KTRAC - Present FFY2026 Grant Proposals

April 30, 2025

Meeting via Microsoft Teams

Agenda

- Update on AASHTOWare Safety
- FFY2026 Proposals
  - Present
  - Question and Answer
- Decide/Vote

AASHTOWare Safety

- Implementation Starts in May
- Sharing funding with:
  - Highway Safety Improvement Program (KYTC DOH Div of Traffic Operations)
  - Quality Assurance (KYTC DOH Div of Highway Design)

Layout of the Slides – FFY2026 Proposals

- Automatically Assigned Project Identifier – will change if awarded
- Title of the Proposal
- Description for the Proposal
  - Added Principal Investigator
  - Added System
  - Added Performance Attribute
- Goals listed for the proposal

NON-LE-2026-Universi-0048
Upgrading the Kentucky Trauma Data Bank for Actionable Contents - Description

- Principal Investigator: Julia Costich
- Kentucky needs timelier and more complete data on motor vehicle trauma to identify optimal strategies for mitigating the burden these injuries impose on the well-being and finances of Kentucky residents. The Kentucky Trauma Advisory Council and its member hospitals have made significant progress towards new data management partnerships that have the potential to give state policymakers more actionable data than our legacy system could provide.

NON-LE-2026-Universi-0048
Upgrading the Kentucky Trauma Data Bank for Actionable Contents - Goals

- To use the newly upgraded trauma data management system to create timely and actionable information for policymakers and stakeholders.
- To identify priority topics for mobilizing timely and actionable data in support of motor vehicle injury prevention and mitigation
- To support existing trauma system members serving rural areas in maintaining their capacity to continue trauma verification status.

NON-LE-2026-Universi-0064 - FY26 Data Linkage - Description

- Principal Investigator: Rob Kluger
- This is the FY26 version of a projected aimed to link data from key transportation safety sources. The primary data to be linked include motor vehicle crashes, EMS patient care reports, and statewide trauma registry records. This process uses a method previously developed by the research team. We will be adding several components for this year in addition to the linkage, focused on the data quality and utilization of emerging AI models for validation.

NON-LE-2026-Universi-0064 - FY26 Data Linkage - Goals

- To link the latest crash, EMS, and trauma center data across 120 Counties in Kentucky. This data is aggregated by all users and VRUs (continuing goal).
- To quantify the Bias and Data Completeness in the linked dataset across the last 5 years.
- To assess the validity of injury data using indicators across datasets.
- To investigate relationships between Lights and Sirens, EMS reliability, and risk.

NON-LE-2026-KBEMS-0099 - Description

- Principal Investigator: Douglas Taylor
- Traffic Records Data System: Injury Surveillance
- Performance Attribute: Accessibility

