AZUGA PRESENTS

The Real Benefits of Safety

The Science & the Art of Developing a Safety Culture for Your Fleet

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Ananth Rani
Co-Founder and CEO of Azuga

- Arrived on a Boeing 747, legally, in 1988
- Founded Azuga in July 2012
- 400+ employees
- When drivers compete on safety, everyone wins
- It’s all about Service
- Previously Cofounder of Xora, (acquired by Click Software, which got bought by Salesforce in 2019)

Matt Camden
Senior Research Associate

- Staff member of the Virginia Tech Transportation Institute
- Experienced researcher in the design and evaluation of transportation safety programs

VIRGINIA TECH
TRANSPORTATION INSTITUTE

During this presentation we will cover:

- An overview of the rising cost of accidents
- GPS telematics data, driver scoring, Data Science and how it can help a fleet predict and reduce crashes
- Insights from research completed by Virginia Tech Transportation Institute

During this presentation we need to joke about:

- Big Data
  - Tell me something I don't know. Thing 1. Thing 2
- Artificial Intelligence
  - Don't just stand there and tell me I have problem drivers. Make that problem go away…except when it's my full-time job

The facts about unsafe driving

Unsafe Driving Costs

Average cost:	$16,500
Average cost with injuries:	$74,000
Average cost with fatalities: [1]	$500,000

Distracted Driving

Accidents: 78% caused by distracted driving [2]

Cell phone use: 4 times more likely to have an accident [3]

Texting: 8 times more likely to have an accident

[1] Source: https://www.constructionequipment.com/true-costs-fleet-accidents
[2] Virginia Tech Transportation Institute
https://vtnews.vt.edu/articles/2009/07/2009-571.html
[3] NHTSA: https://www.nhtsa.gov/risky-driving/distracted-driving

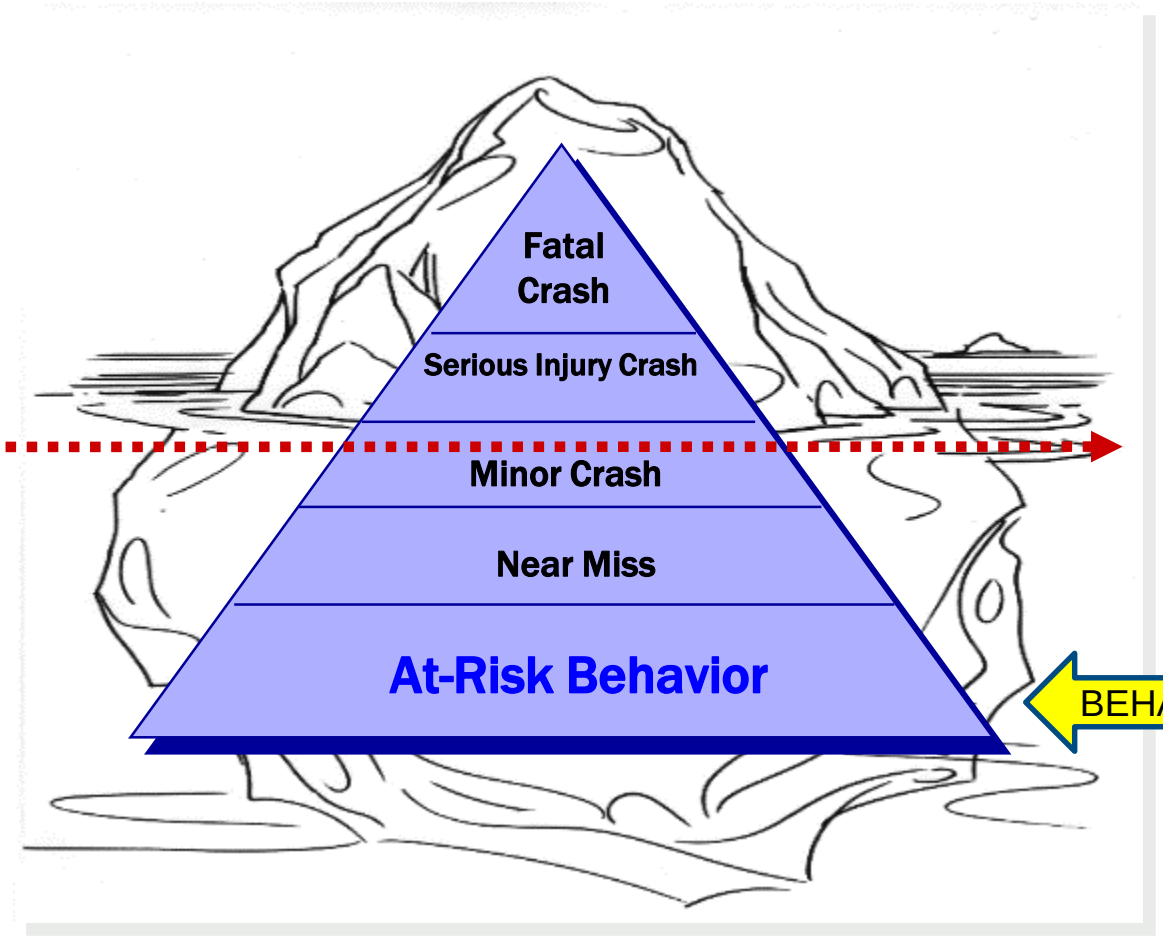
The Impact of unsafe driving

Expensive Lawsuits: The rise of litigation Financing

Insurance: Insuring fleets is not profitable. So, they just keep raising rates, or you have to increase reserves if self-insured.

