MAIS3+ road traffic casualties in Belgium

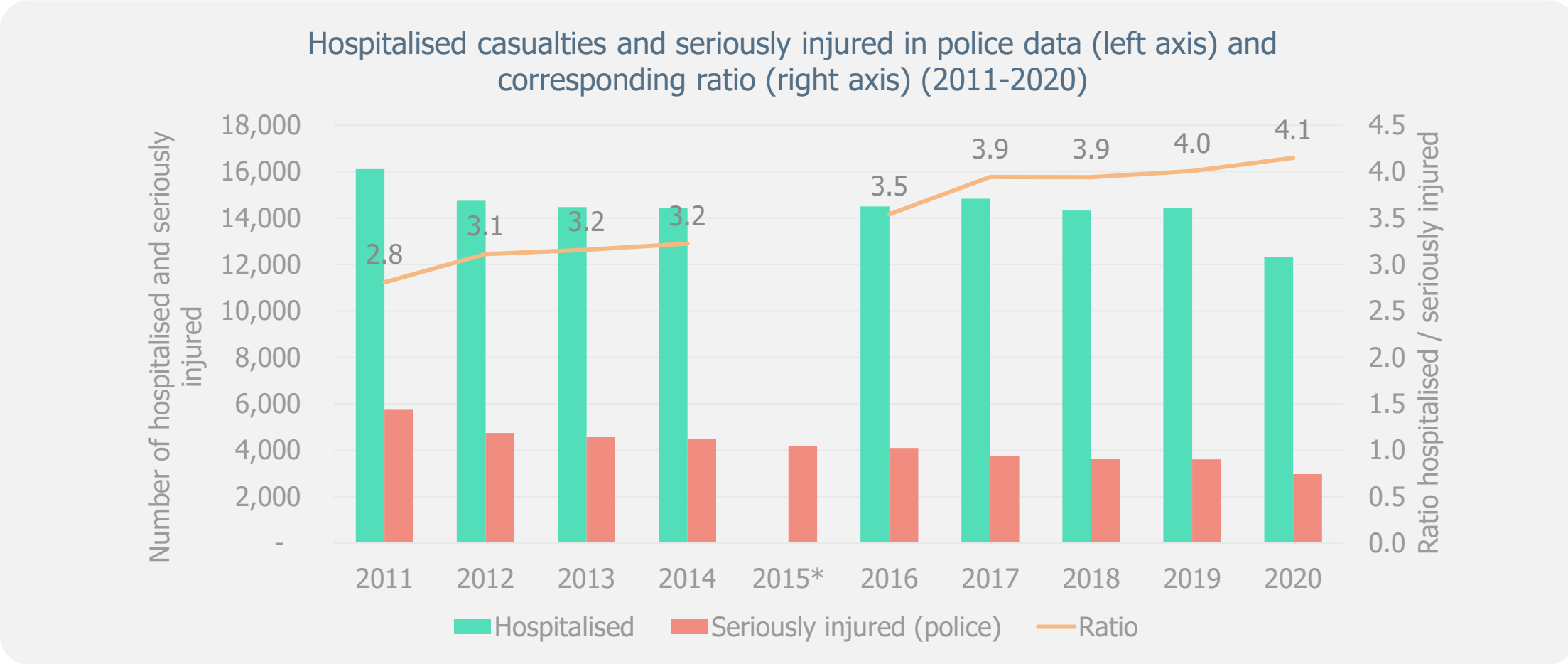
Analysis of Belgian hospital data

Belgrade – 21 June 2024

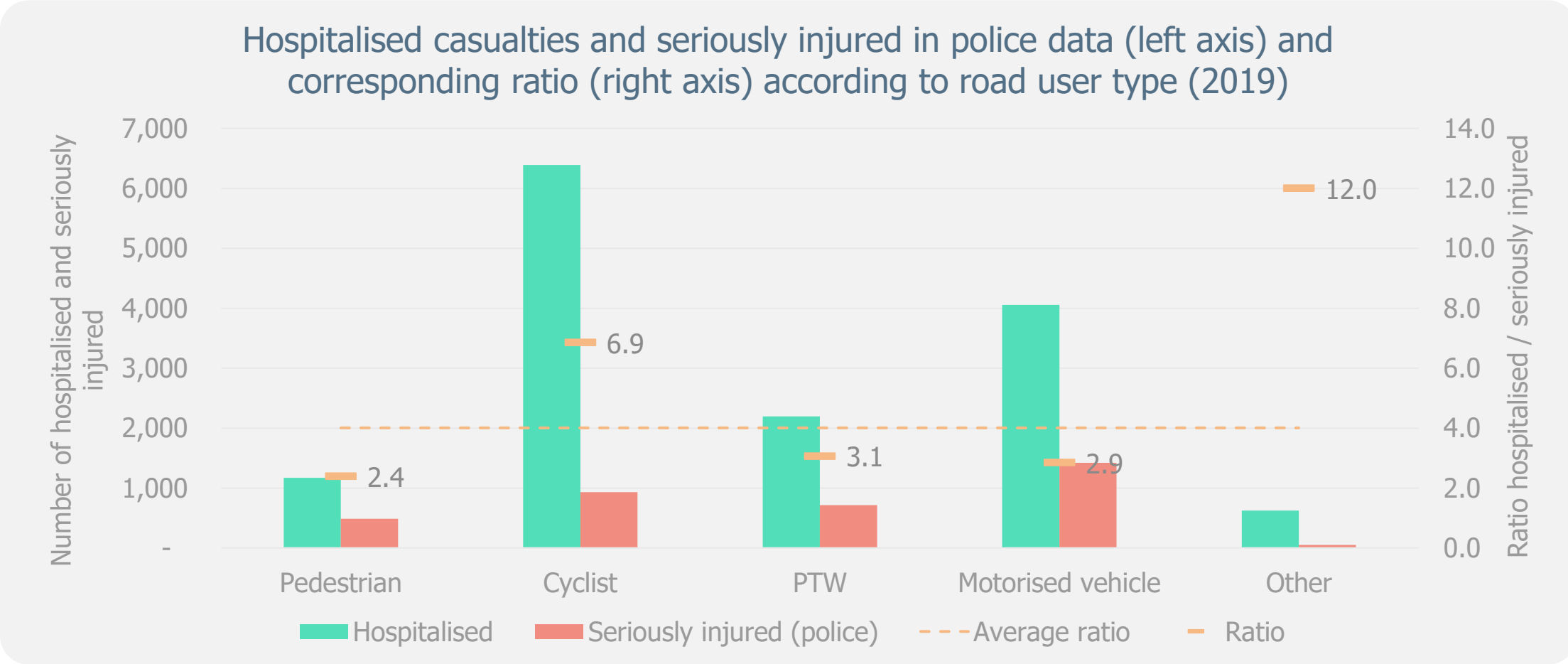
Lies Bouwen

VIAS institute

Number of hospitalised vs seriously injured



Ratio according to road user type



Belgian hospital data

Minimal Hospital Data (MHD)

Registration through which **all non-psychiatric hospitals** in Belgium must make their (anonymized) **administrative, medical, and nursing data** available to the FPS Public Health

Medical diagnosis

- Until 2014: ICD-9
- From 2016: ICD-10

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Methodology to calculate MAIS3+

Pérez et al. (2016) Practical guidelines for the registration and monitoring of serious traffic injuries, D7.1 of the H2020 project SafetyCube:

Method 1: Create a link between police and hospital data;

Method 2: Report the number of injured based on data from hospitals

Method 3: Continue to use police data but apply a correction coefficient derived from samples of hospital data

Main method: Currently up until 2021

Prediction method: 2022-…

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Main method

Number of injured based on data from hospitals

Approach

- **Pérez et al. (2016) Practical guidelines for the registration and monitoring of serious traffic injuries, D7.1 of the H2020 project SafetyCube:**

