

# State of Vermont Traffic Records Strategic Plan for FFY2024

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August 1, 2023



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State Traffic Safety Information System Improvement

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# Vermont Traffic Records Strategic Plan

## 1. Executive Summary

The Vermont Traffic Records Coordinating Committee (TRCC) serves as a platform for discussing, planning, and prioritizing enhancements to Vermont's traffic records data systems. These data systems, including Crash, Driver, Vehicle, Roadway, Citation/Adjudication, and Injury Surveillance, collectively contribute to Vermont's traffic records infrastructure.

In CY2022, Vermont completed a NHTSA Traffic Records Assessment. In CY2023, the TRCC held strategic planning workshops covering each data system and additional focus areas for data use and integration, strategic planning, and TRCC management. These workshops developed new goals, strategies, and expected outcomes based on the findings of the CY2022 NHTSA Traffic Records Assessment. Resulting goals are included in Section 4 of this document.

One of the recommendations stemming from the NHTSA Traffic Records Assessment was to establish a Traffic Records Inventory. This inventory will encompass various aspects, including traffic records data sources, system custodians, data elements and attributes, linkages, and data access policies. By developing this document, safety stakeholders will have a valuable reference to consult when analyzing, designing, or updating traffic records data systems and analysis capabilities. The Vermont Highway Safety Office has set a Q3 CY2023 target completion date for the inventory document.

The plan includes the *Development of a Geospatial Interpolation Method to Estimate Annual Average Daily Traffic (AADT)* project. This project aims to improve AADT estimation on Vermont's local roads by implementing a geospatial interpolation methodology. Geospatial interpolation methods will be chosen for their accuracy and ease of implementation. The project will evaluate techniques, select one for statewide use, and propose implementation and validation plans.

In addition to the *Development of a Geospatial Interpolation Method to Estimate Annual Average Daily Traffic* project, the FFY24 traffic records strategic plan includes projects that improve the various traffic records data systems; *AOT Crash Data Reporting System*, *Emergency Medical Services (EMS) Statewide Incident Reporting System (SIREN)*, and the *AOT Crash Data Reporting System and SIREN EMS Reporting System Integration*.

In Section 5 of this plan, NHTSA Model Performance Measures can be found that demonstrate improvements to:

- Citation Completeness – Agencies Deployed
- Citation Uniformity – Paper vs Electronic
- Crash Timeliness
- Crash Integration
- Crash Completeness - Roadway Clearance
- Crash Completeness - Incident Clearance

- Roadway Uniformity – MIRE Roadway Segments
- Roadway Uniformity – MIRE At Grade Intersections/Junctions Elements
- Roadway Uniformity – MIRE Interchange/Ramp Elements

Any grant funds awarded under FAST Act, Section 405c shall be used to make quantifiable, measurable progress improvements in the accuracy, completeness, timeliness, uniformity, accessibility, or integration of data in a core highway safety database.

## 2. Mission & Vision Statements

### 2.1 Mission Statement

The Traffic Records Coordinating Committee (TRCC) is dedicated to enhancing decision-making and promoting multi-agency coordination for the improvement of traffic records data systems. The TRCC's mission is to save lives and reduce injuries on the roadways by providing timely and accurate information to highway safety professionals and stakeholders, enabling them to develop, deploy, and evaluate effective safety countermeasures.

### 2.2 Vision Statement

The TRCC's vision is to provide the highway safety community with comprehensive and advanced traffic records analysis capabilities. By delivering timely, accurate, and integrated data, stakeholders can make informed decisions regarding enforcement and safety countermeasures. Through these collective efforts, the TRCC aims to reduce crashes, injuries, and fatalities, fostering safer roadways for all.

### 3. Traffic Records Coordinating Committee

#### 3.1 Traffic Records Improvement Program Coordinator

**Name:** Evelyn McFarlane  
**Title:** Deputy Administrator  
**Agency:** Vermont Agency of Transportation  
**Office:** State Highway Safety Office  
**Address:** 2178 Airport Road  
**City, Zip:** Berlin, 05641  
**Phone:** 802-595-4661  
**Email:** [evelyn.mcfarlane@vermont.gov](mailto:evelyn.mcfarlane@vermont.gov)

#### 3.2 Traffic Records Coordinating Committee Chair

**Name:** Mandy Shatney  
**Title:** Data Section Manager & FARS Analyst  
**Agency:** Vermont Agency of Transportation  
**Office:** Operations & Safety Bureau – Data Section  
**Address:** 2178 Airport Road  
**City, Zip:** Berlin, 05641  
**Phone:** 802-595-9341  
**Email:** [mandy.shatney@vermont.gov](mailto:mandy.shatney@vermont.gov)



3.3 TRCC Charter

**VERMONT  
TRAFFIC RECORDS COORDINATING COMMITTEE  
CHARTER**



J.B. M.W.

### Vermont Traffic Records Coordinating Committee Charter

#### Purpose:

To provide Vermont a forum to discuss, plan, coordinate and prioritize Vermont Highway Traffic Records Data Systems development and improvement in terms of timeliness, accuracy, completeness, uniformity, integration and accessibility. To enable stakeholders and partners to identify, resolve, and improve traffic records data and traffic safety issues through their initiatives and other intra-agencies solutions.

#### Organization:

The Vermont Traffic Records Coordinating Committee (TRCC) includes highway safety data generators, collectors and users. The membership includes representative(s) from Agency of Transportation, Department of Motor Vehicles, Department of Public Safety, Department of Health, Agency of Digital Services, Judiciary, State Highway Safety Office - Behavioral Safety Unit, statewide law enforcement agencies, Regional Planning Commissions and non-voting Federal partners. We encourage other state, regional and local data generators, collectors and users to participate in the TRCC.

The Traffic Records Coordinating Committee shall approve annually the membership of the TRCC, the TRCC coordinator, any change to the State's multi-year Strategic Plan (required under Paragraph §1300.22, section (c) of the FAST Act, Section 405c), and performance measures to be used to demonstrate quantitative progress in the accuracy, completeness, timeliness, uniformity, accessibility, or integration of a core highway safety database.

#### Tasks and Responsibilities:

- The Vermont Traffic Records Coordinating Committee will:
  - Provide a forum for the discussion of highway safety data and traffic records issues and report on any such issues to the agencies and organizations in the state that create, maintain and use highway safety data and traffic records;
  - Consider and coordinate the view of organizations in the state involved in the administration, collection and use of highway safety data and traffic records systems;
  - Represent the interests of agencies and organizations within the traffic records system to external organizations;
  - Meet at least 3 times a year for such purpose;
  - Member agencies commit to have representation at a minimum of three TRCC meetings a year;
  - Elect co-chairs<sup>1</sup> at the first scheduled TRCC meeting after July 1 each year, date announced not less than thirty days in advance;

Have the authority to review any of Vermont's highway safety and traffic record systems and to review proposed or planned changes to such systems before implementation;

- Review, evaluate and recommend new technologies to keep the highway safety data and traffic records systems up to date;
- Promote and encourage agencies to develop and implement projects that will improve traffic records data collection and distribution for the long term (3+ years), statewide strategic situation.

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<sup>1</sup> Duties of chair to include: Call TRCC meetings; convene TREC meetings; interface with SHSO-BSU staff, interface with any current TRCC consultants or project managers; interface with Federal partners; provide meeting agendas and review meeting notes; monitor annual update of TRCC strategic plan; publicize traffic records efforts for other internal (SHSP) and external partners; schedule strategic direction and system information updates from member agencies.

- Provide data, program information, and strategic options to support the decision-making leadership of the Traffic Records Executive Committee (TREC.)

Prepare the Vermont Traffic Records Strategic Plan that:

- Identifies needed improvements in Vermont’s highway safety data and traffic records system;
- Specifies how needed improvements in the system were identified;
- Prioritizes the improvements and sets goals for improving the system;
- Identifies data-driven and evidence-based performance measures by which progress toward these goals can be measured; and
- Specifies how Vermont will use *FAST Act 405c Data Programs Funding* and other funds to address the needs and goals identified in the Strategic Plan.

Work cooperatively to carry out specific projects to implement elements of the Vermont Traffic Records Strategic Plan.

The Traffic Records Executive Committee (TREC) is comprised of the executives of the state agencies indicated below.

The TREC shall:

- Convene at least once annually, and on other occasions, as deemed necessary to facilitate TRCC requests with strategic decision-making;

The Undersigned who comprise the Traffic Records Executive Committee, are committed to this Charter, its goals and the coordinated improvement of the Vermont Highway Safety Traffic Records data system as witnessed by their signature effective this date:

E-SIGNED by Joshua Schultz on 2019-06-25 12:47:52 GMT	June 25, 2019
Director, Operations and Safety Bureau E-SIGNED by Keith Flynn on 2019-06-24 13:17:54 GMT	Date June 24, 2019
Administrator, Behavioral Safety Unit E-SIGNED by Wanda Minoli on 2019-06-24 13:06:26 GMT	Date June 24, 2019
Commissioner, Department of Motor Vehicles E-SIGNED by Joe Flynn on 2019-06-24 15:45:28 GMT	Date June 24, 2019
Secretary Agency of Transportation E-SIGNED by Mark Levine on 2019-06-24 13:15:18 GMT	Date June 24, 2019
Commissioner, Department of Health E-SIGNED by John Quinn on 2019-06-24 13:40:25 GMT	Date June 24, 2019
Commissioner, Agency of Digital Services E-SIGNED by Patricia Gabel on 2019-06-27 18:39:04 GMT	Date June 27, 2019
Administrator, Office of the Judiciary E-SIGNED by Thomas Anderson on 2019-06-24 14:37:08 GMT	Date June 24, 2019
Commissioner, Department of Public Safety	Date

Fully reviewed, updated, and signed in June 2019.

### 3.4 TRCC Committees

#### 3.4.1 Executive Committee

Name / Title	Organization	Function
Joshua Schultz Director	Agency of Transportation Operations and Safety Bureau	Highway Safety
Allison LaFlamme Administrator	Agency of Transportation State Highway Safety Office	Highway Safety
Shawn Nailor Secretary	Agency of Digital Services	Information Technology
Mark Levine, MD Commissioner	Department of Health	Injury Surveillance System
Joe Flynn Secretary	Agency of Transportation	Crash/Roadway
Jennifer Morrison Commissioner	Department of Public Safety	Law Enforcement
Therese Corsones State Court Administrator	Court Administrator's Office	Citation
Wanda Minoli Commissioner	Department of Motor Vehicles	Driver/Vehicle

#### 3.4.2 Technical Committee

Name / Title	Organization	Function
Joe Arduca Division Administrator	FMCSA	FMCSA
Valerie Giroux Chief Data Officer	ADS IT	Information Tech
Joanne Charbonneau Statewide Clerk	Judicial Branch	Citation
Evelyn McFarlane TRCC Coordinator	Agency of Transportation State Highway Safety Office	Highway Safety

<b>Name / Title</b>	<b>Organization</b>	<b>Function</b>
William Moran EMS Division Chief	Department of Health	Injury Surveillance System
Gabriel Cano Deputy Regional Administrator	NHTSA Region 1	NHTSA
Eleni Churchill Senior Trans Planner	Chittenden County Regional Planning Commission	Roadway
Johnathan Croft AOT Mapping Chief	Agency of Transportation Mapping Section	Roadway
Dan DeMille Regional Program Manager	NHTSA Region 1	NHTSA
Barbara Rizzuti Regional Program Manager	NHTSA Region 1	NHTSA
Charlene Oakley Regional Program Manager	NHTSA Region 1	NHTSA
Mario Dupigny-Giroux Traffic Safety Engineer	Agency of Transportation Traffic Operations and Mobility	Roadway
Nancy Prescott DMV Director of Operations	Department of Motor Vehicles	Driver/Vehicle
Matthew Rousseau DMV Chief of Driver Improvement, Records, & Information	Department of Motor Vehicles	Driver/Vehicle
Vacant Director	Department of Motor Vehicles	Driver/Vehicle
Paul White Law Enforcement Liaison	Agency of Transportation State Highway Safety Office	Law Enforcement/ Highway Safety
Bill Jenkins Law Enforcement Liaison	Agency of Transportation State Highway Safety Office	Law Enforcement/ Highway Safety
Megan Weeber Director, Crime Research Group	Crime Research Inc.	Research

<b>Name / Title</b>	<b>Organization</b>	<b>Function</b>
Sgt. Paul Ravelin Traffic Safety & E-Ticket	Department of Public Safety	Law Enforcement
Vacant AOT Bike/Ped Coordinator	Agency of Transportation Traffic Operations and Mobility	Roadway
Vacant Exec. Assistant	Vermont Judiciary	Citation
Mike Smith Deputy Commissioner	Department of Motor Vehicles	Driver/Vehicle
Marcia Schels Chief Information Officer	Vermont Judiciary	Citation
Skyler Genest DLC Chief	Department of Liquor Control	Law Enforcement
Unknown Training Coordinator	Vermont Police Academy	Law Enforcement
Roger Thompson Safety Engineer	FHWA	FHWA
Mandy Shatney Data Section Manager FARS Analyst TRCC Chair	Agency of Transportation Data and Analysis Section	Crash/FARS
Benjamin Howe AOT Data Analyst	Agency of Transportation	Crash/Roadway
Jennifer Gratton Manager	University of Vermont Medical Center – Trauma Program Manager	Health Care Information

### 3.5 TRCC Operation

The legislation & Federal Register call for certification that the TRCC continues to operate. Please provide the following information about your TRCC's structure and operation.

*Do you have an executive (policy level) TRCC?* Yes

*If so, how often does it meet?* As Needed.

*Do you have a technical (working level) TRCC?* Yes

*If so, how often does it meet?* Quarterly.

*Does your TRCC have in place documents that demonstrate that the TRCC meets the following requirements of the legislation & Federal register?*

Yes *The TRCC has the authority to approve the Strategic Plan.*

Yes *The TRCC has the authority to review any of the State's highway safety data and traffic records systems and to review changes to such systems before the changes are implemented.*

Yes *The TRCC includes a representative from highway safety, highway infrastructure, law enforcement and adjudication, public health, injury control and motor carrier agencies and organizations.*

Yes *The TRCC provides a forum for the discussion of highway safety data and traffic records issues and report on any such issues to the agencies and organizations in the State that create, maintain, and use highway safety data and traffic records.*

Yes *The TRCC considers and coordinates the views of organizations in the State that are involved in the administration, collection and use of the highway safety data and traffic records systems.*

Yes *The TRCC represents the interests of the agencies and organizations within the traffic records system to outside organizations.*

Yes *The TRCC reviews and evaluates new technologies to keep the highway safety data and traffic records systems up-to-date.*

### 3.6 Past TRCC Meeting Dates

Vermont held TRCC meetings on the following dates:

October 19, 2022

January 18, 2023

April 19, 2023

July 19, 2023

### 3.7 Future TRCC Meeting Schedule

Future TRCC meetings are tentatively scheduled for:

October 18, 2023

January 17, 2024

April 17, 2024

July 17, 2024



## 4. Traffic Records Strategic Plan

### 4.1 Vermont Traffic Records Coordinating Committee

#### 4.1.1 TRCC Overview

The Traffic Records Coordinating Committee (TRCC) operates through two committees: the technical committee and the executive committee. These committees ensure representation from all six traffic records core data systems, as well as State and local law enforcement. The TRCC is authorized by a charter that outlines its mission, the responsibilities of the TRCC Chair, and is signed by key stakeholders, including the Agency of Transportation, Operations and Safety Bureau, State Highway Safety Office, Department of Motor Vehicles, Department of Public Safety, Department of Health, Agency of Digital Services, and Office of the Judiciary.

The technical TRCC is primarily responsible for the development and implementation of the TRCC Strategic Plan and all core areas. This committee meets quarterly to address traffic records initiatives, challenges, and project updates. The executive committee convenes on an as-needed basis.

The TRCC plays a crucial role in establishing strategic plan priorities, identifying traffic records projects and initiatives, and providing recommendations to the Vermont State Highway Safety Office for project approvals.

#### 4.1.2 Assessment Recommendations

There were no recommendations for the Traffic Records Coordinating Committee Management from the Vermont's Traffic Records Assessment that was conducted on June 24, 2022.

#### 4.1.3 TRCC Goals

##### ***TRCC Goal 1: Develop a Vermont Traffic Records Inventory document.***

**Strategy:** The TRCC will sponsor a project to develop and maintain a Vermont Traffic Records Inventory document that will facilitate the identification and linking of common data from the various component traffic records data systems. The document will contain the data sources, system custodians, data elements and attributes, linkages, and data access policies.

**Outcome:** One document that can be used by the various agencies and safety stakeholders as a reference when analyzing, designing, or updating the traffic records component data systems and analysis capabilities.

**Activity:** In Progress.

##### ***TRCC Goal 2: The TRCC will investigate the requirements for a Data Quality Control program for traffic records data systems.***

**Strategy:** The TRCC will provide a framework for discussions on implementing data quality control programs for each data system with the objective of improving data across

quantitative and qualitative dimensions. The TRCC will engage a NHTSA Go Team for guidance in implementing a traffic records data quality program.

**Outcome:** Improved accuracy and completeness of the traffic records data system.

**Activity:** No activity.

#### 4.1.4 Strategic Planning

The strategic planning process for traffic records is well-documented and follows a systematic approach. The Traffic Records Strategic Plan is updated on an annual basis and is reviewed by the Traffic Records Coordinating Committee and State Highway Safety Office. This ensures that the plan reflects the current priorities and needs of the state.

The Strategic Plan outlines a clear process for planning and prioritizing projects. It also establishes a link between ongoing projects and the recommendations from the previous Traffic Records Assessment, ensuring continuity and alignment with previous efforts.

Vermont takes a proactive approach to document the projects undertaken in the Strategic Plan. This includes defining timelines and assigning responsibilities to ensure efficient project management. Furthermore, the state remains open to incorporating new technologies as part of its strategic planning process, leveraging innovation to enhance its traffic records system.

#### 4.1.5 Assessment Recommendations

There were no recommendations for the Strategic Planning from the Vermont's Traffic Records Assessment that was conducted on June 24, 2022.

#### 4.1.6 Strategic Planning Goals

**Goal 1: Incorporate lifecycle costs and plans into the project submission process to enhance Vermont's traffic records system.**

**Strategy:** Evaluate and prioritize projects based on lifecycle costs and include them in the traffic records strategic plan.

**Outcome:** Ensure sustainable functioning of the traffic records system beyond Federal grant funding by accounting for lifecycle maintenance costs.

**Activity:** Planned.

## 4.2 Vermont Traffic Records Data Systems

The Vermont Traffic Records Data Systems are comprised of the Crash, Vehicle, Driver, Roadway, Citation/Adjudication, and Injury Surveillance component data systems. This section discusses the goals that span these core data systems and includes an overview of traffic records data use and integration.

### 4.2.1 System Overview

Vermont's traffic records data systems is comprised of various discrete data systems; driver, vehicle, citation/adjudication, crash, roadway, and several injury surveillance data systems (EMS run reporting, hospital discharge, emergency department, and vital records).

The table below details each system along with any applicable comments.

Data System	System Name	Host Agency	Remarks
Driver	VT PICS	Agency of Transportation, Department of Motor Vehicles	Major technology update is scheduled for CY2025
Vehicle	VT TRIPS	Agency of Transportation, Department of Motor Vehicles	Major technology update is scheduled for CY2023 Q4
Citation	Valcour DPS eTicket	Department of Public Safety	Deployed to production in July 2016
Crash	WebCrash	Agency of Transportation	Deployed to production in 2008
Roadway	Vermont Roads Centerline Data	Agency of Transportation	Anticipated MIRE FDE compliance is September 30, 2026
EMS Run Reporting	SIREN	Department of Health	Deployed to production in 2017. Currently, NEMESIS 3.4 Compliant.
Trauma Registry	No system	Department of Health	

### 4.2.2 Data Use & Integration Overview

Data integration involves the linking of individual datasets in varying combinations to provide data managers, data users, and policymakers the ability to view and analyze information in a manner that is not possible using a single data source. Integrated data can be used to improve problem identification and program evaluation activities at the state and local levels by

incorporating other traffic records systems that provide additional levels of information and detail.

The process of integrating data can be challenging as the databases are managed and housed by different agencies and collected for the specific business activities of those agencies. Consequently, the individual data elements within each system that can be used for the integration process must be identified and standardized. This can be a difficult and time-consuming process and thus is not normally identified as a high-priority activity within the states. Vermont has some experience using linked data sets to support highway safety activities, although only the crash with roadway linkage is being performed at this time.

The Vermont State Highway Safety Office staff have access to data sources, including the State's crash data system, local agency progress reports, and annual seatbelt and driver attitude surveys. This data is used to identify highway safety issues, problem locations, and other characteristics related to motor vehicle crashes.

The Vermont Agency of Transportation's (VTrans) Crash Public Query tool is available online and provides an integrated view of crash and roadway data. Several dashboards have been designed to provide crash analysis reports. In addition to VTrans users, the online query tool is used by the highway safety office, law enforcement agencies, regional planning commissions, and the public.

The VTrans Data Section has developed and deployed the Operations & Safety Bureau Strategic Highway Safety Plan Dashboard. The dashboard provides timely statewide and community-level crash data and metrics related to highway safety performance measures and critical emphasis areas.

#### 4.2.3 Assessment Recommendations for Data Use and Integration

There were no recommendations for data use and integration from the Vermont's Traffic Records Assessment that was conducted on June 24, 2022.

#### 4.2.4 Data Use & Integration Goals

**Goal 1: Integrate data governance principles into the management of the State's traffic records data systems in order to enhance data quality and ensure its sustainable functioning.**

**Strategy:** Develop and implement a comprehensive data governance framework for the traffic records data system that includes processes, policies, and procedures for data integration, standardization, and quality management. The TRCC will engage a NHTSA Go Team for guidance in implementing a comprehensive data governance framework.

**Outcome:** Establish a robust data governance structure that improves the accuracy, consistency, and reliability of traffic records data, leading to better decision-making, enhanced traffic safety, and increased efficiency in managing traffic-related information.

**Activity:** Planned.

**Goal 2: Integrate EMS data with crash data for highway safety analysis.**

**Strategy:** As part of the AOT Crash Data Reporting System and SIREN EMS Reporting System Integration project, develop a data integration process to combine EMS data with crash data for comprehensive highway safety analysis.

**Outcome:** Improved understanding and insights into highway safety trends and factors through the integration of EMS data with crash data.

**Activity:** Planned.

**Goal 3: Integrate citation and adjudication data with crash data for highway safety analysis.**

**Strategy:** Develop a data integration process to combine citation and adjudication data with crash data for comprehensive highway safety analysis.

**Outcome:** Improved understanding and insights into highway safety trends and factors through the integration of citation data with crash data. A combined data set allows for improved data analysis for both citation and crash data.

**Activity:** Planned.

## 4.3 Crash Data System Plan

### 4.3.1 System Overview

The Agency of Transportation serves as the designated repository for crash reports submitted by law enforcement agencies within the State as per Vermont State Statute 23 V.S.A. § 1603(b). The Department of Motor Vehicles acts as the repository agency for all operator crash reports.

Current interpretation of Vermont State Statute 23 V.S.A § 1016 as it relates to crash reports is that law enforcement has 30 days after the investigation is complete.

Motorists involved in a traffic crash are required to submit an operator's crash report within 72 hours of the incident. As described in the Investigator's Guide for Completing the State of Vermont Uniform Crash Report, law enforcement reports shall be forwarded within 30 days of the investigation.

Even though the statute designates DMV as the crash report custodian, in practice, the Agency of Transportation (VTrans) has custodial responsibility for the State's crash repository. Law enforcement crash reports are entered and submitted into the VTrans WebCrash system. VTrans does not enter data from the operator reports into the crash repository or use the information for traffic safety analysis. The operator reports are used to support financial responsibility.

Vermont's crash data is housed in a single, consolidated statewide database at VTrans. Vermont's Web Crash internet application is used to submit all law enforcement crash reports. VTrans has improved the application by merging its functionality from two separate systems into one, which provides additional efficiencies in the field data collection and submission process.

Law enforcement crash data collection is accomplished in several ways; directly entered into the WebCrash system or collecting the data on a paper crash report (or field notes) and then entering the data into WebCrash at the agency or regional offices. Ultimately, regardless of how the data is initially collected, crash data is entered electronically by the law enforcement agency into Vermont's WebCrash statewide crash data system.

The Investigator's Guide is the primary documentation for the key processes governing the collection, reporting, and posting of crash data. The documentation supports procedures for all reportable crashes and describes in detail the processes for reporting commercial motor vehicle-involved crashes to the FMCSA, including the ability to export crash data from the Web Crash application where the results are auto-populated in the SafetyNET system. The Guide describes how enforcement agencies are required to notify VTrans when fatal crashes occur. The notification includes preliminary information related to the crash. The VTrans FARS analyst then gathers other supplemental information to populate the data in the Federal database. The Vermont crash system data dictionary is an automated output from the SQL database model that includes all the tables and elements residing in the database but does not show linked or derived variables. While researchers and analysts could refer to the Investigator's Guide to understand the database content, the manual or current dictionary does not include all the components of a fully functional data dictionary. A comprehensive stand-alone data dictionary would contain

contact information for the data manager, information about how to gain access to the database, a list of all data elements, the allowable attributes (codes), attribute definitions, linked or derived data elements and source datasets, and how the linked or derived elements are populated. The data dictionary should also include all edit checks and validation rules applied to the elements to assure data quality. Vermont is encouraged to develop a fully functional data dictionary to support the regular use of the crash dataset as well as accurate and up-to-date documentation detailing the policies and procedures for key processes describing the collection, reporting, and posting of crash data.

Vermont is encouraged to identify crash reports with errors beyond those flagged by the edit checks. It does not have a formal process for returning rejected crash reports to the originating officer when errors are identified. Processes for returning rejected reports ensure the efficient transmission of the reports between the statewide data system and the originating officer as well as tracking the corrected report's re-submission. Reports updated since the original submission could be tracked along with the changes made. The results could be used to establish timeliness performance measures, a list of high-frequency errors, the identification of additional warning and edit checks, and targeted training processes.

While VTrans staff review the crash location and may update the location information, quality control staff do not have the authority to amend other obvious errors and omissions. In certain instances, quality control staff will contact individual departments if errors are found, using an incident number to identify the report. Obvious errors include minor misspellings and location corrections. Obvious omissions include missing values that can easily be obtained from the narrative or diagram. VTrans might consider instituting a process to allow quality control staff to fix obvious errors and omissions and retain the original report (legal record) if needed for reference. Vermont is encouraged to consider implementing formal, comprehensive crash data quality management.

Vermont has established some crash system performance measures, specifically in the areas of timeliness, uniformity, and integration. The current performance measures are not always clear and do not always include all components of a complete measure. VTrans is commended for its efforts so far and is encouraged to expand performance measures to the other quality attributes. Complete performance measures provide the ability to monitor the health of the crash system and support an accountable outcome-based system that establishes the metric/goal, baseline measurement, and the ability to track and report progress over time to managers, data users, and the Traffic Records Coordinating Committee.

#### 4.3.2 Assessment Recommendations for Crash

The following recommendations are from the Vermont's Traffic Records Assessment conducted on June 24, 2022.

- 1. Improve the data quality control program for the Crash data system to reflect best practices identified in the Traffic Records Program Assessment Advisory.**

**State Accepts Recommendation. State Response:** Vermont will explore possible ways to track errors that make it through to the database. Crashes are not “rejected” in Web Crash because they cannot be submitted without a minimum amount of data. We will also look for ways to institute a more formal performance measurement monitoring program. See Crash Goals 1, 4, and 5.

**Countermeasure Strategy:** Improves Accuracy

**Related Project:** AOT Crash Data Reporting System

**Related Performance Measure:** Crash Accuracy

**2. *Improve the interfaces with the Crash data system that reflect best practices identified in the Traffic Records Program Assessment Advisory.***

**State Accepts Recommendation. State Response:** See Crash Goals 6, 7, and 8.

**Countermeasure Strategy:** Improves Integration

**Related Project:** AOT Crash Data Reporting System

**Related Performance Measure:** Crash Integration

#### 4.3.3 Crash Goals

***Crash Goal 1: Improve the tracking of performance measures for the crash data system and report the results to the TRCC.***

**Strategy:** Develop and implement additional NHTSA Standard Model Performance Measures and related targets (numerical goals) for the crash data system and track their year-to-year performance. The crash data system manager will report updated performance measure metrics annually to the TRCC.

**Outcome:** An enhanced understanding and tracking of vehicle data system performance fosters data-driven decision-making and promotes continuous system improvement.

**Activity:** Planned.

***Crash Goal 2: Track the various crash reporting field data collection methods within the WebCrash system and develop associated performance measures.***

**Strategy:** Develop a comprehensive plan to track the performance of each method of data collection for crash reporting fields within the WebCrash system. This plan will include methods for collecting data and analyzing performance for each method of data collection (i.e., data entered, officer entered, imported).



**Outcome:** This strategy will improve our understanding of each data collection method's performance in the WebCrash system, enabling data-driven decisions to optimize system performance and promote electronic field collection.

**Activity:** Planned.

***Crash Goal 3: Develop a comprehensive stand-alone data dictionary for the crash system.***

**Strategy:** Develop a crash data dictionary for the statewide repository using the Vermont crash form as a basis. The dictionary will include contact information for the data manager, instructions for gaining database access, a list of all data elements, allowable attributes (codes), attribute definitions, linked or derived data elements, and source datasets. The dictionary will also detail edit checks and validation rules applied to ensure data quality.

**Outcome:** A consistently formatted data dictionary that includes variable names, definitions, characteristics, values, limitations, and exceptions for the crash dataset. This document will provide detailed information about the contents of the crash dataset and enable others to better understand and analyze the data.

