Investigating Barriers and Enablers of Active Travel to Sporting Venues in Christchurch

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Table of Contents

Investigating Barriers and Enablers of Active Travel to Sporting Venues in Christchurch i
Table of Contents ii
Executive Summary 1
1. Introduction 2
2. Literature Review 3
2.1 Demographics 3
2.2 Policy and Infrastructure 3
2.3 Enablers 4
2.4 Barriers 5
2.5 Mixed Method Research Design 6
3. Methods 7
3.1 Observational Data 7
3.2 Christchurch City Council Survey 7
3.3 Semi-Structured Interviews 8
4. Results and Discussion 9
4.1 Observational Data 9
4.2 CCC Survey 11
4.2.1 Demographics and Site Context 11
4.2.2 Travel Mode Patterns and Significant Differences 11
4.2.3 Barriers of Active Travel 15
4.3 Semi-Structured Interviews 16
4.3.1 Primary Mode of Transport 16
4.3.2 Reasons for Mode Choice 16
4.3.3 Distance Willingness and Target Group 17
4.3.4 Incentives for Active Travel 18

4.4 Limitations 20
4.4.1 Seasonal and Time Constraints 20
4.4.2 Social Desirability Bias 20
5. Recommendations 21
5.1 Wayfinding Signage 21
5.2 Update CCC Website Maps 22
5.3 Priority Carpooling at Ngā Puna Wai 22
5.4 Better Quality Bike Infrastructure 23
7. Conclusion 24
Acknowledgements 24
References 25
Appendices 32

Executive Summary

Despite the well-documented benefits of active travel, uptake across Christchurch remains low. Accordingly, this project investigated the barriers and enablers influencing active transport within the city's sporting context, focusing on Ngā Puna Wai Sports Hub, Hagley Park, and Tulett Park. A mixed-method research design was employed, with primary data comprising 43 semi-structured interviews and a range of observations, complemented by secondary data analysis of a Christchurch City Council Survey comprised of approximately 580 responses.

Observational data highlighted that active transport facilities across all venues were underutilised, lacked shelter, and had unclear signage. In contrast, car parking was extensive and easily accessible, indicating a strong infrastructural bias toward private-vehicle use. The Christchurch City Council Survey and semi-structured interviews found car travel was the dominant mode of travel across all sites, especially at Ngā Puna Wai (85% drove alone). Most participants lived 2-10 km from their venue, while only 7% lived within 2 km, making walking largely impractical. Active travel was limited overall, but slightly higher at Tulett Park. While a small portion of interview participants expressed potential interest in cycling, most reported nothing would incentivise behavioural change. All primary data was collected during July and August 2025, coinciding with the conclusion of the winter sporting season. Therefore, player fatigue, cold temperatures, and reduced daylight likely decreased active travel participation, while social desirability bias may have influenced interview responses. Future research should be undertaken during summer months or across an entire sporting year to enhance representativeness.

Overall, our findings indicate that Christchurch's main barriers to active travel are distance, safety, and insufficient infrastructure, while key enablers include increased awareness of active routes and venue facilities. Our targeted recommendations - wayfinding signage, CCC website updates, and promoting carpooling – reflect these conclusions and offer feasible alternatives where active modes are limited.

1. Introduction

Over the past decade, Christchurch has experienced substantial social and economic growth, accompanied by population increases and rapid infrastructure development. However, this expansion has been limited by low active travel uptake and the failure to fully realise its benefits, restricting progress toward the city's environmental and public health goals (Buitenwerf, 2021).

For the purposes of this report, 'active travel' (AT) refers to any mode of transport that involves physical activity, such as walking, cycling, or using public transport where movement is required, like walking to and from the bus (Laverty et al., 2013). Extensive research demonstrates that AT provides long-term health benefits, mitigates environmental pollution, and is economically sustainable for individuals (Ding et al., 2024). In contrast, increased reliance on private vehicles promotes sedentary lifestyles associated with higher levels of psychological distress and obesity, while exacerbating carbon, air, and noise pollution (Long et al., 2020; Magdin et al., 2019). Notwithstanding this, an increasing number of individuals are opting against active modes in favour of the greater convenience offered by private vehicles.

Against this backdrop, and in partnership with the Christchurch City Council (CCC), this research project investigated the barriers and enablers of AT to sporting venues across Christchurch. A mixed-methods approach was employed across three focal sites: Ngā Puna Wai Sports Hub, Hagley Park, and Tulett Park. The project was guided by five research objectives: 1) Identify barriers limiting AT; 2) Examine enablers that encourage its uptake; 3) Assess the quality of site infrastructure; 4) Compare travel patterns at different venues; and 5) Develop evidence-based recommendations to enhance AT participation. The final recommendations aim to ease parking congestion, reduce the environmental impact of private vehicles, and improve the overall wellbeing of Ōtautahi residents.

2. Literature Review

Across Aotearoa, the uptake of AT remains low relative to other developed nations such as the Netherlands, as persistent barriers, alongside limited recognition of key enablers, continue to constrain participation (Smith et al., 2020; Frater & Kingham, 2020). A review of the existing literature reveals several key themes influencing mode selection globally, providing a solid foundation upon which this research project was built.

2.1 Demographics

The literature highlights that demographic variations in AT barriers and enablers significantly impact mode choice (Younkin et al., 2024). For example, Rind et al. (2015) found that, regardless of the quality or quantity of AT infrastructure, more affluent individuals often demonstrate lower uptake due to greater reliance on private transport, prevailing social norms, and established travel preferences. Conversely, existing health disparities among marginalised populations - typically those of lower socio-economic status - limit their capacity to engage in AT, reinforcing the need of equity-focused policy development (Yuan et al., 2023). To address demographic differences within local contexts, Christiansen et al. (2014) emphasise the importance of community engagement, as direct participation allows interventions to be tailored to local needs. Their study found that physical and social barriers caused older adults to prefer walking over cycling, guiding the intervention to prioritise neighbourhood walkability over additional cycleway infrastructure.