Cost of Repairs: Autos now have 50% of cost in Complex Electronics. Labor costs higher. Tarrifs

Leading vs. Trailing Indicators



BEHAVIOR DATA

If i ignore you Will you go away?...

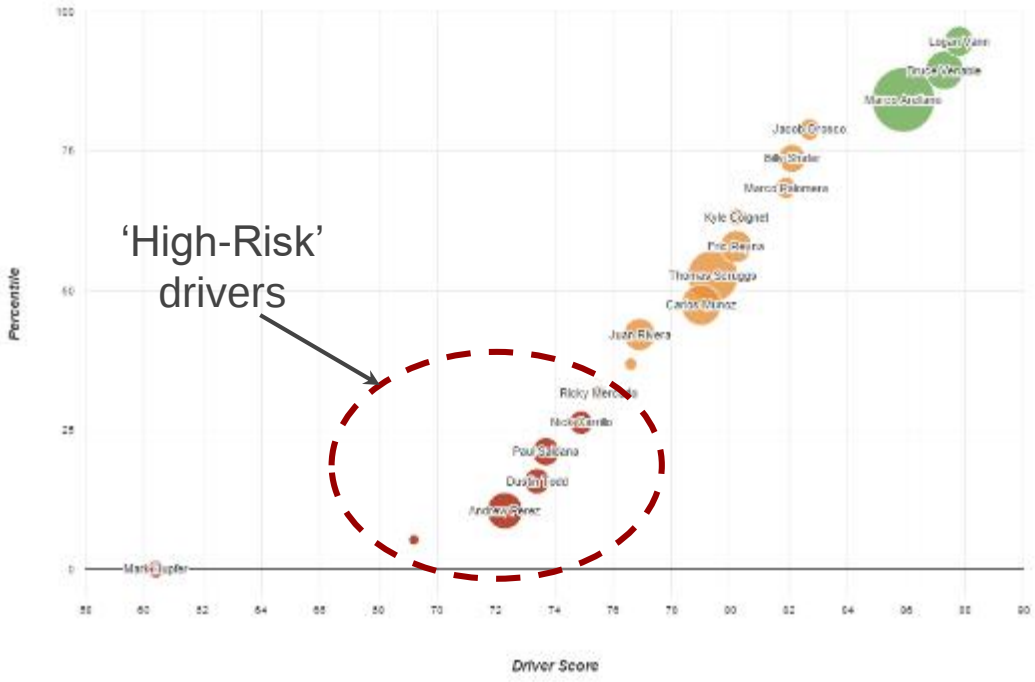
Everyone has a score…

- Scores help simplify what leading indicator to track
- The pursuit of a perfect FICO-type driver score continues
- What do we know from Personal Auto Insurance?
  - Hard Braking 8-10 MPH in one second is a leading indicator
  - Speeding above 80 MPH
- Azuga Scores are based on insurance industry standards. Perhaps a bit too conservative. But results matter.

