



REACH

eCVSP Metrics Monitoring Project



**FMCSA**

Federal Motor Carrier Safety Administration

**CAPS**

CENTER *for* ADVANCED  
PUBLIC SAFETY

# The Problem

Today, law enforcement officials enter data into the FMCSA's electronic CVSP (eCVSP) system regarding their planned safety activities and anticipated incidents (crashes); then, they **manually compare** actual results to the plan. This process is **error-prone, time-consuming,** and **labor intensive**, so that the comparison *can only be done once per quarter*.

# The Problem -> The Target

- Manual comparison -> **Automate**
- Error-prone -> **Accurate**
- Time-consuming -> **Fast**
- Labor-intensive -> **Easy**
- Quarterly comparisons -> **Frequent**

# The Approach

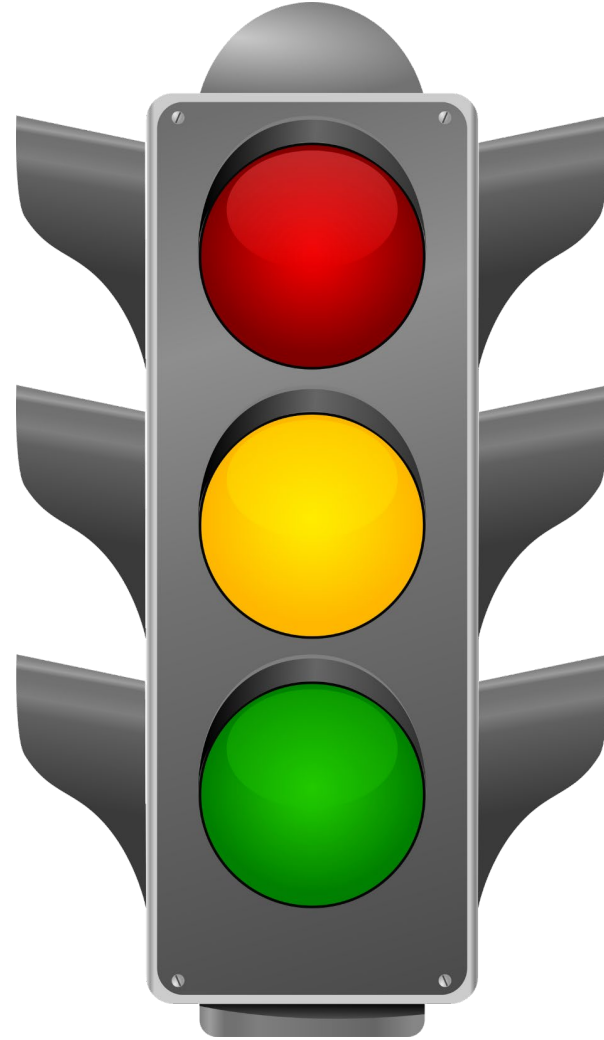
- 1) Give the user actionable information.
- 2) Don't force the user to come to you.
- 3) Make an assistant, not a replacement.

