



Estimating serious injuries in Ireland

ETSC PIN Talk

Reducing serious injuries on European Roads

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Overview



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- The current **Road Safety Strategy 2021-2030** includes specific actions to expand serious road injury reporting with hospital data, to better understand the incidence, cause, management, and outcomes of traumatic road injuries at a national level.

The MAIS3+ serious injuries project

- **Primary goal** of reporting on MAIS3+ serious injuries to the EC
- **Greater understanding** of serious injury trends and characteristics in hospital discharge records
- **Partnership** with the HSE National Health Intelligence Unit and Trinity College Dublin Department of Public Health & Primary Care
- **Comparison** of injury trends and characteristics in hospital data with AGS records, where possible.
- **Exploration** of other sources of data on serious injuries

Sources of data on serious injuries



Police (An Garda Síochána) and hospital discharge records

- **Irish Road Traffic Collision Database-** collision records transferred from the Irish police (An Garda Síochána, AGS) to the RSA.
- **Hospital In-Patient Enquiry (HIPE) Database-** national database of hospital discharge records from Irish acute hospitals.
 - ICD-10-AM: S-T (injury codes) + V (external causes of injury codes)
 - Translation into AIS: ICDmap by AAAM*
 - Inclusion criteria: All casualties who were admitted to hospital as an in-patient, on an emergency basis, with at least one injury from a road traffic collision. Casualties should have been assigned a MAIS score (1-6).
 - Deduplication and data cleaning are key

*Association for the Advancement of Automotive Medicine (2016). Abbreviated Injury Scale (c) 2005 Update 2008. (T. Gennarelli, & e. Woodzin, Eds.) Chicago, Illinois.



Definitions of serious injury

AGS and hospital data



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■ Police data:

- Person detained in hospital as an in-patient, or
- Person having any of the following injuries whether or not detained in hospital: fractures, concussions, internal injuries, crushing, severe cuts and lacerations, or severe general shock requiring medical treatment.

■ Hospital data: based on the Abbreviated Injury Scale (AIS)*.

- A casualty may have one or more injuries recorded in their hospital chart. We first assign an AIS score to each injury, and then determine the maximum AIS score assigned to each casualty.
- MAIS2-
- MAIS3+
- $(\text{MAIS2-}) + (\text{MAIS3+}) = \text{All hospitalised casualties.}$

