



# COVERLAB

May 18, 2022



**COVERLAB**

Commercial Vehicle Enforcement Resource Lab

# coverlab.org

☎ 1-919-515-8587 ✉ help@coverlab.org 👤 COVERLAB Analytics Login



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## IMPROVING COMMERCIAL VEHICLE ENFORCEMENT EFFECTIVENESS

COVERLAB helps commercial vehicle enforcement programs increase operational effectiveness through data driven analytics, program development assistance, and applied research.



**itre.ncsu.edu**



# ITRE Staff



**50 staff**



**25 affiliate  
faculty**



**100  
students**

# COVERLAB Staff



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# Partnership



# Commercial Vehicle Enforcement





# The Programs

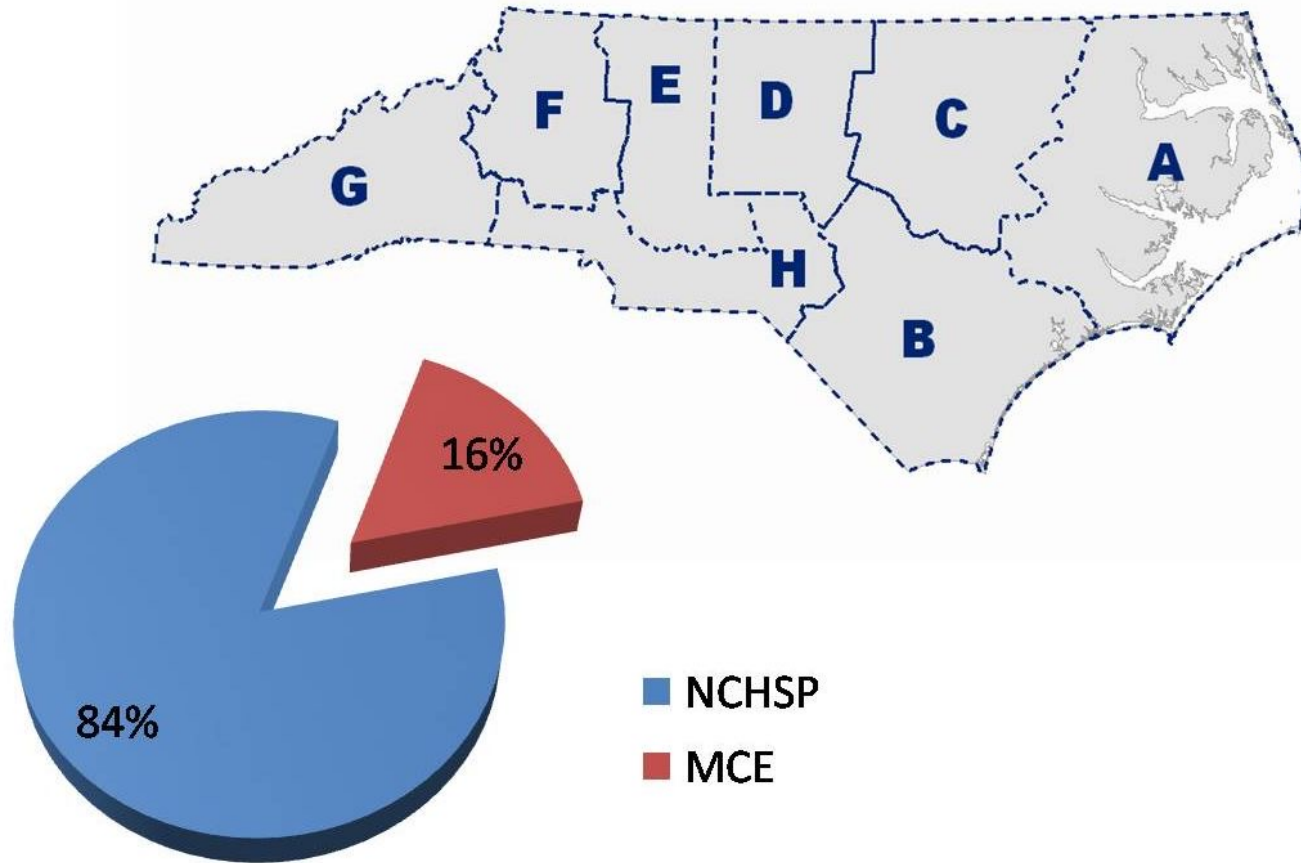
## CMV Safety



## Infrastructure Protection



# Large Geographic Area



# Support Framework

- 1. Operational Planning***
- 2. Program Development***
- 3. Technical Assistance***