Driver Scoring – Risk Assessment – Data Science – 4 Billion Miles

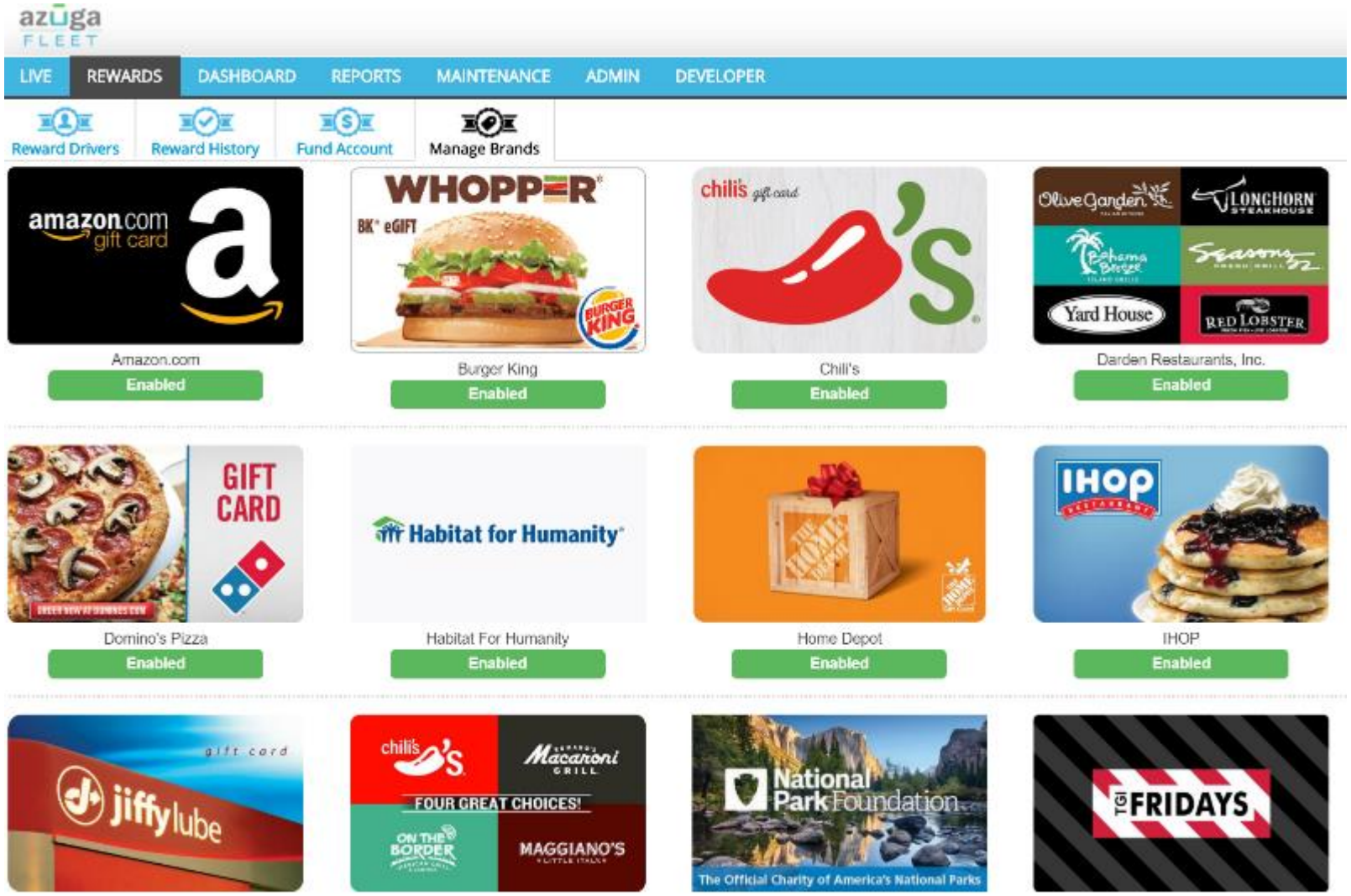
Scoring based on:

- OBD events (low data requirements):
  - Exposure Risk* (Time of day weighted Miles; unfamiliar stretches, length of trips, congestion) and Behavioral Risk (Hard braking, Speeding, Hard Cornering, Hard Acceleration, Distracted Driving, Seat belt use, Idling)
  - Magnitude, duration, frequency, time of event, weather during event, and vehicle class factored in scoring
- High frequency accelerometer and high frequency OBD speeds and RPM:
  - Data at 1 s intervals for capturing nuanced driving behavior



* Exposure & Behavior Scores as a measure of overall Risk for Insurance; Behavior Scores for Fleets for coaching

When driver scores alone don’t stimulate…How to make gamification last more than 4 hours



