Plan Overview

A Data Management Plan created using DMPTool

Title: Smoke, Odors and Fumes in U.S. Airliners: 2016-2019

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

Template: Federal Aviation Administration (FAA) Data Management Plan (DMP) Template v1.1

Project abstract:

Introduction. Air carrier cabin air quality has been a major concern for more than 30 years.[5] The advancement of aircraft engine technology has resulted in increasing temperatures, requiring the introduction of synthetic lubricating oils, which may contain organophosphate additives. Synthetic oils heated to high temperatures have the potential to contaminate aircraft air supplies due to mechanical failures or design deficiencies. The purpose of this paper is to describe the rate of occurrence of cabin air contamination events that potentially involve heated fluids and to describe the symptoms surrounding human exposure to these air contaminants on U.S. commercial airlines. **Methods.** Air supply contamination reports on U.S. commercial airlines were collected from the Federal Aviation Administration (FAA) Service Difficulty Report System (SDRS) database for a 4-year period (January 2016 through December 2019). The filtered reports form a set of representative samples involving cabin air contamination with varying quality. Aircraft occupant symptoms resulting from exposure to such contaminants were provided by MedAire. **Results.** Smoke, Odor, Fume (SOF) events were identified in 6656 SDRS reports and of those 1147 contaminant events (SOF events caused by possible pyrolyzed oil or hydraulic fluids) were identified. The rate of SOF events during the period of the study was determined to be 4.55 events per day, and the rate of contaminant events was determined to be between 0.45 and 0.77 events per day. **Discussion.** The results of this study are limited by conditions such as event underreporting and incomplete symptom data, and should be interpreted as preliminary and indicative rather than conclusive. However, these results do show further monitoring and study are needed.

Start date: 03-01-2021

End date: 09-14-2022

Smoke, Odors and Fumes in U.S. Airliners: 2016-2019

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Recommended Citation:
"final verified SOF results", an Excel file

Change Log: N/A

CONTENTS:

0. Dataset and Contact Information:

Project: Smoke, Odors, and Fumes in US Airlines

LOB: AVS

LOB email: AVS@FAA.gov

Project Number: MED-10167

The events described below are contained as rows in the Excel file, "final verified SOF results".

Air supply contamination reports for US commercial airlines were collected from the Federal Aviation Administration Service Difficulty Report System (SDRS) database for a four-year period (January 2016 through December 2019). The event descriptions were then searched for keywords to include odor, fume, fog, aroma, smoke, odur, odour, oduor, haze, fire, scent, smell, and smoking. Events, such as baggage area fires and inspections, stating that the aircraft was powered off, were removed. The remaining events were manually reviewed to remove the cases that the automated keyword search included but were inapplicable. These filtered results were then manually reviewed to examine the description in the 'Event Details' column to ensure that the contaminant resulted from pyrolyzed oil, hydraulic fluid, or fuel. Furthermore, maintenance-related columns were reviewed for descriptions of follow-up maintenance activities such as repair or replacement that indicated pyrolyzed oil, hydraulic fluid, or fuel was a possible but not definite cause. This more restricted set of events is called the "contaminant events."

Purpose:

Cabin air quality onboard commercial aircraft has been a major concern for over 30 years. Advances in aircraft engine technology have resulted in increased engine temperatures and the use of synthetic lubricating oils that may contain organophosphate additives. Synthetic oils heated to high temperatures can contaminate aircraft air supplies due to mechanical failures or design deficiencies. The purpose of this paper is to describe the rate of occurrence of

smoke, odor, and fume events related to pyrolyzed oil, hydraulic fluids, or fuel on US commercial airline flights.

Rows (representing reported smoke, odor, fume events on US airlines) in an Excel spreadsheet.

The data was extracted from sources as desxcribed above.

The data was collected between 2021 and 2022.

The data used represents data for the years 2016 through 2019.

The data can be used to assess the frequency and categories of reports of smoke, odor, or fume events on US airlines.

The data might, in future studies, be tied to specific passenger or crew medical events.

