

TE ARA MUA - FUTURE STREETS: Emerging impacts on road user behaviour

Lily Hirsch, Hamish Mackie, Nick Wilson,
Zénobie Cornille

MACKIE  **RESEARCH**
OPTIMISING HUMAN SYSTEMS

OUTLINE

- Background to Te Ara Mua – Future Streets
- Methods: road user interactions
- Emerging results and conclusions



BACKGROUND

TE ARA MUA - FUTURE STREETS

A project to demonstrate ‘healthier’ street and route design

A research project to measure safety, health, environmental, and social effects of improving suburban streets and routes

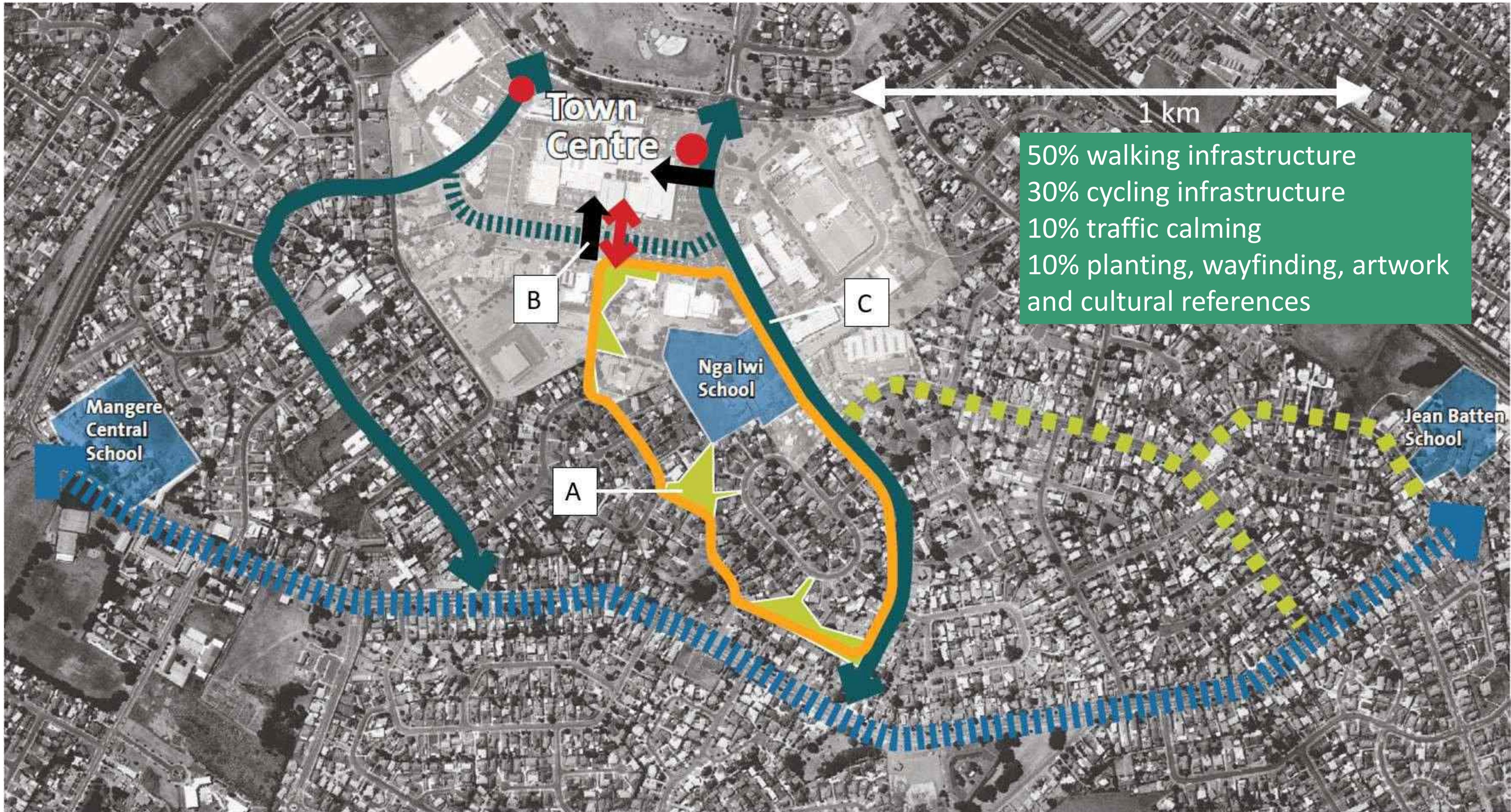


TE ARA MUA – FUTURE STREETS



Making streets around Māngere Central *safer* and easier to travel around, especially by walking and cycling; and reflecting local identity





- Māori 'Pou' or carved poles
- ↔ Pedestrian route art
- Walking and cycling trail
- Public parks
- Reconfigured minor arterial road
- Calmed local streets
- Painted pedestrian route through car park
- New and upgraded crossings (cycle lanes to be added in future)
- Improved pedestrian access to mall

