How do we measure harm in land transport?

Presentation to Australasian Road Safety Conference
Christchurch, NZ, Sept 2022

Dr Glen Koorey, ViaStrada Ltd

Ping Sim, Auckland Transport

Gemma Dioni, Christchurch City Council

VIASTRADA
TRANSPORT PLANNING AND DESIGN

Presentation outline

- How do we define road safety crashes/injuries?
- Some recent case studies
  - Auckland study of vulnerable transport users
  - National domestic transport costs & charges study
- Some implications
  - Possible new measures of transport harm

Defining safety

What is a transport "crash" / "accident"?

- Two motor vehicles colliding
- A motor vehicle hitting a tree
- A person walking hit by a motor vehicle
- A bus passenger falling when the bus stops suddenly?
- A person cycling running into a pedestrian?
- A car door closing on a persons finger?
- A person walking slipping on a footpath?

Do they count if no-one is injured or no vehicle damaged?

Do they count if they occur away from a road corridor?

Reported crashes

- Not all transport crashes are **reportable**
  - Don’t involve a motor vehicle
  - Don’t involve an injury
  - Below property damage cost threshold *(some jurisdictions)*
- Not all reportable crashes are **reported**
  - Road user guilt/evasion over actions taken
  - Lack of follow-up by parties, Police, etc
- Some crashes less likely to be reported
  - Single-veh, remote rural, cyclist or pedestrian
  - Less severe injuries *(influenced somewhat by road user age)*

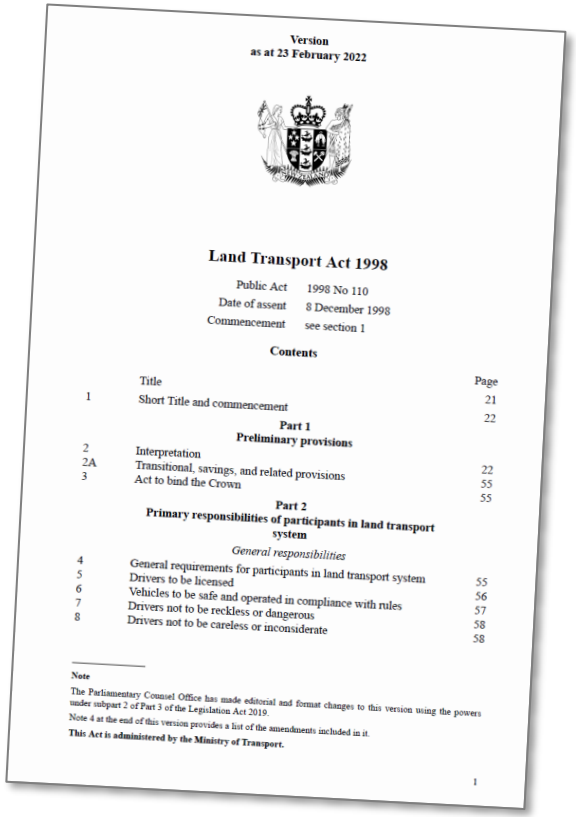
Current crash reporting requirements in NZ

- The NZ Land Transport Act states:

*If an accident arising directly or indirectly **from the operation of a vehicle** occurs to **a person or to a vehicle**, the driver or rider of the vehicle must… stop and ascertain whether a person has been injured…*

: :

*If the accident involves an injury to or the death of a person, the driver or rider **must report** the accident to an enforcement officer as soon as reasonably practicable, and in any case not later than 24 hours after the time of the accident*



Version
as at 23 February 2022

Land Transport Act 1998

Public Act 1998 No 110
Date of assent 8 December 1998
Commencement see section 1

Contents

	Title	Page
1	Short Title and commencement	21
		22
	Part 1	
	Preliminary provisions	
2	Interpretation	
2A	Transitional, savings, and related provisions	22
3	Act to bind the Crown	55
		55
	Part 2	
	Primary responsibilities of participants in land transport system	
	General responsibilities	
4	General requirements for participants in land transport system	55
5	Drivers to be licensed	56
6	Vehicles to be safe and operated in compliance with rules	57
7	Drivers not to be reckless or dangerous	58
8	Drivers not to be careless or inconsiderate	58

Note

The Parliamentary Counsel Office has made editorial and format changes to this version using the powers under subpart 2 of Part 3 of the Legislation Act 2019.

