Most commercial planes could accommodate personal wheelchairs

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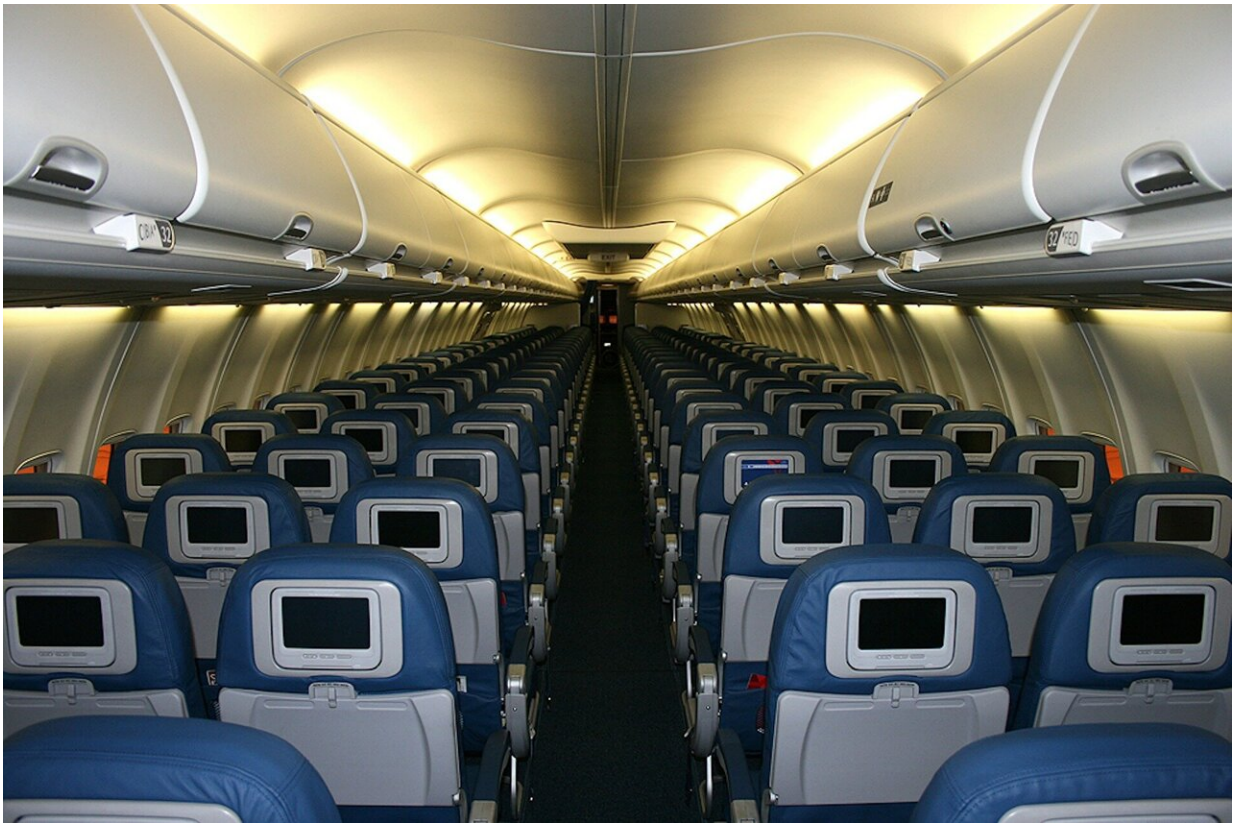

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Many U.S. passenger airplanes could accommodate personal powered wheelchairs, electric wheelchairs often customized to the user, according to a report from the National Academies of Sciences, Engineering, and

Medicine. The report summarizes the preliminary assessment on the feasibility of wheelchair restraint systems in passenger aircraft by an expert committee, which included George Lesieutre, associate dean for research and graduate programs in the College of Engineering at Penn State.

"Our initial assessment determined that most commercial aircraft could accommodate a passenger traveling in their own wheelchair without any major reconfigurations," said Lesieutre, who is also a professor of aerospace engineering. "While we still need to assess compliance of certain wheelchairs and securement systems with applicable safety regulations, the potential is there—this is a first step towards providing a more comfortable and dignified flying experience for people who use wheelchairs."

While implementing a wheelchair securement system and ensuring wheelchair travelers have ample flight offerings would require significant design and engineering efforts, the types of cabin modifications that could provide the access, space and structural support necessary would likely be feasible from a technical standpoint, the committee determined. Given remaining uncertainties about safety, however, further evaluations are needed to understand how secured personal wheelchairs would perform in protecting their occupants during a survivable airplane crash or emergency landing.

Currently, airplane passengers cannot use their personal wheelchair as a seat in the same way they can on many trains, buses and vans. The report, titled, "Technical Feasibility of a Wheelchair Securement Concept for Airline Travel: A Preliminary Assessment," does not advise whether in-cabin wheelchair systems should be installed on airplanes. However, the concept of an in-cabin wheelchair securement system appears technically feasible and warrants more focused analysis and testing, said the committee that wrote the report. The committee called

for a road map—ideally led by the U.S. Department of Transportation—that defines and prioritizes decisions and follow-on work related to system engineering and design, standards and regulation development and airline service personnel training.

"Equipping airplanes with wheelchair securement systems is an intuitively appealing solution to many of the hardships that people with disabilities and who are nonambulatory face when flying," said committee chair Alan M. Jette, emeritus professor and dean at Boston University's Sargent College. "We hope this report lays the groundwork for future efforts to fill the information gaps [that] the committee identified. The idea behind the study is: If passengers had the ability to fly while seated in their personal wheelchair that is customized for their medical and physical needs, they could avoid the hardships of flying and be able to use their own wheelchair at their destination."

There are more than 6,000 passenger airplanes in the U.S. airline fleet, but airplanes in the Boeing 737 family and the Airbus A320 family are ubiquitous. According to the report, for any wheelchair securement concept to be practical and provide substantive levels of service, it would need to be applicable to these two airplane families, which together account for about half of all departures and nearly two-thirds of all passenger boardings. The cabins of the most commonly configured airplanes in these two families could be modified without undue technical difficulty to create a wheelchair securement area at the front of the cabin.

"Our committee did not identify any issues in this preliminary assessment that seem likely to present design and engineering challenges so formidable that they call into question the technical feasibility of an in-cabin wheelchair securement system and the value of exploring the concept further," Jette said. "Closing the remaining information gaps—particularly about safety—would enable more-informed public

policy decisions that meet the needs of airlines, their personnel, and people with disabilities."

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