Motorcycle Action Group

Response to the Consultation Paper

Presented by the inland transport services of the Directorate General for Energy and Transport

SAVING LIVES WITH DAYTIME RUNNING LIGHTS (DRL)

MOTORCYCLE ACTION GROUP

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MAG UK PO BOX 750 Rugby CV21 3ZR Tel: +44 (0)870 444 8 448 Fax: +44 (0)870 444 8 449
Email: public-affairs@mag-uk.org Web: www.mag-uk.org

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1) Introduction

The Commission calls for a response to the following questions:

1. Is the approach of a technical requirement to equip all vehicles with automatic dedicated daytime running lights, coupled with a user requirement to use dipped beam headlights or retrofitted dedicated DRL the correct one, or should other alternatives be considered?

2. Should there be specific rules concerning motorcycles, e.g. a different colour of light for them?

3. Do you have any other comments or questions?

In the Executive summary of the Consultation Paper, the justification for the introduction of the mandatory application of DRL for all vehicles in Europe is as follows:

1. According to the research available, DRL has a high potential to increase road safety. They help road users to better and earlier detect, recognise and identify vehicles. Studies estimate the life-saving potential of DRL to be in the order of 3 to 5 % of the yearly number of road fatalities. That is to say, if measures are taken to require the use of DRL throughout the EU, it could help saving between 1.200 and 2.000 road fatalities per year and thus make an important contribution to the European target of saving 25.000 lives per year on European roads[1].

2. The following research findings should also be noted in the course of assessing whether legislation on DRL for all vehicles is appropriate:

    - Road users not having lighting devices, i.e. pedestrians, cyclists, mopeds do not become less conspicuous if all vehicles feature DRL;

    - A negative effect of DRL on the visibility of motorcyclists can not be ascertained;

    - Dedicated DRL and dipped headlamps do not cause glare;

3. It is true that DRL increases fuel consumption and CO2-Emissions by up to 1.5% if dipped headlamps are used but this is reduced to only 0.3% in the case of dedicated DRL. However, taking into account this effect on fuel consumption and CO2 emissions, the benefits of a legal obligation to use dipped headlights on existing vehicles and to equip new vehicles with automatic dedicated DRL outweigh the costs by the factor 1 to 2. i.e. for one Euro invested into daytime running lights, there is a benefit to society of 2 Euro.

In response to the questions posed by the Commission, MAG UK would like to address each item on its merits and contribute to the debate by presenting further statistical evidence as well as by considering the issues with regards to conspicuity.

We will discuss whether the purpose of DRL is the best solution to the reduction of casualties in Europe and our concerns in relation to the vested interests of the private sector. Finally we will offer recommendations for a more rational, environmentally friendly and longer lasting solution to road casualties.

Elaine Hardy PhD

MAG UK National Research Officer

[1] Of special importance for the discussion of this subject is the report prepared by The Dutch research institute SWOV in 1997, which, on behalf of the EU Commission, reanalyzed all foreign studies known so far on the subject of daytime running lights and developed a common methodological basis for them. By means of correction factors, among other things depending on the geographical degree of latitude, the rate of use of daytime running lights and the accident situation, the findings were then converted for each EU Member State. The results of the study claimed that daytime running lights used throughout the EU would very significantly reduce casualties. For the EU, a reduction of 5,500 fatalities, 155,000 injured persons and 740,000 accidents was calculated (Source: Summary Of The Discussion Concerning Daytime Running Lights In Germany Transmitted By The Experts From Germany Informal Document No.1 (50th GRE, 7-11 April 2003, Agenda Item 6.5.)

2) Reduction in casualties

> The Consultation paper states that *'if measures are taken to require the use of DRL throughout the EU, it could help saving between 1,200 and 2,000 road fatalities per year and thus make an important contribution to the European target of saving 25,000 lives per year on European roads'.*

A reduction of 1,200 (4.8%) to 2,000 (8%) fatalities per year appears to be based on estimates from dedicated safety studies written by authoritative experts which have focused on the benefits of DRL[2] .

While MAG UK has no wish to challenge the studies of these 'experts', we are of the view that the studies have not produced sufficient evidence to guarantee that DRL will reduce road fatalities. What they have been successful in doing is to analyse existing data and based on the assessments of these studies, they have predicted that DRL ***might*** be successful in reducing road casualties.

However, the comparison of casualty statistics throughout Europe is fraught with problems, which is due to difficulties in comparing data from these countries because of the differences in methodologies used to calculate minor and serious injuries. Even calculating fatalities is inconsistent throughout Europe.

For example in Great Britain fatalities caused by a specific road accident are counted up to 30 days following the accident. In Italy fatalities are only counted up to 24 hours following the accident. Clearly this can create distortions in the tally. In spite of the inconsistent method of counting fatalities, there are advantages in the sense that 'death' cannot be open to interpretation, whereas both serious and minor injuries depend entirely on what the definition of these casualties are – and this could be simply based on the observation of the police officer reporting the incident.

Furthermore, as mentioned previously, the EU research projects *estimated* reductions in fatalities due to the application of DRL. However, we believe it should be necessary to compare overall fatalities rates in DRL and non DRL countries and to identify trends over a period of fifteen years. The reason for this is that by comparing these countries, we can identify whether there are any differences and whether these differences can be due to DRL. Ultimately the proof 'is in the pudding' or in other words whether countries that adopt DRL provide evidence of an improved reduction in fatalities COMPARED to countries that do not adopt DRL.

