How do we measure harm in land transport?

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TRANSPORT PLANNING AND DESIGN

Manaaki Tāngata

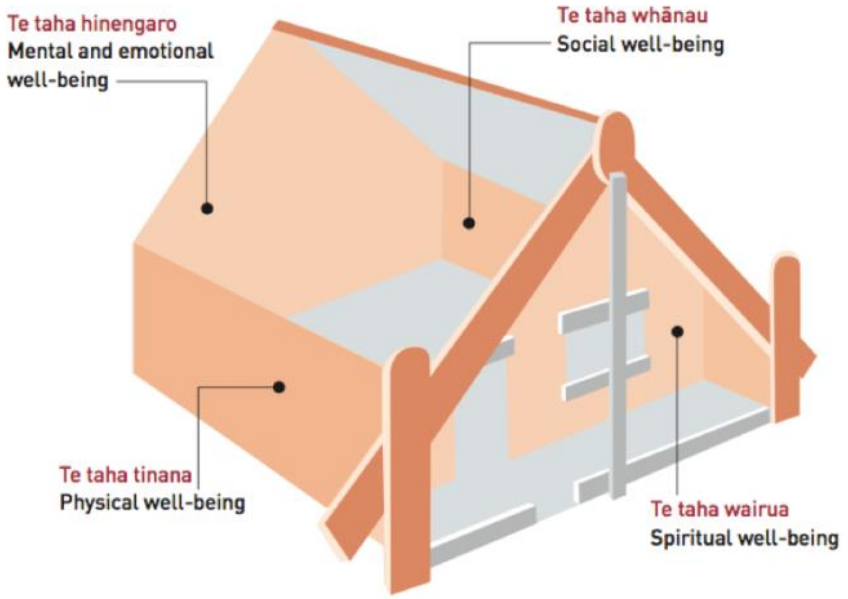
Transportation Conference

27-30 March 2022
Trinity Wharf. Tauranga

Caring for the People

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



Mason Durie (1994) Te Whare Tapa Whā concept of hauora

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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?

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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)*

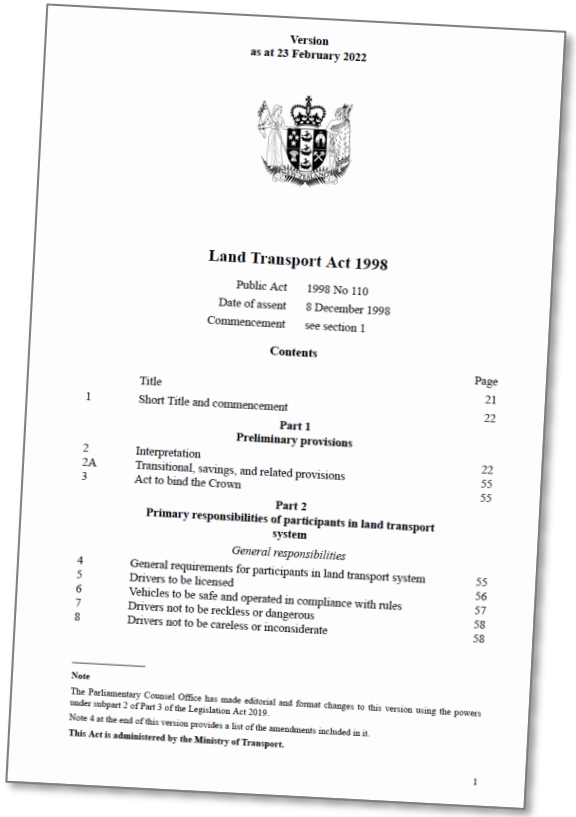
Current crash reporting requirements in NZ

- 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

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.

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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

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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

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Auckland Transport study: Phases 1 & 2

Phase 1:

Use CAS / ACC / MoH data

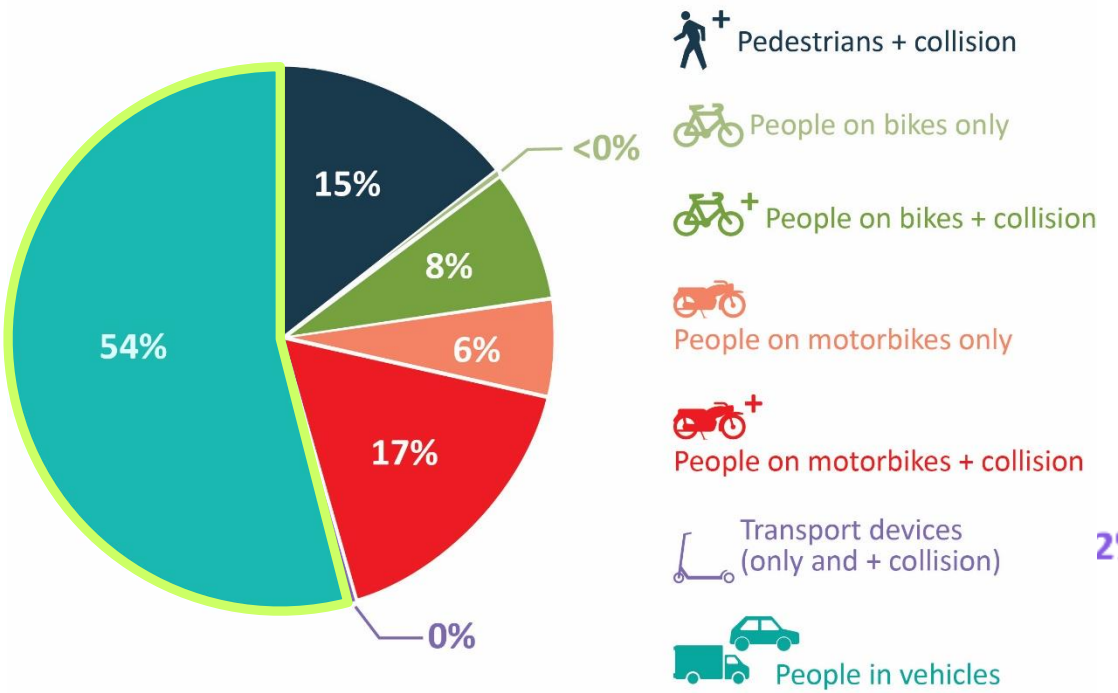
- How big is the problem?
  - Is it getting better/worse?
- What does it look like?
  - Who? (mode, age, ethnicity)
  - Where? (local board areas)
- What are the causes?
  - Key risk factors
- If not controlled, what might happen?

Phase 2:

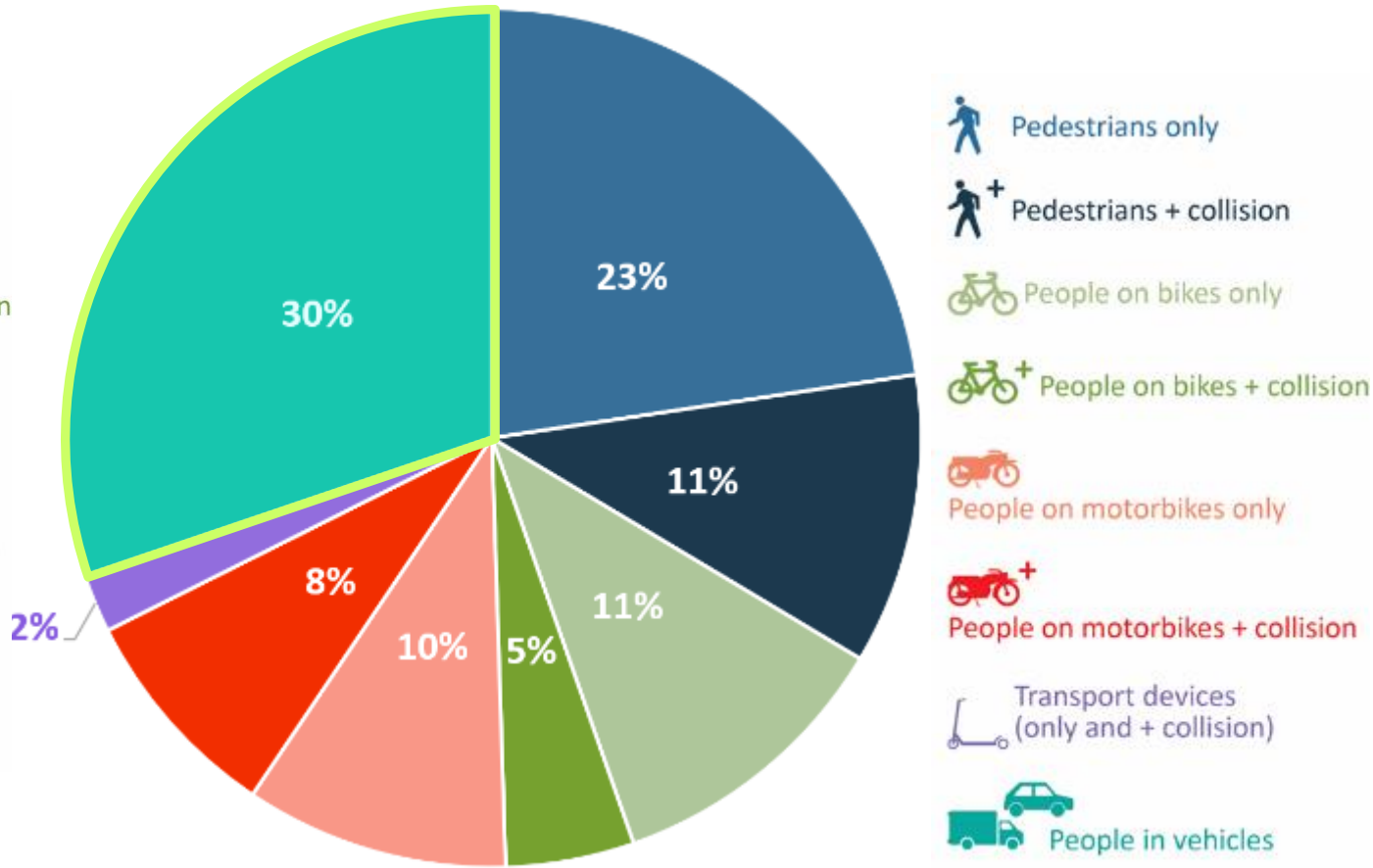
- Are we capturing all fatalities?
- How many out-of-region cases in Akld hospitals?
- Medical events causing falls?
- More info on minor injuries?
- Where in Akld might people be more at risk from slips/falls?
- Injuries at transport worksites?
- Update the Waka Kotahi tables for Akld under-reporting?

