

7th IRTAD Conference
**« Better road safety data for
better safety outcomes »**

September 27-28th 2022

**Céline Vernet, Jean-Louis Martin
Blandine Gadegbeku, Amina
Ndiaye, Bernard Laumon, Hélène
Tardy, Emmanuelle Amoros,
Florian Robinet**

**Gustave Eiffel University
UMRESTTE – Epidemiological Research
and Surveillance Unit in Transport,
Occupation and Environment**

The Rhône Road Trauma Registry



What is a registry?

Definition:

- A registry is an organization for the systematic collection, storage, analysis, interpretation and reporting of data on subjects with a specific disease in a specific geographic area
- Main registries are on cancer and cardiovascular diseases

The Rhône road crash trauma registry

- Population-based registry on injuries and fatalities from road crashes
- Data collection on all cases of road crash injuries within the Rhône department (county)

Main objectives

- **Comprehensive survey of all injury and fatal road crashes and corresponding casualties**
- **Description of each injury by a medical staff using the Abbreviated Injury Scale (AIS)**
- **Assessment of corresponding public health issues**

The Rhône Registry structure



Geographic area: Rhône department

- >1.8 M inhabitants
- Lyon = 2nd French metropolitan area

Started in 1996

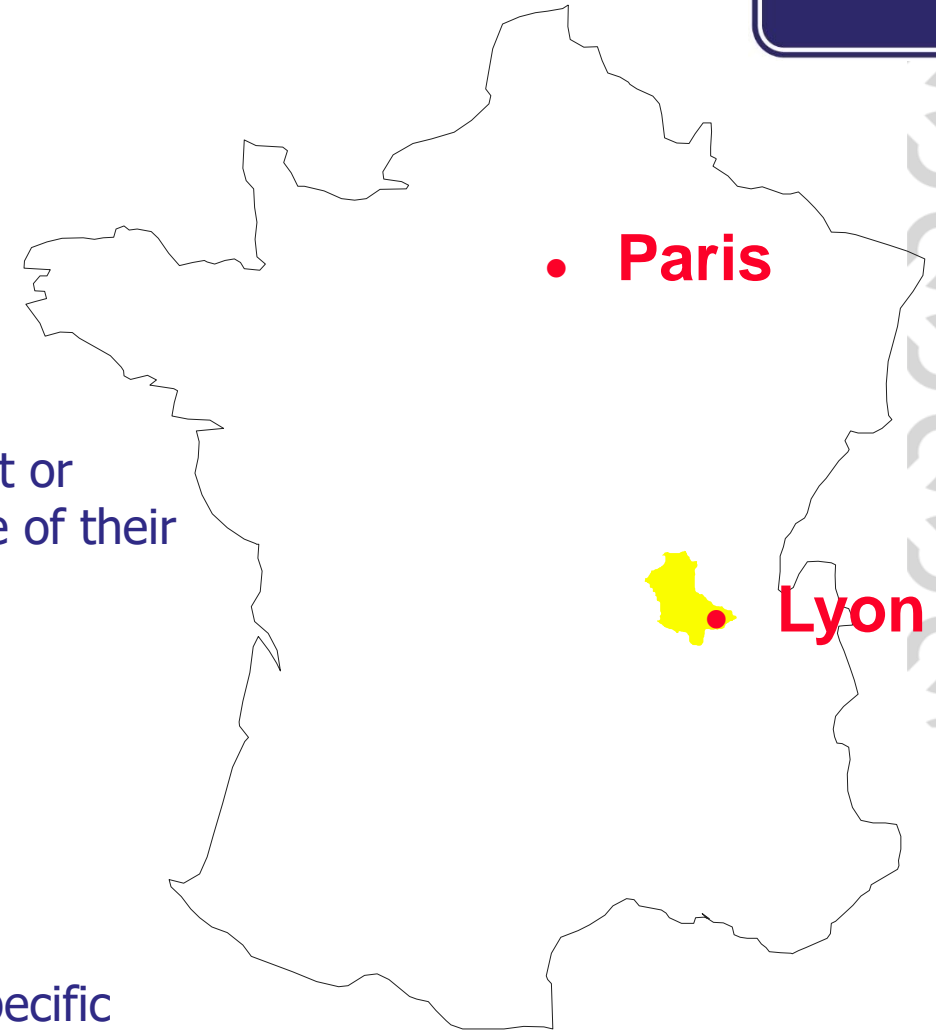
- >25 years of data

Population:

- All victims of road crashes in the Rhône department who went or were brought to a private or public healthcare facility because of their injuries
- Hospitalized / non hospitalized
- Injured or fatally injured

Healthcare network

- >250 units in 50 hospitals or clinics
- Includes emergency medical mobile units, emergency rooms, resuscitation rooms, surgery departments, trauma centers, specific medical specialties (neurology, cardiology, etc.), up to rehabilitation departments



Data collection sheet

Victim and crash information

Injury description (text)

Hospitalization: other services or not

Fiche victime d'accident de la circulation routière dans le Rhône.

