

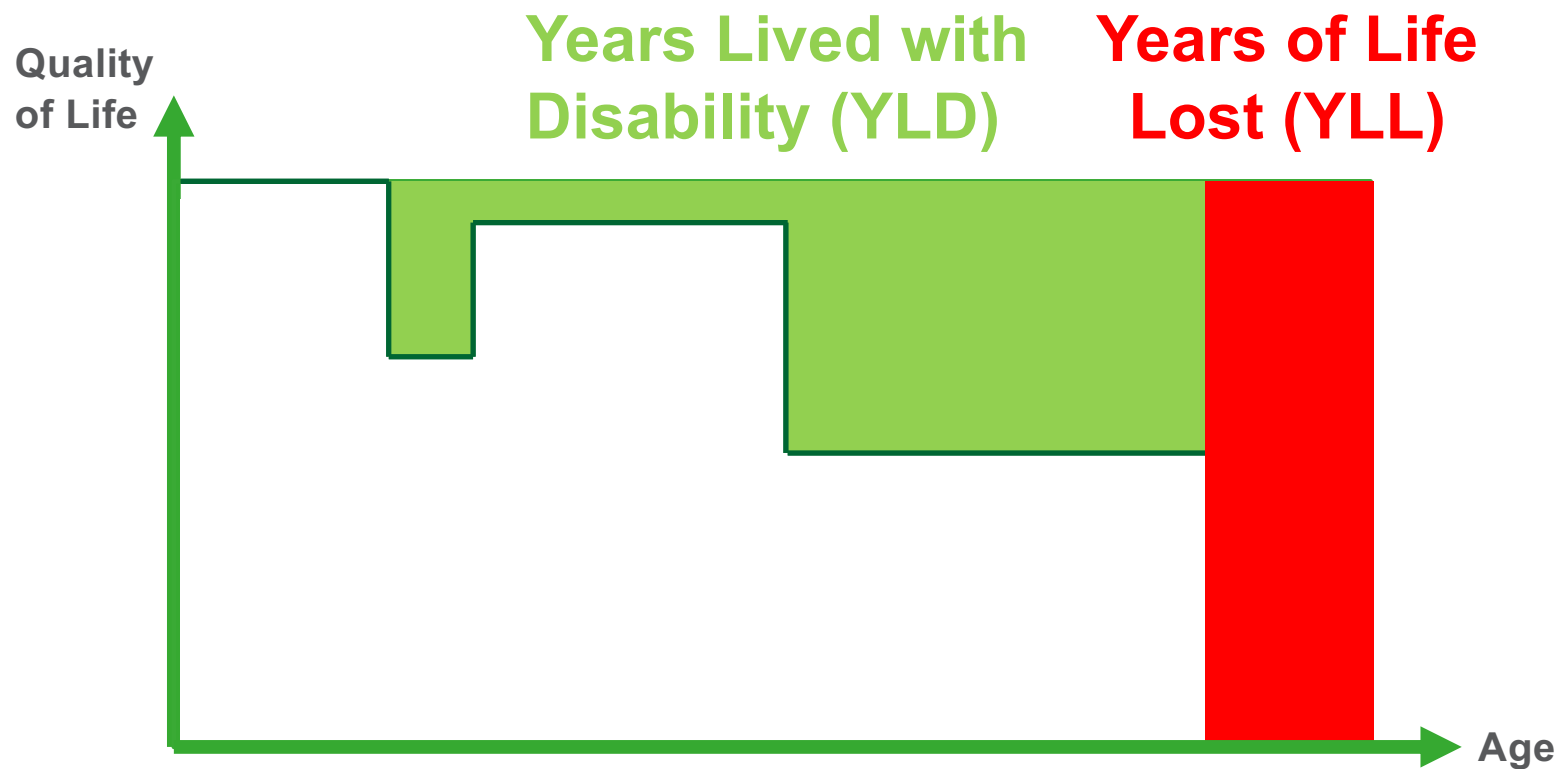
METHODOLOGICAL CONSIDERATIONS WHEN ASSESSING THE BURDEN OF DISEASE DUE TO INJURIES

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Measuring burden of disease

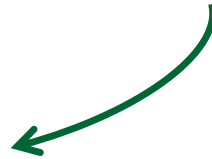



$$\text{DALY} = \text{YLL} + \text{YLD}$$


Why should we measure the impact of injuries

- Injury is a major, preventable public health problem in terms of **morbidity, premature mortality or disability**.
- Worldwide about **5.8 million people** die every year as a result of an injury.
- **Survivors** of severe injury often develop **short-term** and **long-term disabilities**, resulting in **significant losses of healthy life years**, long after the acute injury.

