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## **Comparison of severity assessments based on Czech and Swedish traffic conflict techniques**

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# Comparison of severity assessments based on Czech and Swedish traffic conflict techniques

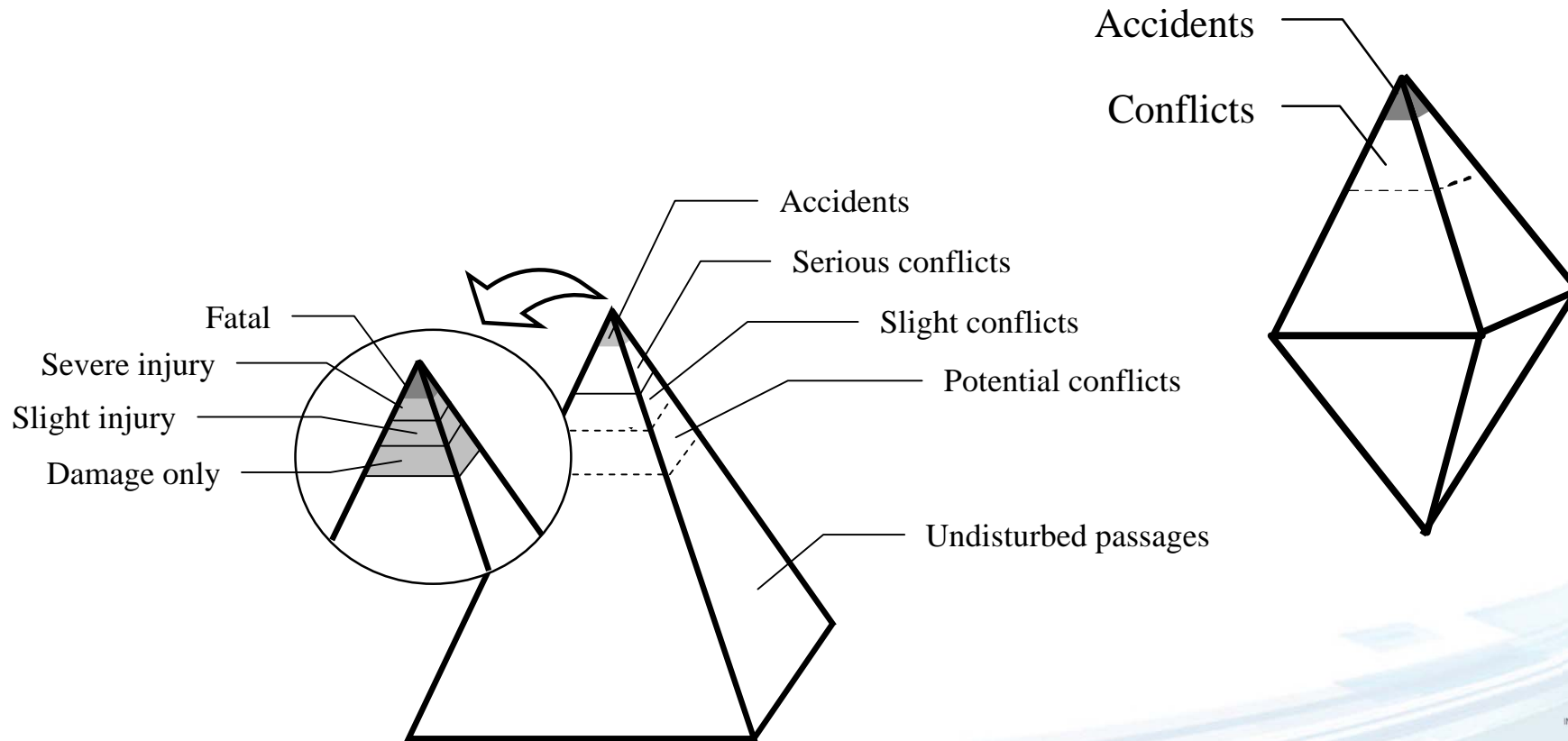
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TØI, Oslo, Norway

# Introduction



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# Introduction

**Traffic conflict** = an observable situation in which two or more road users approach each other in space and time to such an extent that a collision is imminent if their movements remain unchanged (*Amundsen & Hydén, 1977*)



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# Introduction

# Validity

# Reliability



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# Introduction

Various TCTs exist...