**Activity:** Planned.

***Crash Goal 4: Develop a robust Data Quality Control program for WebCrash.***

**Strategy:** Develop a Data Quality Control program for the crash data system that encompasses the following:

- Workflows modelled on FARS QA/QC reports to track counts of issues by type, facilitate communication to originating officer.
- Reporting thresholds by agency based on historical submission counts.
- Comparative and trend analyses to identify unexplained differences in the data across years and jurisdictions.
- Conduct sample-based audits for crash reports and related database content.
- Provide feedback to law enforcement and establish processes for returning rejected crash reports to the originating officer and track resubmissions.
- Develop NHTSA Standard Performance Measures for crash data.
- Provide data quality management reports provided to the TRCC for regular review.

**Outcome:** A formal data quality control program will allow for identification and resolution of crash data quality issues.

**Activity:** Planned.

***Crash Goal 5: Develop an engineering (or analysis) database for VTrans that allows for correction of obvious errors and omissions in crash data.***

**Strategy:** Create a comprehensive database that includes all necessary fields and allows for the identification and correction of errors and omissions in crash data. The database will be designed to provide ease of use and accessibility for VTrans personnel.

**Outcome:** A fully functional engineering (or analysis) database that provides VTrans with a tool to identify and correct errors and omissions in crash data. This will improve the accuracy and completeness of the crash data, resulting in better analysis and decision-making.

**Activity:** Planned.

***Crash Goal 6: Interface WebCrash with the Roadway data system.***

**Strategy:** VTrans has updated Web Crash to provide a Crash to Roadway interface that populates roadway data in the crash repository using ESRI ArcGIS.

**Outcome:** Improved accuracy, integration, and completeness of crash data by integrating roadway data into the crash repository through the Crash to Roadway interface. This will enhance the ability to identify crash patterns and locations, improve safety analyses, and support data-driven decision making for roadway improvements.

**Activity:** Completed.

***Crash Goal 7: Improve integration of traffic records data by developing an interface between the Crash and Citation data systems to automatically populate crash reports with citation data.***

**Strategy:** The interface should ensure that eTicket information is automatically populated within the crash system to improve the accuracy and completeness of crash data.

**Outcome:** Enhanced integration of crash and citation data will improve crash analysis, leading to more informed decision-making and improved highway safety outcomes.

**Activity:** Planned.

***Crash Goal 8: Develop MOU to facilitate an interface to allow analysis between Crash and EMS data systems.***

**Strategy:** Develop an MOU between AOT and Health for interfacing Crash and EMS data for analysis purposes. The MOU will address issues related to personally identifiable information (PII) and comply with the Health Insurance Portability and Accountability Act (HIPAA). A data sharing agreement will be established between AOT and Health to ensure that PII is protected and used only for authorized purposes.

**Outcome:** Improved ability to analyze and understand the relationship between crash and EMS data. The interface will provide a more complete picture of the impact of crashes on public health, facilitate better identification of high-risk populations, and inform more targeted interventions.

**Activity:** Planned.

***Crash Goal 9: Convene an annual TRCC Crash Form Working Group to review crash form updates.***

**Strategy:** The TRCC will form a Crash Form Working Group to review the current crash form annually and identify potential areas of improvement to accommodate evolving crash analysis requirements.

The Crash Form Working Group will aim to improve the crash form to better align with evolving crash analysis needs, while considering available resources and funding. This may include updates to the form to comply with the latest standards.

**Outcome:** The result will be a more effective and efficient crash form that supports the needs of the highway safety community.

**Activity:** Planned.

***Crash Goal 10: Update Investigator's Guide to reflect current crash data, processes, and procedures.***

**Strategy:** Review and update training materials to reflect changes in the data dictionary, the field data collection manual, the coding manual, and crash report processes.

**Outcome:** Consistency among the State's crash system materials, with updated training materials ensuring accuracy of information and adherence to current processes and procedures.

**Activity:** Planned.

***Crash Goal 11: Investigate options for improving location data.***

**Strategy:** Collaborate with the GIS team to identify options for improving location data. Evaluate the feasibility and cost-effectiveness of implementing different solutions, such as enhancing existing data collection methods.

**Outcome:** Improved accuracy and reliability of location data in the crash repository, which will facilitate more effective analysis of crash trends and identification of high-risk locations.

**Activity:** Planned.

***Crash Goal 12: Assign intersection numbers to crash (node id) using the ESRI base map to enable more accurate location data for crashes occurring at intersections.***

**Strategy:** Utilize the ESRI base map to assign intersection numbers to crash data by directly assigning node IDs to crash data. This will improve the accuracy of location data for crashes occurring at intersections.

**Outcome:** A more accurate and comprehensive crash location data set that will allow for more detailed analysis and improved roadway safety.

**Activity:** Planned.

***Crash Goal 13: Create a Crash Reporting Client that supports offline mode.***

**Strategy:** Develop a mobile application for crash reporting that allows users to enter crash data in offline mode and automatically syncs with the central data repository once an internet connection is re-established.

**Outcome:** Improved efficiency and accuracy in crash reporting by allowing officers to collect and input data even in areas with limited or no internet connectivity.

**Activity:** Planned.

***Crash Goal 14: Improve compliance of law enforcement crash reports by clarifying reporting requirements in existing statutes.***

**Strategy:** Amend §1016 – *Reports of arrests* to include specific language outlining the requirement for law enforcement officers to submit written reports on crashes within 30 days of the incident.

**Outcome:** Increased compliance with crash reporting requirements, leading to improved completeness and timely dissemination of crash data.

**Activity:** Planned.

***Crash Goal 15: Provide equipment (such as cell boosters, printers, and barcode scanners) to agencies to encourage crash reporting software adoption.***

**Strategy:** Distribute necessary equipment to agencies to support and encourage the adoption of crash reporting software.

**Outcome:** Improved use of crash reporting software, leading to increased efficiency and accuracy in data collection and analysis.

**Activity:** Planned.

***Crash Goal 16: Implement electronic crash exports to NHTSA's EDT program.***

**Strategy:** Work with NHTSA to map Vermont crash data to NHTSA MMUCC data elements. Develop an export service to transfer Vermont crash data to the NHTSA EDT Crash Data web service.

**Outcome:** Provides increased analysis capabilities through NHTSA’s crash portal and auto population of Vermont FARS reports. Additionally, NHTSA uses EDT data to support the CRSS and FARS programs.

**Activity:** Planned.

## 4.4 Vehicle Data System Plan

### 4.4.1 System Overview

The Vermont Department of Motor Vehicles (DMV) has custodial responsibility for the existing mainframe State vehicle data system and will launch a new vehicle registration and titling data system in Q4 2023, called VT TRIPS (Vermont Titling Registration, Identification, Permitting System). The current mainframe system holds all pertinent information related to vehicle identification and ownership in Vermont, including make, model, year, body type, and title brand history.

The Vermont DMV validates each vehicle identification number (VIN) during registration data entry and identifies VINs needing further correction. The State's vehicle data system provides daily title data updates to the National Motor Vehicle Title Information System (NMVTIS), with manual NMVTIS queries for new out-of-state title transactions only. Vermont also participates in the Performance and Registration Information Systems Management (PRISM) program.

Comprehensive documentation supports the Vermont vehicle data system, covering content and structure, as well as titling and registration procedures. This documentation includes data definitions, edit checks, and data collection rules for each data field. Title and registration procedures are outlined in several documents maintained on the DMV's internal SharePoint site. A process flow diagram is maintained, illustrating key data process flows, timeliness information, and error correction procedures. Edit check and data validation procedures are integral to the system, with automated reports generated for quality control review.

The system retains title brand history from other states, allowing users to access title brand history for individual vehicle transactions. Vermont's vehicle and driver data systems reside in the DMV mainframe system, connected via driver license numbers. Error correction procedures support the vehicle data system, overseen by the Vermont Quality Control Unit staff authorized to carry out these tasks.

### 4.4.2 Assessment Recommendations for Vehicle

The following recommendations are from the Vermont's Traffic Records Assessment conducted on June 24, 2022.

**1. *Improve the data quality control program for the Vehicle data system to reflect best practices identified in the Traffic Records Program Assessment Advisory.***

**State Accepts Recommendation. State Response:** Vermont believes that NMVITS, once implemented, will institute many best practices. See Vehicle Goals 1 and 2.

**Countermeasure Strategy:** Improves Accuracy and Completeness

**Related Project:** No related TRCC project; however, NMVITS is an ongoing project within the Vermont Department of Motor Vehicles

**Related Performance Measure:** Vehicle Accuracy and Completeness

**2. Improve the description and contents of the Vehicle data system to reflect best practices identified in the Traffic Records Program Assessment Advisory.**

**State Accepts Recommendation. State Response:** Vermont believes that NMVITS, once implemented, will institute many best practices. See Vehicle Goal 5.

**Countermeasure Strategy:** Improves Completeness

**Related Project:** No related TRCC project; however, NMVITS is an ongoing project within the Vermont Department of Motor Vehicles.

**Related Performance Measure:** Vehicle Completeness

#### 4.4.3 Vehicle Goals

**Vehicle Goal 1: Improve the tracking of performance measures for the vehicle data system and report the results to the TRCC.**

**Strategy:** Develop and implement additional NHTSA Standard Model Performance Measures and related targets (numerical goals) for the vehicle data system and track their year-to-year performance. The vehicle data system manager will report updated performance measure metrics annually to the TRCC.

**Outcome:** An enhanced understanding and tracking of vehicle data system performance fosters data-driven decision-making and promotes continuous system improvement.

**Activity:** Planned.

**Vehicle Goal 2: Develop a Vehicle Integration Performance Measure.**

**Strategy:** Compare titled vehicles in the state system against the National Motor Vehicle Title Information System (NMVTIS) data. Title data synchronization with NMVTIS occurs every five years, during which NMVTIS provides all state titles in their system for comparison. Discrepancies between the two datasets will be identified and quantified to create a Vehicle Integration Performance Measure.

**Outcome:** A robust and meaningful Vehicle Integration Performance Measure will enable tracking and improvement of data accuracy and consistency between the state vehicle title system and NMVTIS.

**Activity:** Planned.

**Vehicle Goal 3: Add barcodes to the State's vehicle registration documents.**

**Strategy:** The Vermont Department of Motor Vehicles will add barcodes to the State's vehicle registration documents, streamlining data processing.

**Outcome:** Scanning barcoded registration data into citation and crash forms will improve efficiency and accuracy, minimizing the potential for errors and saving time for law enforcement officers.

**Activity:** Planned.

***Vehicle Goal 4: Perform NMVTIS and NLETS stolen vehicle searches before issuing vehicle titles.***

**Strategy:** The Vermont Department of Motor Vehicles will establish a process for performing searches in the National Motor Vehicle Title Information System (NMVTIS) and NLETS databases before issuing a vehicle title, ensuring title legitimacy.

**Outcome:** By enhancing the integrity of the title issuance process, fraudulent activities related to stolen vehicles can be effectively reduced, and overall accuracy in the vehicle registration system can be improved.

**Activity:** Planned.

***Vehicle Goal 5: Implement procedures for the application and removal of stolen vehicle indicator.***

**Strategy:** The Vermont Department of Motor Vehicles will add a stolen vehicle indicator for within the vehicle database and develop procedures for removing the indicator upon vehicle recovery or classification as a junked vehicle.

**Outcome:** Improved DMV processes will minimize delays for vehicle owners and prevent improper title and registration issuance, resulting in a more efficient and accurate vehicle data system.

**Activity:** Planned.

***Vehicle Goal 6: Develop and implement a modern, real-time vehicle data system.***

**Strategy:** Replace the legacy COBOL Mainframe Driver Data System with a modern, real-time, scalable solution that accommodates current business requirements and supports future expansion.

**Outcome:** A next-generation, scalable driver data system will enhance data quality, boost system availability and reliability, improve user experience, and remain adaptable to evolving needs.

**Activity:** Planned.



## 4.5 Driver Data System Plan

### 4.5.1 System Overview

The Vermont Department of Motor Vehicles (DMV) has custodial responsibility for the Vermont driver data system. The driver system maintains all critical information for both commercial and non-commercial drivers including personal information, driver license type, endorsements, status, conviction history, and crash involvement information. Driver training information is only captured for drivers under 18 years old.

The State's driver data system interacts with the National Driver Register's Problem Driver Pointer System (PDPS) and the Commercial Driver's License Information System (CDLIS). System documentation includes a data dictionary that is well documented with each field defined and value depicted. The driver system has edit checks and data collection guidelines. Updates to the data dictionary and edit checks occur through a formal process whenever there are changes to administrative rules, laws, or updated procedures.

Most licensing and issuance procedures for the Vermont driver data system are documented and accessible to staff through the DMV Intranet. Vermont DMV has a standard of no more than one percent error rate for transactions. Vermont has processes in place to administratively suspend licenses based on an impaired arrest independent of adjudication.

Vermont has procedures and automated methods for deterring and detecting fraudulent non-commercial and commercial driver license activity. The DMV utilizes manual methods of comparing on-file Driver License photos to new photos and requires review of documents at multiple levels. The American Association of Motor Vehicle Administrators' (AAMVA) Fraudulent Document Recognition Training is provided to all front-line staff. The State also has a Fraud Unit comprised of sworn law enforcement that investigates suspicious activity for further appropriate action if necessary.

The State has policies and procedures for system and information security. All DMV staff are required to complete the Driver's Privacy Protection Act (DPPA) training, and the use of a "watchdog report" assists with tracking and monitoring access and release of driver data. Access to driver data is granted to law enforcement through the Vermont Department of Public Safety.

Vermont's crash data is linked to the driver data system using a nightly export file. The State's citation/adjudication systems transmit a data file daily that contains, adjudicated/citation data that is used to update driver history. Commercial driver license (CDL) drivers have their driver history records electronically received and transferred to other states and Vermont performs driver license number surveys on drivers coming from other states.

### 4.5.2 Assessment Recommendations for Driver

The following recommendations are from the Vermont's Traffic Records Assessment conducted on June 24, 2022.

**1. Improve the data quality control program for the Driver data system to reflect best practices identified in the Traffic Records Program Assessment Advisory.**

**State Accepts Recommendation. State Response:** The VT TRCC will emphasize the importance of data quality control programs to each of the traffic records data component systems, including the Driver data system. See Driver Goal 3.

**Countermeasure Strategy:** Improves Accuracy

**Related Project:** Not directly addressed in the FFY2024 funded projects.

**Related Performance Measure:** Driver Accuracy

#### 4.5.3 Driver Goals

***Driver Goal 1: Participate in the AAMVA State-to-State Verification Service (S2S)***

**Strategy:** The Vermont Department of Motor Vehicles will interface VT TRIPS with the American Association of Motor Vehicle Administrators (AAMVA) State-to-State Verification Service (S2S). This effort will include the necessary planning and coordination with the AAMVA, as well as the development and testing of any required interfaces or software systems.

**Outcome:** By participating in the S2S program, the Vermont Department of Motor Vehicles will be able to verify the validity of driver's licenses and identification cards issued by other states. This will enhance the accuracy and integrity of Vermont Driver data and promote the safety of the driving public.

**Activity:** Planned.

***Driver Goal 2: Develop and implement a modern, real-time driver data system.***

**Strategy:** Replace the legacy COBOL Mainframe Driver Data System with a modern, real-time, scalable solution that accommodates current business requirements and supports future expansion.

**Outcome:** A next-generation, scalable driver data system will enhance data quality, boost system availability and reliability, improve user experience, and remain adaptable to evolving needs.

**Activity:** Planned.

***Driver Goal 3: Improve the tracking of performance measures for the driver data system and report the results to the TRCC.***

**Strategy:** Develop and implement additional NHTSA Standard Model Performance Measures for the driver data system and related targets (numerical goals) and track their year-to-year

performance. The driver data system manager will report updated performance measure metrics annually to the TRCC.

**Outcome:** An enhanced understanding and tracking of vehicle data system performance fosters data-driven decision-making and promotes continuous system improvement.

**Activity:** Planned.

***Driver Goal 4: Add key data process flows to the existing Driver License process flow diagrams.***

**Strategy:** The Vermont DMV will add key data process flows to the existing Driver License diagrams that currently depict inputs and interfaces with other data systems.

**Outcome:** Process flow diagrams will be used to understand the need for and understanding of existing processes and will promote continuous improvement. The process flows can also identify redundant or unnecessary steps.

**Activity:** Planned.

***Driver Goal 5: Establish an interface between the driver data system and the SAVE System.***

**Strategy:** The Vermont Department of Motor Vehicles will develop and implement an interface between the driver data system and the Systematic Alien Verification for Entitlement (SAVE) system, automating the process of verifying eligibility for license issuance.

**Outcome:** The integration with the SAVE system will streamline the license issuance process, increasing accuracy and efficiency by automating the verification of eligibility for license issuance.

**Activity:** Planned.

## 4.6 Roadway Data System Plan

### 4.6.1 System Overview

Vermont's roadway network includes 15,762 miles as of 2022. The State maintains approximately 17% of the roads, Town Highways maintain approximately 73%, and approximately 10% are unmaintained. All roadways and major assets are mapped in a geographic information system (GIS) stored in an Esri enterprise geo-database. Two linear referencing methods (LRM) are used, the first based on the town-based measures that re-zero at each town boundary and the second using cumulative mileage for the whole route from start to end. The Vermont Agency of Transportation's (VTrans) Mapping Section maintains a master route definition table that includes town-based and end-to-end route codes. Both LRMs are based on the same geometry, with the appropriate route codes and measures applied. The State has the capability of mapping roadway and traffic data using compatible linear reference systems (LRS) and has an online portal that displays route logs (straight line diagrams) and Annual Average Daily Traffic (AADT).

Most crashes are located using the two LRS methods and crashes not located using the LRS system are geolocated using several different methods, including GPS and E911 address. Once a year, crashes are sent to the IT mapping group (IT Support & Analytics) which prepares the data for final mapping. Vermont has about 94% of crashes mapped and the crash locations can be easily linked to other data layers for analysis.

There is a nightly geolocation process that locates crashes for the public query tool.

VTrans has been working to modify databases to support the Model Inventory of Roadway Elements (MIRE) data elements; adding missing FDE data elements and developing the datasets to meet the MIRE FDE data requirements. A large portion of those FDEs is part of the Highway Performance Monitoring System (HPMS) or other systems within VTrans. Most of the MIRE FDEs are collected for all public roads. Below are the percentages:

2021 Roadway Segment = 86.8 %

2021 At-Grade Intersection/Junctions 84.29 %

2021 Intersection Leg (Each Approach) 100 %

2021 Interchange/Ramp 85.45 %

Vermont also has a scorecard providing which data fields VTrans has developed that clearly map to the MIRE FDE fields.

Vermont has individual data dictionaries for road centerline data, intersections, road width, linear reference system, functional class, and limited access, but this information has not been loaded into an enterprise data dictionary. The centerline and intersection documents cover all public roadways while the others only cover the federal aid roads. VTrans also receives roadway

data from Metropolitan Planning Organizations (MPO), regional planning commissions, and municipalities.

VTrans has a Central Data Inventory project within the Data Governance Committee to improve the data, data descriptions, field definitions, and field domains. A subcommittee is working on systems and architecture for agency data. The goal is to create a library for all relevant data dictionaries. Information from the project will provide the architecture for the development of an enterprise data dictionary.

The VTrans Mapping Section integrates new data elements into the roadway information system. When a new element needs to be included, a data schema and authoritative source are defined, and the data is then set up and validated. A process is created between the data steward and IT to ensure the data is published on the preferred publishing cycle. The Data Governance Committee is working to implement more formal data governance that will develop workflows for incorporating new elements, assessment of existing standards, and linkage to existing systems.

Several guidelines have been developed for the collection of roadway data elements and are accessible to data collectors via the internet. The LRS is made available to the regional and local agencies through REST services. Local and regional entities have access to the feature services through the Open Geodata Portal which allows them to do edits to intersection and road centerline attributes. The Open Geodata Portal is available publicly as well.

Vermont has nightly quality control and assurance routines for road centerline and intersections and those results are emailed to Mapping Section staff. Prior to publishing, quality assurance routines are run for the LRS and other elements, field domains, topology, and mileage values are validated. If any errors are found, a queue is developed, and corrections are typically done the following morning. Errors identified using other means go into a different queue where some research on the issue is done. These may take longer than those found in the regular routines.

The State has several completeness and uniformity performance measures with benchmark values and targets.

The State has plans to meet the 2026 deadline for the addition of all MIRE FDEs.

#### 4.6.2 Assessment Recommendations for Roadway

The following recommendations are from the Vermont's Traffic Records Assessment conducted on June 24, 2022.

**1. Improve the applicable guidelines for the Roadway data system to reflect best practices identified in the Traffic Records Program Assessment Advisory.**

**State Accepts Recommendation. State Response:** See Roadway Goals 1 and 2.

**Countermeasure Strategy:** Improves Completeness

**Related Project:** Not directly addressed in the FFY2024 funded projects.

**Related Performance Measure:** Roadway Completeness

**2. *Improve the data dictionary for the Roadway data system to reflect best practices identified in the Traffic Records Program Assessment Advisory.***

**State Accepts Recommendation. State Response:** VTrans understands the recommendation and can see the benefits of a single data dictionary. There are currently different data systems and processes, each with specific data schemas that may not be able to be pulled together into a single dataset but could have their schemas defined in a single data dictionary. This could be done provided adequate resources are available.

VTrans has recently created a data governance working group and running a pilot project to build an enterprise data dictionary and central data inventory. This pilot is looking at crash data and small culverts but will be expanded to also include the roadway data elements, as well as other data from across the Agency. There are currently data dictionaries for many of the data layers, but they have not been incorporated into a single enterprise data dictionary. There is progress towards this development.

**Countermeasure Strategy:** Improves Uniformity

**Related Project:** Data governance working group is piloting the development of an enterprise central data inventory and data dictionary, which is piloting crash data and small culverts and will be expanded over time.

**Related Performance Measure:** Roadway Uniformity

**3. *Improve the data quality control program for the Roadway data system that reflect best practices identified in the Traffic Records Program Assessment Advisory.***

**State Accepts Recommendation. State Response:** Quality assurance and quality control are important to the integrity of any data system, and VTrans needs to review the recommendation and evaluate to what extent this can be implemented within the existing system. There have been a series of overnight QA/QC routines that run on the road centerline data layer and the intersection data, with results that can then be leveraged within Data Reviewer for correction. Other QA/QC is done at the time prior to publication of the data from the working databases to the production databases, and they go through rigorous QA/QC through more manual processes. VTrans would like to build additional automated quality and data integrity tools that run on a more frequent basis. See Roadway Goals 4 through 6.

**Countermeasure Strategy:** Improves Accuracy

**Related Project:** There have been the development of the nightly QA/QC routines and this needs to be expanded to other data layers. VTrans will need to define additional projects associated with this recommendation, which has not happened at this time.

There are limited resources and staffing available to perform all the necessary tasks to support collection, storage, and analysis of the roadway data elements and as much as we may want to implement certain solutions, resources may not be available to do so.

**Related Performance Measure:** Roadway Accuracy

#### 4.6.3 Roadway Goals

**Roadway Goal 1: Finalize Central Data Inventory (CDI) structure by leveraging existing Data Governance Committee processes.**

**Strategy:** Utilize the established processes and expertise of the Data Governance Committee to review, refine, and finalize the structure of the Central Data Inventory (CDI). This collaboration will ensure the CDI structure aligns with data governance best practices and meets the needs of all stakeholders.

**Outcome:** A comprehensive and well-structured Central Data Inventory that adheres to data governance principles, promotes data consistency, and facilitates efficient data management and sharing across the organization.

**Activity:** Planned.

**Roadway Goal 2: VTrans to develop an ETL process for converting existing roadway data elements into MIRE-compatible data elements.**

**Strategy:** VTrans will design and implement an Extract, Transform, and Load (ETL) process to systematically convert existing roadway data elements into the Model Inventory of Roadway Elements (MIRE) format. This process will streamline data sharing and analysis, ensuring compatibility with national data standards.

**Outcome:** Enhanced interoperability and efficiency in roadway data management through the successful transformation of existing data elements into MIRE-compatible formats, facilitating improved data-driven decision-making.

**Activity:** Planned.

**Roadway Goal 3: Enhance the WebCrash Interface with the Roadway data system to include local roads.**

**Strategy:** VTrans has updated Web Crash to provide a Crash to Roadway interface that populates roadway data in the crash repository using ESRI ArcGIS. This effort will expand on that foundation and add local roads (roads off the federal aid network) to the interface.

**Outcome:** Improved accuracy, integration, and completeness of crash data by integrating roadway data into the crash repository through the Crash to Roadway interface. This will enhance the ability to identify crash patterns and locations, improve safety analyses, and support data-driven decision making for roadway improvements.

**Activity:** Planned.

***Roadway Goal 4: Develop a timeliness performance measure based on the NHTSA Model Performance Measures for a Roadway data system.***

**Strategy:** Vermont will develop a timeliness performance measures based on the NHTSA Model Performance Measures that will measure the average timeliness of the Project Substantially Complete Date to entry of the related date elements into the roadway data system.

**Outcome:** Improved understanding of the timeliness performance of the roadway data system and related processes.

**Activity:** Planned.

***Roadway Goal 5: Develop a completeness performance measure based on the NHTSA Model Performance Measures for a Roadway data system.***

**Strategy:** Vermont will develop a roadway completeness performance measures based on the NHTSA Model Performance Measures that will measure the percentage of records with no missing critical data elements or the percentage of records with unknowns or blanks in critical data elements where which unknown is not an acceptable value.

**Outcome:** Improved understanding of the completeness of the roadway data system.

**Activity:** Intersection geometry and intersection traffic control completeness measures were developed for the most recent Traffic Records Strategic plan. VTRANS plans to add additional completeness performance measures.

***Roadway Goal 6: Set a numeric goal (targets) for each performance measure of the roadway data system.***

**Strategy:** For each performance measure (e.g., timeliness and completeness), set a target for the upcoming performance period.

**Outcome:** Setting established, quantifiable targets for each performance measure will drive continuous improvement, enabling the roadway data system to meet or exceed desired performance levels.

**Activity:** Planned.



## 4.7 Citation/Adjudication Data System Plan

### 4.7.1 System Overview

The State of Vermont has a unified court system utilizing a common case management system and has a well-developed citation and adjudication process. The Vermont Judicial Bureau's case management system tracks all citation dispositions and transmits dispositions required by State Statute 23 V.S.A. § 2308 to the Vermont Department of Motor Vehicles (DMV). All law enforcement agencies, parole agencies, probation agencies, and courts within the State have access to several systems providing information on individuals' driving and criminal histories. The Vermont Judiciary has a public portal where law enforcement can view criminal cases, conditions, citations, and dispositions.

The Vermont citation and adjudication system consists of a law enforcement component managed by the Vermont Department of Public Safety (DPS) and a courts component managed by the Vermont Judicial Bureau.

The law enforcement component of eTicket is implemented by the Vermont DPS' Valcour Records Management System (RMS) system.

Valcour has an electronic citation module (i.e., eTicket) that provides participating Vermont law enforcement agencies the ability to issue electronic citations. Once electronic citations are issued, they are transmitted to the Vermont Judicial Bureau's Odyssey court case management system for adjudication.

The court component of eTicket is handled by the Vermont Judicial Bureau's Odyssey court case management system. Odyssey tracks all citation dispositions, deferrals, and dismissals within the Judicial Bureau. Reportable dispositions are transmitted electronically to the Vermont Department of Motor Vehicles (DMV), while dismissals and deferrals remain accessible in Odyssey. There are no citation dispositions outside of the Judicial Branch.

The Vermont Judicial Bureau currently receives electronic and paper citations. The Vermont TRCC, Vermont Judicial Bureau, and the Vermont DPS are continuing to promote and provide funding for continued expansion of eTicket throughout the State.

The Vermont Judicial Bureau assigns unique citation numbers for paper traffic ticket books used by law enforcement and provides requirements to eTicket vendors to generate unique citation numbers within their systems. With the advent of Vermont's eTicketing program, agencies on the Valcour system receive a numeric generated ticket number from the system. The Vermont Judicial Bureau assigned a unique starting number sequence, and the CAD/RMS then generates the ticket number based on the beginning sequence number.

The Judicial Bureau transmits all dispositions nightly to the DMV via FTP in the form of a list of Judicial Bureau civil complaint adjudications or judgments for the day as well as a list of notices to suspend for non-payment. The next business day the Judiciary transmits compliances to the

DMV electronically. Final judgements, after an appeal, are posted to the driver data system. Dispositions of dismissals are not transmitted to DMV.

Vermont is committed to utilizing national data standards in its court system, as evidenced by its membership in the Justice Court initiative and compliance with the National Information Exchange Model (NIEM) Justice domain guidelines. Vermont is a supporting member of the Justice Court initiative of the National Center for State Courts (NCSC). Vermont's citation and adjudication system complies with the National Information Exchange Model (NIEM) Justice domain guidelines in several key interfaces.

The State of Vermont utilizes the National Information Exchange Model (NIEM) 2.1 standards for a data exchange between the Valcour and Odyssey. NIEM compliance is planned as part of an upgrade to the interface between the VCIC and the National Instant Criminal Background Check System (NICS).

Both the Odyssey and eTicket systems utilize data dictionaries to provide definitions for each field of citation and adjudication data.

The Odyssey court case management system has a proprietary data dictionary that provides a definition for each field relating to citation and adjudication data.

The law enforcement eTicket system has a data dictionary based on the NIEM 2.1 national data standard and provides a definition for each field and is consistent with field data collection manuals, training materials, coding manual, and corresponding reports.

The State of Vermont can track citations from issuance to when they are posted on the driver's record. The information about the citation and its resolution is stored in two systems, Odyssey, and the DMV's system. Odyssey holds information on the citation's issuance and adjudication, while the DMV keeps the corresponding information in the driver history.

The Vermont Judiciary, in conjunction with the Vermont DMV, engages in sample-based audits conducted periodically for commercial enforcement citations to verify the accuracy of CDL license, commercial vehicle, and HazMat data.

