

Driving and Rehabilitation

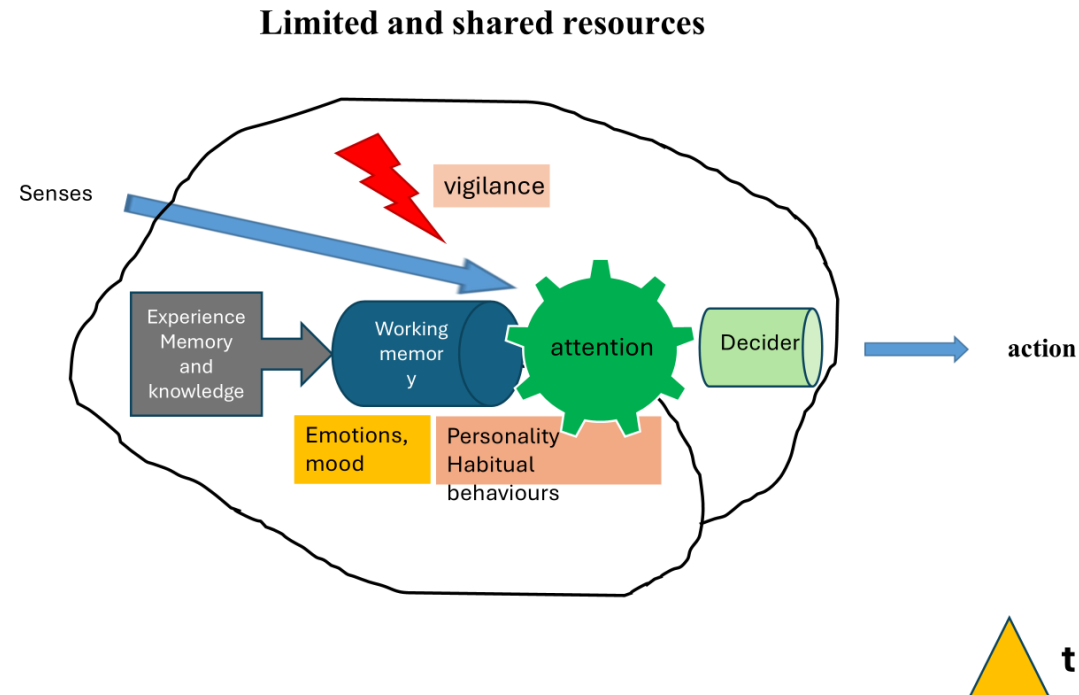
Dr Paul Carroll

Consultant in Rehabilitation Medicine National Rehabilitation Hospital, The Royal Hospital Donnybrook, St Vincents
University Hospital

Disclosure: Doctor actively involved in this area and member of National Office of Traffic Medicine

A short note on the brain

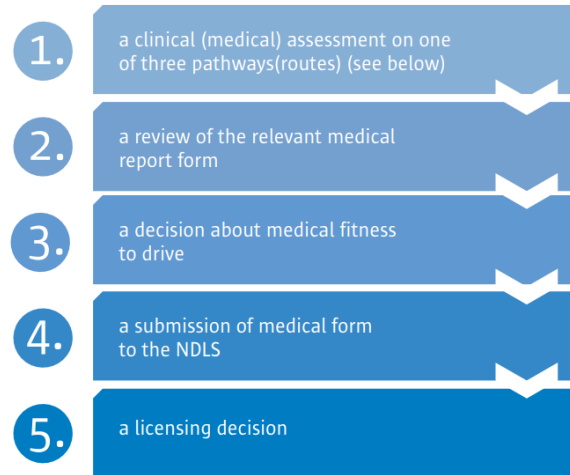
- Much of what we do involves large areas of brain real estate working to respond to events in our world in real time. Many of our activities will tolerate a blip in this exquisite functioning. The issue with driving is that we are moving at speed and the human body is not great with large physical forces when we encounter them.



