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Staged Pedestrian Crossings

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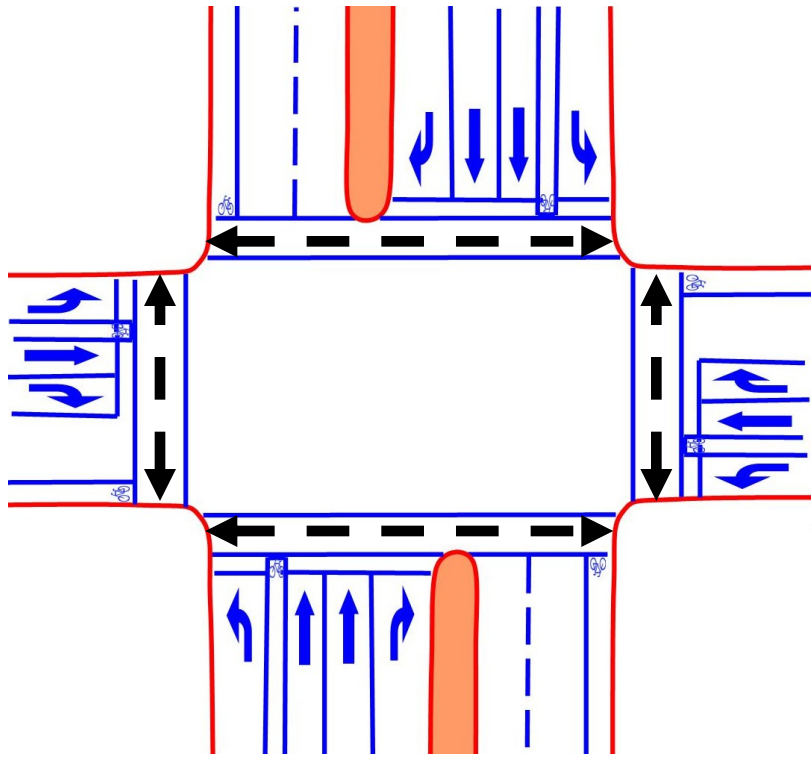


Presentation outline

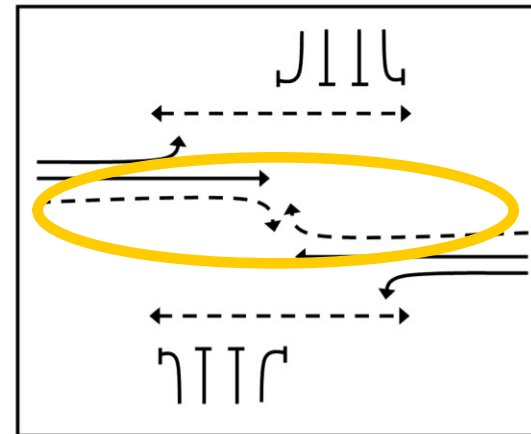
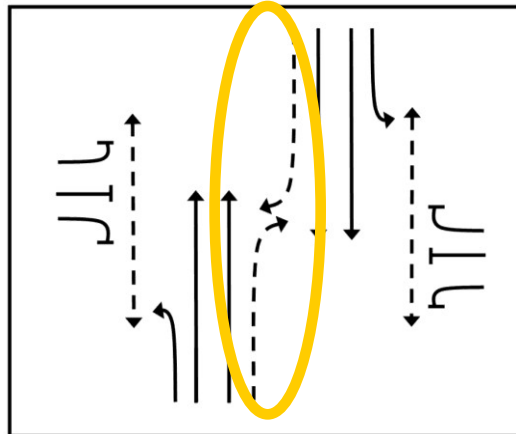
- Introduction
- Components of staged pedestrian crossings
- Modelling
- Case study
- Discussions
- Conclusions

Introduction

- A typical pedestrian crosswalk operation in NZ:

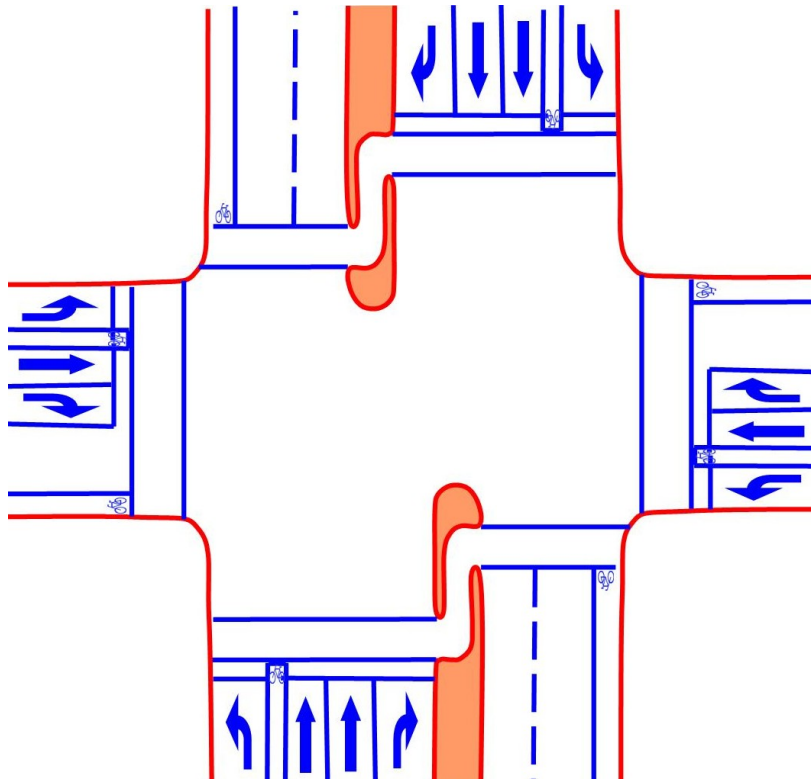


- Allowing filter turning vehicles significantly decreases pedestrian safety
- Exclusive pedestrian protection decreases efficiency



Introduction

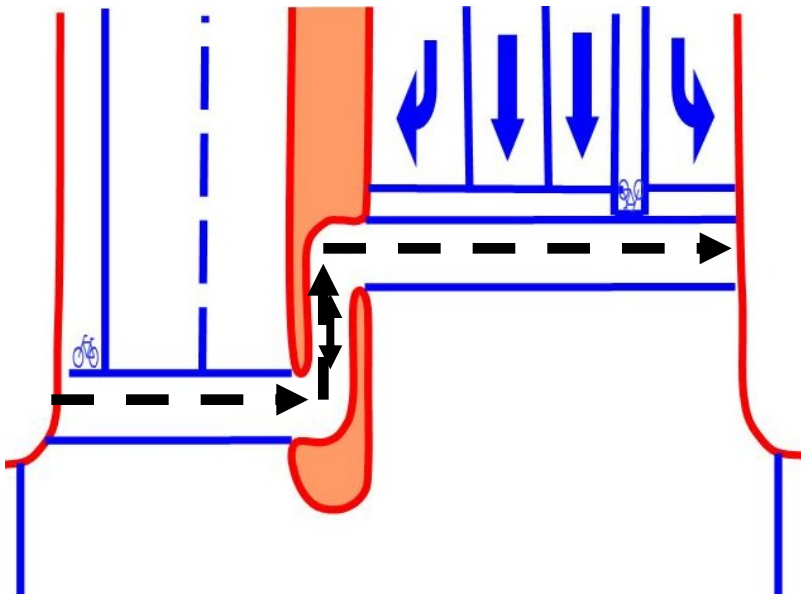
- Why not try a staged pedestrian crossing?



- Separates crossing tasks
- Allows for full (or increased) protection without decreasing efficiency

