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RSA Údarás Um Shábháilteacht Ar Bhóithre
Road Safety Authority

Road Safety Authority
Defective Lights Report

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Prepared for: **Road Safety Authority**

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MMcL/SR/AF/MMC

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11. Introduction

In December 2017 Amárach Research was commissioned by the Road Safety Authority (RSA) to carry out an observational study to determine the number of vehicles with defective lights on Irish roads. The fieldwork dates were the 15th of January to the 29th of January. Amárach Research has undertaken this project for the past five waves. The fieldwork is usually carried out in October through to November however this year, field work took place in January. Not keeping up with standard car safety checks or maintenance can lead to road users driving with defective lights, whether it is known to them or not. The use of a vehicle with defective lights, either front, rear or both can put the driver, other road users and pedestrians in danger. Danger can stem from confusion over the type of vehicle approaching, road position or not seeing a vehicle in front or behind in due time.

A single defective front light can cause vehicles such as cars, vans, heavy goods vehicles and buses to be mistaken for motorcycles/ bicycles when driving on the road. Consequences of driving a vehicle with a defective light can prove fatal for the occupants of that vehicle and other road users, as the ability to correctly judge the spatial positioning of the vehicle has been compromised with visibility reduced by up to 50%. Pedestrians are vulnerable to a similar threat as they also could misjudge the size of an oncoming vehicle if there is a defective light present. The dangers of having multiple defective lights either front or rear should never be underestimated, choosing to drive a vehicle in this condition is a collision waiting to happen.

In 2012, the RSA found that over1 in 5 cars had a damaged headlight when passing through the NCT inspection.[1] In the case of defective lights, it is the responsibility of the car owner to ensure that their vehicle does not pose a threat to themselves or to other road users. On many vehicles if a defective light is present there will be no warning signal from inside the cabin. Drivers

[1] Operation “light up” 20th- 21st February 2013. 2013 News. http://www.rsa.ie/en/Utility/News/2013/Operation-Light-Up-20th-21st-February-2013/

must manually check all of their lights regularly and have an accomplice help them do so in a safe place. Filling stations commonly have specialist mirrors for checking front lights on a vehicle; these should be used on a regular basis and when doing so rear lights should also be checked manually to ensure motorists don't pose a danger to other road users. Car owners are urged to fix a broken light rather than face prosecution.

A national campaign was undertaken in 2013 entitled 'Light up' where cars, trucks and motorcyclists were stopped at check points and issued with fines if their lights were found to be defective. This came about in an attempt to crackdown on the presence of defective lights.

Detailed herein is an overview across multiple vehicle categories of the presence of defective lights, either front, rear or both.

Amárach Research working as a research partner with the RSA is committed to providing the most accurate data possible. In accordance with ISO 9001 quality assurance standards and ISO 20252 Market, Opinion and Social Research quality procedures Amárach has ensured that data reported within will help ensure increased safety on Irish roads.

2. Methodology

2.1 Observation of Defective lights

In line with previous waves a total of 96 sites were surveyed combining urban (36 sites) and rural roads (60 sites) throughout Ireland (see appendix 1). This year we also looked at an extra sampling point, the Gort to Tuam Motorway, bringing the total to 96 points. These pre-determined site locations were provided by the RSA and each point was allocated to interviewers with specific instructions regarding times and dates for data to be recorded. The majority of sampling points have remained unchanged since the 2013 study, allowing for comparisons to be made throughout.

As was done in previous studies, interviewers were provided with briefing packs that included the following items:

- Picture cards identifying different vehicle types
- High visibility vests
- Bespoke dashboard for data collection
- Mock completed dashboard to show correct data collection procedure
- Clipboard and protective plastic cover
- Map of their site location
- Interview Instructions
- Risk assessment sheet

After the packs were issued, each interviewer received a phone call from the project field manger to ensure they received everything and that they understood everything correctly.

It is now standard that interviewers are provided with a site risk assessment form (see appendix 3) to be filled out and returned to the Amárach offices.

By providing the supplementary briefing documents we were able to ensure that defective lights were easily identifiable across all vehicle types avoiding any confusion for the interviewers regarding vehicle type.

The following tables outline the road classifications and number of sites allocated to each. It is worth noting that all of the urban national survey points were located outside of Dublin. Also worth noting is that some motorway locations were located within the Dublin city limits but these are reported under rural as all motorway points were identified as rural roads by the RSA.