# What Do We Do?

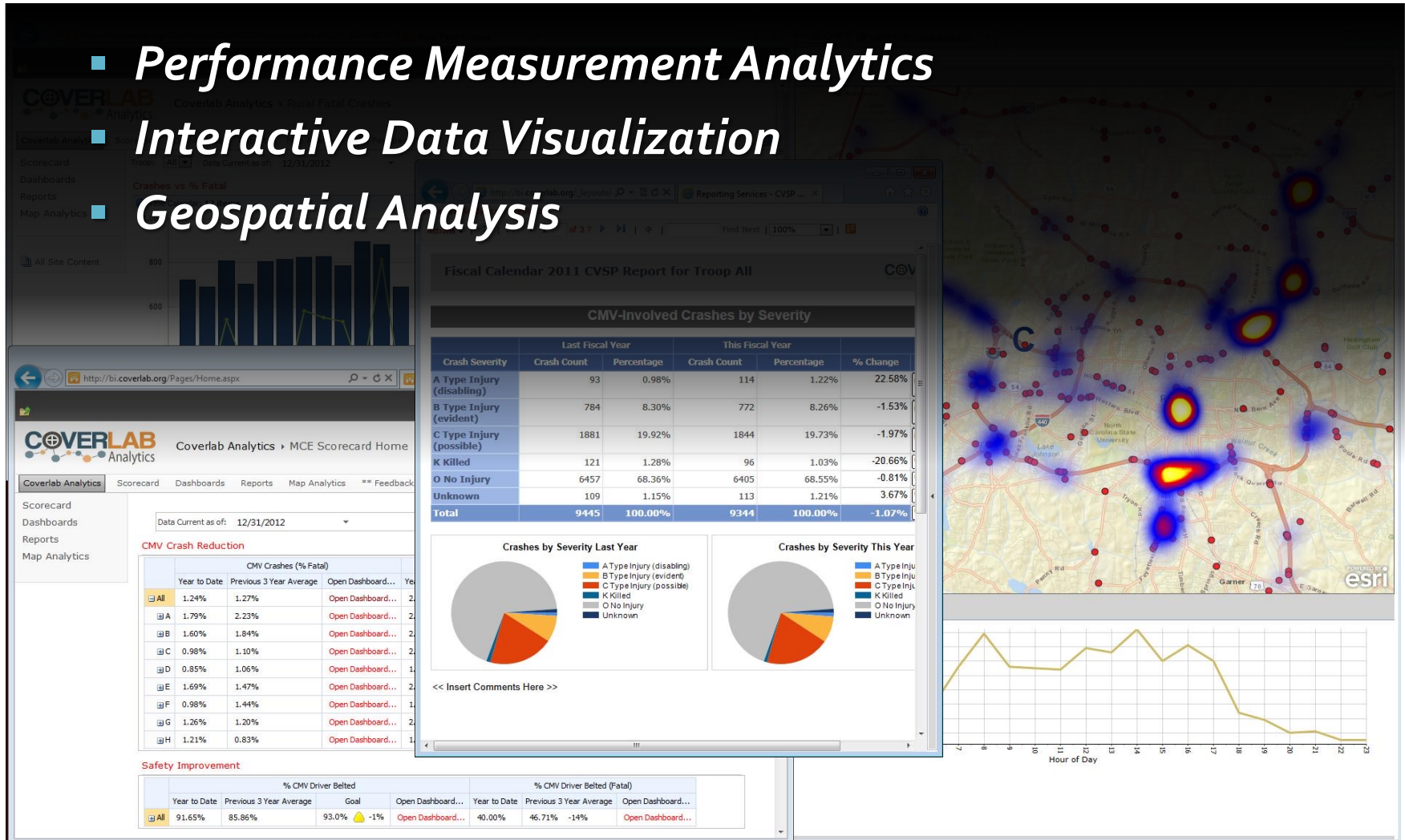
- *Decision Management Services*
- *Operational Planning Support*
- *Research, Education and Training*

**COVERLAB**

Commercial Vehicle Enforcement Resource Lab

# Emphasis Areas

- Performance Measurement Analytics
- Interactive Data Visualization
- Geospatial Analysis



# Our Services

- *Decision Support Analytics*
- *Resource Allocation Models*
- *Quick-Response Requests*
- *Grant Writing Assistance*
- *Geospatial Services*
- *ITD Program Assistance*
- *Education / Training*
- *CMV Research*

