

COVERLAB Analytics

Data Visualization Award Application 2013 Traffic Records Forum

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Introduction

The operational mission of North Carolina's Motor Carrier Enforcement (MCE) program is to reduce commercial vehicle crashes and protect federally funded road and bridge infrastructure from damage from overweight vehicles.

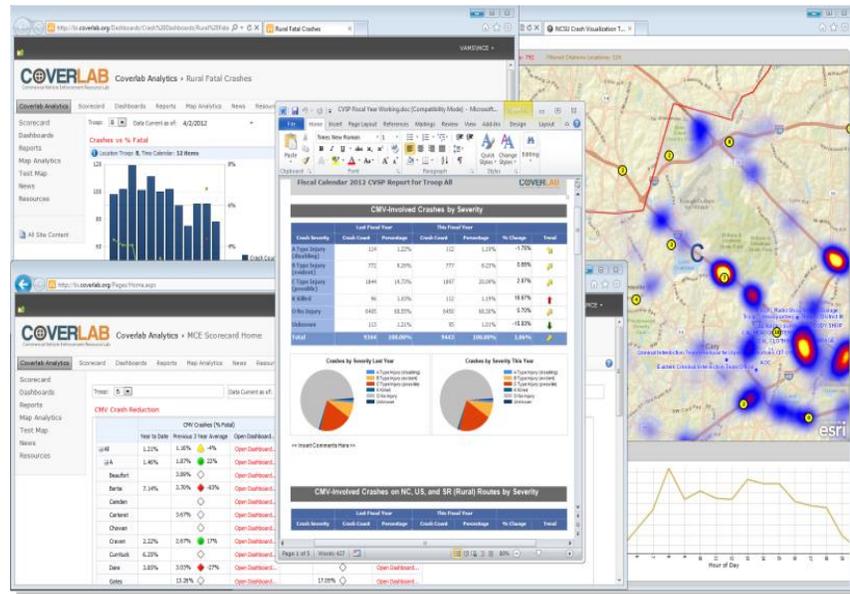
Each year, as part of the State's FMCSA and FHWA funded safety and weight programs, measurable performance goals and objectives are established as well as the specific performance-based strategies carried out in support of these goals and objectives. These strategies, in turn, drive operational planning of MCE enforcement activities in the areas of driver and vehicle inspections, CMV crash reduction, traffic enforcement operations, and weight enforcement.

To assist in accomplishing these goals, NC State University's Institute for Transportation Research and Education ([ITRE](#)), in partnership with the [North Carolina State Highway Patrol](#)'s (NCSHP) [MCE](#) unit has developed the **Commercial Vehicle Enforcement Resource LAB** (www.coverlab.org). COVERLAB staff provides state-level decision support and analytic services to commercial motor vehicle (CMV) programs to help improve enforcement planning effectiveness, program development, and system performance.

What is COVERLAB Analytics?

COVERLAB Analytics is a data visualization decision support system that helps the Motor Carrier Enforcement (MCE) section of the North Carolina State Highway Patrol (NCSHP) improve its tactical enforcement planning for reducing truck-involved fatal crashes and protecting road/bridge infrastructure from heavy truck damage.

COVERLAB Analytics provides MCE supervisors with online scorecards to track performance for meeting enforcement goals, dashboards for in-depth trend and comparison analysis, dynamic reports to streamline and simplify reporting requirements, and map analytics to prioritize times and locations for prioritized enforcement.



Geospatial analytics allows users to easily filter and map CMV crashes, inspections, and citations by location, time, contributing circumstance and many others. Users can visualize patterns and trends with interactive graphs and tables that are linked to the filtered map results. The goal is to visualize relationships between existing enforcement activities and areas where safety and infrastructure preservation concerns are the greatest.

What is the Need?

Although FMCSA and FHWA requires states' to come up with goals and strategies for how they are going to reduce truck crashes and protect infrastructure, the tools they provide are tailored to the broad state level and therefore are not sufficient for states to generate effective data-driven, troop-level enforcement strategies.

North Carolina's approach has been to drive operational enforcement goals and objectives down to the individual 'troop' level, and as such, to develop intelligent strategies for troop supervisors to use local data to develop troop-specific enforcement plans.

This troop-level planning approach is critical to flexible and effective enforcement planning. Each troop is uniquely different and as such, demands different strategies for maximizing resource effectiveness.

How Does it Work?

COVERLAB staff request CMV crash, citation, inspection and roadway data from NCDOT, NCDMV and NCSHP. These data are geo-located, ingested into a data warehouse and exposed through interactive online web services. MCE users log in to COVERLAB Analytics thru the coverlab.org gateway.

COVERLAB staff train the Patrol how to effectively use COVERLAB decision support technologies. Likewise, COVERLAB staff work closely with each Troop's operational planning supervisors to translate field operations knowledge to improve COVERLAB Analytics.

How does COVERLAB Analytics Inform, Educate and Support Decision Makers and Safety Advocates?

Although COVERLAB Analytics was developed for CMV operational enforcement planning, the benefits of this data visualization tool for non-enforcement decision makers are becoming increasingly evident.

- MCE staff use COVERLAB Analytics to outreach to municipalities for increasing CMV safety awareness
- Provides the only online map for North Carolina truck crashes from 2001-present
- Identifies gaps where FMCSA reporting requirements do not align with state crash forms
- Provides a means to identify locations and types of crashes where NCSHP can work with NCDOT to initiate countermeasures

The larger vision of this project is to link the three safety stakeholders NCDOT (Engineering), NC GHSP (Education) and NCSHP (Enforcement) for performance measure tracking and alignment with the Strategic Highway Safety Plan.

North Carolina's Governor's Highway Safety Program (Education) has funded the expansion of COVERLAB Analytics to extend to the 'traditional' non-motor carrier side of the Patrol as well as for NC GHSP. The first part of this project will be to align NC GHSP highway safety plan performance measures with NCSHP's, then provide a scorecard and reporting components for both GHSP and NCHSP. Expected completion of the first phase of this project is June 2014.

The NCDOT Traffic Safety Unit (Engineering) has also expressed interest in COVERLAB Analytics. ITRE is an active participating member of NC Traffic Records Coordinating Committee and seeks to solicit feedback from NHTSA, FMCSA and FHWA state representatives for improving the system.