Combining Behavioral Safety Theory and Telematics

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Elements of Well Performing Fleet Programs

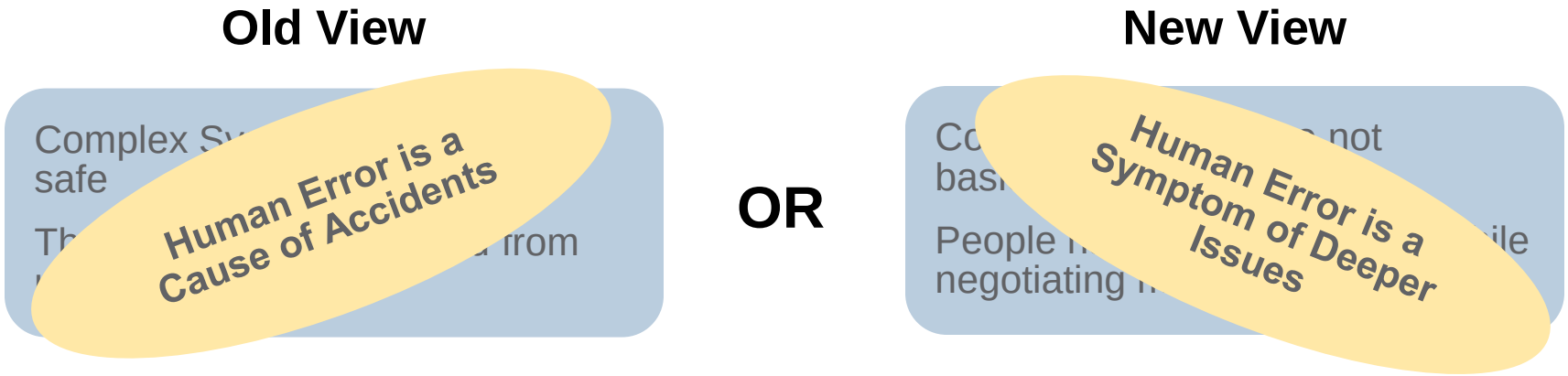
- Select drivers based on their history and ability to perform the job
- Establish and communicate expectations on how jobs should be performed
- **Monitor performance against the expectations**
- **Identify systemic barriers to expected performance**
- **Adjust systems to support performance expected**
- Document actions taken as policy

A Metropolitan Service Fleet…

Scenario	Action
▪ The business is known for service excellence ▪ The drivers are service experts & have regular customers ▪ Bad weather is forecast	▪ Drivers are told to stay off slick roads ▪ Postpone service calls until conditions permit ▪ “Catch-up” on customer commitments “ASACP”

What Driving Performance Might Result?

Reducing Risk in Complex Systems…*



"For a long time, people were saying that most accidents were due to human error and this is true in a sense but it's not very helpful. It's a bit like saying that falls are due to gravity."

Dr. Trevor Kletz

*Dekker, Sidney; The Field Guide to Human Error Investigations, Ashgate Publishing Company 2002

Probing Process Failures – What is needed?

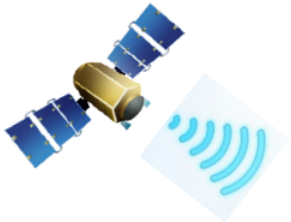
- A steady stream of data on their occurrence
- Context for situations in which they occur
- Process for understanding situational contributing factors to them
- Strategies for mitigating contributing factors at their source

Telematics provide continuous, real-time data on driving process failures.