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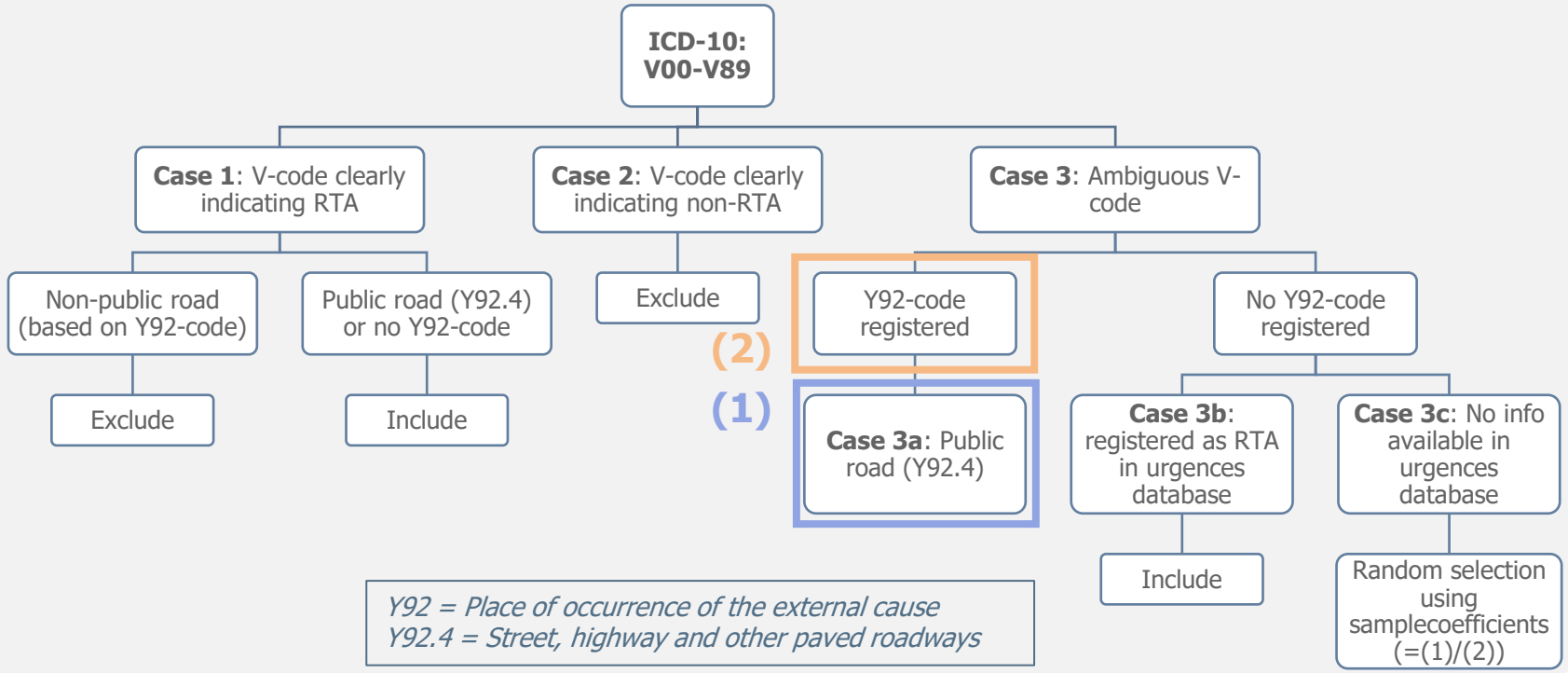
Selection of traffic casualties using external cause of injury codes: E-codes (ICD-9-CM) and V-codes (ICD-10-BE)



Approach

- **Pérez et al. (2016) Practical guidelines for the registration and monitoring of serious traffic injuries, D7.1 of the H2020 project SafetyCube:**

1. **Selection** of traffic casualties using external cause of injury codes: E-codes (ICD-9-CM) and V-codes (ICD-10-BE)
2. **Exclusion** of fatalities 30 days, readmissions and scheduled admissions, and injuries not present during admission
3. **Conversion** of ICD injury codes to AIS codes by means of the AAAM conversion tool
4. **Maximum AIS** of each casualty
5. **Correction** for missing E- and V-codes using inverse of registration rate of external cause codes