2.2 Policy and Infrastructure

In examining which policy and infrastructure initiatives most effectively promote AT, the literature consistently emphasises comprehensive, multi-level strategies that integrate infrastructural improvements with supportive policies that foster cultural shifts (Zukowska et al., 2022).

According to Winters et al. (2017), the most beneficial infrastructural initiatives include expanding cycling networks, enhancing pedestrian safety, and integrating AT within public transport systems. Importantly, these initiatives should be complemented by policies that discourage car use through parking fees and financial cycling incentives. Furthermore, the broader social benefits of AT provide a compelling rationale for participation and should be emphasised in informational and educational campaigns beyond immediate health and environmental outcomes (Rabl & de Nazelle 2012). However, campaigns alone have limited impact, reinforcing the need for comprehensive, system-wide approaches that combine behavioural, infrastructural, and policy development (Scheepers et al., 2014). As a final point, long-term behavioural change poses a continual challenge for policymakers, necessitating iterative policy review and community consultation to ensure responsiveness to evolving population needs (Scheepers et al., 2014).

2.3 Enablers

Analysis of the literature reveals that AT is enabled by a complex interplay of behavioural, psychological, institutional, and environmental factors. Beyond the actual safety of AT infrastructure, perceived safety plays a crucial role in shaping participation, highlighting the importance of urban design (Timmons et al., 2023). Simple measures such as reducing traffic speeds, installing crosswalks, increasing greenspace, and ensuring children encounter familiar faces throughout their journeys have all been shown to enhance perceived safety and, in turn, increase AT participation (Wilson et al. 2018; Broberg et al., 2013). Beyond participants' perceptions of AT, motivation also serves as a key enabler, with psychological factors such as reassurance, meaningfulness, and relatedness proving critical (Khachatryan et al., 2024). These factors depend on empathetic consultation from local authorities, institutional support, and opportunities for trial participation (Timmons et al., 2023).

Following effective consultation, policy success relies on collaboration and resource pooling between health and transport departments, complemented by locally tailored communication strategies (Lawlor et al., 2024). Additionally, to mitigate political resistance, the literature suggests

that AT projects should align with broader public works to maximise acceptance and efficiency (Lawlor et al., 2024).

2.4 Barriers

As with AT enablers, barriers to participation are shaped by the intersection of physical, environmental, social, and cultural influences. Common physical and infrastructural barriers include incomplete walking and cycling routes, inadequate maintenance, suboptimal connectivity and excessive travel distances (Wismadi et al., 2025; Cheyne et al., 2015). Additionally, incompatibility between sports equipment and AT modes often leads individuals to depend on private transport instead (Frater & Kingham, 2020). Environmental constraints, including topography, lighting, and weather conditions also interact with social factors such as perceived safety, which disproportionately inhibit AT participation among females and younger individuals (Wismadi et al., 2025; Frater & Kingham, 2020).

Perceptions of safety in AT infrastructure are influenced by a multitude of factors such as traffic, driver behaviour, and limited road-sharing measures, including a lack of protected cycle lanes, signage, and secure parking (Pearson et al., 2022). Parental concerns of abduction and accidents, shaped by broader cultural stigma and social discouragement toward AT in Aotearoa, also represent a major barrier to uptake (Ahlport at al., 2006; Frater & Kingham, 2020). In the context of Palmerston North, poor health and socio-economic disadvantage have constrained both access to and use of bicycles (Cheyne et al., 2015).

Overall, the literature reveals that addressing AT barriers requires equal attention to social and infrastructural considerations, as physical improvements alone will not sustain behavioural change (Milward et al., 2013; Ahlport et al., 2006).

2.5 Mixed Method Research Design

Methodologically, the literature demonstrates that mixed-methods designs – by integrating both qualitative and quantitative data – provide richer, more nuanced insights into place. Participatory approaches, in particular, are emphasised as tools for identifying context-specific AT enablers and barriers that conventional top-down planning processes often overlook (Khachatryan et al., 2024; Wilson et al., 2019).

A notable participatory approach highlighted in Gale et al. (2021) and Spinney & Millward (2013) is the use of semi-structured interviews. In both studies, participants' perspectives of AT were explored in depth through open dialogue, while the guided question format ensured discussions remained focused and relevant. Moreover, research that incorporates a diverse range of stakeholder perspectives, including those of local councils and community groups, consistently demonstrates the value of drawing on varied expertise to generate more actionable and adaptable solutions (Cheyne et al., 2015). With a particular focus on youth policy and intervention, Buttazzoni et al. (2023) further emphasised the importance of centring young people's voices within the research process.

Overall, analysis of the global literature on AT behaviour directly informed our investigation, offering a deeper understanding of New Zealand's unique social context and perceptions of AT, while identifying demographic variations in uptake and emphasising the need for community-specific interventions. Grounding our study in existing evidence enabled the development of research objectives, methods, and results that build upon – rather than replicate – previous findings, which this report will subsequently explore.

3. Methods

Recognising the value of multiple perspectives, this project adopted a mixed methods research design to leverage the complementary strengths of qualitative and quantitative data (Kanazawa, 2018). Primary data collection comprised of a series of semi-structured interviews and site observations across all focal venues, while secondary data analysis - beyond the existing academic literature - centred on a CCC survey of approximately 580 responses provided by our community partner.

3.1 Observational Data

Observational data was collected to provide a snapshot of the real-world conditions at each venue, capturing aspects of the site that could influence travel behaviours. Two distinct tables were used: one for site information and one for infrastructural counts. The site information table recorded relatively static data, such as carpark capacity, bike park capacity, and other physical features that could impact AT access to the venue. Where site characteristics required a qualitative assessment, a simple rating scale of '*Good*', '*Fair*', or '*Poor*' was applied for consistency across categories and to allow comparison between venues. Counts measured the number of cars and bikes present at the time of each visit, providing quantitative insight into actual usage. All site data was gathered on a single visit, while count data was collected on subsequent visits. The first counts coincided with the initial site visit to provide a baseline for each venue.