WINDRUSH PARK

A



WINDRUSH PARK

A



TOWN CENTRE

B



TOWN CENTRE

B



MASCOT AVENUE

C



MASCOT AVENUE

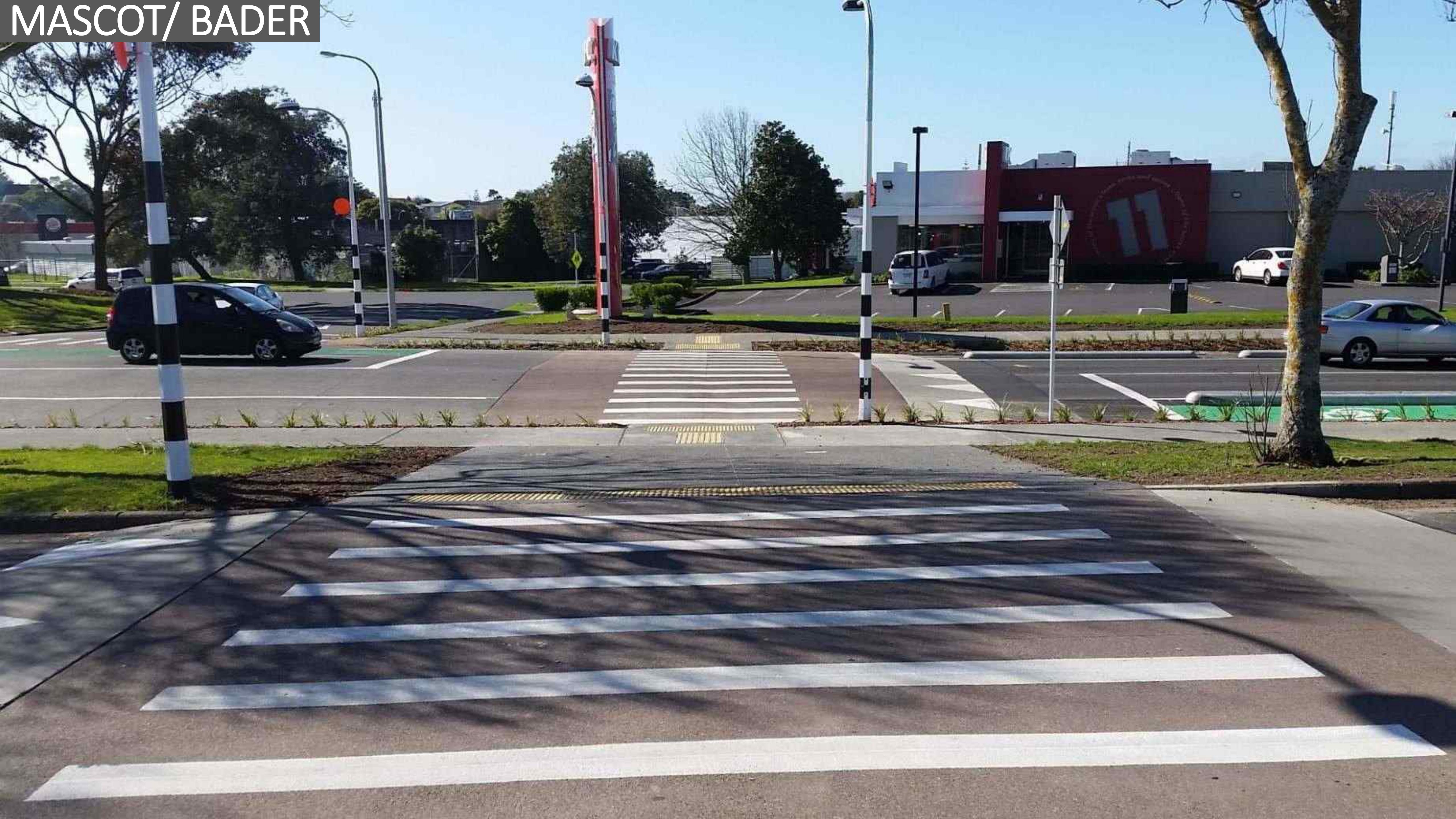
C



MASCOT/ BADER

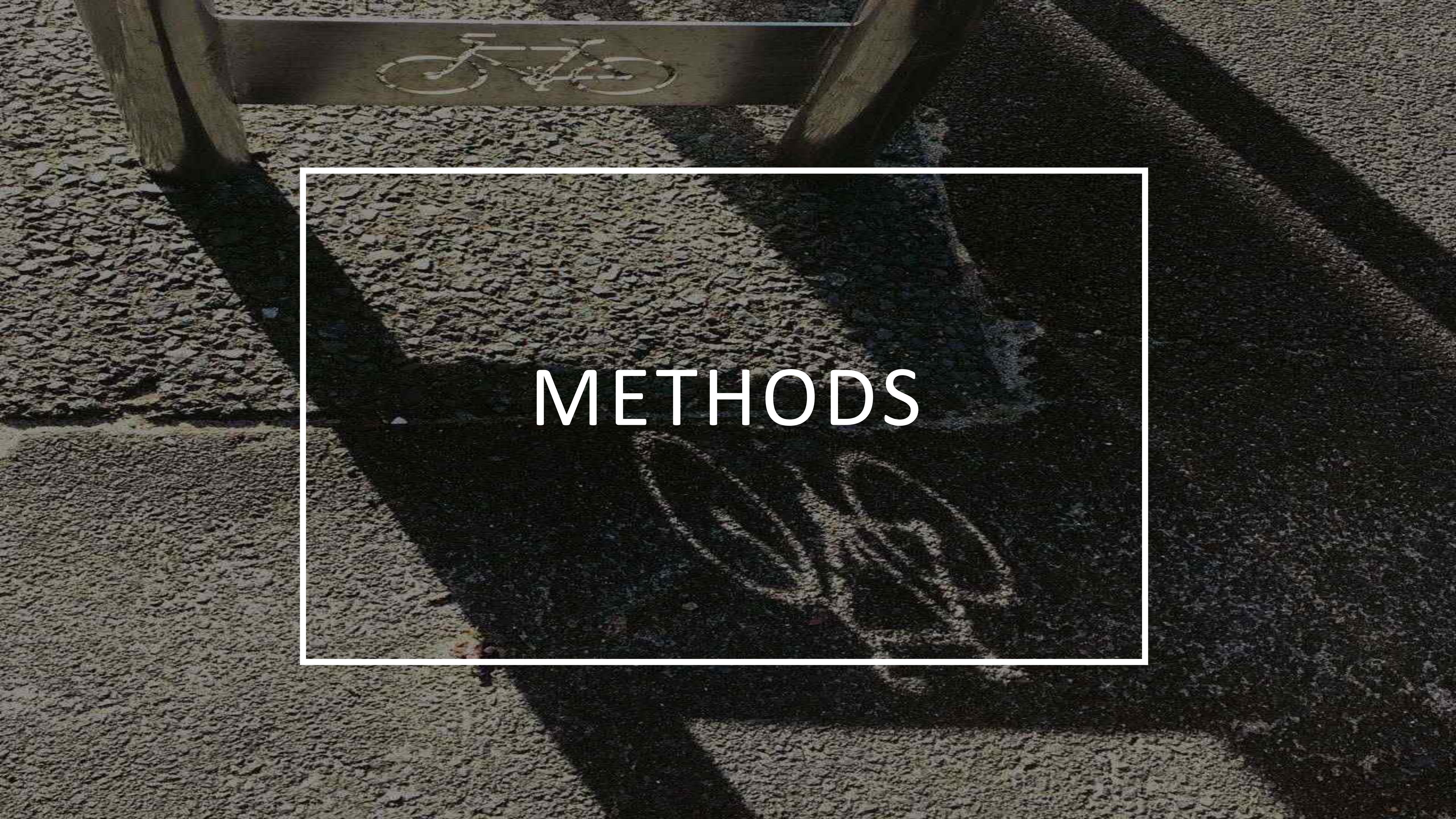


MASCOT/ BADER



Pedestrian priority where there are lots of pedestrians,
better access to the town centre





METHODS

	Intervention area Māngere Central	Control area Māngere East
Before	<p>Traffic behaviour</p> <ul style="list-style-type: none"> • Speed & counts measures • Video of behaviour <p>Motorists, peds & cyclists Footpaths & roads</p> <p>Residents surveys</p> <ul style="list-style-type: none"> • Mode use to local destinations • Physical activity • Neighbourhood perceptions • Injuries (self report & data linkage) • Children & adults 	
After		



Intervention and control areas were matched for:

- Access to amenity destinations
- Street layout and age of development
- Demographics

Aim of road user interaction analysis

To understand the effects of Future Streets Treatments on:

Road user behaviour

Road user interactions

Hypothesis: Future Streets treatments will create a safer and more user-friendly road network that matches the intended road function.

Video coding system method development

Previous Studies

Point England, Self-explaining Roads (*Mackie, 2013*)

Traffic Conflict Studies (*St Aubin, 2015*)

