VOSA Research & Development Team

Final Report

LHD Vehicles Blind Spot

Version 1.3

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Contents

1 Executive Summary

1.1 The Project Objective

The objective of the project was to evaluate whether or not:

- Fresnel lenses could make a contribution to improving left-hand drive (LHD) HGV driver vision to the nearside (offside in the UK); and,
- Fresnel lenses could make a contribution to reducing the number of 'side-swiping' incidents.

1.1.1 Legal requirements relating to driver vision

All new vehicles are required to comply with the requirements of type approval legislation prior to entry into service (see section 2.1). New legislation on mirrors gives new HGVs a wider angle of view and 'close proximity' mirrors enable drivers to see pedestrians, cyclists, and motorcyclists when they are immediately to the side of the vehicle. However, a blind spot remains in an area adjacent to the vehicle's passenger door .It was to address this particular issue that this project - and associated earlier background work - was commissioned.

1.2 Introduction

A disproportionate number of reported 'side-swipe' incidents[1] involve left-hand drive (LHD) heavy goods vehicles (HGV) changing lane to the right and striking a car in the adjacent right hand lane of a dual-carriageway or motorway. It is believed the principal point of impact for these incidents is between the front right hand corner of the HGV and the rear left hand corner of the car.

In 2005, there were 1164 side-swipe accidents resulting in injury recorded in the GB national road accident and injury database (STATS19). 39% of these involved foreign registered HGVs, and the majority were involved in side-swipe incidents when changing lane to the right (the passenger side of the vehicle),

This report concentrates purely on examining accidents resulting from a side-swipe as defined in this report.

Statistics collected and submitted by the Kent Police over a number of years have shown a major increase in the number of (what they previously described as) side-swiping incidents. The rate of incidents has increased from 1 in every 2.44 days in 1997-98 to 1 in 1.57 days in 2003 which equates to 55% increase. In the same time-span there has been an 83% increase in the number of foreign registered HGVs visiting the UK.

The evaluation project's methodology was to:

- issue Fresnel Lenses free-of-charge to incoming foreign HGV drivers
- encourage drivers to fit the lenses to their vehicles on a voluntary basis; and,
- evaluate the effectiveness of the lenses in helping to reduce side-swiping incidents by collecting accident data from before the lenses were issued (Phase 1) and after (Phase 2).

[1] For the purposes of this report, a 'side-swipe' incident is when a HGV changes lane and strikes car that is partially or completely alongside.

1.2.1 Associated background

Earlier work had suggested that the fitment of a Fresnel lens to the passenger's side window eradicated or at least reduced the blind spot, and recommended that a trial should be conducted to assess the potential value of fitting the lens.

The TRL HGV Blind Spot Modelling and Reconstruction Trial by G J Couper (Indirect Visibility Assessment). Assessment date: March 2006) agreed with these findings.

1.3 Collection of Data

At a meeting held in June 2006 it was agreed that Highways Agency Traffic Officers (HATOs) and the Police would complete a special proforma to keep a track on the number of side-swiping incidents - both before, during and after the Lenses were issued.

The proforma - with clear instructions - was produced by VOSA R&D, and agreed by the co-ordinating group (copy at Annex C).

It was agreed by the co-ordinating group that the collection of incident data should be split into two phases. The first phase (**Phase 1**) was to collect data before the issue of the lenses - so as to enable the project to determine of the scale of the side-swiping problem generally. The second phase (**Phase 2**) was to enable the project to determine whether or not there had been any reduction in incidents after the issue of the lenses. The collection of data started on 28 August 2006, and continued for 13 weeks until the 26 November 2006, when the distribution of the lenses began. The second dataset was collected between the 18 December 2006 and the 16 March 2007 after all of the Lenses had been handed out.

The HATOs and police collected data from **all** HGV incidents that occurred within the Kent corridor and M25 South East corridors (both LHD and RHD incidents). This was specifically arranged so as to allow for all potentially relevant data to be collected and to avoid forcing HATOs and the police to make decisions at the roadside about which incidents were sideswipes and which were not. That decision was taken later when the data was filtered and analysed by VOSA R&D and by DfT Statistics Branch. A summary of this information, including the number of incidents classed as side-swipes, can be seen in Annex H (key findings).

1.4 Distribution of the Lenses

The lenses were delivered to the three French locations where the UK Immigration Service carried out their distribution. All 40,000 lenses were handed out to drivers within 3 weeks. The Three French locations were selected because they cover the ports through which the majority of HGVs enter the UK.

1.5 Assessment of effectiveness of Lenses

VOSA R&D used several different methods for assessing the effectiveness of Lenses. In addition to the data collected from roadside checks, interviews were also carried out on the roadside by VOSA R & D, and MORI was employed to conduct an independent assessment during January and February 2007.

1.6 Summary of Results

Phase 1

- a total of 401 HGV incidents were recorded, giving an average of 31 incidents per week;
- 368 (92%) of all the incidents were attributed to LHD vehicles;
- 341 (93%) of the LHD incidents were attributed to side swipes.

Phase 2

- a total of 174 incidents were recorded, giving an average of 13.4 incidents per week
- 160 (92%) of all the incidents were attributed to LHD HGVs;
- 139 (80%) of all incidents were attributed to LHD side swipes.

	Phase 1 (28/8/06 - 26/11/06)	**Phase 2 (18/12/06 - 18/3/07)**	**% reduction**
No. of LHD incidents	368	160	*57%*
No. of LHD sideswipe incidents	341	139	*59%*

1.6.1 Key findings

It can be seen that during Phase 2, following the distribution of the Fresnel lenses, LHD side-swiping incidents decreased by 59% - from 26 per week before the lenses were distributed to an average of 11 subsequently. In 91% of LHD side-swiping incidents the HGVs did not have a lens fitted.

1.7 Analysis

Due to the range of factors which can impact on the incidence of road accidents it is difficult to assess conclusively the effect of any one measure or device, particularly in a limited timescale. Nevertheless, the results of the trial demonstrate a good qualitative indicator of the positive contribution made by the fitment of Fresnel lenses. In summary:

- The number of LHD sideswipe incidents decreased significantly during Phase 2, following the issue of the lenses. The fitment of these lenses therefore appears to have been one of the main factors in the reduction of side-swiping incidents.
- Drivers believe that the issue of the lenses is a positive step to reducing side swipes and increasing road safety. VOSA has received no complaints about the lenses and a large amount of praise for them.

2 Introduction

VOSA Research and Development Unit were asked by TLLS to investigate side-swiping incidents. In this context, and throughout this report, the term side-swiping refers to an HGV changing lanes on a dual carriageway or motorway and then colliding with a car adjacent to the HGV cab. The principal point of impact for these incidents is between the front right hand corner of the HGV Cab and the rear left hand corner of the car.

This report highlights the findings and conclusions of a study into the effectiveness of introducing a Fresnel lens to improve the field of vision for drivers of LHD HGVs, so as to reduce the number of side-swipe incidents.

2.1 Project Objective

The objective of the project was to evaluate whether or not:

- Fresnel lenses could make a contribution to improving left-hand drive HGV driver vision to the nearside (offside in the UK); and,

- Fresnel lenses could make a contribution to reducing the number of side-swiping incidents.

2.2 Legal requirements relating to driver vision

All new vehicles are required to comply with the requirements of type approval legislation prior to entry into service. This ensures that similar requirements are applied - both for the benefit of manufacturers and road safety - throughout the EU, and indeed throughout the wider UN-ECE area. Once vehicles have entered into service, operators need to comply with relevant domestic legislation - which generally relates to maintenance standards.

In this particular context, GB Construction and Use regulations require all large HGVs (over 12 tonnes) registered in the UK since 1988 to be fitted with a ‘close proximity’ (Class V) mirror. This requirement resolves the blind spot which would otherwise prevent HGV drivers from having any vision of pedestrians, cyclists, and motorcyclists whenever they are immediately to the side of the passenger’s door - and whenever they are being driven on the right side of the road - typically at a junction. Similar requirements apply to foreign-registered HGVs.

However, such mirrors do little to extend visibility beyond 'close-proximity', and a blind spot remains in an area adjacent to the vehicle’s passenger door. Close-proximity mirrors are in any case not intended for use in fast-moving traffic, and their usefulness in alerting a driver about adjacent traffic on the passenger side is therefore extremely limited.

Recent changes require new HGVs to be fitted with mirrors giving a wider angle of view, but these do not completely address the blind spot described above. It was to address this particular issue that this project - and associated earlier background work - was commissioned.

2.3 Background

HGVs entering UK from Europe are typically left hand drive. Drivers of LHD vehicles on UK roads may experience difficulty in their view to the right as their direct vision is restricted due to the:

- position of the driver - on the left-hand side of the vehicle;
- height of the driver from the road; and
- the size and shape of the passenger door window.

There has been an increasing number of cases reported to Kent Police of LHD HGVs changing lane even though a vehicle is alongside.

Statistics from Kent Police show an increase of side-swiping incidents from 1 in every 2.44 days in 1997-98 to 1 in 1.57 days in 2003. These figures also correspond to an 83% increase in the number of foreign registered goods vehicles visiting the UK over this 6 year period. **(*The Kent Police data shows that 85% of the foreign LHD goods vehicles involved in side-swiping accidents (where fitment was recorded) had a close proximity Class V mirror fitted).***

As a result of the dramatic increase in their number - causing injury and road congestion - VOSA was asked to consider whether or not any in-service measures could be taken to mitigate these incidents.

An initial LHD Side Swipe Project was conducted and a report produced by VOSA R&D in March 2006. This strongly suggested that fitment of a Fresnel lens to the passenger's side window eradicated or at least dramatically reduced the nearside blind spot adjacent to the driver's cab. The reason for looking at Fresnel lenses was because they appeared to be likely to be cost-effective, and with an all-round benefit in reducing the blind-spot in question.

The VOSA report - which went to DVOPD and TTS - recommended a campaign focusing on left-hand-drive HGVs entering or exiting British ports, and proposed the free issue of a Fresnel lens and educational leaflet.

A co-ordinating group was set up with VOSA, HA, TTS, DVO PD and DfT Statistical Branch to manage the trial and agree the reported outcomes.

It was agreed with the co-ordinating group that a pilot project should commence with the distribution of a significant number of Lenses being issued to drivers of LHD HGVs operating in GB. It was decided that the pilot would be run in the South East - the same locations as the South East Pilot targeting enforcement effort on HGVs involved in international journeys. This made use of the resources already available and would target LHD vehicles entering GB from three main French points of entry; the Channel Tunnel at Coquelles, and the ports of Calais and Dunkirk.

At a meeting held in June 2006 with VOSA and the HA, agreement was reached that the HA would fund the procurement of the lenses. The HA agreed to invest up to £100,000 in the project.

3 Procurement and distribution of lenses

3.1 Procurement

In May 2006 - and as a result of the previous work by VOSA and questions raised by TTS - VOSA's R&D unit developed a specification for the Fresnel lenses. A copy of the specification is at annex A

A tender was issued by VOSA's Procurement Unit in June 2006. A preferred bidder was selected and the contract for 40,000 lenses was awarded on the 14 August 2006, with a unit cost per lens of £2.31.

During the production of the lenses an information leaflet and fitting instructions were developed by VOSA R&D (copy at Annex B). These were translated into four different languages, French, German, Polish and Spanish, which were deemed to be the four key European languages.

The Highways Agency agreed to fund the purchase of the lenses for up to £100,000, as a possible tool to aid their targets in reducing road congestion.

3.2 Distribution

Lenses were delivered to the French locations on 23 November 2006, where the UK Immigration Service carried out their distribution. There was a number of requests from drivers for more lenses so they could take them back for the rest of their fleet; or, failing that, for information on where could they be purchased. All 40,000 lenses were handed out to drivers within 3 weeks. The three French locations were selected because they cover the ports through which the majority of HGVs enter the UK.

The lenses were issued to LHD HGVs, primarily of 12.5 tonnes and over.

4 Collection of data by HA and Police before lens issue (Phase 1)

Prior to the issue of lenses the HA and Police collected data on side-swipe incidents for 13 weeks in order to provide VOSA R&D with background, 'baseline', information.

4.1 Method

At a meeting held in June 2006 it was agreed that HATOs and the Police would complete a comprehensive proforma detailing information about side-swiping incidents that occurred before the issue of Lenses. The purpose was to provide a baseline of incidents - how many there were, and where and when they happened. (A copy of the proforma is in Annex C).

It was agreed by the co-ordinating group that the collection of incident data should be split into two phases. The first phase (Phase 1) was to collect data before the issue of the lenses - so as to enable the project to determine of the scale of the side-swiping problem generally. The second phase (Phase 2) was to enable the project to determine whether or not there had been any reduction in incidents after the issue of the lenses. The collection of data started on 28 August 2006, and continued for 13 weeks until 26 November 2006, when the distribution of the lenses began. The second dataset was collected between 18 December 2006 and 16 March 2007 after all of the lenses had been handed out.

Phase	Description	Dates	Comment
1	Pre-distribution	28/8/06 - 25/11/06	Data collected and analysed
	Distribution	26/11/06 - 17/12/06	Data collected but not analysed due to small sample size
2	Post-distribution	18/12/06 - 16/3/07	Data collected and analysed

The collection of data by HA and the Police was intended to record all LHD HGV side-swiping incidents within the Kent corridors M20 and M25, as this is where the majority of HGVs enter the UK. The HATOs and police collected data from **all** HGV incidents that occurred in this area (both LHD and RHD incidents). The decision to collect data from all incidents was specifically taken in order to allow for all potentially relevant data to be collected, and thereby to safeguard against forcing HATOs and the police to make decisions at the roadside about which incidents were side-swipes and which were not. That decision was taken later when the data was filtered and analysed by VOSA R&D and by DfT Statistics Branch. A summary of this incident data, detailing the number of incidents classified as side-swipes can be found in Annex H (Key findings).

It was important to collect data from all incidents to be able to baseline the percentage of incidents that could be attributed to LHD side-swipe incidents and thereby to underline the size of the problem.

4.2 Side-swiping incidents prior to Lens issue (Phase 1)

The following data was collected:

- a total of 401 incidents were reported (Over the 13 week period this equates to 31 incidents per week).

An analysis of the data showed the following:

- **LHD HGV incidents** accounted for 92% of the total (368 incidents);
    - 341 of these (85% of all incidents) were attributed to side-swipes (all HGVs were moving from left to right);
    - There was an average of 26 LHD side-swipes per week.
- **RHD HGV incidents** accounted for 8% of the total (33 incidents)

The data showed that LHD sideswipe incidents accounted for 85% of all recorded incidents, equating to 26 per week.

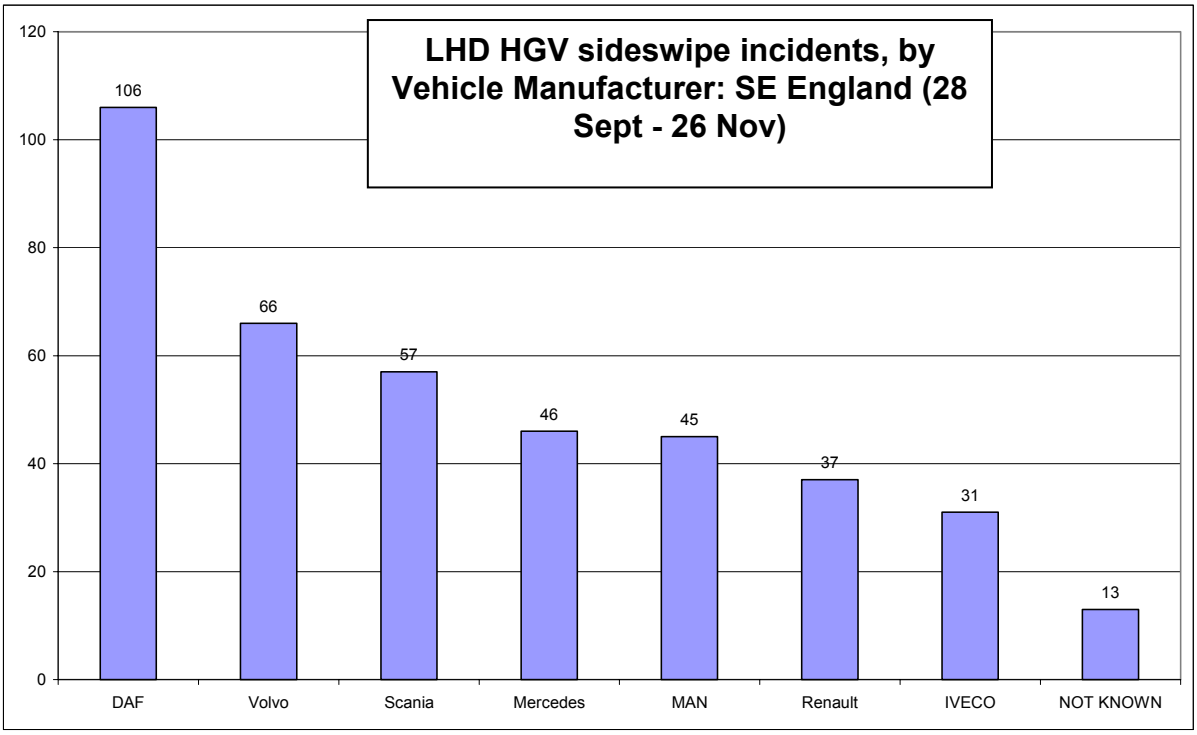
It is also clear from the data that the vast majority of side-swipe incidents occurred when the HGV was moving from lane 1 to lane 2 (RHD incidents occur when the vehicle is moving back from lane 2 to 1 or when a car is joining the motorway from a slip road and the HGV driver equally has no vision of the vehicle).

All the completed incident proformas were recorded by VOSA R&D. The data was subsequently analysed by Road Accident Statistics Branch (TSR5).

4.2.1 LHD HGV sideswipe incidents, by Vehicle Manufacturer: SE England 28 Sept - 26 Nov (Phase 1)

Data showing how the different manufacturers are represented in the LHD Vehicle parc was not available at the time of writing; this data is therefore presented for information only and no conclusions can be drawn.

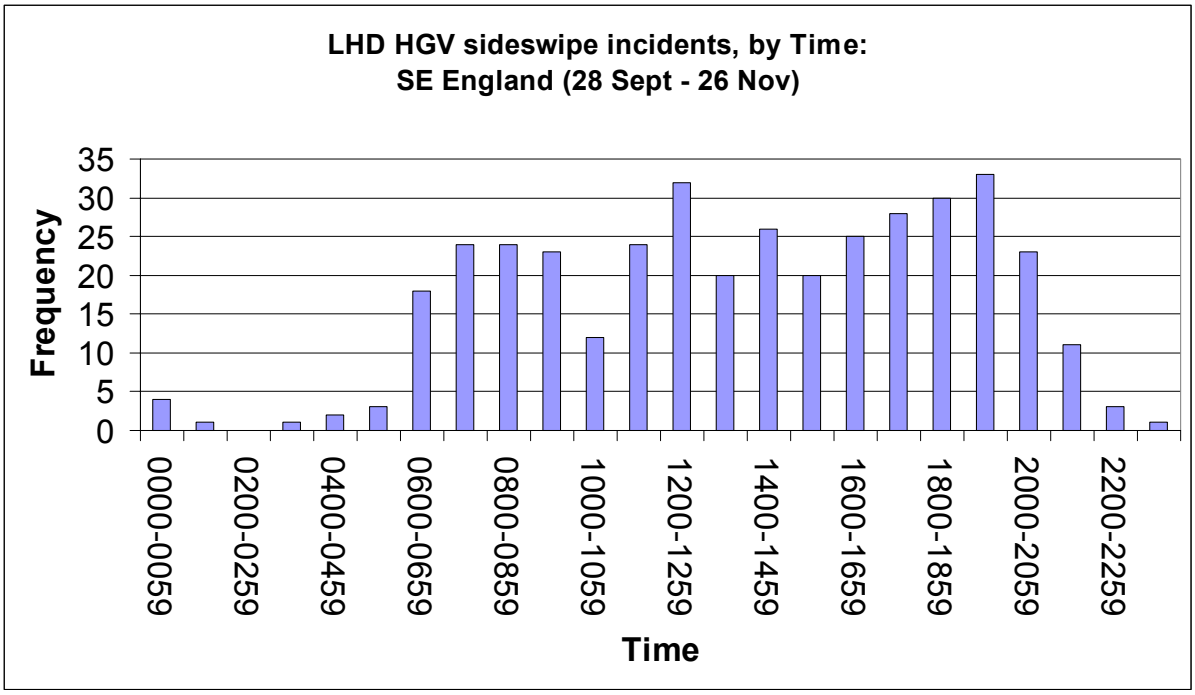
Graph showing the different vehicle manufacturers involved in side swipe incidents



4.2.2 Incidents by Time of Day

The data suggests that there are three distinct peaks at 08:00 - 09:00, 12:00 - 13:00 and 19:00 - 20:00 hours - during 'rush hours' due to an increased volume of traffic at those times.

Crossing times for both ferries and the tunnel have been examined but there appears to be no correlation between incident times and volumes of traffic at GB entry points. The channel tunnel has 4 to 5 departures per hour and up to 50 crossings per day - and the ferries have up to 70 crossings per day. This means that there are a maximum total of 120 crossings in a 24 hour period, but there is no evidence of peaks of LHD HGVs at particular times of day.



4.2.3 Graph showing the time of day of side swipe incident

The emerging conclusion appears to be that most side-swipes occur when the road is busy. This is partly because more vehicles on the road mean that there is a greater exposure to risk. However, this trend also suggests that side-swipes may be more likely to occur when:

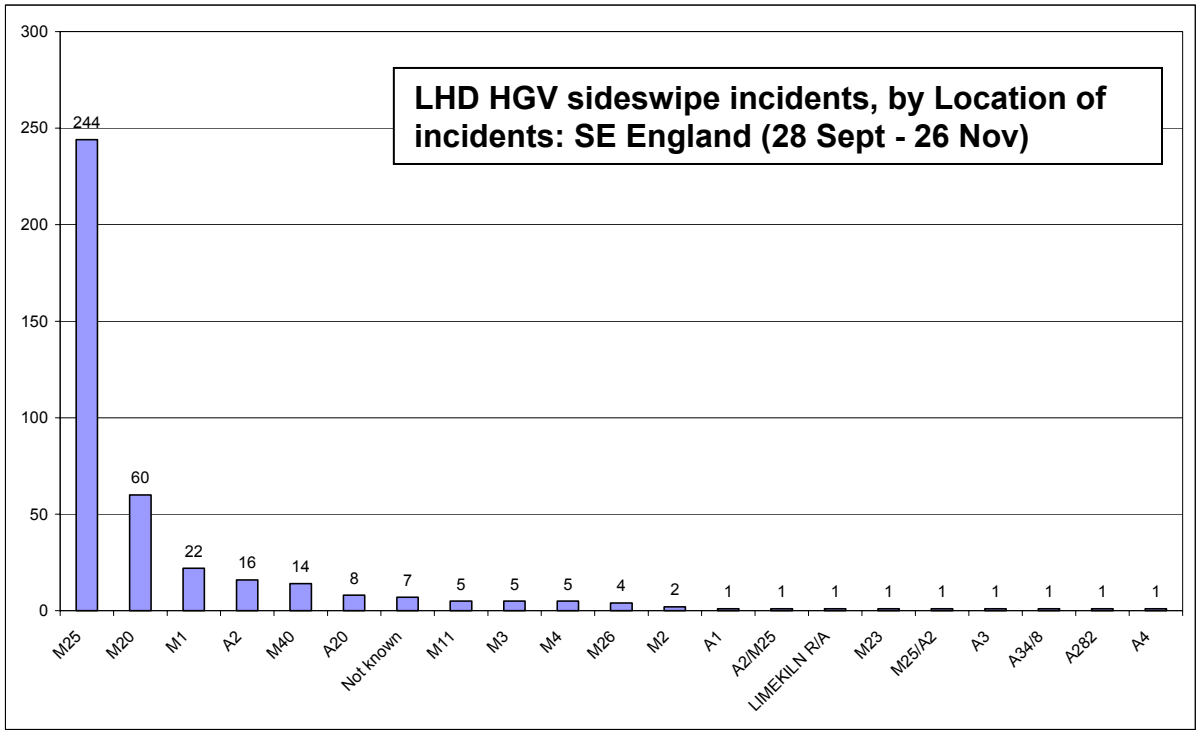
- A car has been travelling adjacent to the front of the HGV for a period of time;
- The HGV driver has no vision of the vehicle; and,
- the HGV driver has simply forgotten whether a vehicle he may previously have seen in his mirror has passed him or not.

4.2.4 Location of Incidents

The incident data shows that:

- 62% of all incidents occur on the M25;
- the M20 accounts for 15%; and,
- the next highest is the M1 with 6%.

(For more detail on the location of incidents refer to the HA report at annex F of this document).



4.2.5 Graph showing the location of incidents

Given that the vast majority of incidents occur on the most congested motorways (at the most congested times) it does appear that side-swiping is most likely to occur where several lanes of traffic have been travelling more or less at the same speed for a period of time.

Incidents also occur at other times, possibly where a car is involved in a 'slow' overtaking manoeuvre - overtaking a group of HGVs, or the HGV driver inadvertently and unexpectedly changing lanes due to being inattentive.

5 Collection of Data after issue of Lenses (Phase 2)

5.1 Method

This phase of the project ran from 18 December 2006 to 16 March 2007 after all of the Lenses had been distributed. This data collection period spanned the same amount of time (13 weeks) as the original data collection period. This was to ensure that an appropriate 'before' and 'after' comparison could be made.

The HATOs and Police used the same proformas as in the earlier part of the project, and continued to collect information on all incidents within the trial area.

5.2 Side-swiping incidents after Lens issue

The following data was collected:

- A total of 174 incidents were reported
- Over the 13 week period this equates to 13.4 incidents per week.

An analysis of the data showed the following:

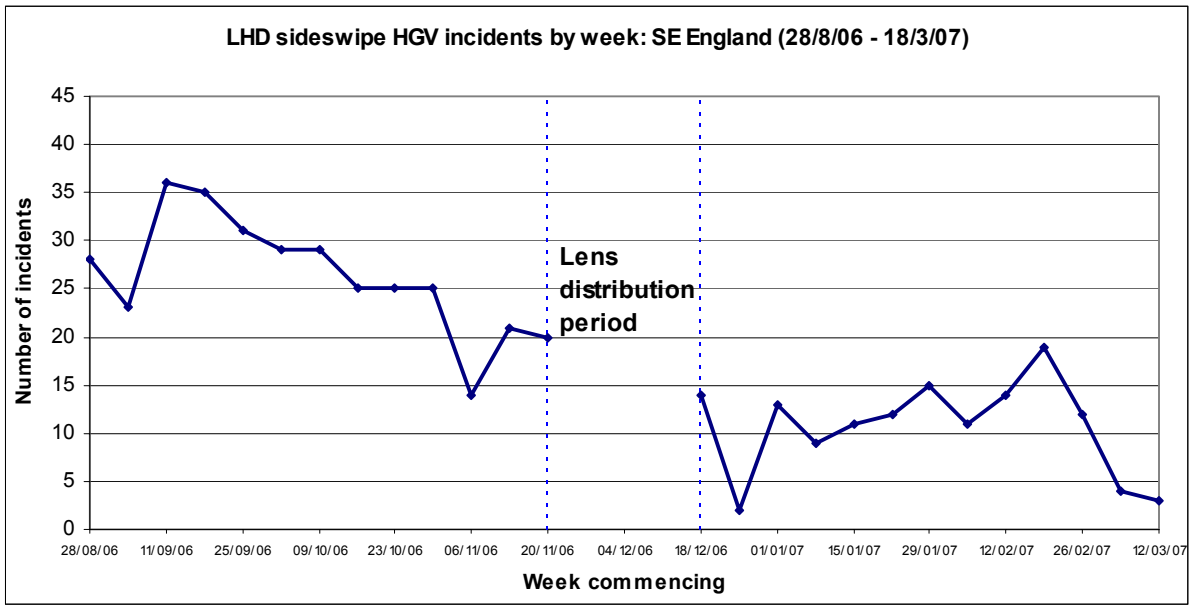
- **LHD HGV incidents** accounted for 92% of the total (160 incidents);
  - 139 incidents (80% of all) were attributed to LHD side-swipes, averaging 10.7 side-swipes per week;
  - There were 13 incidents where the vehicle had a lens fitted.
- **RHD HGV incidents** accounted for 8% of the total (14 incidents)

Summary comparison of Phases 1 & 2

	Phase 1 (28/8/06 - 26/11/06)	**Phase 2 (18/12/06 - 18/3/07)**	**% reduction**
No. of LHD incidents	368	160	*57%*
No. of LHD sideswipe incidents	341	139	*59%*
Of which no. of incidents with lens fitted	*15*	*13*	*13%*

The data also showed a similar percentage reduction in RHD incidents between the two phases, suggesting possible additional factors in the reduction of incidents. However, it should be noted that RHD incidents consisted of a much smaller group than LHD and the results may not be statistically significant. The reasons for this reduction were not covered within the scope of this study. More detailed information is available at Annex H.

