

Review- TRL literature review of interventions to improve the conspicuity of motorcyclists and help avoid 'looked but failed to see' accidents plus an accompanying field study “The effect of two novel lighting configurations on the conspicuity of motorcycles”

The English based Transport Research Laboratory (TRL) recently completed a research study for the Motorcycle Safety Advisory Council. The study aimed to inform the quest for interventions to increase motorcycle safety by improving their visibility. The work comprised a highly structured literature search and an on-road study of two “enhancements” to motorcycle lighting.

Twenty-seven acceptable articles were found including five on daytime running lights, which are already compulsory for motorcycles in New Zealand. No individual result was conclusive but overall, the results indicated that enhanced lighting and clothing which contrasts with the surroundings are positive for visibility. No specific figures were associated with this impact. This was because the visual context of a motorcycle can vary widely in terms of ambient light, street lighting, lighting form headlights, pavement colour and other colours in the observer’s visual field. Thus any intervention may vary in effectiveness with the conditions.

Coloured clothing is more effective when viewed against a contrasting background. Most studies show benefits of bright clothing but dark clothing may be better with brightly coloured backgrounds. However, as the positive impact of protective clothing is much better established than the visibility impact of contrasting clothing, the protective qualities of the clothing should always come first.

Lighting arranged to accentuate the shape of the motorcycle (and help in judging approach speed) should improve gap acceptance. However, real world research about this is sparse. Colour of lighting can play a role in effectiveness especially where coloured motorcycle lights aid the motorcycle in standing out from surrounding vehicles which have white lights. The converse where coloured motorcycle lighting may make it more difficult for a vehicle driver or pedestrian to recognise the motorcycle as a vehicle was not mentioned. Another point not dealt with in the review is that the effectiveness of such lighting is dependent on ambient lighting levels which in turn are dependent on time of day, season, geographical latitude and weather. The lower the ambient light, the more effective daytime running lights are. Therefore they, and other lighting “enhancements” should be more effective in the south.

The review was followed by an on-road study of two motorcycle lighting “enhancements”. These were a dipped headlamp plus LED lighting on either mirror in a ‘V’ formation and a similar formation with extra LED lighting on each fork leg to give a ‘Y’ formation. The baseline was a dipped headlamp.

Observers in cars at intersections reported whatever “grabbed their attention” in the traffic scene to their right, any motorcycles they detected while actively looking for them and when they would not accept a gap in front of an oncoming motorcycle.

The study found that the two “enhanced” lighting configurations improved observer detection times at night where the observer had been asked to look for motorcycles. No such impact was found during the day or when the observers had not been so prompted.

The results of the study which indicated that the enhanced lighting configurations were only effective at night was disappointing. Three quarters of multivehicle motorcycle crashes occur during the day, thus limiting the usefulness of the measures to the other quarter occurring at night. Also, the impact of lighting varies with ambient light and no information was given on the experimental conditions.

MSAC now intends to discuss with the Transport Agency issues related to allowing some specific enhanced lighting configurations for motorcycles.