

ETSC RESPONSE TO THE DRAFT COMMISSION DELEGATED REGULATION ON INTELLIGENT SPEED ASSISTANCE (ISA)

ETSC Response: www.etsc.eu/isada

Draft Commission Delegated Act: <https://bit.ly/38YIDK8>

DRAFT DELEGATED ACT ALLOWS FOR 4 TYPES OF FEEDBACK

GSR's Article 6(2)(a)

The driver should be made aware that the speed limit is exceeded through either the accelerator control, or an alternative that provides "dedicated, appropriate and effective feedback".

1. visual warning + cascaded acoustic warning
2. visual warning + cascaded haptic warning:
 - a) increasing the restoring force of the accelerator pedal; or
 - b) vibrating the accelerator control
3. haptic warning alone (increasing the restoring force on the accelerator control)
4. speed control function (SCF)

Paragraphs 1.1 & 2.5.2

ETSC CALLS FOR:

1. Cascading acoustic warnings and vibrating pedal **not** to be included as potential feedback, as they are neither appropriate nor effective
2. Only 2 feedback modes to be allowed:

Always **VISUAL warning** +

- a) **Haptic pedal** = increasing the restoring force of the accelerator control; or
- b) **Speed Control Function** (SCF)

Each encountered speed limit can individually be overridden in both a) and b) type systems.

- Life-saving potential of the cascading acoustic warnings is **unknown**, contrary to other types of feedbacks.
- An ISA system with cascading acoustic warnings is an 'advisory' type of ISA. Research has shown that another 'advisory' type of ISA, the purely visual warning, has the potential to reduce fatal collisions with around 5%-10%.

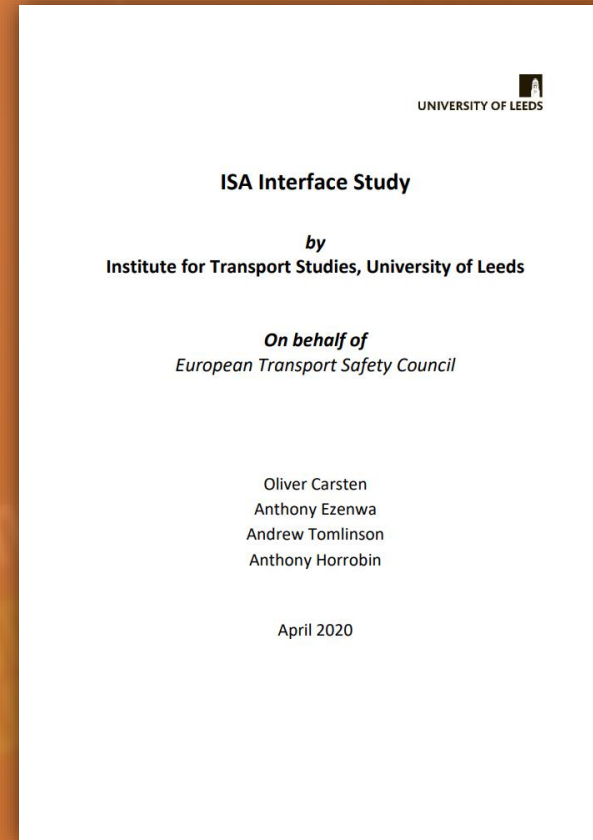
Assisting types of ISA are called 'Voluntary' in Table p.6 of Carsten, O. et al. (2008), Speed Limit Adherence and its effect on Road Safety and Climate Change, <https://bit.ly/3j4dx7t>; and <https://bit.ly/2ZuysZB>

lai et al (2012), How much benefit does Intelligent Speed Adaptation deliver: An analysis of its potential contribution to safety and environment. <https://bit.ly/2DDCTZy>