More is needed to optimize their value to vehicle fleet operations

Telematics Overview

Information	Connectivity	Intelligence



GPS Satellite

Obtains location information

Connected Vehicle

Transmits time, location and vehicle information using cellular technology

Cellular Network

Telematics Service Provider

Gathers and stores vehicle information to create telematics-based services

Customer / Insured

Uses software to run business for productivity, saving and safety gains

Technology Platforms

Smart Phone App or App tethered to OBDII

or

+

After Market Hardwired Professionally Installed Devices

+

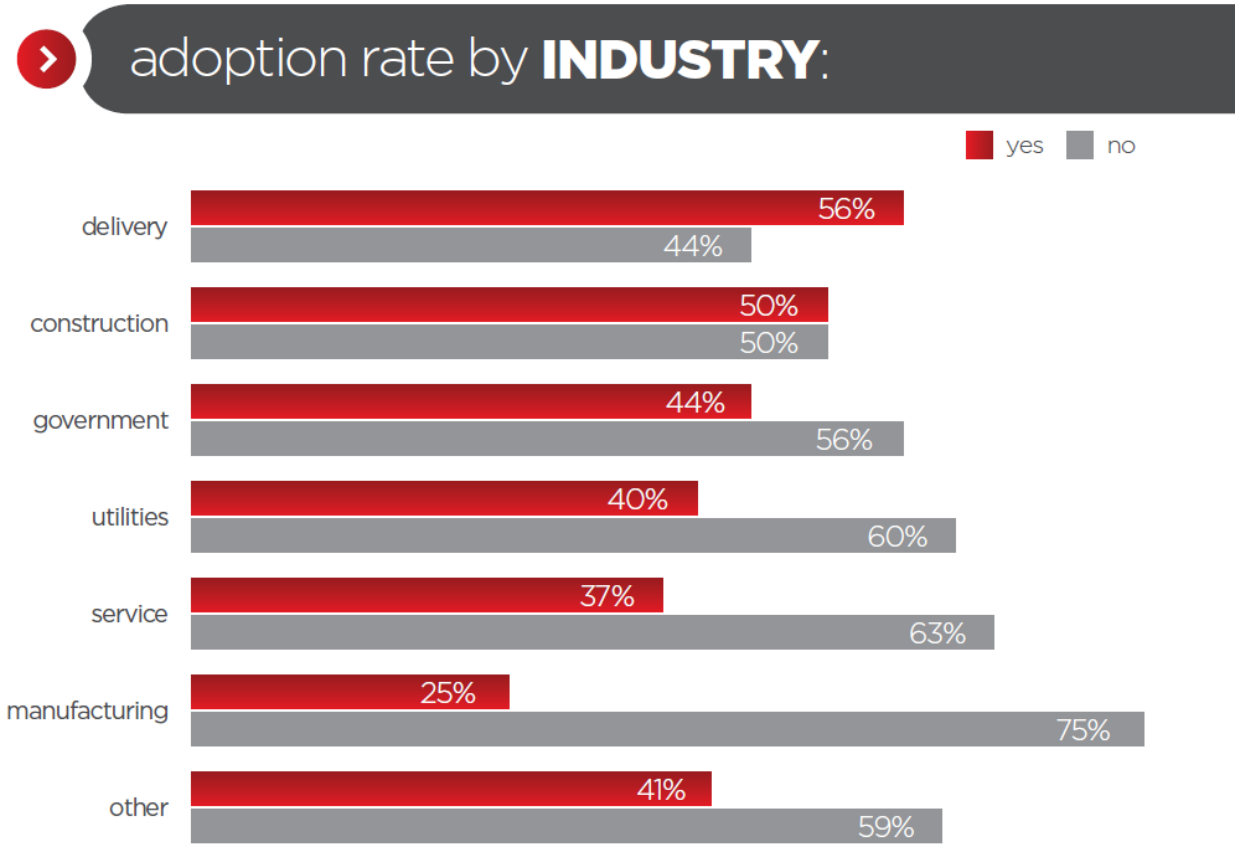
Self Installed OBDII Device

+

OEM Built-In Solutions

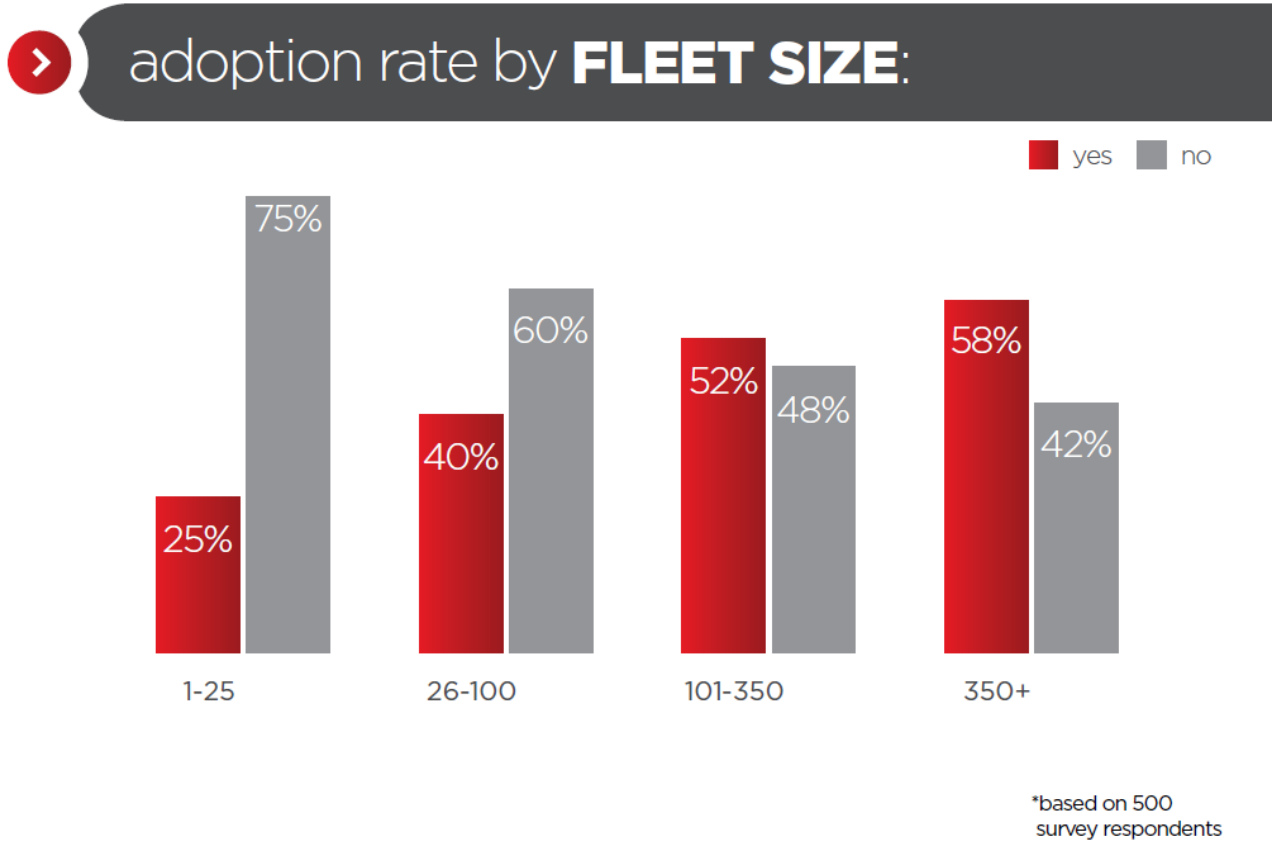
+

Telematics Adoption Rate by Industry



Source Fleet Management Technology Report by Bobit media publisher of Automotive Fleet Magazine and Government Fleet Magazine

Telematics Adoption by Fleet Size



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Defining Needs or Objectives for Telematics

- Work productivity
- Fleet management
- Driver performance
- Fuel economy
- Vehicle location
- Security
- Route compliance

Work Productivity

- Map all your vehicles in one view
- Real-time vehicle location and exception reporting
- Route optimization and turn-by-turn directions
- Rerouting with real-time weather and traffic updates
- Customized geo-fencing to identify mapped areas of interest
- Text-to-speech and speech-to-text messaging

Fleet Management

- Engine diagnostics and scheduled maintenance alerts
- Accident notification and emergency services request
- Integration with back-office payroll and accounting systems
- Hours of service reporting

Driver performance

- Driver and fleet level reporting
- Reports with drivers ranked or scored based on performance
- Real-time exception notification of hard braking, swerving, and speeding events
- Customized thresholds for exception notifications
- Seat belt usage information
- Feedback capabilities and coaching modules for drivers and managers

Fuel Economy

- Excessive idling alerts
- Fuel consumption and fuel tank level monitoring
- Speed monitoring (set limits and MPH compared to posted)

Location and Security

- Search feature to find vehicles, drivers or a location
- Stolen vehicle assistance
- Back up battery and data recovery systems

Selecting a vendor

- Identify vendors that can meet your needs/objectives
- Review sample reports to verify they will provide you with tools for employee discussions
- Review the amount of data you will get to avoid being overwhelmed with individual notifications
- Look at scorecards that provide aggressive events per miles driven by driver and fleet
- Look for vendors that will let you test their products prior to buying or entering into a contract

