, March 17, 2019



Hello all,
To subscribe send an email to: rhughes@humanfactorsedu.com
In this weeks edition of *Aviation Human Factors Industry News* you will read the following stories:

★NTSB: Undetectable Flight Control Malfunction Cause Of Jetliner Runway Excursion

★Air Force Won't Accept Any More Boeing Tankers Until Manufacturing Process Is Cleaned Up

★CAL aircraft damaged while taxiing

★Pilot walks into spinning prop

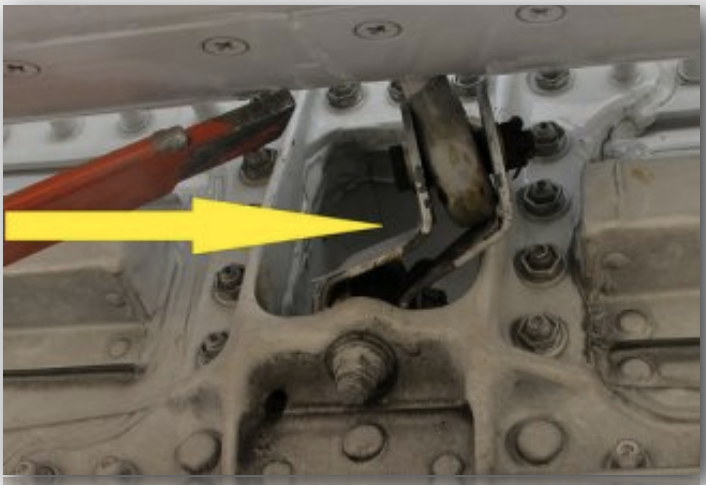
★Screwdriver left on plane's windshield hits prop blade

★How Safe Is Your Safety Culture

★7 Elements Of A Good Preflight Briefing

★AIR SAFETY INSTITUTE DEBUTS SCALABLE SAFETY FRAMEWORK

NTSB: Undetectable Flight Control Malfunction Cause Of Jetliner Runway Excursion



Investigators determined the elevator mechanism was damaged by wind turbulence that caused the elevators to "flap" and damage the actuating system on the right elevator.

Flight Crew's Actions Praised

An MD-83 airplane ran off the end of the runway during a rejected takeoff March 8, 2017, because of an undetected mechanical malfunction, according to a recently-released report from the NTSB.

Seconds after reaching the takeoff decision airspeed of 158 mph at about 5,000 feet down a 7,500-foot runway in Ypsilanti, Michigan, the captain's attempt to raise the nose and get the plane airborne was unsuccessful and he called "abort." The airplane decelerated following the rejected takeoff but was traveling too fast to be stopped on the remaining runway. It departed the end of the runway at about 115 mph, traveled 950 feet across a runway safety area, struck an airport fence and came to a rest after crossing a paved road.

Investigators determined that a component of the elevator flight control system had jammed in the days before the accident flight while the aircraft was parked at Ypsilanti Airport during a wind storm with recorded gusts in excess of 60 mph. Although the flight control system was designed and certified to withstand such horizontal gusts, computer simulation of the wind flow showed that a nearby hangar generated localized turbulence with a vertical component that could move the elevator rapidly up and down, ultimately causing it to jam.

The flight crew completed all preflight checks, including a test of the flight controls, and found no anomalies before initiating the takeoff roll on the accident flight. The NTSB said that there was no way that the pilots could have detected the flight control jam until it was too late.

“This is the kind of extreme scenario that most pilots never encounter – discovering that their plane won’t fly only after they know they won’t be able to stop it on the available runway,” said NTSB Chairman Robert L. Sumwalt. “These two pilots did everything right after things started to go very wrong.”

Investigators said that the captain’s quick decision to abort the takeoff and the other crewmember’s coordinated efforts to assist him had likely contributed to the survivability of an accident in which there were no serious injuries among the 110 passengers and six crewmembers. The Ameristar Charters Boeing MD-83, which was transporting the University of Michigan basketball team to Washington, D.C., was substantially damaged.

