# Play Streets in Bromley: Implementing Strategies in the Community to Increase Play

Lochlan McKenzie, Caimin McNamara, Olivia Millar, Ben Riley, and Brydie Washington

School of Earth and Environment | Te Kura Aronukurangi, University of Canterbury | Te Whare Wānanga o Waitaha

GEOG309: Research for Resilient Environments and Communities

Simon Kingham

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**Contents**

## Executive Summary

Unstructured, creative, and active outdoor play provides children with physical and mental health benefits. Urban designs that enable play improve community outcomes when environmental, economic, and social costs are adequately assessed. This research aims to explore how play strategies can be implemented in the Bromley community, which was identified as experiencing play inequity in a 2020 play scope by Sport New Zealand. Safety, accessibility, and cost and sustainability factors were taken into consideration alongside physical and mental health benefits.

- A community survey, administered online through Qualtrics and distributed through community stakeholders and the community Facebook group, was used to gather data.
- Most types of play were strongly supported, as were locations near greenspace, the school, and the community centre. The importance of culturally inclusive and accessible strategies was highlighted.
- A community event was planned to survey and interview community members in person and collect observational data on play types engaged with, however, this was not utilised due to time constraints on the research, and therefore the depth of the data received was limited.
- Results showed a strong indication that implementing inclusive play strategies in the Bromley community would be successful, especially in the highlighted locations. Communities across not only Christchurch, but New Zealand, could also benefit from this type of research and including such considerations in community and urban development plans at a broader scope.

## Introduction

Play is active, unstructured, and typically outdoors (Brockman et al., 2011; Frost, 2012; Human Potential Centre AUT University, 2015; Umstattd Meyer et al., 2021). The current state of play illustrates that children are not meeting the guidelines for activities such as play (Brockman et al., 2011; Parfitt & Eston, 2007) and the amount and types of play by children have changed from their parents' generations (Nesbit et al., 2023). An English study by Nesbit et al. (2023) found that 62% of adults regularly played on their local streets as children, while only 27% of children do so today. Although the overall time that children and young people are spending engaged in play is decreasing (Sport New Zealand, 2023), people do not need to commit to long play sessions to change this. Having as little as five minutes of free time to play at multiple intervals throughout the day is sufficient to achieve the benefits of play (McCormick, 2017).

Bromley falls within the Christchurch City Council's (CCC) Linwood Ward and, based on data from 2018, is one of several suburbs within the ward that rates between seven and ten (high deprivation) on the New Zealand deprivation index (Christchurch City Council, 2021). Sport New Zealand (2023) identified children in medium and high-deprivation areas to experience a play inequality of 8% and 10% differences in participation, respectively. Christchurch's eastern suburbs, including Bromley, were impacted significantly by the 2010/2011 Canterbury earthquake sequence, and have been left behind in terms of recovery and rehabilitation (RNZ, 2021). Conversations with CCC Play Advocate, Louise Van Tongeren, revealed that the large cemeteries in Bromley are identified as "greenspaces" despite being unacceptable for play (L. Van Tongeren, personal communication, January 28, 2023). The combination of poor infrastructure rehabilitation and upkeep post-earthquake, with the use of the suburb's greenspace as cemeteries, has left Bromley with very few

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inviting play environments for children and families. Louise Van Tongeren and her colleagues at CCC have approached us with approved funding for the implementation of play initiatives in the Bromley community and have asked us to research play types and locations for implementation.

This paper consults existing literature on five sub-topics of interest that relate to the success of play in the Bromley community. These are physical health and development; mental health and wellbeing; accessibility; safety; and sustainability. In addition, this paper also includes direct community consultation on types and locations of play initiatives specific to the Bromley community that we as researchers intend to propose to CCC.

**Physical Health and Development**

Play streets are initiatives that have gained popularity around the world, which see the temporary closure of streets to promote physical activity, sustainable transport, and community engagement. Successful examples of play streets include New York's Summer Streets and Bogota's Ciclovia (Cabezas and España, n.d.). These initiatives show how play streets can be successful in different contexts by providing children with safe spaces to play while encouraging physical activity, community interaction, and a sense of belonging.