Win-Win-Win: Safety + Fuel + Wear and Tear

A 10pt improvement in driving behaviors delivers massive benefits

46.6% risk reduction

Hard Braking

21.7% risk reduction

Speeding

57.4% risk reduction

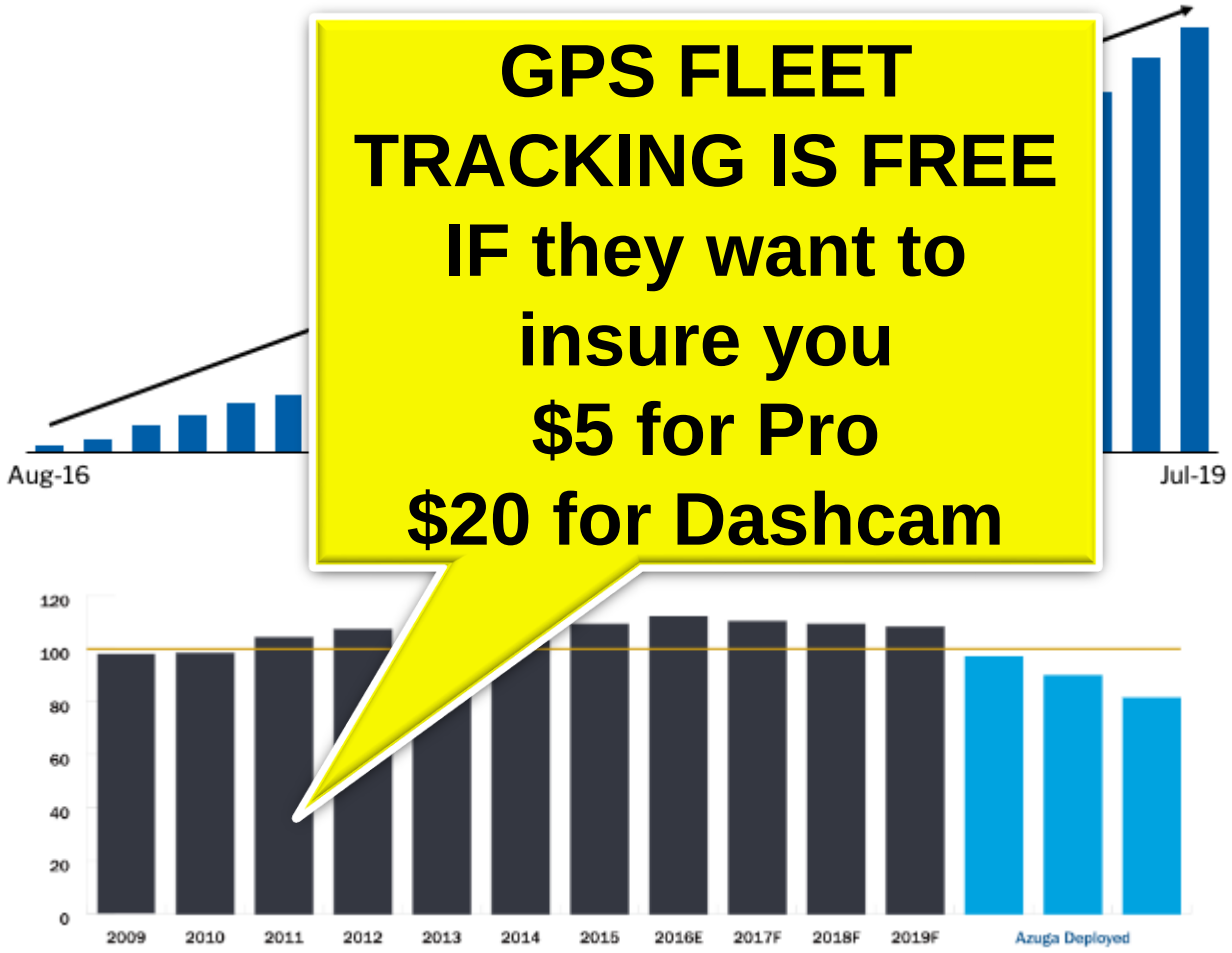
Total Risk

Each hard acceleration consumes 0.029 gallons:	1-2 gallons/month
Each hard braking consumes 0.043 gallons:	2-3 gallons/month
Speeding of 1 min (above 73 mph), 0.013 gallons	1-2 gallons/month

Insurance Company Results

Driving Behavior	Reduction[1]
Hard braking	**98%**
Hard acceleration	**97%**
Speeding	**69%**
Speeding over 15 mph on posted limit	**89%**

[1] Results based on an 18-month pilot



GPS FLEET TRACKING IS FREE IF they want to insure you
$5 for Pro
$20 for Dashcam

Source for 2009–2019F: Conning Inc.Property/Casualty Forecast & Analysis First Q2017; Commercial Auto Year-End 2016 Historical Data from A.M. Best

Other results we've seen

- **Customer with 50 vehicles**
  - California UMI was able to reduce their accident rates by 89%, and have yet to experience an at-fault accident from distracted driving.
- **Customer with 151 vehicles**
  - $1.2M losses in year prior to Azuga deployment vs. $24K in losses during year with Azuga deployed
- **Customer with 2200 vehicles**
  - $4M losses in year prior to Azuga deployment vs. $800K in losses during year 2 with Azuga deployed

"We averaged 18-20 accidents per year for the last 8 years prior to implementing AZUGA. Since Azuga in 2017 that number has reduced to just 4 accidents."

HARBRO
Emergency Services & Restoration

And all the well known operational benefits

Azuga Customers Report…	
Reduction in door-to-door travel time	29%
Improved Safety	30%
Reduction in accidents	39%
Reduction in wear & tear	54%
Reduction in citations / tickets	59%
Savings from Azuga	$ 10,064

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Big Data Results: Tell me something I don't know: Thing 1, Thing 2….

- Hard Braking (HB) and Speeding minutes statistically significant in predicting risk of preventable accidents

- 1 HB/100 miles increases risk of an accident by 1.36 times. 2 HB, 1.85 times

- 1 min of Speeding/100 miles increases risk by 1.07 times (7%). 10 minutes, 2 times.

Big Data Results: Tell me something I don't know…Other things

- Thing 3: Driving between 12:00 AM – 3:00 AM increases risk.
- Thing 4: Exposure risk (average drive time during moderate Risk hours) is significant. Every 1 hour increases risk by 2.26 times
- Thing 5: Driving after the 7th hour after Shift Start and in high risk times adds to risk.
- Thing 6: Your mileage may vary. Always personalize the results with actual analysis on your fleet behavior along with accident history