Note 4 at the end of this version provides a list of the amendments included in it.

This Act is administered by the Ministry of Transport.

1

Implication: any injury accident involving a cycle, scooter or other 'vehicle' must be reported

Implication: accidents only involving a pedestrian do not need to be reported

VIASTRADA

Case study 1: the safety challenge for people travelling outside of vehicles in Auckland

- Vision Zero strategy enacted for Tāmaki Makaurau (Auckland) in Sep 2019
- How well do we understand the safety challenge for people travelling *outside* of vehicles?
- ViaStrada commissioned to do a deep dive into further data sources to find out more…

"Vulnerable Transport Users"

People walking

People on bikes

People on motorcycles

Other transport devices

VIASTRADA

Auckland Transport study: Phases 1 & 2

Phase 1:

Use CAS / ACC / MoH data

- How big is the problem?
  - Is it getting better/worse?
- What does it look like?
  - Who? (mode, age, ethnicity)
  - Where? (local board areas)
- What are the causes?
  - Key risk factors
- If not controlled, what might happen?

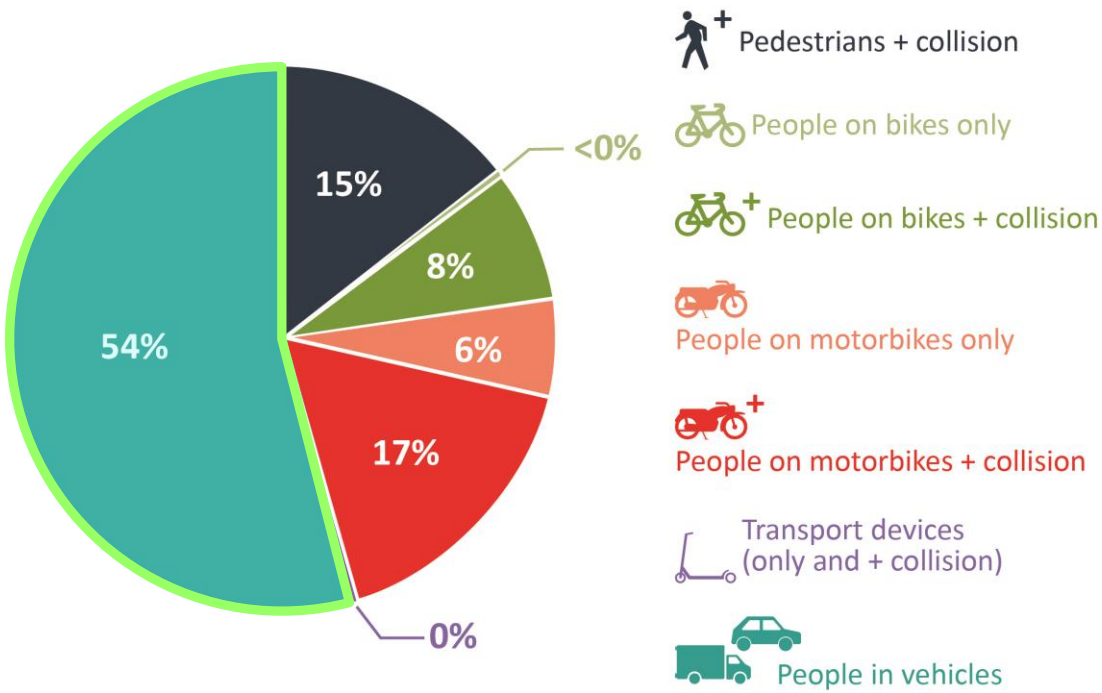
Phase 2:

- Are we capturing all fatalities?
- How many out-of-region cases in Akld hospitals?
- Medical events causing falls?
- More info on minor injuries?
- Where in Akld might people be more at risk from slips/falls?
- Injuries at transport worksites?
- Update the Waka Kotahi tables for Akld under-reporting?