DALY

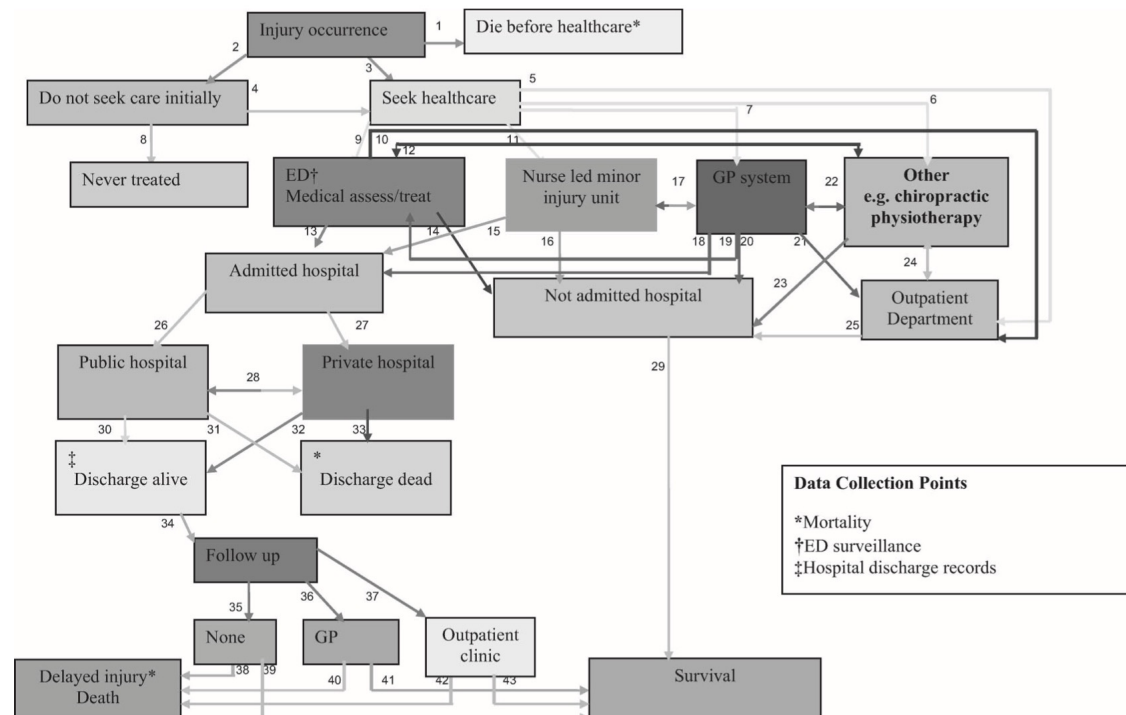


Typical scenario	
YLD	
Occurrence of disease	
Health states	
Disability weights	
YLL	
Age of death	

Injury scenario	
YLD	
Cause of injury (e.g. falls)	
Nature of injury (e.g. hip fracture)	
Health states	
Disability weights	
YLL	
Age of death	

What makes the burden of injuries complex

Healthcare professionals and organisations once an injury occurs



Lyons et al. (2014)

Methodology when calculating disease burden

Similar, but *slightly* different methodological frameworks are available

- GBD 2019 methodology (p. 1342 of the appendix)
- Methodology suggested by Haagsma et al. (2014)
- ...

What **has been done** so far in Europe (Charalampous et al., 2022)

- **48** injury specific studies have been performed
- Cause of injury >> nature of injury
- Mainly Western European countries
- ICD coding >> EUROCCOST
- Incidence-based >> prevalence-based

A fall incident



What is the impact of falls on population health?

