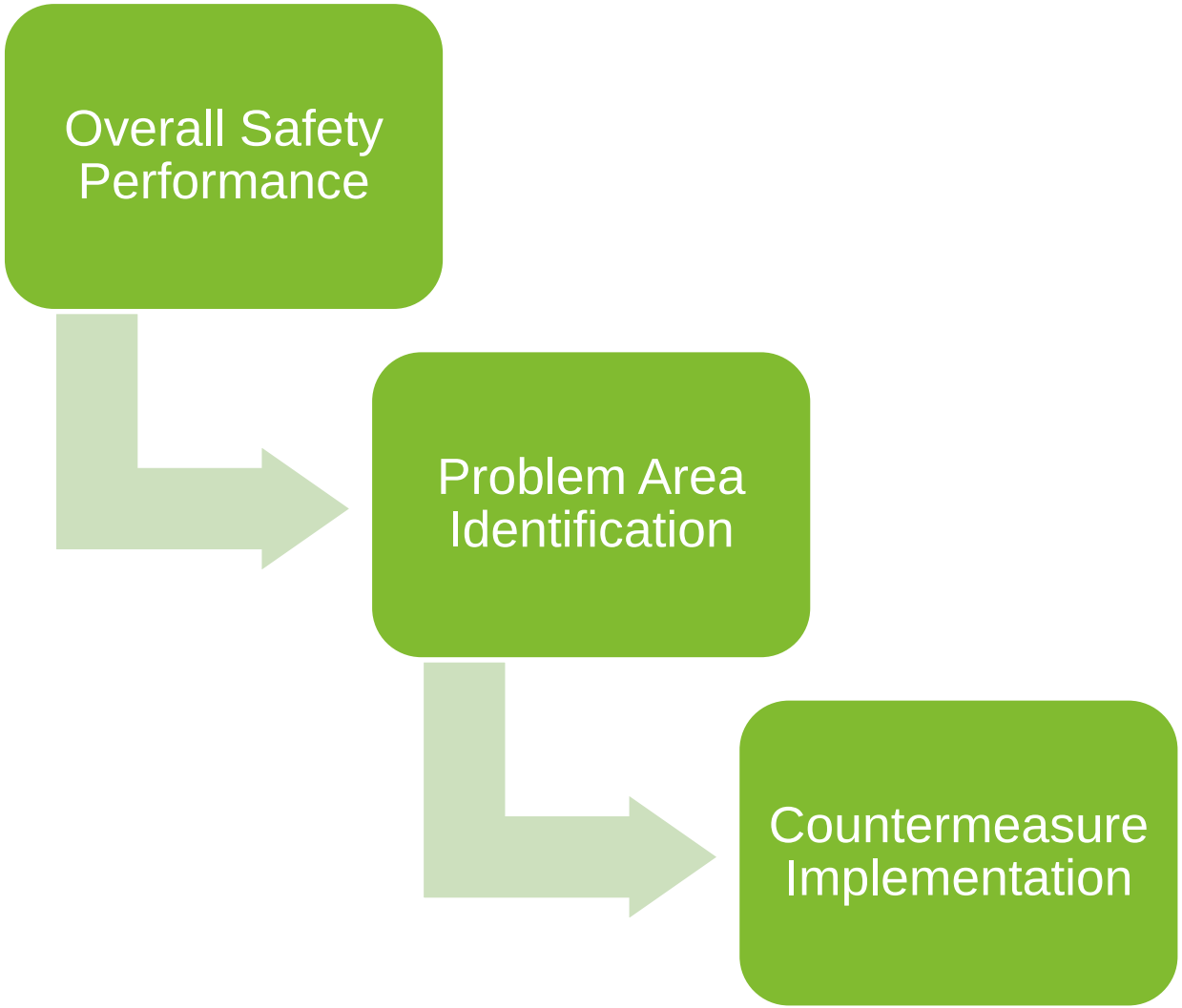
Held Hostage by Your Data: What Does "Data-Driven" Decision Making Really Mean?

Heather Rothenberg, PhD
Sam Schwartz Engineering
Jocelyn Lewis
Booz Allen Hamilton