Urban Roads

Road Class	Number of Sites
Urban National	10
Urban Arterial – 60km/h	8
Urban Arterial – 50km/h	7
Urban Residential – 50km/h	11
Total	36

Rural Roads

Road Class	Number of Sites
Motorways	11
Dual Carriageways	10
National Primary Roads (2-lane)	10
National Secondary Roads (2-lane)	10
Regional Roads	9
Country Roads[2]	10
Total	60

Interviewers collected data manually to avoid any technical issues that could arise from using handheld devices. In order to make data collection as efficient and straightforward as possible and to record effectively during both high and low traffic flow, Amárach designed a dashboard that calculated the number of vehicles observed as the interviewers recorded data (see appendix

[2] Local roads- all other urban and rural roads not included in the breakdown. A small number of regional roads in countryside locations were also included.

2). The survey did not measure the number of vehicles with either two defective front lights or two defective rear lights as this would be difficult for interviewers to interpret and could easily be mistaken for having the lights turned off completely.

On all ‘rural’ and ‘urban national’ roads multiple vehicle categories were recorded and classified as either Cars, Rigid Goods Vehicles (RGV’s), Semi-Articulated Goods Vehicles (SAGV’s) or Buses. On both urban arterial and urban residential roads only cars were recorded as there is a low volume of other vehicle categories on these roads.

Vehicle categories not included in the survey were motorcycles and commercial vehicles (vans) that could not be identified under any of the above vehicle categories.

Observations were conducted between 6.30am -8.30am and 5.00pm-7.30pm Monday – Friday in accordance with guidelines agreed with the RSA.

Health and Safety

In line with health and safety protocol, we produced a site risk assessment form to be completed which is now a significant part of the process. The risk assessment form was produced by Amárach and approved by the RSA. For each site, each interviewer was provided with a separate site risk assessment form to be completed and sent back to the Amárach offices. Completed forms were reviewed by Amárach and stored in a secure location in the Amárach offices. No issues were found with any of the sites that would cause danger to anyone or impede on the data collection process.

Pilot Survey

The initial 5 site locations were undertaken as a pilot by interviewers who had carried out the project previously. The project manager reviewed those sites and had a de-brief with each interviewer. The field manager was confident

that no issues had arisen and full fieldwork could commence as normal. These pilot sites were included in the final data as no changes were made.

There were no changes made to the dashboard and the learnings from 2013/14/15/16 were carried forward to this wave of the research, with observers (with the exception of those on rural roads) only monitoring one lane of traffic to ensure that they could keep up with the traffic flow and note each car that passed a particular point.

3. Results and Analysis

The analysis section is comprised of two sections in accordance with requirements outlined by the RSA in the tender documents. Where applicable each section is shown, and analysed by vehicle and road type.

i) Incidence of defective lights by front & rear, vehicle type and urban/rural location

Defective Lights – Vehicle Category – Urban/Rural amárach research

Total	Total N=39,426 N= (38,051)	Cars N=33,274 (31,836)	Rigid Goods Vehicles N=2,875 (3,030)	Semi-Articulated Vehicles N= 2,438 (2,291)	Buses N=839 (894)
No defective lights	93% (94%)	93% (94%)	92% (94%)	94% (96%)	94% (96%)
Defective front	5% (3%)	5% (3%)	4% (3%)	4% (2%)	2% (1%)
Defective rear	2% (2%)	2% (2%)	3% (4%)	2% (3%)	3% (3%)
Defective front & rear	0% (*)	0 (*)	1% (*)	0 (*)	1% (0)
Urban	N=14,769 (13,917)	N=13757 (12,683)	N=487 (648)	N=373 (429)	N=152 (157)
No defective lights	92% (95%)	92% (95%)	92 % (91%)	95% (94%)	95% (97%)
Defective front	5% (3%)	5% (3%)	2% (4%)	3% (2%)	2% (1%)
Defective rear	2% (2%)	2% (2%)	4% (5%)	1% (3%)	2% (2%)
Defective front & rear	1% (*)	1% (*)	1% (*)	0 (0)	1% (0)
Rural	N=24,657 (24,134)	N=19,517 (19,153)	N=2,388 (2,382)	N=2065 (1,862)	N=687 (737)
No defective lights	93% (94%)	93% (94%)	92% (94%)	94% (96%)	94% (95%)
Defective front	5% (3%)	5% (4%)	4% (2%)	4% (2%)	2% (1%)
Defective rear	2% (2%)	2% (2%)	3% (3%)	2% (2%)	4% (3%)
Defective front & rear	0(*)	0 (*)	(*)	0 (*)	1% (0)