#### 4.7.2 Assessment Recommendations for Citation/Adjudication

The following recommendations are from the Vermont's Traffic Records Assessment conducted on June 24, 2022.

1. Improve the data quality control program for the Citation and Adjudication systems to reflect best practices in the Traffic Records Program Assessment Advisory.

**State Accepts Recommendation. State Response:** See Citation Goals 1, 4, 5, and 6.

**Countermeasure Strategy:** Improves Accuracy

**Related Project:** DPS E-Ticket Implementation

**Related Performance Measure:** Citation Accuracy

2. Improve the interfaces with the Citation and Adjudication systems to reflect best practices identified in the Traffic Records Program Assessment Advisory.

**State Accepts Recommendation. State Response:** The Vermont Judiciary has embarked on a multi-year initiative to implement a Next Generation Case Management System (NG-CMS). This initiative, currently in its planning phase, will drive and enable the transformation of the Judiciary's case management process from a paper-driven to an electronic-focused business model that will improve access to justice for our citizens, strengthen inter-agency communication, and enable more efficient court operations through faster court case initiation, more accurate electronic case files, and improved document availability and accessibility. Additionally, this initiative will facilitate improvements to the E-Ticket Upgrade project. See Citation Goals 2 and 3.

**Countermeasure Strategy:** Improves Integration

**Related Project:** DPS E-Ticket Implementation

**Related Performance Measure:** Citation Integration

#### 4.7.3 Citation/Adjudication Goals

**Citation Goal 1: Develop a robust Data Quality Control program for the Citation data system.**

**Strategy:** Develop a Data Quality Control program for the Citation data system that encompasses the following:

- Implement workflows for QA/QC reports to track counts of issues by type and facilitate feedback to originating officers.
- Develop reporting thresholds by agency based on historical submission counts.
- Conduct comparative and trend analyses to identify unexplained differences in the data across years and jurisdictions.
- Conduct sample-based audits for citations and related database content.
- Establish processes to provide data quality feedback to law enforcement.
- Develop NHTSA Standard Performance Measures for citation and adjudication data.
- Provide data quality management reports provided to the TRCC for regular review.

**Outcome:** A formal data quality control program will allow for identification and resolution of crash data quality issues.

**Activity:** Planned.

***Citation Goal 2: Develop an interface between the crash and citation systems to link violations and charges related to crashes.***

**Strategy:** Define and implement a solution that will allow citation data to be linked to the crash system for analysis purposes.

**Outcome:** Improved accuracy and completeness of crash data by capturing relevant citation information and facilitating analysis of the relationship between crashes and traffic violations.

**Activity:** Planned.

***Citation Goal 3: Automate the DMV's processing of citation/adjudication data received from Vermont Judiciary***

**Strategy:** Currently, the court transmits relevant citation/adjudication data via FTP to the DMV where the information is manually processed and entered on the driver record. This effort would automate the importing of this data into the DMV Driver data system.

**Outcome:** Improved accuracy and efficiency in processing citation/adjudication data, leading to updated driver records and improved traffic safety.

**Activity:** Planned.

***Citation Goal 4: Develop and implement timeliness performance measures for citation data.***

**Strategy:** Work with stakeholders to identify key performance indicators for timeliness of citation data processing, including measures for both paper and electronic citations. Develop and implement protocols to monitor and report on these measures. Develop targets for each performance measure and report the results to the TRCC.

**Outcome:** Improved understanding of the efficiency and effectiveness of the citation system, leading to improved timeliness performance and safety analysis.

**Activity:** Planned

***Citation Goal 5: Develop and implement timeliness performance measures for adjudication data.***

**Strategy:** Work with stakeholders to identify key performance indicators for timeliness of citation data processing using CourTools. Develop and implement protocols to monitor and report on these measures. Develop targets for each performance measure and report the results to the TRCC.

**Outcome:** Improved understanding of the efficiency and effectiveness of adjudication processing leading to improved timeliness performance and safety analysis.

**Activity:** Planned

***Citation Goal 6: Develop and implement accuracy performance measures for citation data.***

**Strategy:** Work with stakeholders to identify key performance indicators for accuracy of citation data processing, including rejection ratios for eTickets. Develop and implement protocols to monitor and report on these measures. Develop targets for each performance measure and report the results to the TRCC.

**Outcome:** Improved understanding of the efficiency and effectiveness of the citation system, leading to improved accuracy performance and safety analysis.

**Activity:** Planned

***Citation Goal 7: Implement geolocation functionality within the eTicket citation data system.***

**Strategy:** Implement functionality with the citation data system to enable officers to geolocate citations using GPS and/or GIS technologies.

**Outcome:** Increased citation analysis capabilities allowing stakeholders to perform map-based and roadway-based queries of citation data.

**Activity:** Planned.

***Citation Goal 8: Increase adoption of eTicket by Vermont Law Enforcement agencies.***

**Strategy:** Develop outreach and training programs to educate law enforcement agencies on the benefits of eTicketing, as well as provide technical support and assistance for agencies transitioning to eTicketing.

**Outcome:** Increased adoption of eTicketing by law enforcement agencies, leading to improved efficiency and accuracy in the citation process.

**Activity:** Planned.

***Citation Goal 9: Increase eTicket adoption through equipment provision to Law Enforcement agencies.***

**Strategy:** Identify law enforcement agencies that may need equipment assistance to facilitate eTicket adoption. Provide grant assistance for agencies to purchase necessary equipment (e.g., cell boosters, printers, barcode scanners) to enable eTicket issuance and processing.

**Outcome:** Increased eTicket adoption and use by law enforcement agencies in Vermont, resulting in improved citation data collection and processing.

**Activity:** In progress.

## 4.8 EMS/Injury Surveillance Data System Plan

### 4.8.1 System Overview

States with a comprehensive Injury Surveillance System (ISS) have data readily available from five core components: pre-hospital emergency medical services (EMS), trauma registry, emergency department, hospital discharge, and vital records. These data sets enable a wide variety of stakeholders (including the Traffic Records Coordinating Committee (TRCC)) to effectively develop problem identification and program evaluation efforts. A mature ISS can specifically address issues related to data quality so that subsequent analyses of injury severity, costs, and outcomes can be made accurately and reliably. These data sources provide more detailed information on injuries sustained in motor vehicle crashes than can be found in other components of a state's traffic records system, thus they are uniquely able to detail the severity, cost, and clinical outcomes of injuries sustained in crashes.

Vermont's ISS includes four well-developed data systems housed in the Vermont Department of Health. The Statewide Incident Reporting Network (SIREN) collects NEMESIS-compliant ambulance run reports. As of January 01, 2023, SIREN reports are submitted 100 percent electronically. The system is well-documented, has automated edit checks that apply validation rules to submitted records, and has ongoing performance measures and goals for several of the core metrics. These metrics permit SIREN managers to provide detailed data quality feedback to the services and reports to the State's TRCC. Quality control reviews are required at the agency level, but a State-level review would ensure consistency among the State's EMS agencies.

The Vermont Green Mountain Care Board (GMCB) manages the collection of data from the State's hospitals and the resultant data set is managed by the VDH. The Vermont Uniform Hospital Discharge Data System is primarily used for utilization analysis. Public use data files are available upon request and researchers may apply for a limited-use data set through an agreement with the GMCB. While hospital data is available to researchers, its use for highway safety programs has been minimal. Given its small size and the differences in traffic safety laws in bordering states, analysis of hospital data can help to provide a more complete picture of the burden of injury resulting from motor vehicle crashes in the State.

Vital records data is also available through the VDH. The data is collected in accordance with guidelines provided by the National Center for Health Statistics. Data is available for use by researchers and other interested parties through a public records request. By Vermont law, death certificates are considered public information and are available for analytical purposes.

Vermont has many elements of a core injury surveillance data system, with the exception of a trauma registry. Limitations in funding and staffing have prevented the use of available injury surveillance data beyond mandatory reporting requirements. Identifying partners that would be able to provide analytical support for highway safety efforts through other funding opportunities would be beneficial.

#### 4.8.2 Assessment Recommendations for EMS/Injury Surveillance

The following recommendations are from the Vermont's Traffic Records Assessment conducted on June 24, 2022.

**1. Improve the data quality control program for the Injury Surveillance systems to reflect best practices identified in the Traffic Records Program Assessment Advisory.**

**State Accepts Recommendation. State Response:** The TRCC will promote the use of completeness and accuracy performance measures for Vermont's Injury Surveillance data systems.

**Countermeasure Strategy:** Improves Accuracy

**Related Project:** SIREN

**Related Performance Measure:** EMS Accuracy

**2. Improve the interfaces with the Injury Surveillance systems to reflect best practices identified in the Traffic Records Program Assessment Advisory.**

**State Accepts Recommendation. State Response:** The TRCC will review and evaluate integration opportunities of the various traffic records data sets.

**Countermeasure Strategy:** Improves Integration

**Related Project:** SIREN

**Related Performance Measure:** EMS Integration

#### 4.8.3 EMS/Injury Surveillance Goals

**EMS Goal 1: Improve the tracking of performance measures for the EMS data system and report the results to the TRCC.**

**Strategy:** Develop and implement additional NHTSA Standard Model Performance Measures and related targets (numerical goals) for the EMS data system and track their year-to-year performance. The EMS data system manager will report updated performance measure metrics annually to the TRCC.

**Outcome:** An enhanced understanding and tracking of EMS data system performance fosters data-driven decision-making and promotes continuous system improvement.

**Activity:** Planned.

## 5. Progress

### 5.1 Performance Measures and Targets

#### 5.1.1 Citation Completeness– Agencies Deployed

**Label:** C-C-01

**Status of Improvement:** Demonstrated Improvement

**Related Project/System:** E-Ticket

#### Narrative

Vermont will improve the completeness of the E-Ticket system as measured in terms of:

The total number of agencies issuing citations electronically within a period determined by the State.

The state will show measurable progress using the following method: The number of agencies issuing electronic citations using a baseline period and a current period.

**The result is an increase in completeness of 3.64%. The target for the next period is 55%.**

#### Measurements

Start Date	End Date	Agencies	Percent of Total Agencies	Target (%)
April 1, 2015	March 31, 2016	0	0%	
April 1, 2016	March 31, 2017	11	12%	
April 1, 2017	March 31, 2018	21	22%	
April 1, 2018	March 31, 2019	21	22%	
April 1, 2019	March 31, 2020	34	35%	
April 1, 2020	March 31, 2021	47	49%	
April 1, 2021	March 31, 2022	46	51%	63%
April 1, 2022	March 31, 2023	47	54.64%	53%
April 1, 2023	March 31, 2024			55%
April 1, 2024	March 31, 2025			56%



April 1, 2025      March 31, 2026

57%

**Supporting Materials (Backup)**

Current

<b>Performance Measure 16: Percentage of agencies using E-Ticket</b>	From 4/1/2022 to 3/31/2023	From 4/1/2022 to 3/31/2023	Target Value
Citation completeness	Number of Total Agencies (for >5 citations issued)	Number of Agencies issuing both Paper & E-Citations (for >5 citations issued)	Percentage of Agencies using E-Citation
<b>Totals</b>	<b>86</b>	<b>47</b>	<b>55%</b>

Baseline

4/1/2021 to  
3/31/2022:  
Summary  
numbers on  
agencies  
below

Paper Ticket Unique  
Law Enforcement Agencies

E Citation Unique  
Agencies

Addison CSD	Addison CSD
Barre City PD	Barre City PD
Barre Town PD	
Bellows Falls PD	
Bennington CSD	Bennington CSD
Bennington PD	
Berlin PD	
Bradford PD	
Brandon PD	Brandon PD
Brattleboro PD	
Brighton PD	
Bristol PD	Bristol PD
Burlington PD	Burlington PD
Caledonia PD	
Castleton PD	
Chester PD	
Chittenden CSD	Chittenden CSD
Colchester PD	Colchester PD
Dover PD	Dover PD
Essex CSD	
Essex PD	Essex PD
Fair Haven PD	Fair Haven PD
Fairlee PD	
Franklin CSD	Franklin CSD
Grand Isle CSD	Grand Isle CSD
Granville Constable	
Hardwick PD	
Hartford PD	
Hinesburg PD	Hinesburg PD
Killington PD	
Lamoille CSD	

Liquor Control Admin	
Ludlow PD	Ludlow PD
Lyndonville PD	
Manchester PD	
Middlebury PD	Middlebury PD
Milton PD	Milton PD
Montpelier PD	
Morristown PD	
Motor Vehicles Enforcement	Motor Vehicles Enforcement
Newport City PD	
Northfield PD	Northfield PD
Norwich PD	
Old Bennington PD	
Orange CSD	
Orleans CSD	Orleans CSD
Pittsford PD	
Poultney Constable	
Richmond PD	Richmond PD
Royalton PD	Royalton PD
Rutland City PD	
Rutland CSD	Rutland CSD
Rutland Town PD	
Shelburne PD	Shelburne PD
South Burlington PD	
Springfield PD	Springfield PD
St Albans PD	St Albans PD
St Johnsbury PD	
Stowe PD	
Swanton PD	Swanton PD
Thetford PD	Thetford PD
Town of Groton	
Town of Bethel	
Town of Canaan	
Town of Hartland	
Town of Pawlet	
UVM Police Services	
Vergennes PD	Vergennes PD
VSP Derby	VSP Derby
VSP Middlesex	VSP Middlesex
VSP New Haven	VSP New Haven
VSP Royalton	VSP Royalton
VSP Rutland	VSP Rutland
VSP Shaftsbury	VSP Shaftsbury

VSP St Albans	VSP St Albans
VSP St Johnsbury	VSP St Johnsbury
VSP Traffic Operations	VSP Traffic Operations
VSP Westminster	VSP Westminster
VSP Williston	VSP Williston
Washington CSD	Washington CSD
Weathersfield PD	
Williston PD	Williston PD
Wilmington PD	Wilmington PD
Windham CSD	Windham CSD
Windsor County State Attorneys	
Windsor CSD	Windsor CSD
Windsor PD	
Winhall PD	Winhall PD
Woodstock PD	
	Winooski PD

<b>89</b>	<b>Total Agencies Paper</b>	<b>47</b>	<b>Total Agencies E Citation</b>
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<b>Percentage</b>	<b>52%</b>	Of Agencies Using E Citation
<b>Total Agencies</b>	<b>90</b>	In the Citation Data base*
* Fish and Wildlife Tickets/ Dog Ordinances and Voids removed		
<b>Total Agencies using both</b>	<b>46</b>	
<b>Agencies Paper Only</b>	<b>43</b>	
<b>Agencies E Citation Only</b>	<b>1</b>	

**Count of Agencies Where E-Ticket is Deployed**

Month	2015	2016	2017	2018	2019	2020	2021
Jan		0	8	21	21	28	147
Feb		0	11	21	21	30	147
Mar		0	11	21	21	34	147
Apr	0	0	11	21	21	91	
May	0	0	11	21	21	91	
Jun	0	0	11	21	21	91	
Jul	0	3	11	21	21	91	
Aug	0	3	11	21	21	91	
Sep	0	6	11	21	21	91	
Oct	0	6	11	21	21	91	
Nov	0	6	11	21	22	147	
Dec	0	8	11	21	24	147	

### 5.1.2 Citation Uniformity – Paper vs Electronic

**Label:** C-CU-02

**Status of Improvement:** Demonstrated Improvement

**Related Project/System:** E-Ticket

#### Narrative

Vermont will improve the Uniformity of the Citation system as measured in terms of:

The percentage of electronic citations entered into the citation database.

**The result is an increase in uniformity of 9.09 percent. The target for the next period is 42 percent.**

#### Measurements

Start Date	End Date	Paper	Electronic	Percent Electronic	Target (%)
April 1, 2015	March 31, 2016	88,926	0	0.00%	
April 1, 2016	March 31, 2017	94,908	1,218	1.27%	
April 1, 2017	March 31, 2018	95,198	11,687	10.93%	
April 1, 2018	March 31, 2019	84,755	15,427	15.40%	
April 1, 2019	March 31, 2020	53,256	21,269	28.54%	
April 1, 2020	March 31, 2021	41,240	23,377	36.18%	
April 1, 2021	March 31, 2022	23,823	11,578	32.71%	75%
April 1, 2022	March 31, 2023	23,912	17,173	41.80%	34%
April 1, 2023	March 31, 2024				42%
April 1, 2024	March 31, 2025				43%
April 1, 2025	March 31, 2026				44%

**Supporting Materials (Backup)**

Current

<b>Performance Measure 15: Percentage of highway safety E-Tickets issued</b>	From 4/1/2022 to 3/31/2023	From 4/1/2022 to 3/31/2023	From 4/1/2022 to 3/31/2023	Target Value
Target for Citation Uniformity	Paper Citations Issued	E-Citations Issued	Total Citations	Percentage of E-Citations
<b>Totals</b>	<b>23912</b>	<b>17173</b>	<b>41085</b>	<b>42%</b>

Baseline

4/1/2021 to 3/31/2022 : Summary numbers on agencies below	Paper Ticket Unique Agencies: Law Enforcement Agencies	E Citation Unique Agencies	Total E Citations Issued per Agency - (Fish and Wildlife Tickets/ Dog Ordinances and Voids	Total All Tickets / Paper and E Citation	Total Number of Paper Tickets all Agencies	Total number of E Citation Tickets All Agencies	Percentage of Paper Tickets all Agencies	Percent of Tickets issue using E Citation All agencies
	Addison CSD	Addison CSD		35401	23823	11578	67%	33%

### 5.1.3 Crash Timeliness

**Label:** C-T-01

**Status of Improvement:** Demonstrated Improvement

**Related Project/System:** Vermont Web Crash

#### Narrative

Vermont will improve the Timeliness of the Crash system as measured in terms of a decrease of:

The average number of days from the crash date to the date the crash report is entered into the crash database within a period determined by the State.

The state will show measurable progress using the following method: The average number of days from the crash date to the date the crash report is entered into the crash database using a baseline period and a current period.

**The result is an increase in timeliness of 6.18 days. The target for the next period is 42 days.**

#### Measurements

Start Date	End Date	Total Reports	Average Number of Days	Target
April 1, 2016	March 31, 2017	10,371	27.89	
April 1, 2017	March 31, 2018	9,901	31.75	
April 1, 2018	March 31, 2019	9,705	30.91	
April 1, 2019	March 31, 2020	12,559	56.22	
April 1, 2020	March 31, 2021	7,439	66.56	
April 1, 2021	March 31, 2022	9,419	49.54	
April 1, 2022	March 31, 2023	7,343	43.36	48
April 1, 2023	March 31, 2024			42
April 1, 2024	March 31, 2025			41
April 1, 2025	March 31, 2026			40



## Supporting Materials (Backup)

### Current

Page 1 of 3

Vermont Agency of Transportation

04/18/2023

#### General Yearly Summaries - Average Reporting Days by Reporting Agency

Crash Date between 04/01/2022 AND 03/31/2023

Reporting Agency (ORI)	# Crashes	Average Reporting Days
Addison CSD	1	217.00
Barre City PD.	53	45.89
Barre Town PD	58	13.14
Bellows Falls PD.	17	114.76
Bennington CSD	14	65.93
Bennington PD.	365	87.59
Berlin PD.	53	25.79
Bradford PD	5	123.60
Brandon PD.	45	66.40
Brattleboro PD.	341	15.10
Bristol PD.	10	49.10
Burlington PD	766	15.36
Caledonia CSD	1	39.00
Castleton PD.	10	8.80
Chester PD.	35	90.54
Colchester PD.	417	28.18
DMV	76	34.41
DMV Enforcement	5	73.40
Dover PD.	36	15.64
Essex CSD	7	204.14
Essex PD.	129	39.04
Fair Haven PD.	21	50.95
Franklin CSD	69	81.30
Grand Isle CSD	20	17.55
Hardwick PD.	45	19.53
Hartford PD.	131	75.95
Hinesburg PD.	9	48.00
Killington PD	21	17.19
Lamoille CSD	71	26.25
Ludlow PD.	68	10.94
Lyndonville PD	12	40.17
Manchester PD.	40	128.18
Middlebury PD.	134	14.25
Milton PD.	153	36.08

**General Yearly Summaries - Average Reporting Days by Reporting Agency**  
 Crash Date between 04/01/2022 AND 03/31/2023

Reporting Agency (ORI)	# Crashes	Average Reporting Days
Montpelier PD.	44	20.34
Morristown PD.	105	27.56
Newport PD.	67	29.13
Northfield PD.	22	33.86
Norwich PD.	15	46.87
Orange CSD	12	11.83
Orleans CSD	23	31.87
Pittsford PD.	12	16.00
Richmond PD.	18	107.06
Royalton PD.	17	125.94
Rutland CSD	14	72.36
Rutland PD.	97	31.53
Rutland Town PD	28	42.36
Shelburne PD.	73	24.23
So. Burlington PD.	514	50.56
Springfield PD.	178	26.94
St. Albans PD.	33	26.36
St. Johnsbury PD.	29	21.66
Stowe PD.	164	21.85
Swanton PD.	42	55.29
Thetford PD.	1	126.00
Town of Bethel	2	117.50
UVM Police	26	47.50
Vergennes PD.	9	170.33
VSP - A1 Williston	279	47.01
VSP - A2 St. Albans	174	58.84
VSP - A3 Berlin	116	60.75
VSP - A4 St. Johnsbury	113	93.03
VSP - A5 Derby	188	67.85
VSP - B1 Westminster	302	84.36
VSP - B2 Royalton	190	52.14
VSP - B3 Shaftsbury	186	44.98
VSP - B4 Rutland	212	80.35
VSP - B5 New Haven	137	70.47

**General Yearly Summaries - Average Reporting Days by Reporting Agency**

Crash Date between 04/01/2022 AND 03/31/2023

Reporting Agency (ORI)	# Crashes	Average Reporting Days
Washington CSD	2	34.50
Weathersfield PD.	49	13.76
Williston PD.	290	16.14
Wilmington PD.	83	18.81
Windham CSD	9	138.33
Windsor CSD	5	16.00
Windsor PD.	23	25.74
Winhall PD.	45	25.53
Winooski PD.	132	16.27
Woodstock PD.	25	56.80
<b>Total Crashes/Overall Average:</b>	<b>7,343</b>	<b>43.36</b>

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#### 5.1.4 Crash Integration

**Label:** C-I-1

**Status of Improvement:** Demonstrated Improvement

**Related Project/System:** Vermont Web Crash

#### Narrative

This performance measure is based on the C-I-1 model.

Vermont will improve the integration of the AOT Crash Data Reporting System as measured in terms of the percentage of reports in the crash database that are linked to driver/owner and vehicle information from NLETS and DMV data via the message switch for auto-population.

The state will show measurable progress using the following method: The percentage of crash reports linked to person and vehicle data using a baseline period and a current period.

**The result is an increase in integration of 23.23%.** (Since crash reports can contain multiple vehicles and persons, the percentage linked can be greater than 100 percent).

#### Measurements

Start Date	End Date	Number of Auto-populate Queries	Number of Crash Reports	Percentage Linked	Target (%)
April 1, 2015	March 31, 2016	19,669	10,537	186.66%	
April 1, 2016	March 31, 2017	27,823	10,371	268.28%	
April 1, 2017	March 31, 2018	26,613	11,717	227.13%	
April 1, 2018	March 31, 2019	27,578	9,705	284.16%	
April 1, 2019	March 31, 2020	25,814	12,559	205.54%	
April 1, 2020	March 31, 2021	18,211	9,268	196.49%	
April 1, 2021	March 31, 2022	18,335	9,704	188.94%	
April 1, 2022	March 31, 2023	16,348	7,705	212.17%	100%
April 1, 2023	March 31, 2024				100%
April 1, 2024	March 31, 2025				100%

April 1, 2025    March 31, 2026

100%

### Supporting Materials (Backup)

#### Current

```
SQLQuery4.sql - ao...CrashTranUsr (154))* SQLQuery3.sql - ao...CrashTranUsr (164))* SQLQuery2.sql - ao...CrashTranUsr (164))*
select COUNT(*) From MessageSwitch where messagecalldate between '04/01/2022' and '03/31/2023'
select count(*) from crashheader where crashdate between '04/01/2022' and '03/31/2023'
```

100 %

Results

-----
16348
(1 row affected)
-----
7706
(1 row affected)

Completion time: 2023-04-18T14:06:45.4380593-04:00

#### Baseline

```
SQLQuery1.sql - 10...CrashTranUsr (449))*
select COUNT(*)
From MessageSwitch
where messagecalldate between '04/01/2021' and '03/31/2022'
select count(*) from CrashHeader where CrashDate between '04/01/2021' and '03/31/2022'
```

100 %

Results Messages

(No column name)
1 18335

(No column name)
1 9704

`select COUNT(*) From MessageSwitch where messagecalldate between '04/01/2020' and '03/31/2021'`

### 5.1.5 Crash Completeness - Roadway Clearance

**Label:** C-C-02

**Status of Improvement:** Demonstrated Improvement

**Related Project/System:** Vermont Web Crash

#### Narrative

This performance measure is based on the C-C-02 model performance measure.

Vermont will improve the Completeness of the Crash system as measured in terms of:

The percentage of crash records with Roadway Clearance values entered by the officer.

The state will show measurable progress using the following method:

Count the number of crash reports with Roadway Clearance values (count only non-null values) for all reporting agencies in the State during the baseline period and the current performance period. Then, count the total number of reports for all reporting agencies in the State for the same periods. Divide the total number of reports by the count of reports with Roadway Clearance values and multiply by 100 to get the percentage of reports for each period.

**The result is an increase in completeness of 2.45 percent. The target for the next period is 44 percent.**

#### Measurements

Start Date	End Date	Roadway Clearance	Total Reports	Completeness (%)	Target (%)
April 1, 2020	March 31, 2021	3,711	10,716	34.63%	
April 1, 2021	March 31, 2022	4,273	10,646	40.14%	
April 1, 2022	March 31, 2023	3,312	7,777	42.59%	42%
April 1, 2023	March 31, 2024				44%
April 1, 2024	March 31, 2025				44.5%
April 1, 2025	March 31, 2026				45%

### Supporting Materials (Backup)

#### Current

Report Number	Roadway Clearance Time	Incident Clearance Time				
22B4004579	11:59 PM	11:59 PM				
23WT001896	11:58 PM	11:59 PM				
23B3000320	11:10 PM	11:59 PM				
22WH003329	11:42 PM	11:58 PM				
22BU005416	11:20 PM	11:58 PM				
22B5002863	9:50 PM	11:58 PM				
22DV000987	12:30 AM	11:56 PM				
22RM000622	9:51 PM	11:55 PM				
22WT005344	11:54 PM	11:54 PM				
22BU014646	11:53 PM	11:53 PM				
			Roadway Clearance Reported	3,312	42.59%	
			Incident Clearance Reported	3,354	43.13%	
			Total Crashes	7,777		

#### Baseline

Secondary Crash	Roadway Clearance Time	Incident Clearance Time				
FALSE	12:00 AM	12:00 AM				
FALSE	12:00 AM	12:00 AM				
FALSE	12:00 AM	12:00 AM				
FALSE	12:00 AM	12:00 AM				
FALSE	11:30 PM	12:00 AM				
FALSE	11:50 PM	12:00 AM				
FALSE		12:00 AM				
FALSE	12:02 AM	12:02 AM				
FALSE	12:02 AM	12:02 AM				
			Rdwy Clearance Reported	4273	40.14%	
			Incident Clearance Reported	4391	41.25%	
			Total Crashes	10646		

### 5.1.6 Crash Completeness – Incident Clearance

**Label:** C-C-02

**Status of Improvement:** Demonstrated Improvement

**Related Project/System:** Vermont Web Crash

#### Narrative

This performance measure is based on the C-C-02 model performance measure.

Vermont will improve the Completeness of the Crash system as measured in terms of:

The percentage of crash records with Incident Clearance values entered by the officer.

The state will show measurable progress using the following method:

Count the number of crash reports with Incident Clearance values (count only non-null values) for all reporting agencies in the State during the baseline period and the current performance period. Then, count the total number of reports for all reporting agencies in the State for the same periods. Divide the total number of reports by the count of reports with Incident Clearance values and multiply by 100 to get the percentage of reports for each period.

**The result is an increase in completeness of 1.88 percent. The target for the next period is 44 percent.**

#### Measurements

Start Date	End Date	Incident Clearance	Total Reports	Completeness (%)	Target (%)
April 1, 2020	March 31, 2021	3,776	10,716	35.24%	
April 1, 2021	March 31, 2022	4,391	10,646	41.25%	
April 1, 2022	March 31, 2023	3,354	7,777	43.13%	42%
April 1, 2023	March 31, 2024				44%
April 1, 2024	March 31, 2025				44.5%
April 1, 2025	March 31, 2026				45%



### Supporting Materials (Backup)

#### Current

Report Number	Roadway Clearance Time	Incident Clearance Time				
22B4004579	11:59 PM	11:59 PM				
23WT001896	11:58 PM	11:59 PM			Roadway Clearance Reported	3,312 42.59%
23B3000320	11:10 PM	11:59 PM			Incident Clearance Reported	3,354 43.13%
22WH003329	11:42 PM	11:58 PM			Total Crashes	7,777
22BU005416	11:20 PM	11:58 PM				
22B5002863	9:50 PM	11:58 PM				
22DV000987	12:30 AM	11:56 PM				
22RM000622	9:51 PM	11:55 PM				
22WT005344	11:54 PM	11:54 PM				
22BU014646	11:53 PM	11:53 PM				

#### Baseline

Secondary Crash	Roadway Clearance Time	Incident Clearance Time				
FALSE	12:00 AM	12:00 AM				
FALSE	12:00 AM	12:00 AM			Rdwy Clearance Reported	4273 40.14%
FALSE	12:00 AM	12:00 AM			Incident Clearance Reported	4391 41.25%
FALSE	12:00 AM	12:00 AM			Total Crashes	10646
FALSE	11:30 PM	12:00 AM				
FALSE	11:50 PM	12:00 AM				
FALSE		12:00 AM				
FALSE	12:02 AM	12:02 AM				
FALSE	12:02 AM	12:02 AM				

5.1.7 EMS Timeliness – Average number of Days

**Label:** M-T-01

**Status of Improvement:** No Improvement

**Related Project/System:** SIREN

**Narrative**

Vermont will improve the Timeliness of the EMS system as measured in terms of:

The average number of days from the date of an EMS run to the date when the EMS patient care report is entered into the database.