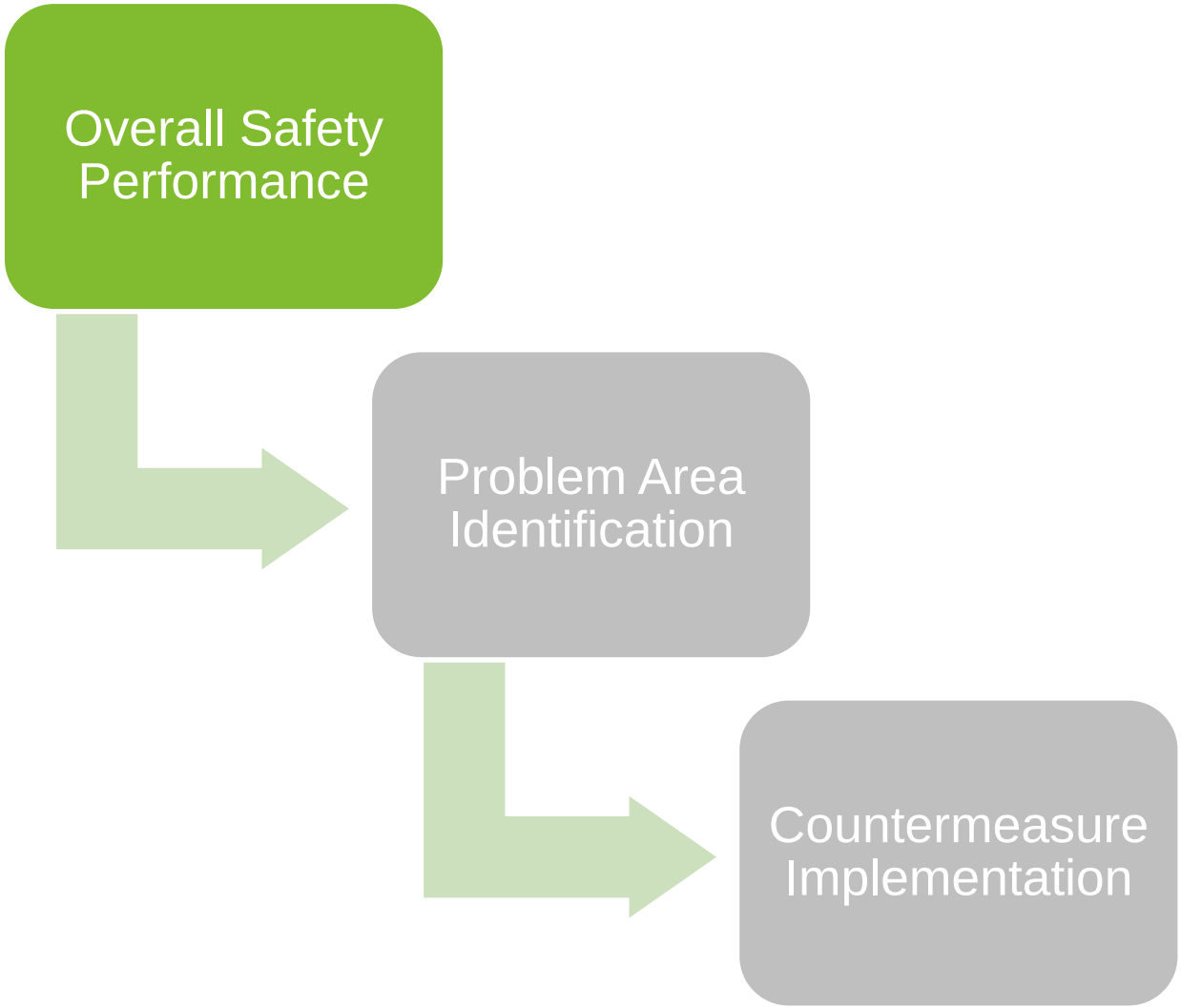
5th International Transportation Systems Performance Measurement and Data for Decisions and Performance Measures
June 2, 2015

Sam Schwartz Engineering D.P.C.

Data for Safety Performance



Data for Safety Performance



Overall Safety Performance

Fatalities

- Historically used as performance measure
- Uniform national database (FARS)
- Standardized definition (death within 30 days of crash from crash-related injuries)
- Rare occurrence, relatively speaking

Serious Injuries

- More recent measure
- No national database
- No consistent definition, except voluntary MMUCC
- Law enforcement asked to make medical assessment
- More common than fatalities – potentially small factors could be the difference between serious injury and fatality

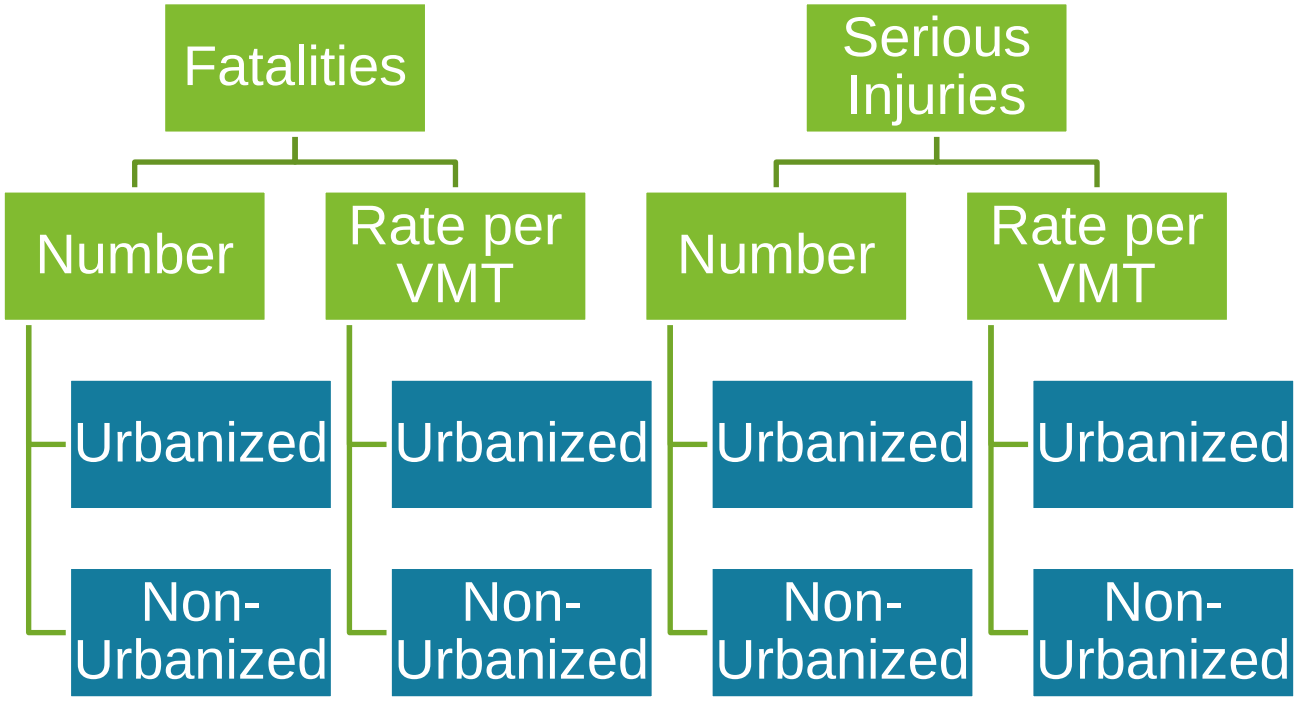
Traffic Safety Performance Measures for States and Federal Agencies (NHTSA, August 2008)

