

<u>REACH</u> eCVSP Metrics Monitoring Project





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

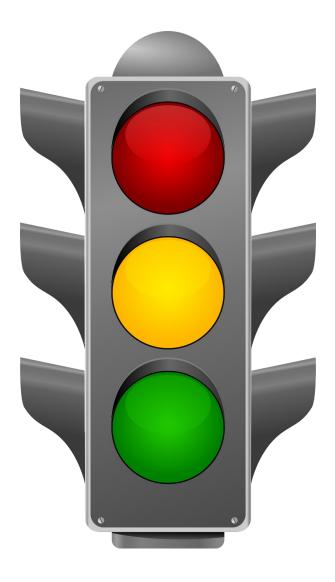
- 1) Give the user actionable information.
- 2) Don't force the user to come to you.
- 3) Make an assistant, not a replacement.

Our Solution



Rapid **e**CVSP **A**ctivity **C**omparison **H**elper





State of Your Goal

In Danger	 RED. Stop. Change something. What went wrong? What can be <u>done next time</u>?
Warning	 YELLOW. Speed up or slow down. Make a decision. What is going wrong? What can be <u>done now</u>?
On Target	 GREEN. Go. Keep it up. What is going right? What can be <u>learned</u>?

Active vs. Passive Goal Systems

Active	Passive
 Tell you how you're doing Meeting your goal In danger of missing your goal Missing/missed your goal 	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

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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

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Search by goal name		Sort By	P1a: Total I	nspections (2017)		
-			25000			
Tuscaloosa Crashes with Injuries (2017)	Below 1800	1				
Crashes (AL) 💼 01-Jan-2017 - 01-Jan-2018	YEAR	Expired 10 months ago	20000		_	
P1a: Total Inspections (2017) Inspections (GA)	Above 20000 QUARTER	1	15000			
inspections (04)	QUARTER	Expired a year ago				
			10000			
P1b: Driver Violations (2017) Violations (GA)	Above 16000 QUARTER	Expired a year ago				
៉ 01-Oct-2016 - 01-Oct-2017			5000			
P1c: Vehicle Violations (2017)	Above 30000	1				
Violations (GA)	QUARTER	Expired a year ago				

Dashboard

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

Goal Entry

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		Data Source *	Crashes (AL)		× 👻	Group By *	CMV Caused			× 👻			
				Goal Value *	Below	× 👻 500							
				Interval *	Quarterly		×	r					
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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

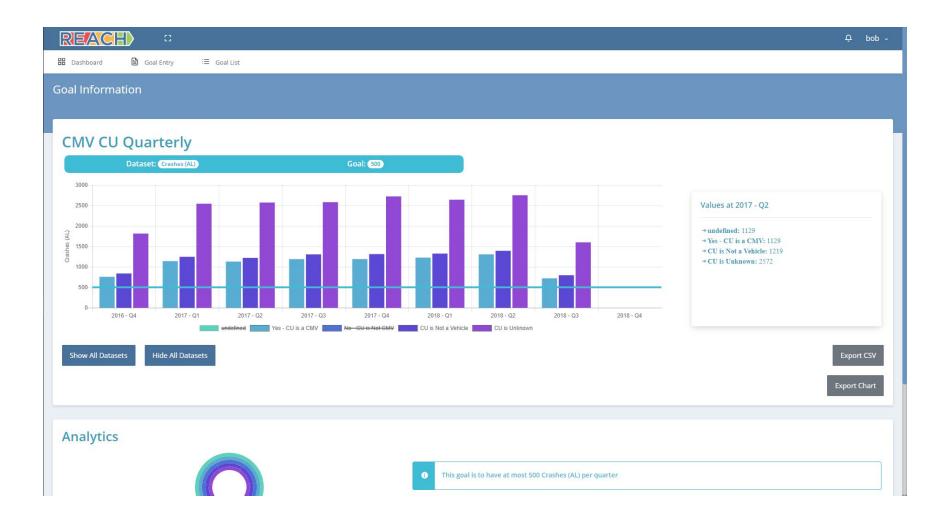
Goal Entry Example

- 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

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/iolations (GA)	P4c: Vehicle Violations (2017)	Oct 1, 2016	Oct 1, 2017		MAX	Region	18000	
/iolations (GA)	P4d: Traffic Enforcement Violations (2017)	Oct 1, 2016	Oct 1, 2017		MAX	Region	2500	
/iolations (GA)	P4e: Violations (2017)	Oct 1, 2016	Oct 1, 2017		MAX	Region	30000	\bigcirc
nspections (GA)	P4f1: Inspections (2017)	Oct 1, 2016	Oct 1, 2017		MAX	Region	8000	
/iolations (GA)	P5a: Following Too Close Violations (2017)	Oct 1, 2016	Oct 1, 2017		MAX	Region	100	
/iolations (GA)	P5d: Drug and Alcohol Violations (2017)	Oct 1, 2016	Oct 1, 2017		MAX	Region	80	
/iolations (GA)	P5d1: Drug Violations (2017)	Oct 1, 2016	Oct 1, 2017		MAX	Region	40	
/iolations (GA)	P5d2: Alcohol Violations (2017)	Oct 1, 2016	Oct 1, 2017		MAX	Region	40	
/iolations (GA)	P5e: Disqualified Driver (2017)	Oct 1, 2016	Oct 1, 2017		MAX	Region	150	
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Goal Details



Goal Details

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

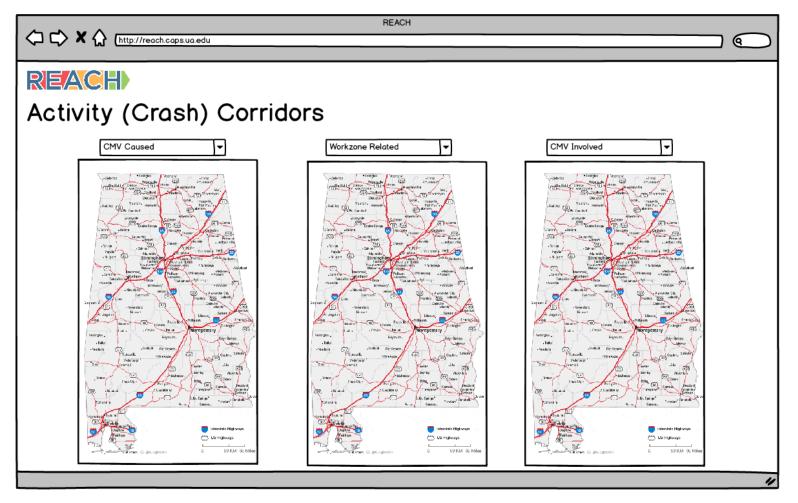
Under Construction Notifications

- 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)

<u>Under Construction</u> Activity (Crash) Corridors



<u>Under Construction</u> 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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