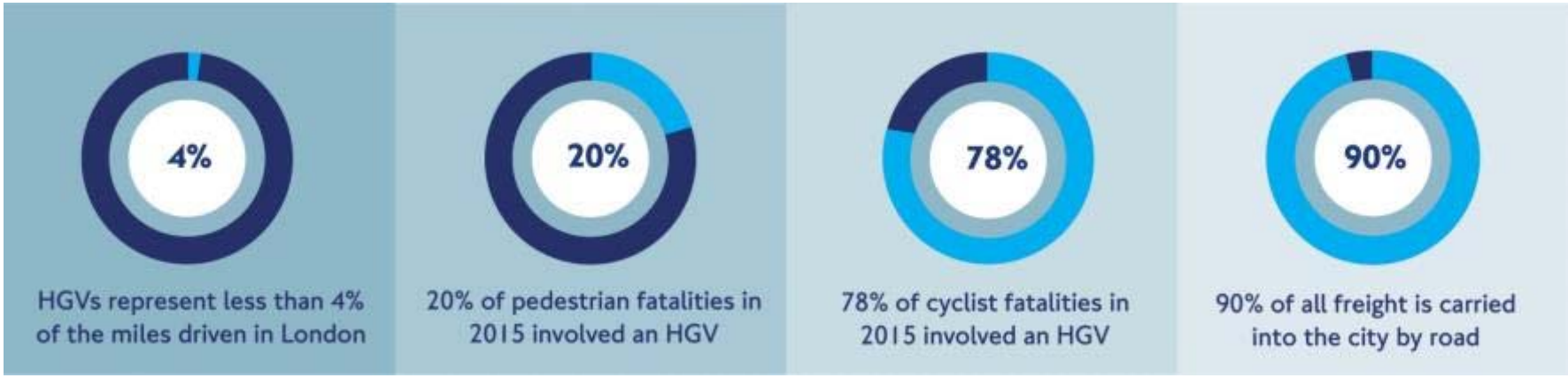
MARCH 2017

How many mirrors and cameras is a truck driver able to look at? - Direct vision matters, evidence from London

Hannah White, Transport for London

EVERY JOURNEY MATTERS

The case for change



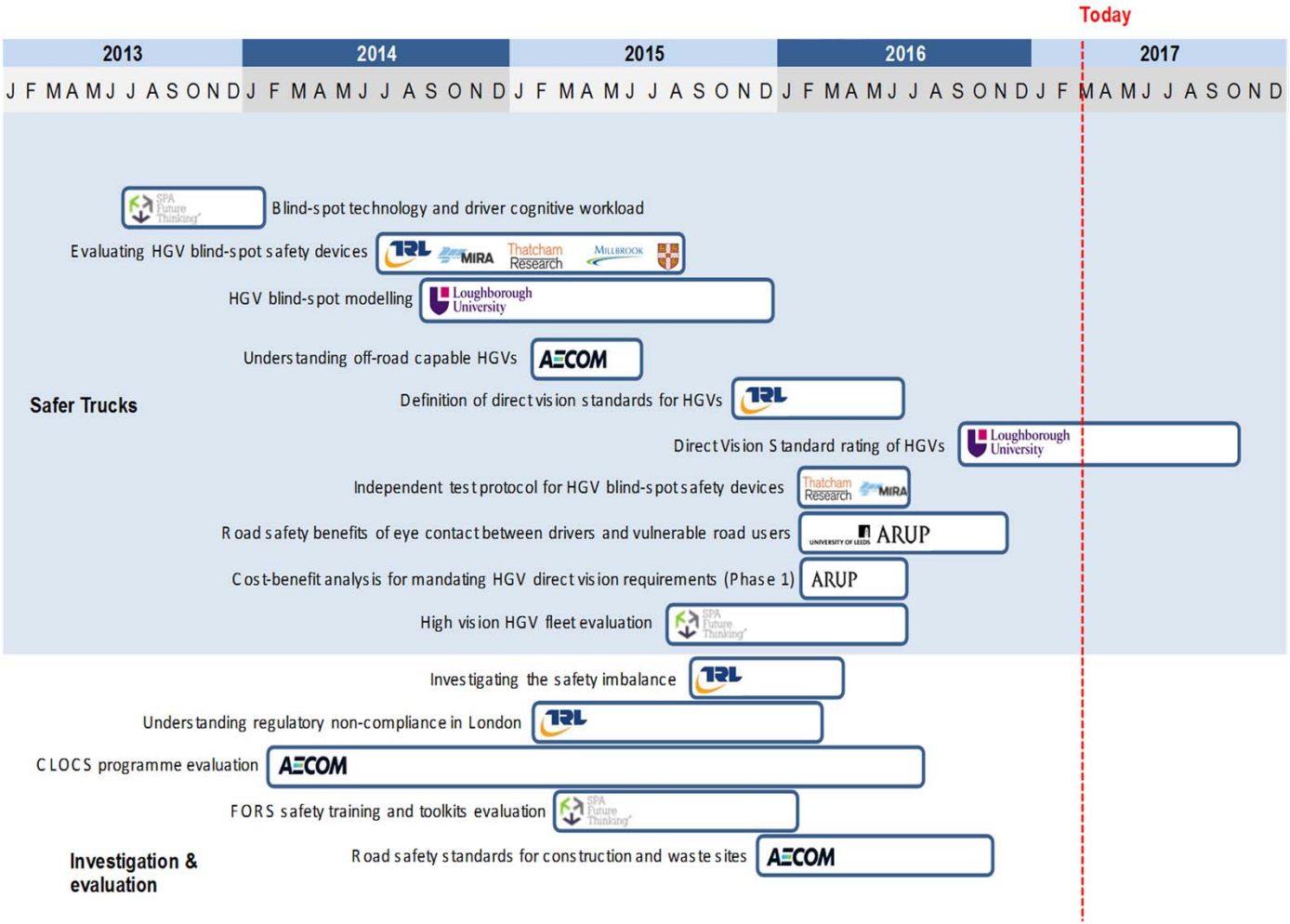
- A disproportionate number of vulnerable road user fatalities involve an HGV