The methodology used to calculate Average Number of Days has been updated to more accurately reflect the timeliness performance of the data system.

**Result for Time Frame**

The result is a decrease in timeliness of 0.43 days. The target for the next period is 1.50 days.

**Overall Measurements**

Start Date	End Date	Number of Reporting Services	Count of Incident Records	Average Number of Days	Target (Days)
April 1, 2017	March 31, 2018	109	96,550	0.67	
April 1, 2018	March 31, 2019	105	102,025	0.92	
April 1, 2019	March 31, 2020	108	104,222	0.94	
April 1, 2020	March 31, 2021	111	101,211	1.10	
April 1, 2021	March 31, 2022	119	115,229	1.24	
April 1, 2022	March 31, 2023	144	123,523	1.67	
April 1, 2023	March 31, 2024				1.50
April 1, 2024	March 31, 2025				1.25
April 1, 2025	March 31, 2026				1

**Supporting Materials (Backup)**

See table on the following pages.

Table 1: An overall view of the Average Number of Days from when a unit is dispatched to when the incident record is created, by the primary type of service, agency name and month:

Apr 2022	May 2022	Jun 2022	Jul 2022	Aug 2022	Sep 2022	Oct 2022	Nov 2022	Dec 2022	Jan 2023	Feb 2023	Mar 2023
1.43	1.51	1.32	1.6	1.43	1.34	1.74	2.71	2.92	1.95	1.41	0.95

Table 2: An overall view of the Average Number of Days from when a unit is dispatched to when the incident record is created, by the primary type of service, agency name and month:

Agency Name (dAgency.03)	Apr 2022	May 2022	Jun 2022	Jul 2022	Aug 2022	Sep 2022	Oct 2022	Nov 2022	Dec 2022	Jan 2023	Feb 2023	Mar 2023
ALBURGH RESCUE	0.76	0.4	0.6	0.33	2.05	0.64	0.28	0.62	0.31	0.62	0.44	0.39
AMCARE AMBULANCE SERVICE	1.26	1.22	1.28	1.26	1.07	1.72	1.58	3.65	1.96	1.21	1	1.64
ARLINGTON RESCUE SQUAD, INC.	7.11	9.32	10.61	6.74	9.13	5.26	5.39	5.18	3.51	2.35	5.76	2.01
BARRE CITY FIRE AND AMBULANCE	0.06	0.09	0.06	0.06	0.06	0.06	0.07	0.4	0.13	0.2	0.16	0.15
BENNINGTON RESCUE SQUAD, INC	0.14	0.14	0.16	0.16	0.23	0.23	12.26	34.72	33.27	6.22	0.41	0.12
BRANDON AREA RESCUE SQUAD, INC.	0.32	0.23	0.11	0.45	0.36	0.21	0.28	0.28	0.34	0.19	0.25	0.27
BRISTOL RESCUE SQUAD, INC.	0.62	1.07	0.92	1.56	0.93	0.59	0.16	0.84	1.16	0.56	0.2	0.47
BURLINGTON FIRE DEPT. AMBULANCE	0.19	0.03	0.02	0.03	0.01	0.03	0.02	0.02	0.02	0.02	0.02	0.2
CABOT EMERGENCY AMBULANCE SERVICE, INC	0.98	0.59	0.65	0.61	1.5	1.29	0.38	0.51	0.52	2.76	0.45	1.06
CALEDONIA ESSEX AREA AMBULANCE SERVICE, INC.	0.27	0.95	0.26	0.49	0.61	0.37	0.29	0.75	0.85	0.57	0.62	0.52
CAMBRIDGE RESCUE SQUAD, INC.	0.45	0.12	0.08	0.49	0.29	0.05	0.03	0.08	0.21	0.15	0.84	0.22
Charlotte Fire and Rescue	0.28	0.16	0.95	0.34	0.4	0.73	0.17	0.14	0.17	0.09	0.21	0.56
CHESTER AMBULANCE SERVICE	0.3	0.16	0.15	0.07	0.08	0.1	0.28	0.19	0.1	0.07	0.21	0.53
COLCHESTER RESCUE	0.03	0.03	0.03	0.04	0.02	0.04	0.03	0.02	0.03	0.04	0.04	0.03
COMMUNITY AMBULANCE SERVICE d/b/a LUDLOW AMBULANCE SERVICE	0.11	0.14	0.13	0.15	0.13	0.08	0.13	0.3	0.19	0.2	0.34	0.16
DEERFIELD VALLEY RESCUE, INC.	0.8	0.72	0.76	0.58	1.01	0.46	0.78	1.12	1.63	0.83	1.08	0.67
EAST MONTPELIER VOLUNTEER FIRE DEPT. INC.	0.38	0.7	0.76	0.27	0.14	0.48	0.5	0.72	1.42	1.48	0.93	0.75
ENOSBURGH AMBULANCE SERVICE	1.38	0.73	2.18	1.18	1.6	1.31	1.54	0.32	2.83	0.39	1.62	1.32
ESSEX RESCUE, INC.	1.34	2.23	1.1	0.25	0.64	1.42	0.93	0.23	0.76	1.19	0.81	0.26
FAIR HAVEN RESCUE SQUAD	0.13	0.68	1.29	0.51	0.26	0.32	0.73	0.19	0.32	0.14	0.35	0.49
FAIRFAX EMS, INC.	0.69	2.06	0.88	0.63	0.92	1.64	0.94	2.16	2.09	1.93	1.72	1.19
FIRST BRANCH AMBULANCE	0.39	0.59	0.41	0.87	0.42	0.72	0.51	0.78	0.89	0.39	0.64	1.07
GLOVER AMBULANCE SQUAD, INC.	3.1	6.77	2.23	1.86	0.98	4.09	0.79	0.88	0.28	1.52	0.47	0.75
GOLDEN CROSS AMBULANCE INC.	0.49	0.6	0.56	1.23	0.55	0.52	0.84	0.87	0.38	0.66	0.82	0.62

Golden Cross Ambulance, Inc. (Brattleboro)				2.05	0.34	0.76	1.12	1.01	1.27	1.14	0.75	1.1
GOLDEN CROSS AMBULANCE, INC. (WESTMINSTER)	0.69	1.12	1.65	1.07	1.01	0.99	0.86	1.45	1.45	1.7	2.59	2.56
GRAND ISLE RESCUE, INC.	1.21	0.21	0.26	0.24	0.34	0.34	0.32	0.29	0.42	0.27	0.25	0.26
HARDWICK EMERGENCY RESCUE SQUAD, INC.	0.35	0.56	0.4	0.15	0.12	0.22	0.26	0.34	0.2	0.62	0.27	0.41
HARTFORD FIRE DEPARTMENT	0.12	0.18	0.11	0.07	0.05	0.19	0.05	0.05	0.1	0.05	0.06	0.06
LONDONDERRY VOLUNTEER RESCUE SQUAD	1.37	1.69	1.8	2.14	0.94	1.6	1.3	1.34	1.51	1.36	1.62	1.79
LYNDON RESCUE, INC.	0.48	0.19	0.16	0.36	0.4	0.33	0.2	0.2	0.8	0.31	0.29	0.3
MAD RIVER VALLEY AMBULANCE SERVICE	0.29	0.19	0.62	0.28	0.26	0.41	0.26	0.56	0.26	0.3	0.6	0.69
MIDDLEBURY REGIONAL EMS	1.84	2.48	0.85	1.11	2.31	1.74	2.04	2.39	1.34	1.59	1.05	1.39
MILTON RESCUE	0.14	0.1	0.17	0.13	0.16	0.09	0.12	0.14	0.27	0.11	0.12	0.3
MISSISQUOI VALLEY AMBULANCE SERVICE	2.13	2.12	1.74	6.76	5.41	5.86	2.88	3.33	4.57	5.01	3.23	2.89
MISSISQUOI VALLEY RESCUE, INC.	3.31	1.06	1.91	1.68	2.58	2.16	3.06	2.59	1.1	2.4	0.95	0.96
MONTPELIER AMBULANCE SERVICE	0.16	0.16	0.15	0.15	0.17	0.17	0.13	0.15	0.13	0.23	0.12	0.24
MORRISTOWN EMS	0.15	0.16	0.15	0.14	0.06	0.21	0.71	0.15	0.65	0.29	0.39	0.17
Mount Holly Volunteer Rescue Squad	17.81	8.78	0.22	11.28	14.9	12.17	12.2	3.45	33	0.07	0.03	0.09
NEWPORT AMBULANCE SERVICE, INC.	0.3	0.45	0.45	0.54	0.46	0.41	0.58	0.52	0.35	0.27	0.32	0.32
NEWPORT AMBULANCE SVC. - NORTHERN EMS DIV.	0.24	0.19	0.24	0.17	0.27	0.73	0.15	0.32	0.17	0.23	0.29	0.23
NORTHFIELD AMBULANCE SERVICE	0.97	0.84	0.72	1.02	0.68	0.86	0.69	0.96	0.7	1.2	0.89	0.78
NORTHSHIRE RESCUE SQUAD	0.12	0.12	0.13	0.24	0.24	0.28	0.16	0.13	0.19	0.23	0.24	0.24
ORLEANS EMERGENCY UNIT, INC.	0.38	0.59	0.4	0.58	0.3	0.42	0.37	0.48	0.41	0.33	0.23	0.3
POULTNEY RESCUE SQUAD, INC.	0.56	1.07	0.28	2.52	1.32	2.08	2.99	0.66	0.47	0.36	0.52	1.04
POWNAI RESCUE SQUAD, INC.	0.19	0.34	0.19	0.12	0.32	0.14	0.28	0.11	0.21	0.23	0.21	0.13
REGIONAL AMBULANCE SERVICE	0.08	0.11	0.14	0.09	0.08	0.06	0.06	0.13	0.04	0.05	0.04	0.05
RESCUE INC.	4.31	4.71	4.14	21.02	18.81	12.26	4.21	3.81	6.08	4.64	3.74	4.05
RICHFORD AMBULANCE SERVICE	0.85	1.03	0.85	0.96	1.09	1.62	1.02	1.71	1.35	1.62	2.02	4.14
RICHMOND RESCUE, INC.	0.33	0.23	0.27	0.43	0.3	0.4	0.4	0.36	0.68	0.35	0.22	0.24
SAINT MICHAEL'S COLLEGE FIRE & RESCUE, INC.	0.16	0.25	0.18	0.26	0.28	0.25	0.25	0.2	0.42	0.28	0.23	0.16
SOUTH BURLINGTON FIRE DEPARTMENT	0.06	0.04	0.04	0.04	0.11	0.07	0.04	0.16	0.05	0.04	0.06	0.05
SOUTH HERO RESCUE	0.4	0.32	0.88	0.6	0.46	0.54	0.18	0.52	0.46	0.18	0.28	0.46
SOUTH ROYALTON RESCUE SQUAD	0.13	0.11	0.14	0.2	0.27	0.17	0.13	0.22	0.47	0.12	0.11	0.09

SPRINGFIELD FIRE DEPT. AMBULANCE	7.98	12.04	6.35	2.98	1.34	2.44	2.92	3.8	3.87	3.59	4.21	3.66
STRATTON MOUNTAIN RESCUE	0.34	0.13	0.34	0.41	0.49	7.83	1.8	4.16	4.4	0.81	0.82	1.08
TOWN OF BARRE DEPT. OF EMS	3.54	1.85	1.02	1.02	0.86	1.99	1.28	2.52	3.28	1.72	1.53	1.38
TOWN OF SHELBURNE - RESCUE DEPARTMENT	0.38	0.09	0.14	0.44	0.42	0.33	0.26	0.3	0.26	0.2	0.11	0.15
TOWN OF STOWE - EMERGENCY MEDICAL SERVICES DEPT.	29.82	21.57	30.24	22.11	23.79	21.27	21.14	21.26	19.16	22.09	21.84	18.07
UNIVERSITY OF VERMONT RESCUE SQUAD	0.13	0.11	0.17	0.15	0.09	0.1	0.19	0.22	0.29	0.13	0.18	0.23
UPPER VALLEY AMBULANCE, INC	0.1	0.15	0.16	0.16	0.15	0.16	0.14	0.14	0.12	0.22	0.12	0.12
VERGENNES AREA RESCUE SQUAD, INC.	0.08	0.06	0.13	0.08	0.07	0.17	0.09	0.08	0.1	0.11	0.08	0.1
WALLINGFORD RESCUE, INC.	0.16	0.23	0.25	0.11	0.16	0.34	0.21	0.15	0.26	0.16	0.1	0.4
WATERBURY AMBULANCE SERVICE, INC.	1.15	0.44	0.49	0.46	0.49	0.63	0.37	0.52	0.3	0.34	0.59	0.78
WHITE RIVER VALLEY AMBULANCE	0.21	0.21	0.31	0.22	0.28	0.22	0.28	0.21	0.19	0.17	0.22	0.17
WILLIAMSTOWN AMBULANCE	0.93	1.18	1.79	1.3	1.93	2.9	2.6	1.97	5.75	3.82	3.49	2.17
WILLISTON FIRE DEPARTMENT	0.06	0.1	0.21	0.04	0.11	0.05	0.05	0.07	0.05	0.05	0.04	0.29
WINDSOR AMBULANCE SERVICE	0.21	0.2	0.56	0.33	0.33	0.4	0.92	0.31	0.38	0.27	0.24	0.3
WOODSTOCK AMBULANCE SERVICE	0.7	0.65	0.69	0.45	1.69	0.72	0.39	0.24	0.65	0.25	0.19	0.35
BAKERSFIELD FIRST RESPONDER	0.12	0.09	0.94	0.05		6.58	0.38	1.94	0.18	0.84	1.22	0.33
BARNET FIRE & RESCUE									1.1	0.15		0.04
BENSON FIRST RESPONSE				7.2						0.4	7.96	3.21
BERLIN VOLUNTEER FIRE DEPARTMENT	0.31	2.04	2.51	3.34	1.99	2.71	2.99	5.29	5.29	4.46	6.93	13.98
BRADFORD FAST SQUAD	17.96	1.43	1.53	24.77	6.3	3.44	8.31	7.97	2.8	0.95	1.19	4.03
BRATTLEBORO FIRE DEPARTMENT	0.16	0.16	0.17	0.9	0.23	0.82	0.49	0.11	0.17	0.15	0.44	0.4
Capitol Police Department						0.04					0.03	0.02
CHAMPLAIN VALLEY EXPOSITION FIRST RESPONSE		0.02	0.12		0.29	0.5	0.04					0.03
CHITTENDEN FIRST RESPONSE	0.49			0.07	6.62	2.41	1.12	1.11	1.46	0.23	0.05	
Colchester Fire Department										0.38	0.22	0.05
CORINTH/TOPSHAM EMERGENCY RESPONSE TEAM	4.09		0.63	1.96	2.3		3.02	2.77		1.07		
CORNWALL VOLUNTEER FIRE DEPARTMENT										15.27	3.16	0.52
ESSEX FIRE DEPARTMENT	0.2	0.41	1.02	0.93	0.73	0.81	1.41	0.66	1.09	1.39	0.35	0.33
ESSEX JUNCTION FIRE DEPARTMENT	0.13	0.2	0.4	0.17	0.13	0.07	0.91	0.26	0.04	0.24	0.11	1.28
FAIRLEE FAST SQUAD											2.87	

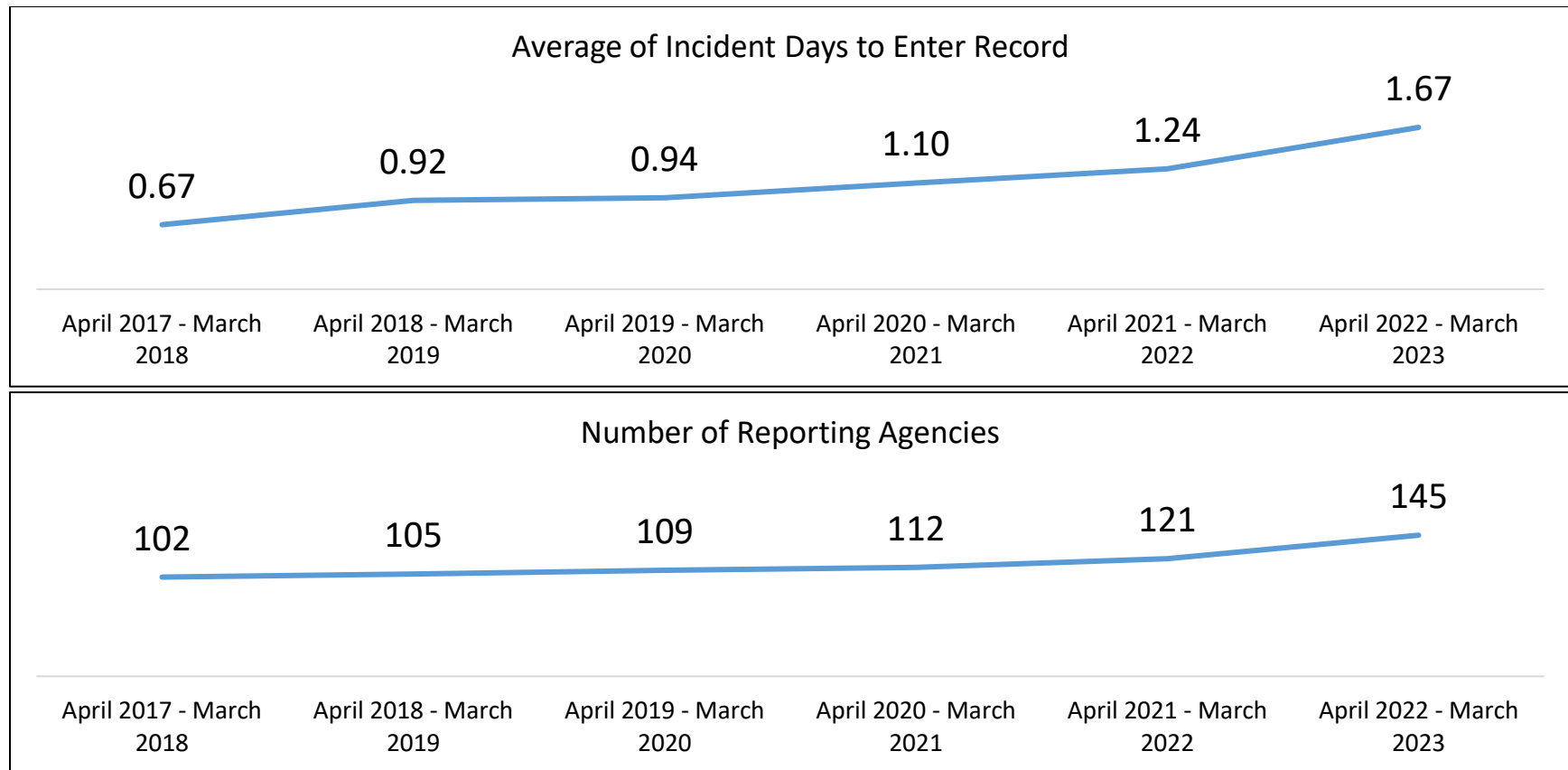
GEORGIA FIRST RESPONSE	0.96	1.86	0.73	1.38	0.71	0.75	1.8	1.53	1.52	1.35	0.77	1.83
GILMAN-LUNENBURG FAST SQUAD											0.25	
GLOBAL FOUNDRIES FIRE DEPARTMENT	0.31	0.31	0.75	1.52	0.22	1.01	0.66	0.23	0.2	0.07	1.09	0.75
GRAFTON RESCUE	5.16	8.2	3.87	1.52	5.37	6.3	2.84	16.44	13.19	2.42	1.08	3.79
GRANVILLE VOLUNTEER FIRE DEPARTMENT, INC	6.32	3.29	4.04	6.64	9.77				0.69		4.89	0.83
GROTON-RYEGATE EMS	6.07	4.38	4.15	7.29	4.01	4.88	7.6	4.87	1.64	4.91	2.49	2.06
GUILFORD VOLUNTEER FIRE DEPARTMENT	0.89			6.14				0.07				
HARTLAND VOL. FIRE DEPT & RESCUE SQUAD, INC.	1.18	1.55	0.45	0.09	0.22	0.13	1.49	0.33	6.55	0.73	1.76	0.41
HINESBURG FIRE DEPARTMENT	1.64	2.34	7.71	0.84	0.85	1.82	3.07	3.36	7.27	2.91	1.01	3.2
HYDE PARK FAST SQUAD										0.75		
IRA VOLUNTEER FIRE DEPARTMENT, INC.		8.62		0.06					0.17			
JAY PEAK SKI PATROL										0	7.97	0.03
Killington Fire and Rescue		0.04	0.07	0.04		0.07				0.47	0.08	0.14
LINCOLN VOLUNTEER FIRE COMPANY, INC.								0.08	0.15	0.59	6.16	
MARLBORO VOLUNTEER FIRE COMPANY, INC.	20.2	23.02	17.25	8.27	3.37	3.63	7.49	2.95	0.97	0.69	0.66	3.06
MIDDLESEX FAST SQUAD		0.17	0.82			2.07	0.58	0.23	0.97	0.62		0.07
MONKTON VOLUNTEER FIRE & FIRST RESPONSE											0.32	
MOUNT SNOW RESCUE										5.58	0.44	1.38
NEW HAVEN FIRST RESPONSE									0.25	0.82	8.5	1.12
NEWARK VOLUNTEER FIRE DEPARTMENT				7.05	0.1				6.17	1.84	1.5	0.8
NEWBURY EMS	1.69	0.93	1.45	2.6	1.99	3.22	1.96	0.51	0.88	1.81	0.92	1.51
NORWICH FIRE DEPARTMENT	0.4	0.99	0.52	0.24	0.85	0.58	0.88	0.68	0.44	1.49	0.62	0.43
Okemo Ski Patrol										0.47	2.49	13.92
ORWELL FIRST RESPONSE					20.42		5.99			11.92	5.68	4.49
PEACHAM VOLUNTEER FIRE DEPARTMENT	22.2	34.71	27.38	28.05	23.9	15.89	15.88	15.81	15.39	4.5	3.58	5.47
PITTSFORD FIRST RESPONSE SQUAD, INC.	0.11	0.09	0.06	0.04	0.05	0.1	0.04	0.05	0.13	0.09	0.08	0.06
PLYMOUTH FIRST RESPONSE TEAM	0.17	2.14	6.71		0.52				3.77	0.86	0.85	0.98
READING RESCUE SQUAD	0.5	2.56			0.84	6.13	4.78		1	1.48		1.23
Regional - Castleton First Response	0.21	0.09		0.35	0.17	0.12	0.12	0.07	0.08	0.15	0.2	0.43
RIPTON FIRST RESPONSE									1.05	0.58	0.18	0.07

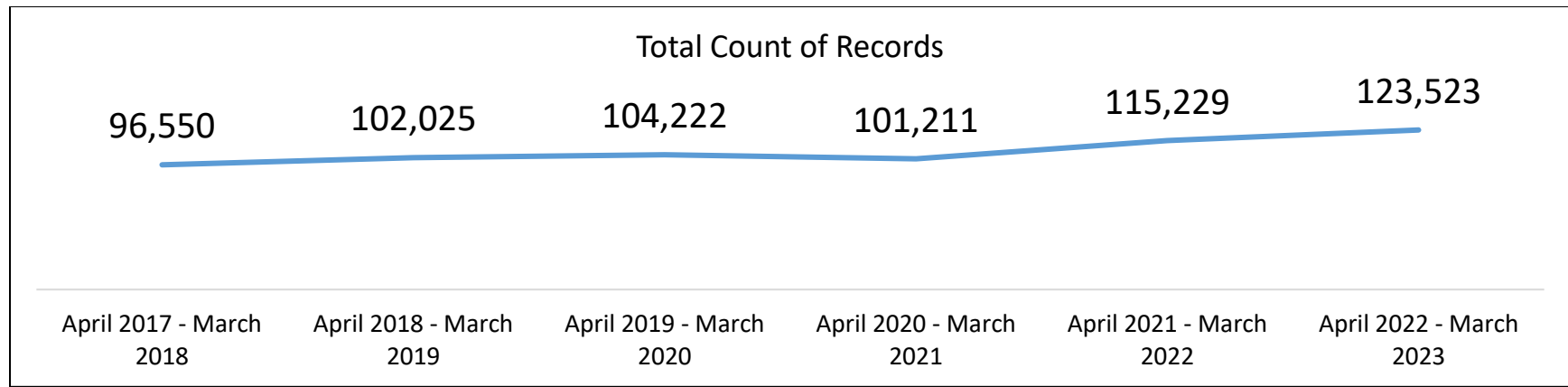
SAXTONS RIVER 1ST RESP RESCUE					0.06	0.06				20.57	0.3	0.14
SHELDON FIRST RESPONSE									1.92	2.23	3.46	2.29
SOUTH HERO VOLUNTEER FIRE DEPARTMENT FIRST RESPONSE	0.03	0.05	0.16	0.04	0.02	0.06	0.04	0.06	0.03	0.04	0.09	0.07
ST. JOHNSBURY FIRE DEPARTMENT	0.72	2.46	1.36	17.92	2.38	0.35	1.69	0.3	2.22	3.4	0.36	0.45
STARKSBORO EMERGENCY RESCUE UNIT	1.52	0.98	1.28	2.81	1.94	1.68	1.08	0.91	0.68	1.39	1.54	1.56
STOWE MOUNTAIN RESCUE									1.73		2.36	4.92
STRAFFORD FIRST AID SQUAD		2.24	12.17	2.61	4.1	1.31	0.47	0.45	0.3	0.5		0.11
Thetford Volunteer Fire Department, Inc	3.55	24	17.13	8.24			4.04	1.77		0.66	0.53	3
TOWN LINE FIRST RESPONSE					2.91	0.44	0.47		14.52	3.47	0.37	0.92
TOWN OF HUNTINGTON VOLUNTEER FIRE DEPARTMENT	0.05	0.04		1.42				28.17		1.9	0.32	0.04
TOWN OF PUTNEY FIRE DEPARTMENT	31.76	7.01	0.37	22.28	16.28	0.11	1.67	1.06	2.25	0.79	0.64	3.36
UNDERHILL JERICHO FIRE DEPARTMENT	0.81	0.42	0.38	0.44	0.29	1	0.35	0.46	0.56	0.52	0.24	0.4
VERNON FIRE DEPARTMENT	8.78	14.01	15.99	5.95	9.49	2.39	13.93	8.87	0.65	24.88	21.6	8.65
VR US Holdings II, LLC dba Mt Mansfield Ski Patrol								30.11	21.5	31.13	30.56	
VT AIR NAT'L GUARD FIRE DEPT	0.06	0.12	0.04	0.04	0.29	0.3	0.17	0.05	0.06	0.34	0.41	0.61
WALDEN FIRE DEPARTMENT	0.79	0.46	10.5	2.02	0.47	0.31	0.06	0.53	0.62		0.29	0.78
WEST DUMMERSTON FIRE RESCUE										1.08	6.57	3.14
WEST FAIRLEE VOLUNTEER FIRE DEPARTMENT				0.3		40.18						
West Weathersfield Fire Department						9.08	6.77		0.12	0.32	6.94	6.82
WEST WINDSOR VOLUNTEER FAST SQUAD	16.69			0.36	0.19		15.13			7.58	2.98	0.03
WHITING FIRST RESPONSE								0.09	0.33	1.11	0.14	0.11
WHITINGHAM FIRST RESPONSE	9.84	25.9	11.68	26.04	34.65	39.91	15.31	14.02	6.51	11.91	3.89	8.39
WINHALL POLICE & RESCUE	1.7	2.56	8.16	2.55	1.59	2.79	4.49	3.71	1.9	10.79	2.52	0.98
Woodbury Volunteer Fire Department								1.85	1.94	2.79		
WORCESTER FAST SQUAD	7.5	0.32			0.24	0.26	0.37	0.52	1.68	1.33	0.1	0.88
DHART DARTMOUTH HITCHCOCK ADVANCED RESP TEAM	25.07	23.64	22.01	23.19	24.47	23.43	24.35	2.34	1.45	3.45	2.44	1.5
DARTMOUTH-HITCHCOCK ADVANCED RESPONSE TEAM - GROUND	31.24	23.69	23.14	26.73	25.69	25.13	28.71	1.2	2.02	3.34	0.92	1.1



Garnet Transport Medicine	0.17	0.11	1.67	0.17	0.6	0.1	1.36	0.19	0.06	0.05		
LAMOILLE AMBULANCE SERVICE	0.61	0.62	0.66	0.65	0.63	0.63	0.68	0.69	0.62	0.49	0.49	0.48
UVM HEALTH NETWORK CRITICAL CARE TRANSPORT	14.49	20.51	11.8	14.77	11.43	9.5	15.28	11.78	8.29	10.65	7.83	8.87

Time Frame/Grant Year	Number of Reporting Agencies	Total Count of Records	Average of Incident Days to Enter Record
April 2017 - March 2018	102	96,550	0.67
April 2018 - March 2019	105	102,025	0.92
April 2019 - March 2020	109	104,222	0.94
April 2020 - March 2021	112	101,211	1.10
April 2021 - March 2022	121	115,229	1.24
April 2022 - March 2023	145	123,523	1.67
<b>Overall</b>	<b>156</b>	<b>642,760</b>	<b>1.12</b>





### 5.1.8 EMS Integration

**Label:** I-I-01

**Status of Improvement:** Planned

**Related Project/System:** SIREN

#### Narrative

Vermont will improve the Integration of the EMS system as measured in terms of an increase of:

The percentage of appropriate records in the EMS file that are linked to another system or file. Specifically, the percentage of records linked between Vermont's pre-hospital electronic patient care reporting system (SIREN – Statewide Incident Reporting Network) and hospital electronic medical record databases with spinal injury outcomes reported.