Core Outcome Measures	Core Behavior Measures	Activity Measures
Number of Fatalities	Citations and arrests related to speeding, seat belt use, and impaired driving	Observed Seat Belt Use
Number of Serious Injuries		
Fatalities/VMT		
7 more related to fatalities for specific problem areas – speeding, belt use, impaired driving, motorcyclists, pedestrians, and young drivers.		

NHTSA relates these measures to MAP-21 programs in an Interim Final Rule published in the Federal Register in January 2013.

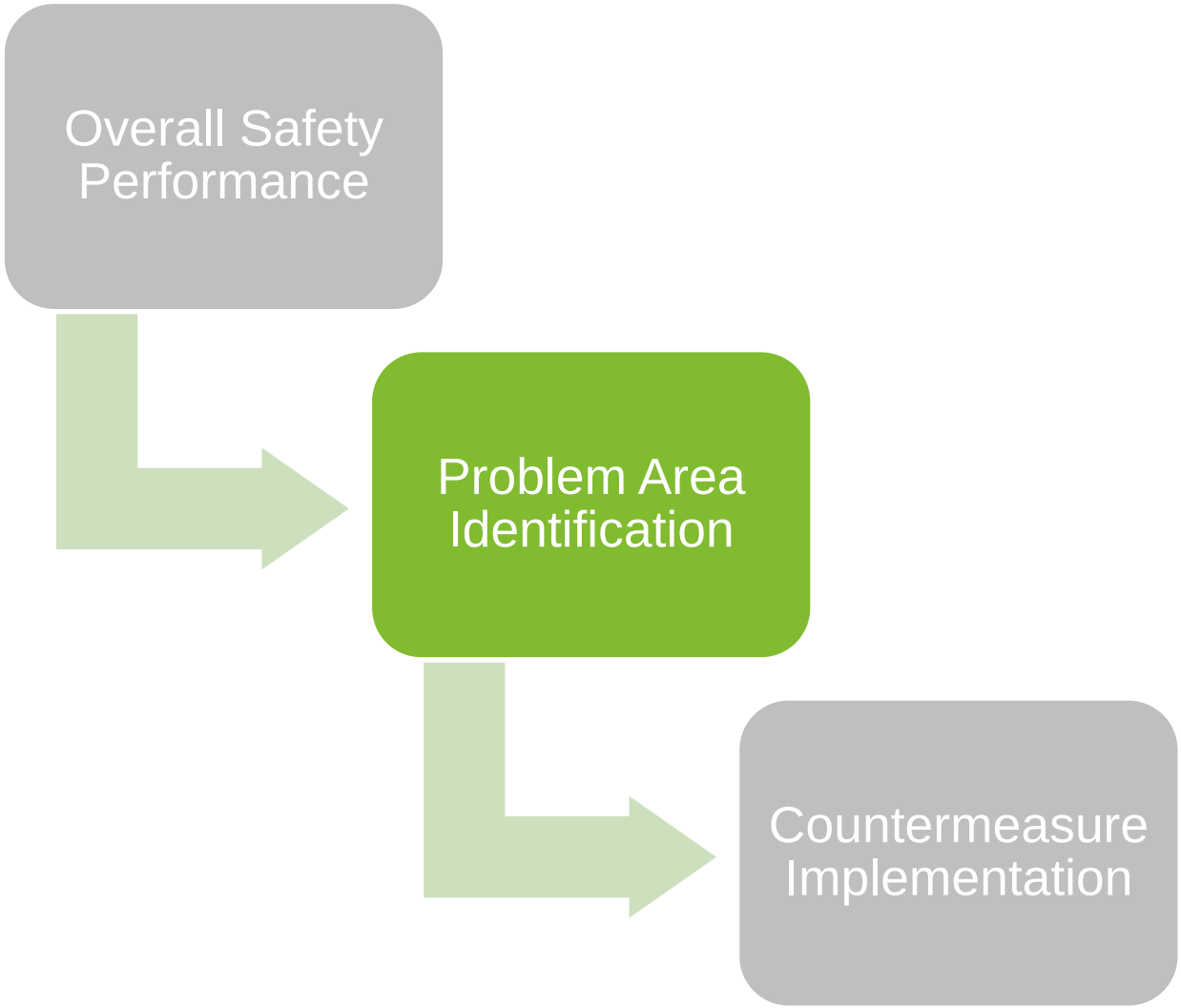
National Performance Management Measures, Highway Safety Improvement Program NPRM

