



Countdown timers: time to counter?

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SNUG workshop,
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Hello everyone, I'm Megan from ViaStrada and I'm here to share a few thoughts about countdown timers for pedestrians and cyclists.

First, a confession...

- I used to think a countdown timer supersedes a flashing red man



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First, I have to confess something:

I used to think - countdown timer displayed - numbers give us information - we decide if we had enough time to **start** crossing regardless of FRM.

Not sure where I picked this idea up – intuition, or aspirational (uni) before we started introducing CDTs in NZ?

First, a confession...

- I used to think a countdown timer supersedes a flashing red man
- But I was wrong



Road User Rule 6.6(3A):

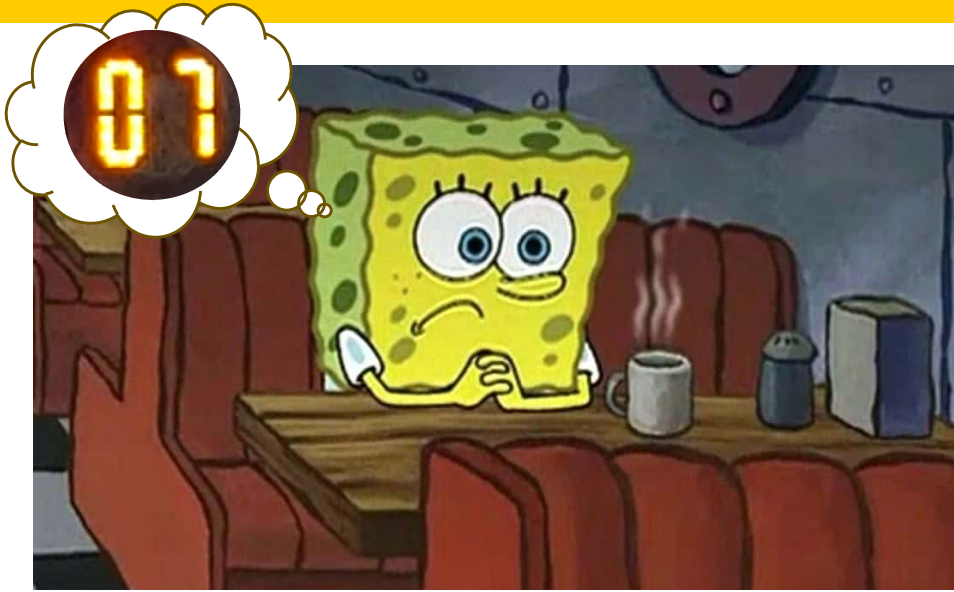
A countdown pedestrian signal, comprising a white or yellow display (conforming to the description in Schedule 3) showing the **number of seconds remaining in the pedestrian clearance period** [...]

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Turns out I was wrong: RUR still loves FRM.

Countdown timer = indication of clearance period – doesn't change / override meaning of FRM.

Was I alone?



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I don't like being wrong.

Definitely don't like feeling stupid.

So I wanted to know if I was the only one who misinterpreted this.

Was I alone?

- Research Report 428 (2010) suggests I was among a small minority
 - “Almost all pedestrians (95%) understood their function”

Table 6.2 On- site questionnaire responses

Question	Number of respondents	Response
1	79	70% of the respondents noticed the countdown timer
2	62	Of those who noticed the countdown timer, 39% did not change behaviour, 31% walked more quickly, 3% more slowly, and 19% stopped and waited, 8% crossed when they should have waited
3	79	<u>86%</u> of respondents thought the numbers indicated the time left to complete crossing
4	78	90% of respondents thought the countdown timers added to pedestrian safety

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Unfortunately, RR 428 –TCD trial ped CDTs, mainly 2 Wlghtn sites - seems I was v small minority.

Conclusion says 95%; couldn't find details (lit review: 2004 study Maryland, USA)

Contradicted by results table 6.2: 86%.

Note: 79 respondents in their survey

Was I alone?

- Research report 428 would suggest I was among a small minority
 - “Almost all pedestrians (95%) understood their function” – or is it 86%?
- But, how was the survey worded?