Components of SPCs

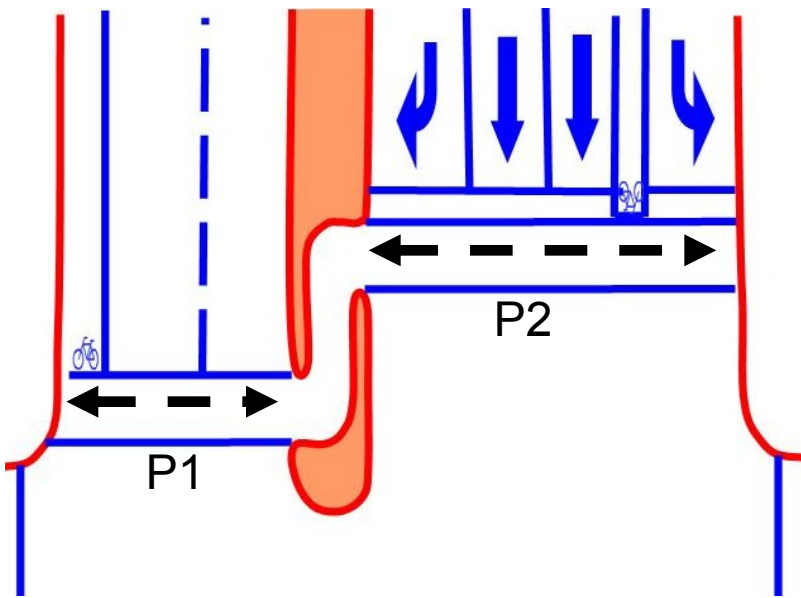
- Refuge island



- Staggered
- Stagger ≥ 3 m
- Lefthand stagger preferred
 - ensures peds walk towards opposing traffic

Components of SPCs

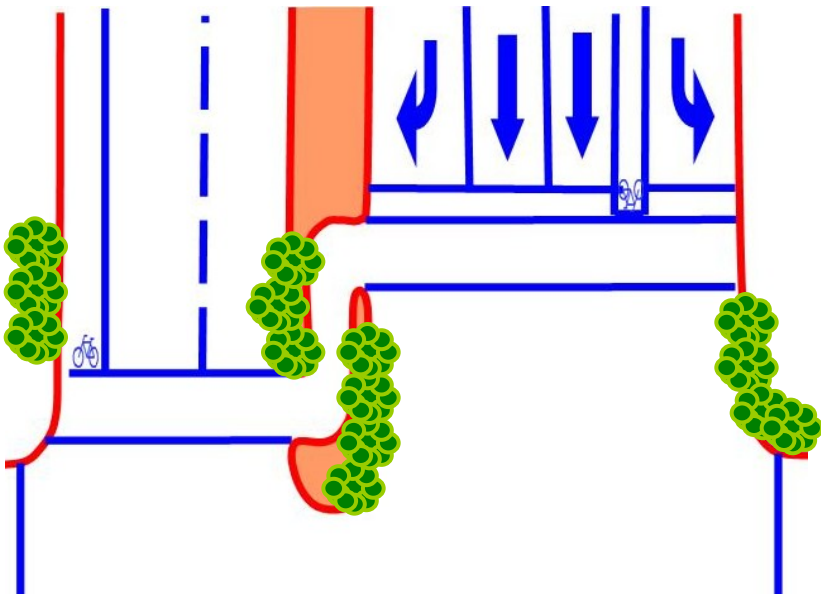
- Traffic signal phasing



- Operates as two separate crosswalks
- Coordination depends on demand at intersection
- Different phasing possibilities depending on location of pedestrian demand

