

Traffic safety evaluation for tramway systems

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Plan

- I. Background
- II. Methods
 - I. Accident data
 - II. Safety studies for preventing accidents
- III. Future research
- IV. Discussion



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Background

- Master's thesis: *Planning and design implications from traffic safety evaluation for tramway systems*
 - Which factors should be considered in planning and design in terms of safety
 - Accident data analyses as a key methods
- New tramways are planned nowadays. They are a part of the **city image**, and they also interact with other street users.
- Eventhough trams are not new transport mode, there are not many commonly used methods to study tramway safety.



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Background Evaluating tramway safety

COLLISION SPEED

COLLISION ANGLE

MASS DIFFERENCE

EVASIVE MOVEMENT



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Methods

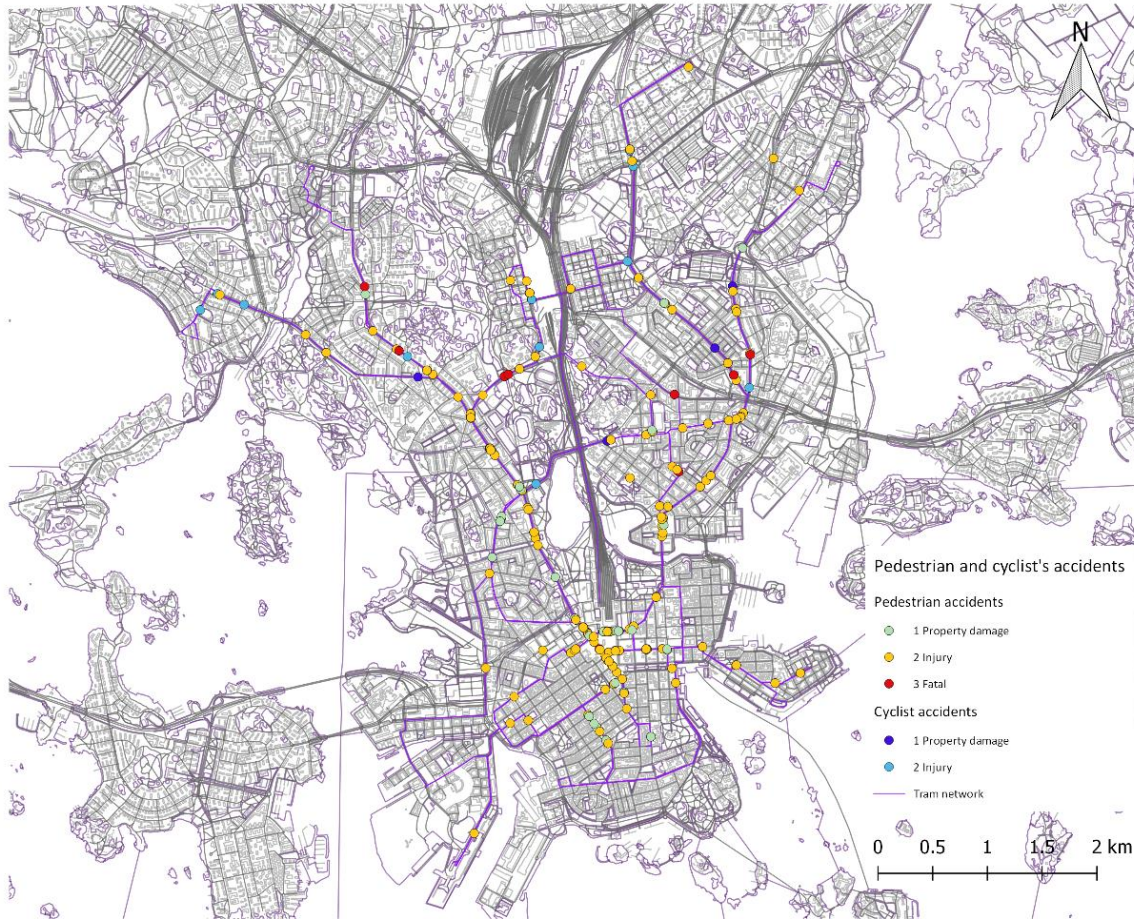
Accident data

- Police accident forms, operator accident forms
- In the study, accident data was used from Helsinki, Gothenburg and Dublin.
- Data showed the hotspots of accident locations with cars (typically property damage accidents).
- Accident data showed higher number for car-tram accidents than for tram-pedestrian/cyclist accidents. → nature of accident data
- Problems
 - Only reported accidents
 - Accidents represent only part of safety
 - Ethics – is it right to wait accidents to happen before development?



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CASE Helsinki Pedestrian & Cyclists





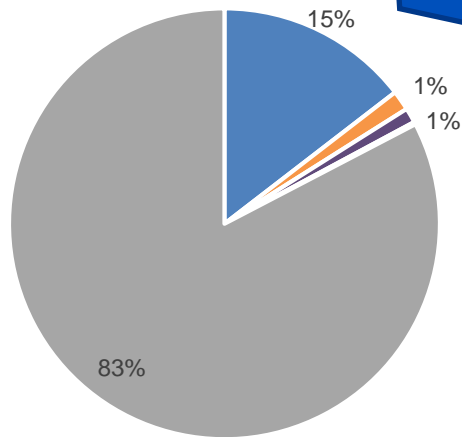
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Methods Preventing accidents

- What if we don't need to wait accidents to happen?
- Information of near-misses (conflicts) would offer better knowledge of challenging locations for pedestrians and trams.
- Difference between a near-miss and a serious accident

Helsinki

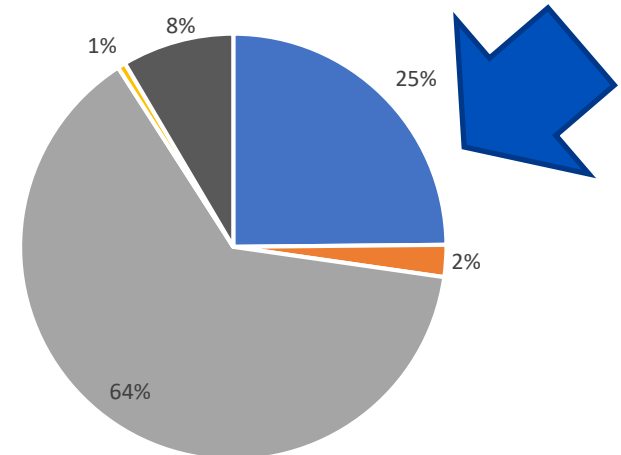
2007-2016



■ Pedestrian ■ Cyclist ■ Motorbike ■ Moped ■ Car

Dublin

2013-2017



■ Pedestrian ■ Cyclist ■ Car ■ Motorbike ■ Bus



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Future research Preventing accidents or analyzing them?

- Traffic conflict technique for trams?
- Driving computers already can show the locations where the number of brakings is higher
 - This information provides a new possibility to make closer safety studies at these locations.
- To understand accidents, we need to understand which factors have lead to them
- To get all possible benefits from methods aiming to prevent accidents, we need to understand which conflicts are dangerous.
- Finding relationship between accidents and traffic conflicts as a key.

Thank you for your attention!

