



Highlights of [GAO-10-414](#), a report to congressional requesters.

Why GAO Did This Study

To improve aviation safety, the Federal Aviation Administration (FAA) plans to have in place the initial capabilities of a risk-based approach to safety oversight, known as a safety management system (SMS), by the end of fiscal year 2010. FAA is also implementing new procedures and technologies to enhance the safety, capacity, and efficiency of the national airspace system. Data are central to SMS and FAA's ability to test the impact of these changes on safety.

This congressionally requested report addresses FAA's (1) current and planned use of data to oversee aviation safety, (2) access to data for monitoring aviation safety and the safety performance of various industry sectors, and (3) efforts to help ensure data quality. To perform this work, GAO reviewed 13 databases that contain data on key aviation safety events, assessed data quality controls for the databases, and interviewed agency and industry officials, as well as 10 experts in aviation safety and data.

What GAO Recommends

GAO recommends efforts to improve FAA's capability to use data for oversight, including developing a comprehensive data management plan; identifying and, to the extent feasible, addressing reasons for nonparticipation in voluntary reporting programs; and applying data quality controls to more databases, as appropriate. The agency agreed to consider GAO's recommendations.

View [GAO-10-414](#) or [key components](#). For more information, contact Gerald L. Dillingham, Ph.D., at (202) 512-2834 or dillinghamg@gao.gov.

AVIATION SAFETY

Improved Data Quality and Analysis Capabilities Are Needed as FAA Plans a Risk-Based Approach to Safety Oversight

What GAO Found

FAA analyzes data on past safety events, such as engine failures, to prevent their recurrence and plans to use data to support a more proactive approach to managing risk. For example, weather and air traffic control data helped identify factors associated with injuries from turbulence. As part of SMS, FAA plans to analyze data proactively to support a risk-based approach to safety oversight. For example, FAA plans to use data to model the impact of proposed changes in procedures and technologies on the safety of the national airspace system. Experts said that identifying risks is necessary to maintain the current level of safety and possibly achieve a higher level of safety in the future. Because SMS relies on data to identify emerging risks, FAA has an effort under way to enhance its access to industry data and improve its capability for automated analysis of multiple databases. According to FAA, this effort will allow for more efficient safety analyses. FAA is also developing a plan for managing data under SMS, but the plan does not fully address data, analysis, or staffing requirements. Without such requirements, the plan will not provide timely guidance for implementing SMS.

FAA has access to some voluntarily reported data, which are important for SMS, but not all carriers and aviation personnel participate in FAA's voluntary reporting programs. Such data are gathered electronically by equipment on aircraft or reported by aviation personnel or carriers following noncriminal, unintentional violations or safety events. Industry personnel have some incentives to participate in voluntary programs, such as promised immunity from disciplinary action, but concerns about sanctions and the cost of equipment have deterred full participation, especially by smaller carriers. While FAA has some information on reasons for nonparticipation and has taken some steps to promote greater participation, it lacks carrier-specific information on why air carriers are not participating. FAA also lacks data to assess the safety performance of certain industry sectors, such as air cargo and air ambulance operators. GAO has previously made recommendations to address this lack of data. FAA concurred with GAO's prior recommendations and is taking actions to address them.

To help ensure data quality—that is, data that are reliable (complete and accurate) and valid (measure what is intended)—FAA has implemented a number of data quality controls that are consistent with GAO's standards for data quality, but some weaknesses exist. For example, all the databases GAO reviewed had at least some controls in place to ensure that erroneous data are identified, reported, and corrected. However, about half the databases lack an important control—managers do not review the data prior to entry into the data system. FAA is taking steps to address its data weaknesses, but vulnerabilities remain, potentially limiting the usefulness of FAA's data for the safety analyses planned to support SMS.