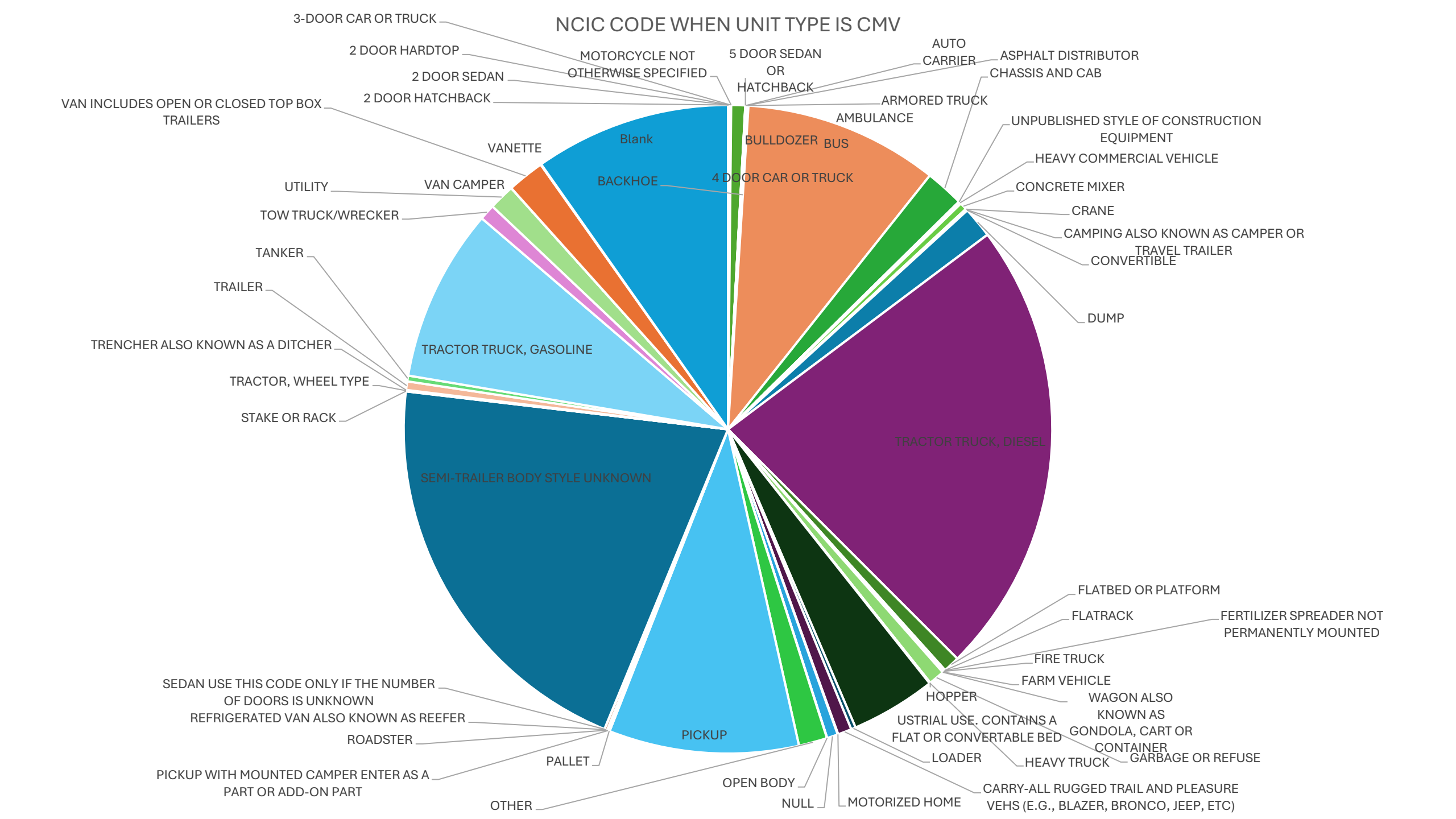
- The Kentucky Emergency Medical Services Information System (KEMSIS) is the statewide initiative encompassing
- the certification and licensing of Emergency Medical Services (EMS) agencies, clinicians, and Training or
- Educational Institutions (TEIs), and the architecture, collection, analysis, and integration of statewide EMS agency and
- patient care data, to include the Kentucky State Ambulance Reporting System (KStARS), administered by the
- Kentucky Board of Emergency Medical Services (KBEMS).

NON-LE-2026-KBEMS-0099 - Goals

- To work toward acquisition of the ImageTrend Data Mart module, with a target date of November 1st, 2025.
- To work toward acquisition of a local SQL server and the appropriate software tools needed to analyze, visualize, and share the EMS data, with a target date of November 1st, 2025.

NON-LE-2026-UKRF-0093
Data QC of Vehicle Attributes Using VIN

- Principal Investigator: Tony Fields
- Traffic Records Data System: Crash
- Performance Attribute: Accessibility, Accuracy, Completeness, Uniformity
- This project will assess and improve the accuracy and completeness of the crash and vehicle databases through the systematic integration of vehicle information gleaned from the vehicle identification number (VIN). The team proposes to build an exhaustive database of vehicle attributes by using custom-built software tools to decode the VIN of each vehicle in the crash database for the last 10 years and to update this database as each new year of crash data becomes available. The attributes from the vehicle manufacturer will be compared to those recorded by the reporting officer at the crash scene to assess errors in the unit information recorded in crash reports.