3.2 Christchurch City Council Survey

The CCC conducted an online survey in July 2025, completed by sports players and spectators across Christchurch. The survey focused on four primary sites: Ngā Puna Wai, Hagley Park, Tulett Park, and the Canterbury Agricultural Park. As shown in Table 1, approximately 580 individuals responded; however, because participants could select more than one site, this generated a total of 831 site-specific responses. Canterbury Agricultural Park was excluded from further analysis due

to significantly fewer respondents (~60) and project time constraints. To reflect overall trends, graphs and tables were weighted according to each site's portion of total responses. All data were collected and processed using Qualtrics, with survey questions capturing participants' sport type, age range, travel distance, and perceived barriers to walking, cycling and busing.

Table 1. *CCC Online Survey Responses for Each Site (N = 831)*

Location	Number of Responses
Hagley Park	293
Ngā Puna Wai Sports Hub	336
Tulett Park	202

3.3 Semi-Structured Interviews

43 semi-structured interviews were conducted across Ngā Puna Wai Sports Hub, Hagley Park and Tulett Park. All participants were provided with an information sheet outlining the project, their rights, relevant contact details and key ethical considerations. Verbal consent was obtained before commencing each interview, all of which were conducted during the day while games were being played to maximise engagement with both players and spectators. As the interviews posed no greater risk than what people might ordinarily experience in everyday life, participant resistance was rare. To further safeguard the process, venue managers were notified of the survey administration in advance to ensure institutional support. Additionally, prior to arriving at each venue, we reviewed team schedules to determine when and where local teams were competing, prioritising interviews with spectators of teams aged 15 and above, as well as players visibly over the age of 18. This is because older teens are typically able to travel independently to and from sport, with distance and safety less often serving as a definitive barrier.

The aim of these interviews was to encourage natural, conversational engagement while collecting data efficiently and comfortably. This approach also helped the survey flow logically, beginning with general participant information that excluded personally identifiable details (shown in Appendix C). Gathering participants' neighbourhood data from the outset enabled quick

assessment of the feasibility of AT based on home-to-venue distance, allowing omission of subsequent questions on travel motivations and mode choice.

4. Results and Discussion

4.1 Observational Data

The observational data directly addressed research objective 3, which aimed to evaluate the quality of AT infrastructure across all venues. To achieve this, four key criteria were established to assess the condition and functionality of the bike racks, as outlined in Table 2.

Table 2. *Summary of site Bike Rack ratings based on our four criteria*

Sporting Venue	Secured to Ground	Ability to lock frame	Visibility	Shelter	**Rating**
Ngā Puna Wai	✓	✓	✓	✗	**Good**
Hagley Park	✗	✓	✓	✗	**Fair**
Tullet Park	✗	✗	✗	✗	**Poor**

Ngā Puna Wai achieved the highest overall rating, assessed as '*Good'*, as it met three out of the four criteria. The site's bike racks were easily visible, located close to the playing fields, and offered a large capacity. Across all three venues, bike racks were situated within 20 metres of the nearest sporting field, making it easier for cyclists to transition from parking and play. However, none of the sites displayed clear signage directing users to the bike racks, highlighting a consistent area for improvement. Additionally, all sites lacked any form of shelter or cover for bikes, which is likely to deter users, particularly during adverse weather conditions. Examples of the bike rack facilities observed at each site are provided in Appendix A.

In contrast, car parking infrastructure was more developed and accessible across all sites. Each venue provided extensive car parking capacity, whether on or off-site. All parks were located within short walking distance of the playing fields, effectively encouraging car travel over AT, as shown in Table 3.

Table *3*. *Bike and Car counts from our site visits.*

Date	Time	Bikes Parked	Cars Parked
Ngā Puna Wai			
2/8 (Saturday)	08:30	2/68	592/888
13/8 (Wednesday)	16:00	0/68	750/888
16/8 (Saturday)	12:00	2/68	710/888
Hagley Park			
2/8 (Saturday)	13:00	1/34	41/47
6/8 (Wednesday)	15:00	2/34	38/47
Tullet Park			
2/8 (Saturday)	13:00	0/5	30/34

Vehicle and bike counts further reinforce an imbalance in transport mode. Across site visits, car park occupancy consistently exceeded 80% capacity, except for one early morning visit to Ngā Puna Wai, which recorded 66% capacity. In comparison, only 7 bicycles were observed in total across 6 site counts. This low uptake, despite high rack capacity at Ngā Puna Wai and Hagley Park, suggests the mere presence of infrastructure does not guarantee its utilisation.

To better understand other influencing factors, wider network connectivity was analysed using the CCC Bike Map in Appendix B. Ngā Puna Wai and Hagley Park are well connected to the city's cycle lanes and major cycleways. Tullet Park, however, is located in a relatively remote area of the bike map, with limited routes to the venue from all directions. Ngā Puna Wai was the only site where bike rack locations and nearest bus stops were accurately represented on the CCC map with the two other sites not having all bike racks shown. This extra online visibility may improve awareness over time and ultimately encourage more AT.

Overall, the observational results show while AT infrastructure exists across all venues, its effectiveness is limited due to poor connectivity, lack of signage, and limited public awareness.

4.2 CCC Survey

The survey revealed several key trends that address research objectives 1 and 4, aimed at identifying barriers limiting AT and comparing travel patterns across sporting venues (Christiansen et al., 2016; Rabl & de Nazelle, 2012).

