

ENGINEERING FACULTY, CENTRE FOR  
TRANSPORT STUDIES



**UCL**

# Managing the road safety risk of home deliveries: the role of telematics

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# Executive Summary

## Background

Driving for work is one of the riskiest activities undertaken by workers on a day-to-day basis, and time pressure (leading to speeding) is known to be an important risk factor for work-related driving. The rise of home delivery has brought with it a likely increase in time-pressured work-related driving activity, and finding ways to manage this risk will be important within the context of a wider safe-system approach to road safety. Telematics products (broadly - technologies either in the vehicle or on a device such as a smart phone that monitor driver behaviour in some way) show great promise in managing this risk, but little work has examined this issue in detail in the home delivery sector.

## Methods

In this research, several activities were undertaken to understand if and how telematics is used in the home delivery sector to monitor speed. These activities were:

- An online survey with 780 home delivery drivers
- In-depth interviews with 20 fleet managers who use telematics
- In-depth interviews with 39 delivery drivers (18 using telematics, 21 not)
- A workshop with practitioners in the industry to discuss findings

## Findings

The quantitative data collected from surveys among drivers showed the following findings related to telematics use:

- Telematics users were more likely to drive medium to large vans than non-users and were more likely to drive a vehicle they did not own.
- Telematics users were more likely than non-users to report that they had injured someone in a crash and damaged their vehicle while working.
- Telematics users were more likely than non-users to report that they had attended a speed awareness course.
- Telematics users were more likely than non-users to report having been trained on managing road risk.
- Telematics users with 'in-vehicle' (rather than 'app-based') technologies were more likely to report the use of their data in things like in-company comparisons and management of risk.

For reported damage collisions, multivariate analysis showed that predictors of reporting being involved in a damage collision was related to gender, the size of the vehicle, vehicle ownership some hazardous behaviours such as parking and distraction caused by mobile phone apps, and driving violations. There was no significant association between being involved in a damage collision and being set personal targets, using telematics or higher mileage or agreement that they at times drove over the speed limit or went through red lights whilst under pressure.

The qualitative data collected from managers showed that although many reported using telematics to manage the safety of drivers, this claim was very often followed by a description of the value of financial benefits. Safety was very rarely mentioned as a goal, and the mental model of managers around driving safety clearly lags behind the research evidence; managers reported, for example, tolerating 'minor' speeding. Telematics were also used often for their benefits in supporting the operational needs of the

business, for example in helping customers know when to expect deliveries. Managers also reported a benefit of telematics as being the time this technology had freed up in their role to add value in other areas.

Drivers in general reported pressure in the home delivery role to speed, take risks, park illegally and drive while distracted and fatigued, to get their job done. However, drivers using telematics did believe that they were used to safety ends, as well as for managing information flow to clients and helping manage driver location. Drivers using telematics generally reported wanting to have their good behaviour highlighted, as well as understanding risky driving. Drivers not using telematics viewed it with suspicion.

## Conclusion

Telematics alone does not seem sufficient to manage the road safety of last mile deliveries.

## Recommendations

- Several recommendations are made regarding the specific use of telematics (for example simpler data, automatic speed control, and more sharing with drivers).
- App based telematics seem to be associated with distraction and therefore in vehicle telematics should be used where possible.
- An ethical delivery service charter should be created that business brands can sign up to, promising less speeding and emissions, and clean driving licences as being the norm for delivery drivers.
- A 'Driver's passport' scheme could be created to align with the ethical delivery service charter.
- Speed awareness course attendance should be considered by businesses as an indicator for risk.
- Finding safe places to park and taking in time to walk to delivery points need to be taking into account in business planning.

## 1 Introduction

Driving for work is one of the most common causes of collisions on the road, with speeding as a particular risk factor for crashes in this group (Christie & Ward, 2019; Grayson & Helman, 2011). With the rise of online shopping and therefore an increase in e-commerce deliveries, delivery drivers are at risk of road collisions as part of their working day.

This project aimed to explore the role of telematics in reducing speed violations amongst drivers in the home delivery sector. The research aimed to understand if and how telematics is currently used by the delivery sector to monitor speed. The study comprised:

- an online survey administered to 780 home delivery drivers, half of which experienced telematics to assess whether telematics made a difference to their self-reported behaviours, reported violations and crash involvement. The survey also explored the acceptability of telematics,
- interviews with 20 managers who use telematics to monitor the safety of their fleet,
- interviews with 39 drivers of whom 18 used telematics to explore qualitative differences in their views on managing road risks,
- a workshop with practitioners to explore industry responses to our findings.

Finally, all the data sources were considered in terms of how they could inform an ethical delivery standard that can be disseminated to the industry and communicated to policy makers as a vision of future thinking about transport-related harms, and decarbonisation.

## 1.1 What is telematics?

Telematics refers to the technology that combines telecommunications and informatics to transmit and receive data using technologies, such as telecommunications, GPS (Global Positioning System), sensors, and computing systems, to collect, store, and transmit data related to vehicles. Telematics usually involves devices installed in vehicles to gather and transmit data about their location, speed, acceleration, braking, engine diagnostics, and other performance parameters. This data is then sent wirelessly to a central system where it can be analysed and used for various purposes.

In our study two types of telematics were used: In vehicle 'black box' telematics and smartphone App based telematics.

### In vehicle telematics

In terms of delivery services, with in vehicle telematics operators can monitor and manage their vehicles in real-time, tracking their location, optimizing routes, and monitoring driver behaviour and thereby improve efficiency, reduce fuel consumption, and enhance overall safety. The Telematics Control Unit (TCU) is responsible for collecting, processing, and transmitting data related to the vehicle's location, performance, and other telematics features and can be in various places within the vehicle (dependent on car make and model) including under the seats, behind the dashboard, or in the engine compartment.

### Smartphone App telematics

Mobile phone telematics uses the sensors and functions of a smartphone to collect data about a user's driving behaviour and transmit it to a telematics service provider and usually requires the installation of a dedicated mobile application or App. Sensors, such as the GPS receiver, accelerometer, gyroscope, and magnetometer, are used to gather data during the user's driving activities. For example, the GPS provides location and speed information, while the accelerometer measures acceleration, braking, and lateral forces. The App hosts algorithms that interpret the sensor data to determine driving behaviours such as speed, acceleration, braking, cornering, and overall driving patterns. The telematics service provider calculates risk scores and provide feedback to the user. The feedback can be in the form of a driving score, insights on driving habits, suggestions for improvement, or even personalized insurance premiums based on the user's driving performance where it is linked to insurance.

## 2 Quantitative survey of delivery drivers

The online survey was completed by 780 parcel delivery drivers, comprising 350 who used telematics and 430 who did not. Of those who used telematics 173 used app-based telematics and 177 used in-vehicle telematics. The online questionnaire is shown in Appendix A.

Chi-squared analysis was performed for cross tabulated data and where significant associations were observed the Chi squared statistic ( $\chi^2$ ) is given with the degrees of freedom (*df*) and probability ( $p=$  or  $< 0.05\%$ ).

### 2.1 Sample Characteristics

#### 2.1.1 Gender

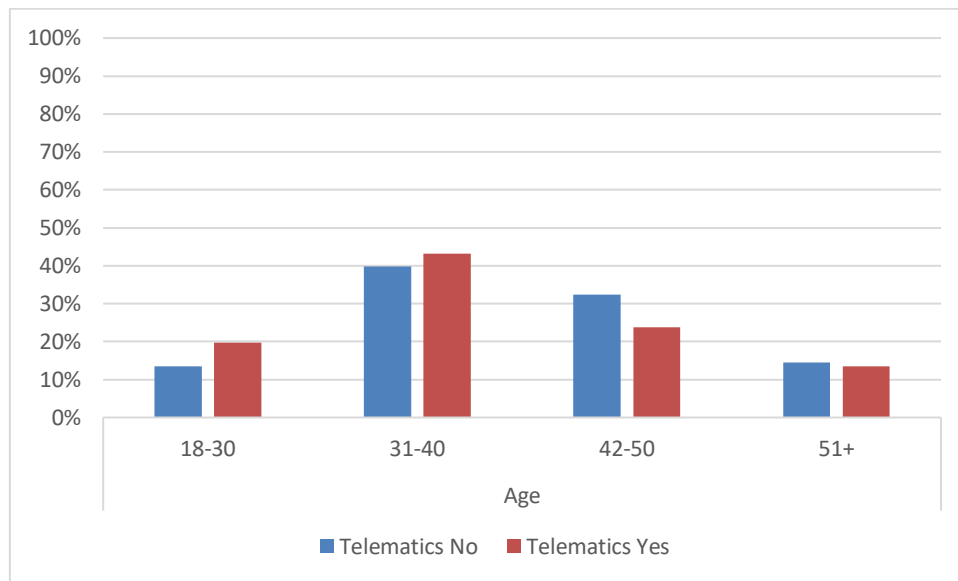
There was no significant association between telematics use and gender of drivers, most were male (73%).



### 2.1.2 Age

There was a significant association between telematics use and the age of drivers, telematics users tended to be slightly younger ( $\chi^2=10.28, df=3, p=.016$ ) (see Figure 1).

Figure 1: Age by telematics use

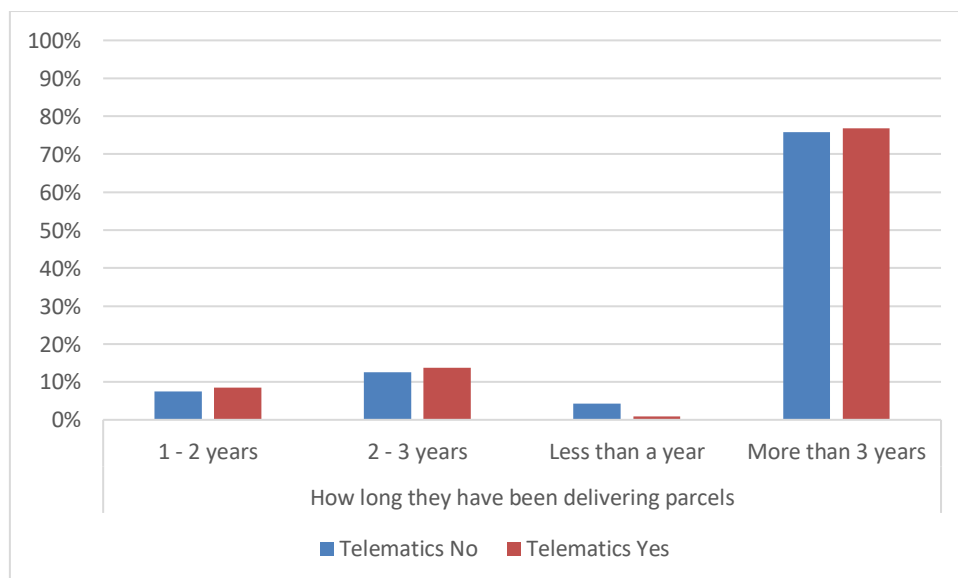


## 2.2 Experience and exposure

### 2.2.1 Experience of delivering parcels

There was a significant association between telematics use and the experience of drivers, telematics users were more likely to be more experienced ( $\chi^2=8.47, df=3, p=.037$ ) (see Figure 2).

Figure 2: Experience delivering parcels by telematics use



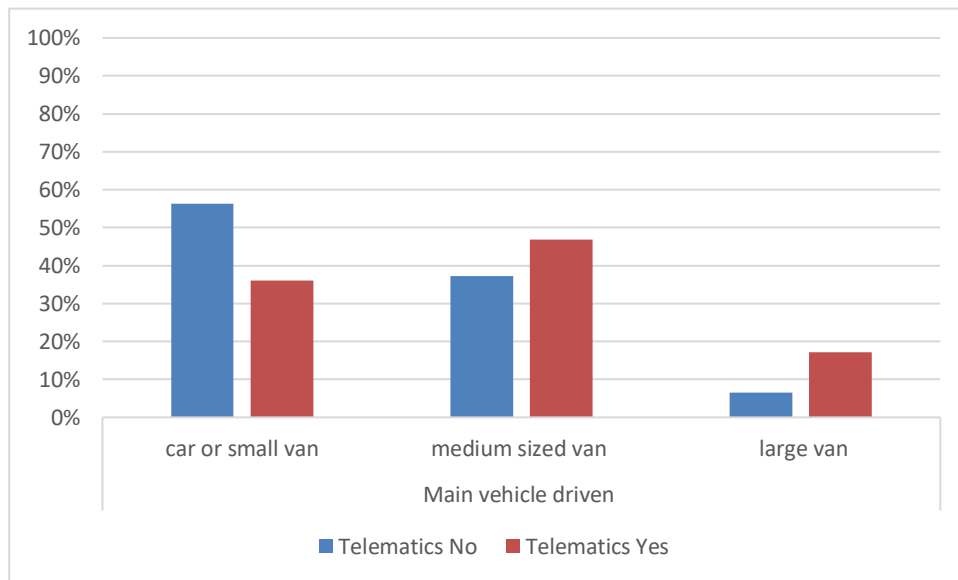
### 2.2.2 Years held driving licence

There was no significant association in the number of years that drivers had held a driving licence and telematics use with 94% having a held a licence for more than 3 years.

### 2.2.3 Main Vehicle driven

In this analyses car and small vans were combined. There was a significant association between telematics use and the type of main vehicle driven. Drivers who used telematics were more likely to drive medium to large vans ( $\chi^2= 40.472, df=2, p<0.001$ ) (see Figure 3).

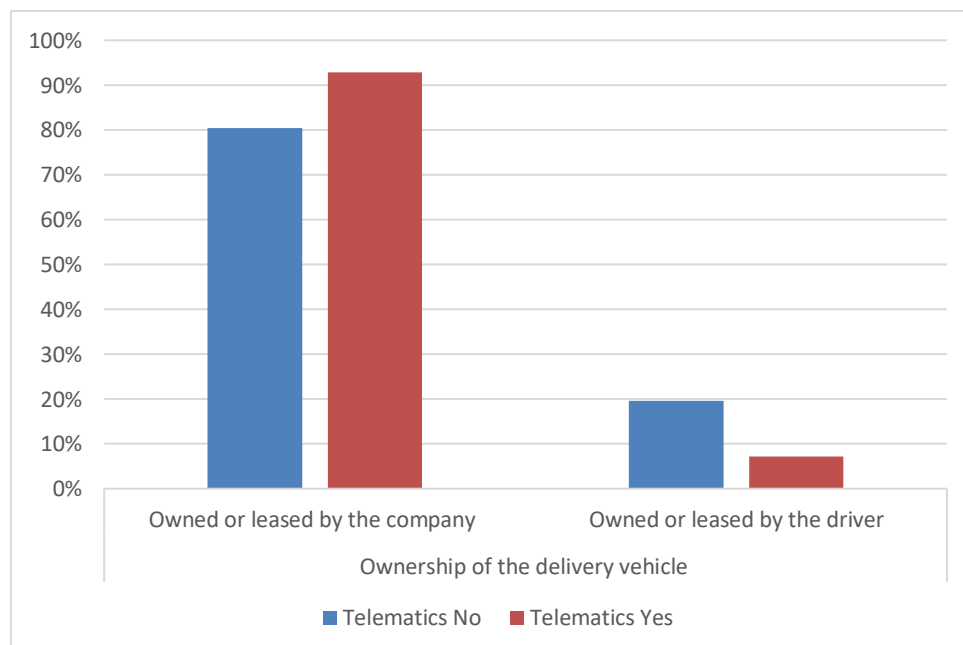
Figure 3: Size of main vehicle driven by telematics use



### 2.2.4 Vehicle ownership

There was a significant association between telematics use and the ownership of the vehicle. Drivers who used telematics were more likely to drive vehicles owned by a company ( $\chi^2= 24.647, df=1, p<0.001$ ) (see Figure 4).

Figure 4: Ownership of delivery vehicle by telematics use

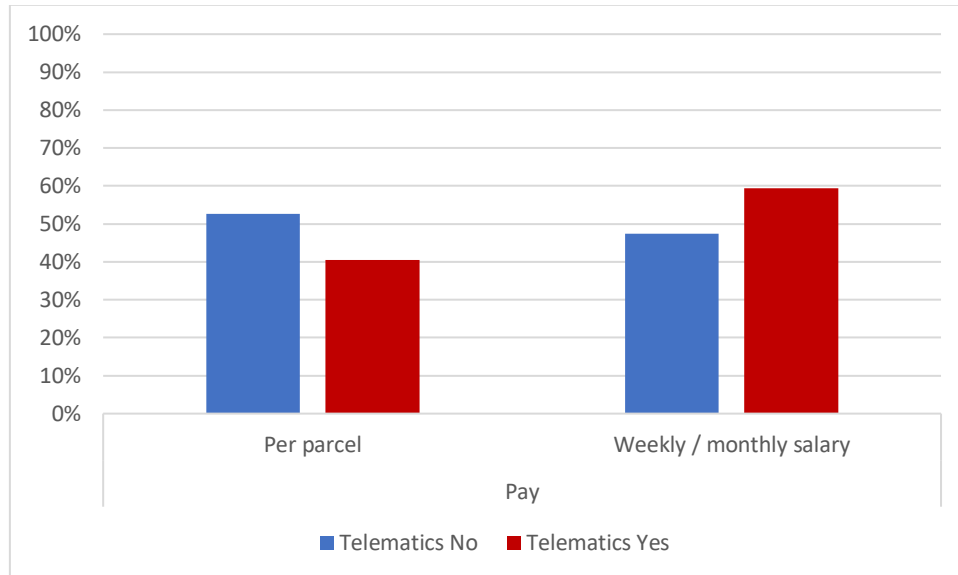


## 2.2.5 Pay frequency and income

### 2.2.5.1 Pay

There was a significant association between telematics use and how they were paid. Drivers who used telematics were more likely to be salaried ( $\chi^2=11.12$ ,  $df=1$ ,  $p=.001$ ) (see Figure 5).

**Figure 5: Type of pay by telematics use**



### 2.2.5.2 Income

There was no significant association between telematics use and the income provided by delivery work. Most drivers (81%) said that this was their only source of income with 11% supplementing a part-time job and 8% supplementing a full-time job.

## 2.3 Exposure variables: mileage and hours worked

### 2.3.1 Most hours worked in a single day

There was no significant association between telematics use and the most hours that drivers reported that they had worked in a single day. Half worked between 8-9 hours a day and over a third worked 10 hours or more a day.

### 2.3.2 Hours worked in a typical week

There was no significant association between telematics use and the hours worked in a typical week. Most drivers (69%) worked up to 35 hours a week with 31% working 36 or more hours per week.