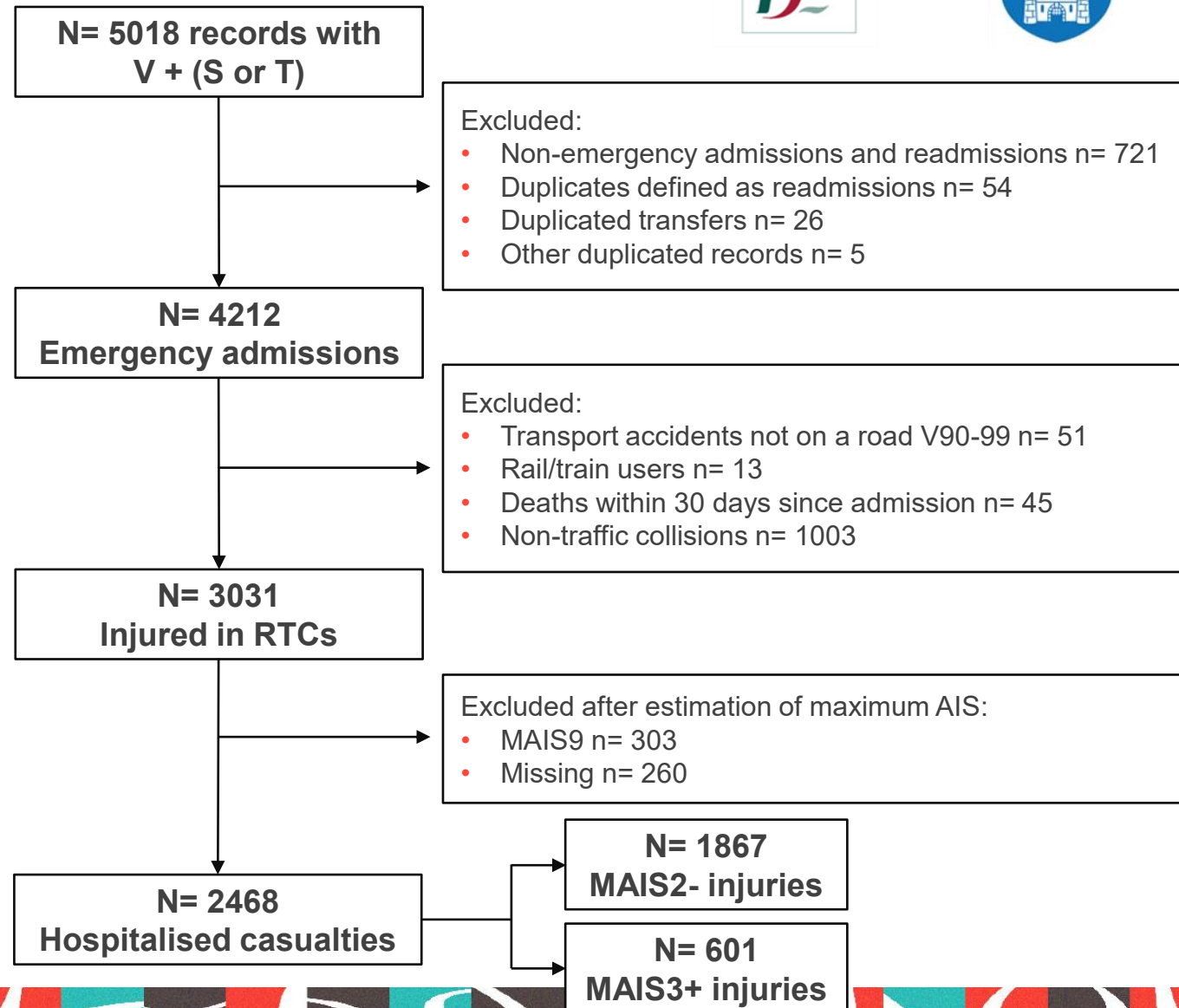
*Association for the Advancement of Automotive Medicine (2016). Abbreviated Injury Scale (c) 2005 Update 2008. (T. Gennarelli, & e. Woodzin, Eds.) Chicago, Illinois.

