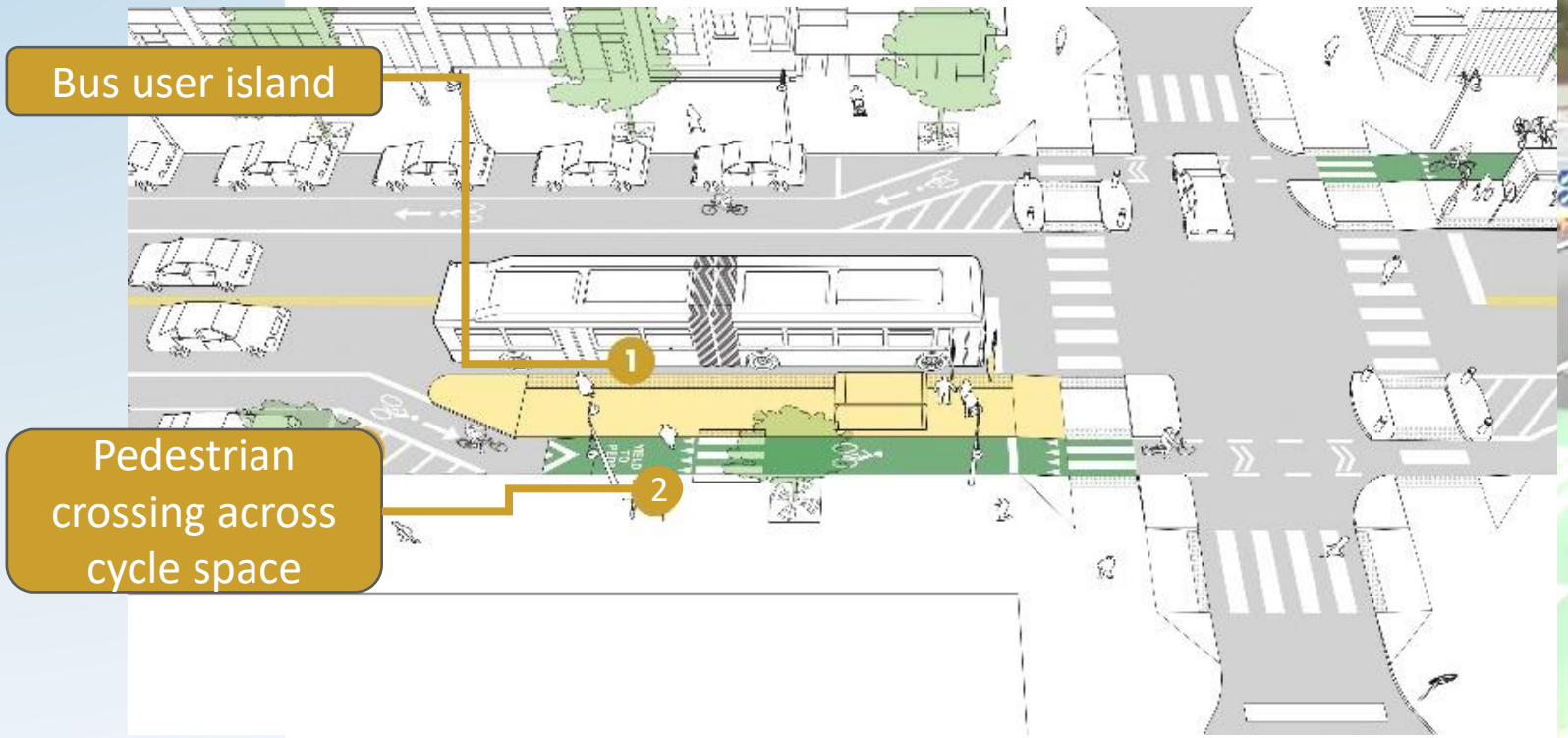
Safe integration of bus stops and cycle lanes

2WALKandCYCLE

What are bus stop bypasses? Why use them?