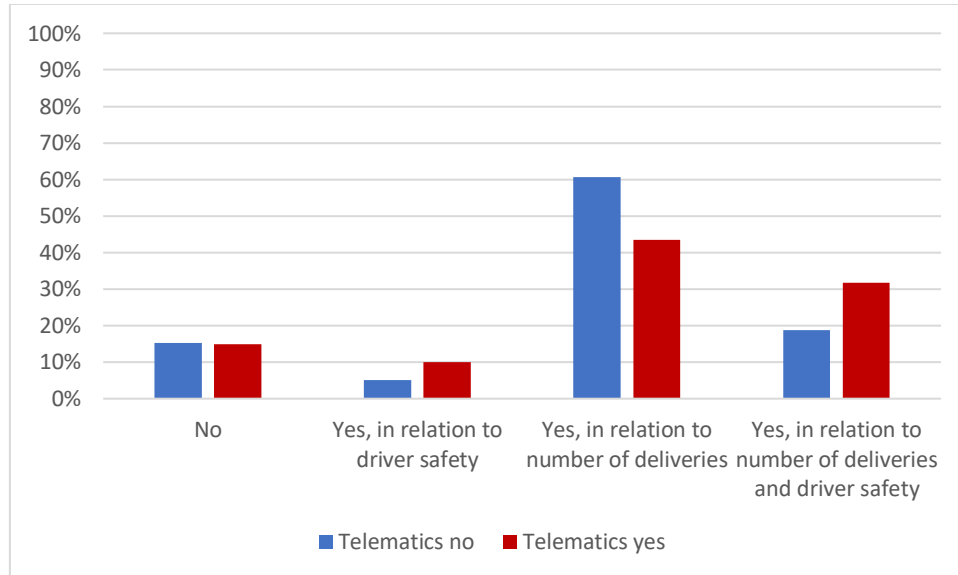
### 2.3.3 Average weekly mileage

There was no significant association between telematics use and the mileage worked in a typical week. Most drivers (52%) drove between 250-450 miles per week, 9% drove over 450 miles per week and 39% drove up to 250 miles per week.

### 2.3.4 Target setting

There was a significant association between telematics use and targets set by the company. Drivers who used telematics were more likely to report targets for deliveries and road safety (32% vs.19%) and in relation to driver safety (10% vs. 5%) and less likely to report having targets for deliveries only (43% vs. 61%) ( $\chi^2=30.19$ ,  $df=3$ ,  $p<.001$ ) (see Figure 6). Around 15% of drivers overall reported having no targets.

Figure 6: Target setting by telematics use

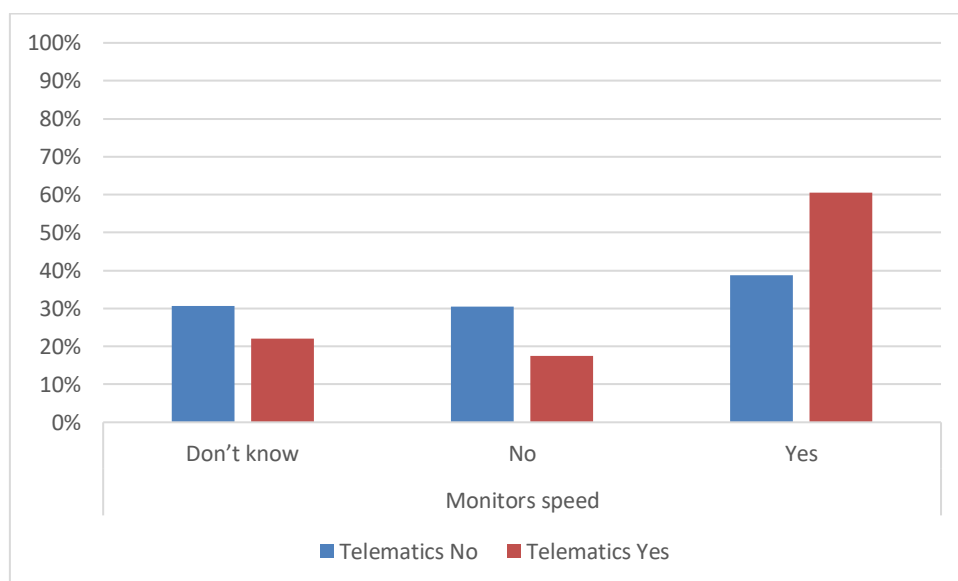


## 2.4 Company monitoring of driving behaviour

### 2.4.1 Company monitoring of speed of delivery

Drivers who had telematics were significantly more likely to say that their company monitored how fast they delivered parcels (61% vs. 39%) ( $\chi^2= 37.52$ ,  $df=2$ ,  $p=.001$ ) (see Figure 7).

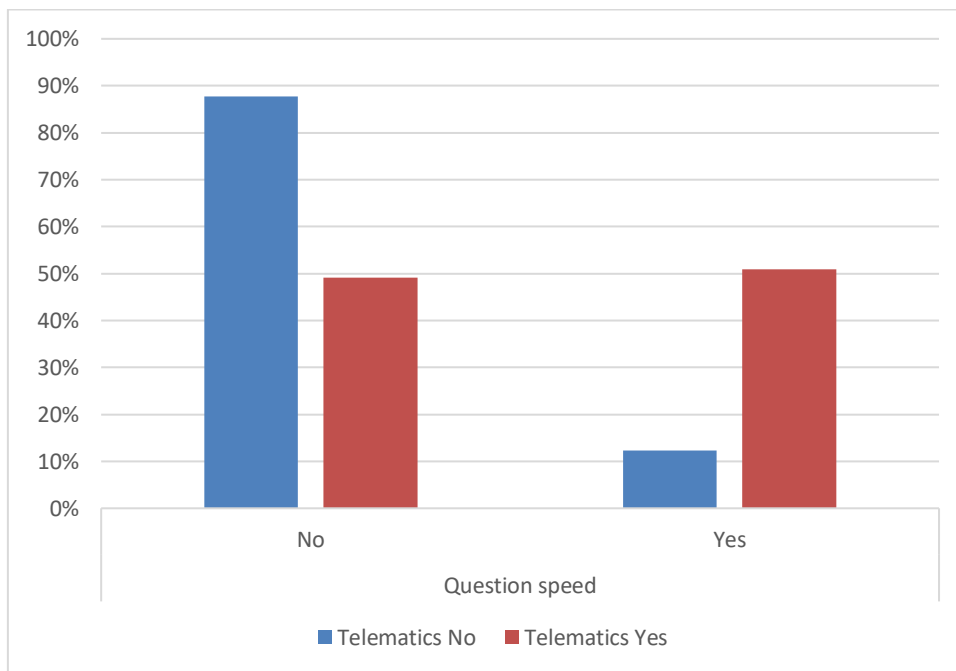
Figure 6: Company monitors speed parcels delivered by telematics use



### 2.4.2 Company questions driver if they think you are travelling too fast

Drivers who had telematics were significantly more likely to say that their company questioned them if they felt they were travelling too fast (51% vs. 12%) ( $\chi^2=137.43$ ,  $df=1$ ,  $p=.001$ ) (see Figure 8).

Figure 7: Company questions driver if they think they are travelling too fast by telematics use

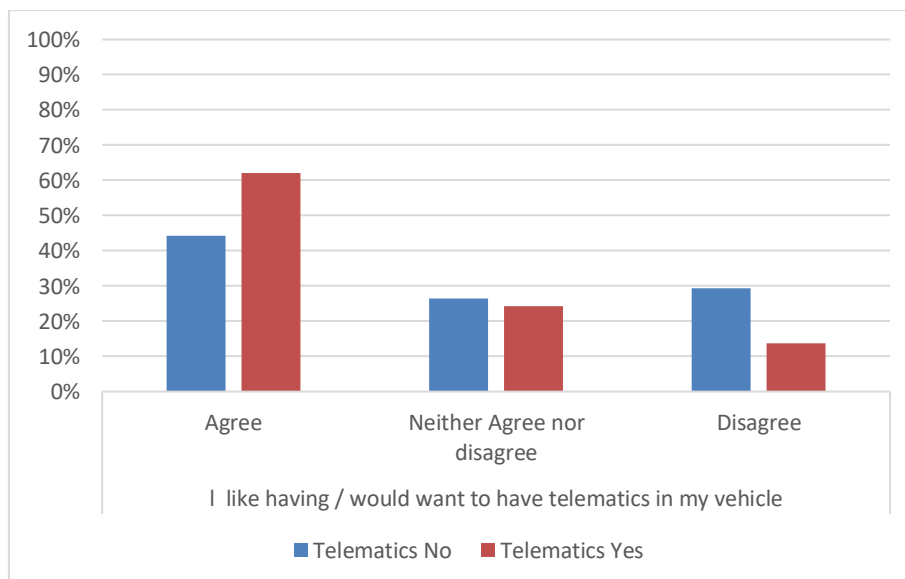


## 2.5 Driver's views on telematics

### 2.5.1 Preference for telematics

Drivers who had telematics were significantly more likely to say that they liked having telematics (62% vs. 44%) ( $\chi^2=33.12$ ,  $df=2$ ,  $p=.0001$ ) (see Figure 9).

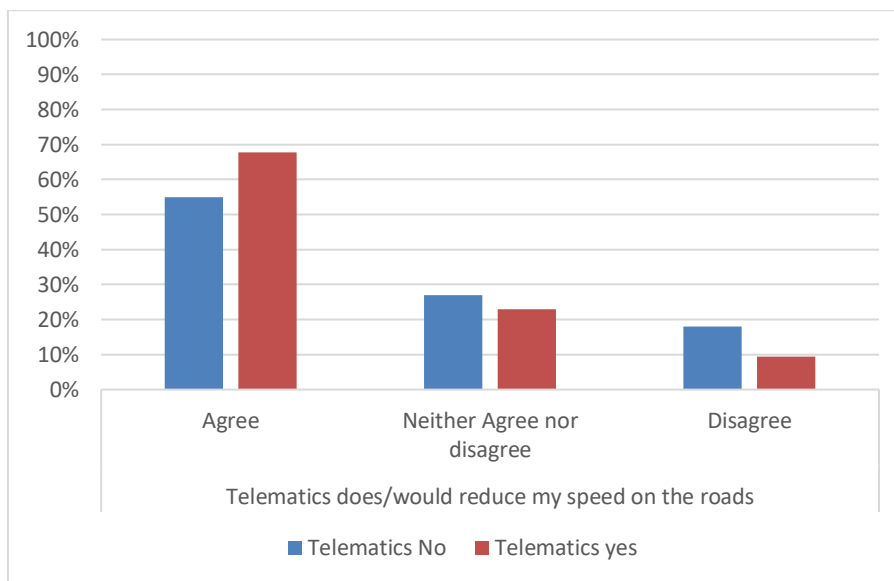
Figure 8: Agreement with the statement "I like having / would want to have telematics in my vehicle" by telematics use



### 2.5.1.1 Telematics reduces speed

Drivers who had telematics were significantly more likely to say that having telematics reduced their speed on the roads (68% vs. 55%) ( $\chi^2=16.83$ ,  $df=2$ ,  $p=.0001$ ) (see Figure 10).

**Figure 9: Agreement with the statement "Telematics does/would reduce my speed on the roads" by telematics use**



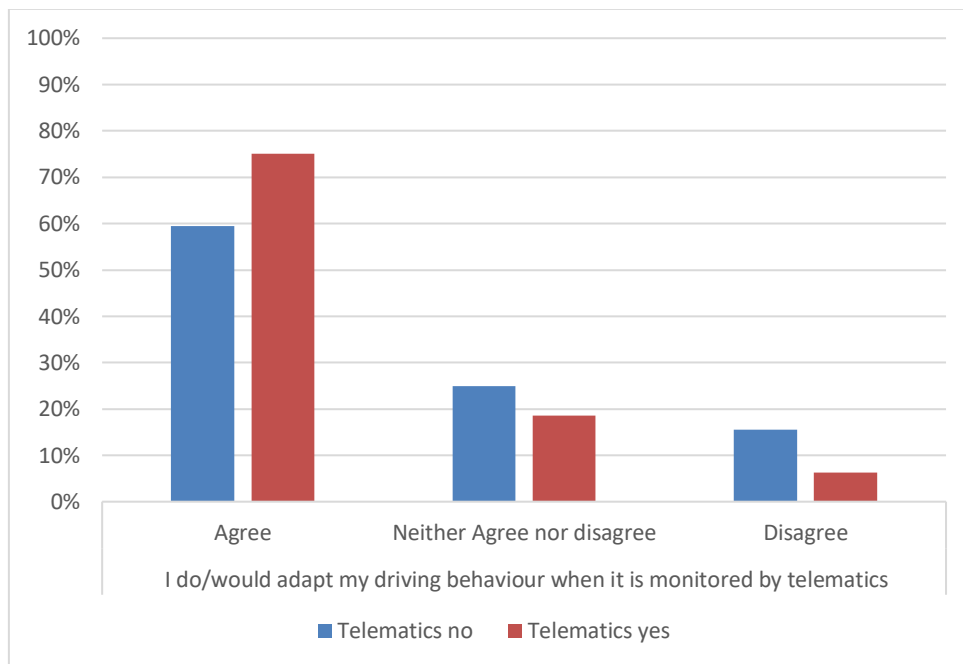
### 2.5.1.2 Telematics increase pressure

There was no significant association between telematics use and drivers views on whether they agreed with the statement that they "increase the pressure on me to deliver within expected timeframes". Most drivers (67%) agreed that telematics would increase the pressure on delivery, 21% were neutral and 12% disagreed.

### 2.5.1.3 Telematics adapts driving behaviour

Drivers who had telematics were significantly more likely to agree that they would adapt their driving when it is monitored by telematics (75% vs. 60%) ( $\chi^2=25.16$ ,  $df=2$ ,  $p=.0001$ ) (see Figure 11).

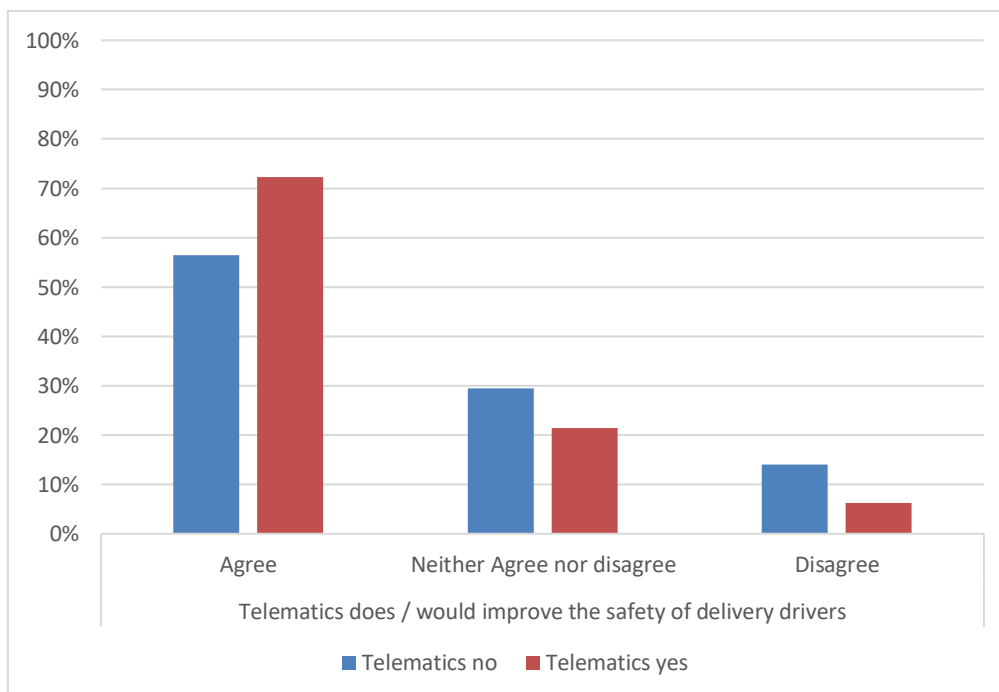
**Figure 10: Agreement with the statement " I do/would adapt my driving behaviour when it is monitored by telematics" by telematics use**



**2.5.1.4 Telematics improves safety**

Drivers who had telematics were significantly more likely to agree that telematics improves the safety of drivers (72% vs. 57%) ( $\chi^2=23.23, df=2, p=.0001$ ) (see Figure 12).

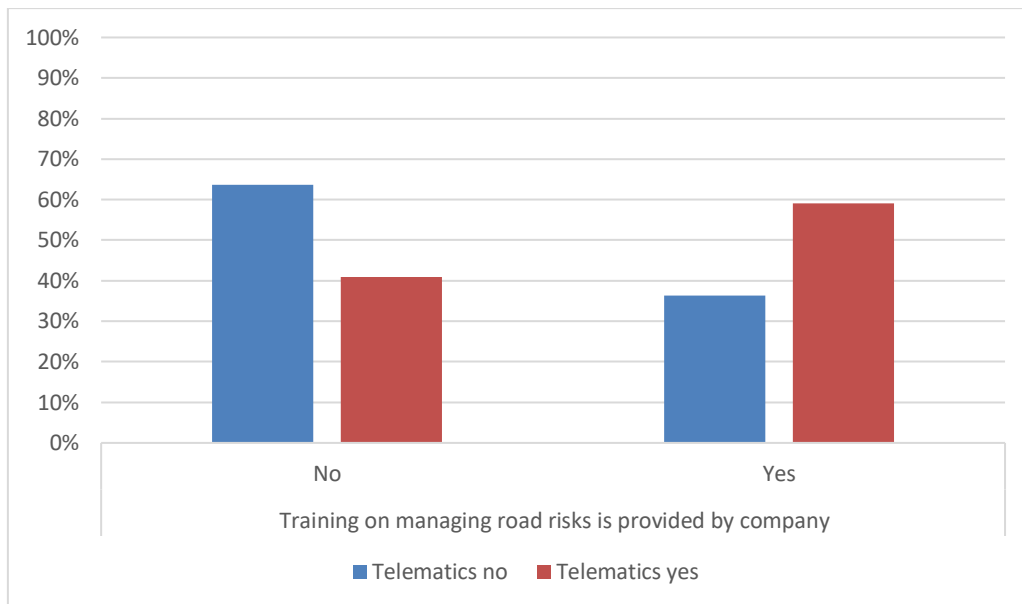
**Figure 11: Agreement with the statement "Telematics does / would improve the safety of delivery drivers " by telematics use**



**2.5.2 Training**

Drivers who had telematics were significantly more likely to say that they had training on managing road risks (59% vs. 36%) ( $\chi^2=40.54, df=1, p<.001$ ) (see Figure 13).