Results

Deduplication and data cleaning

Hospital data

■ Example: 2024 hospital sample flow



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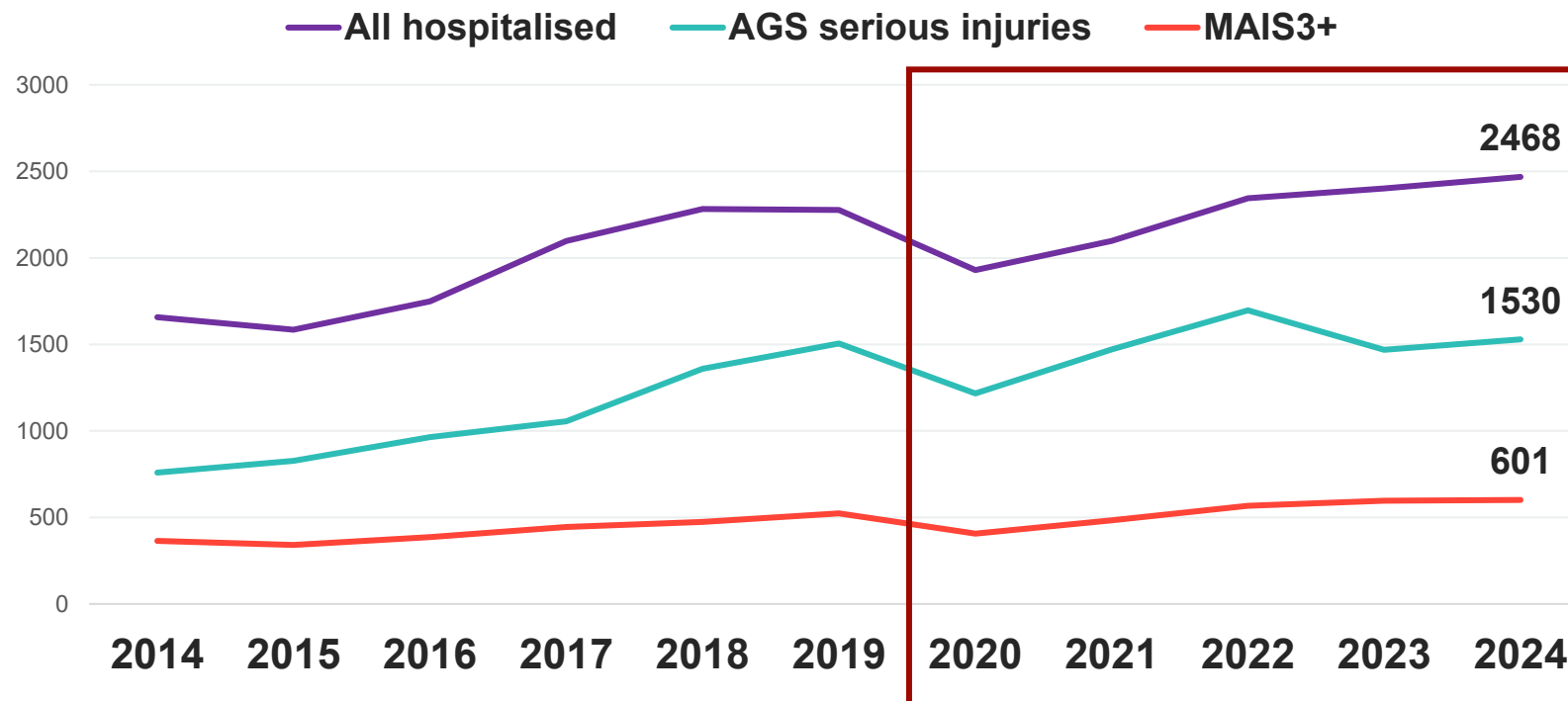




Trends

Police and hospital data

- There is an upward trend in both data sources- also in the number of MAIS3+ injuries.
- The number of serious injuries recorded in police data is consistently lower than the number of hospitalisations.



AGS data is current as of 31 July 2025. Figures for 2021 onwards are provisional and subject to change.



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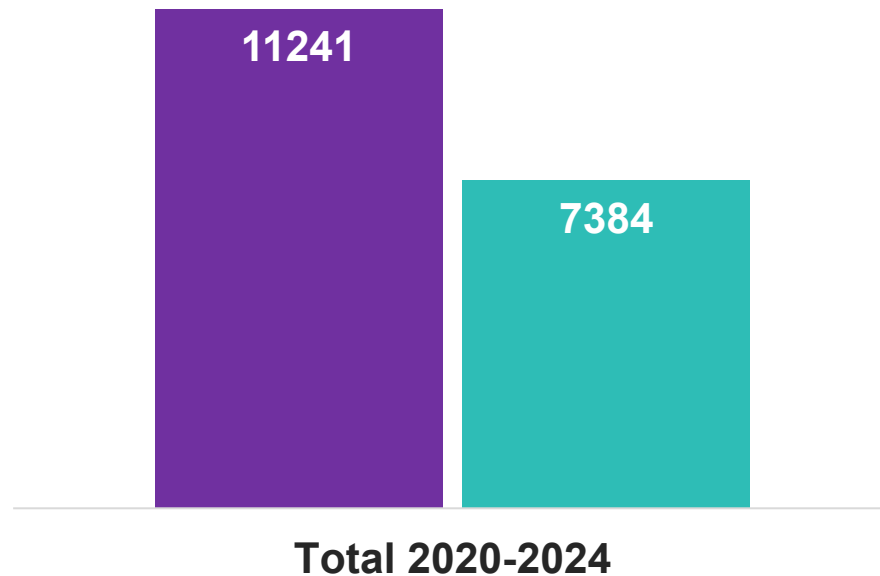