Example bus bypass design. (Source: Nacto, USA)

Bus bypass design, Wellington
(followed Waka Kotahi Bus Design Guide)

Understanding user behaviour (four Wellington-based sites)

Site 1: Nominal Island Width (1.12m)

Site 3: Below Nominal Island Width (0.32 m)

Site 2: Narrow Island Width (1.48m)

Site 4B: Full Island Width (4.0m)

Site 4A unmarked

How much space is enough? Differing island widths

Note: Yellow shape indicates bus user island

Site 1: Nominal Island Width (1.12m)

Site 3: Below Nominal Island Width (0.32 m)

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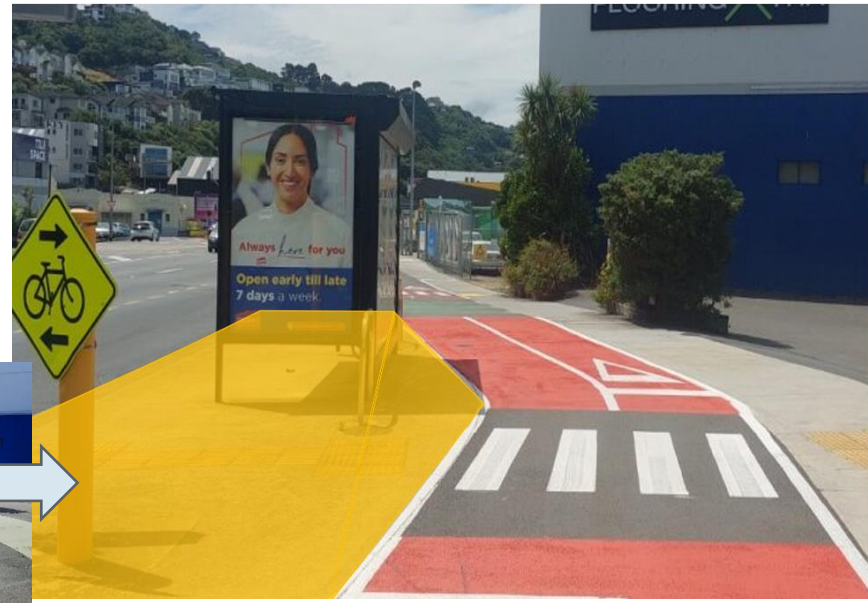
Site 4B: Full Island Width (4.0m)

Site 4A unmarked



Who and what did we observe?

User Observations (N = 1162)	Behavioural measures (13)
Bus driver n = 235 	Bus Alignment (with Crossing TGSI)
Person on bike n = 499 	Rider path (bypass / footpath / vehicle lane) Avoidance behaviour (around bus user) Stopping location Rider type
Bus user n = 488 	Bus user movement (board / alight) Looking behaviour Used pedestrian crossing point Yielding to person on bike Rushed crossing Bus user type Dwelling in bike / footpath Leaving a gap in queue

Key indicators this talk will focus on

Example of positive avoidance behaviour, giving horizontal space to bus user

1

Island stops are successfully used by people who ride most of the time

This insight shows the bypass design does move people who ride out of conflict with vehicle traffic

Use of Island Bus Stop	Overall *
Island Bus Stop	98.6%
Rides in road	1.1%
Footpath	0.4%

