

# Safe Road Users and Enforcement Technology



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National Highways

Vice Chair – ITS UK  
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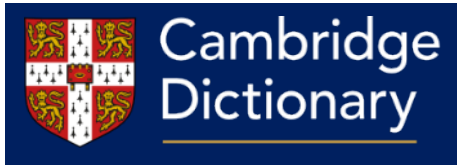
**Geoff Collins**  
Jenoptik

Chair – ITS UK  
Enforcement Forum



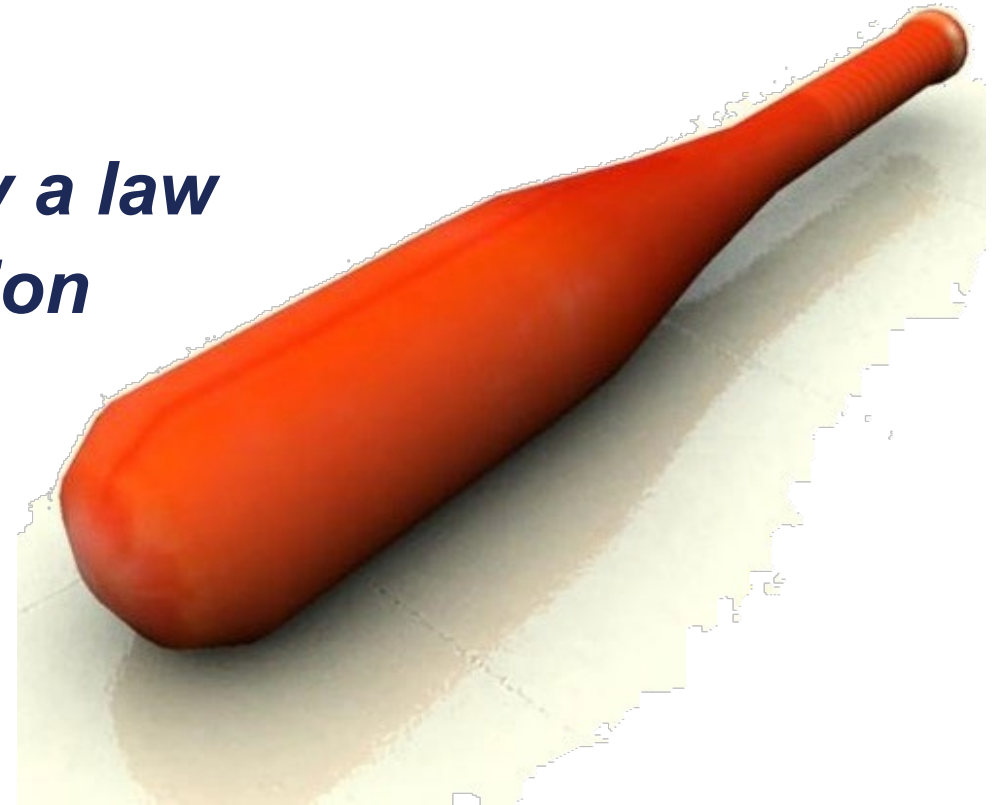
**MORE LIGHT**





***“The process of making people obey a law or rule, or making a particular situation happen or be accepted”***

- This can sound ‘heavy handed’
- What is it that we want to achieve?
- Isn’t it better to encourage the ‘right’ behaviours?