NCIC CODE WHEN UNIT TYPE IS CMV
3-DOOR CAR OR TRUCK
2 DOOR HARDTOP
2 DOOR SEDAN
2 DOOR HATCHBACK
VAN INCLUDES OPEN OR CLOSED TOP BOX TRAILERS
MOTORCYCLE NOT OTHERWISE SPECIFIED
5 DOOR SEDAN OR HATCHBACK
AUTO CARRIER
ASPHALT DISTRIBUTOR
CHASSIS AND CAB
ARMORED TRUCK
AMBULANCE
UNPUBLISHED STYLE OF CONSTRUCTION EQUIPMENT
HEAVY COMMERCIAL VEHICLE
CONCRETE MIXER
CRANE
CAMPING ALSO KNOWN AS CAMPER OR TRAVEL TRAILER
CONVERTIBLE
DUMP
Blank
BULLDOZER
BUS
4 DOOR CAR OR TRUCK
BACKHOE
VANETTE
VAN CAMPER
UTILITY
TOW TRUCK/WRECKER
TANKER
TRAILER
TRENCHER ALSO KNOWN AS A DITCHER
TRACTOR, WHEEL TYPE
STAKE OR RACK
TRACTOR TRUCK, GASOLINE
TRACTOR TRUCK, DIESEL
SEMI-TRAILER BODY STYLE UNKNOWN
FLATBED OR PLATFORM
FLATRACK
FERTILIZER SPREADER NOT PERMANENTLY MOUNTED
FIRE TRUCK
FARM VEHICLE
WAGON ALSO KNOWN AS GONDOLA, CART OR CONTAINER
HOPPER
USTRIAL USE. CONTAINS A FLAT OR CONVERTABLE BED
GARBAGE OR REFUSE
HEAVY TRUCK
LOADER
CARRY-ALL RUGGED TRAIL AND PLEASURE VEHS (E.G., BLAZER, BRONCO, JEEP, ETC)
MOTORIZED HOME
NULL
OPEN BODY
OTHER
PALLET
PICKUP
SEDAN USE THIS CODE ONLY IF THE NUMBER OF DOORS IS UNKNOWN
REFRIGERATED VAN ALSO KNOWN AS REEFER
ROADSTER
PICKUP WITH MOUNTED CAMPER ENTER AS A PART OR ADD-ON PART

Outcomes

Inputs

The Team:
Tony Fields
Caitlin Northcutt
Nathaniel Swallom

Partners:
KOHS
KIPRC
KSP

Data:
Unit data from crash report
Unit data from vehicle manufacturer

Actions

Develop custom software tool to link VIN-based unit data to crash units

Compare data elements across sources

Quantify disagreement between VIN and reported unit attribution

Outputs

Merged dataset 2015 - 2024

Presentations

Reports

Short-term

Percentage of discordance between VIN and reported unit attribution

Patterns of Discordance

Predictors of Discordance

Intermediate

Law enforcement training

Research guidance

Long-term

Improvement of development, implementation and evaluation of safety countermeasures

Semi-automated unit-based crash reporting

NON-LE-2026-UKRF-0093
Data QC of Vehicle Attributes Using VIN

- To expand the capabilities of researchers and safety decision makers who use vehicle-level crash data to make safety improvements
- To supplement statewide vehicle-level crash data by completing missing fields and providing corrected information where errors are found
- To create a methodology to decode and link VIN-based vehicle data to the statewide crash dataset on an annual basis
- To assess the current crash database and identify patterns of error including those correlated with errors in other parts of the crash database
- To maintain a secure, linked database available for use by safety practitioners

NON-LE-2026-UKRF-0079
Assessment of Kentucky Traffic Records Data Quality FY26

- Principal Investigator: Reg Souleyrette
- This project will continue the regular assessment of the quality of Kentucky safety data (traffic records). It will also monitor implementation of the recommendations of the 2022 NHTSA Traffic Records Assessment.
- The benefit of this project is to coordinate continuous improvement of the quality of traffic records in Kentucky, resulting in improved analytical capabilities, selection of countermeasures and ultimately safer roads in the state.
- Traffic Records Data Systems: All
- Performance Attributes: All

NON-LE-2026-UKRF-0079
Assessment of Kentucky Traffic Records Data Quality FY26 – Goals and Objectives

- To continue coordination with the appropriate database liaisons.
- To review and update the performance metrics developed for each database.
- To review questions in the TRA assessment tool for opportunities to improve data quality, in support of the larger NHTSA recommendations from the 2022 TRA.
- To facilitate discussions among appropriate liaisons to improve integration between databases.
- To facilitate discussions with database liaisons to identify projects and funding to meet the goals.
- To monitor and document progress toward fulfilling the goals and timetables in the strategic plan.
- To document any necessary changes in the goals, objectives and strategies of the strategic plan or reasons for delays in meeting the goals and/or completing the projects underway.
- To develop a final report to address each database, with quantitative measures (where possible), for the attributes of each database, along with any projects/strategies identified for improvement.

