

## Exploring Community Engagement at RAD Bikes

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## Executive Summary

- **Context:** RAD (Recycle a Dunger) Bikes is a not-for-profit community bike workshop located in Ōtautahi, Christchurch, dedicated to promoting community bike recycling and repair. By providing accessible resources and education, RAD Bikes aims to address local transportation challenges and foster community engagement.
- **Research Question(s):** This study explores two key questions: 1) What demographics does RAD Bikes currently serve, and 2) What strategies can RAD Bikes implement to reach underrepresented groups?
- **Summary of Methods:** A mixed-methods approach was employed, combining quantitative data from surveys distributed with qualitative insights gained from in-depth interviews with volunteers and stakeholders.
- **Key Findings:** RAD Bikes is praised for its sense of community but faces challenges in diversity and outreach. Most participants were male and New Zealand European, highlighting the need for targeted outreach to women and minority groups. Geographic reach was limited, suggesting opportunities for growth in underrepresented areas.
- **Shortcomings:** Low survey response rates and sampling bias, due to self-selection and logistical constraints, limited the diversity of the data. Geographic representation was insufficient for a comprehensive spatial analysis.
- **Suggestions for Future Research:** Extending survey duration, addressing logistical barriers, and employing broader outreach methods would improve data diversity and depth, enabling more comprehensive spatial and graphical analysis.

## Introduction

RAD (Recycle a Dunger) Bikes is a community-based bike workshop located in Ōtautahi, Christchurch. Bike workshops aim to foster accessibility within the local community by providing a space where people can learn to repair and recycle bikes (Bradley, 2018). RAD offers access to bikes, tools, parts, workshops, and technical support at its central city location. Since its establishment in 2013, RAD has been addressing transportation challenges in the community, particularly aiding those facing financial or technical barriers.

This research is conducted in collaboration with Jess Smale, the RAD Bikes coordinator, to explore the demographics of those currently utilising the workshop and to identify underrepresented groups. Specifically, the research seeks to answer two key questions: "What are the demographics that RAD Bikes do and do not serve?" and "What approaches can RAD Bikes take to reach missing demographics?" Underscored by Smith and Schonfeld (2000), by addressing these questions, this project aims to highlight opportunities and challenges for increasing diversity and community engagement.

A mixed-methods approach will be employed in this research to effectively collect both qualitative and quantitative data from primary sources (Onwuegbuzie & Leech, 2005). The report will include a review of relevant literature, a detailed explanation of the methodology, analysis of the results, discussion, conclusions, and an overview of the limitations of the research. The findings reveal a significant gap in RAD Bikes' reach to certain demographics, laying the groundwork for potential future strategies to boost participation and engagement at RAD Bikes.

## Literature Review

Relevant literature was critically reviewed for this report, to provide background information and explore existing results in community bike workshops. The review was split into the 5 following sub-themes:

### Cycling's Impact on Communities

Cycling has well-documented positive environmental, physical, and social benefits that align with RAD Bikes' mission. Environmentally, cycling reduces air pollution and carbon emissions (Pucher & Buehler, 2012; Dalton et al., 2022). It also contributes to physical health by lowering risks of cardiovascular diseases, though local urban pollution risks remain underexplored. On a social level, cycling fosters community inclusivity and well-being (Horton et al., 2007). However, the literature lacks comprehensive data on how different demographic groups engage with cycling, highlighting a gap in understanding that RAD Bikes aims to address.

### Current Biking Status in NZ

Research into cycling trends in New Zealand has used a variety of methods, primarily surveys (O'Fallon, 2010; Wang et al., 2012) and interviews (Wild, 2018), alongside secondary data from national sources like the New Zealand Census (Jones et al., 2020; Shaw & Russell, 2017). Factors impacting cycling rates in New Zealand include infrastructure availability, safety concerns, and socio-economic conditions. While the presence of infrastructure encourages cycling, its absence deters participation. Understanding these barriers is crucial for RAD Bikes to tailor its services

effectively. Limitations included challenges such as low survey response rates that may have introduced biases in data collection.

## How Charities Increase Their Scope and Reach

Barriers to participation in cycling workshops often affect marginalised groups such as women and low-income individuals, who face issues like cost, knowledge gaps, and poor infrastructure (Leister et al., 2018; Community Cycling Centre, 2012). RAD Bikes can address these barriers through targeted outreach, particularly via social media, to reach underserved groups. Effective location planning, such as situating workshops near universities or city centres, is also important for increasing engagement, though it needs to be balanced to serve disadvantaged areas as well (Brodie et al., 2011; Valentini & Butler, 2023). Gender-specific sessions could further enhance inclusivity and reach (Batterbury et al., 2023). The identified data gaps include an emphasis on bike shares over bike workshops and a lack of research on bike workshops with less affluent reach.

## Charities and Engaging Volunteers

Volunteer engagement is heavily influenced by the sense of relatedness and need satisfaction. Relatedness fosters community and volunteer retention, while meeting volunteers' needs increases motivation (Boezeman & Ellemers, 2009; Huang et al., 2019). For RAD Bikes, maintaining a diverse volunteer base is critical, and research shows that volunteer motivations are consistent across demographics, including gender (Bortree & Waters, 2014). Implementing strategies like occasional interviews allows volunteers to express their thoughts on the organisation's direction, enhancing their sense of value (Behrens & Colombelli-Négrel, 2024). However, a lack of studies into the specifics of engaging demographically diverse people, which RAD are trying to target, hinders the applicability of these findings.

## Bike Repair Charities Across the World

International bike repair shop (BRS) programs provide valuable insights for RAD Bikes, particularly in their role promoting urban sustainability, social inclusion, and affordable transportation. BRSs are essential for fostering green transport and sustainable urban planning (Wesolowski, 2015). Projects like cycling kitchens teach repair skills and reduce waste, promoting self-sufficiency (Valentini & Butler, 2023). Successful BRS models have demonstrated the importance of local partnerships to reach diverse communities, which could serve as a model for RAD Bikes to enhance its community outreach (Abord, 2022; Chatillon, 2022). Gaps in knowledge include starting up Bike repair businesses in less sustainable transport centric cities.

