

Micromobility Research



Safety Trends and Risks

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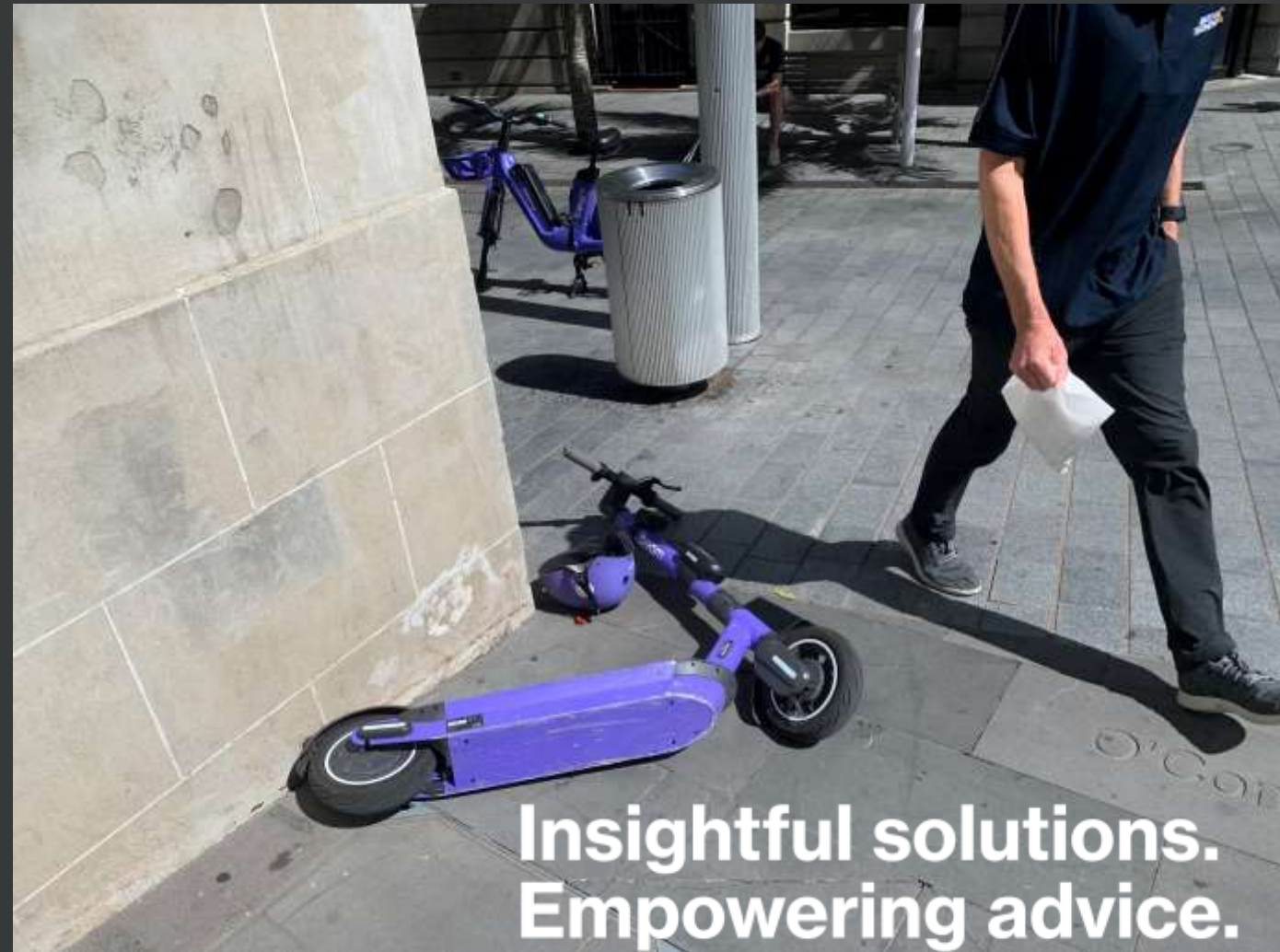


Jo Draper

11 May 2021



He Kaupare. He Manaaki.
He Whakaora.
prevention. care. recovery.

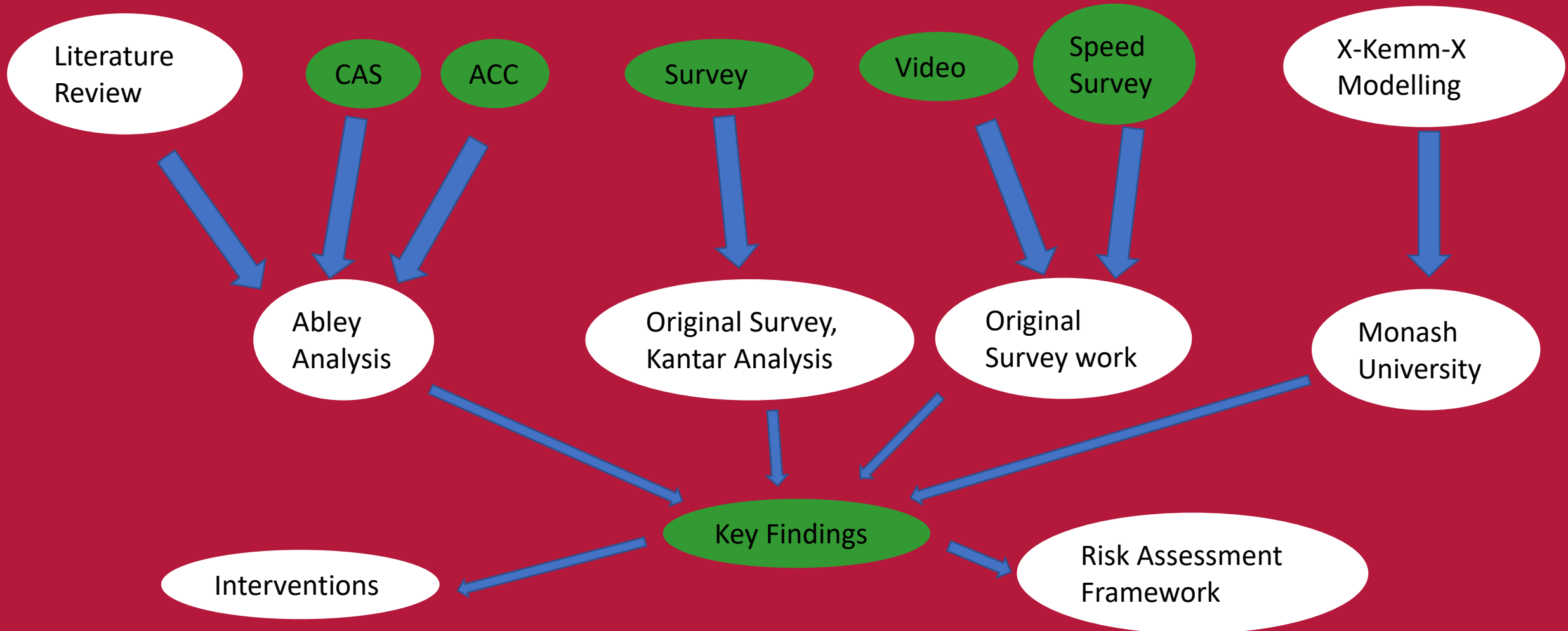


Insightful solutions.
Empowering advice.