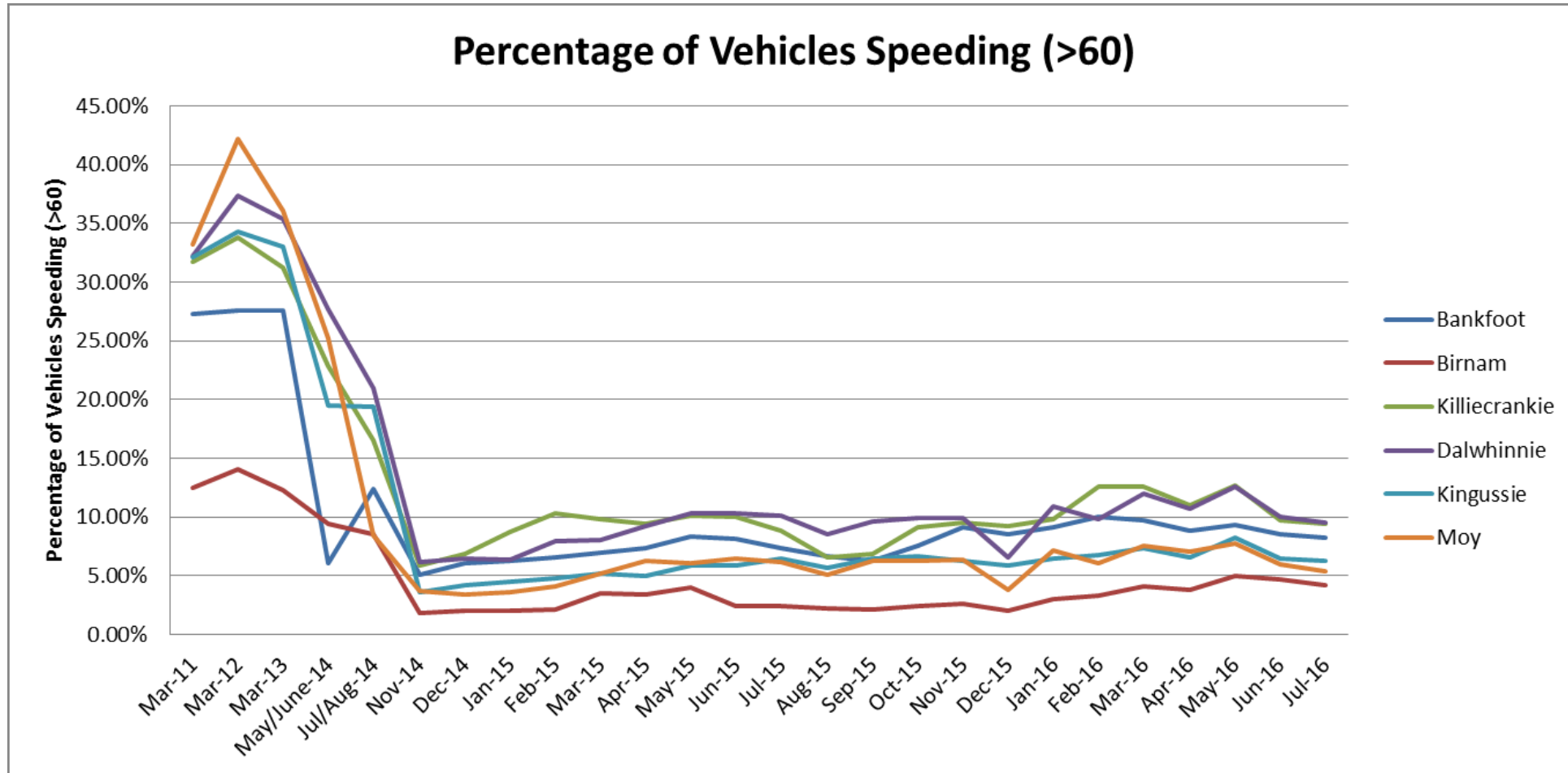


# Can you make people comply rapidly?

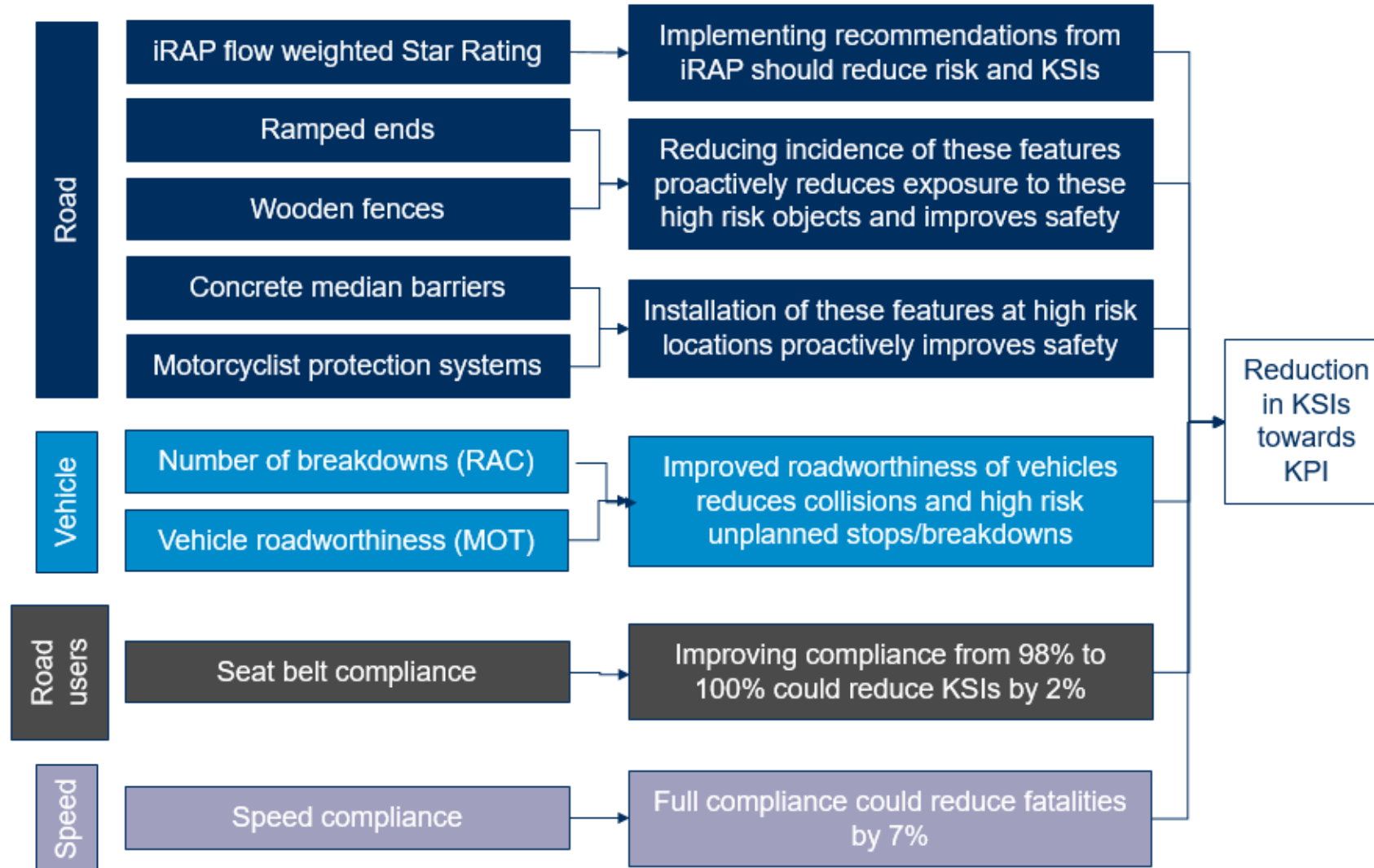


A9 Scotland – 220km of Average Speed Cameras.

Independent loop sites were in place before, during and after installation:



# Example of Lead Safety Indicators



# Speed and Seat belt Lead Safety Indicators

## Lead Safety Indicators: Speed

**Aim:** To explore the potential for using available measurable parameters related to speed to predict, manage and improve safety on the SRN.

**Definition of Lead Safety Indicator:** A metric based on data relating directly to risk, providing information to predict future events (as opposed to a lag indicator which relates to past events)

In collaboration with: **TIRL**

### Tasks

- Overview of potential data sources for measuring vehicle speeds on the SRN
- Exploring the links between speed and safety
- Development of methodology to measure speed as an LSI

### The evidence: What is the effect of speed on safety?

**Highways England fatalities database (537 cases)**

- 112 cases (21%) involved a speeding vehicle
- 115 vehicles (21%) were listed as exceeding the speed limit
- 94 vehicles (18%) were travelling too fast for the conditions (but under the speed limit)

**Stats19**

'Exceeding the speed limit' and/or 'travelling too fast for conditions' was recorded as a contributory factor in the collision for 14% of SRN KSIs

**Elvik's power model**

Collision and casualty frequency increases with mean speed

A small increase in speed can have a large effect on collision or casualty numbers or severity outcomes

**Risk curves**

The likelihood of a fatality in a collision increases at higher speeds

### Levers to influence speeding

- Increased policing and visibility
- Average speed cameras
- Fixed cameras
- Variable speed limits
- Road layout and redesign
- Education campaigns
- Vehicle safety technology features
- Speed limit review/adjustment