We're seeing just the tip of the iceberg…

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

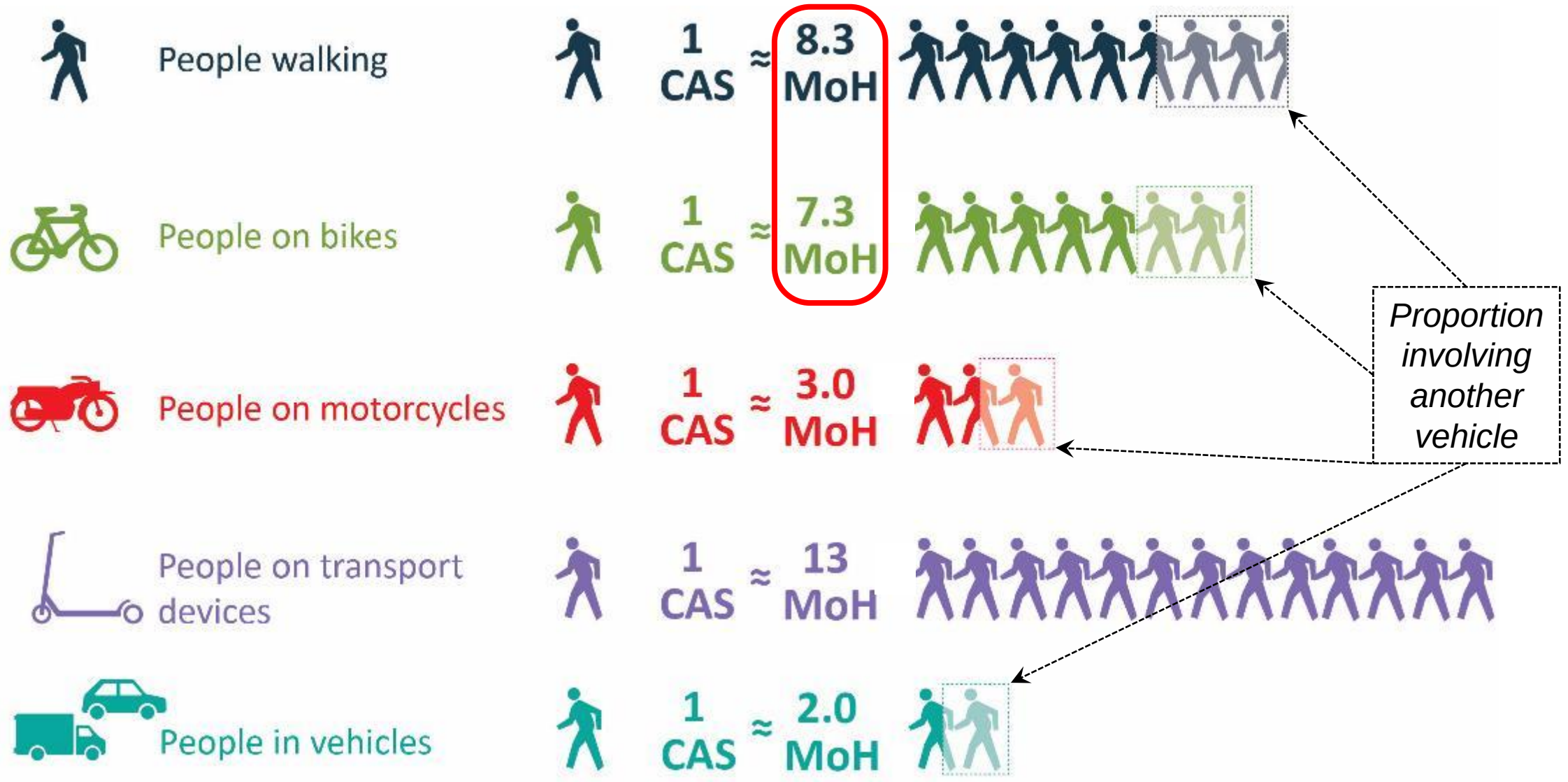


