

Light 'SINN'

'Light pollution'

Was and still is one of the undesirable effects that we are not warned about in any of the information issued by the lighting industry.

Ever greater light intensities are unnecessary, often distracting and sometimes downright dangerous.

Phototoxicity

Potentially harmful light rays that can cause retinal damage.

The cornea and lens focus potentially dangerous light rays into the most important point of the human body: direct into the middle of the retina, the fovea centralis, the place of sharpest vision.

Photodamage to the retina is irreparable; acute lesions can be caused by unshielded lights, the most famous example being, watching a solar eclipse without a protective filter.

Phototoxicity must be prevented through 'light hygiene'.

Glare, irritation, distraction ('distraction blindness') and bio-rhythms disturbed by light at the wrong time ('chronodisruption') plus psychological and somatic sequelae are often played down. Glare causes electrophysiologically verifiable long-term (side) effects, after glare effects resemble 'driving in a dark tunnel'.

Sensitive, vulnerable structures of the visual and cognitive system require a much more cautious procedure when dealing with modern high-intensity lamps than was previously the case. The capacitive limits of cognitive processes and the limitations of the physiology of the senses must be taken into account.

The high brightness blue/white ('Blue Peak Hazard') from many LED lamps is unphysiological (the central area of the retina lacks blue cones: e.g. the physiological central blue scotoma); yellow light improves contrast vision, causes less glare and distracts less.

The caveat regarding epigenetic and prenatal imprinting goes unheard.

Blog: Blue writing in the blue scotoma. The human retinal fovea is 'blue blind, the wrong colour, especially in front of the recommended dark backgrounds (retinal protection). (PH 1.12. 2018) <https://ub.meduniwien.ac.at//blog/?p=31486>

Excessively bright light intensities, indoors, outdoors, hazard lights etc. all interfere with human sensitivity and perception. In traffic scenarios the consequences are potentially fatal.

In plain language

Short-wave, 'bluish' spectra dominated light sources, e.g., arc welding, car Daytime Running Lights (DRL), high-intensity Light Emitting Diodes (LED)/Bi-Xenon headlights, street lights and advertising hoardings are distracting and potentially eye-damaging, depending on intensity, spectrum, exposure duration and distance from the light source - and temporal summation (repetitive light damage).

Light-trespassing is to be avoided, that is to say light that penetrates into bedrooms from neighbouring property or street lighting which can cause sleep disturbances.

Sports field and ski slope illuminations usually are tailor-made for 'TV-compatible cameras' but not for the human eye.

Bright 'security lights' ('Rottweiler light') do not drive away intruders. Globe lights, in 'Sky radiators' embedded in the ground and radiating upwards above the horizontal are obsolete.

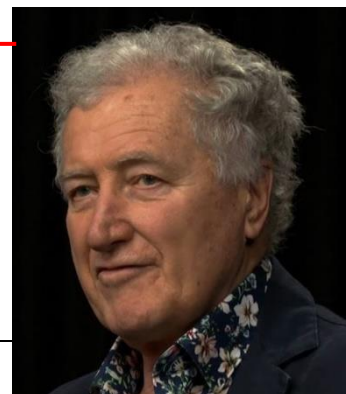
Light emissions at the wrong time and in the wrong place cause 'light pollution' - an aerosol haze of light palling over urbanized landscapes blocking out the natural sky.

The solutions:-

Indoor Lights

Should be softlight 'warm white', missing the 'blue peak' of the spectrum, still a nuisance in many commercially available LEDs.

The direct view into the light source should be avoided whenever possible. Once more: Bright light sources should never be seen directly with the naked eye.



a.o. Univ. Prof. emer. Peter Heilig



Roy Milnes Lightmare UK

Outdoor lights

Should be full cut-off (with no direct uplight and no light emitted above horizontal) only illuminating paths or streets downwards. (Upward Light Ratio (ULR ~ Zero)

Design and Regulation

Improved interdisciplinary cooperation is required between designers, regulators and health specialists, first and foremost eye-doctors. International Dark Skies Association specifications are a good guide.