# **Our Approach**

# Performance Based Grants





# Troop Level



# Business Units

**Corporate  
HQ**



**Business Units**



**CVE  
HQ**



**Field Offices**



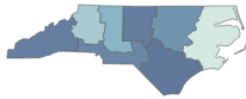
# Outcomes Propagate Up



# Data-Informed Planning



# COVERLAB ANALYTICS



**40,232**  
INSPECTIONS

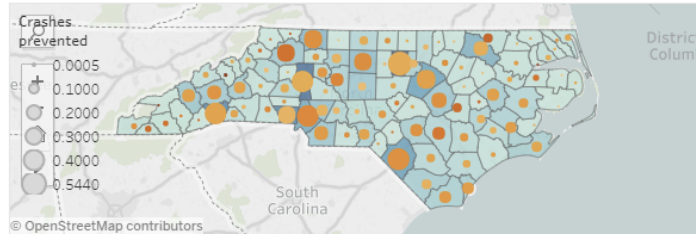
**7,750**  
OOS INSPECTIONS

**19.26%**  
OOS RATE

**0.21**  
CRASHES PREVENTED  
PER 1000 INSPECTIONS

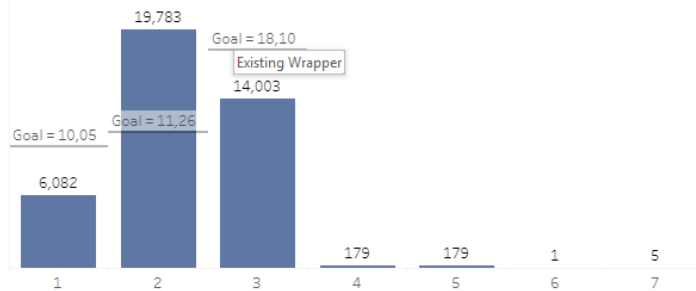
**8.37**  
CRASHES PREVENTED

## Inspections compared to Crashes Prevented



Crashes prevented per 1000 Inspections: 0.0209 to 0.7481  
Inspections: 3 to 3,159

## Level of Inspection



## Crashes Prevented for each Violation

	Crashes prevent..	Violations	Crashes Prev..
Inoperative turn signal	0.0001	13,293	1.24
Operating a CMV without periodic inspe..	0.0002	4,924	0.76
Operating a CMV without proof of a peri..	0.0002	4,924	0.76
Inoperable required lamp	0.0001	3,776	0.31
No medical certificate in driver's posses..	0.0001	824	0.12
No medical certificate on driver's posse..	0.0001	824	0.12
Driver failing to retain previous 7 days l..	0.0001	952	0.12
Driver failing to retain previous 7 days lo..	0.0001	952	0.12
Operating a CMV while ill or fatigued	0.0057	20	0.11
Operating a CMV while ill/fatigued	0.0057	20	0.11
Stop lamp violations	0.0001	1,154	0.11
Flat tire or fabric exposed	0.0001	699	0.10
Tire-other tread depth less than 2/32 of ..	0.0001	680	0.09
Inspection/repair and maint parts & acc..	0.0001	733	0.07
No/discharged/unsecured fire extinguis..	0.0001	728	0.07
Tire-flat and/or audible air leak	0.0001	453	0.06
Clamp/Roto type brake(s) out-of-adjust..	0.0001	439	0.06
Inoperable head lamps	0.0001	498	0.05
Driver's record of duty status not current	0.0001	342	0.04
Leaking/spilling/blowing/falling cargo	0.0002	244	0.04
Oil and/or grease leak	0.0001	303	0.04
Failing to submit medical certification do..	0.0001	243	0.04
Failing to submit medical certification d..	0.0001	243	0.04
False report of drivers record of duty st..	0.0002	151	0.03
Inoperable tail lamp	0.0001	337	0.03
No / insufficient warning devices	0.0001	312	0.03
Driving after being declared out-of-servi..	0.0057	5	0.03

# Target Audiences

## **TROOP**

First Sergeants



## **STATE**

Command Staff



# Target Tracking

## CVSP Goal Tracking Dashboard

FuelTaCS current as of:

9/30/2019 Fiscal Year

FY2019

TEAAS (Fatality data) current as of:

9/30/2019 Troop

(All)

