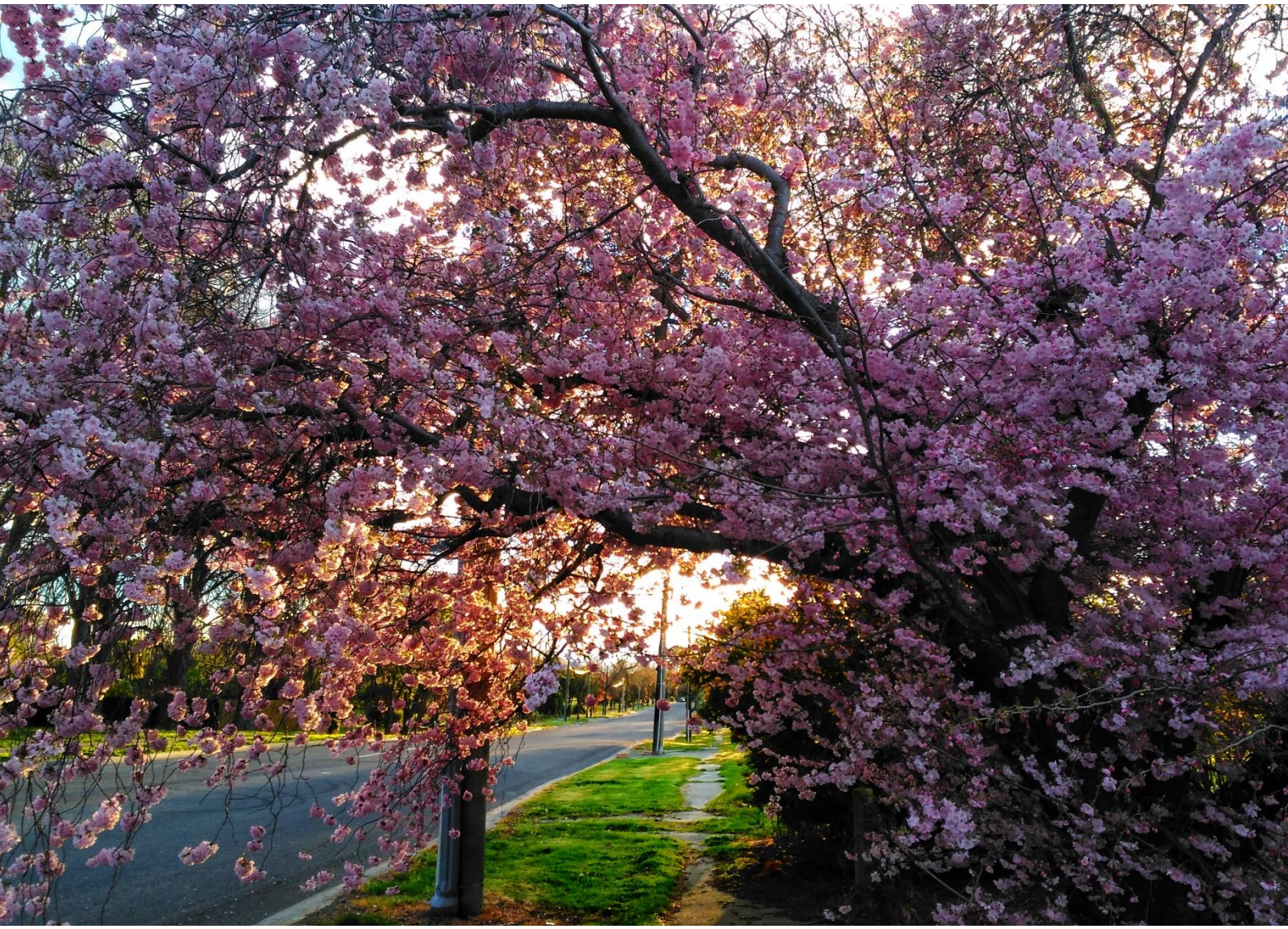
The diverse uses and users of the Residential Red Zone