Micromobility in this study





The shape of this study



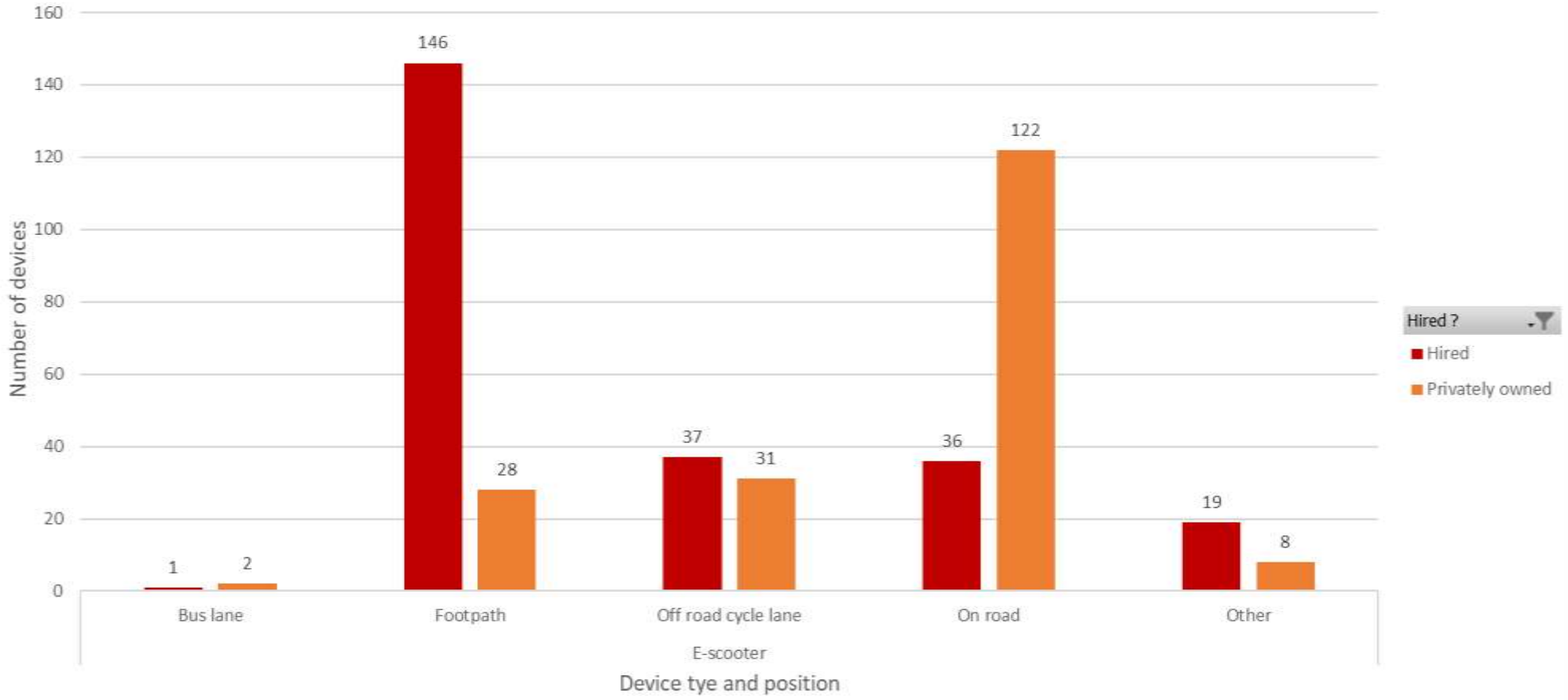
Video/Speed Data



-  Video Count Location
-  Speed Survey Location

Count of Helmet?

All sites: E-Scooter type and position



Hired ?
■ Hired
■ Privately owned

Privately owned e-scooters favour the road; hired e-scooters favour the footpath

Vehicle Type	Count	Mean Recorded Speed (km/h)*	Maximum Speed (km/h)	Helmet Use (%)
Electric Scooter - Private	156	26.44	54.00	43.6%
Electric Scooter - Hired	91	22.26	30.00	11.0%
E-Bike - Private	182	30.11	49.00	97.8%
E-Bike – Hired	9	28.86	37.00	55.6%
Bike	579	28.62	52.00	96.7%
Skateboard / Pushscooter / E-Skateboard	20	23.27	34.00	30.0%
Other	5	27.00	30.00	80.0%