**Figure 12: Training on managing road risks is provided by company by telematics use**

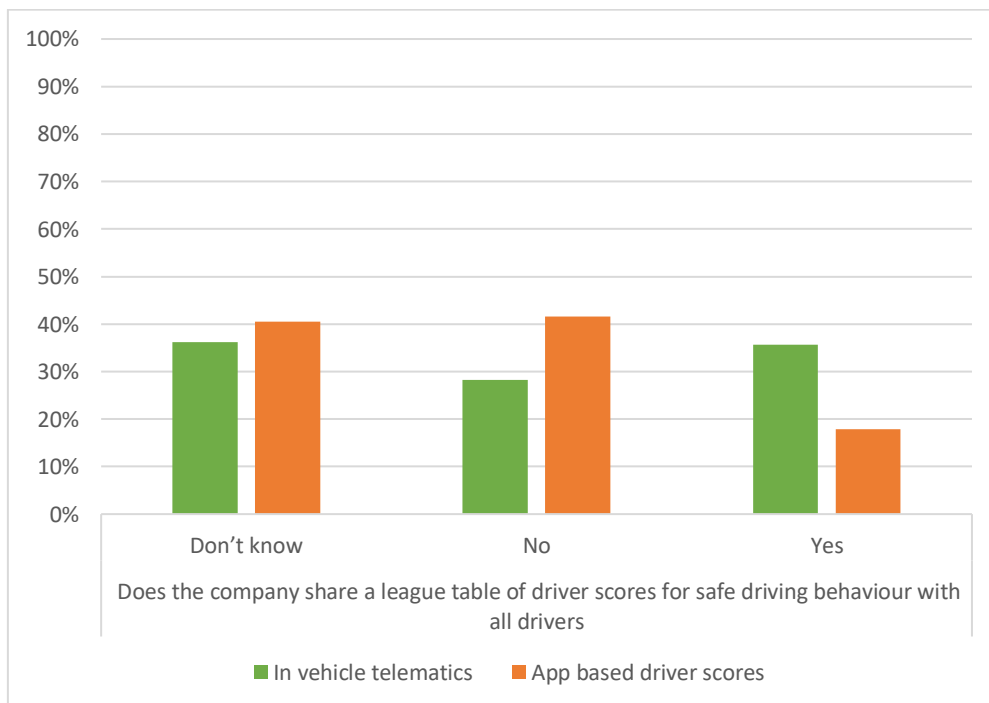


**2.5.3 How telematics data is used and shared with drivers who use telematics**

**2.5.3.1 Company league tables**

Generally, there were low levels of sharing league tables among telematics users (27%). Those with in-vehicle telematics were significantly more likely to say that a league was shared (36% vs 18%), ( $\chi^2=15.08$ ,  $df=2$ ,  $p<.001$ ) (see Figure 14).

**Figure 13: Does the company share a league table of driver scores for safe driving behaviour with all drivers by type of telematics used**

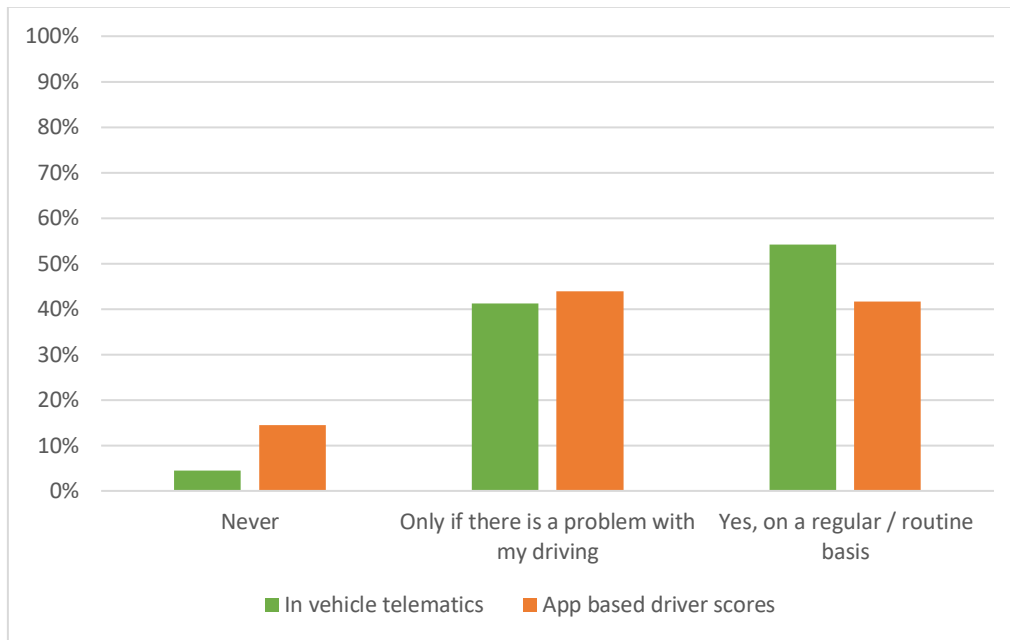


**2.5.3.2 Company sharing of telematics data**

Drivers who had in-vehicle telematics were significantly more likely to agree that their data was shared with them on regular basis drivers (54% vs. 42%) ( $\chi^2=12.02$ ,  $df=2$ ,  $p<.002$ ) (see Figure 15).



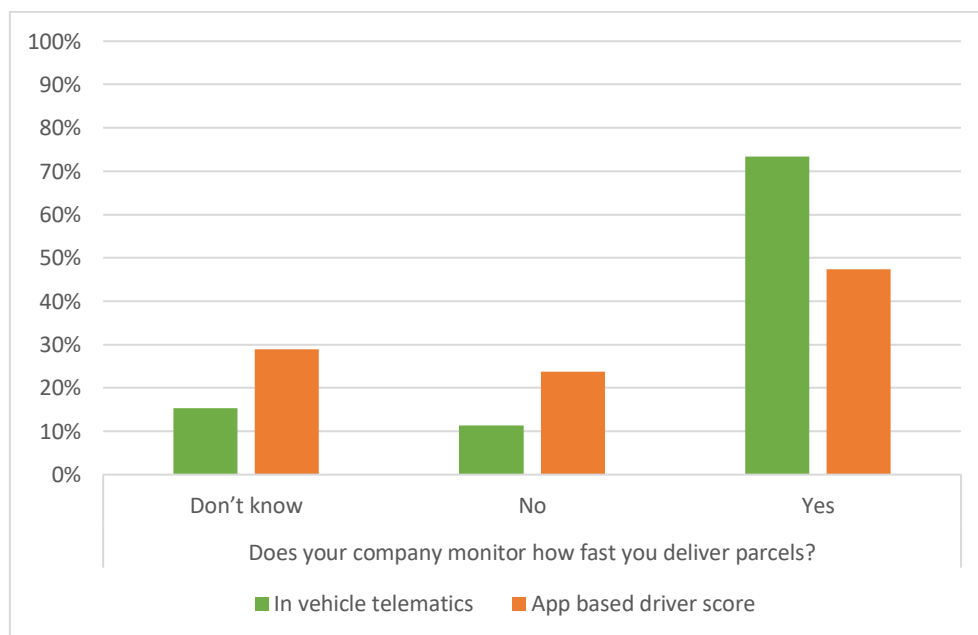
**Figure 14: Does the company share the telematics information with you about your driving behaviour by type of telematics used**



**2.5.4 Monitoring speed of delivery by type of telematics used**

Drivers who had in-vehicle telematics were significantly more likely to say their company monitored how fast they delivered parcels (73% vs. 47%) ( $\chi^2=24.92, df=2, p<.001$ ) (see Figure 16).

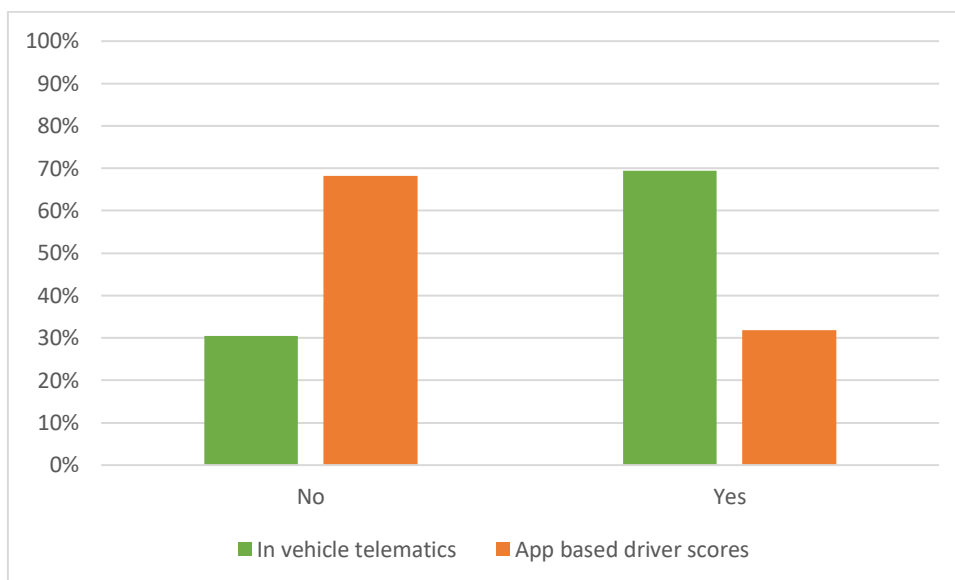
**Figure 15: Does your company monitor how fast you deliver parcels by telematics type**



**2.5.5 Company questions speeding**

Drivers who had in-vehicle telematics were significantly more likely to say that their company would question them if they were travelling too fast (70% vs. 32%) ( $\chi^2=49.75, df=1, p<.001$ ) (see Figure 17).

**Figure 16: Does the company question you if they think you are travelling too fast by telematics type**



## **2.6 Telematics use and reported road safety behaviours**

### **2.6.1 Pressure to travel over the speed limit**

There was no significant association between drivers who used telematics and those who didn't in their agreement with the statement "The time pressure of delivery work can make you travel over the speed limit", 80% agreed with this statement, 11% were neutral and 9% disagreed.

### **2.6.2 Red light running**

There was no significant association between drivers who used telematics and those who didn't in their agreement with the statement "I have driven through a red light when I've been under time pressure", 43% agreed with this statement, 19% were neutral and 38% disagreed.

### **2.6.3 Unsafe and illegal parking**

There was no significant association between drivers who used telematics and those who didn't in their agreement with the statement "I often have to park illegally / in unsafe places on roads to deliver parcels ", 63% of drivers agreed with this statement, 18% were neutral and 19% disagreed.

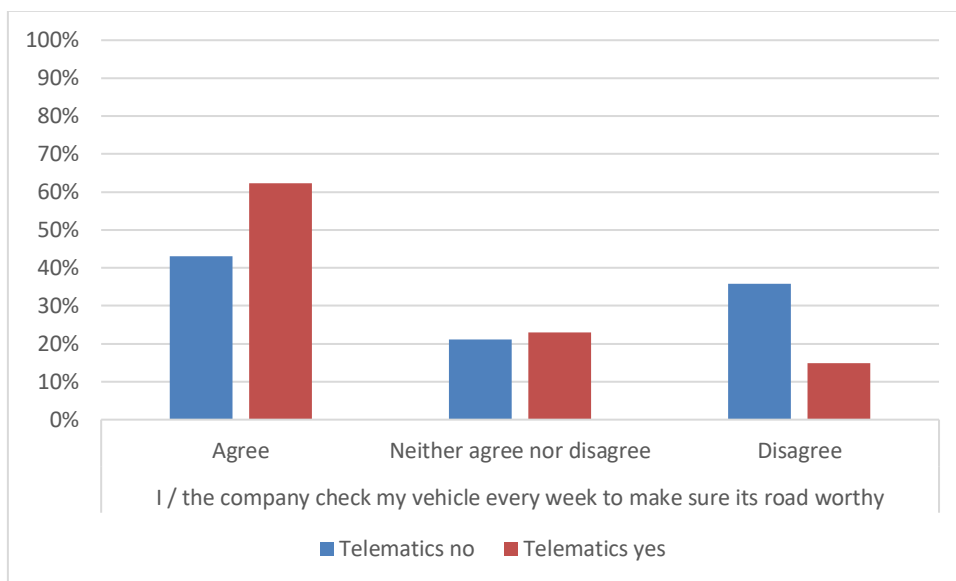
### **2.6.4 Distraction**

Of the total sample 68% said their work was app based and of these over third (34%) said that it was distracting. There was no significant difference among app-based workers distraction and whether they used telematics.

### **2.6.5 Roadworthiness checks**

There was a significant association between drivers who used telematics and those who didn't in their agreement with the statement "I/the company check my vehicle every week to make sure its road worthy". Drivers who used Telematics were more likely to agree with this statement (62% vs. 43%) ( $\chi^2=46.19$ ,  $df=2$ ,  $p<.0001$ ) (see Figure 18).

**Figure 17: Agreement with the statement "I / the company check my vehicle every week to make sure its road worthy" by telematics use**



## 2.7 Damage and injury crashes

### 2.7.1 Someone injured whilst working by telematics use

Only 3% of the total sample reported that they had a collision where someone was injured whilst they were working (Table 1). Drivers who had telematics were significantly more likely to say that they had a collision whilst working where someone was injured (67% vs. 33%) ( $\chi^2=5.37$ ,  $df=1$ ,  $p<.020$ ).

**Table 1: Telematics use by whether someone injured in collision whilst working**

			Someone injured in collision whilst working		Total
			No	Yes	
Telematics use	No	Number	421	9	430
		%	55.9%	33.3%	55.1%
	Yes	Number	332	18	350
		%	44.1%	66.7%	44.9%
Total		Number	753	27	780
		%	100.0%	100.0%	100.0%

### 2.7.2 Who was injured

Of the 3% of drivers that reported an injury collision (Table 2), most involved the driver themselves.

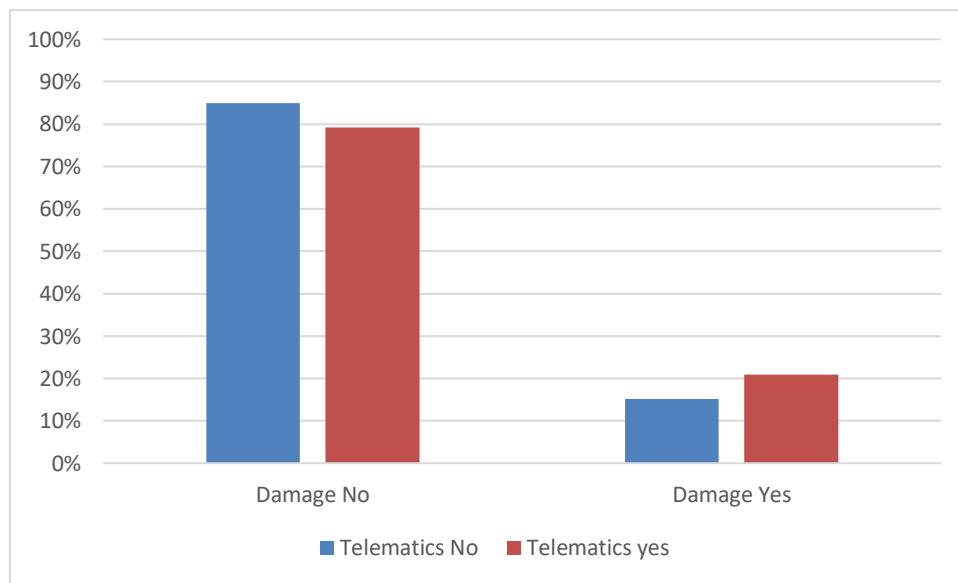
**Table 2: Who was injured**

		Number	%
	No injury accident	753	96.5
	Both me and someone else	6	.8
	Just me	16	2.1
	Just someone else	5	.6
	Total	780	100.0

**2.7.3 Vehicle damage by telematics use**

Overall, 18% of the sample said that they had damaged their vehicle in a collision whilst working. Drivers who had telematics were significantly more likely to report that they had damaged their vehicle in a collision whilst working (21% vs 15%) ( $\chi^2=4.36, df=1, p<.037$ ) (see Figure 19).

**Figure 18: Reported vehicle becoming damaged whilst working by telematics use**



**2.7.4 Violations**

There was no significant association between whether a driver had any licence points whilst working by telematics use. Of the total sample 8% had points on their licence (Table 3).

Drivers were asked how many points they had the past 12 months. Of the 750 who responded, 15% said they had had points in the last 12 months, of these 12% had up to three points and 3% had six or more.

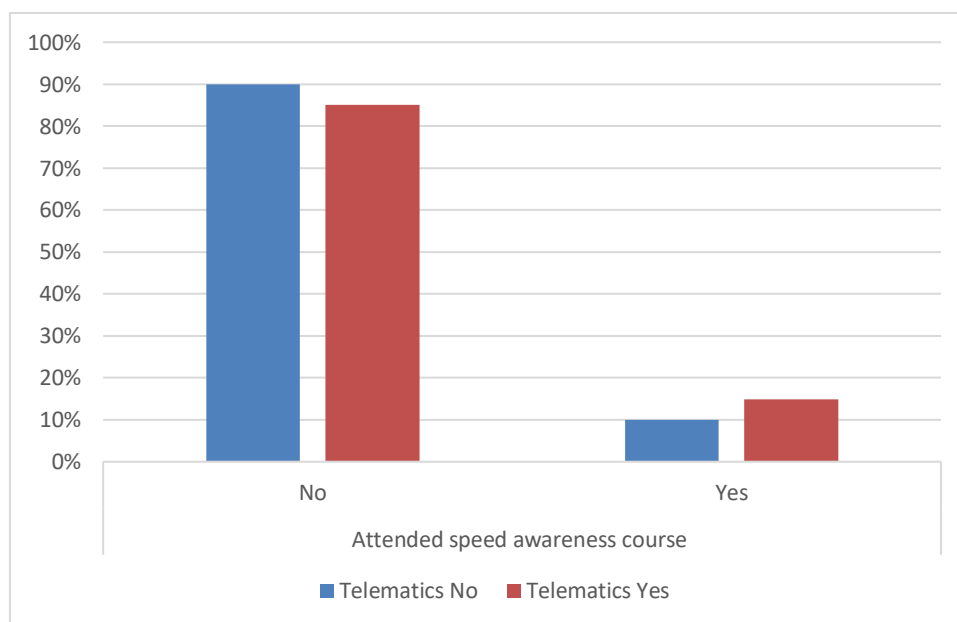
**Table 3: Number of licence points in the last 12 months**

Number of licence points in the last 12 months – all drivers			
	Number of licence points	Number	%
	0	637	84.9
	2	2	.3
	3	91	12.1
	6	19	2.5
	9	1	.1
	Total	750	100.0
	Missing	30	
Total		780	

**2.7.5 Attendance on a Speed Awareness Course**

Significantly more telematics users had attended a Speed Awareness Course (15% vs.10%) ( $\chi^2=4.25$ ,  $df=1$ ,  $p=.039$ ) (see Figure 20). Overall, 12% of the sample had attended a course.

**Figure 19: Reported attending a Speed Awareness Course by telematics use**



There was no significant association in whether a driver had been stopped by the police and telematics use with 12% reporting that they had been stopped by the police whilst working.

**2.8 Multivariate modelling**

The presence of telematics does not seem to have a clear safety benefit in terms of reducing risky behaviours, crashes, and marginal speeding. However, this is self-reported behaviour therefore further

analysis was done to explore which factors influenced safety outcomes using reported damage collisions as the outcome variable because it was more frequent than reported injury collisions.

Multivariate analysis was carried out using binary logistic regression to simultaneously explore and evaluate the relationship between the dependent variable which was being involved in a damage collision and several explanatory variables described in Table 4 which measures key demographics, exposure (i.e., mileage), work situation, unsafe behaviours, and violations. The reference category is shown in brackets in the table below.

