



**An evaluation of the Stormwater Superhero Trailer
as a community education tool:
pilot project 2022-23**

Report written by Megan Blakie
On behalf of Christchurch Envirohub, May 2023

Stormwater Superhero Trailer: An evaluation of the trailer as a community education tool

Summary Statement

Reducing stormwater contamination is a contributing factor in improving Christchurch's urban waterway health. The Stormwater Superhero Trailer education tool - which is the focus of this report - can be considered a creative and vital part of achieving the freshwater strategies and improvements sought by both the regional and city councils.

The trailer demonstrably raises community awareness of the stormwater system, the connection between urban stormwater and fresh-waterways, and contributes to positive behaviour change.

Overall Recommendation:

Christchurch Envirohub seeks to continue its facilitation and management of the Stormwater Superhero Trailer, taking into account any fine-tuning of operational or other matters that are agreed as a result of this evaluation report.

As such, Christchurch Envirohub seeks to continue a contractual arrangement with Environment Canterbury, and/or the Christchurch City Council, and any co-funders, to continue utilising the Stormwater Superhero Trailer as a public engagement and education tool. The current Memorandum of Understanding allows for a project extension of one year beyond May 2023, after which the terms of facilitation by Christchurch Envirohub will need to be renegotiated. They are requesting that longer term funding be allocated, to continue the project for the remaining lifespan of the educational tool.

Assessment approach

Four elements contribute to the evaluation of the efficacy of the Superhero Stormwater Trailer:

- (a) Quantitative Data (about the people engaging with the trailer and/or facilitator)
- (b) Qualitative Data (trailer users' feedback and learnings, derived from a cross-sectional sample of people at a range of locations/events)
- (c) Evaluator's on-site observations
- (d) Evaluator's professional assessment from communications and event management perspectives



Research Highlights

95%
of F2F interviewees
had +ve
1st impression of
Stormwater
Superhero Trailer

**2 to 20
minutes**
conversation
time

82%
of F2F interviewees
learned something
new to protect
waterways

89%
gave trailer a
post-interaction
rating of 80%
or more

79%
of F2F interviewees
named SW-friendly
actions they want
to take

98.8%
gave trailer a post-
interaction
rating of 60% or
more

100%
positive comments
re facilitator's
contribution to
trailer experience

This report provides
evidence that the
Stormwater Superhero
trailer is a beneficial
educative tool for
informal learning

99%
of iPad
respondents
motivated to
make +ve SW
behaviour change

STORMWATER SUPERHERO QUOTES

“I didn’t realise it [stormwater] isn’t treated; now I do.”

Adult male at Richmond Gala

“Be aware of what’s going down the drains and where it ends up.”

“ [The trailer] is interactive and easy to understand.”

Adult male from Taylor’s Mistake. Self-gauged as 5 out of 5 for prior knowledge of stormwater



“I wasn’t aware stormwater goes straight into the sea.”

Mt Pleasant adult male. Interestingly, he self-gauged as 4 out of 5 for prior knowledge of stormwater



Main take-home message:
“Protecting the waterways so we can protect the wildlife.”

South New Brighton teenager

“There are more enviro issues than I thought.”

Halswell female, 18-29 years

INTRODUCTION

Context of report

Fresh water is essential to life on this planet. World renown broadcaster and biologist David Attenborough said about this vital resource:

Only 3% of the water on our planet is fresh. Yet these precious waters are rich with surprise. All life on land is ultimately dependent on fresh water.¹

Christchurch's stormwater has a direct impact on the city's freshwater ecosystem. The urban stormwater, which flows into our streams, rivers and estuary (and ultimately the Pacific Ocean), is generally "unfiltered and untreated".² Contaminants such as rubbish, hard metals and other chemicals, silt, and biohazards can enter the stormwater system and have a negative effect on waterways and the environment.

Environment Canterbury noted in its *Long Term Plan 2021-31* that "in general, [fresh]water quality is poor in urban areas".³ Freshwater management is identified as a priority⁴ in ECan's *Draft Annual Plan / Mō tēnei Mahere ā Tau* for the 2023-4 year.

Community participation is part of the regional council's collaborative strategy for improving the health of urban waterways⁵. Similarly, the Christchurch City Council identifies community involvement as integral to "good stormwater management practice"⁶.

What is the Stormwater Superhero Trailer education tool?



The Stormwater Superhero Trailer is a large, purpose-built unit that can be towed by regular vehicle to outdoor and suitable⁷ indoor venues. The side opens out to reveal a large touch-screen TV, a slide-out table with two rectangular interactive 'games' with movable parts, and other educational props and collateral.

¹ When Attenborough narrated the 2006 television series *Planet Earth*.
<https://www.imdb.com/title/tt0797601/characters/nm0041003>

² 'Stormwater protecting our waterways' leaflet, CIT1005 (jointly produced by Christchurch City Council and Environment Canterbury, August 2017). <https://ccc.govt.nz/assets/Documents/Services/Stormwater-drainage/Protecting-our-Waterways-general-stormwater-discharge-quality-pamphlet.pdf>

³ 'Long-Term Plan / Te Pae Tawhiti 2021–31, Adopted 17 June 2021 Revised 26 October 2021'. <https://www.ecan.govt.nz/your-region/plans-strategies-and-bylaws/long-term-plans/> p 5

⁴ p 7 of the Draft Annual Plan 2023-4. <https://www.ecan.govt.nz/your-region/plans-strategies-and-bylaws/annual-plans/>

⁵ Ibid. pp 20-21.

⁶ 'Te Mahere Rautaki Kaurera / Our Long Term Plan 2021–2031 Volume 1 of 2', p 101.

https://ccc.govt.nz/assets/Documents/The-Council/Plans-Strategies-Policies-Bylaws/Plans/Long-Term-Plan/LTP-2021-final/LTP2021-Vol1/Long-Term-Plan-2021-31_-Vol-1.pdf

⁷ Those with appropriate access for the weight and size of the trailer unit.

Further details of design features and contents:

- Christchurch Envirohub website: <https://www.chchenvirohub.org/blog/stormwater-superhero-trailer/>
- 'Waterways Centre for Freshwater Management' report produced for Environment Canterbury by Lincoln and Canterbury universities⁸.

The trailer was originally manufactured in 2018 as a partnership project between Environment Canterbury, Christchurch City Council and local environmental groups. In 2021, a report noted that there was still “no comparable community educational resource” in use in Ōtautahi Christchurch or across Aotearoa New Zealand.⁹ It's understood that the trailer remains a unique educational tool.

The key purpose of the resource is to raise awareness of urban waterway contamination and the role that stormwater plays.