# Our Solution



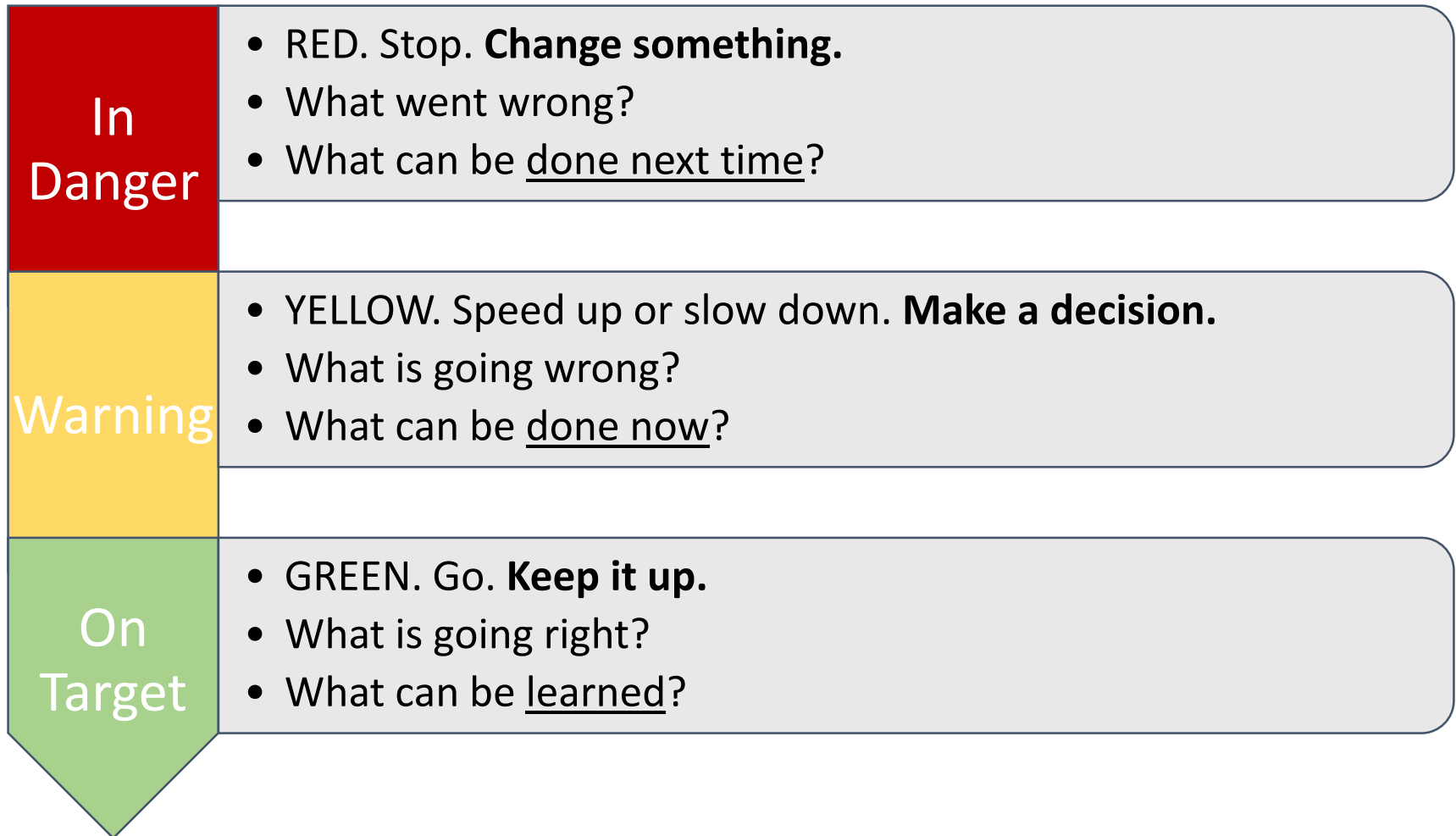
***Rapid  
eCVSP  
Activity  
Comparison  
Helper***