Almost all cyclists use the Island bus stops

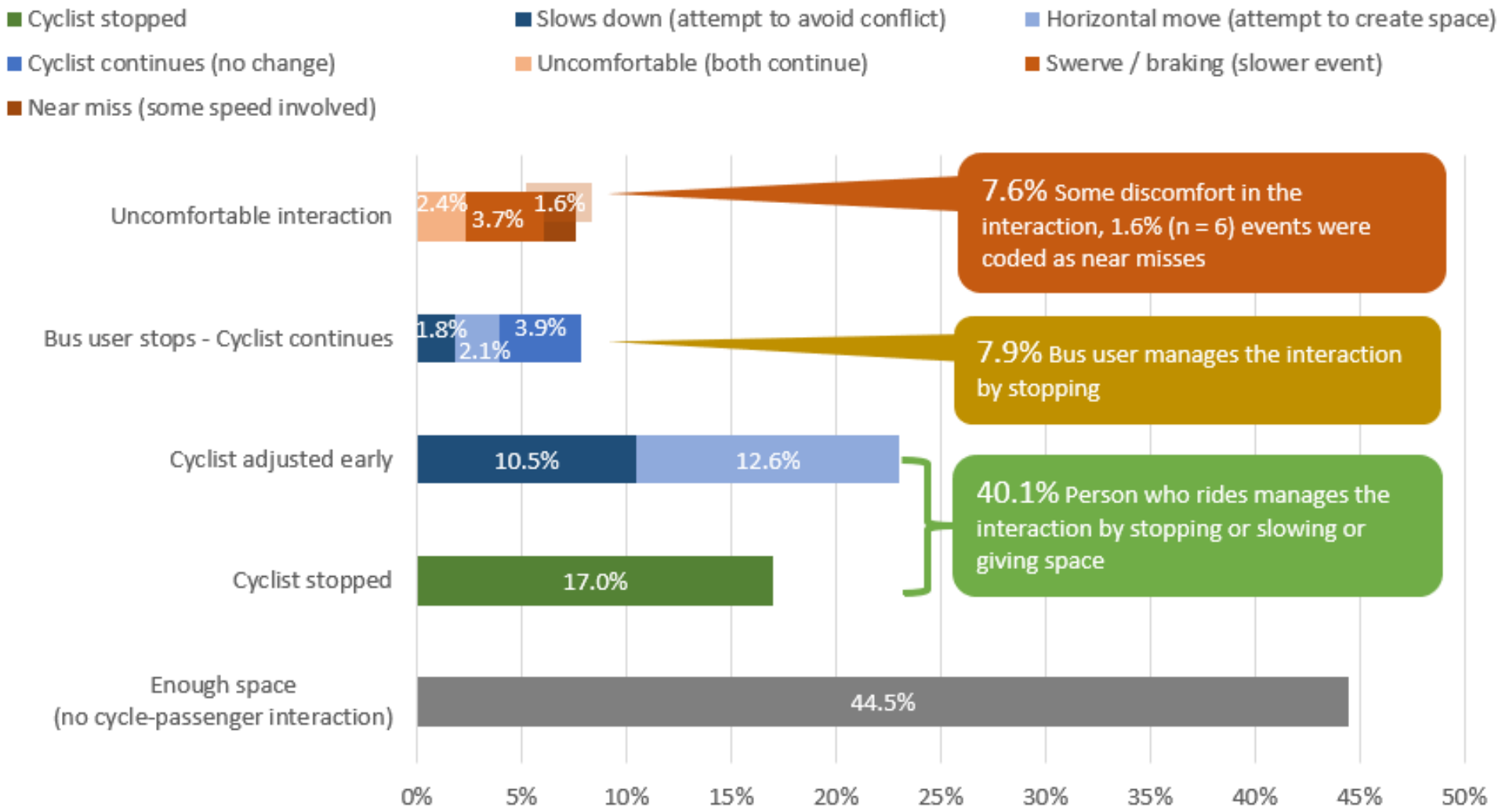
* Note: At midblock sites. Only exception was where a right turn movement across traffic was required downstream to the bus stop. Indicating the importance of site context.

2

85% of interactions had either enough space, or the interaction was managed by the person on the bike.