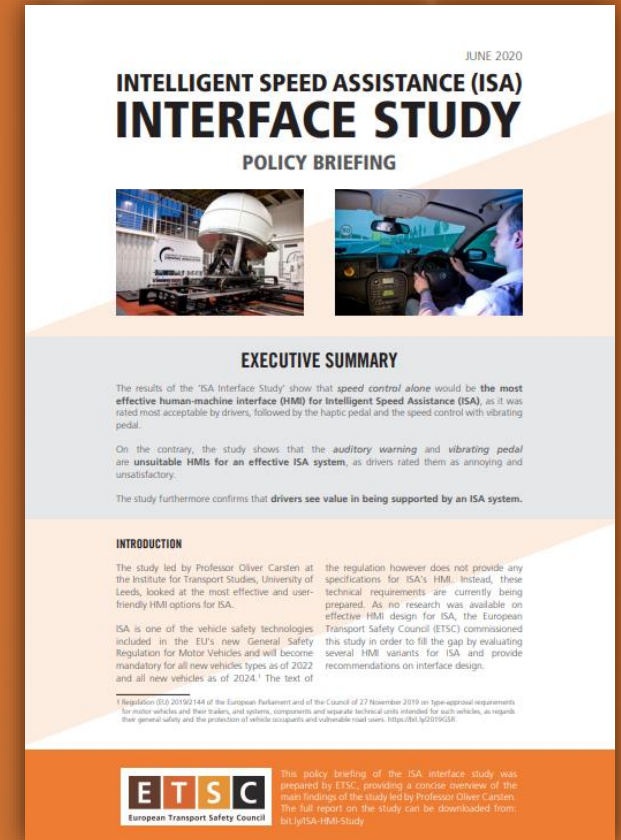
- Annoying systems will very likely be switched OFF by drivers
- Thereby limiting the effectiveness of the system as well as its potential to improve road safety

RESULTS ISA INTERFACE STUDY

- Drivers consider acoustic warnings and vibrating pedals as **annoying and unsatisfactory**



<https://bit.ly/hmi-isa-study>



<https://bit.ly/isa-hmi-pb>

Carsten et al. (2020) – Background

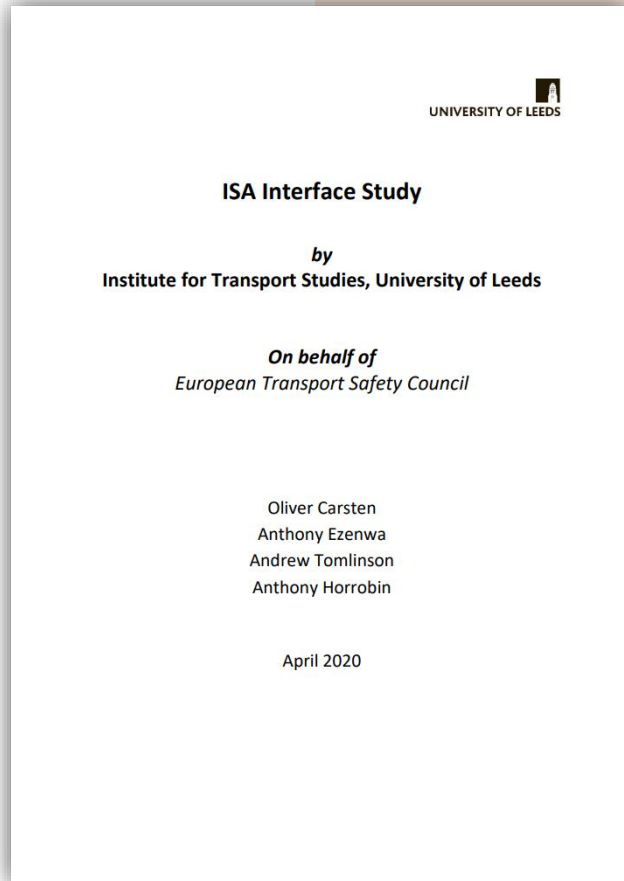
Intelligent Speed Assistance (ISA) is coming as part of the GSR package, but the Human Machine Interface (HMI) was not specified.

Aim of study

To recommend suitable Human Machine Interfaces (HMIs) for ISA, by examining:

- How effective they are in curtailing speeding
- How accepted they are by drivers

The assumption is that a “good” ISA needs to be both effective in curtailing speeding as well as be acceptable to drivers.