REACH





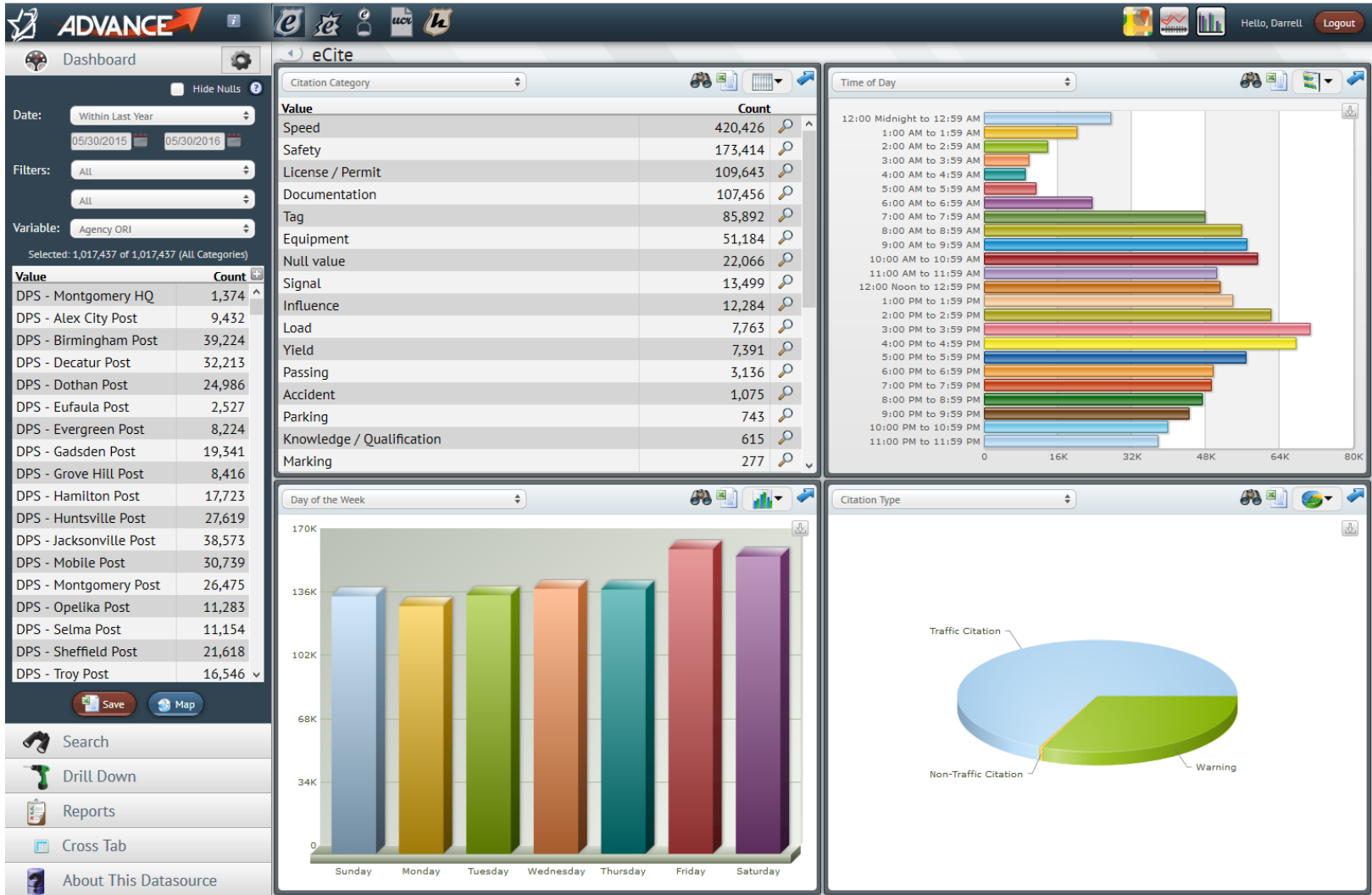
# State of Your Goal



# Active vs. Passive Goal Systems

Active	Passive
Tell you how you're doing <ul style="list-style-type: none"><li>• Meeting your goal</li><li>• In danger of missing your goal</li><li>• Missing/missed your goal</li></ul>	Show you what you're doing (activity only)
Aware of your goals	Unaware of your goals
Warns you before missing, hopefully giving you time to react	Require you to check and stay on top of the goal to prevent missing
Example: REACH	Example: ADVANCE

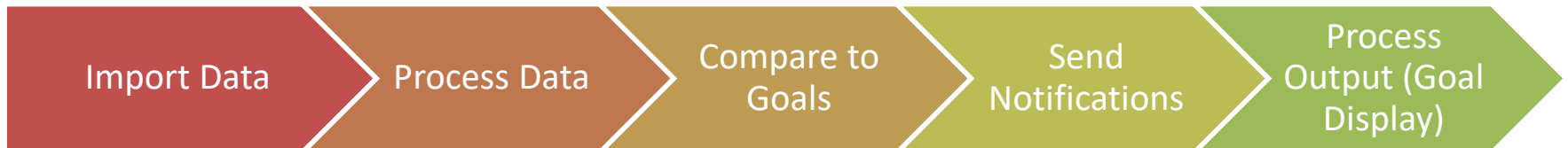
# Passive Goal System: ADVANCE



# Passive Goal System: ADVANCE

- Custom reports. Can be set up to email on a schedule.
- Reports usually match previous paper reports that were manually generated.
- Aggregate statistics for crashes, citations, etc.
- Updated daily (typically).

