

A comparison of different surrogate safety measures for traffic conflicts involving VRUs

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at the XI ICTCT extra workshop (Vancouver, Canada)*

Objectives

Many SSMs have been proposed and applied in (scientific) research.

But how do they relate to each other?

1. Which aspects influence the calculation of the SSMs?
2. Are the measures identifying the same (severe) events?
3. Are there (significant) correlations?

Focus on events involving VRUs

- Other evasive manoeuver capabilities

Data

Available datasets at Transportation Research Institute (IMOB) of Hasselt University

- Channelized Right-Turn Lanes (CRTL)
 - 4 locations
- Signalized Intersections
 - 4 locations
- Non-Signalized intersections
 - 2 locations

In total 1141 conflict situations

Methods

Hasselt Manteliusstraat

Project Data Record Display Help

Detections

ID 23 Video

Time 2014-11-17 08:35:28

Status not checked

Type not known

Comment

Add New Delete

|<< < 27 of 279 > >>|

Trajectories

Road user 1 Type car Edit

Road user 2

Length, m 5,00

Width, m 1,80

Height, m 1,40


Weight, kg 1300

Key 1 Key 2

User-defined fields

00088 x1 show graphs

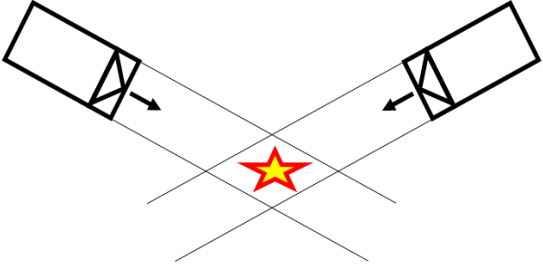
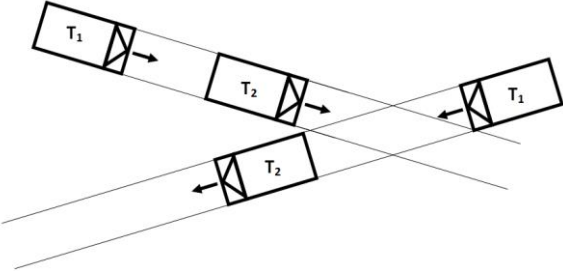
2014-11-17 08:35:34.000



0.00:05 0.00:14

X: 20,9 m, Y: 43,8 m | X: 333 pxl, Y: 51 pxl | 1 pixel = 0,40 m

Surrogate safety Measures

Collision course	Transition	Crossing course
		
<p><u>Time-to-Collision (TTC)</u> Severity Level <i>TTCmin</i></p>	<p><u>T2-value</u> <i>T2min</i></p> <p><u>Extended Delta-V (EdV)</u> <i>EdV4</i> <i>EdV8</i></p>	<p><i>Post-Encroachment-Time (PET)</i></p>