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Several studies, including those by Hou et al. (2022), Ortegon-Sanchez et al. (2022), and Umstattd Meyer et al. (2019), emphasize the importance of urban design in shaping active and sedentary lifestyles. Well-designed streets can support play and physical activities, encouraging healthier lifestyles. Cul-de-sacs (Brockman et al., 2011; Kingham et al., 2020), access to greenspace (Brockman et al., 2011; McCormick, 2017), and providing play opportunities in both suburban and inner-city areas (Ergler et al., 2013), are important urban design elements to achieve these outcomes, especially as high-density housing increases.

Play streets also play a vital role in children's motor skill development. Open spaces allow children to develop fine motor skills, such as balance, coordination, and agility, and engage in different play obstacles. Additionally, they provide opportunities for social interaction, cognitive development, and problem-solving skills, fostering greater independence and decision-making.

**Mental Health and Wellbeing**

Play provides benefits to the mental health and emotional well-being of children who engage with it, as well as better cognitive performance (Brockman et al., 2011; Howard & McInnes, 2012; Human Potential Centre AUT University, 2015; Kingham et al., 2020; Marlborough District Council, 2022; Nesbit et al., 2023; Parfitt & Eston, 2007; Sport New Zealand, 2020; Wellington City Council, 2022). Increased mental health concerns in young people coincide with the trend of decreased play (Brockman et al., 2011). However, this can be moderated by improvements in self-regulation and resilience, Attention-Deficit/Hyperactivity Disorder (ADHD), and depression and anxiety rates through play (Human Potential Centre AUT University, 2015; Howard & McInnes, 2012; Marlborough District Council, 2022; McCormick, 2017; Parfitt & Eston, 2007; Wellington City Council, 2022). Emotional well-being is benefitted through autonomy and motivation, self-esteem, creativity, fatigue recovery, and stress moderation (Brockman et al., 2011; Human Potential Centre AUT University, 2015; Howard & McInnes, 2012; Marlborough District Council, 2022; McCormick, 2017; Parfitt & Eston, 2007; Wellington City Council, 2022). Additionally, cognitive performance is strengthened by play as it develops problem-solving and risk management skills, better attention, focus and memory, increased brain function and growth, and better test scores and results (Brockman et al., 2011; Frost, 2012; Human

Potential Centre AUT University, 2015; Howard & McInnes, 2012; Marlborough District Council, 2022; McCormick, 2017).

The mental health and wellbeing benefits from play extend to adulthood (Nesbit et al., 2023) through decreased emotional and behavioural problems such as bullying, violence, and crime (Frost, 2012; Howard & McInnes, 2012) and degenerative diseases (Frost, 2012). Additionally, social and community outcomes, including cohesion, capital, and resilience are achieved through play (Umstattd Meyer et al. 2021).

Community play partners, such as Sport Canterbury and Kia Kori Waitaha in Christchurch, provide examples of play to work towards (Frost, 2012; Howard & McInnes, 2012), with events helping to investigate the scope for further implementation (Kingham et al., 2020; Umstattd Meyer et al., 2021). School structures focussed on experiential, free choice, and outdoor integrated learning, such as those in Finland and Denmark positively influence play and achieve high student outcomes (Frost, 2012), but even integrating multiple short play breaks throughout the day can be beneficial (McCormick, 2017).

**Accessibility**

Investigating the accessibility of play spaces is imperative to creating successful play interventions in Bromley. Igel et al. (2020) were the most influential, as their study engaged 140 students and their parents from two primary schools. This collaboration provided raw potential for play initiatives, which were then refined by school staff, and finally implemented by researchers. The type of results included hopscotch grids, labyrinths/mazes, and “mirror me” grids, which were permanently installed on footpaths in and around the schools involved.

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Accessibility is more than an issue of physical risk, but one of emotional, mental, and social. Alison John Associates (2017) identified that accessibility concerns involved children with mobility issues, cognitive processing conditions, mental health conditions, and sensory impairments. This identification helps consider diverse types of play initiatives that facilitate all realms of accessibility and inclusion.

Practical and physical considerations have a heavy focus on path width and surface. Narrow pathways often result in exclusion within groups as they squeeze to fit on a narrow path without spreading onto the road. Jeanes & Magee (2011) explained that while woodchips/bark provide a softer surface in case of falls, they also create an uneven surface which is difficult for wheelchair/mobility aid users and children in prams to move on.

**Safety**

There are three main concerns regarding the safety of play: children feeling safe, parents and caregivers feeling safe, and the general safety of the environment.