**Table 4: Model**

Explanatory Variables	Beta coefficient	Standard error	Significance	Exponent of Beta coefficient
Constant	.771	.526	.143	2.162
Gender (female)	-.468	.227	.039	.626
Targets (No targets)	.423	.264	.109	1.527
Vehicle size (medium to large van)	-1.295	.255	.000	.274
Miles per week (over 250 miles per week)	-.276	.228	.227	.759
Whether uses telematics (Uses telematics)	-.271	.211	.199	.763
Whether owns or leases vehicle (Owned or leased by driver)	-.989	.308	.001	.372
Distraction by App (App not distracting)	.636	.232	.006	1.889
Goes through a red light under pressure (neutral/disagrees)	-.296	.220	.178	.744
Parks unsafely/illegally (neutral/disagrees)	.510	.235	.030	1.665
Pressure of work leads to going above speed limit (neutral/disagrees)	.501	.288	.082	1.650
Points on licence (Has points)	-.712	.340	.036	.491
Whether been on Speed Awareness Course (Been on course)	-.781	.292	.008	.458

### 2.8.1 Model results

#### Demographics

Males were 37% less likely to belong to the damage group compared to females.

#### Work situation

The odds of a small car or van being damaged in a collision were 73% less than for a medium or large van. The odds of a vehicle that was leased or owned by a company being damaged were 63% less than the odds of a vehicle owned or leased by the driver. There was no significant association between being involved in a damage collision and being set personal targets, using telematics or higher mileage.

#### Risky behaviours

The odds of an App distracted driver being involved in a damage collision was 89% greater than those who did not experience distraction.

The odds of drivers who agreed they parked unsafely/illegally being involved in a damage collision was 67% greater than those who disagreed or were neutral to this statement. There was no significant association between being involved in a damage collision and agreeing that they at times drove over the speed limit or went through red lights.

### **Licence points and whether attended a Speed Awareness Course**

The odds of drivers who had no points being involved in a damage collision were 51% less than drivers who had points on their licence. The odds of drivers being involved in a damage collision was 54% less for those who had not been on a speed awareness course compared to those who had. It is important to state here that this is not an evaluation of the Speed Awareness Course but an indicator of marginal speeding.

## **3 Interviews with managers and drivers**

### **3.1 Criteria**

Managers of home delivery fleets were interviewed to understand their perceptions of the impact of telematics. Specifically, we engaged with people managing delivery drivers who deliver small goods (but excluding meal services or groceries), using cars or vans that are fitted with telematics. For drivers the criteria for inclusion were that they were a home delivery driver. Half of these drivers used telematics and were interviewed to understand their perceptions of the impact of telematics on the driving and safety. As with the manager interviews, we specifically engaged with people who delivered small goods (but excluding meal services or groceries), using cars or vans.

### **3.2 Recruitment**

Interviewees were recruited through the fieldwork agency Further Afield. In total, 21 managers were interviewed, with 20 suitable transcripts being included in the analysis (one interviewee provided inappropriate answers to the question and seemed confused as to whether they really had telematics in their fleet). Thirty-nine drivers were recruited 18 of which used telematics.

### **3.3 Procedure and analysis**

Semi-structured interviews were used based on topic guides (Appendix B – managers and Appendix C Drivers). All interviews were audio recorded. Interviews were typically around 20-30 minutes in length. Template analysis was the approach chosen to analyse the interview transcripts. Template analysis (King, 2004) is regarded as a practical tool for applied research especially in relation to policy development. The template was based on the topic guide of semi structured questions which was developed as a priori topics of interest but is also easily adapted to new themes that may arise in the interview process. NVivo analysis software, was used to organise sub themes, based on the themes that were anticipated at the start of the research. Ethical approval of this study was given by UCL Ethics Committee.

## **4 Interviews with managers**

This section explores the use and acceptability of telematics to managers of delivery drivers that use telematics to monitor safety in their fleet. The findings aimed to answer the following research questions:

- How are telematics used to monitor speed violations among people who work in home delivery services using cars and vans?
- What role do organisational factors such as leadership, culture and policies play in the effectiveness of telematics in the home delivery sector?

This section outlines the risks associated with delivery driving and in-depth discussions around the use of telematics in fleet management, according to managers, including why telematics is used, how they are used and the impacts that managers have seen because of introducing the technology.

#### 4.1 Participant characteristics

A brief description of the 20 participants involved in the interviews can be seen below in Table 5. This table contains details regarding how participants described their role within the company, where their company is based and the size of the fleet they manage, if disclosed during the interview.

**Table 5: Anonymised description of interviewees and the companies they work for**

Code	Anonymised description of role and company	Region
1	Fleet manager at small courier company. Introduced telematics when the company initially opened.	Manchester
2	Fleet manager at new courier company; fleet contains six vans.	Cheshire
3	Fleet manager at family run courier business of 20 years.	Manchester
4	Fleet manager of last mile delivery company responsible for tracking delivery drivers.	Manchester
5	Fleet manager responsible for the day-to-day issues and monitoring of last mile delivery drivers.	Leeds
6	Manager that self-describes role as floating hybrid role, assists with formal fleet manager to oversee the fleet.	Somerset
7	Fleet manager of last mile delivery drivers who deliver in the countryside.	Devon
8	Transport lead who manages a fleet of 20 delivery drivers and 20 transit vans.	Cheshire
9	Started as a delivery driver in company, now manages a fleet of 18 drivers and vans.	Manchester
10	One of three fleet managers in company, manages general day-to-day running of company. Telematics recently installed.	Bristol
11	Fleet manager who organises pickups and drop offs as well as safety and finance for a delivery company.	Oxford
12	Fleet manager who manages a fleet of 20 drivers and 20 vehicles at a delivery company. Based in the Northwest of England.	Manchester
13	Fleet manager who manages 10 delivery drivers and vans at a delivery company.	Manchester
14	Experienced fleet manager who currently manages parcel delivery and safety of delivery drivers at a delivery company.	Manchester
15	Manager who oversees the compliance of delivery drivers and their safety using telematics at a delivery company.	Manchester
16	Fleet manager who ensures assigns vans to drivers and ensures delivery is on time.	Manchester
17	Fleet manager of 45 vehicles and role is logistics and ensuring parcels get delivered.	Manchester
18	Part of fleet manager team for a courier delivery service with over 50 delivery vans and drivers.	Liverpool
19	Fleet manager of 24/7 same day delivery service. Describes role as managing people and tracking deliveries.	Leicester
20	Fleet manager of a team of over 50 delivery drivers for a courier company, also deals with admin.	Manchester



### 4.1.1 Risks of delivery driving

Fleet managers were asked what they considered to be the main road safety risks involved in home delivery work. The main risks identified were speeding, other road users, frequent manoeuvres, and driver fatigue.

**Speeding** was the most frequently reported road safety risk involved in delivery work (mentioned by 13 out of 20 fleet managers). One manager mentioned that if the delivery driver was under pressure to make deliveries quickly, they may be tempted to speed and take other risks. Several managers discussed how they attempt to mitigate the risk of speeding using telematics, managing their drivers' workload, and ensuring their drivers understand the potential consequences of speeding. They also understood their role in identifying dangerous drivers who are a risk to themselves and other road users: *"If you have loads of vans going over the speed limit. It can kill someone."* (Participant 14). Given the focus of this research on how telematics is used to monitor speed violations, it was noteworthy that some managers consider speeding to be a very important road risk.

**Other road users** were seen as a prominent road safety risk for delivery work: *"the main one would be obviously traffic and other road users be that cars, bikes, pedestrians. Obviously, that's one of the biggest worries."* (Participant 6). One manager stated that the risk of other road users tends to be greater when a delivery route passes a school or somewhere with busy pedestrian traffic: *"You don't know what a child's going to do, [...] if it is around children leaving school or going to school or whatever then they're extra careful in specific areas."* (Participant 2). While this did not directly relate to the use of telematics, being aware of the risk of routes (i.e., around schools at pick up time) may lead to more safe planning of deliveries, avoiding risks.

**Manoeuvres** Managers highlighted the risk of parking on the side of the road and exiting the vehicle onto a busy street: *"Drivers getting in and out of vans possibly not looking where they're going"* (Participant 17), and frequently pulling over onto the pavement and out onto busy roads. This was also discussed by several managers as a big road safety risk involved in delivery work, especially as they are driving a large vehicle: *"You know when a normal person goes out in the car, they might only do two manoeuvres every time they go out. When a delivery driver goes out, you might do 50 in a day, you know. In a in a bigger vehicle as well, that's obviously a bit more difficult to manoeuvre and to see around really."* (Participant 12). This suggested that the increased driving involved in driving for work increases the number of risky manoeuvres that a delivery driver is likely to make compared with an average driver.

**Fatigue** was also reported as a road safety risk involved in delivery work. One manager reported being mindful of how many hours their drivers did at once, knowing that driving skill depletes as tiredness increases. The risk of fatigue was considered unavoidable in some circumstances, as some delivery work is conducted at night.

### 4.1.2 Commitment to safety

#### 4.1.2.1 Fleet managers' and companies' commitment to safety

Most of the fleet managers interviewed described their company as committed to the safety of their drivers and described safety as a big part of the company ethos. Managers reported that this commitment was not only for the safety of their employees but also for the safety of their customers and other road users. One manager stated: *"...on the wider company, I'd say we were very committed to making sure that our drivers and the public are as safe as they possibly can be."* (Participant 2).

Managers who described their company as somewhat or not that committed to safety explained that their company's priority was getting packages delivered: *"I would say 50% if I'm really honest because the main goal is to get rid of them parcels."* (Participant 14).

One of the reported ways they keep staff safe is ensuring drivers were not fatigued: *"We're also quite mindful that they don't drive over their hours because obviously that can cause tiredness"* (Participant 15). One

manager also mentioned how the company ensures their drivers are not under pressure to help prevent dangerous driving: *"I would say 99% of delivery drivers speed around because they're under pressure. So, we just we just take completely take that emotion out of the business and it has such a drastic effect."* (Participant 6). To ensure drivers are not under pressure the manager overbooks drivers for each shift so that if one driver is showing signs of aggressive driving such as speeding, they will be asked to take a break and another driver will take their deliveries.

Fleet managers also reported that they ensure the drivers are confident driving during antisocial hours and that they can rapidly communicate in the case of an emergency. The following quote illustrates the dangers and mitigations of working in the dark: *"...we can track make sure they've got their system on all the time. We know where they are, they know they can contact us and it's just basically the touch of a button. If there's a problem, they can communicate with us. And if they're not able to communicate because they have activated the button, we know that there may be a problem. So, if somebody is in the area close to them. They will sort of, you know, go and assist and let us know."* (Participant 2).

Managers who reported they were committed to their drivers' safety also attempted to prove their commitment through mentioning their use of telematics, safety training, pre-screening drivers and having one-to-one meetings to discuss their driving behaviour and how they can improve their safety.

Some fleet managers explained that safety was a focus because safer driving was cost efficient in the long run: *"...because it affects the bottom line at the end of the day, if drivers are driving safer then it costs us less in claims and vehicles off the road and parcels not delivered, so safety is very important to the company because if we can deliver it in a safe way it saves a lot of hassle."* (Participant 16). They felt that keeping employees safe helped to keep staff turnover low, reduced absences, and reduced the number of days of staff sickness due to workplace injuries (along with the support and aftercare the company must provide). A few managers reported that the reason they were committed to safety was for the employees and that happy, safe staff do much better work in the long run.

#### 4.1.2.2 Driver screening

Many managers described their commitment to safety being instilled in drivers from the start of the application process. Applicants were prompted to discuss the issue of speeding within their initial interviews. However, standards varied as to how clean an applicant's licence should be. Several managers reported that drivers will not be employed if they have any points on their licence: *"...we do obviously promote the fact that you know our drivers have clean licences."* (Participant 9). Another manager agreed that drivers should have not accumulated any points, even in the distant past: *"It doesn't matter if it's 40 years ago, we still like to know."* (Participant 7). Other managers had a points threshold, which meant that any applicant with six or more points on their licence would not be invited to a second interview. Other methods to pre-screen drivers included requiring at least 1-2 years of delivery driving experience. One manager mentioned that they include a driving test in the application process to ensure their drivers are up to date with the highway code.

#### 4.1.2.3 Driver training

Driver training processes varied dramatically across companies. Some fleet managers described training as a lengthy process that included new drivers being shadowed during their first week: *"...they go out for a drive and I think one of the more experienced drivers, they shadow them."* (Participant 10). As well as the use of workshops, seminars, videos, and webinars, some driver training included test-like-material: *"...it's general, it's on speed, it's on hazards and dangers on the road. It's not a test as such, but it's just to see if they are aware of what's going on, not just in the front vision in the peripheral vision and things like that. So, it's similar to hazard awareness test that you would get if you were taking your driving test from the start."* (Participant 1).

Most fleet managers felt that there was some degree of training that must be undertaken within the first few days of working as a delivery driver. This training was mostly used to protect the company, with the drivers signing a document to confirm that they understood and accepted the rules for driving safely: *"...we get them to sign to understand that everything we've told them they understand, so they can't turn around and say, well, I didn't know I had to drive safely because we make that sign for it."* (Participant 16). There was a focus on outlining the risks of driving a delivery van, including blind spots, using mirrors appropriately, and the risks associated with the van size and weight.

Some managers described safety training as an ongoing process that not only featured at the start of the driver's career but with frequent 'refreshers' to maintain awareness: *"...we have awareness days, depends, every six months or it could be eight months. It just depends... how soon we can fit them in and obviously we can't do it all at the same time."* (Participant 2).

A few fleet managers used external training companies and have annual visits from someone they referred to as their *"safety liaison officer"* (Participant 18) or *"safety coordinator"* (Participant 15). These trainers would lead refresher courses, monthly briefings, and train new drivers on safe driving.

### **4.1.3 Why are telematics used?**

#### **4.1.3.1 Introduction to the companies**

Fleet managers were asked why their company introduced telematics. Their answers can be categorised into financial savings, safety, company reputation and assistance with day-to-day management.

**Financial savings** were a reason for telematics being introduced. The technology was suggested to save as well as earn the company money (19 out of the 20 managers). Managers reported that telematics could save a company money through lowered insurance costs, fewer potential driving violations, better fuel economy and cheaper van servicing. These potential savings were what motivated several delivery companies to introduce telematics to their business: *"...it helped with the insurance costs and plus if they stay in the speed limit and whatever its fuel economy and we know the price of fuel these days. So, at every little, tiny aspect it it's more economical for us."* (Participant 2). Managers also reported that telematics were introduced to earn the company more money through winning more contracts: *"...that was one of the biggest selling points to getting contracts through with people."* (Participant 1).

**Safety** of both the drivers, the company and the general public was reported as a reason for introducing telematics. Managers said that their company wanted to ensure their drivers were driving safely and that they were not risking the safety of other road users by driving carelessly: *"...they can't get away with something that wouldn't be safe on the road."* (Participant 11). Telematics were also introduced to prevent drivers from leaving company vehicles in risky locations, resulting in vehicle theft and potential danger for the driver: *"...it's for the safety of the drivers, but also for our safety as a company to make sure the vehicles are safe and we know where they are, any risk of them being stolen. We have a way and means of being able to track them, but also just to make sure that our drivers are aware that we are tracking them to make sure they are safe, but also that they take responsibility for their own driving."* (Participant 11). Safety was a frequently cited reason for introducing telematics. Managers often also referred to the financial benefits of telematics alongside this. Examples of benefits include limiting damage to the vehicles, preventing vehicle theft, preventing the cost of aftercare for injured employees, and minimalizing the time the vehicle and employees spend out of work due to accidents.

**Reputation** was another reason why telematics was introduced. Managers stated that they wanted to use telematics to be sure that delivery drivers were driving appropriately whilst they were representing the company on the roads: *"We're just trying to improve the company really and other people's perception of our company to prove that we're a caring company."* (Participant 2). The need for a good reputation was highlighted by our sample of fleet managers from smaller delivery companies as they are competing with

much larger, profitable companies: *“The last thing they want is companies not to trust us... for example, if I know that I've got... a fragile parcel coming from probably two of the main companies ...I'll cringe thinking that it's not going to get here in one piece... So, we can't have that reputation. We want the business. We want customers to know that.”* (Participant 6). Managers said that a positive reputation also has financial implications, as they want to win more contracts and be trusted by more customers.

**Management** of the fleet was another reason managers reported introducing telematics as systems can assist with managing the day-to-day running of the company. One manager said that it was introduced to help them manage deliveries and reduce the possibility of anything going wrong such as a delivery being missed. Another manager mentioned that introducing a tracker was necessary as some drivers would complete personal errands on company time: *“It did happen a lot...they'd go and do some shopping or pick the kids up from school.”* (Participant 13). This again highlights the fact that managers needed to protect their company vehicles from misuse and the unnecessary costs of fuel consumption. Several managers stated that completing personal errands on company time and idling for too long was a large problem they faced prior to the introduction of telematics. They hoped that telematics would give them more control over managing delivery drivers and identifying potential problems such as idling.

#### 4.1.3.2 *Drive from leadership*

The companies' commitments to safety were frequently described as being **driven from the top** (i.e., from company leadership). These company leaders included CEOs, other directors, and senior managers. One fleet manager stated that although company leaders were the driving force for safety standards, this commitment originally stemmed from feedback provided by lower management: *“Before I started the role, the drivers didn't feel that their needs were taken into consideration as much as they should be so that hence the commitment to the new system, to support them.”* (Participant 3).

Other managers explained that the external pressure of what other companies were doing led to the change of ethos that was implemented by company leaders. One manager reported that although company leaders were the driving force for monitoring safety through telematics, there were other priorities: *“...it comes directly from the top, to say we, you know we need to monitor this, monitor that, and it's not just about monitoring the safety, although that's part of it. I think they wanted to monitor the drivers themselves or the vehicles themselves so they can see what the drivers are doing, where they're going etc. But also, obviously how efficiently they're driving and things like that. So, I think it was part of a bigger thing, not just safety, although that was a big part of it.”* (Participant 8).

#### 4.1.3.3 *Alignment of telematics with company priorities*

All fleet managers expressed driver safety as being very important and mentioned this when discussing why they used telematics. They described the risks the drivers faced in their day-to-day work such as parking on busy roads, driving in the dark and navigating other road users. However, only a few managers claimed that safety was their highest priority. A few managers reported delivering packages as their highest priority and the main reason for using telematics: *“Is it the priority? No. It's not the highest priority, but it's certainly in the top four or five maybe. You know, obviously the highest priority is that we deliver.”* (Participant 10).

However, some managers reported that safety was inadvertently their priority due to the positive impact safe driving has on the company: *“...because it affects the bottom line at the end of the day. If our drivers are driving safer, then it costs us less in claims and vehicles off the road and parcels not delivered. So, safety is very important to the company because if we can deliver in a safe way, it saves a lot of hassle.”* (Participant 16). This positive impact seems to be a key reason for why managers perceived telematics as a potentially positive asset to the company, as they could monitor driving behaviour and enforce safe driving speeds.