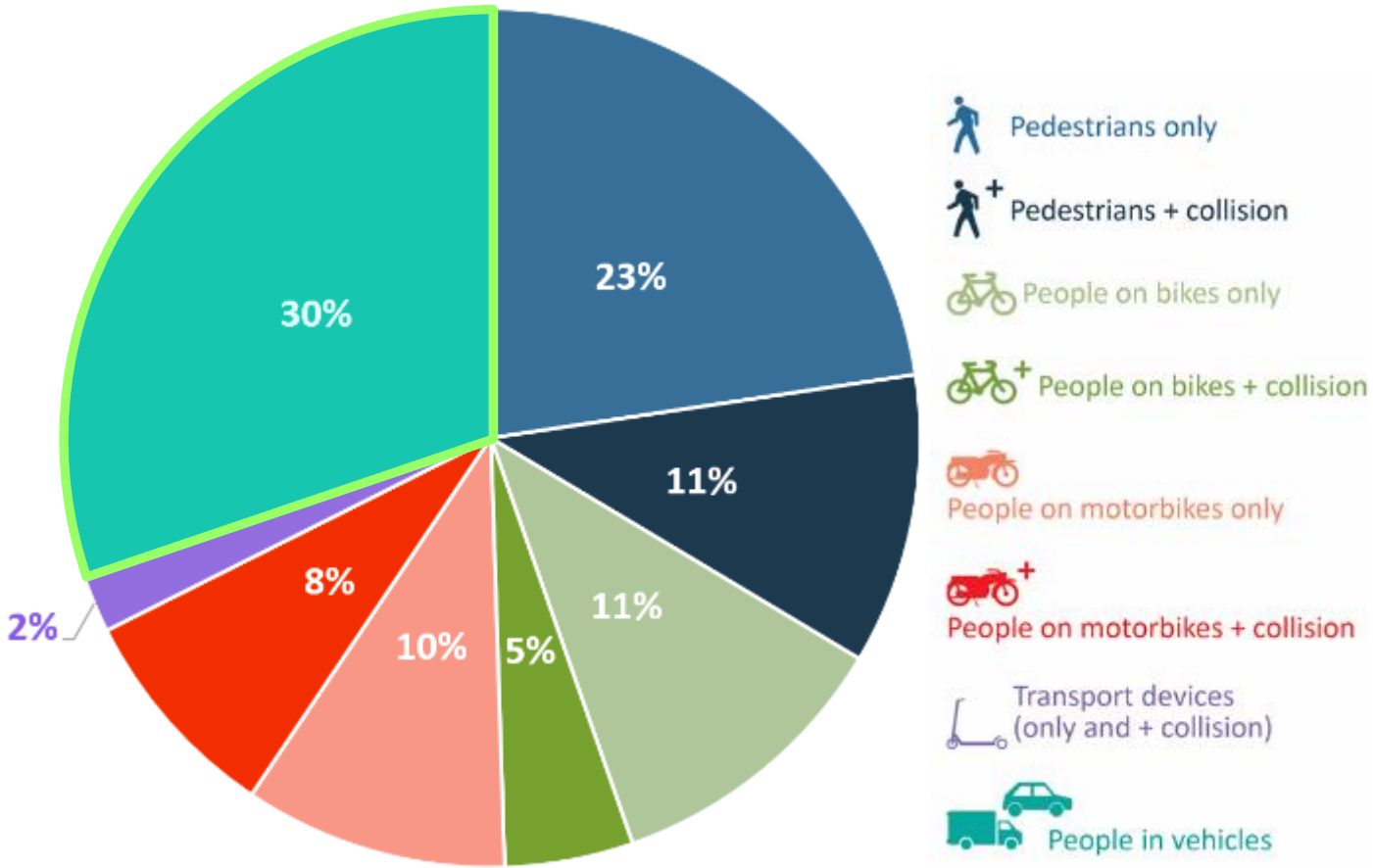
VIASTRADA

We're seeing just the tip of the iceberg…

2,457 serious injuries in the Crash Analysis System (CAS)