A case study of Locksley Avenue and Avonside Drive



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Executive Summary

- Research question: “What is the current diversity of users and uses of the publicly accessible residential red zone?”
- The R.R.Z is defined as any areas of previously residential land deemed too damaged to live on by the authorities after the 2011 Christchurch Earthquakes. Currently, it consists of grassy land, dotted with a variety of trees and wildlife, with the Avon River flowing through. There has been little research relating to the current uses of the area.
- Two areas were focused on: The Locksley Avenue section and the Avonside Drive loop from either end of Retreat Road. Both quantitative and qualitative data was desired. Quantitatively, data required includes numbers of people, demographics, time and activities of people within the R.R.Z. This data was obtained through observational field trips, at various times of day, and different days of the week. Qualitatively, information required includes opinions by the public who are using the R.R.Z, about the R.R.Z. This data was obtained through surveying members of the public who were actively in the studied areas. The surveys were short, taking no more than 2 minutes to complete. 21 field trips of 1-hour length were carried out. From this, 539 people were observed in the R.R.Z, and 32 people were surveyed, giving some thoughts about the area.
- Observations showed that the most common activities within the R.R.Z were dog-related, at close to one-third of recorded users. This was followed in descending order by walking, cycling, fishing, running, picnics and breaks. Most people were doing these activities near the river. Some people used the inner roads and grassy areas, although, less than near the river. Less frequent activities include foraging, art and gardening. There were slightly more males than females who used the R.R.Z. The 20-39 age range was the most common; with under 19 and over 60 being less common. Public suggestions include maintenance, more usable trees, more ‘nature’, lighting and making some access points through the fences into the grassy areas. Many people were satisfied with the current state of the R.R.Z. and didn’t want anything changed.
- There were several limitations for this research. Data could only be obtained through a limited number of field trips, meaning not all types of weather or times of day could be accounted for. Being winter, most fruit trees were not in season for foraging, potentially leading to less use of the R.R.Z temporarily. The ground was often saturated, which also may have meant fewer people were willing to use the grass areas. With the studied areas being so large, observed users were often long distances away. This could potentially lead to inaccuracies in age and other demographic estimations. With survey questions, not everyone approached wished to take part, and some users were involved in activities which meant we were unable to approach them. Therefore, the opinions may not be fully representative.
- Further research on the R.R.Z is recommended. Public opinions on the future of the R.R.Z would be useful for policymakers. Knowledge of suitability of land for buildings, and how the land will be affected by disasters may help prevent future trauma. Planners may also wish to know the amount of maintenance required to keep the R.R.Z both usable and in harmony with the natural environment. Wildlife variety and abundance knowledge is also useful.

Introduction

In 2010 and 2011, a series of earthquakes devastated Christchurch. On top of the many lives lost and central city buildings damaged beyond repair, thousands of residential homes were destined for demolition. These areas, primarily east of Christchurch city centre, were classified as the residential red zone (R.R.Z) (LINZ, 2017). This report is about the current uses of this once residential land.

Today, the R.R.Z consists of large areas of grassy land, intersected by roads, dotted with various trees and the Avon River flowing through it. Wildlife in the area include geese, ducks, fantails and some wetland birds, such as herons, plus many other species. People are known to use the area; however, there has been little research so far which goes into detail about whom, and what they are using the area for.

Therefore, the aims of this research are to find out the quantity of people using the R.R.Z, demographics, time of day that it is used, reasons for using the area as well as gathering public opinions on the R.R.Z.

From the aims, a research question was specified:

"What is the current diversity of users and uses of the publicly accessible R.R.Z.?"

