

## Plan Overview

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*A Data Management Plan created using DMPTool*

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

**Creator:** Levi Breeding

**Affiliation:** United States Department of Transportation (DOT) ([transportation.gov](https://www.transportation.gov))

**Principal Investigator:** Levi Breeding

**Funder:** Civil Aerospace Medical Institute ([faa.gov](https://www.faa.gov))

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

### Project abstract:

New hire flight attendant training generally involves learning and demonstrating knowledge and proficiency. This study examined the proprietary training data of a participating organization that measured the proficiency of two groups of new hire flight attendants, those who received an extended reality (XR) intervention and those who received only traditional training. The purpose of this study was to investigate any effects of the XR intervention on proficiency for the benefit of one day certifying and accepting XR as a viable training modality. Currently, if a U.S. airline company chooses to integrate XR learning into its program, it is supplemental to the participating organization's approved training program. This study asked three research questions related to understanding if the XR intervention was more effective in certain lessons, aircraft cabin door proficiency, and longitudinal information retention. However, the data set provided by the participating organization was only able to answer one research question regarding the effectiveness between the XR intervention group and those who did not receive the XR intervention. The results of this study were statistically significant, which indicates there could be some advantage to incorporating this modality in flight attendant new hire training. It should be noted that the non-intervention group was also characterized by very high proficiency rates as well. It is important to note that both groups exhibited high proficiency. More research is needed to understand how XR effects learning in several areas of flight attendant training.

**Start date:** 01-12-2022

**End date:** 07-30-2024

**Last modified:** 02-01-2024



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

### Persistent Link

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Include the persistent identifier (PID) that is associated with the dataset.

Persistent Link:

<https://doi.org/10.21949/1524430>

### Recommended Citation

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The recommended data citation to be used when citing the dataset.

Recommended Citation:

Breeding, L. L., Phipps, T. M., Weed, D. B., Beben, M. S. (2023). *Extended reality in flight attendant training I: Initial training*. (Report No. DOT/FAA/AM-23/TBD). Federal Aviation Administration.

### Change Log

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Document the changes that are made to the DMP, any and all changes should be noted to ensure a more complete documentation.

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.

2023-04-27: Revised project end date to 15 December 2023 due to MOU provision to allow a 30-calendar day airline review of the technical report before publishing.

2023-12-14: Revised research end date based on approved rebaseline. Added Tanya Phipps (co-owner) and Paul Jaramillo (editor) to contributor list. Revised Dataset and Contact Information and Data Description to

address proprietary dataset used for this study.

2024-01-04: Revised research end date based on approved rebaseline.

2024-01-12: Revised research end date based on approved rebaseline. Addressed review comments in sections 2, 3, 5, and 6.

## CONTENTS

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**Include a table of contents, in order to better organize the DMP.**

### CONTENTS:

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3. Access Policies
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5. Archiving and Preservation Plans
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## 0. Dataset and Contact Information

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**Please provide the following information:**

- Name of the dataset or project for which data is being collected
- Project number, contract number, or other number used to link this DMP
- Name of the person submitting this DMP -ORCID of the person submitting this DMP
- Email and phone number of the person submitting this DMP
- Name of the organization for which the person submitting this DMP is working for
- Email and phone number for the organization
- Link to organization or project website
- Date the DMP was written

### 0. Dataset and Contact Information:

Extended Reality in Flight Attendant Training I: Initial Training

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

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

Federal Aviation Administration

## 1. Data Description

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**Name the data, data collection project, or data producing program.**

**1. Data Description:**

**Extended Reality in Flight Attendant Training I: Initial Training**

**Describe the purpose of your research.**

This descriptive research study examines the effects of XR training when used in an AQP-style training program at U.S. airlines. This study analyzes historical performance and proficiency data collected during flight attendant training using AQP and XR training methodologies. This body of research aims to understand if the technology is beneficial when applied to various aspects of flight attendant training. If XR is beneficial in this application, then the findings therefrom could assist in establishing or revising guidance and certification criteria for XR training use. However, the aim of this first study is in three parts (1) to understand performance and proficiency using XR, (2) to determine XR efficacy in a formal aviation training program, and (3) to identify and potentially enhance data collection practices as they relate to XR flight attendant training.

**Describe the data that will be generated in terms of nature and scale (e.g., numerical data, image data, text sequences, video, audio, database, modeling data, source code, etc.).**

This project used proprietary de-identified training data from a participating organization.

**Describe methods for creating the data (e.g., simulated; observed; experimental; software; physical collections; sensors; satellite; enforcement activities; researcher-generated databases, tables, and/or spreadsheets; instrument generated digital data output such as images and video; etc).**

The proprietary training data were created by the participating organization.