(FHWA, March 2014)



Required Optional

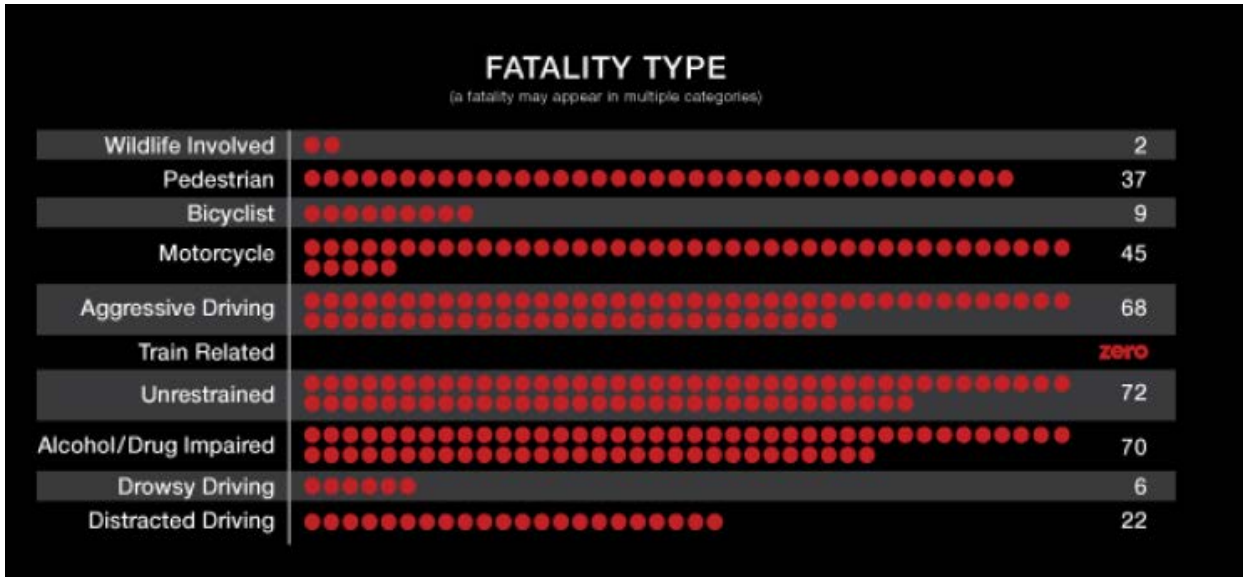
Data for Safety Performance



Problem Area Identification

- Strategic Highway Safety Plan (SHSP)
- Highway Safety Plan (HSP)
- Commercial Vehicle Safety Plan (CVSP)

- Long Range Transportation Plan (LRTP)
- State Transportation Improvement Plan (STIP)
- Metropolitan Planning Organization TIP