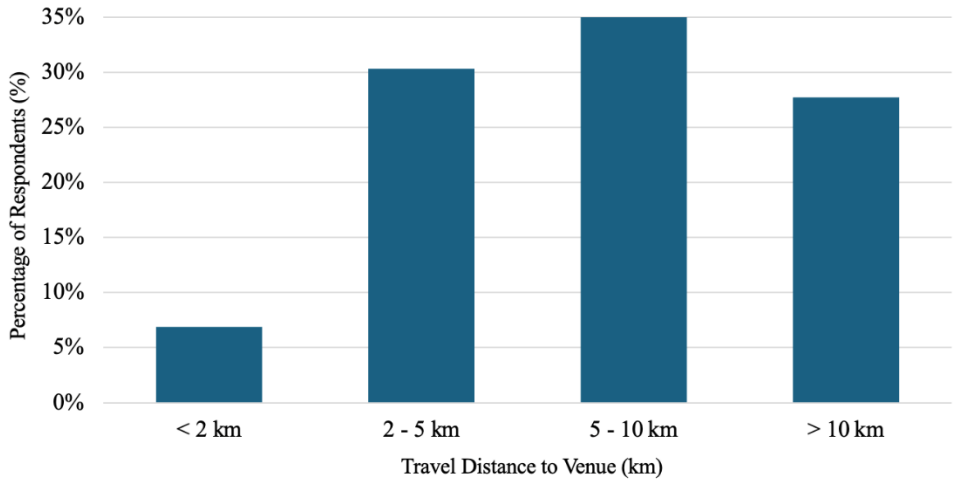
4.2.1 Demographics and Site Context

Across all three venues, the largest age group represented was 35–49 years, followed by 50–64 years. The most commonly played sport at Hagley Park was football (53%), while at Ngā Puna Wai it was netball (40%). Football was the only sport recorded at Tulett Park. At each site, car travel was dominant, followed by carpooling, with AT making up a small proportion of trips (3% at Ngā Puna Wai, 7% at Hagley Park, 13% at Tulett Park). These patterns align with literature showing that car use dominates adult sport-related travel, particularly over longer distances (Younkin et al., 2024).

4.2.2 Travel Mode Patterns and Significant Differences

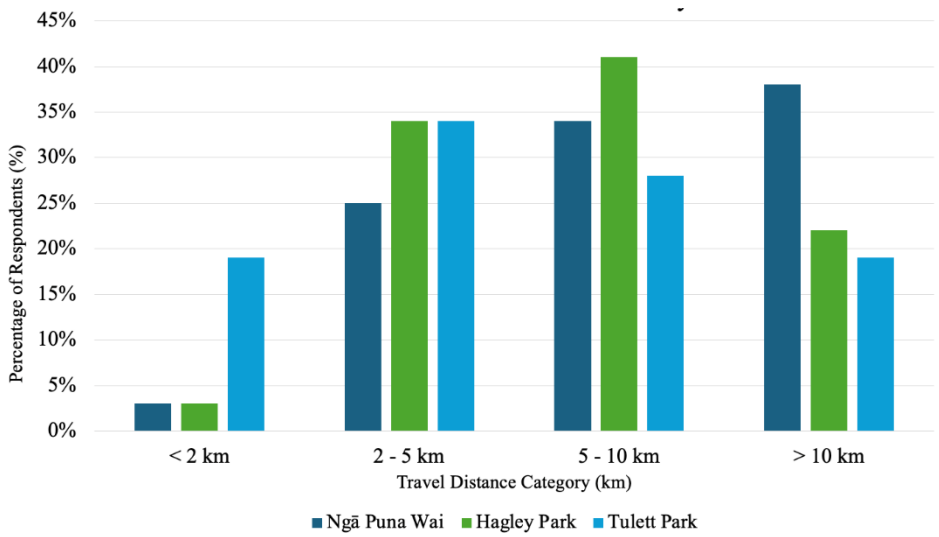
Figure 1 shows across all three sites, most respondents travelled 5–10 km (35%), followed by 2–5 km (30%) and over 10 km (28%), with only 7% living within 2 km. This suggests walking is unlikely for most participants, while cycling and public transport may be more feasible (Mandic et al., 2023).

Figure 1. *Percentage of respondents travelling different distances to sporting venues across all sites combined (N = 831).*



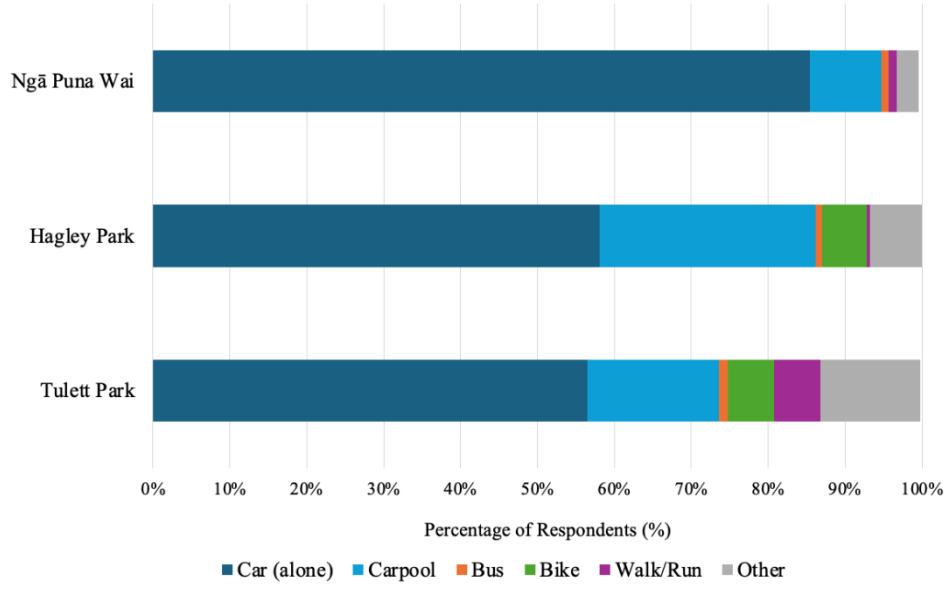
Travel distances varied across sites (Figure 2). At Ngā Puna Wai, 72% of respondents travelled more than 5 km, making AT largely unfeasible. Hagley Park participants mainly travelled 2–10 km (75%), while Tulett Park respondents were generally closer, with 53% living within 5 km. This indicates walking may be feasible for a small portion of participants.