### Speed LSIs

Two LSIs were developed to estimate the percentage of vehicles exceeding the speed limit based on NTIS data

LSI	Approach	Percentage
LSI 1	Simple approach	10.4%
LSI 2	Complex approach	22.7%

### Next steps

- There is potential for speed management to contribute to reductions in KSIs across the SRN
- This can contribute to attaining Highways England's main safety KPI
- Highways England is using the NTIS data to provide this metric
- Highways England is investigating collecting more granular speed data which would allow a wider range of speed LSIs to be developed in the future

## Lead Safety Indicators: Seat belt wearing rates

**Aim:** To explore the potential for using available measurable parameters related to seat belt wearing to predict, manage and improve safety on the SRN.

**Definition of Lead Safety Indicator:** A metric based on data relating directly to risk, providing information to predict future events (as opposed to a lag indicator which relates to past events)

In collaboration with: **TIRL**

### Tasks

- Overview of current seat belt wearing rates on the SRN using various data sources
- International literature review
- Overview of potential data sources for measuring seat belt wearing rates
- Development of recommendations in order to use seat belt wearing rates as an LSI

### Current seat belt wearing rates

- 98.6% of car drivers (2017 observational survey)
- 96.5% of all drivers (2017 observational survey)
- Drivers are most likely to wear a seat belt; adult rear seat passengers are least likely
- 24% of 392 fatalities were recorded as not wearing a seat belt (2011-2018)

### Characteristics of non-seat belt wearers

- Gender:** greater proportion of unbelted male occupants, especially in fatal collisions
- Professional drivers:** greater proportion of goods vehicle drivers were unbelted in collisions
- Seat position:** greater proportion of unbelted occupants were in rear seats
- Pregnant women:** small proportion of observed pregnant women not wearing seat belts

### Why do people not wear seat belts?

- Habit or forgetting
- Not perceiving a safety benefit or believing seat belts are dangerous
- Discomfort
- Peer pressure and social norms (e.g. young groups)
- Sensation seeking
- Perceived lack of enforcement

### Effects of increased compliance on fatalities and serious injuries:

Category	Current Level	Target Level	Change
Fatalities	17 fatalities (over 3 year period)	10 fatalities (over 3 year period)	Decrease by 3.6%
Serious Injuries	47 serious injuries (over 3 year period)	43 serious injuries (over 3 year period)	Decrease by 1.4%

### Future research

- Automated monitoring technologies
- SRN roadside observations
- Regular data collection on attitudes to seat belt wearing
- Explore attitudes amongst taxi/HGV/van/gig' drivers
- Explore relationship between seat belt wearing and other offences on the SRN

# A249 Sheppey Crossing, Kent

## Case Study – Changing Behaviour



### A249 - A history of speeding & casualties

#### **“Britain’s biggest road accident”**

September 5<sup>th</sup> 2013

- Poor weather
- Very high speeds for the site / conditions
- 130 vehicles involved
- 100s injured but no fatalities

#### **Initial Outcomes:**

- TTRO for 50mph introduced
- Not-enforceable (signage issues)

#### **SPECS Solution**

- 50mph limit increased to 70mph
- Visible SPECS installation in 2017.

