

Reporting of serious road traffic injuries in Finland

Road Safety Authority Annual Conference on Serious Injuries

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Background

- **A study on different criteria to define serious injury in 2012***
- **The EU recommended to use the MAIS 3+ criteria in 2013.**
- **Current method was developed, tested and documented in 2014**** when we prepared reporting serious injuries to EU in Finland.

Conclusions and recommendations:

- Healthcare data can be used to report serious injuries.
 - The ICD-AIS-map (=automatic conversion tool) is useful to identify the seriously injured persons.
 - A new variable "seriously injured" should be included in the official statistics (based on police data) of road traffic crashes.
 - Annual reporting on the number of serious injuries to the EU and nationally should be started.
- **Regular reporting of serious injuries started in 2015.**

*Airaksinen, Lüthje (2012): *Development of statistics on injury severity of traffic accidents - summary report (in English)*

** Airaksinen, Kokkonen (2014): *Tieliikenteessä vakavasti loukkaantuneiden määrän arviointi VAAKKU (in Finnish, English summary)*

Reporting serious injuries - Data

- Based on the personal identification number of **persons involved with traffic crashes in police statistics***, the treatment periods, outpatient visits and diagnoses from the Care Register for Health Care** are identified and extracted.
 - **Based on the ICD-10*** external cause of injury V00–V99 (traffic injuries)**, all treatment periods and outpatient visits in the Care Register are extracted.
- Resulting in two datasets on treatment periods/outpatient visits from the Care Register:
1. data based on police statistics
 2. data based on ICD-10 external cause

* *The official statistics of road traffic crashes*

** *Care Register covers information on treatment periods in inpatient care and outpatient visits in public and to some extent in private healthcare.*

*** *International Classification of Diseases 10th Revision*

Reporting serious injuries – Data processing, key points (1/2)

1. Data based on personal ID-numbers

- Only the ICD-10 injury diagnoses S00-T79 related to traffic crashes are considered.
- Linking the crash and treatment:
 - Time from crash to admission in treatment must not be more than 6 days*
 - Time between treatment periods/outpatient visits must not be more than 1 day

2. Data based on ICD-10 external cause (V01-V99)

- Deletion of treatment periods and outpatient visits included in data 1 (based on ID numbers) to prevent overlap
- Only the injury diagnoses S00-T79 related to traffic crashes are considered.
- A delimitation in the method of arrival and urgency of treatment (=emergency, urgent/immediate need for treatment).

** based on an earlier Finnish study, 85% arrived for treatment within six days of the crash. When the time between crash and start of treatment increases, the uncertainty of the connection between these events increases*

Reporting serious injuries – Data processing, key points (2/2)

- Classification of the severity of all injuries in both datasets is determined using the ICD-AIS map (AAAM*).
- All patients with at least one AIS 3+ injury are considered as seriously injured (MAIS 3+).
- The information on seriously injured persons in data 1 is included in police statistics of road traffic crashes and reported to EU.
- The information on seriously injured persons in data 2 is published separately due to its different structure, and the total number (data 1 + data 2) is reported to EU as additional information.