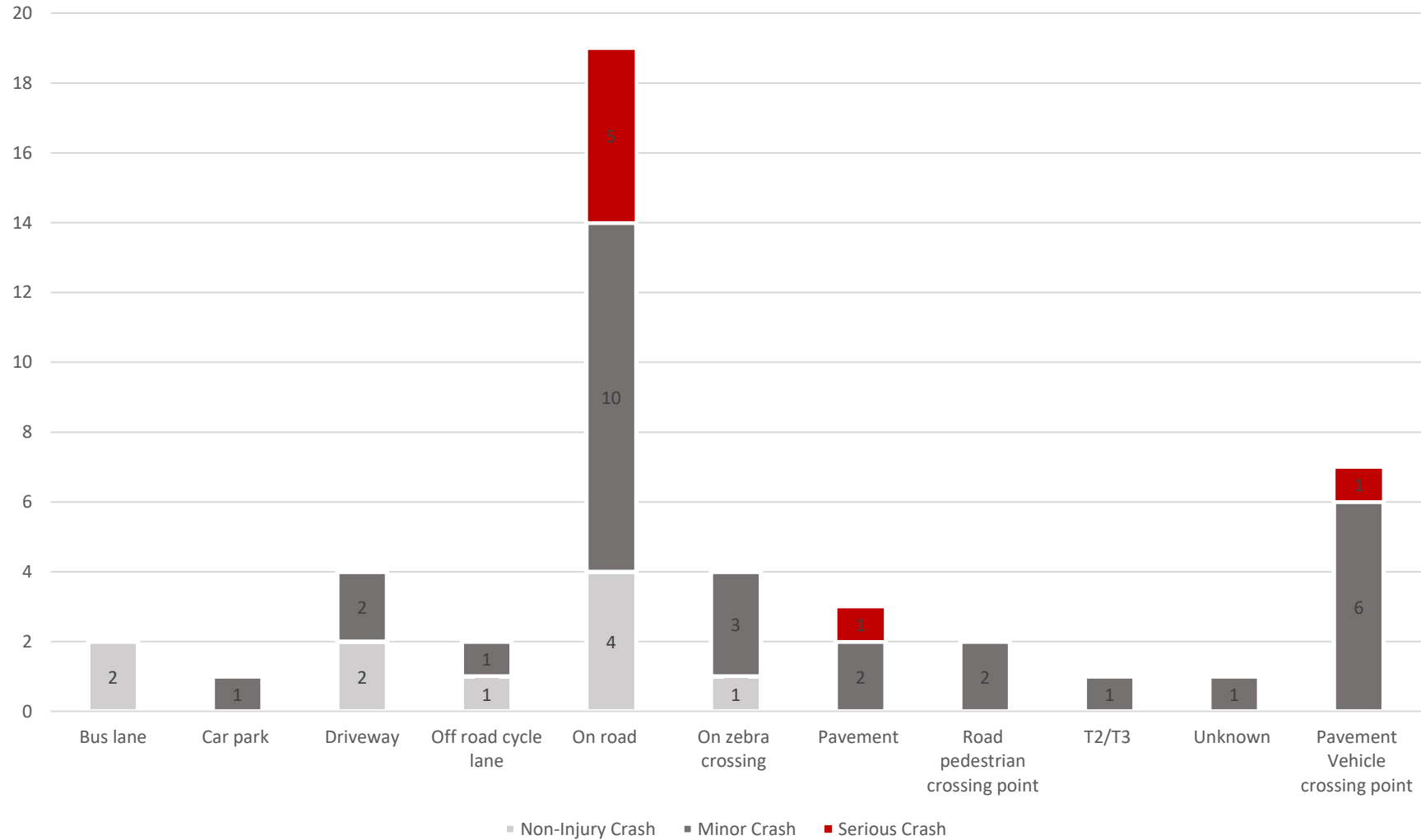
*Of speeds recorded >16kph

ACC/CAS Trends

Cycle v E Scooter Injury Type Breakdown – 2019 ACC

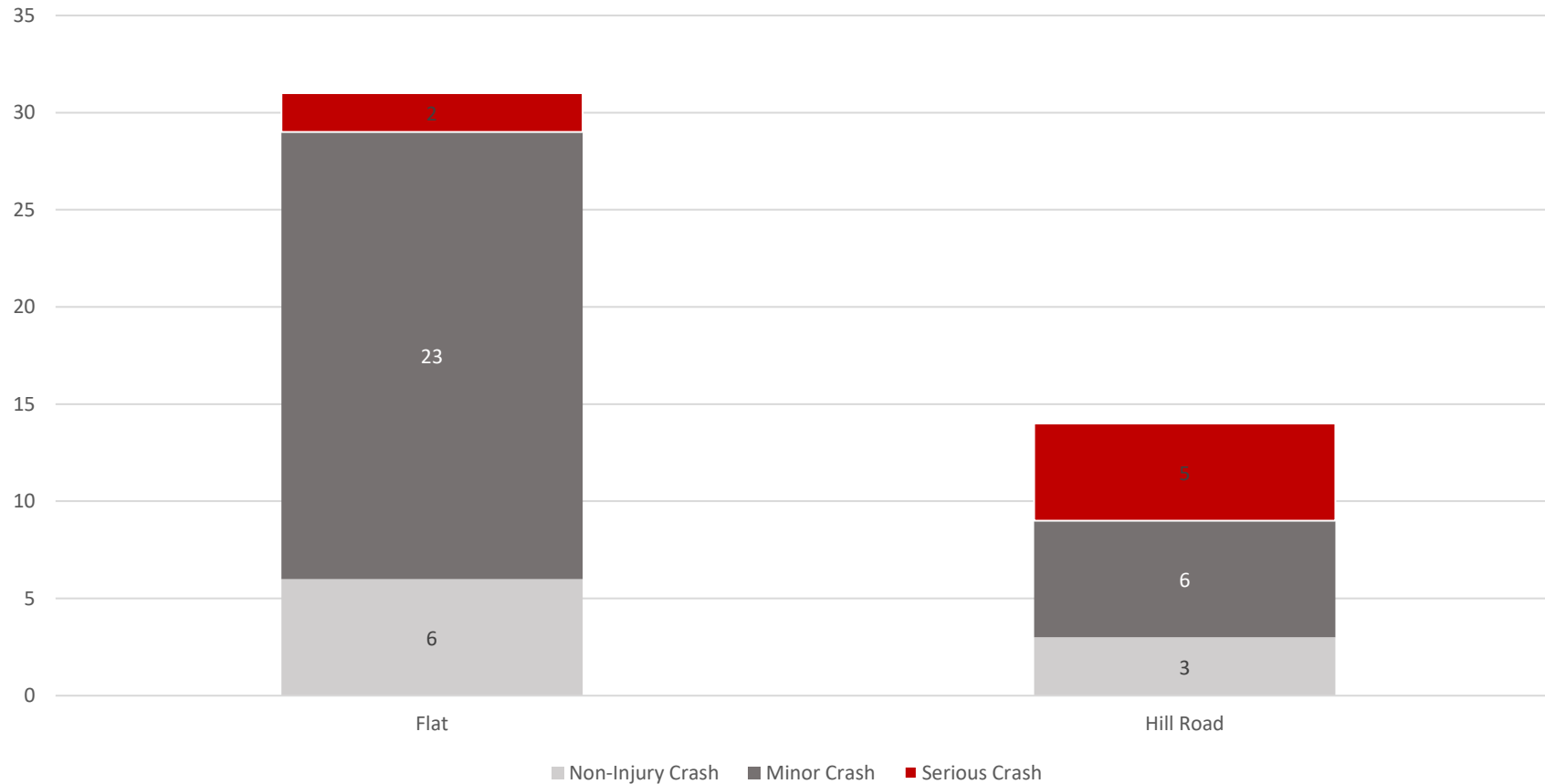
Primary Diagnosis	Cycle Injuries	E-Scooter Injuries
Soft Tissue Injury	56.8%	51.9%
Laceration /Puncture /Sting	21.7%	23.6%
Fracture /Dislocation	13.5%	16.4%
Dental Injury	2.2%	3.6%
Concussion /Brain Injury	2.0%	2.3%
Other	3.7%	2.3%