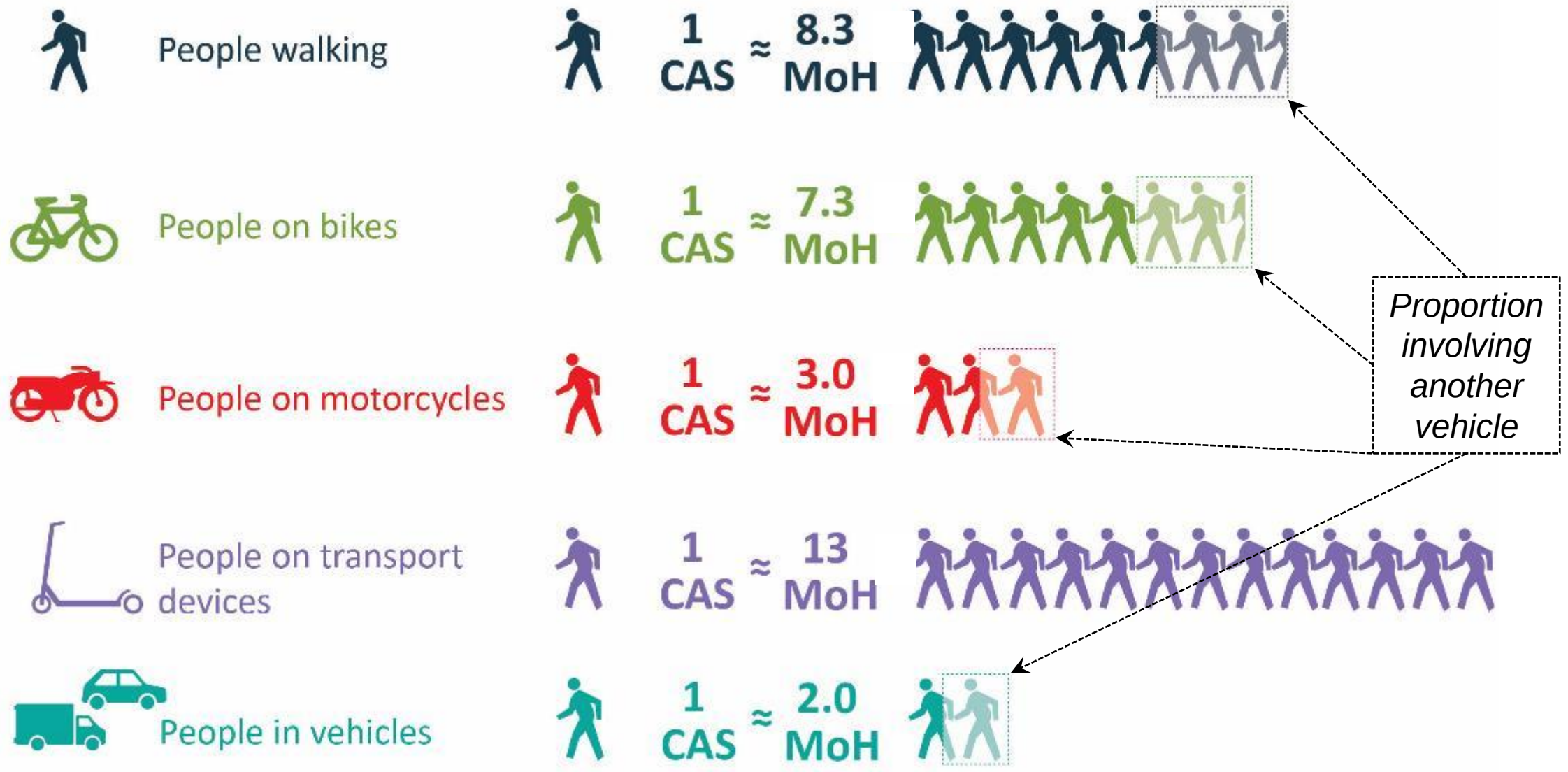


8,514 serious hospital admissions captured by the Ministry of Health (MoH)