Medical assessment for fitness to drive

The assessment process

The process that assesses medical fitness to drive has five stages:



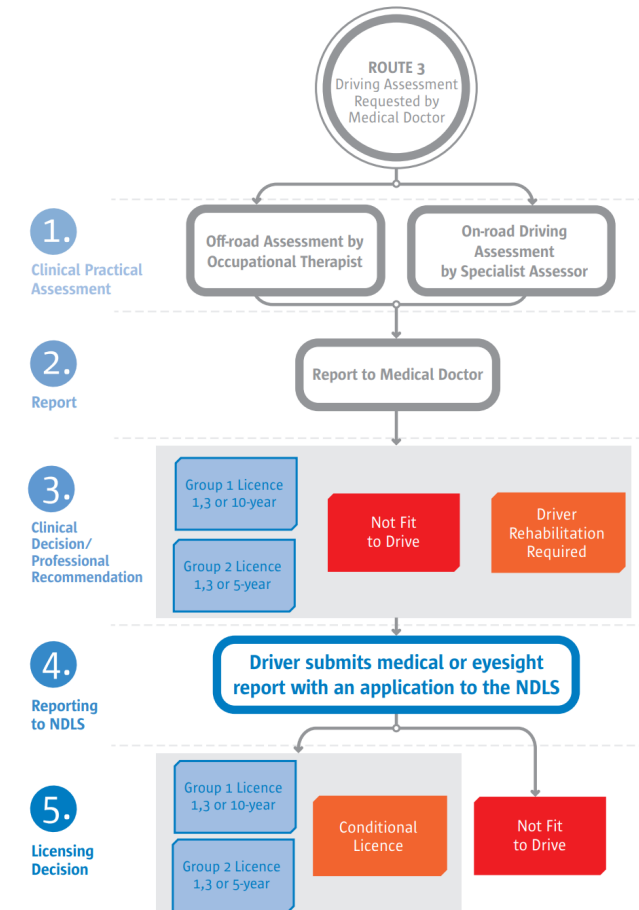
Routes to assessment

We use three routes to assess drivers' medical fitness to drive (see page 4 & 5). Sometimes more than one route is required.

- Route 1 assesses eyesight.
- Route 2 assesses medical fitness to drive.
- Route 3 assesses medical fitness to drive where a more detailed off-road or on-road assessment (and sometimes both) is required.

Route 3: On-road and off-road assessment

Medical assessment for fitness to drive



STROKE
TRAUMATIC BRAIN INJURY
SPINAL CORD INJURY
LIMB LOSS

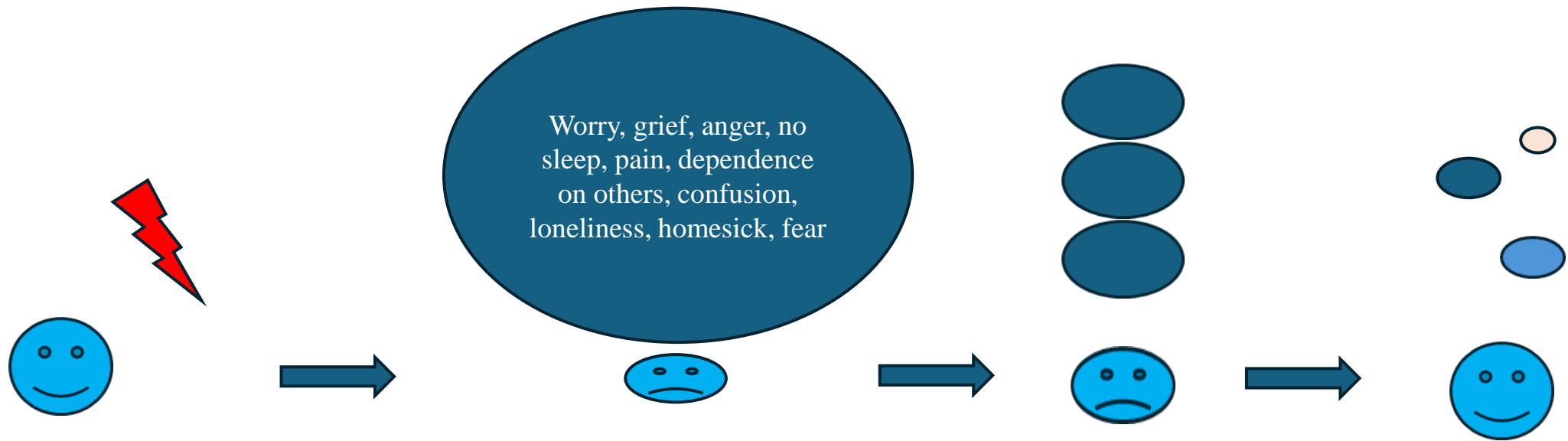


Paralysis
Incontinence
Sight loss
Severe pain
Cognitive impairment
Change in personality
Dependence on others
Fracture of identity
Loss of confidence
Grief and loss of future hopes
Relational distress and fracturing
Ability to drive

What is Rehabilitation?

