Traffic conflict indicators as surrogate safety measure

How can we measure Vulnerable Road Users' safety?

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OBJECTIVE

Examine the use of surrogate safety measures (*SSM*) for evaluating safety critical events involving vulnerable road users (*VRU*) during the yielding process

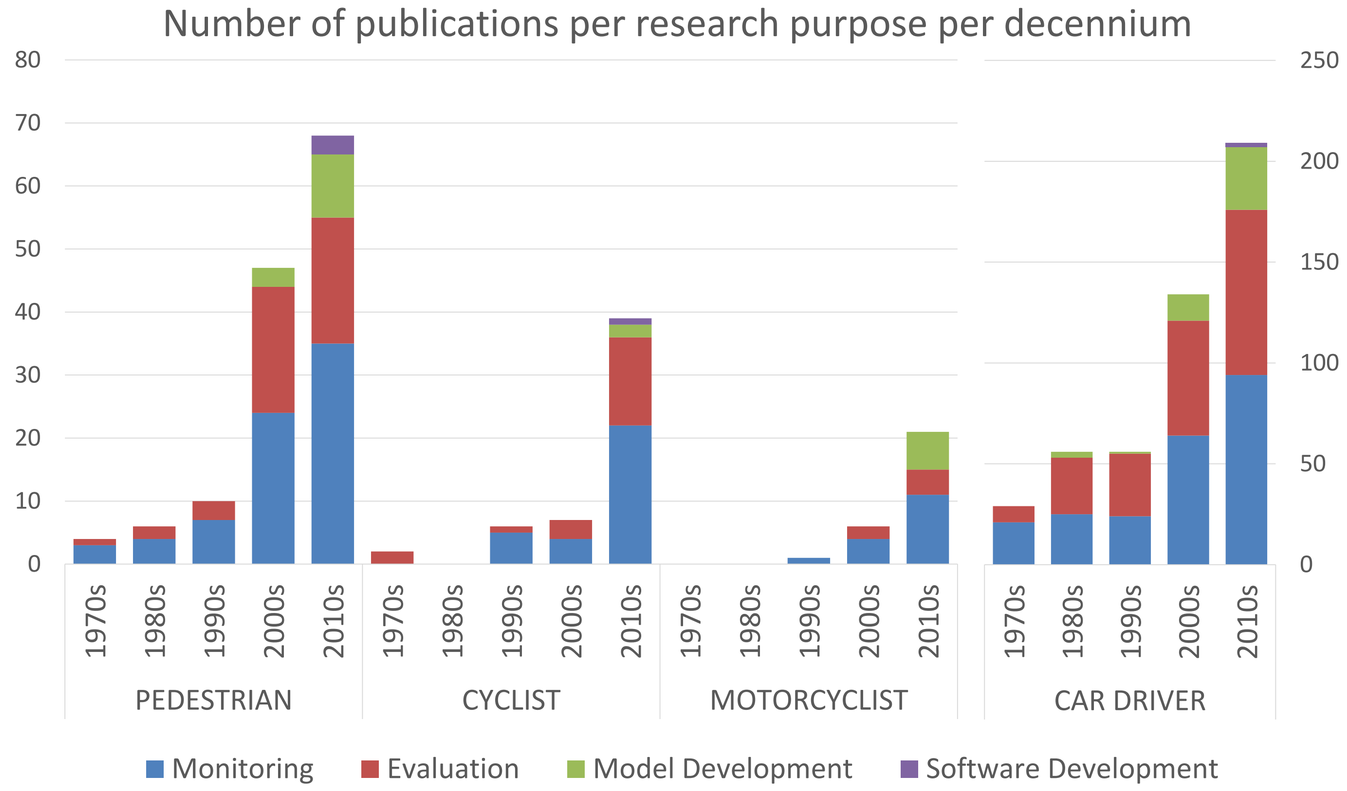
BACKGROUND

Crash data drawbacks
- × Frequency
- × Reporting issues
- × Behavioral and situational data
- × Reactive approach