Aggressive Events

- Speeding can be measured in multiple ways
- Speed vs. posted limits frequently used
- Harsh acceleration may not tell much about large trucks
- Cornering is measured in G force
- Braking shows rapid speed changes
- Parameters are adjustable (speed and time prior to becoming an event)
- Parameter tolerance should be based on operations and equipment
- Comparing fleets requires similar parameters to provide a valid benchmark

Compliance vs. Measuring Risk

- Speed risk from open interstate driving
- Running yellow lights vs. stopping
- Sudden stops can avoid a crash and be a good thing
- Focus on event rates rather than individual events

Telematics Service Provider (TSP) Scorecards

- Scorecards can identify aggressive drivers
- Understand the scoring methodology (algorithm)
- A group of aggressive drivers can look average or one average driver can look aggressive depending on the comparisons
- Group like operations and similar vehicles when comparing performance (don’t assume the TSP knows your operation that well)

Managing Vital Driving Performance™ (MVDP™)

- MVDP is a process not a way for Liberty Mutual to collect your driving data
- Objective is to help you identify aggressive drivers
- MVDP uses event rates
- Understanding the range of event rates lets you identify outliers
- MVDP uses root cause analysis rather than training
- Root cause analysis lets you develop action plans for drivers and management

Calculating Event Rates

- Events per 100 miles common
- Type of event (speed, braking, cornering and acceleration)
- % of time over posted

Event Rate Outliers

- Understand how your equipment works
- Management should have or test devices
- Review the range of event rates
- Compare a driver to the median or middle of the pack driver
- Establish company goals

Aggressive Event Rates- Example 100 Vehicle Fleet

Root Cause Analysis Group

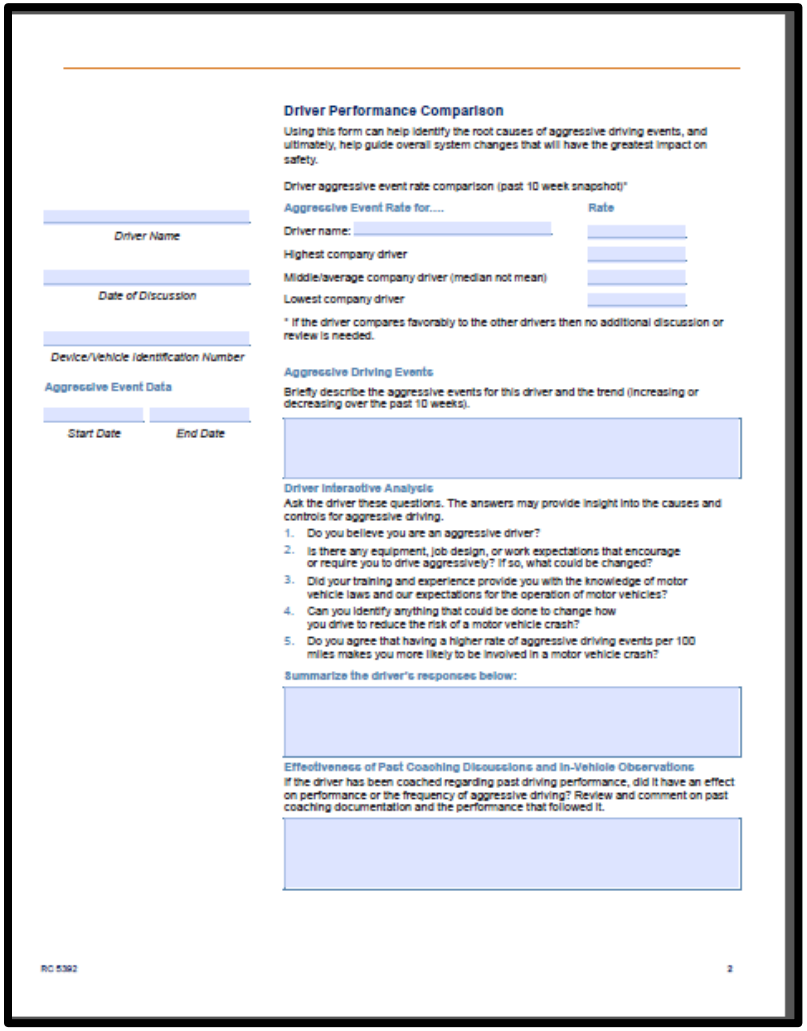
Vehicle Number	Event rate per 100 Miles
Vehicle 1	44.5
Vehicle 2	11.9
Vehicle 3	9.8
Vehicle 4	7.5
Vehicle 5	6.9
Vehicle 6	6.9
Vehicle 7	6.6