5.2.1 Graph showing the reduction in sideswipe incidents



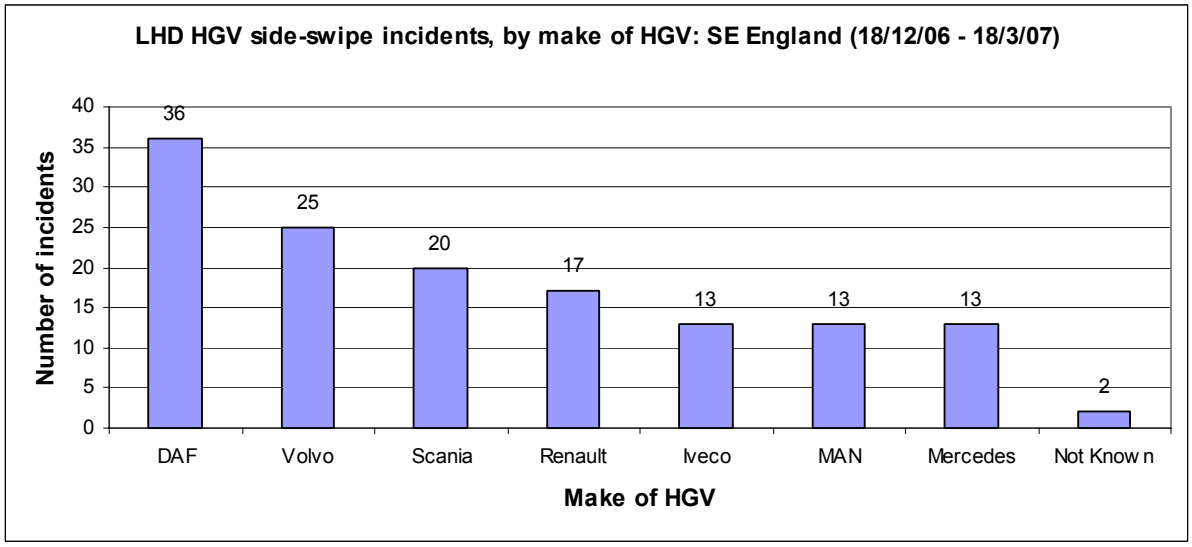
This graph shows the significant reduction in sideswipe incidents after the distribution of Fresnel lenses

In the period following the distribution there were approximately 11 LHD sideswipe incidents per week as opposed to 26 a week before lenses were issued - a reduction of 59%.

The reduction could possibly have been even greater if more HGVs had lenses or if the drivers had been compelled to fit them (for proportion of drivers who fitted lenses, see Mori survey at Annex E).

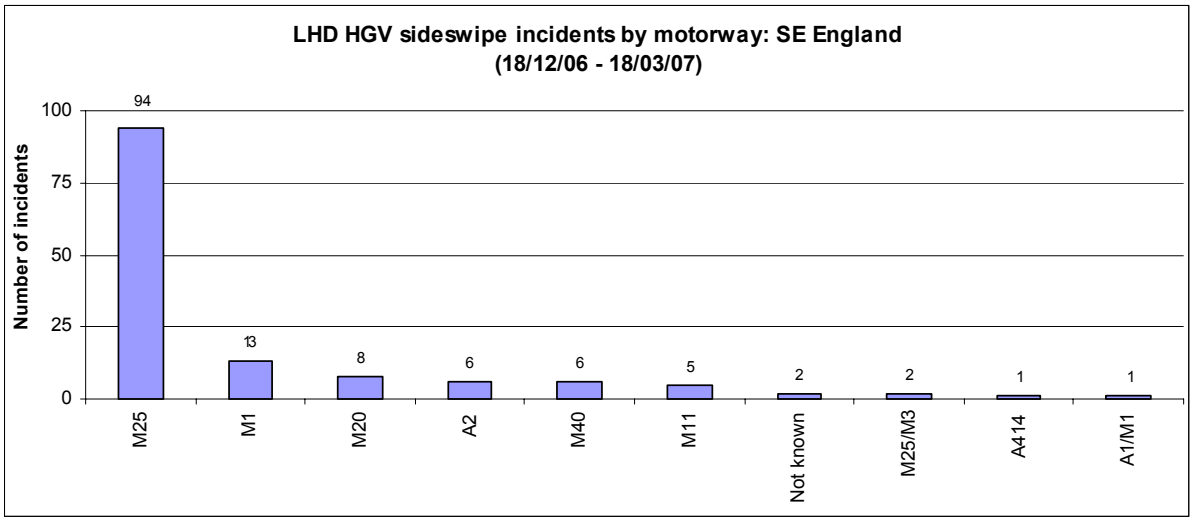
5.2.2 LHD HGV sideswipe incidents, by Vehicle Manufacturer: SE England 18 Dec 06 - 18 Mar 07 (Phase 2)

Data showing how the different manufacturers are represented in the LHD Vehicle parc was not available at the time of writing; this data is therefore presented for information only and no conclusions can be drawn.



5.2.3 LHD HGV sideswipe incidents, by Incident location: SE England (18 Dec 06 - 18 Mar 07)

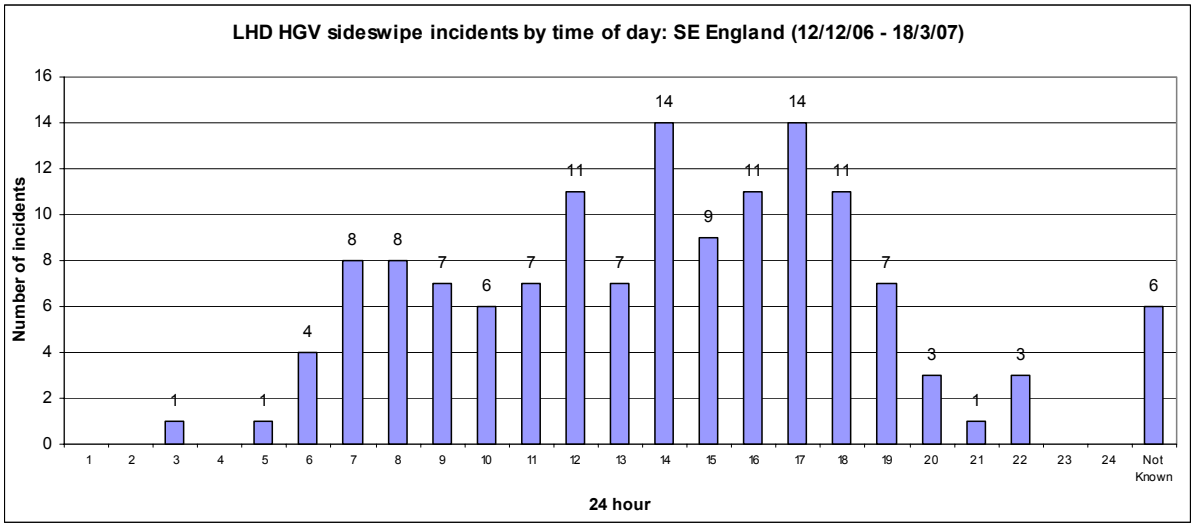
211 incidents were recorded on the M25 before the lenses were issued. 95 incidents were recorded after the issue of the lenses. This shows a reduction of 55% incidents on the M25.



The distribution of incidents is similar post-lens distribution - however this was to be expected as traffic continues to be heavier on the M25 and M20. From the data collected it is clear that there is a significant reduction in the number of incidents.

It should also be noted that it is perhaps not surprising that a still high - though much reduced - number of side-swipes continued to occur after lenses had been issued. This appears to be related to the fact that the vast majority of LHD vehicles involved in these incidents did not have a Fresnel lens fitted. These vehicles had probably entered the GB by other ports of entry, or after the distribution of lenses was completed.

5.2.4 LHD HGV sideswipe incidents, by Time: SE England (18 Dec 06 - 18 Mar 07)



The times of most frequent incidents changed only slightly between the two trial phases.

The table below shows how the incident time has changed as an average during the two trial phases

Visually, since the distribution of lenses, there appears to be more incidents occurring at later times in the day. There was a similar time distribution of incidents before the lens distribution, suggesting that between 12 and 6pm are the peak times for HGV traffic, and as a result more incidents are likely to occur.

5.2.5 Incident Peak Times

Time of day	Initial Data before lens issue	Data after lens issue
Morning	07:00 to 08:00	07:00 to 08:00
Lunch time	12:00 to 13:00	14:00 to 15:00
Evening	18:00 to 19:00	17:00 to 18:00

Department for Transport Road Accident Statistics (TSR5) have produced a full data analysis of the recorded data collected during both stages of the trial and their report is at annex H.

6 Other factors from Collection of Data

6.1 HA Information

The following data was supplied by the Department for Transport Highways Agency. A full copy of their report is at Annex F.

- Approximately 64% (306) of all side-swipe incidents involving LHD HGV's occurred on the M25. The next worse location was the M20 which saw 12% (58) of all LHD incidents.

- 95% of these incidents involved just one other vehicle, in most cases a car.

- HGVs originating from Poland accounted for just under 15% of sideswipe incidents despite Poland accounting for less than 3% of HGV traffic. Conversely UK HGVs account for 25% of all outgoing goods vehicles but only 5% of side-swipes (of 47 British incidents 41 were RHD and 6 LHD)

- 94% of LHD HGV's involved in side-swipe incidents do not have a Fresnel Lens fitted. (4% had lenses fitted before the issue of lenses 9% had lenses after the issue of lenses).

- The most vulnerable time period for side-swipe incidents was between 1600 and 1800 hours. This may be due to the early hours of darkness and also the greater number of vehicles on the road at this time.

6.2 Potential benefits and cost savings

6.2.1 Delay Savings

The HA have no exact measure but do have a number of variables that provide indicative figures

From the data collected the Vehicle Hourly Disruption (VHD) savings could be at least of the order of £2m annually. This figure is very conservative and it is only for the South East - if taken for the whole of the GB then this figure could rise to £8m

We should also consider casualty savings given the recent fatality. It is estimated that around 10% of sideswipes could result in hospitalisation.

6.2.2 Methodology for delay savings

The HA do have data on flows and delays figures up to the end of February 2007, so the delay on SE routes from the end of the issue of lenses (18 December) until end of February can be compared. HA compared this period with the Nov-Feb period for 2005/6. It is known that the yearly traffic flows in the SE are pretty much constant year to year but have seasonal variations.

There is a significant saving between the 2 three month periods but the HA are unable to confirm exactly what has caused the reduction in delay. We know that the activities of HATOs and also VOSA's SE Pilot are likely to have had some contributory beneficial impact. HA have also introduced "quick wins" targeting congestion hot spots and completion of some road works ahead of the PSA congestion year. These factors too may have had an impact on reducing delays.

The government rate for VHD is set at £12.44. For the 3 month period, savings show around 500,000 vehicle hours reduction. Extrapolated for a year, this reads 2,000,000. At £12.44 per VHD that is around £25m a year. This is for the South East only and covers all savings. It is impossible to identify any one cause.

The reduction in side-swipes is 16 in number a week - which extrapolates to 832 a year. This figure is the difference between incidents between the two phases of the trial.

There are no figures for each vehicle delay on side-swipe incidents, but from the data collected an estimate based on experience/available information can be made.

Any fatality is logged as a "critical incident" and an average critical incident is estimated at £100,000.

The average time delay for a side-swipe taken from mobilisation time, including response time and time taken by Police and others to clear the road could be over an hour (longer if an offence has been committed). For a minor incident the vehicles are moved off the road in about 15 minutes. Therefore a half an hour's delay could be used as an average.

Average cost equates to 1380 (VH flow in SE), x 12.44 x 0.5 vehicle hours. =£8,500 per sideswipe. As most side swipes are on motorways this is likely to be an underestimate.

Rather than take 832 as an annual saving, it might also be more cautious to assume 400. That provides savings of 400 x £8,500 = £3.4m.

6.2.3 Casualty savings

If 10% of sideswipes result in hospitalisation then that is 40 a year, some of which are serious and 1 recently was a fatality. The annual saving in casualty costs could be higher than £3.4m.

7 Lens Distribution

7.1 Method

The UK Immigration service distributed the lenses at three locations in France, the Channel Tunnel at Coquelles, and two ferry ports at Calais and Dunkirk.

Distribution of the Lenses started on 23 November 2006 the lenses and ended on 18 December 2006

The UKIS provided the numbers of HGVs through each port to help allocate the correct number of lenses issued at each location:

- Calais - 24,000 lenses;
- Coquelles -12,000 lenses;
- Dunkerque - 4,000 lenses.

7.2 Monitoring of Distribution

During the second week of distribution VOSA R&D visited each distribution point to check on how the distribution was going and if there were any problems.

The staff at all three locations were handing out the lenses as instructed.

The areas were checked to ensure that the lenses were not being immediately discarded by drivers, but no such evidence was found. On the contrary, there was strong evidence that the lenses were well received - with word of the lenses spreading and drivers asking for lenses at the booths. (A Polish driver actually asked for boxes of lenses so they could fit their whole vehicle fleet when they returned to base) It was noted that vehicles with the lenses already fitted had no problems lowering the windows when speaking to officials at the immigration booths.

7.3 UKIS Information on Traffic Flows

The United Kingdom Immigration Services (UKIS) who helped the project with the distribution of the lenses also provided us with information on the volume of traffic from Europe to GB. This information was important to the project, to give an understanding of whether or not there was any change in traffic flows over the time of the trial. It was noted that there was a slight increase in November and a slight reduction in December. However the average remained level around 145,000 HGV vehicles travelling in to GB each month. What is not known is how many return journeys are made by these vehicles.

Month	Calais	Coquelles	Dunkerque	Total
Sept 06	75681	52267	19677	147625
Oct 06	78637	58220	23427	160284
Nov 06	76686	60812	23279	160777
Dec 06	58704	53888	16968	129560
Jan 07	71675	59271	18558	149504
Feb 07	69183	54733	18661	142577

Information from UKIS on traffic flows of HGV entering GB each month by port.

8 Publicity

The communications strategy for this project was handled by VOSA's Communications Unit and HA Communications Unit. 'Packaging' was designed to be user-friendly and translation was arranged of the questionnaires used for the R&D driver's survey and the roadside checks. The press team ensured that VOSA staff and the media were made aware of and kept up to date with the lens initiative.

9 Assessment of Lenses

Apart from the collection of data from the HA and the Police, VOSA R&D used several different methods to assess the use of the lenses in the field, including:

- direct feedback from drivers,
- reports from Haulage Companies,
- VOSA R&D Roadside Survey and
- MORI Survey.

9.1 Direct feedback from drivers

VOSA Enforcement staff in the South East conducting road checks on LHD HGV's, interviewed a number of drivers about the usefulness of the Lenses. They used a questionnaire devised by VOSA R&D - with the form translated into the same four languages as used for the Lens fitting instructions (a copy is at Annex D). On completion the reports were sent to the VOSA R&D team for analysis.

It was found that of 60 LHD HGV's included in the survey between 25 November and the 20 December 2006:

- 23 vehicles had lenses fitted (and their drivers confirmed that the Lenses helped to reduce blind spots);
- 14 drivers had received lenses but had not had time to fit them (the majority of these fitted them during the survey);
- 23 drivers had not had one issued due to entering the country via other ports (but were given one during the survey).

9.2 Reports from Haulage companies

The Proprietor of an organisation based in Spain contacted VOSA R&D in December to find out more about the lens project. VOSA sent him two lenses to fit to his LHD vehicles. He has since reported that the fitment of a Fresnel lens to LHD trucks has considerably improved visibility - both when in the UK and abroad. In particular, the ability to see more when attempting to enter large UK roundabouts at an angle is especially helpful to him. The extra visibility when manoeuvring in tight confines, e.g.: aboard ship, was also reported to be an unexpected bonus.

Dover Enforcement Office received a face-to-face comment from a driver of a RHD HGV who visited their office. He reported his delight with the Fresnel lens. He had fitted one to his vehicle for use on the Continent and thought that they were "a brilliant idea that will save accidents & lives". He reported that a number of his colleagues had also received a lens and they were all of the same opinion.

9.3 In-Use Survey Conducted by VOSA R&D

During December 2006 VOSA ran 'Operation Atlanta' - a roadside enforcement exercise in the South East, targeting vehicles on international journeys. VOSA R&D saw this as an opportunity to interview LHD vehicle drivers to gain an understanding of how useful the lenses had been in overcoming blind-spots and side-swiping incidents. The questionnaire used during the South East Pilot research was used to ensure that the data collected was consistent (a copy of the form is at annex D).

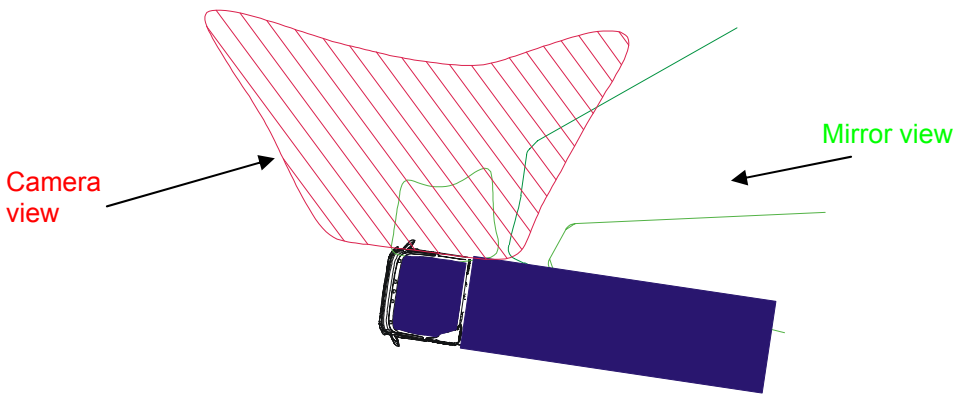
26 Drivers were interviewed at three locations: Ashford Truck Stop, Boughton Road Check Site and the Dartford River Crossing HAZCAM site. At the date this research was carried out, all of the lenses had been distributed and the drivers had had sufficient time to judge their usefulness. The result of the interviews was:

- 98% of the drivers questioned said fitting the lenses reduced the blind spot;
- 80% of the drivers questioned said the lenses made them more aware of blind spots;
- 2 drivers said it had reduced their vision slightly (though this was due to bad fitment of the lens on the passenger window);
- 76% of the drivers said the lenses stayed in place when operating the windows (19% did not comment and 3% reported that the lens had fallen off the window); and,
- 60% of drivers indicated that the lenses worked at night and in the rain (30% did not comment).

All of the drivers questioned thought the idea of giving out the lenses was worthwhile, and that lenses were very effective.

It was of interest that one driver of a Volvo had a camera fitted near the passenger door step and this gave a clear picture of the side-swipe blind-spot. He explained that this was an option fitted by Volvo but not by Volvo's Truck UK only on the continent.

Diagram showing Volvo's sideswipe camera angle of vision.
(Diagram supplied by Volvo Truck UK)



9.4 MORI Survey

MORI was commissioned by VOSA to conduct an independent survey to ascertain the effectiveness of the lenses, the clarity of the fitment instructions and the ease of use at night and in the rain.

MORI were asked to collect data from the drivers of 250 vehicles which had a lens fitted. Their survey was conducted at three locations, Clackett Lane Services, Ashford Truck Stop and Thurrock Services. It commenced on 15 January 2007 and finished on 28 February - which gave drivers adequate time to trial the lenses and so be able to make more meaningful comments on their use.

9.4.1 Results of the MORI Survey

Overall, the results of this survey show that the distribution of the lens has been very successful; in terms of the proportion of:

- drivers that actually fitted the lens;
- drivers' perception of the effectiveness the lens; and,
- side-swiping incidences reported among drivers since fitting the lens.

Those using left-hand-drive vehicles in the UK are aware of blind-spots around their vehicle. Of those drivers that fitted the lens, nine in ten (90%) were aware of blind-spots before fitting the lens. Just over a third (36%) are now aware of blind-spots around their vehicle (that they were not previously aware of) due to fitting the lens. The blind-spots are mainly at the front right hand corner, directly to the right and directly in front of the vehicle.

The Lens has had a positive effect in reducing blind-spots. Three-quarters (77%) of drivers who fitted the lens think that it has either completely eliminated blind-spots or reduced them to a great extent. The majority of drivers also feel that the lens is effective in wet conditions (77%) and at night (70%). Additionally, almost nine in ten (87%) do not feel that the lens has obscured their vision.

Before fitting the lens, one-third of drivers interviewed had been involved in some sort of side-swiping incident in the UK - whether this was an actual collision or a near miss. However, since fitting the lens, only 3 drivers out of 221 who fitted the lens have been involved in such an incident (although it is important to note that most had only recently received the lens).

Overall, the majority of drivers fitted the lens when they received it (86%) and most of these drivers still had it fitted at the time of the interview. Some drivers had originally fitted the lens but no longer had it in place at the time of interview. The main explanation they gave was that the Lens simply 'fell off' (however, it should be noted that only 17 drivers in total said their lens fell off).

Of those who fitted the lens themselves, the majority (87%) say that the lens stayed in place. Of the few (22) cases where the lens did not stay in place, eighteen say that it fell off while winding the window up and down.

A copy of their full report can be found at Annex E

10 Context

We have also sought some information about the 'context' of side-swiping accidents since the idea of using Fresnel Lenses emerged. The idea of doing so is to show why side-swiping incidents were considered to be a problem, and to help to understand what other stakeholders - including motorists - thought about how such accidents occur. We have also sought information from the Motor Insurers' Bureau, and monitored the incidence of major accidents involving side-swiping.

10.1 Accidents and Police reports

EXAMPLE 1. This occurred on the M25 between in August 2006. It involved a collision between one car and a LHD HGV, resulting in the car being spun into the central reservation with 2 minor injuries. The initial indications were that this incident could well have been a side swipe incident and the Essex Police Officer who attended confirmed the following - 'it was the usual foreign blind-spot lane change'. No prosecution was undertaken and there were no other significant factors.

EXAMPLE 2. This occurred on the M25 in July 2006. Kent Police have confirmed that this collision was a side-swipe, caused by a car being in the blind spot of the LHD HGV. The HGV was in lane one and car was in Lane 2 alongside the front of the HGV. The car ended up on its roof and the driver escaped with only minor cuts to her head and right leg. There is no planned prosecution and no other significant factors involved.

EXAMPLE 3. This was in July 2006 on a busy carriageway on the M20.. In this case the driver of a LHD articulated HGV clipped the offside front of his vehicle with the near nearside of a car which was then turned into the path of the HGV. The HGV pushed it sideways in front of it as it was braking and into the hard shoulder.

EXAMPLE 4. This incident involved a fatality on the M25. The left hand drive articulated vehicle was driving in lane 1, alongside a car traveling in the same direction in lane 2. The artic moved from lane 1 into lane 2 colliding with the nearside of the car. It rotated around the front of the artic unit and left the carriageway to the nearside colliding with some dense vegetation. The intrusion into the car caused fatal injuries to the passenger. At the time it was daylight, but overcast with a wet road surface, and visibility was good.

10.2 Interest from the media

We are aware that media interest in side-swiping continues, though there still seems confusion as to whether or not fitment of close-proximity mirrors to a wider group of HGVs will solve the problem (which it will not).

Extract from the Kent on Sunday News 20 May 2007 Motorway madness - a published letter:

'I had the misfortunate to be involved in an accident on the M25 between Gatwick and Orpington last Wednesday. My husband was driving, my friend was in the back of the car and we were in the middle lane. A large lorry pulled out of the slow lane as we were level with it, crushing our rear and sending us spinning towards the central reservation. My husband managed to correct the car, but we then went out of control and span across in front of the braking lorry, which clipped us again and sent us into the undergrowth and trees off the hard shoulder. Miraculously we were unhurt, but the police told us they were attending seven or eight of these accidents involving foreign lorries every week, sometimes with fatalities. The lorry that hit us was from the Czech Republic – the driver spoke no English. When it is known that these accidents are occurring regularly, why aren't there rules to make the drivers stay in the slow lane and to have another mirror fitted so the driver can see what is travelling at the side of him? We'd like to see some action taken before more regular users of this road are killed.'

D Grimsley
Abbey Wood

10.3 Motor Insurers' Bureau (MIB)

The MIB are very often the first point of contact when someone is involved in an accident in the UK with a foreign motorist.

They are aware of side-swiping incidents and have said that they are 'very common'. They have told us that where they manage to obtain reports about incidents from foreign lorry drivers they will often say "car in my blind spot,- did not see it." They have also said very clearly that they agree the idea of using Fresnel Lenses will be very useful.

Unfortunately the MIB does not routinely monitor side-swiping incidents. However, they did agree to monitor a sample of claim payments made last October. Their information was that out of 30 payments made in one week during October 2006 in respect of foreign vehicle accidents 8 were for side-swiping. The total amount paid out by the MIB to UK motorist claimants for these accidents was £43,850.23, and the MIB said this was less than usual.

The MIB also supplied illustrative anonymised information from claimants as an indication of how such accidents occur. These are reproduced in annex G

11 Summary of Results

There was a significant reduction in LHD side-swipe incidents during Phase 2 of the trial, LHD HGV incidents falling from 28 to 12 incidents per week and LHD HGV sideswipe incidents decreasing from 26 to 11 incidents per week, a reduction of 59%.

Due to the range of factors which can affect the incidence of road accidents it is difficult to assess conclusively the impact of any one measure or device, particularly in a limited timescale. However, the results presented in this report provide a strong indicator of the success of the lenses during this study and demonstrate their positive contribution to the reduction of side-swiping incidents.

The collection of incident data has provided VOSA, HA and DfT with a comprehensive set of data referring to side-swiping incidents. This is the first time that data has been comprehensively analysed in this way - and it has demonstrably suggested some clear trends:

- incidents are more likely to occur when traffic-flow is heaviest;
- there tends to be a reduction in the number of incidents when it is dark (although this is probably due to the fact that there is less traffic during the night time hours);
- the highest number of incidents after the lens issue occur between 17:00 and 18:00 and,
- most of the incidents occur in good weather conditions.

.

On the basis of this evidence, HA are to extend the exercise, across the rest of the network and repeat the exercise in the SE to capture those LHD vehicles that do not have Fresnel lens. This will begin in November, following the procurement and distribution of the next batch of lenses. HA will issue the lenses to LHD HGVs entering the UK, and continue to monitor the effect on HGV incidents.

Annex A Fresnel Lens Specification

Specification for the supply of Fresnel Lens and Art Work

Version 0.3

1. Scope

This Specification relates to the supply, delivery of 40,000 Fresnel Lenses with four colour artwork sleeves and a cleaning wipe.

2. Background

The Vehicle & Operator Services Agency (VOSA), an Executive Agency within the Department for Transport, and part of the Driver Vehicle Operator Group (DVO) is involved in the safety, testing, and enforcement of regulations for vehicles, within Great Britain. We also work closely with other agencies within the DVO to ensure cross-departmental cooperation to look at discrepancies in safety legislation. We require the Fresnel lenses to supply to drivers of medium and high cab heavy goods vehicles (HGV) to assist overcome blind spots that are present on the passenger side (offside) of the driver's cab. The lens is considered an interim solution after a study identified the blind spot. The lens will be distributed to drivers of HGVs on a free of charge basis.

3. Environment

The lens must be capable of working in temperatures typically found in a HGV cab from -20°C - +45°C.. The cab relative humidity can vary from
10% - 100% humidity.

4. Requirements

The Contract will include all of the following as required:

- The supply of 40,000 lenses for collection by VOSA.
- The underwriting, by the supplier of any claims made against the Secretary of State for fire damage to vehicles or persons which may be proven to have resulted from any lens supplied which does not comply with VOSAs' specification.

The basic requirements are as follows:

4.1 The Fresnel Lenses required should meet the following general criteria:

a. Able to attach to side window glass by capillary attraction
b. The optical centre should be placed to a central point of the lens width (allowing use for, both left and right-hand drive trucks) and close to the upper edge creating an increase in radius allowing more facets
c. Flexible and not able to shatter or cause injury in the range of temperature/humidity -20°C - +45°C, 10% -100%
d. Be supplied in a package with full colour instruction on fitting (art work will be supplied)
e. Be CE marked
f. The lenses must **NOT** have a focal length inside the cab
g. Be packed in suitable multi-unit packaging as to be lifted by one person
h. Be packaged with a small cleaning wipe to clean and wet the glass prior to fitment.

4.2 In addition it shall meet the following specific criteria:

a. Size minimum A4 or 21 x 29.7cm
b. Maximum thickness less than 1.00mm
c. Be marked with the Words “Vision Aid Only”
d. If possible, be shaped at the edge to minimise the thickness to allow easy passage through window weather strips.
e. Be UV stable, not changing colour and remaining soft and flexible during its useful lifetime.

5. Warranty

The lenses should be fit for purpose and free from manufacturing defects. The product warranty should guarantee against UV degradation and fire risk.

6. Contract Period

This contract is for a one-off bulk purchase.

7. Invoices and Payment

Payment shall be made following completion of all works to the satisfaction of the Vehicle & Operator Services Agency. All invoices shall be submitted in arrears of the associated work; payment shall be made under the standard payment terms of 30 days. All invoices should clearly identify supply, and VAT as separate elements. Failure to do so will result in the invoice being returned and payment being delayed.

Invoice to:Procurement and Finance
Highways Agency
Federated House,
London Road,
Dorking,
Surrey,
RH4 1SZ.

8. Information Required With Tenders

1. Prices to be all inclusive of any delivery/collection costs. The handling of collection for faulty or substandard goods shall be the responsibility of the seller
2. Evidence that lenses are of a type that will not cause fires when mounted correctly and in direct sunlight
3. Full technical detail of the lens offered. Twelve sample products are required for evaluation.
4. Details of any alternative product and why you consider the substitute appropriate.
5. Details of any items, offered within the quoted price, which are in addition to those required by the Specification.
6. Information on capability to supply the equipment quickly or by stages
7. A COSHH statement on the contents of the cleaning wipe

Note: All information to be supplied in English.

9. Queries

All queries relating to this specification must be made in writing and addressed to:

Martyn Pegg
Berkeley House
Croydon St
Bristol BS5 0DA
0117 954 3361

Written responses to queries will be provided and copied to all tenderers.

Schedule of Prices

Prices**,** based upon the minimum requirements as laid out.