The state will measure progress using the following method: The percentage of hospital spinal injury outcome records from the hospital electronic medical record database that are linked with records in SIREN with motor vehicle crash related injuries.

#### Measurements

Start Date	End Date	Total Records	Linked Records	Percent Linked	Target
April 1, 2021	March 31, 2022				
April 1, 2022	March 31, 2023				
April 1, 2023	March 31, 2024				
April 1, 2024	March 31, 2025				
April 1, 2025	March 31, 2026				

5.1.9 Roadway Completeness – MIRE (Intersection Geometry FDE)

**Label:** R-C-01

**Status of Improvement:** Demonstrated Improvement

**Related Project/System:** Roadway

**Narrative**

Vermont will improve the Completeness of roadway records as measured in terms of:

The percentage of public, paved roadways on the federal system with no missing critical data elements. The measure is the completeness of the MIRE FDE Intersection Geometry data element.

**The result is an increase of 20.24% in completeness. The target for the next period is 95 percent.**

Start Date	End Date	Percent Complete	Target (Percent)
April 1, 2020	March 31, 2021	78%	Not set
April 1, 2021	March 31, 2022	74.5%	Not set
April 1, 2022	March 31, 2023	94.74%	78%
April 1, 2023	March 31, 2024		95%
April 1, 2024	March 31, 2025		95.25%
April 1, 2025	March 31, 2026		95.5%

5.1.10 Roadway Completeness – MIRE (Intersection Traffic Control)

**Label:** R-C-01

**Status of Improvement:** Demonstrated Improvement

**Related Project/System:** Roadway

**Narrative**

Vermont will improve the Completeness of roadway records as measured in terms of:

The percentage of public, paved roadways on the federal system with no missing critical data elements. The measure is the completeness of the MIRE FDE Intersection Traffic Control data element.

**The result is an increase of 26.19% in completeness. The target for the next period is 90 percent.**

Start Date	End Date	Percent Complete	Target (Percent)
April 1, 2020	March 31, 2021	78%	Not set
April 1, 2021	March 31, 2022	63.5%	Not set
April 1, 2022	March 31, 2023	89.69%	78%
April 1, 2023	March 31, 2024		90%
April 1, 2024	March 31, 2025		90.25%
April 1, 2025	March 31, 2026		90.5%

5.1.11 Roadway Uniformity – MIRE – Roadway Segment

**Label:** R-U-01

**Status of Improvement:** Demonstrated Improvement

**Related Project/System:** Roadway

**Narrative**

Vermont will improve the Uniformity of roadway elements as measured in terms of:

The percentage of MIRE-compliant Roadway fundamental data elements entered in the roadway database or obtained through linkage to other databases.

**The result is an increase in uniformity of 3.51 percent. The target for the next period is 90.5 percent.**

Start Date	End Date	Percent Complete	Target (Percent)
April 1, 2020	March 31, 2021	68.67%	Not set
April 1, 2021	March 31, 2022	86.80%	Not set
April 1, 2022	March 31, 2023	90.31%	88%
April 1, 2023	March 31, 2024		90.5%
April 1, 2024	March 31, 2025		90.6%
April 1, 2025	March 31, 2026		90.7%

**Supporting Materials (Backup)**

Current

The VTrans Mapping Section added the FederalAid and FederalAidDescription fields to the Functional Class data layer, providing a uniform federal aid field to support MIRE. This data can be accessed through the Functional Class feature service at the following link:

<https://maps.vtrans.vermont.gov/arcgis/rest/services/Master/General/FeatureServer/19>

Here are the definitions of the two fields added:

- FederalAid ( *type: esriFieldTypeSmallInteger, alias: FederalAid, editable: true, nullable: true, defaultValue: null, modelName: FederalAid* )
- FederalAidDescription ( *type: esriFieldTypeString, alias: FederalAidDescription, editable: true, nullable: true, length: 50, defaultValue: null, modelName: FederalAidDescription* )

The field contents match the values defined in the MIRE data schema for field #21 – Federal Aid. Based on this addition and populating this field for the functional class segments, the uniformity scoring increases from 86.8% to 90.31%.

<b>MIRE Uniformity Status - 3/31/2023</b>	MIRE Uniform Fields	MIRE Uniform Fields
	Score 6/2021	Score 3/31/2023
<b>MIRE NAME (MIRE NO.)</b>		
<b>ROADWAY SEGMENT</b>		
Segment Identifier (12)	100.00%	100.00%
Route Number (8)	100.00%	100.00%
Route/Street Name (9)	100.00%	100.00%
Federal Aid (21)	33.30%	100.00%
Route Type (22)	100.00%	100.00%
Rural/Urban Designation (20)	100.00%	100.00%
Surface Type (23)	21.43%	21.43%
Begin Point Segment Descriptor (10)	100.00%	100.00%
End Point Segment Descriptor (11)	100.00%	100.00%
Segment Length (13)	100.00%	100.00%
Direction of Inventory (18)	50.00%	50.00%
Functional Class (19)	100.00%	100.00%
Median Type (54)	44.44%	44.44%
Access Control (22)	100.00%	100.00%
One/Two Way Operations (91)	100.00%	100.00%
Number of Through Lanes (31)	100.00%	100.00%
Average Annual Daily Traffic (79)	100.00%	100.00%
AADT Year (80)	100.00%	100.00%
Type of Governmental Ownership (4)	100.00%	100.00%
	86.80%	90.31%



Baseline – 2021 MIRE FDE Scorecard from FHWA Office of Safety

# Vermont Mapping Scores

Generated on 23-JUN-21

## Mapping Info

Guideline Name	Guideline Version	State Structure Name	Version Comment
MIRE 2.0 FDEs	2	VTrans Mapping Section Data Dictionaries - 2021	2019 MIRE FDE Mapping

## Total Percent Mappable for All Elements

Data Structure Name	System	Percent (%)
VTrans Mapping Section Data Dictionaries - 2021	Roadway Segment	86.8 %
VTrans Mapping Section Data Dictionaries - 2021	At-Grade Intersection/Junctions	84.29 %
VTrans Mapping Section Data Dictionaries - 2021	Intersection Leg (Each Approach)	100 %
VTrans Mapping Section Data Dictionaries - 2021	Interchange/Ramp	85.45 %

5.1.12 Roadway Uniformity – MIRE – At Grade Intersections/Junctions Elements

**Label:** R-U-01

**Status of Improvement:** Demonstrated Improvement

**Related Project/System:** Roadway

**Narrative**

Vermont will improve the Uniformity of roadway elements as measured in terms of:

The percentage of MIRE-compliant Roadway fundamental data elements entered in the roadway database or obtained through linkage to other databases.

**The result is an increase in uniformity of 6.66%. The target for the next period is 90.96 percent.**

Start Date	End Date	Percent Complete	Target (Percent)
April 1, 2020	March 31, 2021	84.29%	Not set
April 1, 2021	March 31, 2022	84.29%	Not set
April 1, 2022	March 31, 2023	90.95%	86%
April 1, 2023	March 31, 2024		90.96%
April 1, 2024	March 31, 2025		90.97%
April 1, 2025	March 31, 2026		90.98%

**Supporting Materials (Backup)**

Current

The Mapping Section is working in conjunction with the VTrans Rail & Aviation Bureau to leverage the railroad crossing data layer which includes traffic control information, providing 4 additional MIRE intersection traffic control types:

- 8 – Railroad crossing - gates and flashing lights
- 9 - Railroad crossing – flashing lights only
- 10 - Railroad crossing – stop-sign controlled
- 11 - Railroad crossing – crossbucks only

This data exists within VTrans and can be viewed through the Rail Crossing Inspection web map at <https://apps.rail.vermont.gov//crossing-inspection/#> and Mapping can access the data through the following feature service:

[https://maps.vtrans.vermont.gov/arcgis/rest/services/Rail/CrossingInspection2017\\_inspect\\_QC/FeatureServer/0](https://maps.vtrans.vermont.gov/arcgis/rest/services/Rail/CrossingInspection2017_inspect_QC/FeatureServer/0)

Warning devices at the crossings are listed in the WDCode field, providing warning device type that can be mapped to the railroad crossing traffic control listed above.

The ability to pull the railroad crossing data augments the number of traffic control types for intersections that VTrans can supply to FHWA from 6 of the 12 (50%) to 10 of the 12 (83.33%), which increases the overall scoring for that at-grade intersections to 90.95%.

<b>MIRE Uniformity Status - 3/31/2023</b>	MIRE Uniform Fields	MIRE Uniform Fields
	Score 6/2021	Score 3/31/2023
<b>AT-GRADE INTERSECTION / JUNCTIONS</b>		
Unique Junction Identifier (110)	100.00%	100.00%
Location Identifier for Road 1 Crossing Point (112)	100.00%	100.00%
Location Identifier for Road 2 Crossing Point (113)	100.00%	100.00%
Intersection/Junction Geometry (116)	71.43%	71.43%
Intersection/Junction Traffic Control (121)	50.00%	83.33%
	84.29%	90.95%

Baseline – 2021 MIRE FDE Scorecard from FHWA Office of Safety

# Vermont Mapping Scores

Generated on 23-JUN-21

## Mapping Info

Guideline Name	Guideline Version	State Structure Name	Version Comment
MIRE 2.0 FDEs	2	VTrans Mapping Section Data Dictionaries - 2021	2019 MIRE FDE Mapping

## Total Percent Mappable for All Elements

Data Structure Name	System	Percent (%)
VTrans Mapping Section Data Dictionaries - 2021	Roadway Segment	86.8 %
VTrans Mapping Section Data Dictionaries - 2021	At-Grade Intersection/Junctions	84.29 %
VTrans Mapping Section Data Dictionaries - 2021	Intersection Leg (Each Approach)	100 %
VTrans Mapping Section Data Dictionaries - 2021	Interchange/Ramp	85.45 %

### 5.1.13 Roadway Uniformity – MIRE – Interchange/Ramp Elements

**Label:** R-U-01

**Status of Improvement:** Demonstrated Improvement

**Related Project/System:** Roadway

#### Narrative

Vermont will improve the Uniformity of roadway elements as measured in terms of:

The percentage of MIRE-compliant Roadway fundamental data elements entered in the roadway database or obtained through linkage to other databases.

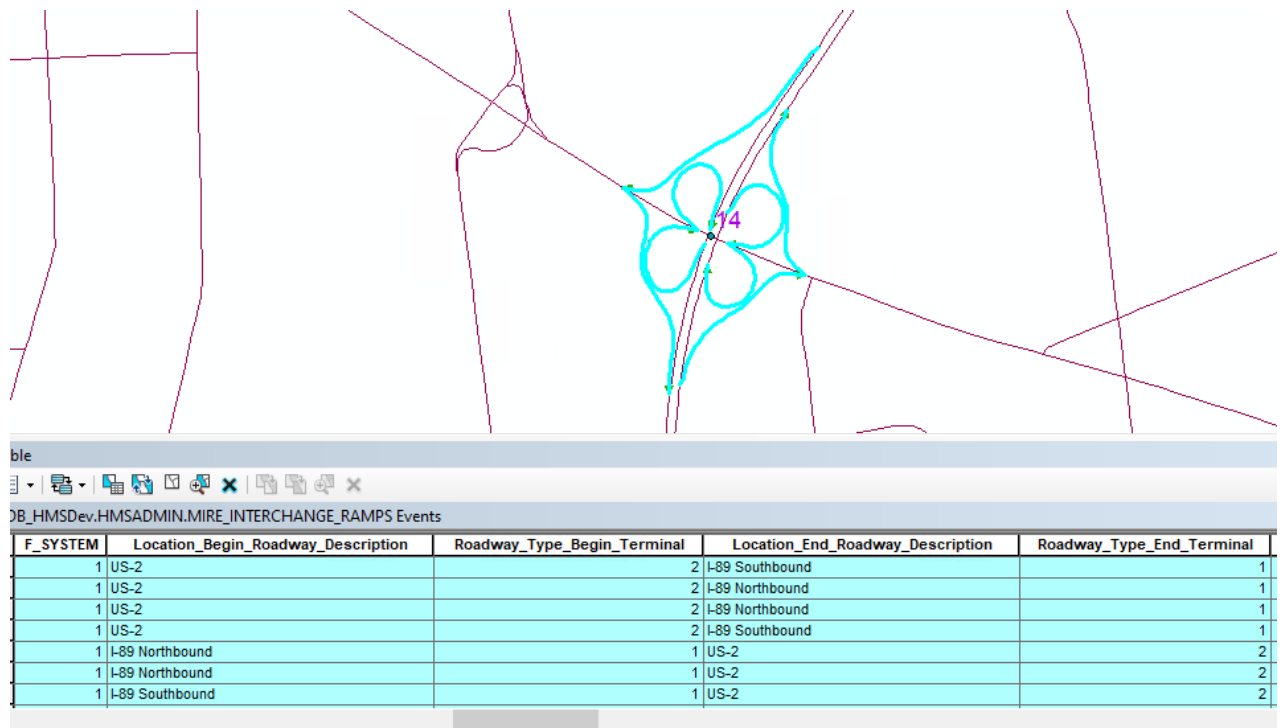
**The result is an increase in uniformity of 3.64%. The target for the next period is 89.5 percent.**

Start Date	End Date	Percent Complete	Target (Percent)
April 1, 2020	March 31, 2021	85.45%	Not set
April 1, 2021	March 31, 2022	85.45%	Not set
April 1, 2022	March 31, 2023	89.09%	87%
April 1, 2023	March 31, 2024		89.5%
April 1, 2024	March 31, 2025		90%
April 1, 2025	March 31, 2026		90.5%

#### Supporting Materials (Backup)

##### Current

The VTrans Mapping Section has built a table for interchange ramps that includes the MIRE FDE fields, including the Roadway Type at Beginning Ramp Terminal and Roadway Type at Ending Ramp Terminal fields. This table has been partly populated, so the percentage is not 100%, but an improvement from not having these fields. Here is an example of the data that is being entered for these fields:



The interchange ramp terminal type fields are being populated and will aid in improving the scoring of the uniformity of these MIRE FDE for ramps for the upcoming year.

MIRE Uniformity Status - 3/31/2023	MIRE Uniform Fields	MIRE Uniform Fields
	Score 6/2021	Score 3/31/2023
<b>INTERCHANGE/RAMP</b>		
Unique Interchange Identifier (168)	100.00%	100.00%
Location Identifier for Roadway at Beginning of Ramp Terminal (197)	100.00%	100.00%
Location Identifier for Roadway at Ending Ramp Terminal (201)	100.00%	100.00%
Ramp Length (187)	100.00%	100.00%
Roadway Type at Beginning of Ramp Terminal (195)	20.00%	40.00%
Roadway Type at End Ramp Terminal (199)	20.00%	40.00%
Interchange Type (172)	100.00%	100.00%
Ramp AADT (191)	100.00%	100.00%

Year of Ramp AADT (192)	100.00%	100.00%
Functional Class (19)	100.00%	100.00%
Type of Governmental Ownership (4)	100.00%	100.00%
	85.45%	89.09%

Baseline – 2021 MIRE FDE Scorecard from FHWA Office of Safety

## Vermont Mapping Scores

Generated on 23-JUN-21

### Mapping Info

Guideline Name	Guideline Version	State Structure Name	Version Comment
MIRE 2.0 FDEs	2	VTrans Mapping Section Data Dictionaries - 2021	2019 MIRE FDE Mapping

### Total Percent Mappable for All Elements

Data Structure Name	System	Percent (%)
VTrans Mapping Section Data Dictionaries - 2021	Roadway Segment	86.8 %
VTrans Mapping Section Data Dictionaries - 2021	At-Grade Intersection/Junctions	84.29 %
VTrans Mapping Section Data Dictionaries - 2021	Intersection Leg (Each Approach)	100 %
VTrans Mapping Section Data Dictionaries - 2021	Interchange/Ramp	85.45 %

5.1.14 Roadway Integration – Roadway/Crash

**Label:** R-I-01

**Status of Improvement:** Planned

**Related Project/System:** Roadway and Vermont Web Crash

**Narrative**

Vermont will improve the Integration of the crash data integrated with roadway records as measured in terms of:

The percentage of records in the crash database that are linked to roadway data.

**Measurements**

Start Date	End Date	Number of Crash Reports linked to Roadway Data	Target
April 1, 2022	March 31, 2023		
April 1, 2023	March 31, 2024		
April 1, 2024	March 31, 2025		
April 1, 2025	March 31, 2026		



5.1.15 Roadway Timeliness

**Label:** R-T-02

**Status of Improvement:** Planned

**Related Project/System:** Vermont Highway Mapping System

**Narrative**

Vermont will improve the Timeliness of the Roadway system as measured in terms of a decrease of:

The mean number of days from the date a roadway project is substantially complete to the date the updated critical data elements are entered into the database.

**Measurements**

Start Date	End Date	Total Reports	Average Number of Days	Target
April 1, 2022	March 31, 2023			
April 1, 2023	March 31, 2024			
April 1, 2024	March 31, 2025			
April 1, 2025	March 31, 2025			

5.1.16 Roadway Accuracy – Road Surface Type

**Label:** R-A-01

**Status of Improvement:** Planned

**Related Project/System:** Vermont Highway Mapping System

**Narrative**

Vermont will improve the Accuracy of the Roadway system as measured in terms of an increase of:

The percentage of local road segments with no errors based on a random sampling of the Road Surface Type data element as defined by the MIRE Road Surface Type (MIRE Element 23, MIRE 1.0).

**Measurements**

Start Date	End Date	Total Sample	Accurate Count	Percent Accurate	Target (%)
April 1, 2022	March 31, 2023				
April 1, 2023	March 31, 2024				
April 1, 2024	March 31, 2025				
April 1, 2025	March 31, 2026				

5.1.17 Roadway Completeness – AADT for Local Roads

**Label:** R-C-01

**Status of Improvement:** Planned

**Related Project/System:** Roadway

**Narrative**

Vermont will improve the Completeness of roadway records as measured in terms of:

The percentage of local roads with no missing AADT values.

Start Date	End Date	Percent Complete	Target (Percent)
April 1, 2023	March 31, 2024		
April 1, 2024	March 31, 2025		
April 1, 2025	March 31, 2026		

## 6. TRCC Projects

The FFY2024 TRCC projects are listed below. The Highway Safety Office scores each grant application based on previous expenditures of award funds, problem identification, strategies, countermeasures, goals, and its ability to address critical safety needs. The Vermont Highway Safety Office prioritized the following projects based on scoring and funding availability.

Refer to the Vermont Highway Safety Plan for FFY2024 project budget information.

Projects for FFY2024
AOT Crash Data Reporting System
Emergency Medical Services Statewide Incident Reporting System (SIREN)
Development of a Geospatial Interpolation Method to Estimate Annual Average Daily Traffic
Traffic Records Coordinating Committee Consultant

## 6.1 AOT Crash Data Reporting System

### Contact

**Mandy Shatney****Title:** Data Section Manager & FARS Analyst**Agency:** Vermont Agency of Transportation**Office:** Operations and Safety Bureau**Address:** Dill Building, Unit A, 2178 Airport Road,**City, Zip:** Berlin, VT 05641**Phone:** 802-595-9341**Email:** [mandy.shatney@vermont.gov](mailto:mandy.shatney@vermont.gov)

### Lead Agency

Vermont Agency of Transportation

### Status

Active

### Project Description

This is a project for ongoing enhancements to the crash program. The FFY2024 goal is to work on seven components:

To use the new MMUCC standards to update the Uniform Crash Report Form and implement any necessary changes. The TRCC will put together a UCRF subcommittee to review, and specific updates will be implemented thereafter.

SIREN - Web Crash bridge - NHTSA suggests a link for the purposes of looking for outcomes across these datasets. With the NHTSA GO Team's help, we were able to identify a path forward starting with an MOU between VTrans & DOH. This is the first step in moving this task forward. This part of the project would be to create a shared environment for the SIREN & Crash data. Using a consultant, they will create an upload procedure to implement the integrated data back into each system.

Valcour & eTicket - Web Crash bridge/interface - The state has gone to a single eTicket platform within Valcour. Web Crash is already integrated with Valcour, but we are looking to enhance that integration process and include ticket data. Currently, very few tickets are reported in the crash data. The specific activity for this is to engage the Valcour Board to approve changes.

Develop a comprehensive stand-alone data dictionary for the crash system. The activities for this task would be to start with deciding on a consultant or in-house development.

Develop an engineering (or analysis) database for VTrans that allows for correction of obvious errors and omissions in crash data. The outcome will be a fully functional database that provides VTrans with a tool to identify and correct errors and omissions in crash data. This will improve

the accuracy and completeness of the crash data, resulting in better analysis and decision-making. Specific activities would include engaging a consultant to help with the development.

Recently Web Crash upgraded the map tool from a Google base to an ESRI base that uses VTrans roadway data. This part of the project would enhance the existing data to include data that was not previously captured, for example functional class. Since the framework is there, the timeline for this part of the project is easily achievable during this grant period.

Assign intersection numbers to crash (node id) using the ESRI base map to enable more accurate location data for crashes occurring at intersections. The outcome will be a more accurate and comprehensive crash location dataset that will allow for more detailed analysis and improved roadway safety.

Each of the tasks has many activities to achieve. It is expected that significant progress or full task completion is achievable in the grant year.

*Core System and Performance Area*

	Performance Area					
Core System	Accuracy	Completeness	Integration	Timeliness	Uniformity	Accessibility
Crash		✓	✓	✓		

*Schedule*

October 1, 2023 – September 30, 2024

*Lifecycle Cost Consideration*

*Describe how the project team has planned for lifecycle costs to ensure the project continues to function once Section 405c Federal grant funds have been expended. If the project is a one-time effort, please explain that it is a one-time project and will have no on-going costs. Otherwise, please explain how the project team has planned for ongoing operating and maintenance costs.*

Ongoing lifecycle costs are funded via FHWA Highway Safety Improvement Program (HSIP) funds at ninety percent and State funded at ten percent. Specific data system improvement tasking identified herein are funded through NHTSA 405c funds with HSIP funds being used as needed.

*Activity Reporting*

**Progress for period April 18, 2019 to July 17, 2019 (brief description of progress since last report):**

- PQT was updated with new “Reports” pages. A problem was also found and corrected with the 2010 data.

- Attended Traffic Safety Committee Meeting.
- Web Crash Training – Hardwick PD
- Attended Data Integration Peer Exchange – Montgomery, AL
- Assisted with Part-Time Crash Investigation Class
- Met with Jim Baraw & Chelsea Dubie to start Go-Team Request for Crash/SIREN integration project assistance.
- Tested two new message switch states: CT & ME
- Working with LexisNexis on a few issues: Google Map problem, Diagram Printing problem & FMCSA Link issue.
- Non-Reportable crash issue was fixed. They will no longer be receiving these.

**Plans:**

- Add more Message Switch states.

**Problems (if any):**

- None

**Progress for period Jul 17, 2019 to October 16, 2019 (brief description of progress since last report):**

- Go-Team Application submitted and approved to get some guidance on how to integrate Web Crash with SIREN.
- Five message switch states will be implemented – ME, CT, NH, NJ and NY will be reconnected
- Have been working on some issues with the Crash server with my vendor and VTrans ADS group
- Attended the Traffic Safety Quarterly Meeting
- Assisted with Crash portion of Basic Academy class
- Attended the 2019 Traffic Records Forum in Austin, TX

**Plans:**

- Assist with At-Scene Class at the VPA
- NCHRP 22-44 Panel Meeting, Washington DC
- Northeast Transportation Safety Conference, Burlington VT
- Operations Academy, Baltimore MD
- Continue to work with IT to fix Web Crash server issue

**Problems (if any):**

- None

**Progress for period of October 16, 2019 to January 15, 2020 (brief description of progress since last report):**

- Go-Team Site Visit with NHTSA Technical Team for the Web Crash – SIREN integration project.
- Five message switch states were implemented – ME, CT, NH, NJ and NY – invoice submitted and paid.
- Conducted a Web Crash training at New Haven VSP for new users
- Attended the Traffic Training Committee Quarterly Meeting
- Assisted with At-Scene Crash Class at the VPA
- Attended the Northeast Transportation Safety Conference in Burlington, VT
- Attended the Operations Academy in Baltimore, MD. This is a two-week total immersion program geared toward developing senior level training that focuses on transportation systems management and operations (TSMO).
- Conducted interviews and hired Benjamin Howe into an AOT GIS Professional II position within the Data Unit.
- Working with AOT IT on an issue with the password reset emails. They are currently not allowing people to reset their own passwords, and this is creating a lot of calls & emails requesting assistance from our office.

**Plans:**

- Review UCRF for changes.
- Continue to work on Web Crash/SIREN integration.
- Web Crash Trainings as requested. Currently 1 scheduled but I have two other PDs looking to get on board.

**Problems (if any):**

- None

**Progress for period of January 16, 2020 to April 14<sup>th</sup>, 2020 (brief description of progress since last report):**

- Attended the Traffic Training Committee Quarterly Meeting
- Password reset email issue was resolved.
- Attended CAD/RMS Demos at DPS.
- Conducted Web Crash Training at Royalton PD
- Attended FARS Systemwide Training.



- Began work with vendor to update Standard Reports to have updated language to match federal requirements for “Suspected Serious Injury”.
- Also working with vendor to add “Email” functionality to Property Damage section so LE can email property owners.

**Plans:**

- Review UCRF for changes.
- Continue to work on Web Crash/SIREN integration.
- Web Crash trainings, as necessary. (Two postponed due to Stay at Home order.)
- Update the diagram tool with newer version.

**Problems (if any):**

- None

**Progress for period July, 2020 to October, 2020 (brief description of progress since last report):**

- Attended the Traffic Training Committee Quarterly Meeting
- Assisted with VPA Crash Class
- Attended a Road Safety Audit
- Attended SHSP Workshop
- Worked through several issues with Web Crash with vendor
- Vendor began work migrating Web Crash from ADFS to Azure

**Plans:**

- Review UCRF for changes.
- Continue to work on Web Crash/SIREN integration.
- Web Crash trainings, as necessary.

**Problems (if any):**

- Minimal Activity due to COVID.

**Progress for period of October 16, 2020 to January 27, 2021 (brief description of progress since last report):**

- To use the new MMUCC standards to update the Uniform Crash Report Form and implement any necessary changes.
- Build a Crash Collection Stand Alone Client Application. The client application will provide law enforcement with the ability to create and submit crash reports from the field.

- SIREN - Web Crash bridge.
- E-Ticket - Web Crash bridge/interface.
- Investigate and potentially implement a predictive analytics software in Web Crash for Law Enforcement to use in their data driven directed patrols.
- Integrate roadway data into Web Crash.

**Plans:**

- Requested vendor look into integrating the roadway data. Prepare quote.
- Worked through several issues with Web Crash with vendor.
- Vendor began work migrating Web Crash from ADFS to Azure.
- Review UCRF for changes.
- Continue to work on Web Crash/SIREN integration.
- Web Crash trainings, as necessary.
- Hopeful to move forward with projects above when grant is executed.

**Problems (if any):**

- Need an executed grant to move forward!
- Minimal Activity due to COVID.

**Progress for period of January 27, 2021 to April 28, 2021 (brief description of progress since last report):**

- No progress on specified projects below. Did not have an executed agreement until April.
- Vendor has nearly finished changes to Web Crash to Azure. This will allow for better account maintenance and support.

**Plans:**

- 1) Uniform Crash Report Form Changes
- 2) Crash Collection Stand Alone Client Application
- 3) SIREN - Web Crash Bridge
- 4) E-Ticket - Web Crash Bridge
- 5) Investigate & Implement Predictive Analytics in Web Crash
- 6) Integrate Roadway Data into Web Crash

**Problems (if any):**

- A huge delay in getting a grant executed means I only have 6 months left of the grant time. For many of these tasks that is not enough time.

**Progress for period of April 29, 2021 to July 28, 2021 (brief description of progress since last report):**

- No progress on specified projects below. Did not have an executed agreement until April.
- Vendor has nearly finished changes to Web Crash to Azure. This will allow for better account maintenance and support

**Plans:**

- 1) Uniform Crash Report Form Changes
- 2) Crash Collection Stand Alone Client Application
- 3) SIREN - Web Crash Bridge
- 4) E-Ticket - Web Crash Bridge
- 5) Investigate & Implement Predictive Analytics in Web Crash
- 6) Integrate Roadway Data into Web Crash

**Problems (if any):**

- A huge delay in getting a grant executed means I only have 6 months left of the grant time. For many of these tasks that is not enough time.

**Progress for period of July 29, 2021 to October 27, 2021 (brief description of progress since last report):**

- Vendor finalized their work on the Azure account management set up; however, they have been instrumental in helping us move through the steps to integrate the accounts and prepare for the implementation of the new account management program.

**Plans:**

- Uniform Crash Report Form Changes
- Crash Collection Stand Alone Client Application
- SIREN – Web Crash Bridge
- E-Ticket – Web Crash Bridge
- Investigate and implement Predictive Analysis in Web Crash
- Integrate Roadway Data into Web Crash

**Problems:**

- We had to stall the LRS work to focus on the Azure work as that was behind schedule.

**Progress for period of October 28, 2021 to January 19, 2022 (brief description of progress since last report):**

- Azure Account Management implemented in November 2021.
- Work is ongoing with the Roadway Data integration. This should be finalized by February 2022.
- Data team worked on two major analysis reports in response to fatal crashes on VT 105 & VT 22A in 2021.
- Data team built and implemented a SHSP Website using data from the Crash Reporting System.