We analysed fatalities in eight European countries[3] between 1990 and 2005 as well as fatality rates (percentages of fatalities weighted against vehicle stock) between 1990 and 2004: Austria introduced mandatory DRL in 2006 therefore the Austrian data reflect a 'non' DRL country. Finland introduced mandatory DRL in 1982[4]. Norway introduced mandatory DRL in 1986 and Sweden in 1977[5].

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[2] 1) TNO Human Factors, Daytime Running Lights, Final Report, October 2003
http://europa.eu.int/comm/transport/roadpublications/projectfiles/drl en.htm.
More recently: BASt,Abschätzung möglicher Auswirkungen von Fahren mit Licht am Tag in Deutschland, Bergisch Gladbach2005.
2) Koornstra, M.J., Bijleveld, F.D. and Hagenzieker, M.P., The safety effects of daytime running lights. R-97-36. SWOV Institute for Road Safety Research, Leidschendam 1997
4) CARS21 : Final Report, December 2005. The final report is available on the website of DG Enterprise:
http://europa.eu.int/comm/enterprise/automotive/pagesbackground/competitivenesss/cars21.htm
Also, DRL studies in the 1990s indicated reductions of 10-15% (Elvik, 1996) and 8-22% (Koornstra, 1993) in the numbers of daytime crashes in which two or more road users were involved. (Source: SWOV Fact Sheet : SWOV, Leidschendam, the Netherlands April 2005.

[3] Austria (KfV Road Accident Statistics 2005); Belgium: INS et SPF Mobilité et Transports (DIV). Voir aussi : Statistiques et publications du SPF Mobilité).; Finland : Statistics Finland 2005); Great Britain: Department For Transport Road Accidents and casualties 1950-2004 and Transtats for 2005); Ireland: NRA Road Collision Facts Ireland 2004 and Joint OECD / ECMT Transport Research Centre for 2005) ; Netherlands: CBA/AVV and Joint OECD / ECMT Transport Research Centre for 2005); Norway: Norway Statsbank/ IRTAD and Joint OECD / ECMT Transport Research Centre for 2004/2005; Sweden: Vägverket).

[4] Finland clearly used a more gradual approach in the implementation of compulsory DRL for all motor vehicles. At first it was only required during the five winter months in 1972. Then this was extended to a period of seven months in 1973. Next this was again extended to the entire year outside built-up areas in 1982, and finally to all roads during the entire year in 1997. In most vehicles DRL are automatically switched on when the engine is started. However, manually operated DRL are also allowed. (Source: State of the art with respect to implementation of daytime running lights - Jacques Commandeur, R-2003-28).

[5] This followed the introduction of DRL a decade earlier when Sweden changed from driving on the left hand side of the road to the right hand side and the purpose of the introduction of DRL at that point was to avoid oncoming collisions).

Table One: Total Fatalities in Eight European Countries

	Austria	Belgium	Finland	G.B.[6]	Ireland	NL[7]	Norway	Sweden
1990	1558	1976	**649**	5217	478	1376	**332**	**772**
1991	1551	1873	**632**	4568	445	1281	**323**	**745**
1992	1403	1672	**601**	4229	415	1285	**325**	**759**
1993	1283	1660	**484**	3814	431	1252	**281**	**632**
1994	1338	1692	**480**	3650	404	1298	**283**	**589**
1995	1210	1449	**441**	3621	437	1334	**305**	**572**
1996	1027	1356	**404**	3598	453	1180	**255**	**537**
1997	1105	1364	**438**	3599	472	1163	**303**	**541**
1998	963	1500	**400**	3421	458	1066	**352**	**531**
1999	1079	1397	**431**	3423	413	1090	**304**	**580**
2000	976	1470	**396**	3409	415	1166	**341**	**591**
2001	958	1486	**433**	3450	411	1083	**275**	**554**
2002	956	1353	**415**	3431	376	1066	**310**	**560**
2003	931	1215	**379**	3508	335	1088	**280**	**529**
2004	878	1163	**375**	3221	374	804	**257**	**481**
2005	768	1089	**379**	3201	400	750	**224**	**440**

Table Two : Percentage Change in Fatalities 1990-2005

	Austria	Belgium	Finland	G.B.	Ireland	NL	Norway	Sweden
1990	1558	1976	**649**	5217	478	1376	**332**	**772**
2005	768	1089	**379**	3201	400	750	**224**	**440**
	-50.7%	**-44.9%**	**-41.6%**	**-38.6%**	**-16.3%**	**-45.5%**	**-32.5%**	**-43.0%**

Table two demonstrates that Austria had a 50.7% reduction in fatalities between 1990 and 2005 - prior to the introduction of DRL in 2006; Belgium and Netherlands had similar results in fatality reductions, respectively 44.9% and 45.5% less fatalities in 2005 compared to 1990. Sweden (a DRL country) had a 43% reduction in fatalities, while Great Britain had a reduction of 38.6% over the same period. Finland (a DRL country) had a 41.6% reduction followed by Norway (a DRL country) with a reduction of 32.5% over the same period.

Finally Ireland had the lowest reduction in fatalities between 1990 and 2005, of only 16.3%. In the event, three non DRL countries (Austria, Belgium and the Netherlands) had a higher overall reduction in fatalities compared to the DRL countries during the same period.