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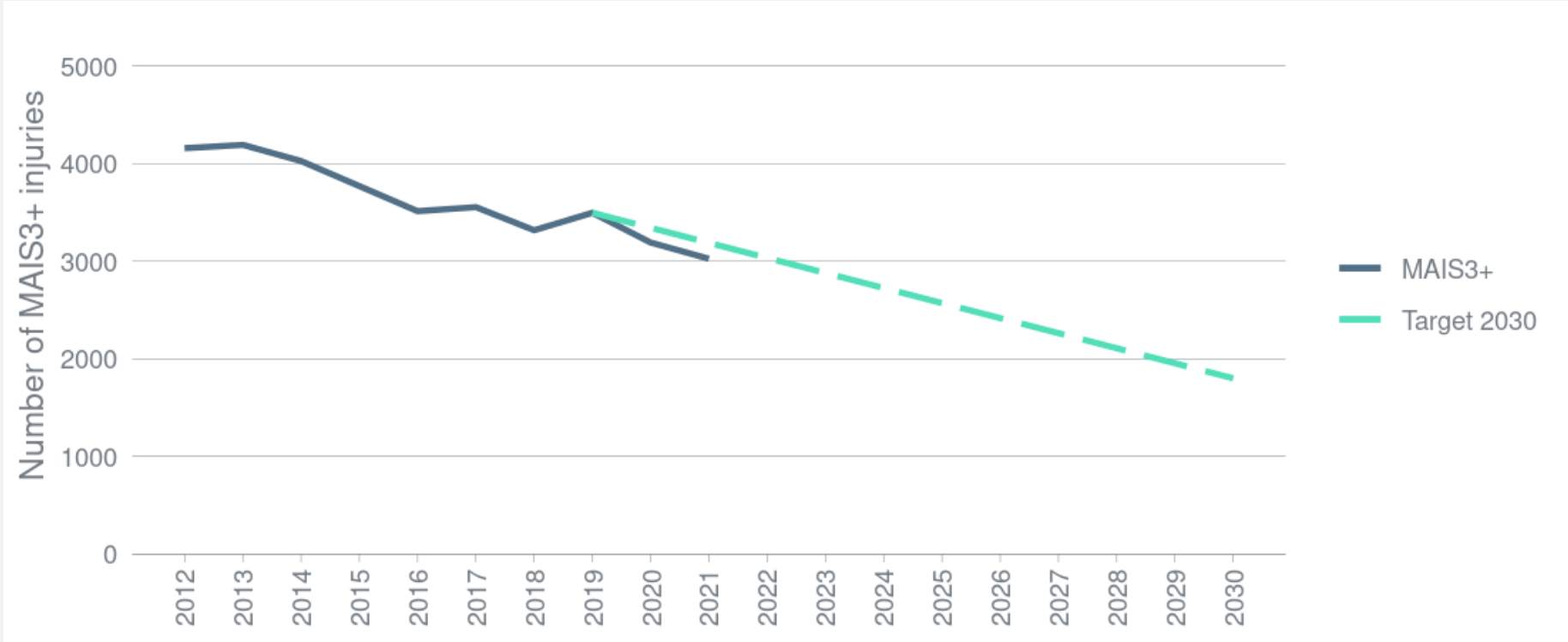
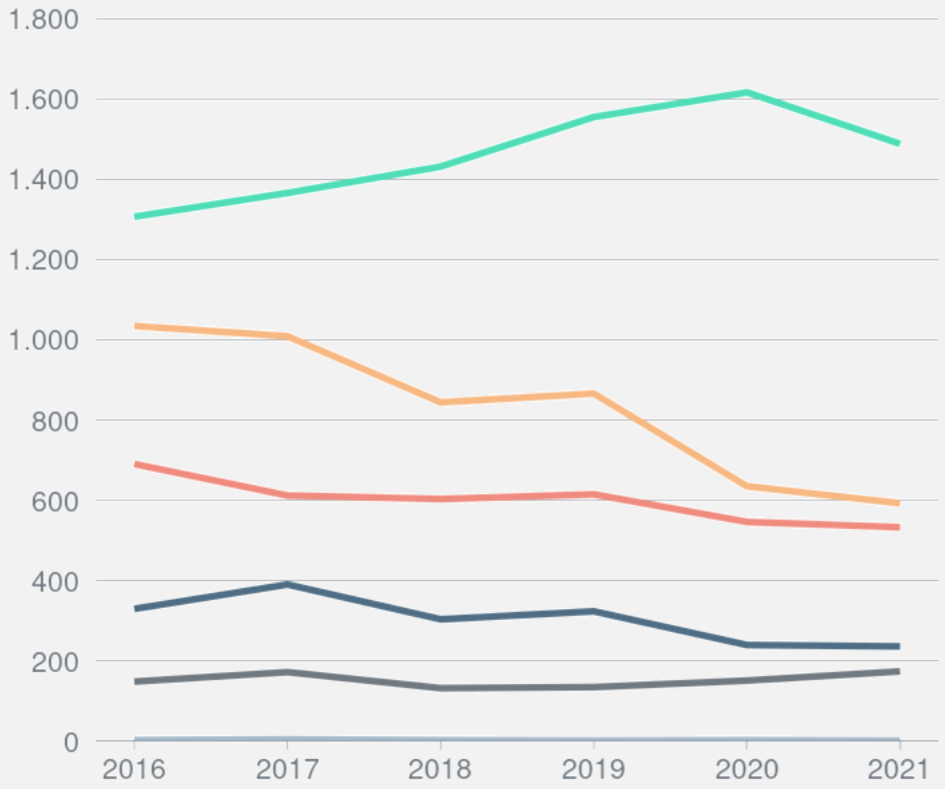
Results - MAIS3+ trend

