



InDev

IN-DEPTH UNDERSTANDING OF ACCIDENT CAUSATION FOR VULNERABLE ROAD USERS

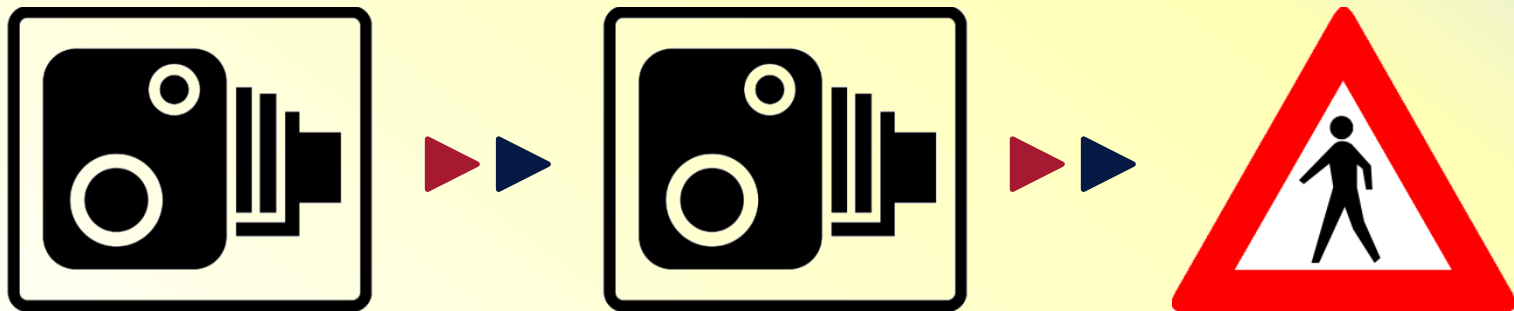
Using behavioural observation studies to evaluate (vulnerable) road users' safety

Wouter van Haperen (Imob)

ICTCT, 22/10/2016, Lund, Sweden



Observing observation of road user behavior



A scoping review on current practices in scientific literature

Our objectives

1. Provide an overview of conducted road user behaviour observation studies
2. Assess the usefulness of behavioural observation
3. Identify topics and behavioural indicators
4. Prevent duplicate research efforts

Behavioural observation?

Actual (objective) traffic safety	Proxy for actual (objective) traffic safety		
Naturalistic data collection		Controlled data collection	
Revealed		Simulated	Stated
Crash data	<u>Behavioural Observation</u> Traffic conflict observation Naturalistic Driving	Driving Simulator Microsimulation	Questionnaires Interviews Focus groups

Studies observing road user behaviour, in which the road users are not informed (beforehand) of their participation in the research (experiment).

