
Road Collision and Fatality Reduction through Driver Monitoring and Incentives

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May 12, 2017

*Mention of commercial products does not constitute
endorsement by the United States Government*

Road Safety Challenges

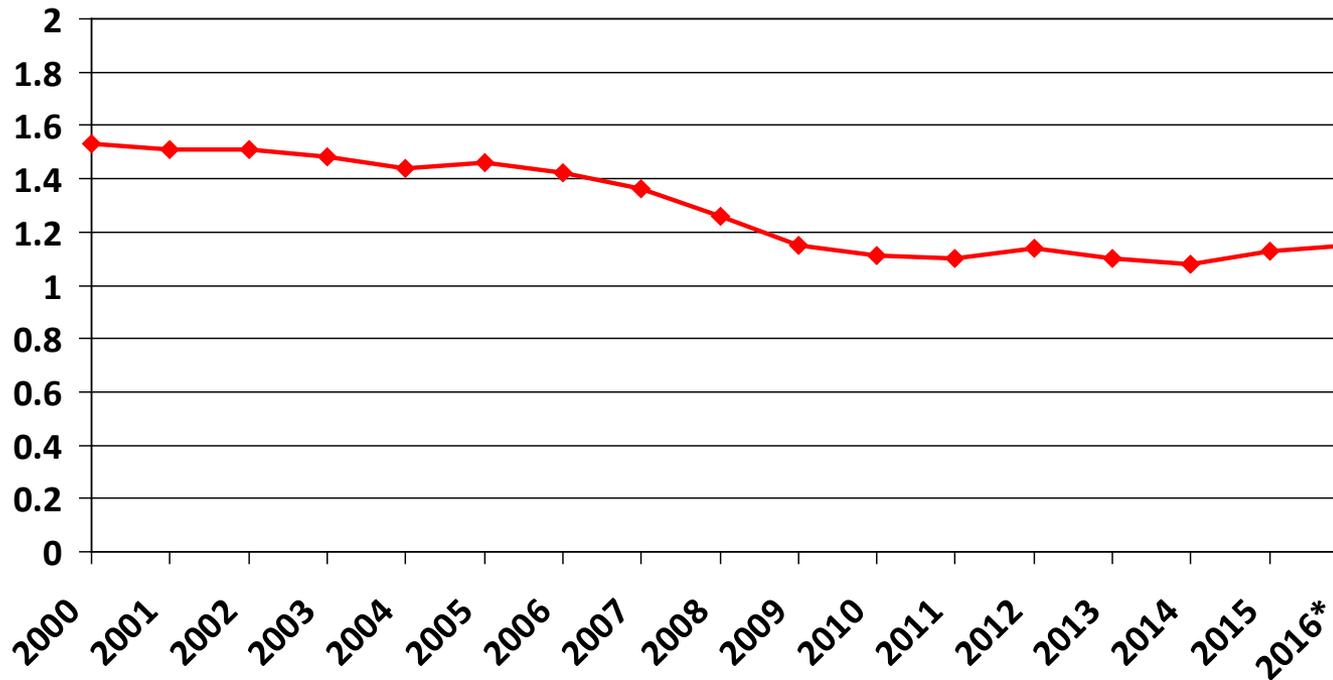


Death of American Diplomat, Sana'a, 2006

US Motor Vehicle Fatalities/MVMT

Source: NHTSA Traffic Facts

Fatality rate had decreased 28% from 2000 to 2014, before increasing
About 9,500 vehicle fatalities/yr since 2014 are attributed to excessive speed



* Preliminary NHTSA Estimate

Speeding Culture in the US?



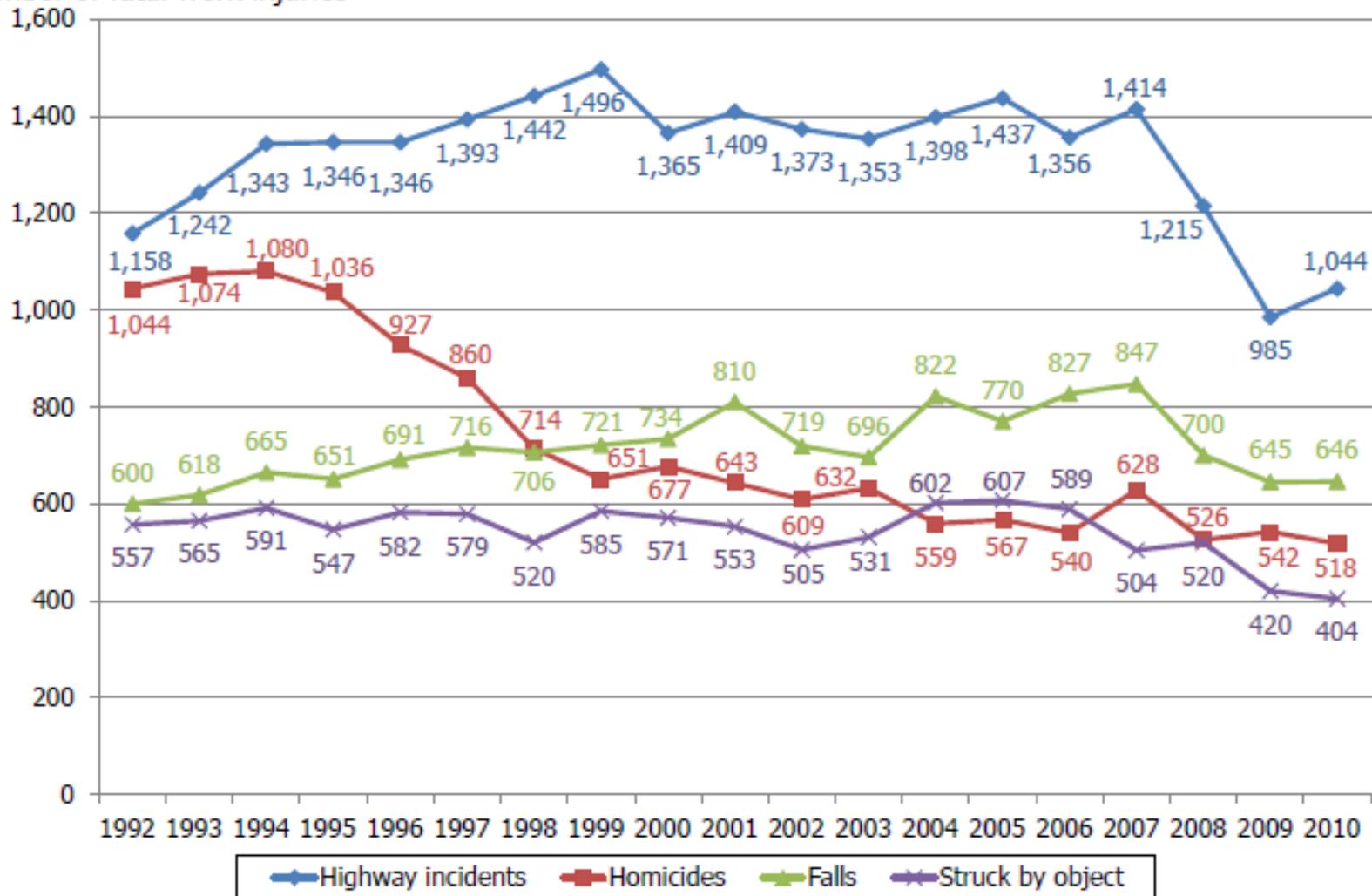
Speeding Culture in the US?