*Less than 1%
Due to rounding totals may not add to 100%

() Denotes 2016 findings

Defective Lights – Vehicle Category – Urban/Rural- Total Defective Lights

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Total	Total N=39,426 N= (38,051)	Cars N=33,274 (31,836)	Rigid Goods Vehicles N=2,875 (3,030)	Semi-Articulated Vehicles N= 2,438 (2,291)	Buses N=839 (894)
Total Defective lights	7% (6%)	7% (6%)	8% (6%)	6% (4%)	6% (4%)
Urban	N=14,769 (13,917)	N=13757 (12,683)	N=487 (648)	N=373 (429)	N=152 (157)
Total Defective lights	8% (5%)	8% (5%)	8% (9%)	5% (6%)	5% (3%)
Rural	N=24,657 (24,134)	N=19,517 (19,153)	N=2,388 (2,382)	N=2065 (1,862)	N=687 (737)
Total Defective lights	7% (6%)	7% (6%)	8% (6%)	6% (4%)	6% (5%)

*Less than 1%
Due to rounding totals may not add to 100%

() Denotes 2016 findings

This first section of analysis provides a topline review of the results from the observational study, showing also the urban and rural split. Similar to last the 2016 survey, less than 1 in 10 (7%) vehicles surveyed had at least one defective light, in 2016 we saw a slight improvement, however this year we can see a slight increase in the number of defective lights. This increase, seems to be driven mostly by RGV's. There was also a rise in Semi Articulated Goods Vehicles and buses having defective lights, although these vehicles are typically the best performing in terms of fully working lights. We have observed a dis-improvement across all vehicle types.

As with previous waves, there is little difference between urban and rural roads. However, urban roads are showing a higher increase of defective lights than in rural areas with an increase of 3%. Cars on urban roads saw the biggest increase while Semi-articulated goods vehicles and RGV's showed an improvement on urban roads. All rural roads saw a dis-improvement of either 1% (cars and buses) or 2% (RGV's and Semi-articulated goods vehicles).

ii) Incidence of defective lights by road type

Incidence of Defective Lights by Road Type – Total

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Total	No Defective Lights	Front Defective Light	Rear Defective Lights	Defective Front and Rear	Total Defective
Dual Carriageway – N = 5,468 (5,364)	95% (95%)	4% (3%)	1% (2%)	0 (*)	5% (5%)
Motorway – N= 5,013 (3,199)	92%(96%)	4% (3%)	3% (1%)	0 (*)	8% (4%)
Country Road – N=2,424 (2,986)	91% (94%)	5% (3%)	3% (2%)	0 (*)	9% (6%)
Regional Road – N= 2,497 (3,264)	91% (93%)	6% (4%)	2% (3%)	0 (*)	9% (7%)
National Primary Road – N= 4,627 (4,848)	92% (94%)	6% (3%)	2% (3%)	0 (*)	8% (6%)
National Secondary Road – N=4,628 (4,473)	94% (93%)	3% (4%)	3% (3%)	0 (*)	6% (7%)
Urban National – N= 4,928 (4,898)	92% (93%)	4% (3%)	3% (3%)	6 (*)	8% (7%)
Urban Arterial – N= 6,000 (6,000)	92% (95%)	5% (3%)	2% (2%)	0 (*)	8% (5%)
Urban Residential – N=3,841 (3,019)	93% (96%)	5% (2%)	2% (1%)	1 (*)	7% (4%)

*Less than 1%
Due to rounding totals may not add to 100%

() Denotes 2016 findings

As always, the survey results are divided among different road categories and the following section discusses the emerging trends across the total number of vehicles surveyed and also each individual vehicle category. In relation to grouping, cars are included in all 9 categories, for the remaining vehicle categories urban residential and urban arterial have been excluded.