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Traffic Scenarios

In our increasingly risk-averse society, it seems incredible that when life-safety is at risk auto manufacturers are vying to outdo each other with brighter and brighter bluish white blinding lights.

Vehicle lights have developed from eye-tolerant tungsten to tungsten-halogen, dazzling Bi-Xenon, blinding eye-damaging 6500k bluish white LED and even laser headlights.

Since DRL were mandated by EU ministers in 2011, accidents have increased in the EU, the UK and the USA.

[EU research organisation SVOV Factsheet](#) claimed 15% less fatal & 10% less injurious accidents.

Increased accidents

However, in 2019 higher than expected injuries and fatalities have occurred: -

The EU had 8,000 more fatalities

The UK had 10,000 more fatalities and seriously injured

The USA had 516,500 more fatalities and injured

2019 EU road safety report sums up the problem well:

"Whilst vehicles are equipped with an increasing amount of safety devices e.g. ABS, ASC, SIPS, RFT, Radar, Lidar, absorbent bumpers, crumple zones etc. and roads are engineered with safety as a priority, the expected year on year downward trend has halted"



The EU offers no explanation for the decline in road safety despite it being coincidental with the introduction and development of blinding lights that many drivers intensely dislike.

To justify their studies EU traffic "experts" used slides in a laboratory which cannot emulate the photon emissions beamed directly into a driver's eye. The EU then commissioned meta-analysis (studies of studies) which compounded their errors to produce the desired result.

Lighting manufacturers assume roads are billiard table smooth when designing lamps, a fact that regulators seem to overlook. Undulations in real traffic cause illegal blinding glare.

For evidence of how inaccurate their claims were, look at the EU, UK and USA road accident charts in Appendix 1.

Effect upon the brain

Continual exposure to blindingly bright lights and distracting stimuli (DRL) can cause overflow of visual short-term and working memory because overstimulation can produce 'seen' but ultimately not consciously 'perceived' objects which are extinguished in the cognitive processes.

The most vulnerable group of all road users: Children at pedestrian crossings **

Due to "Distraction Blindness"

Dazzle causes negative after-images and light in the peripheral field of vision from DRL can trigger 'distraction blindness'. Road users can also become less aware of each another through overstimulation, which distracts and increases risk to less conspicuous, more vulnerable road users.

Particularly affected are drivers who have had eye surgery and drivers who have retinal problems. They may have 20:20 vision but they can have longer [retinal recovery times](#)

This, plus straylight, can cause [temporary blindness](#) with fatal consequences.

Cumulatively, constant blinding light causes driver irritation and tiredness, putting the driver in an unsafe frame of mind. This annoyance can be an intangible contributory factor in the causation of accidents. A driver could be found guilty of causing an accident when the real criminals are the manufacturers and authorities permitting motorists to be distracted or even temporarily blinded!

** In German *Schutzweg* = Safe Way, way of protection.

The auto industry believes in 'superhuman' eyes and with disarming naivety almost infinite cognitive capacities.

"It has been suggested that Variable Message Signs (VMS) become less effective at communicating important traffic information when irrelevant information is displayed on them "(Thomas et al 2020).

"We waste our lights in vain, like lamps by day." William Shakespeare, Romeo and Juliette, Act I Scene IV. Mercutio

Elimination of blinding lights will provide increased safety and security for all road users. Every 'traffic-relevant object' in road traffic deserves exactly the same amount of attention.

No ETHICS commission in the world would approve such an unethical life or death 'experiment'.

Overaccentuated motorised vehicles (DRL) against vulnerable inconspicuous road users.

Law and Human Rights

Blinding light violates:

The convention concerning The Power of Authority;

The Law in Respect of the Protection of Infants;

The bond of protection;

The Principle of Equality;

Declaration of Human Rights (1948) Article Three;

The Laws of Logic; Public Ethics and Morals.