[6] NB: Great Britain (G.B.) includes England, Wales and Scotland United Kingdom also includes Northern Ireland; Isle of Man and Channel Islands. These regions are not included in this analysis due to the fact that they have different registration authorities and are not included in the DfT analysis of casualty statistics in Great Britain.
[7] NL – the Netherlands

Table Three: Annual Percentage change in Fatalities between 1990 and 2005

	Austria	Belgium	Finland	G.B.	Ireland	NL	Norway	Sweden
1990/1991	-0.4	-5.2	-2.6	-12.4	-6.9	-6.9	-2.7	-3.5
1991/1992	-9.5	-10.7	-4.9	-7.4	-6.7	**0.3**	**0.6**	**1.9**
1992/1993	-8.6	-0.7	-19.5	-9.8	**3.9**	-2.6	-13.5	-16.7
1993/1994	**4.3**	**1.9**	-0.8	-4.3	-6.3	**3.7**	**0.7**	-6.8
1994/1995	-9.6	-14.4	-8.1	-0.8	**8.2**	**2.8**	**7.8**	-2.9
1995/1996	-15.1	-6.4	-8.4	-0.6	**3.7**	-11.5	-16.4	-6.1
1996/1997	**7.6**	**0.6**	**8.4**	0.0	**4.2**	-1.4	**18.8**	**0.7**
1997/1998	-12.9	**10.0**	-8.7	-4.9	-3.0	-8.3	**16.2**	-1.8
1998/1999	**12.0**	-6.9	**7.8**	**0.1**	-9.8	**2.3**	-13.6	**9.2**
1999/2000	-9.5	**5.2**	-8.1	-0.4	**0.5**	**7.0**	**12.2**	**1.9**
2000/2001	-1.8	**1.1**	**9.3**	**1.2**	-1.0	-7.1	-19.4	-6.3
2001/2002	-0.2	-9.0	-4.2	-0.6	-8.5	-1.6	**12.7**	**1.1**
2002/2003	-2.6	-10.2	-8.7	**2.2**	-10.9	**2.1**	-9.7	-5.5
2003/2004	-5.7	-4.3	-1.1	-8.2	**11.6**	-19.0	-8.2	-9.1
2004/2005	-12.5	-6.4	**1.1**	-0.6	**6.7**	-6.7	-14.7	-8.5

(NB: Increases in fatalities are in bold and identified by the colour orange)

By observing the annual percentage changes in table three however, there does not appear to be any advantage to having mandatory DRL, indeed in the case of Finland, the data demonstrate an increase in fatalities in 1997 (+8.4%), in 1999 (+7.8%), in 2001 (+9.3%) and again in 2005 (+1.1%).

The country that has the least reduction in casualties in percentage terms is Ireland. Indeed over the 15 year period, there were 7 years in which there was an increase in fatalities. According to the Irish National Road Authority (NRA)[8], the most important factor contributing to a large extent to road fatalities in this country (92%) is the behaviour of the road user and the behaviour of drivers contributes to 76.9% of road fatalities. The NRA document highlights two principle causes as excessive and inappropriate speed and driving while intoxicated, whether through drugs or alcohol. Indeed such is the concern of the Irish government that a series of initiatives have been announced by the Minister for Transport

- to extend the number of offences attracting Penalty Points to 35 and
- the drafting of legislation for the introduction of Random Breath Testing are to be greatly welcomed.
- the Garda (police) fixed charge payment system will be fully computerised and the pulse system linked to the courts for the roll out of the extended penalty points system on 1st April 2006.

However, in relation to the justification of mandatory DRL to reduce casualties in Ireland, we would like to understand how effective DRL could be to a person who is intoxicated. If drink driving is a major factor in fatalities in Ireland, how would the introduction of DRL make a difference?