Above is a chart combining the total number of vehicles surveyed cross-referencing them against the specific road types. The majority of road types showed an increase in the number of defective lights captured, aside from Dual Carriageways where the number has stayed static and National

Secondary roads where there was an improvement of 1%. The biggest negative change was seen with Motorways, with an increase of 4% in the number of defective lights (8% vs. 4%). Fewer than 1 in 10 vehicles had defective lights across all routes, although Country roads and Regional roads both had 9%, the highest recorded across all road types.

Incidence of Defective Lights by Road Type - Cars amárach research

Cars	No Defective Lights	Front Defective Light	Rear Defective Lights	Defective Front and Rear	Total Defective Lights
Dual Carriageway – N = 4,000 (4,000)	95% (95%)	4% (4%)	1% (2%)	0 (*)	5% (5%)
Motorway – N= 4,080 (2,480)	92% (95%)	4% (4%)	3% (1%)	0 (*)	8% (5%)
Country Road – N= 2,251 (2,677)	91% (94%)	6% (4%)	3% (2%)	0 (*)	9% (6%)
Regional Road – N= 2,110 (2,641)	91% (93%)	7% (4%)	2% (2%)	0 (*)	9% (7%)
National Primary Road – N= 3,323 (3,704)	93% (95%)	5% (3%)	2% (2%)	0 (*)	7% (5%)
National Secondary Road – N=3,753 (3,651)	94% (92%)	4% (4%)	2% (3%)	0 (*)	6% (8%)
Urban National – N=3,916 (3,664)	92% (93%)	5% (4%)	3% (3%)	0 (*)	8% (7%)
Urban Arterial – N=6,000 (6,000)	92% (95%)	5% (3%)	2% (1%)	0(*)	8% (5%)
Urban Residential – N=3,841 (3,019)	93% (96%)	5% (3%)	2% (1%)	0 (*)	7% (4%)

*Less than 1%
Due to rounding totals may not add to 100%

() Denotes 2016 findings

Evident from the chart above, due to the overall volume of cars recorded, they vastly reflect the overall patterns. We have seen an increase in defective lights across almost all road types, except Dual Carriageways which has stayed static with the only improvement seen in National Secondary roads down by 2%. Motorways, which have typically had lower levels of defective lights have increased by 3% in 2018 from 5% to 8%. The highest levels of defective lights for cars is seen in Country and Regional roads.

Incidence of Defective Lights by Road Type – RGV's

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Rigid Goods Vehicles – RGV's	No Defective Lights	Front Defective Light	Rear Defective Lights	Defective Front and Rear	Total Defective Lights
Dual Carriageway – N = 607 (561)	95% (95%)	3% (2%)	2% (3%)	0 (0)	5% (5%)
Motorway – N= 420 (316)	91% (97%)	4% (1%)	4% (2%)	1 (*)	9% (3%)
Country Road – N= 107 (174)	93% (97%)	1% (1%)	7% (2%)	0 (0)	7% (3%)
Regional Road – N= 205 (279)	89 % (93%)	5% (3%)	4% (4%)	1% (1%)	11% (7%)
National Primary Road – N= 511 (570)	90% (94%)	8% (3%)	2% (3%)	0 (0)	10% (6%)
National Secondary Road – N= 538 (482)	94% (91%)	1% (4%)	6% (5%)	0 (*)	6% (9%)
Urban National – N= 487 (648)	92% (91%)	2% (4%)	4% (5%)	1% (*)	8% (9%)

*Less than 1%
Due to rounding totals may not add to 100%

() Denotes 2016 findings

In the previous two waves of the study we were beginning to see improvements on light maintenance for RGV's, unfortunately there has decline in this wave of the research. One in ten, or more RGV's were found to have defective lights on Regional and National Primary roads. The biggest change was seen on the motorway with an increase of 6% points rising from 3% to 9%. Country roads saw an increase in rear light failures for RGV's of 5% (7% vs. 2%). Dual carriageways reflected overall trends and styed static. However we did see an improvement in National Secondary roads, mainly due to an improvement in front lights.