Carsten et al. (2020) – Experimental Design

- Within participant, i.e. each participant drove each of the conditions below
- 6 conditions:
 - Baseline with no ISA
 - 5 x ISA HMIs, **all with visual warning**:
 - Auditory warning (beep)
(could not be turned off)
 - Haptic (force feedback) pedal
 - Vibrating pedal
 - Speed control + vibrating pedal
 - Speed control



ISA Interface Study

by

Institute for Transport Studies, University of Leeds

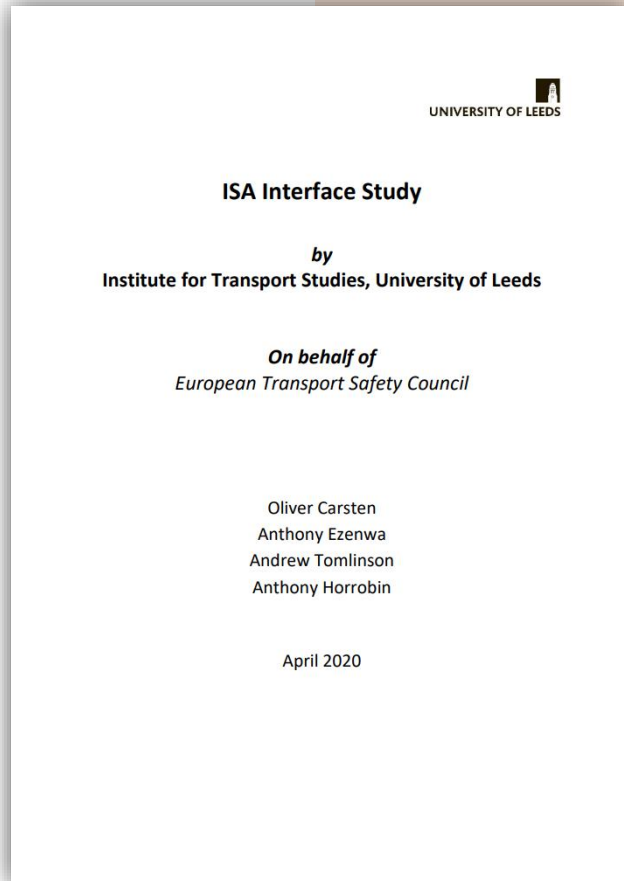
On behalf of

European Transport Safety Council

Oliver Carsten
Anthony Ezenwa
Andrew Tomlinson
Anthony Horrobin

April 2020

Carsten et al. (2020) – Participants



- All of the chosen HMIs allow drivers to override the feedback (i.e. to exceed the speed limit if they choose to do so, as required by legislation)
- BUT in the experiment, the participants were not given the option to switch off the ISA feedback, since that would have effectively negated the purpose of the study