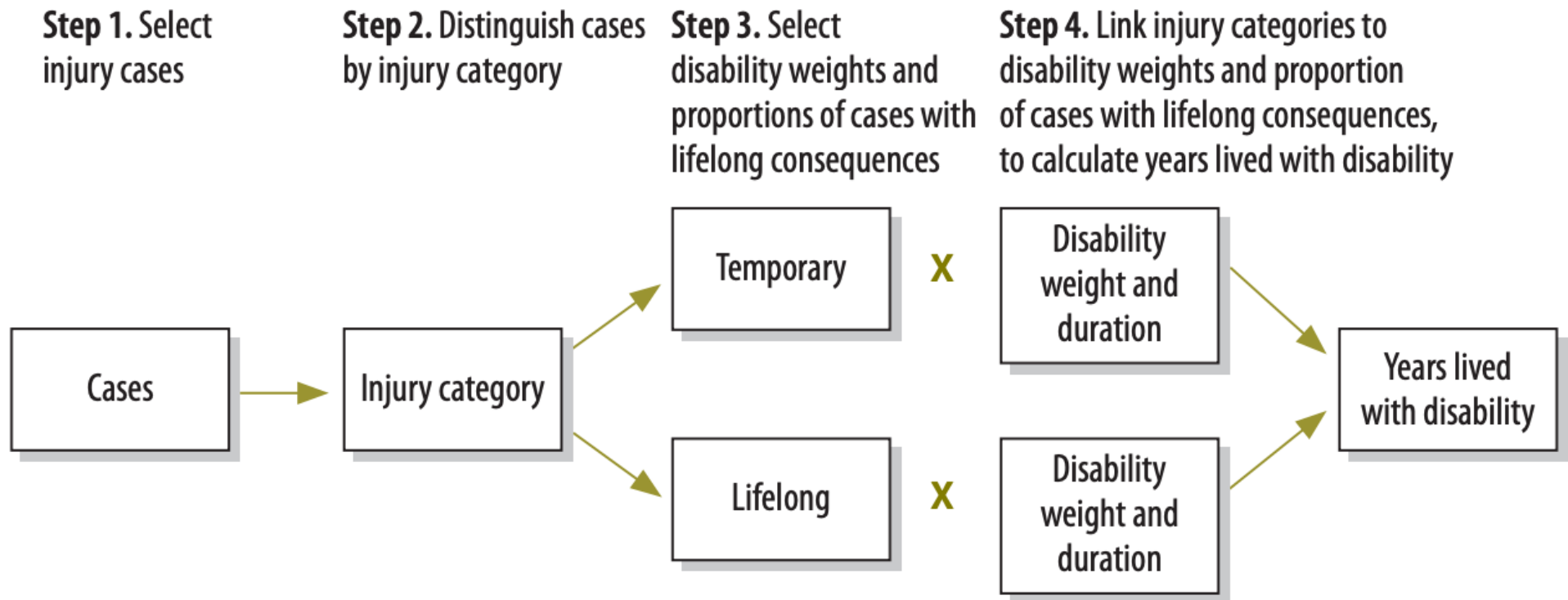
$$\text{YLL} + \text{YLD} = \text{DALY}$$

ICD-10 code W00-W19
Cause of Death
Age of individual

ICD-10 code W00-W19
Cause of injury
Nature of injury
Disability weights

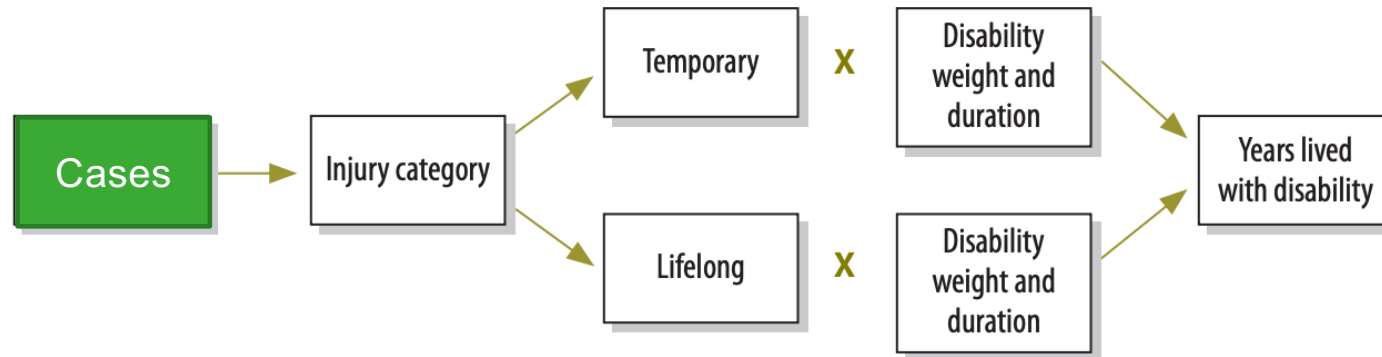


Methodology when calculating disease burden (YLD)



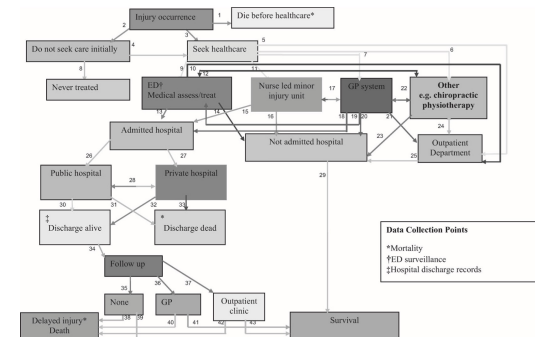
Haagsma et al. (2012)

Someone fell, what would be their likely clinical path?