MOU & pilot project

Under a memorandum of understanding (MOU), the trailer is currently managed by Christchurch Envirohub and housed at its premises at Vogel Street (the Riverlution Community Hub). The timeframe for this pilot project, with this custodial and management arrangement, is for a year (until May 2023).

As part of the arrangement, Christchurch Envirohub takes responsibility for booking and operating the trailer at a range of locations, and for evaluating the efficacy of the pilot programme by producing this report.

The other parties to the MOU were Environment Canterbury and Christchurch City Council. Environment Canterbury remains the legal asset holder of the trailer and is responsible for its insurance and maintenance.



⁸ Saha, Dr Sriparna and Challies, Dr Edward, 'Stormwater Superhero Mobile Resource: Towards an Evaluation Framework', Waterways Centre for Freshwater Management Report 2021-001 (February 2021), p 11.

⁹ Ibid, p 15. The report noted that other educational programmes targeting stormwater issues are in use in schools throughout the Canterbury region.

COMMUNITY ENGAGEMENT ASSESSMENT PARAMETERS

The quantitative data

During the pilot programme, a total of 253 people (16% of trailer visitors) gave feedback on their interaction with the Stormwater Superhero Trailer, using one of three available feedback methods.

56 of those agreed to face-to-face (F2F) interviews conducted by the evaluator.

16%

of trailer users
give feedback

Nearly three-quarters of all respondents were adults.

Details of the assessment parameters used for evaluating community engagement with the Stormwater Superhero Trailer, plus the demographic data of F2F interviewees, are given in the report's appendix (p 21).

6%

of adult trailer
users complete
F2F interviews



The qualitative data

While the quantitative data tells us that people across ethnicities, gender, and to some extent age groups, are engaging with the trailer, qualitative information from the 56 F2F interviews can be considered “far more compelling” and “more useful”¹⁰ evidence in assessing the trailer’s efficacy.

“Most of the recognised evaluation frameworks” that are currently in use “identify interest-building as a primary characteristic of informal learning.”¹¹ Such evaluation frameworks try to identify (a) increase in knowledge/understanding; (b) increase in skills; (c) change in attitudes/values; (d) enjoyment, inspiration, creativity; and (e) action and behaviour/progression¹². Item (b) could not be ascertained on-site with the trailer; some follow up was done by the evaluator to gauge (e), but increasing the level of follow-up of trailer users in the medium to longer term may be desired, to determine resultant behaviour change.

For this report, any attempt to calculate statistical significance or margins of error on the data collected was deemed unwarranted¹³ given the informal learning context of the trailer and the variables of its operation (such as changes in personnel facilitating the trailer, and the diverse locations and conditions of each event).

¹⁰ Dr Edward Challies, in an email to the evaluator during the design phase of the F2F interview questionnaire. Challies co-authored the 2021 report on an evaluation framework referred to in footnote 8.

¹¹ Same report referred to in footnote 8, p 25.

¹² Ibid

¹³ Discussion during the design phase of the evaluation, with MOU representatives’ input.

STORMWATER SUPERHERO

MORE QUOTES

“The game was good, to learn how water [grey water and stormwater] goes in different ways. Sometimes we did wash the car in the driveway; we can go to a professional [carwash]. A common game contains so much knowledge.”

Chinese Female, 30-64 years, from Cashmere, who enjoyed the Stormwater Trailer video and games. She learned where “roof water” goes and gauged her prior knowledge of stormwater as 2 out of 5.

Pākehā Male, 30-64 years, from Linwood, who “learned lots of good information” from the trailer facilitator and self-gauged his prior knowledge at 2 out of 5.

“Stormwater comes from my house and goes unfiltered into the river, which I didn’t know about. That’s something I learnt.”

“Changing your brakes from copper ones – I’ve not ever thought of that. I’m aware of titanium use in hips: now they’re ceramic. If you have a titanium joint, titanium eventually gets into your bloodstream and [through bodily fluids] down the waterways; that contributes to a bad environment.”

Barbara, retiree, draws parallels between the potential effects of heavy metals in medical procedures and heavy metal contamination of stormwater. She self-gauged her prior knowledge of stormwater as 1 out of 5.



KEY FINDINGS

The following section of the report discusses key aspects of the trailer’s operation and implementation during the pilot programme. It incorporates:

- public responses (what they liked and didn't, and what they learned)
- the evaluator’s observations and professional assessment
- key findings: summary statements and evaluator’s recommendations

(1) First impressions of the trailer

“Curious”, “so colourful”, “eye-catching”, “intrigued”, “caught my attention”, “amazing”, “oooo”, “cool” and “snazzy as” are some of the overwhelmingly positive initial impressions of the trailer, from F2F interviewees at both commercial and community venues.



Of 56 F2F interviewees:

- 48 unreservedly complimentary
- 4 complimentary of look, but unsure at first glance of trailer’s subject matter
- 1 qualified comment: “engaging to kids” but not personally
- 2 no comment recorded
- 1 negative; “hard to understand purpose”

The 4 adults who were initially unsure of the trailer’s subject matter (is it a food truck or pay-for games?) went on to describe it as “cool”, “very cool”, “very professional” and “the message was better [than expected]”.

The trailer appearance had the effect of drawing people in: creating a desire to interact with it. This was indicated by other reactions recorded:

- “Let’s have a tutu [‘fiddle/play around’ with it]”
- “ ‘Superhero’ [theme] pulled me in”
- “Magnet for kids” “High tech”
- “Draws people in” “Followed [*child’s name*]. Kids notice it”
- “Appreciated the engineering”
- “Great sign on the end of the trailer”.

Key finding: The Stormwater Superhero Trailer makes a positive first impression with adults and children.

(2) Overall rating of the trailer



At the conclusion of each interaction with the trailer, F2F interviewees (feedback method 1) and those who chose to fill in the iPad 5-star rating (feedback method 2)¹⁴ could give the trailer an overall rating out of 5, with 5 being the highest and 1 being the lowest.

Of the 168 ratings received¹⁵, 166 people (98.8%) awarded the trailer 3 stars or more out of 5.

¹⁴ See appendix for explanation of methods used in (a) Data collection process, under Evaluation Methodology, p 23.

¹⁵ The rating question was not asked of 7 people during the piloting of the initial F2F questionnaire. The question was included in subsequent interviews.

89%
gave trailer a
post-interaction
rating of 80%
or more

A total of 150 people (89.2%) scored the trailer with a rating of either 4 or 5.

The 2 people who independently rated it at 40% (2 out of 5), nevertheless indicated that their visit motivated them to “better protect our waterways”¹⁶. Both gauged their motivation as 3 out of 5.