About 1 in 60 interactions were coded as near misses

(N = 382)



3

Wider bus islands were observed to have lower conflict

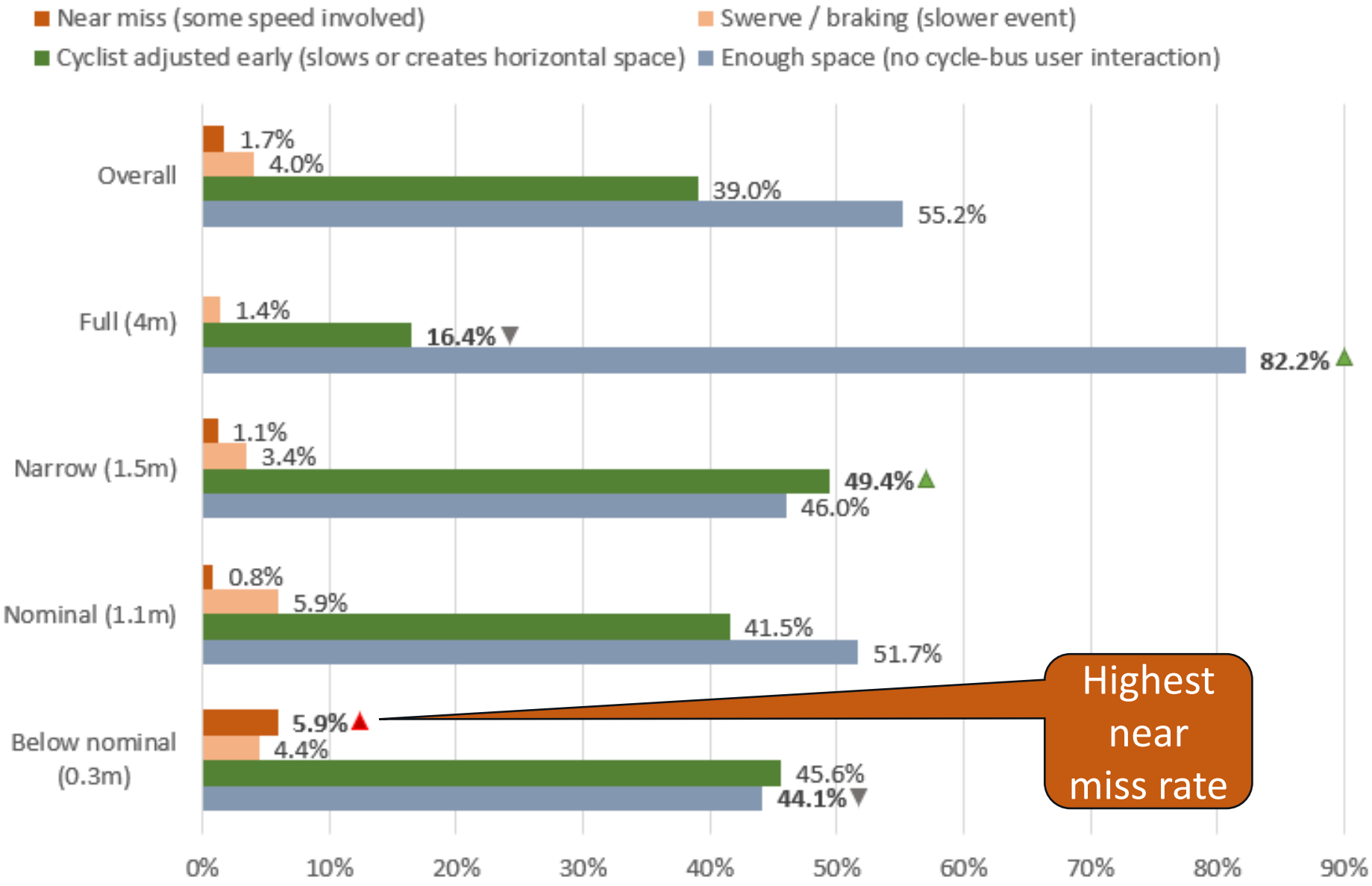
Bus Island Width

