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How Koornstra et al 1997 'The safety effects of daytime running lights' only achieved consistent findings in favour of daytime running lights from their re-analysis of the Swedish and Norwegian data by the adoption of an inconsistent methodology

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1. Authors state in the summary and conclusions of the paper that the data of the 24 existing studies of motorcar (or all-vehicle) daytime running lights has been re-analysed on a 'comparably defined' basis:

'In this study all existing (24) independent DRL-evaluations have been reviewed and/or reanalysed in order to obtain unbiased, and comparably defined, intrinsic DRL-safety-effects while estimating statistical uncertainties in an optimal way.'

[Summary, conclusions and recommendations p4]

2. Authors state in the introduction to the main body of the paper that they will 'if needed and possible' apply an 'optimal methodology' (which they go on to describe) in the re-analysis of the data of the existing studies 'in order to arrive at ... comparable estimates':

'In this chapter an optimal methodology and analysis for evaluation of DRL-effects is described, which then in the next chapter is applied (if needed and possible) for a re-analysis of the accident data from several DRL-studies in order to arrive at optimal and comparable estimates of the DRL-effects in each DRL-evaluation.'

[Chapter 3. Methodological aspects of DRL-evaluations p50]

3. By way of re-analysis of the Swedish all-vehicle data, the authors conduct a separate analysis of summer and winter DRL-effects (which yields a finding in favour of DRL-use):

'The nearly significant difference between the intrinsic DRL-effects for the selected summer and winter periods and the different DRL-increases define two genuinely different raw DRL-effects, which should not be represented by one single raw DRL-effect for the whole year.'

*[Chapter 4. Annotated review and re-analyses of DRL-evaluations:
4.4 DRL-evaluation in Sweden p101]*

4. Authors present the result of their re-analysis of the Swedish data as the finding of the separate analysis of summer and winter DRL-effects:

'In conclusion the selected summer and winter periods prove that the DRL-effects for Sweden are significant, despite the critical comments by several authors who have concluded that a significant Swedish DRL-effect can not be demonstrated.'

[4.4 DRL-evaluation in Sweden p101]

5. By way of re-analysis of the Norwegian all-vehicle (excepting motorcycle) data, the authors again conduct a separate analysis of summer and winter DRL-effects. But, unlike for Sweden, 'in contrast to expectation' the analysis yields a lower winter than summer finding:

'This most probable winter DRL-effect of 35.7% is significant (one-sided t-test $p=.01$), but in contrast to the expectation it is just significantly lower DRL-effect than the summer DRL-effect (one-sided t-test, $p=.05$) and also its parameter variance is significantly smaller (F-test, $p=.03$).'

*[Chapter 4. Annotated review and re-analyses of DRL-evaluations:
4.5 DRL-evaluations in Norway p112]*

6. Authors abandon the separate analysis of summer and winter DRL-effects for Norway.

Instead they present the result of their re-analysis of the Norwegian data as the finding of a whole year analysis of the average of summer and winter DRL-effects (which is now, like for Sweden, a finding in favour of DRL-use):

'Because of the significant differences between the summer and winter DRL-effects and their variances, one must not estimate a DRL-effect by an analysis of annual totals, but by an average of the summer and winter DRL-effects. This average DRL-effect percentages yields a whole year DRL-effect on casualties in MD-accidents between vehicles without rear-end accidents of:

[Algebraic presentation of finding omitted].

It amounts to a whole year DRL-effect on casualties in MD-accidents between vehicles without rear-end accidents of 48.5% for Norway.'

[4.5 DRL-evaluations in Norway p112]

7. By the change of methodology from a separate analysis of the summer and winter Swedish data to a whole year analysis of the Norwegian data—ie from 'disaggregating' to 'aggregating' annual data—the authors wrongly believe:

- The statement that they made in Chapter 3 that they would if needed and possible apply a methodology that was intended to achieve 'comparable estimates of the DRL-effects in each DRL-evaluation'.
- The statement in their Summary and conclusions that the data of the 24 existing studies had been re-analysed on a 'comparably defined' basis.

Koornstra et al 1997 have in fact adopted an inconsistent methodology for their re-analysis of the Swedish and Norwegian data. It is only thereby that they have achieved the consistent findings from the data that they rely upon in favour of daytime running lights in their paper.

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