Results: Range

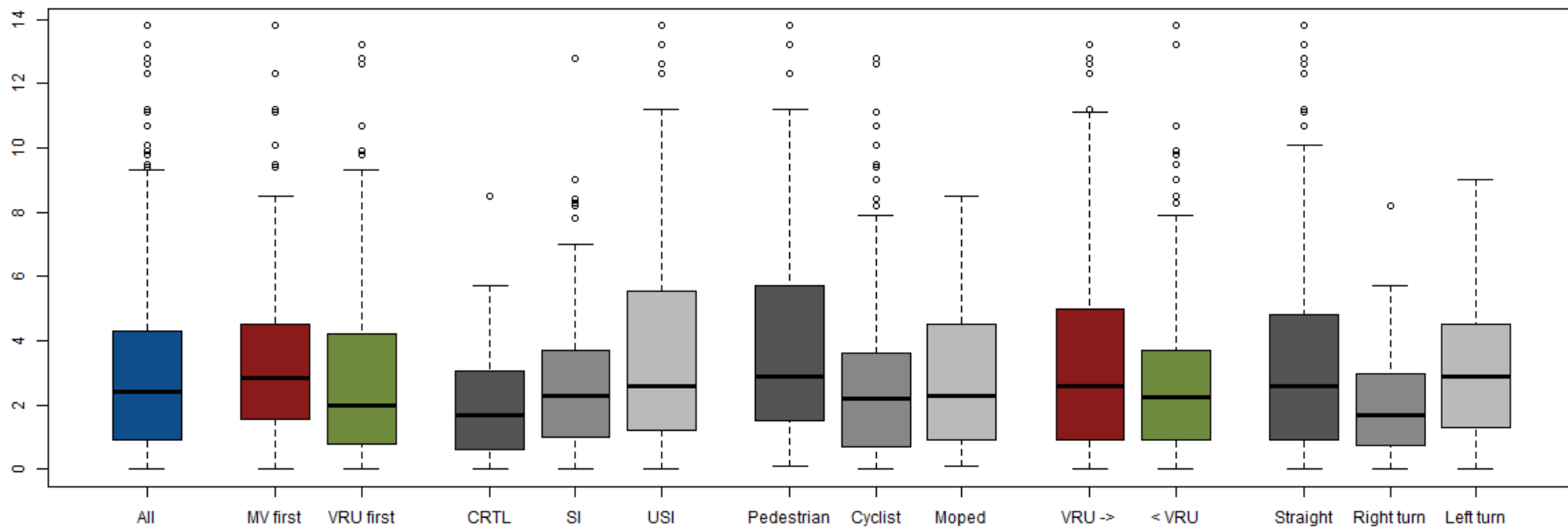
Severity Level

TTCmin

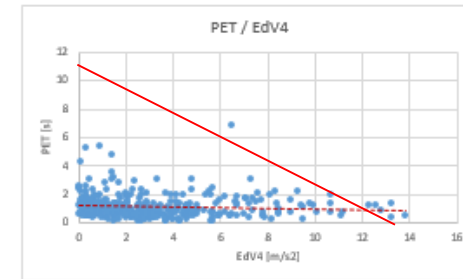
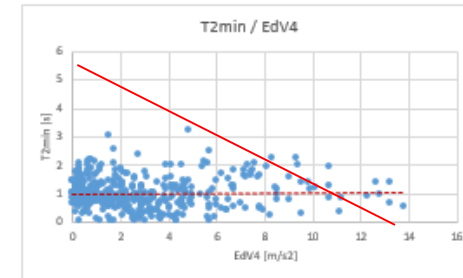
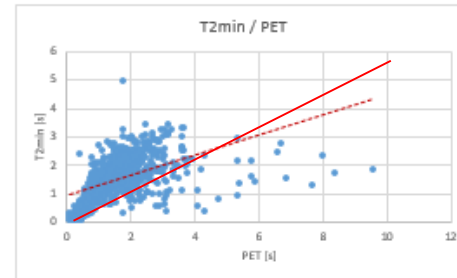
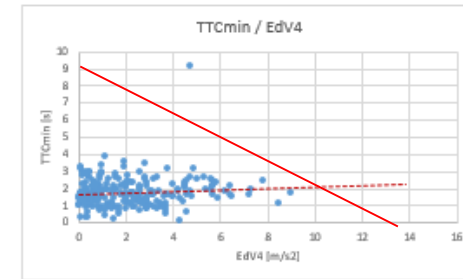
