Eyes on the road – visual standards for car drivers

BY JANET POOLEY

The author examines the current visual standards required by drivers and asks whether more needs to be done to make roads safer.

Are the public adequately protected by the current system of visual standards required by drivers? In a survey conducted on behalf of the General Optical Council (GOC), many registrants didn't think so [1], but there is limited evidence to support what is required. Driving is clearly a complex visual task, but one would have thought that being such an important part of daily living that there would be considerable evidence to support the vision that is required. However, the Cochrane Review, that looked at whether vison screening in older drivers was required to prevent road traffic accidents, was inconclusive; there just wasn't the evidence [2].

The present system requires self-reporting for drivers when their vision does not reach the required standard [3]. The only time it is measured is by the driving examiner as part of the driving test. The police can conduct random tests [4,5], or test drivers where they have concerns. Powers have also been strengthened to speed up the police's ability to revoke a driver's licence immediately where the vision has been found not to meet the required standard [6]. The recent regulations followed the tragic case of Cassie McCord who was knocked over and killed by a driver whilst walking on a pavement to college. The driver, Colin Horsfall, had failed a police eye test three days earlier but still held a valid licence as the process of removal used to be extremely slow.

For most of us driving is an essential part of modern living. Millennials may be less inclined to learn to drive [7], but reliance on the car, especially as we get older, is often key to our independence. In more rural settings, with poor public transport, it may well be the only way to get out and about. Clearly drivers have responsibilities with respect to their fitness to drive [3]. This can become a challenge with age, not least the ageing eye, and the inevitable likelihood of developing sight-limiting conditions as we get older.

Visual standards

Whilst it is self-evident that vision is important for driving, the actual level of vision that is required is much more difficult to assess [8]. The UK is amongst the European countries with the lowest visual standards for driving [9]. It is a legal requirement that all licensed drivers meet a set visual standard, either with or without a correction:

- in good daylight, able to read the registration mark fixed to a vehicle registered under current standards at a distance of 20 metres with letters and numbers 79mm high by 50mm wide on a car registered since 1 September 2001 **and**
- the visual acuity must be at least Snellen 6/12 with both eyes open or in the only eye if monocular [8,10,11].

The correction should be spectacles or contact lenses, and not a telescopic device. Any driver unable to meet these standards must not drive and must notify the Driver and Vehicle Licensing Agency (DVLA), which will refuse or revoke a licence. The inclusion of the Snellen acuity was introduced in 2012 in order to implement EU directives, harmonising some visual standards across member states [9].

Visual field requirements

The law also requires all drivers to have a minimum field of vision. This is defined as: "A field of at least 120° on the horizontal measured using a target equivalent to the white Goldmann III4e settings. The extension should be at least 50° left and right. In addition, there should be no significant defect in the binocular field that encroaches within 20° of the fixation above or below the horizontal meridian." It's patients with a visual field loss, and good visual acuity, who are often the most difficult to break the news to that they can no longer drive; they may still be able to see to the bottom of the test chart [11].

Where the DVLA needs a visual field assessment for determining fitness to drive, it requires the method to be a binocular Esterman field test. They may request monocular full field charts in specific conditions. The Secretary of State's Honorary Medical Advisory Panel for Visual Disorders and Driving advises that "for an Esterman binocular chart to be considered reliable for licensing, the false-positive score must be no more than 20%" [11]. When assessing monocular charts and Goldmann perimetry, fixation accuracy will also be considered.

Some defects affecting the central visual field only may be regarded as acceptable central loss. For example, scattered single missed points or a single cluster of up to three adjoining points. This can be the case in a patient with diabetic retinopathy. Where there is significant central loss the driver will fail the test. This is classified in a variety of ways, for example, a cluster of four or more adjoining points that is either wholly or partly within the central 20° area [11].

In the US, visual standards are part of individual state legislation and these can vary widely [12]. In 16 states there are no visual field requirements, which could

mean that a UK driver, registered blind in the UK due to grossly restricted fields, could legitimately drive in some parts of America.

Restricted licenses

Interestingly, where vision is reduced in the US, drivers may have a restricted license issued [12]. This may limit drivers to daylight hours, local driving or requiring additional mirrors. In Montana some of these restrictions can be very specific, e.g. home to grocery store or church.

Restricted licenses can also be issued in some European countries [9]. These licenses are considered effective mechanisms for increasing driver safety whilst not unduly restricting driver mobility.

Accidents caused by poor eyesight

Published annual data from the Department for Transport [13] records the number of road traffic accidents and the contributory factors. There are figures collected where vision is affected by external factors, e.g. dazzling sun, spray from other cars etc. Also data collected where uncorrected or defective eyesight is the identified cause (Figure 1). It is recorded by the police officer attending the scene after an accident has occurred and it can't be imagined that the officer's first thought will be to ascertain whether the driver was wearing, or needed to wear, his spectacles.