- Larger vehicles, including construction or ‘off-road’ vehicles are further overrepresented

Mitigating road risk

Safer operations	• Encouraging, supporting and recognising safe and compliant fleets
Safer people	• Improving driver and manager knowledge, skills and performance
Safer vehicles	• Stimulating innovative HGV design and providing evidence for change
Safer supply	• Using buying power and planning to manage road risk in supply chains

Providing the evidence for change



Read it here:

https://tfl.gov.uk/info-for/deliveries-in-london/delivering-safely/safer-trucks

Protecting all vulnerable road users

In 2016, **13 pedestrians** and **4 cyclists** were killed by HGVs in London*

**Provisional data*

Vision affected – the 'blind-spot' key contributory factor

The Blindspot

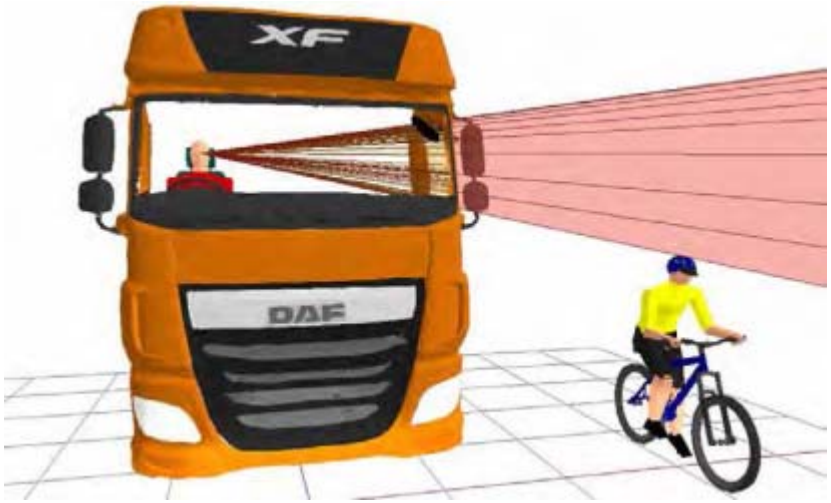
1970 1980 1990 2000 2010





Research: Understanding direct vision

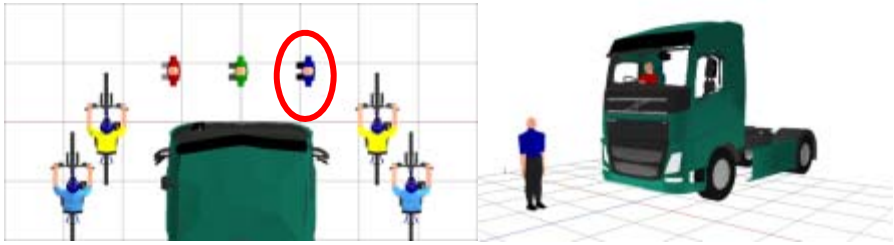
Indirect vision – What the driver can see through mirrors or cameras