- “a set of interventions designed to optimize functioning and reduce disability in individuals with health conditions in interaction with their environment”. World Health Organisation
- The process of helping someone recover their confidence, sense of identity, independence and meaning in the face of a severe illness or injury.
- The control of pain (physical, mental, spiritual) and other upsetting symptoms.
- The support of family/close friends who may have been affected by the illness

Rehabilitation: A change process where people who may have very little change capacity need to make an extraordinarily hard journey



A number of perspectives

Freedom is gone
How will I work
Meeting family and friends
I've driven for 40 years
This is catastrophic v I'm never
liked driving and I am glad to be
alive



We live in the country
I don't think he is safe
she only drives locally
How will we pay the mortgage
Who will drop the children to
school
I don't want to care for him



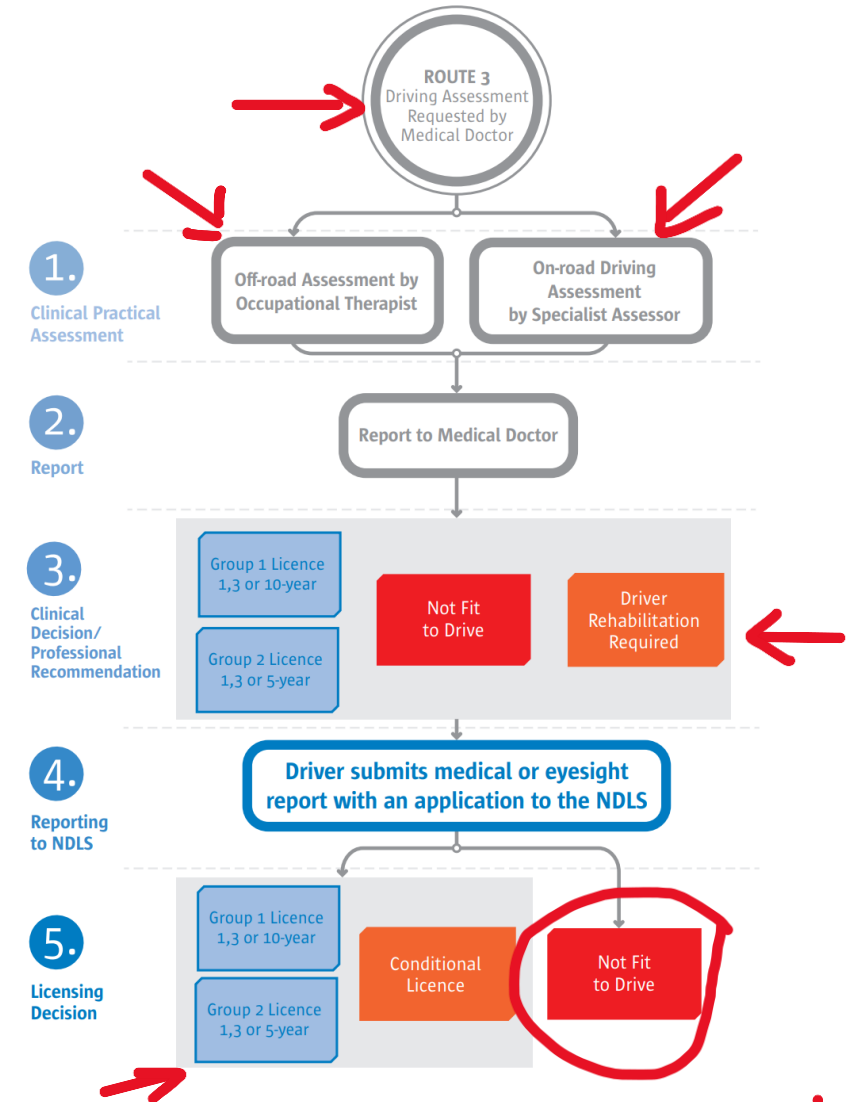
- I care about this person
- They have to be safe