Parents and caregivers feeling safe are a priority in getting the children to play by themselves. 'Play-on-the-way' initiatives can be used on the way to and from a destination and do not necessarily need supervision. Research points towards the experience of space, psychological, and emotional reactions to form more liveable and safer neighbourhoods. Park and Garcia (2020) support even small additions such as improved street lighting, widening footpaths, and updating transitions for accessibility, together increasing the feeling of safety among parents/caregivers.

Research has shown failures in the past due to the high traffic levels that were affecting the relationship between working-class street sociability and children's play (Cowman, 2017). Grayling et al (2002) confirm there is a greater effect of the built

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environment and traffic conditions on children rather than adults. Safety considerations, such as low speed and traffic areas (Brockman et al., 2011; Ergler et al., 2013; Human Potential Centre AUT University, 2015) and having separate spaces for teenagers and younger children (Brockman et al., 2011), increase the uptake of play. There is supporting literature on 'Home Zones' which is "a whole street redesigned to give priority to pedestrians, children and cyclists over motorized traffic, combined with a lower speed limit, is another step in the right direction" Grayling et al (2002).

**Sustainability**

Lal et al. (2019) stated the importance of frequent physical activity and the negative implications that can be brought on when physical inactivity is prevalent in challenged neighbourhoods. During this research, they also found that newer, refurbished parks are more likely to be used regardless of the socio-economic statistics in the area. This is confirmed by Colabianchi et al. (2009), who used structured play in their research and found that renovations of play areas can increase the level of physical activity, especially among school-aged boys.

James (2023) explains that using environmentally friendly paints to create community murals is possible. This would lessen the effects of a community-based project on the environment while ensuring the community can still benefit from such initiatives.

A benefit of unstructured play can come in the form of a reduced chance of injury. Bierbaum et al. (2018) have explained that the safer, unstructured play areas are more socially and economically sustainable. This is because injuries can cause long lasting mental and physical damage to children as well as have wider economic impacts. The costs of

injuries gained on playgrounds cost $18million between 2010 and 2014 across playgrounds in New South Wales, Australia (Bierbaum et al., 2018).

## Aim

Based on the above, our main research question was this: what can be implemented in the Bromley community to encourage play? Where Play is defined as unstructured, creative, innovative, and inclusive. We intend to do this by focusing on quick and accessible play-on-the-way ideas.

## Methodology

### Sampling Method

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The intention was to hold a community event at which community members could be surveyed in person and interviewed in more depth, with the addition of observational data of the types of play most engaged with. Due to the time constraints of the research, an online survey was used to collect community voices. The questions generated for the online survey were developed from those planned to be included at the community event, including examples of types of play, locations for play, and diverse cultural and accessibility inclusions that could be implemented.

### Procedure

The online survey was created on the survey software Qualtrics. It was distributed via community stakeholders and the community Facebook group, Bromley Residents Group – Christchurch, NZ. All responses were collected anonymously.

Questions regarding types of play were evaluated using sliding scales from one to ten. Location questions required participants to select multiple options from a list of appropriate spaces for play implementation, with the option to submit their suggestions as well. Locations

included greenspace areas and streets. Participants were also asked questions regarding inclusivity, such as the inclusion of Māori representation, which participants could select "Yes", "No", or "No Preference". An open-response question was also posed to gather data on any other cultures the community would like to see represented. Considerations for accessibility inclusion were gathered through a multiple-choice selection, with options of Mobility Concerns, Cognitive Processing Condition(s), Mental Health, and Sensory Impairments (see Appendix A).

**Data Analysis**

Data was collected in an Excel spreadsheet and analysed to create a series of bar graphs to assess the counts of participant views on the types and locations of play that were suggested. For the types of play, scores between one and three, inclusive, were categorised as "Unlikely", scores from four to six, inclusive, were categorised as "Indifferent", and scores from seven to ten, inclusive, were categorised as "Likely" in terms of their engagement potential. Locations of play were analysed by the number of votes each location received and information provided by CCC.

Data for the questions surrounding inclusivity were presented using pie charts. The charts included a representation of the responses received, as well as the number of participants that did not respond as some questions did not require a response. For example, if a participant did not have any accessibility considerations to disclose, they did not have to answer the question. However, the non-response needs to be represented to indicate this proportion of the sample.