NON-LE-2026-UKRF-0079
Assessment of Kentucky Traffic Records Data Quality FY26

- What is to be delivered?
  - An annual report…
    - addressing each database with quantitative measures for attributes along with any projects/strategies identified for improvement.
    - Including description and supporting documentation of work completed to reach the goals laid out in the Traffic Records Strategic Plan.
    - Including changes in goals and projects with the reasons for any changes or delays.
    - Documenting quarterly interactions with liaisons or analysis using third party information.
- Who/how will implement?
  - Based on the annual report and updated Traffic Records Strategic Plan and timetable, data stewards are responsible for implementation of recommendations

NON-LE-2026-UKRF-0081
Kentucky Traffic Safety Data Service - KTSDS FY26

- Principal Investigator: Alex Wang and Reg Souleyrette
- Traffic Records Data Systems: Citation/Adjudication, Crash, Driver, Injury Surveillance, Roadway, Vehicle
- Performance Attributes: Accessibility, Integration
- This project is a continuation of the popular Kentucky Traffic and Safety Data Service (KTSDS). The Kentucky Transportation Center (KTC) has considerable resources and expertise for identifying and addressing safety concerns using a variety of traffic records databases and tools. The aim of this study is to increase access to and integration of data from the six traffic record systems and especially to increase access to expert resources with a more in-depth knowledge of the databases. Accordingly, KTC will continue to market and host a free traffic data service to enable users to "access an expert" to conduct small studies and get answers to traffic safety problems which would ordinarily be out of reach due to a) difficulty and expense of contracting, or b) lack of awareness that such expert resources exist and are available to them.

NON-LE-2026-UKRF-0081
Kentucky Traffic Safety Data Service - KTSDS FY26 – Goals and Objectives

- Market KTSDS by contacting database liaisons, researchers and safety planners and analysts in Kentucky
- Receive and record data and data analysis requests
- Work with requesters to understand and refine requests and to identify appropriate sources, organizations and/or staff to complete the requests.
- Conduct small studies or data assembly in response to requests.
- Improve and/or update KTSDS web site

NON-LE-2026-UKRF-0081
Kentucky Traffic Safety Data Service - KTSDS FY26

- What is to be delivered?
  - Provide 20-25 small studies of traffic safety to end users by September 30, 2026.
  - Promote KTSDS in at least three or more state and/or national level online or offline transportation events (conferences, workshops, public hearings) by September 30, 2026.
- Who/how will implement?
  - KTC team will implement the project

NON-LE-2026-UKRF-0082
Kentucky from Above for Traffic Records Improvement

- Principal Investigator: Reg Souleyrette and Alex Wang
- Traffic Records Data System: Roadway
- Performance Attribute: Completeness
- Application of KY from Above aerial LiDAR to improve completeness of Kentucky traffic records (road data).

NON-LE-2026-UKRF-0082
Kentucky from Above for Traffic Records Improvement – Goals and Objectives

- To improve the completeness of Kentucky Traffic Records Data by developing a method to measure road superelevation using Kentucky from Above LiDAR data.
- To improve the completeness of Kentucky Traffic Records Data by developing a method to measure roadside slopes using Kentucky from Above LiDAR data
- To improve the completeness of Kentucky Traffic Records Data by developing a method to measure pavement slopes to assure drainage to reduce the possibility of ponding/hydroplaning.

NON-LE-2026-UKRF-0082
Kentucky from Above for Traffic Records Improvement

- What is to be delivered?

1. Measures of road superelevation in 12 sites (one in each KYTC district) using Kentucky from Above LiDAR data. Ground truth measurements of road superelevation at the same sites. Comparison of KfA data to ground truth to establish accuracy.
2. Measures of roadside slopes at 12 sites (one in each KYTC district) using Kentucky from Above LiDAR data. Ground truth measurements of roadside slopes at the same sites. Comparison of KfA data to ground truth to establish accuracy.
3. Measures of pavement slopes at 12 sites (one in each KYTC district) using Kentucky from Above LiDAR data. Ground truth measurements of pavement slopes at the same sites. Comparison of KfA data to ground truth to establish accuracy.
4. A report describing the methodology and cost estimates for statewide implementation.