- *The Fast and the Furious (2001)*
- *2 Fast and 2 Furious (2003)*
- *The Fast and the Furious: Tokyo Drift (2006)*
- *Fast and Furious (2009)*
- *Fast Five (2011)*
- *Fast and Furious 6 (2013)*
- *Furious 7 (2015)*
- *Fast and Furious 8 (2017)*

BLS - Work-Related Fatalities

Four most frequent work-related fatal injury events, 1992–2010

Number of fatal work injuries

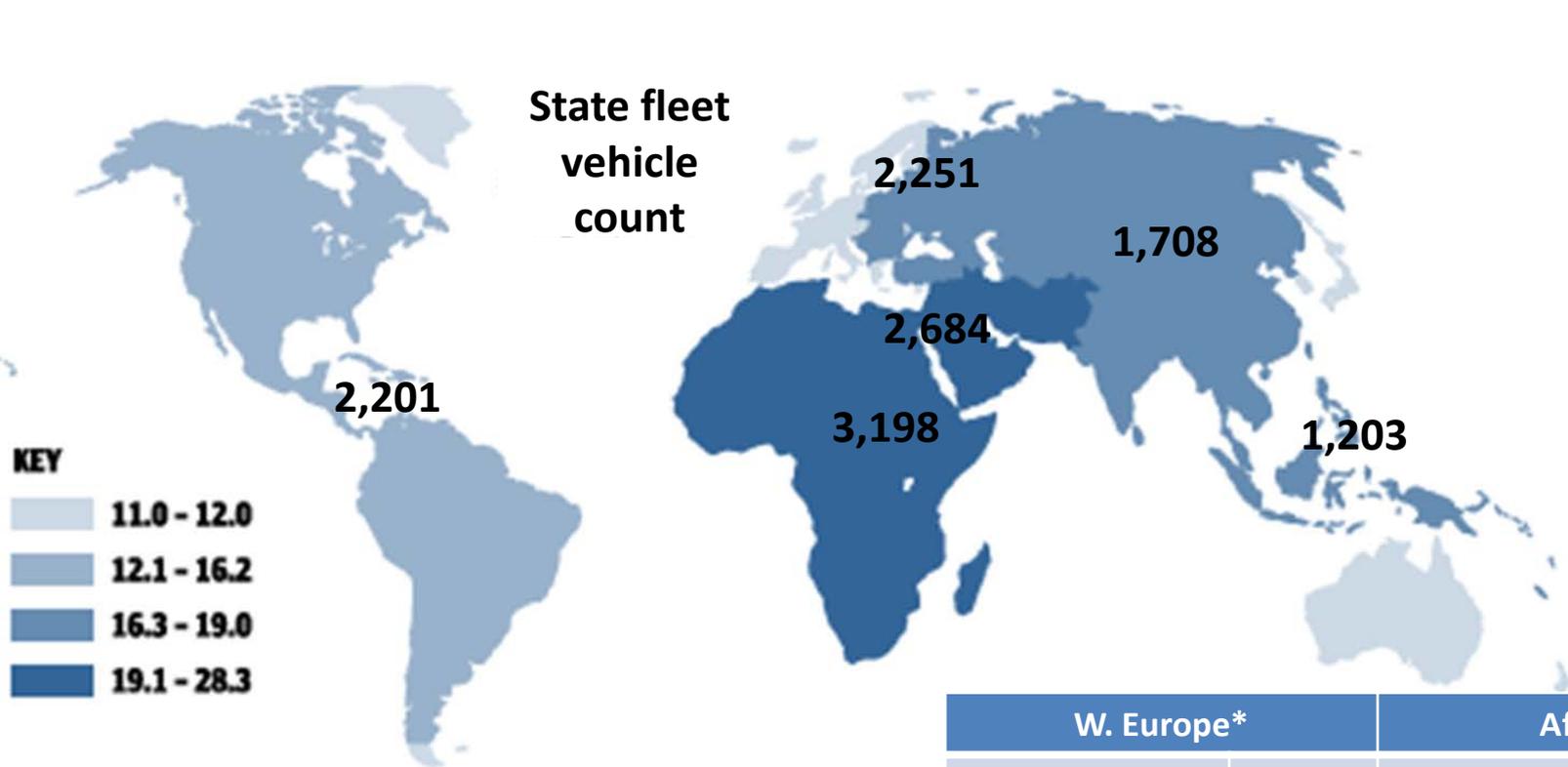


Network of Employers for Traffic Safety (NETS).

Nearly **two-thirds** of all people killed on U.S. roadways were members of the nation's workforce,

WHO Road Traffic Death Rates

1,300,000 fatalities/year

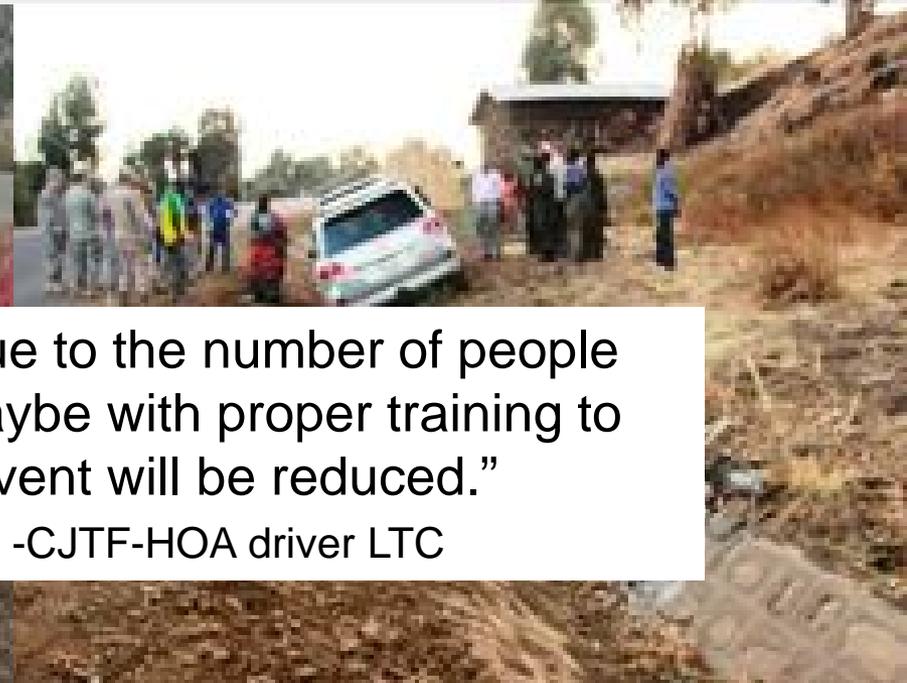


* *Global Status Report on Road Safety: 2016*

W. Europe*		Africa*	
France	5.1	Nigeria	20.5
Spain	3.7	Uganda	27.4
Germany	4.3	Tanzania	32.9
Denmark	3.5	Kenya	29.1
UK	2.9	Ethiopia	25.3



Addis Ababa Fatality



“In Ethiopia this happens and due to the number of people on the roads it will continue. Maybe with proper training to the local populace this type of event will be reduced.”

-CJTF-HOA driver LTC

hit him. My evasive action put me in a 4 ft ditch. I never had time to brake.