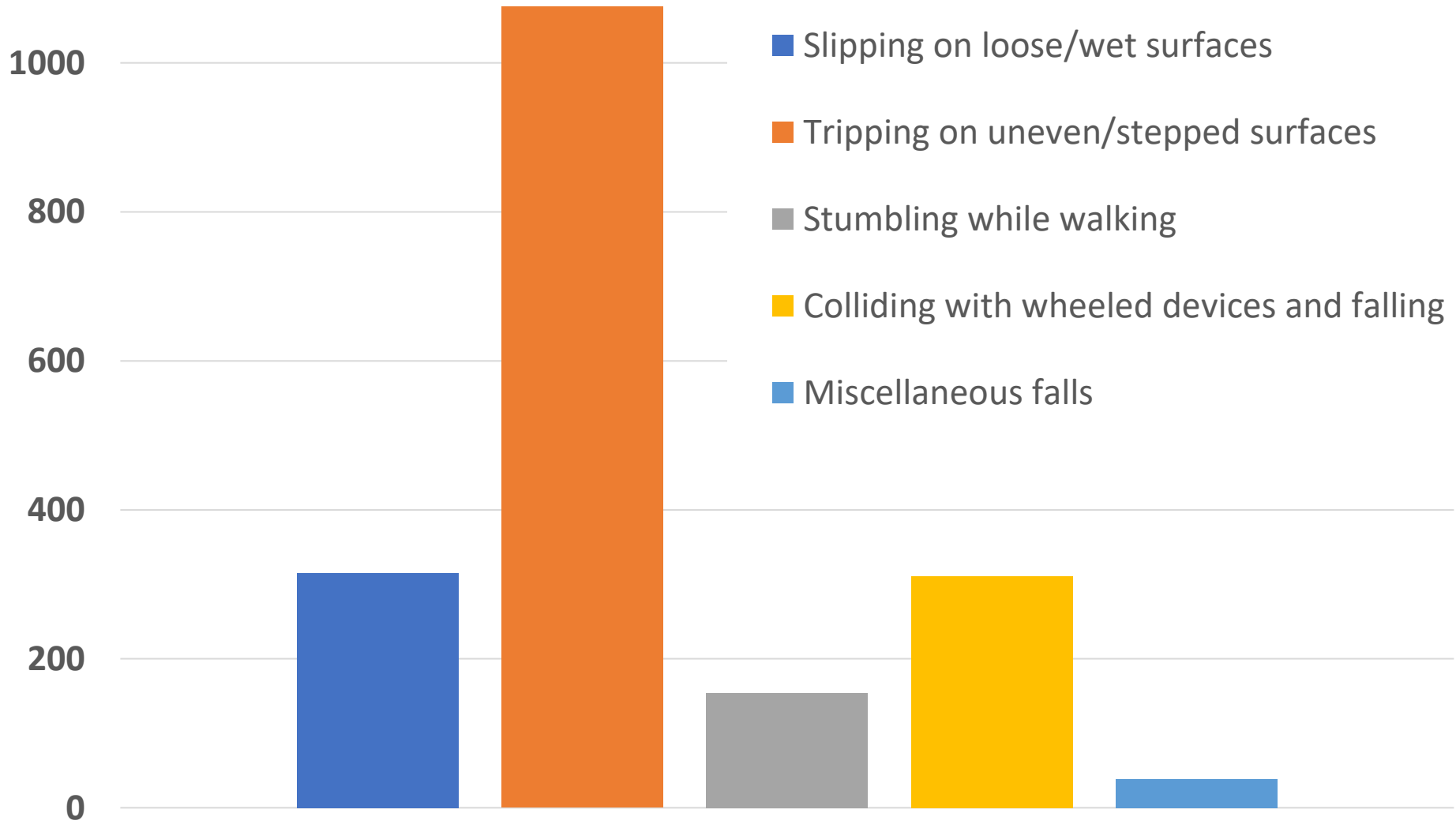


(2016-19 Auckland data)

Non-motor vehicle serious injuries are highly under-reported via traditional channels



Serious pedestrian-only crashes: a big problem



(2016-19 data)

VIASTRADA

Case study 2: MoT costs & charges study

For the NZ Ministry of Transport:

- Derive estimates of the **Social costs** of road transport-related *"accidents"* in NZ
  - All those involving **Motor Vehicles**
  - **Non-motorised** users only (pedestrians, bicycles, etc)
- Costs to be investigated
  - **Total** Costs (by road/vehicle type)
  - **Average** Costs (per VKT/PKT/NTK)
  - **Marginal** Costs (c/ΔVKT)
  - Assessment of **Internal vs External** Costs

VIASTRADA

Total/average non-motorised crash costs

- Based on Crash Analysis System (CAS) and ACC datasets
  - Including pedestrians, cyclists, wheelchair users, small-wheeled devices (skateboards, scooters, etc)
- Many accidents by these modes not captured by Police crash records but reported through hospital & ACC data

  e.g. Slips, Falls

Note the health and other benefits of active modes

With M.Veh:	Bicycle	Pedestrian
Total Costs **shared** ($m/year)	**$110m**	**$219m**
Cost shared per distance travelled by **person** (c/PKT)	35.7c	31.0c

Without M.Veh:	Total NMU-only
Distance travelled by person (PKT, million km)	1014m km
Total costs shared ($m/year)	**$830m**
Cost shared per distance travelled by person (c/PKT)	82.0c

VIASTRADA

Health vs safety

- A potential dilemma:
  - Encouraging **more walking/cycling/etc** is desirable
  - Having more **walk/cycle/etc injuries** is *not* desirable

Does your strategy ask for both?

- How to reconcile these competing aims?
  - Use exposure metrics instead ➔ *Injury risk per km travelled*
  - Use health-related metrics ➔ *Disability-adjusted life years (DALYs)*

The health benefits of more active travel vastly outweigh the slight increase in safety costs

