Transport Research Laboratory
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CLIENT PROJECT REPORT CPR2188

Survey of vehicle roadworthiness of HCVs and driver compliance with EU rules on driving times, breaks and rest periods

Summary of HGV and bus survey results - 2014 data

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1 Introduction

The aim of this survey was to determine the current levels of driver compliance and vehicle roadworthiness of HGVs and buses in Ireland with the operating licence and EU drivers' hours' regulations.

The survey was designed by the Transport Research Laboratory (TRL) and carried out by the Vehicle Inspectors and Transport Officers at RSA. Heavy goods vehicles (HGVs) and buses were randomly stopped for inspection at roadside locations between the 1st January and 30th December 2014.

This was the second survey of its kind, the first of which was carried out in 2012.

This report is a summary of the results from the HGV and bus surveys undertaken in 2014 with comparisons to results from the 2012 survey. The final section of this report also contains some discussion about the effectiveness of the Commercial Vehicle Reform (CVR) programme introduced in 2013, which aims to improve the roadworthiness of commercial vehicles in Ireland.

2 Terminology

In this report the term 'roadworthiness inspection' refers to the roadside inspection carried out by the Vehicle Inspectors as part of the survey. The term 'driver compliance check' refers to the roadside check of the compliance of drivers with EU rules on driving times, breaks and rest periods and also operator licensing compliance carried out by the Transport Officers as part of the survey.

The term 'defect' refers to a motor vehicle or trailer roadworthiness defect and the term 'infringement' refers to a breach of the licensing, tachograph or drivers' hours' requirements.

'HGV survey' refers to the survey of HGVs (i.e. vehicle categories N2 and N3) and trailers (i.e. O3 and O4). 'Bus survey' refers to the survey of passenger vehicles with more than eight passenger seats (i.e. vehicle categories M2 and M3).

3 Notes about the data

To compare between the two surveys, the 2014 data was weighted using the road type of the inspection site. Weighting the data adjusts the results from the 2014 inspections to take into account differences in the location of the inspections from the survey in 2012 to ensure, as far as possible, the results from the 2014 analysis are comparable to the results from 2012. Inspections where the road type was recorded as unknown were excluded from the analysis. For the roadworthiness inspections this resulted in 4% of HGVs, 4% of trailers and 24% of buses being excluded from the analysis. For the driver compliance checks, 3% of HGV drivers and 7% of bus drivers were excluded.

The results from the bus survey are based on much smaller sample sizes than the results from the HGV survey. As a result, care should be taken when interpreting the figures from the bus survey, as small changes in the number of vehicles in each group mean that larger changes in the proportions may be due to chance alone. Due to the small number of buses inspected at the roadside, the results from the bus survey were not weighted. For operational reasons, e.g. reducing the delays experienced by bus

passengers, most bus inspections are carried out on the companies' premises or on location at events and not at the roadside (the focus of this report).

Vehicles were randomly selected to participate in the survey; however, selection of inspection sites may introduce bias into the results. In 2012, many of the bus inspection sites were located near to schools or on school routes. As a result, school buses may be over-represented in this survey and the results are not necessarily representative of the national bus fleet as a whole. This same bias in site selection was not evident in 2014. For this reason, care should be taken when comparing the results of the 2012 and 2014 bus surveys as the results may not be directly comparable.