# REACH: The Process



# REACH: The Components

## Goals System

Data Processing

Data  
Import

Notifications

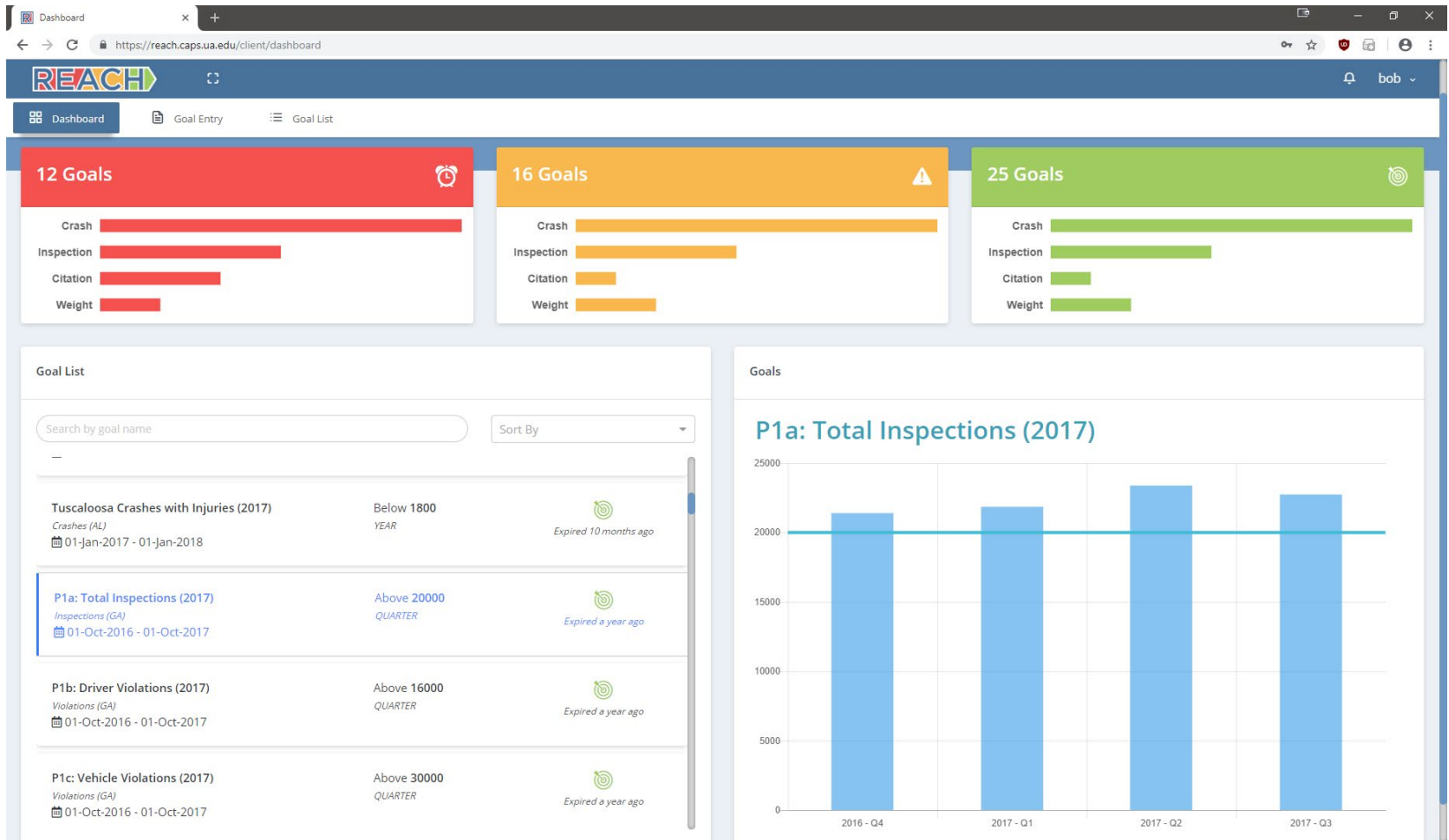
UI/Maps/Charts

External System  
Interaction

# REACH Main Screens

- Dashboard
- Goal Entry
- Goal List
- Goal Details
- In Progress: Activity Corridors
- In Progress: Settings and Notifications

# Dashboard





# Dashboard

- Summary of all of your goals.
- Browse your list of current goals.
- See past goals.