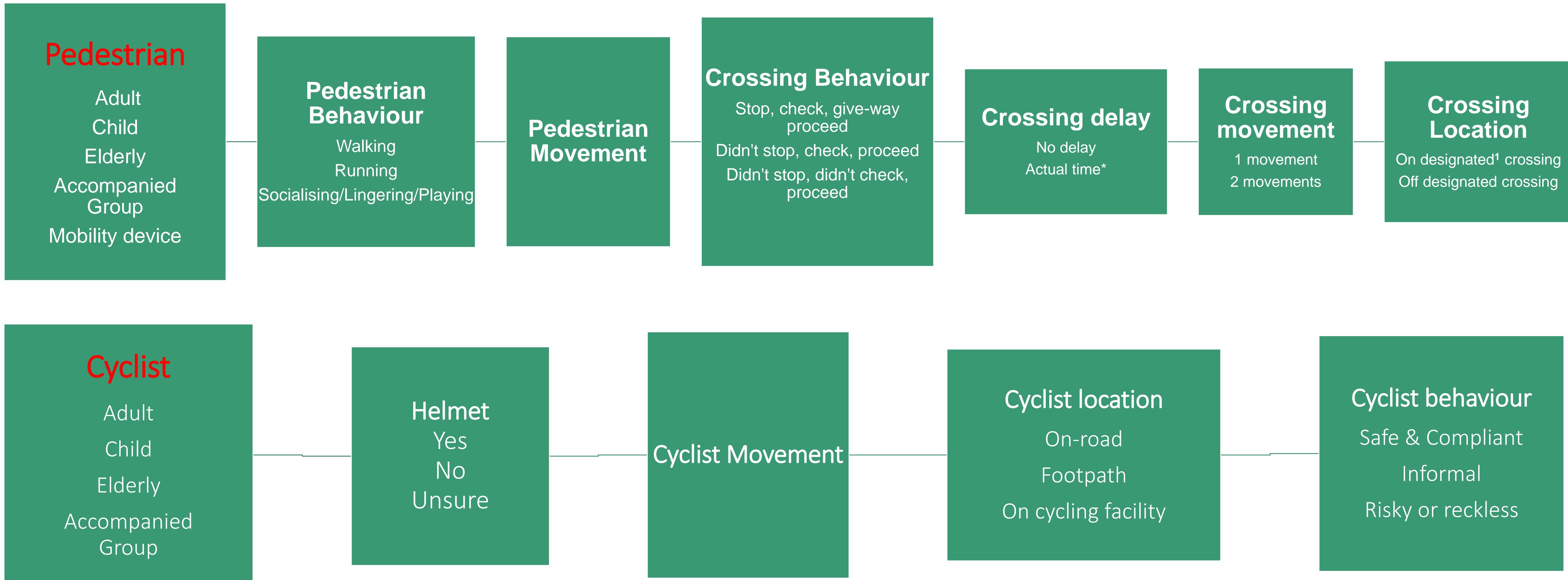
Naturalistic Cycling Studies (*Johnson 2010*)

Before/After evaluation of infrastructure treatments (*Hunter, 2012*)

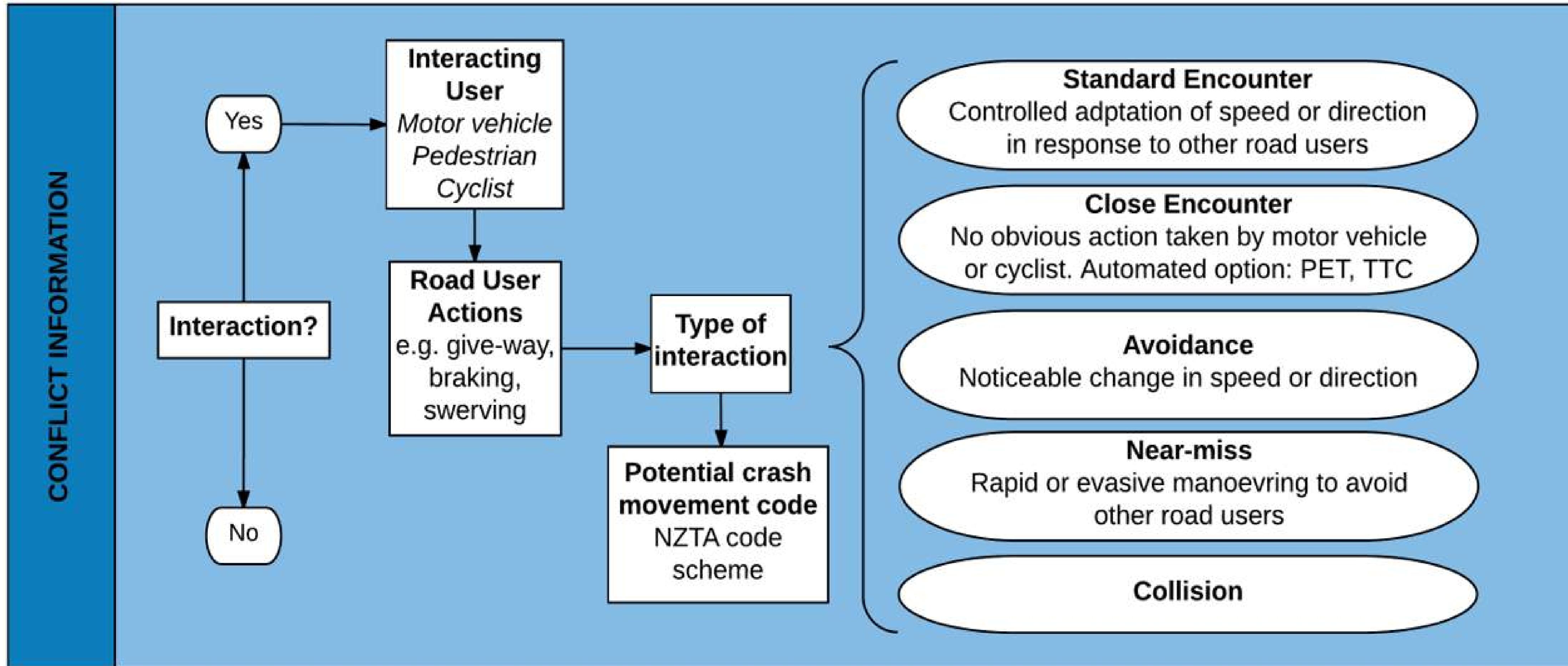
Hybrid automated/manual method – cyclists (*Thomas, 2018*)