Importance of research on SSM and VRUs:
- Previous research focused on motorist
- VRUs have other characteristics
- VRU-crashes decrease slower in the EU compared to other modes of transport

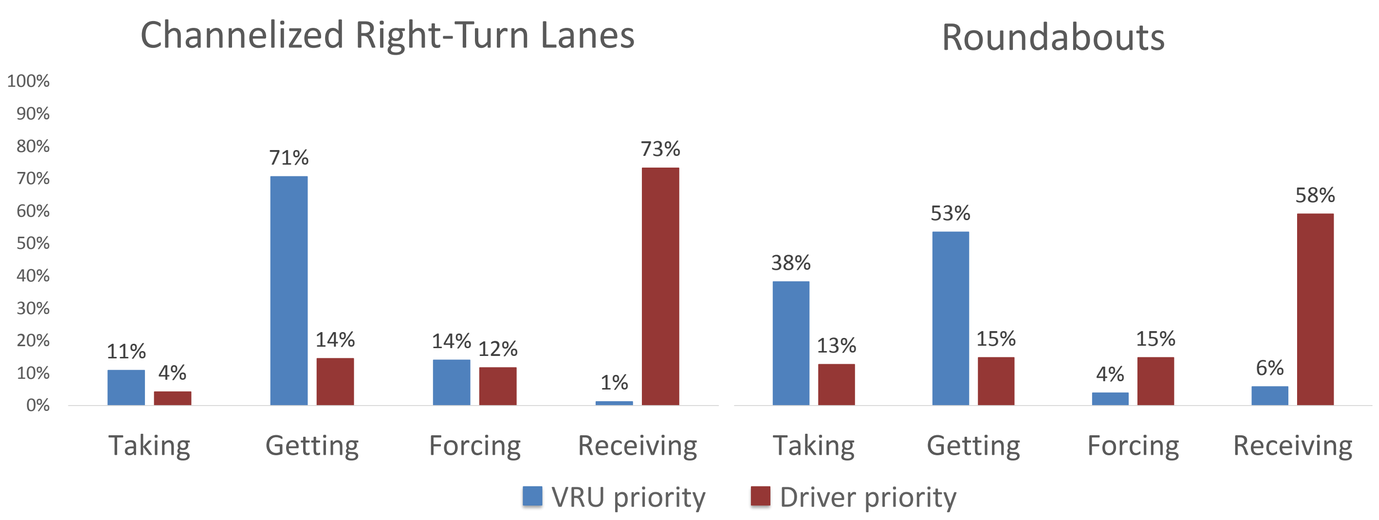
Scoping Review Behavioral observation

- Database of available scientific literature
- Identification of research efforts and behavioral processes