N° 28001

Service dans lequel la fiche est remplie : _____

Personne ayant rempli la fiche : _____

Date et heure d'arrivée dans ce service : JJ MM AA HH MN

Si le blessé venait d'un autre service ou structure, précisez : _____

La victime	L'accident
NOM (maj.) : _____	Date et heure de l'accident JJ MM AA HH MN
PRÉNOM (maj.) : _____	Lieu de l'accident (précisez le plus possible) : _____
Date de naissance JJ MM AAAA	Nom de la ville, village ou commune : _____
Lieu de résidence (département ou pays si hors de France) : _____	Nom de la voie (rue, route, etc.) ou de l'endroit : _____
Sexe : Masculin <input type="checkbox"/> Féminin <input type="checkbox"/>	Circonstances : _____
Poids _____ kg	Antagoniste (directement en contact avec la victime et/ou son véhicule) :
Taille _____ cm	Aucun <input type="checkbox"/> Voiture <input type="checkbox"/>
Grossesse en cours ? oui <input type="checkbox"/> non <input type="checkbox"/>	Camionnette <input type="checkbox"/> Camion <input type="checkbox"/>
Accident du travail Non <input type="checkbox"/>	Car/Bus <input type="checkbox"/> Tramway <input type="checkbox"/>
Trajet domicile ↔ travail <input type="checkbox"/>	Véhicule en circulation <input type="checkbox"/> Deux-roues motorisé <input type="checkbox"/>
Dans le cadre du travail <input type="checkbox"/>	Véhicule en stationnement <input type="checkbox"/> Vélo <input type="checkbox"/>
ne sais pas (nsp) <input type="checkbox"/>	
Type d'usager Voiture <input type="checkbox"/> Piéton <input type="checkbox"/>	Précisez : _____
Camionnette <input type="checkbox"/> Rollers/Patins/Planche <input type="checkbox"/>	
Camion <input type="checkbox"/> Autre <input type="checkbox"/>	
Car/Bus <input type="checkbox"/>	
Tramway <input type="checkbox"/>	
Deux-roues motorisé <input type="checkbox"/>	
Vélo <input type="checkbox"/>	
La victime était-elle ? Conducteur <input type="checkbox"/>	Obstacle fixe <input type="checkbox"/> Précisez : _____
Passager avant <input type="checkbox"/>	Autre catégorie <input type="checkbox"/> Précisez : _____
Passager arrière <input type="checkbox"/>	
Passager sans précision <input type="checkbox"/>	
La victime a-t-elle "bénéficié" de l'effet d'un(e) :	Autres véhicules ou obstacles impliqués Oui <input type="checkbox"/> Précisez : _____
Ceinture de sécurité Oui <input type="checkbox"/> Non <input type="checkbox"/>	Non <input type="checkbox"/> nsp <input type="checkbox"/>
Dispositif enfant Oui <input type="checkbox"/> Non <input type="checkbox"/>	
Sac gonflable (airbag) Oui <input type="checkbox"/> Non <input type="checkbox"/>	
Casque attaché Oui <input type="checkbox"/> Non <input type="checkbox"/>	
nsp <input type="checkbox"/>	
Bilan précis des lésions initiales et/ou des séquelles consolidées (sans oublier la latéralisation) :	

Prise en charge dans le service Bilan sans soins <input type="checkbox"/>	
Soins sans hospitalisation <input type="checkbox"/>	
Hospitalisation <input type="checkbox"/>	
Date et heure de sortie du service JJ MM AA HH MN	
Devenir après sortie du service Retour au domicile <input type="checkbox"/>	
Précisez : Sans suite de soins <input type="checkbox"/> Ré-hospitalisation prévue <input type="checkbox"/>	
Avec suite de soins prévue <input type="checkbox"/> Hôpital de jour <input type="checkbox"/>	
Transféré <input type="checkbox"/> Précisez le nom de l'établissement et du service de destination : _____	
Décédé <input type="checkbox"/> Date et heure du décès JJ MM AA HH MN	
Autre <input type="checkbox"/> Précisez : _____	