Rehabilitation

- to help people to return to driving not to catch people out
- Optimising health
- Perceptual rehabilitation
- Building self-awareness eg fatigue management
- In-car practice
- Accessing the vehicle
- Restrictions to license
- Vehicle adaptations
- Family adjustment

Route 3: On-road and off-road assessment



Driving experiences of disabled drivers

RS Prasad, J Hunter and J Hanley Scottish Driving Assessment Service, Rehabilitation Medicine Directorate, Astley Ainslie Hospital, Grange Loan, Edinburgh, UK

Received 13th November 2004; returned for revisions 27th June 2005; revised manuscript accepted 3rd September 2005.

Table 2 Return to driving, lessons advised/taken and driving problems by recommended driving technique

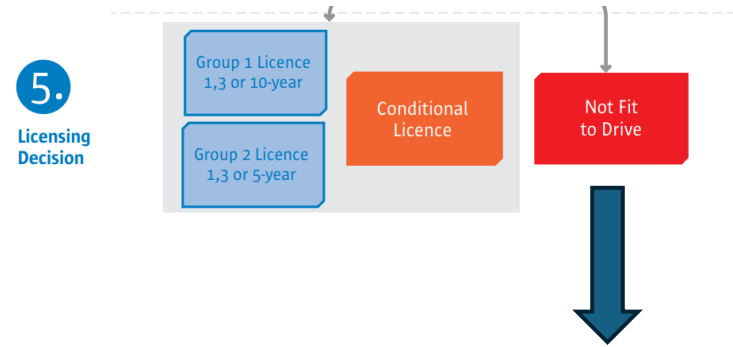
	Manual gear	Automatic (RFA&B)	Automatic (LFA&B)	Automatic (RFA&LFB)	Hand controls (HC)	Total
Recommended driving technique	249 (42.3%)	200 (33.9%)	41 (7%)	34 (5.8%)	65 (11%)	589 (100%)
Returned to driving	214 (85.9%)	146 (73%)	28 (68.3%)	28 (82.4%)	47 (72.3%)	463 (78.6%)
Lessons recommended	36 (16.8%)	59 (40.4%)	28 (100%)	24 (86%)	47 (100%)	194 (41.9%)
Lessons taken	26 (12.1%)	38 (26%)	14 (50%)	13 (46.4%)	25 (53.2%)	116 (25%)
Experienced difficulties	3 (1.4%)	7 (4.8%)	3 (10.7%)	4 (14.3%)	8 (17%)	25 (5.4%)
Had an accident	8 (3.7%)	10 (6.8%)	2 (7.1%)	2 (7.1%)	8 (17%)	30 (6.5%)

Principal pedal controls appropriate to over 99% of people seen in Scottish Driving Assessment Service:

Clinical messages

- Almost 80% of disabled people found fit to drive by a driving assessment service do so but using a left foot accelerator is least successful.
- Initial difficulties with unfamiliar adapted controls are usually resolved, however hand controls are difficult to master and have the highest accident rate.

Rehabilitation and not driving



- **to help people adjust to a life of not driving**
- Adjustment to loss
- Alternative transport solutions
- Vocational rehabilitation
- Benefits
- Reasonable re-checking
- Family adjustment

Driving and roles/work

Driving may be one part of a persons work/roles and duty of care may extent beyond the narrow question of driving



Insight and understanding the other

Having insight

(the ability to have) a clear, deep, and sometimes sudden understanding of a complicated problem or situation

<https://dictionary.cambridge.org/dictionary/english/insight>

Lacking insight

“...an individual’s perception of him or herself is grossly at odds with that of his or her community or culture”

(Amador & Kronengold, 2004)

Lacking insight

An individual’s depth of understanding of another has an unattainable quality because we lack the capacity to experience another’s experience exactly as they do. We rely on their self report, our sensing of their mental state, our own experience and our imaginative capacity

‘The big thing is how I’m perceived – when I first tell others that I have a visual impairment, they either feel overly sorry for me or they try to over-compensate, or they build distance from me. So you have to re-establish where you’re at with other people.’ (M, 55)

‘I think sometimes people make an assumption that I’m not a capable person because of the vision impairment. There are legitimately certain things that I can’t do or are difficult for me to do, but sometimes people make assumptions about things that I can do and things that I can’t.’ (F, 42)

Clinical Rehabilitation 2008; 22: 816-824

Staying connected: re-establishing social relationships following vision loss

Shu-Wen Wang University of California, Los Angeles and Kathrin Boerner Jewish Home Lifecare, New York, USA

Received 12th November 2007; returned for revisions 28th February 2008; revised manuscript accepted 4th March 2008.

