

**Why the European Commission's proposal of mandatory motorcar daytime running lights is wrong**

*The response of DADRL (UK) to European Commission 2006  
'Saving lives with daytime running lights'*

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## Why the European Commission's proposal of mandatory motorcar daytime running lights is wrong

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### DADRL (UK): Statement of position

The European Commission proposes that the EU make motorcar daytime running lights mandatory.

It claims the support of defective major studies by Koornstra et al 1997 and Elvik et al 2003, and a baseless cost-benefit analysis by the latter. It too easily dismisses the energy and environmental costs. It ignores the Japanese Government's evidence that motorcar daytime running lights will mask motorcycle lights. It ignores that they will operate as a peripheral reflex distraction away from pedestrians and pedal cyclists.

DADRL (UK) say that this is bad legislation. It will not further European road safety. It may indeed in the event rather diminish it.

### DADRL (UK): Short facts

#### 1. Failure of North European motorcar daytime running light studies

Upon scrutiny, the monitoring studies of the effect of motorcar daytime running light laws in Finland (1972), Sweden (1977), and Norway (1985 & 1988) failed to find a reduction of accidents, apart from a reduction of animal accidents in Finland.

The monitoring study of the law in Denmark (1990) did find a reduction of motorcar accidents, but the reduction was offset by an increase of pedestrian accidents.

#### 2. Commission's motorcar counter-evidence grossly defective

Elvik 1996, and Commission authors Koornstra et al 1997 responded by conducting reanalyses of the worldwide data of motorcar monitoring studies, including the North European studies. They claimed to have found that motorcar daytime running lights do reduce accidents.

Present Commission authors Elvik et al 2003 now respond again in the same way.

But whereas critics had revealed the failure of the North European daytime running light laws by disaggregating the data of the monitoring studies in order to supply the actual year-by-year changes of the data, Elvik 1996 merely aggregated the worldwide data to make from it a single global 'finding'.

Koornstra et al 1997 claimed that they reanalysed the data of each study in the proper scientific way, consistently employing the same methodology.

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<sup>1</sup> The Association of Drivers Against Daytime Running Lights (United Kingdom)

But scrutiny of their text shows that they only achieved new findings in favour of motorcar daytime running lights in Sweden and Norway by inconsistently changing methodology when their Swedish methodology failed to yield a favourable finding in Norway.

And Elvik et al 2003, first, base their worldwide finding upon the common finding in favour of motorcar daytime running lights of three tests that they admit are not specific for the effect of daytime running lights, and so scientifically inadequate.

Accordingly Elvik et al rely for the validity of their finding upon the metaphysical and non-scientific proposition that 'three wrongs can somehow make a right'.

Elvik et al, second, fail to demonstrate a dose-response relationship for daytime running lights, or to show that they pass various other tests of the plausibility of their finding.

In other words if motorcar daytime running lights were a drug, it would not be deemed safe by the medical authorities on the evidence of Elvik et al 2003 to prescribe it to patients.

### 3. Conflicting findings of Commission studies Koornstra et al 1997 and Elvik et al 2003

A fundamental claim of Commission study Koornstra et al 1997 was that the reduction of accidents that they found from the data of the worldwide studies of the effect of motorcar daytime running lights rose proportionately with latitude.

Koornstra et al 1997 went on to base the calculations of a cost-benefit analysis in favour of daytime running lights, and a consequent recommendation to the Commission that it mandate motorcar daytime running lights in Europe, upon the claim in question.

However Elvik et al 2003, as one of the failed plausibility tests of motorcar daytime running lights, now report their finding from the same data as Koornstra et al 1997 that, to the contrary (*p86*):

'There is hardly any relationship between latitude and effects of DRL'.

le one set of Commission authors is saying, unsatisfactorily, that the other set of authors' recommendation that the Commission mandate motorcar daytime running lights was based upon a spurious and wrong finding from the data that they analysed.

### 4. Commission's cost-benefit analysis founded upon unsupported guesswork

The Commission rely for the cost-benefit analysis in support of the present Commission proposal upon the analysis of Elvik et al 2003.

Elvik et al report that they put the following valuations upon a road accident injury at Euro 2000 prices (*p94*):

Fatal	1,265,000
Serious	125,000
Slight	2,720

Correspondingly it is critical for the validity of Elvik et al's cost-benefit analysis that the reduction of accidents that they claim to have found from motorcar daytime running lights be accurately and reliably apportioned between fatal, serious and slight injury accidents.

However all that Elvik et al are able to say is (p87):

'The relationship between accident severity and the effects of DRL was discussed in Chapter 3. There is not very much evidence regarding this relationship.'

or (*ibid*):

'This means that available evidence is too unreliable to predict the effect of DRL on fatal accidents with much confidence.'

Likewise for the purposes of a meaningful cost-benefit analysis, Elvik et al 2003 need to have before them a plausible—ie proportionate—finding of the dose-response relationship of daytime running lights and accidents.

But as previously mentioned, all that Elvik et al were able to find on the subject was (p84):

'As can be seen from Figure 7, there is no apparent dose-response relationship between the variables. It does not seem to be the case that the greater the increase in the use of DRL, the larger the effect on accidents.'

Elvik et al 2003 go on, in default of access to the above two items of essential information, to rely for the findings of their cost-benefit analysis upon unsupported assumptions, namely plain guesswork.

The findings of the analysis, as in turn relied upon by the Commission, therefore fall to be dismissed as baseless.

## 5. High energy and environmental costs

Daytime running lights are powered by electricity. And to generate electricity from a vehicle engine is extremely inefficient due to mechanical and engine heat losses. To run two 55 watt headlights and associated lamps takes 970 watts of fuel energy.