Utah

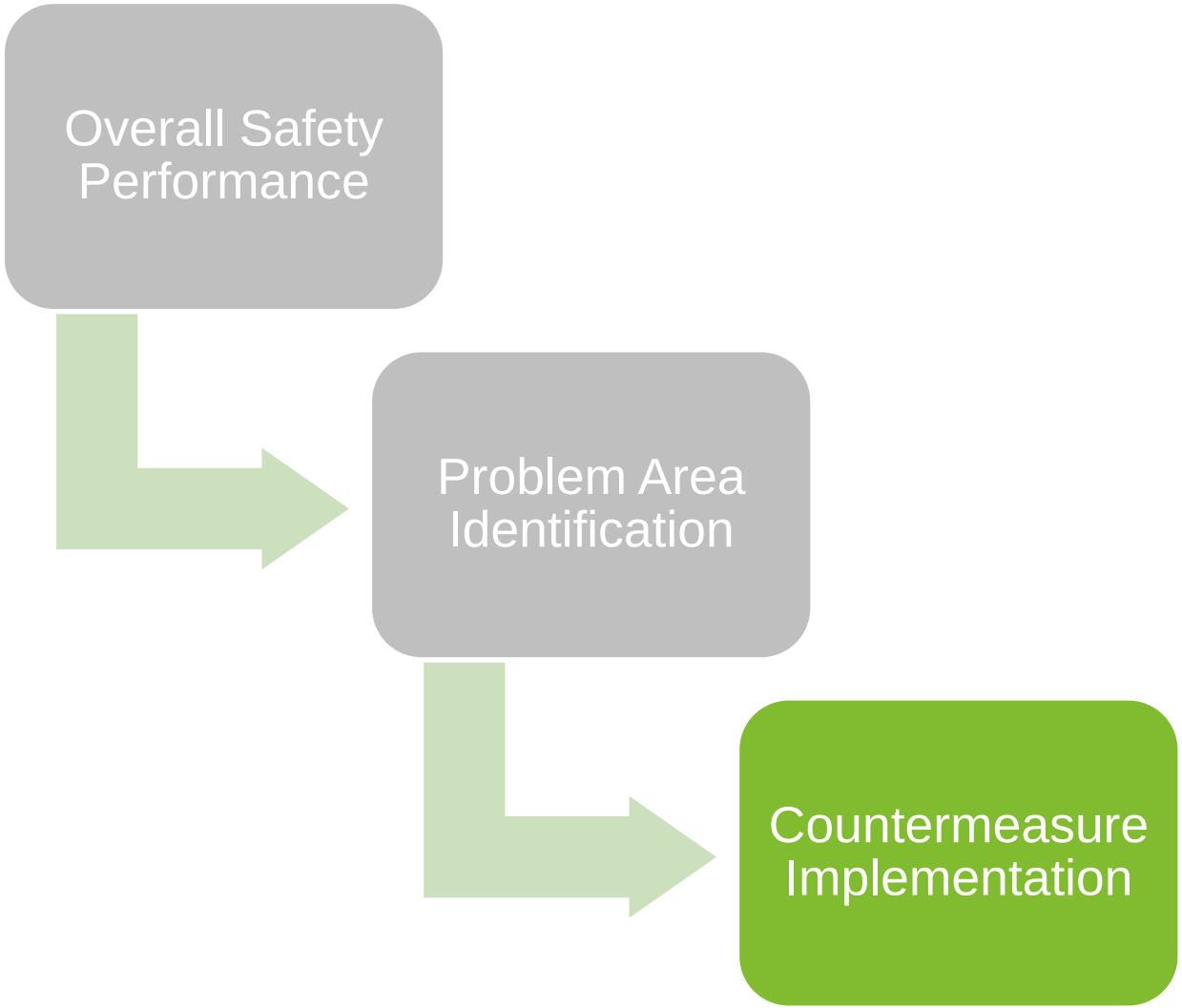
http://ut.zerofatalities.com/statistics_utah.php

Washington

http://www.wsdot.wa.gov/partners/targetzero/PDF2/priorityone.pdf

Washington State 2009-2011	Fatalities # of People	Fatalities % of Total	Serious Injuries # of People	Serious Injuries % of Total
Priority Level One				
Impaired Driver Involved	704	50.1%	1,519	21.0%
Run-Off-the-Road	615	43.7%	2,156	29.7%
Speeding Involved	555	39.5%	2,126	29.3%
Young Driver 16-25 Involved	487	34.6%	2,763	38.0%
Distracted Driver Involved	426	30.3%	868	11.9%
Intersection Related	290	20.6%	2,474	34.1%
Traffic Data Systems	**	**	**	**
Total*	**1,406**		**7,247**	