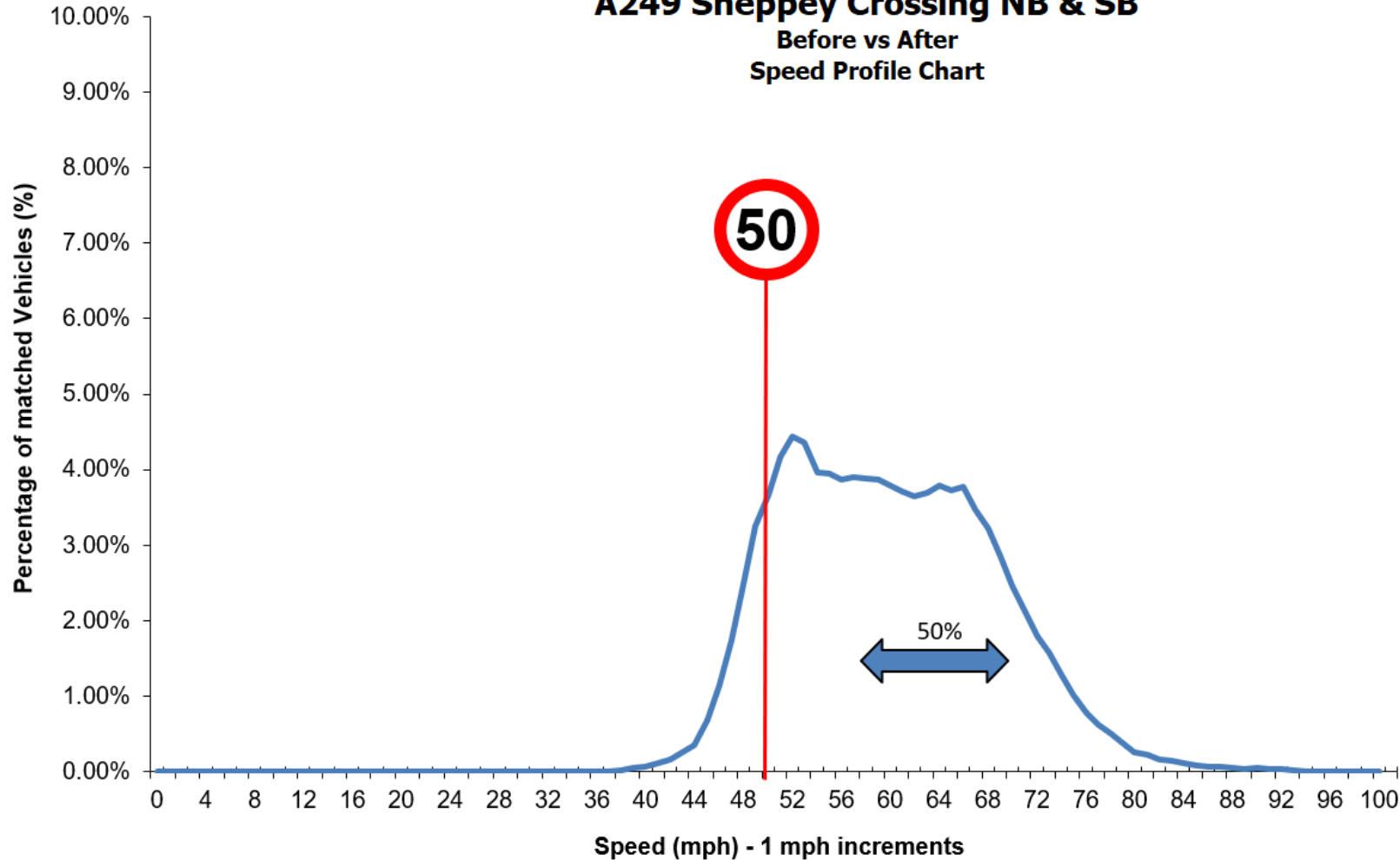
**Not a panacea, but reduces some risk**