# Goal Entry

The screenshot shows a web browser window with the URL <https://reach.caps.ua.edu/client/goals/goal-entry>. The page features a navigation bar with 'Dashboard', 'Goal Entry', and 'Goal List'. The main content area is titled 'Goal Entry' and contains a form with the following fields and options:

- Goal Name \***: Text input field containing 'CMV CU Quarterly'.
- Data Source \***: Dropdown menu with 'Crashes (AL)' selected.
- Group By \***: Dropdown menu with 'CMV Caused' selected.
- Goal Value \***: Two input fields; the first is a dropdown with 'Below' selected, and the second is a text input with '500'.
- Interval \***: Dropdown menu with 'Quarterly' selected.
- Continuous?**: Radio buttons for 'Yes' (selected) and 'No'.
- Add Filter**: A blue button to add a filter.
- Filter List**: A row containing a dropdown with 'CMV Caused', a dropdown with 'Yes - CU is a CMV', and a red 'Remove' button.
- Submit**: A blue button.
- Clear**: A red button.
- Wizard**: A dark blue button.

# Goal Entry

- Name
- Data Source
- Group By (Will display this variable in the goal)
- Goal Value (Above/Below)
- Interval (can be recurring)
  - Daily/Weekly/Monthly/Quarterly/Yearly
- Filters (optional)
  - Any categorical variable, any combination of values

# Goal Entry Example

- Name: “CMV CU Pre-Workzone Quarterly”
- Data: “Crash”
- Group By: “Workzone Involved”
- Target: “Below: 500”
- Interval: “Quarterly, Recurring: Yes”
- “CMV CU: Yes, Workzone Involved: Yes”

# Goal List

The screenshot shows a web browser window with the URL <https://reach.caps.ua.edu/client/goals/goal-list>. The page title is "Goal List". The navigation bar includes "Dashboard", "Goal Entry", and "Goal List". The main content area displays a table of goals.

Data Set	Goal Name	Start Date	End Date	Interval	Target	Variable Name	Goal Value	
Violations (GA)	P4c: Vehicle Violations (2017)	Oct 1, 2016	Oct 1, 2017		MAX	Region	18000	
Violations (GA)	P4d: Traffic Enforcement Violations (2017)	Oct 1, 2016	Oct 1, 2017		MAX	Region	2500	
Violations (GA)	P4e: Violations (2017)	Oct 1, 2016	Oct 1, 2017		MAX	Region	30000	
Inspections (GA)	P4f1: Inspections (2017)	Oct 1, 2016	Oct 1, 2017		MAX	Region	8000	
Violations (GA)	P5a: Following Too Close Violations (2017)	Oct 1, 2016	Oct 1, 2017		MAX	Region	100	
Violations (GA)	P5d: Drug and Alcohol Violations (2017)	Oct 1, 2016	Oct 1, 2017		MAX	Region	80	
Violations (GA)	P5d1: Drug Violations (2017)	Oct 1, 2016	Oct 1, 2017		MAX	Region	40	
Violations (GA)	P5d2: Alcohol Violations (2017)	Oct 1, 2016	Oct 1, 2017		MAX	Region	40	
Violations (GA)	P5e: Disqualified Driver (2017)	Oct 1, 2016	Oct 1, 2017		MAX	Region	150	

71 total

Navigation: << 1 2 3 4 5 >>

# Goal Details



# Goal Details

- Detailed graph for period.
- Filterable variable values.
- Export CSV and image (PNG).
- “Goal line” that shows goal value.

# Under Construction **Notifications**

- Goal updates via email
- Customizable by user and by goal
- Notify when you:
  - Have Met (or surpassed) a goal
  - Are at risk of missing a goal
  - Have missed a goal
- How frequent?
- What about recurring goals?