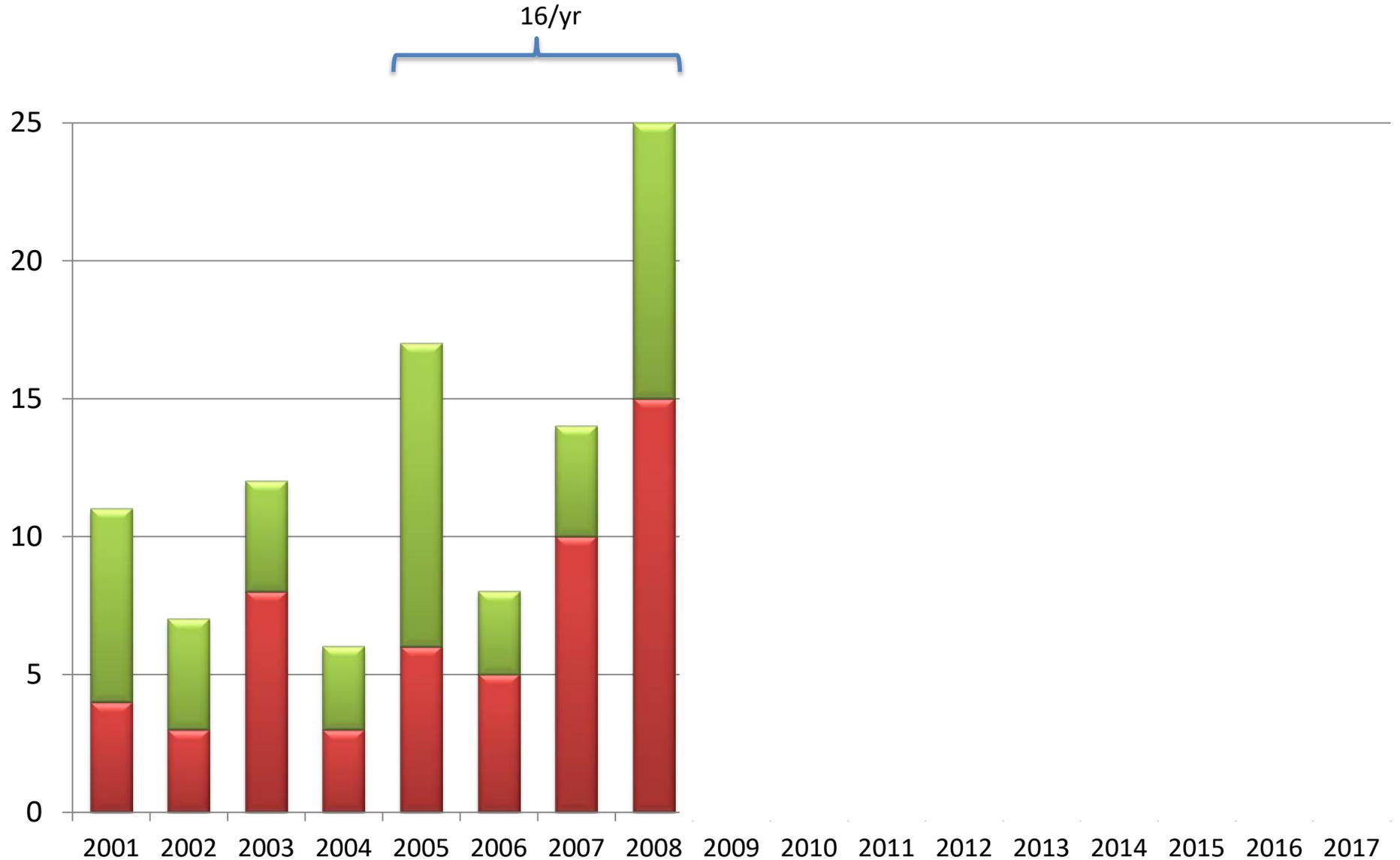
Corrective Action(s) Taken. Describe recommended actions that will prevent recurrence of a similar mishap in the future, whether or when these actions have been implemented.

In Ethiopia this happens and due to the number of people on the roads it will continue. Maybe with proper training to the local populace this type of event will be reduced.

Motor Vehicle Safety Management

- Written Mission Policy
- Driver Qualification, Evaluation & Orientation
- Medical Certification
- Safe Driver Training
- Operational Safety (Local Laws, Alcohol Proscription)
- Crash Protection (Seat Belts)
- Duty Limits (Fatigue Control)
- Distraction Controls
- Vehicle Inspections
- Mishap Reporting & Investigation

Overseas Official Vehicle Fatalities by FY



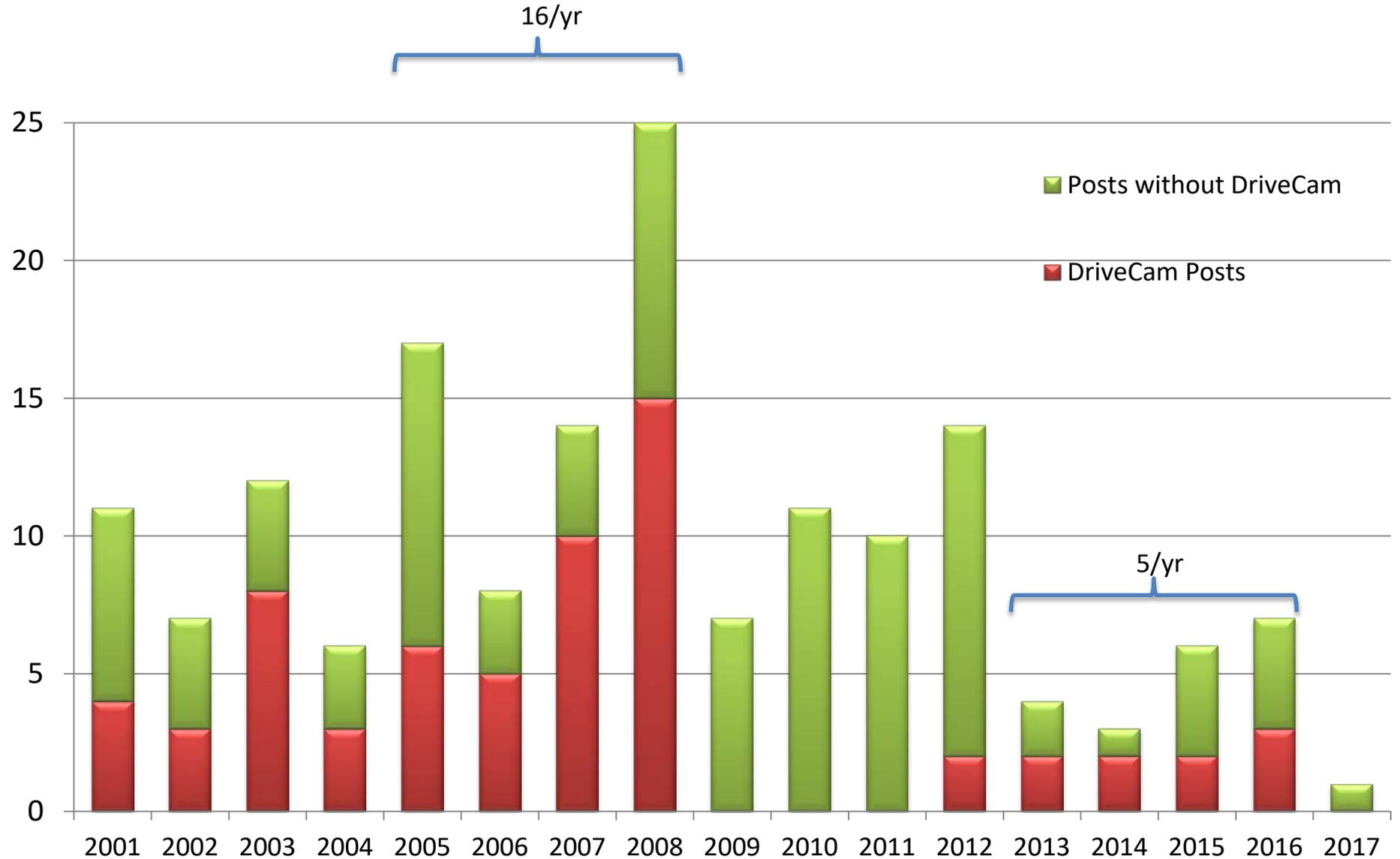
Elevated Risk Posts

Killed in Traffic

70% of Fatalities since 2000 have occurred at 25 Posts



Overseas Official Vehicle Fatalities by FY



How Can We Change Culture?