## Results

**Types of Play**

The results depicted positive reactions towards all three options for painted street play (see Figure 1). The Painted Copycat game had 83% of the vote proportion as represented by 'Likely' in green, compared to the lower vote proportions in Painted Hopscotch which is 75% and for Painted Maze 81%. Painted Hopscotch showed the greatest potential resistance represented by 'Unlikely' in the red with a 10% vote proportion.

The results for nature-inspired play show that there were positive reactions towards all three options (see Figure 2). Wooden Stepping Numbers had 85% of the vote proportion as represented by 'Likely' in green, compared to the lower vote proportions in Sandpit Tires which is 69% and for Log Tunnel 80%. Sandpit Tires and Wooden Stepping Numbers both showed potential resistance represented by 'Unlikely' in the red with 3% of the vote proportion.

The results for play-based events show that creative events, such as Rock Painting and Bird Feeder days received the highest proportion of support (96% and 88% respectively) relative to those suggesting disengagement (see Figure 3). The Community Mural and Play Street events also received a high proportion of 'Likely' votes (71% and 74% respectively), however received comparatively more 'Unlikely' and 'Indifferent' votes at 17% 'Unlikely' and 13% 'Indifferent' for the Community Mural and 26% 'Indifferent' for the Play Street event.

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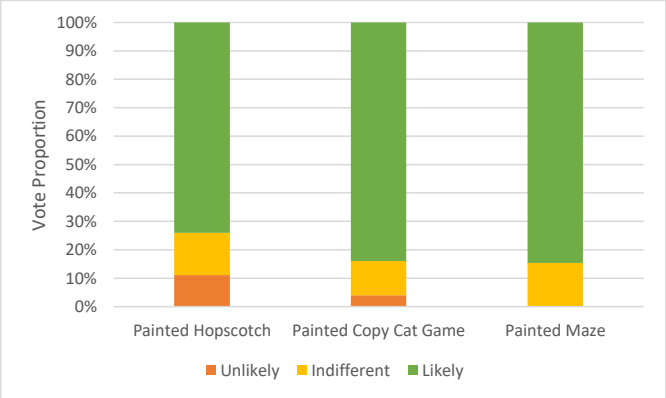
**Figure 1**

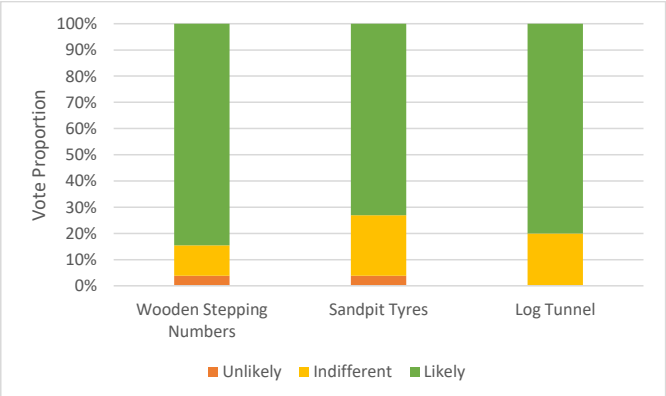
*Bar Graph of Survey Responses on the Likelihood of Engagement with Painted Street Play Initiatives Displayed as Percentages*




*Note.* Unlikely is ratings 1-3, Indifferent is ratings 4-6, Likely is ratings 7-10.

**Figure 2**

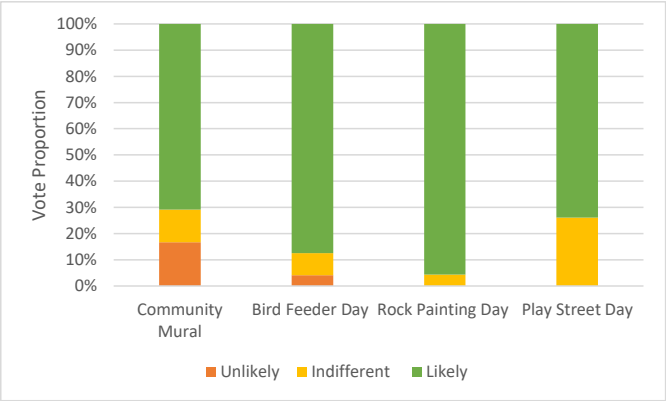
*Bar Graph of Survey Responses on the Likelihood of Engagement with Nature-Inspired Play Initiatives Displayed as Percentages*




*Note.* Unlikely is ratings 1-3, Indifferent is ratings 4-6, Likely is ratings 7-10.