Our focus

Traffic Safety

Peer-reviewed journal articles

- Not uncommon
- Available resources
- Publication bias
- Study objective

English

Methodology

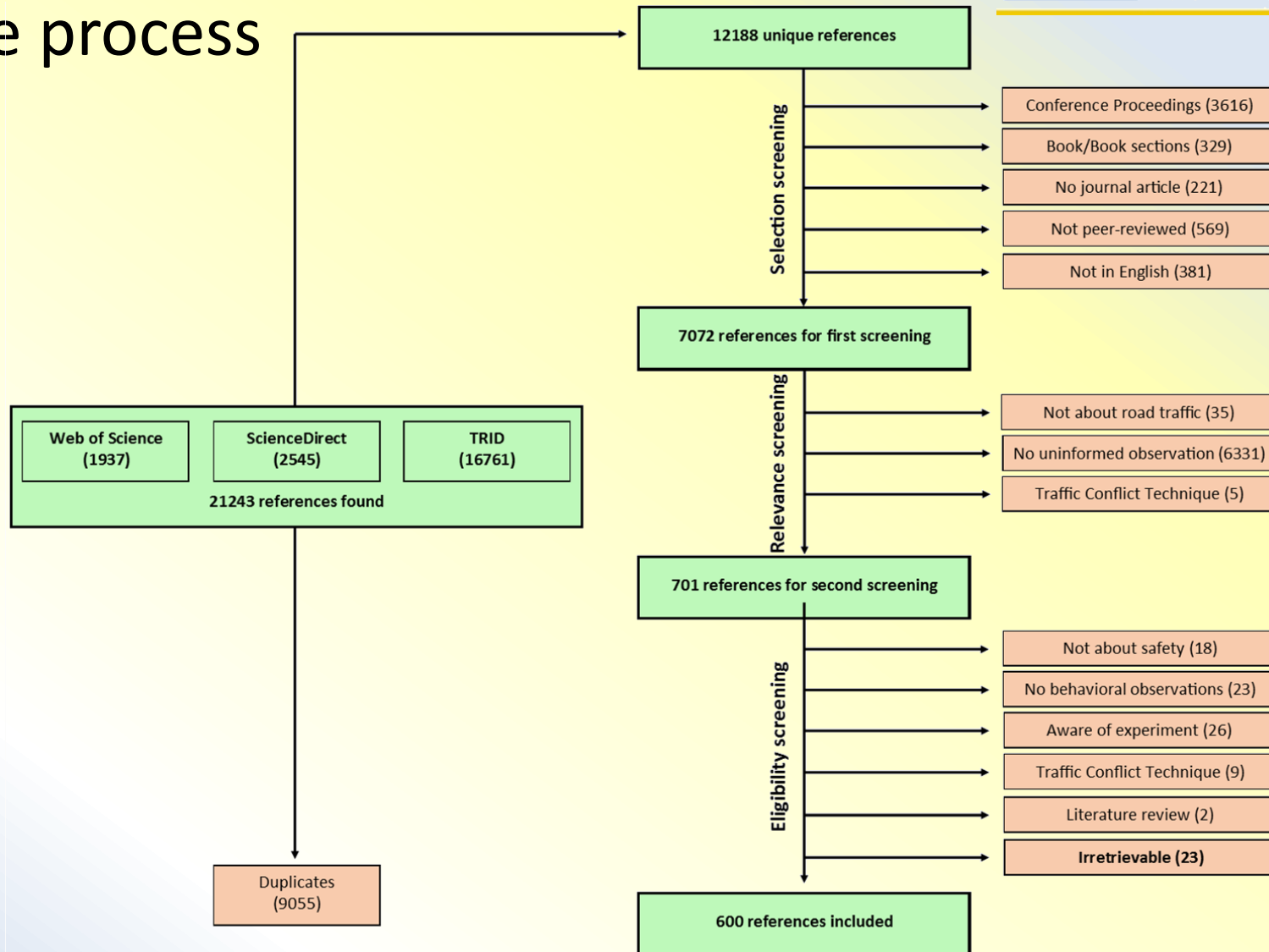
A scoping review

- To “map rapidly the key concepts underpinning a research area and the main sources and types of evidence available”. (Mays et al, 2001)
- A systematic literature retrieval process