No-one rated the trailer with a 1.

Key finding: Almost 99% of respondents (via iPad and F2F) rated their trailer interaction positively.

(3) Facilitation

The role of the facilitator is threefold:

1. Generate interest: entice/invite people to interact with the trailer and/or learn about link between stormwater and urban freshwater health
2. Education: deliver key message(s) and answer stormwater related questions
3. Assistance: enable interaction with, and learning opportunities from, the trailer’s activities and/or collateral

Facilitators during the pilot programme were recruited from a range of sources:

- Christchurch Envirohub staff and/or contractors (including Te Tuna Tāone facilitator and stormwater education specialist Jenny Bond)
- Trained volunteers: including university undergraduates from environment-related fields, and personnel from community groups
- Primary school children from the Te Tuna Tāone programme with oversight from facilitator Jenny Bond
- CCC and ECan staff involved with the MOU and pilot programme

Comments from F2F interviewees about the facilitator’s contribution to their experience included:

100%
positive comments
re facilitator’s
contribution to
trailer experience

“Made it relevant. ...Helped us to stay and learn more. Positive experience”

“Very helpful and knowledgeable. Pleasant”

“Made it easy for us to understand”

“Relatable”

“Bright and interesting. Knew her stuff”

“Good to see the kids [from Te Tuna Tāone programme] are interested and explain these things”

“Helpful” “[S]howed you how to use games”

“Lots of good information. Learned a few things from what she was saying”

The evaluator has managed (and worked as part of) F2F community engagement teams and so has direct experience of its challenges.

Evaluator’s key observations, to further enhance facilitator outcomes :

- (i) Effective facilitation of the trailer requires a sound knowledge-base coupled with effective solicitation skills. The volunteer facilitators observed by the evaluator had appropriate backgrounds in

¹⁶ Quoting from a subsequent interview question.

environmental and infrastructure studies, but most would have benefitted from training in (a) solicitation (how to approach and engage people in conversation); and (b) motivation strategies, to maintain confidence in the face of multiple 'rejections' (people who don't want to stop and interact).

Morale and confidence can be negatively affected for even the most experienced and confident of facilitators: at one event, an experienced facilitator recorded 12 people in a row say 'no'.

- (ii) The solicitation skills of facilitators affects their approach rate (number of people approached) and the range of people approached (demographic and psychographic). Less experienced facilitators tended to approach 'softer' targets, such as children and families. This is understandable but can negatively skew the 'hit rate' (number of conversations/interactions) and lessen the dissemination of key messages to a broader spectrum of the community. The challenge is to not to avoid the more challenging proportion of the 60% of 'non-converted' residents.¹⁷
- (iii) Some potential conversations were missed by a lack of awareness (not aware of people's presence) and/or not recognising body cues. For example, when someone stands at a slight distance from the trailer but is showing interest in it.
- (iv) Facilitators experimented with their conversation opener. Generally, questions don't work very well as a teaser/hook, as people can say 'no' and walk off. A neutral statement appears to have better results, such as: 'We're talking about how to keep urban streams and rivers clean'. However, an element of fun or enticement can work, such as 'Would you like to test your knowledge with a fun quiz?' or 'Would you like a chocolate fish? [but first play this game]'.
- (v) The more regularly a person facilitated, the more confident they were in the role.
- (vi) There's variation in facilitator's key messaging. Further training could assist. (This is discussed further in section 4(v)).
- (vii) The concept of community groups facilitating/operating the trailer raises questions of: consistency of messaging; lines of responsibility especially when on-site problems occur; level of care (minimising damage to the trailer's expensive hardware and technology by, for example, over-zealous children playing the games); and responsibility for equipment cleaning and post-event pack-down of the trailer.

One example: at the Summer at the Styx event the evaluator took on the facilitator role because, of the two volunteers scheduled as facilitators, one didn't show up and the other inexplicably left the stand for reasonably long periods¹⁸.

- (viii) Facilitation and quality of conversation with the public is affected by factors such as trailer placement and noise. At the Estuary Fest, the trailer site was close to the bouncy castle generator and music speakers, which made it difficult for facilitators and members of the public to concentrate and hear.

Indoor commercial venues and some outdoor ones are more cramped, so the Tuna and Drains game and other props/collateral can't be used. This highlights the need for facilitators to have effective solicitation (not reliant on props) and to be adaptable in their communication strategy.

The portable gazebo that was bought during the pilot programme offers sun protection and some rain protection for people and equipment, which promotes more quality conversation.

¹⁷ Referring to those "60% of Christchurch residents [who]...are unaware that roadside guttering, drains and stormwater discharges from their properties lead initially to streams and rivers, eventually ending up in the sea." (MOU document)

¹⁸ The event organisers apologised to Christchurch Envirohub for the situation and lack of volunteers.

- (ix) Adults were very receptive to the Te Tuna Tāone primary school children sharing their stormwater knowledge. The students asked a few questions of listeners at their end of their spiel (which was well received) and is a fun way to reinforce key messages and assess if people have been listening and learning!

Perhaps a 'short quiz' – or some other mechanism – could also be used by adult facilitators as a reinforcement tool; this is a popular technique with non-profits on social media. Some people left the trailer with misconceptions or remained unclear about a stormwater key message. (Discussed further in section 6).

Key findings: Facilitation of the trailer contributes positively to people's learning and experience of the trailer.

Recommendations:

The following recommendations may help improve facilitator efficacy and in so doing aid positive environmental outcomes.

(a) Consistency and expertise in facilitation

Build consistency, confidence and competence by increasing the skill base of the team of facilitators (possibly still incorporating volunteers).

This could be enabled by:

- Christchurch Envirohub and stakeholders developing an ongoing process of upskilling facilitators. Include training on F2F approach and strategies for maintaining their motivation.
- Have personnel facilitate the trailer on a reasonably regular basis, to ensure consistency of output and to maintain facilitator skills. Build a 'team' and a sense of team.
- Maintaining and increasing stormwater knowledge through occasional 'refresher' training, whether on-line dissemination of information, or formal or informal learning (eg. with an 'expert' or experienced facilitator onsite prior to an event).
- Recommend initial training to be in-person and include role-plays. Continue recruiting students and others with knowledge base in appropriate fields: facilitating the trailer could be structured as part of an internship and/or marketed as practical, in-the-world experience.

(b) Oversight of trailer operation

If the desire remains for a broad range of community organisations to operate the trailer at community events, it would be beneficial for Christchurch Envirohub or an MOU partner to maintain hands-on oversight of the trailer during its use.