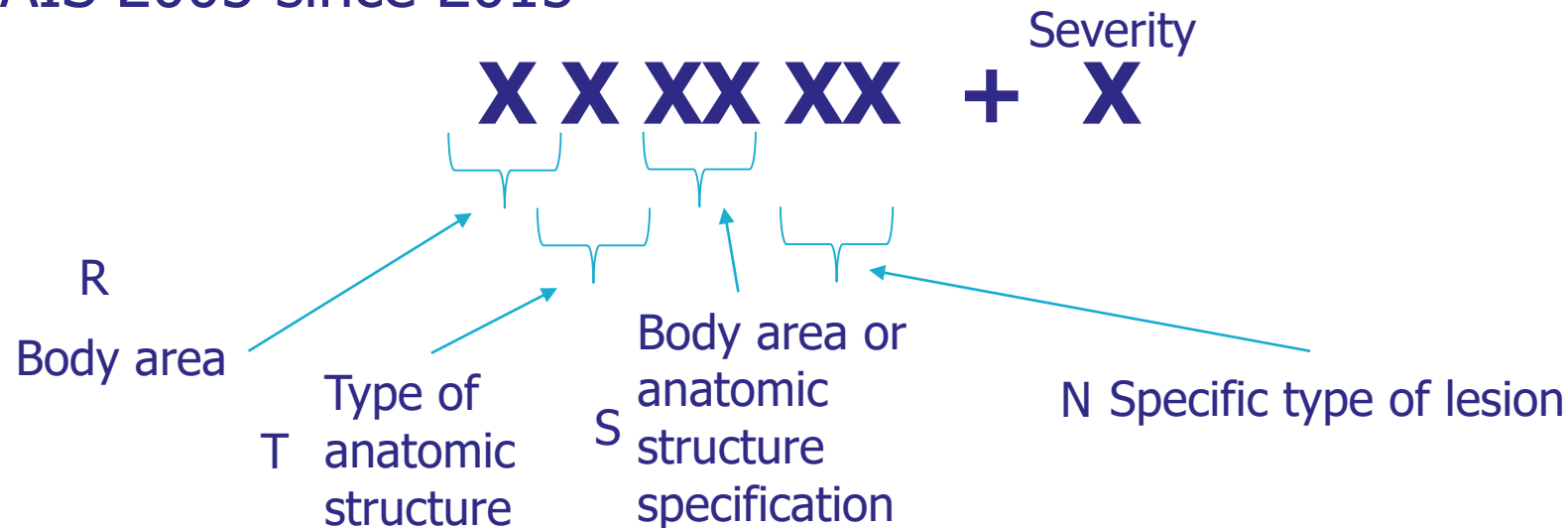
Injury assessment

Injury data collection

- Assessment of all injuries based on all diagnoses established by the different care teams during the entire hospital stay
- Medical expertise on injuries and injury classification

Abbreviated Injury scale AIS 2005 since 2015

- Medical expertise on injuries and injury classification
- AIS 90 and AIS 2005 since 2015



Additional data sources

The French national police database of road traffic crashes

- Police records of road crashes involving:
 - At least one vehicle
 - At least one injured casualty
- Combined with the Rhône Registry data when available (using common information)
- + : add more precise information on the crash, vehicles and people involved
- : little information on injuries
under-reporting of casualties (and bias)

➔ Presentation on September 28th, 11h-12h30: Analysis of road safety data

- “Linked police and health data: how to apply capture-recapture to correct for under-reporting and bias” *Emmanuelle Amoros*