Components of SPCs

- Assisting infrastructure



- Signal aspects
- Signage
- Low cover landscaping

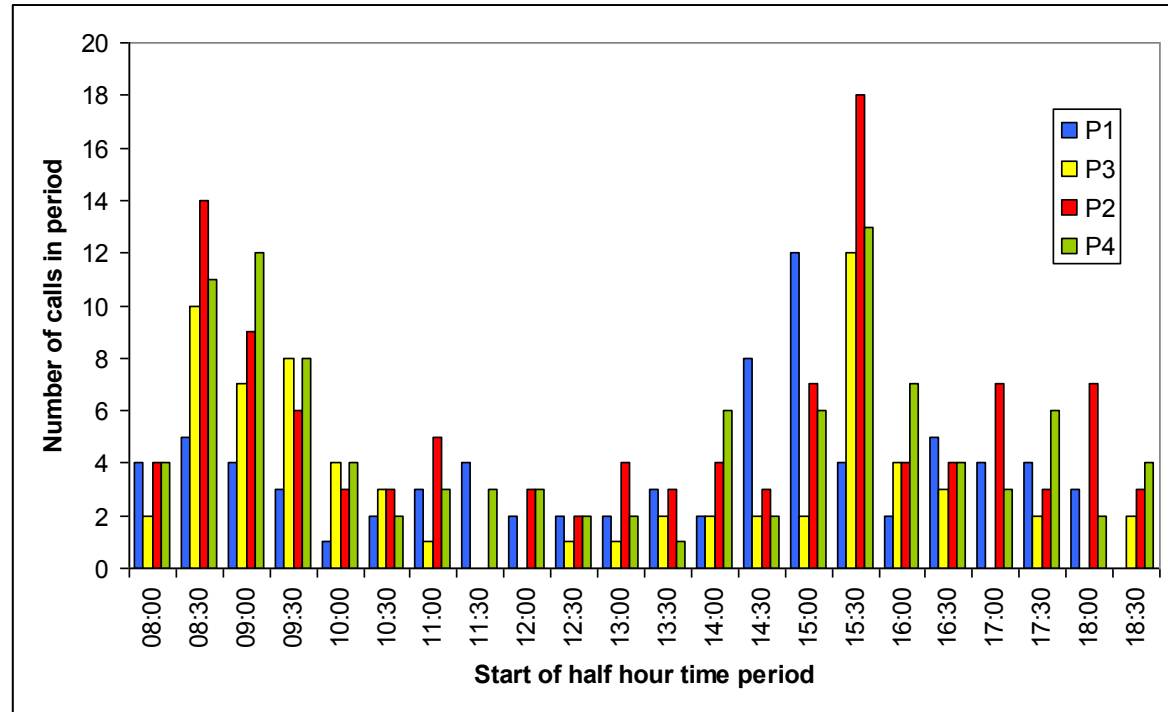


Modelling

- SIDRA not too good at modelling effects of pedestrians based on pedestrian volume data
- Best to model based on late starts to vehicles that occur when crosswalk phase demanded
- This requires demand data