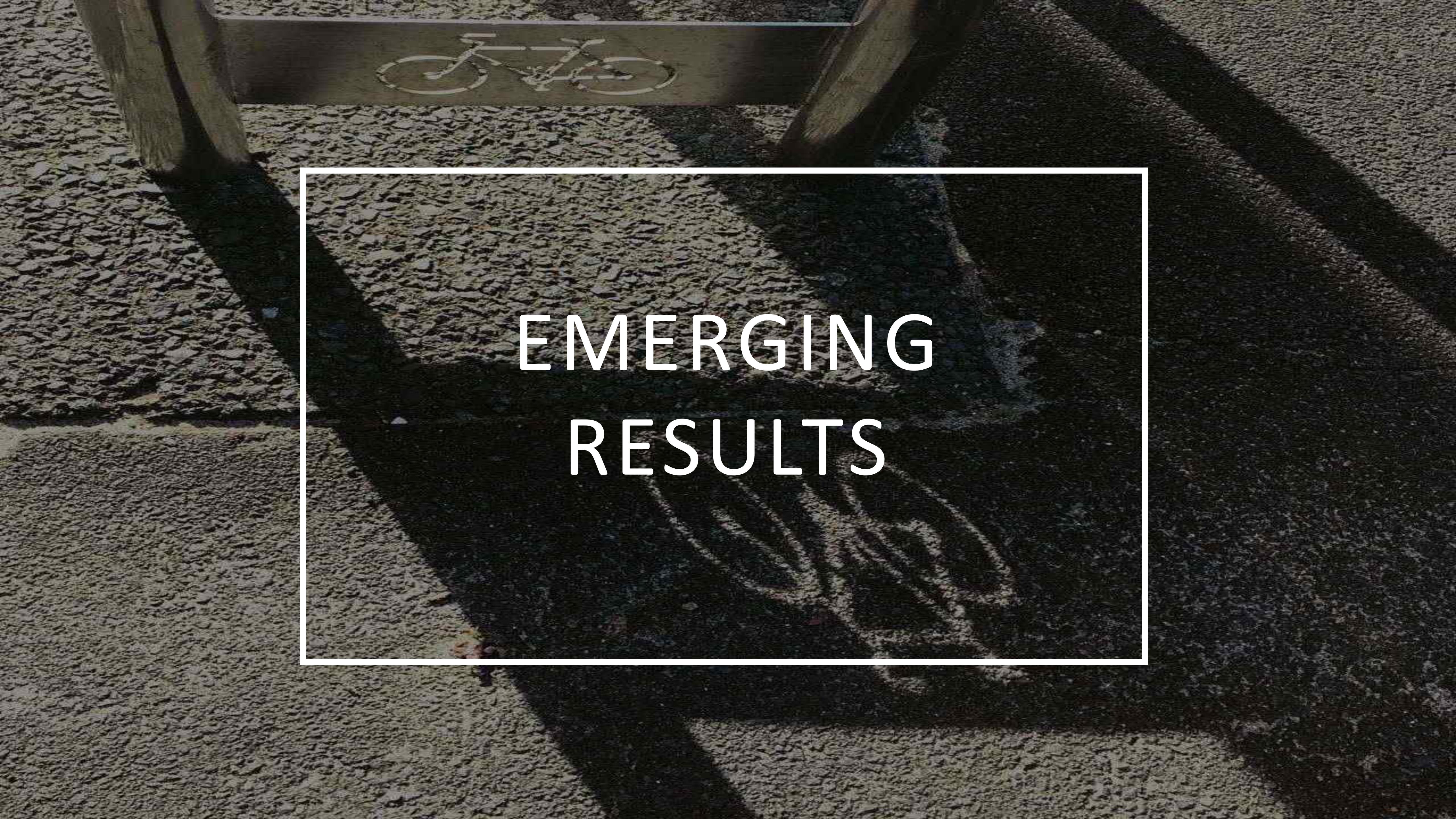


Vulnerable road user behaviour



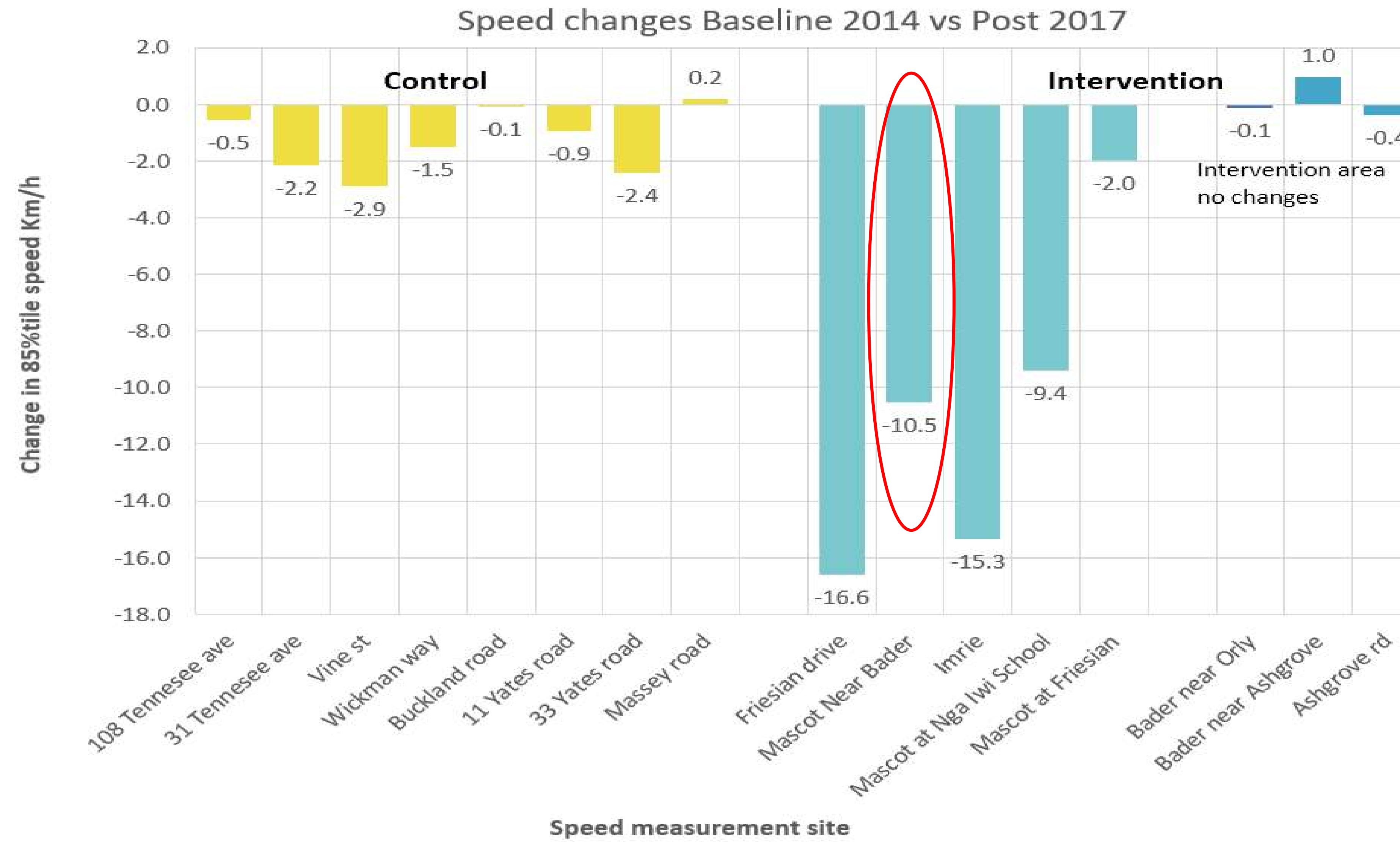
Road user interactions



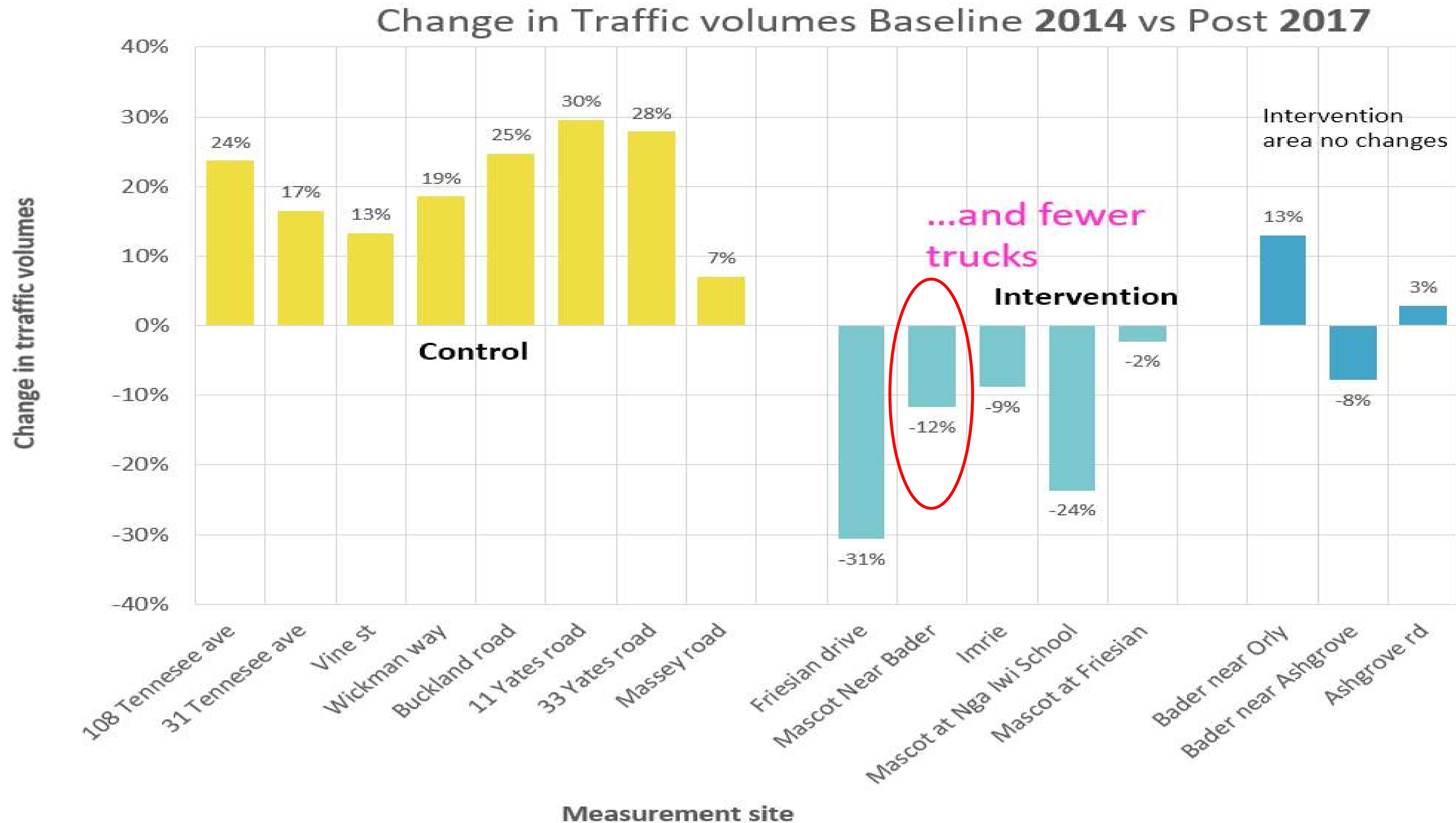


EMERGING RESULTS

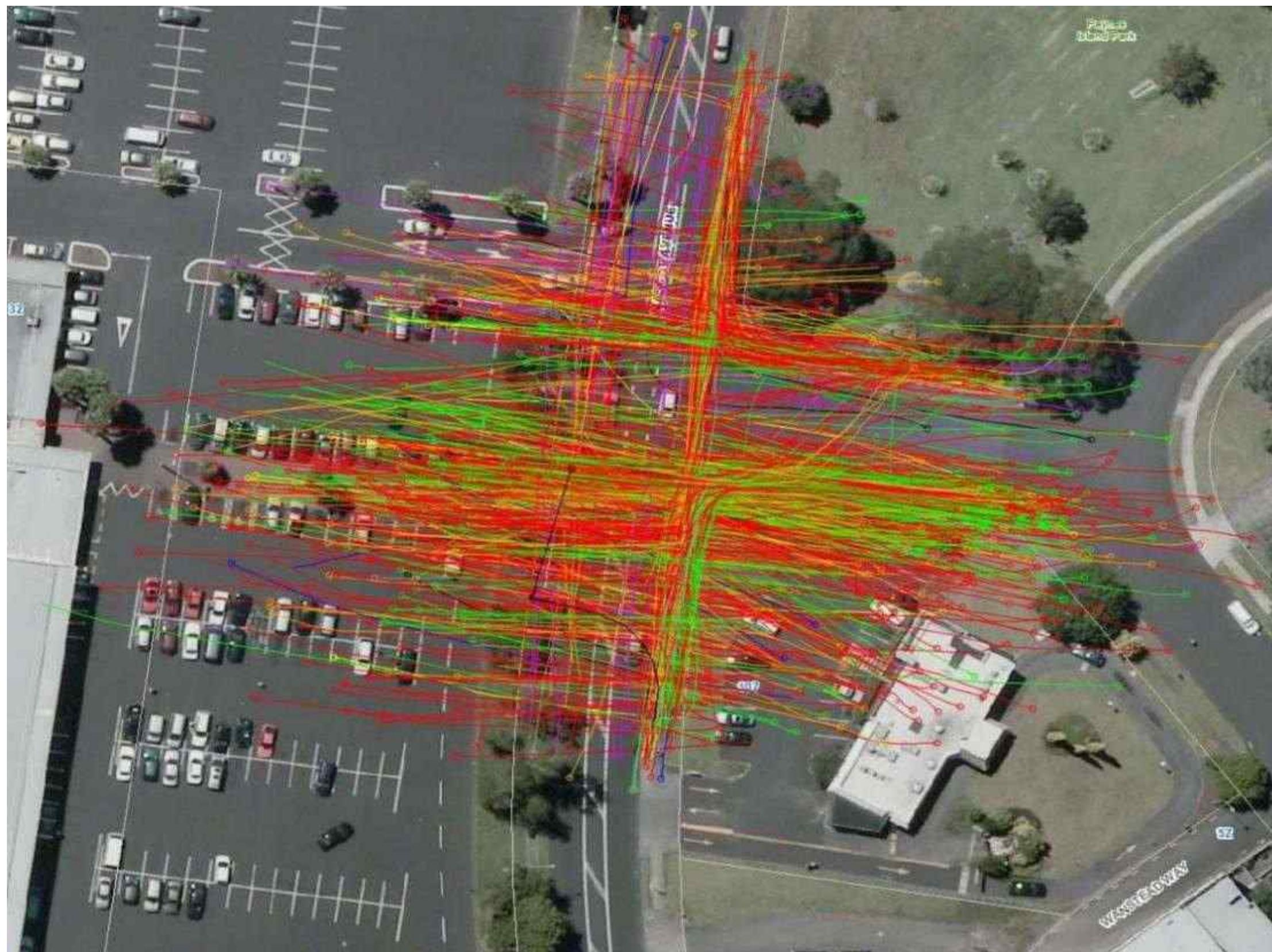
SLOWER SPEEDS



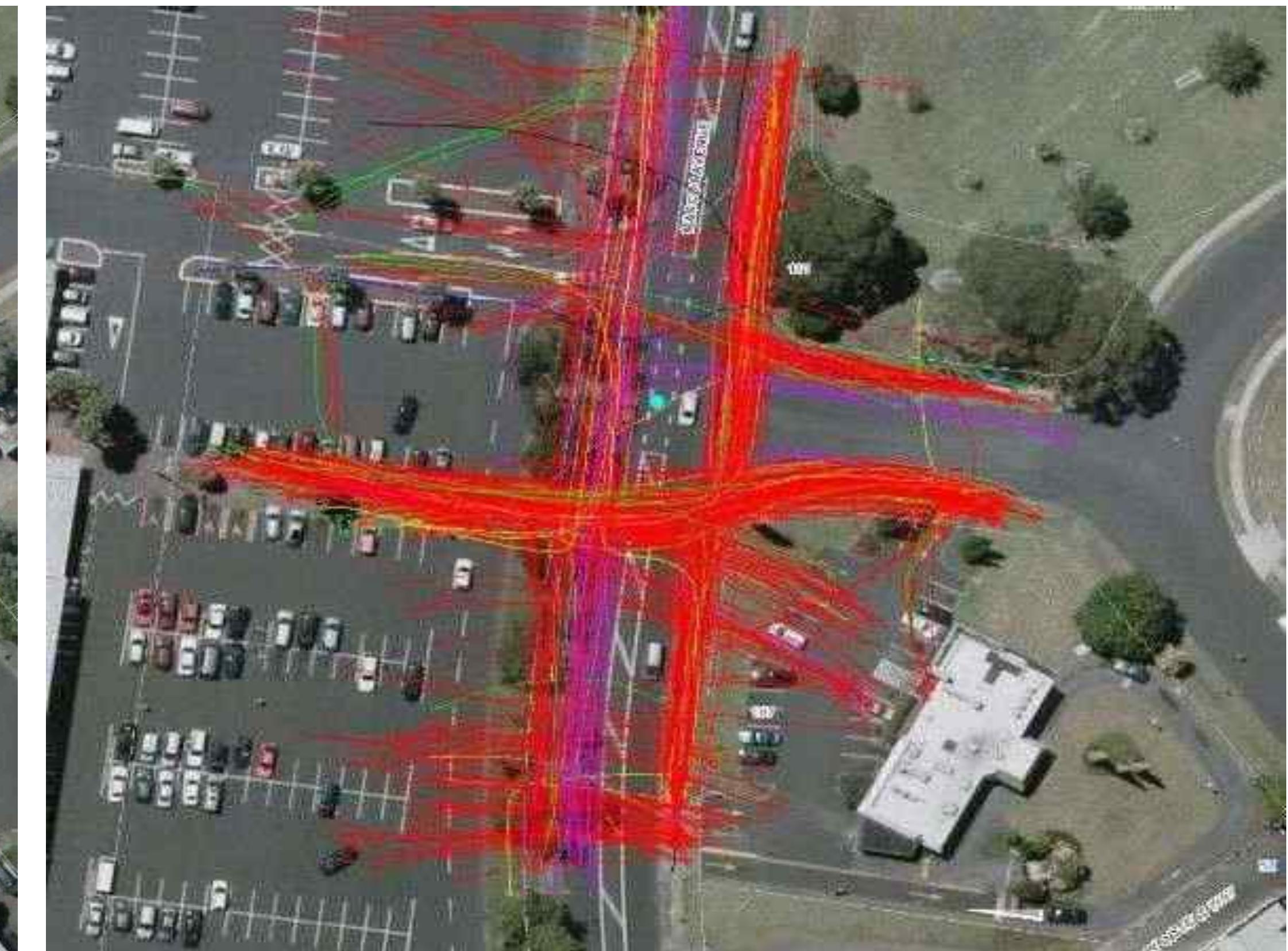
LESS TRAFFIC