Additional data sources

French hospital data

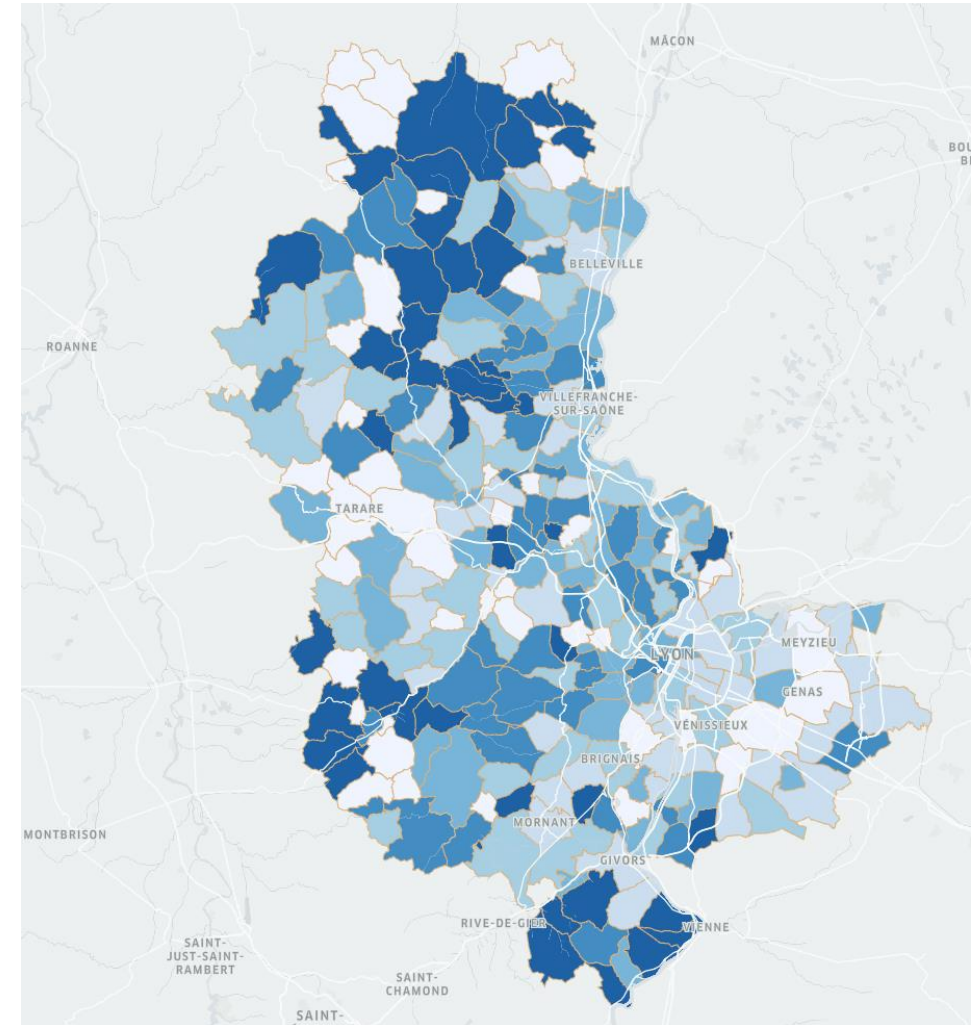
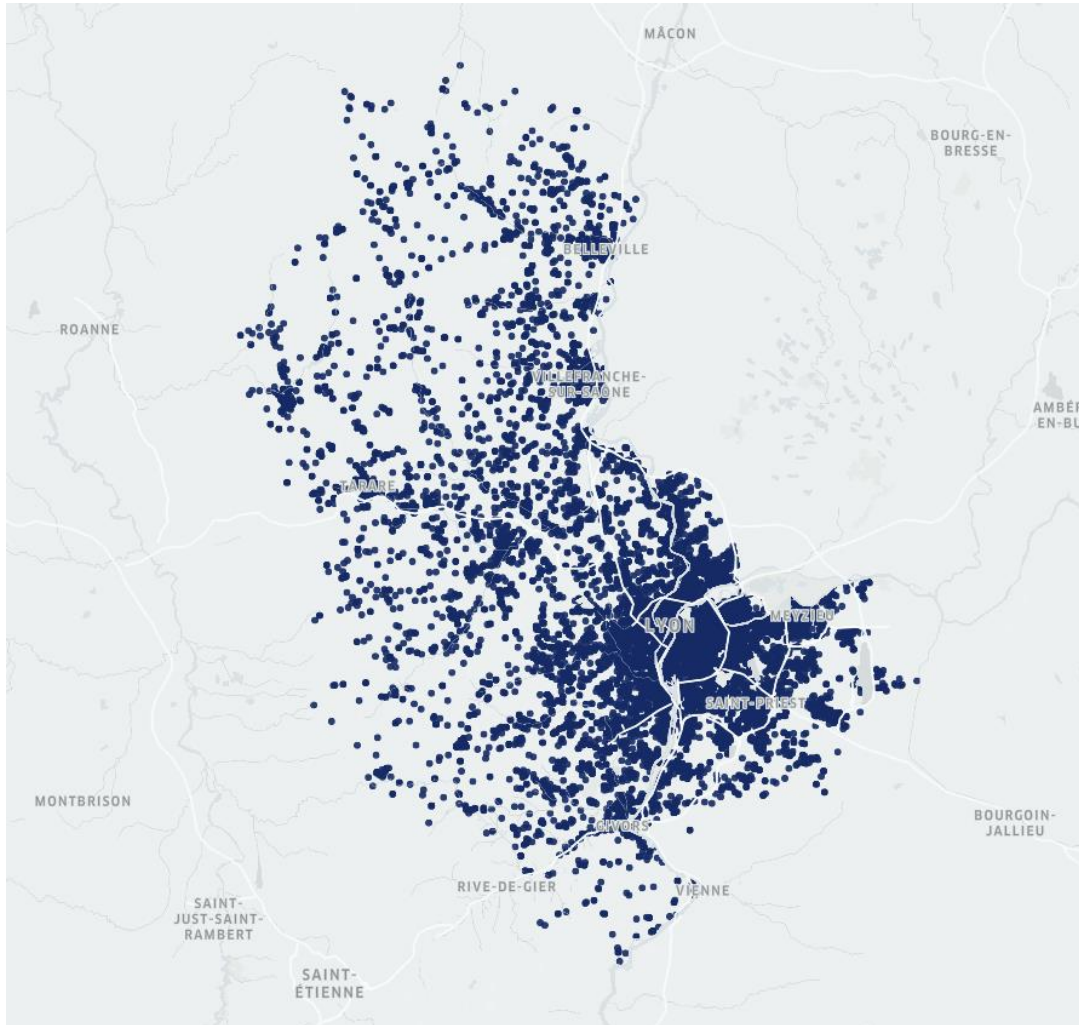
- Programme National de Médicalisation des Systèmes d'Information (PMSI)
 - Pathologies described by:
 - A principal diagnosis (+ secondary diagnoses)
 - French version of ICD 10
 - + : Precise medical information at the national level
 - : Missing external cause
- No severity coding, need of conversion matrices between ICD and AIS