“What do you think the numbers on the timer mean?”

Options
given in
RR 428
survey

1. Time left to **complete** crossing
2. Time left to **start** crossing
3. Time until **start of next crossing**
4. Don't know / care



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Another thing that struck me was the wording of the survey.

Participants asked “...?” Given 4 options:

1. “complete” could be “**start and finish**” rather than just “finish if already started” > interpretation like me, esp. since 1st on list.
 2. “start” could be “**start but not finish**”
- Could come to right conclusion, by wrong understanding.

So, I made my own survey

- Separated participants into three groups
- Each group had two scenarios, for each scenario:
 - Asked what they are ALLOWED to do (understanding)
 - Asked what they WOULD do (response)



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3 groups, based on birth month

range of sites + sig displays

w/o people getting bored, or realising their understanding not be correct.

Asked: ALLOWED (understanding) vs WOULD (response)

Note: stated preference <> reality

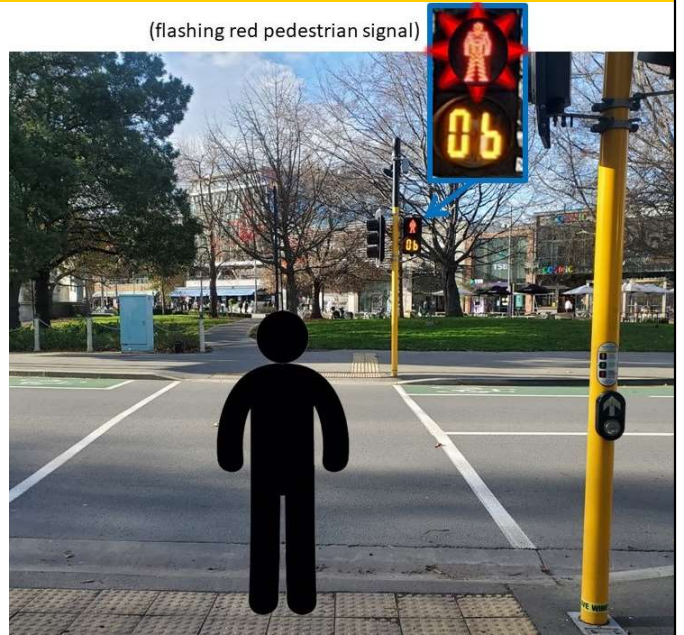
Example scenario: Group 1, question 1

Imagine you are the person in the picture. You are standing at the kerb and want to cross to the other side. The crossing signals show a flashing red figure and the number "06". You are confident you can cross in less than 6 seconds.

What are you ALLOWED to do?

- a) Wait until the signals show a green man
- b) Walk across safely in 6 seconds or less
- c) Walk across, but only if other people are already crossing
- d) I don't know

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E.g: 1st Q to group 1

Given a scenario

Asked what they're allowed to do in this situation

Given a bunch of options

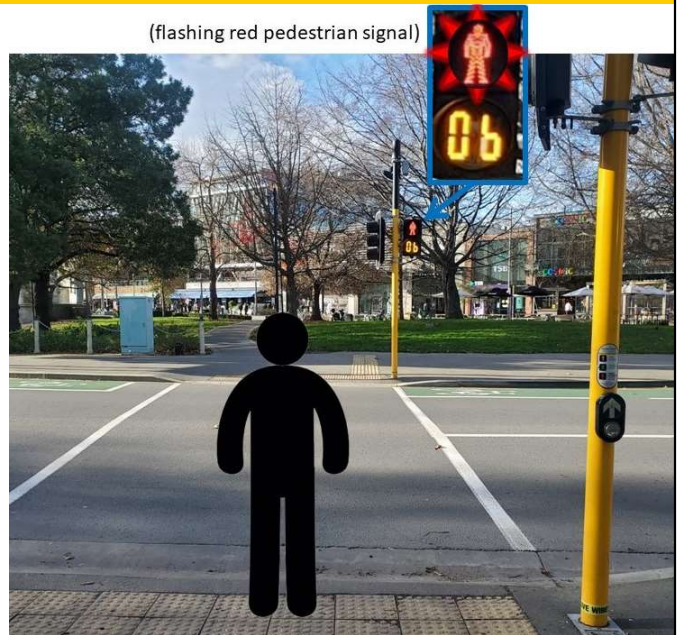
Example scenario: Group 1, question 2

Continue with the previous scenario.
You are standing at the kerb and want to cross to the other side.
The crossing signals show a flashing red figure and the number "06".
You are confident you can cross in less than 6 seconds.

