MONITORING DEVICES FOR OVERALL FITNESS OF DRIVERS

https://www.fitdrive.eu

Fit Drive

15 October 2024

The FitDrive system was designed to identify and prevent states of stress while driving for professional drivers: through AI techniques it provides continuous screening of the driver's psychophysical state, alerting them to potential illnesses during their journey: the unusual variations detected by the AI can be associated with early situations of discomfort not yet evident to the driver, but which are about to appear.

Latest News

Results of the questionnaire on standardization needs for fatigue detection and alerts (more on pages 2-6)

Workshop online to discuss the questionnaire results (more on page 7)

Discussion table planned in Brussels - early 2025 (more on page 7)

ITCL TECHNOLOGY CENTRE — AIPSS — MDU Mälardalens universitet — advanticsys — SAPIENZA Università di Roma — SECURETEC — EFA — EPDA — aselsan

Questionnaire's subject

While it is commonly recognized that fatigue is a major factor in a large proportion of road crashes (range 10-20%), an objective method to measure fatigue while driving is not yet defined.

EU Regulation 2019(EU)2144 mandates the adoption in new vehicles of an "advanced system for driver drowsiness and attention warning" (article 6) without any further specification, thus leaving each OEM to adopt its own proprietary system with its own measurement scale: this implies that the same driver in the same conditions may be fatigued in one vehicle and but not in another one. The FitDrive project (www.fitdrive.eu), which focuses on professional drivers, has defined an AI-based, indirect and non-intrusive method to define, with a good level of likelihood, if a driver is affected by fatigue.

The result of the FitDrive project (which will be made public to encourage OEMs to use them) may contribute to improvinge road safety, but need a common agreement is needed on the parameters of the different levels of measured fatigue and the thresholds beyond which:

1. An alert is issued to the driver
2. The driver is firmly invited to stop and check her/his status (threshold that could be used in legislation for police controls)
3. The SAE3 system is informed that the driver is not deemed capable of responding to an intervention request

Full text of the questionnaire

The full text of the questionnaire is available at **this link.**

39 stakeholders from different countries replied to the questionnaire; the results are summarised on the following pages:

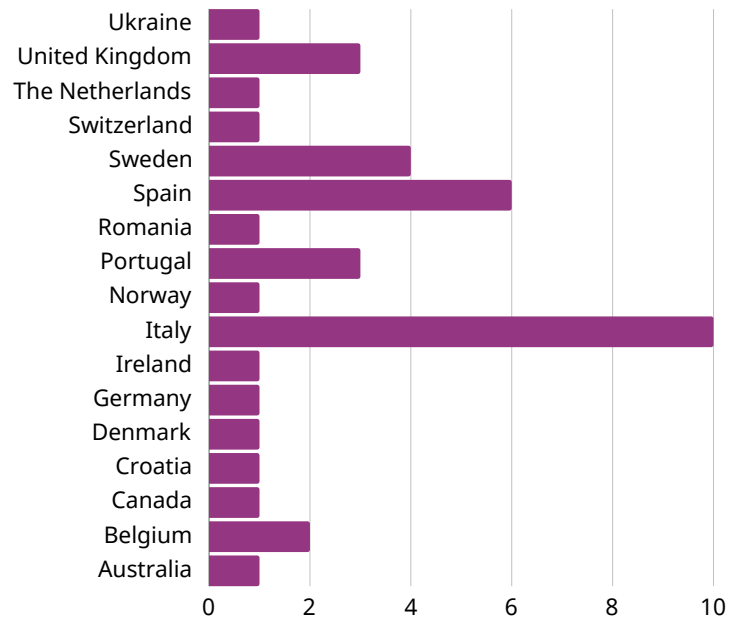FitDrive system tested on Trucks in Spain