It can be very hard to hear no and very hard to say it

Travel Patterns of American Adults with Disabilities

by Stephen Brumbaugh

Key Findings

Travel-Limiting Disabilities

- 25.5 million Americans age 5 and older have self-reported travel-limiting disabilities. 13.4 million are age 18 to 64 and 11.2 million are age 65 and older.¹
- 3.6 million Americans with travel-limiting disabilities do not leave their homes because they are disabled or housebound.

Household Demographics and Vehicle Ownership

- Only one-fifth of people age 18 to 64 work full- or part-time if they have travel-limiting disabilities. This percentage declined from previous years. In contrast, over three-quarters of people without disabilities age 18 to 64 work.
- Slightly over half of people age 18 to 64 with disabilities live in households with annual household incomes under \$25,000 versus 15 percent of people without disabilities.
- Over one-fifth of non-workers and 12 percent of workers age 18 to 64 with disabilities live in zero-vehicle households.

¹ Numbers in this report may not add up exactly to their totals due to rounding.

Trip Frequency

- Regardless of age, people with disabilities make fewer trips per day on average than people without disabilities. The daily trip rates for people with disabilities and without disabilities has declined over time.
- Workers with disabilities age 18 to 64 make fewer trips compared for workers without disabilities. This pattern is consistent for non-workers with disabilities compared to non-workers without disabilities.
- 7 out of 10 respondents with disabilities reduce their day-to-day travel because of their disabilities.

Mode Share

- Regardless of age, people with disabilities travel by personal vehicles—as drivers or as passengers—for a smaller share of trips than people without disabilities.
- People with disabilities age 18 to 64 travel as passengers for a greater share of personal vehicle trips.

Technology

- Several groups of technologies might help people with disability-related transportation limitations, but people with disabilities use them less.

What may the future hold? Driver monitoring systems

“...driving while drowsy increases an individual’s near-crash/crash risk by four to six times, engaging in complex secondary tasks increases risk by three times, and engaging in moderate secondary tasks increases risk by two times that of normal, baseline driving.”

Klauer S.G., Dingus T.A., Neale V.L., Sudweeks J.D., Ramsey D.J. The Impact of Driver Inattention on Near-Crash/Crash Risk: An Analysis Using the 100-Car Naturalistic Driving Study Data. National Highway Traffic Safety Administration, US Department of Transportation; Washington, DC, USA: 2006.



The screenshot shows the European Commission website. At the top, there is the European Commission logo and a search bar. Below the logo, the text "Business, Economy, Euro" is visible. The main navigation bar includes links for "Home", "Single market and standards", "Industry", "Entrepreneurship and SMEs", "Access to finance", "Sectors", and "Tools and databases". The breadcrumb trail reads "Home > News > Mandatory drivers assistance systems expected to help save over 25,000 lives by 2038". The article title is "Mandatory drivers assistance systems expected to help save over 25,000 lives by 2038". The sub-header indicates "DAILY NEWS | 5 July 2024 | Directorate-General for Internal Market, Industry, Entrepreneurship and SMEs | 1 min read". The article text states: "New rules on general vehicle safety now apply to all new motor vehicles sold in the EU as of 7 July 2024. The rules, which already apply to new vehicle types since July 2022, improve road safety by introducing a range of advanced driver assistant systems for all new vehicles."

SURVEY

Open Access

Exploration of issues, challenges and latest developments in autonomous cars



B. Padmaja^{1*}, CH. V. K. N. S. N. Moorthy^{2,3}, N. Venkateswarulu⁴ and Myneni Madhu Bala⁵

- The autonomous car is a fully computer-controlled car which can instruct (guide) itself, make its own decisions, familiar with its surrounding without any human interference (intervention).

