

**To:** Transport & Health Policy Makers, & Practitioners

**From:** Professor Adrian Davis

**Date:** 5<sup>th</sup> April 2021

**Subject:** Essential Evidence 4 Scotland No.37 Effects of street lighting on road safety

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Top Line: When considering changes to street lighting, claims of reduced traffic collisions within relighting proposals should be questioned, not least as there is evidence to the contrary.

Street lighting has been suggested as a relatively low-cost intervention with the potential to prevent traffic crashes. Street lighting may improve a driver's visual capabilities and ability to detect roadway hazards. However, street lighting could have an adverse effect on road safety; drivers may 'feel' safer because lighting gives them improved visibility which could result in increasing speed and reducing concentration. A 2009 systematic review suggested that street lighting may prevent road traffic crashes, injuries and fatalities.<sup>1</sup> In the UK, an increasing number of local councils had been turning off public street lighting in certain areas in a move to reduce costs and carbon emissions. The researchers concluded that potential adverse road safety impact of such a policy should be carefully considered in light of their findings.

Since then, within a context of cost constraints and increasing local accountability for climate change mitigation, technological innovation is enabling changes to the provision of street lighting in ways that may have important implications for public health. Technologies, such as LED lighting and computerised central management systems, have created opportunities for local authorities to adapt street lighting strategies in ways that can reduce energy costs and contribute to reductions in carbon emissions. However, there is also concern that reductions in street light at night might increase road traffic injury, crime and fear of crime.

Several UK studies have addressed these issues within the past decade. Researchers designed a study in England and Wales to examine associations between reduced street lighting and road traffic collisions and crime, adjusting for regional trends.<sup>2</sup> Analyses were conducted at road level for traffic collisions and at area level for crime. Analyses were based on the patterns of change in monthly counts of collisions and crimes within each street, or area. STATS19 collision data were classified as 'night-time' or 'day-time' according to the time and date of the collision. Crime data was analysed using Middle Super Output Area units. The results provided no evidence that switch off, part-night lighting, dimming, or white light adaptations to street lighting were associated with night-time traffic collisions. The results also provided no evidence that these lighting strategies were associated with an increase in crime at an area level. Results suggested that in the aggregate, dimming and white light regimes were associated with reductions in crime, though estimates were imprecise.

In other UK research, city-wide introduction of white light-emitting diodes (LEDs) was studied with the aim to estimate the effect of new lighting on road traffic injuries within the city of Birmingham.<sup>3</sup> No evidence was found, however, for brighter lamps leading to an improvement in road safety in any of the analyses. For this city, introducing brighter road lighting may have compromised safety rather than reducing harm.

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<sup>1</sup> Beyer, F., Ker K. 2009 Street lighting for preventing road traffic injuries. *Cochrane Database of Systematic Reviews*, Issue 1. Art. No.: CD004728. DOI: 10.1002/14651858.CD004728.pub2 .

<sup>2</sup> Steinbach, R., Perkins, C., Tompson, L., et al, 2015 The effect of reduced street lighting on road casualties and crime in England and Wales: controlled interrupted time series analysis, *Journal of Epidemiology and Community Health*, 69: 1118-1124 doi:10.1136/jech-2015-206012

<sup>3</sup> Marchmont, P. 2016 Does changing to brighter road lighting improve road safety? Multilevel longitudinal analysis of road traffic collision frequency during the relighting of a UK city, *Journal of Epidemiology and Community Health*, 74(5) <http://dx.doi.org.ezproxy.uwe.ac.uk/10.1136/jech-2019-212208>