Location of Collision



CAS – Auckland
E Scooters
2016-19

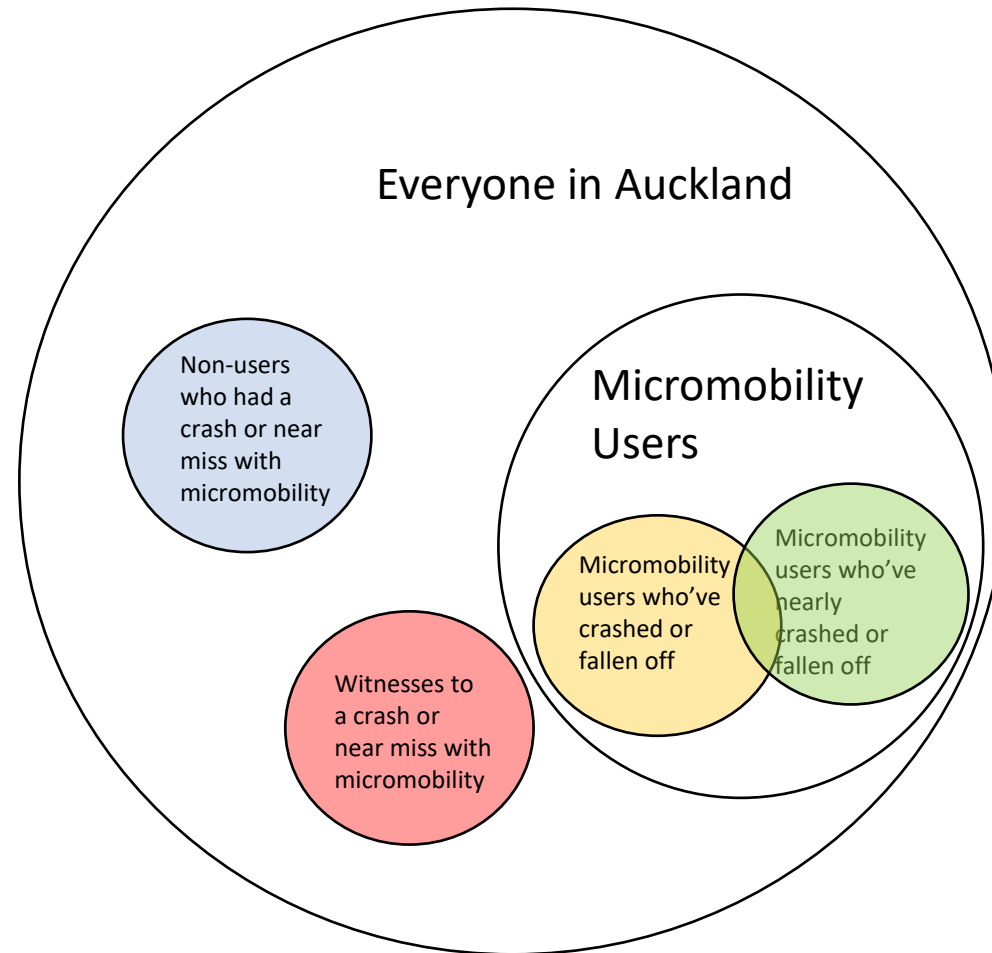
Gradient reported at collision location and severity of crash