# Methodological Framework and Methods

### *Framework*

The study used a mixed-methods approach, integrating both a range of qualitative and quantitative data, collected from interviews and surveys. This approach is shown to enhance research outcomes (Östlund et al., 2011), enabling us to address the research questions effectively.

Project-Based Learning (PBL) and Community-Based Learning (CBL) frameworks informed the research and shaped the approach to the RAD Bikes. PBL fostered a problem-solving mindset that was vital in overcoming data collection challenges, while CBL emphasised the

importance of addressing broader social, environmental, and ethical contexts in community engagement (Prince et al., 2005; Arantes do Amaral, 2018).

## Data Collection Methods

### *Survey Design*

The primary quantitative data for this study was collected through three separate surveys, each tailored to a different audience: the public, RAD volunteers, and RAD customers.

The surveys were created using the platform Qualtrics. Before launching, a pilot study was conducted to ensure the questions were appropriate and effective, adjusting the design to enhance validity and reliability.

Throughout the survey development process, ethical guidelines were followed and included a suitable consent form. Questions were simplified and aimed to minimise bias and avoid sensitive or invasive topics. This ensured maximum response rate from participants and ensured they would feel comfortable and respected while contributing their responses to the research.

### *Distributed Surveying*

The public was recruited using convenience sampling, targeting individuals within a specific time frame. The volunteer and customer groups were selected through purposive sampling, focusing on individuals engaged with RAD Bikes due to their relevance to the research.

Surveys were distributed both physically and digitally to maximise response rates. QR codes were handed out during RAD's Sunday and Wednesday workshops, and survey links were shared on RAD Bikes' social media and the University of Canterbury Biking Society. The public survey was also sent to 13 community spaces, including libraries, community centres, and gardens.

Additionally, QR posters were placed around Christchurch, including at bus stops and poster walls (see Appendix).

### *Intercept Surveying*

For 6 weeks, intercept surveys were conducted at RAD Bikes sessions and public locations like the Christchurch bus interchange, Richmond Community Garden, and Hagley Park. These varied settings helped reach a diverse demographic, improving sample representativeness. Surveys were held on Sunday afternoons to access a broader population.

Combining online and face-to-face methods is key for effective interpretive research (Curasi, 2001). Face-to-face engagement improved response rates and allowed for more detailed feedback compared to online surveys, as participants could be guided through the consent form and questionnaire.

### *Interviews*

Three in-depth interviews were conducted with key stakeholders: a long-standing RAD Bikes volunteer, a bike bridge researcher, and a former customer and member of the University



Bike Society. Conducted in a relaxed setting, these interviews encouraged genuine responses. Lasting 5–10 minutes, the open-ended questions focused on how participants first learned about RAD Bikes, their opinions on outreach efforts, and any challenges in attending sessions.

Participants were selected through purposive sampling, chosen for their relevance to RAD's initiative. Two face-to-face interviews were transcribed into notes, while a third was conducted via email due to scheduling constraints. The conversational nature of the interviews encouraged candid, detailed answers.

## Data Analysis Methods

Survey data was exported from Qualtrics to Excel for cleaning, with incomplete or inappropriate responses removed. Variables and their corresponding data were organised into tables for improved analysis. Five bar graphs and two pie charts were created to visually represent key variables, enhancing clarity.

ArcGIS Pro was used for spatial analysis, mapping participants' residential locations. Christchurch suburbs were colour-shaded based on participant numbers, and the map indicated whether participants were familiar with RAD Bikes.

## Data Analysis Limitations

A low survey response rate restricted the ability to identify strong trends. 74.62% of the community sample did not respond, reducing the final sample to 2 community groups. Furthermore, due to delays in the distribution process, as multiple modifications and university ethics approval reduced the surveying period to 6 weeks.

A significantly small number of participants provided residential data, resulting in insufficient information for a meaningful spatial analysis. Due to significant gaps in suburb data, spatial patterns could not be represented visually, so this analysis is excluded and presented in tables instead.

# Results and Discussion

This section presents the key finding from the surveys conducted among RAD Bikes' customers, volunteers and the public, along with insights derived from three interviews. The surveys remained open for a period of 45 days, receiving a total of 89 responses (12 customers, 22 volunteers and 55 public responses).

## Quantitative Insights

### Gender

The gender distribution among RAD Bikes' respondents reveals a significant imbalance, with 67% identifying as male and only 33% as female; non-binary or other gender identities were not represented. This reflects a predominantly male user base, consistent with broader cycling literature (Ministry of Transport, 2015). Handy et al. (2010) suggest that women may be more risk-averse, perceiving greater risks from road traffic, which could contribute to lower female participation.

This disparity highlights the need for targeted outreach to enhance gender inclusivity, such as female-focused workshops. Although the survey did not directly address safety perceptions, implementing safer cycling initiatives could help mitigate barriers and encourage diverse participation. While this research provides insight into gender distribution, it underscores the necessity for strategies aimed at balancing representation and fostering inclusivity

### Gender of customers and volunteers

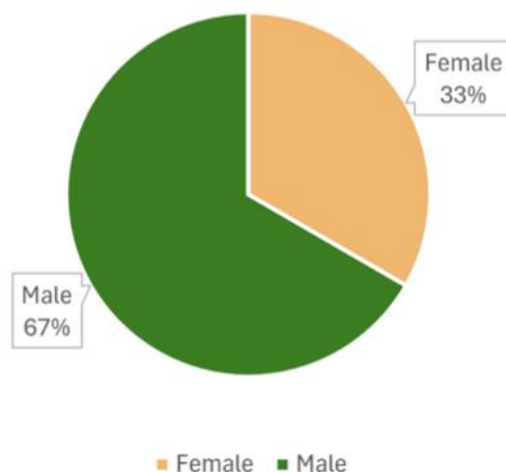


Figure 1. Gender distribution pie chart of volunteers and customers at RAD Bikes

### Age

Responses to the question "What is your age range?" revealed that the largest group of RAD Bikes users are aged 30–39, followed by those aged 20–29 and 40–49 (Figure 2). Responses from older age groups, especially 60–69 and 70+, were limited, indicating potential underrepresentation. Notably, there were no responses from the 17–19 age range, suggesting significant underrepresentation among teenagers.