1. With a minimum of 1 year warranty

    a. Supply of 40,000 Fresnel lens, ex works, in full colour packaging as specified above

£ ……(each)

Annex B Lens fitting instructions

Wording used on the front of the lens packaging his was designed to give the drivers of LHD HGV's a reminder of the blind spots on their passengers side when driving in GB. The packaging and fitting instructions were given out in German, French, Spanish, Polish and English, this was the same as used for the information leaflets used on the South East project and covers the most used and understood languages

Anleitung zur Anbringung / Instrukcja Montażu / Para Colocar las Lentes / Notice d'installation / Fitting Instructions

1. D - Um Schmutz und Fett zu entfernen, putzen Sie das Fenster auf der Beifahrerseite mit nassem Zeitungspapier.
   PL - Aby usunąć brud i tłuszcz, wyczyść szybę po stronie pasażera kawałkiem zmoczonej gazety.
   E - Para eliminar la suciedad o grasa, limpie la ventana del copiloto con una hoja de periódico húmeda.
   F - Pour enlever la poussière et la graisse, nettoyez la vitre côté passager avec du papier journal mouillé.
   UK - To remove dirt and grease, clean the passenger side window using a wet sheet of newspaper.

2. D - Reiben Sie das Fenster mit trockenem Zeitungspapier trocken.
   PL - Suchą gazetą wytrzyj szybę do sucha.
   E - Para secar la ventana, utilice una hoja de periódico seca.
   F - Essuyez soigneusement la vitre avec une feuille de papier journal sèche.
   UK - Using a dry sheet of newspaper, wipe the window until it is dry.

3. D - Tränken Sie das mitgelieferte Tuch mit Wasser und wischen Sie damit die Scheibe ab. Trocknen Sie die Scheibe diesmal NICHT ab.
   PL - Zmocz wodą szmatkę dołączoną do zestawu i wytrzyj szybę. Szyba powinna pozostać wilgotna.
   E - Humedezca el paño provisto con agua y limpie la ventana. Deje el cristal húmedo.
   F - Mouillez le chiffon fourni et utilisez-le pour essuyer la vitre en prenant soin de la laisser humide.
   UK - Wet the cloth provided with water and wipe the window, leave the glass wet.

4. D - Drücken Sie die glatte Seite der Linse gegen die Scheibe.
   PL - Przyłóż soczewkę gładką stroną do szyby.
   E - Coloque la parte lisa de la lente contra el cristal.
   F - Apposez le côté lisse de la lentille contre la vitre.
   UK - Place the smooth side of the lens against the glass.

Anleitung zur Anbringung / Instrukcja Montażu / Para Colocar las Lentes / Notice d'installation / Fitting Instructions

5. D - Streichen Sie die Linse glatt, so dass keine Luftblasen mehr zu sehen sind.
   PL - Wygładź soczewkę, dokładnie wyciskając wszystkie pęcherzyki powietrza.
   E - Presione la lente, asegurándose de que no queda ninguna burbuja de aire.
   F - Lissez la lentille pour éliminer toutes les bulles d'air.
   UK - Smooth the lens out, ensuring all the air bubbles are completely removed.

Achtung! Uwaga! ¡Atención! Avertissement! Warning!

6. D - **Stellen Sie sicher, dass die Linse NICHT die Sicht zu den Rückspiegeln einschränkt.**
   PL - **Upewnij się, że położenie soczewki NIE ogranicza widoczności przez żadne z lusterek wstecznych pojazdu.**
   E - **Asegúrese de que la posición de la lente NO impide la visión de ninguno de los espejos retrovisores.**
   F - **Assurez-vous que la lentille NE gêne la vue d'aucun rétroviseur arrière.**
   UK - **Ensure the position of the lens does NOT obscure the vision of any rear view mirror.**

Annex C HATO Forms for Data Collection

HGV INCIDENT REPORT FORM

Information to be recorded by Officers attending ALL incidents involving left hand drive international HGV's or Side Swipe incidents involving UK reg HGV's

Date (dd/mm/yy) | **Time (00:00)**

Incident No. | **Vehicle Registration**

Location (Motorway) | **Marker Post No.**

Location (Junction) | or between

Which lanes are closed Carriageway

Time Lanes Reopened (excluding if they are closed for repairs)

Time obstruction was moved from running lanes

How many HGV's are involved?

What other Vehicles are involved?

		How many?
Car	☐	
Motorbike	☐	
Trailer	☐	
Caravan	☐	
Other Please State		

Vehicle make of HGV

Iveco	☐	Volvo	☐
Mercedes	☐	Leyland Daf	☐
Renault	☐	Scania	☐
ERF	☐	MAN	☐
Other Please State			

HGV Type

Artic	☐		
Ridged	☐		
Tractor Unit only	☐		
Breakdown truck	☐		
Drop-side	☐		
Flat-bed	☐		
Low Loader	☐		
Tanker	☐		
Car Transporter	☐		
Other Please State			

Country of Origin

U.K	☐	France	☐
Germany	☐	Poland	☐
Netherlands	☐	Italy	☐
Ireland	☐	Croatia	☐
Czech Rep	☐	Denmark	☐
Slovakia	☐		
Other Please State			

Year Manufaturer

Vehicle Model

Operator Name

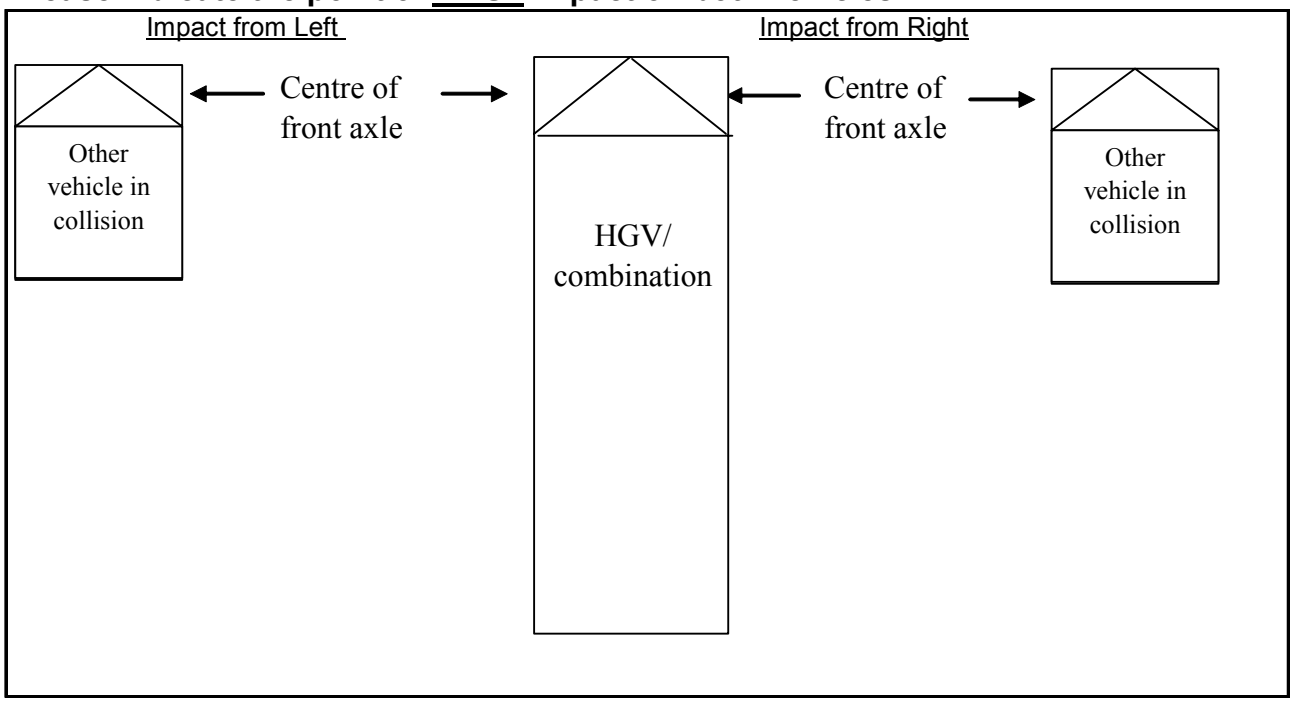
Driver Nationality

Weather / Light Conditions

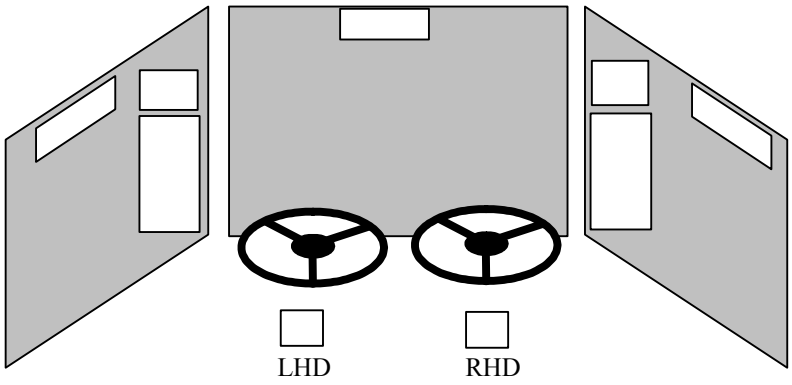
Accident Circumstances
(e.g. changing lane to the right/left, overtaking to the left/right, turn signal used etc…)

Please see reverse of form

Please indicate the point of FIRST impact on both vehicles.



Please indicate which external mirrors are fitted to the HGV
(tick the location where a mirror is present)



Was a Fresnel lens fitted: YES ☐
NO ☐

Other mirrors fitted (specify): …….

Officer's Name ☐

Officer's Badge No ☐

Annex D VOSA Form Used At Roadside Checks

This form was produced in same languages as used for the fitting instructions and MORI Survey

Base Line Project for LHD Side Swipe Incidents

LHD HGV Drivers Questionnaire After Fitment

This form should be completed by all drivers **After** the fitting of the Fresnel lens

We apologise if you have filled some of this information before.

Vehicle Information			
Make		Model	
Vehicle Registration		Date of Manufacture	

HGV Type			
Artic	☐	Car Transporter	☐
Rigid	☐	Bottle Float	☐
Tractor unit only	☐	Low Loader	☐
Drop-side	☐	Tanker	☐
Flat-bed	☐	Curtain Sider	☐
Breakdown truck	☐		
Other Please State			

Driver Information			
		Please enter your answers	
1	Do you only drive LHD HGVs?	☐ Yes	☐ No
2	Has the lens helped reduce the blind spots?	☐ Yes	☐ No
3	Are you now aware of any blind spots on the passenger's side of your vehicle? If yes where?	☐ Yes Where?	☐ No
4	Under what conditions are you most aware of blind spots?		
5	Has the fitting of the lens made you more aware of blind spots?	☐ Yes	☐ No
6	Has the fitting of the lens obscured your vision in any way?	☐ Yes How?	☐ No
7	Did the lens stay in place?	☐ Yes	☐ No
	If no to question 7 please answer the following questions:		
8	Did you carry out all the fitting and glass cleaning instructions?	☐ Yes	☐ No
9	Did the lens fall off when winding the window up or down?	☐ Yes	☐ No
10	If yes to question 8 how frequently do you move the passenger window?	☐ Seldom	☐ Often
11	Is the lens effective at night?	☐ Yes	☐ No
12	Is the lens effective during wet conditions?	☐ Yes	☐ No
13	Have you ever experienced a side swipe incident since fitting the lens (impact or near miss)?	☐ Yes	☐ No

14	If yes please answer the following questions	
a	Location (Motorway, A road, etc)	
b	How many HGV's were involved?	
c	What other Vehicles were involved?	
d	Weather conditions	
e	Light Conditions	
f	Accident Circumstances	

If you would like to help us further with a short follow up call or discussion we would very much appreciate the opportunity to talk with you.

Please leave your name and contact details below:

Name:

Contact Telephone:

If you prefer to remain anonymous either please call Martyn Pegg 07802 695907 or John Fitch 07803 020909

Please answer these questions on VOSA's roadside activities

	Please tick one box for each question	1 Yes	2	3 Maybe	4	5 No
1	Do Know who VOSA are?	☐	☐	☐	☐	☐
2	Have you noticed an increase in VOSA roadside activity?	☐	☐	☐	☐	☐
3	Are you fairly treated on the roadside checks?	☐	☐	☐	☐	☐
4	Have VOSA checks had any influence on your activities?	☐ Yes		☐ No		
	If yes in answer 4 please say how					

Thank you for your time and cooperation

Annex E MORI Survey

Left-Hand-Drive Survey

Report

Research Study
Conducted for Department for Transport/VOSA

March 2007

Contents

Appendices

12 Introduction

12.1 Background

Left-hand-drive vehicles make up a large proportion of HGV powered vehicles that cross from Britain to mainland Europe each year. Indeed, in 2003 73% of all powered vehicles travelling from Britain to mainland Europe were foreign. In one week up to 20,000 vehicles will cross the Channel into Britain, meaning that in any one time thousands of left-hand-drive vehicles will be on the roads in the UK.

Over recent years, a high profile concern of left-hand-drive HGVs in Britain is the rise of sideswiping. In Kent there is currently one sideswipe every day and a half. This is caused because it is impossible for the driver of a left-hand-drive HGV to see a vehicle which is alongside the tractor unit. During 2006, The Daily Telegraph has campaigned that all left-hand-drive trucks should have close proximity mirrors fitted before being allowed to enter the UK.

The Department for Transport (DfT) is addressing this problem by manufacturing lens that can be fitted to windows of trucks so that drivers are able to see vehicles to the right of their truck which would previously have been invisible to them. The aim of this is to reduce injury and accidents currently caused by sideswiping.

When fitted to vehicles, the lens looks as follows:

Between 26th November and 18th December 2006, the DfT distributed around 40,000 lens through the Immigration Service at Calais in France. Ipsos MORI was commissioned by the DfT/VOSA to conduct a quantitative survey among drivers who had received a lens.

12.2 Objectives

The main objective of the survey was to explore attitudes towards the lens and specifically to assess:

- The proportion of drivers who fit the lens
- Reasons for fitting/not fitting the lens
- Effectiveness of the lens in reducing sideswiping incidents

12.3 Methodology

Face-to-face interviews were conducted with 257 left-hand-vehicled drivers who had received a lens. Whether drivers subsequently chose to fit the lens was not a screening criteria to qualify for an interview, as this was measured in the survey. As lens were distributed at Calais in France, interviews were conducted around Dover at sites frequented by HGVs bound for the ports, namely Ashford Truck Stop, Clacket's Motorway Service Area (MSA) and Thurrock Lane MSA.

Fieldwork was conducted between 15th January and 17th February 2007 at these three sites. In order for a range of drivers to be interviewed, there were two main shift times when interviews were conducted (9am to 3pm and 3pm to 9pm).
The table below shows the numbers of shifts that were conducted at each of the three sites and the number of interviews completed.

Site	Shift time	Number of shifts completed	Number of interviews
Ashford Truck Stop	9am – 3pm 3pm – 9pm	22	98
Clacket's Lane MSA	9am – 3pm 3pm – 9pm	15	93
Thurrock MSA	9am – 3pm 3pm – 9pm	14	66

Source: Ipsos MORI

DfT/VOSA made the initial contact with the locations and secured access to the sites for Ipsos MORI to conduct the interviews. Interviewers were required to register on entering the site and wore protective clothing. Drivers were mainly interviewed in the drivers' lounge/café.

12.4 Questionnaire Design

The questionnaire was designed in conjunction with the DfT/VOSA to meet the survey objectives. Each interview lasted 10 minutes on average. In order to include a full range of nationalities, the questionnaire was translated into French, German, Spanish, Italian, Polish and Dutch.

12.5 Sample Profile

A range of nationalities participated in the survey, the most popular being Polish, French, Dutch and German. Drivers' vehicles are relatively new: around nine in ten vehicles have been manufactured and registered since 2000, including one-quarter manufactured and registered since 2006. The main type of vehicle driven is an articulated lorry. From the 257 interviews with drivers, seven marques of vehicles are included within the sample as follows:

MANDAF

Renault

Volvo

Mercedes

Iveco

Scania

Any differences between vehicle marques and use and opinion of the lens are highlighted in the main findings section of this report.

13 Executive Summary

Overall, the results of this survey show that the distribution of the lens has been very successful; in terms of the proportion of drivers that actually fitted the lens, drivers' perception of the effectiveness the lens and sideswiping incidences reported among drivers since fitting the lens.

Those using left-hand-drive vehicles in the UK are aware of blind spots around their vehicle. Of those drivers that fitted the lens, nine in ten (90%) were aware of blind spots before fitting the lens. Just over a third (36%) are now aware of blind spots around their vehicle (that they were not previously aware of) due to fitting the lens. The blind spots are mainly at the front right hand corner, directly to the right and directly in front of the vehicle.

The lens has had a positive effect in reducing blind spots. Three-quarters (77%) of drivers who fitted the lens think that it has either completely eliminated blind spots or reduced them to a great extent. The majority of drivers also feel that the lens is effective in wet conditions (77%) and at night (70%). Additionally, almost nine in ten (87%) do not feel that the lens has obscured their vision.

Before fitting the lens, one-third of drivers interviewed had been involved in some sort of sideswiping incident in the UK, whether this was an actual collision or a near miss. However, since fitting the lens, only 3 drivers out of 221 who fitted the lens have been involved in such an incident (although it is important to note that most had only recently received the lens).

Overall, the majority of drivers fitted the lens when they received it (86%) and most of these drivers still had it fitted at the time of the interview. Among those who originally fitted the lens, but no longer had it in place at the time of interview, the main reason was because it fell off (however, it should be noted that only 17 drivers in total said their lens fell off).

Of those who fitted the lens themselves, the majority (87%) say that the lens stayed in place. Of the few (22) cases where the lens did not stay in place, eighteen say that it fell off while winding the window up and down.

Checked & Approved:

Rebecca Klahr

Checked & Approved:

Gemma Decent

Checked & Approved:

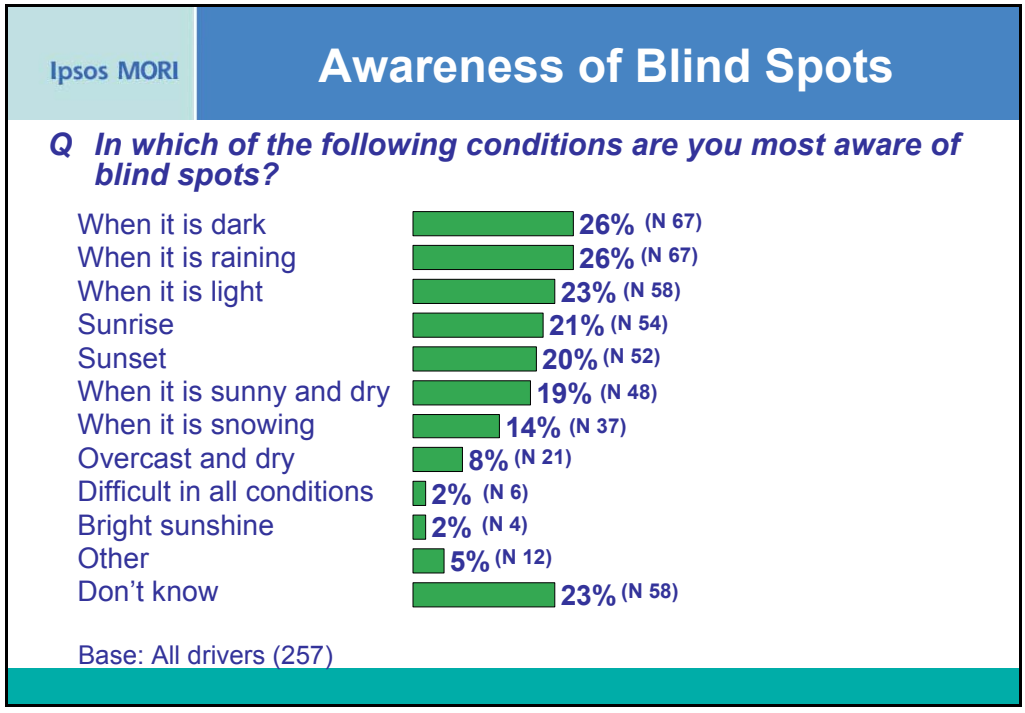
Stefan Durkacz

14 Main Findings

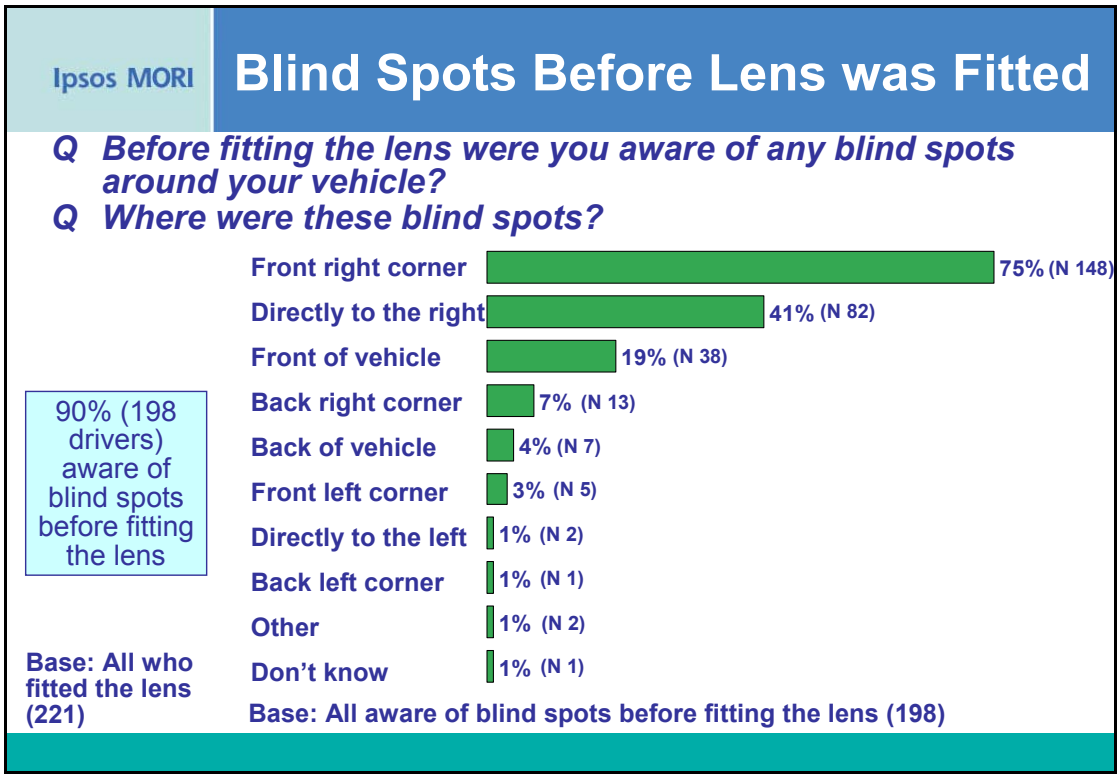
14.1 Awareness of blind spots

14.1.1 General awareness

Drivers are aware of blind spots in a variety of weather conditions; the most popular mentions being when it is dark (26%), raining (26%), or light (23%), and at sunrise (21%) or sunset (20%).



Before fitting the lens drivers respondents who fitted the lens were aware of blind spots around their vehicle prior to fitting it (90%). Three-quarters (75%) of those who were aware of these blind spots say there was a blind spot at the front right corner; two-fifths (41%) say there was one directly to the right and one fifth (19%) say there was a blind spot to the front of the vehicle.

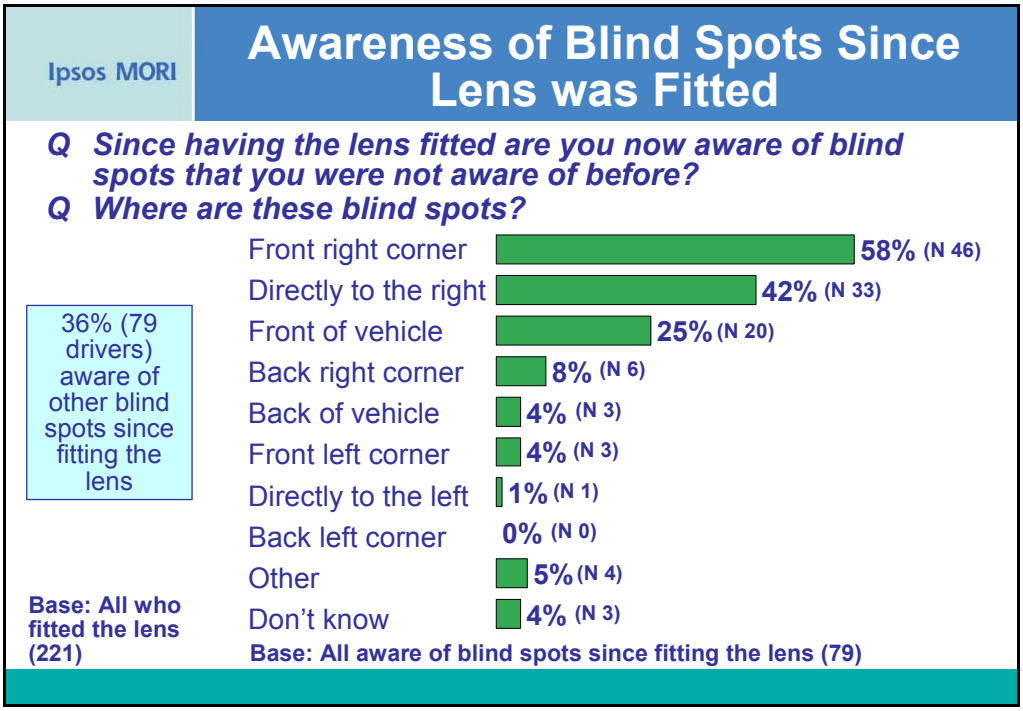


Drivers with DAF (97%), MAN (95%) and Volvo (94%) vehicles are slightly more likely to have been aware of blind spots before fitting the lens than drivers of Scania (73%) vehicles[2].

[2] **Caution** low base sizes for makes of vehicle: DAF (39), MAN (38), Volvo (34), Scania (30).

14.1.2 Awareness of presence of blind spots since fitting the lens

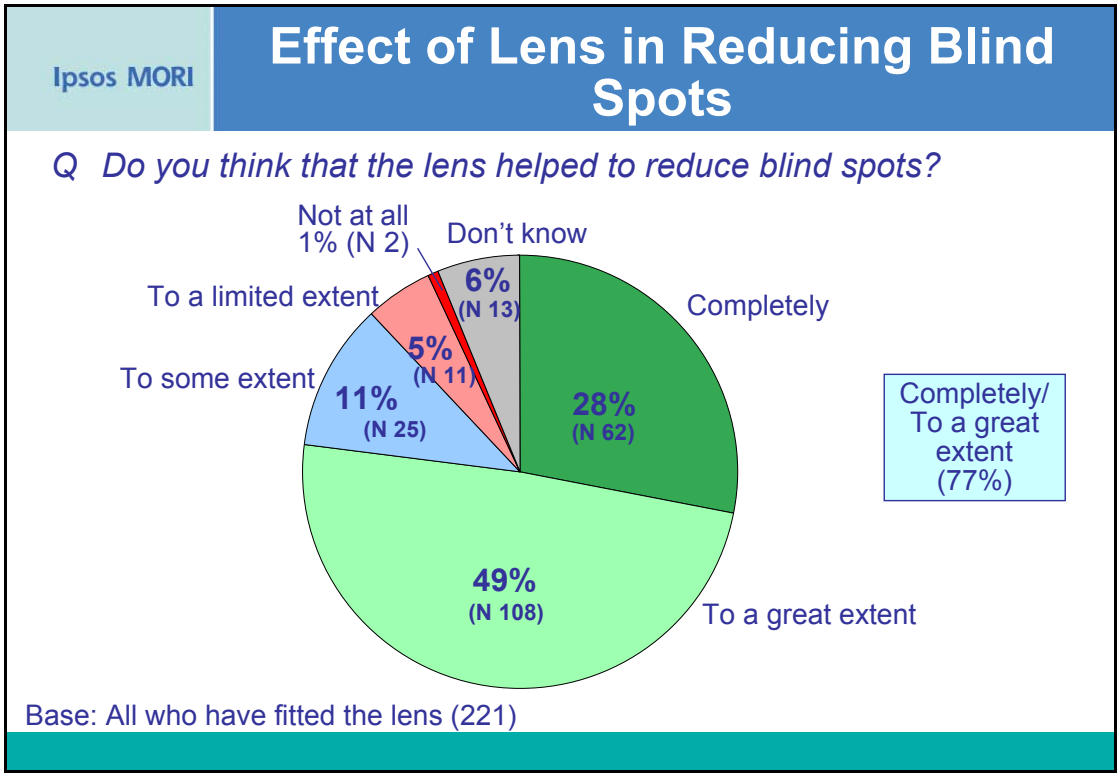
Just over a third of drivers (36%) who have fitted the lens are now aware of other blind spots since fitting the lens. The majority of these blind spots are at the front right corner (58%) or directly to the right (42%) of the vehicle.