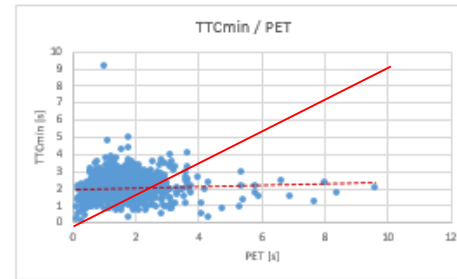
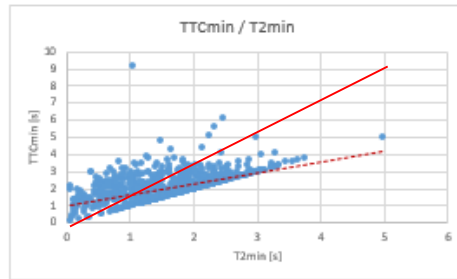
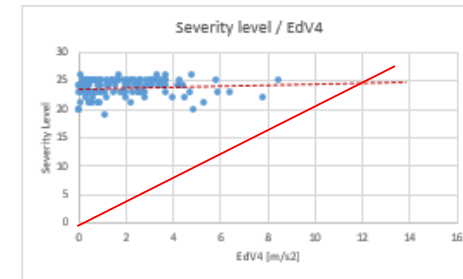
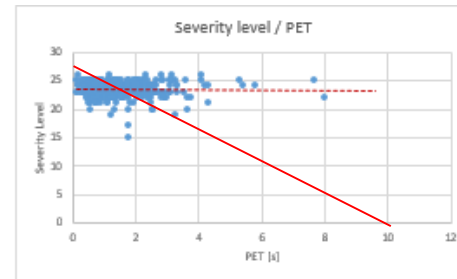
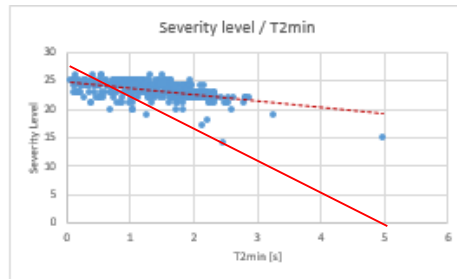
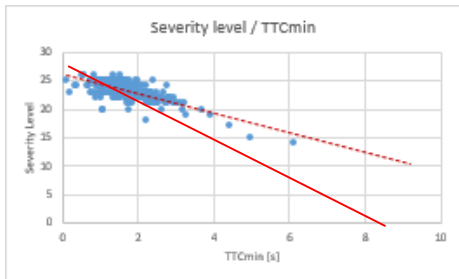
T2min