While RAD Bikes effectively engages a millennial demographic, there is an opportunity to reach both older and younger age groups. Engaging youth is essential for the organisation's long-term sustainability, as early interest in cycling can foster ongoing community involvement. Research indicates that early participation in volunteer activities can lead to sustained engagement (Garnelo-Gomez & Money, 2024). Targeted programs or events for younger demographics can address youth mobility and promote sustainable transportation habits.



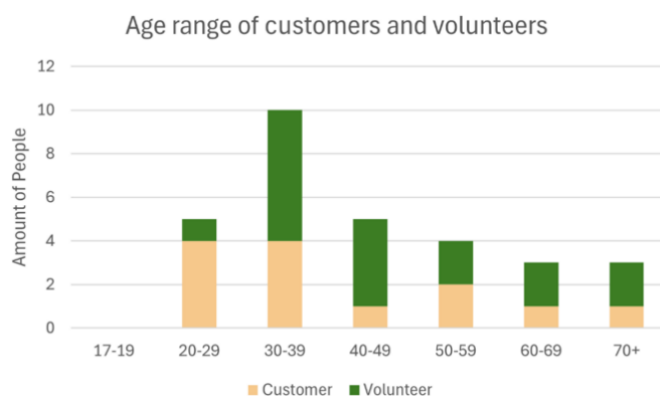


Figure 2. Age distribution graph of volunteers and customers at RAD Bikes

2

### Ethnicity

Ethnicity data from the question “What ethnicity best describes you?” revealed a lack of diversity within the RAD Bikes community. The majority of participants identified as New Zealand European, with 20 responses in total: 11 volunteers and 9 customers. Representation from other ethnic groups was minimal, including 4 Māori, 3 Asian, 2 from other backgrounds, and 1 Middle Eastern/Latin participant (Figure 3).

These findings highlight the underrepresentation of minority groups within RAD Bikes, indicating a need for enhanced outreach to ethnically diverse communities. Research shows that increased cycling efforts into these community sub-groups, increases the population of cyclists and bike users in an area (Rissel et al., 2010). Current initiatives, such as the bike bridge program targeting refugee and migrant women, received a positive response. Interviews with the community researcher emphasised the importance of such programs, suggesting that developing similar initiatives could be vital for increasing inclusivity and representation within the organisation (Nieves et al., 2021).

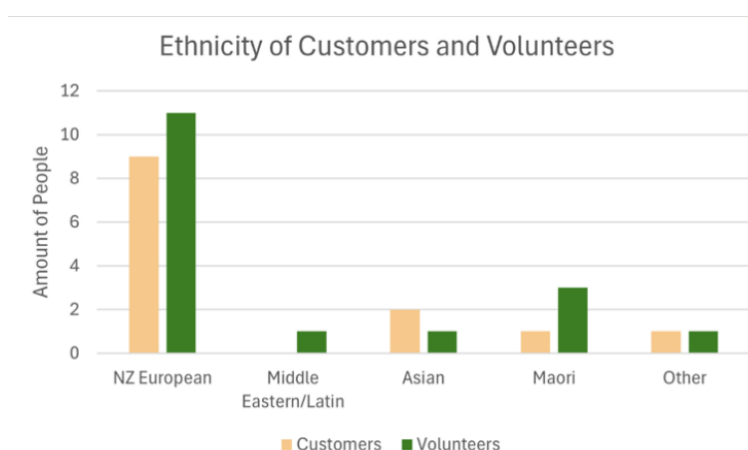


Figure 3. Ethnicity distribution graph of volunteers and customers at RAD Bikes

### Geographic Reach

A total of 20 volunteers responded to the question, “What suburb do you live in?” The results revealed a limited geographic reach, with only 18 of the 91 suburbs represented. Avonhead and Riccarton had the highest participation, with 2 respondents each, while the remaining 16 suburbs each contributed only 1 participant.

The customer responses also indicated a restricted reach, with only 11 participants providing their suburb information. This data showed representation from just 6 suburbs. The majority of customers were from Spreydon (3), while Linwood, Opawa, and Upper Riccarton had 2 respondents each. Ilam and the CBD contributed only 1 response each.

The public survey gained 44 responses regarding participants' home locations, yet still reflected limited geographic representation, with only 26 of the 91 suburbs noted. Riccarton had the highest participation with 6 respondents, followed by Sumner and St Albans (4 each) and Linwood (3). Five suburbs had 2 participants each, including Addington, Cashmere, CBD, Clifton, and Merivale, while the remaining 17 suburbs had only 1 participant.

These findings suggest that insufficient data was collected for a comprehensive analysis; however, they also indicate that RAD Bikes has the potential to expand its scope into a more diverse range of Christchurch suburbs. Targeted community outreach has been shown to foster stronger local ties (Wallerstein & Duran, 2010). By broadening its reach, particularly to underrepresented suburbs, RAD Bikes can enhance inclusivity, address community needs, and ultimately fulfil its research objectives regarding demographic engagement and representation in cycling initiatives.