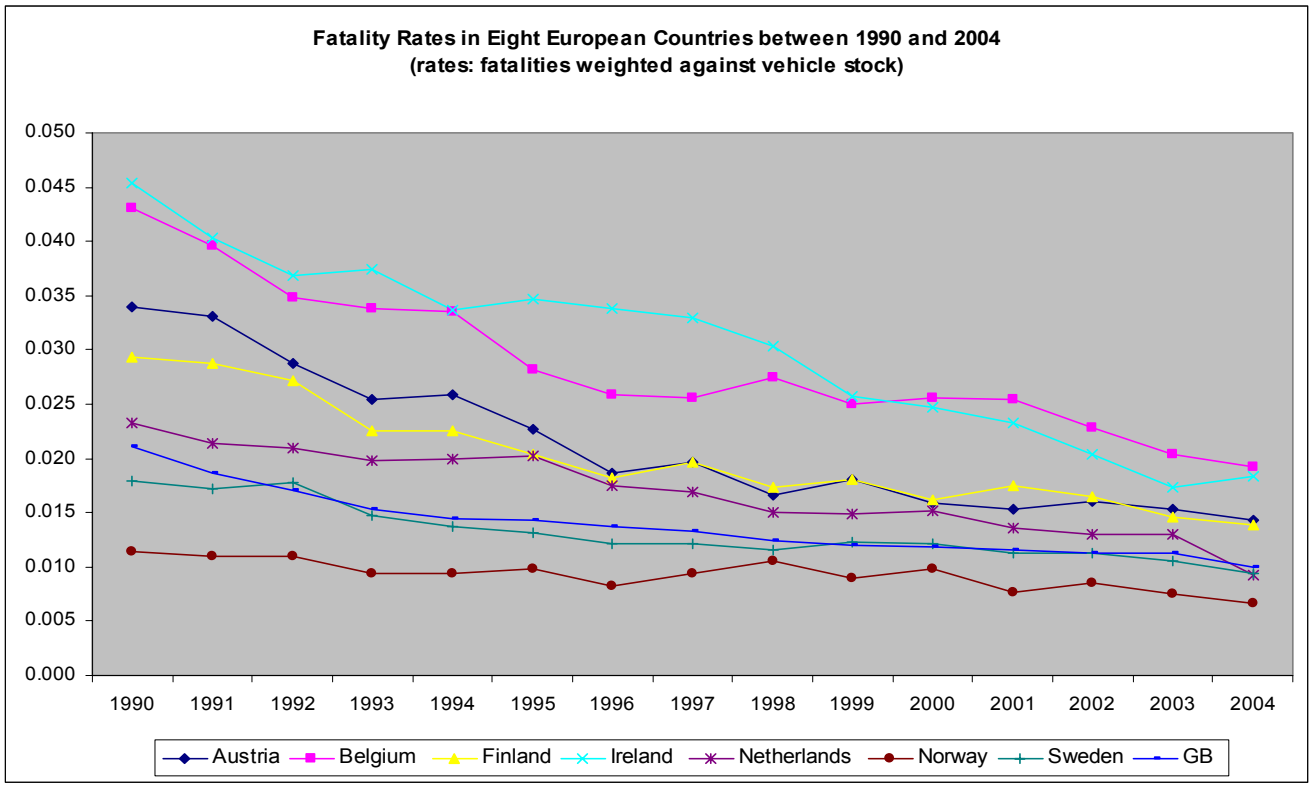
Even if intoxicated drivers were in front of a light-house, we argue that their behaviour would not necessarily change, because this type of driver would not be in full control of the vehicle.

Also in Norway, there were annual increases in fatalities for seven of the fifteen years as highlighted in table three. In this country, similar issues of those identified as the cause of fatalities in Ireland (speeding and drink driving) are amongst the major reasons for road accidents[9].

Figure one highlights fatality rates in the eight countries. Annual fatalities are weighted against the vehicle stock in each country[10].

[8] PRESENTATION TO THE JOINT COMMITTEE ON TRANSPORT Wednesday 8th February 2006 By Noel Brett, Acting Chief Executive, National Safety Council.
[9] Joint Oecd / Ecmt Transport Research Centre Country Reports On Road Safety Performance
[10] Vehicle stock sources: Austria: KfV Road Accident Statistics 2005; Belgium: National Institute for Statistics; Finland: Tilastokeskus/AKE Statistics Finland; Great Britain: DfT Transtats; Ireland: Irish Bulletin of Vehicle and Driver Statistics 2004; Netherlands: Bovag; Norway: Statsbank; Sweden: Vägverket.

Figure One



As Figure one and Table four below demonstrate, there has been an overall reduction in fatalities throughout the eight countries analysed. Most significant are the reductions in Belgium and Ireland where fatality rates have decreased respectively from 0.043% to 0.019% in Belgium and from 0.045% to 0.018% in Ireland between 1990 and 2004, in other words, fatality rates have more than halved in both countries. In fact with the exception of Norway, fatalities have halved in ALL countries irrespective of whether there is mandatory DRL or not.

Table Four - Fatality Rates from 1990 to 2004 in Eight European Countries

	Austria	Belgium	Finland	G.B.	Ireland	NL	Norway	Sweden
1990	0.034	0.043	**0.029**	0.021	0.045	0.023	**0.011**	**0.018**
1991	0.033	0.040	**0.029**	0.019	0.040	0.021	**0.011**	**0.017**
1992	0.029	0.035	**0.027**	0.017	0.037	0.021	**0.011**	**0.018**
1993	0.025	0.034	**0.023**	0.015	0.037	0.020	**0.009**	**0.015**
1994	0.026	0.034	**0.022**	0.014	0.034	0.020	**0.009**	**0.014**
1995	0.023	0.028	**0.020**	0.014	0.035	0.020	**0.010**	**0.013**
1996	0.019	0.026	**0.018**	0.014	0.034	0.017	**0.008**	**0.012**
1997	0.020	0.026	**0.020**	0.013	0.033	0.017	**0.009**	**0.012**
1998	0.017	0.028	**0.017**	0.012	0.030	0.015	**0.011**	**0.012**
1999	0.018	0.025	**0.018**	0.012	0.026	0.015	**0.009**	**0.012**
2000	0.016	0.026	**0.016**	0.012	0.025	0.015	**0.010**	**0.012**
2001	0.015	0.025	**0.017**	0.012	0.023	0.014	**0.008**	**0.011**
2002	0.016	0.023	**0.016**	0.011	0.020	0.013	**0.009**	**0.011**
2003	0.015	0.020	**0.015**	0.011	0.017	0.013	**0.007**	**0.010**
2004	0.014	0.019	**0.014**	0.010	0.018	0.009	**0.007**	**0.009**

The figure also indicates that Austria and Finland have very similar patterns in the decrease in fatalities. Finally, figure one demonstrates that there is very little difference in the data in both Sweden (a DRL country) and Great Britain, indeed they appear very similar – as table four highlights.