The NTSB also noted that the 1,000-foot runway safety area – added to Ypsilanti airport during upgrades between 2006 and 2009 – likely contributed to the lack of serious injuries. In 1999, in response to an NTSB recommendation, the Federal Aviation Administration began a national program to add runway safety areas to many commercial airports.

“The addition of runway safety areas at many airports are a real success story in commercial aviation, as demonstrated in Ypsilanti” said Sumwalt. “RSAs across the nation have mitigated accidents, prevented injuries and saved lives.”

https://www.ntsb.gov/news/press-releases/Pages/NR20190307.aspx

Air Force Won't Accept Any More Boeing Tankers Until Manufacturing Process Is Cleaned Up

Boeing grounded the tankers just over a week ago after loose tools and bits of debris -- known in the aviation world as Foreign Object Debris, or FOD -- were found in various locations inside completed airplanes

The Air Force said Friday that it won't accept delivery of any more KC-46 tankers until Boeing's manufacturing process is cleaned up.

Boeing grounded the tankers just over a week ago after loose tools and bits of debris -- known in the aviation world as Foreign Object Debris, or FOD -- were found in various locations inside completed airplanes, the airframes of which are built on the 767 assembly line in Everett.

Air Force spokeswoman Capt. Hope Cronin said Friday that the Defense Contract Management Agency stopped acceptance of KC-46 aircraft on Feb. 20.

"No aircraft have been accepted since then, and [deliveries] will not restart until the production aircraft are cleared of FOD, and the Air Force and DCMA have approved a corrective action plan by Boeing that will prevent FOD in the future," Cronin said via email.

At a roundtable at the Air Force Association's Air Warfare Symposium in Orlando, Fla., Friday, defense journalists asked Will Roper, the assistant secretary of the Air Force for acquisition, technology and logistics, about the impact of the FOD issues, which were first reported Thursday by The Seattle Times.

"As of this morning we are still not accepting KC-46s and I believe that will continue for some time," Roper said.

"I don't want to overblow it," Roper told Defense News. "If the issue goes away and we have no cause for concern in the future, I'll just treat it as growing pains. ... If we have this issue again, then -- it's already serious -- but it will be a much more serious endeavor."

During the process of building aircraft, all airframes are supposed to be routinely swept for FOD -- especially anything metal. A loose object left, say, inside a wall cavity or under a floor, is potentially dangerous because over time it could damage equipment or cause an electrical short.

Last week, an internal Boeing management memo to employees noted that eight tools were found in aircraft delivered from the main assembly line to the company's military installation facility at the south end of Paine Field, and two more were found in tankers delivered to the U.S. Air Force.

In the past, final FOD sweeps of any area of any aircraft that's about to be closed up would have been done by a quality inspector. However, Boeing is in the process of transforming its quality-control procedures, aiming to change work procedures and introduce automation so that many fewer such secondary checks are necessary.

One change already implemented is that mechanics can close up many areas of the airplane without an inspector taking a final look. And as part of what Boeing calls its Quality Transformation" program, the company intends to cut nearly 1,000 quality-inspector jobs over the next two years.

Boeing has delivered six tanker aircraft to the Air Force so far, the first of a total 179 airplanes. The government estimates it will spend $41 billion on development and procurement of the KC-46, of which approximately $30 billion will go to Boeing, according to the company's annual report.

However, the program has been beset with years of delays and Boeing has already had to swallow more than $3.6 billion in cost overruns.

The Air Force took the first tanker in January only after working out an agreement with Boeing that it will fix certain flaws in the aircraft's refueling systems over the next three to four years, and that until those fixes are implemented the Air Force will withhold up to $28 million from the final payment on each aircraft.

Prior to the latest FOD problems surfacing, Boeing had been expecting to deliver its next tanker within days. That's now on hold.

CAL aircraft damaged while taxiing

A Caribbean Airlines aircraft hit a wall at Piarco Airport last night while the aircraft was being sent to the maintenance area, Newsday Tobago was told by an eyewitness. The aircraft was empty and no one on the ground was injured, but the plane's nose was badly damaged.

A witness who wished to remain anonymous said the incident occurred around 10.30pm.