PET

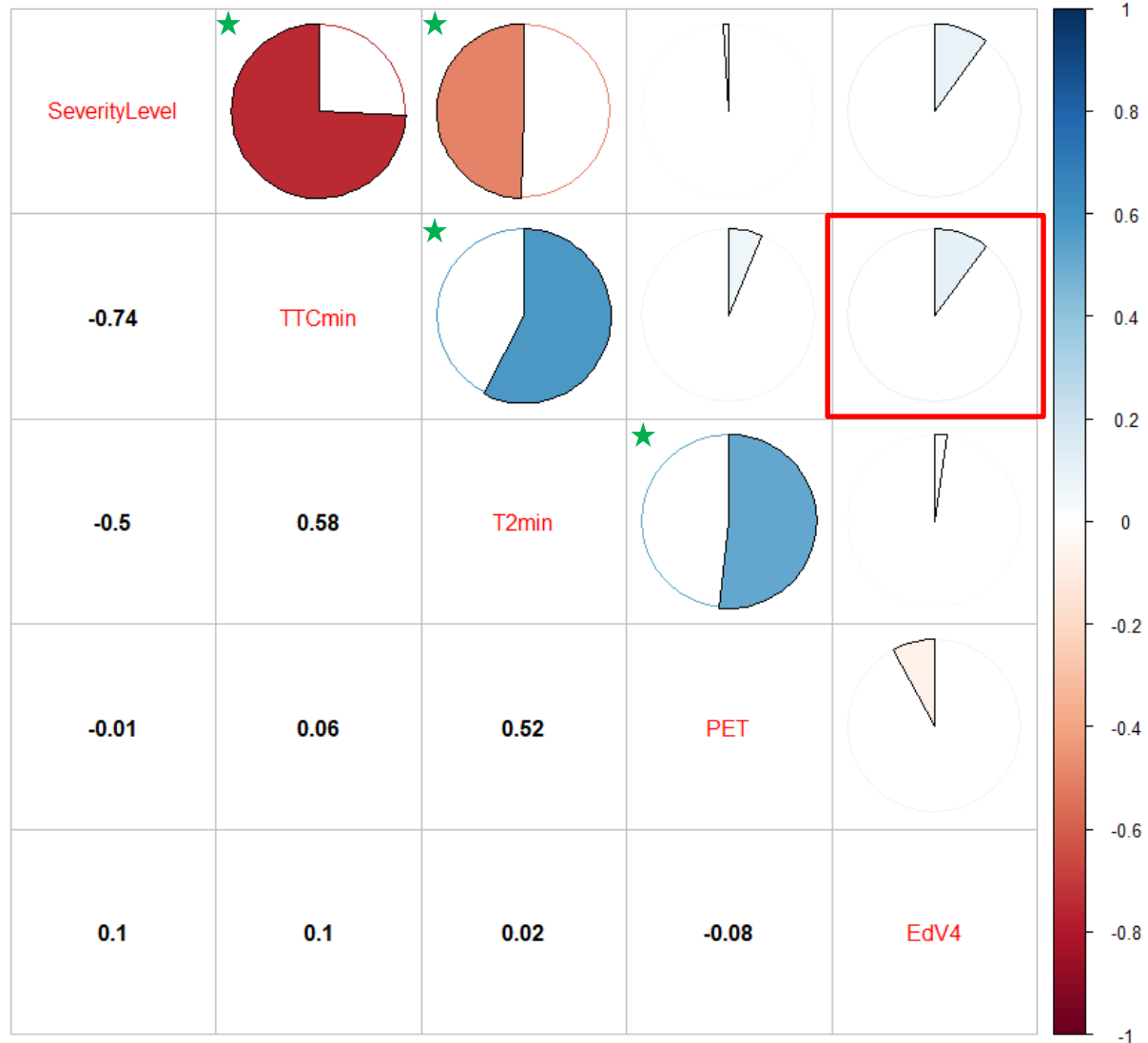
EdV4



Result: Correlation

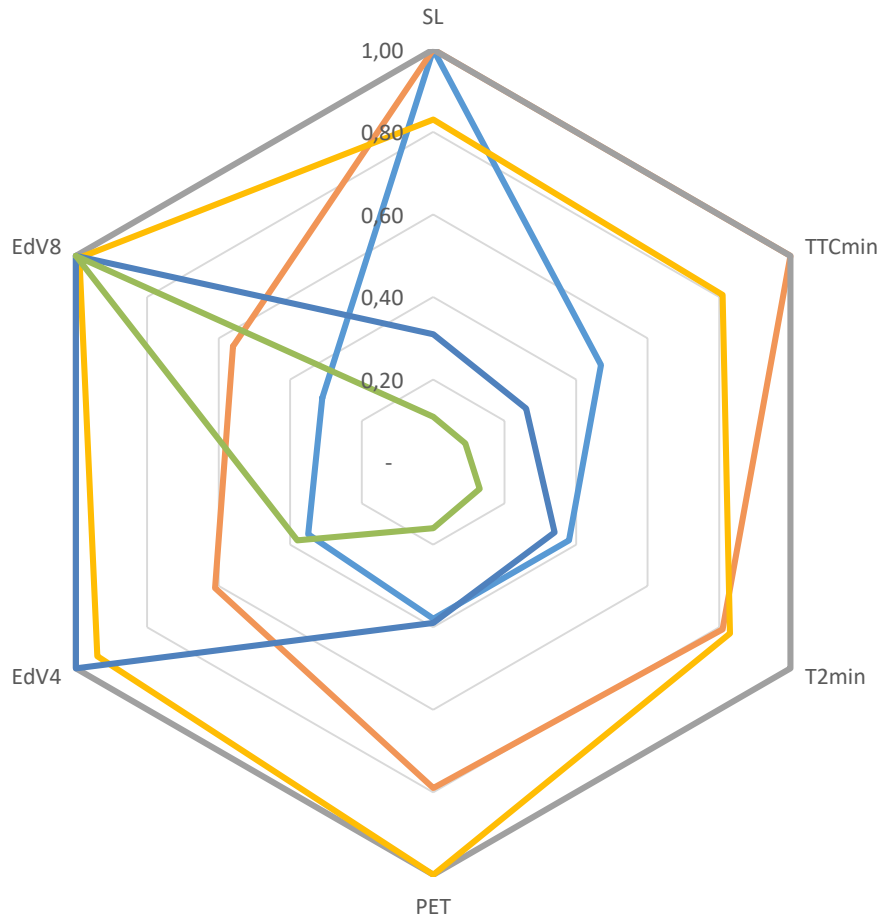


