Q&A: Is it safe to fly? Airline safety expert on modern commercial flight

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Amy Pritchett, pilot, professor and head of aerospace engineering at Penn State, fuels a Beechcraft Bonanza at the University Park Airport near Mount Nittany. Credit: Amy Pritchett/Penn State

In light of recent news regarding congressional action on aviation safety, Penn State News spoke with Amy Pritchett, department head of aerospace engineering and professor in Penn State's College of Engineering. Pritchett previously served as the director of NASA's Aviation Safety Program and currently chairs the National Academies committee chartered to research and advise federal regulators on emerging trends in aviation safety.

In your current role as chair of the Emerging Trends in Aviation Safety committee, you have a front row seat to the next frontiers in aviation. What is top of mind for you as you are interacting with regulators? What should they be thinking about?

We are a widely diverse committee with many different perspectives on safety, which has been fascinating for me as an engineer and an academic. Before serving on this committee, I tended to think about safety as being about the technology working—specifically technology working to support the pilot.

I quickly learned that I needed to broaden my perspective. We look at all the personnel, not just the pilots, but the flight attendants, the dispatchers, the mechanics. Safety means making certain that when we design an operation, we can assume a strong level of performance out of all the humans contributing to the system.

The technology is certified to prove that it is reliable, but people are the most import safeguard when it comes to aviation safety. We need to focus on making sure they are given all the resources they need to perform at their absolute best.

Anyone who reads the news knows that the aviation industry has seen its fair share of challenges over the past few years. What are some of the biggest challenges you see facing the industry heading into the future?

What are we proposing today in aviation looks a lot like science fiction. We're proposing urban air taxis, little aircraft that are whizzing around above the traffic. We are proposing drones for cargo delivery. We're proposing entirely new sustainable fuel systems. It's fascinating.

We're working on regulations as people are designing these things, working on all the safety issues we can predict. But that's the catch. As humans, there's always something we cannot predict. We are imperfect beings and there will always be something we miss.

So, a lot of the focus on the cutting edge in aviation safety right now is talking about how, as an industry, as the organizations within the industry, we manage this conceptually.

It seems like every other week there is some news story about aircraft safety issues. What do you think is contributing to these problems and what is the fix?

In recent cases, the issues have resulted from a design made in one place and the production happening somewhere else. The concerns that are coming up do not suggest the design is flawed. They suggest that the process for putting the design together and monitoring that everything is in the right place, that those organizational practices are of concern.

The Federal Aviation Administration doesn't have the capacity to

regulate the entire production line for every single bolt that is going into an aircraft. Instead, we need an organizational ethos within these companies where they are monitoring and managing safety, where they are open to hearing about concerns from people, in their design team or on their shop floor.

And further, here it gets even more complex, when you start having a huge aircraft that is not just built and designed by one company, but instead is has an elaborate supply chain that spans the world. At that point, we need to be making certain that the safety management ripples out not just from the final production line, but also out to all the components that go into it. This is an extremely challenging organizational issue, but it's the only way to really solve the problem.

Automation is increasingly entering industries these days, including aviation. What are your thoughts on the topic?

Not to name names, but we've heard from corporations that say "Oh, my airplane is perfectly automated, we don't even need a pilot." We're quick to point out that as long as everything's working, you don't need a pilot. Pilots are incredible problem solvers. I'm also personally a pilot from a family of pilots, so I feel very strongly about how much the pilot contributes to safety when other safety systems fail.

And it's not just the pilots. The number of cases where air traffic controllers have saved the day is amazing. We need to make certain that we don't just focus on human error, but that we also focus on the human contribution of safety as we increase automated technology and its sophistication.

This is a question that I'm hearing a lot more of these

days: Is it safe to fly?

Trust is such a fragile thing and unfortunately the public has lost some of that trust in my industry. You might find this surprising, but I think right now is probably the safest time to fly. There's a heightened level of scrutiny, which means that safety checks are happening at an even higher level right now. But in a broader sense, commercial air transport in the United States and in the Western world is the safest form of transportation, ever. Your riskiest part of the flight is driving to the airport.

Provided by Pennsylvania State University

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