**Figure 3**

*Bar Graph of Survey Responses on the Likelihood of Engagement with Play-Based Events Displayed as Percentages*




*Note.* Unlikely is ratings 1-3, Indifferent is ratings 4-6, Likely is ratings 7-10.

**Location of Play**

The survey data provided several potential locations for play implementation (see Figure 4). McGregors Road near Bromley Park (see Figure 5) received a high number of survey votes but experienced high traffic volumes, with a notable presence of heavy vehicles (see Table 1), which may pose safety concerns for children. The morning peak hour data (see Table 1) suggests congestion, which could affect accessibility and the safety of young pedestrians and cyclists.

Raymond Road (see Figure 6) offers significantly lower traffic volumes and a reduced percentage of heavy vehicles (see Table 2), indicating a safer and more accessible environment for children. The morning peak hour traffic (see Table 2), though relatively lower, requires careful consideration to ensure safe access for kids.

**Figure 4**

*Possible Site Locations of Play Streets in the Bromley Area*

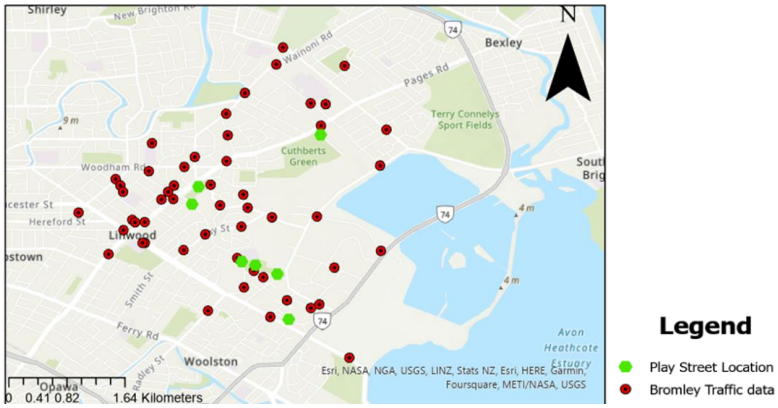



**Figure 5**

*Site Location Option One: Bromley Park, McGregors Road*

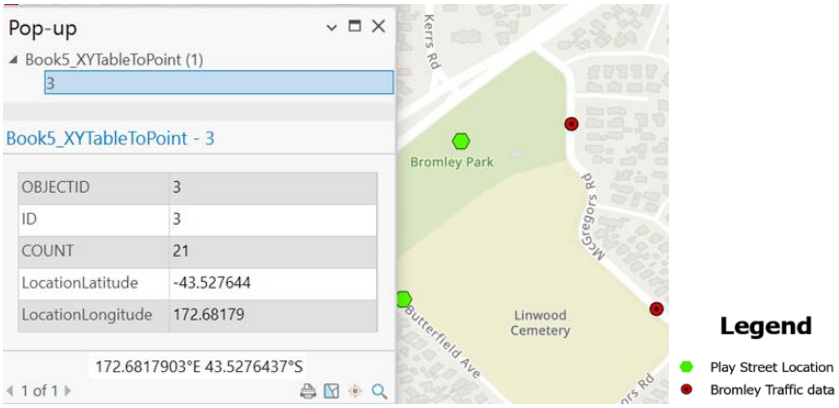


**Table 1**

*Survey and Traffic Data for Bromley Park, McGregors Road*

| Survey Votes | Average Daily Traffic | Heavy Vehicle Percentage | Morning Peak Hour Traffic | 85th Percentile Speed |
|---|---|---|---|---|
| 21 | 2,460 | 8.6% | 1,785 | 49.9km/hr |

Bromley Road (see Figure 7) features substantial traffic volumes and a significant presence of heavy vehicles (see Table 3), which may hinder accessibility and safety for children. The morning peak hour traffic is considerable (see Table 3), potentially posing challenges to the safety of young pedestrians and cyclists.