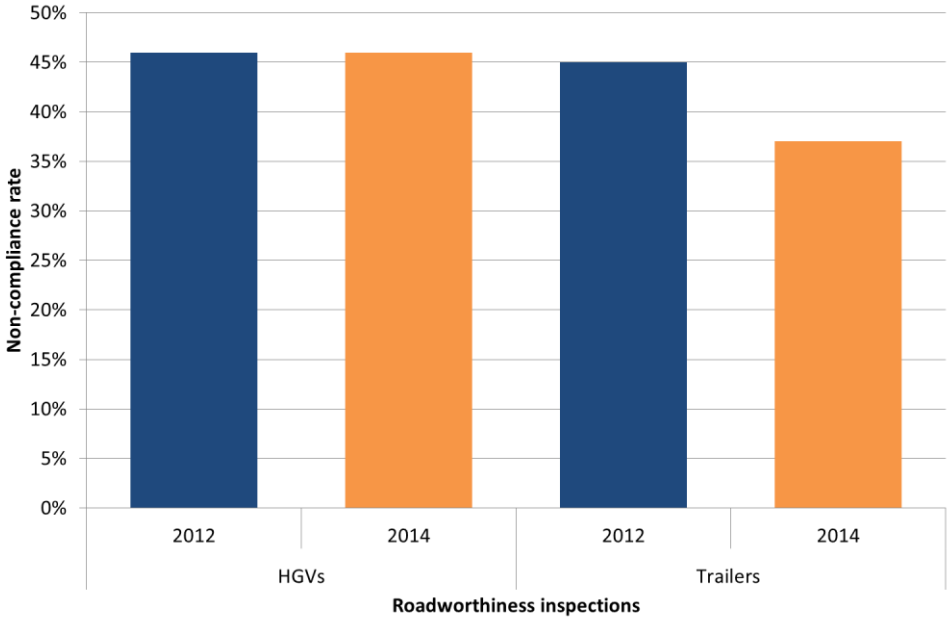
4 HGV survey

4.1 Key findings – roadworthiness inspections

The Vehicle Inspectors checked 14,845 vehicles (9,352 HGVs and 5,493 trailers) between 1st January 2014 and 30th December 2014.

Figure 1 shows the proportion of HGVs and trailers that were non-compliant (i.e. had at least one defect recorded) in the 2012 and 2014 surveys.

Figure 1: HGV and Trailer vehicle roadworthiness inspection non-compliance rates for the 2012 and 2014 surveys



In 2014, 46% of the inspected HGVs had at least one defect. The equivalent figure for trailers was 37%.

The HGV non-compliance rate remained the same from 2012 to 2014; however there was a significant[1] decrease in the proportion of trailers that had defects from 45% in 2012 to 37% in 2014.

[1] Within this report we use the convention of the behavioural sciences to report results as 'statistically significant' if the p-value is less than 0.05. A p-value <0.05 indicates that there is a 95% chance that the comparison being made has arisen due to the variable under investigation, and not simply due to random fluctuations in the data.

HGVs

The results from the 2014 analysis of 9,352 HGVs showed:

- Forty six percent of the inspected HGVs had at least one defect (30% had a maximum defect severity of minor, 15% were major, and 1% were dangerous). 54% had no defects recorded.
- In total, 8,393 defects were detected; an average of 0.9 defects per HGV inspection.
- The most common defect category in which HGVs failed inspections was the 'lighting and electrical equipment' category (20% of inspections). However, when the data are broken down into the different subcategories, defects with tyres were the most common (703 defects).
- Of the defects listed within the top 10, defects with the vehicles' tyres were commonly recorded as dangerous (59%).
- Inspection site, vehicle age and inspection province were identified as important factors for predicting which HGV inspections are likely to record a defect. No significant difference in the proportion of vehicles with a defect was found across the days of the week.
    - Defects were more commonly found at weighbridges (where 55% of HGVs had at least one defect) and least commonly found on motorways and regional roads (42%). 46% of HGVs on national roads and 48% of HGVs at ports had at least one defect.
    - Defects were more commonly recorded for older vehicles than newer vehicles: the proportion of HGVs with at least one defect increased from 15% for vehicles aged 0-2 years to 80% for vehicles aged 21-30 years.
    - Inspections in Connacht had the highest proportion of HGVs (52%) with at least one defect and Ulster had the lowest (41%).