Likewise vehicle engines emit Carbon Dioxide (CO<sub>2</sub>) into the atmosphere. Milnes of DADRL (UK) is an accredited Carbon Trust survey engineer. He calculates that motorcar daytime running lights will add some 1.85 million tonnes annually of CO<sub>2</sub> into the UK's atmosphere.

The UK emits as whole around 560 million tonnes annually of CO<sub>2</sub>. Nevertheless to compare 1.85 million tonnes on a different scale, the Carbon Trust is a government funded body helping industry to save energy. During 2005/06 with an army of 250 surveyors, the estimated savings were 3.9 million tonnes of CO<sub>2</sub>. The use of daytime running lights will negate 50% of the hard won environmental gains.

## 6. Issue 'conspicuity', not 'visibility', of motorcars

What attracts, also distracts.

Hörberg & Rumar 1975 found that their experimental subjects were able to see a motorcar without its lights on at distances over 3000 metres.

Rather the original purpose-designed daytime running lights that Hörberg & Rumar 1975 recommended were specified to be sufficiently powerful to engage the reflex attraction of the peripheral vision to a bright light at up to 30° peripheral angle.

le the purpose of daytime running lights is to enhance the noticeability, or conspicuity, not the mere visibility, of vehicles.

But in doing so daytime running lights have the inherent adverse side-effect that as well as attract the attention of other road users, they may equally also distract it.

The Commission's proposal fails to make it clear to a lay readership that, in this way, motorcar daytime running lights are, not a 'passive' road safety measure that has only beneficial effects, but an 'active' road safety measure that has potential adverse side-effects.

## 7. Omission of Japanese motorcycle masking studies

Just as the European Commission recites in the proposal the findings of a Dutch motorcycle masking study, Brouwer et al 2004, that it commissioned, so too some three or four years ago the Japanese Government commissioned its own motorcycle masking studies, Morita et al 2001 and JASIC 2003.

As treated below, JASIC 2003, in particular, found, 'against' motorcar daytime running lights, that the daytime headlight of a motorcycle could be masked by the daytime headlights of a following motorcar.

Wrongly and partially, the Commission ignores, and utterly fails to mention the existence or findings of two Japanese motorcycle masking studies.

Instead, as above, it mentions only the findings of its own masking study, Brouwer et al 2004, which found, by contrast with JASIC 2003 'in favour of' motorcar daytime running lights, that the daytime headlight of a motorcycle was not masked by the daytime headlights of motorcar alongside it.

Likewise the Commission fails to mention that, as a result of the findings of JASIC 2003, as communicated to UN/ECE GRE<sup>2</sup> before its meeting in June 2004 the Japanese Government prohibits motorcar daytime running lights of over 400 candlepower in Japan, and wishes to retain the discretion under international agreements to prohibit motorcar daytime running lights, as well as mandate them.

## 8. Commission's motorcycle counter-evidence weak, partial and inconclusive

The special concerns of motorcyclists who use daytime running lights are that, when motorcars also use daytime running lights:

Motorcyclists will:

- Lose the message 'motorcycle' that their light conveys to other drivers
- Be outshone and rendered less noticeable by more powerful motorcar lights in the scenarios:

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<sup>2</sup> United Nations Economic Commission for Europe at Geneva, Inland Transport Committee, World Forum for Harmonization of Vehicle Regulations (WP.29), Working Party on Lighting and Light-Signalling (GRE). The European Commission is a member of GRE

- ‘Motorcar and motorcycle side by side’
  - ‘Following motorcar’;
- they will experience the adverse effects of:
- Confusion in the scenarios:
    - ‘Motorcar and motorcycle side by side’
    - ‘Following motorcar’
  - Masking in the scenario:
    - ‘Headlight in line with headlight of following motorcar’;
- they will encounter motorcar drivers who are:
- Over-confident that other drivers will see and give way to them
  - Over-assertive that other drivers must see and give way to them
  - Distracted by motorcar lights
  - Subject to glare;
- and they will themselves be:
- Distracted by motorcar lights
  - Subject to glare.

The Commission answer that Elvik 1993's Norwegian study and Hansen 1993 & 1995's Danish study failed to show any adverse effect of motorcar daytime running lights upon motorcycle accidents.

But Commission authors Elvik et al 2003 caution that their estimates of effect are ‘based on small samples and are very far from statistical significance at conventional levels’ (p65).

The Commission point out, as already stated, that Brouwer et al 2004 made the experimental finding that the daytime headlight of a stationary motorcycle was not masked by the daytime headlights of a stationary motorcar alongside.

But to repeat, the Commission omit to mention that JASIC 2003 more realistically employed the experimental scenario of a moving motorcycle followed by a moving motorcar, and did find that the headlights of the motorcar masked the motorcycle.

The Commission attempts to reassure the plausible concerns of motorcyclists with weak, partial and inconclusive counter-evidence.

## 9. Effect upon pedal cyclists & pedestrians

Pedal cyclists and pedestrians share many of motorcyclists' concerns at the effect of motorcar daytime running lights upon them.

DADRL (UK) does not respond to the Commission's proposal on their behalf.

But it does point out that if, as DADRL (UK) has demonstrated in Sections 1 to 3, motorcar daytime running lights remain on the evidence to date not proven to reduce accidents, then even one additional pedal cyclist or pedestrian casualty from such side-effects of daytime running lights as glare, masking, or distraction is on road safety grounds unacceptable.

DADRL (UK)

14 September 2006

DADRL (UK)

## Figures



Car with DRL and bicyclist in the condition with homogeneous background

Brouwer et al 2004: Configuration 1



Car with DRL and motorcyclist without lights in the condition with cluttered background

Brouwer et al 2004: Configuration 2



JASIC 2003