... but hardly ever cross-compared

*Malmö study, 1983*



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# Introduction

- **Conflict = type + severity**
- Severity assessed **objectively** or **subjectively**
- **Evasive manoeuvre**



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# Introduction

- **Subjective** (US, French, German ...and Czech)
- **Objective** (Swedish...?)
  
- *Are these two comparable?*



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# Data

- > 150 short videos from CZ
- Two groups chosen:
  - **69 turning/merging** vehicle-vehicle interactions
  - **23 pedestrian-vehicle** interactions



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# Czech TCT



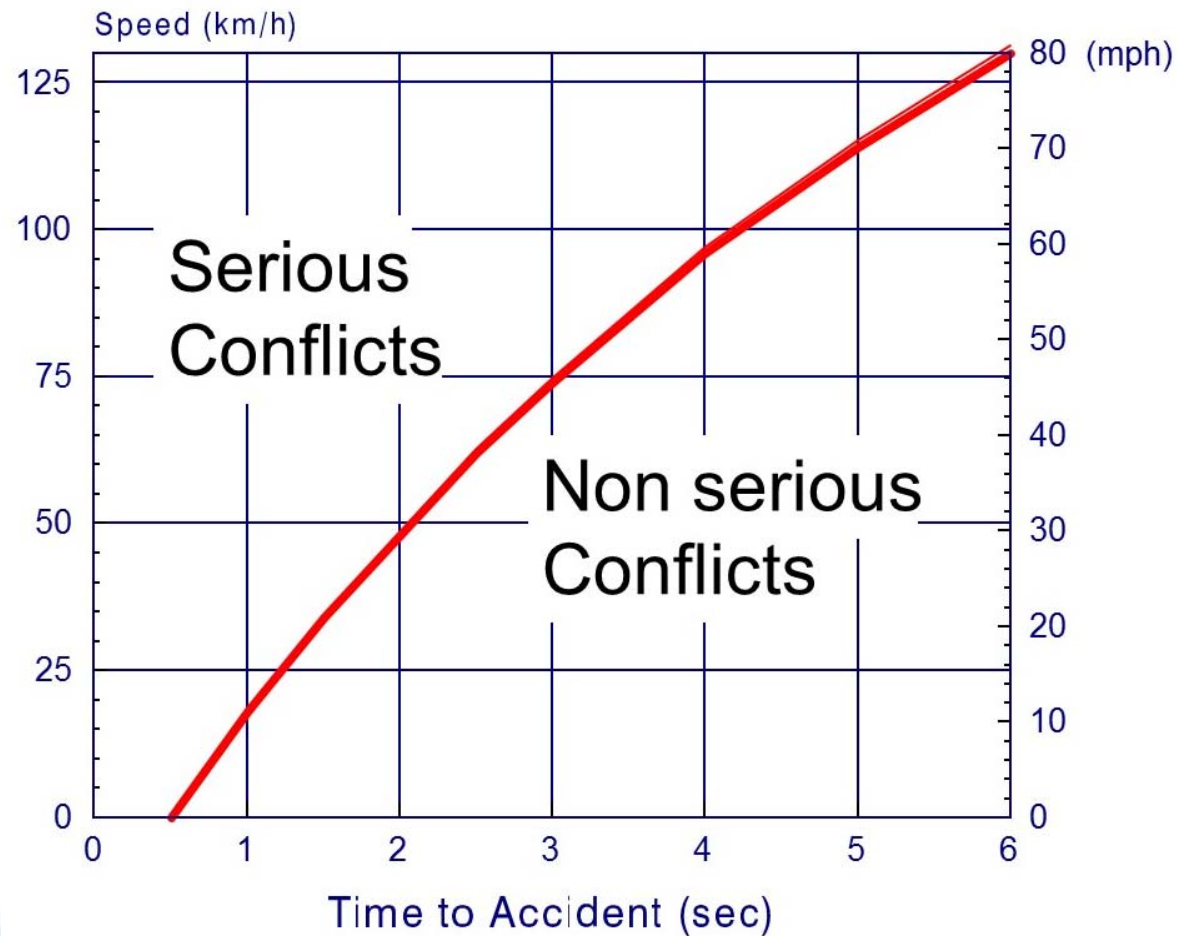
severity grade	description	severity	physical reactions	events		
				related to vehicles	related to pedestrians	
0	(mis)behaviour	none	no reactions	breaking the rules without consequences, misbehaviour of road users	breaking the rules, e.g. crossing outside of zebra	
1	conflict	slight	low	common reactions	fluent, controlled, predictable manoeuvres	change of walking direction
2		medium	obstruction	sudden reactions	pronounced, sudden, unpredictable manoeuvres	change of walking speed, sudden entering the zebra
3		severe	endangerment	sharp reactions	critical, emergency manoeuvres	shocking manoeuvres
4	accident	various levels (property damage only or injury accidents)				