14.2 Effectiveness of lens

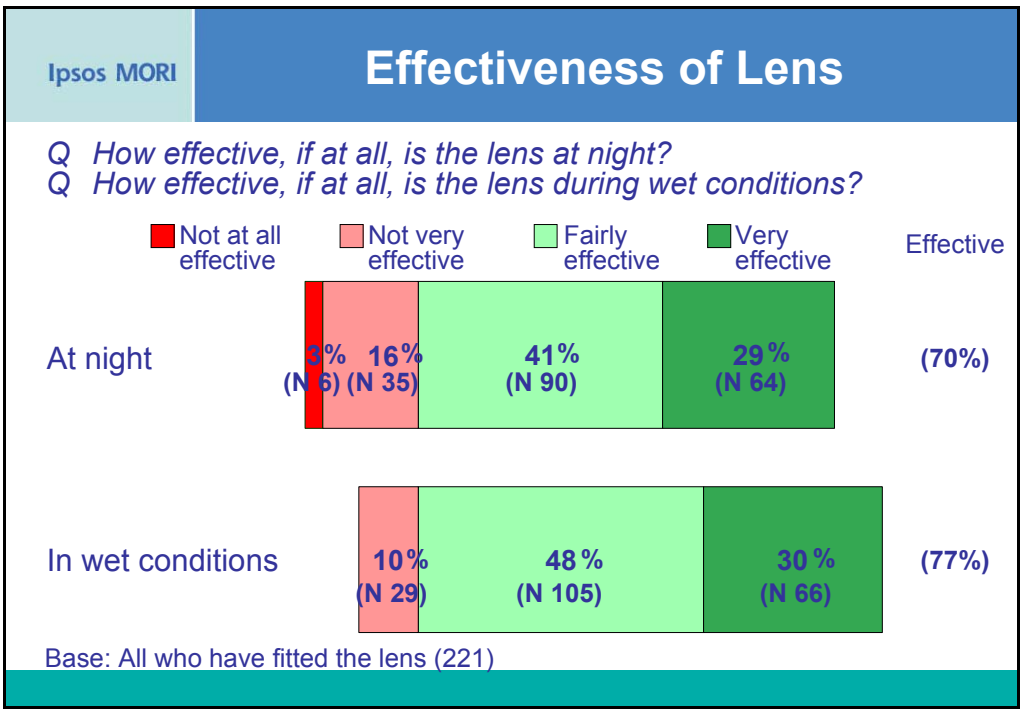
14.2.1 Reducing blind spots

Three-quarters (77%) of drivers who fitted the lens think that it has either 'completely' eliminated blind spots (28%) or reduced them 'to a great extent' (49%). Only one percent of drivers think that the lens has not helped blind spots at all.



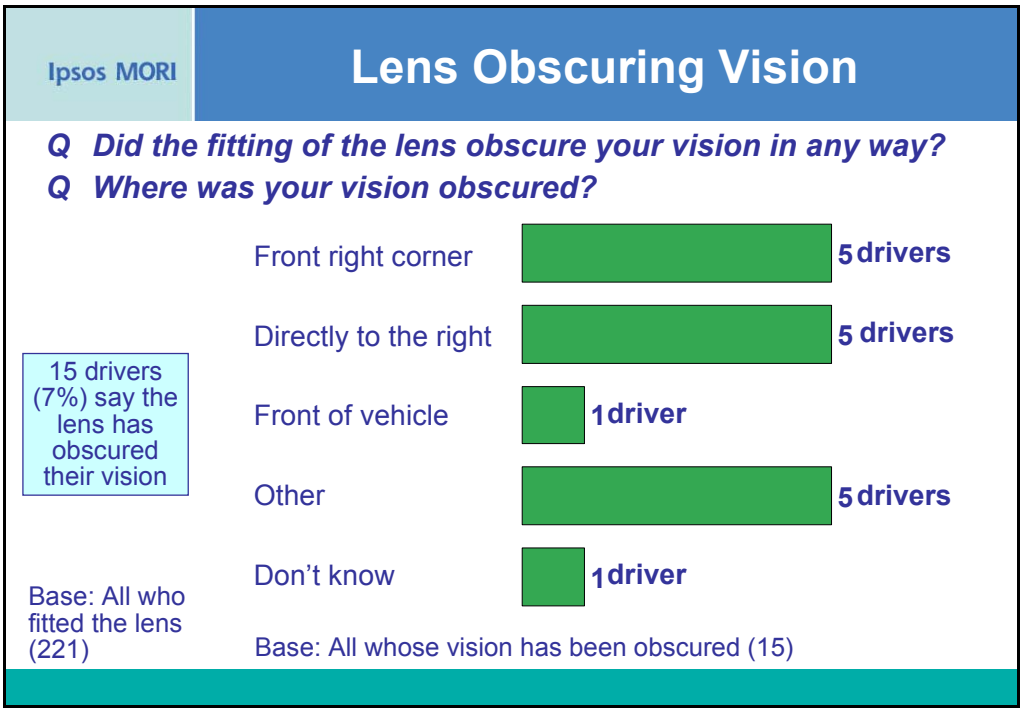
14.2.2 Driving in wet conditions and at night

Nearly eight in ten (77%) drivers who fitted the lens find it effective in wet conditions, including 30% who find it 'very effective'. Seven in ten find it effective at night, including 29% who find it 'very effective'.



14.2.3 Obscuring vision

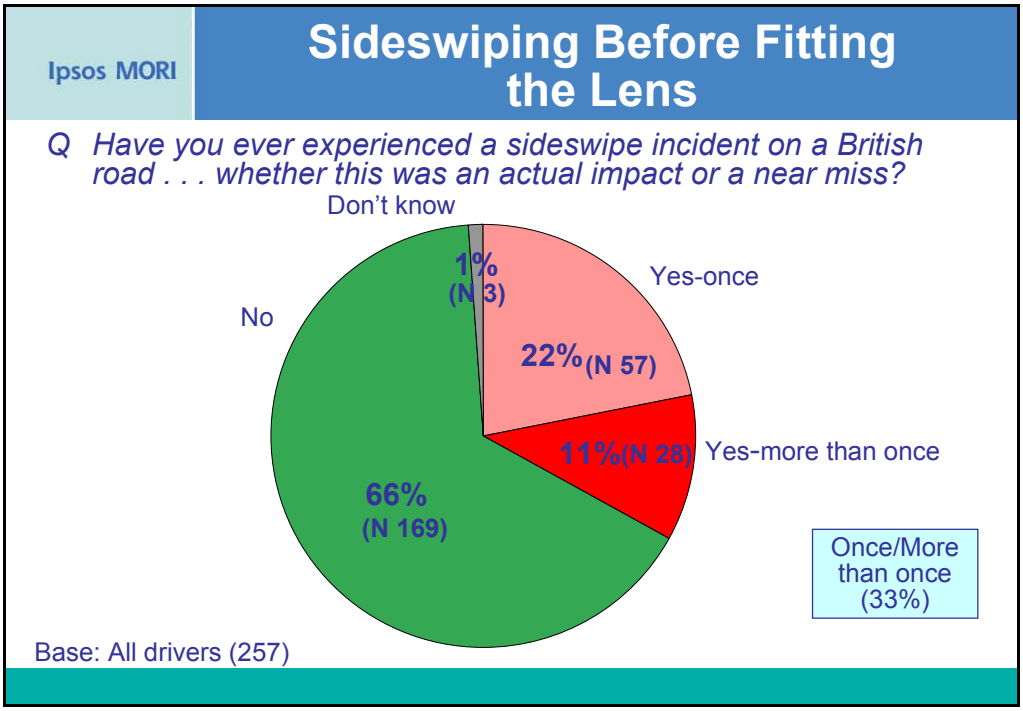
Nearly nine in ten (87%) drivers who have fitted the lens do not think that it has obscured their vision. Less than one in ten (7%) think that is has obscured their vision and mostly think that the difficulty is at the front right corner or directly to the right of the vehicle (5 mentions each).



14.3 Sideswiping

14.3.1 Before fitting the lens

One-third (33%) of drivers say they had experienced a sideswiping incident in the UK at least once prior to fitting the lens



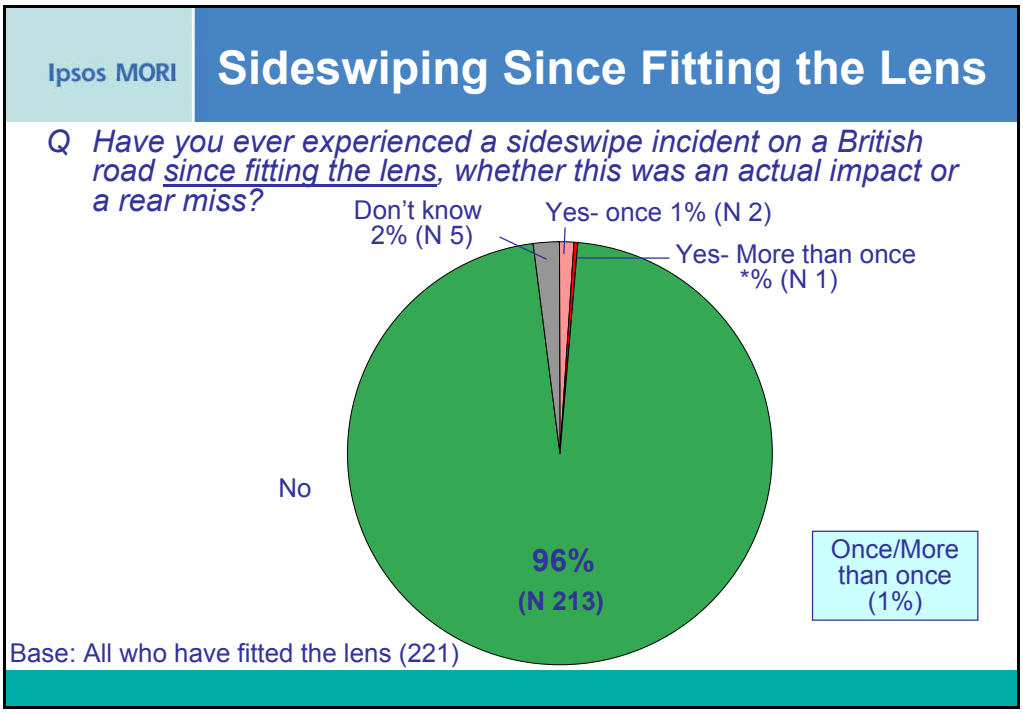
- Drivers registered in France (49%) and the Netherlands (43%) have experienced considerably more sideswiping incidents before fitting the lens than Polish drivers (28%)[3].

- Related to this, those who currently drive Renault (45%) and DAF (44%) vehicles have experienced considerably more sideswiping incidents before fitting the lens than Mercedes (19%), MAN (24%) and Scania (29%) vehicles[4].

[3] **Caution** low base sizes for countries: France (39), Netherlands (28), Poland (54).
[4] **Caution** low base sizes for makes of vehicle: Renault (42), DAF (45), Mercedes (26), MAN (46), Scania (34).

14.3.2 Since fitting the lens

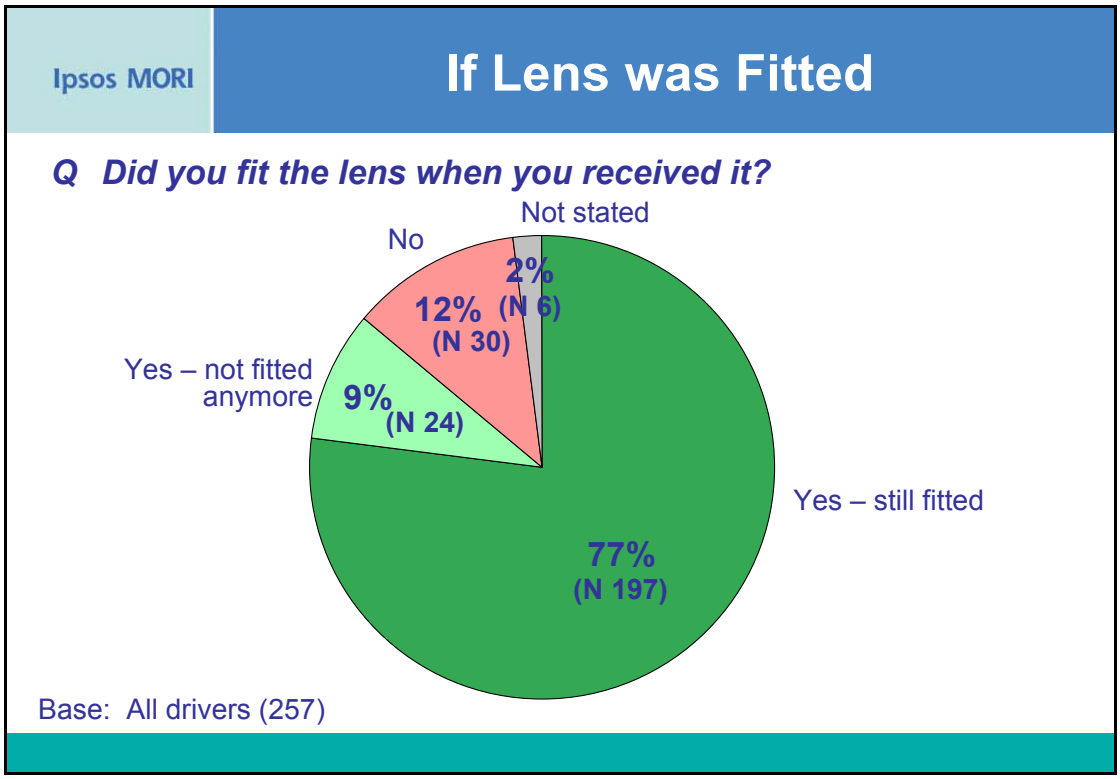
Nearly all the drivers who fitted the lens (96%) say they have not experienced a sideswiping incident since fitting it.



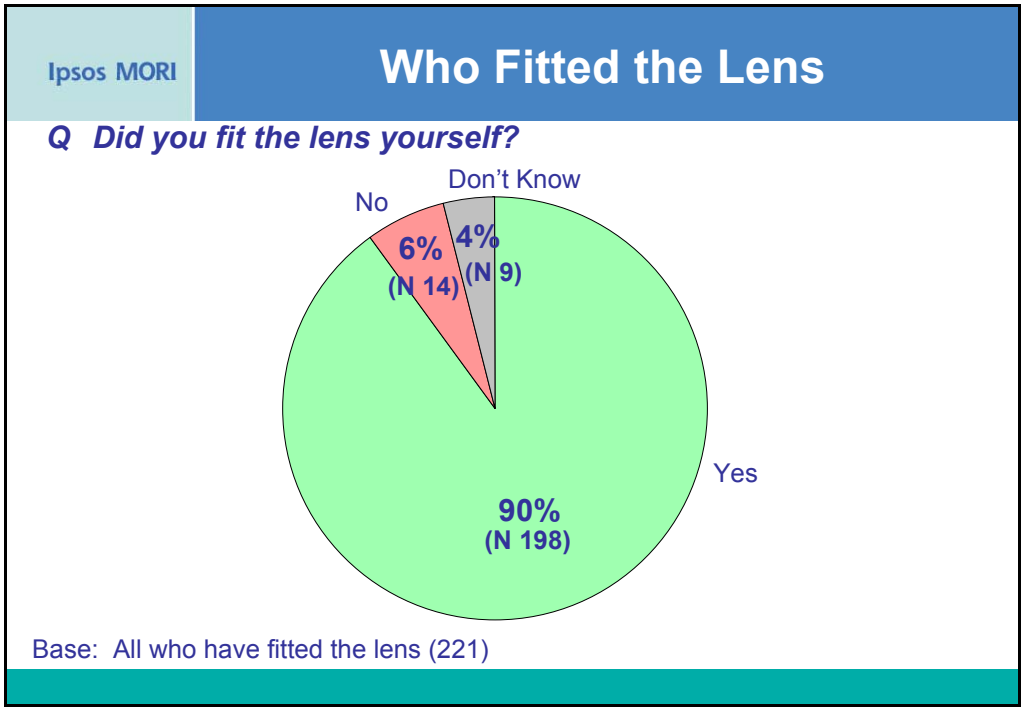
Only three respondents report having experienced a sideswiping incident since fitting the lens, so no significant findings can be drawn here. Two of the respondents report cars being involved in the most recent incident; two also report another lorry being involved. Two respondents say the incident happened when a vehicle overtaking cut them up; the other incident occurred when the driver was changing lanes.

14.5 Usability

The majority of drivers (86%) fitted the lens when they received it. This includes three-quarters (77%) who still had the lens fitted at the time of the interview. Therefore, only one in eight drivers either fitted the lens but it had been removed by the time of the interview (12%) or never fitted the lens at all (12%).

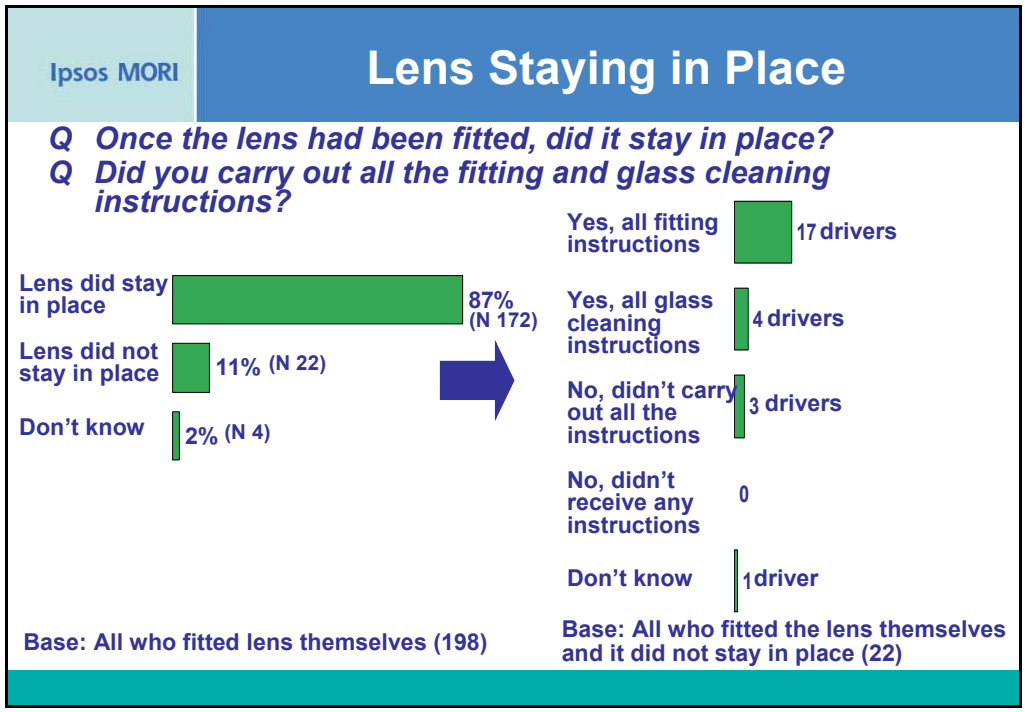


Nine in ten drivers, who fitted the lens, fitted it themselves.



14.5.1 **Keeping the lens in place**

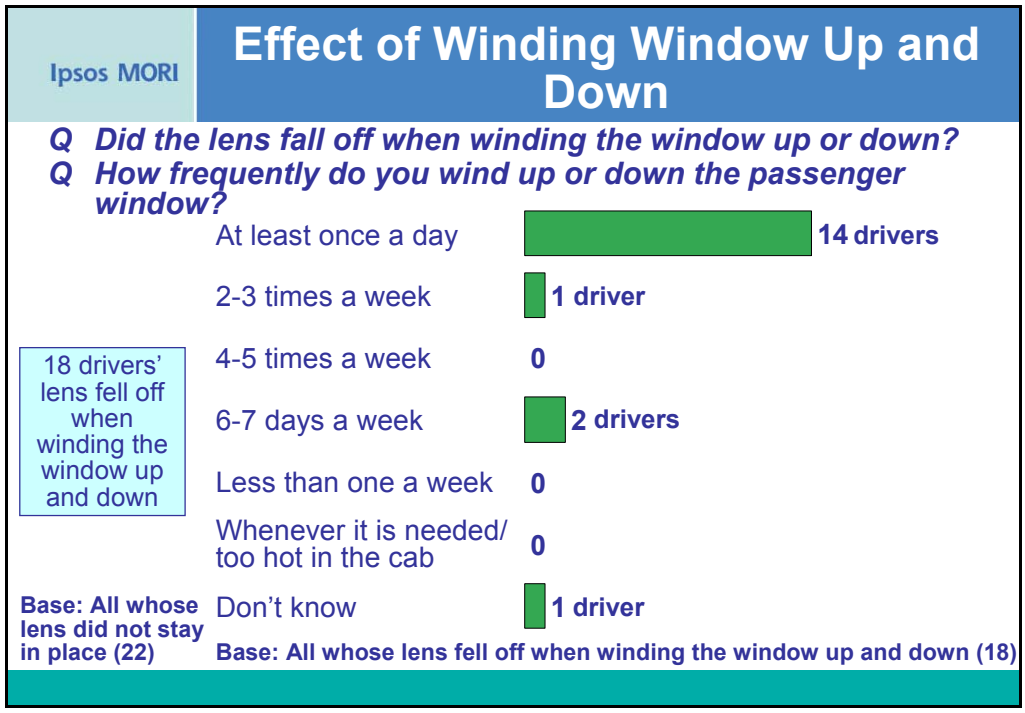
Of those who fitted the lens themselves, the majority (87%) say that the lens stayed in place. Of the few drivers (22) whose lens did not stay in place, seventeen drivers carried out all the fitting instructions and four carried out all the glass cleaning instructions.



- Drivers of DAF (97%) and MAN (94%) vehicles are slightly more likely to say that the lens stayed in place than drivers of Volvo (73%) and Renault (81%) vehicles[5].

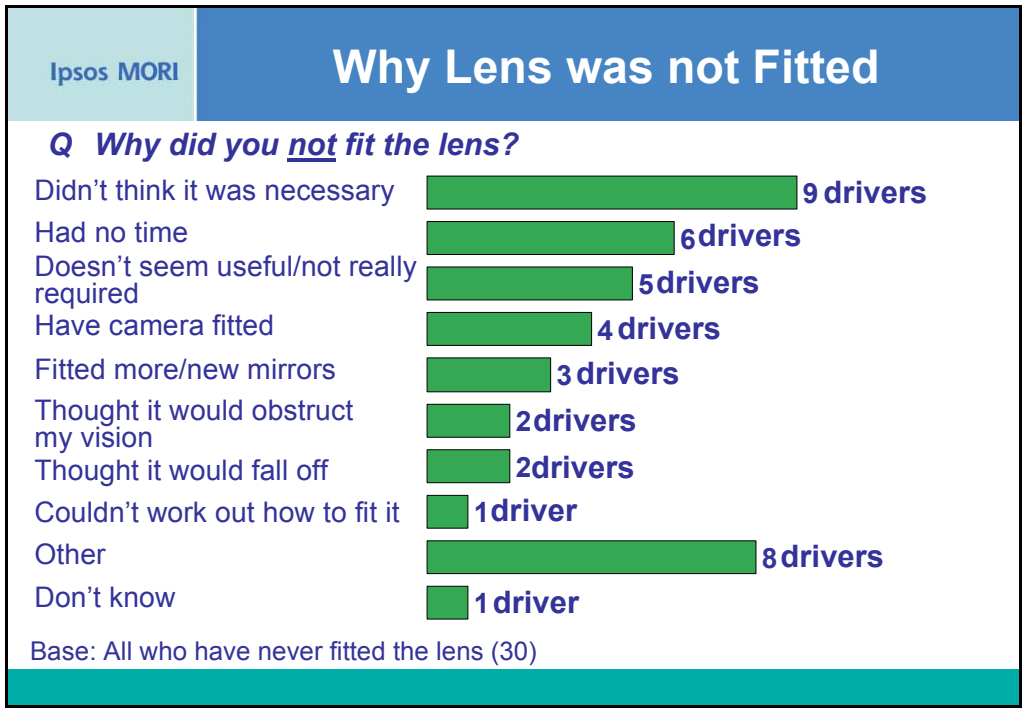
[5] **Caution** low base sizes for makes of vehicle: DAF (32), MAN (34), Volvo (30), Renault (36).

Of the twenty-two cases where the lens did not stay in place, eighteen drivers say that it fell off while winding the window up and down. Most of these wind their passenger window up or down at least once a day (fourteen drivers).



14.5.2 **Reasons for not fitting the lens**

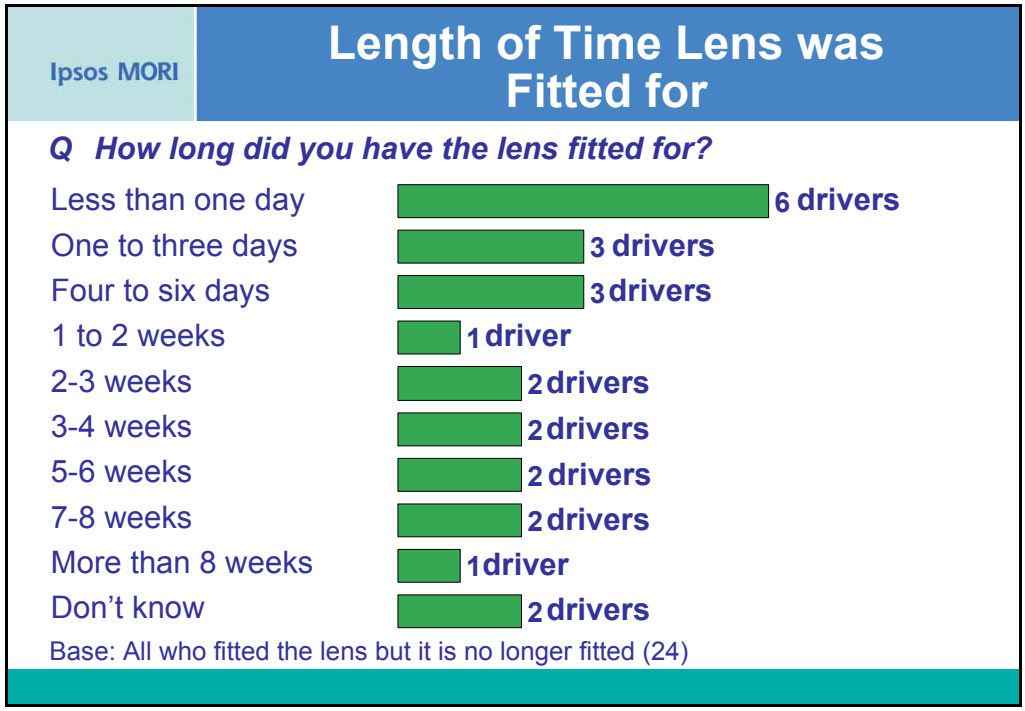
Thirty drivers (12%) did not fit the lens at all. The majority of these (17 out of 30) do not regard the lens as useful and nine drivers do not think it is necessary. Seven drivers were unable to fit the lens because they had a camera fitted (four) or had mirrors fitted (three). Six say they had no time to fit the lens and some have concerns about the safety and practicality of the lens, believing it may fall off or actually obstruct their vision (two mentions each).



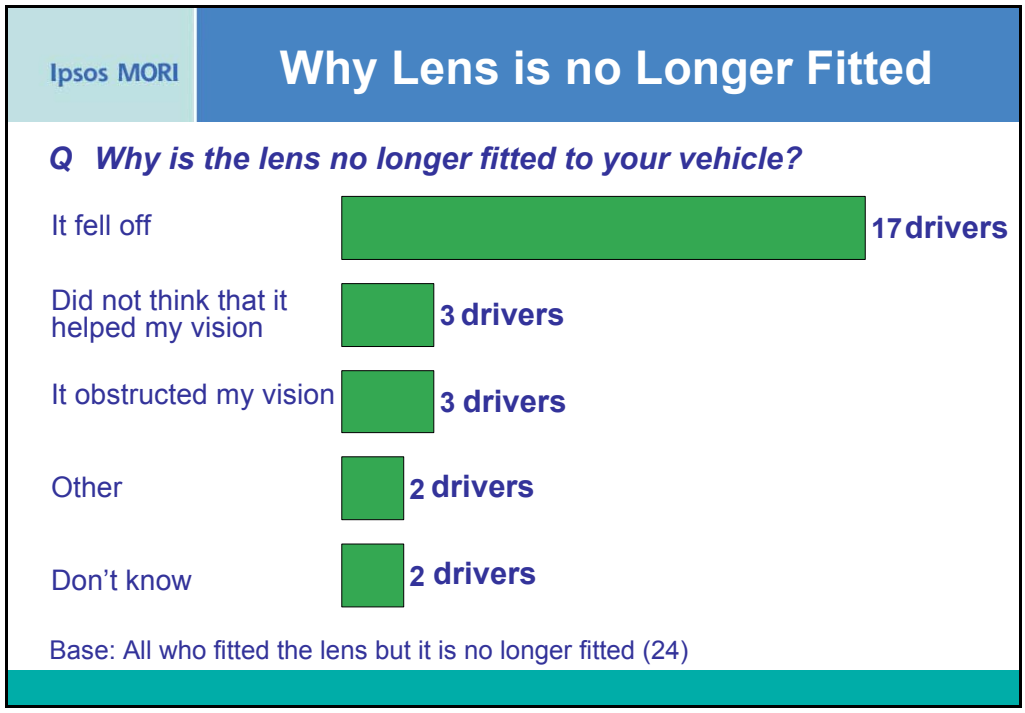
- Of the four drivers who have a camera fitted, two have Volvo vehicles, one has a MAN and one drives a DAF. Of the three drivers who have extra mirrors fitted, two have Mercedes vehicles and one has a Renault vehicle.

14.5.3 **Reasons for no longer using the lens**

Twenty-four drivers (9% of the total sample) who fitted the lens when they received it did not have it fitted by the time of the interview. Of these twenty-four drivers, twelve had the lens fitted for less than a week, including six who only had it fitted for a day.



