Plan Overview

A Data Management Plan created using DMPTool-Stage

Title: Extended Reality for Cabin Safety II: Flight Attendant Training

Creator: Levi Breeding

Affiliation: United States Department of Transportation (DOT) (transportation.gov)

Principal Investigator: Levi Breeding

Funder: Civil Aerospace Medical Institute (faa.gov)

Template: U.S. Department of Transportation: Data Management Plan (DMP)

Project abstract:

This study aims to understand the efficacy of extended reality (XR) technology in aspects of flight attendant training. Comparing and contrasting current approaches to flight attendant training in the United States and XR technology yields similarities and many differences. Two of the more common approaches require flight attendants to demonstrate proficiency in several areas such as aircraft familiarization, emergency procedures, and security procedures to qualify to serve as a working crewmember on commercial aircraft. The regulatory authority mandates qualification criteria through the relevant Federal Aviation Regulations, and airlines must demonstrate how their training programs meet or exceed the standards. This study will examine historical training data provided by a United States air carrier. The training data contains the proficiency and performance results of flight attendants completing training requirements in basic indoctrination and their progression over the next few years attending annual training. This study expands XR research and literature into an under-researched area, flight attendant training. Results of this study could inform regulators on updating policies and rules regarding the use of extended reality in flight attendant training.

Keywords: extended reality, XR, flight attendant training, regulations, policy change

Start date: 01-11-2022

End date: 11-13-2023

Last modified: 03-27-2023

Copyright information:

language used, but using any of the plan's text does not imply that the creator(s) endorse, or have any relationship to, your project or proposal

---

Extended Reality for Cabin Safety II: Flight Attendant Training

Persistent Link:
https://doi.org/10.21949/1524430

Recommended Citation:

Breeding, L. L., Weed, D. B., Beben, M. S. (2023). *Extended reality for cabin safety II: Flight attendant training.* (Report No. DOT/FAA/AM-23/TBD). Federal Aviation Administration.

Change Log:

2021-12-29: Updated project title. Wrote recommended citation.

2022-01-27: Updated project schedule. It is unknown at this time what data will be collected; therefore, a plan will be developed when this information is known.

2022-05-09: Updated with DOI and funder.

2022-07-25: Updated project abstract, project end date, and funding status. Made updates to specific items within each section of this plan.

2022-08-31: Removed ethical concern for this project because all historical data given to the FAA will be de-identified prior to transmission.

2022-10-03: Revised relevant sections and information to reflect recent rebaselining activity.

2022-12-01: Revised end date to reflect new anticipated completion date.

CONTENTS:

0. Dataset and Contact Information:

Extended Reality for Cabin Safety II: Flight Attendant Training

CAB-22007 DOT/FAA/AM-23/TBD

Levi L. Breeding 0000-0003-2740-2790

levi.l.breeding@faa.gov (405) 954-0692

Federal Aviation Administration

1. Data Description:

Extended Reality for Cabin Safety II: Flight Attendant Training

The FAA Air Carrier Training Systems and Voluntary Safety Programs Branch, AFS-280, requested this research project to investigate the use of XR in flight attendant training. The identified issue is a dearth of criteria to evaluate the efficacy and guidance for certifying such devices (i.e., hardware and software) as approved or accepted training modalities. Although few airlines have implemented this technology, even as a supplemental training modality, industry experts and manufacturers believe there will be an increased implementation of this technology in aviation training over the next several years. The International Civil Aviation Organization (ICAO) and the European Union Aviation Safety Agency (EASA) have established guidelines to incorporate this technology in crewmember training.

This study aims to understand the efficacy of this training modality when used in AQP flight attendant training. This quasi-experimental study aims to analyze proficiency and performance data collected by an airline using AQP training with supplemental XR lessons. As this is an initial study in this area, the goal is to understand gaps in data collection, techniques, performance and proficiency, and XR efficacy in a formal training program. In the future, the iterative effort aims to understand XR training to inform rule makers when considering certification standards. Specifically, this study will seek to understand if (1) XR technology is an efficacious flight attendant training tool when used in AQP training, (2) XR technology significantly improves flight attendant task proficiency, and (3) XR flight attendant training increases longitudinal information retention.

This project is anticipated to use historical airline training data that has been de-identified prior to transmission to the researcher.

The methods for creating the data are anticipated to include analyses of existing training data collected by the participating airline.

It is anticipated that the data collection period will begin in 2Q22 and end in the following quarter (both within U.S. Federal government fiscal year 2023). Frequency is to be determined by availability of resources and access to data.

The data collection anticipated is quantitative in nature. This data measures performance and proficiency.

The list of potential users of this data may include air carriers, regulators, and academic institutions.

The potential value of the data in the long-term is that it provides a baseline for future studies as the technology increasingly expands and develops.

This data will be made accessible to the public.

The data will be managed by its authors.

Adherence to this data management program will be reviewed at least once per quarter.