Result: Correlation

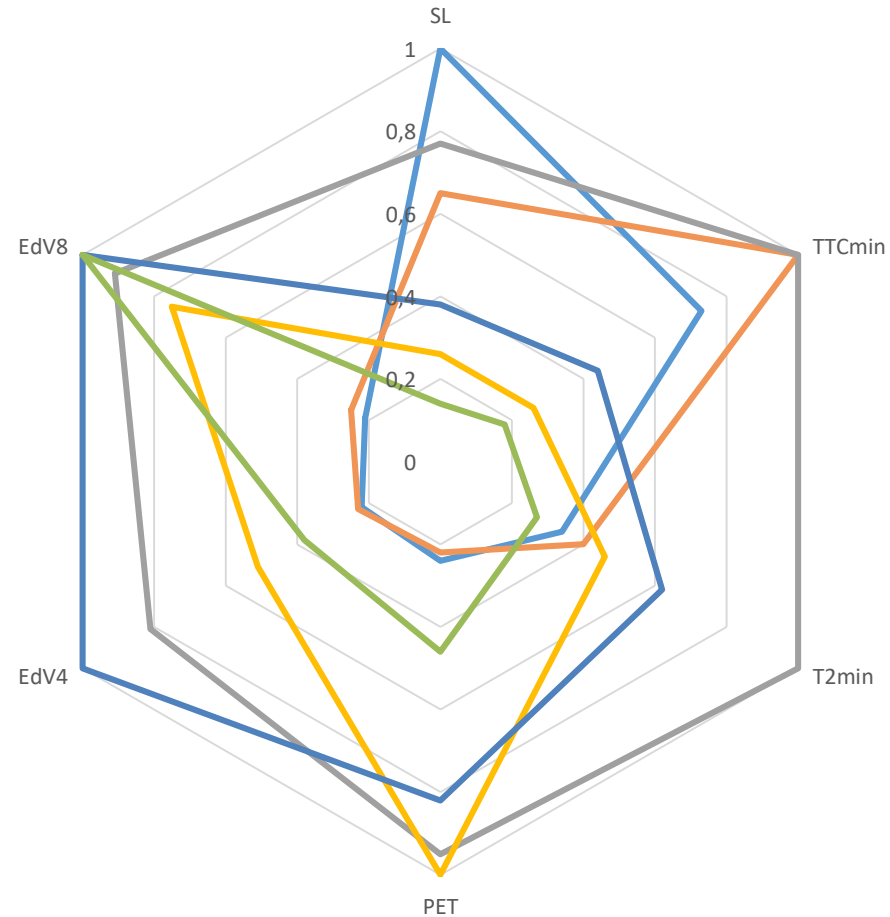


Severity assessment

All conflicts (overlap)