3) Conspicuity

According to the Commission's consultation paper, *'road users not having lighting devices, i.e. pedestrians, cyclists, mopeds do not become less conspicuous if all vehicles feature DRL; A negative effect of DRL on the visibility of motorcyclists can not be ascertained';*

However a document from Denmark, published in 2001 by the United Nations Economic Council[11] demonstrates that this does not seem to be the case, indeed the findings of the document are clear. The Danes acknowledge that a significant negative effect is found in accidents involving pedestrians: The authors comment that *'The result is surprising, as these accidents were found unaffected in the analysis based on 5 after-quarters. No specific reason for the increase has been identified, but no other explanations than the Daytime Running Lights can be pointed out'.* The document also comments that there is a negative effect with regards to accidents involving motorcycles which was the same as the first evaluation carried out in 1993 – so no improvement due to DRL. The document concludes that

'The safety effect of Daytime Running Lights is now considered to be somewhat smaller than after the first analysis'.

This suggests that the 'experts' providing the research to support the EU Commission's consultation paper have not considered all the evidence.

MAG UK argues that motorcyclists (and indeed cyclists) are constantly encouraged to enhance their conspicuity by use of daytime running lights and brightly coloured clothing. However, there are contradictory opinions about the effectiveness of DRL and conspicuous clothing: Under some circumstances, e.g. when riding on motorways in heavy rain, the positive effects of fluorescent rain suits and daytime running lights are well known and accepted.

However, under other circumstances, e.g. when riding in cities in bright sunshine, brightly coloured clothing and daytime running lights may have a "camouflaging" effect, in that they make the motorcycle and rider "blend" with colourful, bright objects in the traffic environment as the photograph below demonstrates.

In countries already having introduced mandatory daytime running lights for all vehicles, studies of placing fluorescent tape on specific locations on the bike and using additional motorcycle light arrangements, such as triangular lights, to maintain conspicuity, show little or no effect.

With regards to the negative effect of DRL on the visibility of motorcyclists, MAG UK would like to contribute to this discussion by considering a report from Great Britain. The purpose is to demonstrate that the issue of conspicuity is far more complex than the findings of the studies carried out by the research organizations which support the introduction of mandatory DRL.

[11] INLAND TRANSPORT COMMITTEE Working Party on Road Traffic Safety (Thirty-sixth session, 3-6 April 2001, agenda item 4 (e)); REVISION OF THE CONSOLIDATED RESOLUTIONS ON ROAD TRAFFIC (R.E.1) AND ON ROAD SIGNS AND SIGNALS (R.E.2) Daytime running lights; Transmitted by Denmark

Collision at Junctions

In Great Britain in 2004, there were 175,150 car accidents at junctions of which 38,171 (22%) occurred when the car was in the process of turning right. Overall, there were 17,699 accidents at junctions involving motorcycles and mopeds of which 8,878 were motorcycles over 125cc[12].

In the same year there were 88,137 accidents involving cars at T, Y or staggered junctions[13] which represent 50% of car accidents occurring at all types of junctions[14] (for built up, non built up roads and motorways) compared to 9,656 accidents involving motorcycles at T,Y and staggered junctions which represent 55% of PTW accidents occurring at all types of junctions)[15].

Behaviour and Right of Way Violation (ROWV) Accidents

In November 2004, the DfT published a report called Behavioural Research in Road Safety. The report covers a variety of studies which focus on specific causes to road accidents. One of these studies is called 'An in-depth case study of motorcycle accidents using police road accident files' by the authors DD Clarke, P Ward, W Truman and C Bartle[16].

This study considers accidents *'involving motorcyclists (and their blameworthiness) and the problem surrounding other road users' perception of motorcycles, particularly at junctions'* (page 5). The report considers factors such as *'drivers with relatively high levels of driving experience who nonetheless seem to have problems detecting approaching motorcycles'* (ibid).

The study examined 1,790 motorcycle accidents from the West Midlands police reports with follow up questionnaires. However, the authors concentrated on c.1000 of these accident reports identified as 'A' class' which provided more detail of the accidents.

Who is to blame?

Accordingly, *'of the total cases, 681 (38%) involve ROWVs also known as SMIDSYs[17]. However, less than 20% of these involve a motorcyclist who rated as either fully or partly to blame for the accident. The majority of motorcycle ROWV accidents have been found to be primarily the fault of other motorists. This is an even higher level of 'non-blameworthiness' in ROWV accidents than that observed in other in-depth studies, e.g. Hurt et al 1981. (op. cit.)*'.

The study supports the DfT 2004 casualty data by identifying that *'The majority of ROWVs occur at T-junctions, which are three times as common as roundabouts or crossroads. This finding is in accordance with the work of Hole et al. (1996), who found that the majority of such accidents occurred at 'uncontrolled' (i.e. no stop light or sign with only give-way markings and/or signs present) T-junctions in urban environments'* (page 7).

The report highlights that *'Over 65% of ROWV accidents where the motorcyclist is not regarded as to blame involve a driver who somehow fails to see a motorcyclist who should be in clear view, and indeed frequently is in view of witnesses or other road users in the area. Failures of observation that involve drivers failing to take account of restricted views of one kind or another, and failing to judge the approach speed and/or distance of a motorcyclist are not included in this category'* (Ibid).