Comparison between 2012 and 2014 results shows:

- Forty six percent of HGV inspections had at least one defect in 2012 and 2014. However, in 2012 4% of inspection had a maximum defect severity 'dangerous' compared with 1% in 2014, which suggests that the defects identified in 2014 were less serious than those in 2012.

Trailers

The results from the 2014 analysis of 5,493 trailers showed:

- Thirty seven percent of trailers had at least one defect recorded, 22% of the inspections had a maximum defect severity of minor, 14% were major, and 1% were dangerous. 63% had no defects.
- In total, 3,138 defects were detected: an average of 0.6 defects per trailer inspection.
- Trailers most commonly failed the inspection due to defects with the 'braking equipment' and 'lighting and electrical equipment' (13% of inspections respectively).
- Absence of a Certificate of Roadworthiness (CRW) at the roadside (captured as 'absence of technical inspection') was the most common defect (reported in 9% of trailer inspections, compared with 4% of HGV inspections).
- Similarly to HGVs, of the defects listed within the top 10, defects with the trailers' tyres were commonly recorded as dangerous (54%).
- Inspection site and inspection province were identified as important predictors of whether an inspection would detect a trailer defect. No significant difference in the proportion of vehicles with a defect was found across the days of the week.
    - More trailers inspected at weighbridges had defects (45%) than any other type of inspection site. Defects were least commonly found at ports (31%). The proportion of vehicles with at least one defect on Motorways, national roads, and regional roads were 39%, 38%, and 35% respectively.
    - Inspections in Connacht had the highest proportion of trailers with at least one defect (46%) and a much higher proportion with a maximum defect severity of major than the other provinces. Ulster had the lowest proportion of trailers with at least one defect (32%).

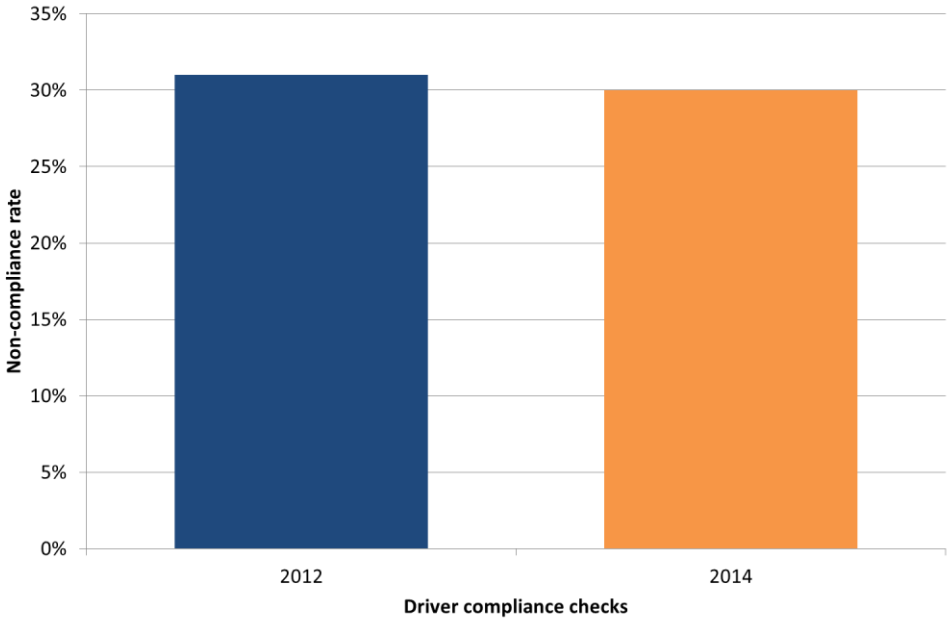
Comparison between 2012 and 2014 results shows:

- The proportion of trailers with at least one defect decreased significantly from 45% in 2012 to 37% in 2014.
- Similarly to HGVs, the proportion with maximum defect severity dangerous has also decreased (3% compared to 1%).