How Can We Change Culture?

-  **Motor vehicle “accidents” have been viewed as random events that happen to others and as an inevitable outcome of road transport.**
-  **The term “accident”, in particular, can give the impression of inevitability and unpredictability – an event that cannot be managed. This is not the case.**
-  **Road traffic crashes are events that can be analyzed for causes and preventive measures.**

Why Change Our Culture?

 **Emotional impact on employees**

 **Negative press in local/international media**

 **Resource destructive**



04/20/2012 07:49

Why Change Our Culture?

Newsweek



INTERNATIONAL

A Thorn in Bush's Side

The death of a popular Romanian musician haunts the NATO summit.

By [Katie Paul](#) | Newsweek Web Exclusive

Apr 2 2008 11:11 AM EDT 6:19 p.m. ET Apr 2 2008

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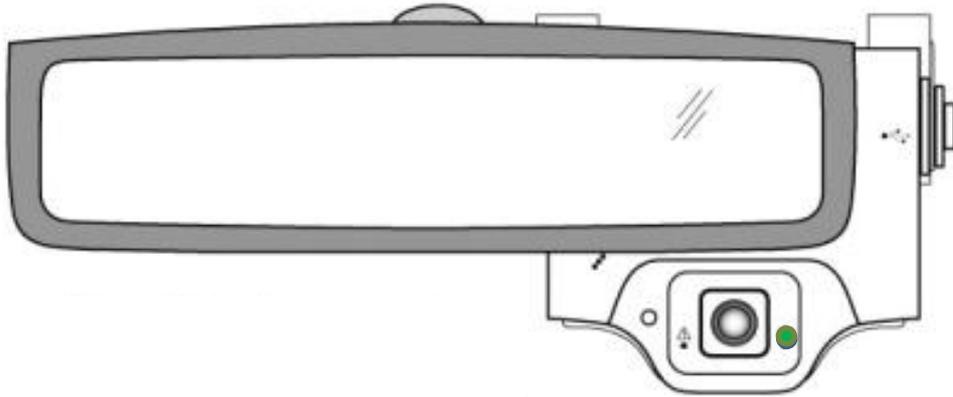
A little over four years ago, a dark blue Ford SUV careened through a stop sign at 4:30 a.m. on a December night in Bucharest, [Romania](#), broadsiding an oncoming taxicab and inflicting fatal head injuries on the passenger riding in the cab's back seat. The accident probably would have faded into obscurity had that passenger not been 50-year-old Teofil Peter, a beloved local rock star--often likened to a Romanian Bruce Springsteen--and had the driver of the [U.S. government](#)-owned SUV not been 31-year-old S/Sgt. Christopher VanGoethem, a [U.S. Marine](#) serving as the commander of the U.S. Embassy security detail, who had been drinking that night.

Four years later, following a series of frustrations that have roiled fans and Romanian government leaders alike, the issue is popping up again--at an especially inopportune time for U.S. officials. Newspapers throughout Romania last week were plastered with headlines announcing the

Friends of the late Romanian musician Teofil Peter protest outside the U.S. embassy in Bucharest after Peter was killed in an incident involving a Marine who had been drinking.



Vehicle Event Recorders



Event Triggers

- Hard cornering
- Hard braking
- Rapid acceleration
- Speed > 75 mph
- Collision
- Rough road

30-second video/audio loop always on

Indicator light alternates red and green while event is being saved;

Vehicle Event Recorders



Risky Behaviors



Front FWD +0.05 LAT +0.04 Time -8.00 22 MPH GPS Rear



Risky Behaviors



Front

FWD +0.12

LAT -0.03

Time -8.00

45 MPH GPS

Rear

Risky Behaviors



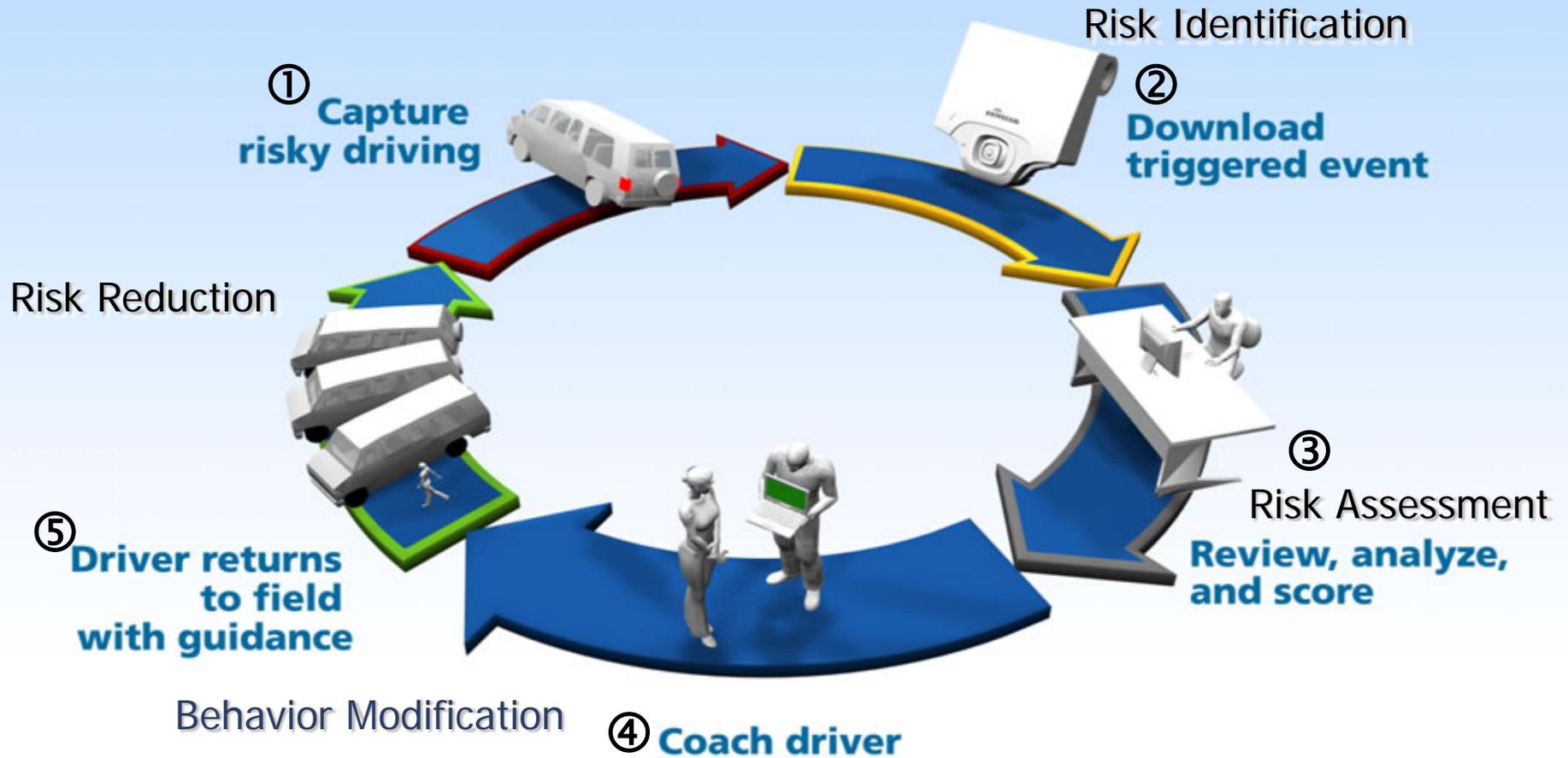
FWD +0.02

LAT -0.01



TIME -8.00

How Driver Risk Management Works



Sample Risk Scoring Scheme

Traffic violations

- Speeding 5 points
- Red light 5 points

Following too close

- ≤ 1 second: 5 points
- 1.00-1.75 seconds: 4 points
- 2.00-2.75 seconds: 2 points