Total by road user

Police and hospital data – 2020-2024

■ Over 2020-2024, there were 1.5 hospitalised casualties for each serious injury recorded by the police.

■ All hospitalised ■ AGS serious injuries



■ Police underreporting varies by road user, being the highest for pedal cyclists.



4,247
HOSPITALISED

3,064
AGS SERIOUS
INJURIES

1.4



1,648
HOSPITALISED

892
AGS SERIOUS
INJURIES

1.8



3,305
HOSPITALISED

1,299
AGS SERIOUS
INJURIES

2.5



1,384
HOSPITALISED

1,461
AGS SERIOUS
INJURIES

0.9

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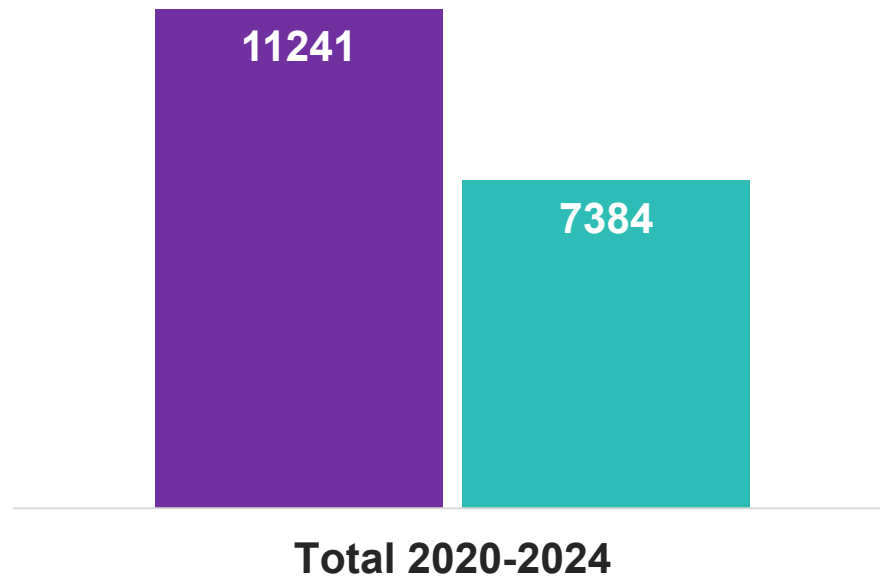


Total by road user

Police and hospital data – 2020-2024

- Over 2020-2024, there were 1.5 hospitalised casualties for each serious injury recorded by the police.

■ All hospitalised ■ AGS serious injuries



- Police underreporting varies by road user, being the highest for pedal cyclists.
- Understand reasons for underreporting that are specific to cyclists: single cyclist collisions
- Our approach to reporting on serious injuries using all available information.