4.2 Key findings – driver compliance checks

In 2014 the Transport Officers carried out 3,281 HGV driver compliance checks as part of this survey.

Figure 2: HGV driver compliance check non-compliance rates for the 2012 and 2014 surveys



In 2012 31% of HGV drivers had at least one infringement recorded; in 2014 this had reduced to 30%. This difference was not significant.

HGV drivers

The 2014 results from 3,281 driver compliance checks showed:

- Thirty percent of HGV driver inspections had at least one infringement; 10% of which had a maximum infringement severity 'very serious', 13% had maximum infringement severity 'serious' and 8% had maximum infringement severity 'minor'.
- In total, 2,177 infringements were detected across 3,281 checks: an average of 0.7 infringements per driver compliance check.
- The most common infringements were 'Fail to take adequate breaks' (488 infringements) and 'Failure to correctly operate mode switch' (419 infringements).
- Inspection site, vehicle age, and inspection province were identified to be important when predicting whether a compliance check was likely to identify an infringement.
    - Inspections at motorway sites and regional road sites resulted in a larger proportion of inspections with at least one infringement (34%) than ports and weighbridges (25% and 29% respectively).
    - As age of the vehicle increased, the proportion of vehicles with at least one infringement increased from 18% of vehicles aged 0-2 years to 38% of vehicles aged 21-25 years.
    - Drivers inspected in Ulster were more commonly recorded as committing an infringement (41%) than the other provinces.
    - Other factors including the day of inspection, driver age and driver nationality showed no significant difference in the proportion of drivers committing an offence across the categories. For example, older drivers where no more likely to be found to be committing an offence then younger drivers and vice versa.

Comparison between 2012 and 2014 results shows:

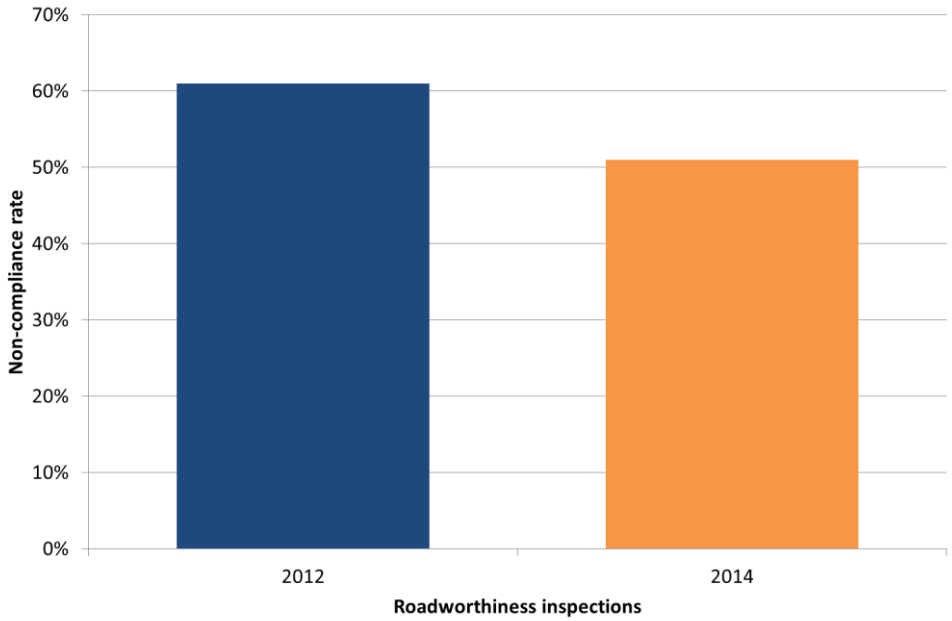
- There was no significant difference between the proportion of driver checks with at least one infringement between 2012 and 2014.
- The proportion of driver compliance checks by infringement severity (minor, serious, or very serious) was very similar in 2014 to the results from 2012.
- The average number of infringements per inspection remained the same.