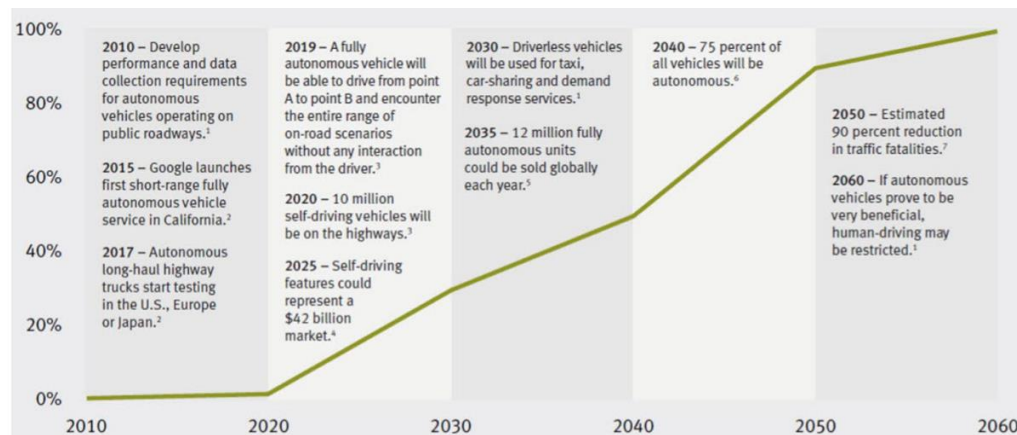

















Fig. 1 Predicted Development of Autonomous Vehicles from 2010 to 2060. This figure illustrates the expected advancement of autonomous vehicle technology over the course of the next several decades. The x-axis represents the years, starting in 2010 and ending in 2060. The y-axis represents the level of autonomy, with 0% being no automation and 100% being fully autonomous. The line represents the projected trajectory of the technology, starting at 0% in 2010 and gradually increasing to 100% by 2060. The graph illustrates the rapid pace of technological advancement in the field of autonomous vehicles and the significant impact it is expected to have on transportation in the coming years



















<https://waymo.com/community/articles/blinded-veteran-i-am-alone-in-a-car-again/>

What is the rehabilitation for 2 wheeled vehicles?

Group 1 Vehicles and Licence Category	Group 2 Vehicles and Licence Category
AM 	C 
A 	C1 
A1 	CE 
A2 	C1E 
B 	D 
BE 	D1 
W 	DE 
	D1E 

What Rehabilitation is expected for Mopeds, Motorbikes, Quads, motorised bicycles, (?bicycles)?

Should a tractor really be in the same class as a car?

















Group 1 Vehicles and Licence Category	Group 2 Vehicles and Licence Category
AM 	C 
A 	C1 
A1 	CE 
A2 	C1E 
B 	D 
BE 	D1 
 W 	DE 
	D1E 

The medical requirements for a Group 1 driving licence are different to those for a Group 2 licence. The requirements for Group 2 are stricter than those for Group 1. This is because Group 2 drivers generally spend considerably more time driving and are therefore more exposed to risk and more likely to be involved in a crash. Furthermore, the vehicles Group 2 drivers operate are generally bigger and heavier than bikes and cars and can cause more harm if involved in a crash.