**Plans:**

1. Uniform Crash Report Form Changes
2. Crash Collection Stand Alone Client Application
3. SIREN – Web Crash Bridge
4. E-Ticket – Web Crash Bridge
5. Investigate & Implement Predictive Analytics in Web Crash
6. Integrate Roadway Data into Web Crash

**Progress for period of January 20, 2022 to April 20, 2022 (brief description of progress since last report):**

- Work is ongoing with data integration program. The integration project has inspired ideas for additional projects for when complete.
- Program includes an RFP for a new crash program contract for maintenance & enhancements. Grant remains unexecuted for FFY2022. Waiting for a server update for Web-crash.

**Progress for period of April 21, 2022 to July 20, 2022 (brief description of progress since last report):**

- Work is ongoing with the Roadway Data integration. This should be finalized soon.

**Plans:**

1. Uniform Crash Report Form Changes
2. Crash Collection Stand Alone Client Application
3. SIREN – Web Crash Bridge
4. eTicket – Web Crash Bridge
5. Investigate & Implement Predictive Analytics in Web Crash
6. Integrate Roadway Data into Web Crash

**Problems (if any):**

- We have had to push back implementation of the roadway data integration for several reasons.

**Progress for period of July 21, 2022 to October 19, 2022 (brief description of progress since last report):**

- The ESRI map was implemented into Web Crash in August 2022. About 65% of the crashes are being populated using this tool currently.

**Plans:**

1. Uniform Crash Report Form Changes
2. Crash Collection Stand Alone Client Application
3. SIREN – Web Crash Bridge
4. eTicket – Web Crash Bridge
5. Investigate & Implement Predictive Analytics in Web Crash
6. Enhance Roadway Data to collect non-Federal Aid milepoints & functional class

**Progress for period of October 20, 2022 to January 18, 2023 (brief description of progress since last report):**

- ESRI Map updated with a new basemap for users so that they have better visibility of the area around the roadways.
- Troubleshooting and correcting the TA-1 Report and the High Crash Location Report.
- Updating/decoding an issue with the Connecticut Driver/Vehicle Message Switch output.
- Conducted a Web Crash training on December 22 with Barre City PD

**Schedule:**

- Capture AOT Use Only fields for Non-Roadway crashes
- TA-1 & HL Updates

**Plans:**

1. Uniform Crash Report Form Changes
2. Crash Collection Stand Alone Client Application
3. SIREN – Web Crash Bridge
4. eTicket – Web Crash Bridge
5. Investigate & Implement Predictive Analytics in Web Crash
6. Enhance Roadway Data to collect non-Federal Aid milepoints & functional class

**Progress for period of January 19, 2023 to April 19, 2023 (brief description of progress since last report):**

- Continued troubleshooting and correcting the TA-1 Report and the High Crash Location Report.
- Finalized and fixed an issue with the Driver/Vehicle Message Switch outputs for several states.

**Schedule:**

- Capture AOT Use Only fields for Non-Roadway crashes
- TA-1 & HL Updates

**Plans:**

1. Uniform Crash Report Form Changes
2. Crash Collection Stand Alone Client Application
3. SIREN - Web Crash Bridge
4. eTicket - Web Crash Bridge
5. Investigate & Implement Predictive Analytics in Web Crash
6. Enhance Roadway Data to collect non-Federal Aid milepoints & functional class

*Performance Measures*

See Sections 3.1.3 Crash Timeliness, 3.1.4 Crash Integration, and 3.1.5 & 3.1.6 Crash Completeness for performance measures.

## 6.2 Emergency Medical Services Statewide Incident Reporting Network (SIREN)

### Contact

**Beth Brouard****Title:** EMS Data Manager**Agency:** Vermont Department of Health**Office:** Division of Emergency Preparedness Response, and Injury Prevention**Address:** 108 Cherry Street**City, Zip:** Burlington 05401**Phone:** 802-951-5824**Email:** [bethany.brouard@vermont.gov](mailto:bethany.brouard@vermont.gov)

### Lead Agency

Vermont Department of Health Emergency Medical Services

### Status

Active

### Project Description

Project Description: Problem - Timeliness, Completion: Data submission timeframes and collection accuracy not at optimal levels.

Within the grant period, create six Report Writer reports for agencies to leverage to identify potential areas of documentation concerns. Creating these reports and distributing them to agencies allows for new or existing users who have been unable to participate in training, to still be able to identify and subsequently address common or simple problems related to accuracy and/or submission timeframes. Providing a template for agencies to use will also ensure that there is increased statewide consistency for performance measures and clearer guidance as to the expectations of providers.

During the grant period, provide six Report Writer trainings either in-person or online to at least one third of the EMS districts in Vermont to improve knowledge and competency with creating and generating reports in SIREN's Report Writer center. Three of these trainings will focus on expanding upon the existing user knowledge and three will focus on educating new users about the basics. In offering education for different levels of knowledge and experience, this will lead to a greater recognition of accuracy and submission timeframe issues as agencies will be able to better identify service-specific areas for improvement.

Problem - Uniformity: Ambiguity and inconsistency in system usage from provider to provider.

Evaluate documentation requirements within the ePCR on a six-month basis to identify and address areas of unnecessary work, perceived complexity by the end users, inconsistent documentation practices, new data points to enhance the overall quality of the data collected, existing barriers preventing accurate data collection for underserved communities.

Problem - Integration: Lack of efficient and comprehensive data sharing regarding motor vehicle collisions. Implement data integration by leveraging ImageTrend Continuum and WebCrash Bridge, while consistently monitoring and improving. This will allow for accurate and expedient decisions regarding potential policies, programs and other enhancements that will improve the safety of motorists in Vermont.

Problem - Integration: Lack of standard operating procedures on data sharing for motor vehicle collisions. By the end of the grant period, create a living document that defines security and privacy policies involved with a data sharing project, including potential DUAs and MOUs needed, to provide guidance and maintain consistency in data security. In addition to defining the necessary safekeeping steps, a living document will be created identifying exactly which pieces of data are shared. This will ensure long term consistency and contribute to data analysis and identification of equity disparities from year to year.

*Core System and Performance Area*

Core System	Performance Area					
	Accuracy	Completeness	Integration	Timeliness	Uniformity	Accessibility
EMS			✓	✓		

*Schedule*

October 1, 2023 through September 30, 2024

*Activity Reporting*

**Progress for period April 18, 2019 to July 17, 2019 (brief description of progress since last report):**

- Was on maternity leave from mid-March – mid-June.
- Met with Jim and Mandy to work on a NHTSA Go Team application to get guidance on data integration between CRASH and SIREN.
- Met with researchers from the Northeast Center for Occupational Health and Safety on utilizing EMS data for agricultural injuries.
- Worked with VDH Communications Office to create instructional videos for SIREN users. Will continue to work with VDH Communications to continue making videos in an effort to increase documentation education.

**Plans:**

- July 19<sup>th</sup>: Meeting with AOT team again to review NHTSA Go Team application draft.
- *Ongoing*: Working on a community paramedicine documentation project aimed at creating a home health visit documentation form in SIREN.



- *Ongoing*: Working on Hospital Integration project to link hospital data with EMS data, specifically around patient outcomes.
- *Ongoing*: Working on updating the Vermont data resources page on the NEMSIS website.
- *Ongoing*: Drafting a strategic plan to onboard remaining first response agencies for the year into SIREN.
- *Ongoing*: Statewide EMS Protocols are in progress. We have been pulling SIREN data for reference and to help inform decision-making process.

**Problems (if any):**

- Funding for SIREN was significantly cut for next FY.
- Still operating off contract with ImageTrend.
- One of the two Assistant Data Managers' position is ending August 23.

**Progress for period Jul 17, 2019 to October 16, 2019 (brief description of progress since last report):**

- Submitted prehospital data to two entities for research: Maine Medical Center on opioid-related cardiac arrests and NE Occupational Health and Safety to look at our agricultural and occupational injury data.
- Had a successful first meeting with VHB and AOT on next steps for the NHTSA GO Team data integration project.
- Met with AOT, DPS, VSP partners to resume the NGA data integration project.
- Onboarded another first response agency to report data into SIREN.

**Plans:**

- Meeting scheduled next week (Oct 15<sup>th</sup>) to continue NHTSA GO Team discussions.
- *Ongoing*: Working on a community paramedicine documentation project aimed at creating a home health visit documentation form in SIREN.
- *Ongoing*: Working on Hospital Integration project to link hospital data with EMS data, specifically around patient outcomes.
- *Ongoing*: Working on updating the Vermont data resources page on the NEMSIS website.
- *Ongoing*: Drafting a strategic plan to onboard remaining first response agencies for the year into SIREN.
- *Ongoing*: Statewide EMS Protocols are in progress. We have been pulling SIREN data for reference and to help inform decision-making process.
- *Ongoing*: Updating our data application process for external people requesting data.

**Problems (if any):**

- Funding for SIREN was significantly cut for next FY, causing resources to be stretched thin and limiting our ability to process data requests and train EMS providers on data entry, among other things.
- Still operating off contract with ImageTrend. Contract is delayed due to VDH wanting to incorporate a new product into the contract.
- One of the two Assistant Data Managers' position ended August 23.

**Progress for period of October 16, 2019 to January 15<sup>th</sup>, 2020 (brief description of progress since last report):**

- NHTSA GO Team came to Vermont for a two-day site visit with AOT and VDH to discuss a data integration project.
  - A spreadsheet was started to compare data elements from each data system for probabilistic linkage.
  - Discussions were had on potential public health projects using select data from both systems.
  - Discussed software options, legal concerns, and data variables of interest.

**Plans:**

- Continue to work on spreadsheet for probabilistic linkage.
- Explore data integration features of other software vendors in addition to ImageTrend.
- Continue to work with Mandy at AOT to discuss next steps of project.

**Problems (if any):**

- As the MOU currently exists, funding is in place for an integration software component, but not for staff time or travel to support the project. Moving forward without funds for time is a challenge.
- Because the ImageTrend contract has been expired for so long, the VDH Business Office is making the VDH EMS Office go out to bid for a new contract and potentially a new vendor. A draft Scope of Work for the RFP will a data integration component.

**Progress for period of January 16, 2020 to April 14<sup>th</sup>, 2020 (brief description of progress since last report):**

- A request for proposals (RFP) for a prehospital electronic ePCR system continued to move forward.

- The amendment for our expired ImageTrend contract was extended until next year.

**Plans:**

- Continue to work on Web Crash/SIREN integration.

**Problems (if any):**

- As of February 3, 2020, the EMS Data Manager was transitioned to work full-time on the Health Department's COVID-19 response as the Operations Section Chief for the Health Operations Center. This has significantly impacted plans and progress towards the SIREN / Web Crash data integration project.

**Progress for period of April 15<sup>th</sup>, 2020 to July 15<sup>th</sup> 2020 (brief description of progress since last report):****Plans:**

- The meeting scheduled for July 15th for the period of April 15th through July 14th was cancelled due to the COVID Pandemic. The project director for the SIREN EMS had been reassigned to the COVID Health Operations Center (HOC), the project director for E-Ticket was reassigned to the State Emergency Operations Center (SEOC) for Statewide COVID operations, the project director for the Crash Data system was reassigned to Transportation Incident Command Center (TICC) for COVID data research, and the TR Coordinator was reassigned to the State Emergency Operations Center for Medical Logistics.

**Problems (if any):**

No Activity was conducted.

**Progress for period of July 1, 2020 - October 2020 (brief description of progress since last report):**

- A request for proposals (RFP) for a prehospital electronic ePCR system continued to move forward.
- The ImageTrend SIREN Elite contract was backdated so we could continue our contract coverage.

**Plans:**

- Continue to work with the Health Department Business Office and the Agency of Digital Services (ADS) to move forward with the electronic PCR system RFP.

- Purchase an ImageTrend module called the “Vault” which will replace the outdated NEMSIS version 2 system. The Vault will provide secure storage of historical SIREN records from 2009 – 2017 (records prior to switching to ImageTrend Elite).

**Problems (if any):**

- As of February 3, 2020, the EMS Data Manager was deployed to work full-time on the Health Department’s COVID-19 response as the Operations Section Chief for the Health Operations Center. This has significantly limited all normal data manager functions, including plans and progress towards the SIREN / Web Crash data integration project.

**Progress for period of October 16<sup>th</sup> 2020 to January 27<sup>th</sup>, 2021 (brief description of progress since last report):**

- A request for proposals (RFP) for a prehospital electronic ePCR system continues to move forward.
- The ImageTrend SIREN Elite contract was backdated so we could continue our contract coverage.

**Plans:**

- Continued work with the Health Department Business Office and the Agency of Digital Services (ADS) to move forward with the electronic PCR system RFP.
- Our contract that was backdated include the ImageTrend module called the “Vault” which will replace the outdated NEMSIS version 2 system. The Vault will provide secure storage of historical SIREN records from 2009 – 2017 (records prior to switching to ImageTrend Elite). ImageTrend is in the process of transferring our data to the Vault. Once complete, EMS chiefs will be notified and receive instructions on how to access the new system.

**Problems (if any):**

- As of February 3, 2020, the EMS Data Manager was deployed to work full-time on the Health Department’s COVID-19 response as the Operations Section Chief for the Health Operations Center. This has significantly limited all normal data manager functions, including plans and progress towards the SIREN / Web Crash data integration project.

**Progress for period of January 27<sup>th</sup>, 2021 to April 28<sup>th</sup> 2021 (brief description of progress since last report):**

- The ImageTrend SIREN Elite contract was backdated so we could continue our contract coverage.

**Plans:**

- Continue work with the Health Department Business Office and the Agency of Digital Services (ADS) with the electronic PCR system RFP.
- The first step of the transition process to ImageTrend's "Vault", the new module which will replace the outdated NEMSIS version 2 system, was completed. Training materials and instructions are being developed by the EMS Data Manager to distribute to EMS chiefs how to access the new system.
- Plans are underway to map out tasks associated with the future upgrade to NEMSIS version 3.5 from v3.4. A timeline with major activities will be posted to our VDH website and communicated with EMS leadership.
- Hire and onboard 0.5 FTE temp to assist with EMS data activities.

**Problems (if any):**

- As of February 3, 2020, the EMS Data Manager was deployed to work full-time on the Health Department's COVID-19 response as the Operations Section Chief for the Health Operations Center. This has significantly limited all normal data manager functions, including plans and progress towards the SIREN / Web Crash data integration project.

**Progress for period of April 29, 2021 to July 28, 2021 (brief description of progress since last report):**

- Historical V2 has been transferred from old SIREN site to updated site.
- Timeline is being reviewed in light of COVID for upgrades.

**Progress for period of July 29, 2021 to October 27, 2021 (brief description of progress since last report):**

- New 0.5 FTE temp to assist with overdose-related work was hired and onboarded.
- Working internally with the VDH EMS Office to evaluate the current statewide run form and consider what changes should be made.
- Continue work with the Health Department Business Office and the Agency of Digital Services (ADS) with the electronic PCR system RFP.
- Participating in multiple planning calls associated with the future upgrade to NEMSIS version 3.5 from v3.4. Once the timeframe is confirmed, major activities will be posted to our VDH website and communicated with EMS leadership.

**Schedule:**

- The transition process to ImageTrend's "Vault", the new module which will replace the outdated NEMSIS version 2 system, is complete.

- Working with the Business Office on the ePCR RFP process.

**Problems:**

- As of February 3, 2020, the EMS Data Manager was deployed to work full-time on the Health Department's COVID-19 response as the Operations Section Chief for the Health Operations Center. This has significantly limited all normal data manager functions, including plans and progress towards the SIREN / Web Crash data integration project.
- The EMS Data Manger has taken another position at the Department of Health. The process for hiring a replacement is underway.

**Progress for period of October 28, 2021 to January 19, 2022 (brief description of progress since last report):**

- No update.

**Progress for period of January 20, 2022 to April 20, 2022 (brief description of progress since last report):**

- New 0.5 FTE temp to assist with overdose-related work was hired and onboarded.

**Schedule:**

- The transition process to ImageTrend's "Vault", the new module which will replace the outdated NEMESIS version 2 system, is complete.
- Working with the Business Office on the ePCR RFP process

**Plans:**

- Working internally with the VDH EMS Office to evaluate the current statewide run form and consider what changes should be made.
- Continue work with the Health Department Business Office and the Agency of Digital Services (ADS) with the electronic PCR system RFP.
- Participating in multiple planning calls associated with the future upgrade to NEMESIS version 3.5 from v3.4. Once the timeframe is confirmed, major activities will be posted to our VDH website and communicated with EMS leadership.

**Problems:**

- As of February 3, 2020, the EMS Data Manager was deployed to work full-time on the Health Department's COVID-19 response as the Operations Section Chief for the Health Operations Center. This has significantly limited all normal data manager functions, including plans and progress towards the SIREN / Web Crash data integration project.

- The EMS Data Manger has taken another position at the Department of Health. The process for hiring a replacement is underway.

**Progress for period of April 21, 2022 to July 20, 2022 (brief description of progress since last report):**

- 

**Progress for period of July 21, 2022 to October 19, 2022 (brief description of progress since last report):**

- Data Manager has been released from HOC duties.
- As of 10/01/2022:
  - Created a new Patient Care Report, ensuring:
    - All required elements for NEMSIS 3.5 are included
    - Format is similar to layout for NEMSIS 3.4 form, to ensure easier transition for providers
    - State-level requirements are met
  - Created Validation Rules to meet requirements for NEMSIS 3.5
  - Opened a NEMSIS 3.5 Demo Environment to all users
  - Released guidance on changes from NEMSIS 3.4 to 3.5 to all users
- Updated the Vermont State Data Set for NEMSIS to include:
  - State Certification/Licensure Levels

**Schedule:**

Transition to NEMSIS 3.5 will be completed by December 27th, 2022

Group 1 Agencies: Tuesday, November 1st

Group 2 Agencies: Tuesday, November 8th

Group 3 Agencies: Tuesday, November 15th

Group 4 Agencies: Tuesday, November 22nd

Group 5 Agencies: Tuesday, November 29th

Group 6 Agencies: Tuesday, December 6th

Group 7 Agencies: Tuesday, December 13th

Group 8 Agencies: Tuesday, December 20th

Additional Concerns or Lingering Issues: Tuesday, December 27th

**Plans:**

- Continue to work with First Response agencies to ensure submission of electronic patient care reports.
- Implement NEMSIS 3.5 for all agencies.
- Provide in-person training as needed for agencies that request this.
- Continue to update the Vermont State Data Set to include:
  - Custom Data Elements
  - State Required Elements

- Procedures Permitted by the State
- Medications Permitted by the State
- Continue to evaluate the Patient Care Report for areas of possible improvement.

**Problems:**

- Data Manager is continuing to learn the role and requirements, as this position has been filled for less than one year.
- Anticipated resistance from some First Response agencies as a result of new requirement to electronically document incidents.

**Progress for period of October 20, 2022 to January 18, 2023 (brief description of progress since last report):**

- No status updates this reporting period.

**Progress for period of January 19, 2023 to April 19, 2023 (brief description of progress since last report):**

- A potential data sharing opportunity between EMS and the Agency of Transportation has been identified within a software integration called “Continuum”. This opportunity is currently under review to determine if it will meet the data sharing needs.
- Additional trainings on how to create reports within the EMS data system have been provided. This will allow for greater detail within documentation.
- Although written guidance on creating thorough electronic documentation was made available to all First Response agencies in the previous grant period, additional personalized training has also been provided to services as requested. This will encourage a higher quality of data be obtained from First Response agencies, allowing for more accurate analysis.
- As of April 19th, 84% of First Response services have created incidents within SIREN. This is an increase of 20% or 18 agencies.

**Plans:**

- Data sharing next steps include a detailed review of the possibilities associated with Continuum, as well as continuing to work towards identifying other options.
- Data sharing using DataMart will also be reviewed to thoroughly identify capabilities, restrictions and actions needed to implement.
- Ad hoc trainings will continue to be provided to agencies regarding how to leverage the reporting capabilities of the system, as well as documentation best practices.



- There are currently 16 First Response services that have not created any incidents within SIREN. Next steps include verifying if the agencies have had any dispatches at all during this grant quarter and subsequently identifying and resolving any barriers to documentation completion.

#### *Performance Measures*

See *Section 5.1.7 EMS Timeliness and 5.1.8 EMS Integration* for performance measure.

## 6.3 AOT Crash Data Reporting System and SIREN EMS Reporting System Integration

### Contacts

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### Lead Agency

Vermont Agency of Transportation/Vermont Department of Health

### Status

Active

### Project Description

This project describes the integration effort between the AOT Crash Data Reporting System and the EMS Statewide Incident Reporting Network (SIREN). Next year's tasking for this effort can be found under each respective system's project section in this plan (Sections 6.1 and 6.2).

This project and project description is being retained within this plan for completeness and to provide background information.

### Phase 1 – Pre-Integration

The project director for the SIREN EMS had been reassigned to the COVID Health Operations Center (HOC), the project director for E-Ticket was reassigned to the State Emergency Operations Center (SEOC) for Statewide COVID operations, the project director for the Crash Data system was reassigned to the Transportation Incident Command Center (TICC) for COVID data research, and the TR Coordinator was reassigned to the State Emergency Operations Center for Medical Logistics. Our goal is to pick this project up in FY2023 and move forward with it as planned in FY2022.

The working relationship between VTrans and VDH serves as a foundation for data integration efforts. In most circumstances, the preparation phase for an integration project is often the most resource intensive. Data access is an on-going concern, especially regarding protected health information (PHI), which a State may capture within both the crash report and the EMS patient care report (PCR). Examples of PHI include name, date of birth (DOB), vehicle identification number (VIN), and any other data elements that an agency may use to identify an individual such as a social security number. It is important to note that NHTSA was formally recognized as a public health authority by the Department of Health & Human Services in 2013 for the Health Insurance Portability and Accountability Act. Often, this designation permits the sharing of PHI in a secure environment for research, specifically research related to traffic safety.

VTrans could explore data access policies for each data owner agency to help determine the methods for obtaining the information. Some elements within each data system may not be accessible under any terms, while others may be accessible within specific limits such as those exclusively for integration and then removed from the dataset before analysis. This is a common occurrence because PHI is the most reliable and specific information about an individual. Its use for integration makes the task easier and more reliable. The highly specific PHI is not necessary for analysis, so its removal from the file does not usually hamper the ability to create meaningful reports that support decision making. For example, age or age range is more useful than DOB, so it is sensible and helpful to redact the DOB once the match is complete. Thus, the integration, matching, and analysis elements may not be the same. The PHI is used for the integration itself and other information is used in the interest of research (e.g., DOB and name are used to match records, but restraint use and seating position are used for analysis). The matching variables need to be extracted along with record-level and person-level identification numbers; those identification numbers may already be in the system (e.g., report number, person number) or are randomly assigned numbers as part of the integration process. Once the PHI elements used for integration are removed from the files, those matched identification numbers will be used for subsequent analyses. An example is that report number and person number appear in each data file (both crash and EMS). Initially, the data files will include the PHI elements and integration elements. The files are joined and the PHI is removed from the files for security purposes. The remaining data elements in the original files are appended using those matched identification numbers. All information related to John Doe's crash are aligned with the matched PCR in a combined file that has no sensitive PHI. This lowers the risk of inadvertent release of protected information and supports the possibility of a broader release of the combined data.

Other considerations related to data access include the logistics for sharing information and the platform on which the files may reside before, during, and after the integration. For security, physical transfer (e.g., passing of information on a digital medium) is not a preferred or even permitted method for sharing data files. Accepted alternative methods include access to a shared protected location such as a secure file transfer protocol (FTP) site or a shared network if the partner agencies have established a secure connection. A secure means of exchange is important along with a memorandum of understanding and data use agreements so data owners can be certain that the access controls that apply to their data are agreed upon by all who will have access. This includes other agencies as well as any independent third parties.

Using the example of a shared location, such as a secure FTP site or a shared network, the following is an example sequence for access to the two datasets to be used for integration:

1. All permissions and documentation are in place to the satisfaction of the owner agencies, and the parties involved agree to abide by all associated restrictions and logistics;
2. Data owners work together to identify common elements to use for the integration and elements that the State may alternately use for analytical purposes;
3. Each data owner extracts the elements of interest related to a specified period for the project or any other required subset of their full database;
4. The data owners collaborate to determine format specifications for each of the common elements, such as character or numeric format or length of the field;
5. Each dataset is formatted in a similar structure; and
6. The formatted files are moved into a shared environment.

Once the responsible agency prepares both datasets, the files will be uploaded to a secure FTP site or a secure interactive network for the programmer to access and ultimately conduct the integration. Depending on the size or access to different information in each file, the uploaded datasets may be restricted to the matching elements and identification numbers or may include all the requested analytical elements. The uploaded dataset may even include all data elements in the system. The programmer will typically test the integration process to determine the number of resources (both manpower and computing) or the length of time required and adjust project timeliness and budgets based on that information. For example, larger datasets take longer to match, so depending on the size of each file, it may be more strategic to work with just the matching variables and later return to each dataset to pull the analytical variables by using the existing or created identification numbers. Once the two datasets are available on the agreed-upon secure location and the programmer is given access, this phase of the project is complete.

### **Vermont EMS and Crash Data Considerations**

After discussions during the on-site meetings with NHTSA Go-Team, and a review of the data dictionaries for the State-provided crash and SIREN databases, the data elements shown in **Table 1** could serve as initial matching variables.

**Table 1. Potential Integration Data Elements**

Vermont Crash Report	Vermont SIREN Report	Suggested Format
Date of Crash	Date of incident/call	Date MMDDYYYY
Date of Birth (drivers)	Date of Birth	Date MMDDYYYY
Age	Age	Numeric
Gender	Gender	Character
Name	Name	Character
Time of Crash	Incident/Call Time	HH:MM

*Core System and Performance Area*

Core System	Performance Area					
	Accuracy	Completeness	Integration	Timeliness	Uniformity	Accessibility
Crash			✓			
EMS			✓			

*Schedule*

October 1, 2022 – September 30, 2023

*Activity Reporting*

**Progress for period of January 16, 2020 to April 14, 2020 (brief description of progress since last report):**

- Reported to the TRCC the results of the GoTeam Report
- Add to the 2021 405C Plan as a project.

**Progress for period of April 15, 2020 to July 15, 2020 (brief description of progress since last report):**

**Plans:**

- The meeting scheduled for July for the period of April through July was cancelled due to the COVID Pandemic. The project director for the SIREN EMS had been reassigned to the COVID Health Operations Center (HOC), the project director for E-Ticket was reassigned to the State Emergency Operations Center (SEOC) for Statewide COVID operations, the project director for the Crash Data system was reassigned to the Transportation Incident Command Center (TICC) for COVID data research, and the TR Coordinator was reassigned to the State Emergency Operations Center for Medical Logistics.

**Problems (if any):**

- No Activity was conducted.

**Progress for period July, 2020 to October, 2020 (brief description of progress since last report):**

**Plans:**

- The project director for the SIREN EMS had been reassigned to the COVID Health Operations Center (HOC), the project director for E-Ticket was reassigned to the State

Emergency Operations Center (SEOC) for Statewide COVID operations, the project director for the Crash Data system was reassigned to Transportation Incident Command Center (TICC) for COVID data research, and the TR Coordinator was reassigned to the State Emergency Operations Center for Medical Logistics.

**Problems (if any):**

- No Activity was conducted.

**Progress for period of October 16, 2020 to January 27, 2021 (brief description of progress since last report):**

**Plans:**

- The project director for the SIREN EMS had been reassigned to the COVID Health Operations Center (HOC), the project director for E-Ticket was reassigned to the State Emergency Operations Center (SEOC) for Statewide COVID operations, the project director for the Crash Data system was reassigned to Transportation Incident Command Center (TICC) for COVID data research, and the TR Coordinator was reassigned to the State Emergency Operations Center for Medical Logistics.

**Problems (if any):**

- No Activity was conducted.
- Minimal Activity due to COVID.

**Progress for period of January 27, 2021 to April 20, 2022 (brief description of progress since last report):**

**Plans:**

- The project director for the SIREN EMS had been reassigned to the COVID Health Operations Center (HOC), the project director for E-Ticket was reassigned to the State Emergency Operations Center (SEOC) for Statewide COVID operations, the project director for the Crash Data system was reassigned to Transportation Incident Command Center (TICC) for COVID data research, and the TR Coordinator was reassigned to the State Emergency Operations Center for Medical Logistics.

**Problems (if any):**

- No Activity was conducted.

**Progress for period of April 21, 2023 to April 19, 2023 (brief description of progress since last report):**

- No Activity was conducted.

*Performance Measures*

See Section 5.1.8 EMS Integration for performance measure.



## 6.4 Development of a Geospatial Interpolation Method to Estimate Annual Average Daily Traffic

### Contact

**Mario Dupigny-Giroux****Title:** Traffic Safety Engineer**Agency:** Vermont Agency of Transportation**Office:** Operations and Safety Bureau**Address:** Dill Building, Unit A, 2178 Airport Road,**City, Zip:** Berlin, VT 05641**Phone:** 802-793-4408**Email:** [mario.dupigny-giroux@vermont.gov](mailto:mario.dupigny-giroux@vermont.gov)

### Lead Agency

Vermont Agency of Transportation

### Status

Planned.

### Project Description

The strategy to resolve the described problem is to identify and implement a geospatial interpolation methodology that will improve the accuracy of Average Annual Daily Traffic (AADT) estimates on local roads.

There are several types of AADT estimation methodologies including regression, geographically weighted regression, geospatial interpolation, travel demand models, and machine learning. The justification for selecting this method is based on the literature. In general, geospatial interpolation methods are more accurate than regression, produce relatively high accuracy and require less technical expertise or specialized software than machine learning for example as they can be implemented in regular geographic information systems. Since road volumes are highly dependent on the volumes of surrounding roads, using a geospatial method will give us the ability to use spatial proximity and improve accuracy over our current estimation method. Geospatial interpolation methods include several techniques, and the aim of the project is to evaluate the effectiveness and accuracy of these techniques in the Vermont context and select one for statewide implementation. Specifically, this project will develop and define a geospatial interpolation methodology for estimating AADT on local roads. The project will assess data sources and availability, review and summarize interpolation techniques, evaluate the effectiveness of each technique for local roads within a selected county or counties (developing Python scripts as applicable), recommend a preferred interpolation technique for use in Vermont and propose implementation and validation plans.