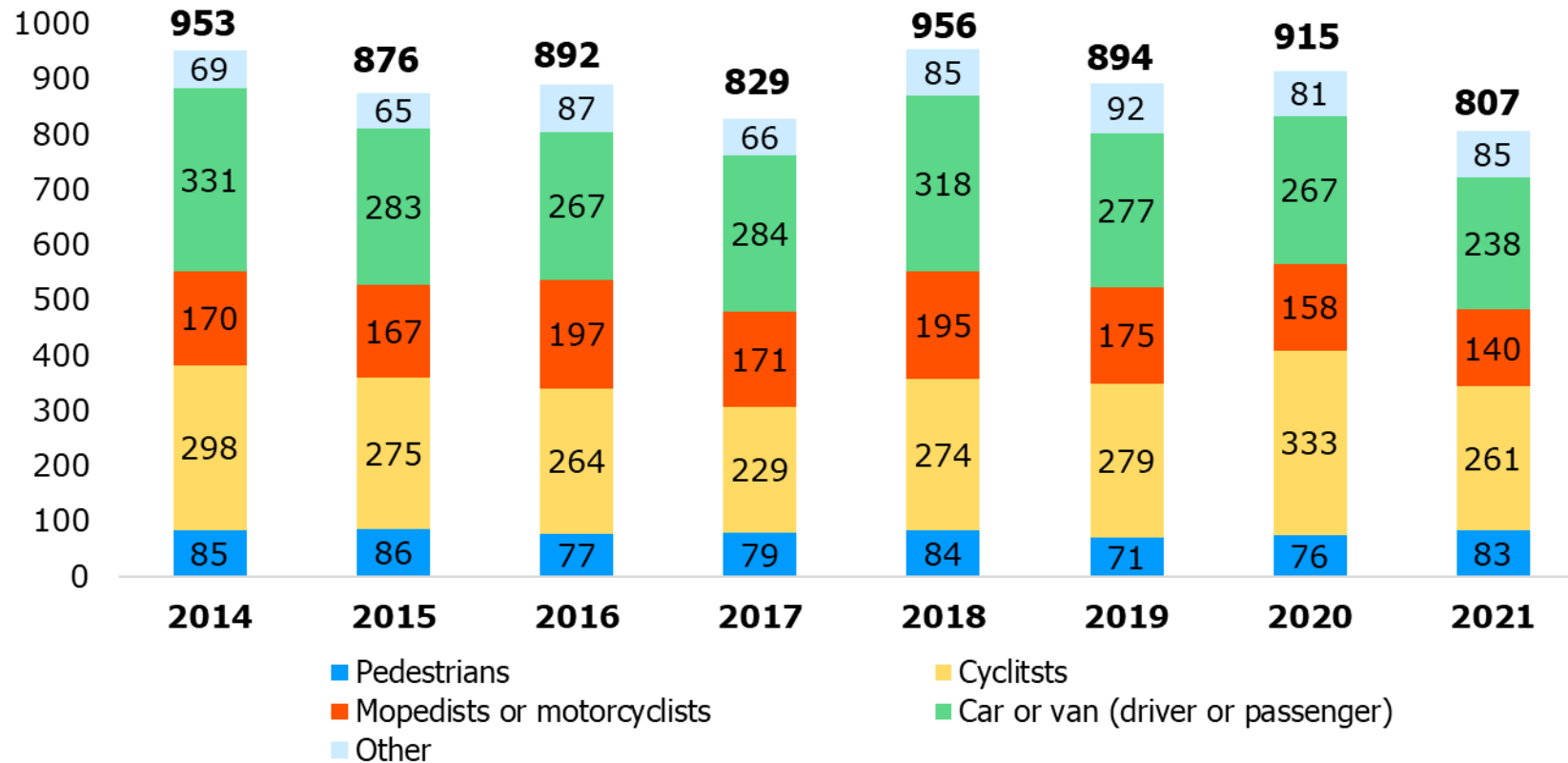
** The Association for the Advancement of Automobile Medicine: aaam_icd10map_v1.0_Feb2015*