Identifying Risky Drivers



Front

FWD -0.01

LAT -0.01

Time -8.00

57 MPH GPS

Rear

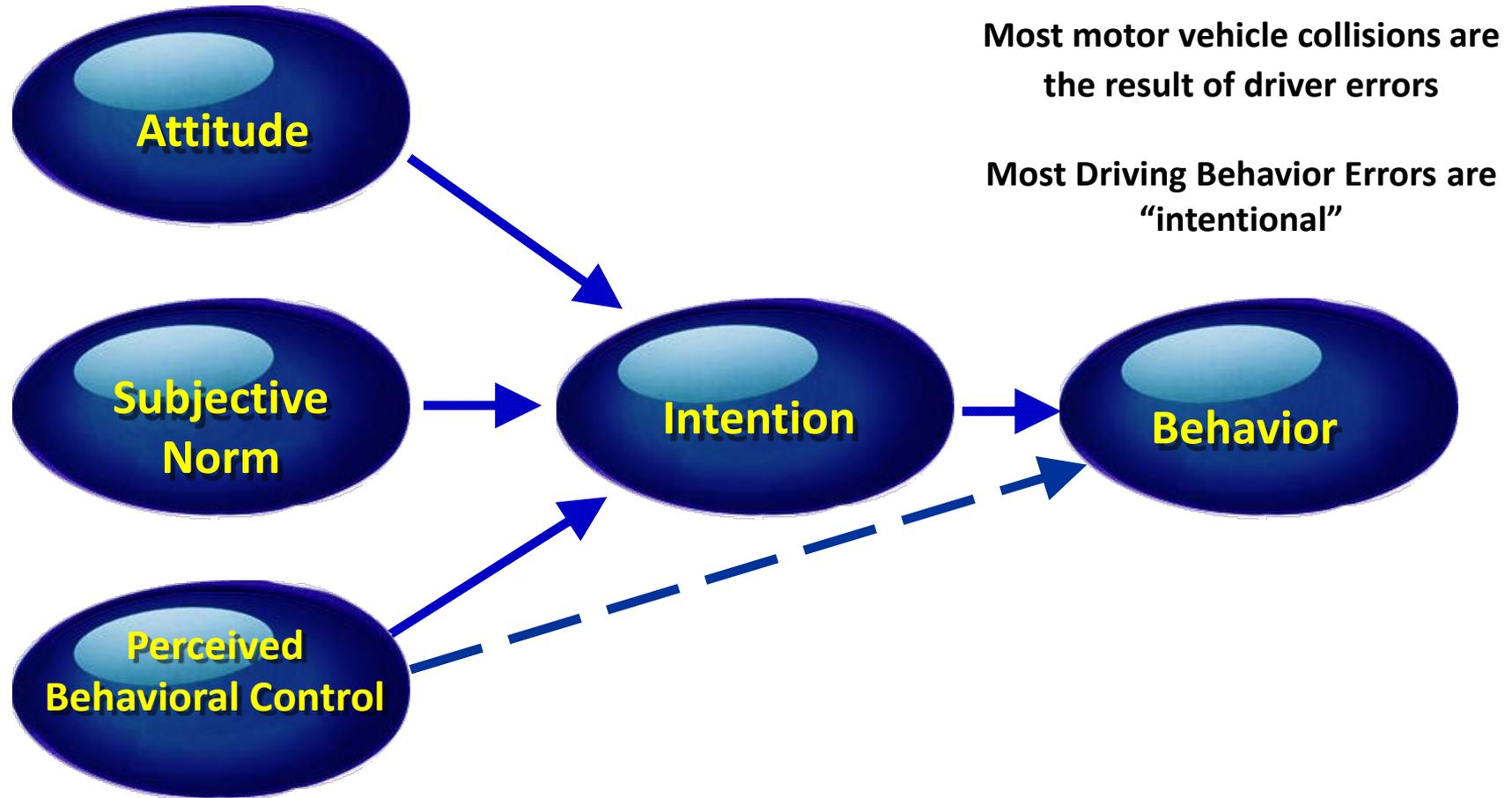
Volume



Export Video

Expand Video

Behavior Model



Most motor vehicle collisions are the result of driver errors

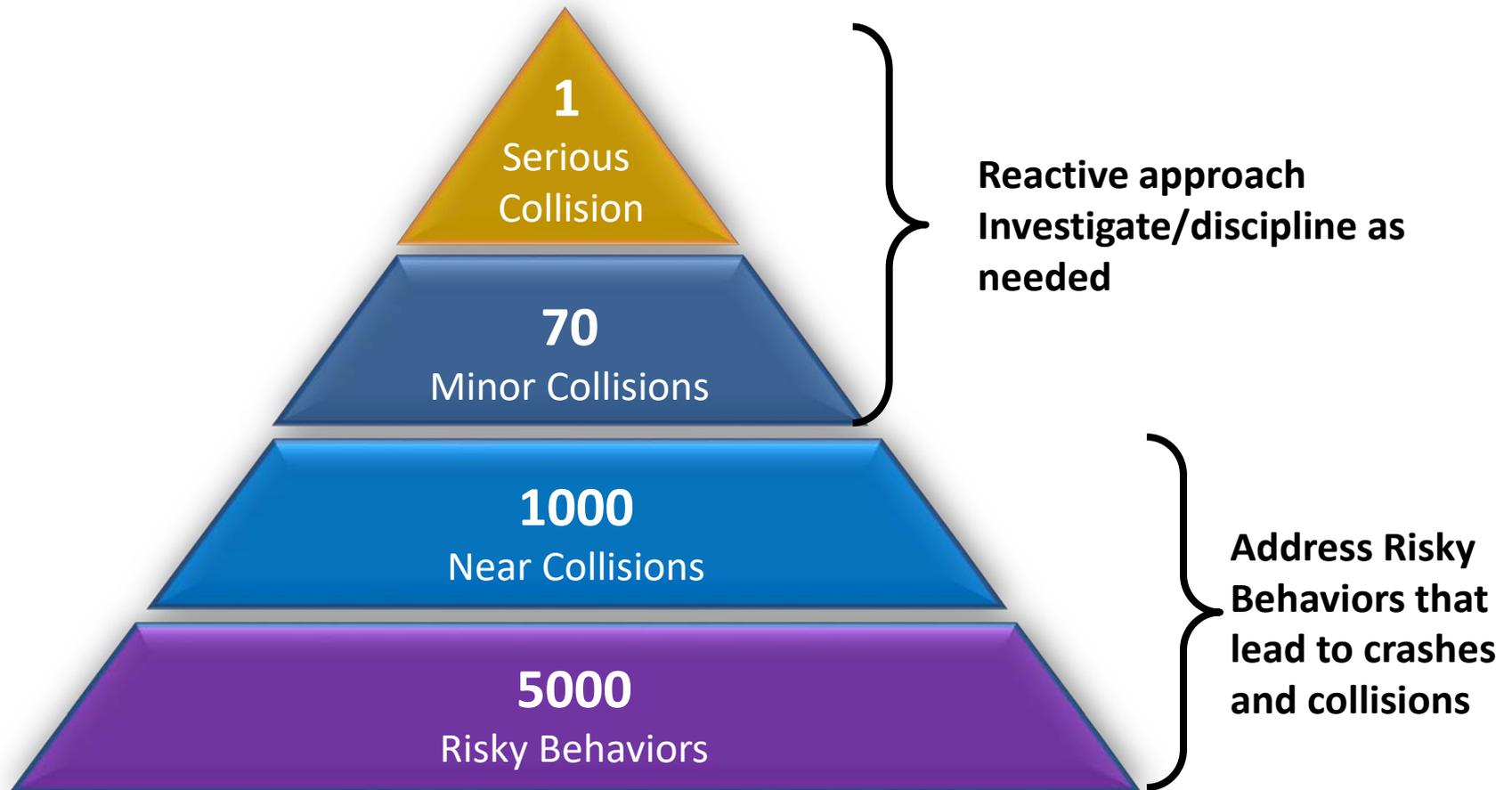
Most Driving Behavior Errors are "intentional"