Taken from Getty Images

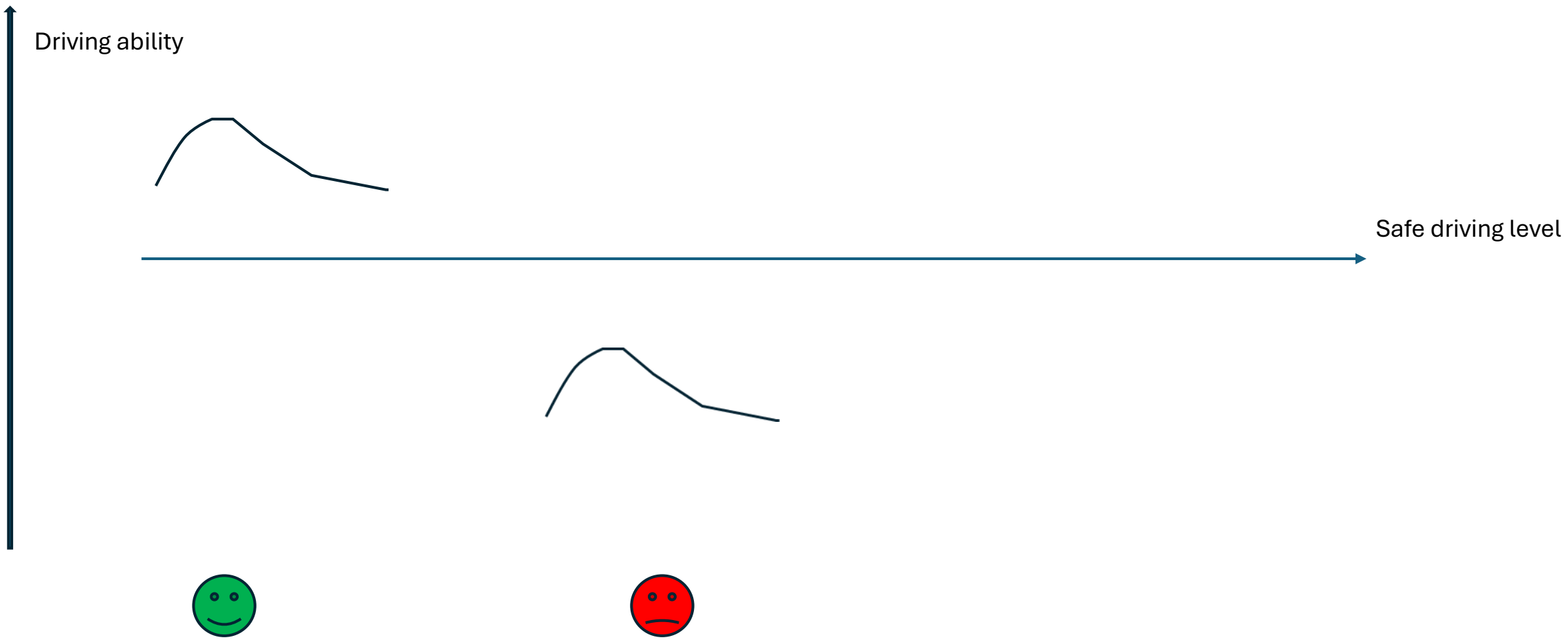
Acquired brain injury and seizure risk – reconciling evidence and vocational goal

Group 1 Vehicles and Licence Category	Group 2 Vehicles and Licence Category
AM 	C 
A 	C1 
A1 	CE 
A2 	C1E 
B 	 D 
BE 	D1 
W 	DE 
	D1E 