**Figure 6**

*Site Location Option Two: Bromley Old School Reserve, Raymond Road*

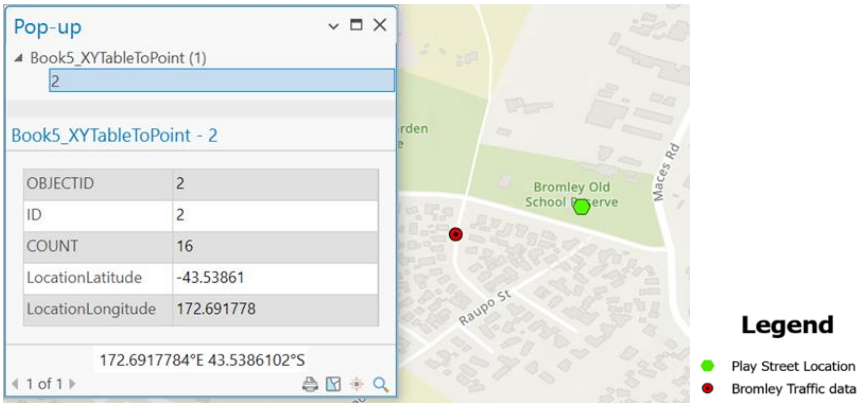


**Table 2**

*Survey and Traffic Data for Bromley Old School Reserve, Raymond Road*

| Survey Votes | Average Daily Traffic | Heavy Vehicle Percentage | Morning Peak Hour Traffic | 85th Percentile Speed |
|---|---|---|---|---|
| 16 | 468 | 4.7% | 350 | 45.5km/hr |

**Figure 7**

*Site Location Option Three: Cypress Garden Reserve, Bromley Road*

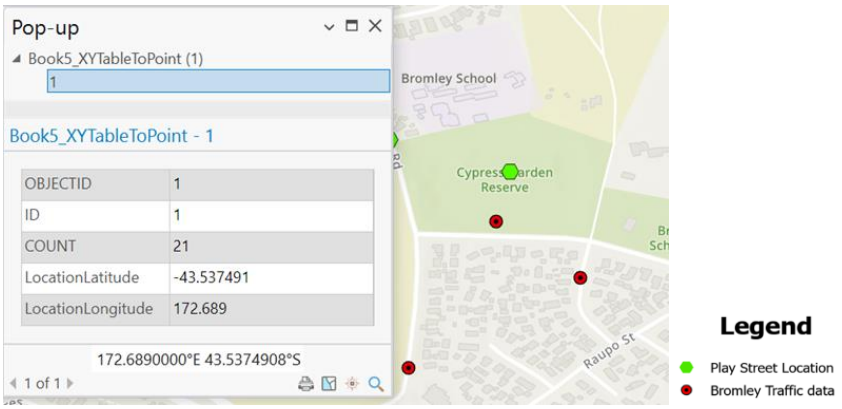



**Table 3**

*Survey and Traffic Data for Cypress Garden Reserve, Bromley Road*

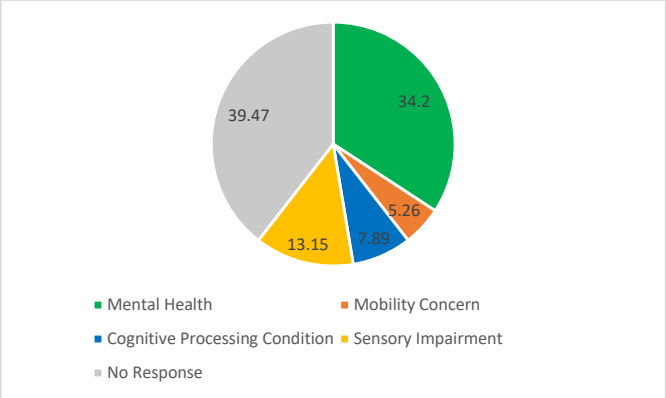
| Survey Votes | Average Daily Traffic | Heavy Vehicle Percentage | Morning Peak Hour Traffic | 85th Percentile Speed |
|---|---|---|---|---|
| 21 | 4,639 | 15.8% | 2,108 | 55.4km/hr |

**Inclusivity of Play**

Sixty-one percent of survey respondents identified themselves or their child as having a disability, and 40% did not identify themselves and/or their child as having a disability (see Figure 8). Most responses, 34%, were for a mental health condition, followed by 13% with sensory impairments; 8% with cognitive processing conditions; and 5% with mobility concerns (see Figure 8).

**Figure 8**

*Pie-Chart of Disability and Accessibility Disclosures Obtained by Community Voice Survey Displayed as Percentages*




*Note.* See Appendix A for descriptions of accessibility disclosures.