3,305
HOSPITALISED

1,299
AGS SERIOUS
INJURIES

2.5

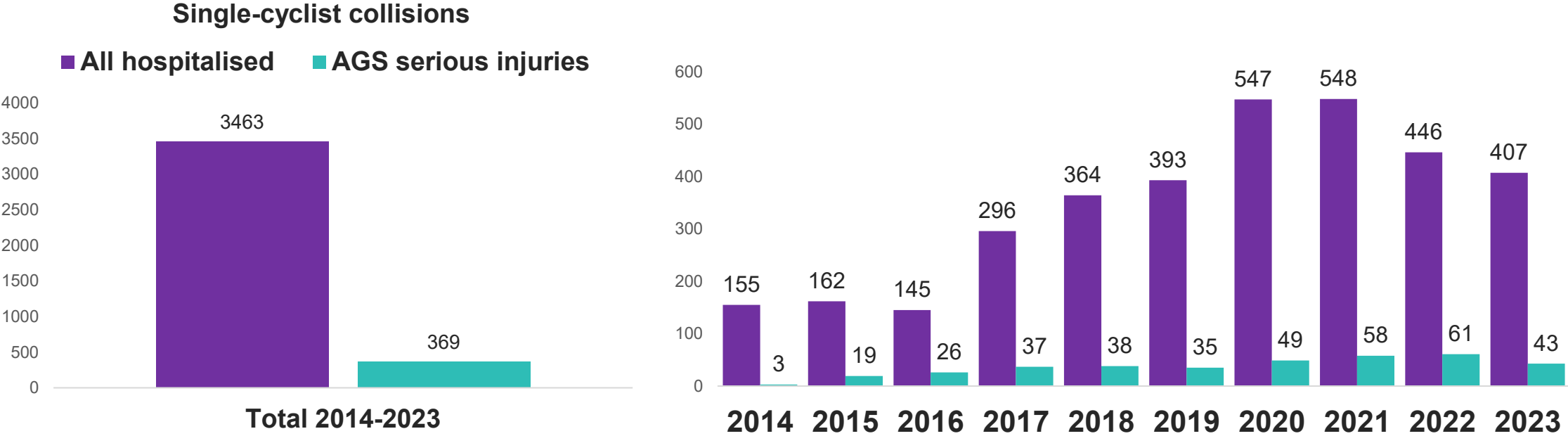
AGS data is current as of 31 July 2025. Figures for 2021 onwards are provisional and subject to change.

Serious injuries from single-cyclist collisions



Police and hospital data – 2014-2023

- There were 9.4 hospitalised cyclists from SCCs for each serious injury from a SCC in police data.
- SCCs in police data accounted for 18% of all cyclist serious injuries – most were collisions with motor vehicles.
- In hospital data, SCCs accounted for 69% of all cyclist hospitalisations – and 64% of MAIS3+ injuries.



AGS data is current as of 31 July 2025. Figures for 2021 onwards are provisional and subject to change.

Reporting serious injuries

Police and hospital data

- Summary report including police and hospital data
- Two sections:
 - Collision characteristics (police)
 - Casualty characteristics (hospital)
- The two data sources are complementary.
- Two full reports are also published (one police data and one hospital data).

RSA

Serious injuries from single-cyclist collisions in Ireland

2019-2023

Summary report

Date of publication: 9 October 2025

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Summary report – section 1

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Serious injuries from single-cyclist collisions in An Garda Síochána (AGS) data*

Over 2019-2023, AGS recorded 246 serious injuries among cyclists following a single-cyclist collision. The absolute number of serious injuries from single-cyclist collisions was the highest in 2022 (61).

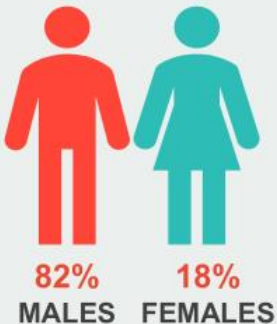


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CHARACTERISTICS OF SINGLE-CYCLIST COLLISIONS IN IRELAND (SOURCE: AGS DATA)

37% AGED
45-64 YEARS



35% OF
SERIOUS
INJURIES
OCCURRED IN
COUNTY
DUBLIN



SINGLE-CYCLIST COLLISIONS ACCOUNTED FOR
17% OF ALL CYCLIST SERIOUS INJURIES

- 88% OF THESE CYCLISTS WERE DRIVING FORWARD

MOST FREQUENT COLLISION SCENARIOS AMONG CYCLISTS IN
SINGLE-CYCLIST COLLISIONS:

- INTERACTION WITH THE ROAD SURFACE
- LOSS OF CONTROL OF THE BIKE
- INTERACTION WITH A KERB / FOOTPATH
- AVOIDANCE OF ANOTHER VEHICLE



37% OCCURRED BETWEEN JUN-AUG

19% OCCURRED ON A SUNDAY

30% OCCURRED BETWEEN 12PM-4PM

79% OCCURRED IN DAYTIME



71% OCCURRED ON AN URBAN ROAD



80% OCCURRED ON A STRAIGHT ROAD

22% OCCURRED AT A JUNCTION



* AGS data is current as of 31 July 2025. Figures for 2021 onwards are provisional and subject to change.

Summary report – section 2

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Serious injuries from single-cyclists collisions in hospital data

Over 2019-2023, 2,341 cyclists were admitted to a hospital in Ireland following a single-cyclist collision. These are between 9 and 10 hospitalised casualties for each single-cyclist collision recorded by AGS (246). The number of single-cyclist collisions increased over the last decade, from 155 in 2014 to 407 in 2023.

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CHARACTERISTICS OF HOSPITALISED CYCLISTS FROM SINGLE-CYCLIST COLLISIONS IN IRELAND (SOURCE: HOSPITAL DATA)

18% AGED
14 YEARS OR LESS



73% MALES
27% FEMALES



40%
COUNTY
DUBLIN
RESIDENTS



SINGLE-CYCLIST COLLISIONS ACCOUNTED
FOR 69% OF ALL HOSPITALISED CYCLISTS



37% ADMITTED TO HOSPITAL OVER SUMMER
47% ADMITTED TO HOSPITAL SATURDAY,
SUNDAY, OR MONDAY

THEY SUSTAINED AT LEAST ONE INJURY IN THE
FOLLOWING BODY AREAS:



HEAD: 19%
FACE: 16%
CHEST: 10%
ABDOMEN: 8%
UPPER LIMBS: 55%
LOWER LIMBS: 22%



THEY SPENT 3 DAYS AT HOSPITAL AS IN-PATIENTS

93% SENT HOME AT DISCHARGE FROM HOSPITAL



17% SUSTAINED CLINICALLY SERIOUS INJURIES

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* If you have further questions on serious injuries in hospital data, please visit our FAQs in this [link](#).

Key messages

Serious injuries in Ireland

- Studying hospital records is key to address the underreporting of serious injuries in police data, and to obtain comparable data at a European level (MAIS3+).
- There is an upward trend in serious injuries in Ireland- hospitalisations, MAIS3+ injuries.
- Underreporting of cyclist serious injuries in police records is notable. The large difference in the share of single-cyclist collisions between police and hospital records contribute to explain the underreporting.
- Police and hospital data are complementary. They provide important information to obtain a more holistic understanding of serious injuries.
- There still are gaps of information- e-scooter serious injuries are not very well captured in police or hospital discharge records.
- Keep studying other sources of data on serious injuries- emergency room, pre-hospital services, major trauma registry, rehabilitation services.

Serious injuries in Ireland

Published reports based on hospital data

- Available at [RSA.ie website](https://rsa.ie)
- Full reports:
 - Serious injuries in Ireland using hospital and An Garda Síochána data 2014-2022 / 2019-2023
 - Cyclist serious injuries
 - Pedestrian serious injuries
 - Motorcyclist serious injuries
 - Serious injuries from single-cyclist collisions
- Summary reports:
 - Cyclist serious injuries
 - Pedestrians 2019-2023 / 2020-2024
 - Motorcyclists
 - Single-cyclist collisions
- FAQs on serious injury reporting using hospital data
- Summary of methodology

Acknowledgements

- RSA Research Department
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Thank you!

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