Carsten et al. (2020) – Speed Compliance



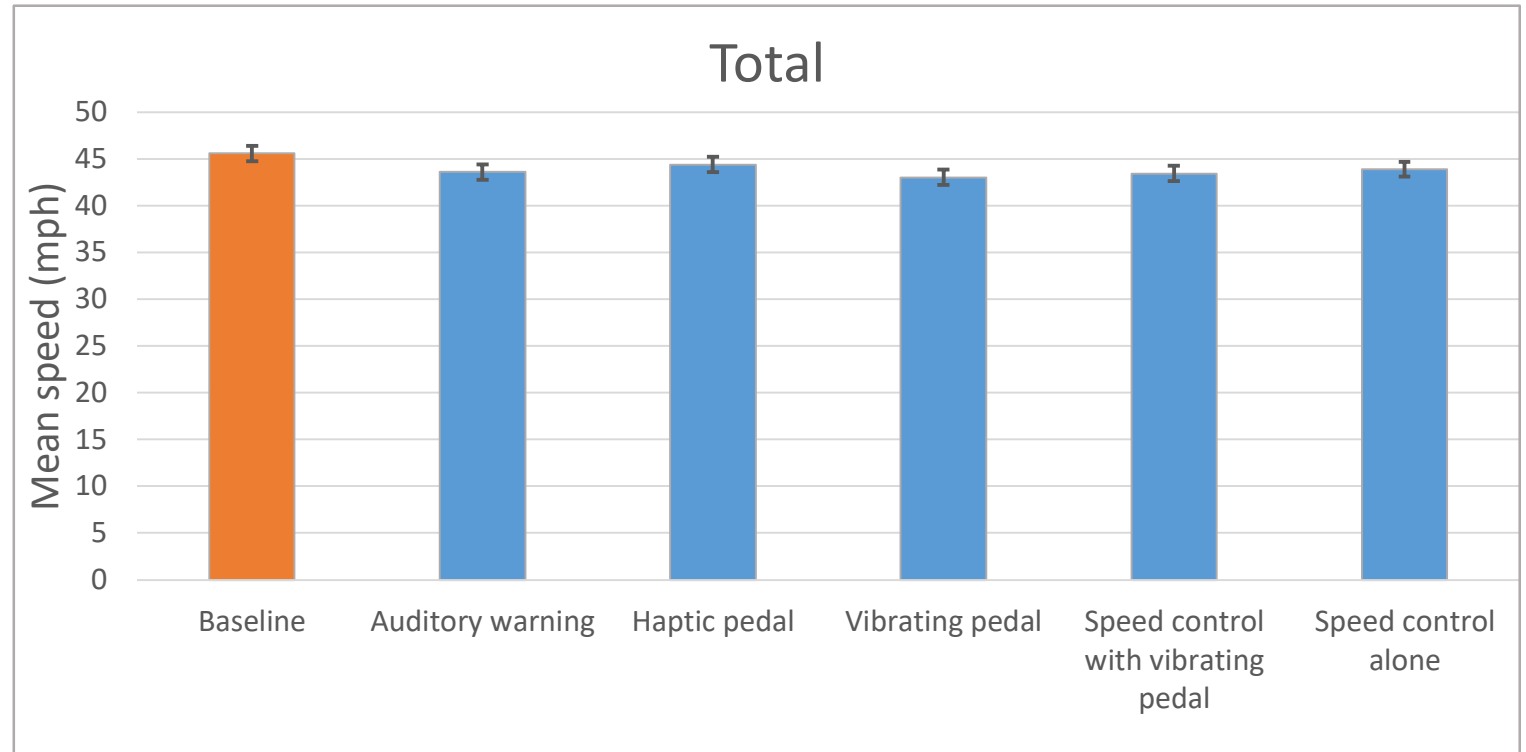
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Note: UK drivers generally tend to be compliant with speed limits

Graphs available for each UK speed limit in Carsten et al. (2020)