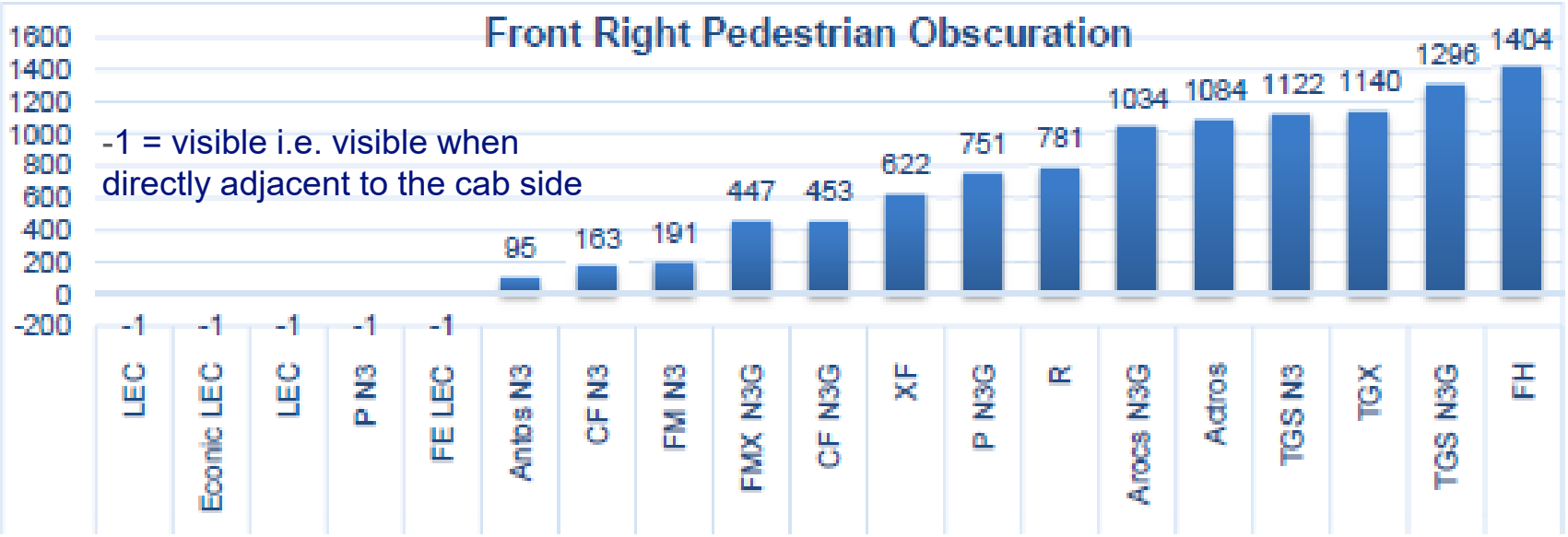


Direct vision – what a driver can see through the windows rather than using mirrors or cameras

Variation in direct vision - front

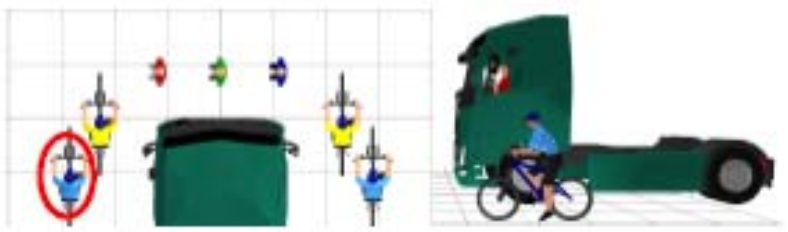
Up to 1.4 metre difference in blind-spot