SAFER CROSSING BEHAVIOUR



2014



2017

CHANGES TO CROSSING MOVEMENTS

'Wheeled' movement has increased:

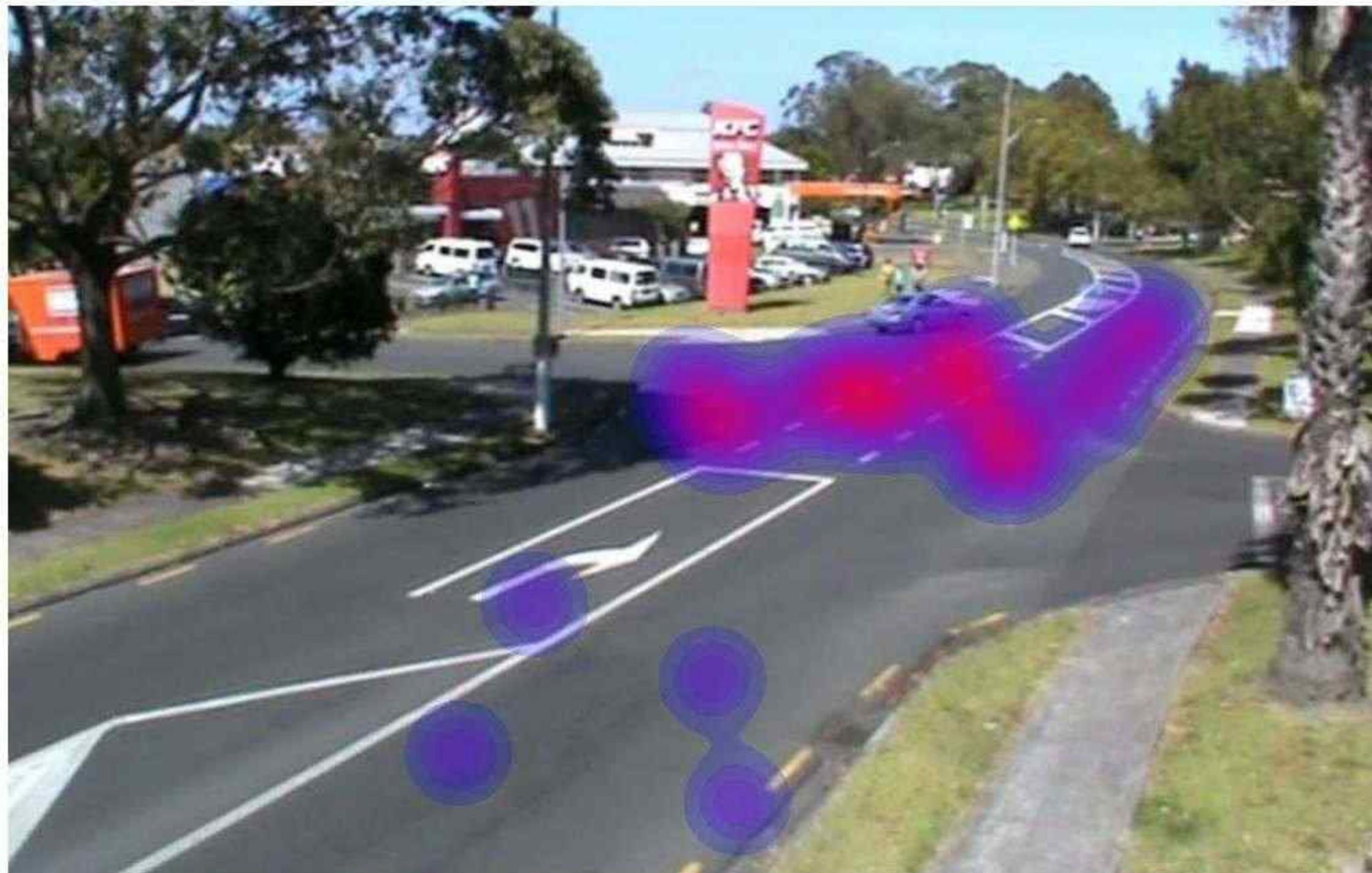
- Mobility-assisted movement has increased from **0.3% to 1.9%** of all pedestrians (from 2 pedestrians to 12)
- Pram movements 12 → 14
- Scooting and skating 0 → 5

Pedestrian crossing movements are safer, quicker, and more continuous:

- Crossing movements were **continuous** (pedestrians had to stop in the middle of the road); **51% → 97%** are continuous
- Pedestrians had to **wait more than 3 seconds** to cross: **77% → 16%**
- **Fewer running across road**