The most significant finding of this study with regards to right of way violation (ROWV) accidents, suggests that in particular, *'there is a marked problem with other road users observing motorcyclists. This is the phenomenon whereby drivers overlook a motorcyclist in the immediate foreground seems to be in agreement with the work of Mack and Rock (op. cit.), whose theory of 'inattentional blindness' showed that subjects may be less likely to perceive an object if they are looking at it directly than if it falls outside the centre of the visual field. 'Inattentional*

[12] Table 44 DfT Report (at a junction)
[13] The DfT does not differentiate between these three types of junctions.
[14] Junctions defined in Table 42, DfT Report: Roundabout, T, Y or staggered, Crossroads, Multiple junction, Slip Road, Other junction, private drive or entrance, not at or within 20 metres of junction.
[15] Table 42 Vehicles: by vehicle type and manoeuvre: DfT Report 2004
[16] Brown, ID. (2002): A review of the 'look but failed to see' accident causation factor. In Behavioural Research in Road Safety XI. Department of Transport, Local Government and the Regions, London.

Clarke DD. et al (2004): An in-depth case study of motorcycle accidents using police road accident files in Behavioural Research in Road Safety 2004: Fourteenth Seminar.
[17] **Sorry Mate I Didn't See You**

blindness' is suggested by research to be affected by four main factors: conspicuity, expectation, mental workload, and capacity' (page 8).

The report finds that *'Some results would seem to permit the discussion of conspicuity and expectation. The fact that many motorcyclists in our sample appear to be trying to make themselves more conspicuous but are not seen (however the report does not indicate what methods were used – i.e. whether this conspicuity included bright clothing, headlights on etc), nevertheless lends credence to the idea that there is something amiss in the cognitive processes of the other involved driver. The 'expectation' factor, in particular, raises the possibility that some road users have a poor perceptual 'schema'[18] for motorcycles in the traffic scene, and therefore do not process the information fast enough when motorcyclists are observed' (page 14).*

Furthermore, the research shows that *'the average age of drivers in 'at fault' ROWV accidents involving motorcycles, 41 years, is significantly higher than the equivalent group in non-ROWV accidents, 36 years ($t = 3.45$, $p < 0.05$)'* (page 15).

The study continues *'For right of way accidents that involve other drivers pulling out in front of motorcyclists who are perhaps further away, it could also be that more global visual failings are contributing to the age effect. The proportion of visual error compared with other 'at fault' errors rises with age. The change in ratio occurs at too greater an age (65' years plus) to be related purely to driver skill factors, and suggests an age-related deficit'* (page 16).

According to the study, *'reasons for such an increase in global visual failings with age are many. Isler et al. (1997) found, in an analysis of the effect of reduced head movement and other deteriorations in the visual system on the useful field of view for the drivers aged 60 years' plus, that there was an evident restriction on the distances at which approaching traffic could be brought into the central, stationary field. Even at maximum head rotation plus one saccadic eye movement[19], approaching vehicles would not be clearly perceived beyond a distance of 50 metres'* (Ibid).

4) Comparative Collision Data

As previously mentioned however, evidence of whether DRL has any effect in reducing collisions with vulnerable road users and indeed between cars, can only really be determined – all things being equal, by comparing countries that have mandatory DRL such as Sweden and Norway and countries that do not, such as Ireland and Great Britain.

In consideration of the comments by Elvik et al[20] who argued that *'available evidence is too unreliable to predict the effect of DRL on fatal accidents with much confidence. It is likely that the effect of DRL on fatal accidents is larger than the effect on other injury accidents, but it is currently not possible to quantify the effect on fatal accidents with very great precision'* (2004:87).

We accept that the data presented here may not provide concrete evidence that DRL has any effect one way or the other, but then nor have the EU Commission's 'experts'. What we offer however is another point of view based on statistical analysis.

The choice of these four countries is due to the similarities in trends as highlighted in tables one, three and four and offers a snapshot from 2004.

Table Five - Comparison of collision statistics in 2004 from four countries

	Car occupants	PTWs	Pedestrians	Cyclists	Total
Sweden	**68**	**31**	**50**	**14**	**163**
Norway	**41**	**20**	**10**	**2**	**73**
Ireland	43	14	30	4	91
Great Britain	494	227	388	61	1170

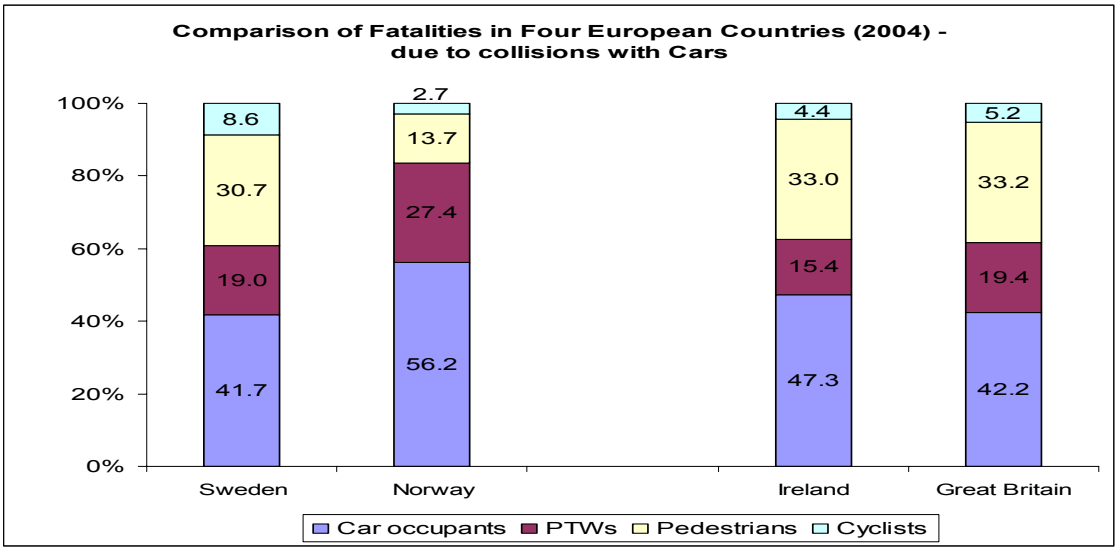
In terms of percentage differences, the following figure demonstrates that Sweden and Great Britain have very similar collision data. Norway and Ireland both have small populations, however what is evident from the following