The research in this report is being done on behalf of The Avon-Otakaro Network, who has a vision of "a multi-purpose river park and ecological reserve in the Avon River R.R.Z." (Avon-Ōtākaro Network, 2017). The results from this research can be useful to find where small gains can be made in the current use of the R.R.Z. It may also be useful for enabling stewards and planners to either promote and grow current activities or transform the area for different activities and uses (Andersson, et al., 2014). In addition, this research of the R.R.Z will establish evidence that the area is being used by a diverse range of people for a variety of reasons.

Literature Review

With little literature directly comparable to the situation of the R.R.Z, international case-studies relating to green spaces, ownership and well-being were a main focal point for reviews.

Green Spaces

Barbosa, et al., (2007), suggests that green spaces are extremely important as they provide essential ecosystem services that urban areas are unable to provide. Ecosystem services corresponds with the benefits people gain from ecosystems. Bolound & Hunhammar (1999) have identified seven different urban ecosystems that contribute to the benefits of people such as: "street trees; lawns/parks; urban forests; cultivated land; wetlands; lakes/sea; and streams". People want to break up their day by moving away from where they are in the urban environment to an area of relative calm. They accomplish this by going to these areas during their lunch breaks and free time throughout the day. Public green spaces are also shown to have longer community benefits and help build connections that could be lost during a natural disaster (Coolen & Meesters, 2012). This is significantly relevant to the R.R.Z. because after the February 2011 earthquake people were drawn together over the potential future use of the R.R.Z as some people had lived their whole lives in the area, and they wanted what is best for the land.

Access

Access is an important part of our report as it affects who will want to use the land. Signage and clear pathways are directly related to the accessibility of an area such as the R.R.Z. (Jeppesen, Robinson, Lau, & Glümer, 2014). Some signs that were displayed throughout the R.R.Z were confusing and sometimes had conflicting messages on them. An example of this was a sign by LINZ (Land Information New Zealand) that said, “No unauthorised access” but another sign by the Christchurch City Council next to it said, “Authorised vehicles only – walking and cycling authorised”. This lead to people being confused to whether they were allowed access to the land or not. Therefore, this is an issue that both parties need to come together on so the public can clearly understand if they can use the land. The size and ease of access for people to visit these green spaces will depend on their functional and aesthetic qualities, such as the Avon River or the access to clear pathways (Cetin, 2015). An example of this by Jeppesen, et al., (2014) suggests that an increase in access to green spaces can be linked to the increase in cycling and walking. The ability for people to visit these green spaces and move temporarily away from the city landscape allows for people to be more in tune with nature and encourages people to visit more often (Du, Jiang, Song, Zhan, & Bao, 2016). Therefore, the degree of accessibility for people is directly related to the success of the open green space (Grunewald, Richter, Meinel, Herold, & Syrbe, 2017) and as the access increases, so will the contribution of all age groups that help with the maintenance of the land (Jeppesen et al, 2014).

Stewardship

Stewardship is about getting involved with the environment around you. Responsible, well-meaning People who have governance over the land, as stewards of the R.R.Z, could produce more positive outcomes. Christchurch has some aspect of land governance in the form of LINZ and the Crown, however, accessibility of governance for the public will increase the positive well-being of the public around the area (Andersson, et al., 2014). Since the Christchurch City Council and the Crown oversee maintenance of the area, having a secondary unit focusing on making the area more aesthetically appealing to people could be more effective in trying to entice people to visit and use the R.R.Z. Industrial designs and social movements may be implemented, increasing public knowledge on how they can interact with the green spaces (Andersson, et al., 2014). Christchurch needs stewards that can help redirect change for ecological ecosystems in the R.R.Z. They could plant native trees bringing a natural culture to the area, create an urban forest, or even land cultivation in the form of local food gardens.

Public Well-being

The quality, size and accessibility of green spaces are factors that may contribute to the well-being of the public. However, according to Larson et al (2016), the quantity of green space, in relation to city, has the biggest impact on people's well-being, whereas quality and proximity of parks have a smaller impact on people’s well-being. Making open, public, accessible, green spaces helps to improve the community for the better, and provides a way to reconnect the community to nature and other ecosystem services that nature provides.