Minimum	0.0
Maximum	44.5
Median	1.6
Mean	2.5

* Minimum rates may include low or zero mile vehicles

Root Cause Analysis Document

- Uses event rate ranges
- Used with high event rate drivers
- Identifies potential causes of aggressive driving
- Does not focus on “training” drivers



Driver Performance Comparison

Using this form can help identify the root causes of aggressive driving events, and ultimately, help guide overall system changes that will have the greatest impact on safety.

Driver aggressive event rate comparison (past 10 week snapshot)*

Aggressive Event Rate for....	Rate
Driver name:	
Highest company driver	
Middle/average company driver (median not mean)	
Lowest company driver	

* If the driver compares favorably to the other drivers then no additional discussion or review is needed.

Driver Name

Date of Discussion

Device/Vehicle Identification Number

Aggressive Event Data

Start Date End Date

Aggressive Driving Events

Briefly describe the aggressive events for this driver and the trend (increasing or decreasing over the past 10 weeks).

Driver Interactive Analysis

Ask the driver these questions. The answers may provide insight into the causes and controls for aggressive driving.

1. Do you believe you are an aggressive driver?
2. Is there any equipment, job design, or work expectations that encourage or require you to drive aggressively? If so, what could be changed?
3. Did your training and experience provide you with the knowledge of motor vehicle laws and our expectations for the operation of motor vehicles?
4. Can you identify anything that could be done to change how you drive to reduce the risk of a motor vehicle crash?
5. Do you agree that having a higher rate of aggressive driving events per 100 miles makes you more likely to be involved in a motor vehicle crash?

Summarize the driver's responses below:

Effectiveness of Past Coaching Discussions and In-Vehicle Observations

If the driver has been coached regarding past driving performance, did it have an effect on performance or the frequency of aggressive driving? Review and comment on past coaching documentation and the performance that followed it.

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Root Cause Analysis for Outliers

- Effectiveness of past coaching discussions and in vehicle observations
- Motor Vehicle Record (MVR)
- Driving Expectations
- Driver Knowledge
- Vehicle and Work Experience
- Fatigue
- Scheduling
- Routing
- Compensation Systems

Root Cause Analysis for Outliers

- Data Integrity/Telematics Device Performance
- Consequences for Performance
- Driver Outside Work Responsibilities/Situations
- Multiple Jobs
- Commuting Times
- On Time Departure at Start Of Work Day
- Distractions
- Vehicle Condition
- Breaks and Lost Time During The Work Day
- Work Flow or Scheduling Exceptions
- Health and Wellness

Setting Company Goals

- Look at the range of performance between drivers
- Understand the average and median scores
- Set realistic company goals for performance
- Use benchmarks from a telematics service provider if they exist
- Develop a plan to improve the drivers most in need of improvement
- Track goals over the course of the year for the company or each location

Developing Individual Action Plans

- Have expectations for the operation of vehicles
- Compare drivers to the median, average and company goals
- Involve supervisors in coaching
- Provide regular feedback
- Avoid distracting the driver while in the vehicle
- Avoid setting unrealistic expectations (“I ran the red light to avoid a hard brake”)
- Develop a culture of friendly competition
- Recognize the very best and use them as an example of what is possible

MVDP™ Process Summary

- Obtain event data and miles
- Calculate event rates
- Identify outliers
- Use root cause analysis
- Track fleet results over time

Vehicle	Miles	Events	Rate per 100 miles
Driver 1	49.48	22	44.5
Driver 2	293.7	35	11.9
Driver 3	10.23	1	9.8

Highest company driver

Middle/average company driver (median not mean)

Lowest company driver

Where does it belong

Last Year	This Year
2.9	2.2

Questions?

Contact our Risk Control Consulting Center

Monday – Friday, 8:00 a.m. to 8:00 p.m. ET

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