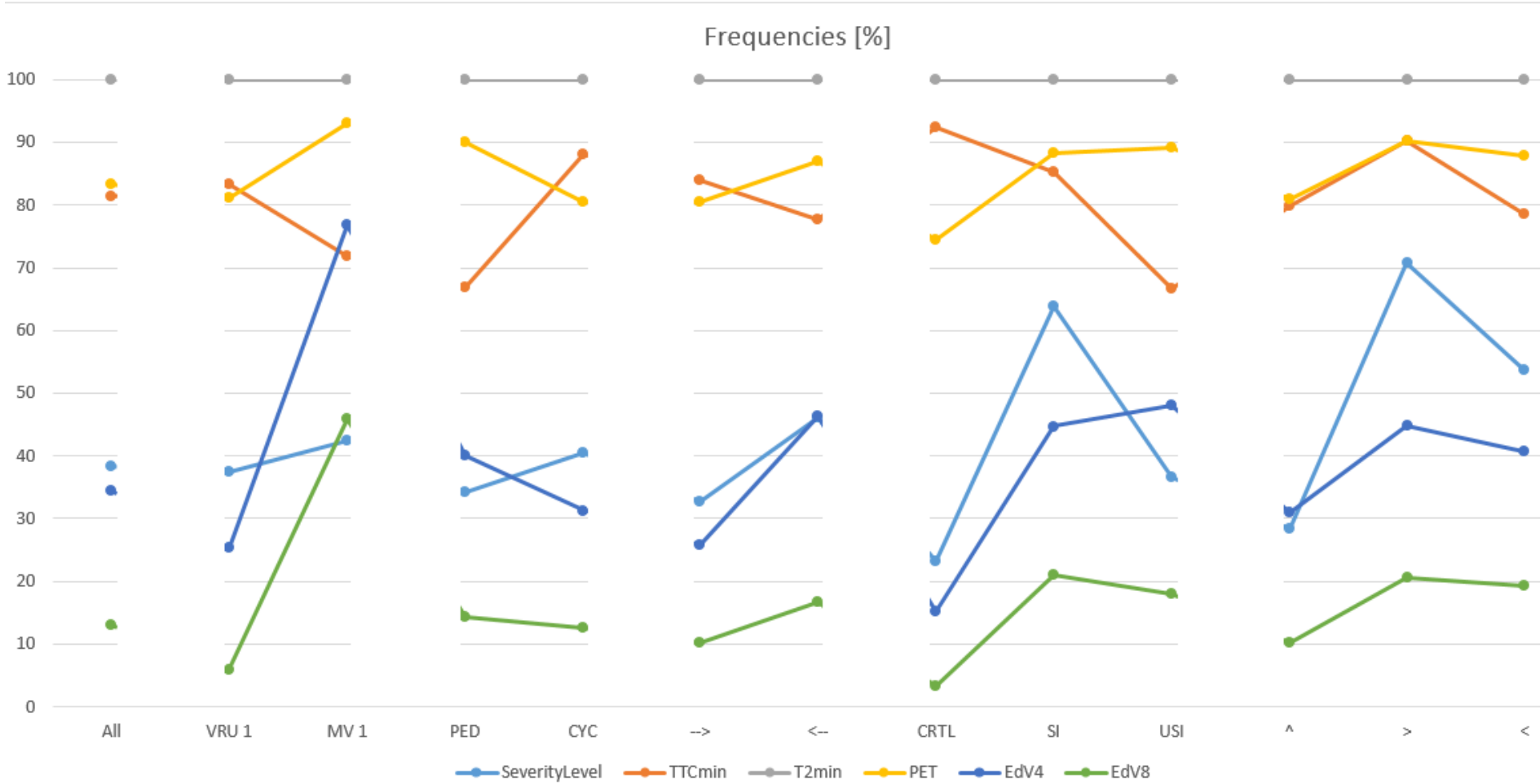
Serious conflicts (overlap)