Time series – seriously injured

Seriously injured (MAIS 3+) 2014–2021

Source: Statistics Finland

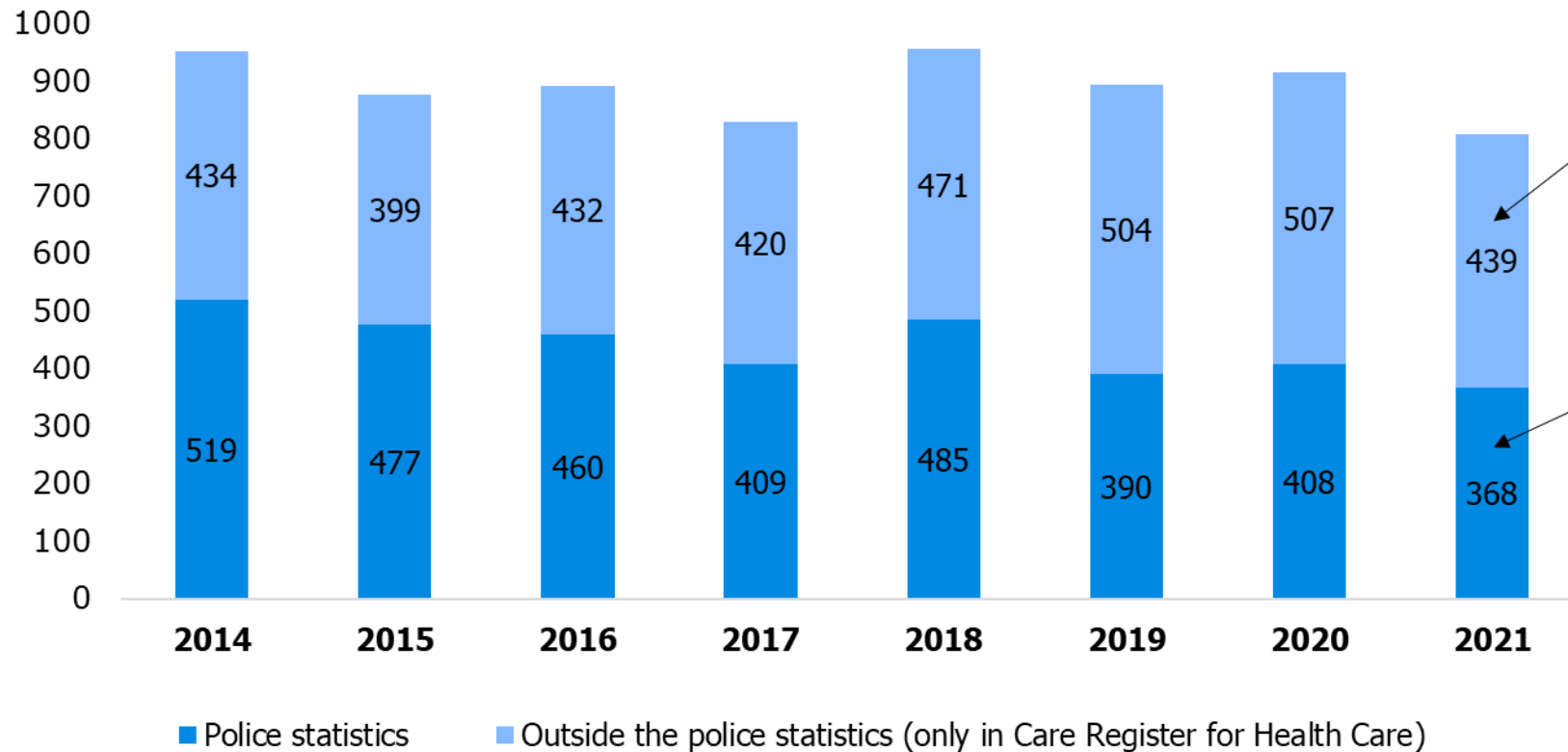


Code for e-scooters has just been generated: V00.8 Accident on other pedestrian conveyance (including **electric scooters**, electric wheelchairs, other electric pedestrian mobility equipment, baby carriages)

Data on seriously injured – two different datasets (1/2)

Seriously injured (MAIS 3+) 2014–2021

Source: Statistics Finland

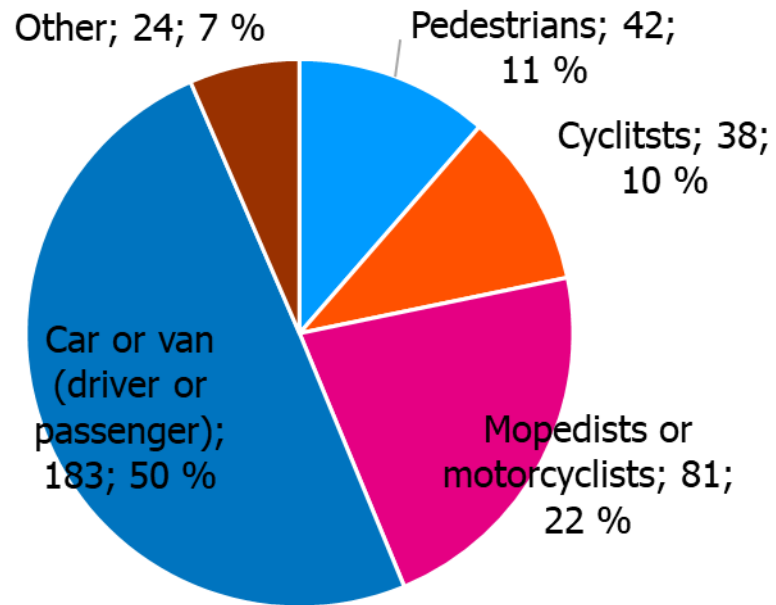


Data 2: ~50%: Number of persons, road user group, age, sex, location of treatment facility
- no other information

