WisDOT's Safety Data Hub is a collaborative platform that brings together existing and new data from across the department to support WisDOT's mission to build a safer multimodal transportation system in Wisconsin.

State of Wisconsin, Department of Transportation

Category: Data Management, Analytics & Visualization

Safety in Numbers – WisDOT's Safety Data Hub

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Executive Summary

The Wisconsin Department of Transportation (WisDOT) undertook a transformative effort to modernize how safety information is collected, integrated, analyzed, and shared across the agency. The result is the Wisconsin Safety Data Hub, a unified, geospatial information system (GIS) powered data ecosystem that elevates data governance, accelerates analytics, and expands access to high value safety insights for staff statewide. This initiative represents a major leap forward in WisDOT's ability to manage complex data, support evidence-based decision making and deliver intuitive visualization tools that empower users at every technical skill level.

Idea

What problem or opportunity does the project address?

WisDOT generates, collects and curates datasets across multiple safety programs. Business processes, tools and applications provide the necessary structure to maintain, process and utilize these data sets. The department had the opportunity to expand on the potential of the datasets and business processes by increasing shared access and ability to overlay the datasets together to support transportation safety analysis capabilities across the agency. Through the Safety Data Hub, business areas and subject-matter experts have increased access to up-to-date datasets through a secure, online and centralized location to support their various safety-related business processes.

Why does it matter?

Improving safety throughout Wisconsin's transportation system is WisDOT's mission. The Safety Data Hub is designed to provide business area staff and subject-matter experts with additional data and GIS-based tools to improve WisDOT's ability to manage complex data, support evidence-based decision making and deliver intuitive visualization tools that empower users at every technical skill level all while focusing on the state's safety needs. The hub was established as a companion tool to support and enhance existing or future safety-related business processes throughout WisDOT. The Safety Data Hub is available to licensed users across the department and can be used to support their individual and cross-agency efforts.

What makes it different?

At the heart of the Safety Data Hub is the Data Linkage Platform (DLP)— a scalable, extensible data integration framework designed to harmonize safety-related datasets from across the agency. The DLP consolidates data from more than 40 curated datasets spanning 10 core systems of record, including crash data, roadway inventory, traffic volumes, bicycle and pedestrian infrastructure, intersection performance, railroad crossings, and asset management systems.

To achieve this, WisDOT implemented a robust Extract, Transform, and Load (ETL) architecture using Safe Software's FME for iterative processing and ArcGIS Velocity for real-time feeds. Unstructured and structured data are staged, transformed into spatially enabled formats, and stored in a centralized Spatial Data Repository (SDR). This ensures:

- Consistent data quality
- Repeatable, automated data refresh cycles
- A single authoritative source for safety analytics
- The ability to scale as new systems and third-party datasets emerge

The DLP now serves as the backbone for all analytics, visualizations, and applications within the Safety Data Hub.

What makes it universal?

Transportation agencies across the states maintain, collect and curate data themselves similar to WisDOT. The technology powering the Safety Data Hub can be utilized by other transportation agencies as they look to expand access to and centralize safety-related data to improve transportation safety in their state. The Safety Data Hub is created with Esri's ArcGIS Online, which is commonly used by most transportation agencies in their efforts to analyze and distribute geographic information.

Implementation

What was the roadmap?

WisDOT deployed the Safety Data Hub through a structured, multi-phased process in partnership with Esri. The hub was deployed on April 6, 2026.

Phase 1: Discovery and Requirements

Over 10 months, WisDOT and Esri conducted a comprehensive discovery effort involving operational, business, and technical stakeholders from across the department. Subject-matter experts from throughout WisDOT attended the discovery sessions to provide their input during this Safety Data Hub initial planning phase. As a result, this phase defined:

- The Safety Data Hub's safety analytics vision
- Data governance needs
- Technical architecture requirements
- Priority use cases for analysis and visualization

Discovery session workshops focused on both innovation and foundational data needs, ensuring the final solution aligned with WisDOT's long-term safety strategy.

Phase 2: Technical Implementation and Data Integration

During the 12-month implementation phase, WisDOT's GIS, Business Intelligence, Batch Operations, and Data Management units collaborated with the Division of Budget and Strategic Initiatives and Esri technical experts. Together, they:

- Modeled and optimized datasets for spatial analysis
- Established data usage agreements and governance protocols
- Built automated pipelines and web services
- Developed visualization tools and applications
- Designed the Safety Data Hub user interface

This cross-divisional collaboration ensured the platform met both technical and business needs.

Who was involved?

The Safety Data Hub project included subject-matter experts from across the department. Business area staff involved in developing the hub from concept to final product included safety transportation engineers, urban and regional planners, policy analysts, data

stewards, GIS developers and business intelligence staff and departmental management at all levels.

Throughout the 12-month implementation phase, a core group of representatives, Safety Data Hub Prioritization Team, from across WisDOT were engaged monthly to provide updates on project progress and receive their input on development of the Safety Data Hub. Additionally, the Safety Data Hub Prioritization Team acted a liaison within their business areas to gather feedback about the hub to provide to the project team. WisDOT partnered with Esri to develop communication materials (e.g., employee newsletter articles, Safety Data Hub training manuals, feedback survey, etc.) to assist with the adoption and training efforts as the Safety Data Hub was deployed.

How did you do it?

The Safety Data Hub is built on ArcGIS Hub Premium, providing a centralized, cloud-based environment where users can discover, analyze, and create safety related content. The platform dramatically improves access to data and analytical tools through:

1. A Comprehensive Safety Data Gallery

A curated catalog of authoritative datasets, each with metadata describing currency, size, purpose, and data steward contacts. This transparency strengthens data governance and user trust.