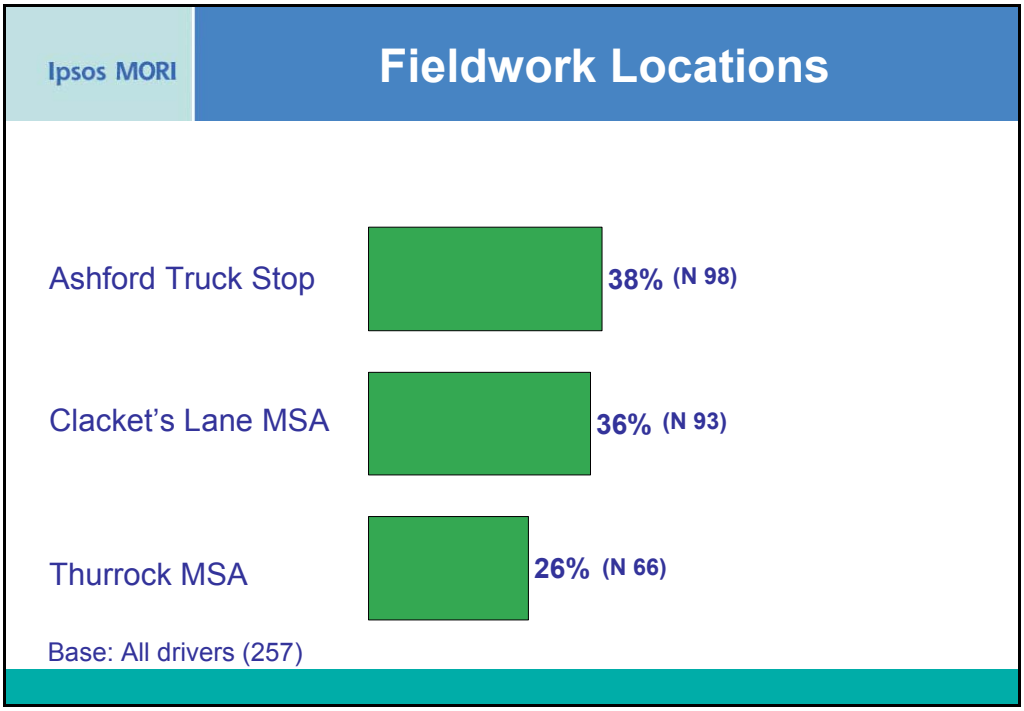
Seventeen of the twenty-four drivers who did not have the lens fitted by the time of the interview say it fell off. Very few removed the lens because it did not help, or it obstructed, their vision (three mentions each).



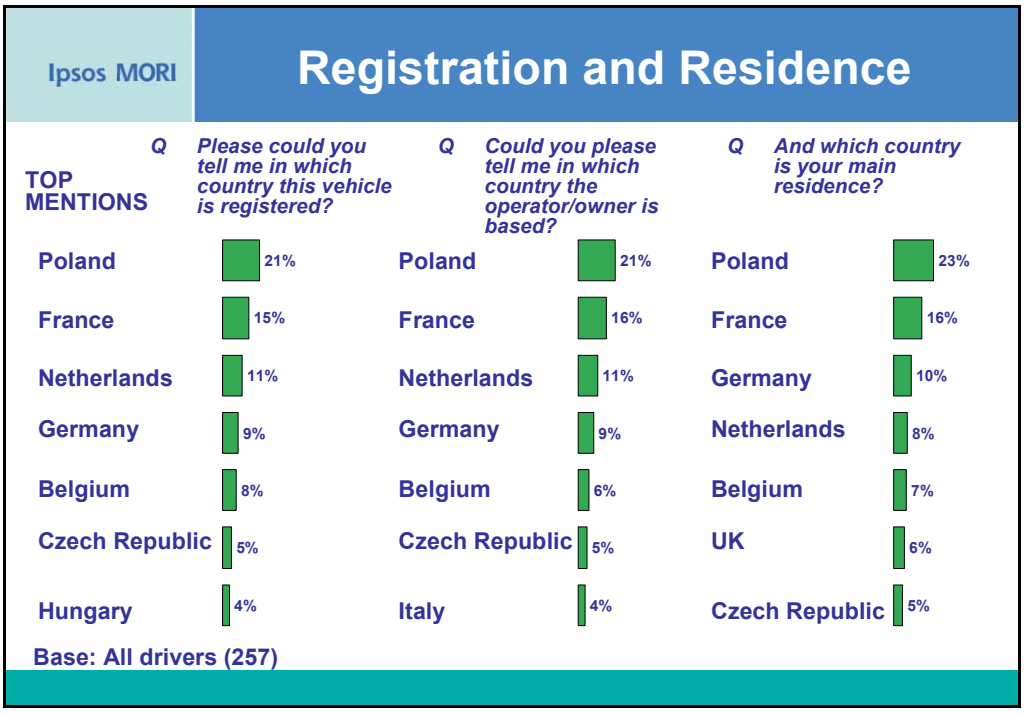
Appendices

Sample Profile

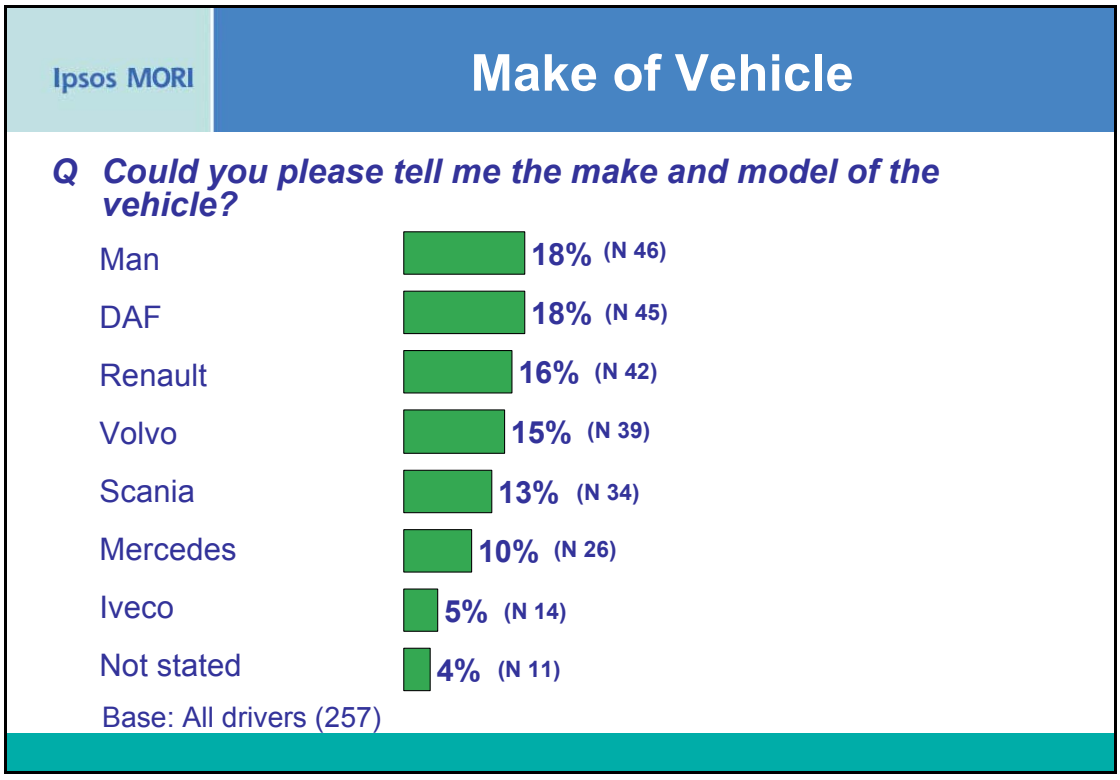
Interviews were conducted at three locations, with slightly more being conducted at Ashford Truck Stop (36%) and Clackets's Land MSA (36%) than Thurrock MSA (26%).



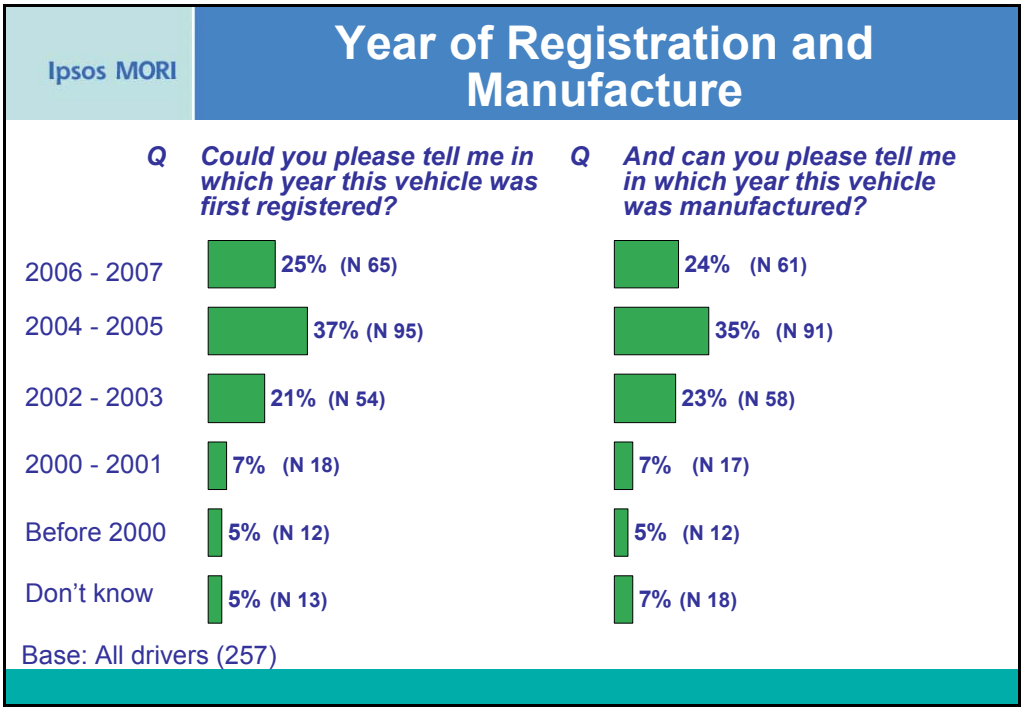
The most popular countries for vehicles to be registered in, the owner to be based and the drivers' main residence, are Poland, France, Netherlands, Germany and Belgium.



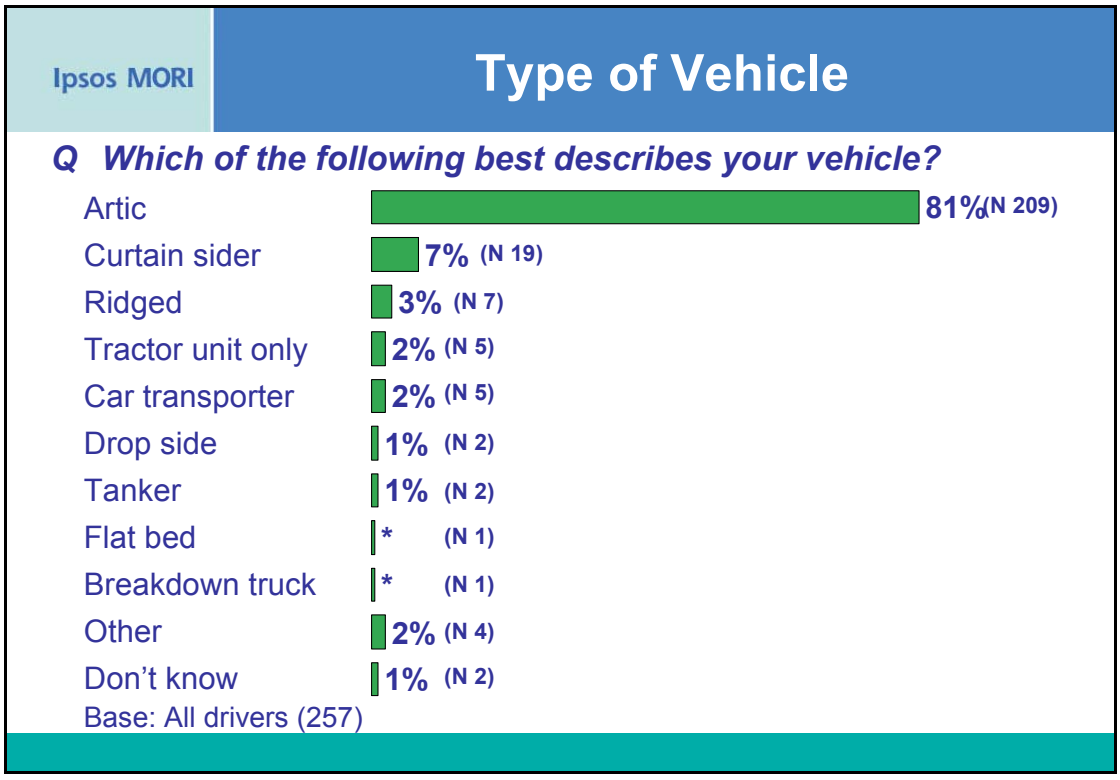
Drivers are likely to have a range of vehicles, the most popular being MAN (18%), DAF (18%), Renault (16%) and Volvo (15%).



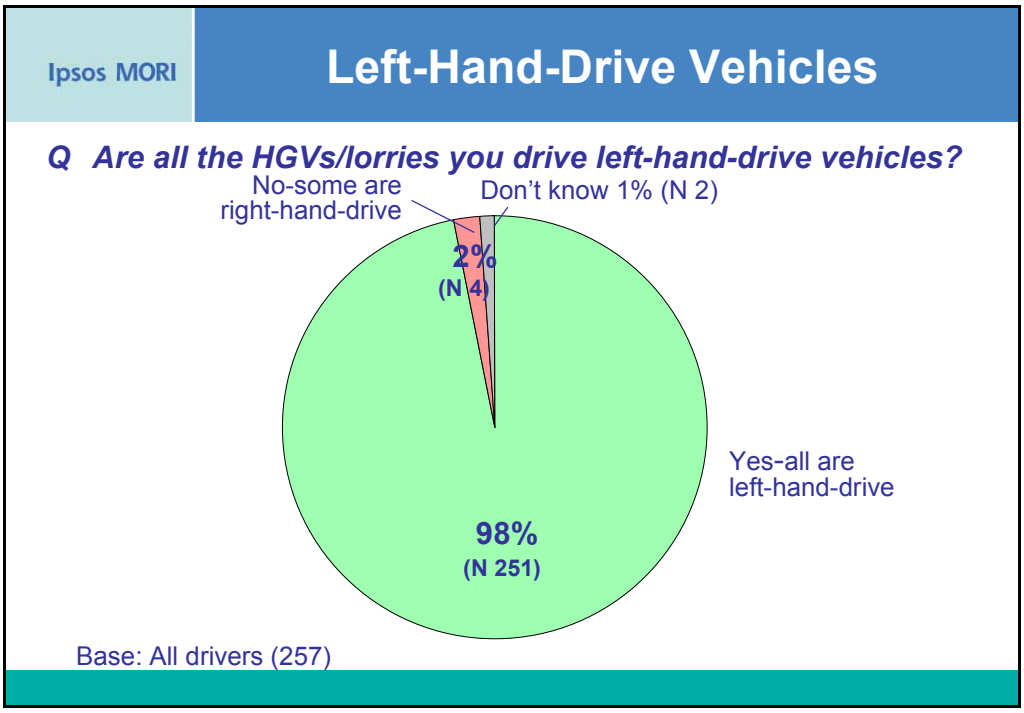
Around nine in ten vehicles have been manufactured and registered since 2000 and around one quarter have been manufactured and registered since 2006.



Eight in ten (81%) vehicles are Artic vehicles.



Virtually all drivers (98%) only drive left-hand-drive vehicles.



Topline Findings

- Face-to-face interviews conducted amongst 257 drivers of left-hand-drive lorries and Heavy Goods Vehicles (HGVs) who were given a lens at Calais, Coquelles or Dunkirk between 25th November and 18th December 2006 for their vehicle
- Interviews took place at Clackets Lane, Ashford and Thurrock motorway truck stops
- Fieldwork conducted between 15th January and 17th February 2007
- Results are based on all respondents (257) unless otherwise stated
- All results are presented both in percentages and in numbers
- When percentages do not add up to 100%, this is due to computer rounding or multiple response
- An asterisk (*) denotes a finding of less than 0.5% but greater than zero

Screening Criteria

Firstly, I'd like to ask you some questions about you and the vehicle you are driving today. Is this vehicle a Left Hand Drive lorry/Heavy Goods Vehicle (HGV)?
SINGLE CODE ONLY

	%	N
Yes	100	257
No	-	-
Don't know	-	-

Were you given a lens at Calais, Coquelles or Dunkirk between 25th November and 18th December 2006 for this vehicle. This lens fits to the side window of your lorry so that you can see vehicles to the right of your lorry?
SINGLE CODE ONLY

	%	N
Yes	100	257
No	-	-
Don't know	-	-

Demographic Profile

Please could you tell me in which country this vehicle is registered? SINGLE CODE ONLY. CHECK QUOTA

Could you please tell me in which country the operator/owner is based? SINGLE CODE ONLY

And which country is your main residence? SINGLE CODE ONLY

	Registered		Owner/Operator based		Residence	
	%	N	%	N	%	N
Albania	-	-	-		-	-
Austria	1	2	1	3	-	-
Belarus	-	-	-	-	-	-
Belgium	8	20	6	16	7	17
Bosnia-Herzegovina	1	2	1	2	1	2
Bulgaria	1	3	1	3	1	3
Croatia	*	1	*	1	*	1
Czech Republic	5	13	5	13	5	14
Denmark	-	-	*	1	-	-
Eire	1	3	1	3	*	1
Estonia	-	-	-	-	-	-
Finland	-	-	-	-	-	-
France	15	39	16	40	16	40
Germany	9	22	9	23	10	26
Greece	*	1	*	1	*	1
Hungary	4	11	4	9	4	11
Italy	4	11	4	11	3	8
Latvia	-	-	-	-	-	-
Liechtenstein	-	-	-	-	-	-
Lithuania	2	4	1	3	1	3
Luxembourg	*	1	*	1	-	-
Macedonia	-	-	-	-	-	-
Moldova	-	-	-	-	-	-
Montenegro	-	-	-	-	-	-
Netherlands	11	28	11	28	8	21
Norway	-	-	-	-	-	-
Poland	21	54	21	54	23	59
Portugal	1	2	1	2	2	4
Romania	1	2	1	2	1	2
Slovakia	3	7	3	7	3	7
Slovenia	2	5	2	4	2	4
Spain	4	10	4	9	3	8
Sweden	-	-	-	-	-	-
Switzerland	1	2	-	3	-	-
Turkey	*	1	*	1	1	2
Ukraine	-	-	-	-	-	-
United Kingdom	3	7	4	11	6	16
Other Europe	1	2	*	1	1	2
Other Rest of World	1	3	1	3	1	3
Not stated	*	1	1	2	1	2

Still thinking about the vehicle you are driving today, could you please tell me the make and model of the vehicle?

	%	N
Man	18	46
DAF	18	45
Renault	16	42

Volvo	15	39
Scania	13	34
Mercedes	10	26
Iveco	5	14
Not stated	4	11

Could you please tell me in which year this vehicle was first registered?

	%	N
2006-2007	25	65
2004-2005	37	95
2002-2003	21	54
2000-2001	7	18
Before 2000	5	12
Don't know	5	13

And can you please tell me in which year this vehicle was manufactured?

	%	N
2006-2007	24	61
2004-2005	35	91
2002-2003	23	58
2000-2001	7	17
Before 2000	5	12
Don't know	7	18

Which of the following best describes your vehicle?
SINGLE CODE ONLY

	%	N
Artic	81	209
Curtain sider	7	19
Ridged	3	7
Tractor unit only	2	5
Car transporter	2	5
Drop side	1	2
Tanker	1	2
Flat bed	*	1
Breakdown truck	*	1
Bottle float	-	-
Low loader	-	-
Other	2	4
Don't know	1	2

Are all the HGVs/lorries you drive left-hand-drive vehicles?
SINGLE CODE ONLY

	%	N
Yes, all are left-hand-drive	98	251
No, some are right-hand-drive	2	4
Don't know	1	2

Whether the lens is fitted

I would now like to ask you some questions about the lens that was given to you at Calais. Did you fit the lens when you received it?

SINGLE CODE ONLY.

	%	N
Yes, fitted it and it is still fitted now	77	197
Yes, fitted it but it is not fitted anymore	9	24
No, did not fit the lens	12	30
Not stated	2	6

Awareness of blind spots

BASE: ALL WHO FITTED THE LENS

Before fitting the lens were you aware of any blind spots around your vehicle?

SINGLE CODE ONLY

	%	N
	(221)	(221)
Yes	90	198
No	6	14
Don't know	4	9

BASE: ALL AWARE OF BLIND SPOTS BEFORE FITTING LENS

Where were these blind spots? MULTICODE OK

	%	N
	(198)	(198)
Front right corner	75	148
Directly to the right	41	82
Front of vehicle	19	38
Back right corner	7	13
Back of vehicle	4	7
Front left corner	3	5
Directly to the left	1	2
Back left corner	1	1
Other	1	2
Don't know	1	1

Impact of fitting the lens

BASE: ALL WHO FITTED THE LENS

Do you think that the lens helped to reduce blind spots?
SINGLE CODE ONLY

	%	N
	(221)	(221)
Completely/To a great extent	77	170
To some extent	11	25
To a limited extent	5	11
Not at all	1	2
Don't know	6	13

Sideswiping

BASE: ALL

Have you ever experienced a side swipe incident on a British road [before fitting the lens], whether this was an actual impact or a near miss?
SINGLE CODE ONLY.

	%	N
Yes - once	22	57
Yes – more than once	11	28
No	66	169
Don't know	1	3

BASE: ALL WHO FITTED THE LENS

Have you ever experienced a side swipe incident on a British road since fitting the lens, whether this was an actual impact or a near miss?
SINGLE CODE ONLY.

	%	N
	(221)	(221)
Yes - once	1	2
Yes – more than once	*	1
No	96	213
Don't know	2	5

BASE: ALL WHO EXPERIENCED A SIDE SWIPE SINCE FITTING THE LENS

I would like to ask you some questions about your [most recent] sideswiping incident. Firstly, where did this take place? WRITE IN LOCATION. PROMPT FOR A MOTORWAY

	N
	(3)
Isle of Sheppey	1
Don't know	2

BASE: ALL WHO EXPERIENCED A SIDE SWIPE SINCE FITTING THE LENS

Excluding your own, how many other lorries were involved?

	N
	(3)
One	2
No others/none	1

BASE: ALL WHO EXPERIENCED A SIDE SWIPE SINCE FITTING THE LENS

Were any other types of vehicles involved? MULTICODE OK

	N
	(3)
Cars	2
Don't know	1

BASE: ALL WHO EXPERIENCED A SIDE SWIPE SINCE FITTING THE LENS

Which of the following best describes the weather conditions at the time of the incident? MULTICODE OK

	N
	(3)
Raining lightly	2
Dry but presence of fog	1

BASE: ALL WHO EXPERIENCED A SIDE SWIPE SINCE FITTING THE LENS

Which of the following best describes the light conditions at the time of the incident? SINGLE CODE ONLY

	N
	(3)
Light	1
Dawn/Dusk (sun rising or setting)	2

BASE: ALL WHO EXPERIENCED A SIDE SWIPE SINCE FITTING THE LENS

Could you please describe how the accident happened? SINGLE CODE ONLY

	N
	(3)
Vehicle overtaking cut me up	2
Changing lanes	1

Using the lens

BASE: ALL WHO FITTED THE LENS

ASK IF FITTED THE LENS BUT IT IS NO LONGER FITTED **Did the fitting of the lens obscure your vision in any way?**
ASK IF FITTED THE LENS AND IT IS STILL FITTED **Has the fitting of the lens obscured your vision in any way?**
SINGLE CODE ONLY

	%	N
	(221)	(221)
Yes	7	15
No	87	192
Don't know	6	14

BASE: ALL WHOSE VISION HAS BEEN OBSCURRED

ASK IF FITTED THE LENS BUT IT IS NO LONGER FITTED **Where was your vision obscured?** MULTICODE OK
ASK IF FITTED THE LENS AND IT IS STILL FITTED **Where has your vision been obscured?** MULTICODE OK

	5	N
	(15)	(15)
Front right corner	33	5
Directly to the right	33	5
Front of vehicle	7	1
Front left corner	-	-
Directly to the left	-	-
Back right corner	-	-
Back left corner	-	-
Back of vehicle	-	-
Other	33	5
Don't know	7	1

Other answer listings:
Seeing small side roads and traffic cones.
Through looking at it due to air pockets.
Night time - it picks up lights etc.
Sun on the right.

BASE: ALL WHO FITTED THE LENS

Since having the lens fitted are you now aware of blind spots that you were not aware of before?
SINGLE CODE ONLY

	%	N
	(221)	(221)
Yes	36	79
No	59	131
Don't know	5	11

BASE: ALL AWARE OF BLIND SPOTS SINCE FITTING THE LENS

Where are these blind spots? MULTICODE OK

	%	N
	(79)	(79)
Front right corner	58	46
Directly to the right	42	33
Front of vehicle	25	20
Back right corner	8	6
Front left corner	4	3
Back of vehicle	4	3
Directly to the left	1	1
Back left corner	-	-
Other	5	4
Don't know	4	3

BASE: ALL

In which of the following conditions are you most aware of blind spots? MULTI CODE OK

	%	N
When it is dark	26	67
When it is raining	26	67
When it is light	23	58
Sun rise	21	54
Sun set	20	52
When it is sunny and dry	19	48
When it is snowing	14	37
Overcast and dry	8	21
Difficult in all conditions/all the time	2	6
Bright sunshine/sunlight	2	4
Other	5	12
Don't know	23	58

Impact of lens in different conditions

BASE: ALL WHO FITTED THE LENS

How effective, if at all, is the lens at night?
SINGLE CODE ONLY

	%	N
	(221)	(221)
Very effective	29	64
Fairly effective	41	90
Not very effective	16	35
Not at all effective	3	6
Don't know	12	26
Effective	**70**	**154**
Not effective	**19**	**41**

BASE: ALL WHO FITTED THE LENS

How effective, if at all, is the lens during wet conditions?
SINGLE CODE ONLY

	%	N
	(221)	(221)
Very effective	30	66
Fairly effective	48	105
Not very effective	13	29
Not at all effective	-	-
Don't know	10	21
Effective	**77**	**171**
Not effective	**13**	**29**

Fitting the lens

BASE: ALL WHO FITTED THE LENS

Did you fit the lens yourself?
SINGLE CODE ONLY

	%	N
	(221)	(221)
Yes	90	198
No	6	14
Don't know	4	9

BASE: ALL WHO FITTED THE LENS THEMSELVES

Once the lens had been fitted, did it stay in place?
SINGLE CODE ONLY

	%	N
	(198)	(198)
Yes	87	172
No	11	22
Don't know	2	4

BASE: ALL WHO FITTED THE LENS THEMSELVES AND IT DID NOT STAY IN PLACE

Did you carry out all the fitting and glass cleaning instructions?
MULTICODE OK

	%	N
	(22)	(22)
Yes, all fitting instructions	77	17
Yes, all glass cleaning instructions	18	4
No, didn't carry out all the instructions	14	3
No, didn't receive any instructions	-	-
Don't know	5	1

BASE: ALL WHO FITTED THE LENS THEMSELVES AND IT DID NOT STAY IN PLACE

Did the lens fall off when winding the window up or down?
SINGLE CODE ONLY

	%	N
	(22)	(22)
Yes	82	18
No	14	3
Don't know	5	1

BASE: ALL WHOSE LENS FELL OFF WHEN WINDING THE WINDOW UP OR DOWN

How frequently do you wind up or down the passenger window?
SINGLE CODE ONLY.

	%	N
	(18)	(18)
At least once a day	78	14
2-3 times a week	6	1
4-5 times a week	-	-
6-7 days a week	11	2
Less than one a week	-	-
When ever it is needed/too hot in the cab	-	-
Don't know	6	1

Why lens was not fitted

BASE: ALL WHO NEVER FITTED THE LENS

Why did you not fit the lens? DO NOT READ OUT. MULTICODE OK

	%	N
	(30)	(30)
Didn't think it was necessary	30	9
Had no time	20	6
Doesn't seem useful/not really required	17	5
Have camera fitted	13	4
Fitted more/new mirrors	10	3
Thought it would obstruct my vision	7	2
Thought it would fall off	7	2
Couldn't work out how to fit it	3	1
Forgot to do it	-	-
Other	23	7
Don't know	3	1

Other Answer listings:
Company is to fit it.
Experience told me it would be no good at night.
Had another one in place which came off but they are good – I will be fitting the new one.
Thought it would look an eyesore on my window.
I have 20 years experience driving in the UK with no problems.
I am always careful to signal and manoeuvre slowly.

BASE: ALL WHO FITTED THE LENS BUT IT IS NO LONGER FITTED

How long did you have the lens fitted for? SINGLE CODE ONLY

	%	N
	(24)	(24)
Less than one day	25	6

One to three days	13	3
Four to six days	13	3
1 to 2 weeks	4	1
2-3 weeks	8	2
3-4 weeks	8	2
5-6 weeks	8	2
7-8 weeks	8	2
More than 8 weeks	4	1
Don't know	8	2

BASE: ALL WHO FITTED THE LENS BUT IT IS NO LONGER FITTED

Why is the lens no longer fitted to your vehicle? DO NOT READ OUT. MULTICODE OK

	%	N
	(24)	(24)
It fell off	71	17
Did not think that it helped my vision	13	3
It obstructed my vision	13	3
Gave it to someone else	-	-
Other	8	2
Don't know	8	2

Permission to re-contact

BASE: ALL

Thank you very much for taking part in this survey. Would you be happy to take part in any future research for the Department of Transport on this topic? SINGLE CODE ONLY

	%	N
Yes	46	117
No	48	123
Don't know	7	17

Statistical Reliability

When interpreting the findings it is important to remember that the results are based on a sample of drivers, and not the entire population. We cannot therefore be certain that the figures obtained are exactly those we would have if everybody had been interviewed (the 'true' values). However, we can predict the variation between the sample results and the 'true' values from a knowledge of the size of the samples on which the results are based and the number of times that a particular answer is given.