# A249 Sheppey Crossing, Kent

## Case Study – Changing Behaviour

**A249 Sheppey Crossing NB & SB**  
**Before vs After**  
**Speed Profile Chart**



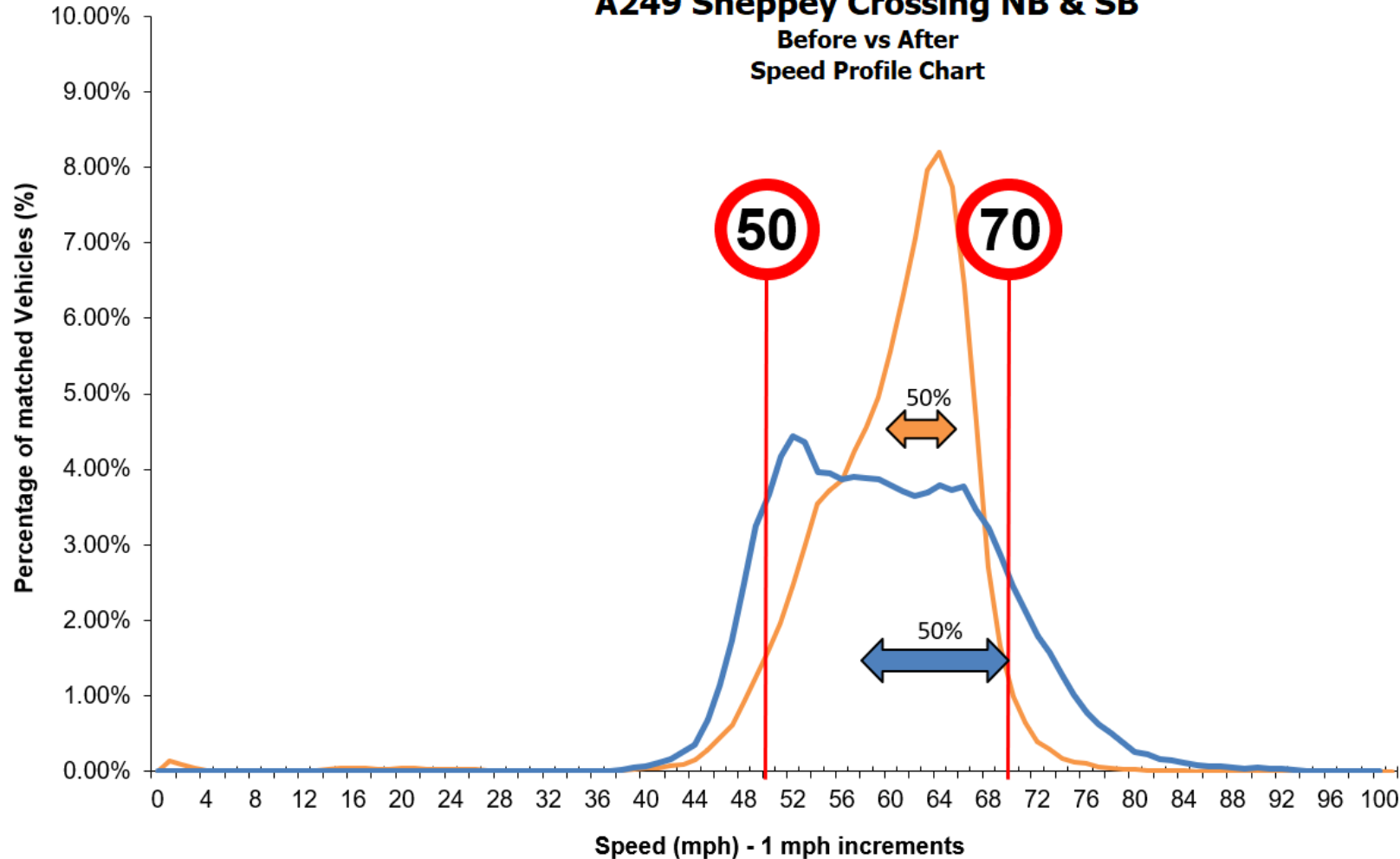
	50mph PRE	70mph POST
<b>85th %oile speed</b>	68.6	65.5
<b>Vehicles exceeding limit</b>	86.04%	1.93%
<b>Vehicles at 5mph above limit</b>	65.15%	0.32%
<b>Vehicles at 10mph above limit</b>	45.84%	0.06%
<b>Vehicles at 15mph above limit</b>	27.27%	0.02%
<b>Average speed</b>	60.0	60.1



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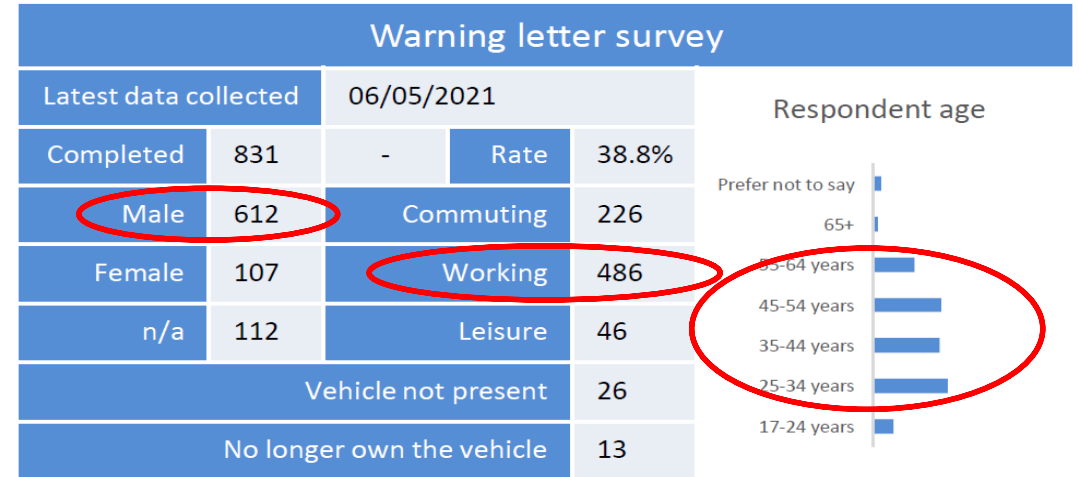
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# Tailgating Detection technology

