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Pedestrian Delay Research

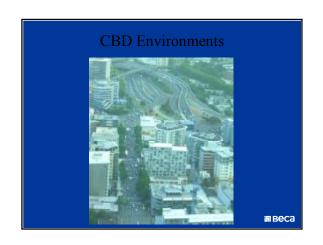Shane Turner, Chris Vallyon, Steve Hodgson, Shane Binder

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Introduction and Context

- A study on delays for pedestrians at signalised crossings
- Focus on CBDs
- Focus on pedestrian peak times (12-2pm)
- LTNZ / NZTA funded

- ~2,400,000,000 crossings per year in NZ
- Everyone is a pedestrian at some point.

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Traditional Approach to transportation

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CBD Environments

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CBD Environments

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Research components

- Literature review
- 14 intersections surveyed – traffic counts, traffic queues, SCATS info, pedestrian counts, pedestrian delays, O-D surveys
- 811 pedestrian interviews
- 1,465 wait time pedestrian observations
- Microsimulation modelling: aSIDRA, S-Paramics Aimsun

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Findings – Literature

- Direct link between delay and fraustration
- Direct link between delay and ignoring signals
- Therefore: direct link between delay and road safety

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Complexities of research

- Identifying pedestrian delay
- Identifying 'average' walk speeds
- Modelling pedestrian behaviour / model limitations

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Lake Road (North Shore City)

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Albert/Customs Street (Auckland)

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Manchester Street (Christchurch)

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Colombo/ Heresford (Christchurch)

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Findings – Observations

- Recommended wait time: 25-30 seconds (literature)

- Average Delay – Auckland – 53 seconds
- Average Delay – Wellington – 45 seconds
- Average Delay – Christchurch – 25 seconds
- Combined Average – 41 seconds
                    (1,465 observations)

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Ped attitudes - percieved wait times

- 75% of Auckland respondents felt more priority should be given to pedestrians.

City	Reasonab +	Perceived	Difference	Difference %
Auckland	26	43	17	39%
Wellington	32	34	2	7%
Christchurch	24	30	6	45%
... ...	26	39	11	39%

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Findings – Per person optimisation

- Intersections optimised to include pedestrians as well as cars
- Significant improvement to pedestrian delay
- Optimisation also reduced car delay at some locations

City	action	Delay reduction from optimisation	Optimisation + other measures
... ...	... ...	...	...
... ...	... ...	...	...
... ...	... ...	...	...
... ...	... ...	...	...

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Pedestrian priority

- Most pedestrian trips are short duration (less than 10 minutes)
- Each minute of delay can therefore add +10% time
- Therefore, very variable trip lengths

- Perhaps pedestrian priority more useful than pedestrian green waves?

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Lessons learned

- Every intersection is different
- If creating a pedestian green-wave – better to underestimate speed then overestimate
- Trade off of safety vs delay
- Increasing cycle times can sometimes decrease average delay for both cars and peds
- Decreasing phase times can reduce 'green wastage' and decrease delays

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Lessons learned

- Every intersection is different
- Regular optimisation of signals
- Optimisation to include pedestrians, particularly in high pedestrian density areas and times

- Consideration of separate SCATS phases during pedestrian peaks – e.g. 12-2pm

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Questions?

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