Incidence of Defective Lights by Road Type – SAGV's

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Semi Articulated Goods Vehicles – SAGV's	No Defective Lights	Front Defective Light	Rear Defective Lights	Defective Front and Rear	Total Defective Lights
Dual Carriageway – N = 657 (635)	96% (97%)	2% (1%)	2% (1%)	0 (0)	4% (3%)
Motorway – N= 396 (282)	93% (98%)	4% (1%)	2% (1%)	0 (0)	7% (2%)
Country Road – N= 36 (77)	100% (99%)	0% (1%)	0 (0)	0 (0)	-% (1%)
Regional Road – N=117 (235)	92% (93%)	3% (3%)	5% (4%)	0 (*)	8% (7%)
National Primary Road – N= 612 (418)	91% (93%)	8% (2%)	2% (4%)	0 (*)	9% (7%)
National Secondary Road – N= 247 (215)	96% (97%)	2% (1%)	2% (2%)	0 (*)	4% (3%)
Urban National – N=373 (429)	95% (94%)	3% (2%)	1% (3%)	(0)	5% (6%)

*Less than 1%
Due to rounding totals may not add to 100%

() Denotes 2016 findings

As we saw last in the 2016 survey, the worst offending categories for defective lights by SAGV's are on the regional roads (+1%) and national primary roads (+2%) and have seen further dis-improvements this year. No defective lights were recorded on country roads, however there was a very small sample size this year, so results should be analysed with caution. Lower base sizes are due to a lower volume of these vehicles were recorded on the roads at the designated survey points. Apart from County roads and Urban National roads, we saw an increase in defective lights across all other road types particularly on the motorway rising by 5% points, which typically have better results for light maintenance. Urban national roads saw an improvement of 1%.

Incidence of Defective Lights by Road Type – Buses

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Buses	No Defective Lights	Front Defective Light	Rear Defective Lights	Defective Front and Rear	Total Defective Lights
Dual Carriageway – N= 204 (168)	97% (96%)	1% (1%)	2% (3%)	(0)	3% (4%)
Motorway – N= 117 (121)	93% (98%)	2% (1%)	5% (1%)	0 (0)	7% (2%)
Country Road – N= 30 (58)	93% (100%)	0(0)	3%(0)	3% (0)	7% (-)
Regional Road – N=65 (109)	97% (92%)	0% (4%)	0% (5%)	3% (0)	3% (8%)
National Primary Road – N= 181 (156)	90% (91%)	3% (2%)	7% (7%)	1% (0)	10% (9%)
National Secondary Road – N= 90 (125)	97% (97%)	2% (1%)	1% (2%)	0 (0)	3% (3%)
Urban National – N= 152 (157)	95% (97%)	2% (1%)	2% (2%)	1% (0)	5% (3%)

*Less than 1%
**Caution small base size
Due to rounding totals may not add to 100%

() Denotes 2016 findings

As with previous waves, in terms of safety on the roads and proper vehicle light maintainance , buses were one of the best performing categorys overall alongside Semi-artilated Goods vehicles. However there has been an overall rise in defectve lights (4% to 6%). Some of the figures quoted below however, have low base sizes and should be used with caution. As we saw in the 2016 survey the highest levels of defective lights were recorded on National Primary roads. However we did see an improvement in Regional roads (8% to 3%) which would typically have higher levels of defective lights. We saw a 1% improvement on Dual Carriageways also.

4. Conclusions

The survey conducted by Amárach Research on behalf of the RSA identified at least one defective light in less than 1 in 10 (7%) vehicles. This demonstrates a 1% overall increase in defective lights observed. RGV drivers are most likely to have a defective light (8%) followed by cars (7%). Buses continue to be the least likely, alongside Semi Articled Goods vehicles (6%).

Drivers observed on rural roads are more likely (93%) to maintain in good order the lights on their vehicles compared to urban drivers (92%). This is the reversal of the 2016 results, however defective lights on urban roads have increased by 3% and rural roads have only increased by 1%.

Defective lights are slightly more common on the front of vehicles (5%) compared to the rear (2%). Less than 1% of the vehicles observed had both front **and** rear defective lights simultaneously. The overall increase in defective lights was mainly as a result of an increase in front light failure.

When it comes to the varying road types, for car drivers the highest level of defective lights was recorded on Country and Regional roads (4%). RGV's recorded the highest levels of defective lights on Regional and National Primary roads. The highest levels of defective lights were also recorded on Regional and National primary roads for SAGV's. Overall, there was either an increase in defective lights or no change across all road types, Dual Carriageways appeared to stay static across most road types. Overall Country road and Regional road users had the poorest light maintenance levels.