### End of Year Goals

Hover over goals for more information

**74,416**

TOTAL INSPECTIONS

**18,604**

LEVEL 1 INSPECTIONS

**30,510**

LEVEL 2 INSPECTIONS

**24,557**

LEVEL 3 INSPECTIONS

**540**

BUS INSPECTIONS

**< 149.5**

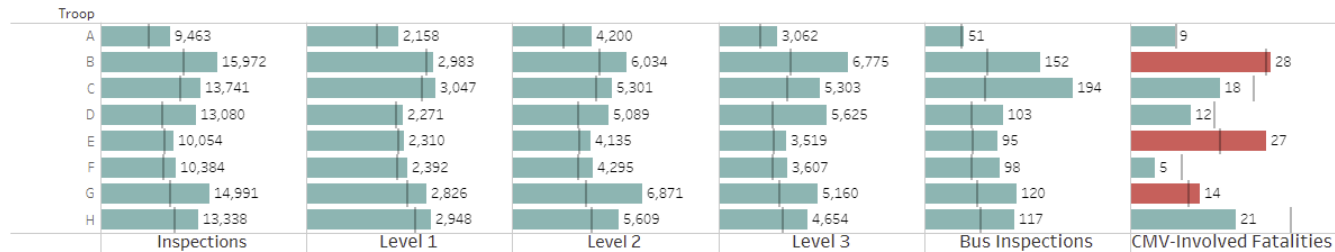
FATALITIES

### Overall goal status (fiscal year)

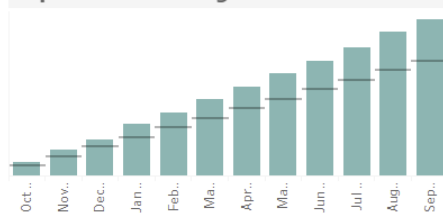
Click on a troop to filter goal progress charts below for that particular troop.

Note: Inspections are credited where trooper is **assigned**

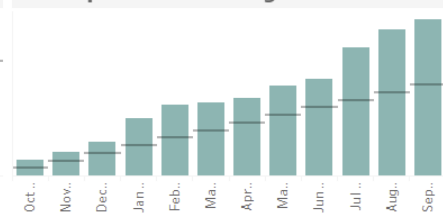
Goals are calculated for the end of the month