- Trial Start: October 2020
- Monitoring L1, instances of tailgating below 0.67 seconds 'thinking time' in the Highway Code
- Oct 2020 – Sept 2021; identified **60,343 tailgating instances**
- Nov 2020 – Worked with Northamptonshire Police – Sent **2,144** warning letters to repeat offenders (seen 2 or more times)
- Developed educational material in line with Space Invader campaign
- Survey to gather insight – **38%** response rate



I did not think I was driving too close	139	29.3%
I changed lane and mis-judged the other vehicle's speed	54	11.4%
The driver in front of me slowed suddenly	52	10.9%
The driver in front of me was hogging the overtaking lane	52	10.9%
The driver in front of me was going too slow	28	5.9%
Other people were driving at the same distance so I assumed it was OK	27	5.7%



# Mobile phones and seat belts

Trial Start: May 2021

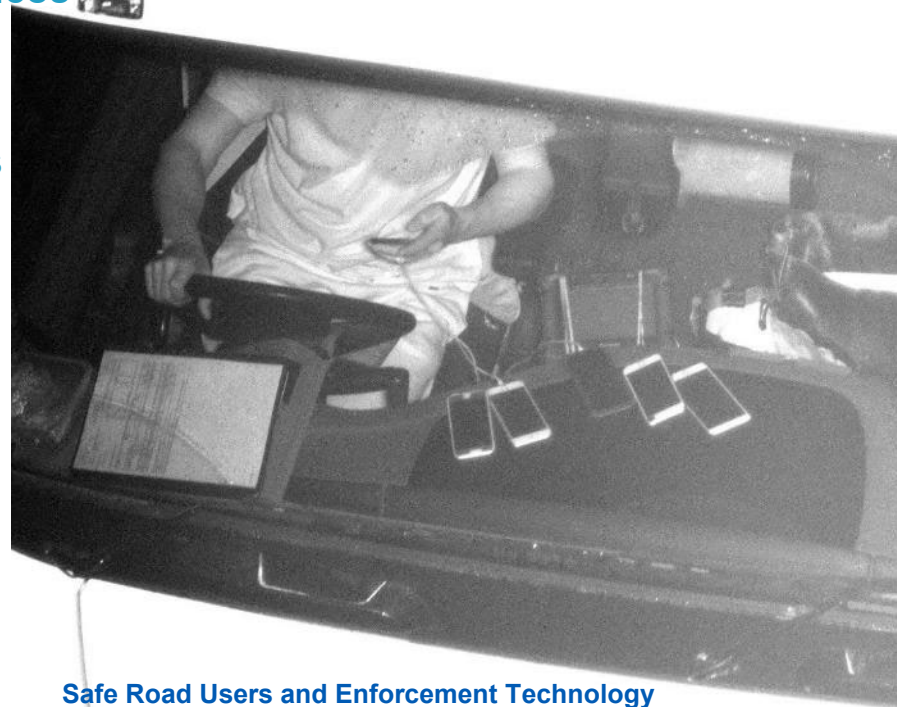
Monitoring L2 to Oct 31<sup>st</sup>

Monitoring L1 & L2 Nov 1<sup>st</sup> to Jan 17<sup>th</sup>

**25,275** Mobile Phone Offences

**6,555** Likely Mobile Offences

**6,982** Seat Belt Offences



Reviewed **1,044** Seat Belt Offences  
(Nov – Jan)

High number of commercial vehicles:

Type	Count	Percentage
Cars	120	11.5%
Coaches	133	12.7%
Horsebox	21	2%
Lorry	407	39%
Van	323	31%
Taxi	26	2.5%
Other	14	1.3%

Some particularly stood out...

# Mobile phones and seat belts



Thank you!



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