Figure 2. *Distribution of respondents' travel distances to Hagley Park, Ngā Puna Wai, and Tulett Park (N = 831).*



Car travel dominated across all sites (Figure 3), particularly at Ngā Puna Wai where 85% of respondents drove alone. AT uptake was low overall, though slightly higher at Hagley Park and Tulett Park, with 6% cycling at each site and 6% walking or running at Tulett Park. Carpooling was also more common at Hagley Park (28%). These patterns reflect broader trends in recreational travel, where reliance on private vehicles is strongly influenced by distance and convenience (Wismadi et al., 2025).

Figure 3. *Percentage of respondents using each transport mode to reach Hagley Park, Ngā Puna Wai, and Tulett Park (N = 831).*



Figures 4–6 show mode of transport by travel distance at each site. At Ngā Puna Wai, most respondents travelled over 10 km (38%) or 5–10 km (34%). Car use dominated all distance categories, with ≥ 75% driving alone and walking/cycling virtually absent. At Hagley Park, car travel remained predominant (≥ 58%), with cycling limited to 43% of trips under 2 km and walking < 1% across all distances. Tulett Park respondents generally lived closer, with 2–5 km the most common distance. Walking and cycling were slightly higher for trips under 2 km (28% walking/running, 9% cycling), but cars still dominated (≥ 47%). Fewer respondents mean these results carry less weight in the overall dataset. These findings are consistent with literature showing

AT feasibility is strongly constrained by travel distance (Christian et al., 2016; Rabl & de Nazelle, 2012).

Figure 4. *Mode of transport by travel distance for respondents travelling to Ngā Puna Wai (N = 336).*

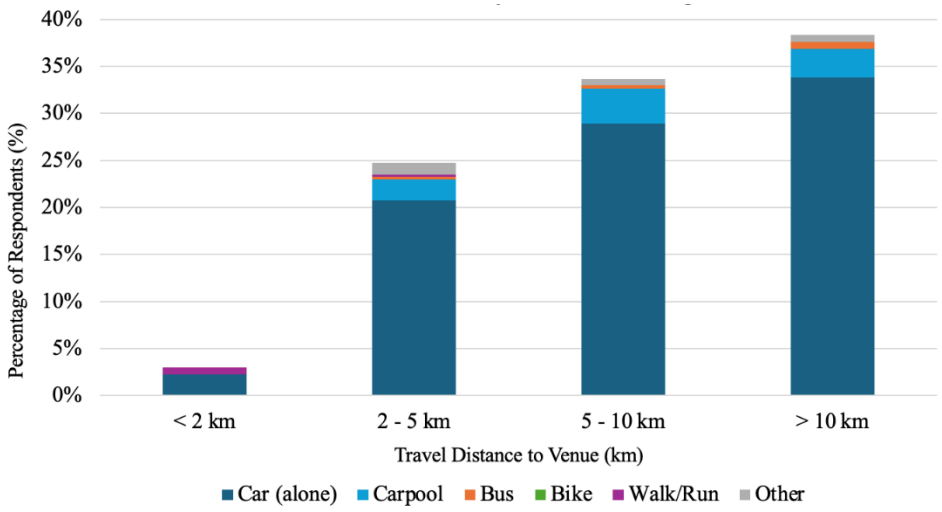


Figure 5. *Mode of transport by travel distance for respondents travelling to Hagley Park (N = 293).*

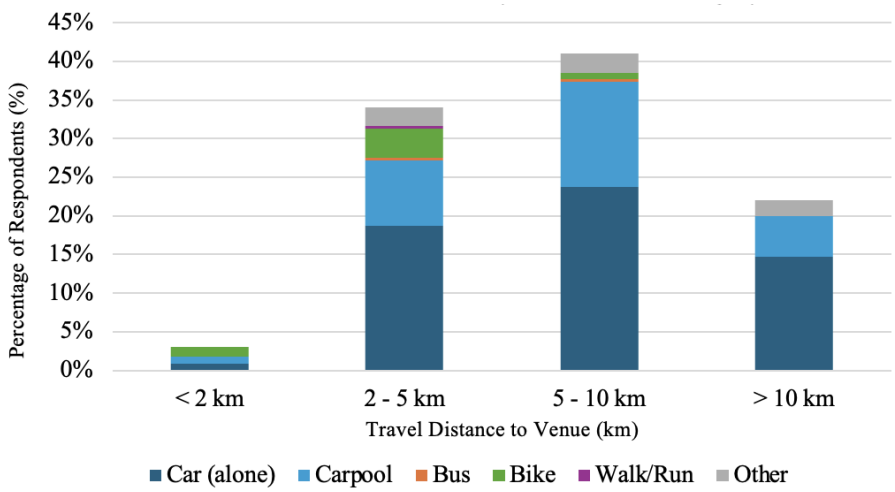
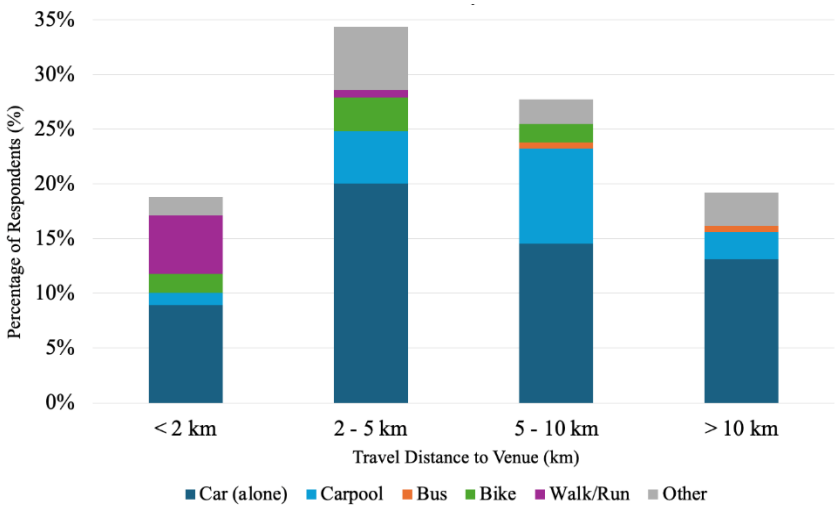