The confidence with which we can make this prediction is usually chosen to be 95% - that is, the chances are 19 in 20 that the 'true' value will fall within a specified range. The table below illustrates the predicted ranges for different sample sizes and percentages results at the '95% confidence interval', based on a random sample. For example, with a sample size of 257 where 30% give a particular answer, the margin of error/specified range will be plus or minus 6.3%.

Sample Size	Approximate sampling tolerances applicable to percentages at or near these levels		
	10% or 90% ±	30% or 70% ±	50% ±
257	3.7	6.3	6.9
150	4.8	7.9	8.6
100	5.9	9.0	9.8
50	8.4	11.1	14.0

Source: Ipsos MORI

Thus, the confidence interval (or margin of error) is the amount by which the survey result could increase or decrease and still be considered to reflect the 'true' result that would have been recorded if everyone in the population had been surveyed.
In addition, when comparing subgroups, if we assume a "95% confidence interval", the differences between the results of two samples must be greater than the values given in the table below:

Size of sample on which survey result is based	Approximate sampling tolerances applicable to percentages at or near these levels		
	10% or 90% ±	30% or 70% ±	50% ±
98 interviews in Ashford Truck Stop *versus* 93 interviews in Clacket's Lane	8.5	13.1	14.2
46 interviews with MAN drivers *versus* 45 interviews with DAF drivers	12.5	19.0	20.8

Source: Ipsos MORI

Annex F Highways Agency Report

HGV Sideswipe
Fresnel Lens Study

This reports summarises in Figure 1 the number of Sideswipe Incidents involving left hand drive HGVs by week from 28/08/2006 to 16/03/2007, the Fresnel Lens were issued in the week up to 04/12/06. The Annex contains analyses of sideswipes during the whole period.

We only used data from incident report forms completed and sent to us by Traffic Officers. However there is some discretion needed in determining what constitutes a sideswipe incident. For the purposes of this report, only incidents involving lane changes specific mention of a sideswipe have been classified as sideswipes.

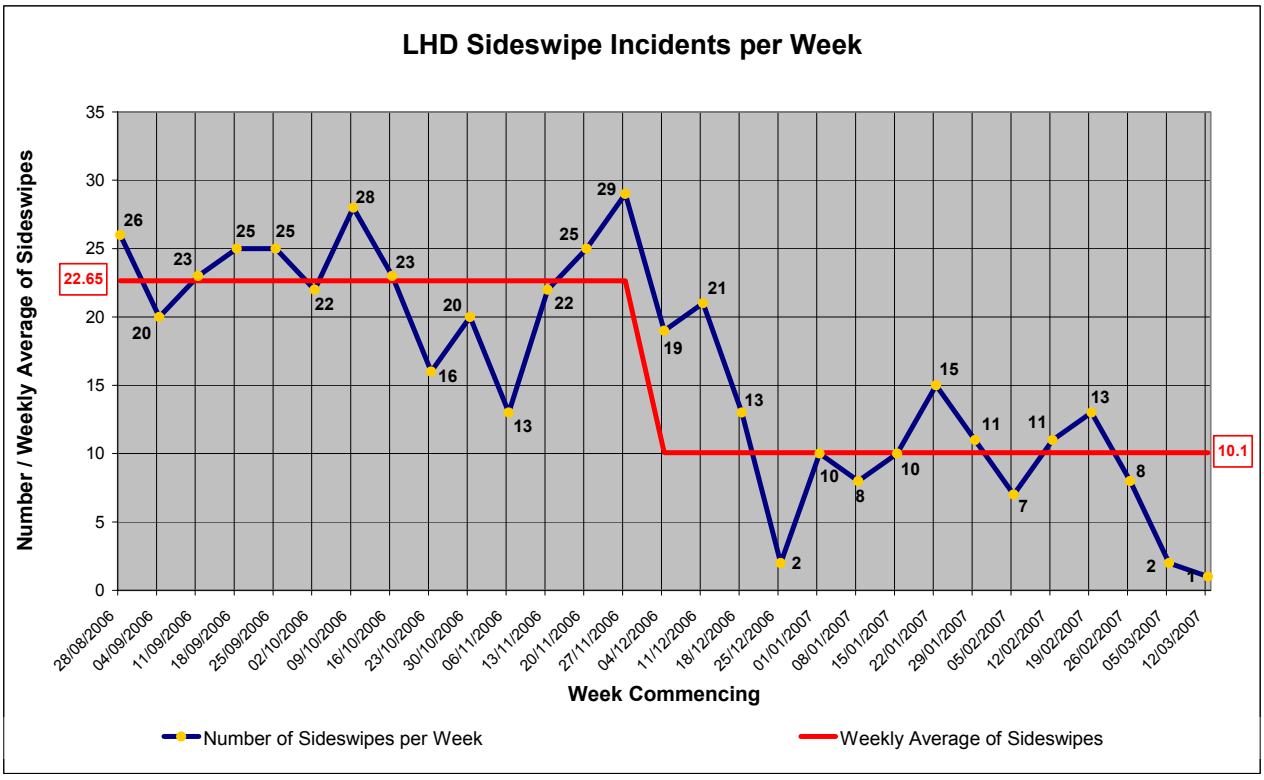


Figure 1.

Executive Summary:

- 503 sideswipe incidents happened between weeks commencing with 28/08/2006 and 05/03/2007 in total.
- 469 of these incidents (93%) involved left hand drive HGVs.
- In the first 14 weeks there were 318 LHD sideswipes recorded. The number dropped to 151 for the 15 weeks after Fresnel Lens were issued, of these 151, 13 had Fresnel lens fitted.
- Taking a before and after average, LHD sideswipes decreased from 23 to 10 a week, a 56% reduction. More recently, from January onwards, the rate has been just over 8 a week, a 64% reduction.

Note: Additionally, on 23rd February 2007, M25 J30-29, there was a fatal accident between a Polish-registered HGV and a private car whose occupant died. The HGV driver was arrested and charged by the police. The incident was confirmed as a "blind spot" crash (i.e. side swipe) and Essex Police advised that a Fresnel lens was not fitted.

Annex
Detailed Analysis of Data

'Figure 2' shows the number of LHD sideswipes by road location.

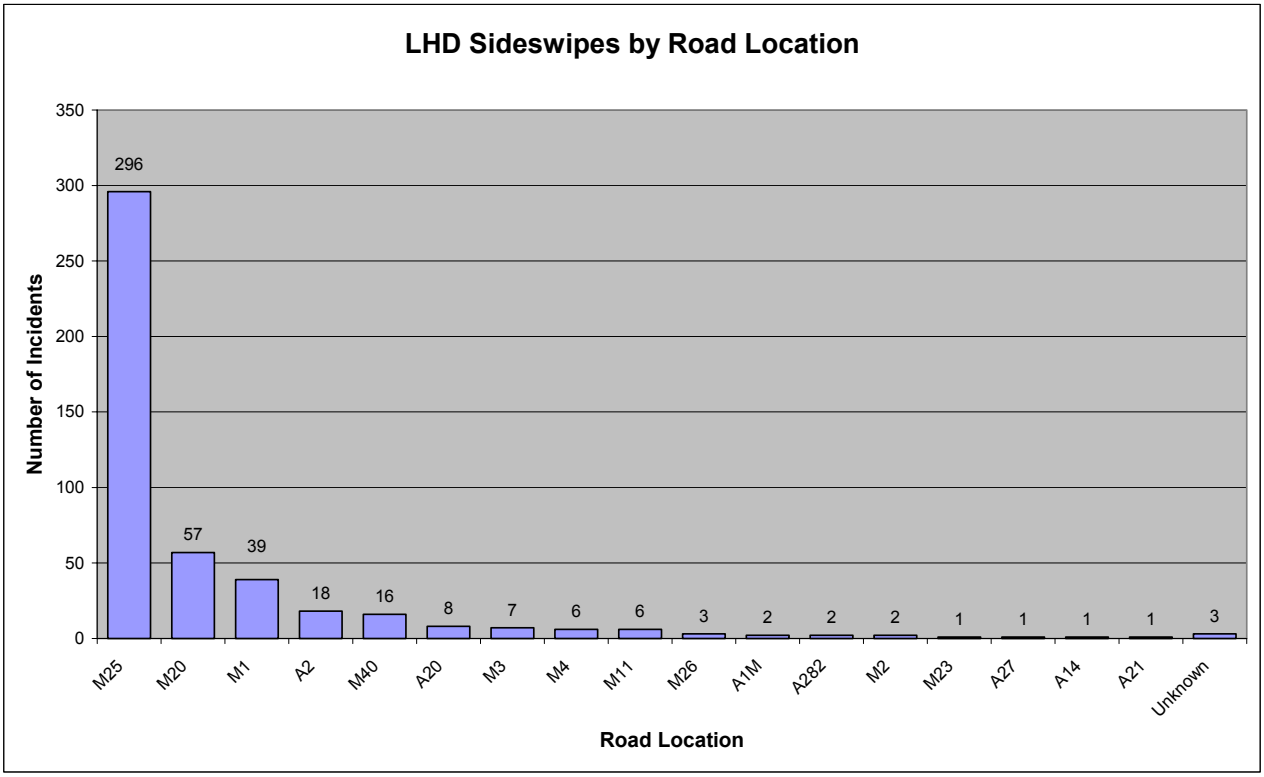


Figure 2.

'Figure 3' shows the number of LHD sideswipe incidents by Vehicle Make.

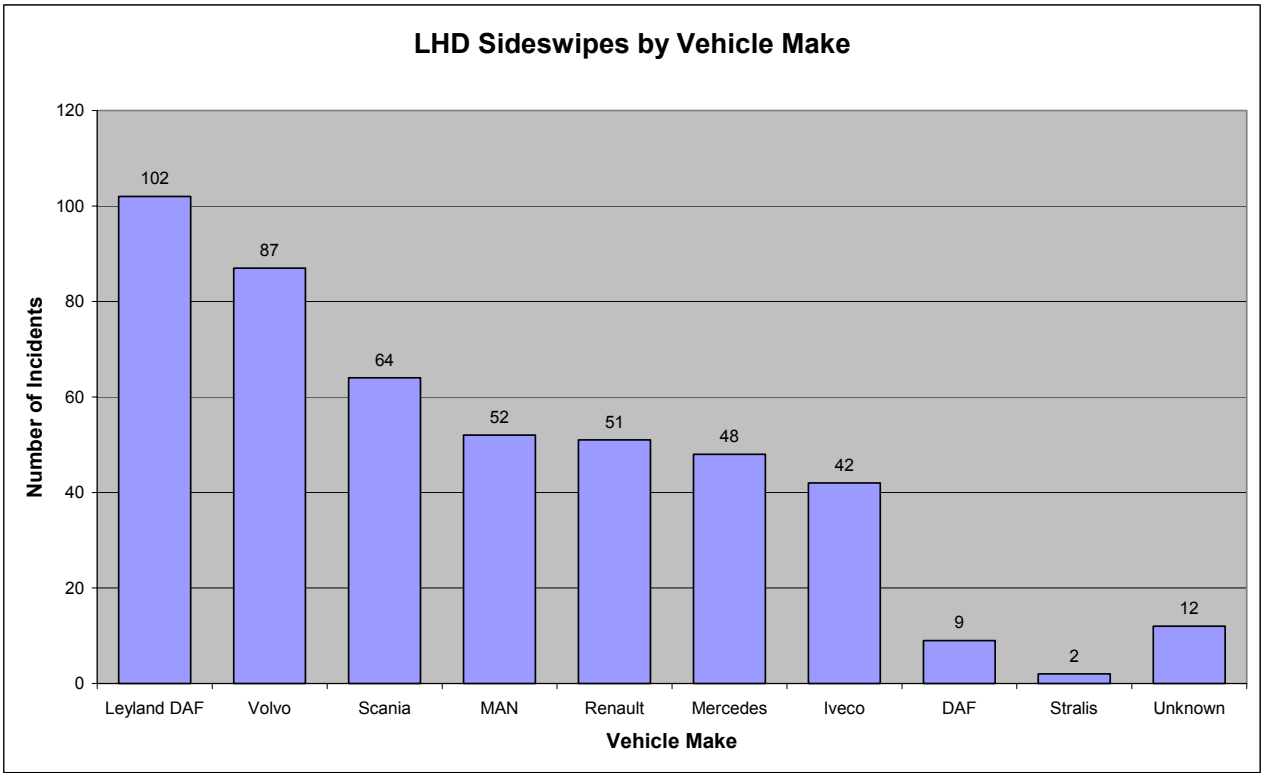


Figure 3.

'Figure 4' shows the number of sideswipe incidents by HGV country of origin.

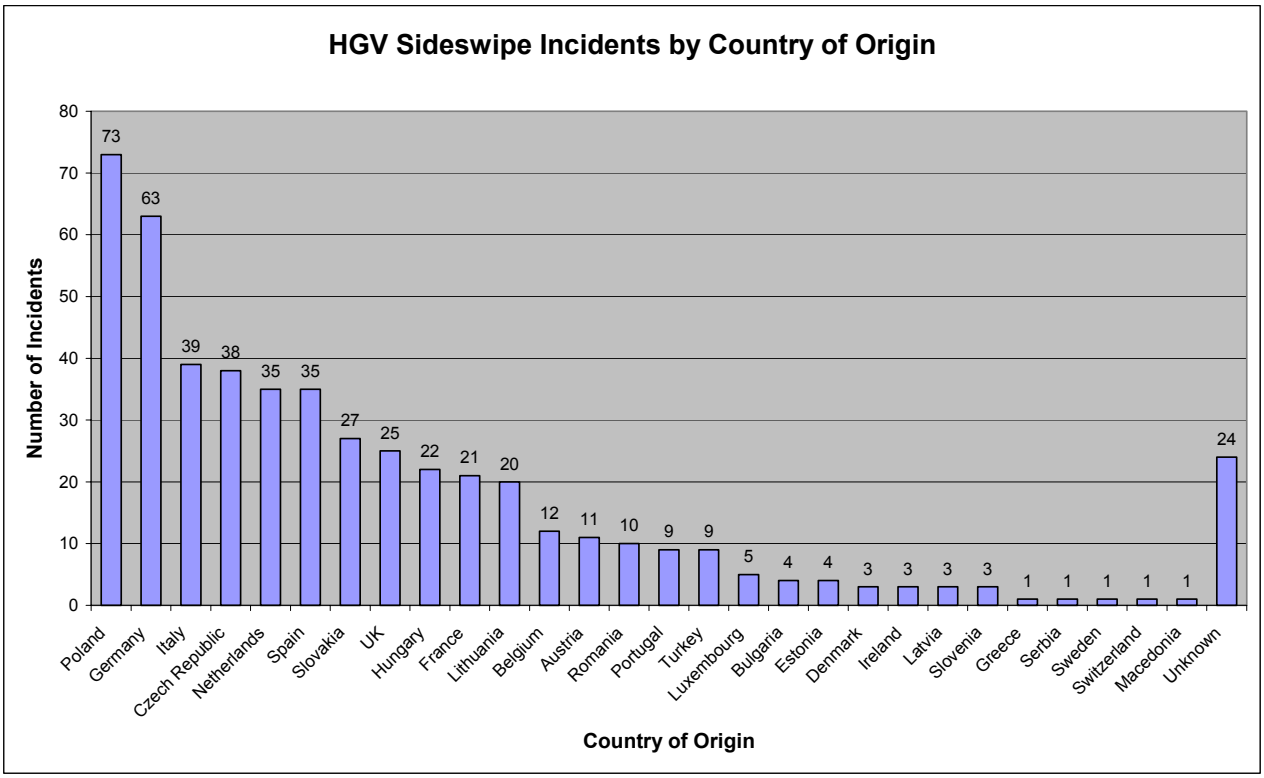


Figure 4.

'Figure 5' shows the number of LHD sideswipes by the time of day at which the incident occurred.

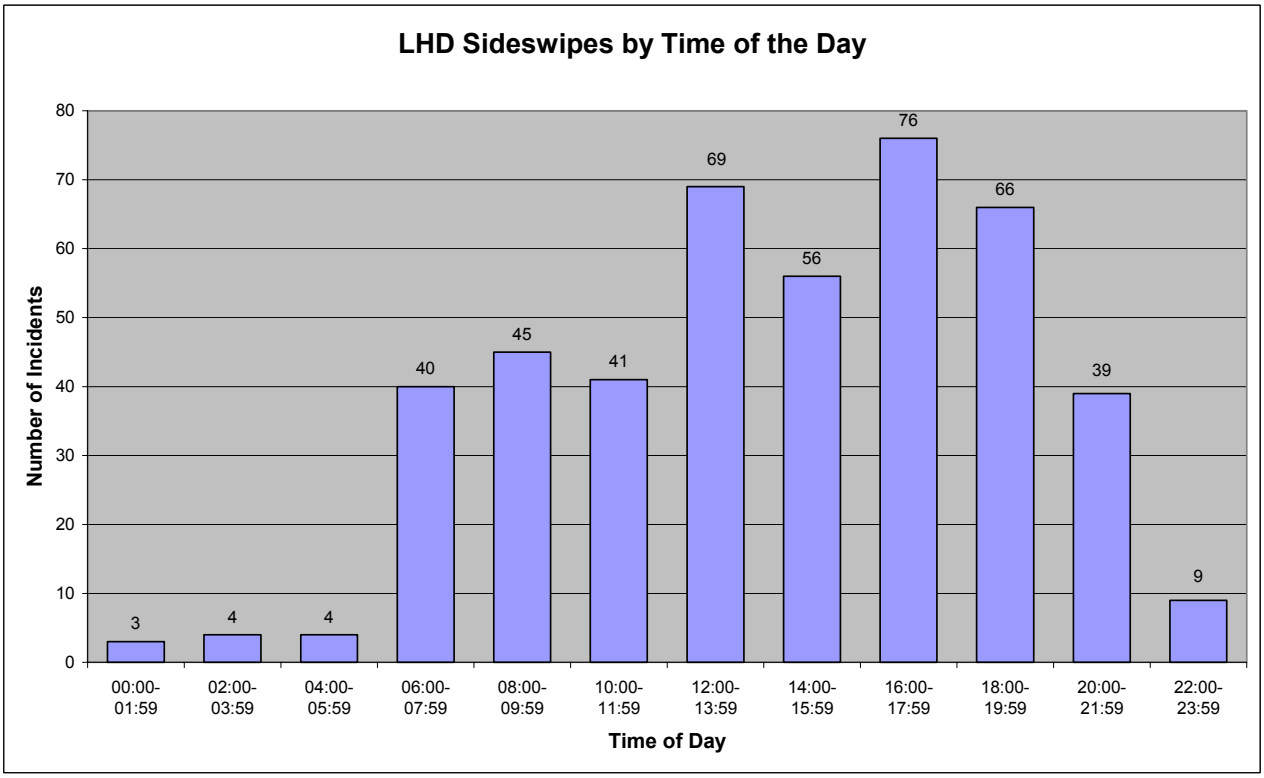


Figure 5:

Observations:

- A total of 459 sideswipe incidents involving LHD HGV's occurred in the South East between 21/08/2006 and 16/03/2007. This accounts for 93.2% of all sideswipe incidents during this period.
- Approximately 63% (296) of all sideswipe incidents involving LHD HGV's occurred on the M25. The next worse location was the M20 which saw 12% (57) of all LHD incidents.
- 95% of these incidents involved just one other vehicle, in most cases a car.
- HGV's originating from Poland accounted for just under 15% of these sideswipe incidents despite Poland accounting for less than 3% of outgoing goods vehicles to mainland Europe by ferry or Channel Tunnel (Transport Statistics Great Britain, 2006, Table 4.11); Conversely UK HGV's account for 25% of all outgoing goods vehicles but only 5% of sideswipes.
- 83% of LHD HGV's involved in sideswipe incidents do not have a Fresnel mirror fitted.
- The most vulnerable time period for sideswipe incidents was between 1600 and 1800 hours. This may be due to the early hours of darkness and also the greater number of vehicles on the road at this time.

LHD Sideswipe Incidents on M25

Approximately 63% (296) of all sideswipe incidents involving LHD HGV's occurred on the M25. The next worse location was the M20 which saw 12% (57) of all LHD incidents.

'Table 1' shows the Top 10 Links on M25 where most of the incidents happened.

M25 Both Carriageways Total					
Nr.	Junction	Link		Number of Sideswipe Incidents	
		C'way A	C'way B	Total	%
1.	5-6	LM359B	LM360B	45	15.3%
2.	8-9	LM363	LM364	30	10.2%
3.	10-11	LM299	LM300	22	7.5%
4.	12-13	LM303	LM304	22	7.5%
5.	15-16	LM309	LM310	21	7.1%
6.	9-10	LM297	LM298	16	5.4%
7.	29-30	LM343	LM344	16	5.4%
8.	27-28	LM339	LM340	14	4.7%
9.	11-12	LM301	LM302	11	3.7%
…				…	…
			Total	**289**	**100%**

Table 1.

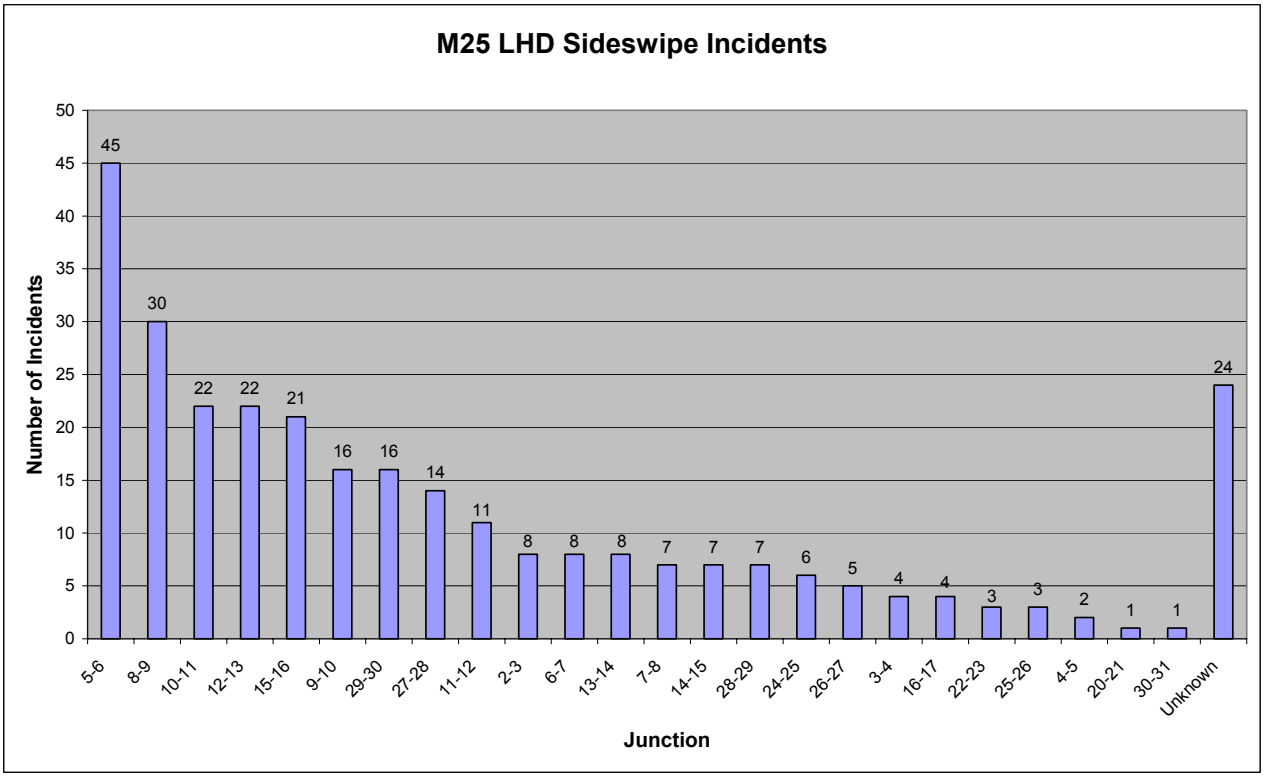


Figure 6.

A 'Figure 6' shows that the area on M25 where most of the LHD sideswipe incidents happened is between Junctions 5 and 6 (links LM359B and LM360B). It takes 15% of the total 296 cases calculated to both directions. The second worst area was between Junctions 8 and 9 (links LM363 and LM364) with about 10% of the incidents. This is followed by the links between Junctions 10-11 and 12-13 with 8 % (LM299/LM300 and LM303/LM304). Junctions 15-16 saw 7% of the incidents.

Number of LHD Sideswipe Incidents on M25 by carriageways

	till 24/11/2006	from 25/11/2006	∑
Carriageway A	76	44	120
Carriageway B	74	63	136
∑	150	106	296

Percentage of LHD Sideswipe Incidents on M25 by carriageways

	till 24/11/2006	from 25/11/2006	∑
Carriageway A	26%	15%	41%
Carriageway B	25%	21%	46%
∑	51%	36%	

** Including 39 unknown cases (13%)*

On M25 41% of the LHD sideswipe incidents occurred in 'Carriageway A' – clockwise, and 46% in 'Carriageway B' – anti-clockwise. (The carriageway where the incident happened is unknown in 13% of the incidents.)

Comparing to the period before the Fresnel Lenses were distributed (23/08/2006 – 24/11/2006) a certain drop in the numbers of the incidents can be observed in the try-out period of the Fresnel Lenses (from 25/11/2006) in both carriageways. The numbers decreased from 51% to 36% calculated to both carriageways, from 26% to 15% on 'Carriageway A' and from 25% to 21% on 'Carriageway B'.

However the worst area in both directions where most of the incidents happened are the links between Junctions 5-6 in both periods; comparing 'Figure 2' and 'Figure 3' it can be observed that apart from this the most critical links are mainly different by carriageways.

Whilst on Carriageway “A” the second, third and fourth worst parts were between Junctions 9-10 (2.), 8-9 (3.) and 10-11 (4.) the same ranking on Carriageway “B” included Junctions 8-9 (2.), 12-13 (3.) and 10-11 (4.) (See ‘Table 2’)

Worst Junctions by Carriageways					
Carriageway "A"			Carriageway "B"		
Nr.	Link	Junction / (nr. of incidents)	Junction / (nr. of incidents)	Link	Nr.
1.	LM359B	5-6 / (20)	5-6 / (21)	LM360B	1.
2.	LM297	9-10 / (12)	8-9 / (16)	LM364	2.
3.	LM363	8-9 / (11)	12-13 (14)	LM304	3.
4.	LM299	10-11 / (9)	10-11 / (13)	LM300	4.
5.	LM339	27-28 / (9)	15-16 / (12)	LM310	5.

Table 2.

Comparing ‘Figure 7’ and ‘Figure 8’ it can be also observed that on Carriageway “A” the drop in the number of incidents were more drastic after the start of the Fresnel Lenses trial period than on Carriageway “B”.

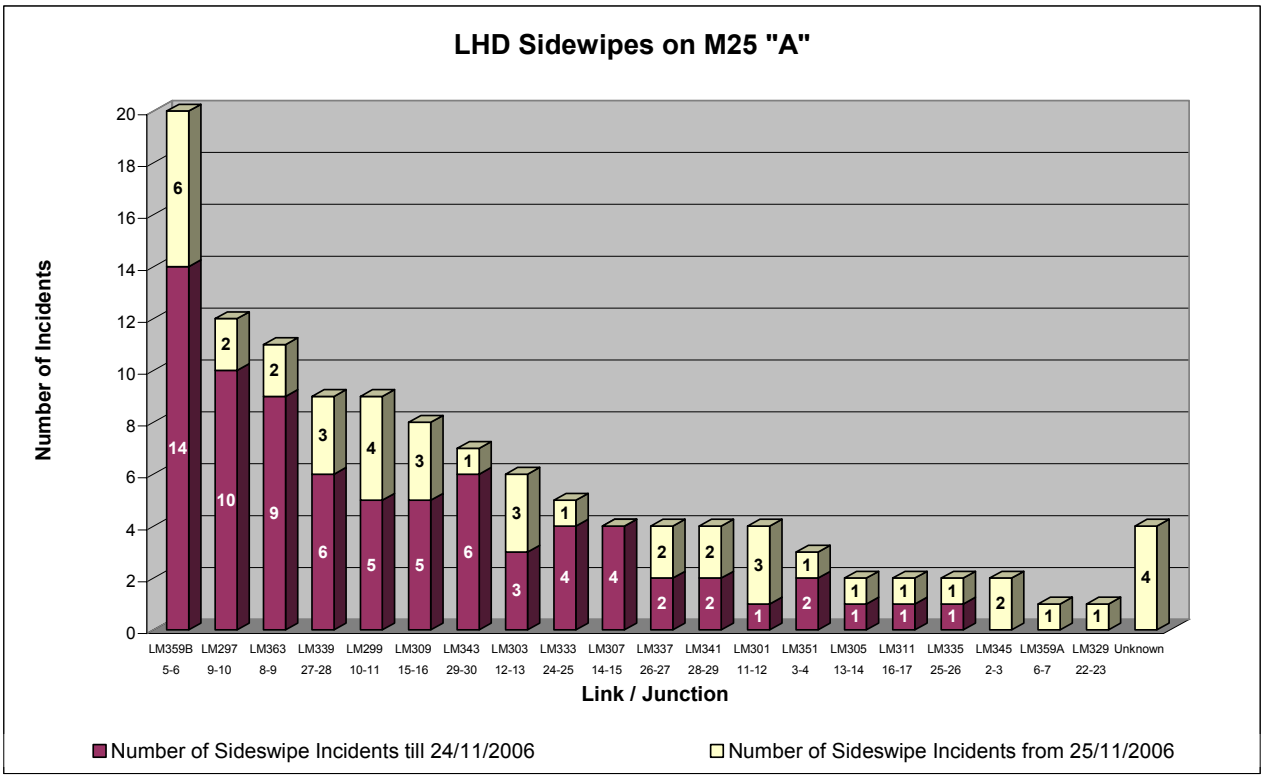


Figure 7.