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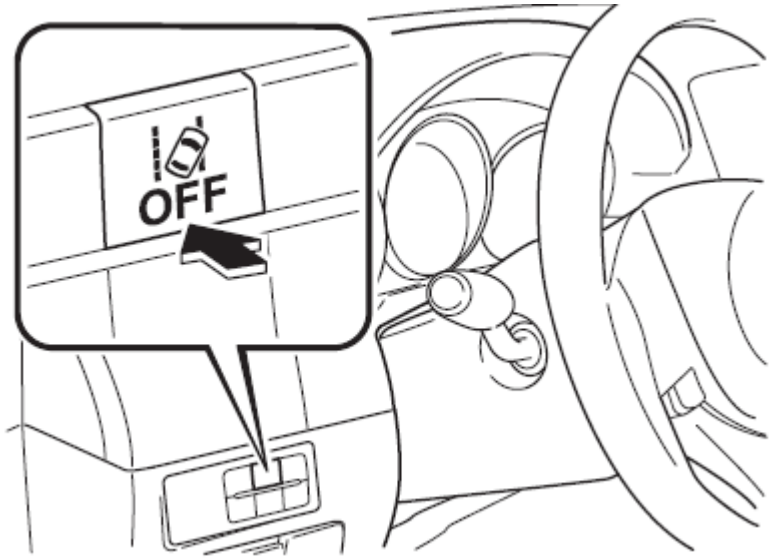
During this presentation we need to joke about:

- Statistics, the swimsuit edition
  - What it reveals is suggestive
  - What it conceals is vital
  - The rest may be Vivid.
- Send in your accident history. Get a personalized analysis

ADAS and all that sort of thing…..

- If new trucks have ADAS (Advanced Driver Assistance Systems) …why bother?
  - SMBs run trucks like consumers. Up to 11 years of ownership
  - Drivers can turn off or ignore ADAS. Fleet and Safety Managers still need to know about tailgates, lane departures etc.



AI and all that sort of thing…..

- AI Cameras
  - Good at facial recognition
  - Capture some (old fashioned) distracted driving
  - Getting better at ADAS
- Human Video Inspection
  - Completes the job
  - Higher priced

1996 Clip Art

Cameras + Telematics is driving Safety improvements

26% more fleet managers say that telematics is reducing safety incidents

<u>Top Safety Benefits</u>

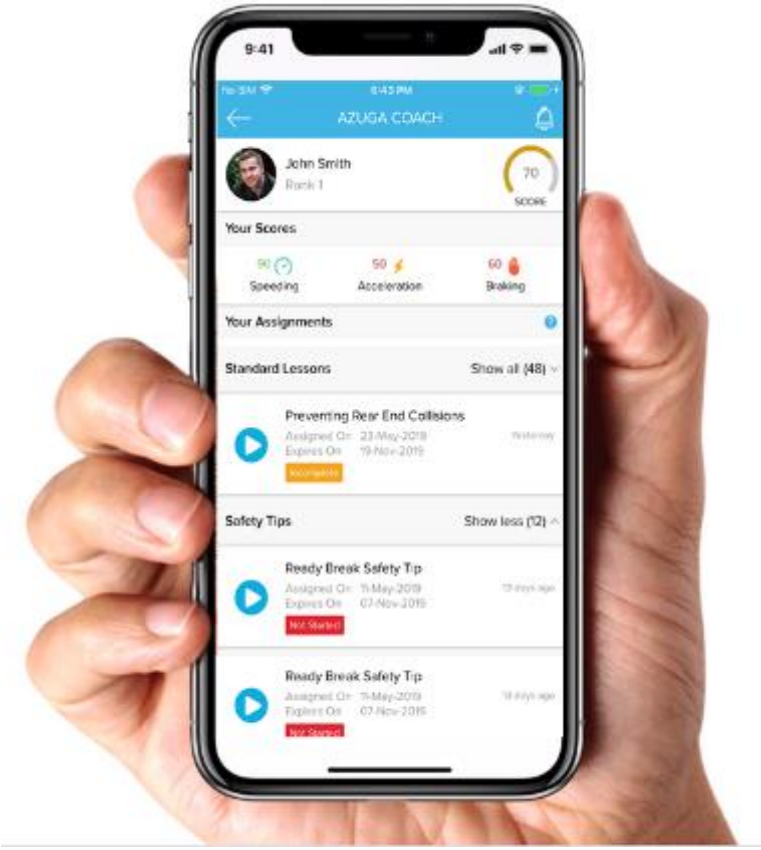
#1 : Monitoring and benchmarking driver behavior

#2: Monitoring hours to prevent driver fatigue / exhaustion

#3: Speed prevention

Enabled by the "rise of video" through dash cams

Score-Connected Coaching Videos: Make the problem driver go away?



Benefits

Targeted training based on driver score makes it easy to use. Drivers learn on their own time, through their mobile device or online via email.

Features

- Azuga Coach automatically assigns videos on Mondays based on driver score.
- 15-20 minutes lessons
- Knowledge checks upon completion
- 3-4 minute micro tips
- Refreshers
- The same app captures talking and texting while driving

Azuga Summary

Azuga improves—and perpetuates—fleet safety with a continuous 4-step process.