Figure 6. *Mode of transport by travel distance for respondents travelling to Tulett Park (N = 202).*



4.2.3 Barriers of Active Travel

The survey identified key barriers to AT, focusing on cycling and public transport, as walking and running were reported by only ~2% of respondents. Distance was the main barrier (93% at Ngā Puna Wai, 89% at Hagley Park, and 76% at Tulett Park; Mandic et al., 2023). For cycling, distance remained the primary barrier (43–62%). Followed by '*other*' factors (28–34%) such as transporting sports gear, travelling with children, and limited time between games, and then weather (21–28%). Public transport was limited by indirect routes and poor connections (53–56%), infrequent services (33–36%), inconvenient stops (17–20%), and cost (9-11%) (Scheepers et al., 2014). Overall, these results addressed objective 1 by identifying key barriers and objective 4 by showing how barriers and travel patterns differed across sites. Highlighting where targeted interventions could support greater uptake (Winters et al., 2017).

While the most prominent barriers are largely beyond the scope of this project to address, several actionable barriers emerged that informed our recommendations. Including low motivation, limited awareness, perceived safety concerns, and inadequate infrastructure quality.

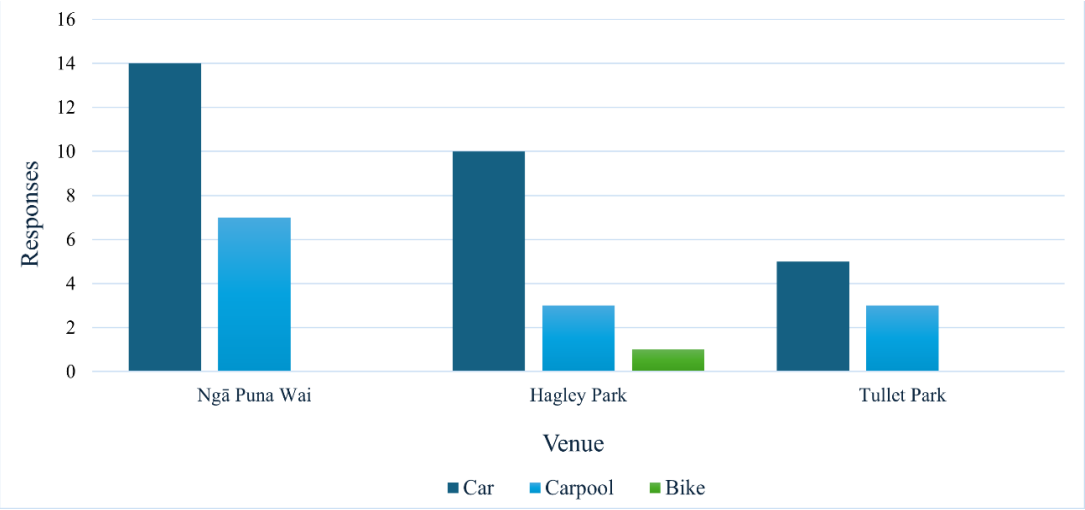
4.3 Semi-Structured Interviews

Interviews directly address research objectives 1 and 2, focusing on identifying barriers that limit AT and examining enablers that might encourage it.

4.3.1 Primary Mode of Transport

When participants were asked about their primary mode of transport to the venue, the results clearly showed that vehicle use dominated (Figure 7). Across all interviews, only one participant reported cycling as their main mode of transport, while the overwhelming majority travelled by car, either individually or through carpooling. This pattern reinforces the observational and survey findings.

Figure 7. *Primary mode of transport that participants take to the three venues.*



4.3.2 Reasons for Mode Choice

Participants were then asked to explain the reasons behind their chosen mode of transport. The responses, summarised in Figure 8, highlighted several key themes: convenience, ease, and time constraints were the most frequently cited motivations, followed closely by distance. These findings align with common behavioural trends identified in the literature, where car travel is often perceived as the most practical and efficient option. Particularly when our individuals are often balancing family schedules and equipment transport. The emphasis on convenience and time suggests that habitual behaviour and perceived practicality play a greater role in transport decisions than environmental concern or infrastructure quality.

Figure 8. *Word cloud showing the most frequent responses to reasons for active travel.*

4.3.3 Distance Willingness and Target Group

To better understand the potential for AT uptake, participants were asked how far they would be willing to walk or cycle to a sporting venue. Responses revealed a consistent pattern across all sites: individuals were willing to cycle considerably further than they were willing to walk (Figure

9). On average, across all venues, participants indicated they would walk up to 2.5 km and cycle up to 7 km to attend their sporting events.

This suggests that while walking may have limited potential as an active mode of transport, cycling represents a more realistic option. When compared to our survey data, which found that 37% of all respondents travelled within 5 km to their chosen venue, this group represents the most viable target for future AT initiatives. Although from our survey we also found that 81% of these people within this distance are driving, indicating that while people may say they *consider* AT, they are not practising it.

Figure 9. *Mean distance (km) by venue, that people are willing to walk or cycle to the respective venue.*

4.3.4 Incentives for Active Travel

Participants were finally asked what might better incentivise their choice of AT in the future. The most frequent response by a large margin was 'nothing', suggesting a high level of entrenched behaviour and resistance to change (Figure 10). Many participants expressed that they were simply not interested in walking or cycling, regardless of available facilities or environmental benefits.

Among those who did identify potential motivators, the most common responses included improved security for bicycles, shorter distances, and better public transport. A few participants mentioned poor lighting, lack of shelter, or insufficient bike storage as deterrents.

These findings demonstrate how barriers to AT are not purely physical or infrastructural, but also social and psychological. The perception that driving is easier, faster, and more socially accepted remains a dominant influence, particularly among older age groups and families.

Figure 10. *Word cloud showing what would better incentivise people to use active travel.*

4.4 Limitations

While these results provide a strong evidence base for our recommendations, seasonal and time constraints, along with social desirability bias, were identified as key limitations that may have influenced the project's outcomes.