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Attorney-at-Law Dr. G. G. SANDER, MA. Mag.rer.publ. states:

“Since 2011, all type-approved cars within the EU have to come with them as standard so-called 'daytime running lights'. This is in blatant contradiction to the above-mentioned laws and listed legally / logically founded principles”.

This has yet to be proven in a law court.

An EU daytime running lights directive would be difficult to explain in terms of the rights of The Child's reconciliation act dated November 20, 1959 - children enjoy special protection.

Art. 2 Para. 1 of the International Covenant of 19 December 1966 on civil and political rights determines every child's legal status as a minor and the protective measures required by society and the state.

Compulsory, state-ordered driving with blinding lights contradicts protective obligations and children's rights.

The authors accept that a proportion of accidents could be due to distractors such as mobile phones and in-car touch screens, as well as being blinded, however, the authorities do not have the ability to quantify the proportions.

Conclusion

Lighting and auto industry, designers, architects and ministers seldom take into account the damaging effects of blinding light upon the retina.

Hazard Perception is inextricably linked to the Cognitive System, because some road users are less conspicuous and others are ablaze with light, which the brain cannot cope with.

The law decrees the use of blinding light to the detriment of less conspicuous more vulnerable road users - a policy based on the morality of the highwayman
“Mack the Knife”.

Outdoor light pollution and light trespass requires action.

Every spark of energy that is saved helps mitigate the effect of climate change.

Artists imagine lovers strolling under a starry sky guided by the Milky Way on the shore of a bathing lake in a World Heritage site. Maybe one day we can regain this ideal not only for lovers but for the future of our children.

France had the correct solution with selective yellow headlights circa 1931 -1993.

France also decreed in 2019 that all external lights should not exceed 2700k (warm white) and focus downwards - other countries should follow.

[The Austrian Ophthalmological Society banned Daytime Running Lights in 2008](#)

Thousands of drivers have [petitioned against blinding lights this one](#) by [Softlights.org](#) USA has almost 30,000 signatures.

“Distracted driving is an increasingly deadly threat to road safety.” (Stimpson et al, 2010)

How many more casualties will it take before authorities' act?

Closing stanza:

“Because some are in the dark”

“And the others are in the light”
(and the others drive with lights)

“And you see them in the light”
(with lights (DRL))

“You can't see those in the dark”
(distraction blindness - worst case)

[The Threepenny Opera](#) Bertolt Brecht 1930

Synopsis

The human eye is a vital organ of vision. It plays a very important role not only in life but also in the human body.

The eye gives us the sense of sight, allowing us to learn more about the surrounding world than we do with any of the other four senses.

Why are we being bombarded with eye-damaging phototoxic blinding light?

The Authorities have an implicit duty of care to prevent our eyes being damaged, this document shows the effect of the drive for commercial profit overruling worldwide medical expertise and the tragic consequences.

Solutions are proposed in Light SINN. Designers, regulators and authorities should be instructed to take note.

Publications:

Thomas FMF, Charlton SG (2020) Inattentional blindness and information relevance of variable message signs, *Accid Anal Prev* 140: 105511. doi: 10.1016 / j.aap.2020