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# Swedish TCT



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# Comparison

- Interaction severity assessed by both methods
- Three conflict grades:
  - 0 (none)
  - 1 (slight)
  - 2 (severe)
- Comparison of (dis)agreement



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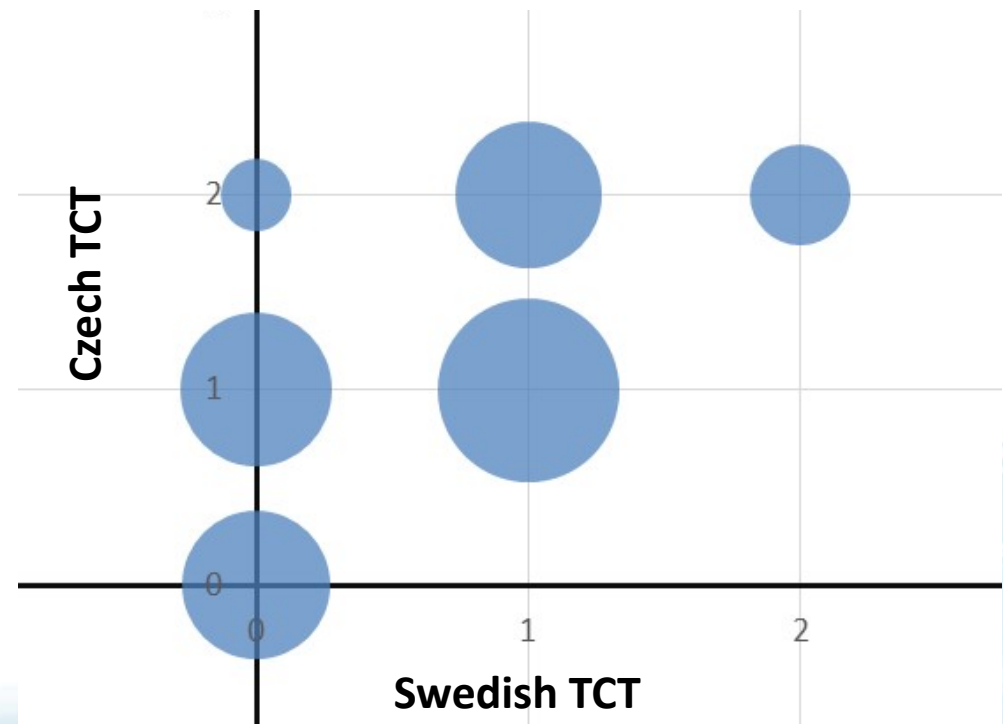
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# Comparison