CAS – Auckland
E Scooters
2016-19

Survey Trends

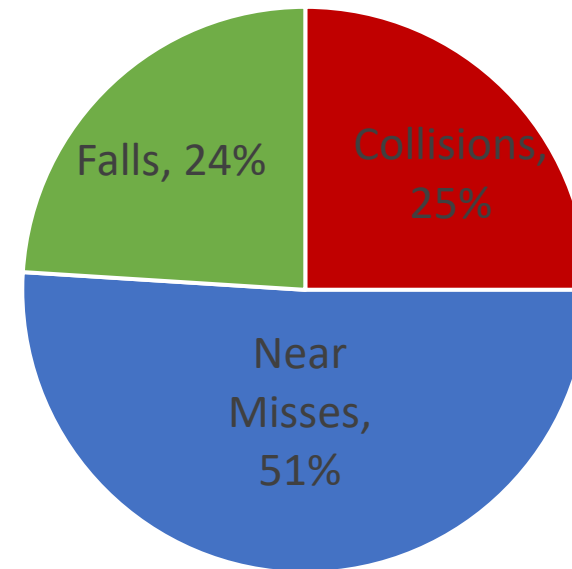
Target Groups - Survey



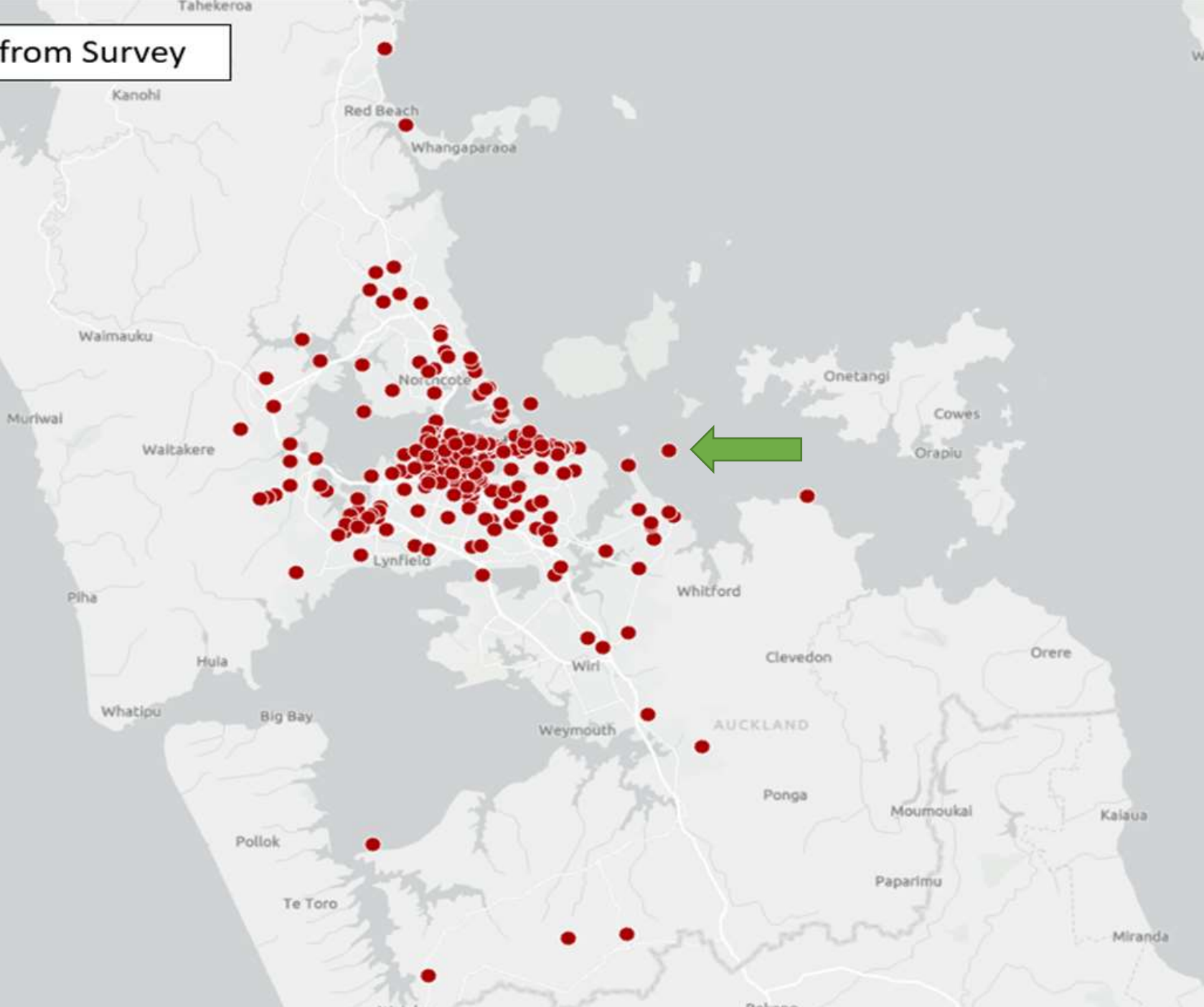
Headline Survey Statistics

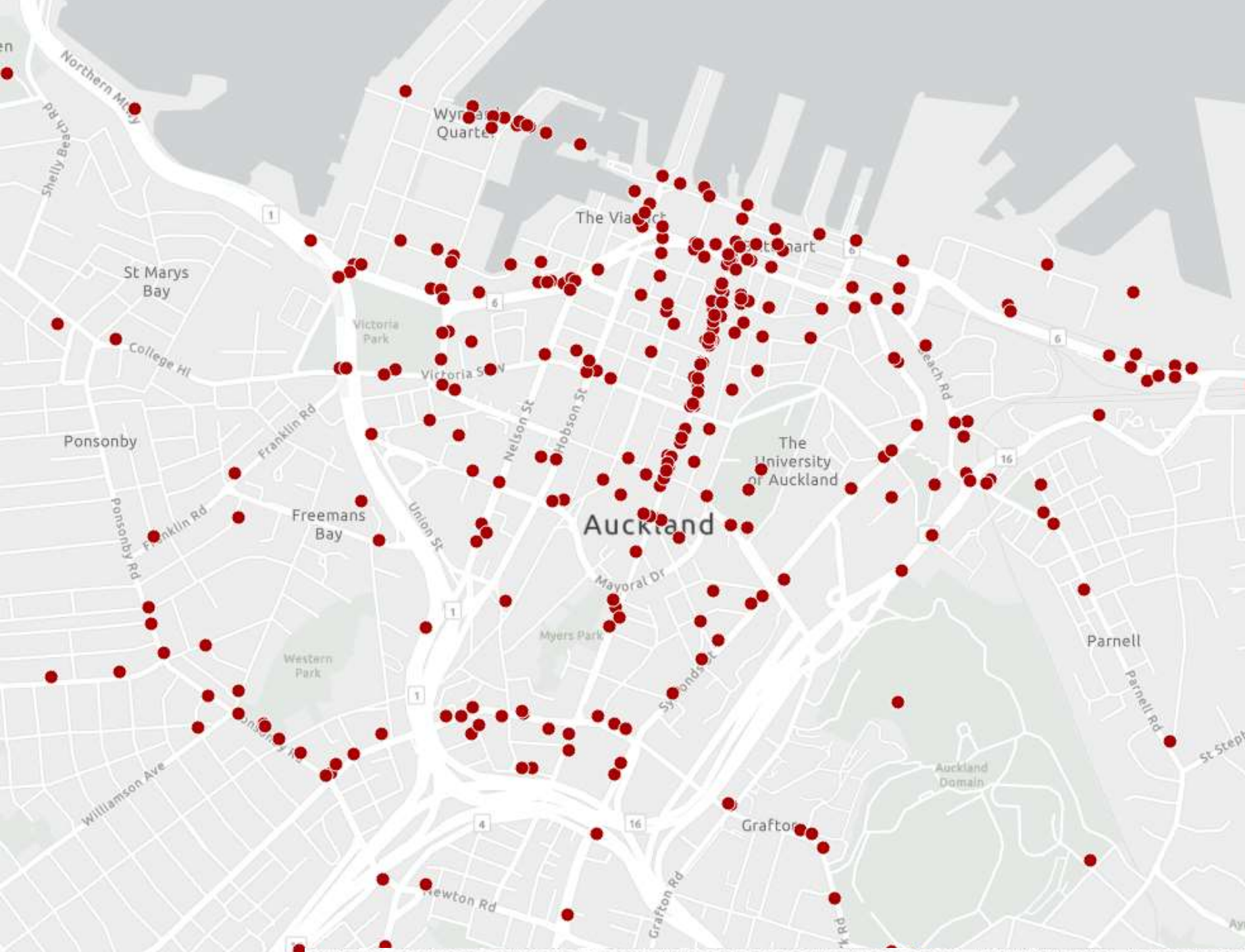
- 810 responses
- 45% screenout (no incident to report)
- 11% surveyed use e-scooters once per week, and 8% use e-bikes once per week.
- 79% responses involved e-scooters