Posch T, Freyhoff A, Uhlmann T (Ed.) (2009) *The End of the Night*. Kindle

Goronczy EE (2018) *Light pollution in metropolises*, Springer

Krop-Benesch, A (2021) *LIGHT OUT !?* rororo Heilig P (2013) *Blendung*

<https://ub.meduniwien.ac.at/blog/?p=14844>
Heilig P (2019) *Light hygiene*

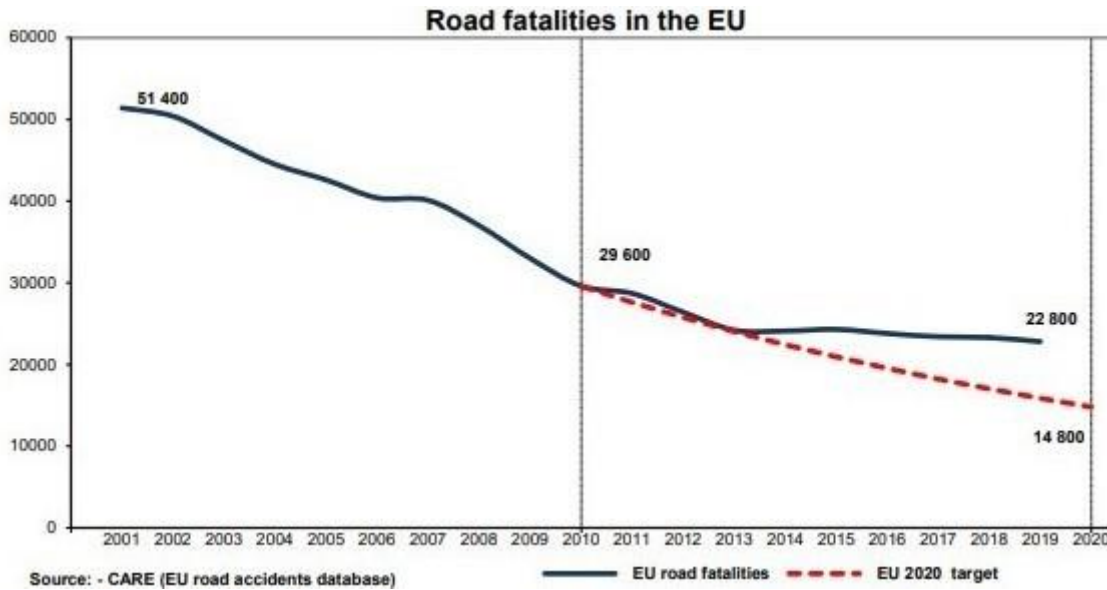
<https://ub.meduniwien.ac.at/blog/?p=33593>

www.darksky.org/light-pollution

www.hellenot.org/themen/mensch

www.lightmare.org

Appendix 1 Road accident data and charts EU, UK and USA



Trend in fatality numbers 2010-2019 EU

Extract from EU 2019 road safety report:

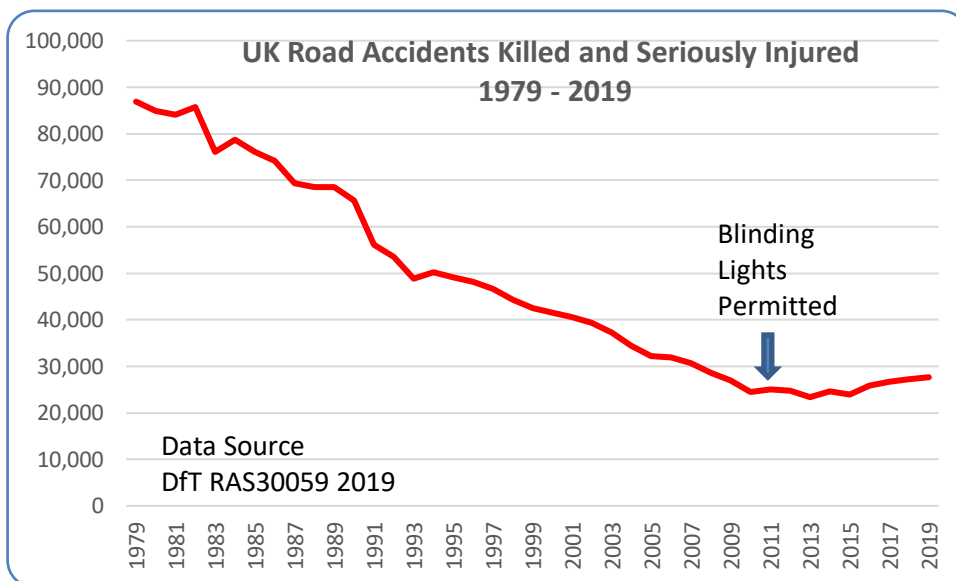
“In 2019, an estimated 22800 road traffic fatalities were recorded in the 27 EU Member States. This represents almost 7000 fewer fatalities compared with 2010, a decrease of 23%. Compared with 2018, the number fell by 2%.