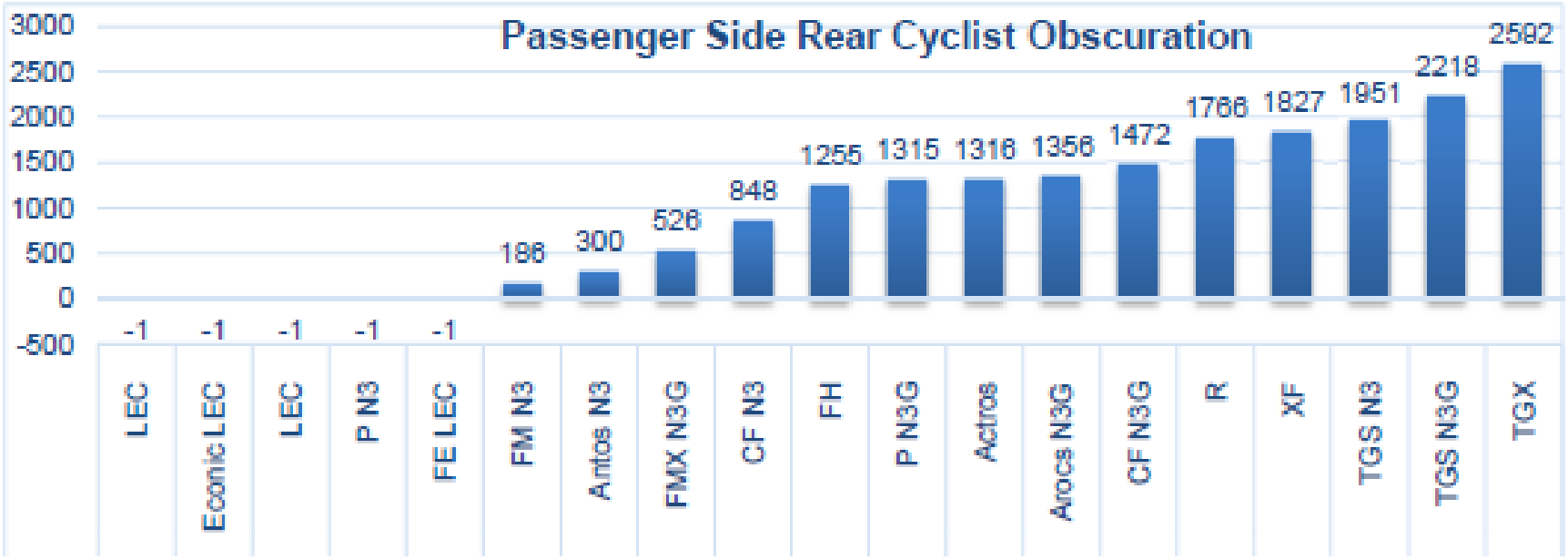




Variation in direct vision - nearside

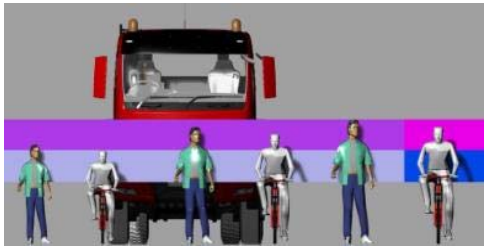
Up to 2.5 metre difference in blind-spot





Developing a Direct Vision Standard

Objective:
Objectively measure how much a driver can see of the area of greatest risk vulnerable road users through the window



Star rating:
Simple star rating where zero stars represents lowest and five star the highest levels of direct vision

Developed to:

- Categorise HGVs based on their direct vision capability
- Inform operator purchasing decisions
- Guide manufacturers to design cabs to meet progressive standards
- Use in procurement clauses
- Lobby for inclusion within changes to regulation

Vehicles meeting the higher vision standards will have a much reduced blind-spot allowing better visibility of vulnerable road users

The case for Direct Vision

ARUP

UNIVERSITY OF LEEDS

Exploring the road safety benefits of Direct Vision

- Understand the benefits of seeing vulnerable road users directly as opposed to indirectly
- Establish the extent to which increased direct vision could reduce driver reaction times
- Establish the extent to which increased direct vision could reduce collisions between HGVs and vulnerable road users