Databases used

- Web of Science
- ScienceDirect
- TRID

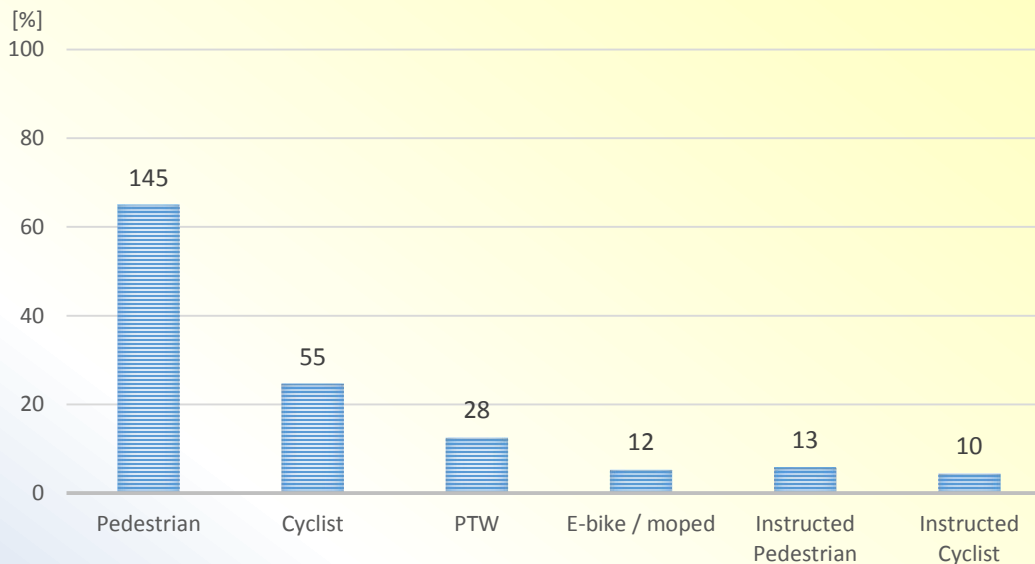
The process



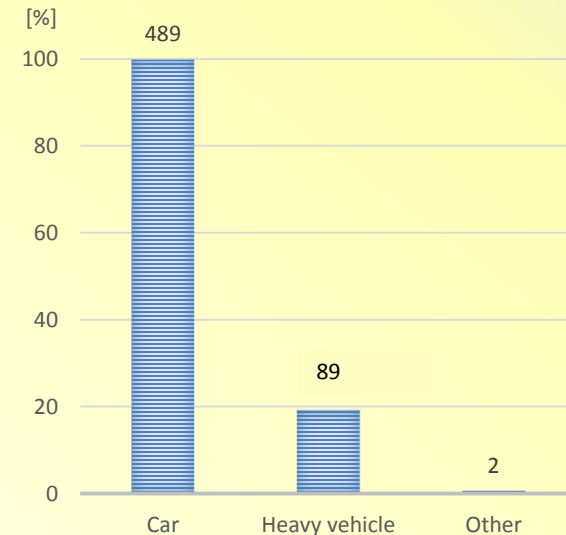
Road user focus

- 223/600 (37%) studies included at least one VRU
- 490/600 (82%) studies included at least one Driver

VRU STUDIES (#)



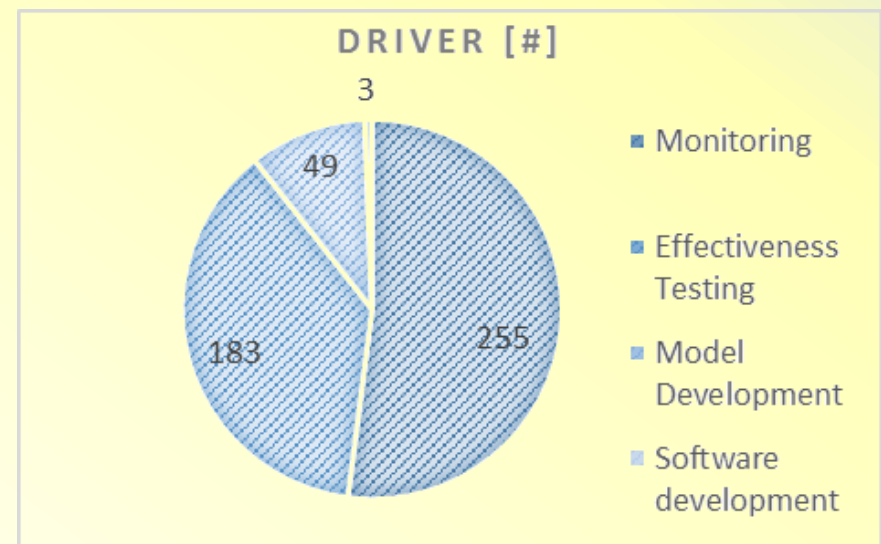
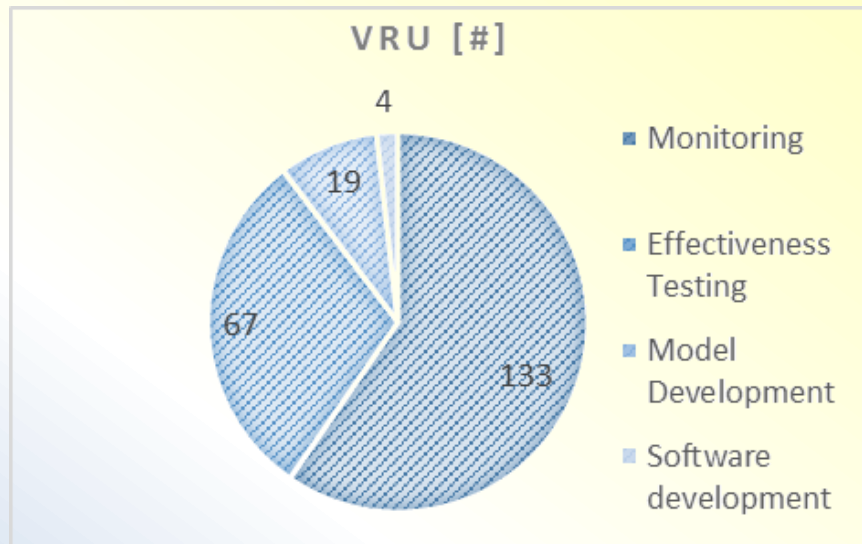
DRIVER STUDIES (#)