While the underlying trend remains downward, progress has slowed in most countries since 2013.”

“The EU target of halving the number of road deaths by 2020 will not be met”

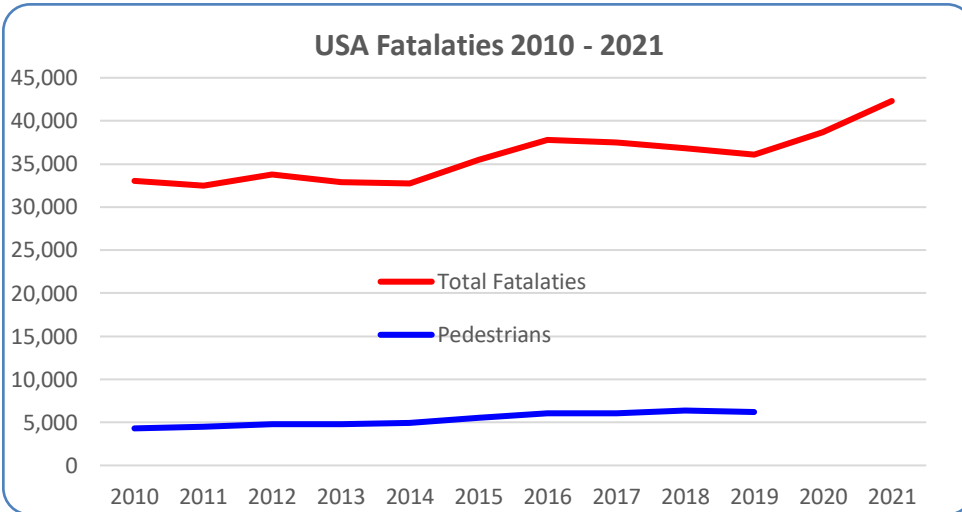
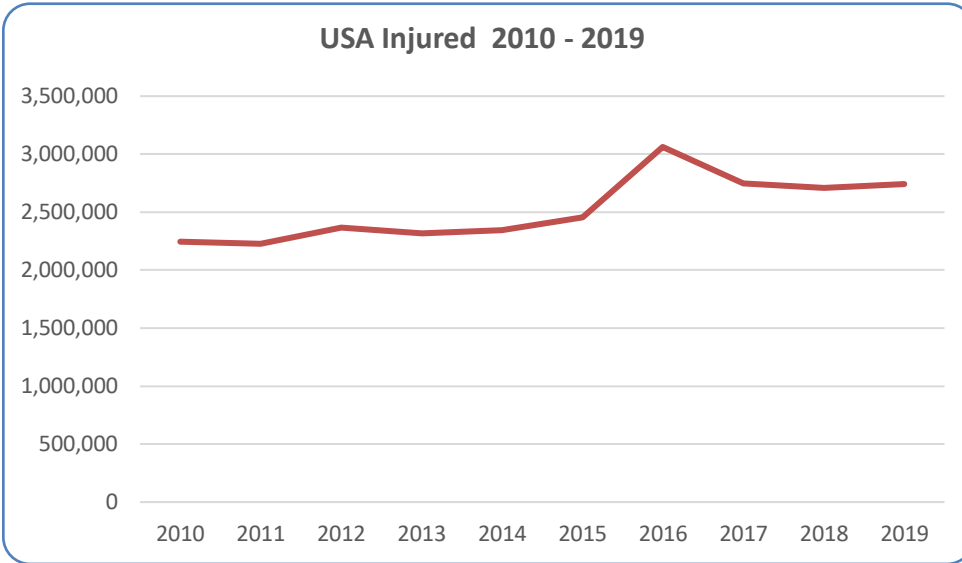
Data Source: https://ec.europa.eu/commission/presscorner/detail/en/qanda_20_1004
[2019 road safety statistics: what is behind the figures? \(europa.eu\)](https://ec.europa.eu/commission/presscorner/detail/en/qanda_20_1004)