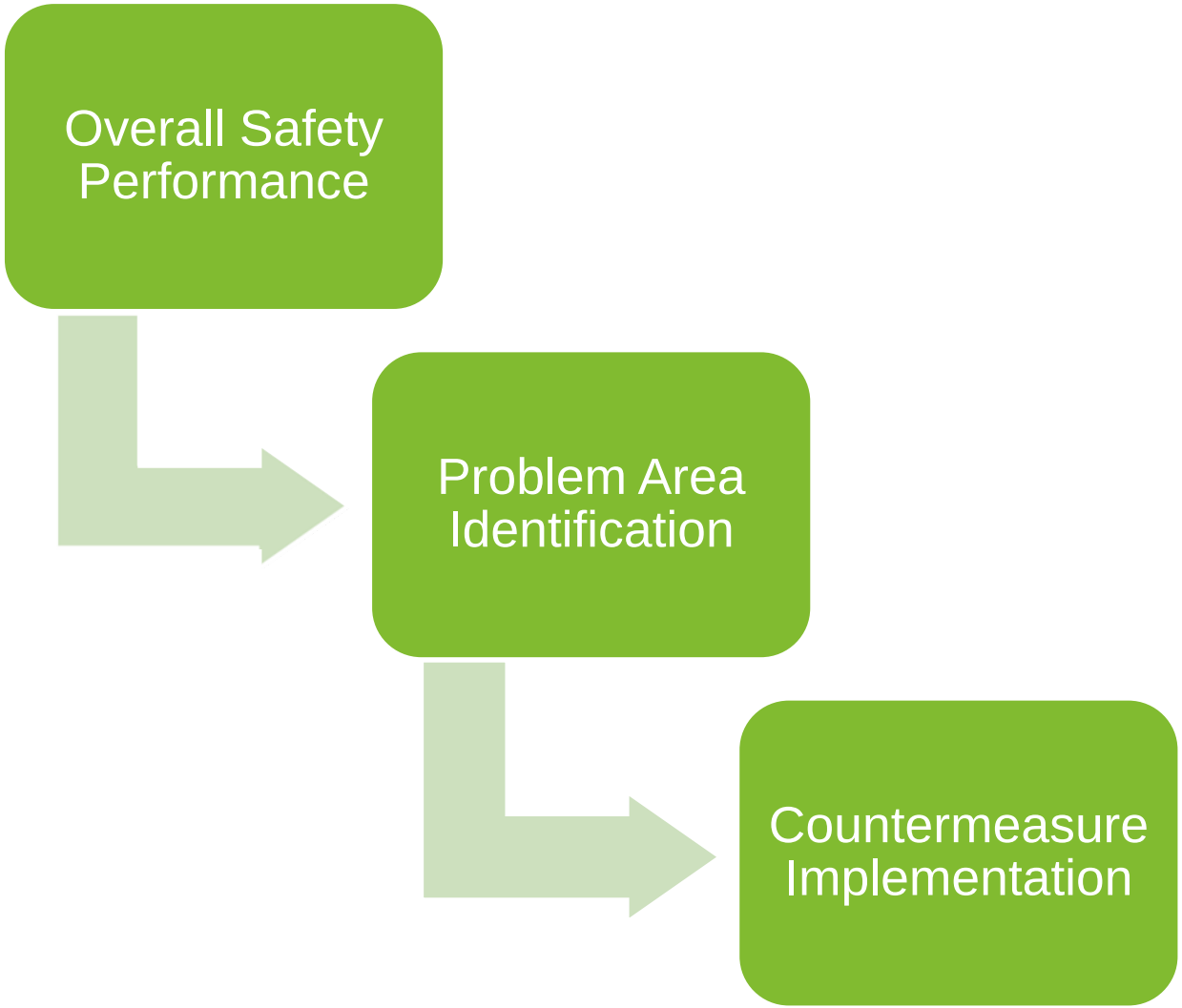
Data for Safety Performance



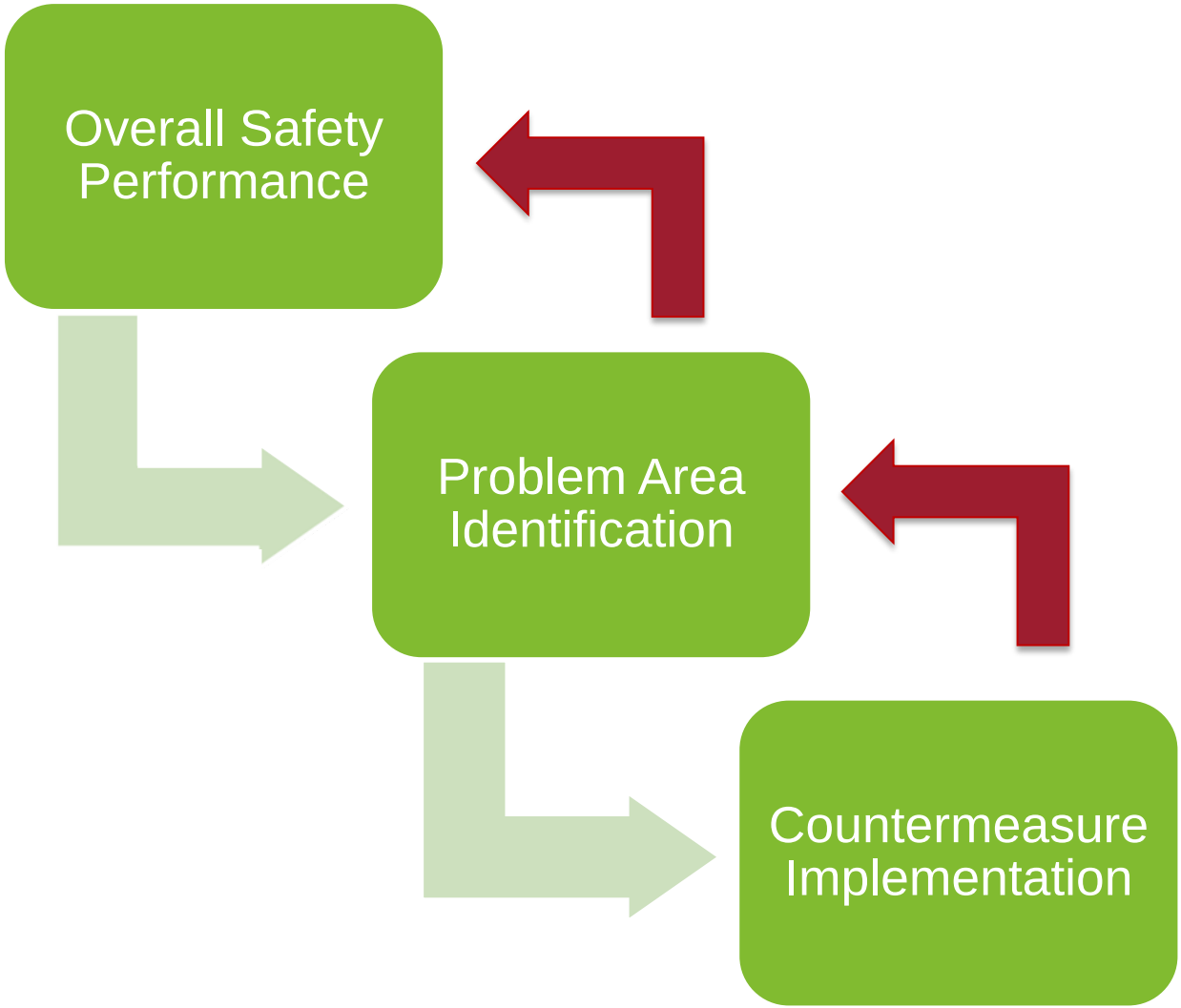
Safety Data for Countermeasures

Source: FHWA *Safety Focused Decision Making Guide,* Publication Number FHWA-SA-13-034

Data for Safety Performance



Data for Safety Performance



Why not?