"It was maintenance that ran the aircraft into the building wall near the baggage makeup area, hitting an Airport Authority sign. It looked like maintenance was taking the aircraft into the hanger. What we saw is the aircraft lost power, the propeller cut off immediately and the aircraft started to drift on the runway and it seemed like they weren't getting brakes."

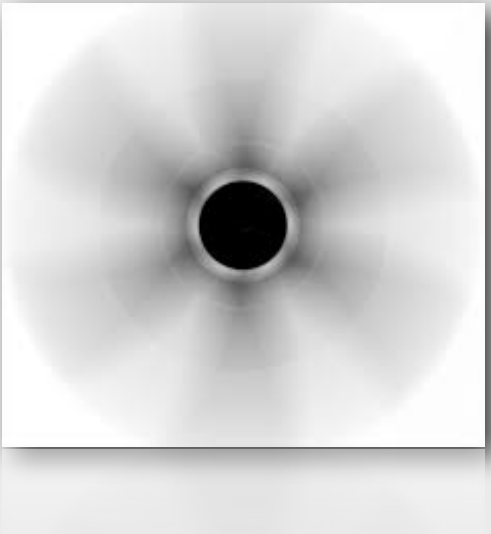
CAL said in a release at about 11.15 last night a plane was being taxied from the ramp to a hangar when it crashed into a wall of the terminal building.

The plane was not in service, meaning there were no passengers aboard, and no employee of CAL was injured.

CAL said the extent of damage to the plane is being assessed and the plane is out of service. Investigations are in progress and the airline said to assure all stakeholders that the airbridge will operate as usual.

Pilot walks into spinning prop

The pilot, who was conducting a local personal flight in a Cessna 162, said he developed "unnecessary anxiety" and hurried his landing due to approaching traffic.



He failed to brake aggressively and, as a result, was unable to turn in time to exit the runway at the airport in Conway, Arkansas. The airplane rolled off the taxiway and became bogged down in the wet grass from a previous rain.

Instead of shutting the engine off, the pilot closed the throttle to idle, exited the airplane, and tried to push the airplane with the left strut.

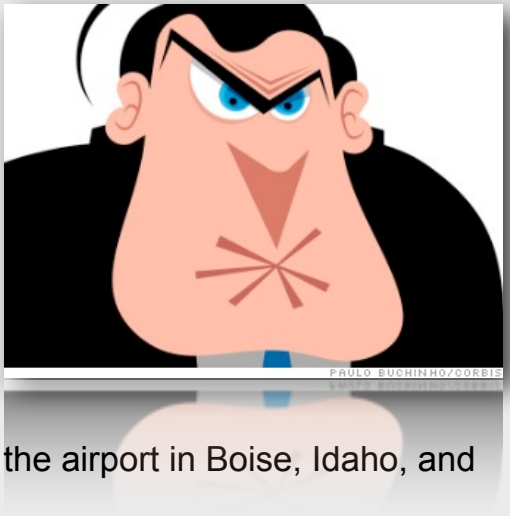
"Without thinking," he walked toward the nosewheel to inspect the airplane and walked into the rotating propeller.

Probable cause: The pilot's failure to shut down the engine before exiting the airplane and his failure to focus his attention on the task at hand, which led to his walking into a rotating propeller.

NTSB Identification: CEN17CA116

This March 2017 accident report is provided by the National Transportation Safety Board. Published as an educational tool, it is intended to help pilots learn from the misfortunes of others.

Screwdriver left on plane's windshield hits prop blade



The airline transport pilot reported that he performed a preflight inspection of the airplane before departing on the repositioning flight. The takeoff roll was normal, however, just after the Swearingen SA226 lifted off, he heard a "pop" and felt a vibration.

He initially thought that one of the tires had blown, but as the vibration continued, he determined that he might have a problem with one of the propellers. He subsequently returned to the airport in Boise, Idaho, and landed without further incident.

When he shut down the left engine after landing, he noticed that the tip of one of the propeller blades was missing.

Further examination of the blade revealed that about 4″ of the blade tip had separated and penetrated the side of the fuselage.