Operational data. The data for this project include data that are used by the organization to conduct official business and are governed by FAA rules regarding the release of such information. Examples include:

- Information related solely to the internal personnel rules and practices of the organization such as employee performance data, sensitive agency infrastructure, employee selection and hiring process data

Unless otherwise noted, refer to "Section 0: Dataset and Contact Information", the FAA line-of-business (LOB) is identified, which is responsible for generating the data, and is also responsible for managing the data initially, and by default long-term, the FAA's Enterprise Information Management (EIM) will manage and catalog the data. Refer to the FAA Data Governance Center, this is landing page and access point to EIM uploaded datasets.

Unless otherwise noted, refer to "Section 0: Dataset and Contact Information," the FAA line-of-business (LOB) is identified, which is responsible for generating the data, and is also responsible for managing the internal project management processes to ensure adherence to the published data management plan (DMP). Details of the particular FAA LOB's DMP adherence processes can be provided on-demand. Typical processes require management review and sign-off at project start and close-out.

2. Standards Employed:

Unless otherwise noted, this FAA research project has descriptive project data posted in https://rip.trb.org/ at project launch and while under development and https://researchhub.bts.gov/ database beyond. These databases have published standards. The project's metadata will be posted in Catalog.Data.Faa.Gov. This catalog follows the DCAT-US Schema v1.1 (Project Open Data Metadata Schema) https://resources.data.gov/schemas/dcat-us/v1.1/ – a set of required fields (Title, Description, Tags, Last Update, Publisher, Contact Name, etc.) for every data set displayed on Catalog.Data.FAA.gov.

Unless otherwise noted, refer to "Section 0: Dataset and Contact Information", the FAA line-of-business (LOB) is identified, which is responsible for generating the data, and is also responsible for version control initially. Once uploaded by default upon project completion and long-term, the data is managed by FAA's Enterprise Information Management (EIM), which also applies configuration control on dataset versions. Refer to the FAA Data Governance Center. This is the internal FAA landing page and access point to EIM uploaded datasets and processes.

Unless otherwise noted, this project's metadata will describe the data and formats whether open source or non-standard to the particular field domain of the research. if additional description is required for non-standard formats, the researcher will list references and/or definitions here.

Question not answered.

Question not answered.

Question not answered.

Unless otherwise noted, open data formats are used as much as possible. If not possible, the researcher shall list proprietary data formats and associated tools and software required to read/view the data here. Citations to the required tools and software would be included.

Question not answered.

Consistent with the previous two sections, "Section 1. Data Description" and "Section 2. Standards Employed," the default long term storage and access location for the data documented in this DMP is the FAA's Enterprise Information Management (EIM). Refer to the FAA Data Governance Center., which is the internal FAA landing page and access point to EIM uploaded datasets and processes.

For this DMP's particular dataset, "Section 1. Data Description" Question #9 the researcher already delineated if the data was able to be publicly accessible or restricted and reason associated with the latter. Restricted data is identified upon upload to the FAA's Enterprise Information Management (EIM) and details of the protections in place are documented at the FAA Data Governance Center, which is the internal FAA landing page and access point to EIM uploaded datasets and processes.

Unless otherwise noted, all concerns and mitigations associated with the need to deidentify fields in the data are addressed in the previous question.

Unless otherwise noted, the data described in this DMP is generated and managed by the Federal Aviation Administration. The data are in the public domain, and may be re-used without restriction.

Unless otherwise noted (e.g., data is partially proprietary by an external entity, where intellectual property is shared), this data is required to be made available in open, machine-readable formats, while continuing to ensure privacy and security in accordance with the OPEN Government Data Act, which is Title II of the Foundations for Evidence-Based Policymaking Act.

Unless otherwise noted, there is no shared copyrights on the data described in this DMP.

There are no rights transferred to the permanent archive or repository to accompany this dataset described in this DMP.

Unless otherwise noted, there is not a need for the data in this DMP to be licensed for reuse, redistribution, and/or its derivative products.