5 Bus survey

5.1 Key findings – roadworthiness inspections

In 2014 1,130 bus roadworthiness inspections were carried out by the Vehicle Inspectors as part of this survey.

Figure 3: Bus roadworthiness inspection non-compliance rates from the 2012 and 2014 surveys



In 2012 61% of the buses inspected had one or more defects recorded. In 2014 this had reduced to 51%. This difference was significant.

Buses

The results from 1,130 bus roadworthiness inspections showed:

- Fifty one percent of buses inspected had at least one defect: 1% had a maximum defect severity of dangerous, 15% were major and 35% were minor. 49% had no defects.
- In total, 1,170 defects were detected: an average 1.04 defects per inspection.
- Buses most commonly failed the inspection due to defects in the 'other equipment' defect category (17% of inspections). This category includes defects with safety belts, fire extinguishers, locks, tachograph equipment, and first aid kits.
- When defects were broken down into the sub-categories, defects with the fire extinguisher and tyres were the most common defects identified (75 and 71 defects respectively). 44% of the tyre defects were given the maximum severity 'dangerous'.
- Similarly to HGVs, older buses were more likely to have a defect recorded than newer buses, increasing from 32% of vehicles aged 0-2 years to 62% of vehicles aged 21-30 years.

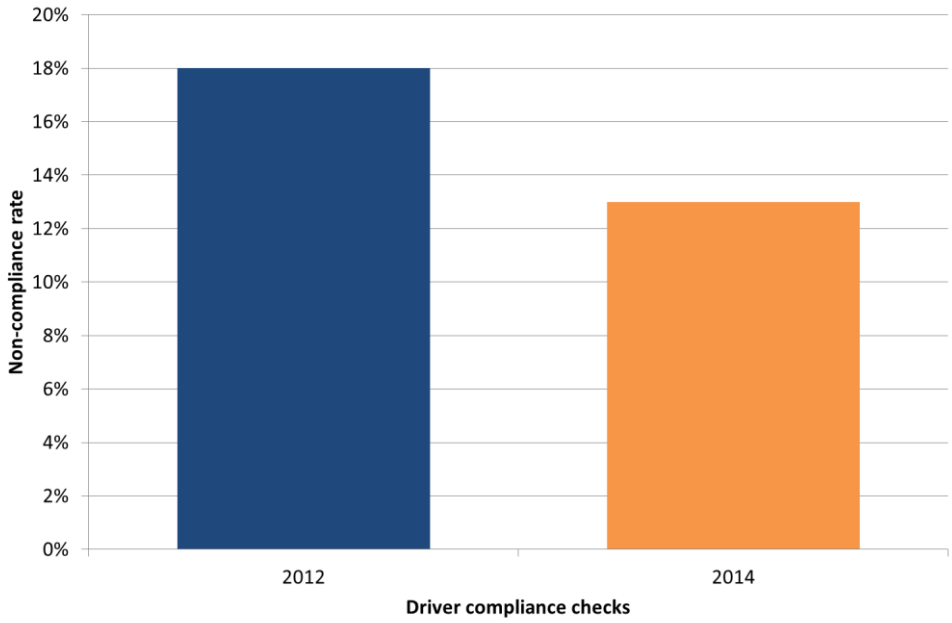
Comparison between 2012 and 2014 results:

- There was a significant difference between the proportion of buses with defects in 2012 compared with 2014, decreasing from 61% to 51%. In 2012 3% of inspections had a dangerous defect compared to 1% in 2014.
- The average number of defects per inspection also decreased between 2012 and 2014 from 1.5 to 1.04.

5.2 Key findings – driver compliance checks

In 2014 126 bus driver compliance checks were carried out by the Transport Officers. The small sample size means that caution should be taken when interpreting these results.

Figure 4: Bus driver checks non-compliance rates from the 2012 and 2014 surveys



In 2012 18% of drivers checked had an infringement; in 2014 this had decreased to 13%. This decrease was not significant.