Of the few managers who mentioned safety being their number one priority, one manager mentioned that this often came at the cost of delivering packages quickly: *“You know from a safety point of view ..., that*

*possibly means they're not going quite as quick as they probably once were. So, from sort of delivery aspects, I don't know whether that's changed much by using it, maybe even gone down slightly.*" (Participant 8). This could indicate that fully prioritizing safety may come at a cost for the company, such as slower delivery times and less parcels delivered. This could be a risk that other managers do not want to take thus resulting in them being happy to highlight the importance of safety, while at the same time placing its importance lower than that of the performance of the business.

Overall, telematics can be used for both safety and financial reasons, and often both are mentioned as intertwined with safety impacting finance. Safety as 'the end in itself' is rarely if ever mentioned.

#### **4.1.4 How are telematics used?**

##### **4.1.4.1 Key indicators**

There was variation in the key indicators being used by the fleet managers. This could be due to the variety of telematics systems being used and the differences between brands. The most used indicators were speed of vehicle and vehicle location. Three managers reported that when their drivers were speeding, they would get an instant notification, meaning they can act quickly to prevent the speeding from continuing: *"...if they're doing 45 in a 30, we'll get a notification that says like where and when."* (Participant 6).

Other commonly reported indicators included speed of deliveries, number of deliveries, fuel consumption, routes taken, distance travelled, acceleration and braking. Some less-commonly reported indicators included wheel angle, door opening and closing, seat belt usage, hard cornering, and emergency stops.

##### **4.1.4.2 Company reputation**

Fleet managers want customers to know their parcels are safe with their company. They discussed how telematics have improved their reputation as well as prevented reputation loss since introduction.

One way telematics were reported to have improved reputation was through keeping customers in the loop regarding their delivery. Managers mentioned that introducing telematics and providing customers with data regarding where their package is and when it will be delivered has encouraged customers to use them as they are seen as a reliable delivery company: *"We want customers to know that It's safe with us sort of thing and it will get there, and it'll get there safely, but still on time."* (Participant 6).

Telematics have also been used to prevent reputation loss through protecting the company against accusations such as for dangerous driving. These accusations could negatively impact the company's reputation; however, by having telematics, companies have instant access to valuable data that could be used to discredit any inaccurate accusations: *"...it protects us from saying well we know it's not their fault they weren't speeding, and we can show you they're not speeding."* (Participant 8). One manager recalled a situation where a driver was being accused of causing an collision, they were able to go back through the telematics data to identify the van's location and speed. This data was used to prove that the driver was driving according to the law and was not responsible for the incident: *"...we've had two accidents in the last three months, both non fault and where our drivers weren't doing anything wrong at all, and obviously the telematics can prove that we can download all the data we can show they weren't speeding."* (Participant 6). This suggests that telematics is useful in maintaining a good company reputation, but the data can also be used as evidence to prove or disprove liability.

##### **4.1.4.3 Alignment of telematics with company priorities**

Many fleet managers utilised their introduction of telematics to 'prove' that their priority was safety. They discussed how telematics had increased good driving behaviours such as adhering to speed limits. The threshold for speeding seemed to be decided individually by the managers as they designed the parameters

for using the telematics. However, of these managers one claimed that they would not act on all occasions of speeding, rather they would look into the context such as what type of road they were on, at what time of day and in what location: “...40 on a quiet road is a bit different to 40 past the school at half past eight in the morning if you know what I mean.” (Participant 12). Overall, telematics appears to align with company priorities for safety and finance as it prevents speeding and managers can use the data to observe and intervene when necessary. However, as managers may pick and choose when intervening is necessary this may mean that they do not intervene in all cases of speeding.

#### 4.1.4.4 Data reviewing and feedback to drivers

There were mixed views from fleet managers regarding setting **safety targets** for drivers. Some managers did not consider targets effective against unwanted behaviour: “...we don't say reduce it by 20%, we just say stop it” (Participant 9). Other managers only mentioned targets set for number of deliveries, rather than specific behaviours like inappropriate speed: “...it's about making sure you do the job within the time.” (Participant 19).

Managers who did set safety targets for delivery drivers did so using telematics. Depending on the telematics system in place and the parameters set, different target systems were used. Some utilised a percentage scoring system based on frequency of going over the speed limit and harsh braking: “1% to 30% it's unsatisfactory. 30% to 50% that you need support” (Participant 15) and some had a colour system in place: “...the target is you stay in the green...[between] 20 and 50 is Amber – anything over 50 is red” (Participant 16). This manager defined the types of behaviours that would classify as ‘red events’: “...red is where they had to slam on their brakes, so they went around the corner at 60 miles an hour [...] it's based on number of events per 10 hours driving.” (Participant 16).

Some targets were described as more casual, being a discussion that takes place in the driver's monthly reviews. These targets could include reducing the driver's average speed or reducing idling time.

Several managers interviewed said that data was constantly being **reviewed** by a member of staff. However, they went on to explain that this was to ensure the drivers were in the correct place at the correct time and that data was only thoroughly reviewed for driving behaviour once a week or once a month: “...it's always being reviewed. But yeah, we'll usually have team meetings probably once a month.” (Participant 13). The managers who did not review data regularly claimed to only review data when needed, such as if a driver was a cause for concern: “...if there's somebody who's a bit troublesome, I'll be checking it every day.” (Participant 19).

Data does appear to be commonly examined within performance reviews with the driver present, however, the frequency of these performance reviews varies according to company (monthly, quarterly, yearly). One manager explained that new employees' data is more often reviewed compared with those who have been at the company for a long time and that this is to ensure they are following the rules as soon as they start driving for the company.

Overall, there appears to be a split within fleet managers as some take on an active role in reviewing the telematics data and incorporate the system into their daily routine whilst others use it as a backup to be used when needed.

Fleet managers discussed that disciplinary action may be taken if the telematics data indicated that the driver was going over the speed limit, idling and driving outside of designated areas. These behaviours are observed, all 20 managers stated that they would pull the driver aside for an individual conversation: “...it would start with just me having a little chat with them and keeping an eye on that and then we would go down a more serious route, things that relate to more safety would go higher up and they would have a verbal warning.” (Participant 11).

Official written warnings appeared to be the next step for most managers: “...you could give him an official warning for that and say, look, you know you're driving under review.” (Participant 10). Some managers

mentioned that they used a points system meaning that drivers only had several chances: *“So one verbal, one written and then it would they potentially would be unemployed”* (Participant 11). A few managers also stated that they may go on to shadow that driver: *“One of the managers would go out with them for the day and assess their driving.”* (Participant 16).

**Rewarding good practice** for safe driving appeared to be a controversial topic. Managers’ opinions varied from insisting rewards weren’t necessary, rewarding through positive feedback, and even providing monetary rewards to motivate good behaviour from staff. One manager expressed concern for a reward system as drivers make deliveries in different locations varying from town centres to country roads. They stated that it would be difficult to find a common ground for reward as these locations impact driving behaviours and telematics data such as fuel consumption and average speed.

Managers who did not reward good practice held the opinion that safe driving behaviour was a minimum standard that should be met by all drivers without the need for rewards: *“That’s what they are paid to do. That’s their job.”* (Participant 6). In addition to this one manager said that the job’s pay was incentive enough.

Managers who said they rewarded good practice used their telematics scoring systems to identify drivers who upheld safety standards. Indicators used to identify these drivers varied but included fuel consumption scores and speeding scores. Some mentioned that drivers were expected to not only uphold their safety standards but also achieve their delivery targets to receive a reward. Rewards could include simply being recognised for doing a good job: *“The pride that you’ve been called out for being actually for, for doing well.”* (Participant 8).

Rewards also included monetary rewards such as end of year bonuses, gift vouchers or extra hours of pay: *“...we do have a system...where we reward the drivers who stay underneath the certain level because you get a safety score. Well, let me give them an extra hour a week if they can stay in the green.”* (Participant 16). It was also mentioned that telematics data was used for rewarding pay increases. One manager stated if an employee requested a pay increase, their telematics data would be reviewed to determine if this should be awarded to them.

#### 4.1.4.5 Impact on the driver

Managers stated that telematics had improved their **drivers’ safety**. Telematics had done this through holding drivers accountable for unsafe driving behaviours: *“by letting drivers know you’ve got the tracker on the van; I think it probably makes some drive a little bit better as well to be honest.”* (Participant 12). To support this impact, managers claimed that since introducing telematics to their company they had received fewer speeding fines: *“Obviously, when we’re monitoring things on the spreadsheets and stuff like that sort, you can see things that are dropping. So, you know the speeding, speeding fines and you know we haven’t got like we just said many injuries or insurance claims. So yeah, it seems to be working.”* (Participant 5). This suggests that telematics can protect drivers from engaging in risky behaviours such as speeding as they are constantly being monitored and therefore managers perceived this to have a positive impact on safety.

Telematics could also benefit the driver’s safety as their location is always known. One manager recited a case in which the van’s GPS data was used to assist with a medical emergency: *“...one guy was walking up somebody’s path and it was sort of winter, and he didn’t realise about ice, and he slipped, and he actually cut his head quite severely, but he hasn’t knocked on the door. So, the person that was there didn’t actually know he was outside her house... But it was through our system that we knew he’d been at that house for - what’s he doing at that house for that long, you know? And we were able to contact the customer. Then she went to the door and then, as I say, we got him the help.”* (Participant 2).

Although the introduction of telematics was reported to have a positive impact on the safety of drivers, it may come with the cost of contributing to a **lack of trust** between managers and drivers. Nearly half of managers (8 out of 20) mentioned the theme of *‘Big Brother’*. This refers to drivers feeling constantly watched over by managers through the telematics systems installed. One manager reported that it’s

important not to be like this; *"I don't think you want to become a spy in the cab too much because I think you lose the confidence if the drivers think that they're being watched all the time and micromanaged, I don't think that's a good thing, because I think part of the attraction of the job is that they're out there on their own, doing their own thing."* (Participant 10). One manager said that to stop drivers feeling uneasy about being watched they discussed the purpose of the telematics: *"There's nothing worse than feeling somebody's, you know, got their eyes on you. We just explain that we're not trying to catch them out. We're just trying to improve."* (Participant 2).

Overall, this suggests that although telematics may impact the drivers positively to drive safely, it could impact them negatively by creating a tense work environment where they could feel micromanaged.

#### 4.1.4.6 Impact on the company

Managers suggested that the introduction of telematics has had a positive impact on their company in multiple ways. This included telematics having a positive financial impact, security and being beneficial for customer relations. According to fleet managers, one way telematics had impacted the business was that they have both saved and earned the company more money. Telematics were reported as reducing the cost of insurance, and the number of driver violations. One manager stated these are interlinked, with a reduction in violations and collisions reducing insurance costs: *"Driver violations and insurance costs, yes, because the two go hand in hand, don't they?"* (Participant 17).

Additional positive impacts on finance included providing savings on fuel costs through planning efficient routes, and reducing parking fines through informing managers when the van's ignition is turned off (and therefore if the vehicle is parked somewhere it shouldn't be). Managers were enthusiastic about the cost-savings associated with telematics and highlighted its value in the company: *"...it's a brilliant system and it saves us a fortune, an absolute fortune [...] it's worth its weight in gold."* (Participant 16). Another manager reported that when telematics data flags up a driver using a vehicle for a personal errand outside of their working hours the driver is charged for this extra fuel usage: *"...so obviously they're not supposed to use that vehicle after they finish work and clocked off. But there is the occasion where people do. If that's the case, then we have to charge them."* (Participant 1). One manager also described it as a *"predictive tool"* as it can help anticipate those vans that will be out of action due to servicing, and when: *"It helps with servicing – we can see ... how many miles a van's done, whether it needs a service soon, which helps in future planning.., because you can say, well, we're gonna be two vans short now in two weeks' time."* (Participant 10).

Managers also reported that promoting their company's use of telematics was a strong selling point that had led to more contracts being won as they were able to share their data with potential clients: *"I think they've done that from the off because they were a start-up and they have to do because that was one of the biggest selling points to getting contracts through with people."* (Participant 1). As this was the main reason why many fleet managers reported installing telematics it would indicate that telematics met these financial expectations.

Fleet managers frequently stated that telematics have improved their fleet's **security**. An example of telematics impacting fleet security was reported, with the technology protecting the vehicles from theft. One manager discussed a case in which a van was stolen, and they were able to use the telematics data to track the vans whereabouts: *"...one of our drivers was set upon by a couple of guys. He phoned the office up and within 5 minutes the police are there, and the people were arrested in that, you know, trying to steal from the van."* (Participant 18). This indicates that telematics has supported the company's commitment to security and have also improved the working conditions for delivery drivers.

Telematics were also reported to have a beneficial impact on **customer relations** as managers were more aware of the location of their drivers and when packages are expected to be delivered. Managers reported that telematics can help them to ensure drivers are delivering on time, to the correct location through their GPS trackers. This in turn had improved customer relationships by allowing the customer to independently track their package or have better communications with managers about delivery times: *"It can tell them*



*how many drop offs that their driver has got before it actually gets to them.” (Participant 2): “We can say, well it should be with you in the next 20 minutes, you know, which makes us look like we’re more professional, more in control rather than, well, I haven’t got a clue where they are.” (Participant 10). Through having better relationships, the fleet managers reported receiving fewer negative reviews, which has a positive impact on the company’s reputation and made their business look more professional.*

Overall, telematics was seen as a positive asset to companies and according to fleet managers the financial impact, impact on safety and impact on customer relations, have made telematics a vital part of their business model.

#### **4.1.4.7 Changes to the job**

Three of the managers interviewed mentioned how the introduction of telematics to their company had changed their role as fleet manager. One manager reported that prior to using telematics the role of fleet manager included being on the phone 24 hours a day to locate drivers and communicate with customers. Telematics have provided fleet managers with constant data regarding the location of their drivers and their expected delivery times thus reducing the need to make calls throughout the day. These managers reported that telematics have made their role much easier which in turn has led to them being given additional responsibilities, increasing their value within the company: *“It’s made my day-to-day job a lot quicker, so I’ve been given other responsibilities. So, I don’t have to focus on this particular job. I do different things in different areas, which is better for me because my job is a little bit more stretched, I enjoy doing the different sides of it.” (Participant 20).*

Therefore, telematics could not only improve the role of fleet manager by making day-to-day managing easier but also change their job requirements as fleet managers are left with more time to contribute value to the company.

#### **4.1.5 Recommendations for improvements to telematics**

Managers reported several ways their current telematics systems could be improved. Problems were highlighted such as servers going down, difficulty interpreting data, data not including the quality of roads (such as potholes) and changing of speed limits. Ways of solving these problems and suggestions for system improvements were made.

One manager discussed the need for a **backup server** for their system. This was recommended as an improvement as sometimes the driver appears to go offline when in far-to-reach locations. This can also result in a lack of GPS data from the driver. The manager explained that overcoming this could be to simply connect their technology to the GPS of the tracker: *“The pad that we use, it’s connected to the tracker, but it doesn’t connect to the GPS of the tracker, so it’s a totally separate sort of console that’s in the vehicle.” (Participant 1).* The manager said there ought to be contingencies in place to ensure the driver’s location is constantly known.

Several managers also discussed a lack of information regarding the quality of roads and varying speed limits. They discussed a way of interacting with the telematics system so as to log where road works are taking place, if there is a large pothole in the middle of the road, or if the council reduced the speed limit of a frequently used road: *“...if it was able to have some up-to-date information about issues on the roads there and then, so if there was road works that was going to happen, if there was any way they could update it for incidents.” (Participant 11).*

Managers complained that road conditions were unpredictable and could have a negative impact on their job and therefore, improving the knowledge surrounding these conditions could allow them to pick more efficient and less dangerous routes, through **updatable road quality and speed limits data**.

Depending on the system they used, several managers said that they found telematics data confusing. The inability to take the time to learn the complete ‘ins and outs’ of the system meant that some managers felt

out of their depth interpreting the data. One manager recommended a more friendly **user guide** which should be provided on installation. They also would like training to be provided to multiple members of staff so that they alone did not hold the responsibility of understanding the system. Issues of data interpretation and training combined to make managers report feeling frustrated that their knowledge of the system was poor and incomplete: *“...it's like a lot of computer programmes...you have your three or five favourite ways of using it or you use three or four little bits. Like if you take Word, you use four or five of the little icons and then you don't use 98% of it. And I think it's the same as that unless you're using it every day and you become a Wiz-”* (Participant 10).

Other managers mentioned that if their company were to expand, they would not have the capacity to analyse all the data: *“I think on a larger scale, it would take multiple people to manage it.”* (Participant 6). Regarding interpretation specifically, another manager recommended that a single figure, statement or **data summary** should be provided at the end of every day for every driver and that this should be easy to understand and cover the basic driving behaviour: *“...if you looked at every driver's driving performance, and then produced a daily score or even just sentence on their driving or mark out of 10 as it were.”* (Participant 10). This manager also said that with large fleets of drivers, it is inefficient to go through all of the data so a method such as this would help him review his drivers more easily. The managers we interviewed were generally from smaller delivery companies. This could mean that the data their telematics systems provides is relatively straight forward as it is only for a small number of delivery drivers. Therefore, there could be different issues with telematics data for companies with many more drivers to manage. This study focused on the management of smaller fleet sizes.

Several other recommendations were made such as including a **breathalyser test** to start the engine of the vehicle (alcohol interlock) (Participant 19), having a walkie talkie feature within the van to prevent distracting the driver with instant messages that require reading (Participant 6). One fleet manager (Participant 16) also suggested that the telematics should cap the speed of the driver to completely remove the **risk of speeding**.

Several managers mentioned the difficulties associated with depending on **faulty technology**. One manager discussed that when GPS tracking data was not live then it uploads in chunks and this has led to confusion about when and if delivery drivers went to delivery locations: *“A driver had been at the customer's and he was actually early, so he went and did another job, went back and the customer still wasn't there.... You know the tracker is not saying that that's happened. You know, it only says you've been there once, and you were half an hour earlier. And then just as I was saying it, it all updated...they got my face, and I was like, yeah, you have been there. Yeah, sorry about that.”* (Participant 12). Issues with data could cause work conflicts as fleet managers depend on GPS data to inform them and the customer of where their package is. Another manager said that then the system does drop, and data stops being received this can cause problems with communicating delivery times to the customer, this also means they must spend time trying to rectify the problem: *“...the system drops down and your trackers can disappear and it's a bit of a panic station, but you contact the customer services [of the telematics provider] to get an explanation.”* (Participant 1).

## 5 Interviews with drivers

### 5.1.1 Participant characteristics

Thirty-nine drivers were interviewed. Participants came from several counties across England, 26% identified as Asian or Black and 23% were female (Table 6).