— SL — TTCmin — T2min — PET — EdV4 — EdV8

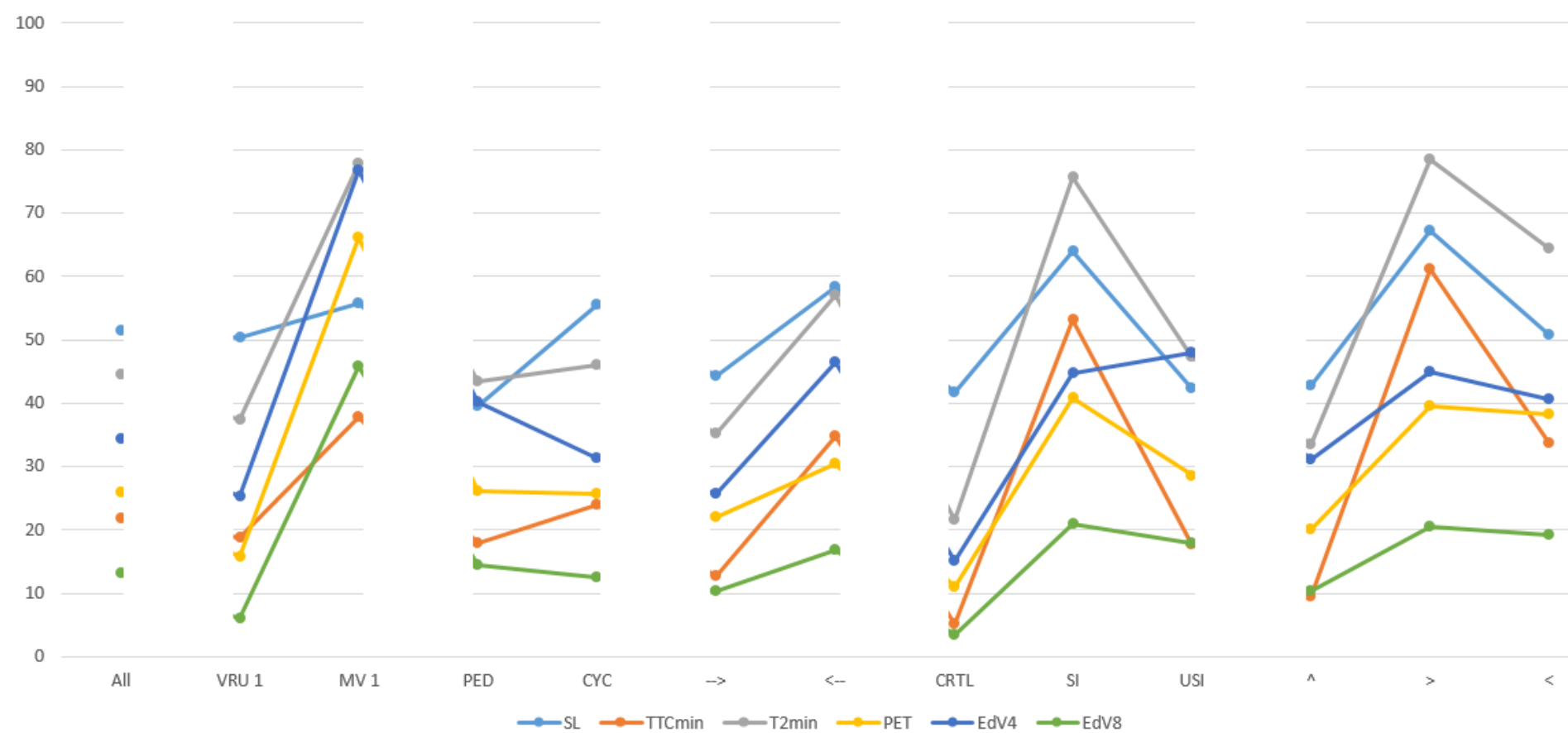
— SL — TTCmin — T2min — PET — EdV4 — EdV8

Frequencies



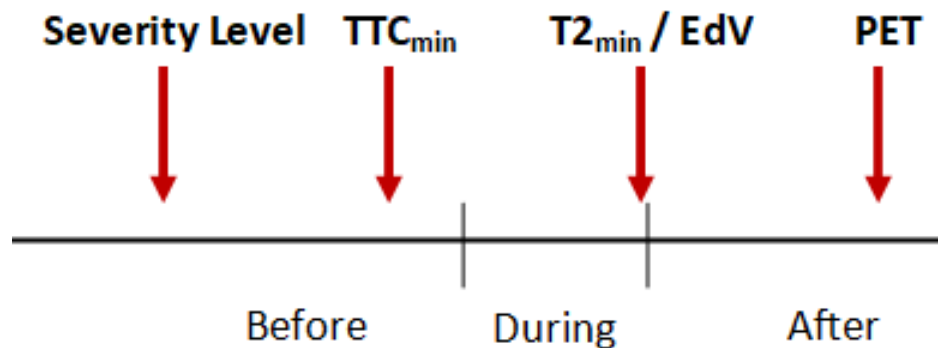
Frequencies (2)

Frequencies Severe conflicts [%]



First insights

Calculation of SSMs during the interaction process:



- Do we need to determine when a certain measure can be calculated?

Clear differences in selecting of events observable

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