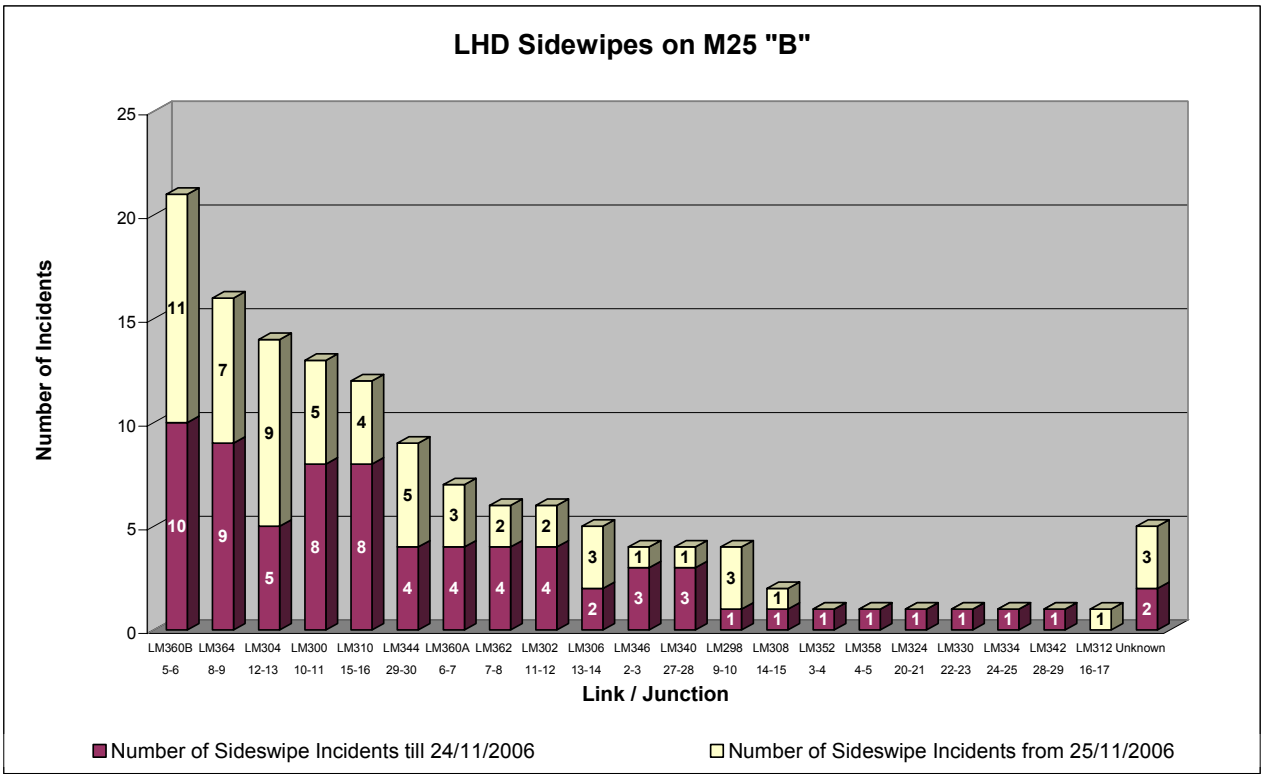


Figure 8.

It is also shown that at some links the decrease was smaller than the average trend, for example on Carriageway "A" at link LM299 (between Junctions 10-11). In particular areas (Carriageway "B", links LM304 and LM344, between Jc12-13 and Jc29-30) the number of observed incidents increased despite of the introduction of Fresnel Lenses.

Summary:

- 63% of all sideswipe incidents involving LHD HGV's occurred on the M25.
- 15% of the incidents happened between Junctions 5 and 6 (links LM359B and LM360B). The second worst area was between Junctions 8 and 9 (links LM363 and LM363) with about 10% of the incidents.
- 41% of the LHD sideswipe incidents occurred on Carriageway "A", 46% on Carriageway "B" on M25.
- After Fresnel Lenses were distributed the number of the incidents dropped from 52% to 36% (calculated to both carriageways).
- Most of the incidents happened on the links between Junctions 5-6 in both directions.
- Apart from this the ranking of the worst links is differed by carriageways.

LHD Sideswipe Incidents on M20

12 % of all sideswipe incidents involving LHD HGV's occurred on the M20. This was the second worst area after M25 with 57 incidents in total.

'Table 3' shows the ranking on M20 by how many incidents happened on the given link.

M20		Number of Sideswipe Incidents			%
Junction	Link	till 24/11/2006	from 25/11/2006	∑	
3-4	LM272	11	5	16	28%
4-5	LM274	8	2	10	18%
10-11	LM260	4	2	6	11%
5-6	LM276	3	1	4	7%
8-9	LM282	1	3	4	7%
2-3	LM270	2	1	3	5%
6-7	LM278	3	0	3	5%
9-10	LM284	3	0	3	5%
7-8	LM280	2	0	2	4%
1-2	LM266	0	1	1	2%
11-12	LM262	1	0	1	2%
12-13	LM264	1	0	1	2%
Unknown		2	1	3	3
∑		39	15	57	100%

Table 3.

A 'Figure 9' shows that the area on M20 where most of the LHD sideswipe incidents happened is between Junctions 3 and 4 (link LM272). It saw 28% of the total 57 cases calculated to both directions. The second worst area was between Junctions 4 and 5 (link LM274) with 18% of the incidents. This is followed by the LM260 between Junctions 10-11 with 11%. Junctions 5-6 (LM284) and Jc8-9 (LM282) are the forth with 7%.

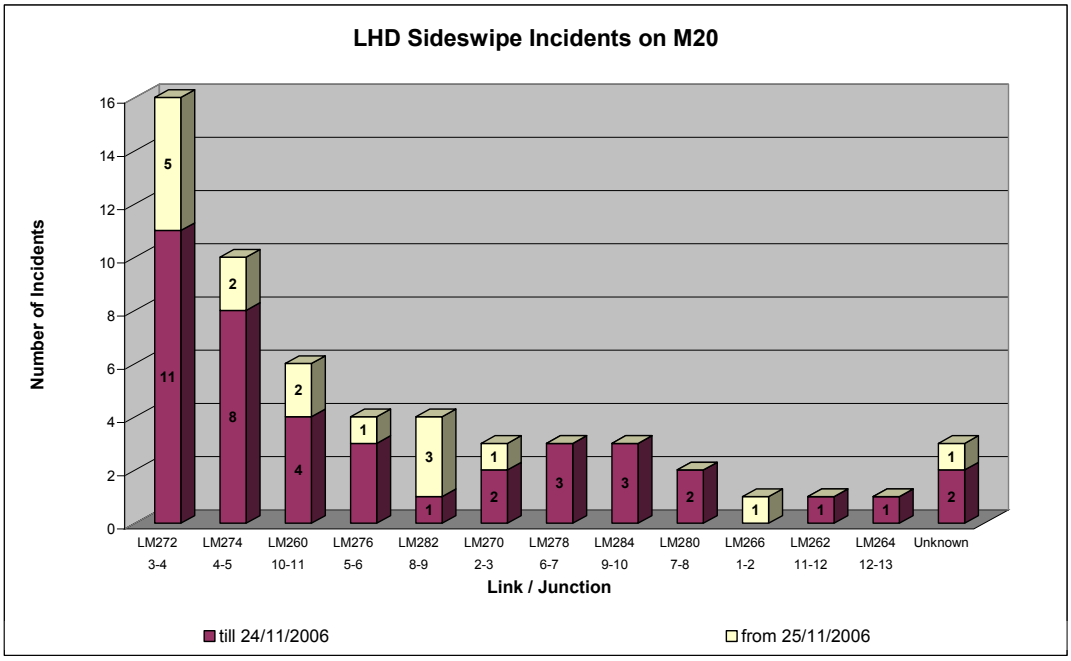


Figure 9.

Number of LHD Sideswipe Incidents on M20 by carriageways

	till 24/11/2006	from 25/11/2006	Σ
Carriageway "A"	21	7	28
Carriageway "B"	13	8	21
Unknown	7	1	8
	41	16	57

Percentage of LHD Sideswipe Incidents on M20 by carriageways

	till 24/11/2006	from 25/11/2006	Σ
Carriageway "A"	37%	12%	49%
Carriageway "B"	23%	14%	37%
Unknown	12%	2%	14%
	72%	28%	

On the M20 49% of the LHD sideswipe incidents occurred on ‘Carriageway A’ and 37% on ‘Carriageway B’. (The carriageway where the incident happened is unknown in 14% of the incidents.)

Comparing to the period before the Fresnel Lenses were distributed (23/08/2006 – 24/11/2006) a certain drop in the numbers of the incidents can be observed in the try-out period of the Fresnel Lenses (from 25/11/2006) in both carriageways. The numbers decreased from 72% to 28% calculated to both carriageways, from 37% to 12% on ‘Carriageway A’ and from 23% to 14% on ‘Carriageway B’.

The ranking of the worst areas where most of the incidents happened is mainly different by carriageways. According to 'Table 4' the worst two links on Carriageway "A" are LM272 (Jc 3-4) – 1st and LM274 (Jc 4-5) – 2nd. The first two links are the same on Carriageway "B" however in reverse order.

Worst areas on M20 by carriageway							
Carriageway "A"				Carriageway "B"			
Nr.	Junction	Link	Total	Total	Link	Junction	Nr.
1.	3-4	LM272	13	4	LM274	4-5	1.
2.	4-5	LM274	5	3	LM272	3-4	2.
3.	10-11	LM260	3	3	LM270	2-3	3.
4.	5-6	LM276	2	3	LM282	8-9	4.
5.	6-7	LM278	2	2	LM284	9-10	5.

Table 4.

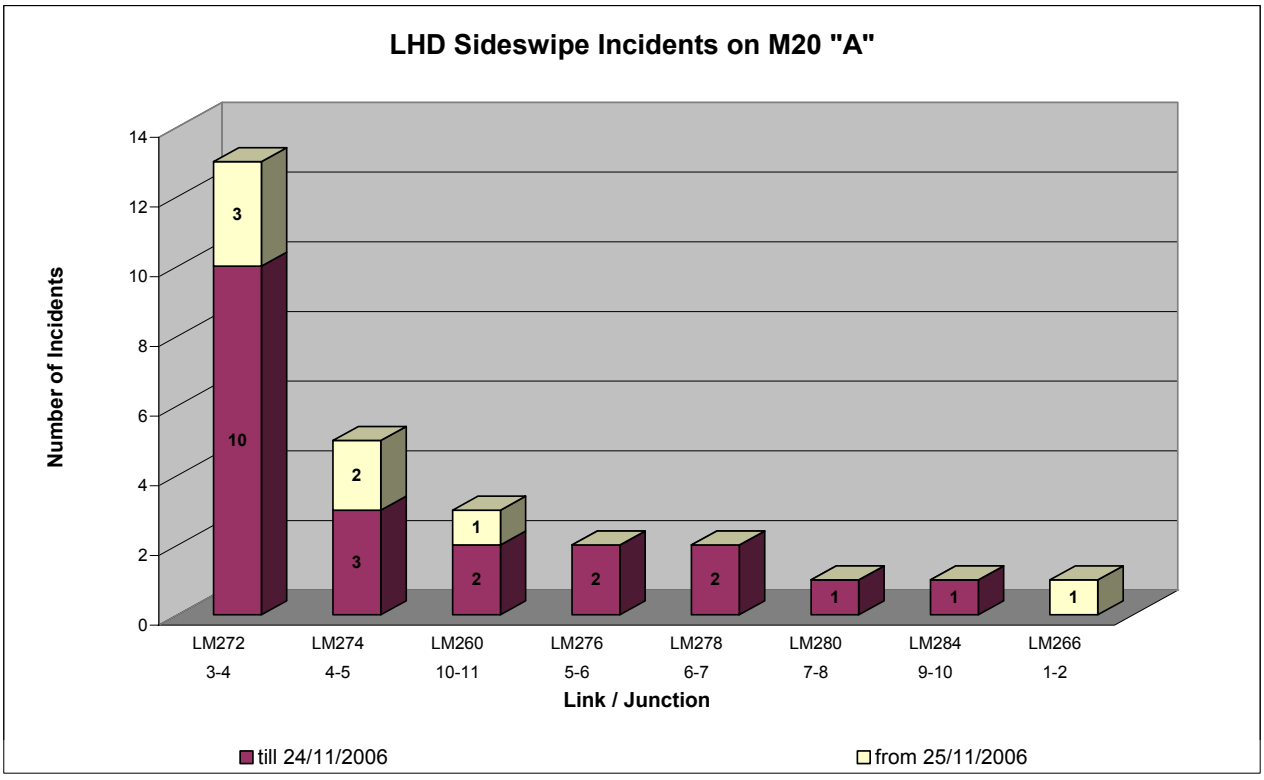


Figure 10.

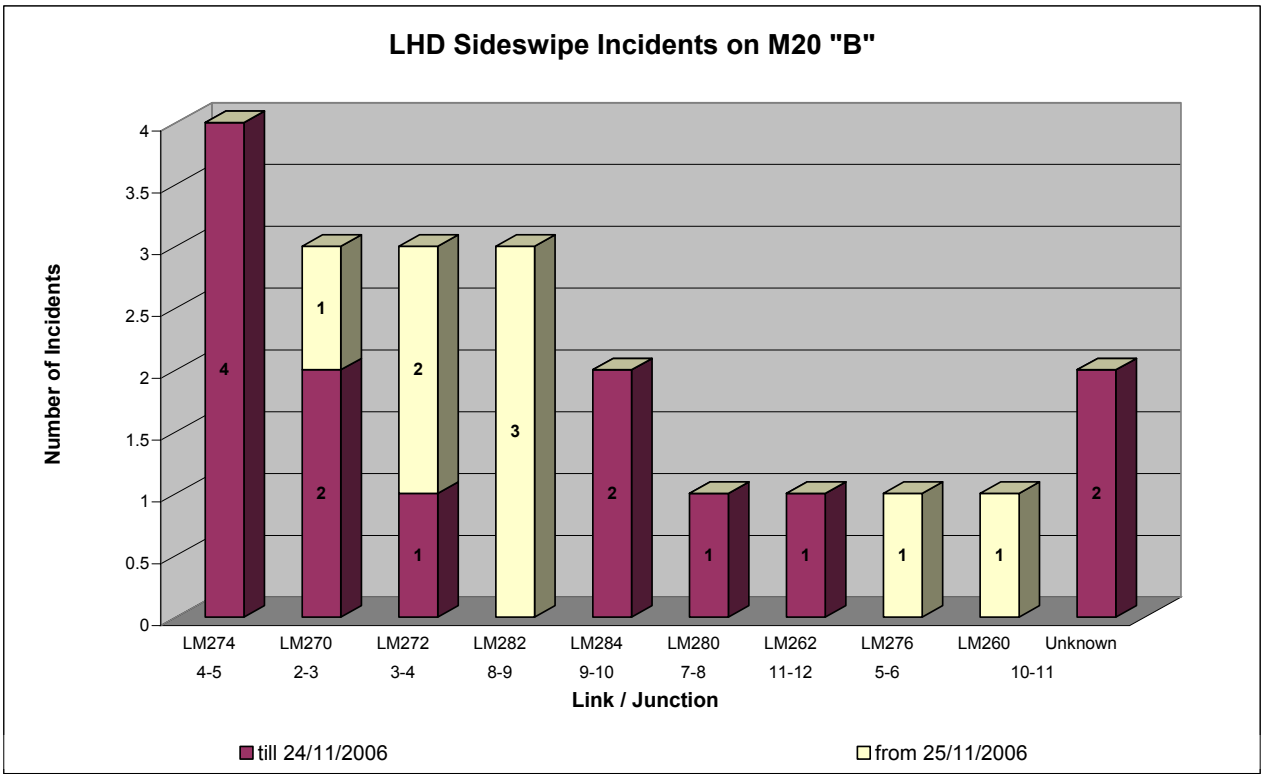


Figure 11.

'Figure 10' shows the number of incidents by links and junctions on Carriageway "A" 'Figure 11' shows the same for Carriageway "B". Because of the relatively low number of the incidents it is difficult to make general observations.

Summary:

- 12% of all sideswipe incidents involving LHD HGV's occurred on the M20.
- 28% of the incidents happened between Junctions 3 and 4 (link LM272). The second worst area was between Junctions 4 and 5 (links LM274) with about 18% of the incidents.
- 48% of the LHD sideswipe incidents occurred on Carriageway "A", 37% on Carriageway "B" on M20.
- After Fresnel Lenses were distributed the number of the incidents dropped from 73% to 28% (calculated to both carriageways).
- The worst links are mainly different by carriageways.
- The location of the most critical links (between Junctions 3 and 5) is corresponding to the area where M20 meets M26.

Annex G Insurance Reports

Included below are some statements to insurance companies referring to sideswipe incidents.

Was the accident reported to the Police: Y/N	Reference and name of Reporting Officer:	
Address of Police station where reported:		
Town:	County:	Postcode:

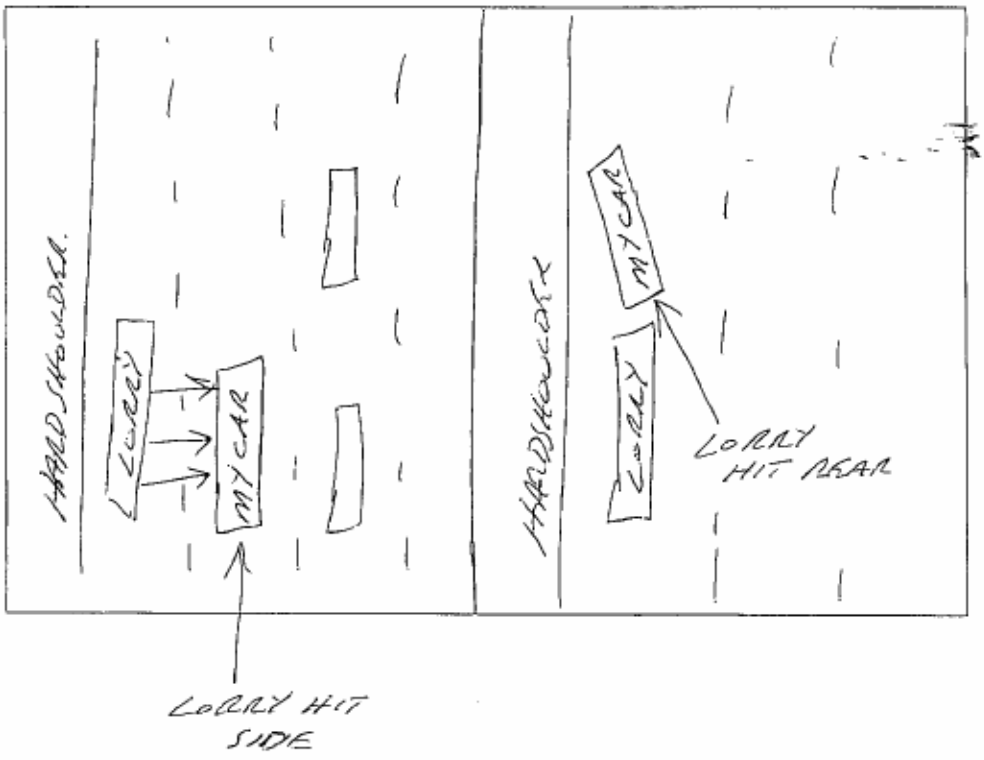
K. DESCRIPTION OF ACCIDENT

DRIVING IN MIDDLE LANE 40-50 mph. SIGN TO SAY INSIDE LANE CLOSED. THE LORRY SWERVED INTO MY LANE FROM THE INSIDE LANE AND SMASHED INTO SIDE OF MY CAR. MY CAR BACKED UP IN FRONT OF THE LORRY WHERE IT THEN SMASHED INTO THE BACK OF MY CAR.

L. RESPONSBILITY (who do you consider to blame and why?)

THE LORRY DRIVER. WHY – AS ABOVE.

M. SKETCH OF SCENE (please indicate direction of vehicle(s), road markings etc.)



Was the accident reported to the Police: Y/N	Reference and name of Reporting Officer:
Address of Police station where reported: HIGHWAYS AGENCY, MOTORWAY CONTROL,	
Town:	County: WARWICKSHIRE Postcode:

K. DESCRIPTION OF ACCIDENT

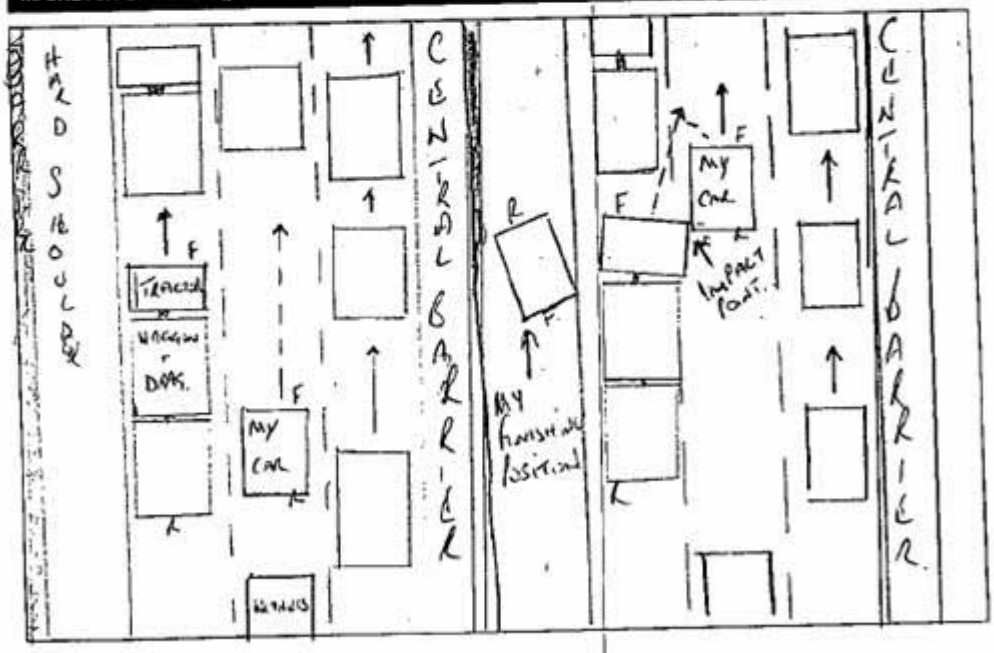
WHILE TRAVELLING ALONG M42 SOUTHBOUND IN THE MIDDLE LANE, I WAS PASSING A LORRY THAT WAS TRAVELLING ALONG IN THE NEARSIDE LANE. MY SPEED WAS 49 MPH. JUST AS I WAS CLEARING THE TRACTOR UNIT, THE LORRY PULLED OUT TO THE RIGHT, TO OVERTAKE ANOTHER LORRY. THE LORRY'S OFFSIDE CORNER OF THE TRACTOR UNIT HIT THE NEARSIDE REAR BUMPER OF MY CAR. THIS CAUSED MY CAR TO SPIN IN FRONT OF LORRY AND COLLIDE WITH THE BARRIER AT THE HARD SHOULDER AND CAME TO REST FACING NORTH HANDS ON THE HARD SHOULDER. THE LORRY WAS LEFT HAND DRIVE

L. RESPONSBILITY (who do you consider to blame and why?)

THE DRIVER OF THE WAGON + DOG

HE PULLED OUT TO OVERTAKE LORRY BEFORE I HAD FULLY PASSED HIS VEHICLE. HE DID NOT CHECK PROPERLY AS HIS VEHICLE WAS LEFT HAND DRIVE

M. SKETCH OF SCENE (please indicate direction of vehicle(s), road markings etc.)



F: FRONT
R: REAR

ACCIDENT DETAILS

Day, date and time of accident:	May 2006
Location:	M1

Please describe the circumstances of the accident.

Please try to describe the accident exactly as it happened, clearly stating the sequence of events; give as much detail as possible. Continue on the reverse of this page if necessary.

I was traveling Northbound on the M1 between 11 and 12 on Sunday morning ~~I looked~~ (m) traveling in the middle lane overtaking a lorry, I looked in my rear view mirror and saw ~~that~~ (m) the lorry changing lane ~~only~~ (m) ~~there was a car traveling~~ (m) but the red Rover ~~car~~ behind me hadn't got past the lorry. I saw the lorry hit the back of the ~~the~~ (m) Rover which wobbled ~~a lo~~ (m) alot and both ~~vehi~~ (m). Vehicles pulled over onto the hard shoulder.

ACCIDENT DETAILS

Day, date and time of accident:	May 2006
Location:	M1

Please describe the circumstances of the accident.

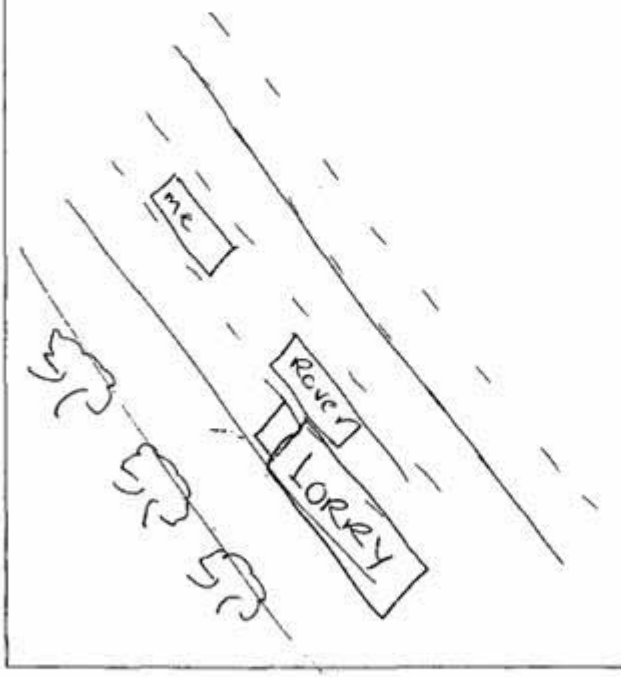
Please try to describe the accident exactly as it happened, clearly stating the sequence of events; give as much detail as possible. Continue on the reverse of this page if necessary.

I were going both on the M1 towards Dunstable and were just speeding up after a 40 mph limit after road works (approx Speed 50mph). It was raining but not heavily when my partner who was driving shouted, "That yellow Lorry's going to hit Haley," with this I turned around and saw the lorry come into the next lane and hit haley on the rear passenger quarter of the car. The car then snake to ~~the~~ my left (as I was facing backwards and looking directly at the incident) and then right. The driver kept the car under control, then indicated and moved onto the hard shoulder followed by the lorry.

***** IMPORTANT *****

Please draw a diagram of the accident scene.

Please try to include all relevant details, including your position in relation to the accident, the position of any other witnesses, the position of the vehicles involved, etc.



I BELIEVE THAT THE FACTS I HAVE DETAILED IN THIS DOCUMENT ARE TRUE TO THE BEST OF MY KNOWLEDGE

Signed..... **Dated**.....

Annex H Department for Transport Road Accident Statistics (TSR5) Report

Fresnel lens sideswipe project

A Fresnel lens sideswipe study has been put together as a result of evidence suggesting a significant occurrence of sideswipe accidents[6]. The Kent Police statistics concludes that 'in Kent there is currently one sideswipe every day and a half'. As a result, between 26th November and 18th December 2006, the Highways Agency funded and VOSA distributed around 40,000 lens through the Immigration service in Calais, France; the aim being to reduce sideswipe incidents by reducing the existing blind spot when changing lanes. This report examines the study's findings to ascertain whether the introduction of the lens reduced the number of accidents and injuries caused by side swiping.

Key findings

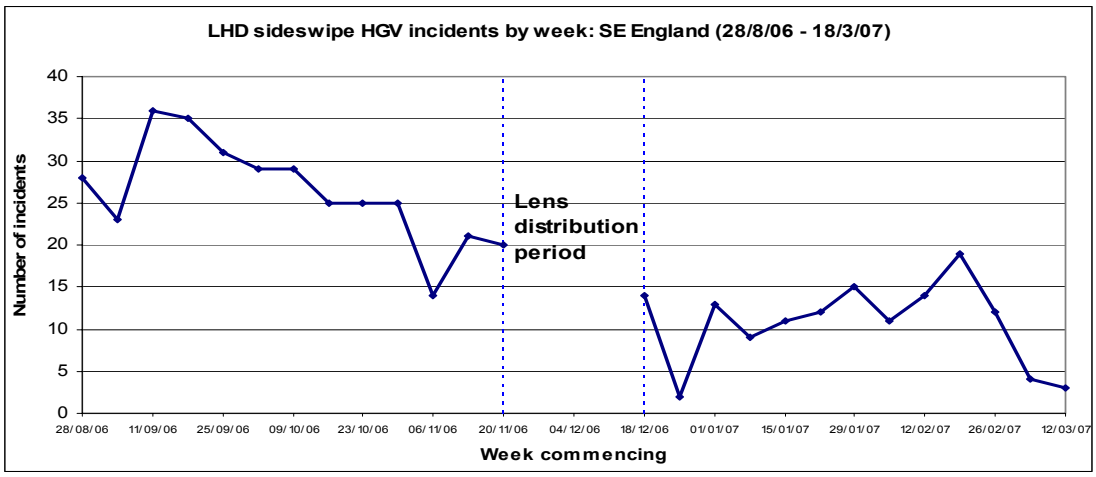
- The table below shows the spread of Heavy Good Vehicle (HGV) incidents and the percentage change in incidents before and after the lens distribution.