2. Standards Employed:

Data is anticipated to be collected electronically on secured government furnished equipment. The data is anticipated to primarily consist of Excel files (.xlsx), Word files (.docx), and Portable Document Format (.pdf).

Proprietary data formats are not anticipated for inclusion at this time.

Data versioning will be maintained by the airline using a standard naming convention. Electronic data files will be retained on secured government furnished equipment.

The file formats anticipated for use are standard to my field.

Anticipated documentation will include charts, graphs, and tables, where necessary, to represent data results of this study.

I intend to use the metadata schema relevant to the Social Sciences: Data Documentation Initiative (DDI).

Electronic data files will be retained on secured government furnished equipment. Any paper notes, documentation, or responses will be scanned or entered into an electronic data file.

A computer or other internet-connected electronic device, Microsoft Office applications, and Adobe. Additionally, references will be maintained by the EndNote Reference Management software.

I will ensure the files are maintain on the government furnished equipment in a restricted yet accessible (to peers) cloud file. I will ensure the files open and have retained the data entered.

3. Access Policies:

De-identified data of performance results; de-identified responses to any interviews, focus groups, or surveys; and results of the study will be shared publicly. Data files will be shared through the National Transportation Library web site.

The data is not anticipated to contain private or confidential information.

No anticipated concerns regarding privacy, ethical, or confidentiality are known at this time.

Any interviews, focus groups, or survey responses will not contain names. If this methodology is used, the air carrier will provide volunteers to respond and no names will be collected. Airline names linked to the data will be changed from proper names to a generic identifier.

4. Re-Use, Redistribution, and Derivative Products Policies:

These data are managed by the Federal Aviation Administration. The data are in the public domain, and may be re-use without restriction. Citation of the data is appreciated. Please use the following recommended citation:

Breeding, L. L., Weed, D. B., Beben, M. S. (2023). *Extended reality for cabin safety II: Flight attendant training.* (Report No. DOT/FAA/AM-23/TBD). Federal Aviation Administration.

The Federal Aviation Administration holds the intellectual property rights to this data.

This data is in the public domain.

Any rights to be transferred to a data archive are unknown at this time.

This data will be available to the public.

5. Archiving and Preservation Plans:

Data archiving will be accomplished through the National Transportation Library services.

The approximate time period between data collections and submission to the archive is anticipated to be less than one year.

The data will be temporarily stored on government furnished equipment before being sent to archive.

The data security and integrity will be maintained by the Federal Aviation Administration and the data management and protection will be subject to the standards and methodologies used by the Administration.

The data security and integrity will be maintained by the Federal Aviation Administration and the data management and protection will be subject to the standards and methodologies used by the Administration.

The data security and integrity will be maintained by the Federal Aviation Administration and the data management and protection will be subject to the standards and methodologies used by the Administration.

The National Transportation Library will archive the data indefinitely.

The National Transportation Library does allow persistent identifies linked to the data.

It is understood that the National Transportation Library complies with the following attributes:

1. Promotes an explicit mission of digital data archiving;
2. Ensures compliance with legal regulations, and maintains all applicable licenses covering data access and use, including, if applicable, mechanisms to protect privacy rights and maintain the confidentiality of respondents;
3. Has a documented plan for long-term preservation of its holdings;
4. Applies documented processes and procedures in managing data storage;
5. Performs archiving according to explicit work flows across the data life cycle;
6. Enables the users to discover and use the data, and refer to them in a persistent way through proper citation;
7. Enables reuse of data, ensuring appropriate formats and application of metadata;
8. Ensures the integrity and authenticity of the data;
9. Is adequately funded and staffed, and has a system of governance in place to support its mission; and
10. Possesses a technical infrastructure that explicitly supports the tasks and functions described in internationally accepted archival standards like Open Archival Information System (OAIS).

6. Policies Affecting this Data Management Plan:

This data management plan was created to meet the requirements enumerated in the U.S. Department of Transportation's "Plan to Increase Public Access to the Results of Federally-Funded Scientific Research" Version

1.1 << https://doi.org/10.21949/1520559 >> and guidelines suggested by the DOT Public Access website << https://doi.org/10.21949/1503647 >>, in effect and current as of Month(Write out) Day(XX), Year(XXXX).

Planned Research Outputs

Dataset - "Quantitative Data for XR in Flight Attendant Training"

This dataset includes the relevant analyzed data for XR in Flight Attendant Training.

Text - "CAB-22007 Extended Reality for Cabin Safety II-Flight Attendant Training"

Technical report of this study, which includes the relevant data collection and analyses.

Planned research output details

Title	Type	Anticipated release date	Initial access level	Intended repository(ies)	Anticipated file size	License	Metadata standard(s)	May contain sensitive data?	May contain PII?
Quantitative Data for XR in Flight Attendant Train ...	Dataset	2023-12-29	Open	None specified	5 MB	None specified	DDI (Data Documentation Initiative)	No	No
CAB-22007 Extended Reality for Cabin Safety II-Fli ...	Text	2023-12-29	Open	None specified	1 MB	None specified	None specified	No	No