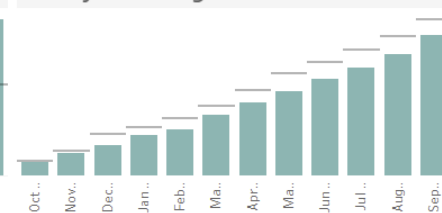
### Inspection Goal Progress



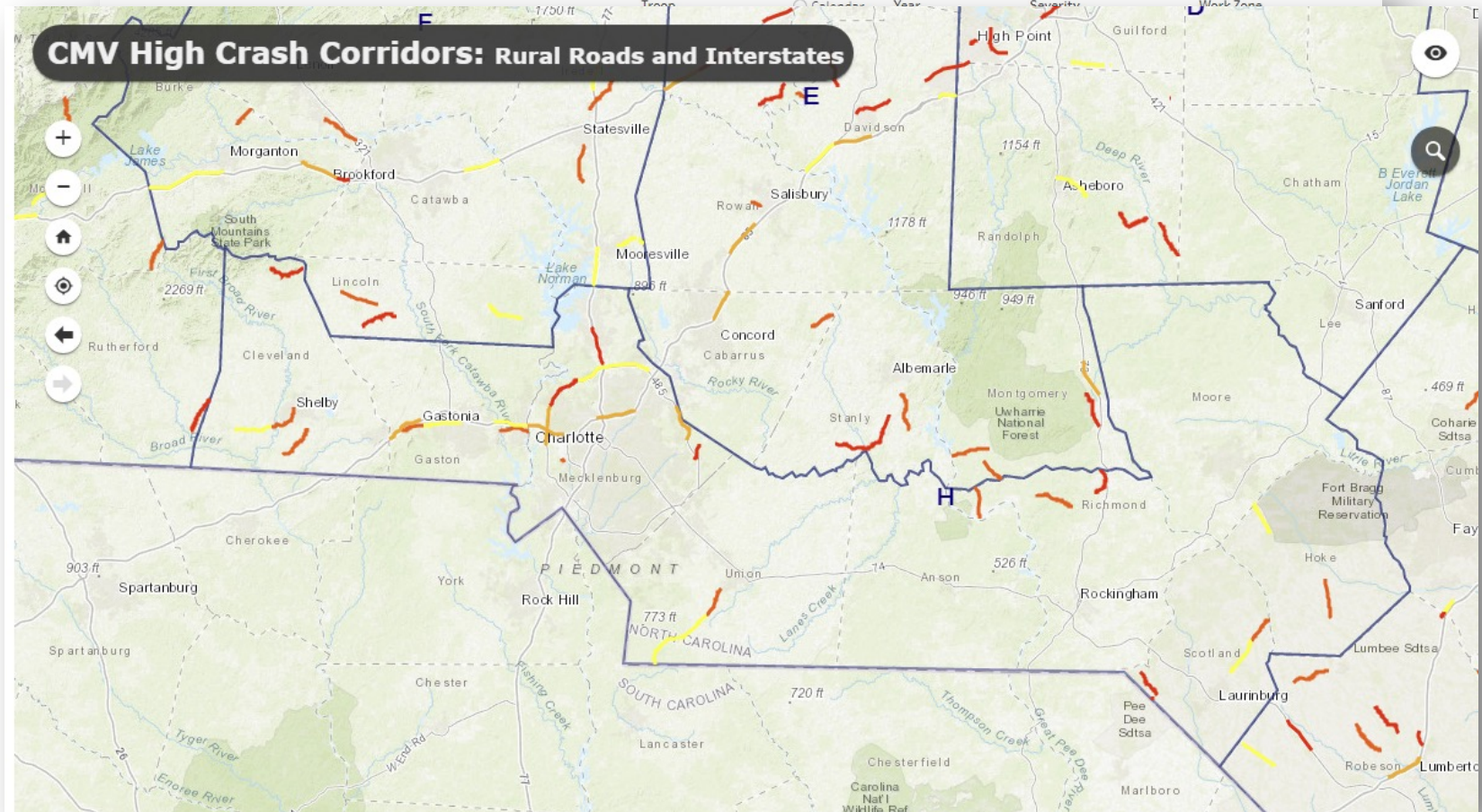
### Bus Inspection Goal Progress



### Fatality Goal Progress



# Map Visualizations





# Contributing Circumstances

## Crash - Why Dashboard

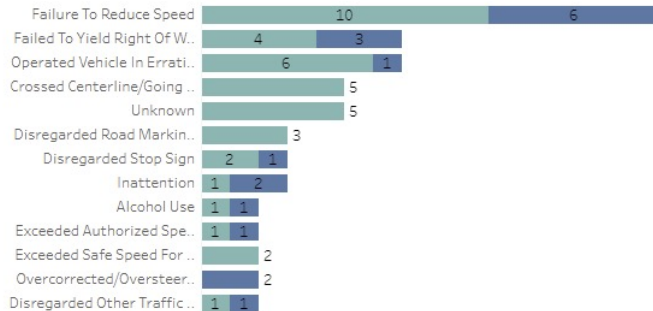
Troop:  | Calendar:  Fiscal:  | Year:  | Severity:  | Work Zone:



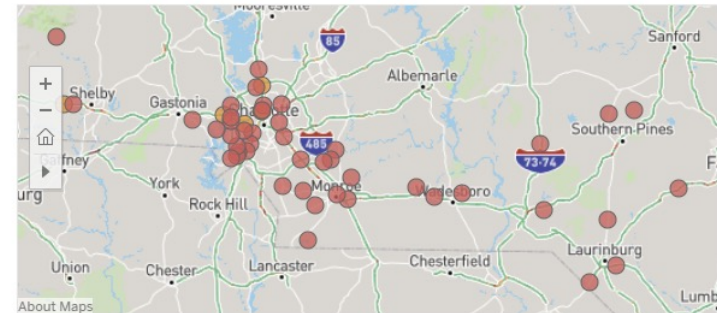
62

CMV-INVOLVED CRASHES

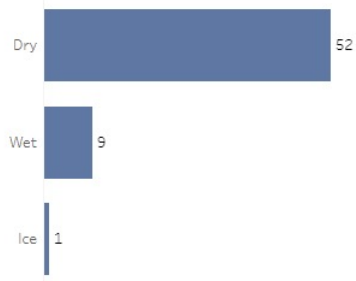
## Contributing Circumstances CMV/Non-CMV



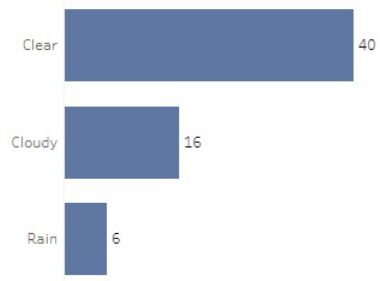
## Where are CMV crashes happening?