**Discuss the period of time data will be collected and frequency of update.**

Data were collected by the participating organization on August 16, 2023.

**If using existing data, describe the relationship between the data you are collecting and existing data.**

The data collection was quantitative in nature.

**List potential users of the data.**

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

**Discuss the potential value of the data have over the long-term for not only your institution, but also for the public.**

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.

**If you request permission not to make data publicly accessible, explain rationale for lack of public access.**

The dataset will not be made available to the public because it is proprietary in nature; however, the analyses of that data will be included in the technical report.

**Indicate the party responsible for managing the data.**

The data will be managed by its authors.

**Describe how you will check for adherence to this data management plan.**

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

## **2. Standards Employed**

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**List in what format(s) the data will be collected. Indicate if they are open or proprietary.**

**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).

**If you are using proprietary data formats, discuss your rationale for using those standards and formats.**

Proprietary data sets are not included.

**Describe how versions of data be signified and/or controlled.**

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

**If the file format(s) you are using is(are) not standard to your field, describe how you will document the alternative you are using.**

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

**List what documentation you will be creating in order to make the data understandable by other researchers.**

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

**Indicate what metadata schema you are using to describe the data. If the metadata schema is not one standard for your field, discuss your rationale for using that scheme.**

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

**Describe how will the metadata be managed and stored.**

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.

**Indicate what tools or software is required to read or view the data.**

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

**Describe your quality control measures.**

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**

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**Describe what data will be publicly shared, how data files will be shared, and how others will access them.**

**3. Access Policies:**

Analyzed data of performance results and results of the study will be shared publicly. Data analyses will be shared through the National Transportation Library web site.

**Indicate whether the data contain private or confidential information. If so:**

- **Discuss how will you guard against disclosure of identities and/or confidential business information.**
- **List what processes you will follow to provide informed consent to participants.**
- **State the party responsible for protecting the data.**

The proprietary data collected by the participating organization did not contain any identifying information about the individuals being measured. The participating organization performed its own internal removal of

identifying information before tendering the data set to the PI.

**Describe what, if any, privacy, ethical, or confidentiality concerns are raised due to data sharing.**

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

**If applicable, describe how you will deidentify your data before sharing. If not:**

- **Identify what restrictions on access and use you will place on the data.**
- **Discuss additional steps, if any you will use to protect privacy and confidentiality.**

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**

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**Name who has the right to manage the data.**

**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.

**Indicate who holds the intellectual property rights to the data.**

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

**List any copyrights to the data. If so, indicate who owns them.**

This data is in the public domain.

**Discuss any rights be transferred to a data archive.**

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

**Describe how your data will be licensed for reuse, redistribution, and derivative products.**

This data will be available to the public.

#### **5. Archiving and Preservation Plans**

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**Discuss how you intend to archive your data and where (include URL).**

**5. Archiving and Preservation Plans:**

Data archiving will be accomplished through the National Transportation Library (NTL) services. The NTL digital repository can be accessed by visiting <https://rosap.ntl.bts.gov>

**Indicate the approximate time period between data collection and submission to the archive.**

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

**Identify where data will be stored prior to being sent to an archive.**

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

**Describe how back-up, disaster recovery, off-site data storage, and other redundant storage strategies will be used to ensure the data's security and integrity.**

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 technical report and associated data analyses (provided in the report) will be archived and maintained on the United States (US) Department of Transportation (DOT) National Transportation Library (NTL) Repository & Open Science Access Portal (ROSAP) at <https://rosap.ntl.bts.gov/welcome>

Prior to archiving, the data are stored on the secured FAA networks and drives, which are backed up nightly. The US DOT systems are secured from outside users and backed up daily.

**Describe how data will be protected from accidental or malicious modification or deletion prior to receipt by the 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.

**Discuss your chosen data archive's policies and practices for back-up, disaster recovery, off-site data storage, and other redundant storage strategies to ensure the data's security and integrity for the long-term.**

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.

**Indicate how long the chosen archive will retain the data.**

The National Transportation Library will archive the data indefinitely.

**Indicate if the chosen archive employs, or allows for the recording of, persistent identifiers linked to the data.**

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

**Discuss how your chosen data repository meets the criteria outlined on the [Guidelines for Evaluating Repositories for Conformance with the DOT Public Access Plan](#) page.**

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**

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**Include policies that the data management plan was created to meet, such as the DOT public access plan.**

### **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 December 29, 2022.

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## Planned Research Outputs

### Text - "CAB-22007 Extended Reality in Flight Attendant Training I: Initial Training"

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

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#### 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?
CAB-22007 Extended Reality in Flight Attendant Tra ...	Text	2024-02-27	Open	None specified	1 MB	None specified	None specified	No	No