What **WOULD** you do?

- a) Wait until the signals show a green man
- b) Walk across safely in 6 seconds or less
- c) Walk across, but only if other people are already crossing
- d) Run across
- e) Other (please specify)


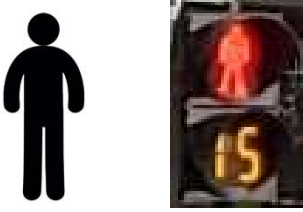
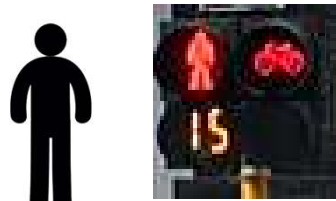
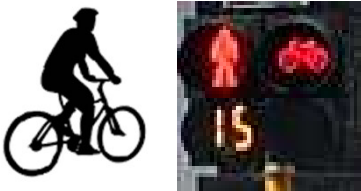


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2nd Q: scenario stays same; asked "what **WOULD** you do?"

Similar options, plus chance to specify if they would do something different.

Scenarios covered

	Group 1 (Jan-Apr)	Group 2 (May-Aug)	Group 3 (Sep-Dec)
Scenario 1			
Scenario 2			



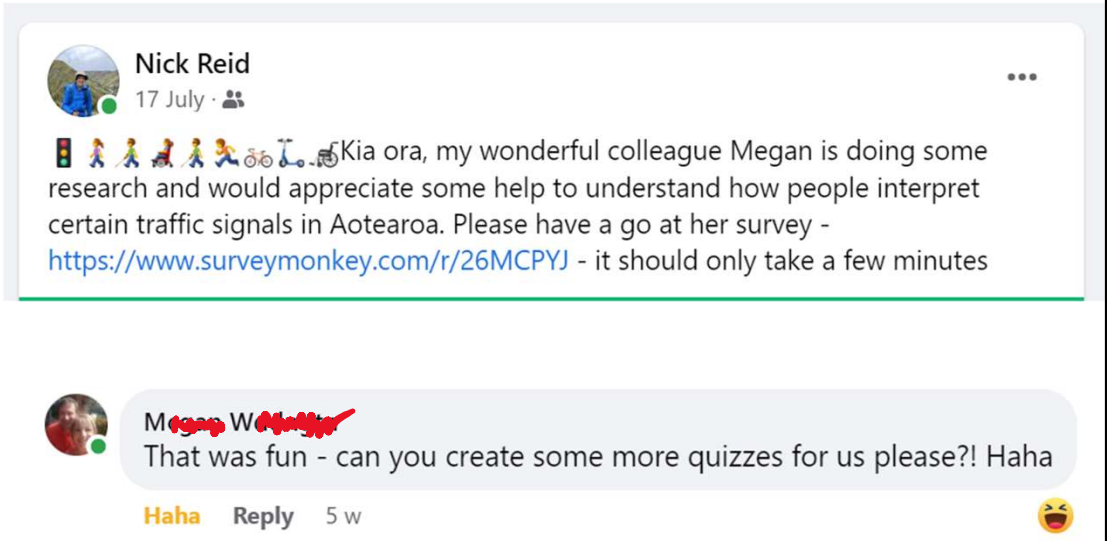
Note: all red men / bikes were indicated as flashing

Range of different signal provisions – pedestrian alone, with 2-aspect cycle signal (same clearance phase), with 3-aspect cycle signal (independent of pedestrian timings).

From point of view of pedestrian or cyclist.