		Before (28/8/06 - 26/11/06)	After (18/12/06 - 18/3/07)	% reduction
LHD	No. incidents	368	160	*57%*
	No. sideswipe incidents	341	139	*59%*
	Of which no. of incidents with lens fitted	*15*	*13*	*13%*
RHD	No. incidents	33	14	*58%*
	No. sideswipe incidents	26	8	*69%*
	Of which no. of incidents with lens fitted	*1*	*0*	*100%*

The number of left hand drive (LHD) sideswipe incidents decreased by 59%. As seen in the table above, the percentage reduction in right hand drive (RHD) incidents is similar to the percentage reduction with LHD incidents, suggesting that there are maybe other factors, other than the introduction of the Fresnel lens, which are affecting the frequency of incidents, for both RHD and LHD HGVs. However, it should be noted that the number of RHD incidents are small in number, and considerably smaller than the frequency of LHD incidents (approximately 11 times less)

- The average number of accidents per week has decreased since the introduction of the Fresnel lens. The average number of incidents per week for all HGVs fell from 31 before the introduction of lenses to 13 after the lens distribution. There was a similar reduction for all LHD HGV incidents (falling from 28 to 12 incidents per week) and for all LHD HGV sideswipe incidents (falling from 26 to 11 incidents per week). The number of LHD HGV sideswipe incidents per week from 28/8/06 to 18/3/07 can be seen in the line graph below.

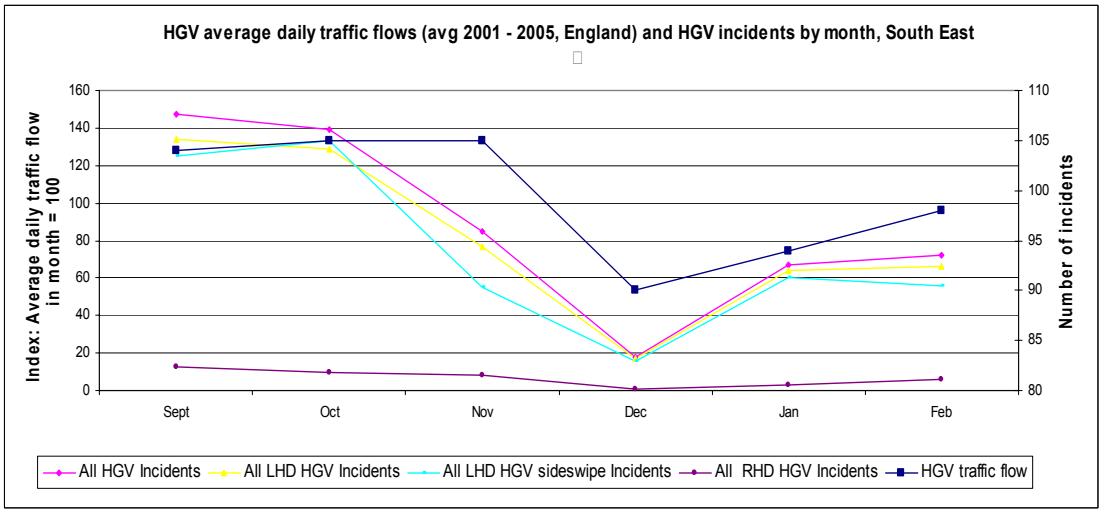
[6] Side swipe incidents occur when the vehicle is moving from lane 1 to 2 on motorways.



In order to show the changes before and after the lens distribution period more clearly, the coordinating group decided that data collected during the lens distribution period (27/11/06 – 17/12/06) should not be used. The graph shows that there has been a definite decline in the number of LHD sideswipe incidents compared to before the lens distribution.

Comparison with other exposure data

- In order to put the sideswipe incidents into perspective, traffic flow data[7] for HGVs over England has been used for comparison. The traffic data is a national index, so whilst this data is not a direct comparison to the HGV incident data (which covers the South East and a six month period in 2006-07); it allows us to see overall trends.



The average daily traffic index has a trough in December. This is due to the effects of Christmas. This fall in December is also apparent in the number of HGV incidents, although this is partly due to data not being reported during the lens distribution period (27/11/06 – 17/12/06).

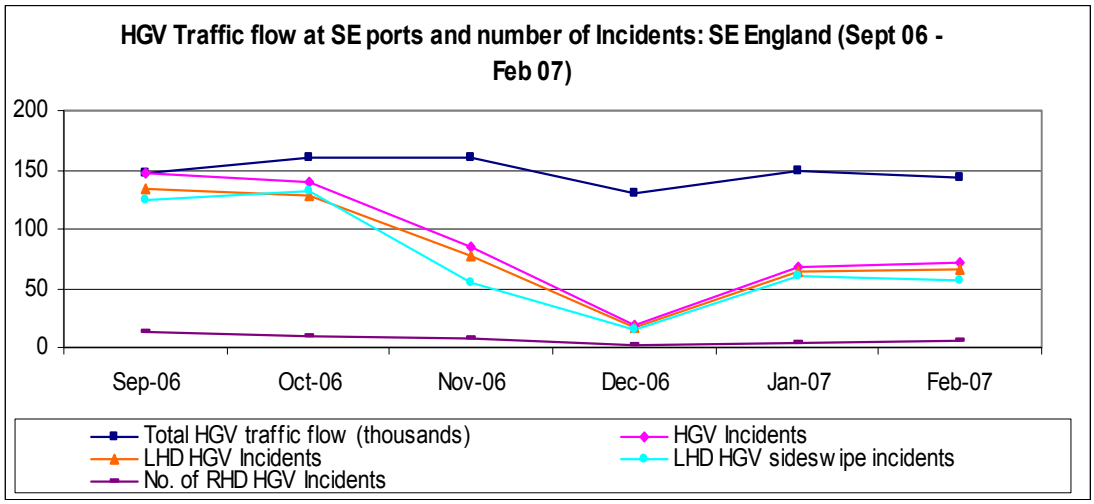
Traffic and HGV incidents are generally lower in January to February than September to November. The number of HGV incidents does seem to levelling off in

[7] Traffic data is from the DfT National Core Census, and is a 5-year average index from 2001 to 2005.

January and February, although due to the limited amount of data it is difficult to conclude if this levelling off is likely to be permanent.

Note: August and March data has not been included due to only partial data collection within each of these months. This would have distorted the graph. The data collection began on 28th August 06 and ended on 18th March 07.

- Looking specifically at the total traffic flow[8] measured at South Eastern ports, the number of HGV incidents follows a similar pattern to the HGV traffic entering into SE ports. There is a decline in HGV traffic flow between November and December, although as the graph overleaf shows, the number of HGV incidents has declined more dramatically.

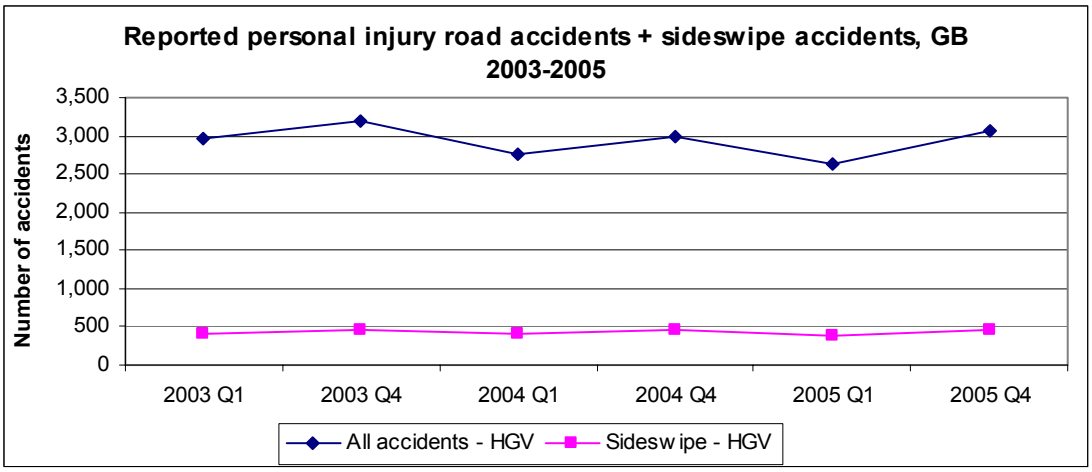


The Fresnel lens was introduced at the end of November. There is a definite reduction in incidents since this date, although the 'Christmas' effect may have played some part in this reduction.

- The latest reported personal injury road accident statistics (2005) show that the number of LHD foreign-registered HGV vehicles in sideswipe accidents as a proportion of all accidents involving a HGV is similar each month of the year, varying from 3% to 5%. Although this data is not directly comparable with the sideswipe incident information, it would seem that there is not a distinguishable difference in the proportion of LHD foreign-registered HGV sideswipe accidents to the total number of HGV accidents in 2005. The reduction in LHD sideswipe incidents since the introduction of the Fresnel lens is unlikely therefore to be due to a monthly pattern of accidents.

- Using reported personal injury road accident data, the number of sideswipe accidents involving at least one HGV has not changed significantly over the period 2003-2005 when looking at Q1 and Q4 (Note: Q1 and Q4 have been selected due to the Fresnel lens period mainly covering these quarters). There seems to be a general pattern, in both forms of accident data, that quarter 4 figures are higher than quarter 1.

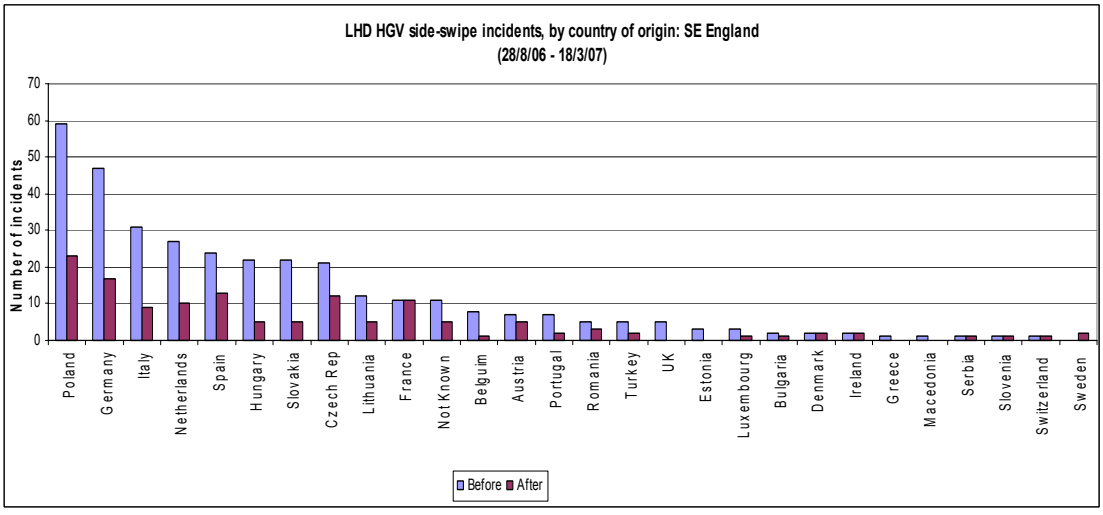
[8] Traffic flow data measured at the Calais, Coquelles and Dunkerque ports by ICIS



Most sideswipe incidents do not result in personal injury, which means these incidents will not be reported in the road accident data. The total HGV incidents, before and after the lens distribution period, include both personal injury and damage only incidents. This also included one reported fatality from a LHD HGV without a Fresnel lens fitted.

Other findings from the study include:

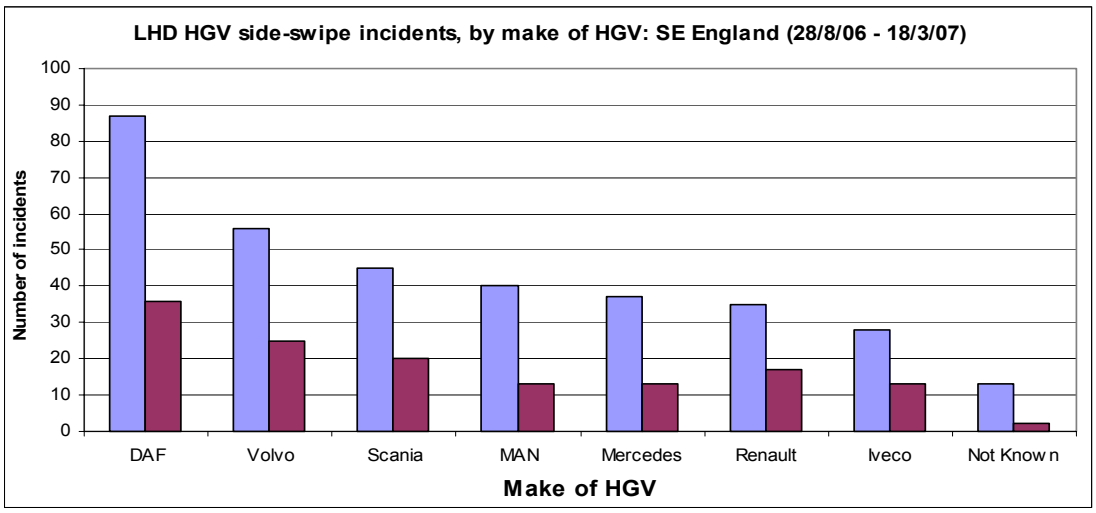
- After the lens distribution, it was found that 29% of drivers involved in LHD HGV sideswipe incidents originated from Poland or Germany. This is a 2 percentage point decrease from before the lens distribution. The number of LHD HGV sideswipe incidents by country of origin is shown in the chart below.



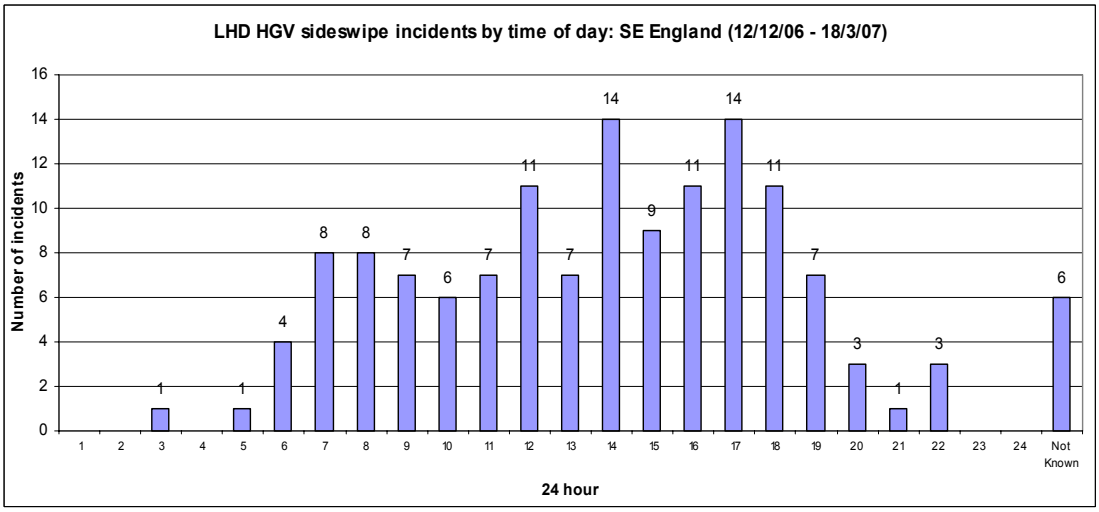
Despite the high proportions for Poland (17%) and Germany (13%), Poland only accounts for less than 3% of road goods vehicles outward to mainland Europe by ferry and the channel whilst Germany accounts for just 8%[9]

- Both before and after the lens distribution, 1 in 4 LHD HGV sideswipe incidents involved a DAF make of HGV. The bar charts below show the distribution of LHD HGV sideswipe incidents by HGV makes.

[9] Source: Transport Statistics Great Britain, Table 4.11

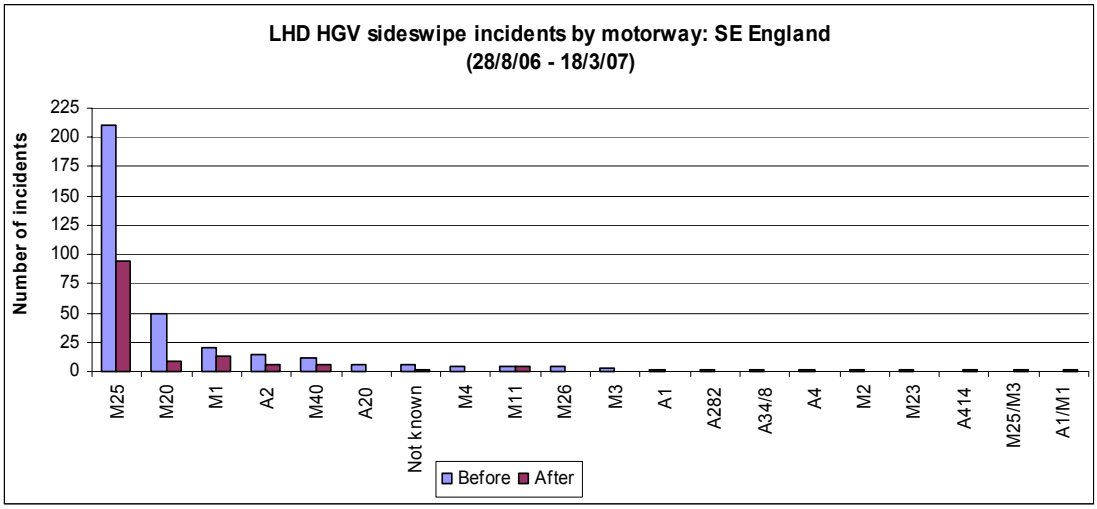


- Since the lens distribution, 43% of LHD HGV sideswipe incidents have occurred between 2pm and 6pm, with over half (56%) occurring between 12pm and 6pm. This is shown in the chart overleaf.

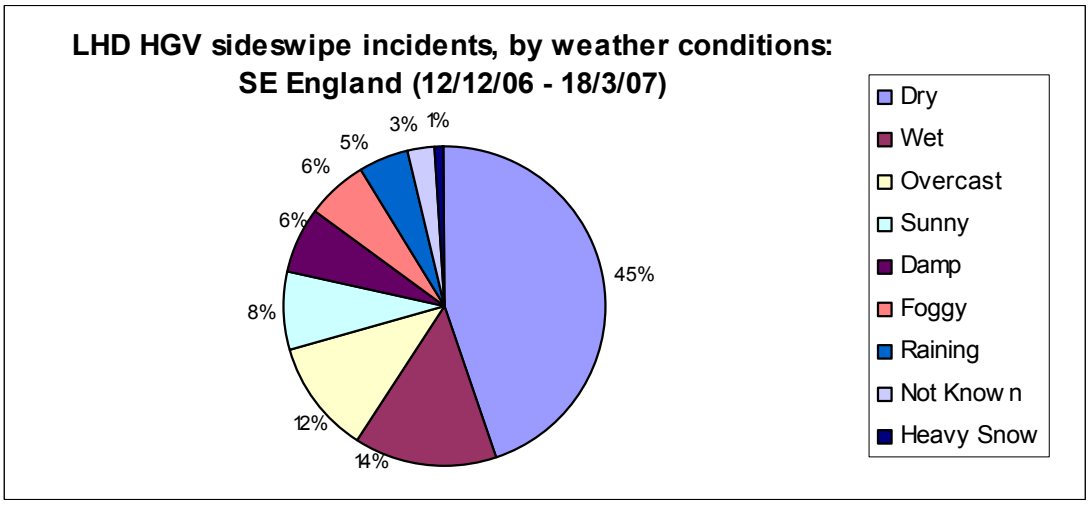


Visually, since the distribution of lenses, there appears to be more incidents occurring at later times in the day. There was a similar time distribution of incidents before the lens distribution, suggesting that between 12 and 6pm are the peak times for HGV traffic, and as a result more incidents are likely to occur.

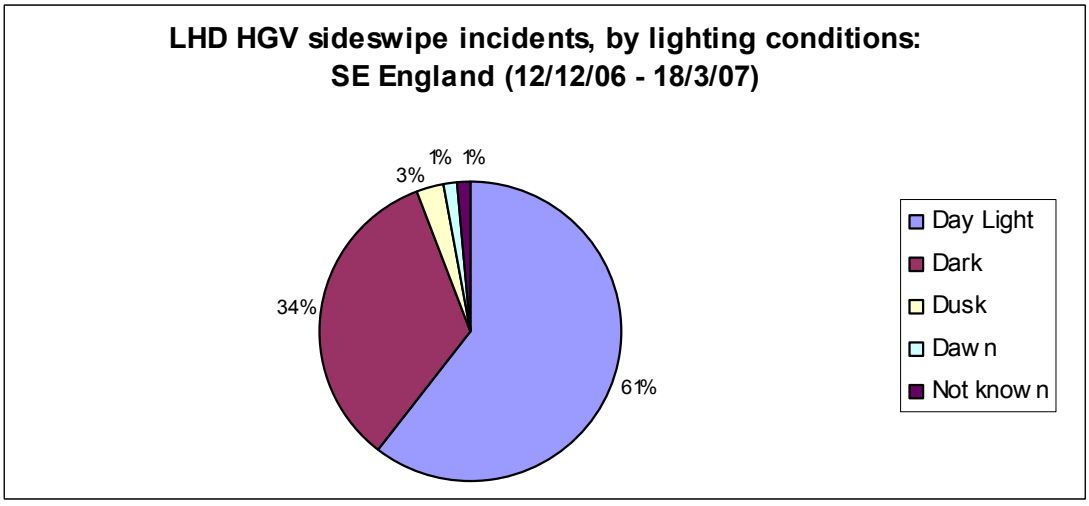
- After the lens distribution, nearly 7 in 10 LHD HGV sideswipe incidents occurred on the M25, with a further 9% occurring on the M1. This is relatively consistent with the level of incidents before the introduction of the Fresnel lens.



- In the period after the distribution of Fresnel lenses, 44% of the LHD HGV sideswipe incidents happened in dry weather conditions. A further 26% were in overcast or wet conditions.



- Whilst over 60% of LHD HGV sideswipe incidents occurred in daylight, 34% occurred during hours of darkness.

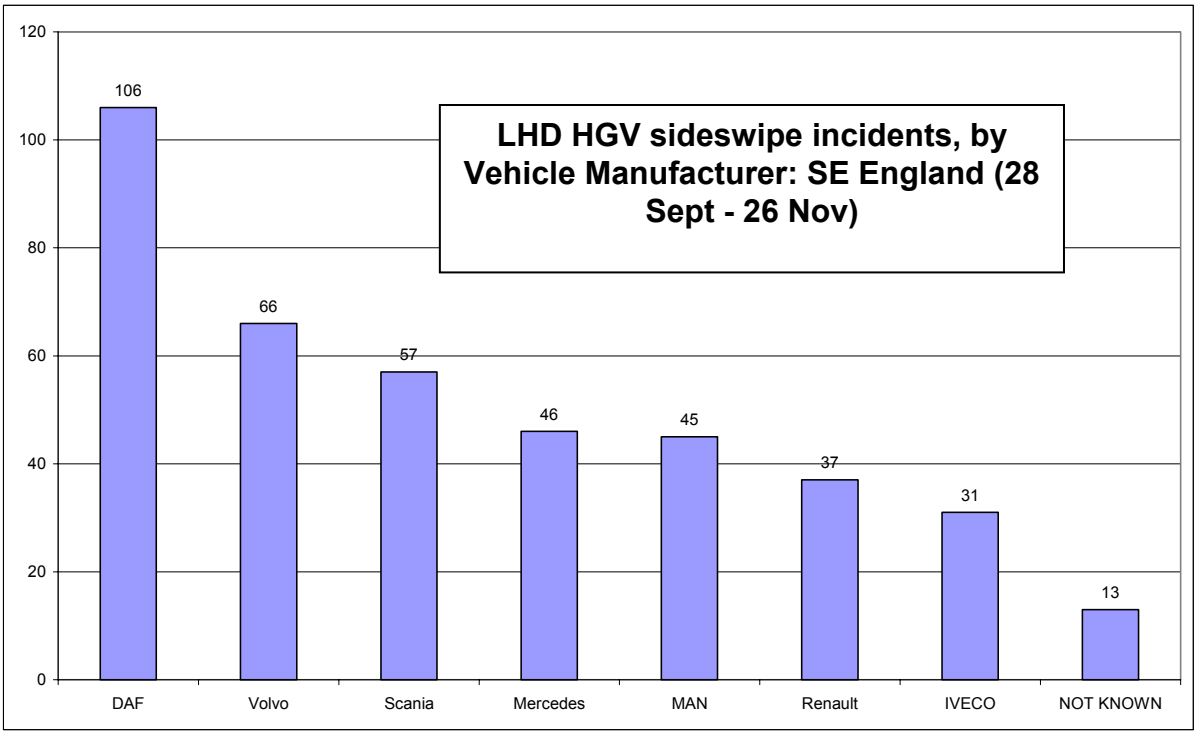


- 84% of all HGV incidents after the lens distribution involved articulated vehicles (over 13 tonnes); 87% of all LHD HGV incidents involved articulated vehicles, as did 90% of LHD HGV sideswipe incidents. This was the case before the lens distribution, suggesting that the larger HGVs are more likely to be involved in incidents. Possible explanations for this could be due to the driver sitting higher from the road, due to the larger size of the HGV, and therefore the driver having a larger blind spot in the adjacent carriageway.

Annex I: Data collected by Vehicle Manufacturer

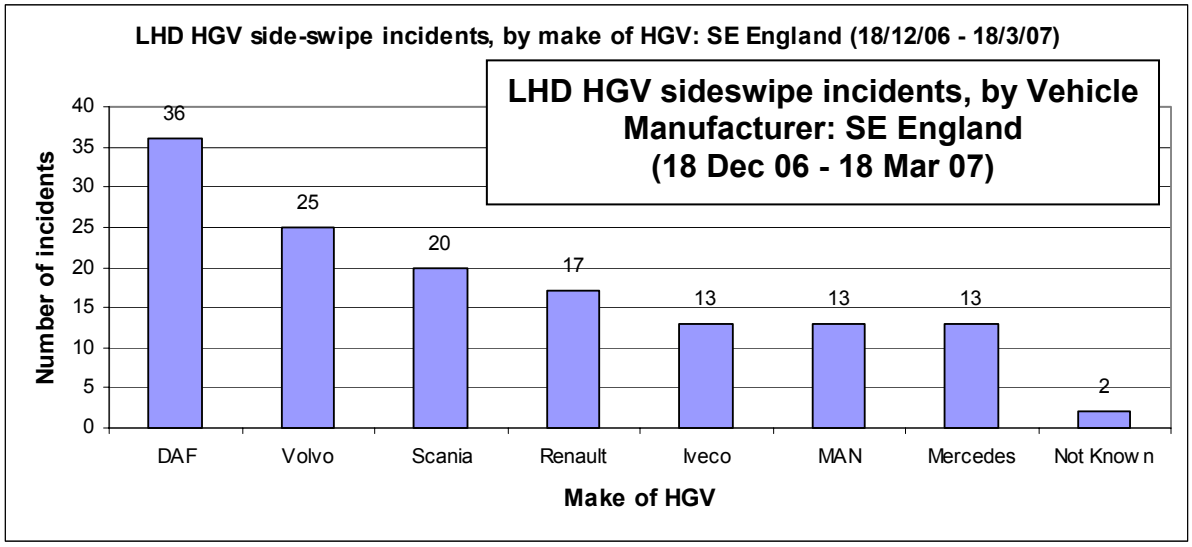
LHD HGV sideswipe incidents, by Vehicle Manufacturer: SE England 28 Sept - 26 Nov (Phase 1)

Data showing how the different manufacturers are represented in the LHD Vehicle parc was not available at the time of writing; this data is therefore presented for information only.



Graph showing the different vehicle manufacturers involved in side swipe incidents

14.5.4 **LHD HGV sideswipe incidents, by Vehicle Manufacturer: SE England 18 Dec 06 - 18 Mar 07 (Phase 2)**



The data collected in the second phase follow the same trends as for the findings in the first phase.

14.5.5 **Photographs showing the different Cab side window designs**

Below is a selection of photographs of the main manufacturers' vehicles, and the most common models involved in sideswipe incidents.

From the pictures it is clear that different makes have different side window heights and layouts.

MAN

DAF

Renault

Volvo

Mercedes

Iveco

Scania

14.5.6 **Side window heights.**

The table below shows a selection of window heights from different manufacturers and models; there are too many models of vehicle on the road to show them all. From the data collected it can be seen that the lower edge window heights vary from 1.8M for the lowest to 2.2 for the highest. It is the higher ones that tend to be used for intercontinental trips.

Make	model	Window height 'm'			Type	
		*Low	*Med	*High	Tractor	Rigid
DAF	60 180		1.8			x
DAF	CF 85		1.93		x	
DAF	95XF			2.2	X	
DAF	95XF			2.2		X
DAF	Euro 2 210	2				X
ERF	CELECT ecii			2	X	
FODEN	A3000			2.07	X	
IVECO	440E42	2			X	
IVECO	STRALIS			2.2	X	
IVECO	440		2			X
MAN	TGA 18 360		2			X
Merc	Actros 184		1.97		X	
VOLVO	FL7	1.8				X

* low, Med and High refers to the cab construction type

It seems likely that the design of the side window may well have some influence on the probability of the vehicle being involved in side-swiping incidents.

It also seems likely that vehicles that have high horizontal lower edged windows do have a larger blind-spot than those with a forward-sloping side window lower edge.