Their purpose

The main goal of behavioural observation studies

- Software development in certain papers a side-goal or not directly linked to behavioural observation!



Common topics

VRU studies

- Crossing (39%)
- Yielding (22%)
- Red light running (10%)

Driver studies

- Speed (16%)
- Yielding (13%)
- Crossing (13%)

Common topics & indicators

VRU studies

- Crossing (39%)
- Yielding (22%)
- Red light running (10%)

Driver studies

- Speed (16%)
- Yielding (13%)
- Crossing (13%)

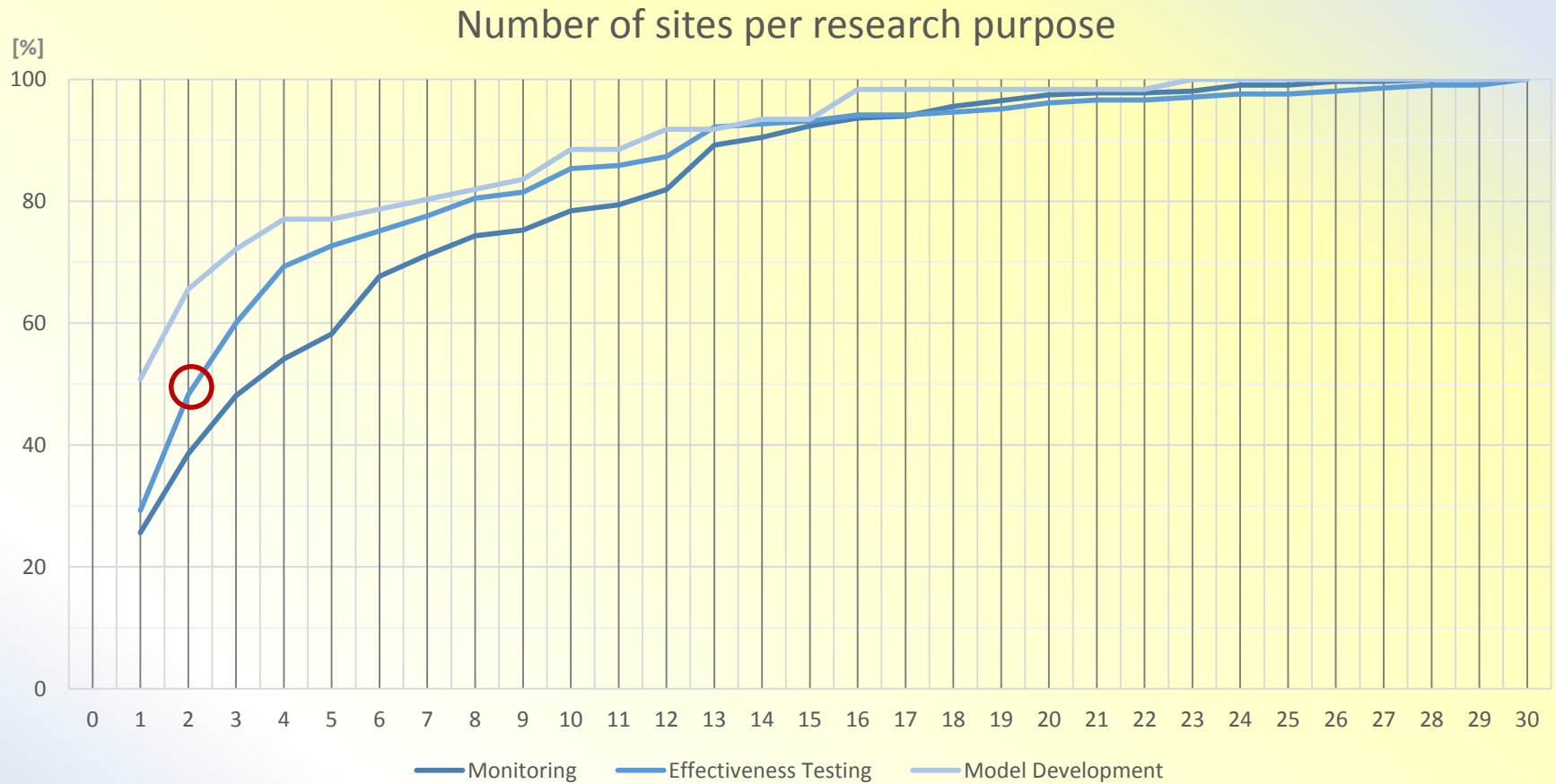
VRU studies

- Red light running (33%)
- Yielding (32%)
- Looking (22%)

Driver studies

- Speed (60%)
- Yielding (16%)
- Red light running (12%)

Testing sites



Reporting

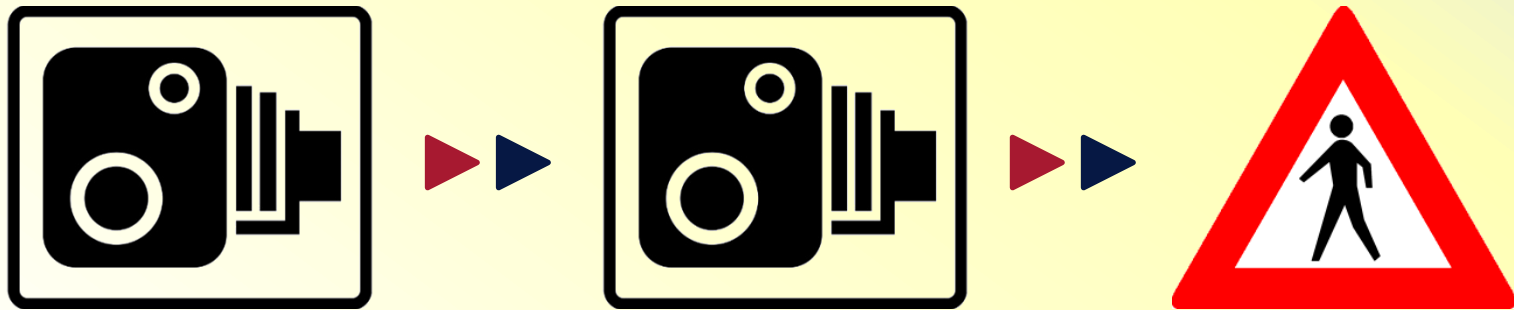
Missing information

- Heavy vehicles
- Observation period
 - Week vs weekend (18% VRU; 47% Driver)
 - Day vs night (14% VRU; 33% Driver)
 - Peak vs off-peak (22% VRU; 53% Driver)
- Sample sizes
 - 13% VRU; 25% Driver

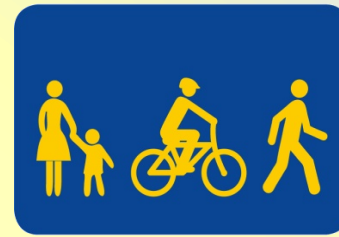
SWOT analysis

	Positive	Negative
Internal factors	<u>Strengths</u> Behavioural and situational processes Natural driving behaviour Data quality	<u>Weaknesses</u> Control of traffic events Data processing Control groups Bias
External factors	<u>Opportunities</u> Amount of data Automated video-analysis software Combination with other methodologies	<u>Threats</u> Privacy legislation Validity

Observing observation of road user behavior



A scoping review on current practices in scientific literature



InDev

IN-DEPTH UNDERSTANDING OF ACCIDENT CAUSATION FOR VULNERABLE ROAD USERS

Visit us on www.indev-project.eu

Thank you very much for your attention!

Wouter van Haperen (Imob)



AALBORG UNIVERSITY
DENMARK

TNO innovation
for life



POLYTECHNIQUE
MONTREAL
LE GÉNIE
EN PREMIÈRE CLASSE

bast
Federal Highway Research Institute