## Roadway conditions



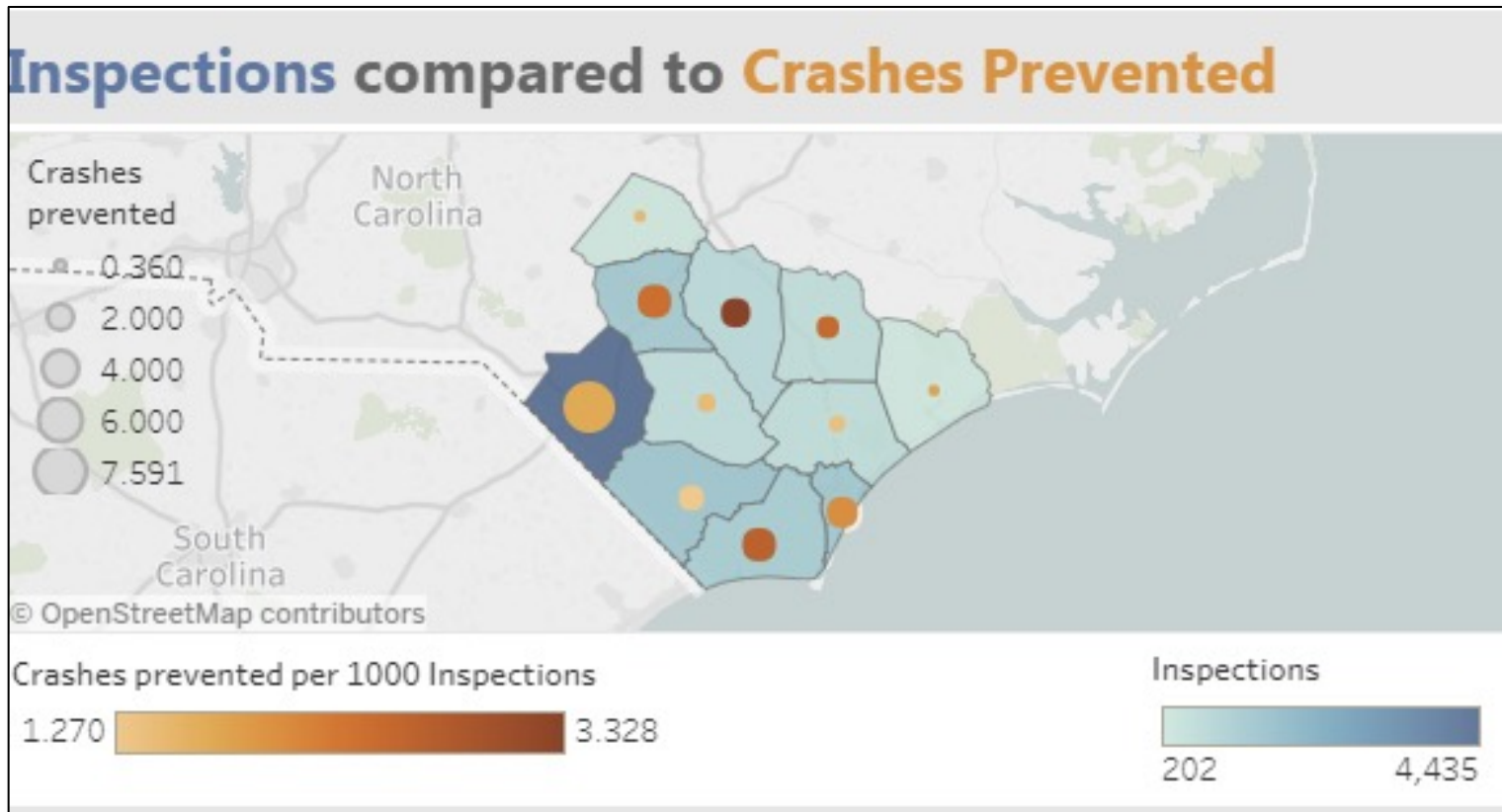
## Weather



## Most Harmful Events



# Data Relationships

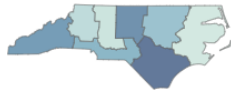


# Trooper Level Metrics

## Inspections - Trooper Dashboard

Troop (All)  Calendar  Fiscal

Year 2020



**9,560**  
INSPECTIONS

**1,519**  
OOS INSPECTIONS

**15.89%**  
OOS RATE

**2.00**  
CRASHES PREVENTED  
PER 1000 INSPECTIONS

**19.11**  
CRASHES PREVENTED

### Troopers

Trooper	Inspections	Violations	OOS Inspections	OOS Rate (All)	RIEM Score per Inspection	RIEM Factor	
J R EDWARDS	4279	1	6	1	100.00%	15.78	0.02
DERRICK P BARNES	3231	52	386	30	57.69%	13.94	0.73
G A MILLS	4930	72	203	29	40.28%	9.61	0.69
M G JONES	4241	82	116	15	18.29%	8.91	0.73
M D RAMEY	4935	44	29	5	11.36%	8.55	0.38
DAVID BUCKNER	3314	18	58	7	38.89%	8.31	0.15
E R SCHWARTZ	4732	3	9	2	66.67%	8.15	0.02
J D BOONE	4893	3	3	0	0.00%	8.03	0.02
KENT D IVEY	3230	44	148	9	20.45%	7.96	0.35
JONATHAN E CABE	3204	3	9	1	33.33%	7.36	0.02
WILLIAM HALL	3316	42	172	25	59.52%	7.12	0.30
C E ASHLEY	4814	31	77	7	22.58%	6.68	0.21
J M ROGERSON, JR	4768	36	59	7	19.44%	6.23	0.22
J K LOCKLEAR	4738	62	27	6	9.68%	6.19	0.38
J L CASH	4680	16	54	4	25.00%	6.04	0.10
SHAWN HURLEY	3321	4	14	3	75.00%	5.78	0.02
O A SILVER	5015	35	144	8	22.86%	5.76	0.20
MARK W CORBIN	3214	87	118	22	25.29%	5.73	0.50
R J FUQUAY	4624	1	4	1	100.00%	5.61	0.01
CHRISTOPHE S THOMPSON	3295	27	60	4	14.81%	5.60	0.15
J B SMITH	4226	19	19	3	15.79%	5.32	0.10
JAMES R HENSON	4135	79	91	15	18.99%	5.14	0.41
S M BRYANT	4947	49	96	10	20.41%	5.09	0.25
R D THOMAS	4939	56	174	27	48.21%	5.06	0.28
B A JONES	4257	42	110	9	21.43%	4.73	0.20
M T RIINN	4151	44	74	10	22.73%	4.65	0.20

### Top violations

Operating a CMV without periodic inspec..	455
Operating a CMV without proof of a perio..	455
Inoperative turn signal	431
Flat tire or fabric exposed	243
Inoperable Required Lamp	240
Clamp or Roto type brake out-of-adjustment	239