FEWER INTERACTIONS

Pedestrian-car interactions



2014



2018

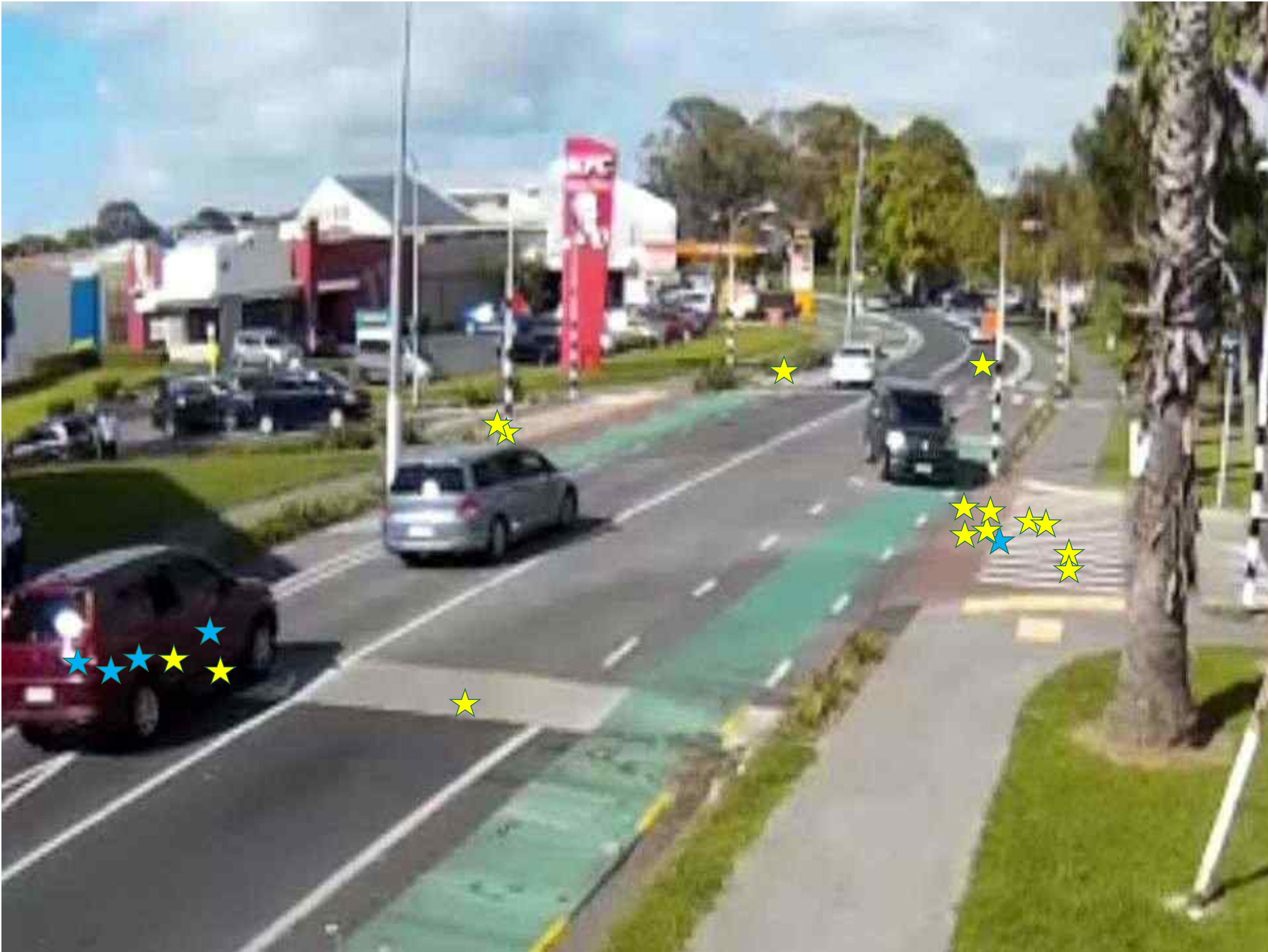
Higher frequency
Lower frequency



Pre Events

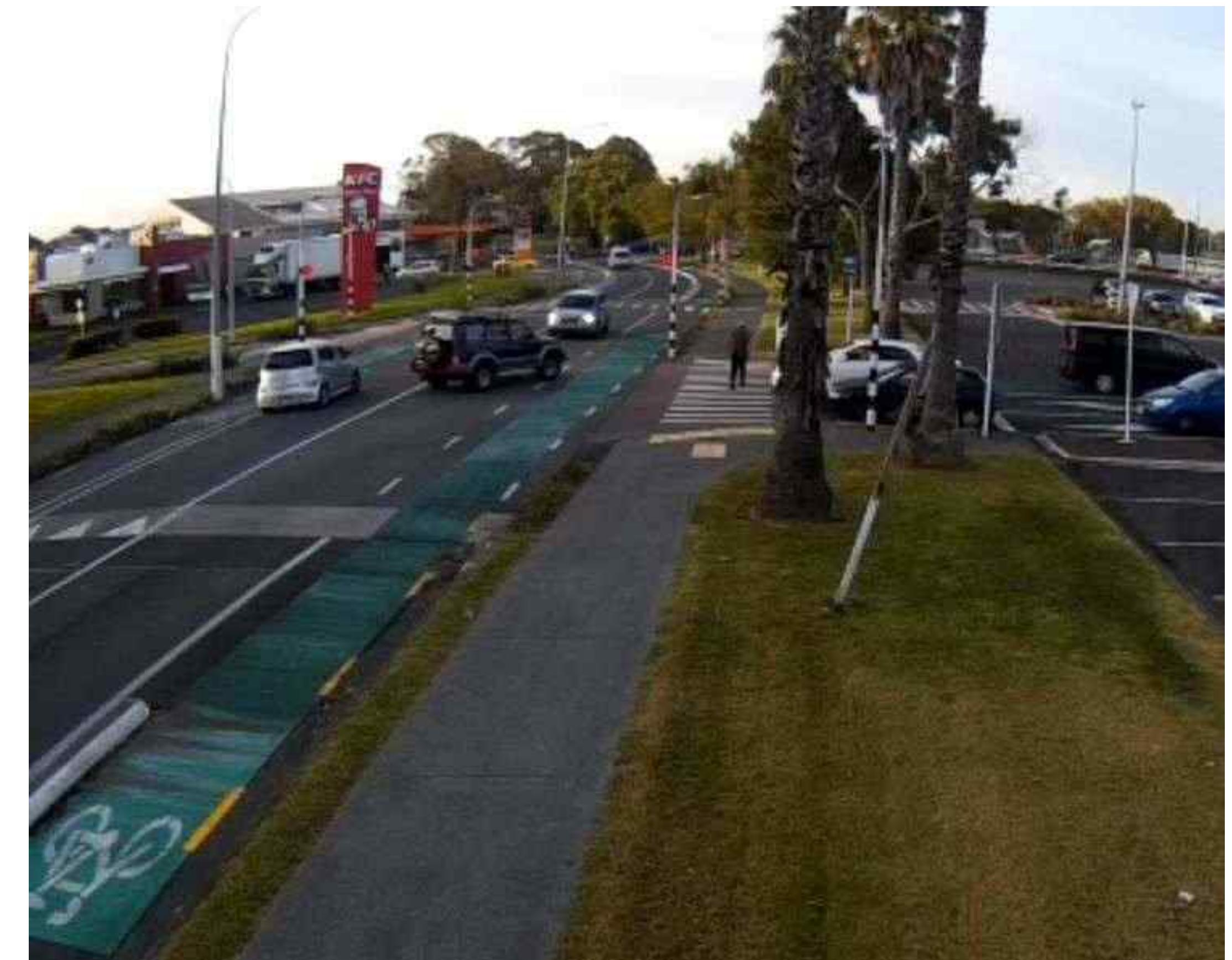
- ★ Close encounter
- ★ Avoidance
- ★ Near Miss