[18] A mental representation that consists of general knowledge about events, objects or actions
[19] Very rapid, ballistic eye movement (with speeds up to 800 degrees per second)
[20] IR 2: Daytime running lights – A systematic review of effects on road safety. Elvik R., Christensen P., Olsen S V (TØI report xxx/2003

figure is that Norway – a DRL country has a higher proportion of fatalities between vehicle users – i.e. cars and cars (56.2%); cars and motorcycles (27.4%) (which all have head lights), though a lower proportion of fatalities due to collisions between cars and pedestrians (13.7%) and cars and cyclists (2.7%). Norway also has a higher proportion of fatalities between vehicle users in comparison to Sweden – another DRL country - where the fatalities due to car collisions is 41.7% and 19% for collisions between cars and motorcycles.

What can be observed in Figure two is that there is a significantly higher proportion of pedestrians killed by cars in Ireland (33%), Great Britain (33.2%) but ALSO in Sweden (30.7%) compared to other 'so called' vulnerable road users. In fact in Sweden 8.6% of cyclists are killed by cars compared to only 4.4% in Ireland and 5.2% in Great Britain. However, as mentioned previously, in Norway the proportion of motorcyclists killed by cars is significantly higher than the countries not adopting mandatory DRL (27.4% compared to 15.4% in Ireland and 19.4% in Great Britain).

Figure Two



In consideration of the comments from the EU Commission consultation paper that:

- Road users not having lighting devices, i.e. pedestrians, cyclists, mopeds do not become less conspicuous if all vehicles feature DRL;
- A negative effect of DRL on the visibility of motorcyclists can not be ascertained.

The data in figure two suggest that these assumptions are not necessarily the case. In fact, the two questions that arise from these data are:

1) Do car drivers 'see' pedestrians?

2) Are motorcycles conspicuous in all the four countries analysed? (consider that in the non DRL countries the vast majority of motorcycles are hard wired (AHO) so that the head lights turn on automatically).

The answer appears to be no – which is supported by the results of the Danish document presented to the United Nations Inland Transport Committee Working Party on Road Traffic Safety in 2001.

What we believe to be the common denominator in these four countries - is that there is no specific testing or training for car drivers in terms of road awareness for vulnerable road users – e.g. motorcycles, with the exception of Norway, but this was introduced in 2005.

5) Advantages of DRL to the private sector

The plethora of safety research papers and studies seems to focus mainly on 'gadgetry' as a panacea for casualty reduction throughout Europe. A myriad of technological solutions has been proposed, which includes DRL. However, the DRL debate appears to be the result of compromise between the European Commission and the automotive industry rather than a considered long term solution to the problem of road accidents.

Voluntary agreement[21]

According to a German document[22], in July 2001, the European Commission informed the Council and the European Parliament that *'ACEA, the European Automobile Manufacturers Association, had offered to accept a voluntary agreement in order to prevent the far progressed project of a directive on an improved pedestrian protection by imposing strict requirements for the design of the front parts of motor vehicles*.

Part of this voluntary agreement was also a paragraph containing the offer to immediately equip new vehicles with daytime running lights'.

'These lights should be in compliance with the requirements of the ECE Regulation No. 87 and should be activated automatically. Thus, the discussion on daytime running lights had new dynamics'.

In spite of this agreement between the EU Commission and ACEA, trials for soft fronts have gone ahead with extremely positive results. The Endura Frontal Protection System (FPS) has now been tested on the Toyota RAV 4.The Toyota RAV 4 is the first of many diverse vehicles which will be tested. These tests were carried out in Great Britain at the testing centre, MIRA. The results demonstrate a significant improvement in the risk of pedestrian injury to head (95- 98%), pelvis/abdomen (59-79%) and leg (37-40%)[23].

Implications

By releasing the automotive industry from the financial burden of redesigning the front of cars to improve pedestrian protection or rather, by opting for a cheaper way of 'reducing' casualties[24], this creates other implications.

The most obvious and most worrying, is that of displacing the responsibility from car drivers to look out for other road users onto other road users to become responsible to look out for cars. This may affect insurance claims – whereby the insurer may not pay out damages to other road users – with the caveat that they should have 'seen' the lights of the vehicle. It may also have a 'moral hazard' effect, which means that car drivers feel less inclined to take due care when driving for the reasons explained previously. More importantly, if we accept the Danish results, the application of DRL would have a more negative effect on pedestrian casualties.