1. Access performance.
2. Prevent incidents and coach drivers
3. Gain new insights.
4. Maintain continuous safety.
5. Tell me…and/or make it go away
6. A Platform for the Attaboy. Rewards and incentives
7. Always trying to figure out the road to $0 for GPS

Driver Monitoring Systems

A tale of two carriers

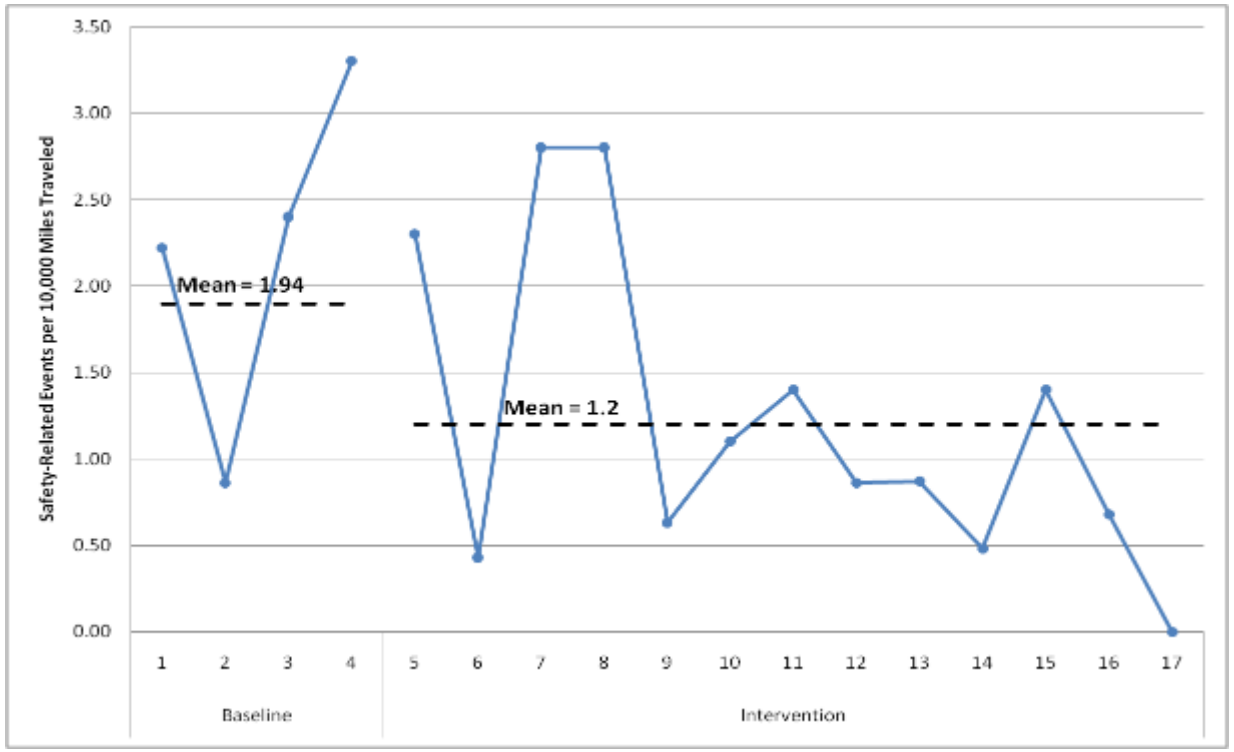
Evaluating Driving Monitoring Systems

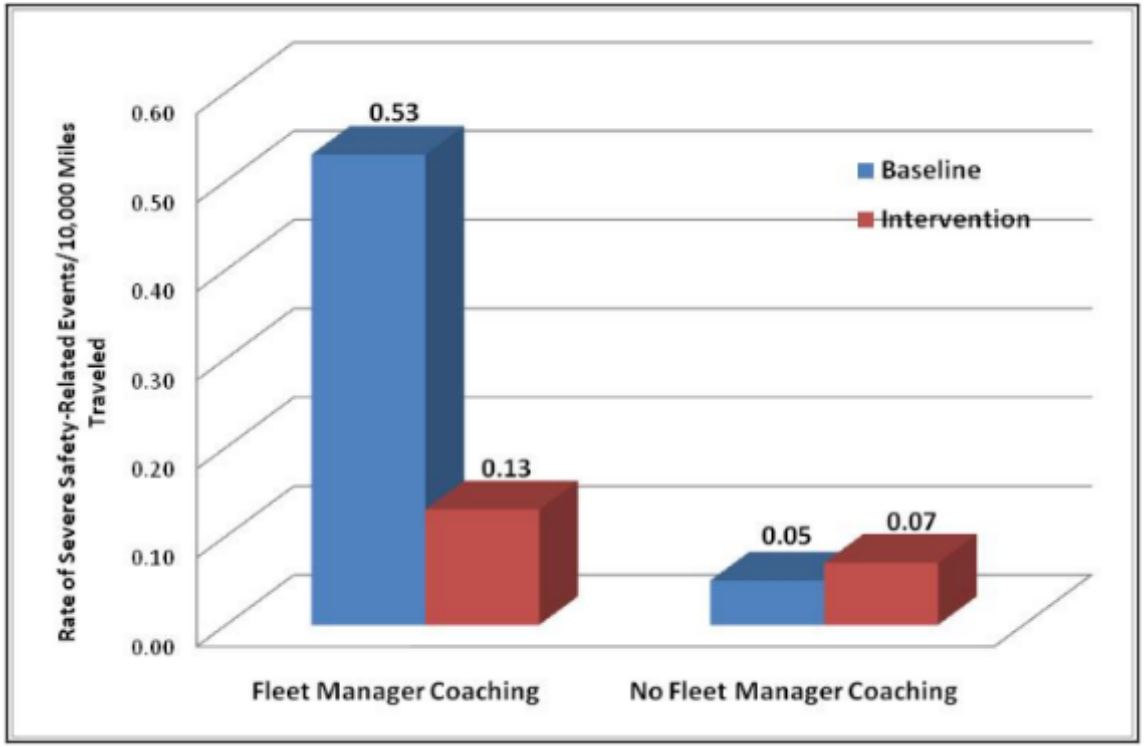
Are driver monitoring systems effective at reducing risky driving?