Progress towards achieving the MAIS3+ 2030 target

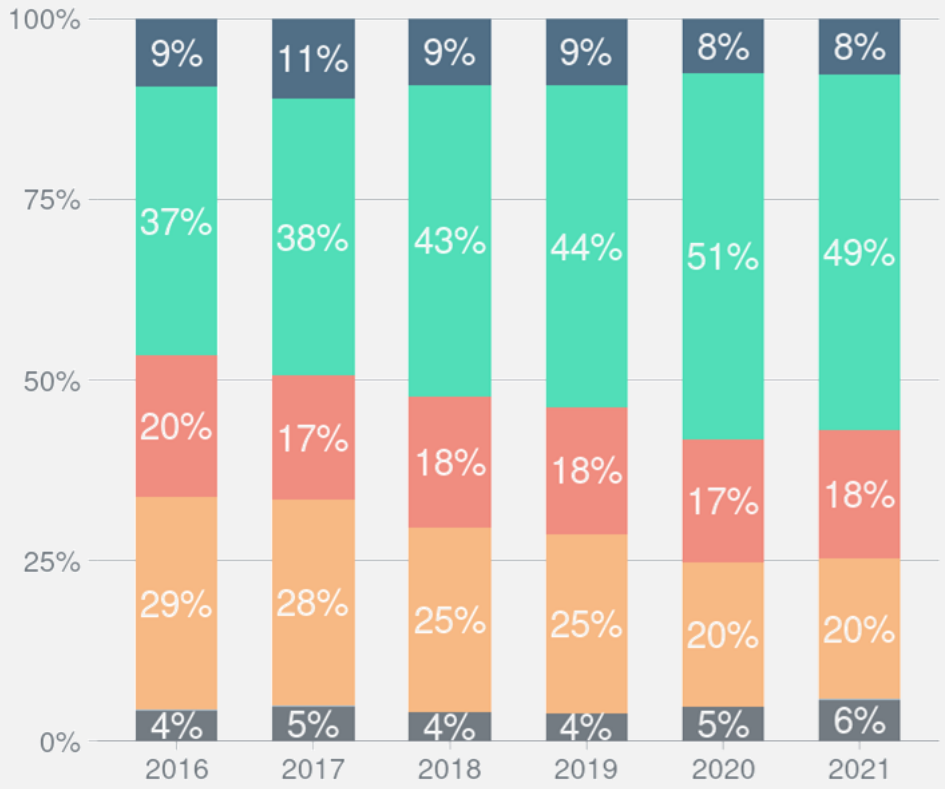


Results - MAIS3+ injuries in more detail

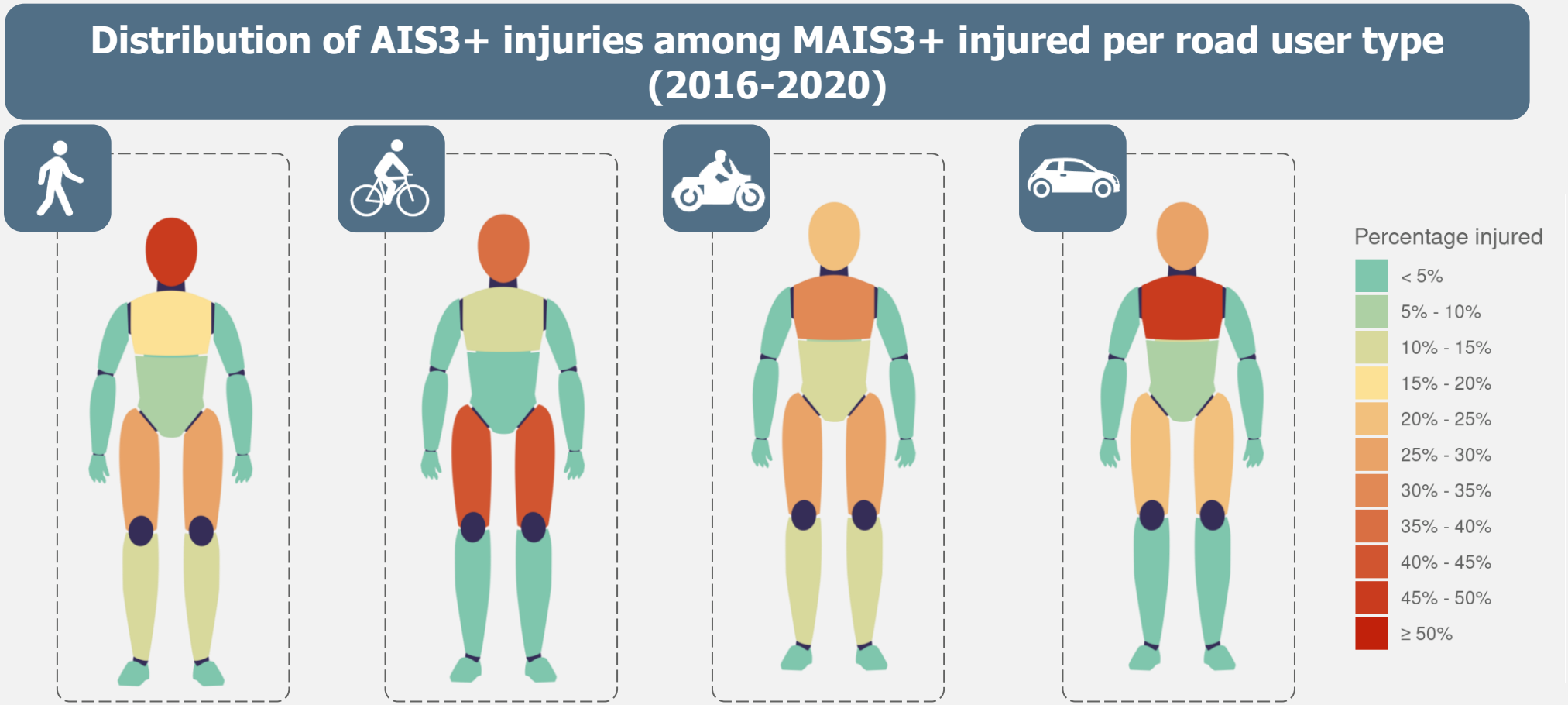
Trend MAIS3+ by road user type



Distribution MAIS3+ by road user type



Results - Injury profiles



Prediction method

Correction coefficient derived from samples of hospital data and applied to police crash data

Approach and mathematical example

- **Correction coefficients:**
  - Step 1: Match samples of data between hospital data and police crash data
  - Step 2: Calculate injury ratios (= MAIS3+ / injured)
  - Step 3: Model injury ratios to estimate correction coefficients (out-of-sample forecast)
  - Step 4: Apply correction coefficients to police crash data

Step 1

Road user type	Opponent	Age	Sex	Time	MAIS3+ (hospital data)	Injured (police data)
Pedestrian	PTW	20-29	F	Weekend	**0**	**2**
Cyclist	No opponent	30-39	M	Week	**12**	**122**
PTW	Motorised vehicle	40-49	M	Weekend	**11**	**76**
Motorised vehicle	No opponent	70+	F	Week	**6**	**132**