8,514 serious hospital admissions captured by the Ministry of Health (MoH)

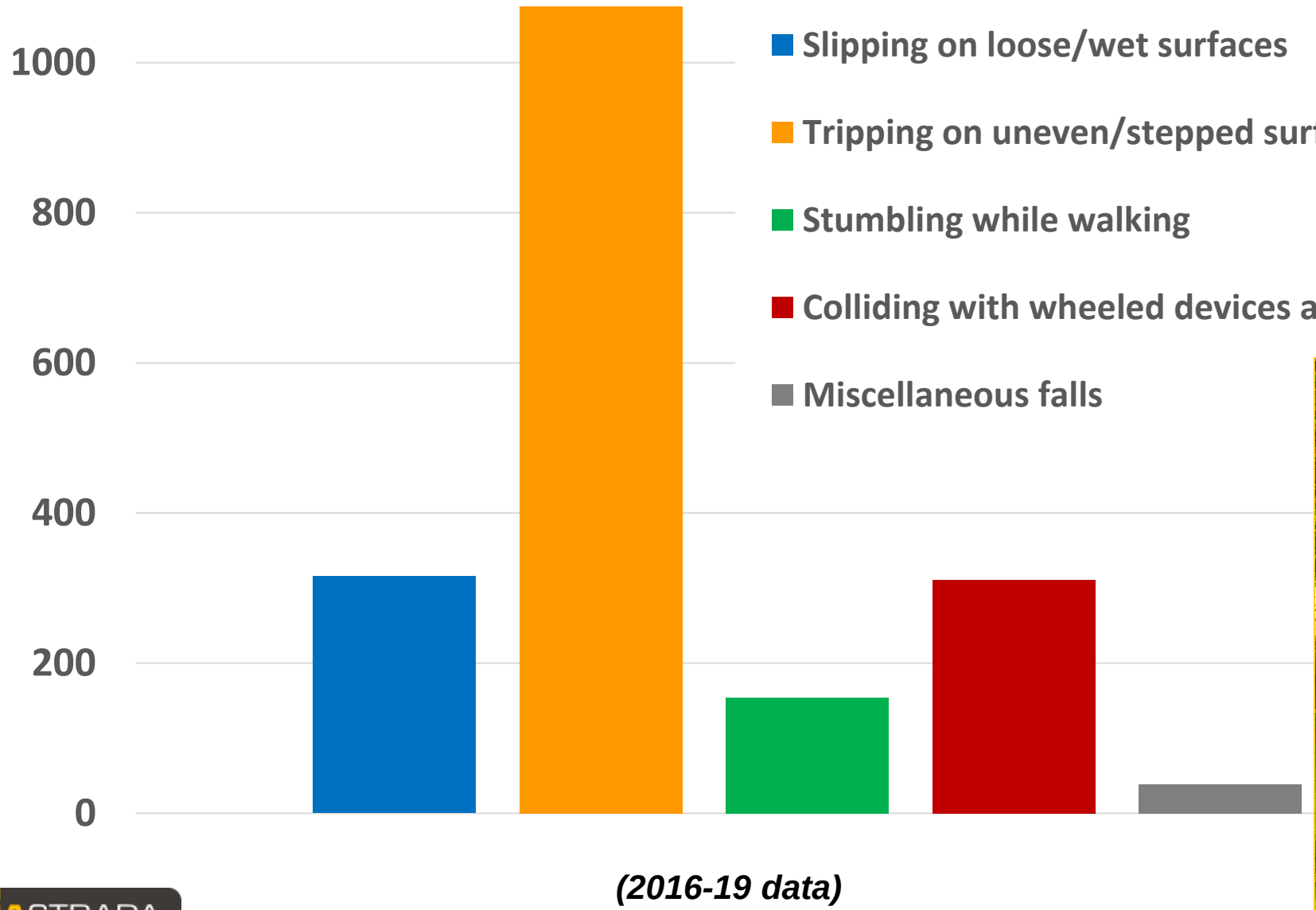


(2016-19 Auckland data)