Airport personnel later found additional pieces of propeller blade material on the runway, as well as what appeared to be the blade of a screwdriver and pieces of the handle.

Maintenance personnel reported that a mechanic had been working on the airplane just before the flight and had been called away from the task he was performing before it was completed. The airplane was subsequently returned to service.

The mechanic left a screwdriver on the nose of the airplane in the windshield wiper area, in a position that the pilot could not see. It is likely that, during the takeoff roll, the screwdriver became dislodged from the area of the windshield wiper and hit the left propeller.

Probable cause: Company maintenance personnel's failure to remove a screwdriver that was left lodged in the windshield wiper area of the forward fuselage during maintenance and subsequently became dislodged on takeoff/initial climb and collided with a left propeller blade.

NTSB Identification: WPR17LA078

This March 2017 accident report is provided by the National Transportation Safety Board. Published as an educational tool, it is intended to help pilots learn from the misfortunes of others.

How Safe Is Your Safety Culture?

by John Goglia

I've been thinking about safety cultures at aviation entities for a few reasons. For one, as I write, it's the start of a new year and a good time for resolutions. One such resolution could be striving to improve the safety culture of your organization for the year 2019. I've been thinking about that for some of the organizations I consult with as a way of motivating what should be a regular review of a business's culture.

For those of you who don't have the span of control to improve an entire organization's safety culture—although, to any owners or chief executives who may be reading this, you do—but any manager or supervisor can influence the area they have control over. And I say influence; it's ultimately the head of the organization who really controls the safety culture, but more about that in a minute.

Another reason for this particular topic is the partial shutdown of the U.S. government and accompanying furlough of FAA safety inspectors and NTSB accident investigators. (Shortly after this writing, the two sides reached an agreement to open temporarily, but the future was uncertain.) For inexplicable reasons, the FAA decided in a 2013 shutdown that the bulk of its safety inspectors would no longer be considered essential workers, as they were in previous shutdowns. It seems that the decision to consider safety inspectors non-essential has continued in this shutdown. According to an FAA statement on Twitter: "if we identify an issue, we recall inspectors and engineers to address it." Who is identifying issues if inspectors aren't out there inspecting or at least evaluating reports coming in from whistleblowers or the public? This situation highlights for me the importance of a strong safety culture so that you don't need the fear of a government inspection to keep management or employees focused on doing the right thing.

TOP-DOWN CULTURE

Coincidentally, as I was getting ready to write about this topic, a friend of mine sent me a podcast interview with a management expert talking about issues that I believe are relevant to safety cultures. Titled " Science of Leadership (with Adam Grant)," the podcast interviews Adam Grant, an organizational psychologist and professor at the Wharton School of Business at the University of Pennsylvania, on a wide range of subjects related to leadership.

Grant's summary defining safety culture is a good one: "When I think about culture, I think about repeated patterns of behavior that reveal norms and values. I think one of the shorthand ways to capture what is "culture" is; what people do when no one is looking." As I mentioned earlier, with the inspectors out on furlough, you hope for a safety culture that doesn't depend on fear of an FAA inspection.

Are the norms and values in your organization or your unit to do the right thing, or to take convenient shortcuts just to get the job done, even if the impact on safety is unknown or risky?

Grant highlights the importance of founders or leaders in creating cultures by what they reward and what they punish. But, importantly, they also do it by the people they promote. If people are promoted for their ability to perform individually but their impact on others is not considered, you can end up with a toxic person creating a toxic environment. I've seen that in organizations where I've worked. I've also seen it in organizations that I've reviewed after accidents have left them shaken as to how the breakdown in safety occurred.

Most often, on the maintenance side, I've seen a failure to follow procedures become a norm that undermines safety. The company mantra is to get the job done, move planes. Someone in the company, maybe a new hire who tries to do work "by the book," is criticized for slowing down the operation. He or she quickly learns the only way to keep their job or to get promotions is to take shortcuts; following the proper steps is not going to be rewarded if it means slowing down the operation.