Suggest that an experienced/expert facilitator (who might be a staff/contractor of Christchurch Envirohub or MOU stakeholder) oversees the trailer while in use at each location. (At least until the community group has what can be considered an 'experienced/expert' facilitator). This is likely to promote longevity and care of trailer hardware and collateral, and enhance consistency of messaging to the public.

A procedural and operational checklist could be helpful for reference (e.g. H&S, insurance, event contacts, etc).

(4) Communication strategy and key messaging

The evaluator has a background in journalism and communications. Main observations about stormwater messaging strategy and implementation are:

(i) Fun, informal learning approach

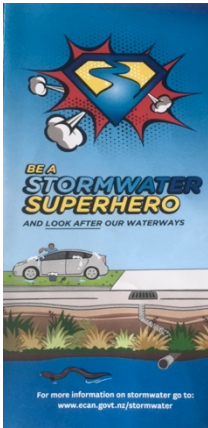
The trailer presents educative information in a fun, interactive and engaging way. The original concept for the design and content of the trailer was to make it appealing to primary children and tweenagers. Since its inception, the trailer has been used by learning institutions as part of curriculum aligned education. There's still demand for this: the evaluator noted 5 direct requests by teachers and a community librarian for the trailer to visit their respective workplaces.

2 to 20 minutes
time spent on trailer engagement

The evaluator observed that whānau/family groups engage with the trailer primarily because the games attract tamariki/children: children are less inhibited to come over and ask what the games are all about; parents/adults follow. Occasionally a parent stood aloof from the activities (more likely in a commercial location, when parents were distracted by the purpose of their visit). Conversely, many parents assisted their children with trailer activities, and were then drawn into conversation with the facilitator.

Older teens and young adults were less likely to find the trailer games appealing, which is largely to be expected because of the age-level at which the interactive activities are pitched.

(ii) Adult-specific messaging



Informal learning is cumulative, so identifying gaps in people’s knowledge is key.

The trailer’s colourful exterior and engineering catches the attention of adults, but little in the way of its messaging tools are specifically targeted to them. For about 20% of F2F interviewees, conversation with the facilitator was their only interaction with the trailer (they were individuals without children). This reinforces the need for facilitators to be skilled at adapting their style and messaging accordingly.

Facilitators used pamphlet E21/8147 (see left) and the non-fold-out version (no identifying code) as a conversation starter *or* as a ‘take-home’ item to reinforce key stormwater messages. Visual learners and those less proficient in reading English may find this pamphlet more helpful than its successor E22/9048 (at right).



Stormwater pamphlet E22/9048 (right) is gendered with a male superhero only, and is less visual than its predecessor in communicating the connection between homes, streets and rivers. However, the tone and language is more colloquial and relatable.

Ideally, pamphlets and any other take-home items can act as reminders, but they are not a substitute for engaging, informative conversation. As one facilitator commented: “It [facilitation] is about igniting people’s interest, so they go home and learn more by themselves”.

(iii) Tuna and drains game – younger end of the spectrum

Pre-school and young children were attracted to the Tuna and Drains game (a huge roll-out, graphically printed mat that resembles snakes and ladders). It has visual impact, acts as a drawcard, plus the giant dice can be handled adequately by that age group.

Parents would usually assist their children and (help) read the messaging. Small venues are not conducive to its use.

At Estuary Fest, the evaluator spotted at another organisation’s stand a more recent example of the same concept (but on a different theme). So this collateral appears to be still current, appropriate and useful.

Interestingly, some child-free adults were observed reading the content of the game’s squares and asking a facilitator about the game’s purpose.



(iv) Interactive board games and video quiz

Of the nearly 80% of F2F interviewees (45 people, usually as part of a family group) who interacted with the trailer's games, 13% of these (6 people) played only one game. The remainder played a combination of two or more games.

Nearly **70%**
of F2F interviewees
interacted with
more than
1 game

The games are critical to the trailer's attraction/marketing and communication: they are extremely effective drawcards, acting like magnets to children and their whānau. Coupled with the assistance and input of facilitators, the games are the heart of the trailer's stormwater communication strategy.

The evaluator noted:

- (a) The movie was not played during the pilot programme; it was thought it would be too difficult to hear in a public setting. It can also take some time to load.
- (b) Some terminology in the quiz wasn't understood by primary age students, such as "sediment".
- (c) Sometimes the quiz's push and slide function (when choosing quiz answers on the TV screen) was difficult to operate: little fingers, not enough pressure on touch screen, or possible computer glitch or heat effects?
- (d) Some adults asked to play the trailer's wobble board game (with marbles), to discover the key message of separate SW and wastewater systems.

(v) Informal learning - desired outcomes

The interactive game and video on the Stormwater Superhero Trailer are "designed to reinforce an action-cause-remedy logic among users".¹⁹ Behaviour modification (remedy) is the desired outcome of the trailer, for all age groups who interact with it.

Comments:

- (e) Some facilitators concentrated on the big picture (two water systems and how stormwater affects waterways' health) and some on the detail (e.g. encouraging drivers to ask for copper-free brake pads).
- (f) Informal public education is incremental: a building block approach, so not to overwhelm the recipient. It relies on facilitators evaluating each conversation and giving nuanced and appropriate messaging at in appropriate ways (i.e. the language and concepts used). It is a balance between emphasising a practical action that contributes to a solution while not losing the opportunity to communicate/reinforce 'big picture' messages. By 'pushing' specific behaviours/actions, the working assumption is that people have a level of knowledge of stormwater that may or may not be there.
- (g) The 'key learning' statements of 11% of F2F interviewees contained some inaccuracy. Some interviewees also used the interview time to clarify information with the evaluator. (Discussed further in section (6)).
- (h) Veracity and currency of information presented. The evaluator overheard one facilitator question the material in the on-screen quiz: something along the lines of "I'm not sure if that's true but...". Another facilitator was unsure of widespread availability of copper-free brake pads after enquiring with her mechanic. Clarify whether the solutions are practicable and easy for people to do.

Also, a specific stormwater-related 'solution' may not have longevity (because of technological/product advances, changes in regulations, or other factors that have an impact on its continued validity).

Recommendations

Fine-tune the communication strategy of the Stormwater Superhero trailer so that facilitators know to emphasise the macro and micro in tandem: the big picture (two water systems: one filtered/treated, one not; SW directly affects streams and wildlife) and an invitation to implement specific positive behavioural change. This approach may allow longevity of messages in light of any future regulatory/legislative and technological changes. /cont.

¹⁹ Ibid, p 11.