2. Themed Analytical Dashboards

Interactive dashboards allow users to explore multiple datasets together—crash trends, roadway characteristics, traffic volumes, and more—supporting deeper, more contextualized analysis.

3. Self Service Visualization Tools

Users can immediately begin creating maps, apps, and analytical products using pre-configured templates and live data feeds. This democratizes access to analytics and reduces reliance on technical staff.

4. Consistent Branding and User Experience

WisDOT's communications team collaborated closely with technical staff to ensure the Hub is intuitive, visually cohesive, and aligned with agency branding.

Impact

What did the project make better?

The Safety Data Hub fundamentally reshapes how WisDOT manages and uses safety information. Key outcomes include:

- Unified, authoritative data replacing siloed systems
- Automated, repeatable data pipelines ensuring accuracy and timeliness
- Powerful visualization tools enabling faster, more informed decision-making
- Improved collaboration across divisions and disciplines
- A scalable foundation for future analytics, machine learning, and innovation

By integrating data, modernizing analytics, and empowering users with intuitive visualization tools, the Safety Data Hub continues to support WisDOT's mission in improving transportation safety throughout the state.

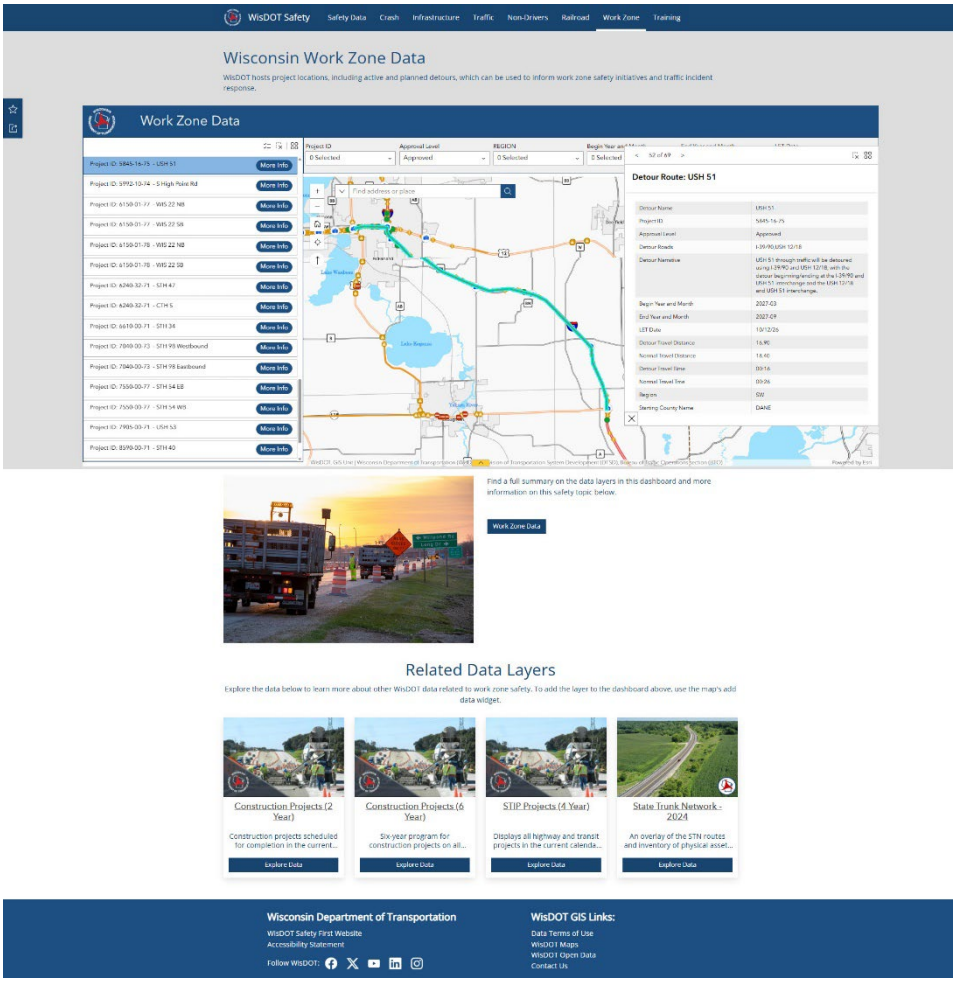
How do you know?

The Safety Data Hub allows for licensed users to explore and use the data, dashboards and mapping interfaces to support their individual uses from across the department. Following soft launch deployment of the Safety Data Hub in April 2026, the hub has seen increased web traffic and requests for ArcGIS Online licenses as subject-matter experts identify how they can integrate the Safety Data Hub into their other platforms, processes and tools. Early indications show strong value in having a central location for data from a variety of subjects and the ability to overlay the data to develop independent insights.

What now?

To facilitate the initial soft launch deployment of the Safety Data Hub, the project team has conducted group presentations to WisDOT Divisions and Offices, holding office hours for users to drop in for questions and publish information in an employee newsletter. To date, the presentations have reached over 150 employees. Each presentation includes a demonstration of the Safety Data Hub and opportunities for questions. A training manual,

video and key messaging document have been developed to accompany the Safety Data Hub as well.



Additionally, the Safety Data Hub platform includes a survey form for users to provide feedback on how they are using the hub and identify opportunities for future enhancements (e.g., new charts/dashboards, additional datasets and analytical capabilities). Future updates to the Safety Data Hub will be reviewed by the key business area subject-matter experts from across the department prior to pursuing.

As the Safety Data Hub continues to be explored by subject-matter experts throughout WisDOT, the project team will continue to monitor the usage, data downloads and opportunities for future enhancements to continue to refine the hub.