The same is true for cultures that push pilots to take risks with weather or aircraft performance that they themselves are hesitant to take. Or a culture exhibited by the pilots themselves, such as revealed by the NTSB investigation of the Gulfstream IV crash that took the lives of seven people, including David Katz, owner of the Philadelphia Inquirer. That accident revealed an astonishing failure by a senior pilot and copilot to perform a routine pre-takeoff flight-control check, resulting in their attempted takeoff with the gust lock engaged. One of the contributing factors found by the NTSB was the "habitual failure" to perform such a check on the preceding 175 flights by the same very experienced flight crew.

One of the observations Grant makes regards the toxic superstar. We all know the employee who is brilliant at their job but creates misery for those around them. Grant, who studies this type of situation, states: "If you look at the data, it's pretty clear, one bad apple can spoil a barrel, but one good egg does not make a dozen."

While it's possible to change some of those toxic behaviors, Grant's conclusion is that "it's much easier to change culture by removing people than it is to change those people's behavior, especially if they are powerful people."

In the end, I thought one of the most helpful parts of this interview was Grant's view on how to avoid group think and encourage speaking truth to power. I can't count the number of times after an accident that I've heard other employees say that so-and-so was an accident waiting to happen. Or, "We wanted to say something but the boss [or bosses] didn't want to hear it."

One of the most meaningful strategies for me has to do with how individuals can raise issues, even with difficult bosses, and greatly increase their chances of being heard and their advice being acted upon.

https://www.npr.org/podcasts/551791730/stay-tuned-with-preet

https://www.ainonline.com/aviation-news/blogs/torqued-gulfstream-iv-crash-corporate-aviations-wakeup-call

7 Elements Of A Good Preflight Briefing

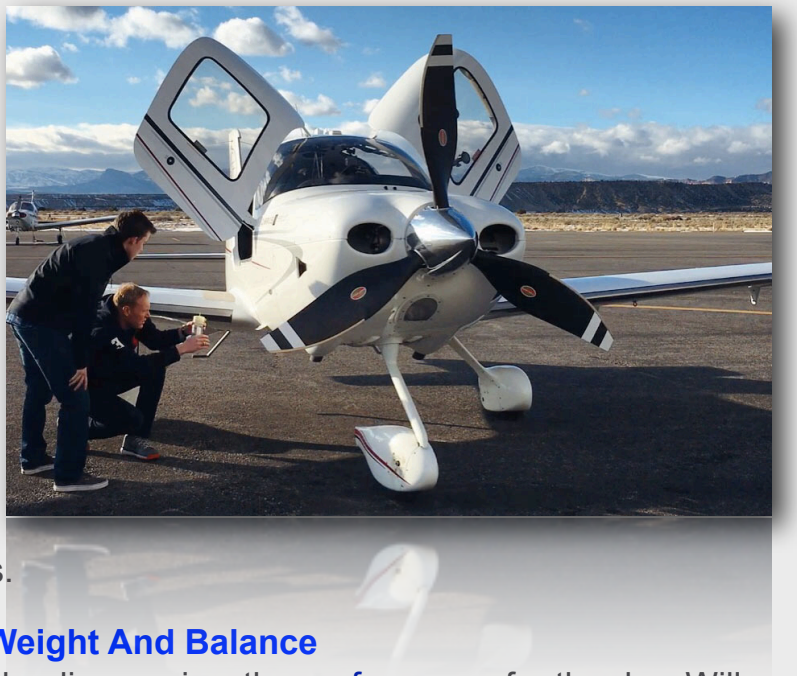
Here are some of the most important things you should cover before you set foot in your plane...

1) Crew Task Management

If you're flying with another pilot, it's important to be very clear about how you'll split tasks in the cockpit. Without clear communication from the very beginning, it'll be difficult to work together.

2) Your Route

Review your planned route and see if any unique navigation equipment requirements apply. Make sure to double check TFRs and special use airspace along your route.



3) Alternate Plans

If there's low weather, brief your plan for alternates, as well as which direction off-route has the best conditions.