Suburb	Number of volunteer participants	Number of customer participants	Number of public participants
Addington	1		2
Avondale			1
Avonhead	2		
Beckenham	1		1
Bishopdale			1
Bottle Lake			1
Bromley			1
Burnside			1
Burwood	1		
Cashmere	1		2
CBD	1	1	2
Clifton			2
Fendalton			1
Ferrymead			1
Hillmorton	1		
Hornby	1		
Ilam		1	1
Lincoln	1		1
Linwood	1	2	3
Marshland	1		
Merivale			2
Opawa		2	
Papanui	1		1
Parklands			
Phillipstown			1
Redwood			
Riccarton	2		1
Somerfield	1	3	6
Spreydon			1
St Albans	1		4
St Martins	1		
Strowan			1
Sumner	1		4
Sydenham		2	
Upper Riccarton	1		1
Westmorland			
Woolston			1
Total	20	11	44

Table 1. Survey participants geographic reach organised by Christchurch suburb. Left: volunteer participant's home location, Middle: customer participant's home location, Right: public participant's home location.

### Public Awareness

A total of 55 public participants responded to the question, “Did you know about RAD before this survey?” 65% (36 participants) were unfamiliar with RAD Bikes, while 35% (19 participants) had heard of the organisation. This significant lack of awareness underscores the need for RAD Bikes to enhance its outreach and community engagement efforts.

Increasing awareness of RAD can attract a more diverse demographic, expanding their volunteer and customer base. Greater community involvement can foster heightened collaboration with local organisations, additionally enhancing resources and support (Wallerstein & Duran, 2010). Ultimately, this outreach could solidify RAD's position as a vital community hub, ensuring its sustainability and relevance in Christchurch's cycling landscape.

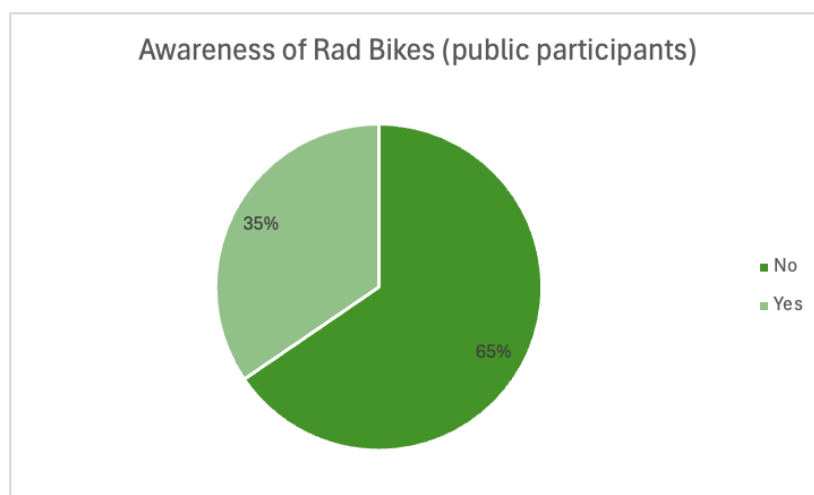


Figure 4. Awareness of public participants graph at RAD Bikes

### Qualitative Insights

The customers and volunteer of RAD Bikes were the main groups surveyed for this section as the users of RAD, they have more insightful and knowledgeable recommendations. The public were included for insights about the scope and reach of RAD bikes.

### RAD Discovery

The survey assessed how participants first became aware of RAD Bikes. The results in Figure 5 indicated 6 customers, 5 volunteers and 5 public participants found rad through word-of-mouth suggesting it is the primary mode of discovery for RAD Bikes. This was followed by social media with 4 customers, 4 volunteers and 1 public participant finding Rad Bikes this way. Google search had 3 volunteers, and 2 customers, followed by mutual friend with 2 volunteers and 1 customer. Advertising had 1 response from a volunteer and newspaper had 1 response from a customer.

Abarca (2019) found that nonprofits effectively reached new communities by posting relevant marketing content. RAD Bikes could achieve this by frequently sharing content that resonates with specific communities within the respective community groups to expand their online visibility and outreach.

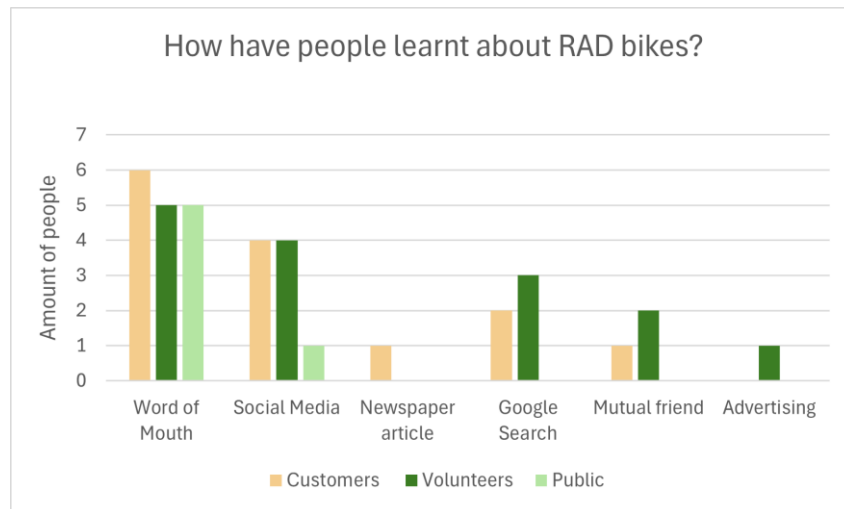


Figure 5. Participants discovery graph for RAD Bikes

### Recommendations for Public interest

The data from Figure 6 reveals that bike repairs were identified as the most appealing aspect of RAD Bikes' offerings, with 9 responses, followed by mechanics lessons (7), bike parts (5), and supporting a non-profit organisation (2). These results suggest that while RAD Bikes is well-regarded in the community, there is room for growth in public engagement through more targeted marketing efforts, especially on digital platforms.