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



Serious pedestrian-only crashes: a big problem



(2016-19 data)

- ***Only ~7% with alcohol or drugs***
- ***<1% with prior medical event***

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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

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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

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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

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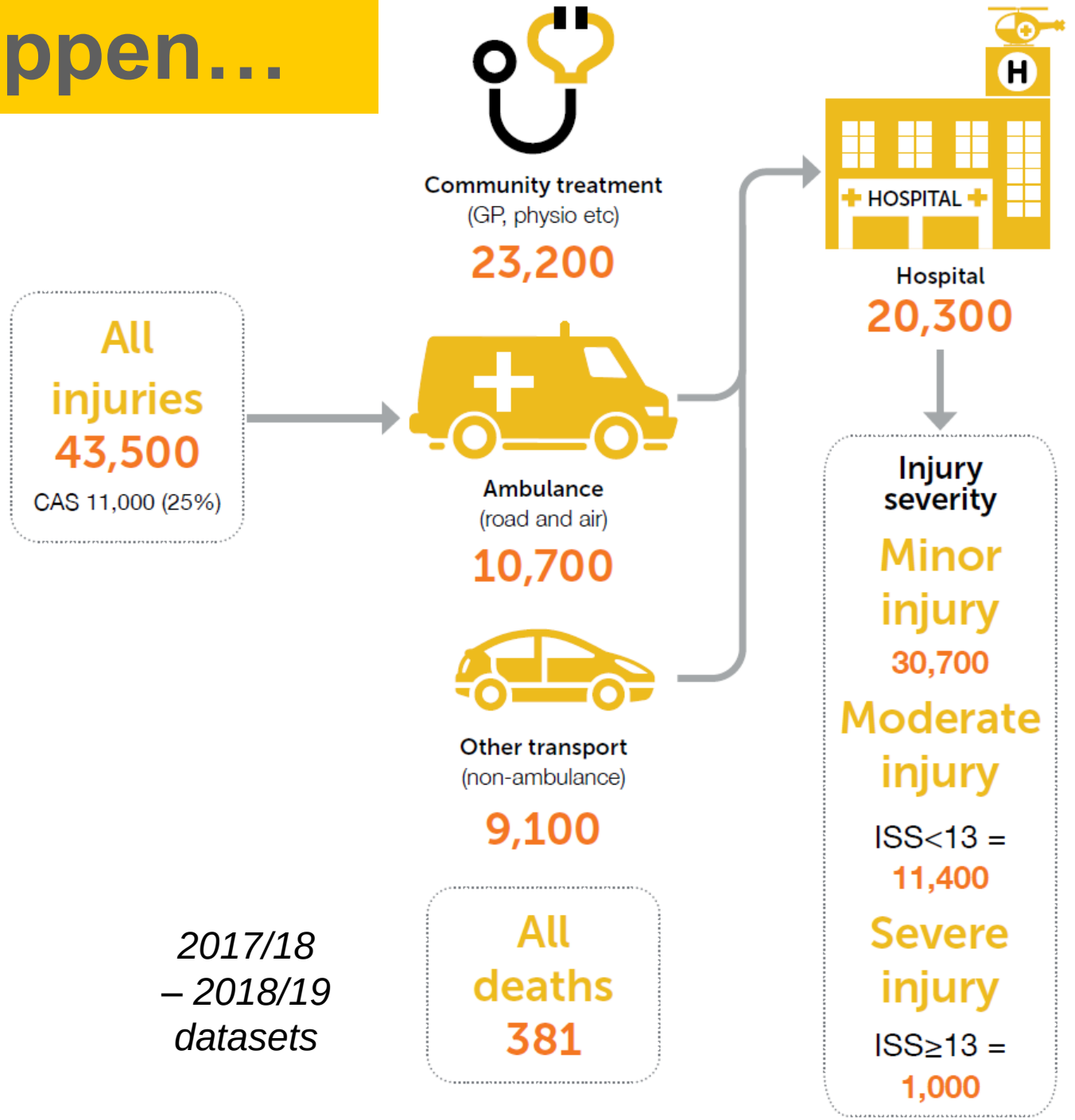
Implications

- 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

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Thank you for your time!

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