4) Aircraft Performance + Weight And Balance

Once you know your aircraft loading, review the performance for the day. Will you be able to meet climb gradient and terrain restrictions? Does the weight and balance fall within limits?

5) Adverse Weather

If there's adverse weather along your route, brief how you'll adjust your route. Before you take off, check the weather again to make sure there haven't been any significant changes.

6) Personal Minimums

Beyond legal limits, always have a conversation about personal minimums. How high do the clouds need to be for you to feel comfortable flying? If you encounter poor weather conditions, how do you want to proceed?

7) Are There Any Unique Risks?

Do you have a baby onboard? How about a sick passenger? Is your fuel load only enough to meet legal reserve requirements? No flight is the same, so it's important to brief what makes your flight unique, and how you want to mitigate any risks.

AIR SAFETY INSTITUTE DEBUTS SCALABLE SAFETY FRAMEWORK

The AOPA Air Safety Institute has released a Scalable Safety Framework (SSF), a PowerPoint presentation with a supporting PDF, that can be downloaded by aviation organizations like public benefit groups, flying clubs, and more to help them formulate, implement, and sustain a safety culture that is geared and scaled to their specific organization.

The institute's Scalable Safety Framework is based on the FAA mandated Safety Management Systems in use by air carriers and other large operations. The Air Safety Institute focused the framework on five main components and steps to success.

1. Leadership: Communication from senior leadership stressing their commitment to a safety culture is imperative. This commitment sets the tone for the whole organization, and emphasis should be placed on a non-punitive culture that encourages pilots to report safety concerns.
2. Accountability: Examine and assess the roles and responsibilities of each stakeholder in a group. The roles include how these individuals interact with others in the organization. The responsibilities include requirements to successfully fulfill the roles as well as the limits of an individual's authority (i.e., can they cancel a flight, ground a flight, authorize a flight?).
3. Risk: Identify and assess the risks and unique issues associated with the operation. Then, create meaningful mitigation strategies that realistically can be implemented.
4. Reporting: Create a reporting system or promote the use of a system that already exists. A reporting system can be paper based, or web based—

either way, it must be usable for the organization. A usable reporting system needs a standard form to report safety issues, a means to submit the report, a place to collect the reports, and a means of distribution of findings across the organization.

5. Culture: The goal of the SSF is ultimately to create an organization-wide safety culture that encourages reporting, rewards safe actions and behaviors, and keeps the entire organization (not just the leaders) engaged and involved in correcting issues.

Safety is everyone's responsibility—help your aviation group by developing your own Scalable Safety Framework. Download the presentation from our **Safety to Go portal**.

https://aopa.org/training-and-safety/air-safety-institute/safety-to-go-downloads

EASA report on "Effectiveness of Flight Time Limitation" Recommends Enhancing Fatigue Mitigation Measures to Prevent Fatigue Among Aircrew

Research found an increased probability of high fatigue levels, especially during nights and duty periods with late finishes, among both pilots and cabin crew.

Scientific study conducted by the European Union Aviation Safety Agency recommends enhancing mitigation measures concerning flight and duty time limitations and rest requirements to prevent high fatigue among aircrew during night flights.

Results of the initial phase of this large European-wide scientific study in the field of Flight Time Limitation (FTL), highlight that prescriptive limits alone are not sufficient to prevent high fatigue during night flights. Further research is recommended alongside other actions to support air operators with their responsibility to tailor more effective fatigue risk management strategies for night duties.

The initial phase assessed the impact of 'night duties longer than 10 hours' and 'disruptive schedules' on the alertness of aircrews. Research found an increased probability of high fatigue levels, especially during nights and duty periods with late finishes, among both pilots and cabin crew. The strongest predictors of high fatigue in these periods, compared with daytime duties, varied by type of flight duty. For early starts, the only significant predictor was the earlier start time itself. For nights, the pertinent predictors were encroachment on the window of circadian low (WOCL, typically the period between 2 am and 5.59 am in the time zone to which a crew member is acclimatized) and short prior sleep.

Based on the conclusions drawn from the outcomes of the analyses, six recommendations were made regarding further fatigue mitigation measures.