Yu (2024) highlights the potential for community bike shops to attract wider audiences by emphasising healthy living and promoting cycling as a means of personal and environmental well-being. Biking serves not only as exercise but also contributes to reducing car usage and greenhouse gas emissions. RAD Bikes could capitalise on this by framing its services in terms of promoting sustainable, healthier lifestyles, aligning with broader public interests.

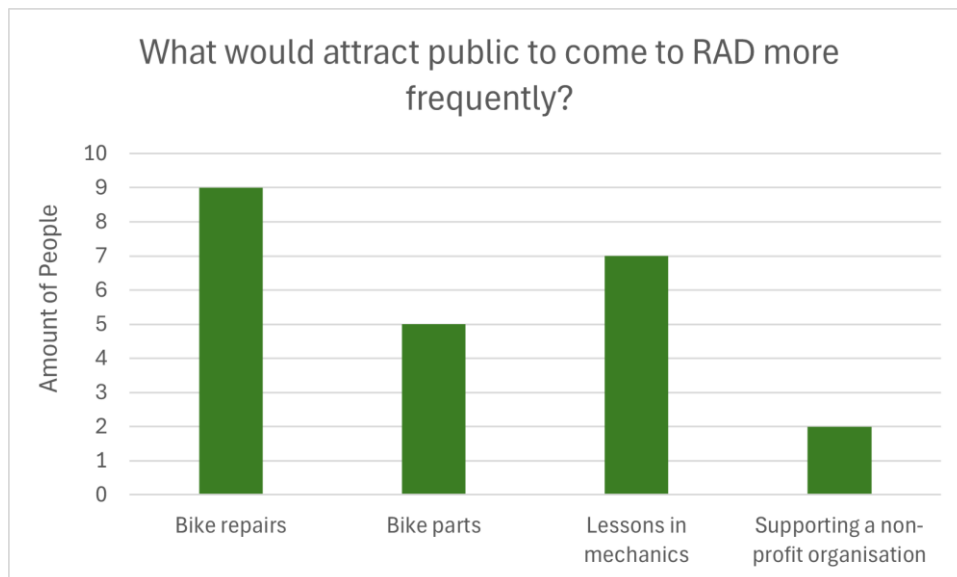


Figure 6. Public interest graph for RAD Bikes

### General Recommendations

The data from Figure 7 shows that additional workshops are the most requested activity for RAD Bikes, receiving 9 responses—5 from customers and 4 from volunteers. The next most desired activities were more drop-in sessions and community events, each garnering 7 responses. Meanwhile, only 2 responses supported either establishing more permanent workshop locations or maintaining the current setup.

These findings suggest a strong demand for enhanced educational opportunities alongside cost-effective services, both critical to strengthening community involvement. Bussell and Forbes (2002), found that motivations for volunteering in non-profit organisations extend beyond altruism to include personal benefits such as social interaction and skill development. This aligns with the survey data, which highlights a need for greater accessibility and expanded learning opportunities at RAD Bikes.

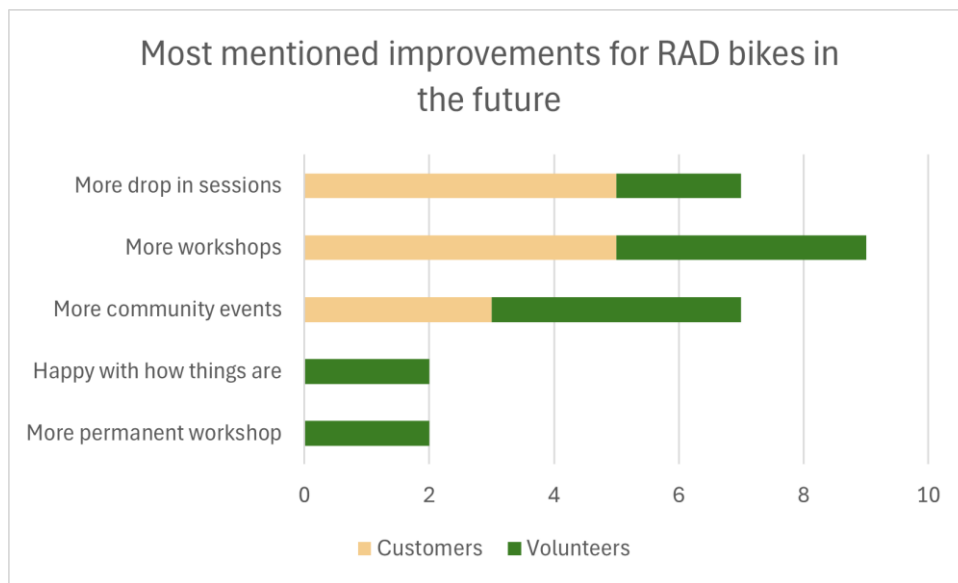


Figure 7. Future activities graph for RAD Bikes

**Recommendations for Increasing Diversity**

Table 4 summarises key suggestions from RAD Bikes' volunteers and customers on enhancing community engagement and diversity. Recommendations include expanding digital marketing, collaborating with local businesses and community groups, and targeting underrepresented demographics. Notably, one respondent proposed "travelling workshops" in underserved areas, while another emphasised the importance of "listening to their needs" to build trust. Additional ideas such as using paid Facebook ads and increasing female volunteer representation highlight the need for inclusive outreach strategies.

These insights align with Wallerstein and Duran's (2010) research, which emphasises that trust-building and collaboration within communities are essential for meaningful engagement. Engaging with people in their own environments through a travelling workshop would ensure outreach efforts remain culturally relevant.