**Table 6: Participant Characteristics**

Code	Age	Gender	Ethnicity	Hours worked pw	Vehicle used	Telematics used?	Region
001	35	Male	White	40	Mercedes-Benz Sprinter	No	Manchester
002	36	Male	Caribbean	20	Mercedes-Benz Sprinter	No	Manchester
005	41	Male	White	40	Mercedes-Benz Sprinter	No	Manchester
006	39	Male	White	40	VW Crafter	No	Leeds
009	27	Male	White	40	Ford Transit	No	Gloucestershire
010	33	Female	White	36	VW Crafter	No	Birmingham
011	44	Female	White	40	Ford Transit	No	Cheshire
016	63	Male	White	24	Ford Transit	No	Bristol
018	33	Male	White	20	Mercedes-Benz Sprinter	No	Devon
019	50	Male	White	36	Mercedes-Benz Sprinter	No	Sheffield
022	24	Male	White	32	Mercedes-Benz Sprinter	No	Leeds
024	38	Female	White	32	Ford Transit	No	Oldham
017	64	Male	White	40	Mercedes-Benz Sprinter	No	Liverpool
020	21	Male	White	20	Car	No	Greater London
021	33	Male	White	70	Car	No	London
026	21	Male	White	15	Car	No	London
029	26	Male	Black	26	Van	No	London
030	61	Female	White	32	Ford Transit	No	Stoke
032	28	Male	Asian	37	Van	No	London
028	29	Male	Black African	10	Car	No	London
035	33	Male	Black British	33	Van	No	London
003	49	Male	Pakistan	35	Mercedes-Benz Sprinter	Yes	Sheffield
004	31	Male	White	20	Mercedes-Benz Sprinter	Yes	Somerset
007	39	Male	White	20	Mercedes-Benz Sprinter	Yes	Manchester
008	27	Male	White	28	Mercedes-Benz Sprinter	Yes	Gloucestershire
012	68	Male	White	32	Mercedes-Benz Sprinter	Yes	Cornwall
013	28	Male	White	40	Mercedes-Benz Sprinter	Yes	Gloucestershire
014	42	Male	White	32	Mercedes-Benz Sprinter	Yes	Blackburn
015	UK	Female	White	40	VW Crafter	Yes	Manchester
023	48	Male	White	40	Ford Transit	Yes	Manchester
025	23	Male	Asian	23	Van	Yes	London
031	35	Female	Black	37	Van	Yes	London
033	36	Male	Black British	32	Van	Yes	London
034	35	Female	White	24	Ford Transit	Yes	Oldham
027	29	Female	White British	20	Van	Yes	London
036	31	Male	White	36	Ford Transit	Yes	Leicester
038	45	Male	White	36	Ford Transit	Yes	Manchester
037	29	Male	White	40	Mercedes-Benz Sprinter	Yes	Oldham
039	35	Male	Black	40	Ford Transit	Yes	Nottingham

## 5.2 Road safety risks of delivery

**Time pressure for deliveries** was the most frequently mentioned road safety risk (32 out of 36 drivers mentioned pressure) and was an issue for both drivers using and not using telematics. Time pressure to complete deliveries within a certain timeframe or within their allotted shift time was often mentioned by drivers who used telematics or who do not use telematics. However, there were some drivers that did not feel as affected by time pressure as their companies allowed them sufficient timeframes for deliveries, companies did not pressure drivers to deliver quickly, or drivers felt they knew the local area well enough that they could deliver the parcels within the timeframe: *"...I give myself enough time. The way I plan my day out is, I don't like to rush. I have no problem with taking my time if that makes sense. It is an issue in this line of work, but I've never found it to be an issue for me personally. I'm very well versed in the area that I work in so if I'm running behind on time, I know how to manoeuvre to get myself back into the position."* (029 No Telematics).

Most drivers, though, did feel affected by time pressure. This often led to drivers reporting that they may speed, take more risks than they would normally, or 'jump lights'. These behaviours were reported by both telematics and non-telematics users: *"Some days you're doing 100 parcels or more. There's quite a lot of pressure to get round and get them delivered. I will drive over the speed limit at times. I will take chances that I wouldn't normally take. I wouldn't put other people on the road at risk or myself, but I will push it a little bit sometimes."* (014 Telematics). This was particularly true where there were priority deliveries: *"I would say the pressure will only come from premier deliveries. In [Company name] we have something called before 10.30 and before 12.00. Those parcels need to be delivered by those times. The customers have paid extra money to get them at a certain time. I would give 30% for distraction and pressure and locating addresses."* (035 No Telematics).

Time pressure was also felt to be increased when routes and addresses were difficult to find, or navigation systems did not provide efficient routes. For example, drivers having to use main roads during rush hour that have increased traffic and safety risks.

Some drivers using telematics reported not being able to speed when running behind with deliveries because of the telematics monitoring their driving. This could be a source of stress for drivers: *"We can't speed because that is all tracked. But sometimes you are in haste rather than speeding and I think sometimes it is... not taking risks like going through red light... but in haste you can lose a bit of concentration. I always say I am a good driver, so I'll be alright. But that haste does affect things. It makes you feel anxious, you are against a stop clock you only have 3 minutes to get to an ETA, you could get there if you could put your foot down but you are in a catch 22, you know you are going to miss it - you can see there are red lights- I am not going to get there unless I jump that light."* (007 Telematics). This may reflect how companies are using telematics data. That is, they may not be using it to monitor driver speed. Additionally, it may reflect the safety priorities of the company.

**Parking** was the second most frequently mentioned road safety risk (31 out of 36 drivers mentioned parking) and was an issue for both drivers using and not using telematics. The main risks around parking involved being able to find a suitable parking space near the delivery site. Drivers discussed that they often had to park in unsafe spaces, such as on the pavement or on busy roads, blocking driveways or double parking, or illegally parking (e.g., on double yellow lines): *"Depending on where you go, especially if you're delivering to the shops. Sometimes you have to take that risk of parking up on double-yellow lines and curbs. Car drivers are not bothered. It's more a case of you shouldn't be parked there. Don't do it. But some of these drivers fly past you and nearly catch you. It's not safe."* (023 Telematics). Drivers also discussed that not being able to park safely put them at risk because they were having to get out roadside or crossroads with parcels: *"Getting in and out of your van. Parking up and crossing over the roads and things. Most of the time I try to have the driver door on the pavement side but sometimes it can't be helped..."* (005 No Telematics).

**Fatigue** was the third most mentioned risk. Fatigue was mentioned by 17 drivers. Drivers both using and not using telematics stated that they could often feel tired when driving due to early starts and long days, multiple shifts or no/limited breaks between shifts and not being able to take breaks. This was reported to impact driver behaviour: *“It is not a hard job but it can be physically demanding and it can be tiring. If you have done a Saturday and a Sunday and then they are trying to send you back out on a Monday evening to redeliver parcels that can feel a bit inconsiderate that is the only time I feel they are pushing you a bit too much.”* (006 No Telematics).

Although drivers often reported company policy was to take breaks, they often felt unable to do so and would often have their lunch while driving: *“I’ve been there nearly a year and I can count how many times I’ve had a break. They say you’ve got a certain amount of time to deliver and have a break but believe me, no one ever gets the slot for a break unless you’re the customer’s worst nightmare of a delivery driver.”* (033 Telematics). Some drivers reported relying on energy drinks to keep them alert: *“I take a lot of energy drinks to get through the day. It’s happened a few times. I’ve had a lot of near misses where I’ve gone through a red light when I thought it was green because I’m just a bit tired or I’m in a rush to get home.”* (021 No Telematics).

**Distraction** was a frequently mentioned road safety risk (16 out of 36 drivers mentioned distraction) and was mentioned by both telematics and non-telematics users. There were two main sources of distraction mentioned by drivers. The first was being distracted trying to find an address: *“Sometimes it will tell you to go down one road and then there will be a sign saying you can’t go down that road. Then you’re trying to find a different route. Sometimes it will tell you the house is here, and you know it’s not that one because you’re down a totally different way. While you’re fiddling around with that, you’re not 100% concentrating on what you’re doing.”* (027 Telematics). Drivers felt this was made worse by poor route navigation or navigation systems that did not provide correct routes.

The second was being called by head office to provide an update on delivery times. Although some drivers mentioned having hands free, they still felt this was a distraction: *“Sometimes they are ringing you chasing for an ETA for the parcel- I am trying to deliver and they are trying to reroute me as they have a customer complaining they have just missed me...I have hands free earpiece but while driving or even delivering another parcel you can get a call from the depot saying I have to go back but I am talking to another customer so I red button it and then they call me back and I red button it and then eventually you take the call and they make you go back. You can feel a bit pecked to be honest.”* (006 No Telematics).

Another distraction mentioned by a few drivers was having a delivery app and needing to respond to this while driving: *“They message while you’re on the road. They know you’re driving... I do actually use my phone on the dashboard to accept jobs or I have to speak to my company if there’s an issue. It’s hard to pull over so I end up just messaging while I’m driving, which is obviously a big risk...It’s got a timer on. When the job comes through, a lot of the time it comes through while you’re driving because you’re working already on a job. When the job comes through, you have to look on the map to see if it’s a job that’s good enough for you, look at the postcode, then you have to accept within about 45 seconds or else you lose the job. A lot of the time in those 45 seconds, I haven’t got enough time to pull up somewhere safe and have a look.”* (021 No Telematics).

Similarly, to the managers, another risk mentioned by drivers using and not using telematics was **other road users** (15 of the 36 drivers mentioned other road users). Drivers felt that driving on high traffic roads was a risk, amplified by the need to deliver parcels within a timeframe. Drivers also reported being subject to confrontation from other drivers and cyclists: *“The roads are very busy these days. It can be very challenging battling your way through traffic. There are drivers out there who are quite impatient. You do find yourself getting into, not altercations, but you will find yourself in problems with some drivers. You are working from one delivery to the next and you want to get round as quickly as you can. The main issues are traffic really.”* (014 Telematics). Vulnerable road users were also identified as problematic: *“Cyclists are a big one as well. I’ve had quite a few problems with cyclists where I’ve been abused by them, or they’ve just come down really*

*close to me and I haven't seen them because they're not in shot of my mirror."* (027 Telematics). A few drivers also mentioned that pedestrians stepping out into the road can be a safety risk: *"Pedestrians stepping out without looking is another one. Again, with myself being quite safety conscious, I'm observing and making sure."* (038 Telematics).

Drivers, therefore, faced a range of safety risks when delivering parcels. The risks identified were the same whether drivers were using telematics or not.

## **5.3 Use of telematics**

### **5.3.1 Why are they used?**

Drivers who used telematics were asked why the company used these systems. Although drivers did often mention to improve driver safety (e.g., speeding, harsh braking), they mainly felt that telematics were used to keep track of drivers and monitor delivery times: *"For me it is performance of course they say it is safety and things like that but it is definitely performance so they can see where we are and how quickly the parcels are being delivered. They do track the safety too, but it is the performance element."* (008 Telematics). A couple of drivers felt that telematics was used to protect company image by ensuring that drivers were driving safely: *"Also they want to protect their brand name, if you have a company and their drivers are always erratic, then that gives the company a bad name."* (004 Telematics).

A few drivers also felt that telematics was used by companies so they could identify who was at fault if the driver was in a road traffic incident: *"There is a dash cam and a GPS as well as the telematics so I think they could look at all of that if there was an accident and someone got injured to find out what happened and who was at fault."* (012 Telematics). Overall, drivers viewed telematics as there for the benefit of the company.

## **5.4 Companies' commitment to safety**

There was a difference between drivers using telematics and drivers not using telematics in their view of the company's commitment to road safety. Drivers that used telematics more often reported that the company was concerned about driver behaviour and that risky behaviour was sanctioned: *"We have got telematics fitted. We do get pulled if we're going over (the speed limit) or if we get harsh braking. We're encouraged in one way not to park anywhere illegal but then we've got them on our backs saying we've got to get our parcels delivered. It's all right them telling you to park somewhere safely but then there's nobody giving us any dispensation for not parking."* (023 Telematics). Though, there was still a feeling by most drivers that the main priority of the company was delivery times. Drivers mentioned that parking was not a priority for companies. Drivers not using telematics frequently reported that the company was not concerned about risky driving behaviour if parcels were delivered on time: *"...they just want your parcels to be delivered. And they are not getting complaints from customers. They have to look after their staff and stuff, but I wouldn't say they are overly concerned. They can advise you to do things like not park riskily. But it is not helpful if you park somewhere, and you have to walk 100m to get to the property."* (001 No Telematics).

There seemed to be a contradiction between company messages and actions in relation to driving behaviour, especially for drivers in companies not using telematics: *"With [company name] in particular, it's more you get left to your own devices, especially being in self-employed position as well. The managers are very hands-off in terms of how you do what you do. It's kind of confusing because they want you to follow their procedures, but they don't follow up on it if you get what I'm trying to say. They will tell you how to do something, but it doesn't matter if you do it that way or not. But, if there are any issues, the blame is completely on you because of however you chose to do it."* (029 No Telematics).

Although, the company may inform drivers that they need to drive safely, drivers are not sanctioned if parcels are delivered on time. Traffic violations were reported to be down to the driver to resolve. There was

an underlying impression that drivers receiving speeding tickets were sanctioned whereas parking tickets were treated more leniently: *“That’s all down to me. All I have to do is try and appeal them and try and prove where I am. A lot of the times you have stages where you get a lot of parking tickets driving down a road at certain times before you’re supposed to. It’s something I have to sort out myself, so I need to be careful with stuff like that.”* (021 No Telematics).

#### **5.4.1 Road Safety Lead**

Most drivers from both telematics and non-telematics companies were not aware who the lead of road safety was in their company: *“Honestly, I would have no idea. My main point of contact is my manger and me and some of the drivers have a WhatsApp group.”* (013 Telematics). The person thought to be responsible was often the manager, particularly those at the depot, but drivers were not often sure of this. This is in line with the underlying theme that there is a contrast between company policy on road safety and company behaviour.

#### **5.4.2 Road Safety Training**

Road safety training was reported to form part of driver induction, but the amount varied. Some drivers reported having to complete an online training course while others reported having face-to-face training. This may have been impacted by the recent COVID-19 pandemic. Course duration varied between lasting a few hours to a few weeks: *“There were three of us being trained at the same time. We spent two days with different drivers out on the road learning what to do and what not to do from a safety point of view and how to do the job efficiently. We spent some time in the classroom as well a good two hours going through the safety issues.”* (012 Telematics).

Drivers often reported that they shadowed an experienced driver or had someone shadow them: *“You actually went out working with someone for a week and then they sat you down in their offices and they showed you videos and different areas. You had to make notes.”* (017 No Telematics). A few drivers, mainly non-telematics drivers, reported there was some form of ongoing road safety training: *“We do a refresher every 12 months there is a half day blocked out in the classroom and they highlight any changes to the Highway code and then you are signed off and start your week.”* (009 No Telematics). Though, this was sometimes in response to risky driving behaviour.

#### **5.4.3 Data reviewing and feedback to drivers**

##### **5.4.3.1 Targets**

Driver targets were not discussed by many drivers using telematics. Those that did discuss targets reported that targets were not often set. This was felt to reflect the fact telematics was used: *“...because of the system we’re using, it’s never really an issue.”* (038 Telematics). Drivers not using telematics also reported that targets were not often used. When they were used, they mainly related to drivers’ behaviour as a whole and not individual targets: *“...it depends how the company is doing. If one month there are a lot of people who have ended up not doing what they should be doing - they would say this month you need to avoid for example PCNs but also your delivery rate for parcels. If it is down companywide, we would be told to improve it if we can.”* (001 No Telematics). Where driver targets were in place, they were typically focused on delivery times: *“The only real targets they set is just making sure your deliveries are within the window. Other than they, they just let you get on with it.”* (029 No Telematics).

##### **5.4.3.2 Rewards and Disciplinaries**

Driver rewards were rare for those not using telematics. In the cases that rewards were provided it was often in response to delivery times than driver safety. A couple of drivers reported monetary rewards and a few

reported that you were indirectly rewarded by receiving more shifts: *“Not in terms of driving quality but in terms of delivering, sometimes they do bonus systems where if you deliver a certain amount of blocks between a certain time period, you might get an extra £100. I guess that might mean that drivers will take more blocks and then do more doubles in a day.”* (020 No Telematics).

In cases where monetary incentives were provided in relation to delivery times it was felt that this would lead to more risky driving behaviour, such as speeding. Drivers were more likely to report being sanctioned for productivity than rewarded. Drivers stated that they were often penalised with being offered less shifts if they were not delivering on time. In some cases, this included missing jobs on the app: *“...It’s just an in-chat app and you get your weekly score with how many deliveries you’ve done, how quickly you’ve accepted, what you haven’t accepted. The problem with my company is that you get penalised for missing jobs. If I am driving and say I’ve got the police behind me and I know I can’t touch my phone, if that job times out, you get penalised for that onto your score.”* (021 No Telematics).

Drivers using telematics, however, did also report disciplinary action for speeding: *“I’ve heard stories where people have been called in because they’ve been speeding. They’ve gone through speed cameras, or they’ve been over the speed limit on a certain road. People are under pressure, and they’ve challenged it sometimes saying that if you don’t want me to speed, reduce my workload and I won’t have to speed. They do have clear guidelines on not speeding but everyone does it and it’s very rare that you get pulled in unless there’s an accident or a severe breach. All the vans are limited as well in terms of speed.”* (014 Telematics).

Some drivers who were using telematics stated that incentives were provided for safe driving in conjunction with efficient delivery: *“If you stay within the speed limit and get all the deliveries out on time, we do get an incentive. It won’t be anything extravagant. It’s more like a meal. The other day somebody won a meal for two at Prezzo. That was because they delivered everything on time. Their speeding had been spot on. It’s just little incentives like that, not anything cash wise. They do cinema discounts if the performance is really good”.* (034 Telematics).

#### 5.4.3.3 Performance Reviews

For both telematics and non-telematics drivers’ performance reviews were not frequently occurring and when they were they were reactive. That is, they took place when their driving performance was not satisfactory. This was typically if they were not delivering parcels within the timeframe rather than related to driver behaviour: *“You only get told if you are doing wrong or badly rather than praise for sticking to the rules -that is the expectation rather than a well done. It is more focus on any complaints on deliveries or missing parcels rather than how they got there. That is why they have the telematics they can see if you are doing something wrong if you are not flagging up they have not need to question you.”* (004 Telematics)

There were a few drivers that reported having reviews monthly or annually. The majority reported that telematics data was not reviewed with them, but in some cases it was. Again, this was mainly when they had not been driving safely. Drivers were disciplined for poor driving performance: *“In one-to-ones or appraisals, they tend to look at it. They look at your speed or if you did it in good time. They look at it in one-to-ones but, as you say, the focus is more on efficiency of delivery, but they would mention if you were breaking the speed limits or doing anything else that wasn’t appropriate. Yes. It wouldn’t wait for the one-to-ones for them to tell you that. If you’re breaking the speed limit every day, you’d get pulled in. If something happened, then it’s on your head”* (037 Telematics).

Similarly, for drivers not using telematics their performance was only reviewed if there was an issue. Again, the focus was on delivery timeframes: *“...It’s only really when you make a mistake that they would call you up and be like, ‘What happened here?’ or, if you delivered something outside of the window, they will phone up and say, ‘What seems to be the issue? How come you couldn’t make it in the time?’ you just give your explanation and that would pretty much be it. If it was something major, then obviously there would be some follow-ups but most of the time it’s very short conversations.”* (029 No Telematics)



#### 5.4.3.4 Impact of telematics

Although, some drivers using telematics felt that they were safe drivers and telematics did not impact their driving, the majority felt that telematics prevented them from taking risks that they otherwise would. This was typically in relation to speeding. Additionally, having the company logo on the vehicle prevented drivers from taking risks: *"...I think I would probably take more risks and would probably push it in terms of speed. The van I used to drive, I did drive it slightly more erratically than I do the one I've got now, simply because I know I've got the big sign down the side that says [company name] and also the telematics on board. They can monitor everything like speed, where I am, what I'm doing. I am fully aware of it."* (014 Telematics).