Encourage facilitators to take a 'verify what has been learned' approach across all age groups, not just with children. Implement an informal/fun way of reinforcing what visitors have learned, thereby providing further opportunity to address any misunderstanding or respond to knowledge gaps (when the situation, time and visitors' patience permits).

Develop a creative way for targeting key messages to adults who stop at the trailer – more than perhaps the traditional take-home pamphlet (whose shelf life in people's homes may be limited).

Review the wording of the quiz, to make it more relatable/accessible.

Review the use and appropriateness of the (or a) movie. Promote watching it at home?

(5) Behaviour change

(i) The potential for positive behaviour change was gauged with questions such as:

99%
of iPad respondents motivated to make +ve SW behaviour change

How has visiting the trailer today motivated you to better protect our waterways?
99% of iPad respondents said they were moderately to highly motivated to make positive behaviour change as a result of visiting the trailer.
86% rated their motivation as 4 or 5 out of 5 (5 being a 'Stormwater Superhero').

Percentage	Rating chosen	
46%	5	"Positive impact/ I want to be a Stormwater Superhero"
40%	4	
13%	3	
0%	2	
1%	1	"Unlikely to change my behaviour"

86%
(iPad) highly to very highly motivated to make +ve SW behaviour change

Nearly half
of iPad respondents motivated to be a 'Stormwater Superhero'



What's something NEW you've learned today about how you can reduce stormwater contamination and so protect our waterways?

82%
of F2F interviewees learned something new to protect waterways

F2F interviewees responded:

"I didn't realise that all the rubbish in the drain would go to sea"
"Stormwater goes ... to the ocean"
"Roof water and where it goes. [Copper-free] car brakes is new to me"
"About sediment and how it affects the waterways. Rinse paint brushes on the lawn."

"Put [car washing] water on the grass. Bromley [treatment plant] is for inside water"
"Knew some of it. Good to be reminded even if you are aware of it. [I learned] new things about how [contamination] ends up in the water."
"I know where to wash my car; what not to throw inside the drain" *"Go to carwash"*
"Where to wash vehicles; makes me rethink washing paint brushes... [and to do that] in the laundry"

Female, 30-64 years, identifying as Māori-European

"I'll be a little more cautious about where we wash our cars, pick up our dog poo, and where we are sending stuff into our waterways. I found it interesting – I never thought about that. It's an easy thing to change."

What stormwater-friendly things do you plan to do as a result of visiting the trailer?

79%
of F2F interviewees named SW-friendly actions they want to take

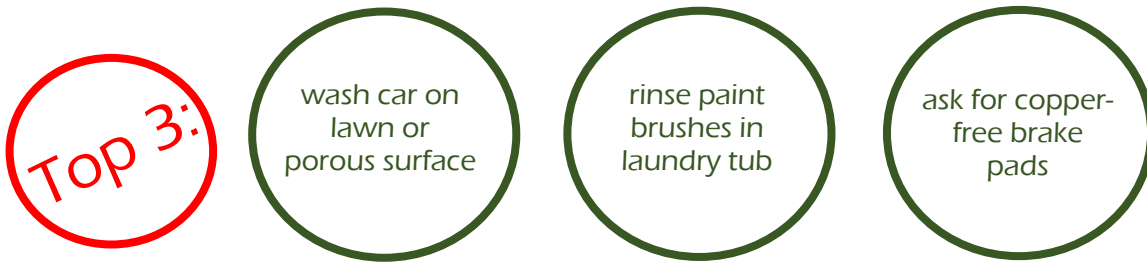
Without prompting/reminders, F2F interviewees mentioned the following storm-water positive actions they intend to take:
(some interviewees listed multiple actions)

% of responses	action
37	wash car on porous surface or at professional car wash
14	change to copper-free brake pads
14	use laundry tub to rinse paint brushes
11	pick up dog poo from gutters
11	avoid sediment/garden dirt from going down SW drain
7	clean SW gutters in street
2	have discussions about SW with other people

18% made an unsolicited 'big picture statement' about SW, such as:

"Be responsible; be conscious"
"Be more careful"
"Don't dump what could be harmful"
"Don't dispose of waste in drains"
"Be mindful about what's going down the drain"

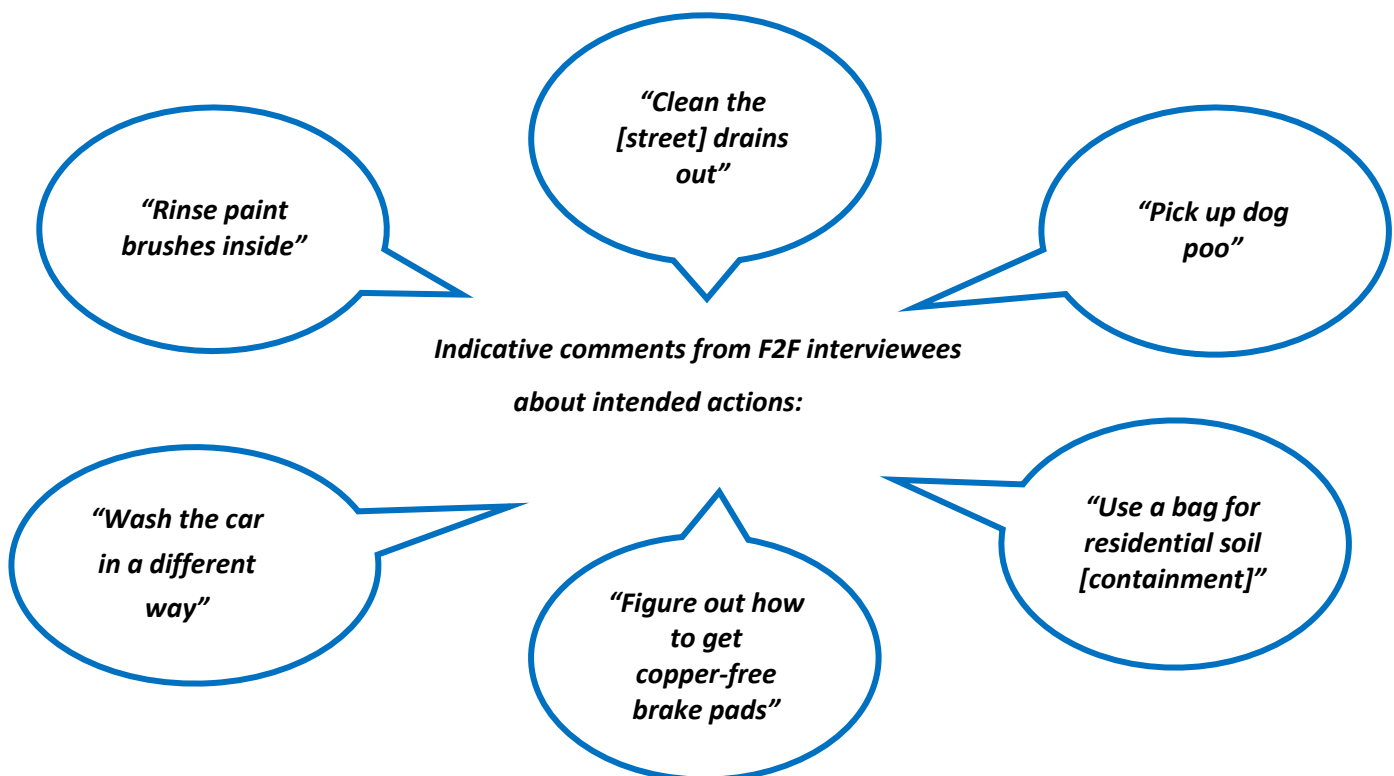
'Top 3' desired actions or favourite tips, collated from the 3 types of feedback forms:



clear rubbish & leaves from SW drain – came a close 4th

The evaluator identified that nearly a third of F2F interviewees were not aware of stormwater infrastructure on their property or in their neighbourhood (gutters, grilles etc). They were invited by the evaluator to take themselves and their families on an exploratory walk.

Do you know where the stormwater drains are located at your home? and in your street? [if no, encourage them to explore]



- (ii) To help assess behavioural change, follow-up phone calls and emails were attempted to a selection of F2F interviewees who indicated they were amenable to further contact. The timing (Christmas and summer holidays) and other factors contributed to a small number of responses collated. Comments received indicate that trailer visits resulted in positive behaviours and actions. For example:

“My boys have talked about it to family and friends, especially about cleaning the car on grass. Keep educating. Loved the trailer. The trailer is a great tool to educate in a fun way”.

“We washed our car at the petrol station. We did talk randomly. We just found out Canterbury rivers are quite polluted. Keep doing it [stormwater education]. I think it’s good. Not a lot of people know about it [stormwater].”

Key findings: 89.5% of F2F and iPad respondents were keen or motivated to put into action stormwater positive actions to help protect urban waterways. The trailer is shown to lead to behaviour change.

(6) Misunderstandings and clarifications



The evaluator noted that when F2F interviewees were asked what the “main message or learning” was from their trailer visit, 11% of answers contained some level of inaccuracy. For example: a male Pākehā 30-64 years said “organic ok, chemicals not” for what can go down SW drains; however he went on to correctly identify that stormwater is not treated/filtered.

Occasionally, interviewees would ask the evaluator to clarify a point they still didn’t understand.

It was observed that a few people attempted to shut down a conversation with a facilitator, in all likelihood to avoid exposing their lack of knowledge of the issue. One facilitator’s strategy “when they said they knew it all” was to be “quietly assertive” [her words] and ask the person a question of clarification.

Informal learning can be aided by facilitators helping to identify misunderstandings, so people’s knowledge of stormwater and freshwater health can be incrementally improved.

As previously mentioned, the implementation of a fun quiz for adults (post-trailer interaction) might be a useful tool in a facilitator’s kete. Alternatively, asking a visitor to identify their main learning reinforces key messages and gives the facilitator an opportunity to correct any inaccuracy or continued misunderstanding.

(7) Pushback

The following issues were raised by F2F interviewees, highlighting an expectation that regulatory and technological contributions may also assist freshwater health.

- Why not make copper-free brake pads mandatory?
- Are there any ways such as a filtration system to help this situation - besides trusting the average Jo to do the right thing?
- In Switzerland, new subdivisions provide designated car washing areas. Why not here?
- Stormwater should be treated
- Are dog poo bags (which can’t go in the green bin) any more environmentally friendly than plastic bags? (i.e. are we improving waterways health at, perhaps, the expense of landfill)

- Cost. “Car wash is \$14-15; I’d rather give the [money] to a starving child”.
- Compliance. Two people expressed disappointment at having witnessed instances of unlawful discharges into waterways: one by their workplace and one by a neighbour. The workplace matter was, with the person’s agreement, referred to the ECan pollution hotline.

(8) Bi-cultural responsibilities

Five percent (3 people) of the 56 F2F interviewees self-identified as Māori or Māori-European.

The evaluator did not observe facilitators other than the Te Tuna Tāone facilitator directly referring to Te Ao Māori concepts in their conversations with trailer visitors.

The trailer and collateral includes Te Reo and one of the games specifically relates to tuna’s wellbeing and its migratory journey to the sea. The concept of mahinga kai is outlined in pamphlet E21/8147.

Recommendations:

Encourage facilitators to be comfortable referencing Te Ao Māori concepts and mahinga kai (i.e. interconnected species, habitats, resources and practices for sustainable living). This would help enable facilitators to interact knowledgeably and with confidence with a Māori audience.

Factor in attendance at events or locations that might attract a higher or predominantly Māori audience. This would also demonstrate the councils’ commitment to Te Tiriti principles.

Recruiting facilitators who identify as Māori may enrich the cultural reach of the trailer.

(9) Pasifika and migrant demographic

None of the F2F interviewees identified as Pasifika peoples.

There was a keen migrant interest in the trailer.

Diverse ethnicities at events such as the multicultural festival Culture Galore were observed responding positively to approaches by the facilitators. It is possible this stems from a desire to learn about ‘how things are done’ in Aotearoa-New Zealand: any regulations/rules that apply, and differences in infrastructure from what migrants are familiar with in their home country.

Facilitators sometimes needed to simplify the terminology to assist these interactions.

Recommendations:

Attend multicultural events/locations such as Polyfest and Culture Galore, to broaden the trailer’s reach into diverse Ōtautahi Christchurch communities.

Recruit Pasifika and non-Pākehā ethnicities as facilitators, to enrich the cultural reach of the trailer and broadening the opportunity for practical experience that the facilitation role offers.

Concluding Remarks:

The MOU for the pilot project recognises that:

- * a majority of Ōtautahi Christchurch residents are unaware that stormwater is discharged directly to streams and rivers
- * Christchurch's urban waterways have "regular exceedances for contaminants above guideline level", and
- * there's a "growing acknowledgement that infrastructure alone will not address the scale of the problem".²⁰

The MOU document states that "more needs to be done to prevent stormwater pollution in the first place, at source, in communities, through education and behavioural change."²¹

This report provides evidence of the positive educative and motivational impact of the Stormwater Superhero Trailer towards this desired change. The recommendations are intended as prompts to enhance the efficacy of what can be considered a beneficial public education tool.