Near miss / close call example video from Below Nominal width site

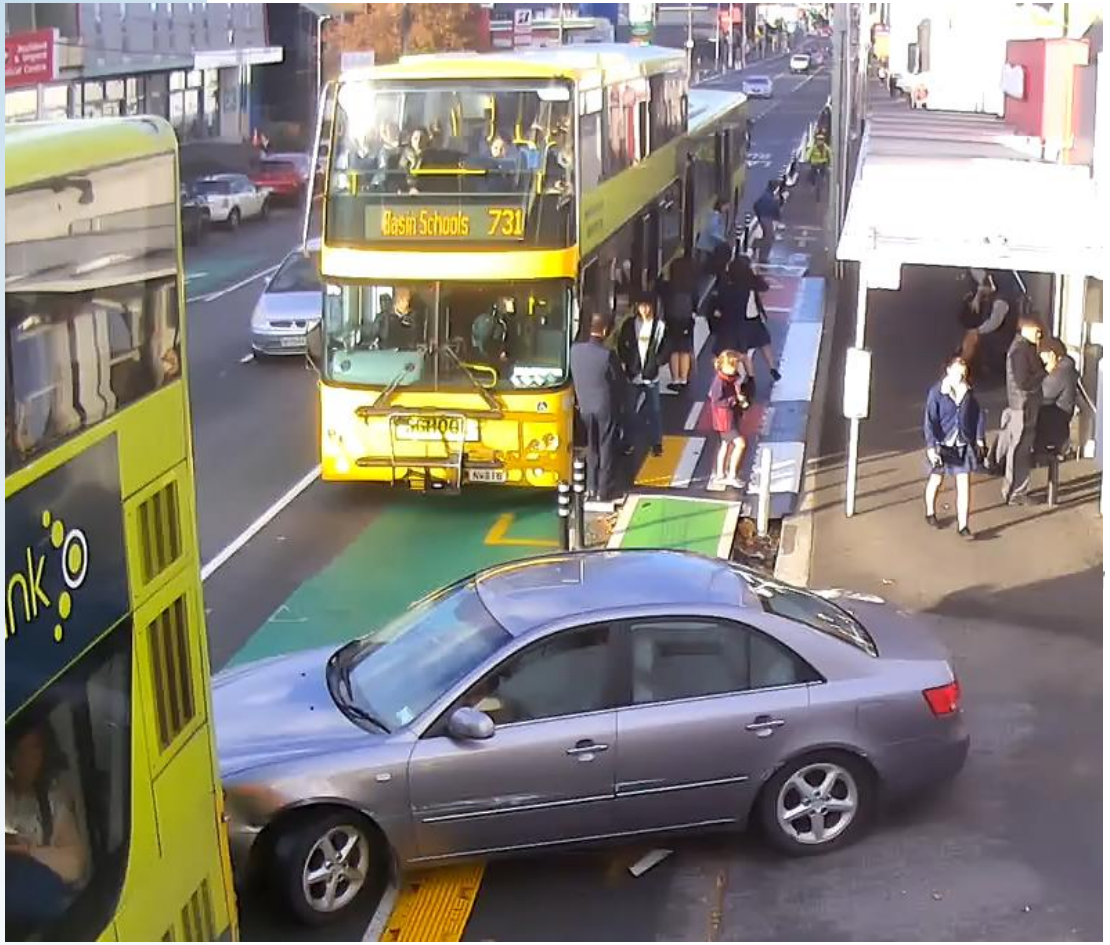
3

Bus Island Width

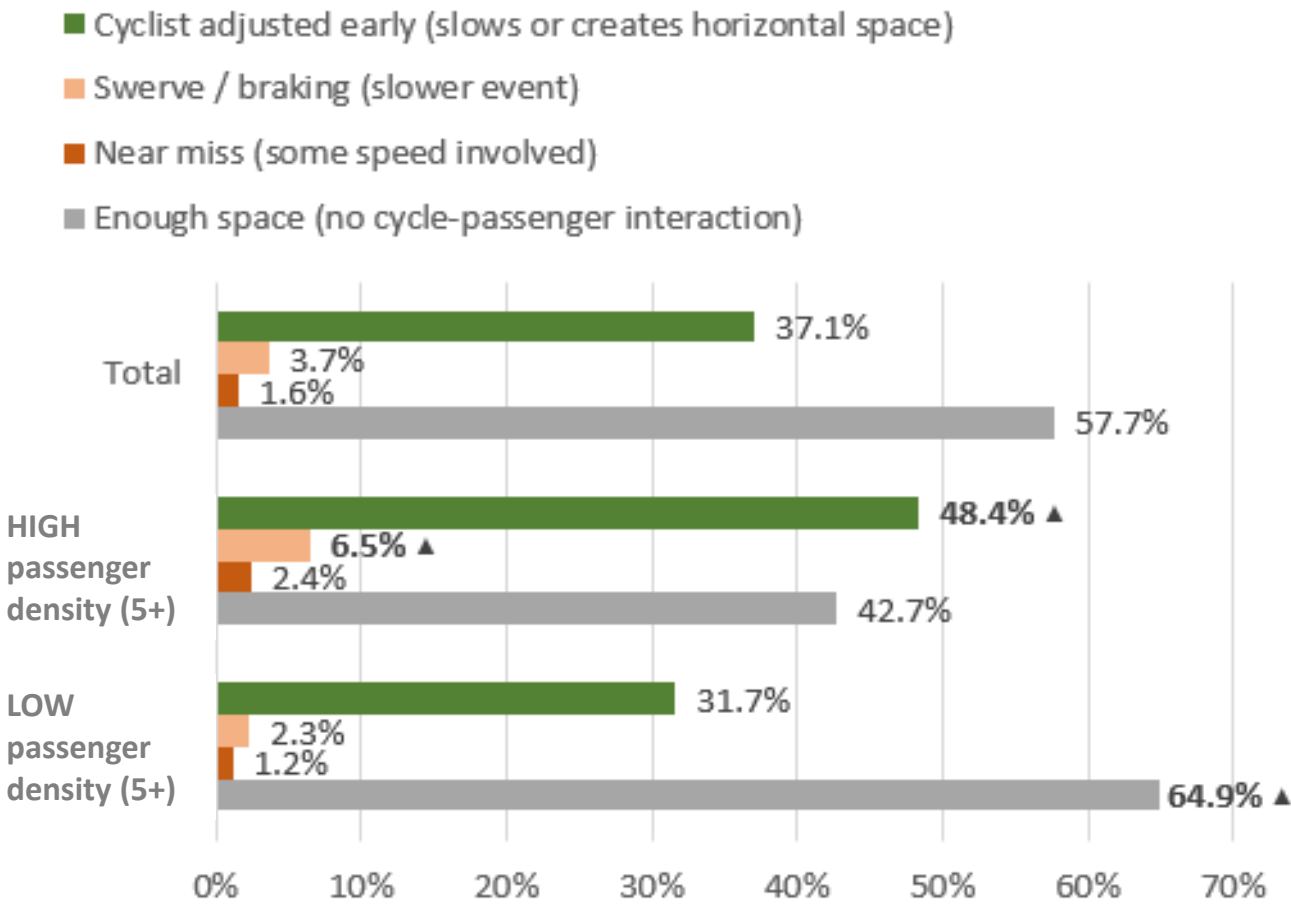
Wider islands had lower conflict. Full Island widths were the best and below nominal widths were the worst for conflict



4 Passenger density had a higher likelihood of people who ride adjusting (about 1 in 2). But there is still a desire to keep moving