	<b>How do you think RAD bikes could reach more diverse volunteers and customers?</b>
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1	“Partnership with businesses & community organisations, leverage existing networks & expertise”.
2	“Through Bike Bridge, RAD bikes have started to get a following from diverse ethnic communities.”
3	“Build relationships with communities and listen to what they do and don't need.”
4	“Sponsored/Paid Facebook adverts - allows you to target certain demographics.”
5	“Having more female volunteers would attract more female public members too. I think this is important for keeping RAD inclusive and welcoming. The volunteers have always been super helpful in the past, but as a woman sometimes I want to fix my bike myself, but male volunteers are always offering to help.”
6	“Collaboration with other community projects e.g. Biketober.”
7	“Go meet community leaders from those underrepresented groups in their community!”
8	“If there was a possibility of having a "travelling workshop" or drop in of some sort, tenants at OCHT could really benefit. Sometimes getting to Lichfield St is a bridge too far for some.”
9	“Connection to University.”
10	“Digital marketing and videos - social media outreach...”

Table 2. Quotes for increasing diversity at RAD Bikes’

## Interview Insights

### Experiences at RAD Bikes

Interviewees consistently praised RAD Bikes for its strong sense of community and the skill-building opportunities it offers. The long-standing volunteer highlighted the inclusive and welcoming atmosphere but noted the need for more proactive outreach to attract younger volunteers and individuals from diverse cultural backgrounds. Similarly, the former customer emphasised the social benefits of RAD’s workshops, describing them as a "great social area" and "fun environment to learn in." They also suggested collaborating with local clubs for a bike sale day, which could help redistribute surplus bikes and benefit university students seeking affordable transportation options.

### Recommendations for Volunteer Outreach

An expert in community engagement offered key recommendations for improving RAD Bikes' volunteer outreach, focusing on targeted social media campaigns and active participation in local events to engage underrepresented groups. Insights from the interviews

are consistent with research by Teppner (2020), which highlights effective increased volunteer participation in cycle shops. They emphasised the importance of culturally inclusive programs to ensure volunteers from diverse backgrounds feel valued and welcomed. Establishing mentorship opportunities, where new volunteers are paired with experienced members, was also suggested to enhance confidence and skill development.

### **Implications for RAD**

The interviews provided valuable insights on how RAD Bikes can effectively engage diverse communities and expand its outreach efforts. In the broader context of community-based learning, these findings can guide RAD in evolving as a vital community hub, ensuring its growth strategies align with the needs of those it serves (Garnelo-Gomez & Money, 2024; Handy et al., 2010).

Interviewees acknowledged their enjoyment of RAD Bikes while emphasising the need for improved community access. Key themes to expand RADs impact and attract a more diverse participant base included: targeted outreach programs for diverse groups, collaborative events with institutions like the University of Canterbury, and establishing additional permanent or mobile locations in outer city suburbs, such as Wigram or New Brighton.

### **Discrepancies**

The primary reasons for discrepancies in the data include language barriers during surveys, which limited engagement with participants, and the limited effectiveness of the outreach methods, such as posters, which led to fewer responses. Additionally, non-random sampling introduced bias into the results.

### **Errors and Limitations**

A major limitation of this research was self-selection bias in online and in-person surveys, interviews, and community outreach, affecting result generalisability. Respondents typically had internet access and a vested interest in RAD Bikes (Andrade, 2020), often omitting questions. This skewed data towards those familiar with RAD's services, excluding underrepresented groups like the homeless and low-income communities with limited technology access.

Additionally, selection bias and sampling errors occurred due to the absence of systematic random sampling. Convenience sampling unintentionally excluded individuals, leading to over-representation of some groups. The low response rate further limited generalisability across Christchurch's suburbs (Andrade, 2020), preventing trend mapping or accurate assessment of RAD Bikes engagement in different areas.

Measurement errors and potential bias in self-reported data also undermined accuracy. Flaws in survey design or interviewer influence may have caused discrepancies (Bound et al., 2001). Respondents might exaggerate or misunderstand questions, compromising data reliability.

Lastly, logistical challenges and resource constraints hindered outreach efforts. Legal limitations restricted poster placement in high-traffic areas, and reaching lower socio-economic areas, mana whenua groups, and community organisations required more resources than available. Inconsistent volunteer support from RAD limited in-person data collection.



Time constraints and scheduling conflicts further reduced the research scope, affecting engagement with underrepresented communities and limiting findings applicability.

## Further Research

Several opportunities exist for future research to enhance these findings. Extending the study's duration would enable a more thorough analysis of RAD Bikes' long-term impact. Increasing demographic reach through signage and in-person surveys in high-traffic areas could help address data gaps from certain suburbs. Density sampling, which targets areas with diverse populations, has proven effective for capturing data from minority groups (Bayes et al., 2022).

Additionally, incorporating more interviews and focus groups would yield richer qualitative insights. Engaging with similar workshops or programs could provide valuable lessons for RAD Bikes, while focus groups would encourage discussion and facilitate deeper exploration of responses (Finch et al., 2003).

## Conclusion

The community-based learning project provided valuable insights into RAD Bikes' community engagement, identifying key diversity gaps and opportunities for improvement. RAD Bikes serves as both a practical resource and a social hub, fostering community and skill-building. To expand its reach, it is recommended establishing additional workshop locations, by implementing travelling workshops in underserved areas, and collaborating with local universities to attract new participants.

Survey and interview data highlight the need for targeted social media outreach, culturally inclusive programs, and mentorship opportunities to enhance engagement with underrepresented groups. Increasing female volunteer representation would also promote a more inclusive environment. Partnerships with local businesses and groups could further embed RAD in Christchurch's community networks.

Looking ahead, RAD Bikes is well-placed to strengthen its engagement with diverse communities, ensuring its services become more accessible and inclusive. By implementing these initiatives, RAD Bikes can enhance their role in sustainable transportation, while also contributing to the development of a more cohesive and resilient community.