Reported Incidents



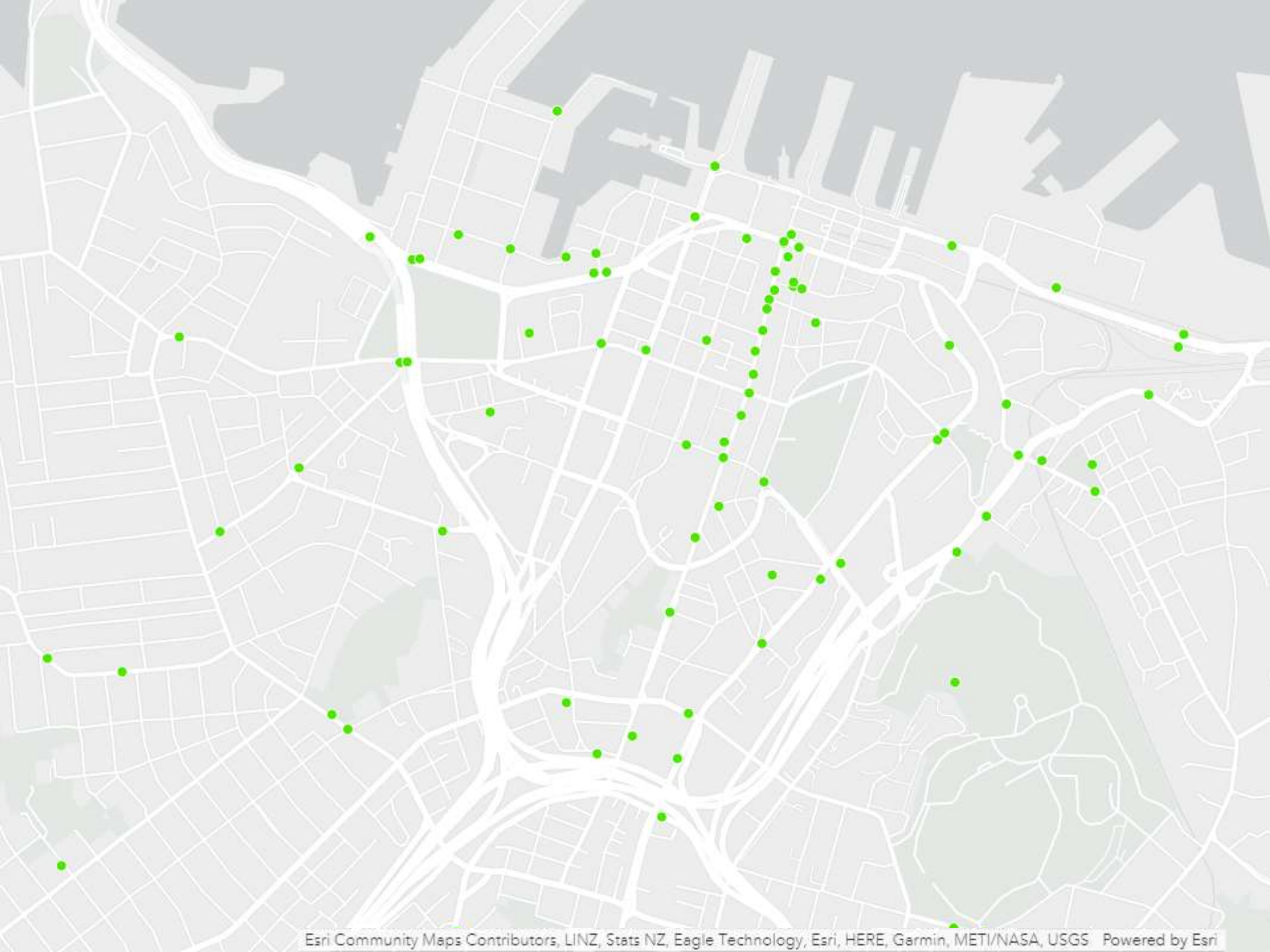
All responses from Survey





All incidents

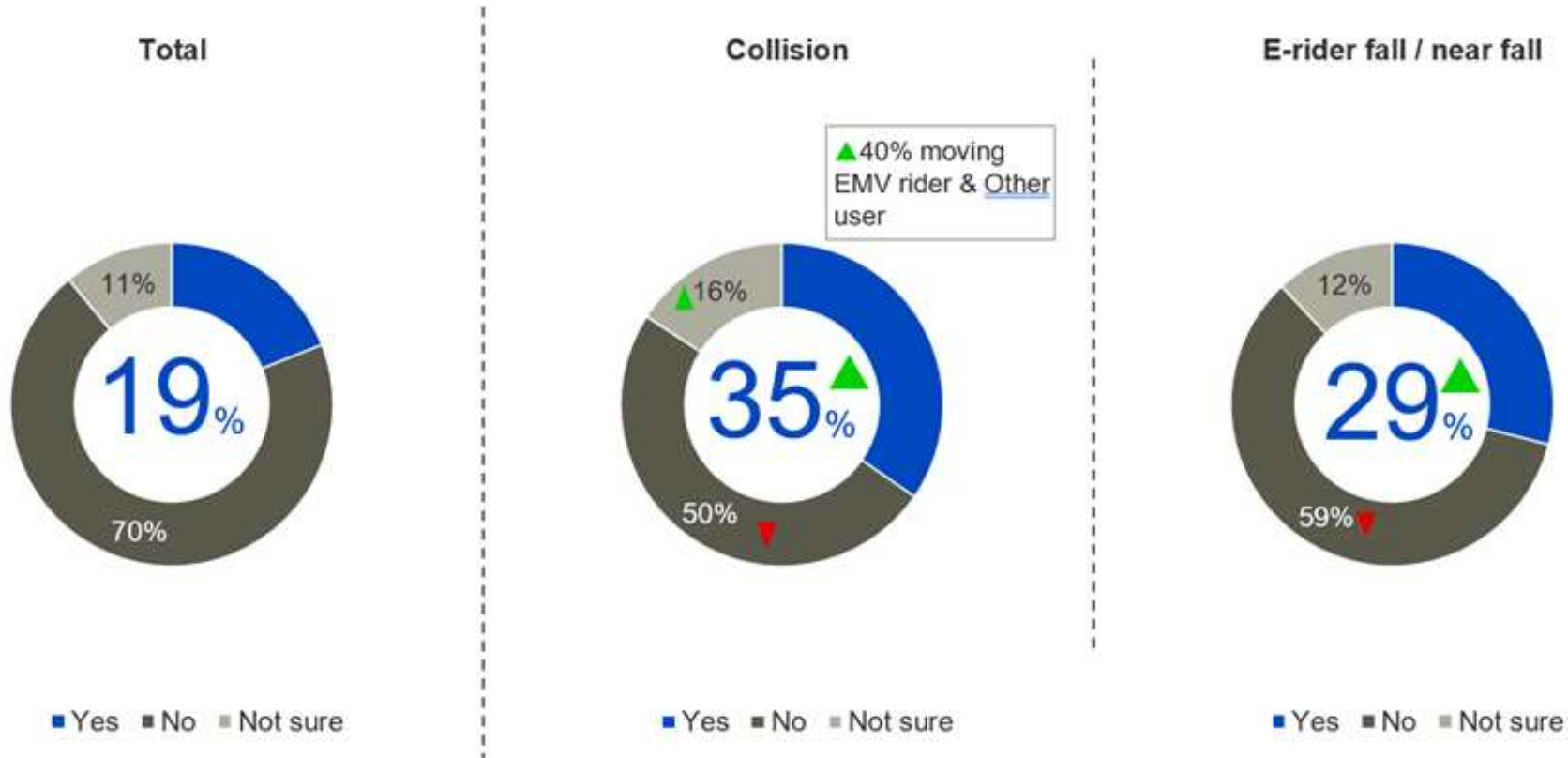


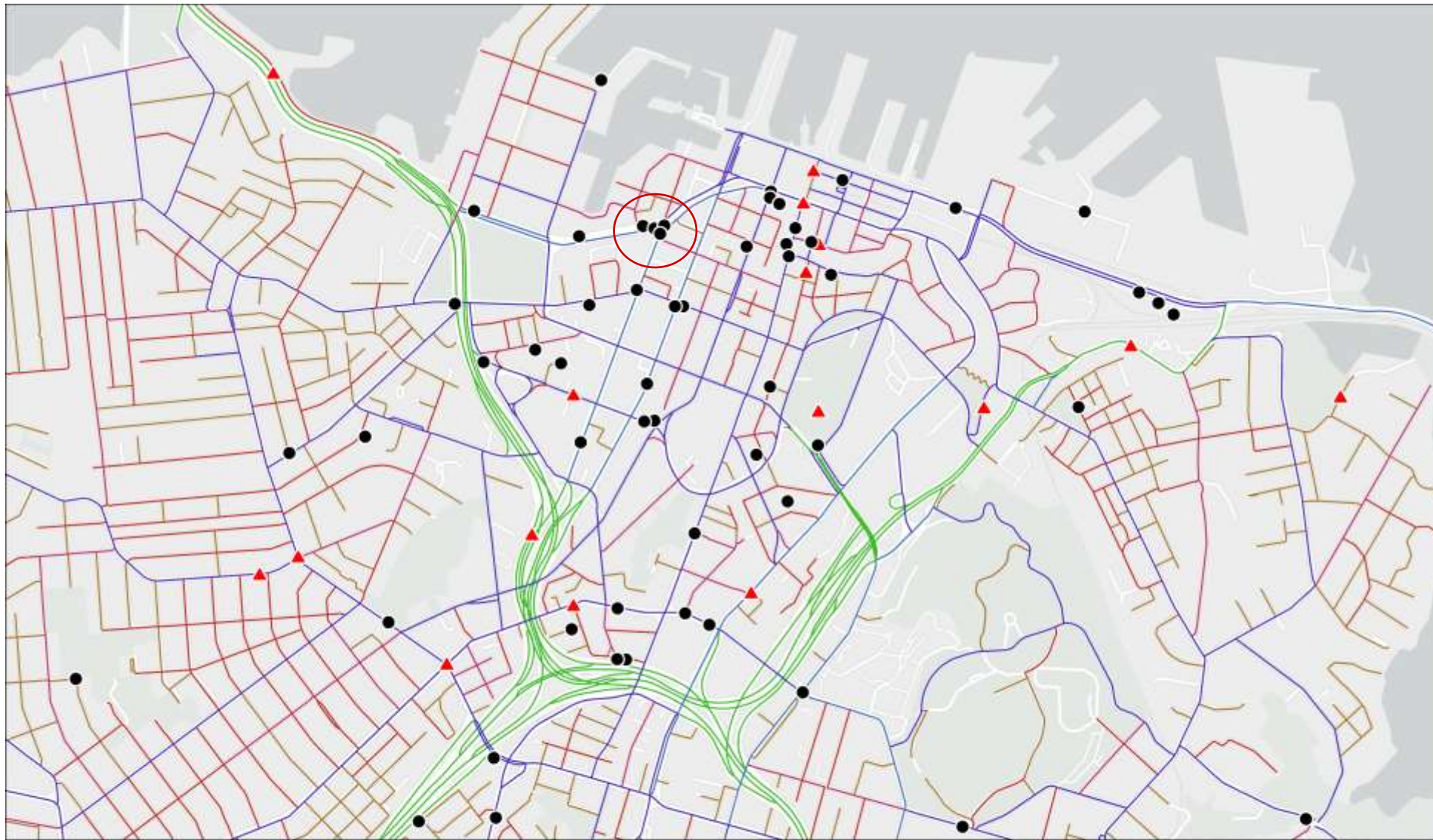


Near miss collisions

30% of collisions or falls result in injury

Was anyone injured in the incident? (% total incidents)