Step 2

Injury ratio
0.00
0.10
0.14
0.05

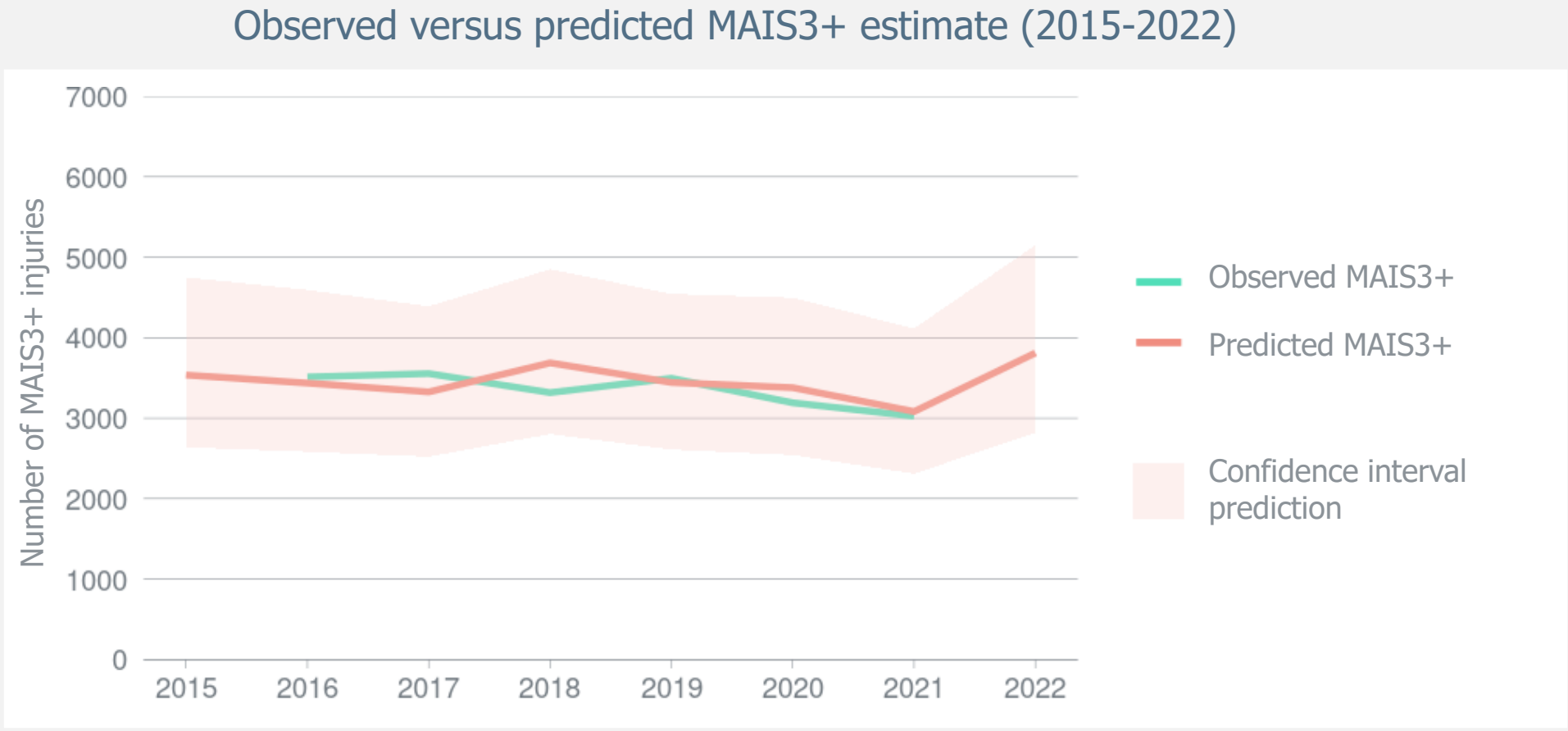
Step 3

Correction coefficient
CC_1
CC_2
CC_3
CC_4

Step 4

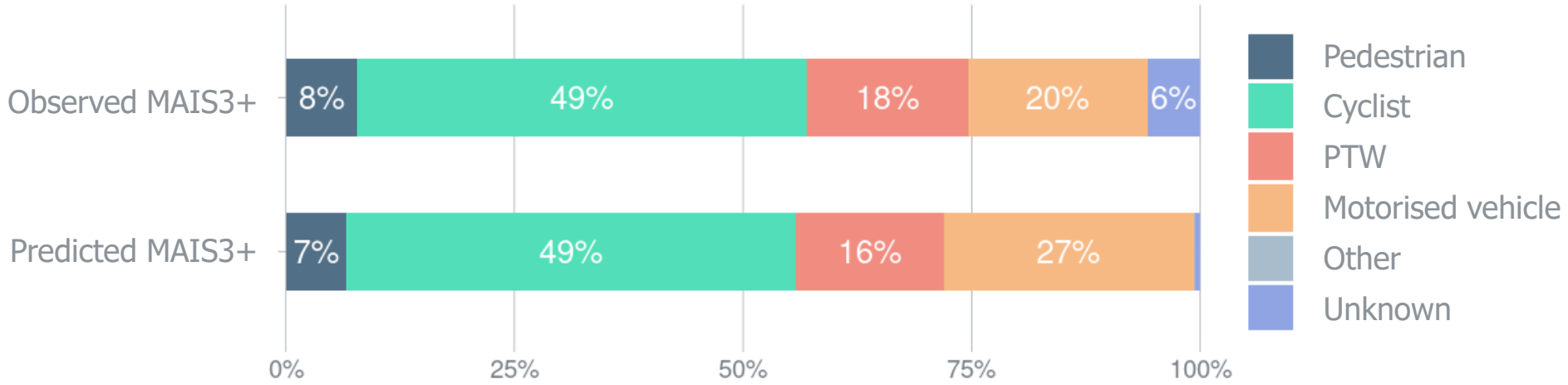
Injured (police data)
2
122
76
132

Results - MAIS3+ prediction



Results - MAIS3+ prediction

Distribution of MAIS3+ injuries by road user type: observed versus predicted estimate (2021)



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Questions?