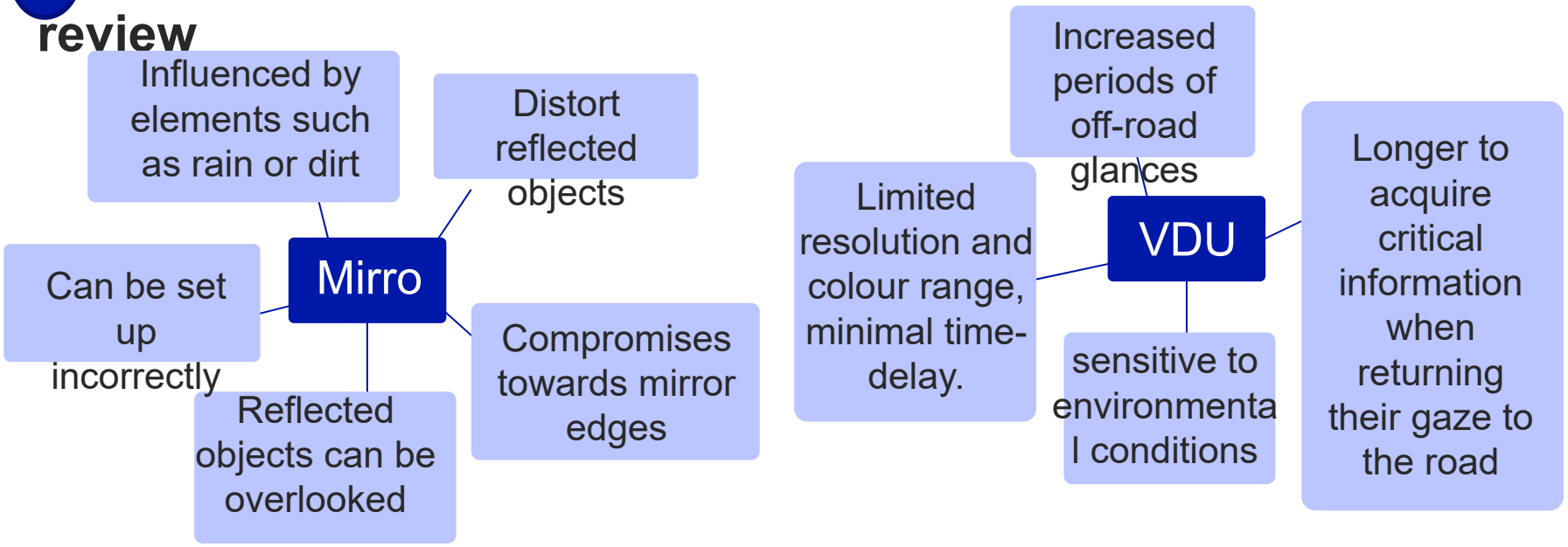
1 **Literature review**

2 **Surveys**

3 **Laboratory experiments**

The case for Direct Vision

1 Literature review



- Number of risks related to relying on mirrors for safe driving and glancing at VDUs when driving
- Increases cognitive load – put simply; its hard to think of lots of things at once
- Processing indirect visual information can result in impaired driver performance

The case for Direct Vision

2 Surveys – pedestrians, cyclists and HGV drivers

- Do not trust HGV drivers can see them through their mirrors or VDUs
- Lower cab height and larger windows are safer
- Eye-contact with HGV drivers makes them feel safer when passing a vehicle

- Do not trust HGV drivers can see them through their mirrors or VDUs
- Agree that drivers positioned lower to the ground see them more easily
- 86% of cyclists agree that drivers who have larger windows and ‘bus style’ doors see them more easily
- Eye-contact with HGV drivers makes them feel safer

- Mirrors provide sufficient view - but sometimes difficult to recognise a cyclist in a mirror
- More advantages than disadvantages of VDU use
- Disagree that they are too high up to locate road users
- Most drivers try to make eye-contact with road users and believe this reduces likelihood of collision