Survey dissemination

- Advertised to normal people (not just traffic geeks)
- 154 complete responses



The screenshot shows a Facebook post from Nick Reid, dated 17 July. The post includes a traffic light emoji and several accessibility-related emojis (person with cane, person in wheelchair, person with stroller, person on bicycle, person on motorcycle, person on wheelchair). The text of the post asks for help understanding traffic signals in Aotearoa and provides a SurveyMonkey link. Below the post is a reply from Megan W. with a redacted name, saying 'That was fun - can you create some more quizzes for us please?! Haha'. The reply has 'Haha', 'Reply', and '5 w' below it, along with a laughing face emoji. A VIASTRADA logo is visible in the bottom left corner of the screenshot.

Nick Reid
17 July · 👤

🚦 🧑‍🦯 🧑‍🦼 🧑‍🦽 🚲 🏍️ 🦽 Kia ora, my wonderful colleague Megan is doing some research and would appreciate some help to understand how people interpret certain traffic signals in Aotearoa. Please have a go at her survey - <https://www.surveymonkey.com/r/26MCPYJ> - it should only take a few minutes

Megan W. [Redacted]
That was fun - can you create some more quizzes for us please?! Haha

Haha Reply 5 w 😂

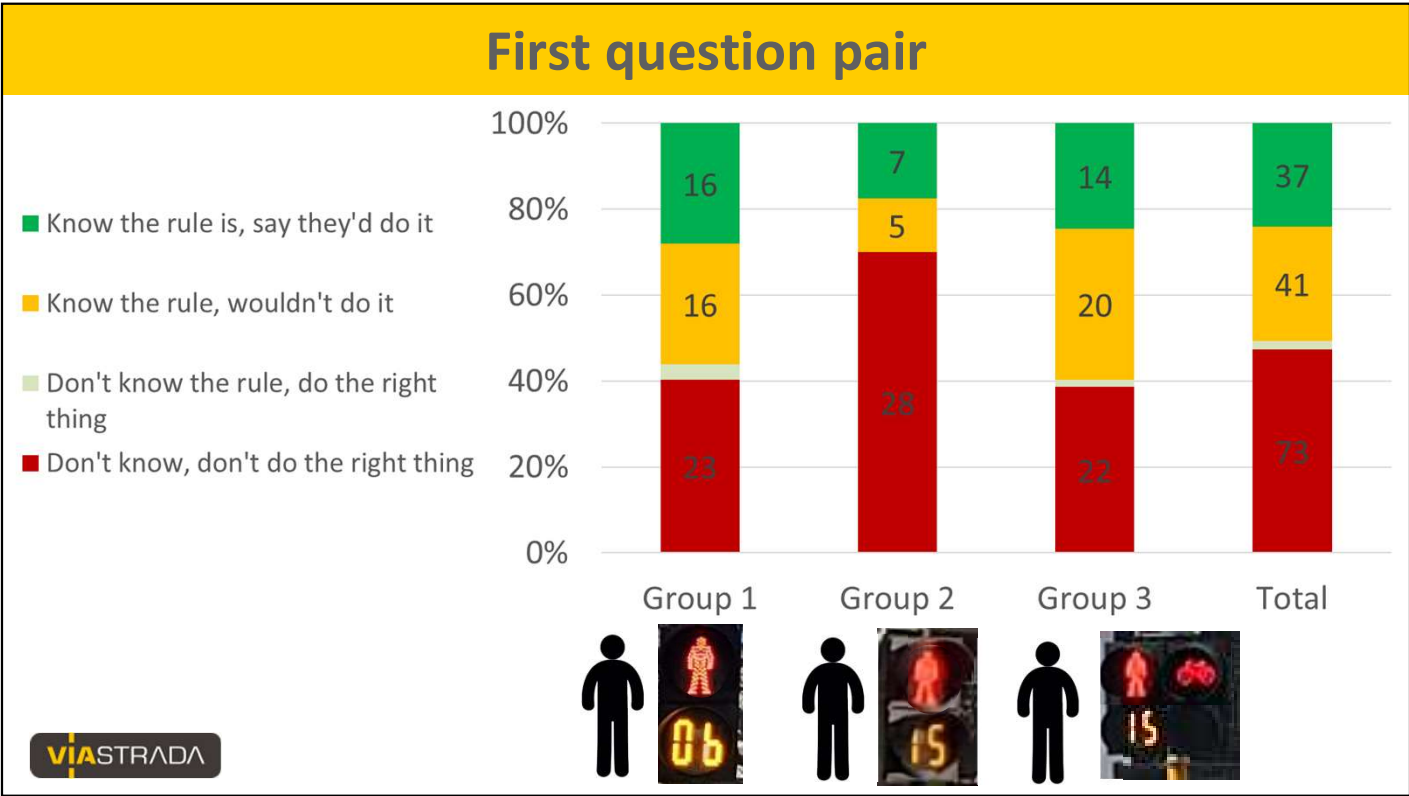
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Share via social media (facebook) > LinkedIn or VS website - avoid bias.