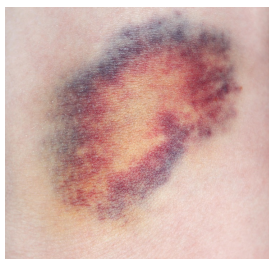
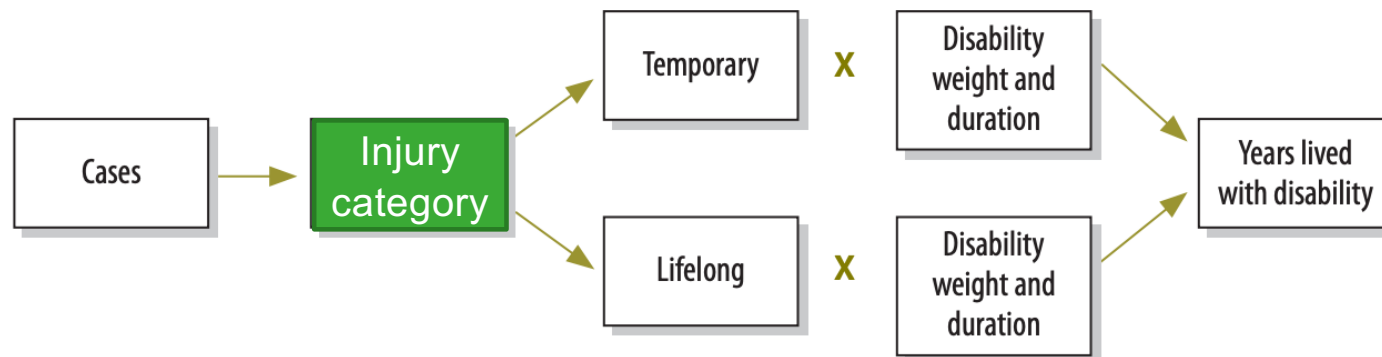


Typical **datasources** could be:

- Hospital inpatient and outpatient registries
- Hospital discharge registers
- GP contacts
- ...



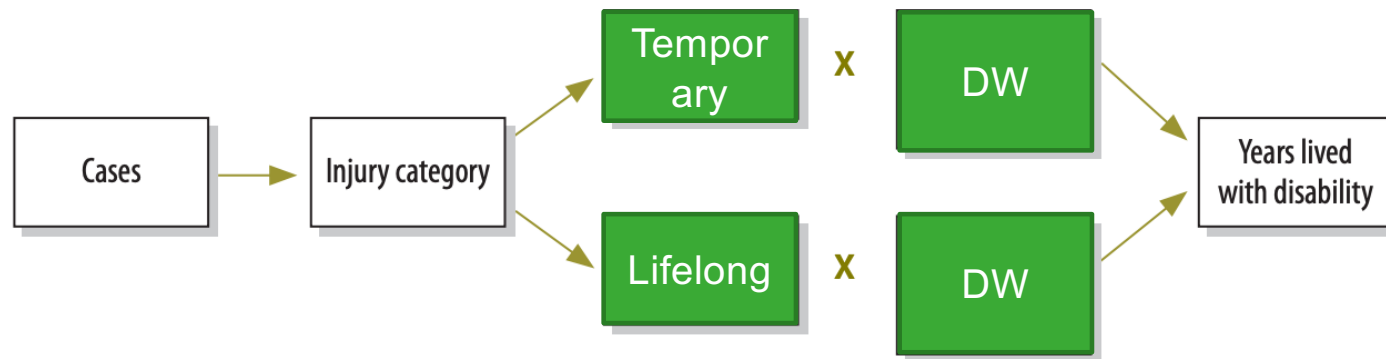
What are the consequences of a fall incident?



ICD-10 **S** and **T** codes

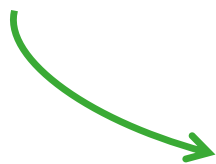
To estimate **functional consequences**, information is required on both the cause of the injury and the nature (type and anatomical location) of the injury (cause-nature matrices)

What is the impact of the injury and will they ever recover?