Clamp/Roto type brake(s) out-of-adjustment	239
No/discharged/unsecured fire extinguisher	221
State Vehicle registration or License Plate V..	216
Inspection, repair and maintenance of..	200

**Non-CMV's**

[ncvisionzero.org](http://ncvisionzero.org)

**NC VISION  
ZERO**

# Aligned Performance Measures

## ***GHSP Highway Safety Plan***



### **North Carolina Governor's Highway Safety Program FY2015 Highway Safety Plan**

GOVERNOR PAT MCCRORY  
STATE OF NORTH CAROLINA  
SECRETARY ANTHONY J. TATA  
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION  
DIRECTOR DON HALL  
GOVERNOR'S HIGHWAY SAFETY PROGRAM



***Align Measures***



## ***NCSHP's Responsibility***



# ncvisionzero.org



- ABOUT
- GET INVOLVED
- SAFETY FOCUS AREAS
- DATA AND ANALYTICS
- RESOURCES
- NC VISION ZERO COMMUNITIES
- FAQ
- IMAGE GALLERY

**NC Vision Zero** is a collaborative initiative to eliminate roadway deaths and injuries in North Carolina.

[Join Us](#) →

[Watch Video](#) →

SCROLL DOWN



## Take the Pledge X

If everyone followed these four simple rules - over a thousand lives could be saved every year in North Carolina.

[Take The Pledge](#) →

NCDOT GHSP ITRE



VISION ZERO ANALYTICS LOGIN

# Data and Analytics

The dashboard features a dark blue sidebar on the left with a yellow logo and a 'DATA AND ANALYTICS' label. The main content area is white with a light blue header. It contains five tool cards, each with a title, description, and a 'View' button. The cards are: 'Crash Query Tool' (find answers to questions about crash data), 'Target Tracking Dashboard' (track safety performance targets), 'Distracted Driving' (view locations and trends of distracted driving crashes), 'Commercial Vehicle Crashes' (explore CMV involved fatalities), and 'Safety Dashboard' (visualize trends and explore contributing circumstances). The background shows a blurred map of North Carolina counties.