Main recommendations:

- In situ management

That Christchurch Envirohub ensures direct oversight of the Stormwater Superhero Trailer during its use (i.e. in situ at events/locations). In essence, ensure an expert facilitator is present during the trailer's use, to maintain consistency and professionalism of facilitation team and to maximise longevity (care) of hardware.

[Recommendation (b) on p 12]

- Upskill facilitators

Upskill facilitator team to increase consistency of communication, confidence, competence and effectiveness (includes improving solicitation skills). *[Recommendation (a) on p 12]*

- Diversity to widen reach

Recruit culturally diverse facilitators to meet Te Tiriti obligations and increase communication reach.

[Recommendations on p 19]

- Review comms to increase relatability

Review messaging of on-trailer components, to increase the trailer's reach and relatability to a wider audience (such as adult-specific components, less technical language, etc). *[Recommendations on p 14 - 15]*

- Macro/big picture

Review facilitators' comms, to ensure promulgation of macro-level key messages (SW system differs from wastewater system; people's actions contribute directly to health of waterways) and to encourage behaviour change as a result of that understanding. *[Recommendations on p 14 - 15]*



²⁰ MOU p 2

²¹ Ibid

APPENDIX

COMMUNITY ENGAGEMENT ASSESSMENT PARAMETERS

I. Evaluation Period

On-site evaluation of the efficacy of the trailer as an effective community engagement tool occurred during spring 2022 and the summer-autumn of 2023, specifically between 6 October 2022 and 15 April 2023 inclusive.

II. Evaluator

An independent contractor ('evaluator') managed the process of data collection and the drafting of this report, on behalf of Christchurch Envirohub. The contractor is a communications specialist, has managed F2F community engagement teams, and has professional project and event management experience.

In some instances when the contractor was unable to attend a location/event, a Christchurch Envirohub staff member conducted the interviews designed by the contractor.

III. Trailer Locations

During this period Christchurch Envirohub evaluated public interaction with the trailer at 4 commercial or pay-for activity sites and 11 community events.

For 13 out of 15 venues visited, Christchurch Envirohub provided an Envirohub staff member/contractor to transport and set up the trailer. They worked alongside trained volunteers, and these teams of 'facilitators' talked with members of the public. At the other two events, the trailer was run by community organisation representatives by themselves, with pre-event guidance from Envirohub.

Continued overleaf/

**Table 1:
List of sites/venues**

Venue	Date	No. of adults	No. of tamariki	Public interaction (hrs)	Average interactions (people/hr)
Commercial site/ pay-for activity venue					
Dressmart Hornby	6/10/22				
“	7/10/22	134	171	14 (combined stats for 2 days)	22
Mitre 10 Ferrymead	6/11/22	106	26	5.5	24
Pioneer Recreation & Sport Centre (with TTT ²²)	13/11/22	38	31	3.5	20
Te Hapua (with TTT)	4/12/22	40	65	3	35
<i>Subtotals</i>		318	293	26	24
Community events					
Spring Fair, Avebury House	16/10/22	49	38	4	22
Summer in the Styx	29/1/23	No tally*	No tally	4	-
Culture Galore	18/2/23	101	162	4	66
Parklands at Play	19/2/23	32	48	3	27
O-week, UC	21/2/23	132	-	4.5	29
Estuary Fest	25/2/23	63	42	4	26
Summer Starter, University of Canterbury	2/3/23	113	1	4	29
Richmond Gala	18/3/23	63	41	5	21
Children’s Day	5/3/23	-	-	Event cancelled	-
Dogs Day Out in the Zone	15/4/23	24	9	1.75	21
<i>Subtotals</i>		577	341	34.25	27
Special category: Community facilitators (Envirohub not present)					
Sumner Residents Assn & Hub event	11/3/23	9	7	4	4
Sumner Sea Week (outside library)	12/3/23	7	8	2.5	6
<i>Subtotals</i>		16	15	6.5	5
Total for all events		911	649	66.75 hrs	23

Exclusions:

A small amount of feedback was collected from additional sites and events not listed above. These locations were outside the Ōtautahi Christchurch metropolitan area and so that data has been excluded (as being relevant to urban waterway health). Similarly, data collected as part of the action learning programme Te Tuna Tāone – an urban eel programme also overseen by Christchurch Envirohub – has not been included unless the event was attended by the wider public, not just within a school community.

²² TTT = trailer co-facilitated by primary aged children who elected to do so as part of the Te Tuna Tāone programme, which is managed by Christchurch Envirohub and aligned with freshwater education.

* Due to facilitator staffing issues; explained further on p 11 of substantive part of the report.

EVALUATION METHODOLOGY

(a) Data collection process

Three types of responses were collected from people who visited the trailer:

1. **Face-to-face (F2F) interviews, conducted by the evaluator**

The evaluator (or substitute) conducted in-person interviews at each trailer location, using a purpose-designed questionnaire. These responses form the backbone of this report, as they offer the most personalised material and a fuller source of information than the other two data collection methods.

Potential F2F interviewees were approached by the evaluator if they had had a 'quality' interaction with the trailer (of sufficient duration or interest level that a F2F interview would be likely to elicit more than cursory comment).

Consenting interviewees were asked up to 10 questions, seeking their feedback on the trailer and their stormwater knowledge pre- and post-interaction with the trailer. Interviewees had the option to supply their name & address for post-event follow up. The evaluator entered answers into an online form, which automatically collated the data.

Ethics:

F2F interviewees had to be a minimum of 16 years old; in family groups, under 16s could assist the interviewee in answering certain questions, such as any learned outcomes of board games. The evaluator was advised by Christchurch City Council staff that the council did not require the draft questionnaire to go through an ethics process before being used with the public.

For the post-event contact with consenting interviewees: 3 follow-up questions were asked about the impact of the trailer.

2. **iPad 5-star rating**

Children and adults who had interacted with the trailer had the opportunity to rate the trailer using a touch-screen device. The online form, on an iPad, gave the option of answering up to 4 questions: 2 x 5-star-ratings (Likert scale) and 2 multichoice questions with standardised options to choose from. Only 1 question - the overall star-rating for the trailer - was compulsory.

Trailer users selected their choices directly by touchscreen; answers were automatically collated by Google Forms.

Note: This online rating system can be adapted and/or used with the trailer on an ongoing basis, beyond the end-date of the evaluation period. A caution is that the iPads can overheat in direct sunlight and so temporarily be non-operational.

3. **Paper-based competition entry:** This manual form captured 2 multichoice questions along with (optional) name and contact details. Its design and use pre-dates the evaluation period but was used as an interim measure until iPads became available for the online form. Data was manually collated.