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## References

- Abarca, K., Edwards, K., Griffith, G., Pierucci, C. & Richardson, H. (2019). Assessing a nonprofits fund development.  
[https://mpa.utah.edu/\\_resources/documents/attachments/6570%20S19-Fund%20Development%20Team.pdf](https://mpa.utah.edu/_resources/documents/attachments/6570%20S19-Fund%20Development%20Team.pdf)
- Andrade, C. (2020). The Limitations of Online Surveys. *Indian Journal of Psychological Medicine*, 42(6), 575–576.
- Arantes do Amaral, J. A. (2018). Combining Community-Based Learning and Project-Based Learning: A Qualitative Systemic Analysis of the Experiences and Perceptions of Students and Community Partners. *Partnerships*.  
<https://libjournal.uncg.edu/prt/article/view/1733>
- Batterbury, S., Uxo, C., Nurse, S., & Abord de Chatillon, M. (2023). On mutual bicycle aid. *Green Agenda*.  
[https://researchmgt.monash.edu/ws/portalfiles/portal/519744440/On\\_mutual\\_bicycle\\_aid](https://researchmgt.monash.edu/ws/portalfiles/portal/519744440/On_mutual_bicycle_aid)
- Bayes, R., Druckman, J. N., & Safarpour, A. C. (2022). Studying Science Inequities: How to Use Surveys to Study Diverse Populations. *The ANNALS of the American Academy of Political and Social Science*, 700(1) 220-233.  
<https://doi.org/10.1177/00027162221093970>
- Behrens, J., & Colombelli-Négrel, D. (2024). Can inclusion of different levels of participation effort improve volunteer diversity and retainment in a citizen science project? *Transactions of the Royal Society of South Australia*, 1-13.  
<https://doi.org/10.1080/03721426.2024.2376779>
- Boezeman, E. J. & Ellemers, N. (2009). Intrinsic need satisfaction and the job attitudes of volunteers versus employees working in a charitable volunteer organization. *Journal of Occupational and Organizational Psychology*, 82, 897-914.  
 Doi:10.1348/096317908X383742
- Bortree, D. S., & Waters, R. D. (2014). Race and Inclusion in Volunteerism: Using Communication Theory to Improve Volunteer Retention. *Journal of Public Relations Research*, 26(3), 215-234. <https://doi.org/10.1080/1062726X.2013.864245>
- Bound, J., Brown, C., & Mathiowetz, N. (2001). Measurement Error in Survey Data. *Handbook of Econometrics*, 5, 3705–3843. [https://doi.org/10.1016/s1573-4412\(01\)05012-7](https://doi.org/10.1016/s1573-4412(01)05012-7)
- Bradley, K. (2018). Bike Kitchens – Spaces for convivial tools. *Journal of Cleaner Production*, 197(2), 1676-1683. <https://doi.org/10.1016/j.jclepro.2016.09.208>
- Brodie, E., Hughes, T., Jochum, V., Miller, S., Ockenden, N., & Warburton, D. (2011). Pathways For Participation. *The National Council for Voluntary Organisations*.
- Bussell, H., & Forbes, D. (2002). Understanding the volunteer market: the what, where, who and why of volunteering. *International Journal of Nonprofit and Voluntary Sector Marketing*, 7(3), 244–257. <https://doi.org/10.1002/nvsm.183>
- Chatillon, M. A. de. (2022, December 12). Velonomy and material mobilities : practices of cycle repair and maintenance in Lyon, France and Melbourne, Australia. Hal.science.  
<https://hal.science/tel-04096258/>
- Curasi, C. F. (2001). A Critical Exploration of Face-to Face Interviewing vs. Computer-Mediated Interviewing. *International Journal of Market Research*, 43(4), 1–13.  
<https://doi.org/10.1177/147078530104300402>
- Dalton, A. M., Burke, A., & Jones, A. (2022). Free-to-use cycle provision schemes have potential to encourage cycling and reduce inequalities. *Journal of Transport & Health*, 26, 101391.  
<https://doi.org/10.1016/j.jth.2022.101391>