There was this impression that telematics was always watching them. The same picture was found for drivers not using telematics. Some drivers felt that they were safe drivers and therefore their driving behaviour would not be impacted by the presence of telematics: *"Of course it would be in the back of my mind that someone's always watching me, but I don't think that would make me drive any differently... To be honest, I drive very safe and cautiously anyway. I'm not speeding. I'm okay."* (032 No Telematics).

However, others said that telematics would impact their behaviour, especially their speed. Drivers not currently using telematics generally viewed it quite negatively and it was not something they wished to use. This was mainly because they felt it was 'watching you' and that it would impact their ability to deliver parcels on time and consequently would be a cause of stress: *"It would make a difference quite a lot - I would slow down considerably...When you are on the motorway you do need to go quite quick you want to go over 70 I reckon it would add almost an hour onto your day...if I was behind and I knew I could only drive so fast on the motorway as I can only go to 70 mph when I should be going 85mph to catch up a bit of time....that would make me really panic."* (002 No Telematics).

Linked to reducing risky driving behaviour, some drivers reported that telematics was used in conjunction with branding on vans. Drivers felt that companies did not want their drivers to be seen to be driving recklessly: *"My van has branding on it I think all the branded vans got the newer telematics first. It doesn't look good if you are doing something wrong and it has the brand on it"* (013 Telematics).

A few drivers not using telematics felt that it may be beneficial if it was used in conjunction with rewards: *"I think I always like comparisons. Almost in a way in a competitive spirit, if it sees how my driving is compared to the other drivers or how efficient my driving is on a similar route as compared to other drivers...If there's some incentive behind that as well, whether it's an additional bonus or some form of reward like a voucher, I think that not only challenges myself but then it challenges the other drivers. If you just give people the standard to say this is what we want you to do, some people just take it as long as I get the job done and I'm paid, I could care less. If you incentivise, I guess and provide some sort of competition, I think that helps me to care about my stats".* (028 No Telematics).

Some drivers not using telematics felt that telematics would be beneficial in highlighting their driving habits to them: *"I don't know 100% about it but I think it definitely would be helpful. It would bring you more of how your driving habits are, how you're coping, where you're braking too much and different things. I feel it could be helpful."* (017 No Telematics).

Drivers, mainly those not currently using telematics, felt that telematics would be beneficial for finding the most efficient route and providing evidence of where they are: *"Those times when you think you know the best route, but you don't. Other than that, it would prove that I've been to certain addresses."* (016 No Telematics). Furthermore, drivers felt that this information could then be used to update customers on delivery times more accurately.

#### 5.4.4 Improvements in Managing Driver Safety

A central theme across interviews with drivers using telematics was that that road safety would be improved if the pressure of delivery times was eased: *"They should reduce the package levels. How are they expecting me to deliver over 300 parcels, 160 stops in 9 hours with no break. When I have a break, it shows in the*

*tracking thing that I'm behind. I'm trying to eat, or I need to go to the toilet. They say those things are factored in and they're really not. I think the pressure needs to be reduced a lot more."* (031 Telematics). This may reflect the fact their driving is being monitored so they are less able to take the risk of drivers not using telematics to complete deliveries on time.

A suggestion by one driver was that working in pairs may ease the safety burden of managing both driving and delivering parcels: *"A driver's assistant to deliver the parcels. So, then the driver can concentrate solely on the road they are not getting wound up by customers or worrying about leaving the van unattended, or having to park in awkward places you can just focus on the road."* (007 Telematics).

Across drivers using and not using telematics, better communication between management and drivers, in relation to safety updates, was thought to be a way of improving driver safety: *"...if there are new traffic laws being implemented, if there are long-term constructions, roadworks, to inform that driver who works in that area so it would make them improve their efficiency as a driver as well as providing data of the driver and their performance and, again, comparing it to other drivers."* (028 No Telematics).

#### **5.4.5 Improving Telematics**

Drivers using telematics often discussed that telematics would be improved if the data was shared with them in more detail: *"It would be good if they published it to us as drivers the main things, we look at are the performance side of it. I expect the people higher up might look at the other stuff, but we don't see it."* (008 Telematics). Drivers also felt that telematics would be improved if it was used to recognise safe driving rather than highlighting risky behaviour: *"I don't think they shout about it enough... you are made aware if you make errors, but nobody tells you who is the best driver. They never say, 'well done John you are the best driver of the month because of this.' ...it would be good if they highlighted the positives not just pick you up on the negatives."* (012 Telematics). In line with this, a few drivers also felt that providing rewards for safe driving based on telematics data would be an improvement: *"I think if on a monthly basis you're making all your targets with deliveries and also the speed and your driving standards are good, they should reward people with bonuses and that kind of thing..."* (036 Telematics).

## 6 Workshop with practitioners

A workshop was convened in May 2023 by National Highways and comprised 12 health and safety managers from key service providers in last mile home delivery. The workshop involved a presentation of the research findings followed by an open discussion under Chatham House rules framed around the question “What can industry do to optimise the safety of last deliveries?” The discussion was recorded and transcribed.

### 6.1 Reducing pressure on drivers

The industry seemed to reward speed of delivery and number of parcels delivered. Some claimed it was difficult to reward safe driving in the same way that speed and parcel delivery is rewarded: *“We've got an industry that rewards financially: speed, brevity, getting between jobs...and...they're paid by that parcel. How do we make it pay that they're safe just as much as it pays that they've delivered?”* (1).

Those that disagreed mentioned they used telematics to reward safe driving. Driving behaviours that were noted as unsafe included hard braking and speeding: *“We do actually use the data to incentivise as well as obviously measure for compliance and good driving practices So you know it's it can be quite easily done. I think if they is a desire to actually do that, all the data is there. We now have quite a good suite of information through various sources”* (3), and *“we have a driver of the year award based on the telematics...the driver of the year award will get his own company private plate put on his vehicle for the year”* (4).

Rewards included not only investing more money in the driver but also recognising their safe driving behaviours: *“Having the conversation with them, saying well done to them and actually, there's a recognition from that also that we've invested time, effort and money”* (2).

Participants said their focus was on the 10% of delivery drivers who were unsafe. They discussed that this was because they are paid for deliveries and will rush to complete their deliveries for the day so that they can get back to the depot and end their delivery day early: *“They are rushing, and actually they're getting back to the depot an hour early, hours early, yet they're still paid till seven in the evening, so we've got to cut through some of this bull”* (2).

Participants had the expectation that if drivers were paid until a certain hour, they should be taking their time to meet their delivery target within that time, no more or no less. They reported addressing these concerns through conversations with the drivers: *“What we've done is had that positive conversation to the driver to say, ‘why are you rushing? You are paid until seven. My expectation is actually you need to slow down.’, and by slowing down, we are reducing their road risk”* (2).

They reported managing dangerous drivers through individual conversations, re-training and sometimes disciplinarys. There was agreement that they wanted to cover themselves as a company as they needed to be seen to be taking action, if a driver was being dangerous. These managers also seemed to not want to let these drivers go as they may then apply for another delivery company and continue to drive dangerously: *“... We will have a meeting with them... I remember one, you know we're in front of the traffic Commissioner, the driver individuals there, right. ‘What you gonna do with the driver?’, ‘We're gonna sack him’, Well the traffic Commissioner said ‘no no, no, no, don't do that, because you're just passing the problem onto another company’ You know, so get down there sit with him...driver assessments, all that kind of stuff”* (4).

A disconnect was mentioned between what they say as a company (i.e., no dangerous driving) and what they do (i.e., incentivise fast delivery): *“I think was a disconnect between what we say we do and what we're actually encouraging them to do in many businesses and our sector, but including mine, they're paid by that parcel. So, we might say to them, ‘hey, if you're in that time, we haven't got the hours or you're running a bit behind, don't do it’. But that actually translates as money to them. So, whilst we might sit somewhere and say yes, we've done the right thing, we've told them not to do it. They haven't got the hours to do it. We haven't said you absolutely can't. We have sort of left it to them to make a decision basically about how much they'd like to get paid that day, and that that's a difficult thing to balance, I think”* (1). Some of the disconnect

was said to come from the top down with company leaders and a lack of layers of compliance: *“You know the disconnect... is actually the disconnect is from senior leaders down to an operational leaders' point of view and actually they are pushing their own teams”* (2).

There seems to be respect for the job as many had made deliveries themselves. One example was when drivers were on strike: *“well I went out and delivered parcels and actually, yeah, it is a demanding job”* (2).

## 6.2 Salaries

Introducing salaries to de-pressurise the work appeared controversial with some saying that it would allow the drivers who underperformed to no longer attempt to deliver all their parcels. Parcel delivery targets appeared to be regarded as a valuable incentive that, if removed, would lead to unmotivated drivers. They discussed that they could use telematics to manage performance but if drivers are salaried, this may lead to more work for managers: *“...they're being paid per parcel, there is an incentive for that driver, isn't it? ‘The more I deliver, the more food I can put on my table at home’ and how you bridge that gap”* (2), and: *“...if you start to salary drivers that you've always got that danger of the drivers thinking ‘well, I'm gonna get paid whatever. So, I'm not gonna bother delivering them’”* (5).

## 6.3 Customers, Councils and possible lockers

Delivery locations were discussed as becoming harder to access which led to dangerous or inconsiderate parking: *“it's becoming more and more difficult for drivers to park in a safe place. They are making it more and more difficult for us to deliver and collect our core products...whereas a driver would be able to safely park outside, they're now having a park up the road run back It's taking them a lot longer and it's having a huge impact”* (2). Participants suggested that a more connected approach and directly communicating with these companies would be a good resolution. They felt that pushing them onto main roads simply shifts poor air quality from one road to the next and forces them to drive longer routes to get to their location which leads to more carbon emissions: *“What they've done is pushed poor air quality from side roads onto main road...also that wider impact is we think it's going to take hours to deliver these parcels. But for this driver, whereas in reality, because they keep popping up late, low traffic neighbourhood schemes and more double yellows...we're not aware of that information all of the time until it is being deployed. Potentially that route is now an hour route”* (2).

Lockers were offered as a good solution for delivery with the proviso that they must be accessible for not only the customer but the driver: *“things like lockers things like shops...we can deliver to them outside of normal daylight hours. We can go into there at two in the morning and leave something in the locker and that, I think is a very, very key point. But the problem does remain that when these places are designed , we're thinking about the pedestrian going to recover the goods, not the vehicle going to place the goods there for the consumer and again...the whole sort of the carbon footprint of it, the amount of times where you've gone from being able to run a tonner [large van] into an area, maybe get rid of two parcels that's now turned into four vans, drivers, four lots of diesel because road narrowing, traffic calming, making it this safe environment is actually quadrupled the amount of traffic on it because the consultation simply didn't happen”* (1).

The practitioners worried that inconsiderate delivery drivers impacted the customers' experience: *“there's probably a wider problem there that we have to face and that is the quality of the service and the customer experience These are the drivers that throw packages over fences and leave them in dustbins and things like that. So, there is a problem that we have to deal with, and I think their driving performance is a symptom of their behaviour, not necessarily the other way around”* (6).

## 6.4 Reputation and brand

Workshop participants felt that whilst some driving behaviours were not illegal, they could be construed as inconsiderate and this places their brand at risk. These things may often not be picked up by using telematics: *“They very often park where it's suitable. I mean, even the sort of in the middle of the street and hold the traffic up that may not be particularly unsafe or illegal, but it's inconsiderate and I think this is something that probably can't be taken into account and that is the behaviour of drivers in our industry can be made negative just by a few people that in their haste to get around to make the drops, to get rid of the packages, to get back to the depot on time, they put the company's reputation at risk”* (6).

Sometimes branding was used to encourage safe driving behaviour as the company logos and numbers are printed on the van: *“All of our vans have the head office telephone number on the back only. So, if we do get any violations, any complaints, they go direct ahead office and then they feed back down to me and I have to deal with them. So, the drivers know that any discourteous driving, any infringements violations, they know that they are going to be penalised”* (5).

One company representative mentioned that drivers can get away with more in their unbranded vans compared to their branded ones.

## 6.5 Driving violations

There was an agreement that drivers are at a higher risk of driving violations. However, participants felt that if they were to only employ those without points it would be hard to find experienced drivers: *“They're in an industry that is bound to make them come into contact with driving violations the most because I used to track the points on our system for a while, and, typically salespeople and delivery drivers are the most common were speeding and use of the mobile phone and it's just it's baked into the business model unfortunately. So, if we were to stop employing drivers that had six points, we would find would be fishing in a very small pond of people willing to do the job and also, they come from other companies as well, so they've probably racked up a driving history with another company that they were working for”* (6).

Participants discussed that it was not about avoiding drivers with points, rather managing them effectively and ensuring they aren't doing anything wrong with checks and balances in place. It was also felt that there were more ways than ever for drivers to obtain a violation as technology on roads increased and it becomes easier for speeding to be penalised: *“So obviously if you get drivers that are getting violations, would it be parking, speeding, accidents, etcetera. Then these have got to be dealt with and you've got to examine that driver and see what he's done wrong and obviously, if it needs disciplinary, then so be it. But if it needs retraining, go to make sure that regardless of what they got to do, they've got to be safe out there and you know, obviously if they're speeding, they're much more likely to have an accident, which for them is points on the licence for the company doesn't look very good. We do ours every month and obviously when people do gain points on the licence we investigate how they've got them and then it's about managing and retraining if necessary.”* (5) and *“It is easier to get an enforcement now than that ever has been... there's more speeding cameras than there ever has been. You know that actually we've got technology on the motorway network potentially that identifies tyres, whether that is overweight, police are clearly targeting us.”* (2).

Participants reported that their companies continued to frequently check licences for points: *“as a company we check licences every three months. We have the ability to do it on the spot by the click of a button, so if we suspect a driver's being caught doing something wrong and may have accrued points and we can check”* (5).

## 6.6 Three things to help manage safety of last mile delivery.

Participants were asked to suggest three things that would improve the safety of last mile deliveries. The key themes that emerged were:

- Training: *“from day one we do driver assessments before anyone gets into a vehicle... When a driver starts everything to do with what they do on a daily basis, we go through safe operating procedure, manual handling”* (5) and continuous driver improvement,
- Induction days: *“from a new starter point of view, when he does an induction on day one, it gives him a feel of he belongs to the company and obviously we make a big thing about branding”* (5),
- Recognition,
- Rewards,
- Dealing with noncompliance,
- Clear set of rules for managers and better business standards,
- Recognition across organisations that health and safety duties extend onto the road and through their contractors *“you have a responsibility as an organisation, not just for your employees, but also for everybody else that you are working alongside and with and that responsibility of health and safety extends out onto the road network”* (7).

## 6.7 Ethical Delivery service standard

The role of an ethical delivery service standard was discussed, and it was felt that this could be an effective overarching ‘branding’ tool that could also link up to sustainability (decarbonisation) as well as safe driving. Participants felt that customers seemed more focussed on the CO2 element of last mile delivery rather than the safety of drivers: *“...from a customer's point of view...when it comes to safety, it's been oh of course I want them to be safe, and of course I want them not to be speeding and of course that but actually it's more to do with the CO element of it”* (2).

# 7 Summary findings

## 7.1 The quantitative survey of drivers

### Differences between sample characteristics

Most of the sample were male (73%), aged 30-50 (67%) though telematics users were slightly younger and very slightly more experienced. Most drivers (94%) had held their driving licence for over three years. Telematics users were more likely to drive medium to large vans compared to non-telematics users (63% vs. 43%) and were more likely to use a vehicle leased or owned by a company rather than own it themselves. In terms of exposure variables (hours and mileage) the samples were similar.

### The relationship between telematics use and attitudes to risky behaviours, crashes, and violations

The key research question was whether telematics drivers report less injury and damage crashes and had commensurate safer attitudes to risky behaviours compared with those that do not use telematics. Telematics drivers were significantly more likely to report that they had injured someone in a crash and damaged their vehicle while working. There was no difference between drivers for having received any licence points whilst working but significantly more telematics drivers had attended a Speed Awareness Course. There was no significant association between telematics use and pressure to speed (80% agreed), drivers reporting that they have driven through a red light under pressure (45% agreed) and that they often had to park illegally (63%).

## **Views on telematics**

Drivers who used telematics were more likely to say they had been trained on managing road risk. Telematics were evaluated more positively by drivers who had them, but most drivers felt that they would increase the pressure on deliveries.

## **Different types of telematics**

For drivers who had telematics, there were two types, one based in the vehicle (called In-vehicle), and one via an app (app-based) approx. (50:50). Only around a quarter of drivers said the company shared all data about drivers in a league table, and significantly more 'In-vehicle' drivers reported this. Around half of telematics users said data on their personal driving was shared on a regular basis – again more 'in-vehicle' users reported this. Of all users 62% said the company monitored how fast they delivered and again 'in-vehicle' users were more likely to report this. Half of users said that the company would question how fast they were travelling and again more 'in-vehicle' users reported this.

## **Multivariate analysis of damage collisions**

For reported damage collisions, multivariate analysis showed that predictors of reporting being involved in a damage collision was related to gender, the size of the vehicle, vehicle ownership, some hazardous behaviours such as parking and distraction caused by mobile phone apps, and driving violations. There was no significant association between being involved in a damage collision and being set personal targets, using telematics or higher mileage or agreement that they at times drove over the speed limit or went through red lights.

## **7.2 Summary from qualitative research**

### **7.2.1 *Managers***

Although most fleet managers claim to prioritise safety, this clearly interacts with, and in some cases competes with, financial considerations. Even those managers who mention 'safety first' quickly gravitate to mentioning financial benefits. Examples include the fact that fewer collisions lead to fewer claims on insurance policies or the fact that drivers avoiding speeding means fewer fines for the company to pay. The actual protection of employee safety is rarely if ever mentioned as the end in itself; other benefits swiftly follow. Furthermore, relating specifically to the main focus of this project (control of speed using telematics) safety 'thresholds' are clearly misaligned with road safety evidence. Managers mentioned having 'some tolerance' of 'minor' speeding, in line with the public narrative on this being to some extent acceptable, despite wide evidence showing that even modest increases in speed lead to substantial increases in risk of a collision, and injury severity (Taylor et al, 2000; Elvik et al, 2019).

A knock-on effect of the acceptability of telematics from these multiple perspectives (not just safety) is that fleet managers are open to there being many other benefits of telematics for their fleets and acknowledge these when they see them. Telematics are seen as being useful for the reputation of the company, and to be helpful in protecting drivers from unfounded accusations from other drivers (and in extreme cases, from legal action, when telematics data can be used to prove driver non-fault in collisions). They are also used as a customer service tool to support better estimated delivery times and communications with buyers who are needing information about this (whether automatically, or simply through communications with the companies).