Because we are held hostage by our data.

Being held hostage by data means:

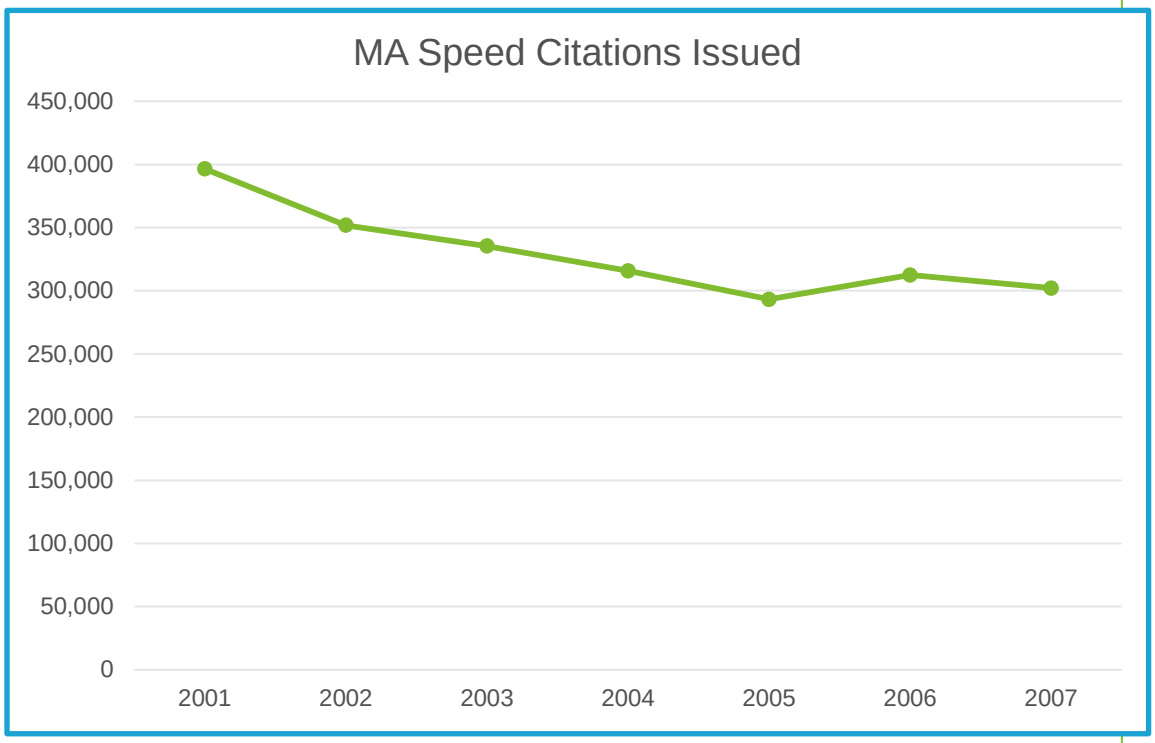
- We rely on “best available” rather than striving for best.
- We confuse causation with correlation with none of the above.
- We make do with old data.
- We make decisions on data presented out of context.
- We aim for standardization and uniformity rather than customization.

“Best Available” vs. Best

- We have “best available” already. Getting to best takes resources.
- Investing in data can be a tough sell.

Washington State 2009-2011	Fatalities # of People	Fatalities % of Total	Serious Injuries # of People	Serious Injuries % of Total
Priority Level One				
Impaired Driver Involved	704	50.1%	1,519	21.0%
Run-Off-the-Road	615	43.7%	2,156	29.7%
Speeding Involved	555	39.5%	2,126	29.3%
Young Driver 16-25 Involved	487	34.6%	2,763	38.0%
Distracted Driver Involved	426	30.3%	868	11.9%
Intersection Related	290	20.6%	2,474	34.1%
Traffic Data Systems	**	**	**	**
Total*	**1,406**		**7,247**	

Causation, Correlation, or Neither



Data Source: UMass Highway Safety Data Warehouse

IRis Northeastern University

Institute on Race and Justice Publications | Institute on Race and Justice

May 04, 2004

Massachusetts racial and gender profiling study: final report

Amy Farrell
Northeastern University

Jack McDevitt
Northeastern University

Lisa Bailey
Northeastern University

Carsten Andresen
Northeastern University

Erica Pierce
Northeastern University

Recommended Citation

Farrell, Amy; McDevitt, Jack; Bailey, Lisa; Andresen, Carsten; and Pierce, Erica, "Massachusetts racial and gender profiling study: final report" (2004). *Institute on Race and Justice Publications*. Paper 13. http://hdl.handle.net/2047/d20004315

This work is available open access, hosted by Northeastern University.

boston.com News your conn

Home | News | A&E | Business | Sports | Travel | Your Life | Cars | Jobs | Personals | Real Estate

Today's Globe | Politics | Opinion | Magazine | Education | Science | NECN | Special reports | Obitu

SPEED TRAP: WHO GETS A TICKET, WHO GETS A BREAK?