The UK



Data Source: [Reported Road Casualties Great Britain Annual Report 2019](#)
 RAS30059 Reported Road accident casualties by severity, Great Britain 1979 – 2019

The USA



[U.S. traffic deaths soar 18% in 2021 to highest first half since 2006 - reuters](#)

[U.S. Traffic Deaths Continued to Spike in 2021 - Bloomberg](#)

“The number of people killed on U.S. roads jumped 18.4%– the largest six-month increase in traffic fatalities on record”

Data Sources:

NHTSA Traffic Safety Facts Annual Report, May 21 <https://cdan.nhtsa.gov/tsftables/tsfar.htm#>

Note: 2021 fatality data is estimated for 11 months to Nov 2021 see;

[Monthly Preliminary Motor-Vehicle Fatality Estimates - Injury Facts \(nsc.org\)](#)

From Dave Walton Petroleum Truck Driver San Francisco December 2021

I am a professional Truck Driver. With a 25 year record of safe driving, I now operate mostly in the San Francisco bay area, driving a petroleum tanker. In my personal experience, I have observed LED lights are not only unhealthy, but are an immediate danger as they impair the vision of others. I want to point out several specific unsafe scenarios in which LED lights impair vision.

Firstly, some are worse than others. The aftermarket "plug'n'play" are horrible when installed into applications intended for halogen bulbs. This causes light fragmentation and erratic beam concentration. The factory LED lights can be bad too.

Many LED lights exceed state vehicle code limits of maximum lumens (brightness). They also employ improper color temperatures. All these aforementioned nuisances can impair vision.

I've noted several specific bad situations:

When a car behind me has LED lights, I can't very well see objects ahead of me.

The latest model cars with High Beam Assist seem to dim too late when approaching from behind.

When a car with LEDs is behind me, I may not be able to see another car right beside me.

When an LED equipped car is coming at me from the opposite direction, it's too bright. Just look down at the white line, right? Wrong! I can't see far ahead or anywhere else I should be looking. This is not acceptable.

When multiple cars with LEDs are coming at me, I may not see a car driving in front of me.

When a car ahead of me has LED taillights, I may not see cars or objects ahead of them as even taillights are now too bright and impairing vision.

I think although LED headlights supposedly project farther, drivers actually aren't seeing as far past their headlights.

Emergency vehicles' disco lights are too bright. It's difficult to see men near their vehicles. It's also difficult to see ahead of and into the scene. Road construction zone illumination is now dangerous. Recently I saw an LED lamp brighter than the arc welder running at the site while they were working on a bridge overcrossing.

All these situations ruin natural night vision. Depth perception is impaired by LED lights. It's difficult to judge the speed of another vehicle when they have LED lights.

LED auxiliary lighting, such as off-road lights, light bars, fog lights/driving lights, etc., legal or not, are now all too bright and impairing other peoples' vision. LED licence plate lights now frequently project the white light rearward.

In freezing conditions, LED lights on a trailer won't melt snow or ice as an incandescent light does. This can make the rig hard to see during winter weather. LED lights can conceal a neighbouring vehicle.

LEDs cause so much blotch and glare, it's hard to see anything. LED lights from parking lots and buildings hit driver's eyes improperly. In urban areas, it's a bright assault from all directions.

