

**9<sup>th</sup> Triennial International Aircraft Fire and Cabin Safety Research Conference**  
**October 28 – October 31, 2019**  
**Atlantic City, NJ**

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**Topic:** Passenger Education and Management: Safety Briefings

**Title:** Rationale for New Brace Position Guidance

**Abstract**

In an aircraft crash, one thing a person can do to increase their chances of survival is to assume an appropriate brace-for-impact position. Typically, the crash vector is unknown to the aircraft occupants, so the brace position selected should be one that minimizes risk during most likely loading scenarios. In several recent transport aircraft crashes, the impact scenario included an initial vertical impact, followed by a horizontal impact. Since the exact sequence and severity cannot be predicted, a brace position that reduces risk in both of these impact vectors should provide the highest overall protection.

FAA guidance concerning brace position contained in AC 121-24D has been recently revised to reflect the latest research findings summarized in DOT/FAA/AM-15/17. The most significant change was to the passenger position in row-to-row seating. The new research findings indicated that arms should be placed down by the lower legs instead of on the seat back as had been previously recommended. This move was necessary to prevent the inertia of the passenger's arms from pushing the seat back forward, which tends to increase head strike severity. The new row-to-row brace position is intended to provide the same level of protection regardless of the specific seat back design. Other guidance material changes primarily focused on foot and hand placement with the goal of minimizing injury risk to extremities. These changes were based on a combination of research findings, human factors, and expected occupant response to impact loading. This presentation will summarize the reasons for selecting each foot and hand placement for the various seat types.

The goal of providing aircraft operators and the public a summary of the rationale behind the new brace guidance is to facilitate its acceptance and implementation.