*Core System and Performance Area*

	Performance Area					
Core System	Accuracy	Completeness	Integration	Timeliness	Uniformity	Accessibility
Roadway		✓				

*Schedule*

October 1, 2023 – September 30, 2024

*Activity Reporting*

Planned.

*Performance Measures*

See Section 5.1.17 for performance measure.

## 6.5 Web Crash Auto Populate

### Contact

**Mandy Shatney****Title:** Data Section Manager & FARS Analyst**Agency:** Vermont Agency of Transportation**Office:** Operations and Safety Bureau**Address:** Dill Building, Unit A, 2178 Airport Road,**City, Zip:** Berlin, VT 05641**Phone:** 802-595-9341**Email:** [mandy.shatney@vermont.gov](mailto:mandy.shatney@vermont.gov)

### Lead Agency

Vermont Agency of Transportation

### Status

Complete - The Auto Population work is done and in a warranty period.

### Project Description

Law Enforcement (LE) continues to communicate their desire for as many auto population features as possible when filling out a crash report in Web Crash.

Any time we can offer LE a way to speed up the data entry process, the better. Filling out the form is already not a #1 priority for LE nor is this task their favorite activity. It is in our best interest to accommodate LE as much as possible to maintain the progress we have made with timely, accurate, and complete crash reporting. The demand continues for more timely and accurate information.

Possible Auto Population services (but not limited to):

- SIREN data (EMS run number, EMS Agency, Destination Hospital)
- Weather services information.
- DMV Person “Restrictions” data (i.e., corrective lenses, mechanical device, hand operations, etc.)
- Provide a GPS coordinate auto-load from Streets/Trips or other application or web service.
- Date (used if in the field filling out form at the scene).
- DMV Person license and address information.
- Pictures from VTrans Roadway Imagery and/or Google Street type online tools.
- Vehicle information.
- Other?

*Core System and Performance Area*

	Performance Area					
Core System	Accuracy	Completeness	Integration	Timeliness	Uniformity	Accessibility
Crash			✓			

*Schedule*

Complete

*Activity Reporting*

**Report Start**    **Report End**    **Provided By**  
 2020                      2021                      Mandy Shatney

**Activity**                      *None.*

**Plans**                      *The Auto Population work is done and in a warranty period.*

*Performance Measures*

See Section 5.1.4 Crash Integration for performance measure.

## 6.6 Traffic Records Coordinating Committee Consultant

### Contact

**Evelyn McFarlane****Title:** Deputy Administrator**Agency:** Vermont Agency of Transportation**Office:** Operations and Safety Bureau, State Highway Safety Office**Address:** 2178 Airport Road**City, Zip:** Berlin, VT 05641**Phone:** 802-595-4661**Email:** evelyn.mcfarlane@vermont.gov

### Lead Agency

Vermont Agency of Transportation

### Status

Active

### Project Description

The TRCC Consultant project funds a consultant responsible for the following:

- Coordinate, schedule, and attend regular TRCC meetings.
- Prepare and provide the TRCC meeting agenda. The meeting agenda shall be provided to TRCC members via email and posted to the SharePoint site.
- Coordinate sharing safety data between the state agencies and state/local police.
- Assist monitoring of the TRCC approved statewide data improvement program's compliance.
- Assist project prioritization using expert understanding of Vermont Traffic Records.
- Develop annual Section 405 grant application and deliver to the federal agency one month before deadline. This is contingent on Vermont providing the vendor all information required for the Section 405 grant application 30 days prior to the federal agency deadline listed previously.
- Provide support for Quarterly Reports to NHTSA.
- Facilitate the FY2022 Traffic Records Assessment. Provide support for all aspects of coordinating the 5-year Traffic Records Assessment, to include setting up informational interviews with necessary state staff and partners.
- Schedule strategic direction and system information updates from member agencies.

### Schedule

October 1, 2023 through September 30, 2024

### Activity Reporting

**Progress for period April 18, 2019 to July 17, 2019 (brief description of progress since last report):**

- Preparing the 405c FY20 TRCC application
- Continue to provide support assistance to all Vermont Traffic Records programs.
- Continue to assist monitoring approved data improvement programs.
- Provide support for Quarterly Report submissions.
- Coordinate TRCC meeting. Prepare meeting agenda.

**Progress for period Jul 17, 2019 to October 16, 2019 (brief description of progress since last report):**

- Continue to provide support assistance to all Vermont Traffic Records programs.
- Continue to assist monitoring approved data improvement programs.
- Provide support for Quarterly Report submissions.
- Coordinate TRCC meeting. Prepare meeting agenda.

**Progress for period of October 16, 2019 to January 15, 2020 (brief description of progress since last report):**

- Continue to provide support assistance to all Vermont Traffic Records programs.
- Continue to assist monitoring approved data improvement programs.
- Provide support for Quarterly Report submissions.
- Coordinate TRCC meeting. Prepare meeting agenda.
- NHTSA GO Team came to Vermont for a two-day site visit with AOT and VDH to discuss a data integration project.
  - A spreadsheet was started to compare data elements from each data system for probabilistic linkage.
  - Discussions were had on potential public health projects using select data from both systems.
  - Discussed software options, legal concerns, and data variables of interest.

**Progress for period of January 16, 2020 to April 14, 2020 (brief description of progress since last report):**

- Preparing the 405c FY21 TRCC application
- Continue to provide support assistance to all Vermont Traffic Records programs.
- Continue to assist monitoring approved data improvement programs.
- Provide support for Quarterly Report submissions.
- Coordinate TRCC meeting. Prepare meeting agenda.

**Plans**

- Continue to champion GoTeam Plan with AOT and VDH.

**Progress for period of April 15, 2020 to July 15, 2020 (brief description of progress since last report):****Plans:**

The meeting scheduled for July 15th for the period of April 15th through July 14th was cancelled due to the COVID Pandemic. The project director for the SIREN EMS had been reassigned to the COVID Health Operations Center (HOC), the project director for E-Ticket was reassigned to the State Emergency Operations Center (SEOC) for Statewide COVID operations, the project director for the Crash Data system was reassigned to the Transportation Incident Command Center (TICC) for COVID data research, and the TR Coordinator was reassigned to the State Emergency Operations Center for Medical Logistics.

**Problems (if any):**

- No Activity was conducted.

**Progress for period of July 15, 2020 - October 2020 (brief description of progress since last report):****Plans:**

- Continue to provide support assistance to all Vermont Traffic Records programs.
- Continue to assist monitoring approved data improvement programs.
- Provide support for Quarterly Report submissions.
- Coordinate TRCC meeting. Prepare meeting agenda.

**Progress for period of October 16, 2020 to January 27, 2021 (brief description of progress since last report):****Plans:**

- Continue to provide support assistance to all Vermont Traffic Records programs.
- Continue to assist monitoring approved data improvement programs.
- Provide support for Quarterly Report submissions.
- Coordinate TRCC meeting. Prepare meeting agenda.

**Progress for period of January 27, 2021 to April 28, 2021 (brief description of progress since last report):**

- The Vermont State Highway Safety Office sent out another RFP in early spring 2021. LexisNexis Coplogic Solutions Inc did respond and was selected. Negotiations with the Vermont Agency of Transportation legal department are underway with a possible start date of July 1, 2021.

**Plans:**

- Preparing the 405c FY21 TRCC application.
- Sent out RFP for new TRCC Contractor.
- Continue to provide support assistance to all Vermont Traffic Records programs.
- Continue to assist monitoring approved data improvement programs.
- Provide support for Quarterly Report submissions.
- Coordinate TRCC meeting. Prepare meeting agenda.

**Progress for period of April 29, 2021 to July 28, 2021 (brief description of progress since last report):**

- Contract is with LexisNexis currently. Expected back by Friday.

**Progress for period of July 29, 2021 to October 27, 2021 (brief description of progress since last report):**

- Consultant prepared TRCC Meeting agenda and PowerPoint presentation for the October 27 TRCC Meeting
  - Co-facilitated the meeting
- Consultant will hold online workshops to be held from November 2021 through February 2022
  - Review questions prior to workshops
  - Assign questions to respondents
- Review point-of-contacts for Traffic Records Assessment information. Provide support for uploading question responses

**Progress for period of October 28, 2021 to January 19, 2022 (brief description of progress since last report):**

- Consultant prepared meeting agenda and PowerPoint presentation for the January 19 TRCC Meeting
  - Co-facilitated the TRCC meeting.
- Consultant gave update on the Traffic Records Assessment schedule.
- Conducted several workshops for Citation, Crash, TRCC Management, Strategic Planning, and Data Use & Integration



**Progress for period of January 20, 2020 to April 20, 2022 (brief description of progress since last report):**

- Consultant entered all the answers in the first round of the Traffic Records Assessment.
- Consultant will reach out to grantees for performance measures and active projects to fulfill the NHTSA requirements of the Traffic Records Strategic Plan.
- Consultant prepared meeting agenda and PowerPoint presentation for the April 20 TRCC Meeting
  - Co-facilitated the TRCC meeting.
  - Demonstrated Crash and Citation dashboards (from another state) during meeting.

**Progress for period of April 21, 2022 to July 20, 2022 (brief description of progress since last report):**

- Consultant reviewed the Traffic Records Assessment and noted that there has been some improvement from the last assessment. There were some areas that the TRCC can address to get to *Meets* as per the recommendations. The final report, and a copy of the presentation of the “report out” by NHTSA will be shared and circulated to the TRCC group.
- Consultant will reach out to grantees for performance measures and active projects to fulfill the NHTSA requirements of the Traffic Records Strategic Plan.
- Consultant prepared meeting agenda and PowerPoint presentation for the July 20 TRCC Meeting
  - Co-facilitated the TRCC meeting.
  - Consultant reviewed performance measures and targets from the Strategic Plan.
- 

**Progress for period of July 21, 2022 to October 19, 2022 (brief description of progress since last report):**

- Consultant prepared meeting agenda and PowerPoint presentation for the October 19 TRCC Meeting
  - Co-facilitated the TRCC meeting.
  - Consultant gave an overview of the TRCC Requirements and Process.
  - Consultant gave an overview of the upcoming tasks for the Vermont Strategic Plan process and Traffic Records Inventory.

**Progress for period of October 20, 2022 to January 18, 2023 (brief description of progress since last report):**

- Consultant prepared meeting agenda and PowerPoint presentation for the January 18 TRCC Meeting

- Co-facilitated the TRCC meeting.
- Consultant is scheduling Strategic Planning workshops for the data systems: Crash, Citation (Courts & LE), Roadway, Driver, Vehicle, Injury Surveillance, TRCC, Strategic Planning, and Data Use & Integration.
- Consultant is working on performance measures to be included in the Traffic Records Strategic Plan.

**Progress for period of January 19, 2023 to April 19, 2023 (brief description of progress since last report):**

- Consultant prepared meeting agenda and PowerPoint presentation for the April 19 TRCC Meeting
  - Co-facilitated the TRCC meeting.
  - Consultant held Strategic Planning workshops for the following data systems: Crash, Citation (Courts & LE), Roadway, Driver, and Vehicle. The following data systems will be scheduled for Injury Surveillance (includes Vital Records, Hospital Discharge, and Emergency Department) and TRCC, Strategic Planning, and Data use & Integration).
  - Continued to work on the Traffic Records Strategic Plan, which is due on July 1 to Highway Safety for review. The final is due to NHTSA by August 1.
  - The Traffic Records Inventory is under development. Consultant will be reaching out to each data system POC to setup up meetings.

## 6.7 E-Ticket Implementation

### Contact

**Richard Hallenbeck**

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### Lead Agency

Vermont Agency of Transportation

### Status

Active

### Project Description

Beginning in July 2016, Vermont law enforcement started issuing citations electronically in three of the State's law enforcement agencies. By the end of March 2022, E-Ticket was deployed and utilized by 47 of the State's 90 agencies. E-Ticket has been administered through a TRCC grant with the Department of Public Safety, however, there has been very little movement in this project and DPS did not renew the application to continue the program in FFY2023. The SHSO proposes to manage the program through funding of a Vermont Highway Safety E-Ticket Coordinator to encourage and facilitate participation in the Vermont E-Ticket program with the goal of increasing E-Ticket adoption and usage by Vermont law enforcement agencies. The coordinator will assist Vermont's forty-seven agencies with adopting and fully utilizing the E-Ticket module within the Valcour law enforcement records management system. The coordinator will provide guidance on hardware and software requirements, assist agencies with applying for grants, and fulfilling grant obligations and requirements. The coordinator will liaison with local agency and State Information Technology (IT) personnel to ensure that all IT infrastructure is setup and configured for successful E-Ticket deployment and use. Since IT resources are limited, the coordinator will field questions related to E-Ticket and forward issues to appropriate group (e.g., IT, DPS, vendor). Additionally, the E-Ticket coordinator will host virtual meetings to provide E-Ticket guidance to and receive feedback from Vermont law enforcement agencies.

In response to a slowdown in deployment of the E-Ticket program, the TRCC facilitated the restart of the E-Ticket Steering Committee to improve deployment and sustainability of the program and address improvements in performance measures.

**Problem Statement:** The current error-prone paper system for traffic tickets impedes the state's ability to have complete and accurate citation data available for traffic records data improvement.

**Countermeasures:** Data recommendations indicated in the 2016 TR Assessment.

**Strategies:** Implementation and evaluation of all phases of a three-phase E-Ticket pilot.

**Goals:** Continue to deploy E-Ticket statewide.

### Core System and Performance Area

	Performance Area					
Core System	Accuracy	Completeness	Integration	Timeliness	Uniformity	Accessibility
Citation		✓			✓	

### Schedule

October 1, 2023 – September 30, 2024

### Activity Reporting

**Progress for period April 18, 2019 to July 17, 2019 (brief description of progress since last report):**

- DPS continues to meet weekly with reps from VSP, Admin and Finance and ADS to ensure the continued progress of the project. In addition, there have been two meetings of the E-ticket Steering Committee, chaired by DC Herrick. The purpose of this group, which has representation from the LE community, Judiciary and ADS is to provide overall governance for the program in the out years. This includes approving changes recommended by the Change Advisory Board (CAB), development of a sustainable funding model for the project and general information sharing among leadership and key partners. The responsibilities of the Steering Committee are to:
  - Create, review, and approve documentation that defines E-Ticket operations
  - Draft, develop, and track the operational budget for E-Ticket
  - Review, assess, and approve or reject change requests brought by the Change Advisory Board
  - Collect and track of technical issues reported by support staff and officers in the field
  - Ensure training materials are provided to support staff and officers in the field
- The CAB referenced above has met twice and is designed to bring individuals with technical knowledge as well as those with a strong interest in the operation of e-ticket together to ensure that it is working as designed and that any necessary changes are orchestrated, vetted and thought through before being recommended to the Steering Committee for final approval. The CAB is made of folks from ADS, AOT (Crash), Crosswinds, Search, ADS, Judiciary and DPS. The responsibilities of the E-Ticket Change Advisory Board are to:
  - Recommend the change management process and governance to the Steering Committee

- Record and track changes through the process
- Make recommendations for the technical resolution of changes to the Steering Committee

We have finished the RFP process for sub granting to municipal agencies and the award notifications are being made. All the agencies who applied were funded for a total of 75 units. In addition, installation guides will be posted on the e-ticket web-site.

Swanton PD	3	Spillman
Thetford PD	3	Spillman
Williston PD	5	Spillman
Northfield PD	4	Spillman
Winhall PD	4	Spillman
Wilmington PD	4	Spillman
Windsor CSD	3	Spillman
Shelburne PD	5	Spillman
Barre Town PD	4	Valcour
Springfield PD	6	Valcour
Bennington CSD	7	Valcour
Chittenden CSD	8	Valcour
Essex PD	7	Spillman
Burlington PD	12	Valcour
TOTAL	75	

- Currently, we have installed 33 of the anticipated 109 to be installed this grant year.
- The Operations Guide is near completion and will cover the general use of the system and will be available via the website as soon as it is ready.

**Plans:**

- Finalize Operations Manual
- Develop sustainability funding model for the project for the years after the end of next year's grant.
- Develop spending plan for the next grant year

**Problems (if any):**

- None

**Progress for period Jul 17, 2019 to October 16, 2019 (brief description of progress since last report):**

- No report filled for this period.
- DPS indicated, All work on schedule.

**Plans:**

- All work is ongoing.

**Problems (if any):**

- None

**Progress for period of October 16, 2019 to January 15<sup>th</sup>, 2020 (brief description of progress since last report):**

- Continue to rollout the installation into all VSP cruisers. Will be at 100% soon.
- Subgrants for local agencies were due back to DPS y 12/31/19. There will be a second round for those who were unable to meet the December deadline.

**Plans:**

- Continue the rollout to local agencies with goal of 95% statewide implementation.
- DPS has included a line in the 2021 budget request for the on going costs of e-ticket.

**Problems (if any):**

- None

**Progress for period of January 16, 2020 to April 14<sup>th</sup>, 2020 (brief description of progress since last report):**

- No report filled for this period.
- DC Harrick acting as Emergency Operation Chief for COVID19
- DPS indicated, All work on Schedule

**Plans:**

- All work is ongoing.
- Secure Contracts for FY20-21

**Progress for period of April 15<sup>th</sup>, 2020 to July 15<sup>th</sup> 2020 (brief description of progress since last report):****Plans:**

The meeting scheduled for July 15th for the period of April 15th through July 14th was cancelled due to the COVID Pandemic. The project director for the SIREN EMS had been reassigned to the COVID Health Operations Center (HOC), the project director for E-Ticket was reassigned to the State Emergency Operations Center (SEOC) for Statewide COVID operations, the project director for the Crash Data system was reassigned to the Transportation Incident Command Center (TICC) for COVID data research, and the TR Coordinator was reassigned to the State Emergency Operations Center for Medical Logistics.

**Problems (if any):**

No Activity was conducted.

**Progress for period of April 15<sup>th</sup>, 2020 to October 15<sup>th</sup> 2020 (brief description of progress since last report):****Plans:**

The meeting scheduled for July 15th for the period of April 15th through July 14th was cancelled due to the COVID Pandemic. The project director for the SIREN EMS had been reassigned to the COVID Health Operations Center (HOC), the project director for E-Ticket was reassigned to the State Emergency Operations Center (SEOC) for Statewide COVID operations, the project director for the Crash Data system was reassigned to the Transportation Incident Command Center (TICC) for COVID data research, and the TR Coordinator was reassigned to the State Emergency Operations Center for Medical Logistics.

**Problems (if any):**

No Activity was conducted.

**Progress for period of October 16<sup>th</sup> 2020 to January 27<sup>th</sup>, 2021 (brief description of progress since last report):****Plans:**

- Ensure the connectivity and backbone support of the system.
- Updated the grant to include 17 units for the DMV.

**Problems (if any):**

- No Activity was conducted.

**Progress for period of January 27, 2021 to April 28, 2021 (brief description of progress since last report):****Plans:**

- Ensure the connectivity and backbone support of the system.

**Problems (if any):**

- No Activity was conducted.

**Progress for period of April 29, 2021 to July 28, 2021 (brief description of progress since last report):**

- Glitch on DMV Enforcement. - browser issue.
- RFI - will we see more move into e-ticket.
- Adding more to DMV
- Environmental push to get rid of paper.

**Progress for period of July 29, 2021 to October 27, 2021 (brief description of progress since last report):**

- Christopher Herrick is leaving public safety within a week.
- Seeking replacement to attend future TRCC meetings.
- Valcour will be the backbone for the E-Ticket system.
- Identifying agencies who would need hardware.

**Progress for period of October 28, 2021 to January 19, 2022 (brief description of progress since last report):**

- Working to assign a lead following Deputy Commissioner Christopher Herrick's departure.
- Project is on-track.
- Potential to purchase more units for agencies.

**Progress for period of January 20, 2022 to April 20, 2022 (brief description of progress since last report):**

- Tim Charland retired. Vendor still experiencing growing pains and user issues and remains a work in progress. Mandy Shatney reported out on the E-Ticket steering committee. Two meetings have been held to date. A survey was issued to Law Enforcement to gather information about issues around implementing the program.

**Progress for period of April 21, 2022 to July 20, 2022 (brief description of progress since last report):**

- As of March 3, 2022, 1,824 tickets have been issued electronically by 39 agencies.
- 4,372 paper tickets have been issued this year.

**Plans:**

- Reach out to agencies to find out who is having issues and what equipment they have.

**Progress for period of July 21, 2022 to October 19, 2022 (brief description of progress since last report):**

- Progress report quarter 3 through July 31st. No progress on the grant. There has been no activity for quarter 4 to date.

**Schedule:**

- Continue the "backbone" for the eTicket system until full transition to VALCOUR is complete. This is a continuation of the eTicket program as it has moved from Spillman to



Valcour. The project is intended to increase the number of agencies who utilize eTicket and increase the percentage of electronic citations to paper citations across agencies. The Department of Public Safety will offer sub-award agreements to eligible Law Enforcement Agencies for a subgrant allowing the purchase and installation of eTicket printers in cruisers.

**Plans:**

Agencies that indicated interest in E-Ticket equipment are listed in the following figure.

<b>Requests for e-citation printers FFY-2023</b>	
	<b># of printers requested</b>
<b>Agencies</b>	
<b>Municipal LEAs</b>	
Barre City PD	2
Brandon PD	5
Essex PD	3
Lyndonville PD	3
Morristown PD	6
Rutland City PD	1
Rutland Town PD	5
St. Albans PD	10
Weathersfield PD	1
Woodstock PD	3
<b>Municipal Sub-Totals</b>	39
<b>State Police Stations</b>	
<b>VSP Sub-Totals</b>	
<b>Sheriffs' Departments</b>	
Addison	3
Caledonia	4
Chittenden	3
Rutland	4
Washington	2
<b>Sheriffs' Sub-Totals</b>	16
<b>Other Agencies</b>	
UVM Police	
VT DMV	
<b>OTHER SUBTOTAL</b>	
<b>GRAND TOTALS</b>	55

**Progress for period of October 20, 2022 to January 18, 2023 (brief description of progress since last report):**

- 11/16/22 – RFP issued
- 12/20/22 – Application period closed; 8 law enforcement agencies submitted applications.
- 12/29/22 and 1/11/23 – Scoring team met and approved awards in the amount of \$41,239.94.
- On track.
- Potential to purchase more units for agencies.

**Plans:**

On February 1, there are several new Sheriff's taking office. In mid-February, DPS will release another RFP to allow those agencies to apply. We are considering allowing agencies to apply for replacement of equipment although if this is done, preference will be given to agencies who have not received funding for eTicket in the past.

**Problems:**

Grant budget will likely need to be changed from 120k Equipment to 110k Equipment and 10k Supplies to 20k Supplies to accommodate the ratio of equipment and mounting hardware seen in the first round of applications.

**Progress for period of January 19, 2023 to April 19, 2023 (brief description of progress since last report):**

- 11/16/22 – RFP issued.
- 12/20/22 – Application period closed; 8 law enforcement agencies submitted applications.
- 12/29/22 and 1/11/23 – Scoring team met and approved awards in the amount of \$41,239.94.
- On track
- 2/24/23 – RFP issued for a second round of awards.
- 3/15/23 – Application period closed; 9 applicants.
- 3/24/23 – Amendment requested to balance the anticipated amount of equipment and hardware. Award increase of roughly \$20K.
- 4/6/23 – Scoring team met. Not all applicants have been scored yet. If all are approved, it appears we will award an additional \$109K.

**Plans:**

- Finish scoring for applicants and make awards. Monitor each award to ensure all requirements are met before closeout. This will be the final e-ticket solicitation from Public Safety.

**Problems:**

- Quotes were difficult to obtain so supply chain may be a concern. If the supply chain holds steady, we should be able to close out timely.

*Performance Measures*

See *Section 5.1.1 Citation Completeness and Section 5.1.2 Citation Uniformity* for performance measures.

## 6.8 Systemic Identification of Roadway Features Related to Roadway Departure and Severe Intersection Crashes and Inventory of High-Risk Sites

### Contact

**Mario Dupigny-Giroux****Title:** Traffic Safety Engineer**Agency:** Vermont Agency of Transportation**Office:** Operations and Safety Bureau**Address:** Dill Building, Unit A, 2178 Airport Road,**City, Zip:** Berlin, VT 05641**Phone:** 802-793-4408**Email:** [mario.dupigny-giroux@vermont.gov](mailto:mario.dupigny-giroux@vermont.gov)

### Lead Agency

Vermont Agency of Transportation

### Status

Active, monitoring this project for results.

### Project Description

The project is first for the continuation of the work that was started under the FFY22 grant for roadway departure crashes (because the project started late, in the 2nd quarter of the grant, it cannot be completed by the end of FFY22. Approximately three months of work is estimated to be required to complete the project). For this part of the project, the project team will use the roadway departure predictive models that were developed during FFY22 to screen the road network (state and local roads) to identify the locations with a high risk for roadway departure crashes based on the identified correlated roadway features and will prioritize and rank the high-risk roadway segments identified based on the measure of highest potential for safety improvement.

For severe intersection crashes, the project team will integrate crash data with roadway data from existing VTrans' databases to develop multi-regression predictive models to identify the roadway features that are associated with severe intersection crashes and use the predictive models to identify the locations with a high risk for severe intersection crashes based on the identified correlated roadway features. The project team will prioritize and rank the high-risk intersections identified based on the measure of highest potential for safety improvement from the expected benefits of applying certain treatments. Ten months are estimated to complete this part of the project.

The above approach is a direct application of the systemic approach and will lead to the identification of the key roadway features and then to the identification of the specific sites with these features for these two types of crashes.

The locations most likely to produce roadway departure and severe intersection crashes will be shown on an ArcGIS map with a schema to display risk level.

**Problem Statement:** In Vermont, roadway departure crashes represent over 70% of all fatal and serious injury crashes while intersection crashes represent more than 20%. As such, these have been identified in the Vermont Strategic Highway Safety Plan (SHSP) as critical emphasis areas (CEA).

Progress in the reductions of these types of crashes have been made over the years as the trends of the running five-year rolling averages of fatalities and serious injuries related to lane departure and intersection crashes have been downward from 2016 to 2020 with eight and ten percent reductions respectively.

While the combined trends (fatalities + serious injuries) are down, the five-year rolling averages of fatalities were actually up in 2020 and the numbers remain significant. In 2020, there were 41 fatalities and 129 serious injuries related to roadway departure crashes while there were 20 fatalities and 41 serious injuries related to intersection crashes. More reductions are needed in these areas if Vermont is to achieve its goal of zero death.

However, the nature of fatal and serious injury crashes is random and the locations where roadway departure and severe intersection crashes occur changes over time. Because the locations are dispersed, they are not detected by traditional high crash location network screening methods that are based on crash clusters. A challenge is to identify where roadway departure crashes are likely to take place to construct appropriate treatments to eliminate roadway departure crashes statewide.

**Strategies:** The key problem is to identify where fatal and serious injury roadway departure and severe intersection crashes will happen in the future given that the locations of these types of crashes are not consistently the same.

The Federal Highway Administration has been encouraging departments of transportation to include a systemic safety management approach within their Highway Safety Improvement Program (HSIP). The systemic approach focuses on crash types (e.g., roadway departure crashes) and the roadway features associated with these crash types (e.g., curve radius of 500 to 900 ft) and the implementation of low-cost treatments at all the locations that display these roadway features regardless of crash history.

The approach to solving the above-mentioned problem is to identify the roadway features that are correlated with fatal and serious injury roadway departure and severe intersection crashes and screen the roadway network to identify sites with these features.

Therefore, this project is 1) for the development of predictive methodologies for applying the systemic safety approach for roadway lane departure and severe intersection fatal and serious injury crashes through the identification of the roadway features related to these crashes and 2) for the inventory of the roadway segments and intersections with these roadway features.

This solution is a direct implementation of the new strategy about systemic analysis and the intersection CEA that is cited in the 2022-2026 SHSP.

**Goals:** Improve the completeness of roadway data related to roadway departure crashes. Identify the roadway features correlated with roadway departure crashes on the non-Vermont Federal Aid and Vermont Federal Aid Road Networks.

**Objectives:** Collect 100% of the Model Inventory of Roadway Elements (MIRE) Fundamental Data Elements (FDEs) and the other MIRE data listed previously for 12,341 intersections on the Federal Aid Road Network by end of FFY20 to give VTrans a complete inventory of intersections covering 100% of the intersections on this network.

- A) Identify the roadway features correlated with roadway departure crashes on the VT Federal Aid Road Network.
- B) Identify the roadway features correlated with roadway departure crashes on the non-VT Federal Aid Road Network.
- C) Identify 100% of the sites with the roadway features correlated with roadway departure crashes.
- D) Rank 100% of the sites identified based on highest expected benefits of constructing a treatment.
- E) Display 100% of the sites identified on a GIS map with prioritized ratings.

**Project Evaluation Plan:** Progress towards the completion of the activities of this project will be evaluated via the quarterly progress reports and the interim technical memos in draft and final forms that are to be submitted by the project team as well as via the monthly check-in meetings and informal email communications with the project team.

The key activities of this project will be measured as a percentage of completion.

The full completion of each activity will lead to the successful completion of the project as each activity builds upon each other towards the final product of an inventory of high-risk sites.

The key activities are also linked to the goals of this project in terms of completeness, uniformity, and accessibility. For example, the roadway features that are associated with severe intersection crashes have been identified, providing a complete dataset or all the high-risk sites are identified and mapped and this map is accessible via a public map on the internet.