In the rain, LEDs glare and reflect worse than traditional lights, especially on new pavement. When LED headlights top a hill, they're directly into others' eyes, as if the hi-beams are on.

**After experiencing battery to the retinas, it takes several moments for vision to recover -
LED lights cause road rage!**

People have told me they have just stopped in traffic as they can't see, until an LED wielding vehicle goes around them. I've also seen this action. LED lights make it hard to distinguish specific scenarios.

Traffic cops aren't adequately enforcing lighting issues. My guess is because it's become too rampant. In closing, for 23 years, my job was fun. Now my job is miserable.

Before I was old enough to drive a truck, I worked in steel fabrication. My eyes are now more tired after a night of trucking than they used to be after a day of welding. I didn't feel this way three years ago. These lights are even bad in the daytime. **They shouldn't be painful to look at!**

I know Truck Drivers who have quit their career because of LED lights.

Sincerely,

David Walton, Petroleum Truck Driver San Francisco December 2021

These heartfelt words from the late Ken Perham the extrovert London Cabbie and Lightmare founder

Hello everybody,

I am campaigning for Motor Manufacturers and Government to use some common sense with vehicle lights. During my research, often a driver did not know what a Xenon (pronounced as "Zenon") or LED headlight was.

Confusing yes, but when I said those bluish white headlights, the driver quickly said "ah those *****!!** lights that blind you".

Now the difficult part - actually these headlights are good to drive with, but not to drive against which in theory could be a 50/50 split. **Wrong!**

My research found that an average of 7 out of 10 drivers disliked lights blinding them but to their surprise were actually driving with Xenon lights and thus blinding other drivers.

This is an issue that is difficult to grasp.

I have been shunned by RoSPa, the IAM, Brake, Road Safety, Motor Manufacturers and many more. However, people who are expert drivers such as the [Driving Instructors Association](#) (DIA), Diamond Advanced Drivers and [Approved Driving Instructor News](#) (ADI News) have supported me along with motoring journalists like [Honest John](#) and [James Baggott's Autoblog](#)



[BBC TV and Radio](#) have covered this issue but no one has yet grasped it fully - **until now!**

With the Driving Instructors Association support I have joined forces with Roy Milnes who had been fighting the issue of over-bright [Daytime Running Lights](#) (DaDRL).

We have combined our resources and are now [lightmare.org](#)

Manufacturers' unproven claims (no EU country can provide any beneficial statistics) and [flawed EU studies](#) have convinced Governments across the world that blinding lights brighter than the power of the sun would make driving safer and reduce accidents. These brilliant daytime and night-time lights may make a driver feel safer, but oncoming drivers hate being blinded and dazzled.

Particularly affected are drivers who have had eye surgery and drivers above fifty. They may have 20:20 vision but they can have longer [retinal recovery times](#) and are thus [temporarily blinded](#).

As a Licensed London Taxi driver, I am 100% certain that Manufacturers and Government have allowed these blinding lights to endanger our lives. If a more common sense approach was adopted and they consulted ophthalmologists (rather than solely road safety experts) our lives would be enriched with fewer accidents and happier drivers.

There is evidence in Europe that rather than saving lives, Daytime Running Lights are killing vulnerable road users even in [Sweden where proportionally more cyclists are killed](#).

Collectively, we have been campaigning for 15 years and we are in it for the long haul, we will not rest until this complicated issue is understood and regulations changed.

Does my story inspire you?

I am often told that my passion for this cause is "inspirational". The responses I get ([see petition comments](#)) give me the heart and determination to never give in and now being a senior citizen, I just hope that I live long enough to see it through.

Sadly Ken died of cancer in 2012 - we continue Lightmare in Ken's memory.

Ken lobbied ministers and the motor traders' association with no result. He concluded that:

"Unless we could present a pile of dead bodies on the steps of the Transport Ministry they will not act"

Ten years on perhaps the 23,000 fatalities (chart appendix 1) will persuade the responsible Authorities to act.