**Crash Query Tool**  
Find answers to questions about crash data and visualize the results  
[View](#)

**Target Tracking Dashboard**  
Track safety performance targets and visualize trends by agency (Login Required)  
[View](#)

**Distracted Driving**  
View the locations and trends of distracted driving crashes in NC. See which counties are above and below the state average for percent of total crashes that are reported as "distracted driving."  
[View](#)

**Commercial Vehicle Crashes**  
Explore Commercial Motor Vehicle (CMV) involved fatalities in North Carolina and interactively filter for crash severity, date, time, and location.  
[View](#)

**Safety Dashboard**  
Visualize trends, View maps and explore contributing circumstances of fatalities and serious injury collisions over time.  
[View](#)



# Audiences

## NC State Highway Patrol



## General Motoring Public



## Traffic Safety Stakeholders

Municipalities, Counties,  
Local Law Enforcement  
Agencies, MPOs, RPOs,  
Indigenous Reservations,,  
MADD, SADD, NC Driver's  
Education Programs,  
emerging NCVZ Communities

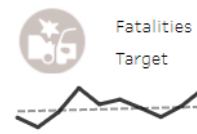


# NCSHP

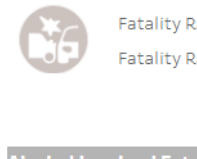
Target Dashboard | **Number of Persons Involved in Crashes (SHP)** | **Number of Distracted Drivers Involved in Crashes (SHP)** | **Number of Distracted Drivers Involved in Crashes (SHP)** | **Number of Distracted Drivers Involved in Crashes (SHP)** (for 2022)

## NC Vision Zero Target

### Total Fatalities



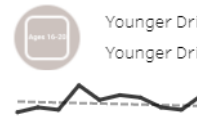
### Fatality Rate



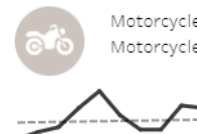
### Alcohol Involved Fatalities



### Younger Driver Involvement



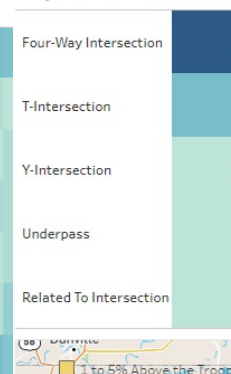
### Motorcycle Fatalities



## Time of Day / Day of Week

Day	0-4	5-7	8-14	15-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	121.0
Sun	21	17	11	21								
Mon	10	11	2	5								
Tue	9	9	8	2								
Wed	7	4	6	7								
Thu	29	3	5	3								
Fri	12	7	4	5								
Sat	27	6	23	21								

## Top 5 Road Features



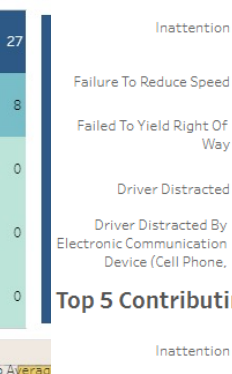
## Top 5 Contributing Causes



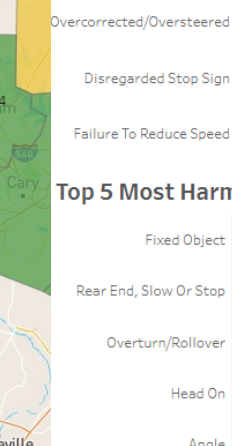
## Age Groups



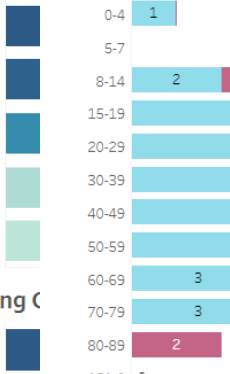
## Top 5 Contributing Causes (Age Groups and Gender)



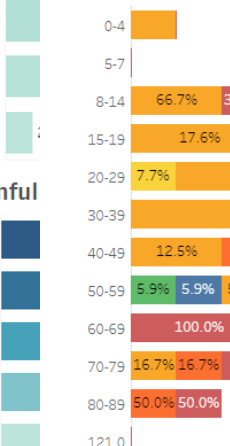
## Top 5 Most Harmful



## Top 5 Contributing Causes (Age Groups and Gender)



## Ethnicity



# CMV vs. Non-CMV



**66%**

**truck crashes involve at least  
one other vehicle**

**56%**

**of these cite car driver  
behavior as 'critical reason'**

# Fatal Risk

**75%**

of **fatal** two-vehicle crashes



# **CMV vs. Non-CMV**

---

# **Current Focus**

# Measuring Effectiveness



# Are These Programs Working?

- **Completed** - CVSA Special Programs Analysis
- **Current** - working on measuring Safe Drive effectiveness
- **On Deck** – extend to overall crash reduction program



**Questions?**

# Panel Session

- 1.** *COVERLAB Analytics Demo*
- 2.** *Practical Ideas and Tips*
- 3.** *Lessons Learned*