Carsten et al. (2020) – Usefulness & Satisfaction



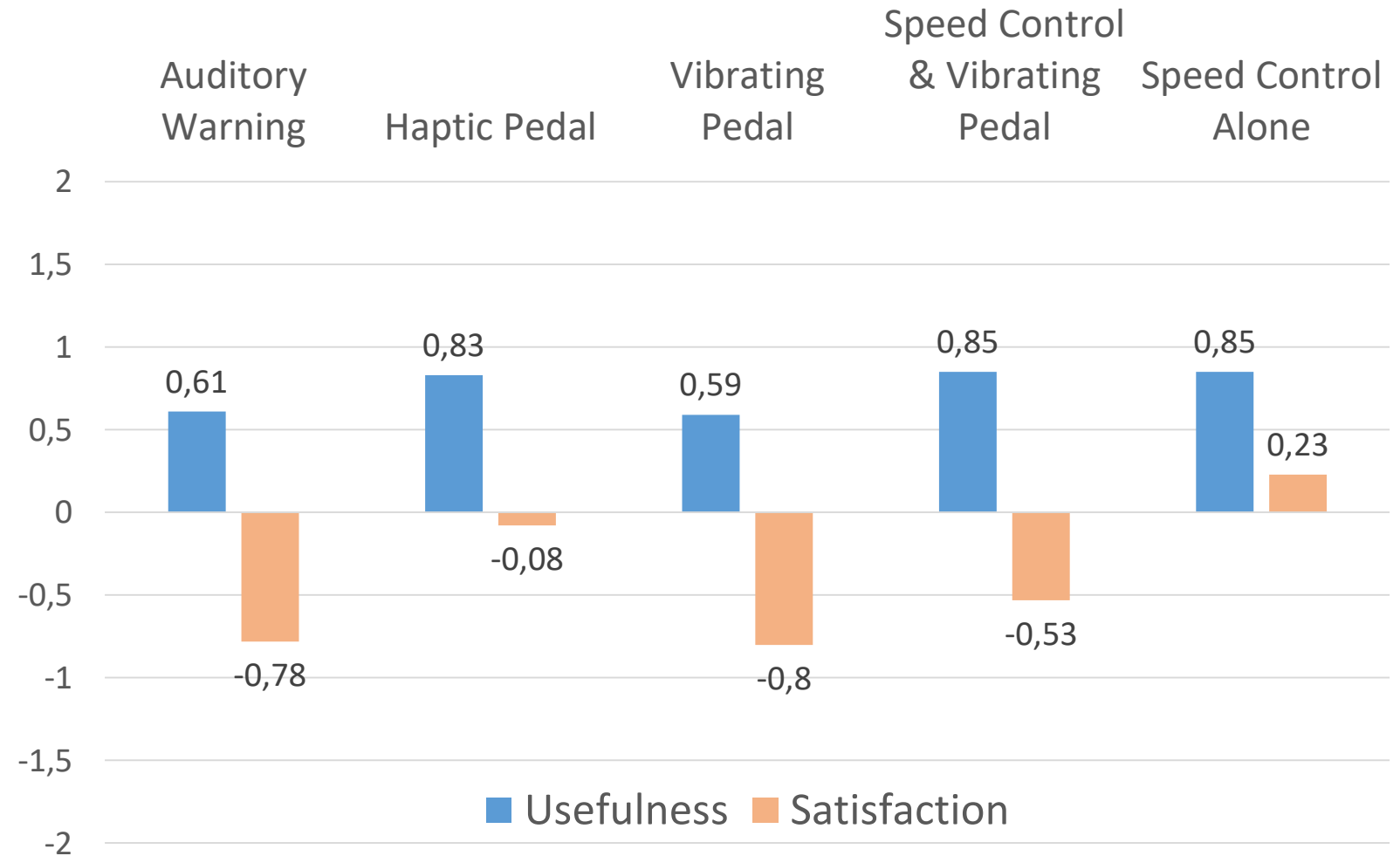
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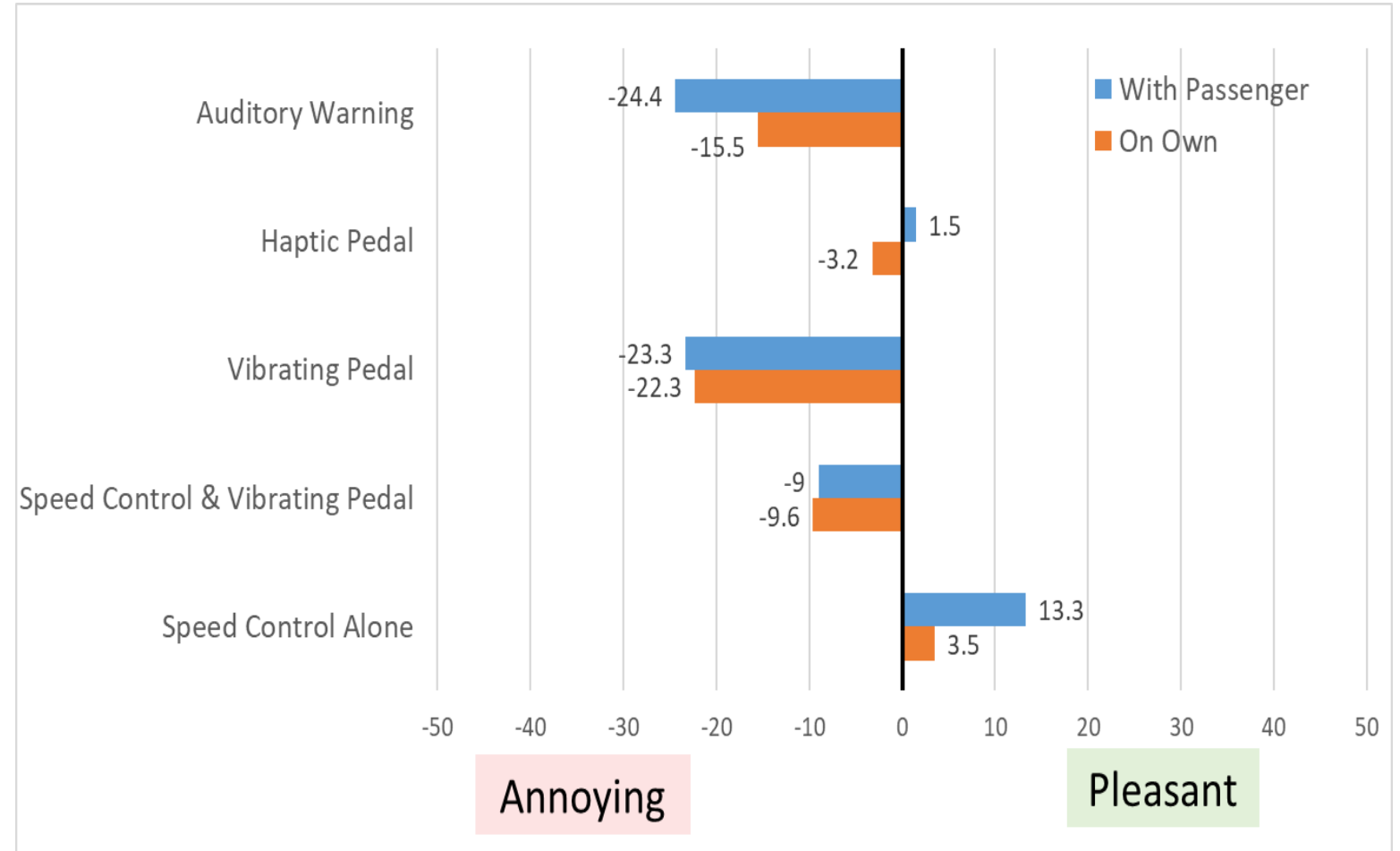