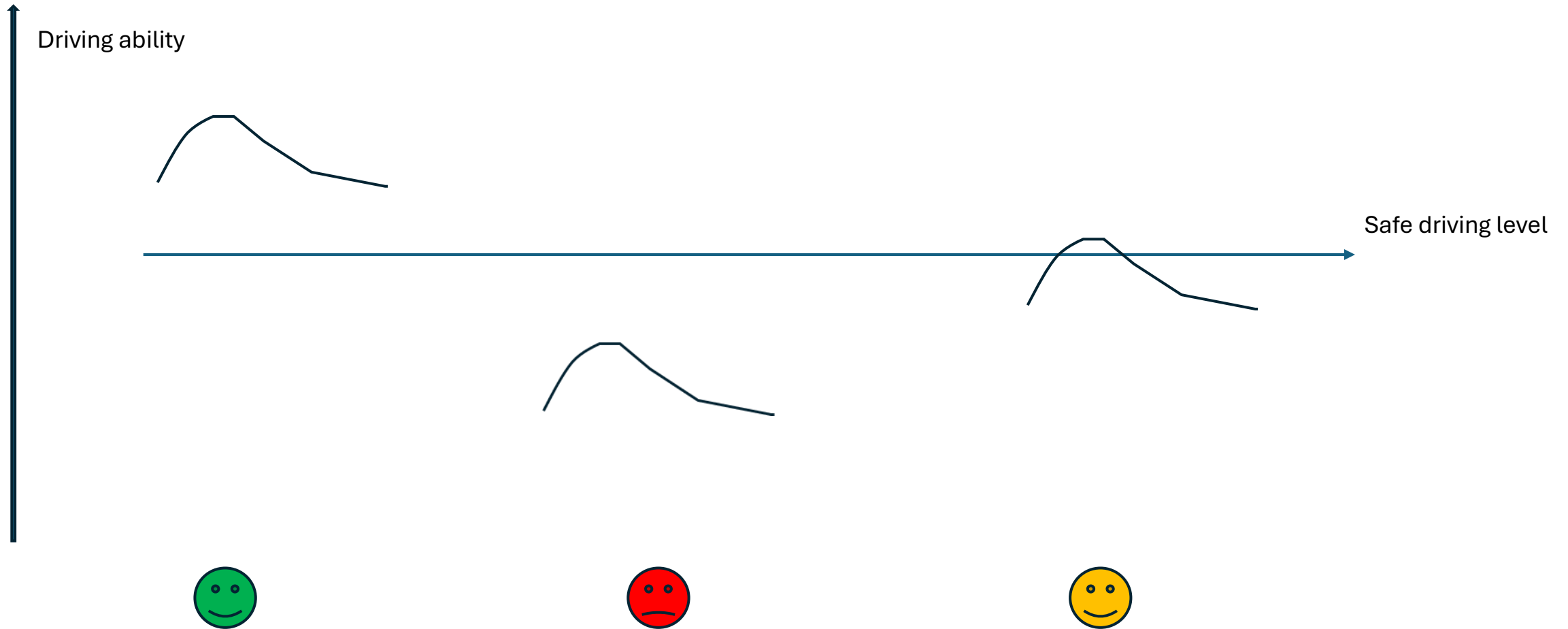
Can a person who has sustained an acquired brain injury return to driving a bus or truck noting the change in their risk of seizure?



Taken from Getty Images



Best performance is good enough but usual performance may not be



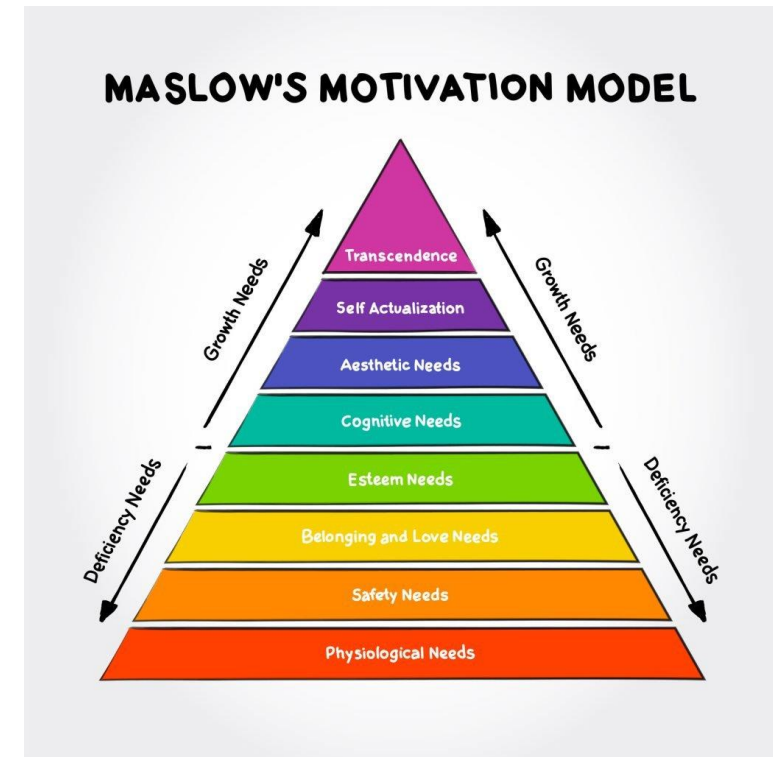
What is at the centre of human life?

Each person is unique

To be loved and have connection with other people

To experience well-being (including alleviation of suffering)

To make decisions and take actions that lead to (some) fulfilment



Maslow's

Hi<https://www.simplypsychology.org/maslow.html#:~:text=It%20is%20important%20to%20note%20the%20hierarchy%20of%20Needs>