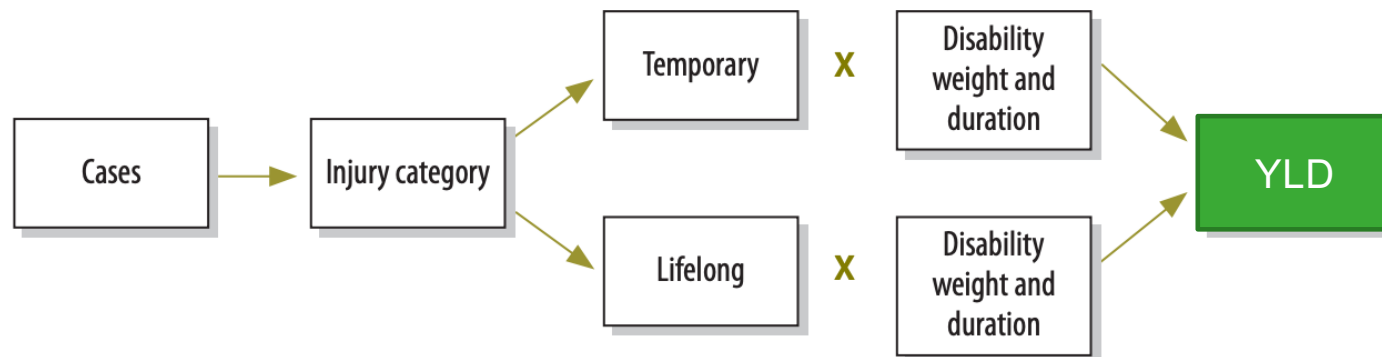
Grouped by nature of injury
 GBD estimates for DW
 European estimates for DW

Injury group	DW for acute phase		Proportion with lifelong consequences (%)		DW for lifelong consequences
	ED	HDR	ED	HDR	
Concussion	0.015	0.100	4	21	0.151
Fracture/dislocation/sprain/strain of vertebrae/spine	0.133	0.258	–	0 ^b	–
Whiplash injury/sprain of cervical spine	0.073	ND	ND	ND	ND
Fracture of upper arm	0.115	0.230	17	10	0.147
Fracture of elbow/forearm	0.031	0.145	0	8	0.074



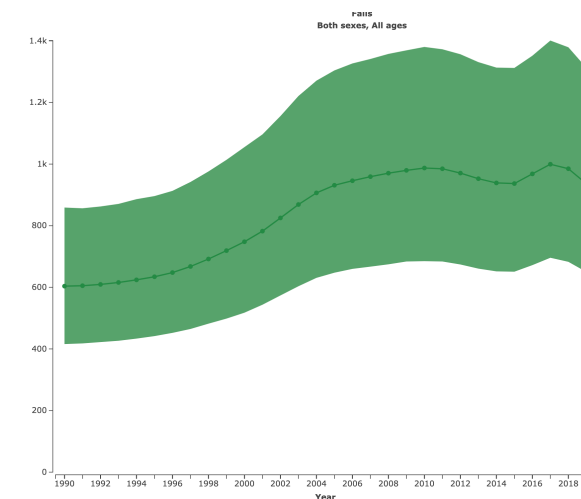
Derived from **empirical follow-up** studies

What is the impact of a fall on population health?



Current burden of falls in Belgium (2019) according to GBD estimates

- YLD: 940 YLDs per 100,000 inhabitants
- YLL: 345 YLLs per 100,000 inhabitants



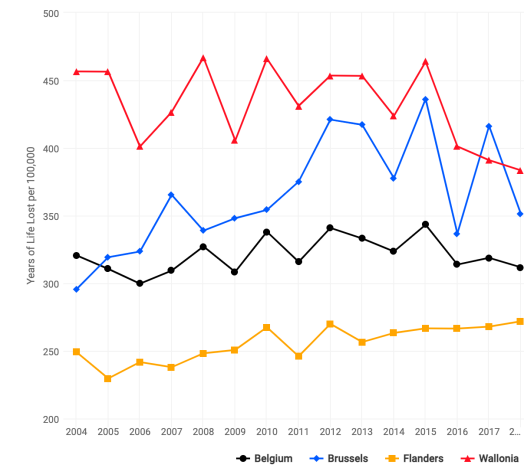
The belgian case – some thoughts

YLL

- Information and estimations available (<https://burden.sciensano.be/shiny/mortality/>)

YLD

- Only information on the **nature** of the injury, but not the **cause** of the injury (after 2015)
- No long-term follow up cohorts available to assess and distinguish short- and long-term consequences of injuries.
- Currently the Belgian framework only applies the prevalence approach.



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Thank you for your attention!

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