Buses and SAGV's were recorded to be the most maintained vehicle category's observed in terms of defective lights. This is a similar story to the 2016 survey, with SAGV's improving to be on par with buses. However, after improvements in the 2016 survey, we have seen a decline in vehicle maintenance this year with even the two lowest categories rising 2% each. Still, as we see with each wave, buses rate highly in terms of having the least

amount of defective lights. The likelihood is that stricter commercial controls are in place for the upkeep of buses (either by regulation or company policies). It may be beneficial if similar regulations were put in place and further enforced by authorities in an attempt to lower the level of all road using vehicles with defective lights especially in terms of RGV's who had one of the highest levels of defective lights measured and due to their size could impose serious risks on others.

Appendix

Appendix 1

Survey Point Locations

Area	County	Route	Road type
Cratloe	Clare	N18	Dual C(R)
Black Bull	Meath	N3	Dual C(R)
Black Bull	Meath	N3	Dual C(R)
Mulhuddart	Dublin	N3	Dual C(R)
Newtownmountkennedy	Wicklow	N11	Dual C(R)
Cratloe	Clare	N18	Dual C(R)
Cratloe	Clare	N18	Dual C(R)
Newtownmountkennedy	Wicklow	N11	Dual C(R)
Arklow	Wicklow	N11 Arklow bypass	Dual C(R)
Little Island	Cork	N25	Dual C(R)
Maynooth	Kildare	M4	M-Way(R)
Newbridge	Kildare	M7	M-Way(R)
Dunleer	Louth	M1	M-Way(R)
Maynooth	Kildare	M4	M-Way(R)
Naas	Kildare	M7	M-Way(R)
Shankhill	Dublin	M11	M-Way(R)
Portlaoise	Laois	M7 Portlaoise bypass	M-Way(R)
Portlaoise	Laois	M7 Portlaoise bypass	M-Way(R)
Balbriggan	Dublin	M1 Balbriggan bypass	M-Way(R)
Balbriggan	Dublin	M1 Balbriggan bypass	M-Way(R)
Gort- Tuam Motorway	Galway	M17/M18	M-Way (R)
Mountbellew	Galway	LP3210	Country Road(R)

Timahoe	Kildare	LP111	Country Road(R)
Naas	Kildare	LP333	Country Road(R)
Djouce Woods	Wicklow	LP999	Country Road(R)
	Cork		Country Road(R)
	Cork		Country Road(R)
Lattin	Tipperary	R515	Country Road(R)
Passage West	Cork	R610	Country Road(R)
	Cork	L35	Country Road(R)
	Wexford	L7	Country Road(R)
Powers Cross	Galway	R352	Regional Rd (R)
Carrickmacross	Monaghan	R178	Regional Rd (R)
Abbeyleix	Laois	R430	Regional Rd (R)
	Tipperary	R499	Regional Rd (R)
	Cork	R630	Regional Rd (R)
	Wexford	R742	Regional Rd (R)
	Offaly	R438	Regional Rd (R)
	Kildare	R403	Regional Rd (R)

Bruff	Limerick	R516	Regional Rd (R)
Dungarvan	Waterford	N25	Nat Primary Rd (R)
Littleton	Tipperary	N8	Nat Primary Rd (R)
Close to Carrickmacross	Monaghan	N2	Nat Primary Rd (R)
Close to Virginia	Cavan	N3	Nat Primary Rd (R)
Drumsna	Leitrim	N4	Nat Primary Rd (R)
Crookstown	Cork	N22	Nat Primary Rd (R)
Ballinafad	Sligo	N4	Nat Primary Rd (R)
Longford Town	Longford	N5	Nat Primary Rd (R)
Swinford	Mayo	N5	Nat Primary Rd (R)
Horseleap	Offaly	N6	Nat Primary Rd (R)
Claremorris	Mayo	N60	Nat Secondary Rd (R)
Partry	Mayo	N84	Nat Secondary Rd (R)
Killeenaran	Galway	N67	Nat Secondary Rd (R)
Castlecomer	Kilkenny	N78	Nat Secondary Rd (R)