Cyclist moving slowly through high passenger density stop



5

Painted markings improved bus user crossings

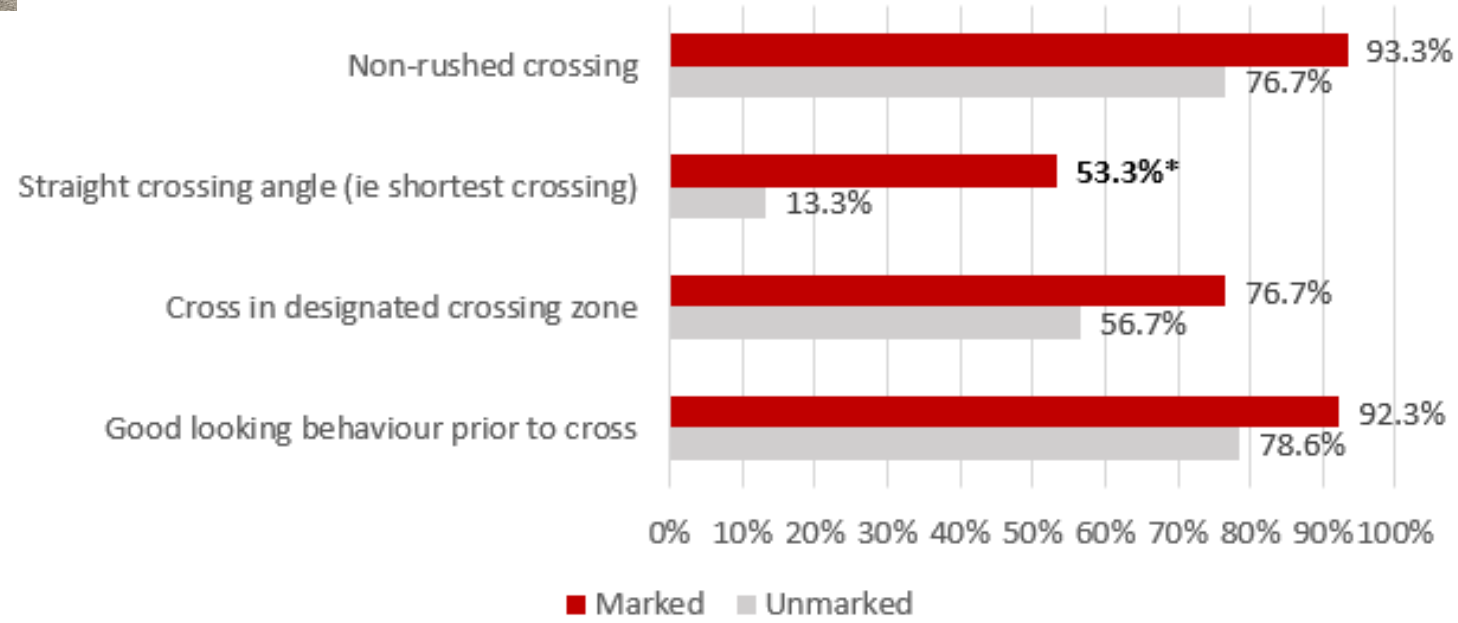
Longer crossing “drifting” along cycle space
(pre markings)

Shortest, straight crossing angle
(with markings)

Painted markings improved bus user crossings

5

Paint markings



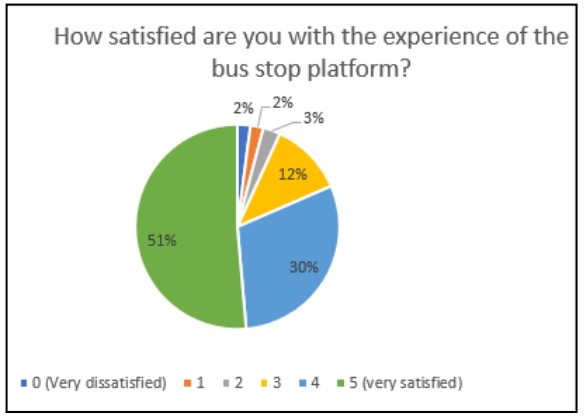
Top 5 Insights (summary)

1. Island stops are successfully used by people who ride most of the time
2. 85% of encounters were managed by space and cyclists (but there is still conflict)
3. Evidence supports a wider bus user island space (provides a more forgiving design for user mistakes)
4. Context is important (user density and surrounding infrastructure)
5. Paint markings improved bus user crossing behaviour

Where to next?

Actionable updates to the Waka Kotahi guidance

Education / behaviour change initiatives



Source: WCC education initiative

Complements work done with the blind / low vision community

https://clearingourpath.ca/index.php/design-needs/exterior-design-elements/transit-facilities/island-platform-transit-stops/

Link to CNIB, Canada