The community showed positivity towards Māori culture being represented in the area, with 78% responding with an explicit "Yes" (see Figure 9). Most people were happy with just Māori imagery, with 45% offering no other suggestion, while 27% suggested expressing various Pacific Island cultures (see Figure 10). A few respondents wanted some Asian themes to be expressed (see Figure 10).

**Figure 9**

*Responses on the Support of Implemented Play Strategies to Include Māori Language Displayed as Percentages*

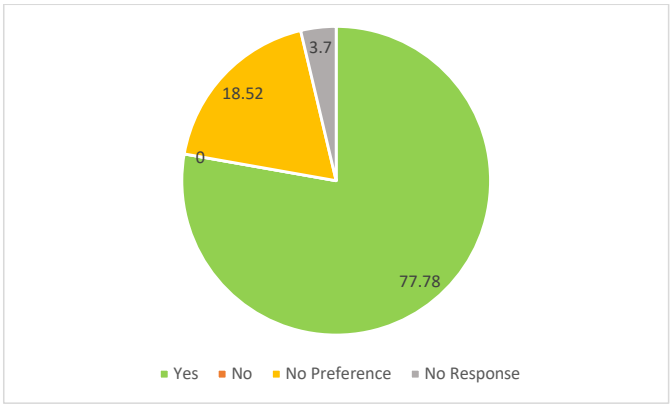
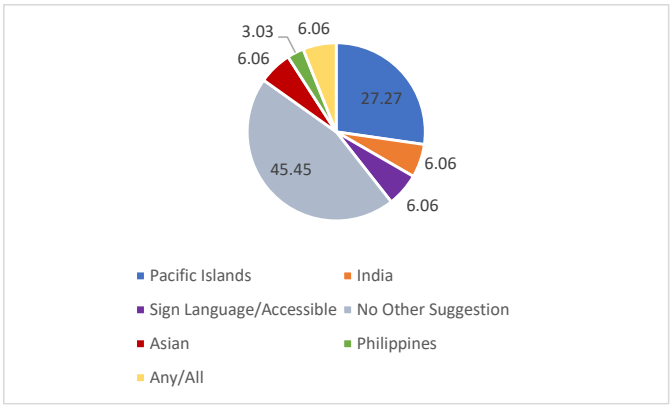



**Figure 10**

*Responses Suggesting Other Cultures to be Expressed in Implemented Play Strategies Displayed as Percentages*



## Discussion

Painted path play, specifically mazes, received the highest proportion of votes that the people in the Bromley community were likely to engage (see Figure 1). This option promotes 'play-on-the-way', because of its flexibility in its positioning and location in the street and can be used individually or with multiple children. It has the potential to be made bright, fun, and attractive whilst also being educational in the elements of design. O'Connor (2013) explains "the Human eye tends to notice and focus on objects that are bright or feature movement". This is valuable when the goal is to attract children. Educational elements may include numbers or words in other languages, like Māori. This would be implemented using anti-slip paint, which is designed to be applied to surfaces for increased grip in a variety of conditions (Slip Doctors, n.d.) to maintain the safety of users.

Nature-inspired play holds value in its sustainable and natural materials, and it has been, and may remain, a critical component in human physical emotional, intellectual, and even moral development (Kahn and Kellert, 2002). Wooden Stepping Numbers received the highest proportion of votes indicating the people in the Bromley community were likely to engage (Figure 2)**.** Wooden logs are a readily available and recyclable material that can be crafted into wooden stepping numbers for the use of the Bromley community. The wooden stepping numbers are raised, promoting children's courage and balance to cross, while also supporting play on the way. There is an accessibility issue as it requires functionality of the lower half of the body, which may not be relative to the whole community. Sand pit tires may have been less desirable due to the chance of children getting dirty on the way to and/or from school. As for the Log tunnel, it does not take as much cognitive skill as stepping on wooden poles raised from the ground which may have been seen as less desirable by parents/caregivers.

Rock Painting and Bird Feeder events received a high proportion of votes (Figure 3) that indicated people in the Bromley community were likely to engage. These events are both creative and incorporate elements of nature, which connects to the high support of nature-inspired play strategies. Although events such as these may not initially be overly active, the ongoing engagement of which is, such as painted rock scavenger hunts and getting outside to maintain the bird feeders. Additionally, the events can be structured to signal play-like activity through completing the tasks on the floor, as opposed to a table, as outlined previously by Howard & McInnes (2012). While the Community Mural and Play Street events were also highly supported, the higher proportion of "Unlikely" and "Indifferent" votes could be influenced by the fact that these types of events have been recently implemented in the area (D. Kearns, personal communication, August 10, 2023; L. Van Tongeren, personal communication, July 28, 2023).