- Finch, H., Lewis, J., & Turley, C. (2003). Focus groups. *Qualitative research practice: A guide for social science students and researchers*, 2, 211-242.  
<https://books.google.co.nz/books?id=IZ3fJID5x8gC>
- Garnelo-Gomez, I., & Money, K. (2024). Charity Starts at Home: Understanding What Drives Children from Economically Disadvantaged Communities to Engage in Social Action. *Nonprofit and Voluntary Sector Quarterly*.  
<https://doi.org/10.1177/08997640241278640>
- Handy, S. L., Xing, Y., & Buehler, T. J. (2010). Factors associated with bicycle ownership and use: a study of six small U.S. cities. *Transportation*, 6, 967–985.  
<https://doi.org/10.1007/s11116-010-9269-x>
- Horton, D., Rosen, P., & Cox, P. (Eds.). (2007). *Cycling and society*. Taylor & Francis Group.
- Huang, Y., Bortree, D. S., Yang, F., & Wang, R. (2019). Encouraging Volunteering in Nonprofit Organizations: The Role of Organizational Inclusion and Volunteer Need Satisfaction. *Journal of Nonprofit & Public Sector Marketing*, 32(2), 147–165.  
<https://doi.org/10.1080/10495142.2019.1589624>
- Jones, R., Kidd, B., Wild, K. & Woodward, A. (2020). Cycling amongst Maori: Patterns, influences and opportunities. *New Zealand Geographer*, 76(3), 182-193.  
<https://doi.org/10.1111/nzg.12280>
- Leister, E. H., Vairo, N., Sims, D., & Bopp, M. (2018). Understanding bike share reach, use, access and function: An exploratory study. *Sustainable Cities and Society*, 191–196.  
<https://doi.org/10.1016/j.scs.2018.08.031> RAD. (n.d.).
- Ministry of Transport. (2015, September). *Cycling New Zealand Household Travel Survey*. Ministry of Transport; NZ Government.  
<https://www.transport.govt.nz/assets/Uploads/Report/Cycling-2015-y1012.pdf>
- Nieves, C., Boeglin, R., Creighton, A., DeGarmo, E., Falvey, C., Kemeny, A., & Zamula, A. (2021). Building El Barrio Bikes: Lessons from a Community Cycling Collaborative. *Progress in Community Health Partnerships: Research, Education, and Action*, 15(4), 525–532. <https://doi.org/10.1353/cpr.2021.0065>
- O’Fallon, C (2010). Bike Now: encouraging cycle commuting in New Zealand. NZ Transport Agency research report no.414. 190pp.
- Onwuegbuzie, A. J., & Leech, N. L. (2005). On Becoming a Pragmatic Researcher: The Importance of Combining Quantitative and Qualitative Research Methodologies. *International Journal of Social Research Methodology*, 8(5), 375–387.  
<https://doi.org/10.1080/13645570500402447>
- Östlund, U., Kidd, L., Wengström, Y., & Rowa-Dewar, N. (2011). Combining Qualitative and Quantitative Research within Mixed Method Research designs: a Methodological Review. *International Journal of Nursing Studies*, 48(3), 369–383.  
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7094322/>
- Prince, K. J. A. H., van Eijs, P. W. L. J., Boshuizen, H. P. A., van der Vleuten, C. P. M., & Scherpbier, A. J. J. A. (2005). General competencies of problem-based learning (PBL) and non-PBL graduates. *Medical Education*, 4, 394–401.  
<https://doi.org/10.1111/j.1365-2929.2005.02107.x>
- Pucher, J., & Buehler, R. (2012). *City Cycling*. MIT Press.
- RAD Bikes Community Bike Workshop*. RAD Bikes Community Bike Workshop. Retrieved August 20, 2024, from <https://www.radbikes.co.nz/>
- Rissel, C. E., New, C., Wen, L., Merom, D., Bauman, A. E., & Garrard, J. (2010). The effectiveness of community-based cycling promotion: findings from the Cycling Connecting Communities project in Sydney, Australia. *International Journal of*

- Behavioral Nutrition and Physical Activity*, 7(1), 8. <https://doi.org/10.1186/1479-5868-7-8>
- Shaw, C & Russell, M (2017). Benchmarking cycling and walking in six New Zealand cities: Pilot study 2015. *Journal of Transport & Health*, 5, S56-S57. <https://doi.org/10.1016/j.jth.2017.05.349>
- Smith, D. G., & Schonfeld, N. B. (2000). The Benefits of Diversity what the Research Tells Us. *About Campus*, 5(5), 16-23. <https://doi.org/10.1177/108648220000500505>
- Teppner, M. (n.d.). *Community bicycle workshops in Austria*. Retrieved October 13, 2024, from <https://unipub.uni-graz.at/obvugrhs/content/titleinfo/5751727/full.pdf>
- Valentini, D., & Butler, A. (2023). Bike Kitchens and the sociomateriality of practice change: exploring cycling-repair relations. *Urban, Planning and Transport Research*.
- Wallerstein, N., & Duran, B. (2010). Community-Based Participatory Research Contributions to Intervention Research: The Intersection of Science and Practice to Improve Health Equity. *American Journal of Public Health*, 100(S1), S40–S46. <https://doi.org/10.2105/ajph.2009.184036>
- Wang, J., Mirza, L., Cheung, A. & Moradi, S (2012). Transforming Auckland into a bicycle-friendly city: Understanding factors influencing choices of cyclists and potential cyclists. [https://australasiantransportresearchforum.org.au/wp-content/uploads/2022/03/2012\\_Wang\\_Mirza\\_Cheung\\_Moradi.pdf](https://australasiantransportresearchforum.org.au/wp-content/uploads/2022/03/2012_Wang_Mirza_Cheung_Moradi.pdf)
- Wesolowski, T. (2015). The Great Good Bicycle Shop: Exploring the Community Roles of a Neighborhood Business. *The Great Good Bicycle Shop: Exploring the Community Roles of a Neighborhood Business*. <https://doi.org/10.15760/honors.126>
- Wild, K & Woodward, A (2018). Electric City: E-bikes and the future of cycling in New Zealand. <https://bpb-ap-se2.wpmucdn.com/blogs.auckland.ac.nz/dist/c/520/files/2018/08/Electric-City-Ebikes-and-the-Future-of-Cycling-in-NZ-1rihn5y.pdf>
- Yu, S., Teixeira, C., & Kostiuk, S. (2024). What do community bike shops mean to the community? Exploring the patrons' perspective. *Journal of Transport & Health*, 39, 101926. <https://doi.org/10.1016/j.jth.2024.101926>

## Appendix

## Publicly Distributed Poster with Survey QR code

**RAD BIKES**

**DO YOU WANT TO START BIKING ??**



**HELP US WITH OUR RESEARCH PROJECT BY FILLING OUT THIS SURVEY**

**WANT TO LEARN BIKE REPAIR SKILLS AND HELP THE COMMUNITY?**

**NEED A FUN PLACE TO FIX YOUR BIKE FOR FREE??**

**RAD (RECYCLE A DUNNER) BIKES IS A NON-PROFIT ORGANISATION, THAT PROVIDES CHRISTCHURCH'S COMMUNITY WITH A WORKSHOP SPACE, TO HELP RECYCLE AND LEARN TO FIX BIKES. IT ALSO DONATES BIKES TO THOSE IN NEED. DROP IN SUNDAY 12-4PM AT 160 LICHFIELD STREET**

**MORE INFORMATION : [HTTPS://WWW.RADBIKES.CO.NZ/](https://www.radbikes.co.nz/)**