Each response method was mutually exclusive (i.e. a person couldn't duplicate their feedback by, for example, filling out the rating form and also being interviewed).

In addition to the above three methods of feedback, the evaluator made unobtrusive observations of children and adults' interaction with the trailer; other relevant information about the event context (such as weather) and attendee interaction was also noted.

(b) Response method totals per event

**Table 2:
Tabulated Responses**

Venue	In-person Interviews (with interviewer) 16 years +	5-star rating (online using iPad)	Manual rating form (interim)
Dressmart Hornby	10	n/a	55
Mitre 10 Ferrymead	3	6	n/a
Pioneer Recreation & Sport Centre (with TTT*)	4	1	n/a
Te Hapua (with TTT*)	6	-	n/a
Commercial site subtotals	23	7	55
Spring Fair, Avebury House	3	n/a	23
Summer in the Styx	2	-	n/a
Culture Galore	11	19	n/a
Parklands at Play	8	1	n/a
O-week, UC	-	20	n/a
Estuary Fest	4	6	n/a
Summer Starter, UC	-	63	n/a
Richmond Gala	4	2	n/a
Dogs Day Out in the Zone	1	1	n/a
Community event subtotals	33	112	23
Sumner Residents Assn & Hub event	-	-	n/a
Sumner Sea Week (outside library)	-	-	n/a
Non-Envirohub led subtotals	-	-	n/a
Total responses	56	119 (80% respondents: adults)	78 (45% respondents: adults)

Overall number of responses:



16% of trailer visitors gave feedback using one of the 3 response methods offered.

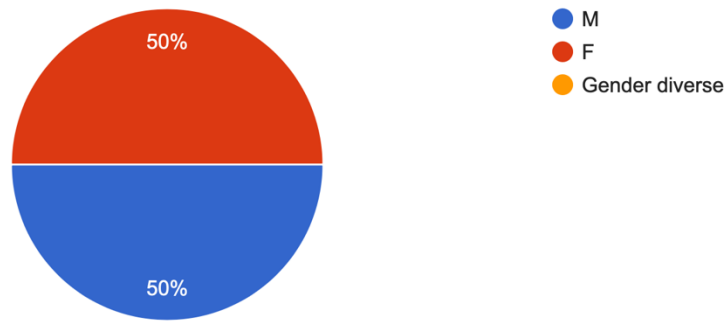
F2F interview response: 6% of adults who visited the trailer were interviewed face to face (under 16 years of age were not eligible).



Factors influencing the willingness of trailer users to do an in-person interview (or, in fact, influencing the evaluator's decision not to request an interview) included: poor weather (people weren't hanging round), age of whānau (restless and wanted to move on), short duration of interaction with trailer (didn't use the games or quiz, for example) or minimal information was exchanged with or by the facilitator (they may have taken a pamphlet but not chatted much or asked many questions).

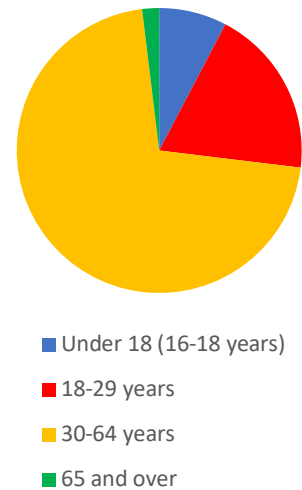
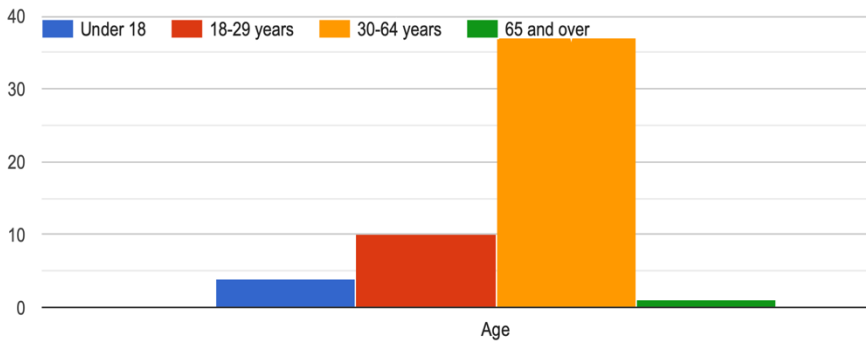
(c) F2F interviewees' demographics

Gender:

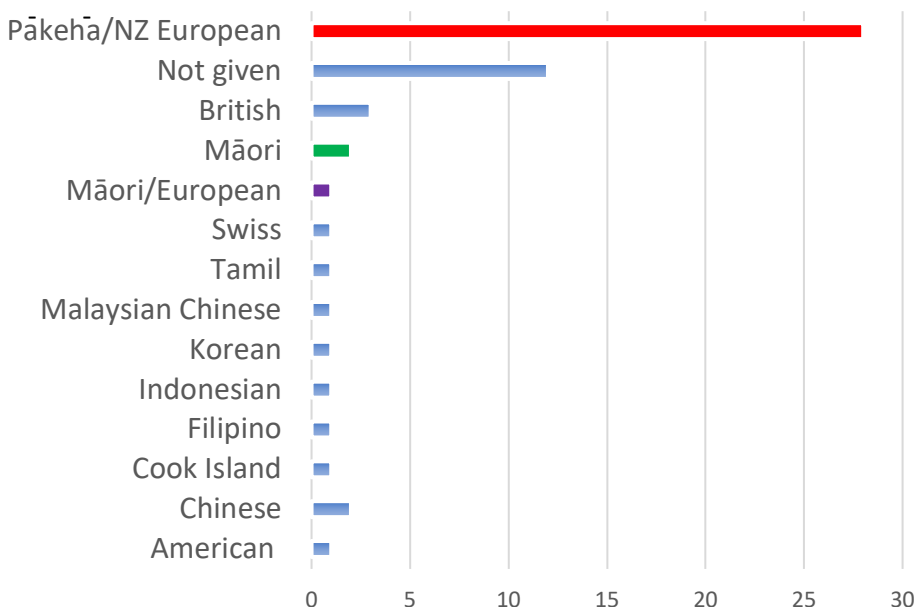


Age:

Two representations of same data:



Ethnicity:



3 of the 56 F2F interviewees self-identified as Māori or Māori-European.

28 identified as Pākehā.

The evaluator noticed that people from a range of other cultural backgrounds and ethnicities showed a keen interest in the trailer activities and information, if their conversational English was adequate/proficient.