Ajzen's Theory of Planned Behavior

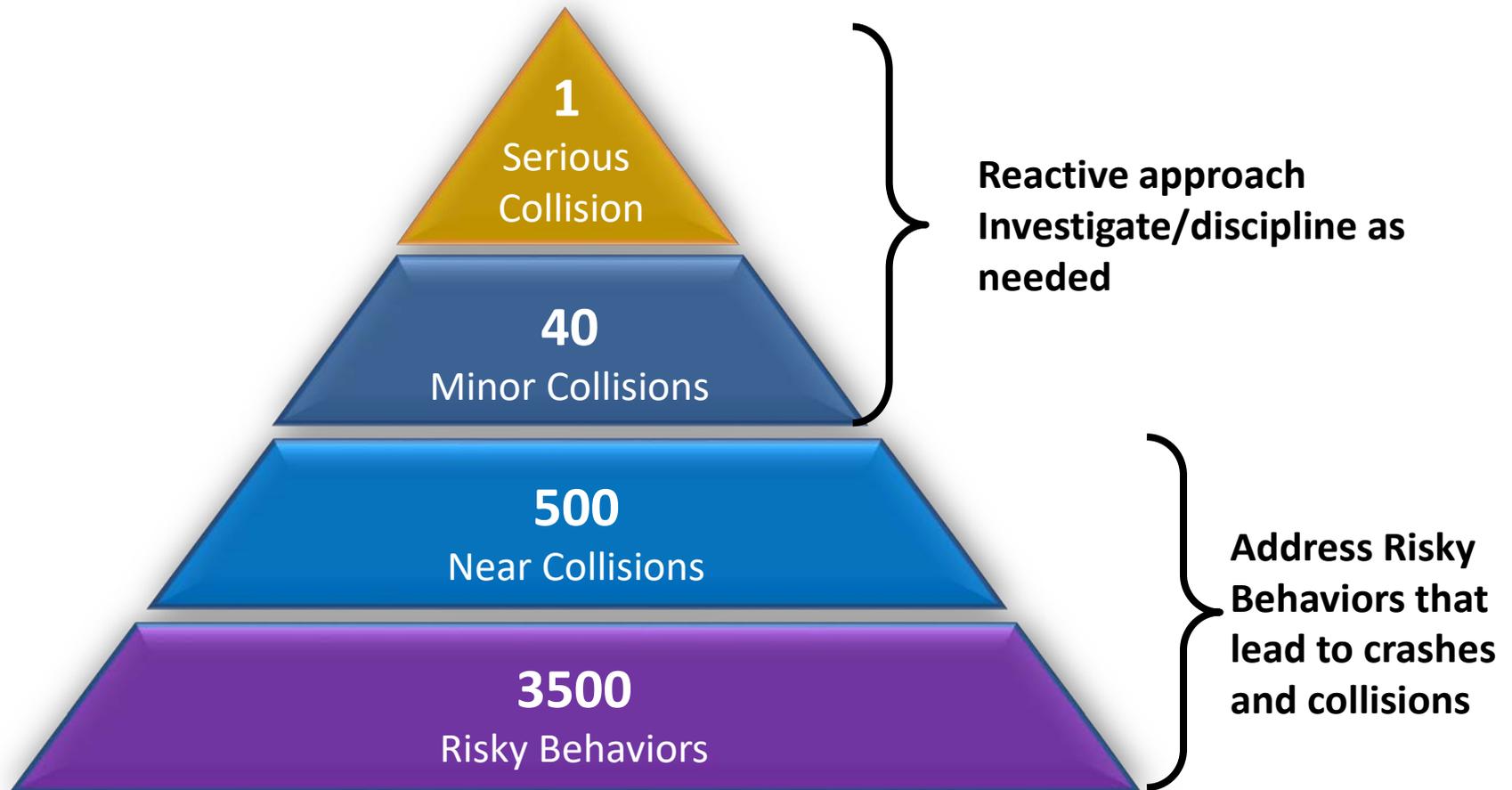
Knowledge vs. Attitude: Is driving and texting dangerous?

- American Automobile Association reported in a 2009 survey that 95% of 2,501 drivers polled said that texting while driving was unacceptable behavior, yet:
 - 21% had recently texted or emailed while driving
 - 50% of the drivers age 16-24 had texted while driving

Outcome Pyramid: 12 months prior to serious collision



Outcome Pyramid: 8 months prior to serious collision



Cognitive Bias

- A “shortcut” used by the brain
- Helps us choose based what’s worked before
 - Confirmation Bias
 - In-group Bias
 - Recency Bias
 - Halo Effect

What messages are we sending?