➔ Two presentations in this session:

- "Estimating the number of seriously injured road users using the national hospital data, France, 2010-2019" *Emmanuelle Amoros*
- "Linking a road trauma registry and hospital discharge data to improve the ICD-AIS mapping, France, 2015-2021" *Mélanie Yvroud*

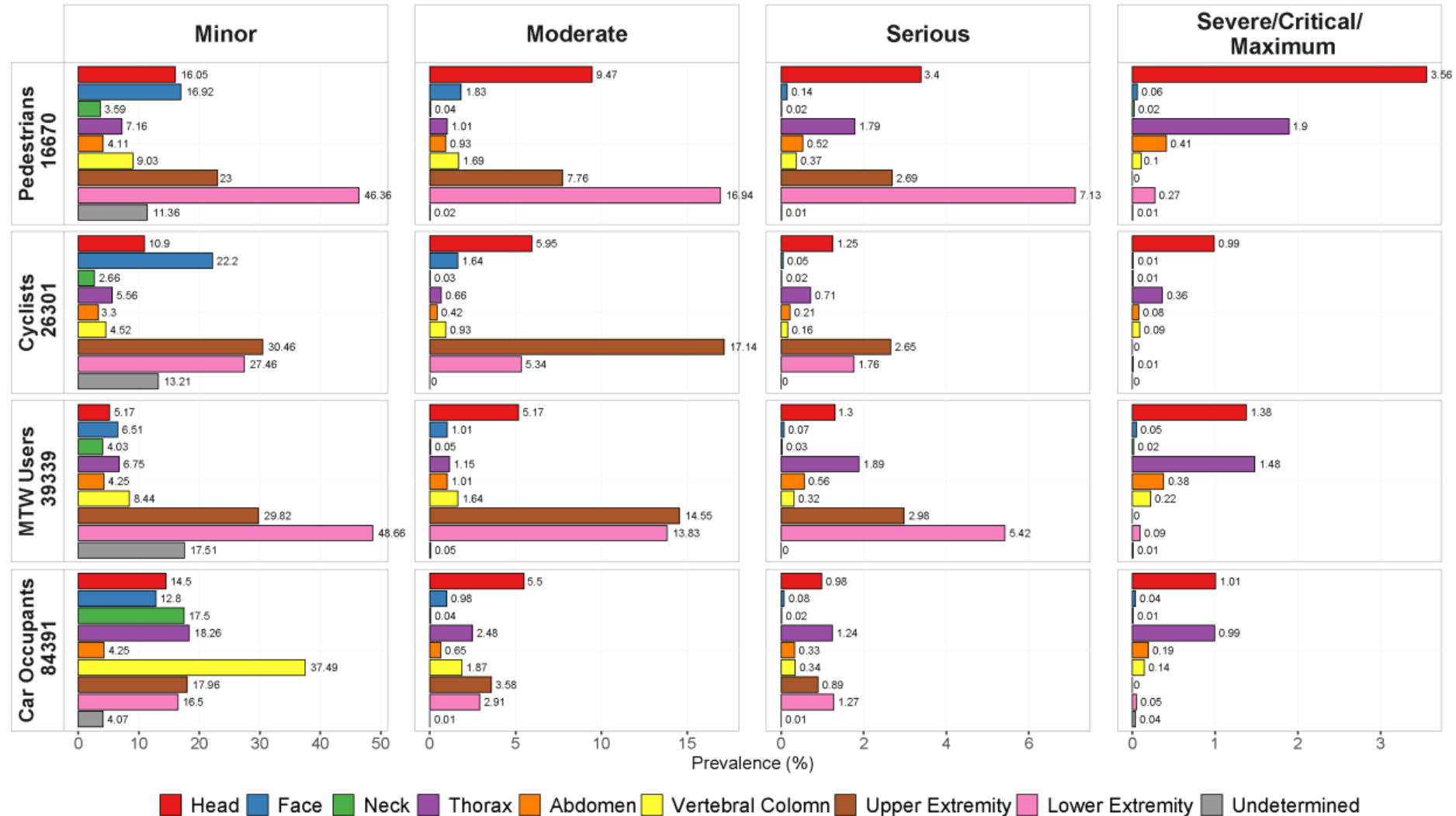
Some results from the Rhône Registry

Comprehensive survey of all injury and fatal crashes



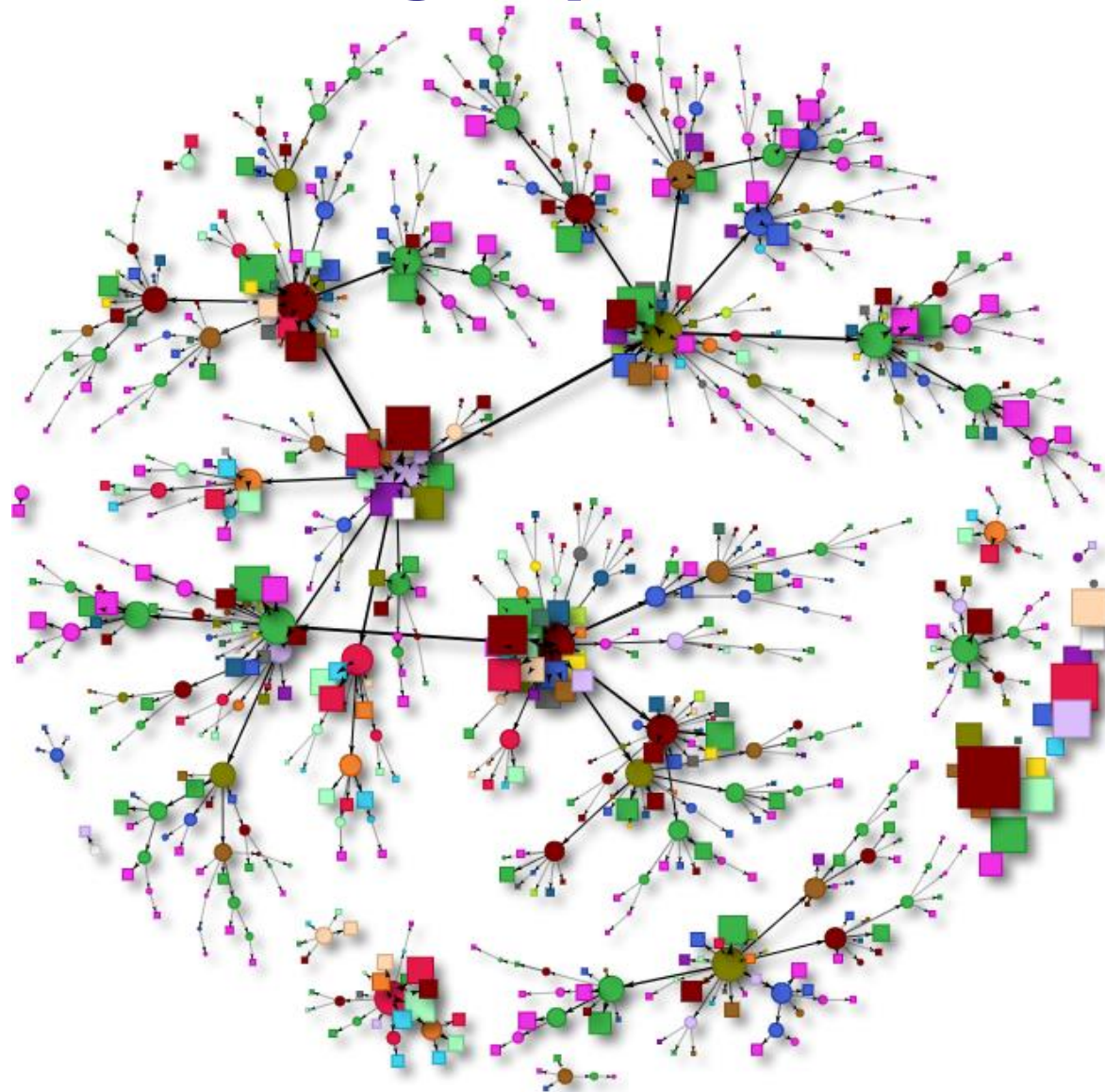
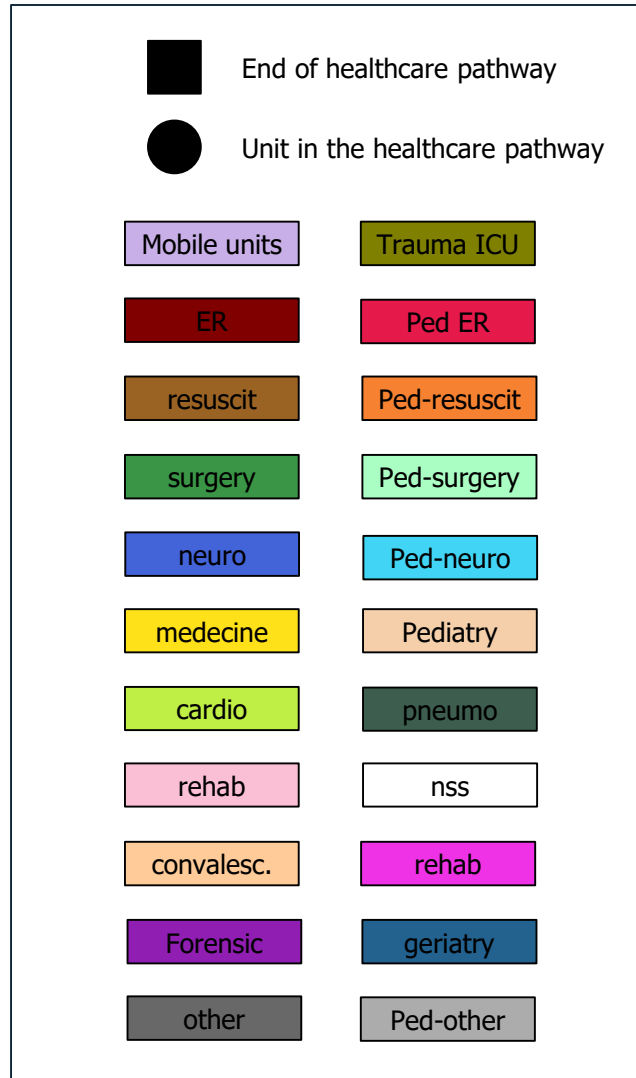
Some results from the Rhône Registry