- Claims to effectiveness
- Very few scientific, independent evaluations

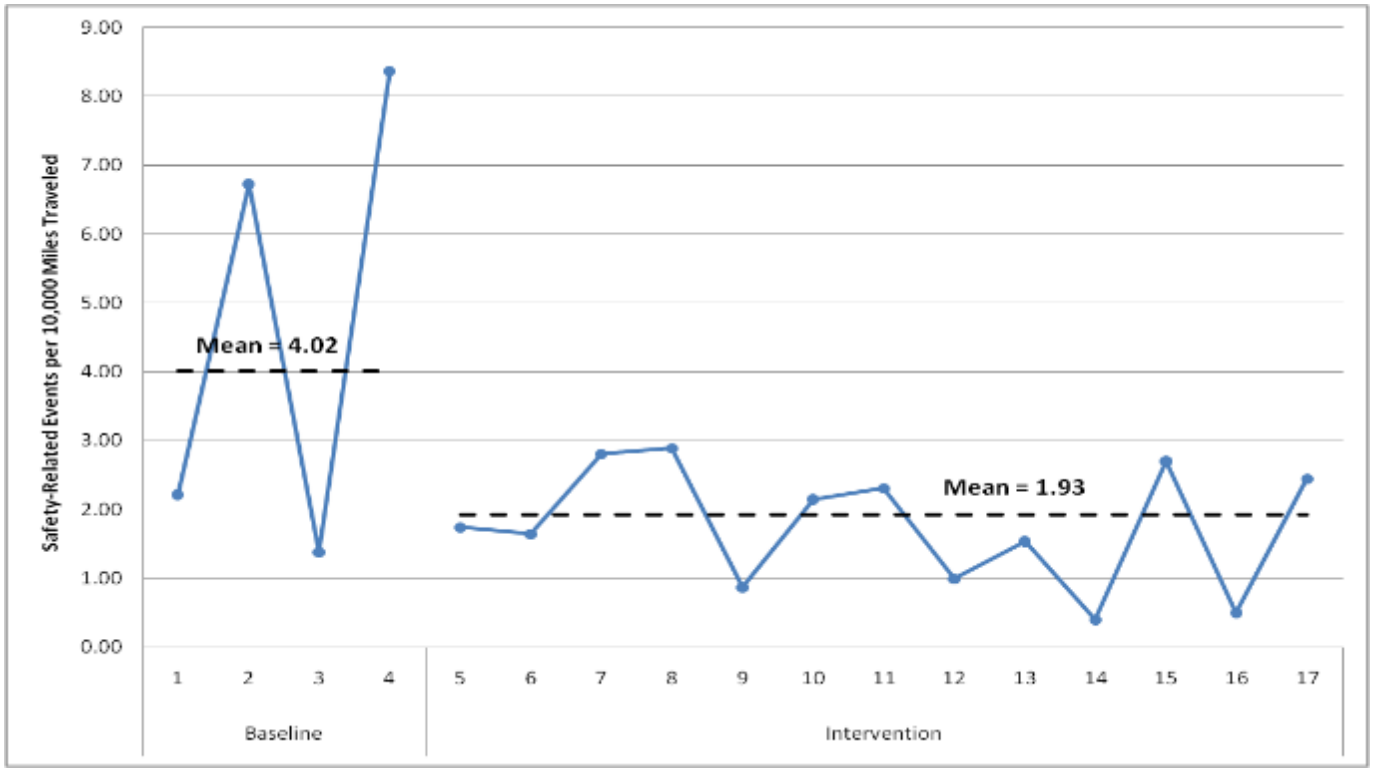
- VTTI study
  - Video-based driver monitoring system
  - 2 fleets, 100 drivers
  - Driver coaching

Results: Carrier A





Results: Carrier B



Adoption Success vs. Failure

	Carrier A	Carrier B
Reviewed video during coaching	80%	7%
How clearly was the root cause identified	Moderately Clear	Very Unclear
Identified ways to prevent future events	90%	7%
Coaching was positive	Positive	Moderately Negative
How likely are you to use the information learned in the coaching session	Moderately Likely	Very Unlikely
Length of coaching session	10 min.	10 min.
Acts of sabotage	4	278

Why success or failure?