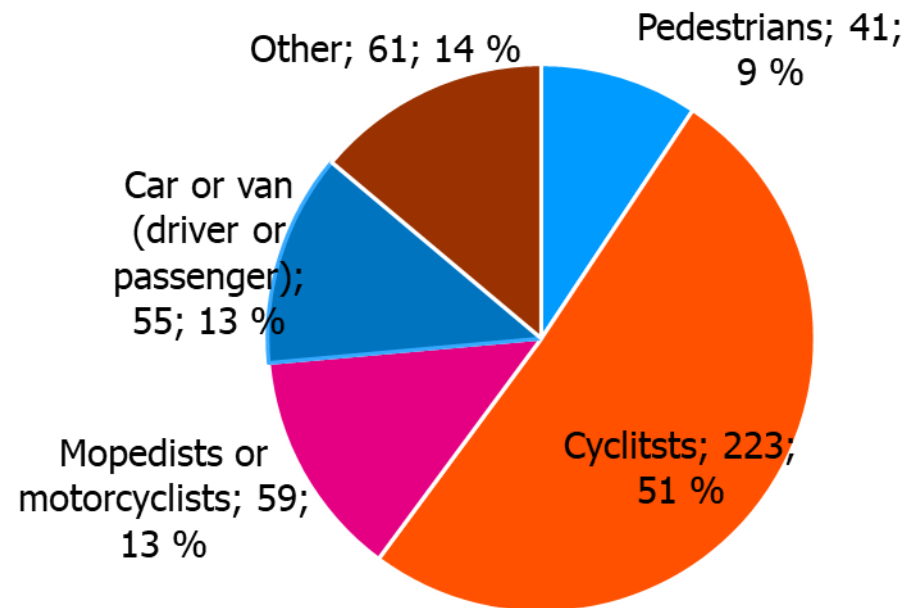
Data 1: ~50%: Good background information of the crash according to the police statistics of road traffic crashes

Data on seriously injured – two different datasets (2/2)

Seriously injured (MAIS3+) in 2021 by road user groups in police statistics (n=368)



Seriously injured (MAIS3+) in 2021 by road user groups, only in hospital statistics (n=439)





Challenges and strengths

- ☹️ ICD-AIS-map underestimates the number of serious injuries by 21-34%*.
- ☹️ Errors in coding of ICD-10 external cause and diagnoses in the Care Register.
- ☹️ Lack of information about the crash in half of the cases.
- ☹️ The reporting delay is too long.
- 😊 Established method and quite long time series already in use.
- 😊 We are aware of the shortcomings of the method.
- 😊 The method clearly highlights the lack of coverage of police statistics.

* Airaksinen N, Nurmi-Lüthje I, Kröger H, Lüthje P. *Traffic Inj Prev* 2018;19(8): 819–24
Airaksinen N, Heinänen M, Handolin L. *Inj* 2019;50: 1545–5
Pérez et al. *Accid Anal Prev* 2019;130:125–35.

The investigation of the serious traffic crashes has started in Finland

- Organised by the Finnish Crash Data Institute (OTI).
- The investigation team works independently, and the members are subject to public liability and a non-disclosure obligation.
- The goal of the investigation is to obtain more extensive and up-to-date information about the serious road traffic crashes and to provide the information for traffic safety work.
- Information is gathered from several sources such as police data, Care Register, traffic crash data from insurance companies.
- MAIS 3+ criteria is used, but others are also considered.
- Due to the high number of cases, the investigation method is significantly lighter than in fatal crashes.
- The investigation is in the stage of development, and we are not yet able to investigate all cases.

Thank you for your attention!



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