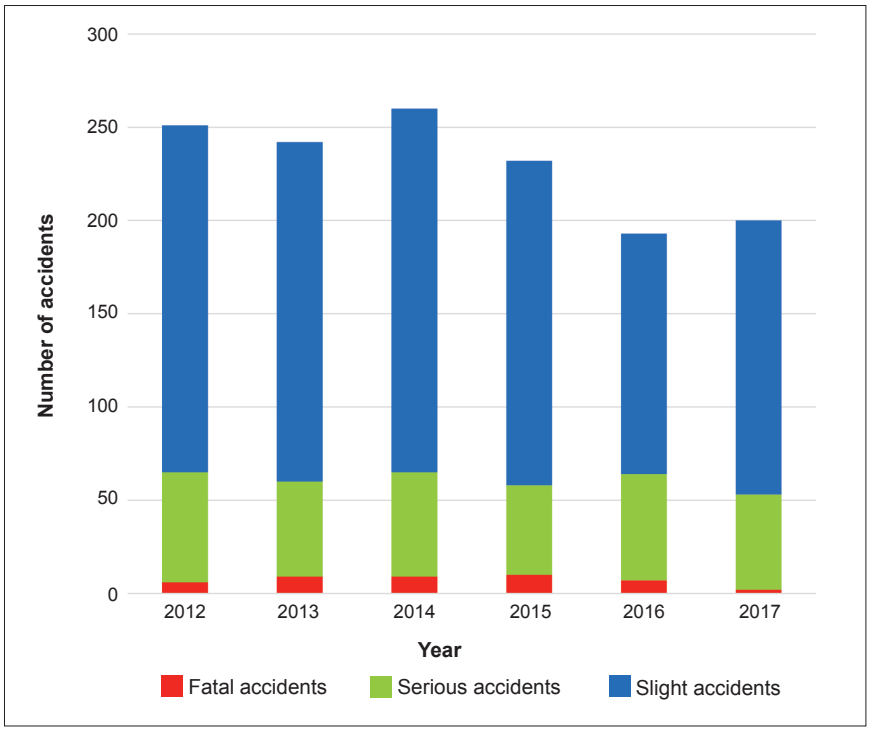

Figure 1: Uncorrected or defective eyesight as a contributory factor in reported accidents by severity [13].

Best visual correction

The spectacle lenses worn for driving clearly need to allow maximised distance vision and visual field. For higher presbyopes, the challenge of also seeing the dashboard and the satnav mean that a bifocal / varifocal is required. A general use varifocal will be ideal. Care needs to be taken where a lens has been set specifically for another use. An occupational lens for example, with a reading area set much higher in the lens than normal, may well impede the driver's distance view and should be avoided in the car. As with all visual tasks, a well fitted frame that isn't constantly slipping down the nose is important.

It is a common misconception that yellow tinted or yellow polarised night driving glasses are beneficial for night time driving. Many are still being sold specifically for driving. As technology has developed, the recommendation is that the use of an anti-reflection coating offers the best solution for driving at night or in lower levels of daylight, without the need for any tint [14]. The British Standard advice is that "filters with a luminous transmittance of less than 75% shall not be used for road use and driving in twilight or at night". This is only a very light tint, class 0 in the BS classification [15].

Reaching the required visual standard for driving

There have been widespread concerns about the public's ability to self-declare problems with their eyesight [16-18]. However, the Honorary Medical Advisory Panel on Driving and Visual Disorders does not support mandatory vision testing for drivers [19]. They consider that visual disorders should not be treated differently from other medical disorders and that self-declaration is the basis of driver licensing in Great Britain.

In an effort to address these concerns the DVLA launched a campaign in 2018 [20] to remind people to check their vision. It advised that five car lengths or eight parking bays can be an easy way to measure the distance.

Patients with poor vision

Optometrists frequently examine patients who do not meet the visual standards for driving, but thankfully this is usually corrected with a new prescription. When the failure is due to a cataract, then it is often at this stage that a referral is considered [21].

When there is a sight-limiting condition the conversation is understandably more difficult. It's important the practitioner is very clear with the patient that they must stop driving and inform the DVLA. The challenge comes when there is concern that the patient will not take the advice and will continue to drive. A letter to the patient is often helpful to reiterate the verbal advice [10]. However, although we have duty of confidentiality to the patient, this can be broken if it is in the wider public interest [22]. The GOC are presently consulting on draft guidance to support the profession on this challenging issue [23].

It is clear that more research would be very beneficial to support a robust and informed visual standard for drivers. The introduction of Snellen Acuity has certainly helped to give a consulting room measure to the standard. However, the driverless car is just around the corner, perhaps literally, and there is the opportunity that fully autonomous vehicles could mean that sight may no longer be a requirement for driving. It's certainly an exciting prospect and one that has the potential to make the roads much safer.

"Although we have duty of confidentiality to the patient, this can be broken if it is in the wider public interest"

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