Colleagues and friends shared too.

154 responses (cf 79, RR 428).

Here's what I found out:



Here's the results from the 1st Q pair (allowed vs would)

[Explain colour code]

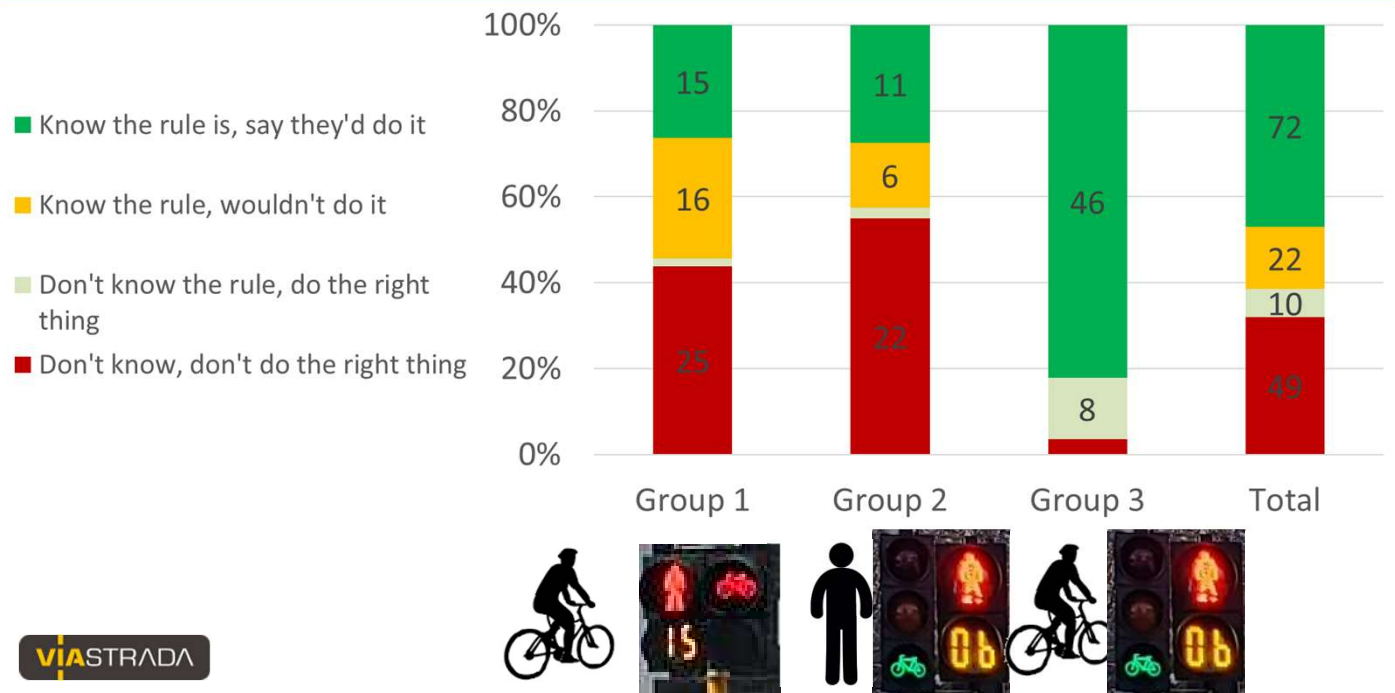
Dark green + yellow = understand ALLOWED. 51% – big diff of 86% RR428

Group 2 worst – diag at ped BD (most would go). Group 3 similar scenario, but message enforced by FR cyc sigs?