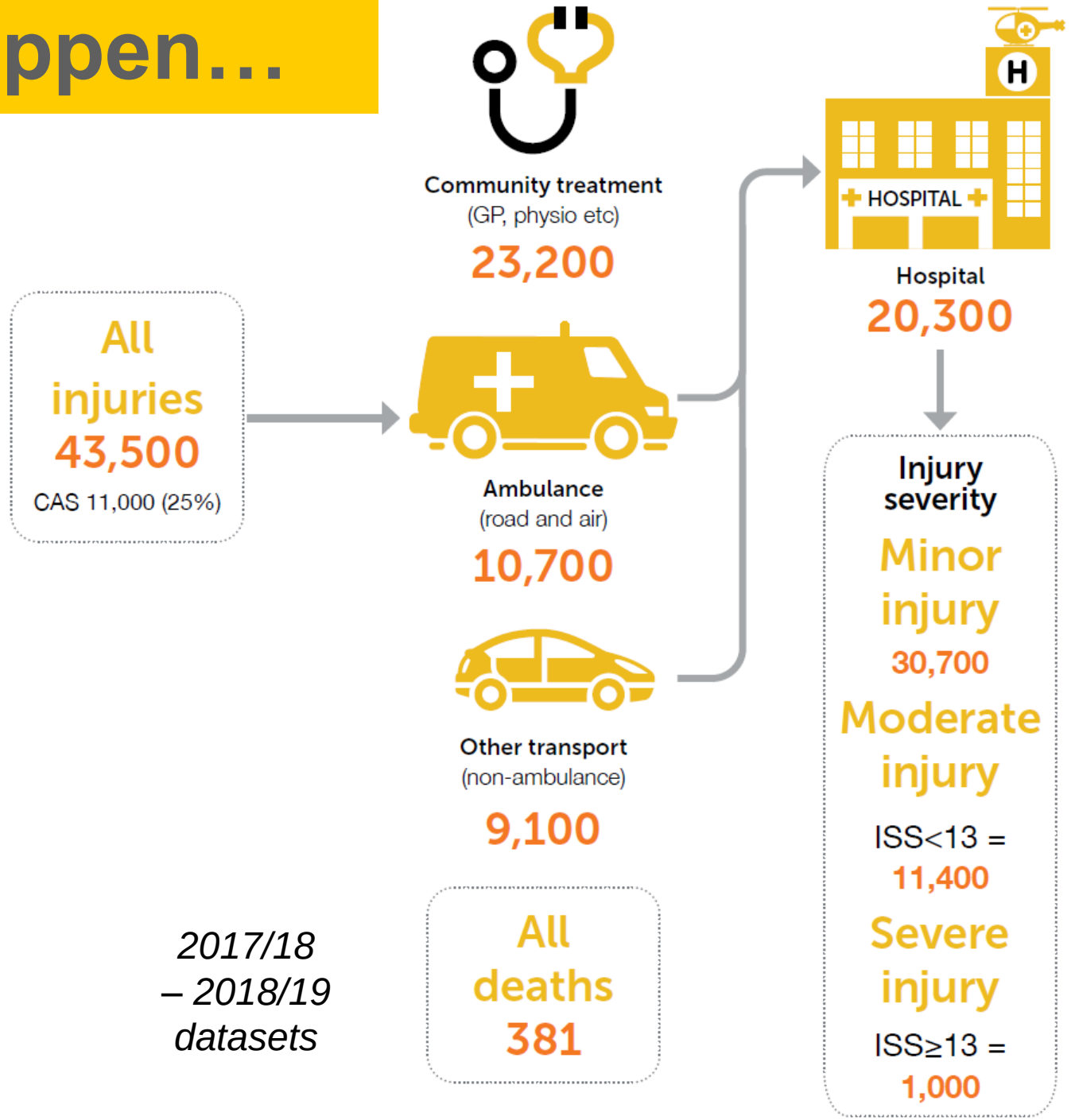
VIASTRADA

Implications

- Traditional Police-reported crash datasets miss a lot
  - Even more so for crashes with non-motor vehicle users
  - Very few crashes where no motor vehicle was involved at all
- Hospital/injury datasets can help fill in the gaps
  - They help to indicate the relative scale of the problem
  - But are limited in what transport/site info they can provide
- Road/path maintenance budgets could also be for safety
  - There is a hidden cost to having poor quality walking routes

Work is starting to happen…

- SORTED Study
  - Study of Road Trauma: Evidence & Data
- 2 yrs of combined data about transport-related injuries
  - Acc Compensation Corp (ACC)
  - Ministry of Health (hospitals)
  - St John / Wellington Ambulance
  - National Trauma Network
  - Waka Kotahi (NZTA)
  - Ministry of Transport
  - New Zealand Police



2017/18 – 2018/19 datasets

VIASTRADA

Thank you for your time!

We share more knowledge on
www.viastrada.nz

VIASTRADA
TRANSPORT PLANNING AND DESIGN