Police chiefs decry profiling study

Racial disparities found in traffic stops

By Bill Dedman, Globe Correspondent, 5/5/2004

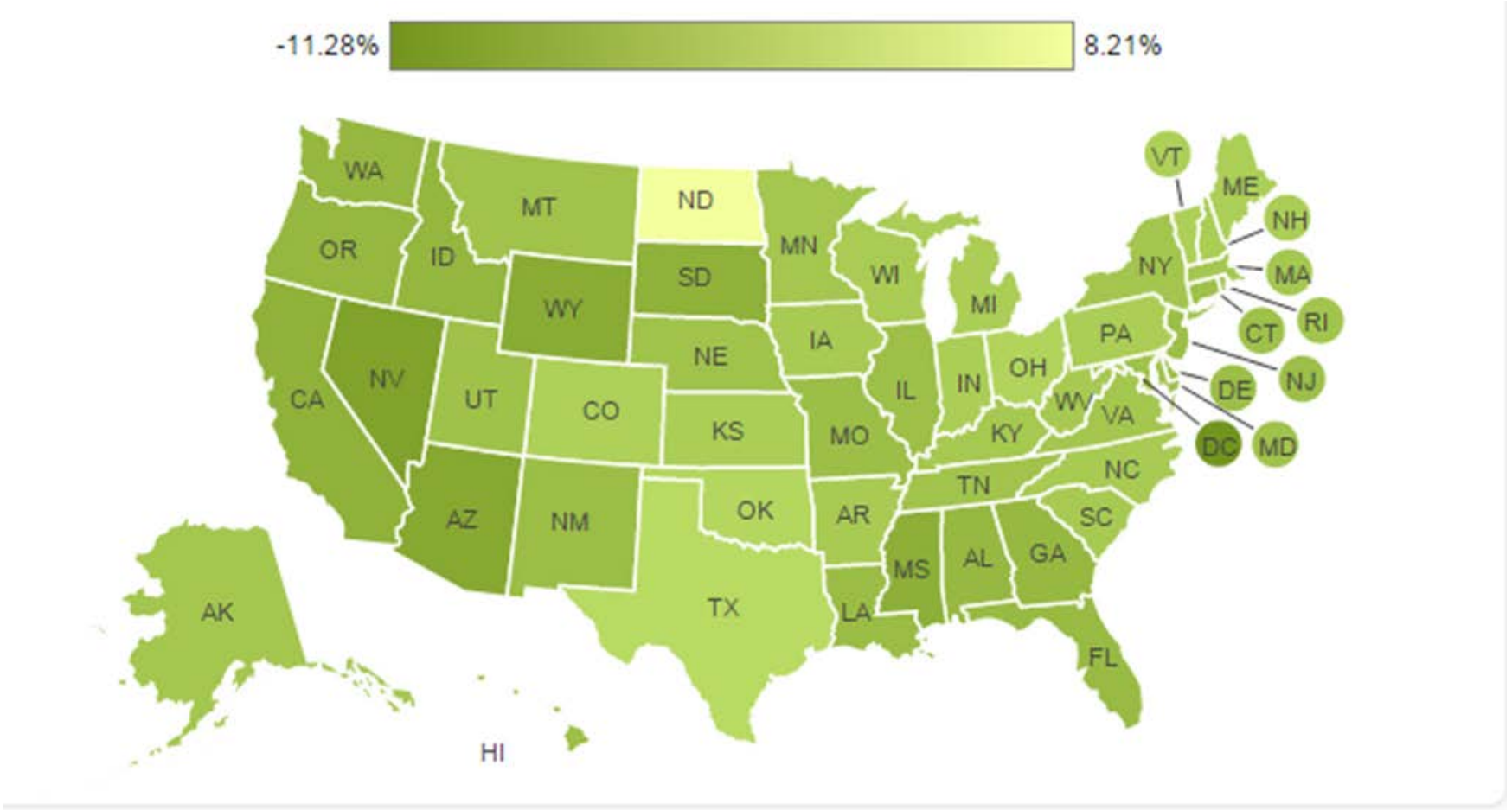
Making Do with Old Data

Generally working with crash data that is 1-2 yrs old.

Even if newer data is available, it’s not regularly used for decision-making.

Data Out of Context

Change in fatalities from 2006 to 2012



Standardizing Data

We aim for standardization at the cost of customization.

So what do we do?

- **Be willing to invest in safety data systems, not just in safety countermeasures**

- Look at the universe and cycle of performance measures rather than relying so heavily on the one we've used historically (fatalities)

- Expand our use of available data systems

End Goal

Create data systems that meet our decision making needs

not

Make decisions based on what we can find in existing data

hrothenberg@samschwartz.com