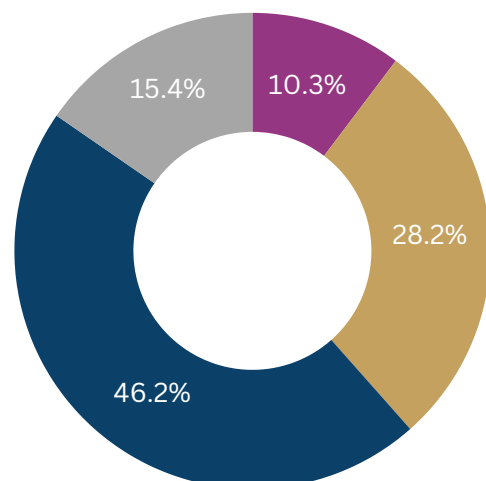## Answers to the questionnaire

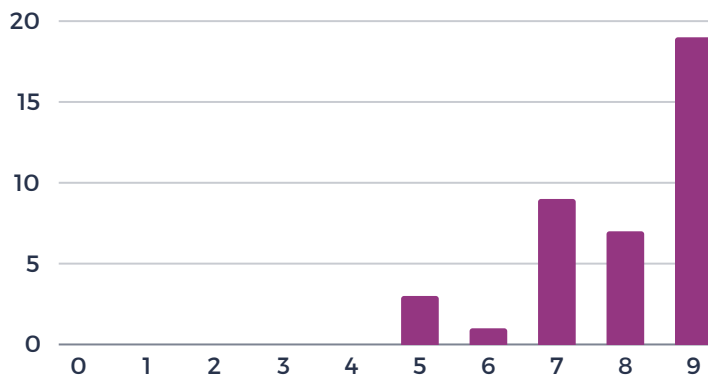39 Answers

Marteyn Van
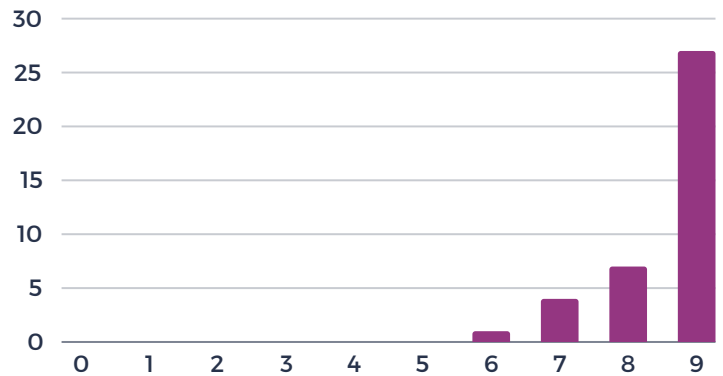Gasteren (ITCL –
Project Coordinator)

The institution you belong to, with respect to the quadruple helix

- ⬤ Public authority or other public body
- ⬤ Private company
- ⬤ Research/Academia
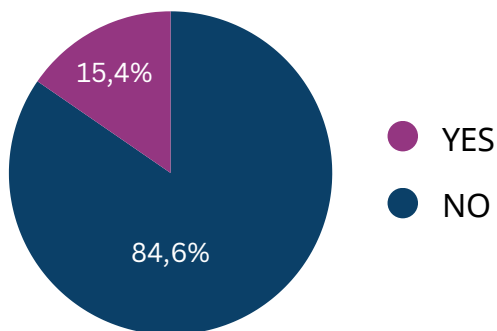- ⬤ City Society

15.4%
10.3%
28.2%
46.2%

How much do you agree on the need to standardize fatigue measurement methods for professional drivers?

Your agreement on the thresholds defined for the three levels of alert

Do you want to suggest different thresholds?

- YES 15,4%
- NO 84,6%

Barry Lyons (EPDA)

Fit Drive

Do you want to suggest different thresholds? If YES, please indicate your suggestions (9 answers)

I'm a bit worried on the timeframe. Perhaps adding a time indication?

Add to the SAE3 level that it could also allow police / authorities to sanction the driver.

The three interventions are ok, but you have not defined the fatigue levels associated with each intervention. It is therefore impossible to say if the thresholds are ok.

Very good job and hopeful for road safety

Individual threshold (*)

Only develop a system that can inform also the Company (e.g. Company Transport Office) via e-mail of the 2nd -3rd Alert?

Suggest a graduating threshold, with the first threshold requiring acknowledgement that they are exhibiting impaired symptoms so they can take action to reduce continued decrements (caffeine, take a rest break), and a second threshold for advanced symptoms where the preferred option is to pull over and the SAE3 is informed.

(*) Note: The FitDrive system profiles the driver's "usual behaviour" and sends alerts based on its deviations, each threshold is adapted to the specific driver

In general, I am skeptical about the PPG/EDA solution. Have you considered enough of the many confounding factors that affect the cardiovascular system to be able to quantify driver fatigue with sufficient sensitivity AND specificity? But it is important that the warning is accurate as drivers will otherwise hate it. That's always the tricky part. I'm not entirely convinced that your metrics without additional eye tracking will be reliable.