Bus drivers

The results from 126 bus driver compliance checks show:

- 13% of the inspected drivers had at least one infringement, 4% had a maximum infringement severity of very serious, 3% were serious, and 6% were minor.
- In total, 31 infringements were found across the 126 inspections; an average of 0.2 infringements per inspection.
- 'Failure to operate mode switches correctly' was the most common infringement recorded (9 infringements).

It was not possible to make robust comparisons to the 2012 survey due to the small sample size and existence of bias (such as an over representation of school buses) within the selection of buses for the 2012 survey.

6 Commercial Vehicle Reform Programme

In 2013 a major roadworthiness reform program was introduced by the Road Safety Authority. The commercial vehicle reform (CVR) program aims to improve roadworthiness standards of commercial vehicles through roadside enforcement, operator compliance, and the standard of testing.

Through the changes introduced as a result of the CVR, a number of improvements were expected to occur over the course of the following few years. This section discusses whether there are indications in the data presented in this report that the changes have influenced the roadworthiness of vehicles. Note however, that the full picture will not be available for a few years, since full trend analysis is not possible with only two years of data.

Since the Certificate of Roadworthiness (CRW) for a vehicle is now issued centrally with an annual renewal date based on the date of last test or the date of registration, there is no incentive for operators to present late for their annual test (which had existed under the last system). The proportion of vehicles encountered without a CRW (recorded as 'absence of technical inspection') significantly decreased between the 2012 and 2014 surveys, suggesting that this change in the requirements for annual testing has been beneficial. This is further supported by additional Authority reporting which shows improvements with regard to 'on time' presentation for the annual test since the introduction of the new system in September 2013 (see Table 1).

Table 1: Percentage of vehicles presenting 'on time' for test

Vehicle Type	October 2013	October 2014
HGV	64%	68%
Trailer	45%	65%
Bus	61%	80%

In addition, commercial vehicle roadworthiness test volume increases have been reported by the Authority in each of the categories surveyed. The most notable increases occurring in relation to trailers, where a 23% increase in test volumes was noted between the two surveyed periods of 2012 and 2014 (HGV test volumes increased by 14% and buses by 9.5%). These increases in test volumes, alongside the decrease in the proportion of inspections without a CRW identified in the roadside survey, may suggest a positive link between annual testing compliance and general roadworthiness of vehicles.

The vehicle driver and owner of HGVs and buses have the legal obligation to ensure that their vehicle is roadworthy at all times. However, the CVR has now made it compulsory for operators to have a vehicle maintenance system in place to ensure this legal requirement is being met. In 2014, the RSA reported to have carried out a total of 3,707 roadworthiness premises inspections, this coming from a base of zero in 2012. Since the RSA have been conducting these premise inspections to review the maintenance systems, records and procedures that are in place, there has been a reduction in the proportion of vehicles with at least one defect for trailers and buses (although this may be influenced by the bias in the sites in the 2012 survey) and a stationary trend for HGVs. In addition, the average number of defects per inspection has declined for all three vehicle types.

The CVR also requires that owners ensure that a 'walk around check' is completed for the vehicle before it is driven in a public area. This check is typically carried out by the driver who should report any symptoms or defects to the owner as soon as possible. The walk around checks should highlight defects including those associated with the tyres, vehicle identification, and visibility. Analysis of defects shows mixed results; tyres remain a common defect for both HGVs and trailers, but the proportion of vehicles that failed in the inspection areas 'identification of the vehicle' and 'axles, wheels, tyres and suspension' has reduced. This suggests that there may have been some improvement as a result of the additional checks, but without additional data in subsequent surveys it is difficult to attribute changes observed solely to the CVR program; some differences would be expected due to chance and differences in the sample of vehicles selected to participate in the survey. In addition there have been other changes, for example an increase in enforcement efforts and an increase in the communication between RSA and vehicle operators, which may also influence the results.