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After analysing the data, we have determined that Option Two, Bromley Old School Reserve, Raymond Road, is the most suitable choice for creating play streets with 'play-on-the-way' initiatives (Figure 6). Its lower traffic volumes and reduced heavy vehicle presence create a safer and more accessible environment for children to play. However, it is recommended that close attention is given to enhancing access and safety measures during the morning peak hours to ensure the well-being of residents.

Options One (Figure 5) and Three (Figure 7) are less suitable for play. Their higher traffic volumes and substantial heavy vehicle presence raise concerns regarding safety and accessibility for children. Adequate safety measures and traffic management should be implemented first, as to create safe and accessible play spaces for kids.

The disability demographic data obtained by the survey (see Figure 8) allows us to make conscious decisions on aspects like colour, texture, design, and type of play we advise to maximise its use by those who do identify as having accessibility needs in the Bromley community. Thirty-four percent of responses to the disability disclosure were “Mental health condition”, which was inclusive of several conditions (see Appendix A). As a result, stimulation is likely the largest balancing act when considering the accessibility of play spaces in the Bromley community. Positively stimulating design is important for those with the likes of depression and/or anxiety as it increases mood and distracts from unhelpful thoughts, but too much positive stimulating design may become overwhelming to those with ADHD or autism spectrum disorder (ASD) which may lead to meltdowns. Those who identified as having sensory impairments (13%) (see Appendix A) may require design choices, such as Braille, that those with ASD may struggle to interact with due to over-stimulation. Achieving positively stimulating design may be done through colour, texture, and/or image selection of the play initiative, but must be done so with care as to be inclusive of the diverse needs of the community without causing biased segregation.

Most respondents (96%) are either in support or have no preference for Māori culture being expressed through play initiatives in the community (see Figure 9). Results also showed that the Bromley community wanted more than just Māori culture to be represented (see Figure 10). This has shown that respondents think that Māori culture as well as other cultures, specifically Asian and Pasifika, would be beneficial in a community play initiative. Inclusion of cultures other than New Zealand European in play initiatives will increase tolerance of those cultures among the community, while also encouraging education outside of the classroom.

## Conclusion

After consulting with the community on issues surrounding play in Bromley, the above research suggests that 'play-on-the-way' initiatives like mazes painted on the pavement and log stepping stones near Cypress Garden Reserve are likely to receive most engagement by the Bromley community (see Appendix B). This research acts as a baseline for future work in the space of play, the well-being of children, and road safety. The CCC has plans and the budget to create safe speed neighbourhoods (Christchurch City Council, n.d.-a; Christchurch City Council, n.d.-b; Christchurch City Council, 2023) and we trust that our findings will be used to implement these positive changes in conjunction with play strategies in the Bromley community.

## Acknowledgements

We would like to extend our appreciation to the following collaborators: Louise Van Tongeren and her team at the CCC; Phoebe Eggleton at the University of Canterbury; Danny Kearns and his team at the Nga Hau e Wha National Marae; and Annette McGowan at the Bromley Community Centre.

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## Appendix A

### Accessibility Disclosure

The following information was presented to survey respondents regarding the disclosure of accessibility considerations.

| | |
|---|---|
| **Mobility Issues** | Wheelchair dependent<br>Use of other mobility aids<br>Low stamina<br>Restricted use of limbs<br>Children who may need to be manually lifted |
| **Cognitive Processing Conditions** | Developmental delay<br>Learning difficulties<br>Challenging behaviour |
| **Mental Health Conditions** | Anxiety<br>Attention-deficit/hyperactivity disorder (ADHD)<br>Autism spectrum disorder (ASD)<br>Depression<br>Post-traumatic stress disorder (PTSD) |
| **Sensory Impairments** | Deaf<br>Hard of hearing (HOH)<br>Blind<br>Partially sighted<br>Deafblind |

## Appendix B

### Implementation Designs

The following images have been generated with the assistance of artificial intelligence (AI) software.

**Painted Paths**

**Nature Inspired Play**

**Play Events**

**Community Centre and Christchurch City Council Suggestion**