- Safety Manager
  - Trust
  - Rapport
- Buy-in vs. skepticism
  - Good rollout
  - “Let’s give this a try”
- Fact-finding vs fault-finding
- Management commitment

Need to create a back-office approach to support the implementation of driver monitoring systems

How Can You Succeed with a Driver Monitoring System?

Success backed by science and practice

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Five Steps to Succeeding with an Driver Monitoring Program

Step 1: Get driver “buy-in”

Step 2: Use the right measures/KPIs

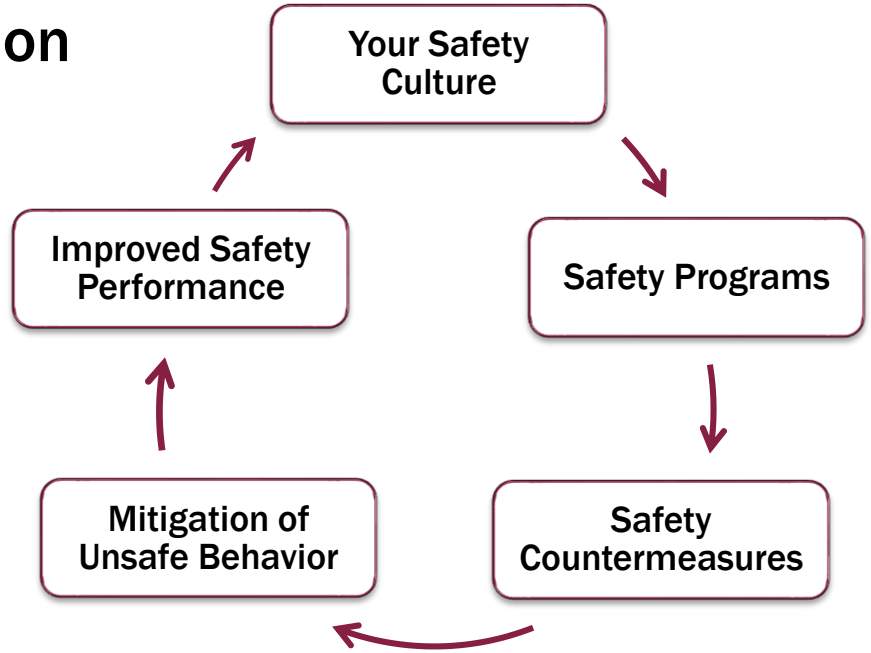
Step 3: Develop Program Awareness

Step 4: Driver training/coaching

Step 5: Program Evaluation

Strategies for Getting Buy-in

- Management "buy-in" with support and participation
  - "Walk the talk"
- Build trust
  - Driver involvement
  - Seek feedback
  - Actively listen
  - Provide opportunities for choice
  - Don't expect immediate results
  - Demonstrate that safety is a ***value***
- Create a Program Leadership Committee to champion the program



Develop and Use the Right KPIs

- How will I know if my program is working?
- How can I use the program to develop accountability?
- What do I need to know to recognize good drivers?
- What behaviors put my drivers at risk?
- What drivers should I coach?

Process vs. Outcome Measures

- Process measures
  - Focus on behavior
  - Controlled by the driver
  - Good for individual/group feedback
- Examples
  - # of hard brakes
  - % speeding
  - Alerts per week

- Outcome measures
  - Focus on outcome of behavior
  - Not fully controlled by driver
  - Good for overall program evaluation
- Examples
  - # of preventable crashes
  - Crash free miles
  - # of injuries

Develop Awareness of Program

- Introduce driver monitoring program with education/training
  - Reasons for the driver monitoring program
  - Functionality
  - Roles/responsibility
  - Rewards/incentives
- Considerations with education/training
  - How will the information be distributed?
  - Reading levels, language proficiencies, shifts

Coaching Drivers

Fundamental to the success of your driver monitoring program

1. Remain positive
2. Training tool not punishment tool
3. Allow opportunities for driver perspectives
4. Actively listen
5. Identify ways to improve performance
6. Goal setting

Program Evaluation

- Ongoing communication
- Regularly review data
  - Operational changes
  - Data suggests safety not improved
  - New technologies/task added
- Consider:
  - Are procedures working?
  - Emerging risky behaviors?
  - Safety now vs. be

Final Thoughts

- Importance of reducing risky driving
- Scientific support for driver monitoring systems
- However, they are only one tool in your safety toolbox
- Importance of safety culture
- Successful implementation takes time and effort
- Expect driver resistance initially
- Maintain communication

Azuga Summary

4 Step

1. Access performance.
2. Prevent incidents and coach drivers
3. Gain new insights.
4. Maintain continuous safety.
5. Attaboy Vs Gotcha
6. Always thinking about the race to $0

Looking for more information?

Contact Ananth Rani

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Good for drivers. Great for business.