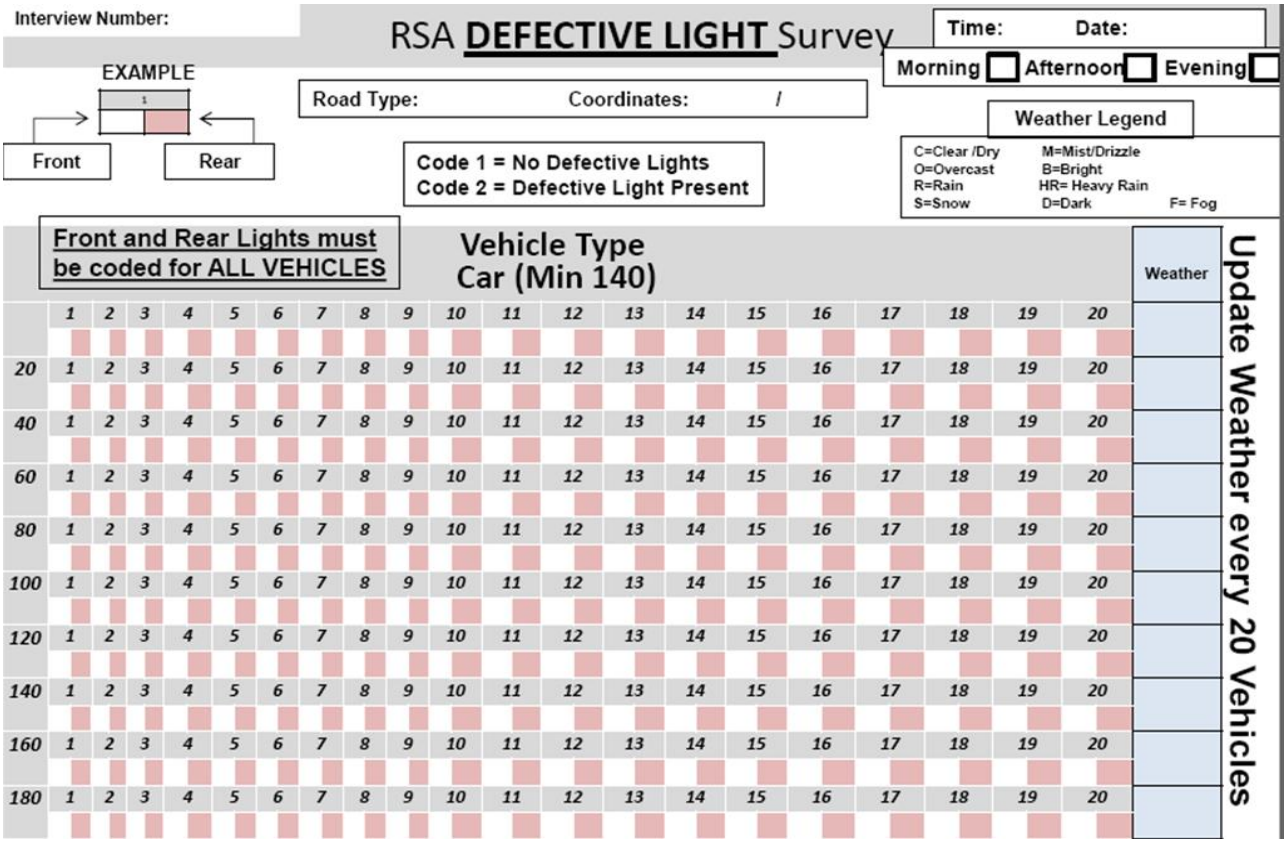
Kilmore	Mayo	N58	Nat Secondary Rd (R)
Dunfanaghy	Donegal	N56	Nat Secondary Rd (R)
Castlebar	Mayo	N60	Nat Secondary Rd (R)
Templemore	Tipperary, north	N62	Nat Secondary Rd (R)
Furnace Lough	Mayo	N59	Nat Secondary Rd (R)
Killarney	Kerry	N72	Nat Secondary Rd (R)
Curry	Sligo	N17	Urban National
Gort	Galway	N18	Urban National
Tivoli	Cork	N8	Urban National
Kells	Meath	N3	Urban National
Durrow	Laois	N8	Urban National
Athy	Kildare	N78	Urban National
Roscommon Town	Roscommon	N63	Urban National
Bandon	Cork	N71	Urban National