A final product of this project will be an inventory list of all the roadway segments and intersections with the identified roadway features that are associated with roadway departure and intersection crashes, prioritized in order of their highest potential for crash reduction for selected treatments.

The ultimate implication of this project is that from this list (and maps), VTrans and other stakeholders will subsequently be able to make recommendations for safety construction projects for both state and local roads through programs and projects in support of the SHSP.

Using the prioritized inventory list from this project will result in cost-effective safety investments at places of known risks for roadway departure and severe intersection crashes and will provide a safer road network across Vermont.

### Core System and Performance Area

Core System	Performance Area					
	Accuracy	Completeness	Integration	Timeliness	Uniformity	Accessibility
Roadway		✓	✓		✓	

### Schedule

October 1, 2022 through September 30, 2023

### Activity Reporting

**Progress for period of April 21, 2022 to July 20, 2022 (brief description of progress since last report):**

The consultant performed the following tasks:

- Completed definitions for roadway types for separating analysis into State and local systems.
- Completed the integration of attributes in the crash database and the roadway segment database for both crash tree and risk factor datasets.
- Submitted to VTrans a final memo describing the analysis datasets along with the joined geodatabase of collected data.
- Developed and submitted to VTrans for review, draft crash trees for roadway departure crash types identifying focus crash and facility types.

### Schedule:

Upcoming Milestones:

1. Development of Statistical Models & Identification of Roadway Features
  - Draft memo describing risk factor analysis results – July 29, 2022
  - Final memo describing risk factor analysis results – September 2, 2022
2. Identify the Sites with the Roadway Features
  - ArcGIS shapefiles of road network displaying levels of risk – Sept 30, 2022.

### Plans:

The consultant anticipates accomplishing the following during the next quarter:

- Meet with VTrans to discuss results of crash trees and prioritize risk factor development for focus facility types.
- Develop regression models and complete risk factor analysis.

- Submit draft memo describing risk factor analysis for focus crash and facility types, make revisions as appropriate based on comments from VTrans and submit a final memo.
- Develop weighting factors (as necessary) for risk factor implementation.
- Apply risk factors to network to determine the locations most likely to produce roadway departure crashes and create ArcGIS shapefiles that reflect levels of risk.

**Problems:**

## Issues related to Data Processing/Compilation

VTrans identified discrepancies between the crash numbers that the consultant originally compiled and VTrans data. The source of the discrepancy was the calculation of the various roadway departure types. VTrans has been using specific crash fields to define these crashes. Although the consultant and VTrans had come to a consensus about definitions and the fields to use, discrepancies remained. Resolved: VTrans processed some of the data and provided a workbook to the consultant that had fields for Report Number, AOT Roadway Group, Crash Severity, and calculated columns for the different roadway departure crash types and the road owner (State vs local).

VTrans noted that the minimum segment length that was being reported in the integrated segment dataset was 0.00305 meters (which is less than one inch). The consultant reviewed the integrated dataset and found that the short segments appeared in two cases: 1) When two curves are so close together that the tangent is essentially null (but ArcGIS picks up a <1 inch segment) or 2) When a roadway characteristic (like speed limit, number of lanes, median type, etc.) changes at the end of a curve or tangent, but do not precisely overlap, so there are two breaks (one for the curve/tangent and one for the roadway characteristic) less than an inch apart. Resolution: The consultant and VTrans agreed that the best approach was to ignore these segments in the risk models by setting a minimum length of 0.05 miles.

**Progress for period of July 21, 2022 to October 19, 2022 (brief description of progress since last report):**

This project has not started yet.

**Schedule:**

Start: October 1, 2022; End: September 30, 2023

## Upcoming Milestones:

- Kick-off Meeting by December 1, 2022.
- Data Acquisition/Processing/Compilation (Completed by end of February 2023).

**Plans:**

- During the next reporting period, we anticipate having a project kick-off meeting and expect that the consultant will work on the Data Acquisition/Processing/Compilation task.



**Progress for period of October 20, 2022 to January 18, 2023 (brief description of progress since last report):**

- Kick-off Meeting was held in December 2022.
- The consultant started the data acquisition process.

**Schedule:**

Start Date: October 1, 2022; End Date: September 30, 2023

Upcoming Milestones:

- Data Acquisition/Processing/Compilation (Completed by mid-February 2023)
- Draft Risk Factors (mid-April 2023)

**Plans:**

- During the next reporting period, the consultant will complete the Data Acquisition/Processing/Compilation task.
- The consultant will identify focus crash types, focus facility types, and develop statistical models to identify risk factors for each focus crash type and facility type pair.

**Progress for period of January 19, 2023 to April 19, 2023 (brief description of progress since last report):**

The consultant performed the following tasks:

- Completed the data acquisition and processing tasks.
- Identified focus crash types and facility types.
- Began working on predictive models to identify risk factors.

**Schedule:**

Start: October 1, 2022; End Date: September 30, 2023

Upcoming Milestones:

- Final Risk Factors (June 2023)
- Draft ArcGIS shapefiles of road network displaying levels of risk (mid-July 2023)

**Plans:**

During the next reporting period, the consultant will

1. Complete the development of models to identify risk factors for each focus crash type and facility type pair.
2. Apply the risk factors and assign risk levels to intersections.

**Performance Measures**

See *Section 5.1 Performance Measures* for all related performance measures.

## 6.9 AOT E-Ticket Expansion

### Contact

**Evelyn McFarlane**

**Title:** Deputy Administrator

**Agency:** Vermont Agency of Transportation

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### Lead Agency

Vermont Agency of Transportation

### Status

On Hold

### Project Description

The SHSO issued an RFP in FY23 to procure a contractor for the Vermont E-Ticket program. The goal was to increase E-Ticket adoption and usage by Vermont law enforcement agencies. No RFP responses were received. The SHSO will consider a re-post of the RFP after FY24.

### Schedule

TBD

### Activity Reporting

None.

## 6.10 Systemic Identification of Roadway Features Related to Roadway Departure Crashes and Inventory of High-Risk Sites

### Contact

**Mario Dupigny-Giroux**

**Title:** Traffic Safety Engineer

**Agency:** Vermont Agency of Transportation

**Office:** Operations and Safety Bureau

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**City, Zip:** Berlin, VT 05641

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### Lead Agency

Vermont Agency of Transportation

### Status

Active, monitoring this project for results.

### Project Description

This new project will integrate crash data with roadway data from existing VTrans' databases to develop multi-regression predictive models to identify the roadway features that are associated with roadway departure crashes.

The project will then use the predictive models that were developed to screen the road network (state and local roads) to identify the locations with a high risk for roadway departure crashes based on the identified correlated roadway features.

The project will prioritize and rank the high-risk sites identified based on the measure of highest potential for safety improvement from the expected benefits of applying certain treatments.

**Problem Statement:** In Vermont, roadway departure crashes represent over 25% of all fatal and serious injury crashes and are therefore a primary crash type year after year. However, the nature of fatal and serious injury crashes is random and the locations where roadway departure crashes occur change. Because the locations are dispersed, they are not detected by traditional high crash location network screening methods. A challenge is to identify where roadway departure crashes are likely to take place to construct appropriate treatments to eliminate roadway departure crashes statewide.

**Strategies:** The Federal Highway Administration has been encouraging departments of transportation to include a systemic safety management approach within their Highway Safety Improvement Program (HSIP). The systemic approach focuses on crash types (e.g., roadway departure crashes) and the roadway features associated with these crash types (e.g., curve radius of 500 to 900 ft) and the implementation of low-cost treatments at all the locations that display these roadway features regardless of crash history.

This project is for the development of a predictive methodology for applying the systemic safety approach for reducing roadway departure crashes through the identification of roadway features related to roadway departure crashes and the inventory of the sites with these roadway features.

**Goals:** Improve the completeness of roadway data related to roadway departure crashes. Identify the roadway features correlated with roadway departure crashes on the non-Vermont Federal Aid and Vermont Federal Aid Road Networks.

**Objectives:** Collect 100% of the Model Inventory of Roadway Elements (MIRE) Fundamental Data Elements (FDEs) and the other MIRE data listed previously for 12,341 intersections on the Federal Aid Road Network by end of FFY20 to give VTrans a complete inventory of intersections covering 100% of the intersections on this network.

- A) Identify the roadway features correlated with roadway departure crashes on the VT Federal Aid Road Network.
- B) Identify the roadway features correlated with roadway departure crashes on the non-VT Federal Aid Road Network.
- C) Identify 100% of the sites with the roadway features correlated with roadway departure crashes.
- D) Rank 100% of the sites identified based on highest expected benefits of constructing a treatment.
- E) Display 100% of the sites identified on a GIS map with prioritized ratings.

*Core System and Performance Area*

	Performance Area					
Core System	Accuracy	Completeness	Integration	Timeliness	Uniformity	Accessibility
Roadway		✓	✓		✓	

*Schedule*

October 1, 2022 through September 30, 2023

*Activity Reporting*

**Progress for period of April 29, 2021 to July 28, 2021 (brief description of progress since last report):**

- No update.

**Progress for period of July 29, 2021 to October 27, 2021 (brief description of progress since last report):**

- During this reporting period, it was decided that the newly hired consultant by the Data Unit of the Operations and Safety Bureau, to work on analytic projects, will be asked to work on this project.

**Plans:**

- During the next reporting period, we anticipate having a project kick-off meeting and expect that the consultant will work on the Data Acquisition/Processing/Compilation task.

**Problems:**

There are no problems, but process steps that need to happen before the project can get underway.

- Waiting for the Data Unit to establish two other priority analytic projects prior to assigning this TRCC project to the consultant.
- Waiting to receive the executed grant agreement in order to be able to start to proceed.

**Progress for period of October 28, 2021 to January 19, 2022 (brief description of progress since last report):**

- This project has not started yet.
- During this reporting period, the Data Unit of the Operations and Safety Bureau met with their on-call analytic consultant to discuss the project. The consultant was asked to provide a scope of work proposal by no later than January 28th.
- The State Highway Safety Office informed us that we were all set to start charging to the project.

**Plans:**

- At the onset of the quarter, we will review the scope of work proposal to be submitted by the consultant and determine if it captures what the project is intended to do and meet with the consultant accordingly.
- During the next reporting period, we will have a project kick-off meeting following which the consultant will work on the Data Acquisition/Processing/Compilation task. We also anticipate that the consultant may also work on the Development of Statistical Models & Identification of Roadway Features.

**Progress for period of January 20, 2022 to April 20, 2022 (brief description of progress since last report):**

- Consultant has started evaluations. Project will last until December 2022, since it started late. Status update to come next week, and update of the integration models is in process. Data needed will be provided to the consultant. A presentation for the TRCC is suggested at the completion of the project.

**Progress for period of April 21, 2022 to July 20, 2022 (brief description of progress since last report):**

The consultant performed the following tasks:

- Met with VTrans to discuss results of crash trees.
- Finalized the list of focus crash types and facility types to be analyzed.
- Developed statistical models to identify risk factors for each focus crash type and facility type pair.
- Developed weighting factors for risk factor implementation.
- Submitted a final memorandum summarizing the selected risk factors and weights.

**Schedule:**

1. Identify the Sites with the Roadway Features
  1. ArcGIS shapefiles of road network displaying levels of risk (November 9, 2022)
2. Countermeasure Development and Prioritization
  - Countermeasures Stakeholder meeting (End of November 2022)
  - Final Excel files & ArcGIS Shapefiles of high-risk sites prioritized for select countermeasure packages (December 9, 2022)
3. Implementation Plan
  - Final memo describing process, results, and implementation plan (December 30, 2022)

**Plans:**

The consultant anticipates accomplishing the following during the next quarter:

- Apply risk factors to network to determine the locations most likely to produce roadway departure crashes and create maps (ArcGIS shapefiles) that reflect levels of risk.
- Develop and submit a draft memorandum summarizing the map results, address feedback from VTrans and submit the final memorandum and maps.
- Develop packages of proposed countermeasures for the focus crash types and facilities identified.
- Coordinate a countermeasure meeting with stakeholders (prepare materials, facilitate the meeting, produce summary notes).
- Work with VTrans to identify preferred countermeasures and develop the prioritization approach.
- Prepare a list of high-risk sites prioritized for specific countermeasure packages and create maps (ArcGIS shapefiles).

- Prepare a technical memorandum describing process, results, and implementation plan

**Progress for period of July 21, 2022 to October 19, 2022 (brief description of progress since last report):**

The consultant performed the following tasks:

- Met with VTrans to discuss results of crash trees.
- Finalized the list of focus crash types and facility types to be analyzed.
- Developed statistical models to identify risk factors for each focus crash type and facility type pair.
- Developed weighting factors for risk factor implementation.
- Submitted a final memorandum summarizing the selected risk factors and weights.

**Schedule:**

Start: October 1, 2021; End: September 30, 2022 (anticipated)

Identify the Sites with the Roadway Features

- ArcGIS shapefiles of road network displaying levels of risk (November 9, 2022)

Countermeasure Development and Prioritization

- Countermeasures Stakeholder meeting (End of November 2022)
- Final Excel files & ArcGIS Shapefiles of high-risk sites prioritized for select countermeasure packages (December 9, 2022)

Implementation Plan

- Final memo describing process, results, and implementation plan (December 30, 2022)

**Plans**

The consultant anticipates accomplishing the following during the next quarter:

- Apply risk factors to network to determine the locations most likely to produce roadway departure crashes and create maps (ArcGIS shapefiles) that reflect levels of risk.
- Develop and submit a draft memorandum summarizing the map results, address feedback from VTrans and submit the final memorandum and maps.
- Develop packages of proposed countermeasures for the focus crash types and facilities identified.
- Coordinate a countermeasure meeting with stakeholders (prepare materials, facilitate the meeting, produce summary notes).
- Work with VTrans to identify preferred countermeasures and develop the prioritization approach.
- Prepare a list of high-risk sites prioritized for specific countermeasure packages and create maps (ArcGIS shapefiles).
- Prepare a technical memorandum describing process, results, and implementation plan.

**Progress for period of October 20, 2022 to January 18, 2023 (brief description of progress since last report):**

The consultant performed the following tasks:

- Applied risk factors to network to determine the locations most likely to produce roadway departure crashes and create maps (ArcGIS shapefiles) that reflect levels of risk. (However, see Problems Section.)
- Developed packages of proposed countermeasures for the focus crash types and facilities identified.
- Coordinated a countermeasure meeting with stakeholders.
- Worked with VTrans to identify preferred countermeasures and develop the prioritization approach.

**Schedule:**

1. Identify the Sites with the Roadway Features
  - ArcGIS shapefiles of road network displaying levels of risk (End February 2023)
2. Countermeasure Development and Prioritization
  - Final Excel files & ArcGIS Shapefiles of high-risk sites prioritized for select countermeasure packages (End March 2023)
3. Implementation Plan
  - Final memo describing process, results, and implementation plan (April 2023)

**Plans:**

The consultant anticipates accomplishing the following during the next quarter:

- Recalculate risk factors (based on local vs state ownership) and determine the locations most likely to produce roadway departure crashes and create updated maps (ArcGIS shapefiles) that reflect levels of risk.
- Submit a final memorandum summarizing the map results.
- Prepare a list of high-risk sites prioritized for specific countermeasure packages and create maps (ArcGIS shapefiles).
- Prepare a technical memorandum describing process, results, and implementation plan.

**Problems:**

Discovered that what had been considered as state roads also included town owned roads (FAS). The main concern was that some of the data used as factors may not have been available for town-maintained roads since the dataset for town-maintained roads was not as complete as for state-owned roads.

**Resolution:** Use the “Ownership” field to distinguish State maintained roads versus “Local”, rerun the analysis for the focus facility/crash types and confirm or update risk factors and update the risk maps with the corrected Ownership class and associated risk factors.



**Progress for period of January 19, 2023 to April 19, 2023 (brief description of progress since last report):**

The consultant performed the following tasks:

- Re-ran models based on local vs state ownership and applied risk factors to network to determine the locations most likely to produce roadway departure crashes).
- Created GIS maps that reflect levels of risk.
- Developed draft packages of proposed countermeasures for the focus crash types and facilities identified.
- Developed the prioritization approach for primary risk sites.

**Schedule:**

Upcoming Milestones:

1. Countermeasure Development and Prioritization
  - Final Excel files & ArcGIS Shapefiles of high-risk sites prioritized for select countermeasure packages (June 2023)
2. Implementation Plan
  - Final memo describing process, results, and implementation plan (July 2023)

**Plans:**

The consultant anticipates accomplishing the following during the next quarter:

- Prepare a list of high-risk sites prioritized for specific countermeasure packages and create maps (ArcGIS shapefiles).
- Prepare a technical memorandum describing process, results, and implementation plan.

***Performance Measures***

See *Section 5.1 Performance Measures* for all related performance measures.

## 7. Traffic Records Data Standards Compliance

### 7.1 Model Inventory of Roadway Elements (MIRE) Compliance

In this section, Vermont has incorporated specific quantifiable and measurable anticipated improvements for the collection of MIRE fundamental data elements.

#### 7.1.1 Mire Data Collection Status

*Which MIRE fundamental data elements are currently being collected and which MIRE fundamental data elements are not being collected? On which functional classes of roads are/are not they being collected?*

All the MIRE FDEs are in process of being developed across the network, as well as additional elements to support safety analysis. VTrans has a listing of the MIRE FDEs with collection status as an inventory of existing data sources that are being created across a series of sections within the Vermont Agency of Transportation. MIRE FDEs are being collected on highways that are functionally class from principal arterial to local roads (FC 1-7), based on FDEs requirements for federal aid highways and surface type. FHWA Office of Safety provided a recent scorecard (3/31/2023) on MIRE FDE progress.

Roadway Segment	90.31%
At-Grade Intersection / Junctions	90.95%
Intersection Leg (Each Approach)	100.00%
Interchange / Ramp	89.09%

The progress for the elements is higher than the scorecard due to gaps in metadata and records where there is an absence of a feature, such as a segment of highway that has not access control. VTrans has provided additional documentation and is also working to fill gaps in the data.

*Which business office(s) in the State DOT collect, receive, and maintain the MIRE fundamental data elements? How are the data stored and managed?*

MIRE fundamental data elements are collected, received, and maintained by several sections and units within the Vermont Agency of Transportation (VTrans), including the following:

- Policy, Planning & Research – Mapping Section
- Asset Management – Data Management Section
- Operations & Safety – Data Analysis Section

The data steward is subject to the core business function and data need of the section, thus the AADT and traffic data is collected by Traffic Research, Mapping maintains the

road centerline, intersections, functional class, and linear reference system, and AM – Data Management maintains HPMS data, which is leveraged for the MIRE fields.

Data is stored in GIS format in ArcSDE (SQL Server) as features or event tables. Current data may not be stored in the MIRE schema and may require translation to meet MIRE requirements. Extract, transform and load (ETL) processes will be developed to create standardized MIRE data tables for the FDEs.

*Who can access the MIRE fundamental data elements for safety analyses, and what steps are necessary to access the data? Are systems planned or already implemented to facilitate access to the data (e.g., online portals)?*

Data is currently open to VTrans staff that has access to GIS tools and much of the data is available through an open data portal. As noted, the data may not be in the exact schema or have domains that match the MIRE requirements and would need to go through an extract, transform, and load (ETL) process to be leveraged by some systems. Systems exist at VTrans to provide open data and more data is being added to this system when needed, with an informal plan to make more data accessible. Many of the datasets, including roadway, functional class, intersections, road width and other data meeting MIRE FDEs is accessible through on-line mapping services. Where possible, VTrans is adding and standardizing data fields to meet the MIRE guidelines and simply the access process.

*Which agency/office/individual/committee(s) have authority and responsible for determining the improvements needed to achieve compliance with the MIRE fundamental data elements requirement?*

The VTrans Office of Highway Safety and the VTrans Mapping Section have authority and responsibility for the development of the MIRE FDEs.

### 7.1.2 Data Collection Methodology

*For the MIRE fundamental data elements that are already being collected:*

- *What methods are being used to collect the MIRE fundamental data elements?*

Annually road centerline data is updated with known changes from municipalities which forms the base of the MIRE FDEs and covers many of the core fields. Traffic data is collected for some higher functional classes on an annual basis, if not more frequently, whereas lesser functional class, such as major collectors and minor collectors may have infrequent updates and local roads may not have any dated collected but may have traffic estimates. The Traffic Research Section needs to provide details on frequency and completeness of the count data.

Road centerline data collection is typically done via use of the GIS and orthophotography and lidar for proper alignments. Some field inventory is performed in cases where questions may arise. VTrans has mapped all public highways to at least 1:5,000 with much of the centerlines

digitized at higher resolutions. Project plans and survey provides detail for construction and paving projects on the federal aid system and information to load into the road width, curve, and other event tables and data layers.

Traffic data collection is typically collected via tube counters or permanent counters at various frequencies.

VTrans needs to define the collection methodology for each element better, but this has not been done due to time and resources.

- *How often do they collect the data?*

Some data is collected annually, and some data is not collected at the current time.

Intersection data for the federal aid system has been collected and work is continuing to collect FDEs for local-to-local road intersections. VTrans is working with the Regional Planning Commissions (RPCs) that are collecting key data elements for intersections on local roads and validating other data elements. AADT is collected on a defined cycle, which needs to be provided by the Traffic Research Section.

- *What Quality Control/Quality Assurance processes are performed before the data is entered into the database.*

The road centerline data goes through a series of quality assurance processes on a nightly basis to ensure correct attribution, topological validity, and mileage assessments. Intersection attributes provided by the RPCs is reviewed before reconciled and posted to the master intersection data. Many datasets go through QA/QC processes on an annual or semi-annual basis prior to publication to the production server. A defined quality control and quality assurance process needs to be defined for each element, but this has not been done at this time.

### 7.1.3 Coordination with Other Agencies

*For MIRE fundamental data elements that are NOT currently being collected:*

- *Who owns the roads where the elements are not being collected (e.g., State, local government agencies, Tribal Governments, Federal Land Management Agencies, etc.)?*

VTrans is working to collect all MIRE FDEs on all public highways, as required and is coordinating with Regional Planning Commissions, who work directly with towns, cities, the gores, and grant within Vermont on the development of intersection elements on local roads. As a plan is formulated, there will be an initiative to move forward in data collection, with coordination with the RPCs and locals as needed to fill any data gaps. Vermont does have federal highways mapped that are owned by several federal agencies and there will need to be coordination to gain MIRE data for these highways. An assessment of FDEs on federal land

highways has not been done to date and elements are not being collected on class 4 town highways, legal trails or private roads.

- *Do the agencies that own those roads collect any of the MIRE fundamental data elements?*

It is uncertain as this time to what extent the other agencies will collect MIRE FDEs at this time and an assessment of this may be done as part of the planning process for the FDEs collection.

- *What mechanisms are needed to share data among those agencies that collect, store, maintain, and use the MIRE fundamental data elements?*

Much of the data used for the MIRE FDEs is shared through the Open Geodata Portal and feature services. There are more datasets that will be provided to federal agencies, RPCs, local municipalities, and others through the Open Geodata Portal. There have been mechanisms for RPCs to be able to provide data updates to VTrans, but this has not been built out for federal agencies or municipalities.

Due to resources, a full plan of who data will be shared with, collected, stored, used, and maintained has not been fully defined or articulated in a defined data sharing document.

#### 7.1.4 Prioritization of MIRE Fundamental Data Elements Collection

*For additional data that needs to be collected to meet the MIRE fundamental data element requirement:*

- *What data elements will be collected in the short (1-3 years), medium (4-6 years), and long (7-9 years) term?*

There are many of the FDEs that already exist on the federal aid system due to HPMS requirements or the existing collection to support other programs within VTrans that have occurred. Much of the effort to be completed in the short term is filling any gaps in the data and building out elements beyond the FDEs, medium term is to develop an ETL process to generate the standardized MIRE FDE schema and data tables, and long term is moving into a data maintenance phase.

Intersection data and other segment data beyond the FDEs may take time to develop and require medium term, and AADT collection and data on the more rural local roads may be a longer-term process. A data acquisition plan needs to be defined as part of the assessment of what data already exists and a gap analysis within VTrans.

- *What collection technologies and/or methodologies are anticipated to be used?*

VTrans has worked with the RPCs on the development of intersection data on local roads. They have leveraged local knowledge, use of roadway imagery applications, discussion with local road commissioners, and field inventory to create the FDEs and other data elements.

This data is fed to VTrans and goes through a review process before posting to the master intersection data layer. Use of project plans, field inventory and other methods are means of keeping the data up to date. VTrans uses GIS technology, and this would provide a technology solution for the MIRE FDEs development and quality assurance processes. VTrans is assessing several commercial data options, including probe data that could augment the data collection, provide data to fill gaps, and provide an increased frequency of data update. Additional technology and methodologies have not been defined.

- *Who is responsible for collecting and maintaining the data?*

VTrans collects and maintains much of the data, but also receives data from the RPCs for local roads.

- *How will it be made available to the State DOT?*

If VTrans collects the data, it would be accessible, if collected by the RPCs or locals, a process will need to be defined for the data exchange. For the intersections on the local roads, VTrans provided the RPCs with an edit environment with links to a version of the data to be updated.

- *What will be the update cycle for the collection of the data?*

This is not currently defined but would be dependent on each element or grouping of elements and subject to the type of system that is being inventoried. Some of the data elements, such as those on the federal aid system are updated on the semi-annual cycle of the road centerline data layer, and others are being updated annually, such as AADT and elements needed for the HPMS submittal. Elements on the local road system have not been assessed for update cycle as of yet.

#### 7.1.5 Costs and Resources for MIRE FDE Data Collection

*What are the estimated costs, staffing, and other resource requirements to collect and maintain the MIRE fundamental data elements?*

Estimates of cost, levels of staffing, or resource requirements have not been defined for collection of the MIRE FDEs. VTrans has worked to collect the FDEs by retooling some workflows, adding targeted projects like the RPC intersection project, and other tasks.

*Who will incur those costs?*

Funding of the collection, storage, and maintenance of the MIRE FDE data has not been fully assessed, but data develop is being included in existing projects and tasks. VTrans incurs the cost and has been building these elements through tasks within the SPR work program and the Transportation Planning Initiative with the RPCs.

### 7.2 Model Minimum Uniform Crash Criteria (MMUCC) Compliance

Vermont underwent a MMUCC V5 compliance review of the crash form that resulted in the following compliance scores:

Data Structure Name	System	Percent
Vermont Crash Database	Crash	52.82 %
Vermont Crash Database	Dynamic Data Elements	0 %
Vermont Crash Database	Fatal Section	25.13 %
Vermont Crash Database	Large Vehicles & Hazardous Materials Section	23.32 %
Vermont Crash Database	Non-Motorist Section	15.3 %
Vermont Crash Database	Person	39.76 %
Vermont Crash Database	Roadway	0 %
Vermont Crash Database	Vehicle	39.01 %

Vermont is currently in compliance with the definition for “Suspected Serious Injury (A)”. Compliance includes the following:

- The State is collecting and accurately aggregating MMUCC v4 attribute “Suspected Serious Injury (A)”.
- The State’s crash database, data dictionary, and crash report user manual employs the verbatim terminology and definitions for this attribute from the MMUCC v4 standard.
- The State’s crash form employs the verbatim MMUCC v4 “Suspected Serious Injury (A)” attribute.
- The State has verified that the seven serious injury types covered by the attribute are not included in the other attributes listed in the State’s injury status data elements.

### 7.3 National Emergency Medical Services Information System (NEMSIS) Compliance

- Vermont’s EMS run reporting system (SIREN) is NEMSIS V3.4 compliant.
- 97% +/- 2% of EMS Transport and Non-Transport First Response Agencies report into the SIREN EMS system.

## 8. Federal Traffic Records Data System Coordination

The State of Vermont participates and contributes to several Federal Traffic Records Data Systems as detailed in the paragraphs below.

### 8.1 NHTSA Fatality Analysis Reporting System (FARS)

The Vermont Department of Public Safety participates and contributes to NHTSA's Fatality Analysis Reporting System. FARS is a nationwide census providing NHTSA, Congress, and the American public yearly data regarding fatal injuries suffered in motor vehicle traffic crashes.

### 8.2 NHTSA Crash Report Sampling System (CRSS)

The Vermont AOT and the Vermont Department of Public Safety participates and contributes to National Highway Traffic Safety Administration's (NHTSA) CRSS. The CRSS is a data system that samples police reported crashes involving all types of motor vehicles, pedestrians, and cyclists, ranging from property-damage-only crashes to those that result in fatalities. CRSS is used to estimate the overall crash picture, identify highway safety problem areas, measure trends, drive consumer information initiatives, and form the basis for cost and benefit analyses of highway safety initiatives and regulations.

### 8.3 Federal Motor Carrier Safety Administration SAFETYNET

The Vermont AOT and the Department of Public Safety participate and contribute to the FMCSA SAFETYNET system. The Federal Motor Carrier Safety Administration's (FMCSA) SAFETYNET system is designed to manage and provide appropriate access for authorized users to crash data, roadside inspection history and data, and motor carrier and shipper identification information to support FMCSA's core mission to reduce commercial motor vehicle-related crashes and fatalities.

### 8.4 NHTSA National Emergency Medical Services Information System (NEMSIS)

The Vermont Department of Health participates and contributes to the National Emergency Medical Services Information System (NEMSIS) system. NEMSIS is the national database that is used to store EMS data from the U.S. States and Territories. NEMSIS is a universal standard for how patient care information resulting from prehospital EMS activations is collected. NEMSIS is a collaborative system to improve patient care through the standardization, aggregation, and utilization of point of care EMS data at a local, state, and national level.

The NEMSIS program is funded and managed by the NHTSA Office of EMS. Currently, NHTSA contracts with the University of Utah to manage the NEMSIS Technical Assistance Center (TAC). The TAC provides assistance to state, territory, and local EMS agencies that submit data to the National EMS Database. Its team also works closely with commercial software vendors to ensure compliance with the NEMSIS standard.



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