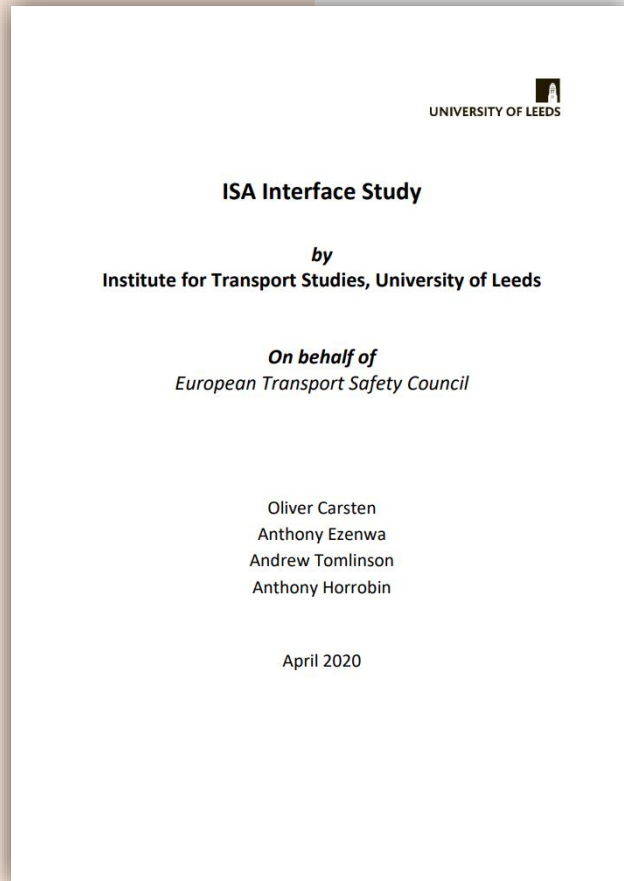
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Carsten et al. (2020) – Pleasantness & Annoyance