Telematics also bring about profound changes to the roles and experiences of managers and drivers. Managers reported having much more time to take on additional duties and provide additional value, after telematics data had made their management of their fleet of drivers much easier; much less time is spent on the phone to find out where drivers are, and customers are much more informed and less likely to chase

for information. The role of a delivery driver is also changing, as they are monitored more closely now than before the introduction of telematics. Drivers that enjoyed the home delivery job for its independence may not enjoy the supervising role telematics now plays.

There are still gaps in the evidence about the impact telematics has on safety outcomes. One limitation is that all our managers were from small delivery companies, and telematics usage, impact and understanding may vary according to company size. Although we may identify good practice as those managers who set safety targets, reward good driving and who share the data with their company leaders as well as driver, no manager could provide exact evidence to show this had directly improved the safety of their drivers. Future research could ask for data regarding collisions (where it was the delivery drivers' fault) from companies identified as having good practice. This evidence could support what we identify as good practice in the industry, if analysed within the context of a properly constructed evaluation framework.

### **7.2.2 Drivers**

Irrespective of telematics use, drivers experience pressure to deliver leading to speeding and risk taking, including hazardous driving, illegal parking, fatigue, and distraction.

Telematics drivers perceived the safety benefits of telematics but felt they were used to keep track of drivers and monitor delivery times for the benefit of the company. They were more likely to report that the company was concerned about driver behaviour and that risky behaviour was sanctioned.

In terms of commitment to safety, drivers per se, were not aware of who led road safety in the company they worked for. Reported training levels were variable ranging from a few hours to weeks and some involving shadowing a more experienced driver. Few reported there was some form of ongoing road safety training. Discussion around driver safety targets were limited, and when mentioned were typically focused on delivery times.

Performance reviews were not frequently carried out for drivers irrespective of whether telematics was used, though some drivers using telematics reported that there was disciplinary action for speeding and some stated that incentives were provided for safe driving in conjunction with efficient delivery. Telematics users would like the data shared with them and would like safe driving recognised rather than just highlighting risk behaviour. Telematics users felt that telematics prevented them from taking risks that they otherwise would. Drivers not currently using telematics generally viewed telematics quite negatively as a source of unwanted monitoring.

## **7.3 Workshop**

Operators acknowledged that drivers would risk speeding to meet delivery targets. There was a consensus that a safety charter should be considered, to help create an ethical delivery service brand that operators and drivers could sign up to.

# **8 Conclusions and Recommendations**

## **8.1 Caveats**

Understanding the role of telematics driver monitoring in reducing speeding behaviour is complicated. Whilst the narratives of drivers, their managers and health and safety practitioners from the industry agreed that delivery work involves pressure, and this can lead to speeding and to an increased probability of getting caught by the police or collisions— for managers and practitioners this was an accepted part of the business model. Practitioners reported that there was a dearth of professional delivery drivers and insisting on a clean licence would be problematic. Whilst telematics drivers were significantly more likely to report being involved in a damage collision and to have attended a Speed Awareness Course, the differences were small



at 5%. However, for injury collisions, whilst the overall number was small at 27, 18 of these drivers' used telematics. We do not know whether these collisions involved speeding or other factors such as distraction or fatigue or a combination of these. The higher proportion of telematics drivers reporting these adverse outcomes may also reflect a greater readiness to report collisions as companies require it and will know from the telematics. Irrespective of telematics use, drivers were similar in terms of self-reported risky driving behaviours which reflects the nature of delivery work. We do not really know whether the telematics tracking function creates an additional pressure on the drivers. Our research shows that managers admit that using telematics to track parcel delivery is the top priority not safety, with safety ranked below this. Moreover, our understanding of the potential of telematics to reduce speeding is complicated by the accepted trade-off between speed and safety, and further complicated by the different types of telematics used, some of which contribute to distraction.

Despite these caveats, our research shows that telematics has a clear role to play in terms making drivers think about their speed and adapt their driving and clear advantages for managing fleets in the delivery sector.

To support the management of road safety in the delivery sector we propose the following recommendations:

1. There is a large variation in data collected using telematics- there is a case for streamlining and sharing good practice. Several problems needed to be addressed such as servers going down, difficulty interpreting data, data not including the quality of roads (such as potholes) and changing of speed limits. Difficulties could be overcome by having more friendly user guides and training for multiple members of staff to develop the capacity to analyse all the data. Data could be more simply presented such as having a single figure, statement or data summary at the end of every day for every driver to cover basic driving behaviour. It was also suggested that telematics should cap the speed of the driver to completely remove the risk of speeding (e.g., intelligent speed adaptation).
2. Telematics data could be shared with drivers in more detail and could be used to praise and reward safe driving. If telematics as an intervention were to be viewed through the lens of behavioural science such as the COM-B model (Capability, Opportunity, Motivation Behaviour, (Michie et al , 2011)) drivers capability could be improved via telematics feedback, motivation could be improved by paying drivers more when they drive safely and companies could manage opportunities for safe behaviour by managing external factors that make execution of a behaviour possible such as scheduling deliveries and taking into account parking and distance to delivery points.
3. App based telematics seem to be associated with distraction and therefore in vehicle telematics should be used where possible.
4. Telematic metrics could be used as key performance indicators as evidence to be awarded membership to an ethical delivery service charter (something equivalent to the Fleet Operator Recognition Scheme (FORS) (<https://www.fors-online.org.uk>.) The charter should stipulate clean licences (or a minimum acceptable number of licence points given the shortage of drivers) are required. Service commissioners also need to support and sign up to this charter. This could also support self-employed individuals as well as large companies. Speed awareness course attendance needs to be considered in assessing driver safety – this needs to be recorded as marginal speeding is a known risk factor for collisions. An alternative preventive measure could be to provide a Speed Awareness Course at the outset of employment before a driver is caught for marginal speeding.
5. A drivers 'passport' scheme could be linked to the ethical delivery charter. There are examples of such schemes in other sectors. National Highways has developed a Highways Passport as a certification system that demonstrates driver's qualifications, experience, and training to work safely on any National Highways site. It consists of a smartcard and a database. The smartcard,

which is securely linked to the database, provides real-time confirmation of a driver's authority to work and ensures adherence to safety standards. The passport allows drivers to carry all relevant information and enables easy verification at any time. It includes proof of completing Highways England's common induction training (HCI). The HCI, which takes about two hours to complete, covers common risks at National Highways sites and ensures employee safety on the strategic road network. An online version of the HCI is available, and registration requires a valid passport number. The scheme simplifies the employee induction process by focusing on site-specific hazards rather than repeating general inductions. Employers can register their company, attend a workshop, add workers to the passport system, pay the annual subscription fee, order cards, and book HCIs for their employees.

Another scheme is the Petroleum Driver Passport (PD Passport) established by the Downstream Oil Industry Distribution Forum (DODF) in collaboration with employers, industry bodies, and trade unions. The scheme provides consistent training standards, a benchmark for employers, and assurance for oil terminals. The scheme includes classroom and practical training, accreditation, and enforcement. SQA approves training centres, sets assessments, and issues the Petroleum Driver Passport (SQA <https://www.sqa.org.uk/sqa/102873.html>). The scheme is enforced by oil terminal operators, and other relevant authorities are made aware of it to ensure compliance. The scheme aims to improve the industry's reputation, training standards, and safety practices. Such a scheme could be developed for delivery drivers and be requested by operators.

6. Given that hazardous parking is likely to be symptomatic of pressure we recommend that finding safe places to park and taking in time to walk to delivery points need to be taking into account in business planning.
7. Given the road safety risks identified by drivers, managers and practitioners working in the delivery sector we recommend that the proposed Road Collision Investigation Branch needs to have driving for work as a key theme.

## 9 Future research

1. There is a need for a more detailed picture of the contributory factors in injury collisions involving delivery drivers. It is recommended that analysis is undertaken of contributory factors in police fatal files and STATS 19 involving large/medium sized vans owned by companies involved in serious and fatal collisions.
2. More research needs to be done among drivers to explore how the tracking function of telematics contributes to pressure and potentially counteracts the safety benefits of telematics. This could be achieved through experimental manipulation and evaluated using objective vehicle measures and psychological/physiological measures of stress in drivers in a small-scale intervention/control design. In addition, the distraction caused by App based telematics could be explored experimentally.
3. If a Speed Awareness Course was delivered as a form of training this could then be evaluated as a randomised control trial among drivers using telematics.
4. Arguably, the most pressurised deliveries are those identified as premier or prime (often same/next day deliveries). It would be interesting to explore 1. If these are associated with more collisions and 2. Whether changing price structure could encourage more consumers to choose slower deliveries, this needs to be explored with consumers and whether safety considerations could be factored into their decision-making process.

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## 12 Appendices

### A Online questionnaire

1. Which of the following best describes the income provided by your work in delivery?

This is my only source of income

This work provides additional income to my main full-time job

This work provides additional income to my part time job

2. Please tell us the name of company/companies that you deliver for? (drop down)

Prefer not to say
Amazon Flex
Amazon Logistics
City Sprint
DHL
DPD
Evri (Hermes)
FedEx
Parcel force
Parcelhub
TNT Express Delivery
UPS
Yodel
Other write in

3. How are you paid?

Per parcel

Weekly / monthly salary

4. How long have you been delivering parcels?

Less than a year

1 - 2 years

2 - 3 years

More than 3 years

5. In your work as a driver, how many hours do you work in a **typical week**?

Under 15 hours

15 - 35 hours

36 - 45 hours

46-60 hours

More than 60 hours

6. What has been the most hours you have worked in a **single day**? WRITE IN

7. What is your average weekly mileage? WRITE IN

8. What best describes the vehicle you mainly use for deliveries?

Car

Small van e.g. Volkswagen Caddy Cargo, Ford Fiesta Van, Citroen Berlingo

Medium sized van e.g. Ford Transit Custom, Volkswagen Transporter, Renault Trafic

Large van e.g. Fiat Ducato, Mercedes Sprinter, Ford Transit

9. Is the vehicle you use for work
- owned by you
  - leased by you
  - owned by the company
  - leased by the company.

10. When you joined the company which of the following checks did they carry out on you?

(TICK ALL THAT APPLY)

Passport

Driving licence

Criminal record (e.g.CRB)

Insurance

References from previous employer

There were no checks

Don't know / can't remember

11. How often does the company check your licence?

Just when I signed up

Annually

Never / Not at all

Don't know

Other

12. What do you think are the top three priorities of your company?

Meeting delivery targets

Corporate image/reputation

Protecting company property and packages

Driver safety

Winning contracts with potential clients

13. Does the company provide any training on how to manage risks on the road?

Yes

No

14. Do you have a dashcam in your vehicle?

Yes

No

15. Does the company use any telematics to monitor your driving behaviour? Telematics refers to in-vehicle or app based technology that monitors your driving behaviour e.g. speed, harsh breaking.

Yes [continue]

No [redirect q19]

Not sure [redirect q19]

16. Is the telematics

In vehicle

App based

17. Does the company share the telematics information with you about your driving behaviour?

yes on a regular/routine basis

only if there is a problem with my driving

never

18. Does the company share a league table of driver scores for safe driving behaviour with all drivers?

Yes

No

Don't know

19. Does the company set you personal targets?

Yes, in relation to number of deliveries

Yes, in relation to driver safety

Yes, in relation to number of deliveries and driver safety

No

20. Does your company monitor how fast you deliver parcels?

Yes

No

Don't know

21. Does the company question you if they think you are travelling too fast?

Yes

No

22. If your work is app based, does the app ever cause a distraction when you are driving?

Yes

No

Not applicable

23. Have you ever been stopped by the police whilst working?

Yes

No

24. Have you ever received any licence points whilst working?

Yes

No

25. How many points have you had in the last 12 months?

Have you ever been on a Speed Awareness Course for a speeding offence committed whilst you were delivering parcels in your van?

Yes  
No

26. Has your vehicle ever been damaged in an accident whilst working in delivery?

Yes  
No

27. Has anyone ever been injured in an accident that you were involved in when working in delivery?

Yes  
No [redirect q30]

28. Who was injured in the accident?

Just me  
Just someone else  
Both me and someone else

29. How many accidents occurred whilst you were working in the last 12 months?

We would now like you to read the following statements and tell us how much you agree or disagree with each of them.

30. The time pressure of delivery work can make you travel over the speed limit

Strongly Agree  
Agree  
Neither Agree nor Disagree  
Disagree  
Strongly Disagree

31. I have driven through a red light when I've been under time pressure

Strongly Agree  
Agree  
Neither Agree nor Disagree  
Disagree  
Strongly Disagree

32. I often have to park illegally / in unsafe places on roads to deliver parcels

Strongly Agree  
Agree  
Neither Agree nor Disagree  
Disagree  
Strongly Disagree

33. I / the company check my vehicle every week to make sure its road worthy.

Strongly Agree  
Agree  
Neither Agree nor Disagree

Disagree  
Strongly Disagree

40. I like having / would want to have telematics in my vehicle

Strongly Agree  
Agree  
Neither Agree nor Disagree  
Disagree  
Strongly Disagree

41. Telematics does/would reduce my speed on the roads

Strongly Agree  
Agree  
Neither Agree nor Disagree  
Disagree  
Strongly Disagree

42. Telematics does/would increase the pressure on me to deliver within expected timeframes

Strongly Agree  
Agree  
Neither Agree nor Disagree  
Disagree  
Strongly Disagree

43. I do/would adapt my driving behaviour when it is monitored by telematics

Strongly Agree  
Agree  
Neither Agree nor Disagree  
Disagree  
Strongly Disagree

44. Telematics does / would improve the safety of delivery drivers

Strongly Agree  
Agree  
Neither Agree nor Disagree  
Disagree  
Strongly Disagree

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That's the end of the questions about, we now just need to ask a few questions about you to make sure that we are speaking to a good mix of people working as a delivery rider.

1. How old are you?

2. What is your gender?

Male  
Female  
Prefer not to say  
Other (specify)

3. How long have you held a car driving licence?



- Less than 1 year
- 1 - 3 years
- More than 3 years

4. What is the first two letters of your home address postcode (these is to help us know what location our respondents are from)

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5. What is your ethnic group? Please choose one option that best describes your ethnic group or background.

White

- 1. English/Welsh/Scottish/Northern Irish/British
- 2. Irish
- 3. Gypsy or Irish Traveller
- 4. Any other White background, please describe

Mixed/Multiple ethnic groups

- 5. White and Black Caribbean
  - 6. White and Black African
  - 7. White and Asian
  - 8. Any other Mixed/Multiple ethnic background, please describe
- Asian/Asian British
- 9. Indian
  - 10. Pakistani
  - 11. Bangladeshi
  - 12. Chinese
  - 13. Any other Asian background, please describe
- Black/ African/Caribbean/Black British
- 14. African
  - 15. Caribbean
  - 16. Any other Black/African/Caribbean background, please describe

Other ethnic group

- 17. Arab
  - 18. Any other ethnic group, please describe
6. Do you have a college/university degree or equivalent?
- Yes
  - No

7. Please use this space to share any other views you have of delivering parcels.

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Thank you  
Contact question for administration of incentives

## **B Topic guide – Managers**

1. Please can you describe your role in the company?
2. What would you say are the main road safety risks involved in delivery work?
3. How would you describe the company's commitment to managing safety of delivery work?
4. Where would you say leadership has come from on this?
5. When you recruit drivers how much does safety management feature as part of their induction?
6. Are telematics used?
7. Why are telematics used? Prompt:
  - a. related to reducing costs of damage
  - b. related to costs of injuries
  - c. related to violations/PCNs
  - d. Fuel use
  - e. Insurance costs
8. Do you have any evidence that telematics has made a difference to your business?
9. What are the key indicators you use from telematics?
  - a. E.g., Speed, harsh braking, fast acceleration
10. What types of data do drivers get about their driving performance?
11. What kinds of telematics data prompt you to review the behaviour of drivers?
12. What sorts of actions do you take because of telematics data?
  - a. Companywide measures?
  - b. Individual conversations?
13. How often do you review the data?
14. How often do you report the information to company leaders?
15. Do you set targets to reduce driver behaviours related speeding, harsh braking?
16. Do you ever use telematics data to reward driver behaviour?
17. Have you had any issues with capacity to analyse the data?
18. What would improve the use telematics to manage occupational road safety?

## C Topic guides – Drivers

### Drivers who use telematics

1. Please can you describe your role in the company?
2. What would you say are the main road safety risks involved in delivery work?
3. How would you describe the company's commitment to managing safety of delivery work?
4. Who do you think leads on the management of road safety risk in the company?
5. When you joined the company how much does safety management feature as part of their induction?
6. To what extent do you feel the company cares about your safety on the road?
7. Why do you feel the company uses telematics? Prompt:
  - a. Related to reducing costs of damage
  - b. Related to costs of injuries
  - c. Related to violations/PCNs
  - d. Fuel use
  - e. Insurance costs
  - f. Duty of care for its workers and/or the public
  - g. Corporate image
8. Have you experienced any collisions whilst working?
9. Have you received any licence points whilst working?
10. Do you feel that telematics makes a difference to the way you drive for this business?
11. What are the key indicators the business uses from telematics?
  - a. E.g., Speed, harsh braking, fast acceleration
12. What types of data or feedback do you get about your driving performance?
13. Has telematics data about your own driving behaviour been used by managers to review how to improve your driving?
14. What sorts of actions are taken because of telematics data?
  - a. Companywide measures?
  - b. Individual conversations?
  - c. 'Gaming' (e.g., 'best' driver gets a prize)
15. How often does the company review your telematics data with you?
16. Are you set targets to reduce driver behaviours related to speeding, harsh braking, fast acceleration, (others mentioned)?
17. Are telematics data ever used to reward driver behaviour?
18. What do you think would improve the use of telematics to manage occupational road safety in your business?
19. What do you feel are the best ways for managers to encourage safer driving?
20. Is there anything else you would like to say?

### Drivers who do not use telematics

21. Please can you describe your role in the company?
22. What would you say are the main road safety risks involved in delivery work?
23. How would you describe the company's commitment to managing safety of delivery work?
24. Who do you think leads on the management of road safety risk in the company?
25. When you joined the company how much does safety management feature as part of their induction?
26. To what extent do you feel the company cares about your safety on the road?
27. Does the company you work for monitor any of the following:
  - a. damage to vehicles involved in collisions prompt (for all) – what happens as a result?
  - b. injuries
  - c. Related to violations/PCNs

- d. Fuel use
  - e. Insurance costs
28. Does your manager use any of this data in conversations with you?
- a. How often does the company review this data with you?
  - b. What sorts of actions are taken as a result?
29. Have you experienced any collisions whilst working?
30. Have you received any licence points whilst working?
31. Do you feel that telematics would make a difference to the way you drive for this business? Why?
32. What types of data or feedback would you like to get about your driving performance?
33. Are you set targets to reduce driver behaviours related to collisions or violations?
34. Is driver behaviour ever rewarded?
35. What do you feel are the best ways for managers to encourage safer driving?
36. Is there anything else you would like to say?