FWD +0.04

LAT -0.06



TIME -8.00

77 MPH 124 km/h

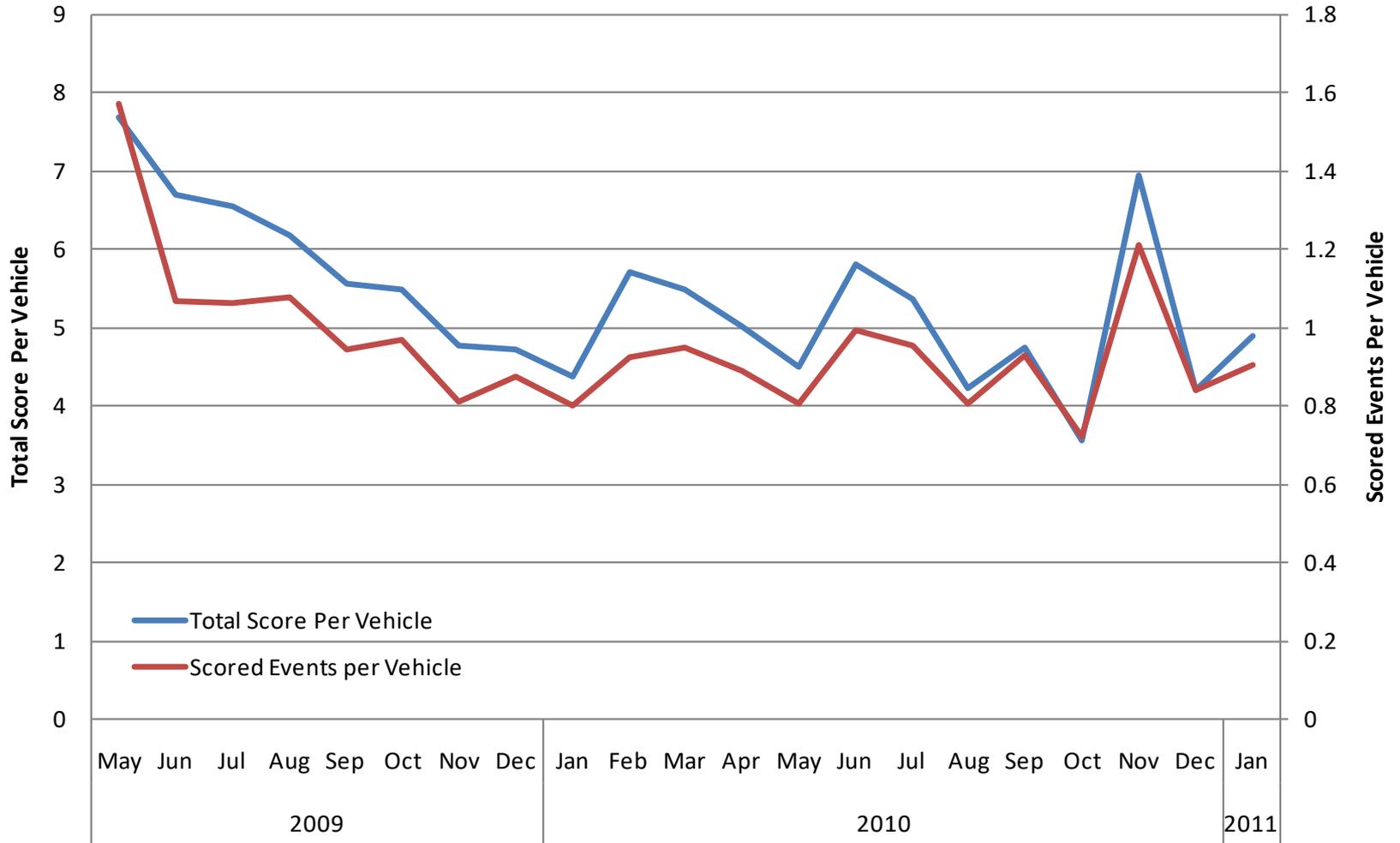
Attitude/Behavior Changes Impact Crash Rates

- In 1982, alcohol impairment accounted for about 20,000 fatalities in US roads.
- By 2009, the number of alcohol-related fatalities was about 10,000
- From 1982-2009, the # of vehicle miles traveled in the US almost doubled.

Source: US NHTSA



Early Program Results



Incentive Policy

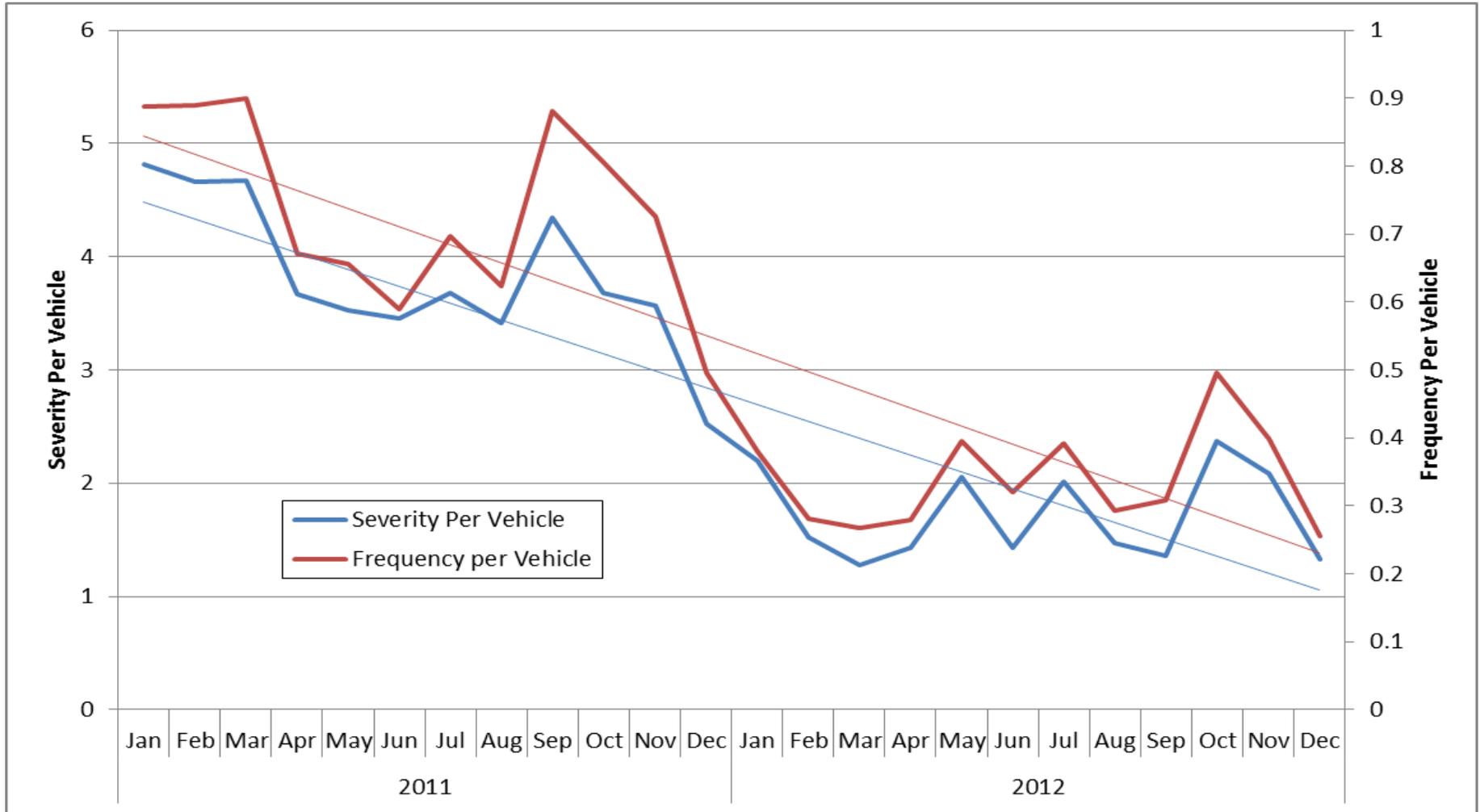
Awards/Recognition

- No policy violations for seat belts, cell phones, eating and traffic rules
- Lowest risk scores in the group
- 6 month intervals