Participants completed the pleasantness/annoyance questionnaire twice: once as though they were driving on their own and a second time as though they had a passenger in the front seat.

Delegated Act

"At times when the driving speed of the vehicle is actively controlled by a vehicle system where the driver is not expected to be touching the accelerator control (e.g. cruise control) the use of a haptic warning is not permitted. In this case the system shall reduce the driving speed to the perceived speed limit automatically ~~OR a visual warning and a cascaded acoustic warning~~ shall be used."

ETSC Position:

- delete ~~OR a visual warning and a cascaded acoustic warning~~, and
- *only allow* the speed control function to be used when the driver is not expected to be touching the accelerator control, together with **VISUAL** warnings

**MORE AMBITIOUS
AND DIFFERENTIATED
DETECTION RATES**

EVENT-BASED DETECTION RATES

Delegated Act: $\geq 90\%$ of sign passing events that satisfy the criteria for road signs, including:

- conforming to Member States' standards on the design, size and positioning,
 - not damaged or partially nor fully covered...
- In reality therefore possibly much lower than 90%



ETSC RECOMMENDATION FOR DETECTION RATES FOR SPEED LIMITS

EXPLICIT

Permanent

Temporary



$\geq 99\%$

IMPLICIT

Area
Dependent

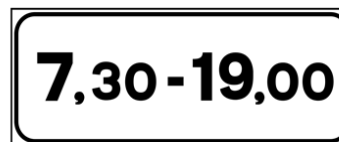
Road Classification
Dependent



$\geq 95\%$

CONDITIONAL

Dependent on time, weather, vehicle



$\geq 95\%$

DISTANCE-BASED DETECTION RATES

Delegated Act

The correct speed limit shall be determined for $\geq 90\%$ of the distance driven at least for the road speed limits that satisfy the previously mentioned criteria.

ETSC recommendation

In line with the events-based performance requirement for implicit and conditional speed limits, ETSC calls for a minimum requirements of $\geq 95\%$.





Estimation of how Speed Limits are determined in Europe

40%
EXPLICITLY

60%
IMPLICITLY

DEACTIVATION OF THE ISA SYSTEM

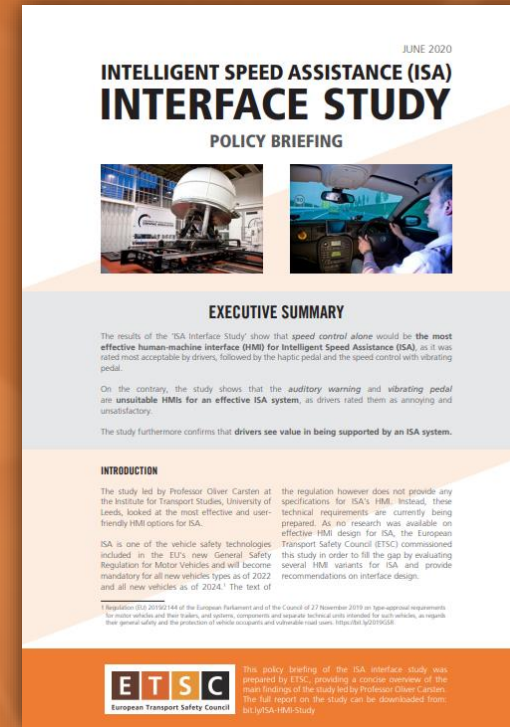
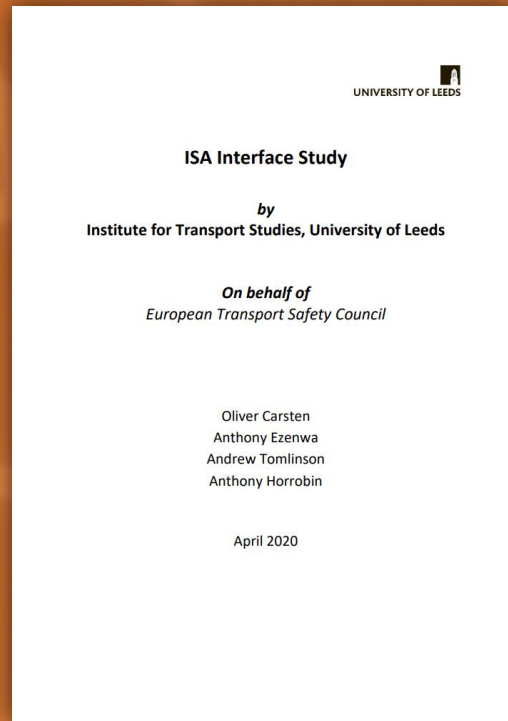
Draft Delegated Act

“It shall be possible for the driver to manually deactivate the ISA system, either fully, or partially with information about the perceived speed limit still provided.”

Paragraph 2.2.1

ETSC calls for:

1. Deactivation of the information about the perceived speed limit should not be allowed: **SLI always ON**.
2. Switching ISA OFF (for the duration of the trip) should only be allowed while in standstill AND require a complex sequence of actions by the driver.
3. Temporarily overriding one speed limit at a time can be done by pushing stronger on the accelerator or pushing one button on the steering wheel.



For more information, contact:

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