Tarbert	Limerick	N69	Urban National
Moylough	Galway	N63	Urban National
Booterstown	Dublin	R118 Rock Road	Urban Arterial
Chapelizod	Dublin	R109 Chapelizod Road	Urban Arterial
Dollymount	Dublin	James Larkin Road	Urban Arterial
Goatstown	Dublin	Lower Kilmacud Road	Urban Arterial
Deans Grange	Dublin	Clonkeen Road	Urban Arterial
Kylemore Road	Dublin		Urban Arterial
Fox & Geese	Dublin	R110 Naas Road	Urban Arterial
Glasnevin	Dublin	N2 Finglas Road	Urban Arterial
Donnybrook	Dublin	N11 Stillorgan Road	Urban Arterial
Coolock	Dublin	R107 Malahide Road	Urban Arterial
Ballsbridge	Dublin	N11 Morehampton Road	Urban Arterial
Cabra	Dublin	N2 Cabra Road	Urban Arterial
Templeogue	Dublin	N81 Templeogue Road	Urban Arterial

Cabra	Dublin	N3 Navan Road	Urban Arterial
Rathfarnham	Dublin	R112 Dodder Park Road	Urban Arterial
Marino	Dublin	Brian Road	Urban Residential
Cabra	Dublin	Broombridge Road	Urban Residential
Santry	Dublin	Lorcan Avenue	Urban Residential
Phibsboro	Dublin	Annamoe Road	Urban Residential
Killester	Dublin	Brookwood Rise	Urban Residential
Glasnevin	Dublin	Glasilawn Road	Urban Residential
Marino	Dublin	Griffith Avenue	Urban Residential
Blanchardstown	Dublin	Delwood Road	Urban Residential
Sutton	Dublin	Offington Park	Urban Residential
Sutton	Dublin	Sutton Park	Urban Residential
Kilbarrack	Dublin	Abbey Park	Urban Residential

Appendix 2

Defective Light Dashboard



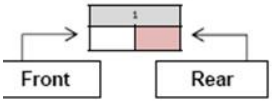
Interview Number:

RSA DEFECTIVE LIGHT Survey

Time: Date:

Morning ☐ Afternoon ☐ Evening ☐

EXAMPLE



Road Type: Coordinates: /

Code 1 = No Defective Lights
Code 2 = Defective Light Present

Weather Legend

C=Clear /Dry M=Mist/Drizzle
O=Overcast B=Bright
R=Rain HR= Heavy Rain
S=Snow D=Dark F= Fog

Front and Rear Lights must be coded for ALL VEHICLES

Vehicle Type
Rigid Goods Vehicle (90)

Weather

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20
20 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20
40 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20
60 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20
80 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

Front and Rear Lights must be coded for ALL VEHICLES

Vehicle Type
Semi-Articulated Goods Vehicle (90)

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20
20 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20
40 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20
60 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20
80 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

Front and Rear Lights must be coded for ALL VEHICLES

Vehicle Type
Buses (30)

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20
20 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

Update Weather every 20 Vehicles

Appendix 3

Risk Assessment

Enumeration Location Risk Assessment Checklist

Note: this checklist is used in full by individual Enumerators for each location visited.

Location:

ENUMERATOR	**YES**	**NO**	**H/M/L**
Supervision			
Have you been assigned a Supervisor?			
Have you got your Supervisor's phone number in your phone?			
Are you carrying ID (Amarach ID badge, letter of authorisation etc)?			
Does your phone have a reasonable amount of battery charge? *(particularly if working alone)*			
Does some member of family/friends know where you are and when to expect you back *(particularly if working alone)*?			
Do you know what the weather forecast is and are you prepared for it (suitable clothing, appropriate footwear etc)?			
Are you wearing high visibility clothing (relevant if working outdoors / at the roadside etc?)			

Set-up at location	**YES**	**NO**	**H/M/L**
Is your car parked safely and legally?			
Does your supervisor know of your location?			
Is your phone charged and have you contact numbers in case of Emergency?			
Is there a phone Signal? *(many locations will not have adequate phone signal and this should not normally be an issue but it is desirable to be aware if this is the case before the enumeration exercise begins)*			

Location Assessment	YES	NO	H/M/L
Is there a suitable place to take up position for observation			
- Without interrupting the flow of traffic or the movement of pedestrians/other road users			
- Without putting yourself at risk from road activity			
- Is there shelter from adverse weather while conducting the exercise?			
Is there any aspect of the location that suggests it may not be appropriate to go ahead with the enumeration exercise at this time (e.g. road works or similar underway)?			

Conduct of the Exercise	YES	NO	H/M/L
Have you completed, signed and dated this Risk Assessment?			
Name Date			