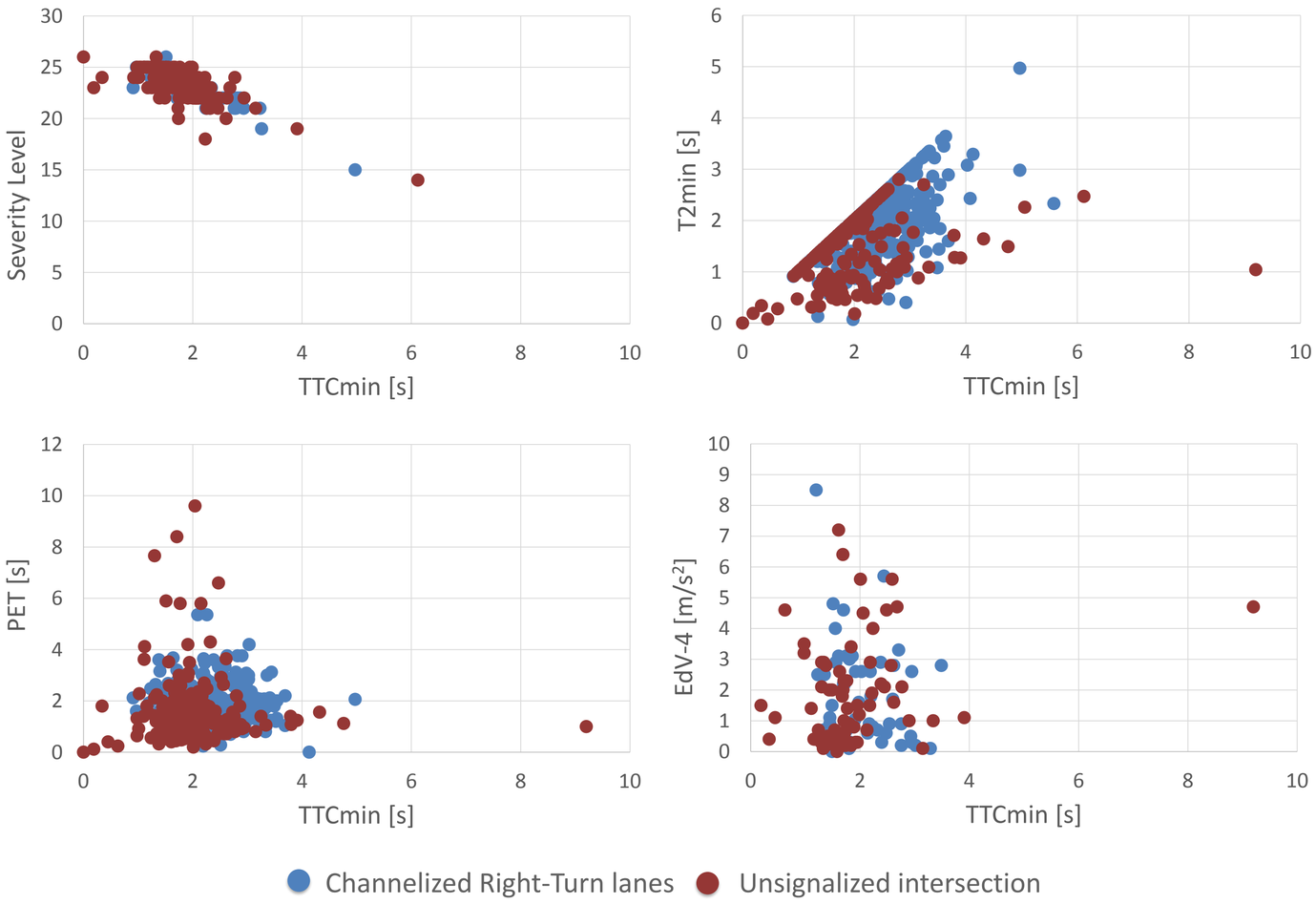
Examining yielding behavior

Yielding types based on crossing style (offensive/defensive) and adherence to priority rule (yes/no)



Conflict Indicator comparisons

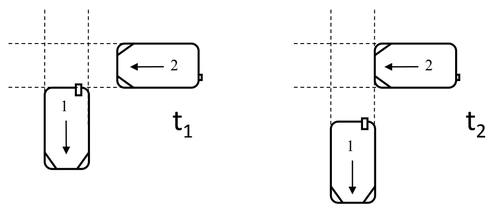
Pairwise comparions between traffic conflict indicators using multiple datasets of different infrastructure elements



Conflict Indicators

<u>Time-to-Collision (TTC)</u>
- Time remaining until crash if speed and direction remain constant
- Severity levels based on TTC at moment of evasive action and speed
- TTC_{min}: minimum value of the TTC

<u>Post-Encroachment Time (PET)</u>



$PET = t_2 - t_1$

<u>T2</u>
- Time remaining for 2nd road user to arrive at the conflict zone given current speed and direction
- $T2_{min}$: minimum value to the T2

<u>Extended-DeltaV</u>
- Speed change at the moment of impact

Conclusions/Discussion

Scoping review behavioral observation
- Crossing and yielding have been mostly the topic of research
- Identification of behavioral processes

Yielding behavior
- First step of identifying yielding types
- Further development and objectivation needed

Traffic Conflict indicators
- Correlation between indicator pairs?
- Identification of shortcomings

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