- Who/how will implement?
  - KYTC
    - Division of Planning for consideration in supplementing HIS database with statewide implementation
    - Office of Design for consideration in use for safer highway design
    - Division of Maintenance for consideration in improved maintenance or paving to promote safety

NON-LE-2026-UKRF-0084
Generating Network-Wide Pedestrian and Bicycle Traffic Volume Data

- Principal Investigator: Xu Zhang
- Traffic Records Data System: Roadway
- Performance Attribute: Accessibility, Completeness
- This project aims to provide network-wide pedestrian and bicycle Average Daily Traffic (ADT) data for different areas in Kentucky. The team will collect observed pedestrian and bicycle counts from both local agencies and the Kentucky Transportation Cabinet (KYTC). The team will also extract large-scale pedestrian and bicycle volume data from Streetlight and assess the data's quality. The team will then train and deploy machine learning models to provide ADT estimates on roadways lacking pedestrian and bicycle volume data. The project will improve the completeness, accuracy, and accessibility of pedestrian and bicycle data as part of the roadway database.

NON-LE-2026-UKRF-0084
Generating Network-Wide Pedestrian and Bicycle Traffic Volume Data – Goals and Objectives

- Compile a database of observed pedestrian and bicycle counts from local agencies and the KYTC;
- Extract Streetlight's statewide pedestrian and bicycle data and evaluate its quality (using one year of data);
- Provide pedestrian and bicycle ADT estimates at locations without physical counters, using calibrated machine learning models; Calibrate the models using all available counts, statewide
- Disseminate the resulting network-wide pedestrian and bicycle ADT data through an open online portal so planners and engineers can easily access the data for active transportation planning and safety analysis applications.

NON-LE-2026-UKRF-0084
Generating Network-Wide Pedestrian and Bicycle Traffic Volume Data

- What is to be delivered?
  - Online portal
  - Technical memo on methods used
  - Data used in project and resulting estimates
- Who/how will implement?
  - KYTC Planning Division, Bike-Ped coordinator for use in promoting safe systems for bicyclist and pedestrians
  - KYTC Planning Division, for possible incorporation of estimates into the HIS data structure

NON-LE-2026-UKRF-0089
AI Data Anomaly Search

- Principal Investigator: Paul Ross
- Traffic Records Data System: Crash
- Performance Attribute: Accuracy, Uniformity
- Data anomalies are deviations or irregularities in a dataset that does not conform to an expected pattern or behavior. Anomalies may represent infrequent events or unexpected patterns, but anomalies often suggest errors in a dataset.
- This project aims to improve crash data utilizing AI to detect data anomalies. Machine learning techniques can be used to identify patterns in data then detect outliers in datasets that deviate from normal or expected behavior.
- To identify one or more AI tools that may be used to identify data anomalies in crash data.

NON-LE-2026-UKRF-0089
AI Data Anomaly Search

Measurement:

Specific – We will identify either a commercially viable or open-source AI tool which will be capable of reading crash data and identifying anomalies.

Measurable – This will be measured by running the tool on one year of crash data and then manually evaluating the findings to see if anomalies identified by the tool are in fact present.

Achievable – Depending on what we identify, we may run several tools and compare the output of these tools. This is achievable in a secure environment as we expect to only run things locally/offline.

Relevant – The broader objective of a 405 project is data quality, which makes finding anomalies which may previously have been missed incredibly relevant.

Time-bound – The timeframe for completion will be one year as is typical for a 405 project and the timeframe of examined data shall be at least one year of data minimum with additional analysis over a total of five recent years of data possible depending on limitations and initial findings.

NON-LE-2026-UKRF-0094
Improving accessibility of AADT data for safety analysis

- Principal Investigator: Eric Green and Mei Chen
- Traffic Records Data System: Roadway
- Performance Attribute: Accessibility
- This research aims to develop tools and methodologies to improve the accessibility and usability of AADT data for all public roads, with a particular emphasis on local, rural, and off-system roads.

NON-LE-2026-UKRF-0094
Improving accessibility of AADT data for safety analysis

- Design and implement methodologies to estimate AADT values for roads with limited or no traffic counts.
- Validate the accuracy and reliability of these estimates through field data and statistical analyses.
- Create user-friendly interfaces and workflows to facilitate the integration of AADT data into safety analysis processes for state and local agencies.