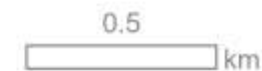
Esri Community Maps Contributors, LINZ, Stats NZ, Eagle Technology, Esri, HERE, Garmin, METI/NASA, USGS

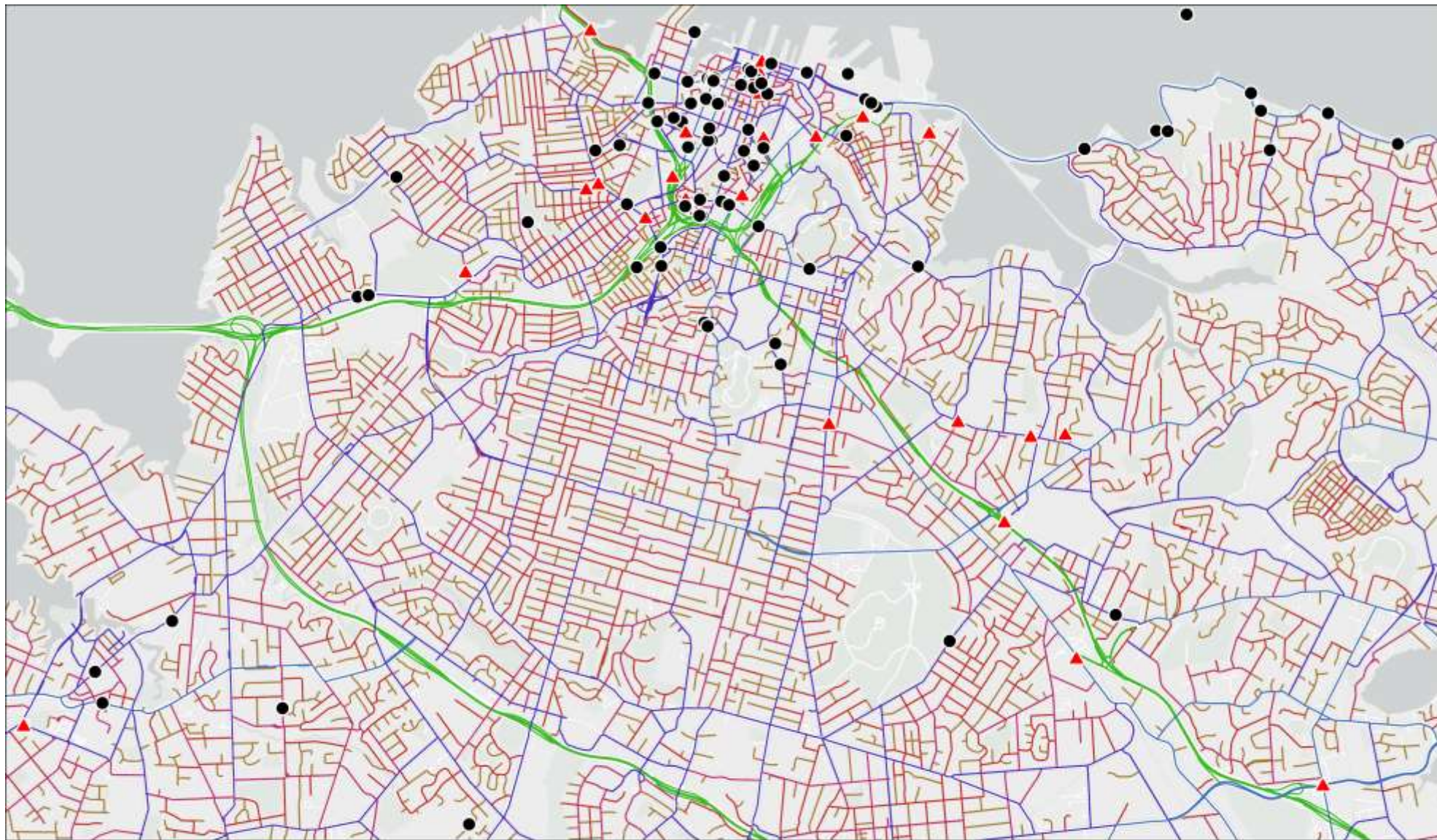
Location of injury points

- ▲ Road; Bus lane
- Footpath, shared path, cycle lane/track, square/plaza, private property, other