4.4.1 Seasonal and Time Constraints

As the winter sports season was nearing its end at the project's onset, time served as an inherent limitation. Consequently, primary data collection was confined to the winter months of July and August 2025, coinciding with teams' semi-final and final matches, during which players may have been less motivated to engage in AT due to fatigue concerns at such a critical stage of competition. Additionally, as the investigation took place during the winter season, weather conditions - particularly cold temperatures and reduced daylight - may have further inhibited engagement, potentially limiting the representativeness of the results (Shepard & Aoyagi, 2009).

4.4.2 Social Desirability Bias

Social desirability bias is defined as occurring 'when individuals endorse more favourable responses in order to enhance their own self-presentation' (Gower et al, 2022, p. 3). Within this research, such bias may have influenced semi-structured interview responses - for example, when participants were asked, *'What would better incentivise [you to use] active travel?*'. The effect of this bias can lead respondents to underreport socially undesirable behaviours, such as admitting nothing would incentivise their participation (Graeff, 2005). However, as indicated by the word cloud in Figure 10, responses appeared reasonably candid, suggesting minimal impact of this bias.

5. Recommendations

Based on our results, we have developed a series of general and site-specific recommendations that can be practically implemented and deliver substantial impact. Even if not immediately actioned by CCC, we hope these recommendations will inform future research, particularly those undertaken within the context of Ōtautahi.

5.1 Wayfinding Signage

Wayfinding signage can serve as an effective enabler for promoting active transport (AT). Keliikoa et al. (2018) found that signs indicating direction and distance to popular destinations encouraged approximately 33% of surveyed residents to walk or cycle instead of using motorised transport, particularly among those travelling in unfamiliar areas. By offering clear and user information - such as distance, direction, and destination - wayfinding signage helps reduce uncertainty, build user confidence, and serve as a behavioural prompt. This can make active transport options appear more convenient and appealing, while lessening barriers such as limited route awareness and perceived safety concerns.

We propose installing clear, engaging, and informative wayfinding signage along popular routes to the venues and within the venues themselves. These signs would highlight key features such as safe bike stands, cycling and walking paths, and directions to nearby bus stops. According to NZTA (2024), effective wayfinding signage incorporates elements such as strong colour contrast, consistent shapes and colour meanings, easily recognisable symbols, and legible fonts. It should also be designed for the main demographic, which in this case was largely within the 35–64-year-old age range.

5.2 Update CCC Website Maps

Accessible public information is essential for improving understanding of AT, and accurate, well-designed maps play a vital role in encouraging participation. Accordingly, revisions to the CCC website are required, as it currently lacks comprehensive information on cycleways and AT parking facilities for all three sites - for instance, the missing cycleway at Ngā Puna Wai. A proposed map addressing these gaps is presented in Appendix D.

The lack of public information about cycleway connections arose as an issue in our interviews and observational results. At present, there is a lack of connectivity between the maps shown on the website and what actually exists, similarly concluded by Schön et al. (2023). We propose the creation of icons that display the correct details that are relevant to the map, in terms of cycling parks, and cycleway connectivity. In terms of Tulett Park and Ngā Puna Wai, what is recommended is making the CCC website have links or have maps showing the cycleway connections and cycle parks.

5.3 Priority Carpooling at Ngā Puna Wai

As indicated in our results, players and spectators at Ngā Puna Wai reported that the introduction of parking fees would not incentivise AT, largely due to the combined effect of distance and a low willingness to walk or cycle. This finding highlights the need for a practical and context-specific alternative. Accordingly, we propose the implementation of a T3 (3+) parking scheme (Figure 11), which would allocate 81 prime on-site parking spaces to vehicles carrying three or more occupants. While not a direct form of AT, carpooling offers a pragmatic compromise -encouraging those who would otherwise travel alone to travel together, thereby reducing parking congestion as well as noise, air, and carbon pollution associated with private vehicle use (Long et al., 2020; Magdin et al., 2019).

***Figure 11**: Map illustrating the proposed allocation of priority T3+ carparking at Ngā Puna Wai*

The scheme would rely on public trust and compliance; however, the decision to allocate funding and employ an on-site parking warden ultimately lies with the CCC. As a final point, a similar initiative has proved successful at Mt Hutt, known as Carpool Priority Days, where skiers who rideshare at the base have priority parking at the top (Mt Hutt | Ski New Zealand, 2025). This approach has fostered a sense of community through the establishment of collectively achievable targets and has successfully influenced travel behaviour in a context where AT is not inherently viable, making it a particularly relevant model for Ngā Puna Wai.

5.4 Better Quality Bike Infrastructure

Observational data revealed neither Tulett nor Hagley Park had bike racks secured to the ground, a feature that would enhance the perceived safety of AT infrastructure and encourage greater uptake (Timmons et al., 2023). At Tulett Park, the racks also failed to securely lock bike frames and were not easily visible; hence, relocating them from behind clubrooms nearer to the carpark is recommended. Furthermore, none of the sites provided sheltered bike storage, which poses a significant barrier during winter months due to adverse weather conditions and reduced daylight.

As a final point, should CCC implement any of these infrastructural improvements, they must also be reflected on the Council's website maps, aligning with Recommendation 5.2.

7. Conclusion

In summary, this research project identified a strong reliance on private car use, revealing limited uptake and motivation for AT to and from sporting venues across Christchurch. The main barriers of AT were predominately distance, poor connectivity, and inadequate infrastructure, while key enablers included greater awareness active routes and the availability of facilities at each venue. Our recommendations target key barriers, including low motivation for AT, limited awareness, perceived safety risks, and substandard infrastructure. These actions aim to increase AT uptake across Christchurch, thereby reducing parking congestion, improving public health, and lessening the environmental impact of private vehicle use.

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Appendices

Appendix A

Bike Racks at the three venues.

