Session Objectives

- Examine the challenge of managing performance systematically
- Discuss the synthesis of actionable insights from reliable data
- Explore Telematics as a process data source
- Describe use of Root Cause Analysis for systematic management of aggressive driving events

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...

<table>
<thead>
<tr>
<th>Scenario</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>The business is known for service excellence</td>
<td>Drivers are told to stay off slick roads</td>
</tr>
<tr>
<td>The drivers are service experts &amp; have regular customers</td>
<td>Postpone service calls until conditions permit</td>
</tr>
<tr>
<td>Bad weather is forecast</td>
<td>“Catch-up” on customer commitments “ASACP”</td>
</tr>
</tbody>
</table>

What Driving Performance Might Result?

People in organizations get complex behavioral influence from the systems with which they work

Behaviors that occur are precisely what the systems support – no more, no less

Performance in Organizations

What Exists/Comes Before
- Physical Facilities/Equipment
- Policies/Procedures
- Training/Instructions
- Interactions
- Objectives/Schedules
- Provided by Management System (Adjustable)

What is Done
- Situational Decision Making on What to Do
- Perceived Results/Action Taken
- Provided by Workers (Observable)

What Happens, or not to Performers
- Health/Health/Status
- Success/Comfort/Energy
- Approval/Acceptance/Affiliation
- Provided by Management System (Manageable)
Reducing Risk in Complex Systems…

Old View

Complex System

Human Error is a
Cause of Accidents

OR

New View

Complex System

People, Tasks, and Operational/Environmental Issues

… Starts with probing for how process failures are systematically connected to people’s tools, tasks, and operational/organizational environment


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

Ackoff, Russell; 1988 Address to International Society for General Systems Research (Proceedings Published 1989)
Graphic Source: http://www.systemswiki.org/index.php?title=Data,_Information,_Knowledge_and_Wisdom
Telematics Overview

<table>
<thead>
<tr>
<th>Information</th>
<th>Connectivity</th>
<th>Intelligence</th>
</tr>
</thead>
<tbody>
<tr>
<td>GPS Satellite</td>
<td>Obtains location information</td>
<td></td>
</tr>
<tr>
<td>Connected Vehicle</td>
<td>Transmits time, location and vehicle information using cellular technology</td>
<td></td>
</tr>
<tr>
<td>Cellular Network</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Telematics Service Provider</td>
<td>Gathers and stores vehicle information to create telematics-based services</td>
<td></td>
</tr>
<tr>
<td>Customer/Insured</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Technology Platforms

- Smart Phone App or App tethered to OBDII
- Self Installed OBDII Device
- After Market Hardwired Professionally Installed Devices
- OEM Built-In Solutions

Personal vs. Commercial Insurance Perspective

**Personal Insurance**
- Marketing focus
- Uses discounts for good drivers
- Price increase for poor drivers rarely used
- Miles, time of day and other factors in addition to driving behaviors used

**Commercial Insurance**
- Large fleets buy insurance products making discounts less applicable
- Not used to price individual drivers
- Telematics is one part of fleet safety program
- Business use has different exposures
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

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

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)
Selecting a TSP

- Identify vendors based on achieving your objective
- 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 and web sites for ease of use
- Look for aggressive events per miles driven by driver and for the fleet
- Understand event parameters and if they can be adjusted
- Look for vendors that will let you test their products prior to buying or entering into a contract

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

<table>
<thead>
<tr>
<th>Vehicle Number</th>
<th>Event rate per 100 Miles</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vehicle 1</td>
<td>44.5</td>
</tr>
<tr>
<td>Vehicle 2</td>
<td>11.9</td>
</tr>
<tr>
<td>Vehicle 3</td>
<td>9.8</td>
</tr>
<tr>
<td>Vehicle 4</td>
<td>7.5</td>
</tr>
<tr>
<td>Vehicle 5</td>
<td>6.9</td>
</tr>
<tr>
<td>Vehicle 6</td>
<td>6.9</td>
</tr>
<tr>
<td>Vehicle 7</td>
<td>6.6</td>
</tr>
<tr>
<td>Minimum</td>
<td>0.0</td>
</tr>
<tr>
<td>Maximum</td>
<td>44.5</td>
</tr>
<tr>
<td>Median</td>
<td>1.6</td>
</tr>
<tr>
<td>Mean</td>
<td>2.5</td>
</tr>
</tbody>
</table>

* Minimum rates may include low or zero mile vehicles

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

Process Summary

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