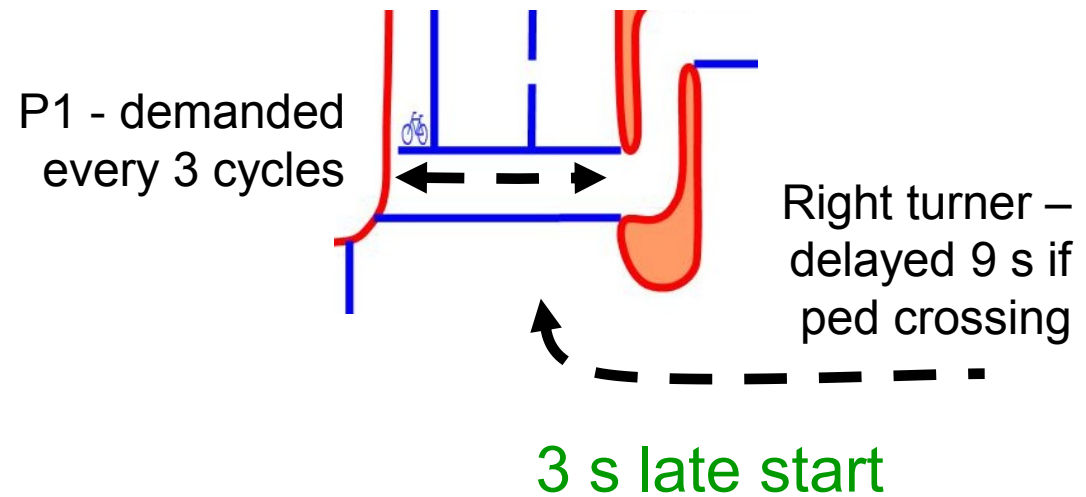
Modelling

- SCATS IDM data



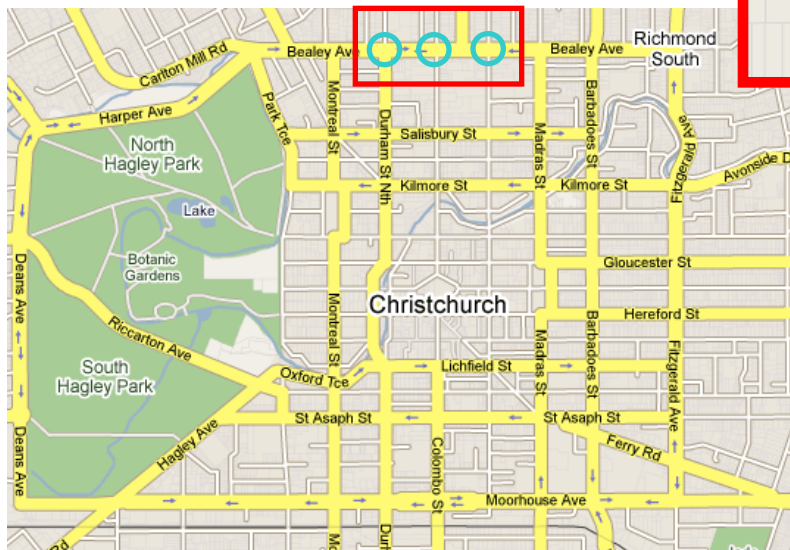
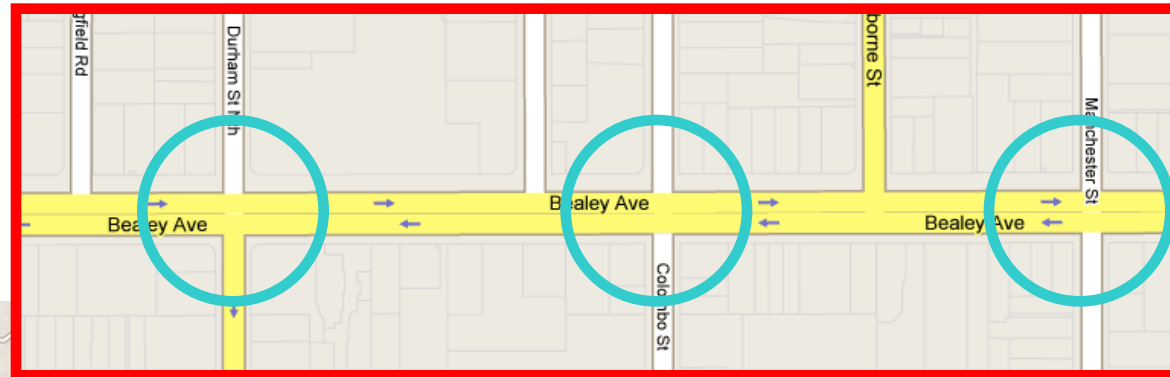
Modelling

- SCATS IDM data
- Average demand rates
- Late starts when demanded
- Average late starts



Case study

- Bealey Avenue, Christchurch
 - Manchester Street
 - Colombo Street
 - Durham Street



Case study

- Applying the modelling method:

Side road	Spare capacity		Average delay (s/person)		LOS	
	Base	SPC	Base	SPC	Base	SPC
Manchester	-14%	-10%	39.0	34.9	D	C
Colombo	-19%	-18%	49.1	45.7	D	D
Durham am	-10%	-10%	51.4	50.4	D	D
Durham pm	8%	10%	35.7	33.4	D	C

Discussions

- Are staged pedestrian crossings unsafe because they require pedestrians to wait in the centre of the road?
 - Phasing should be designed to minimise this occurrence
 - Refuge should be designed to offer actual and perceived safety
 - What about the current situation?

Discussions

- Is pedestrian split approach operation unsafe?
 - Phasing must be carefully designed
 - Signal hardware and refuge layout must emphasise the two separate crossings

Discussions

- Is efficiency the “be all and end all”?
 - NZ Transport Strategy 2008 objectives:
 - Environmental sustainability
 - Economic development
 - Safety and personal security
 - Access and mobility
 - Public health

Discussions

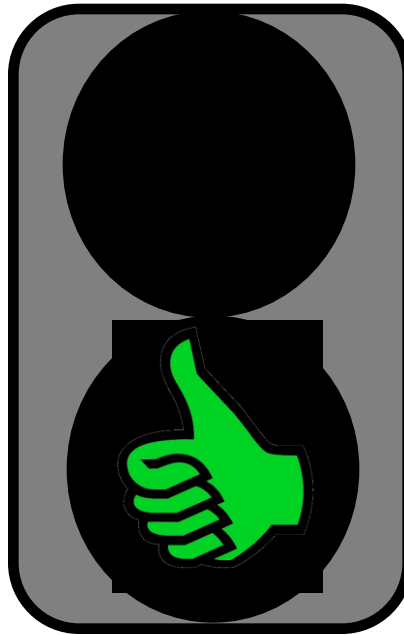
- Will user-unfamiliarity make SPCs unsafe?
 - Current intersections are vastly inconsistent
 - Current intersections not always self-explanatory
 - Improvement requires change

Conclusions

- British experience suggests staged pedestrian crossings will improve safety and quality of pedestrian provision at intersections
- Initial modelling suggests that intersection efficiency can be improved through proper introduction of staged pedestrian crossings
- Further investigations required
- Let's try it!

Thank you

Questions and discussion



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