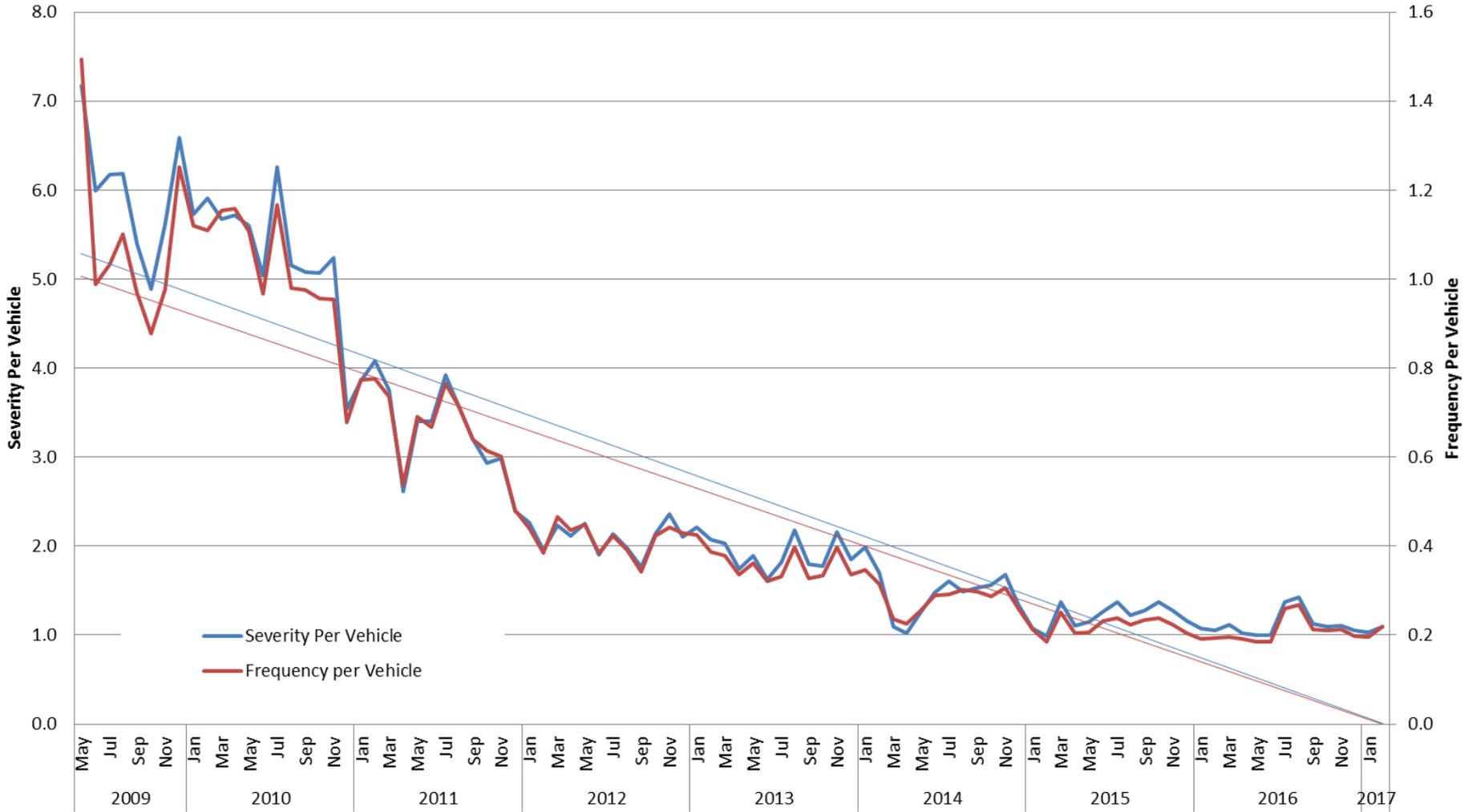
Progressive Discipline

- Policy violations: verbal warning through separation
- 20 pts/month: verbal warning
- 30 pts/2 months: written warning
- 50 pts/3 months: 5 days suspension
- 100 pts/12 months: separation

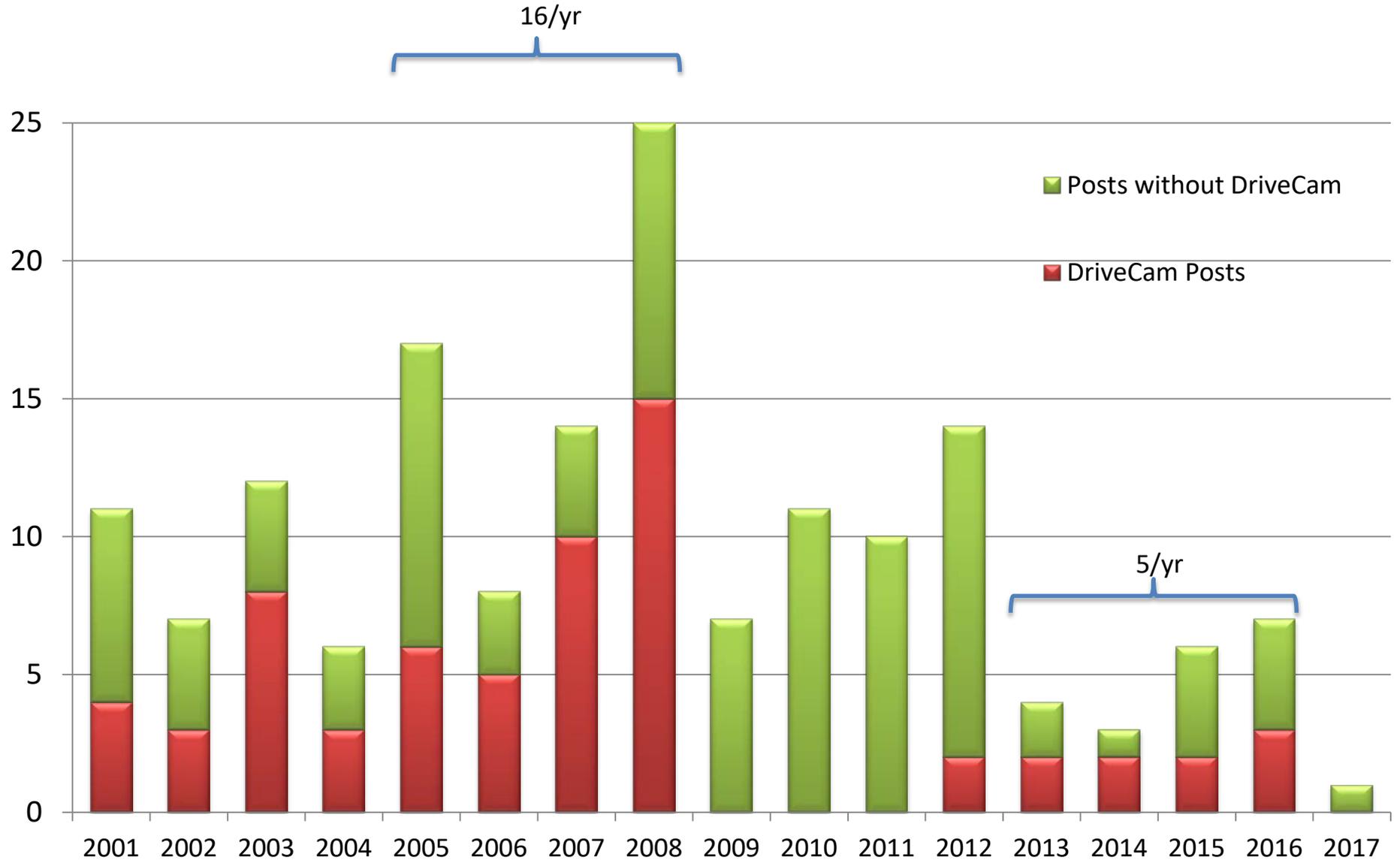
Later Program Results



Risk Reduction For All Posts



Overseas Official Vehicle Fatalities by FY



User Acceptance?



Questions?