Contact: lies.bouwen@vias.be


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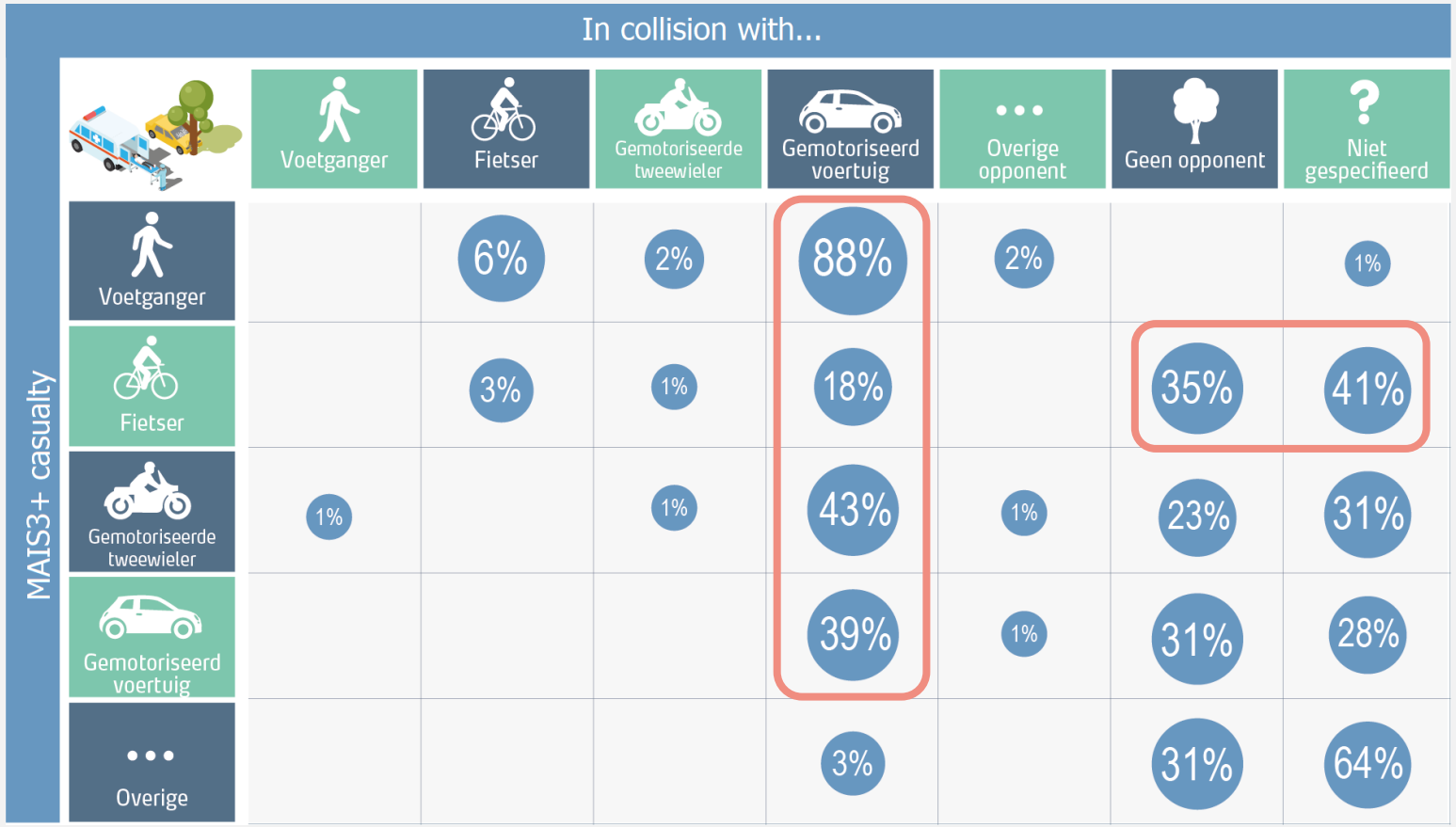
Results - MAIS3+ injuries in more detail



Results - Injury profiles

Distribution of AIS3+ injuries among MAIS3+ cyclists per age group (2016-2020)