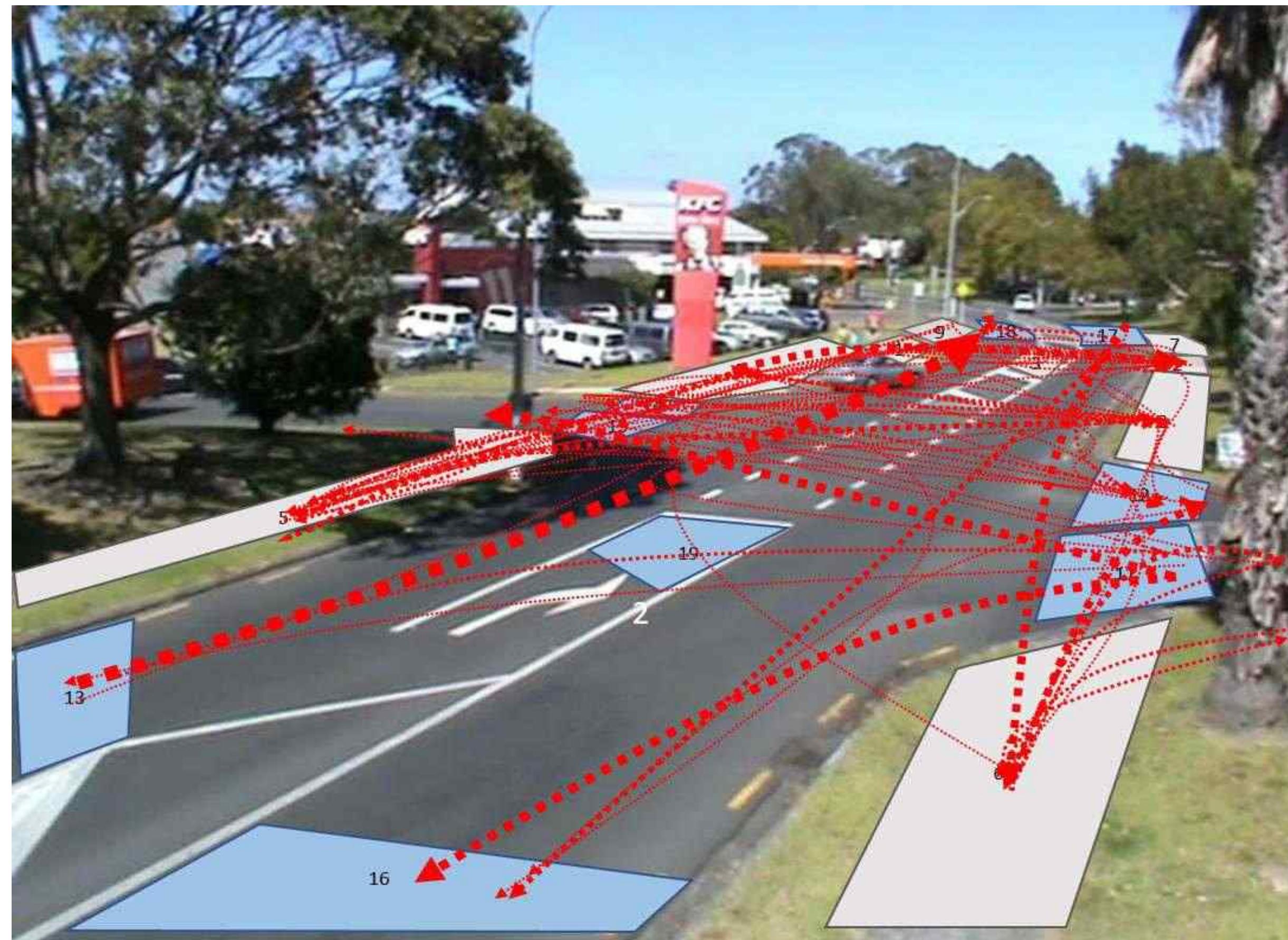


Post Events

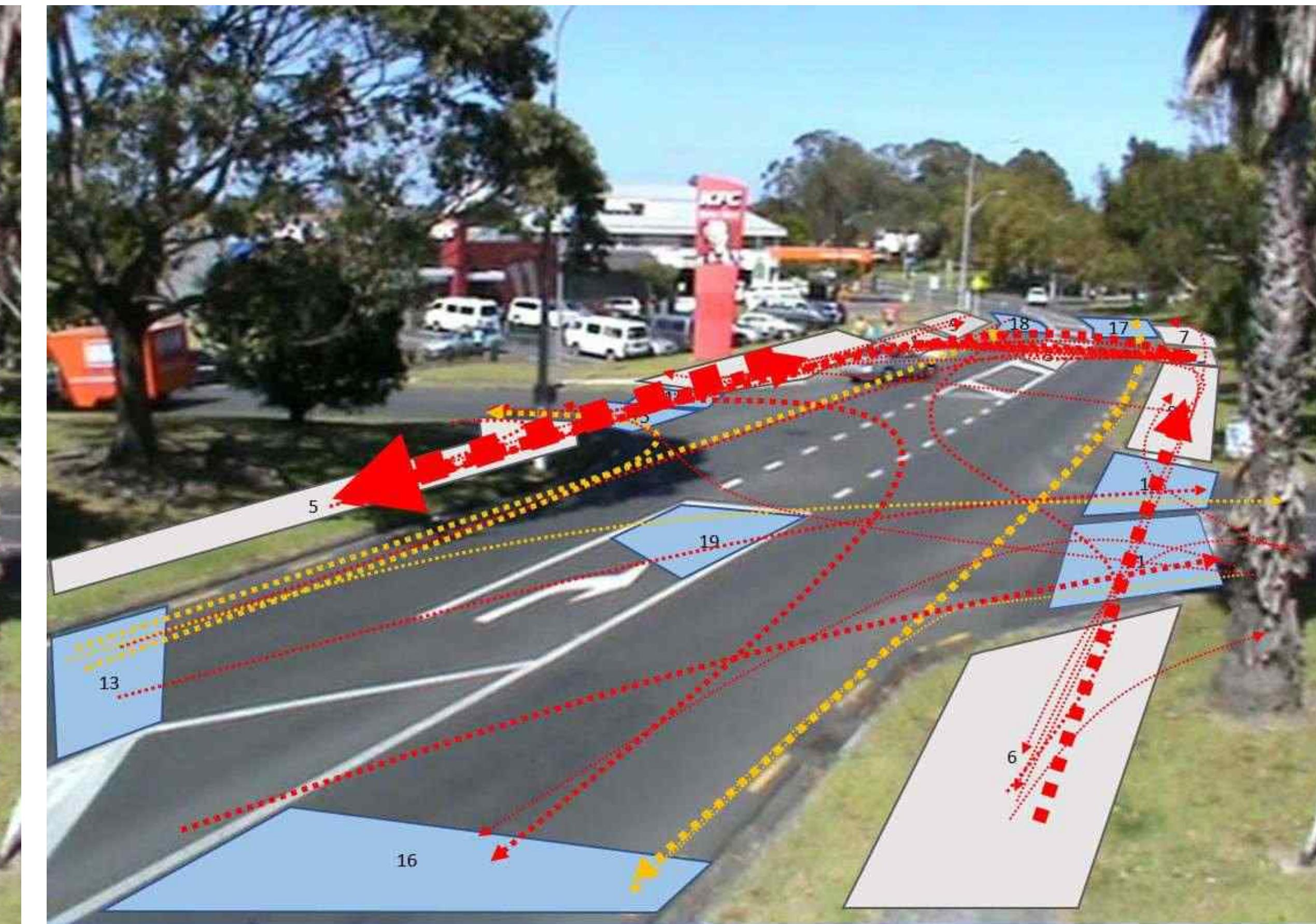
- ★ Close encounter
- ★ Avoidance
- ★ Near Miss



Cyclists



Pre



Post

BENEFITS FOR MOBILITY-ASSISTED MOVEMENT



“...I used to push from home to here [gym by the mall] every day and some of the roads were really bumpy, unsafe and even because you have done lots of good changes I feel independent and safe within myself – in my manual chair or in my power chair. All the local places I feel comfortable and it is freedom for me, so I don’t have a bodyguard [someone to push her].”

36 year old woman with mobility impairment

1.9% of
pedestrians
crossing Mascot
Ave used mobility
aids at follow-up
compared to 0.3%
at baseline

CONCLUSIONS

Future Streets treatments at Mascot Ave have created a more user-friendly environment for pedestrians (and cyclists)

Particular benefits for those with mobility devices/prams/shopping trolleys

Road user interactions have migrated to safer locations

There are remaining design issues that could be resolved