6) Environmental issues and cost of DRL

Elvik et al (2004) argue that *'It is obvious that the results of the cost-benefit analysis are highly uncertain. The possibility cannot be ruled out that benefits are smaller than costs. How likely is such an outcome? Is it possible to estimate the probability that benefits are greater than costs? As indicated above, the answer to this question is, strictly speaking, no. The reason is that not all sources of uncertainty are known and can be meaningfully quantified. A crude estimate is, however, possible by making some assumptions with respect to the contribution of uncertain estimates of safety effects to the uncertainty in the results of the cost benefit analysis.*' [25]

Given this uncertainty, and indeed, considering that Elvik et al suggest that benefits may actually be smaller than costs, we feel it is inappropriate to comment. However we would suggest that unless there are solid calculations to prove that DRL would provide cost benefits for society and the environment, these 'crude' estimates should not be considered as a valid reason to impose DRL by the EU Commission.

One question we would ask, is whether the calculations for cost benefit analysis take into consideration that the vast majority of EU citizens already pay both social (health) and motor insurance to cover the cost of injuries to themselves and others?

7) Conclusions

As previously mentioned, Elvik et al[26] argued that, *'available evidence is too unreliable to predict the effect of DRL on fatal accidents with much confidence. It is likely that the effect of DRL on fatal accidents is larger than the*

[21] (Source: Summary Of The Discussion Concerning Daytime Running Lights In Germany Transmitted By The Experts From Germany Informal Document No.1 (50th GRE, 7-11 April 2003, Agenda Item 6.5.)
[22] Document COM(2001)389, final of 11 July 2001
[23] Source: http://www.frontalprotectionsystems.eu/video/MediumSizeSUVTesting.php
[24] as well as offering a financial windfall to the lighting industry.
[25] Page 101 : IR 2: Daytime running lights – A systematic review of effects on road safety. Elvik R., Christensen P., Olsen S V (TØI report xxx/2003
[26] IR 2: Daytime running lights – A systematic review of effects on road safety. Elvik R., Christensen P., Olsen S V (TØI report xxx/2003

effect on other injury accidents, but it is currently not possible to quantify the effect on fatal accidents with very great precision' (2004:87).

In spite of this admission that *'available evidence is too unreliable to predict the effect of DRL on fatal accidents with much confidence*' (ibid), the EU Commission is prepared to embark on legislation based on considered opinions rather than concrete evidence. It seems apparent from the consultation document and the supporting research that there is no evidence that DRL causes a reduction in fatalities, there are however a number of studies that *suggest a correlation* – but that is not the same. In the event, the UN document mentioned previously, states that the opposite is the case in Denmark – in other words, that document suggests that DRL increases pedestrian and motorcyclist fatalities.

8) Recommendations

It is the view of the Motorcycle Action Group (MAG UK) that the most effective, long term solution to the reduction of road fatalities in Europe is to extend the testing and training of car drivers to look for vulnerable road users. This is a relatively cost effective measure that would have long term effects.

- **Better awareness**

  Cars are the major cause of deaths on European roads therefore the focus of EU Commission safety reduction strategies must first and foremost consider better road awareness through changing the attitude and behaviour of car drivers as well as motorcyclists, rather than opting for DRL as a compromise to appease the automotive industry. This has not been addressed in the Third European Driving Licence Directive.

  Indeed, there is not one sentence in the Directive that recognises the human behaviour (of car drivers) as the greatest cause of fatalities in Europe. There has been no requirement what so ever to change the behaviour of car drivers through improved testing and training by focussing specifically on road awareness for vulnerable road users.

  Instead, the EU Commission has preferred to impose further training on motorcyclists while completely ignoring the one most significant cause of motorcyclist fatalities. DRL for motorcyclists is by and large mandatory throughout Europe, either explicitly through legislation or implicitly due to the hard wiring (AHO) by manufacturers. Yet in spite of this, of the motorcyclists killed annually in Europe, 40% of these deaths is due to collisions with cars.

  In consideration of the findings of research which the British government commissioned, MAG UK argues that both the theoretical and practical hazard perception test must be overhauled to take into consideration the causes of collision accidents and thus, must identify motorcycle awareness as a fundamental part of the testing regime of car drivers, in order to reduce the potential for collisions between cars and motorcycles.

- **Better Training**

  Practical training for car drivers must include consideration of inattentional blindness at junctions, which we believe should include training drivers to rock back and forward as well as looking both ways. The EU Commission needs to address training and awareness techniques for motorcycle riders. The present system does not equip them with the necessary accident avoidance and evasion strategies, this could be easily modified by considering avoidance and evasion strategies which should be included in initial rider training.

In consideration of the fact that human behaviour is the greatest cause of road accidents, further research needs to consider these issues, as well as driving while intoxicated. While there are inconsistencies in legislation throughout European countries that allow car drivers to take control of a vehicle under the influence of diverse levels of alcohol, it is unlikely that there can be a consistent reduction of casualties under a DRL regime.

Finally MAG UK believes that the automotive and motorcycle industries, car and motorcycle publications and dedicated television programmes, are indirectly responsible for many road accidents. In our view, they need to re-evaluate their marketing strategies especially those that focus advertising on young car drivers and motorcyclists by promoting the glamour of speed and dangerous behaviour.

Researched and written by

Dr Elaine Hardy - MAG UK National Research Officer – November 2006