I have a concern regarding the enforceability of what is being proposed as sanctions and penalties are a Member State competence under EU law. Also I have a concern about the practicality of applying them. But yes any information/alerts from vehicle systems indicating drivers being tired should (in the case of tachograph equipped vehicles at least) be automatically be sent to the vehicle operator for action. Some changes to the tachograph regulations will be needed to make this happen as not all operators are likely to use telematics systems. Also there will be a gap for car drivers but I think so long as the data is available to collision investigators, that will suffice and act as a deterrent.

The above-mentioned Regulation 2019(EU)2144 also requires that such "systems do not continuously record nor retain any data other than what is necessary in relation to the purposes for which they were collected"; however, some exceptions are possible and the data "can be made available to national authorities, on the basis of Union or national law, only for the purpose of accident research and analysis".?

HOW MUCH DO YOU AGREE ON THE POSSIBILITY TO EXTEND THE PURPOSE (ONLY FOR NATIONAL AUTHORITIES) TO ROAD SAFETY PREVENTION?

39 Risposte
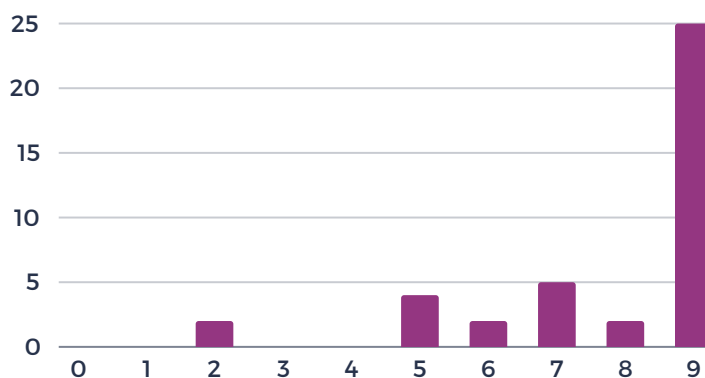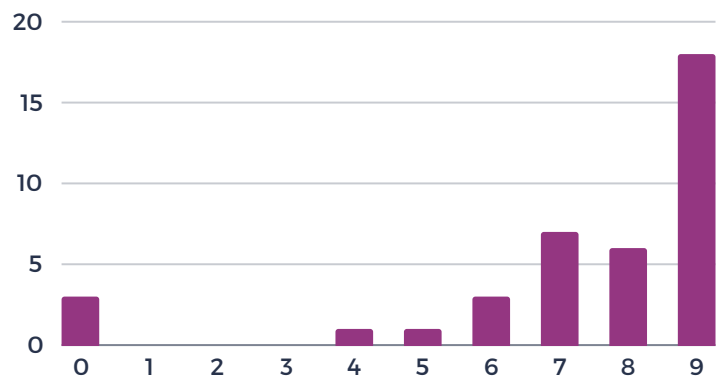
HOW USEFUL WOULD IT BE, IN YOUR OPINION, TOEXTEND THESE CRITERIA NOT ONLY TO PROFESSIONALS, BUT TO ALL TYPES OF DRIVERS?

39 Risposte

Gianluca Di Flumeri (UNISAP) preparing a demonstration test of brain activity detection

An online workshop will be held on the 13th of November 2024 to discuss the questionnaire results Programme and registration here!

https://docs.google.com/forms/d/e/1FAIpQLSfkO7zNLX-KOPE2Bfi7dmAN9YvrcyNy2v76mJFE9N2JBaZhBA/viewform

Discussion Table

- A round table discussion will be organized with relevant stakeholders in February 2025.

- The meeting will be in person, in Brussels.

- Stay tuned to the FitDrive website:
  https://www.fitdrive.eu
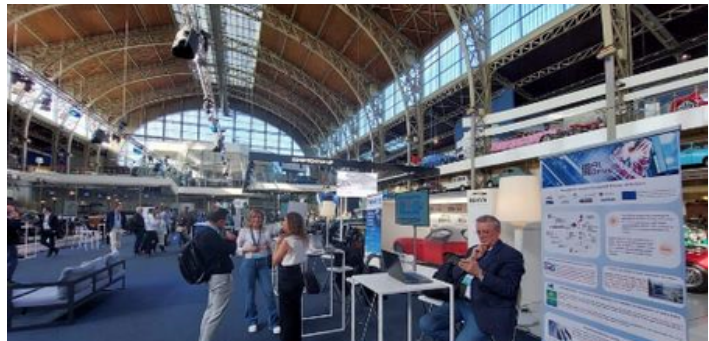
Carlo Polidori (AIPSS) at the FitDrive stand in the EUCAD 2023 Exhibition

7th FitDrive meeting in Munich – September 2024