Road classification

- National Strategic (High Volume)
- National Strategic
- Regional Strategic
- Arterial
- Primary Collector
- Secondary Collector
- Access





LINZ, Stats NZ, Eagle Technology, Esri, HERE, Garmin, METI/NASA, USGS

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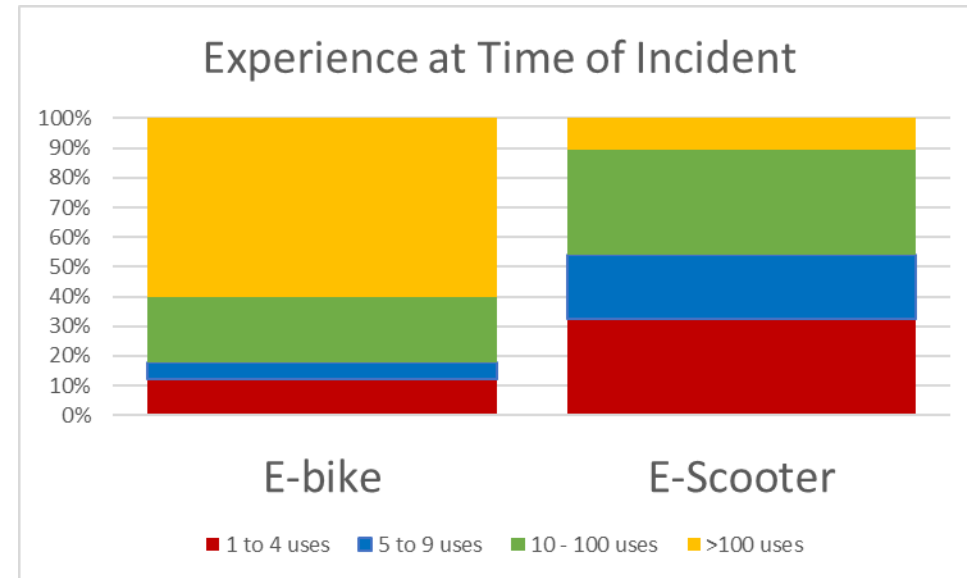
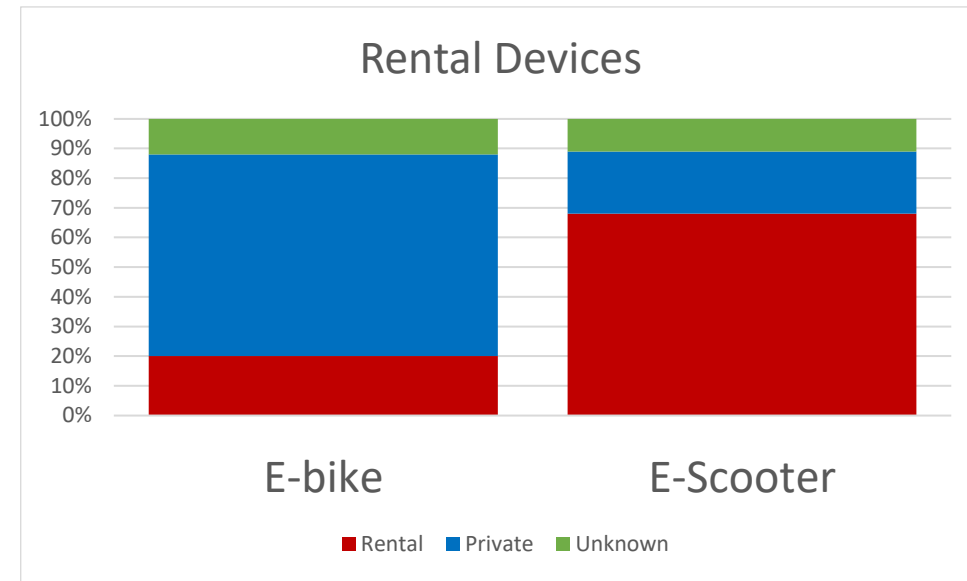
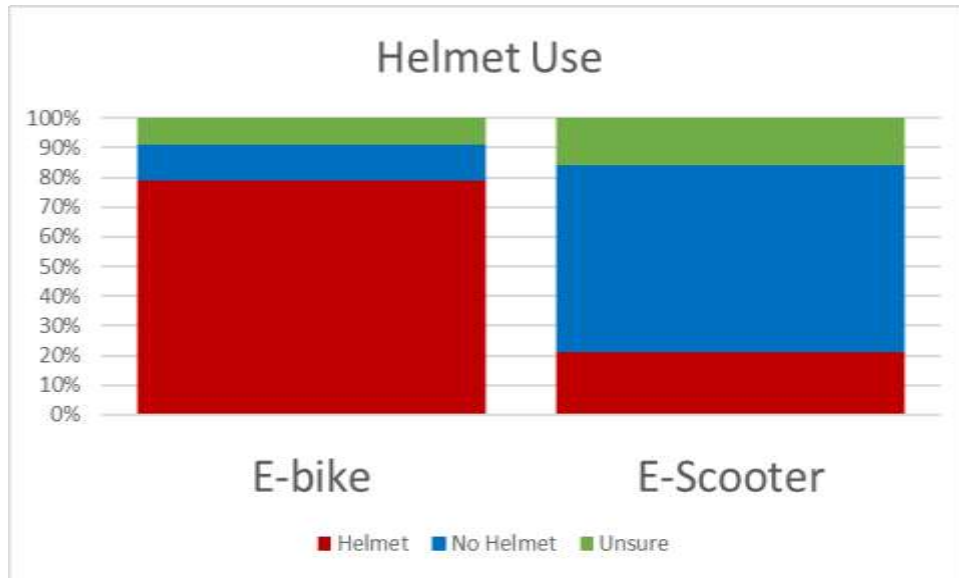
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E-bikes and E-scooters

Helmets, Experience and Rental Use in Incidents



Key Findings

- E-scooters and e-bikes behave completely differently
- E-bikes only 2kph faster than bicycles (except uphill)
- E-scooters can exceed 50kph uphill
- Injuries are most severe on road, on hills, away from CBD
- Injury profiles are very similar between vehicle types
- There is an inconsistency in helmet regulation between cycles and micromobility