European Commission

# Speed Enforcement 2016

## Summary

European Road Safety Observatory
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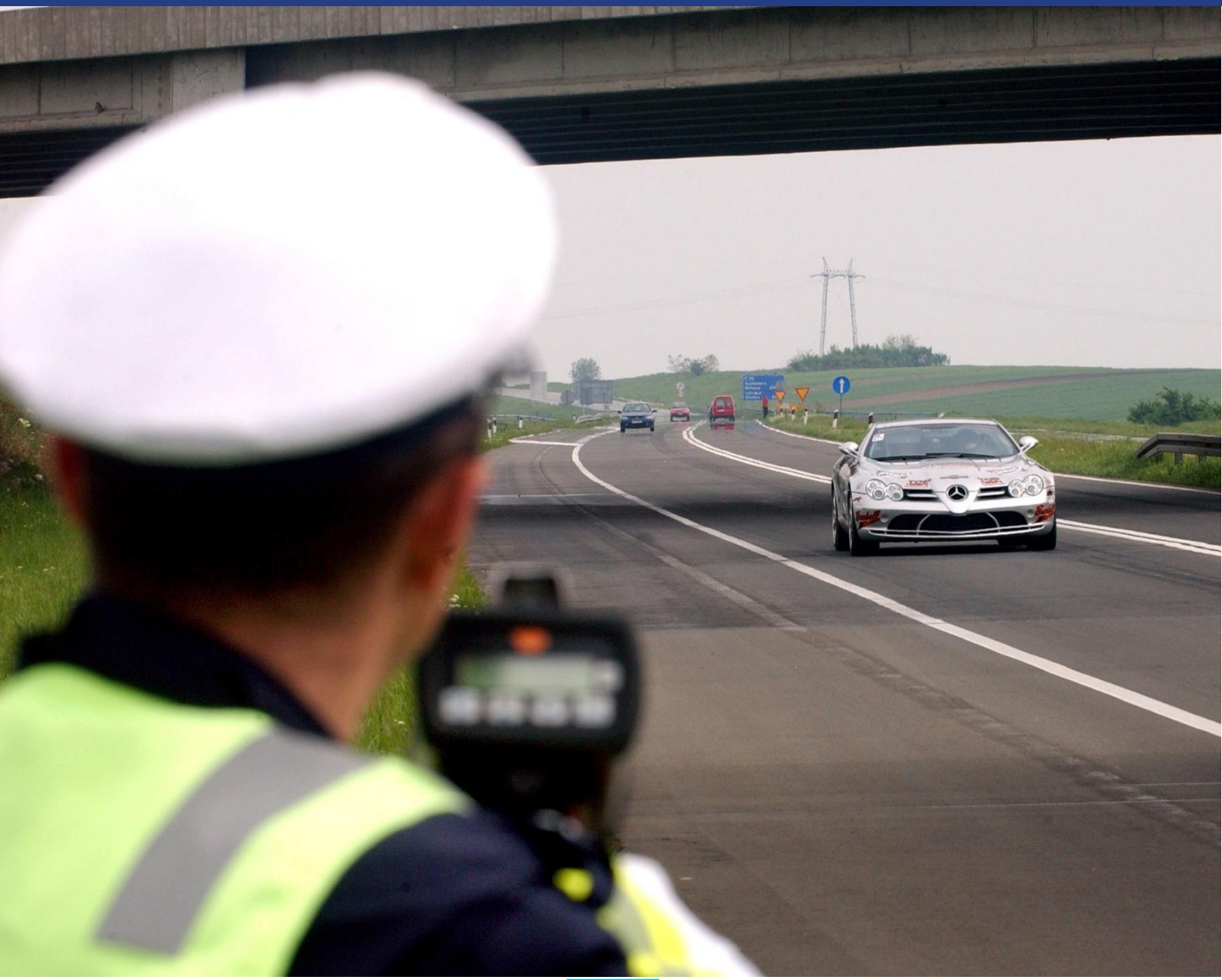

Transport

# Speed Enforcement - Summary

## Introduction

Traffic law enforcement is key to the successful implementation of a Safe System Approach. Road traffic law enforcement is one of the instruments to secure or improve compliance with key road safety rules. Speed enforcement merits special attention for two reasons: Firstly, the relationship between excess speed and the risk of death and serious injury is well-established and speed management is central to a Safe System Approach. Secondly, the variety of policing methods used to prevent speeding violations and the continuing technological developments in this area increase the value of speed enforcement in road safety.

Speed enforcement techniques include physical policing (either with roadside checks or with a police patrol car), automated speed cameras (visible or hidden), and average speed control, with automated systems measuring the average speed of a vehicle over a road section.

## What does science say?

### Enforcement levels and safety improvement

Speed enforcement is a road safety measure that can be applied in different doses. One would, therefore, expect there to be a positive relationship between the amount of enforcement (the size of the dose) and the effect on accidents. Studies indeed show that when the amount of speed enforcement is increased by a factor of 2, a 20% reduction in the number of accidents can be expected.