⇒Deliverables: AADT estimates; Online map; Data download

⇒Target users: Safety analysts and planners @state and local transportation authorities

NON-LE-2026-UKRF-0091
Using Equivalent Rear-End Crashes to Prioritize Intersections Improvements

- Principal Investigator: Eric Green
- Traffic Records Data System: Roadway, Crash
- Performance Attribute: Integration, Completeness (

Project Description

- The Safe System approach focuses on fatal and serious injury crashes (KA)
- The speed of the vehicles and the type of crash can help predict the likelihood of a KA crash
- Equivalent PDO (EPDO)
  - Normalizes all crashes to the quantity of a PDO crash (O)
  - E.g., a K crash will be converted to an equivalent number of O crashes such that more severe crashes are weighted more heavily than less severe crashes
- A similar technique can be applied using crash type and speed to emphasize the likelihood of a severe crash
- The least likely crash type and speed combination can be used as the base unit for crash counts
- Equivalent rear-end crashes (ERC) instead of EPDO

NON-LE-2026-UKRF-0091
Using Equivalent Rear-End Crashes to Prioritize Intersections Improvements

- The ERC counts will be integrated with AADT counts and estimates to develop SPFs for all public road intersections
  - Kentucky has an existing intersection database.
- This process will create a safety score (EEC) for all intersections in the state based on ERC
  - ERC-based SPFs will be developed to generate EECs that can be sorted creating a priority list
  - Unlike EPDO, this ERC data will be based on the potential for severe injuries.
- Progress will be measured by the number of identified intersections shared with KY's HSIP group. The goal is to calculate a safety score for all intersections

NON-LE-2026-UKRF-0091
Using Equivalent Rear-End Crashes to Prioritize Intersections Improvements

- The process will likely be integrated into the annual work KTC does for HSIP.
- Results will also be shared with local governments, MPOs, and police agencies
  - Intersections with the highest EECs will have the highest likelihood of having the most severe crashes.
- It may also be considered during the next SHIFT cycle.

NON-LE-2026-UKRF-0090
Integrating Citation Data with SHSP 2025-29

- Principal Investigator: Ben Blandford
- Traffic Records Data System: Citation/Crash/Roadway
- Performance Attributes: Number of citation records successfully integrated with roadway data for the years 2023-24. Percentage of citation records successfully integrated with crash data based upon the nine newly established SHSP Emphasis Areas.
- This project will continue efforts to acquire and integrate Kentucky citation data into roadway and crash data for usage in safety planning and analyses. The Kentucky Transportation Center previously acquired Kentucky citation data for the years 2018-2022, which included over 1.6 million records. Analysis of this led to an initial integration and classification of citation records to match driving behaviors consistent with Kentucky's 2020-2024 *Strategic Highway Safety Plan* (SHSP). Kentucky's SHSP was updated in 2025 to include nine Emphasis Areas for improving highway safety. This project will improve citation data integration by acquiring updated data for 2023-2024 and reclassifying all citation data to match the newly established SHSP Emphasis Areas.

NON-LE-2026-UKRF-0090
Integrating Citation Data with SHSP 2025-29

Integrating citation data with roadway and crash data provides a more complete and powerful picture of traffic safety and driver behavior. Successful integration of citation data with roadway and crash data can be implemented to promote:

1. Enhanced Crash Analysis
2. Targeted Roadway Improvements
3. Better Law Enforcement Strategy
4. Improved Policy & Education Programs

Strategies and Activities:

1. Acquire citation data for years 2023-2024.
2. Update classification of citation data to reflect SHSP 2025 Emphasis Areas.
3. Identify longitudinal trends in citation data across all available years (from 2018-2024).
4. Analyze longitudinal trends alongside, and in comparison to, crash and roadway data for SHSP Emphasis Areas.
5. Examine trends within the context of COVID-19 pandemic effects on highway safety.
6. Identify locations/opportunities where increased citation issuance could promote safer driving and prevent future crashes.

FFY2026 Proposals

- Any concerns?
- Work on tweaks potentially to goals and activities with applicant

FFY2025 Monitoring Visits

- Will reach out to schedule
- Aim for May/June

Next Meeting

- Updates from FFY2025 grantees
- Aim for June/July