Small number (light green) don't understand, but would do right thing.

Red = people who don't understand what the rule is, and don't act in accordance with its intention.

Second question pair

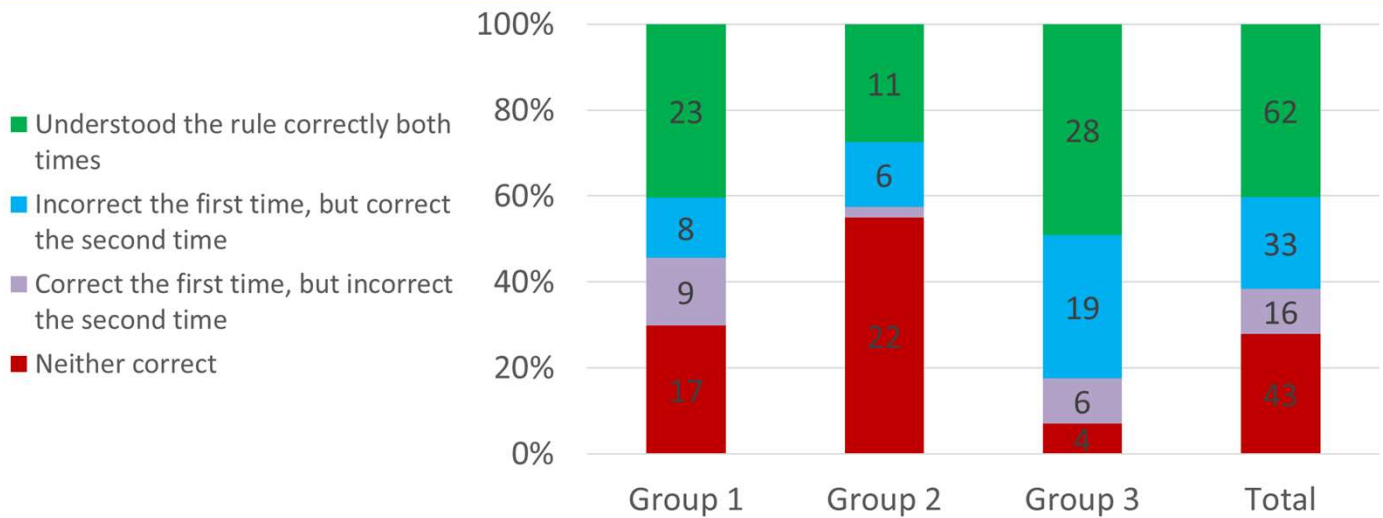


This time 61% understood correctly.

Skewed - Grp 3: cyclist @ green cyc sig adj. to FRM + CDT.

> ppl understand green sig, better than FRM or CDT.

Both understanding questions by group



Compares 2 understanding Qs (ALLOWED)

Worried asking ALLOWED then WOULD: alert not interpreting rule correctly.

Feedback (informal and survey) confirming.

Expecting lots 1st Q wrong but 2nd right (blue portion) – not quite.

Big diff btwn grps: Grp 1 – More correct 1st but incorrect 2nd compared to other way – 2nd harder,

Grp 2: sucked (sorry May - August) – but ppl “improved” outweighed those who didn’t

Grp 3: superstars – partly due to having the question with the cyclist at the green cycle signal.