### Effectiveness of speed enforcement techniques

Automated speed camera enforcement should be used for a large concentration of traffic accidents at high traffic volume locations. Physical policing can be a good alternative to safety camera enforcement when accidents are scattered, and provided operations are randomised and applied to a large part of the network.

### Time and distance halo effects

A common finding in the literature is that speed enforcement effects are limited in terms of both time and space. 'Time halo' is defined as the length of time that the effects of enforcement on drivers' speed behaviour continue after the enforcement operations have ended. 'Distance halo' is defined as the distance over which the effects of an enforcement operation continue after a driver has passed the enforcement site.

### Kangaroo effects

In response to speed enforcement, drivers may tend to reduce their speeds momentarily only near enforcement locations. This type of speed behavior, called the 'kangaroo effect' or Enforcement Avoidance Behaviour raises safety concerns because sudden changes in speed may increase the risk of accident occurrence, especially upstream of the enforcement locations. Study results on the impact of this effect in the number of accidents differ significantly.

## Measures to support speed enforcement

### Safe and credible speed limits

For road users to obey speed limits, it is essential that these limits are safe and credible, i.e. they correspond to the expectations that a road's layout and traffic environment evoke.

**Publicity**
The effect of speed enforcement, and traffic enforcement in general, is substantially increased if it is supported by information targeted at the road user.

**Advance road warning signs**
The use of visible symbols, such as signs warning of potential camera presence and marked enforcement vehicles, can help to remind drivers of the possibility of speed enforcement, thus increasing general deterrence.

**Facilitating legislation**
Legislation not only determines the regulations to be enforced, but also how they should be enforced. This is particularly the case for automatic speed enforcement, e.g. regarding the person responsible for an offence (driver or owner of the vehicle).

**Appropriate sanctions**
Sanctions are an essential element of any effective enforcement program. The possibility of a sanction determines the deterrent effect of enforcement. Despite this essential role, the effect of sanctions is not completely clear, and the impact of issues such as the immediacy of the sanction or the size of the penalty require further investigation.

## Speed enforcement in the future

Innovation is starting to find its way into speed enforcement operations. Promising new technologies include:

**Event data recorders**
Event vehicle data recorders, or black boxes, can monitor and store various driving behaviours, including driving speed. Theoretically and technically it would be possible to compare the information of the speed limit in force and the actual driving speed and use this as a source of information for detecting and enforcing speed limit violations.

**Electronic Vehicle Identification (EVI)**
EVI is a system that uniquely identifies a vehicle electronically, typically comprising a secure in-vehicle data storage element, suitable and secure interfaces and a vehicle-to-infrastructure data communication element. It can be used for enforcement purpose, not only of speeding, but also red light violations and tailgating.

**Intelligent Speed Adaptation (ISA)**
ISA is an in-vehicle system that uses information on the position of the vehicle in a network in relation to the speed limit in force at that particular location. ISA is meant to support drivers and help them to comply with the speed limits everywhere in the network. In that way ISA aims to prevent speeding violations.

**Smart cameras**
A smart camera is a vision system able to convert data to knowledge by processing information where it becomes available, and then to transmit only results that are at a high level of abstraction. A smart camera not only can measure driving speeds but it can also determine whether the driver is wearing a seatbelt, determine the distance between cars to ascertain

whether a driver is tailgating, and detect registration plates to check if a vehicle is being driven uninsured or untaxed.

## Notes

1. Country abbreviations

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|---|---|---|---|---|---|---|---|
| | Belgium | BE | | Italy | IT | | Romania | RO |
| | Bulgaria | BG | | Cyprus | CY | | Slovenia | SI |
| | Czech Republic | CZ | | Latvia | LV | | Slovakia | SK |
| | Denmark | DK | | Lithuania | LT | | Finland | FI |
| | Germany | DE | | Luxembourg | LU | | Sweden | SE |
| | Estonia | EE | | Hungary | HU | | United Kingdom | UK |
| | Ireland | IE | | Malta | MT | | | |
| | Greece | EL | | Netherlands | NL | | Iceland | IS |
| | Spain | ES | | Austria | AT | | Liechtenstein | LI |
| | France | FR | | Poland | PL | | Norway | NO |
| | Croatia | HR | | Portugal | PT | | Switzerland | CH |

2. This 2016 edition of Traffic Safety Synthesis on Speed Enforcement updates the previous versions produced within the EU co-funded research projects SafetyNet (2008) and DaCoTA (2012). This Synthesis on Speed Enforcement was originally written in 2008 and then updated in 2012 and in 2016 by Charles Goldenbeld, SWOV.

3. All Traffic Safety Syntheses of the European Road Safety Observatory have been peer reviewed by the Scientific Editorial Board composed by: George Yannis, NTUA (chair), Robert Bauer, KFV, Christophe Nicodème, ERF, Klaus Machata, KFV, Eleonora Papadimitriou, NTUA, Pete Thomas, Un.Loughborough.

4. Disclaimer



5. Please refer to this Report as follows:
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