Background:EASA has been mandated to perform a continuous assessment of the effectiveness of the rules concerning flight and duty time limitations and rest requirements (FTL) contained in Annexes II and III of Commission Regulation (EU) No 965/2012.

The assessment was started in 2017 with the commission of a scientific study. This assessment, which comprises a large scope of tasks, was split into several phases with the first phase focusing on the two duty periods that had the highest expected level of aircrew fatigue. These were duties of more than 10 hours at the less favorable time of the day and disruptive schedules.

The research contract was awarded to a Consortium led by the Netherlands Aerospace Centre NLR with Stockholm University as partner and the German Aerospace Centre DLR, Jeppesen and the Finnish Institute of Occupational Health as subcontractors.

Read the full report

NSC: Americans Now More Likely to Die of Accidental Opioid Overdose than Motor Vehicle Crash

The odds of dying accidentally from an opioid overdose have risen to one in 96, surpassing the odds of dying in a motor vehicle crash (one in 103), according to analysis by the National Safety Council.

For the first time in U.S. history, a person is more likely to die from an accidental opioid overdose than from a motor vehicle crash, according to analysis by the National Safety Council. The organization unveiled the analysis on Injury Facts.

The odds of dying accidentally from an opioid overdose have risen to one in 96, surpassing the odds of dying in a motor vehicle crash (one in 103), NSC reported. The rising opioid death statistic is fueled by the opioid crisis, which the influx of illicit and potent fentanyl is worsening.

"We've made significant strides in overall longevity in the United States, but we are dying from things typically called accidents at rates we haven't seen in half a century," said Ken Kolosh, manager of statistics at NSC. "We cannot be complacent about 466 lives lost every day. This new analysis reinforces that we must consistently prioritize safety at work, at home, and on the road to prevent these dire outcomes."

The NSC analysis also shows that falls are more likely to result in death than ever before. Falls are the third leading cause of preventable death. Lifetime odds of dying from an accidental fall are one in 114, an increase from one in 119 last year.

After heart disease and cancer, the third-leading cause of death is preventable injuries, which claimed an unprecedented 169,936 lives in 2017.

The council's complete Odds of Dying From … list and other information about leading causes of preventable death can be found at injuryfacts.nsc.org.

https://www.nsc.org/in-the-newsroom/for-the-first-time-were-more-likely-to-die-from-accidental-opioid-overdose-than-motor-vehicle-crash

https://injuryfacts.nsc.org/all-injuries/preventable-death-overview/odds-of-dying/

Long Hours Stress Women More

Women who work long hours are more likely to suffer from depression than men who do the same, a new study has found. British researchers examined data from a study involving 20,000 adults, reports The Times (U.K.).

Compared with women who worked a regular week of between 35 and 40 hours, women who worked 55-plus hours were 7.3 percent more likely to show symptoms of depression, such as stress, insomnia, and feeling of worthlessness. Men who worked the same hours did not show a similar increase. Led author Gill Weston, from University College London, stress that the study didn't show cause and effect.

But she suggested that the difference could be because women tend to do more housework, "leading to extensive total work hours, added time pressures, and overwhelming responsibilities." The study also fund that both men and women who regularly worked weekends were more likely to become depressed than those with normal hours.

Tons Of Americans Would Rather Sleep Alone Than With a Partner

According to an annual survey from alarm clock app Sleep Cycle, 41% of prefer sleeping solo to sleeping with a partner, reports Women's Health.

Many people are very peculiar about sleeping environments: Some require about a dozen blankets to snooze comfortably; some people insist on lying like a giant X in the middle of the mattress; some people need noise machines, others need night lights.

Get the full story at www.womenshealthmag.com

TED TALK : Ideas Worth Spreading

Electric cars are extremely quiet, offering some welcome silence in our cities. But they also bring new dangers, since they can easily sneak up on unsuspecting pedestrians. What kind of sounds should they make to keep people safe? Get a preview of what the future may sound like as acoustic engineer and musician Renzo Vitale shows how he's composing a voice for electric cars.

https://www.ted.com/talks/renzo_vitale_what_should_electric_cars_sound_like