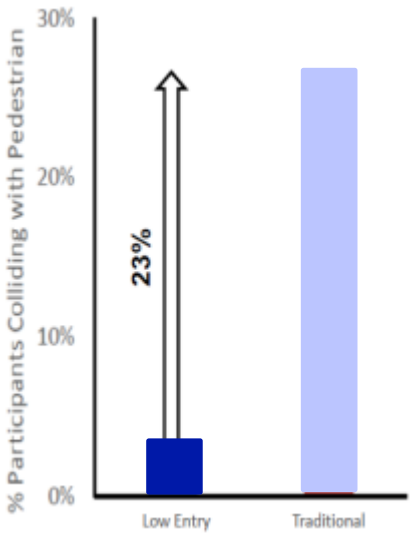
The case for Direct Vision

3 Laboratory experiments

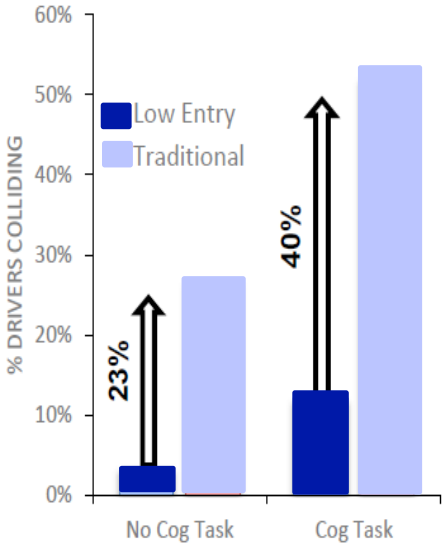
Indirect vision responses were on average **0.7s slower** compared to Direct viewing responses. This results in:

Speed	Extra Travel
15 mph	4.7m
10 mph	3.1m
5 mph	1.5m

Indirect vision resulted in increased incidence of **simulated** pedestrian



Driving whilst processing a **cognitive task** increased this incidence even further - by **40%**



Research: Evaluation – live trials

‘I feel much more confident driving in the higher vision cab. I don’t want to go back to a standard tipper’

“I’d say just give it a go, it’s opened my eyes. I didn’t see how it could be improved before”

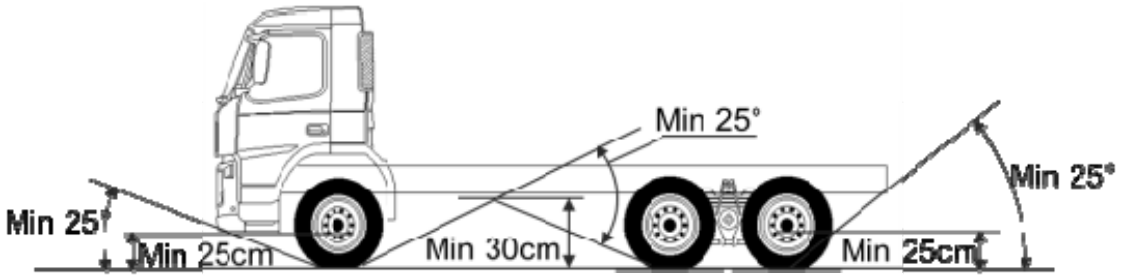
Will I be able to get onto landfill sites ?

‘You just need to sit in one of the old cabs then get in the new one to realise how important this change is’

‘As a lorry driver, it pains me to say this, but its actually pretty good’

Right vehicle for the right job – N3 vs N3g

- N3G are the ‘default’ specification for tippers and mixers
- Over 70% of fatal collisions with cyclists involve these trucks



- Our Research shows that
  - 49 % of operators didn't encounters off-road conditions
  - 47% of operators were unaware of the term N3G

Site standards

- Developed a site rating and standards system linked to operational capability of vehicles
- Grading sites to enable on-road vehicles and lower entry or higher visibility cabs
- Encourage the use of lower, higher visibility vehicles, suitable for urban operations

Site Standards: Improving site conditions will give operators confidence that they can use lower, safer vehicles with improved visibility

Mayoral Commitments

On 30 September 2016, the Mayor launched the world's first Direct Vision Standard to improve the safety of vulnerable road users and made the following commitments:

- Restrict 'zero star' rated vehicles from entering London by 2020
- Allow only a minimum of three-star direct vision rated vehicles only by 2024.'

"I will adopt a 'Vision Zero' approach to road safety, which puts the elimination of road danger at the very heart of the transport system... working with industry to make lorries safer"

DVS Consultation

1. **Consultation on Proposed Direct Vision Standard for Heavy Goods Vehicles**
   24 January to 18 April
   https://consultations.tfl.gov.uk/roads/direct-vision-standard-phase-1/

2. **Analyse and publish the responses to Phase 1 consultation.**
   Spring/Summer 2017

3. **Complete and publish Integrated Impact Assessment of the DVS scheme**
   Autumn 2017

4. **Full policy consultation on the final proposals for the scheme**
   Autumn 2017

5. **Statutory consultation on the appropriate regulatory measure**
   Spring 2018

Thank you

Hannah White
Freight & Fleet
Programme Manager
Transport for London

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