Pearls of wisdom from respondents (1)

- Countdown timers are great – they help to make a more informed decision on whether I feel I can get across safely or not.”
 - Group 3 respondent, who got the first understanding question wrong
- “Having done this survey, I think now that a lot of the time we follow each other... unsure whether we're actually following the signals correctly!”
 - Group 1 respondent, both understanding questions wrong
- “I like countdown timers better than random flashing red icons”
 - Group 3 respondent, both understanding questions correct

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- 1) interpreted incorrectly, like I used to – CTs inform decision
- 2) Realised they might have the wrong idea
- 3) Raises the problems with flashing red men signals

Pearls of wisdom from respondents (2)

- If the countdown is showing ten seconds or less I know logically pedestrians should wait but I do tend to run across... some of our intersections it would be at least 4 minutes waiting until the next crossing otherwise, and it is often raining...
 - Group 3 respondent, first question wrong
- “It’s more obvious what you’re supposed to do when you can actually see it counting down.”
 - Group 1 respondent, both understanding questions correct

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4) some ppl don't do what they know they are meant to – use CDTs for info regardless of intended meaning

5) Fair enough – diff to make a survey reflect true experience. Perhaps also highlights the problems with stated preference vs revealed preference surveys

What do they do overseas?

Country / State	Walk period	Clearance period		
		Time to finish crossing only	Grey area	Inform users deciding whether to start crossing
Australia – Victoria		✓		
Australia – SA				✓
Australia – NSW			✓	(✓)
UK		(✓)	✓	
USA		✓		
Canada – Toronto		✓		
Canada – Montreal				✓
France	✓			
Spain	✓			



Here's a summary of some of the countries that use pedestrian countdown timers.

Note I haven't included places that use the countdown timer to show the time remaining to the next walk period.

Some places only display the countdown timer during the walk period.

Many display it during the clearance, but with different purposes:

Some, like NZ, tell those **already started** time left to cross = hurrying.

Some like I thought – gives info to decide whether to start.

Some grey area between the 2.

Example – walk period: France

- Road Code:
 - Countdown timer shows time left in walk period
 - Also used to countdown to the next crossing green



Counts the number of seconds left of walk period
Blank during clearance

Example – time to finish crossing: Toronto

- City of Toronto promotional video:
 - “Start your crossing only when the walking person is on...”
 - “Midway through your crossing, you may notice the helping hand [flashing red hand] is on, along with the countdown display...”
 - “Whether it’s flashing or solid, do not start your crossing if the helping hand is on...”



Call it a “helping hand”, but clear that its meaning isn’t changed by the presence of the countdown timer.

Example – grey area: UK

- Traffic Signs Manual, Ch6

- “Countdown signals indicate the amount of time remaining in which people can finish crossing the road.”
- Can start crossing during a green man, cannot start crossing during blackout period.

- But...



TRAFFIC CHOICES BS1
CITY OF BRISTOL

Pedestrian countdown timers show the amount of time left to cross the road before the red man appears. This allows pedestrians to decide if they have enough time to cross the road.

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Seems clear from Traffic Signs Manual: defines what you can/can't do, when. Note UK have blackout period, not flashing red anything.

But promotional material gives a different view.

Bristol Temple Qtr – partnership 4 pub sect orgs (none road transport) large brownfield regen project.

Traffic Choices – info for residents on traffic schemes, produced by University of West England

Sought advice from a UK Local Authority Officer who deals with traffic signals.

Traffic signs Manual uses terms like “invitation to cross”. Highway Code “cross with care”.

These documents are not identified as legislation, rather advice.

UK Police don't enforce pedestrian infractions of signals.

So, technically flashing red man governs, in practice countdown timer might be used as the guide

Example – inform decision: Montreal

● Regles de circulation

- Regardez le temps qu'il reste.
- Traversez seulement si vous avez le temps d'atteindre l'autre trottoir.
- Si le décompte numérique est à zero, ne traversez pas.

FEUX POUR PIÉTONS

Lorsque des feux pour piétons sont installés à une intersection, vous devez vous conformer à cette signalisation, en priorité sur toute autre signalisation.



TRAVERSEZ

Regardez de chaque côté. Faites attention aux véhicules qui effectuent des virages. Traversez.



AVERTISSEMENT - Main orange clignotante

Si vous êtes déjà engagé, continuez à traverser. Si la main clignote et qu'elle n'est pas accompagnée d'un décompte numérique, vous ne pouvez pas amorcer la traversée de la rue.



ARRÊT

À la main fixe, ne traversez pas.

Amende > 15 \$



DÉCOMPTE

Regardez le temps qu'il reste. Traversez seulement si vous avez le temps d'atteindre l'autre trottoir. Si le décompte numérique est à zéro, ne traversez pas.