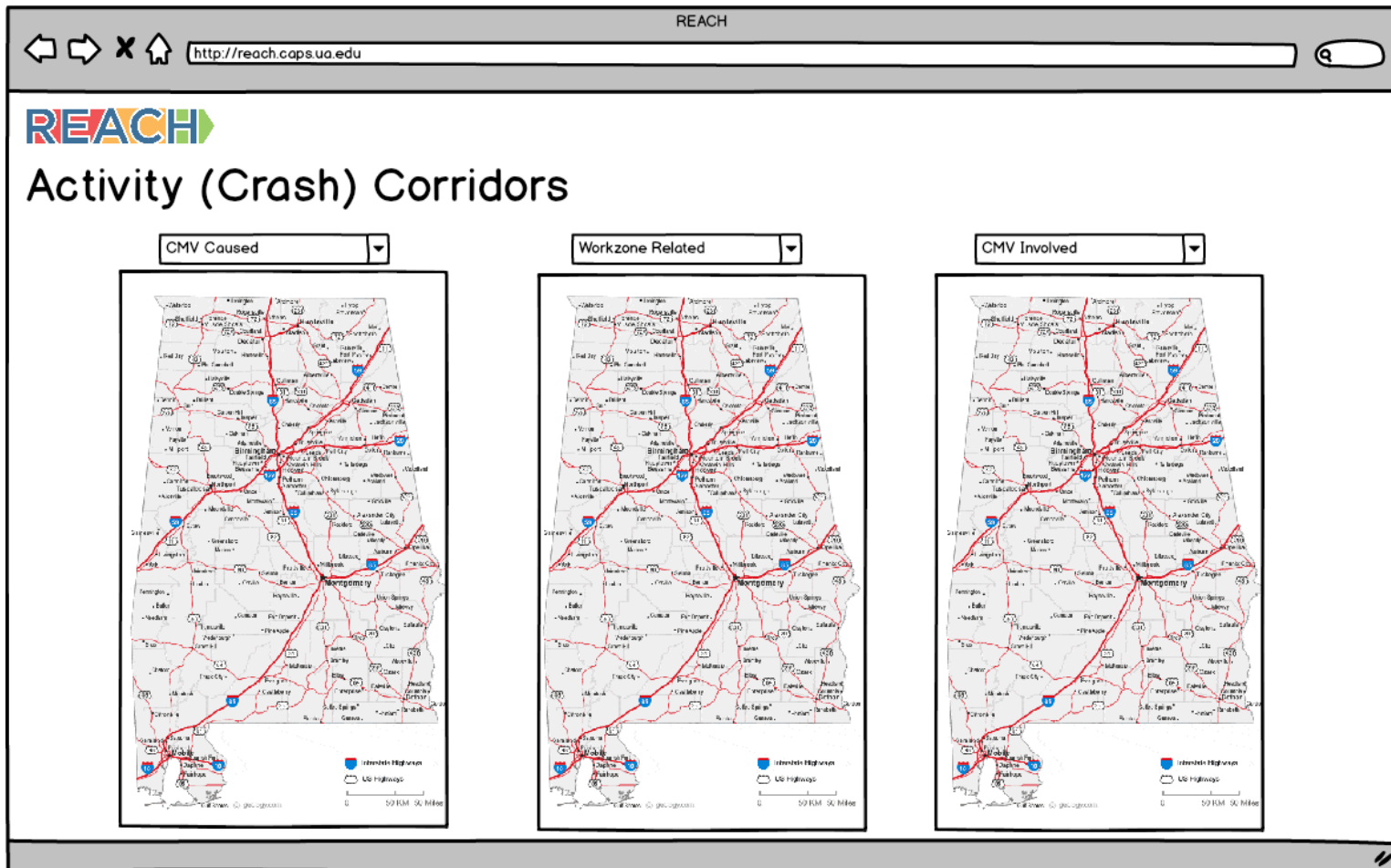


# Under Construction

## Goal System

- Lots of work on how to determine when goals are in each state.
- Activity isn't regular.
  - There are **dips** and **spikes**, often unpredictable.
- Several ideas in progress:
  - **Simple rate** (assuming the same rate)
  - **Adjusted rate** (comparing with similar data)
  - **ML/AI** (building a learning model of your dataset)

# Under Construction Activity (Crash) Corridors



# Under Construction

## **Activity (Crash) Corridors**

- Uses CARE/ADVANCE mapping systems.
- “Locked pan/zoom” functionality  
(Panning/zooming on one map can move the others, too)
- Working to extend to non-crash datasets (i.e. Activity Corridors).

# Thanks to Our Partners!

- Federal Motor Carrier Safety Administration
- University of Alabama
- Alabama Law Enforcement Agency (Motor Carrier Safety Unit)
- Arkansas Highway Police
- Mississippi Highway Safety Patrol (Motor Carrier Safety Division)
- Georgia Department of Public Safety (Motor Carrier Compliance Division)



# Thank You!

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