Comprehensive survey of all injury and fatal crashes



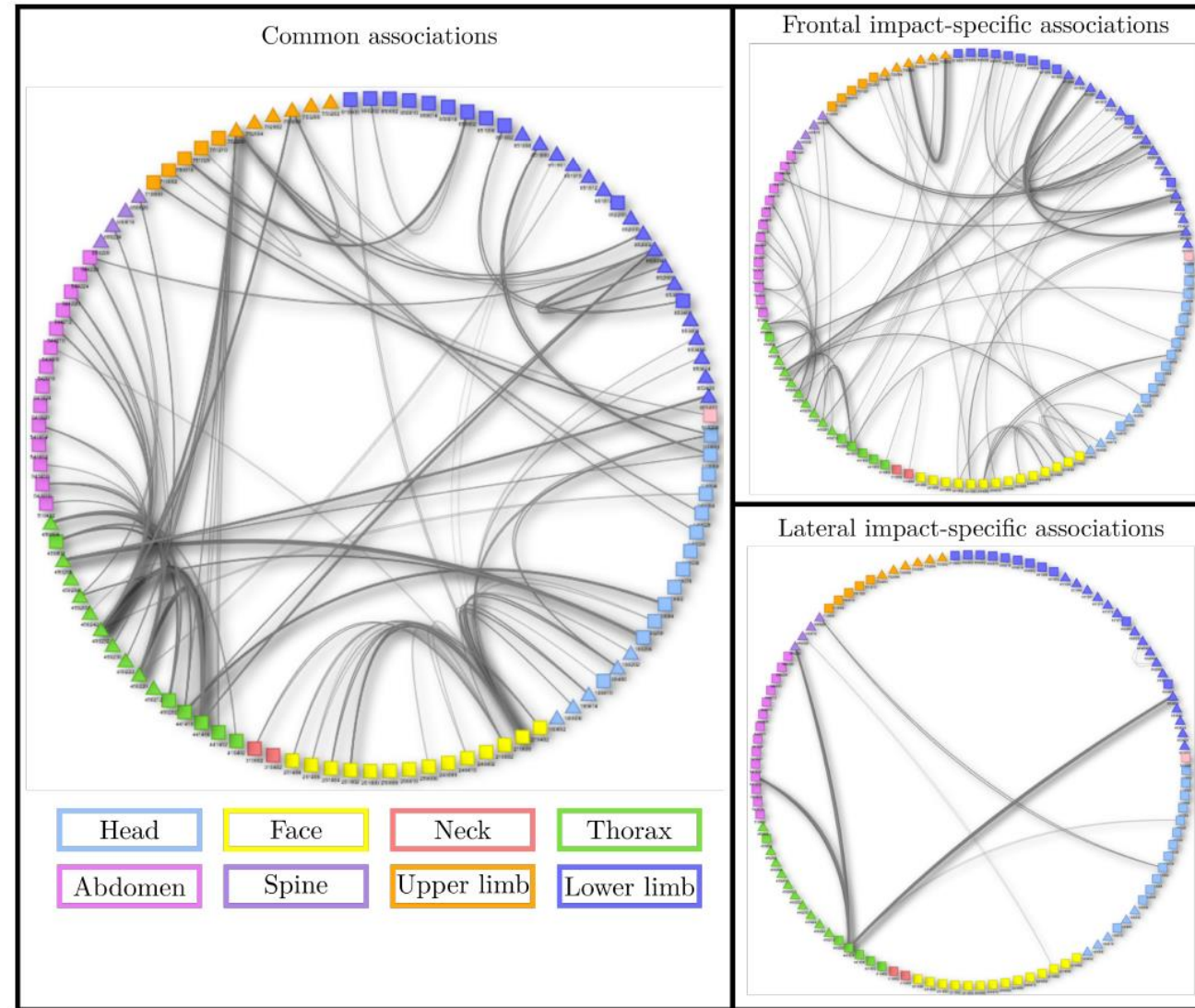
Some results from the Rhône Registry

Health data



Some results from the Rhône Registry

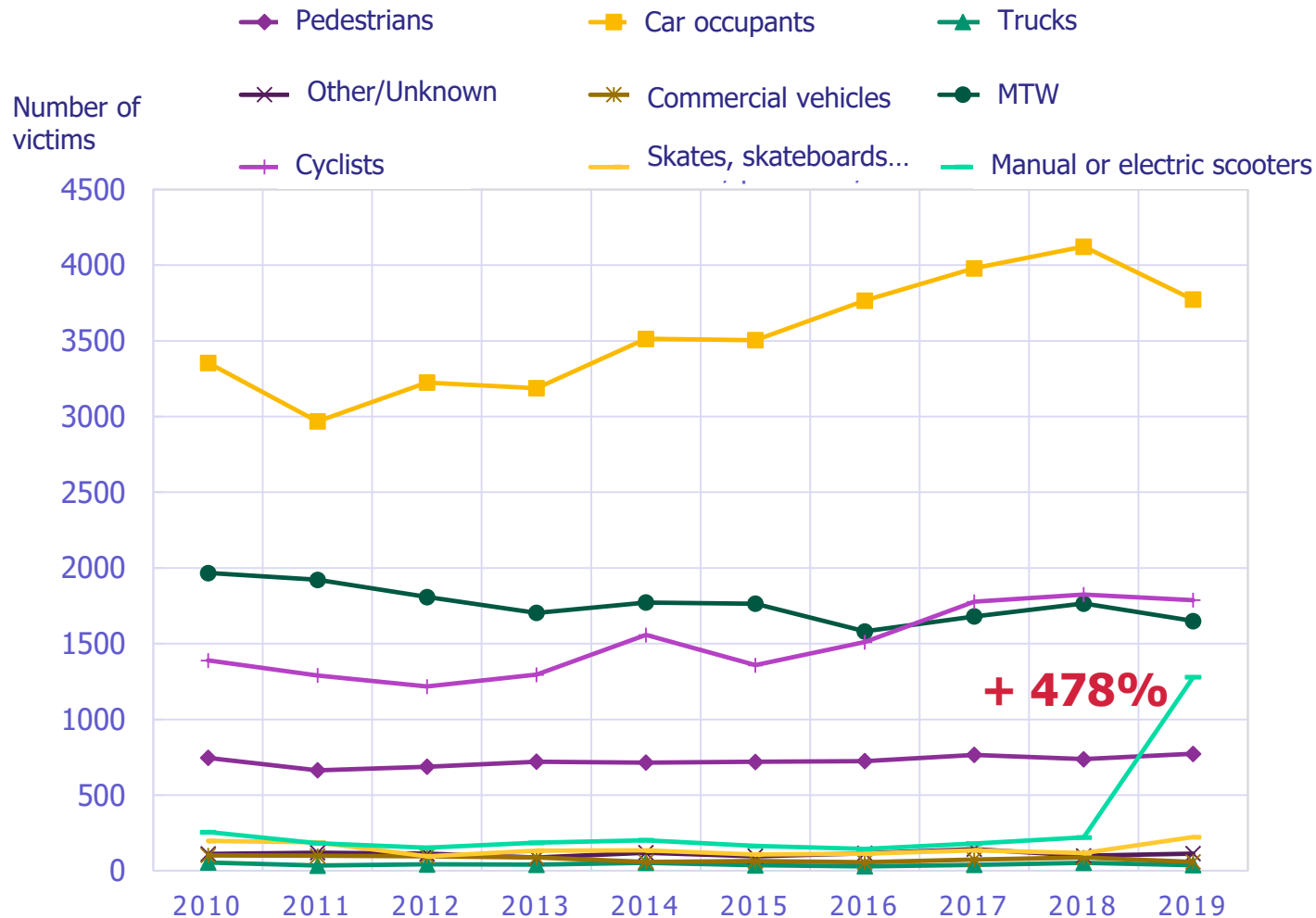
Health data
and public
health issues



Injury associations among car drivers and passengers using the RTSN classification in crashes with frontal and lateral impacts – (Bruna-Rosso C et al., submitted)

Some results from the Rhône Registry

Public health issues



Complementary surveys

- Additional information on crash circumstances
- Additional information on mobility
- Additional information on short/long-term effects of injuries
- ...

Thank you!

Céline Vernet, Jean-Louis Martin, Florian Robinet, Amina Ndiaye, Hélène Tardy, Emmanuelle Amoros, Blandine Gadegbeku, The Rhône Road Trauma Registry team, and the medical staff in the ARVAC network



celine.vernet@univ-eiffel.fr