Unless otherwise noted, the data described in this DMP will be uploaded to the FAA's Enterprise Information Management (EIM) through the [FAA Data Governance Center.](#) This is the internal FAA landing page and access point to EIM uploaded datasets and processes. Here the metadata is curated and validated for quality and accuracy. The FAA Data Steward enters metadata and verifies quality and accuracy before publishing to data.faa.gov, which is the FAA's clearinghouse site for publicly available FAA data and managed and hosted by the FAA's, IT Shared Services organization - Chief Data Office, see https://catalog.data.faa.gov/about for more information.

Data and all research products (e.g., reports) are expected to be submitted within the period-of-performance of the research, which is planned to conclude 12/15/2023.

Unless otherwise noted, the permanent archive of the data described in this DMP shall be uploaded, stored, and managed permanently by the FAA's Enterprise Information Management (EIM) platform. However, until the upload upon completion of the project or at a convenient time before, the data will reside locally by the researcher. Refer to "Section 0: Dataset and Contact Information", the FAA line-of-business (LOB) is identified, which is responsible for generating the data, and is also responsible for managing the data initially.

Unless otherwise noted, the data described in this DMP shall be uploaded, stored, and managed permanently by the FAA's Enterprise Information Management (EIM) platform. This platform is managed and hosted by the FAA's, IT Shared Services organization - Chief Data Office and all back-up, disaster recovery, off-site data storage, and other redundant storage strategies are managed internally by this office and adhering to all FAA mission support policies. For more information and details on these processes, see [FAA EIM Platform](#) or contact the FAA line-of-business (LOB) that is identified in "Section 0: Dataset and Contact Information," which is responsible for generating the data.

Unless otherwise noted, the data described in this DMP will initially (prior to receipt into the FAA's Enterprise Information Management (EIM) platform) be generated and managed by the FAA line-of-business (LOB), identified in "Section 0: Dataset and Contact Information." The FAA LOB will maintain (3) copies of the data within protected and monitored FAA government servers, facilities, and cloud platforms.

Unless otherwise noted, the long term storage of the data described in this DMP will persist indefinitely in the FAA's Enterprise Information Management (EIM) platform following standard government policies and best practices.

Unless otherwise noted for the FAA researchers in this DMP, the persistent identifiers can only be linked to the Catalog.Data.faa.gov, which provides access to metadata. Access to the research data itself currently requires secure access, including a secure government credentialed sign-on, referred to as MyAccess. This is a role based security profile and intrusion detection monitoring policy to maintain a secure boundary for the EIM Platform that hosts the data.

Unless otherwise noted, the data described in this DMP shall be uploaded, stored, and managed permanently by the FAA's Enterprise Information Management (EIM) platform. The EIM Platform is an FAA-developed, cloud-based, big data platform that consists of two key items: (1) "Data Mall" – this is a large repository for FAA data. It is organized and catalogued for easy access, but safeguarded to preserve its integrity and protect data from unauthorized access. And (2) an "App Mall" – this is a collection of curated technologies and tools to enable FAA personnel to transform data into information. For more information, see [FAA EIM Platform](#). The platform's DATA.FAA.GOV is the FAA's clearinghouse site for publicly available FAA data and managed and hosted by the FAA's, IT Shared Services organization - Chief Data Office. It is public gateway to the Enterprise Information

Management (EIM) platform that is dedicated to managing data and information to improve efficiency, reduce costs, promote transparency, and enable business insight across the FAA. Thus, this FAA repository meets all the criteria outlined in the DOT Public Access Plan above.

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

Data paper - "Smoke, Odor, Fumes Technical Report 1700.7"

The FAA 1700.7 summary and data paper describing the results of the Smoke, Odor, Fumes study.

Dataset - "Final Verified SOF Results Dataset"

An Excel spreadsheet containing the final, verified SOF results on which the technical report results are based.

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?
Smoke, Odor, Fumes Technical Report 1700.7	Data paper	2023-08-31	Restricted	None specified	10 MB	Creative Commons Attribution 4.0 International	None specified	No	No
Final Verified SOF Results Dataset	Dataset	2023-08-31	Restricted	None specified	10 MB	Creative Commons Attribution 4.0 International	None specified	Yes	No