Turning/merging:

Agreement with SW			
none	13 /	30	= 43%
slight	20 /	33	= 61%
severe	6 /	6	= 100%
<b>total</b>	<b>39 /</b>	<b>69</b>	<b>= 57%</b>

		SW			
		0	1	2	
CZ	0	13	0	0	13
	1	14	20	0	34
	2	3	13	6	22
		30	33	6	69



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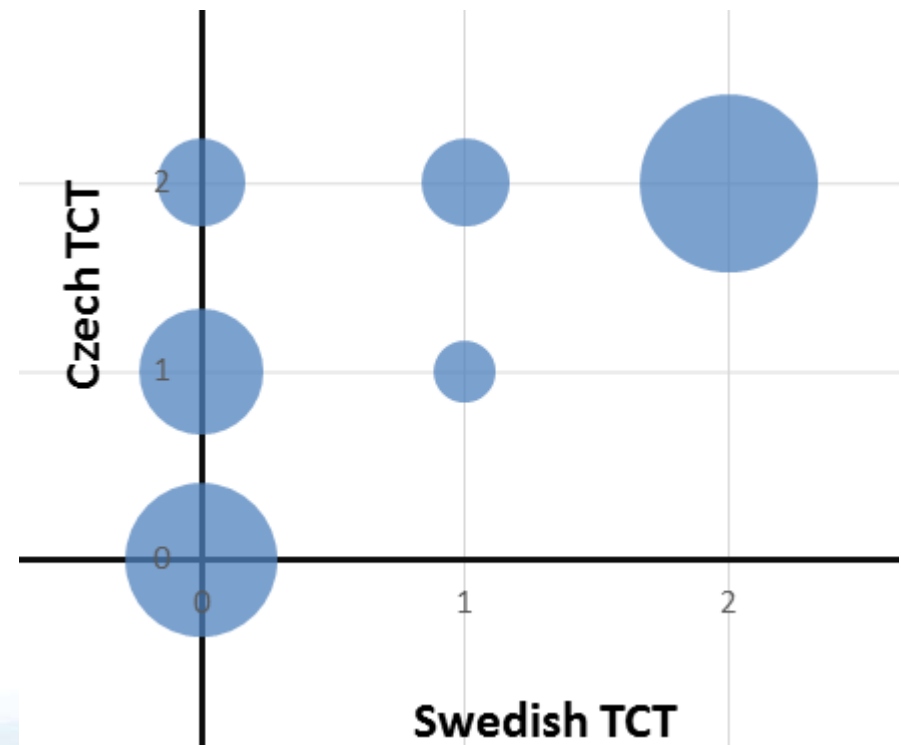
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# Comparison

Pedestrians:

Agreement with SW		
none	6 / 12	= 50%
slight	1 / 3	= 33%
severe	8 / 8	= 100%
<b>total</b>	<b>15 / 23</b>	<b>= 65%</b>

		SW			
		0	1	2	
CZ	0	6	0	0	6
	1	4	1	0	5
	2	2	2	8	12
		12	3	8	23



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# Comparison

- Agreement with SW approx. 60%
- Agreement increases with severity to 100%
  
- CZ detects more than SW
- Differences mainly with:
  - interactions at low speed
  - no collision course
  - (un)controlled interactions



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# Discussion



Pros/cons of both methods?

**CZ:**

- subjective
- severity estimates may not be reliable
- short observation period
- validity?



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# Discussion



## SW:

- objective
- accuracy of measurements?
- longer observation period
- validated



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# Discussion

- Variations in detection rather than in the evaluation of severity (Grayson, 1984)
- Serious conflicts classified subjectively by observers correlated better with accidents (Svensson, 1992)
- Type of road users really matters (Shbeeb, 2000)
- Different safety expectations → different severity ratings (Shbeeb, 2000)



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# Discussion

- Automated conflict studies
- New method, new conflict definition – **new validation**
- Advantage – more standardised approach



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## References

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