



Nudging: The Art of Running a Minimal Interference Safety Play

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MeBeSafe basics



- A H2020 RIA project funded by the European Commission
- Duration: 42 Months May 2017 – October 2020
- Volume: 7.136.979€
- Aims to stimulate traffic participants toward improving their risk management

MeBeSafe Partners

- **IKA** – Institute for Automotive Engineering at RWTH Aachen University
- **ISAC** – Institute of Highway Engineering at RWTH Aachen University
- **SAF** – SAFER Vehicle and Traffic Safety Centre at Chalmers, Gothenburg
- **VCC** – Volvo Cars Sweden
- **TNO** – Netherlands Organisation for Applied Scientific Research
- **SHL** – Shell International BV
- **HEY** – Hejmans Wegen BV
- **SWOV** – Institute for Road Safety Research, the Netherlands
- **UNIFI** – University of Firenze
- **FCA** – Fiat Chrysler Automobiles Italy Spa
- **CRU** – Cranfield University
- **CYG** – Cygnify BV
- **VUFO** – Verkehrsunfallforschung at TU Dresden GmbH
- **BMW** – BMW Group Germany
- **OFF** – OFFIS EV
- **VIF** – Virtual Vehicle



What is risk management?

Risk management

Reduce the frequency of
small margin driving
situations

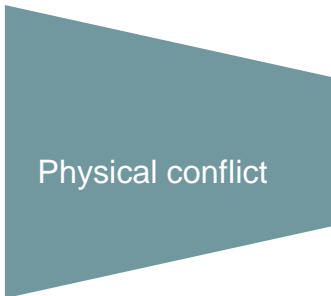
Normal driving



Conflict management

Provide accurate warnings
and/ or interventions for
physical threats

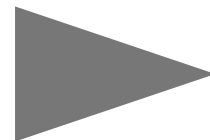
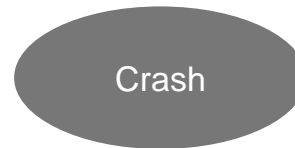
Physical conflict



Injury management

Optimize injury protection
systems and make the car call
for help (eCall)

Crash



Influencing normal driving

Many have tried try to make people behave safer by appealing to reason

However, traffic behavior is largely automated and habitual – reason is not involved

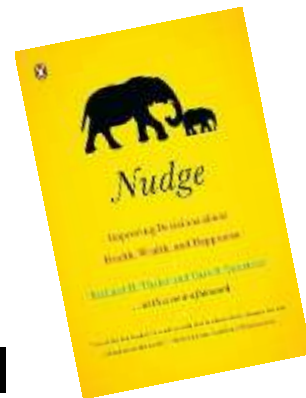
Furthermore, there are by definition no tangible threats present during normal driving, so we cannot appeal to risk awareness

Influencing normal driving

- MeBeSafe therefore aims to change road user behavior by an alternative approach called **nudging**

Thaler & Sunstein 2008

- **Nudging** is adapted from behavioural economics
- It implies pushing humans in a desired behavioural direction, yet without being prohibitive against alternative choices of action



The MeBeSafe challenge

- Can we, through subtle **nudging** and persuasive design, encourage safer driving behaviors in select traffic situations?



Objectives

- 1: **nudge** drivers to take a break when drowsy
- 2: **nudge** drivers to use Adaptive Cruise Control more
- 3: **nudge** timely attention to forecasted hazards in intersections
- 4 & 5: behavioural change through online driver coaching
- 6 & 7: **nudge** toward safe speed and trajectory through hazard zones on inter-urban roads
- 8: **nudge** cyclists to further speed reduction in key locations

In practice

Objective 2 - nudge
drivers to use
Adaptive Cruise
Control more

Objective 1 - nudge
drivers to take a break
when drowsy

Use ACC more

To crash into a lead vehicle, two things are required:

1. Inattention, and...
2. ... a lead vehicle

Many suggested solutions target the inattention, BUT...

...research shows that (lo and behold), risk is greatest when distance to the lead vehicle the shortest

The problem can therefore also be solved by not following too close!

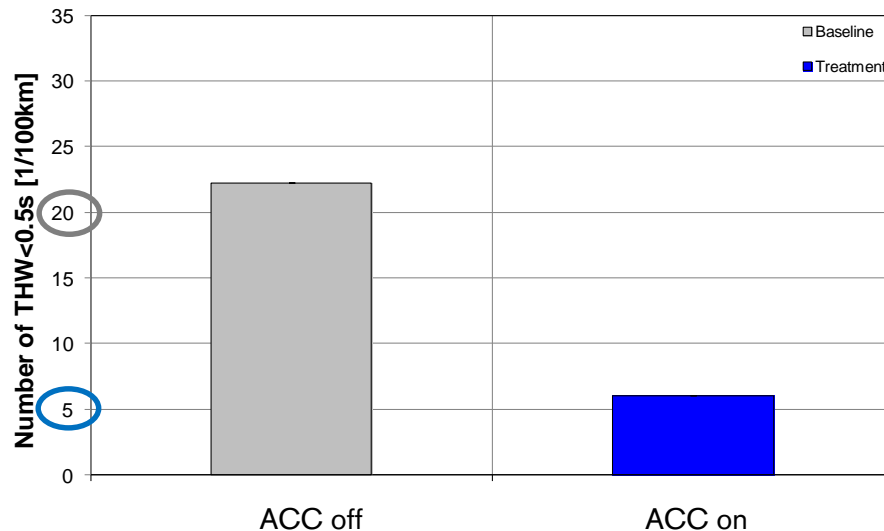
Use ACC more

Human drivers are not so good at avoiding small time gaps

ACC is very good at avoiding small time gaps

Drivers who use ACC are thus less exposed to the risk of running out of time when something unexpected happens

Hourly frequency of time gap $< 0,5$ s



How?

1. Make ACC easier to activate
 - ACC starts automatically after a certain time in lead vehicle following position
2. Leverage social norms
 - Don't drink and drive → don't tailgate and drive
3. Incentives/Rewards
 - Flying Volvo – points for every km with ACC on
4. Gamification
 - Give in-vehicle feedback similar to ECO guide for fuel consumption → Your usage percentage for ACC is a little low, could be higher

Take a break when drowsy

Drowsy driving is a large traffic safety problem

Technically, we're good at detecting drowsy driving

The problem is to make drivers take the break they need when the system tells them they are really drowsy



How?

1. Make it easier to stop
2. Leverage social norms
3. Incentives/Rewards
4. Gamification

Automatic guidance to rest area, gas station, etc

Don't drink and drive → Don't sleep and drive

You get a free coffee if you take a break, offer valid
10 minutes from now on

Parallel to speed cam lottery: every time you stop
after a Driver Alert you get a lottery ticket → every
quarter a lucky winner gets a cruise to Bahamas

**Thank you for
your attention**



Questions?