Amende > 15 \$



Alors, en Montreal, lorsque le feu decompte de pieton s'illumine...
Excusez-moi...

Example – inform decision: Montreal

● Road Rules

- Look at how much time is left.
- Only cross if you have enough time to get to the other footpath.
- If the timer is at zero, don't cross.

FEUX POUR PIÉTONS

Lorsque des feux pour piétons sont installés à une intersection, vous devez vous conformer à cette signalisation, en priorité sur toute autre signalisation.



TRaversez

Regardez de chaque côté. Faites attention aux véhicules qui effectuent des virages. Traversez.



AVERTISSEMENT - Main orange clignotante

Si vous êtes déjà engagé, continuez à traverser. Si la main clignote et qu'elle n'est pas accompagnée d'un décompte numérique, vous ne pouvez pas amorcer la traversée de la rue.



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Amende > 15 \$



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Road Rules in Montreal spell it out
Note it's quite different in Toronto.

Example – inform decision: South Australia

- Department for Infrastructure & Transport South Australia video:
<https://www.youtube.com/watch?v=n9wFRmLmQfQ>
 - Green man → countdown timer → steady red man



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CDT separate signal aspect, but FRM not displayed while CDT runs

“Time left to cross” rather than “time to finish crossing if already started”

A few interesting findings from overseas studies

- UK (Earl, 2011)
 - Pedestrians don't understand the blackout period well
 - More pedestrians started to cross at start of countdown than blackout
 - Fewer pedestrians started to cross at end of countdown than blackout
- Sydney & Melbourne (McTiernan et al, 2012)
 - No net change in safety
 - Reduced compliance
- Toronto (2013)
 - Pedestrian collisions reduced but vehicle-vehicle collisions increased.



Mixed bag of findings overseas (since 2010 RR428)

UK:

- Acknowledges pedestrians don't understand the blackout period well
- Increase in pedestrians crossing when they shouldn't with countdown timer
- But, favourable that fewer people started to cross near the end of the clearance period.

Australia (Melbourne and Sydney)

- No net change safety – based on people getting across in time
- Reduced compliance – increase in late starters

Toronto: vehicle-vehicle collisions increased, due to drivers looking at countdown for parallel pedestrian crossing, causing some to speed up and others to slow down, resulting in rear-end crashes.

Research Report 428 (2010) findings

- Decrease in safety at Wellington sites
 - Increase in late starters
 - Increase in late finishers
 - “Rather than using the additional information of the countdown timers to postpone their crossing... pedestrians used this information to risk crossing during the flashing red man.”
- Increase in safety at Auckland site (not quantified)

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RR 428 focussed on the two Wellington sites, which didn't look great.

Interpretation questions showed a high level of understanding (remember 86%) but researchers concluded that people were using the information to choose the opposite of what was intended.

Auckland sites different – concluded there were several different factors between the design and operation of the intersections.

Conclusions

1. Poor level of user understanding of countdown timers in NZ
 - 51% doesn't suggest they're "intuitive"
2. Existing confusion with flashing red man
 - underlying issue to be fixed
3. Range of different applications overseas
 - NZ among the most common – indication for people already crossing
 - Some localities need to tidy up their legislation and promotion / applications, to reflect their true intention
4. I think we can do better – give users information and choice
 - Especially if we want to use the same signals for cyclists and pedestrians

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1. 51% might be a "pass" but we'd normally expect much more from a TCD.
2. We know as an industry that there is confusion about the flashing red man. Can't expect that adding another device that isn't universally understood will help that.
3. Lack of consistency between countries doesn't help, and there's grey areas / poor understanding in a lot of places.
4. Information + right to decide = better LOS, because some will still be able to cross. Some margin of safety because we only operate countdown timers where there are no conflicting vehicle movements – so will be followed by an all-red, not filter turning.

Especially for longer crossings where cyclist crossing time is much less than pedestrian crossing time.

Thank you, any questions?



We share more knowledge on
www.viastrada.nz



TRANSPORT PLANNING AND DESIGN