1 Nga Puna Wai

2 Hagley Park

3 Tulett Park

Appendix B

1 Nga Puna Wai Cycleway connections, CCC Bike Map

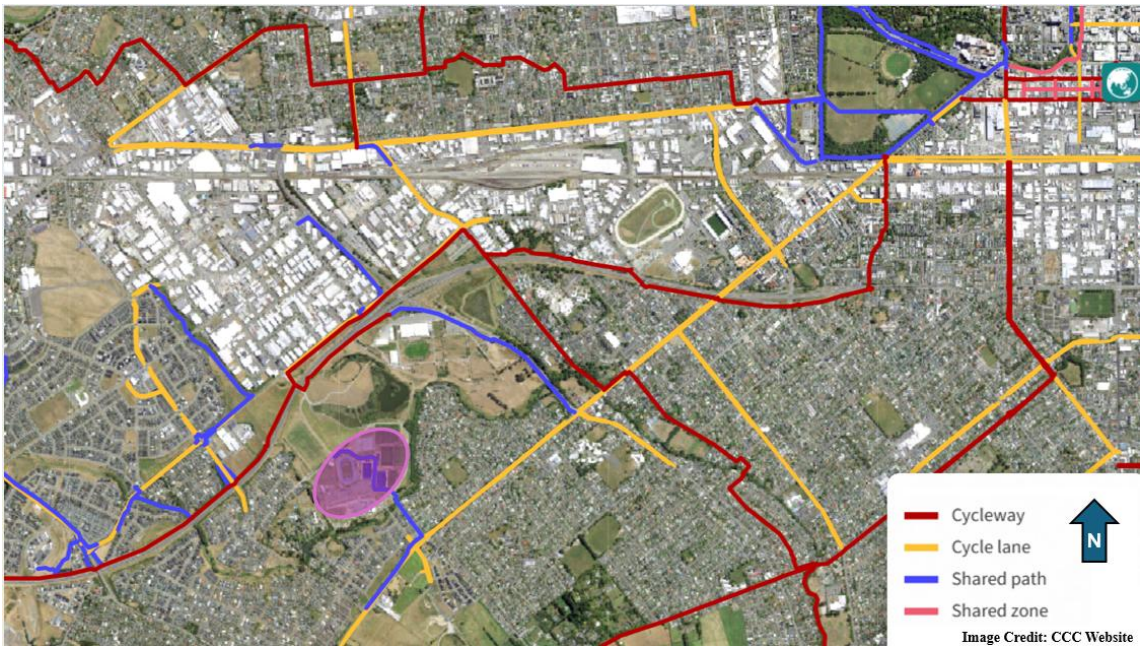

Image Credit: CCC Website

2 Hagley Park Cycleway connections, CCC Bike Map

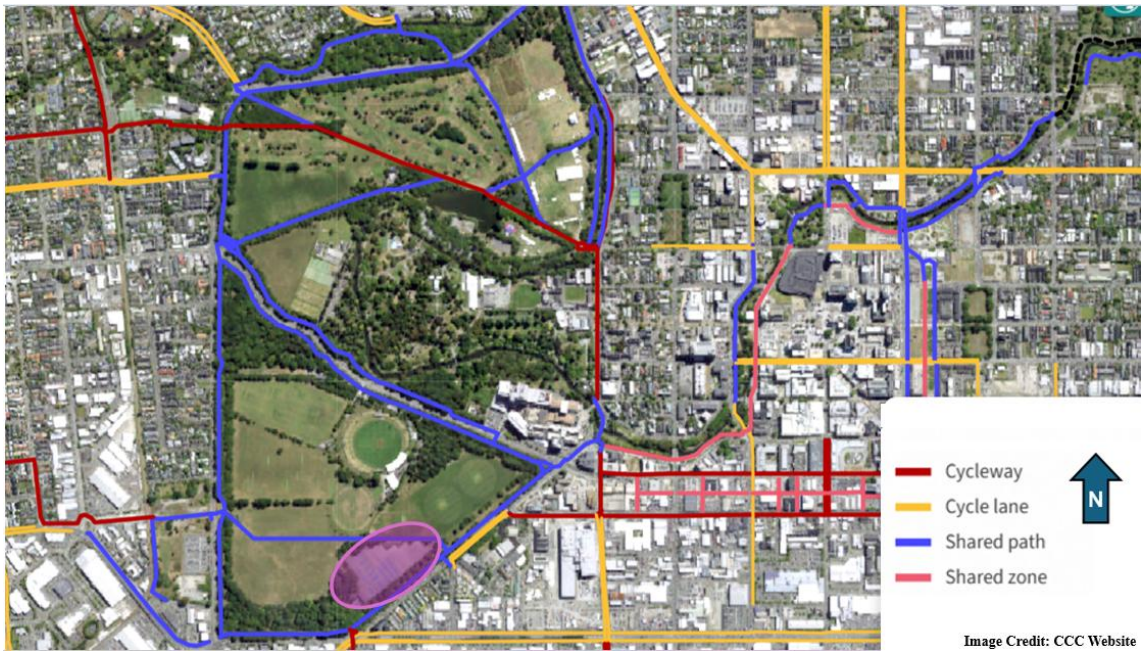

Image Credit: CCC Website

3 Tulett Park Cycleway connections, CCC Bike Map

Image Credit: CCC Website

Appendix C

Semi structured interview questionnaire.

Survey Questionnaire:

Fill out: Date, Time, Venue and Sports Played, Weather Conditions, Age of the spectator's child / person they are supporting (age range).

1. Ask whether they are spectating or playing

2. What suburb are you from?
    a. + 3K – don't bother asking about walking.
    b. + 8 K – don't bother asking about cycling

3. How did you travel here?
    a. If carpool: Did you carpool with people outside of your household?

4. Why did you choose this mode / Did you consider active transport (biking, walking, public transport)?

5. Ask what their awareness is of cycleway connections to and from the venue? (make this question site specific – provide examples)

6. What would better incentivise active travel?

    a. Security?
    b. Capacity at site?
    c. Shelter?
    d. Safety?
    e. Lights?
    f. Lack of gear?

Appendix D

Proposed Ngā Puna Wai map update.