Methodology

Quantitative and qualitative data was desired to analyse the diversity of users and uses of the R.R.Z and the accessibility to/from these areas. Firstly, we needed to decide on suitable locations for our study to be commenced in. This involved a walk around the R.R.Z., taking in the factors we believed would invite the most visitors such as accessibility from roads and footpaths, natural aesthetics, green areas, suitable pathways and dry, even walking spaces.

Observational Data

Once we had achieved this, we commenced our observational study of visitors to our two locations of choice (figure 1). The area decided on was Locksley Avenue and the Avonside Drive section from either end of Retreat Road. We started by considering the time and day, weather and our location. We went out to the areas in figure 1 at various times of the day to try and get a variety of data and to avoid duplicating data by counting people at the same time for different days. Once we noted a person's demographics and activity, we moved on to the next data source. For people who were doing activities classed in 'other' (playing, fishing, etc), extra notes were added as we believed it could be good for exploring potential connections (Mills, 2016). We did this because we were interested in the initial activity of the person(s) in the R.R.Z. rather than what else they do at this current point so we recorded 'instantaneous' data (Martin & Bateson, 1993).

In terms of sampling, we had no specific method in place as we were wanting to observe and interview anyone we saw within our testing areas. We had a temporal boundary of four weeks for conducting research and a spatial boundary of our two testing locations (Parfitt, 2005). As we were surveying anyone we saw, based on the small number of people in the test areas, we were willing to interview anyone unless we were uncomfortable approaching them (Evans, 1988). Upon analysis, we had a 'convenient sample frame' as we only surveyed people within the two locations as we had limited time but it can also be argued that this allowed us to discover more in-depth about the habits and behaviours of people within Locksley Ave and Avonside loop (Dixson & Leach, 1976).

Survey Data

Questions were based on a more in-depth analysis of what was already observed, aiming to get more specific and descriptive data. The participant's frequency of use was also asked. The 'Qualtrics' surveying system was used with two tablets on loan from the University of Canterbury geography department. 32 people within the areas outlined in figure 1 were surveyed. After 20 surveys, we began to see 'data saturation' where duplicating answers would start to occur. The answers to the survey were split between the two location sites, aiming to get a representative sample for the specified sites. We acknowledge, however, the fact that we were limited to two locations meant we could not get a true representative sample of all the R.R.Z.

The survey had several criteria that we wanted to uphold and follow. Open-ended questions gave us the ability to retrieve more in-depth answers for our analysis (Cloke, 2004). These questions were good for us as researchers, however, it requires more effort for the participants to answer (Bryman, 2012). Also, we outlined in our disclaimer form that the participant's names were not needed, which we hoped would allow us to receive honest answers and opinions (Van Selm & Jankowski, 2006). The survey structure involved a mixture of demographic, 'behaviour' (what are they doing in these areas) and 'attitude' (what would make their experience more appealing) questions (De Vaus, 2014).

We wanted to limit bias led questions, and kept a true anonymity approach to answers, stating to the participants we did not require personal details. We gave a disclaimer form before asking questions to make certain the participants were happy to continue. We avoided using 'usually' or

'recently' words hence why we categorised our time intervals into days and weeks (Parfitt, 2005). We wanted to get the most information possible but also ensure the survey was easy to complete in a short timeframe. Finally, we avoided asking personal questions as we did not need to know specific home addresses or income rates.

Analysing

Once we had satisfactorily reached our data saturation level (32 people), we began our analysis of results. This involved transforming our data into graphs and mapping our 'where have you come from' data into a kernel-density graph to show where most people came from. We were interested in finding out how people felt about accessibility and where they came from to get to the R.R.Z for the day they were interviewed. We also wanted to note the demographics of the people visiting the area. This is because while we were interested in the human interactions with nature, we also

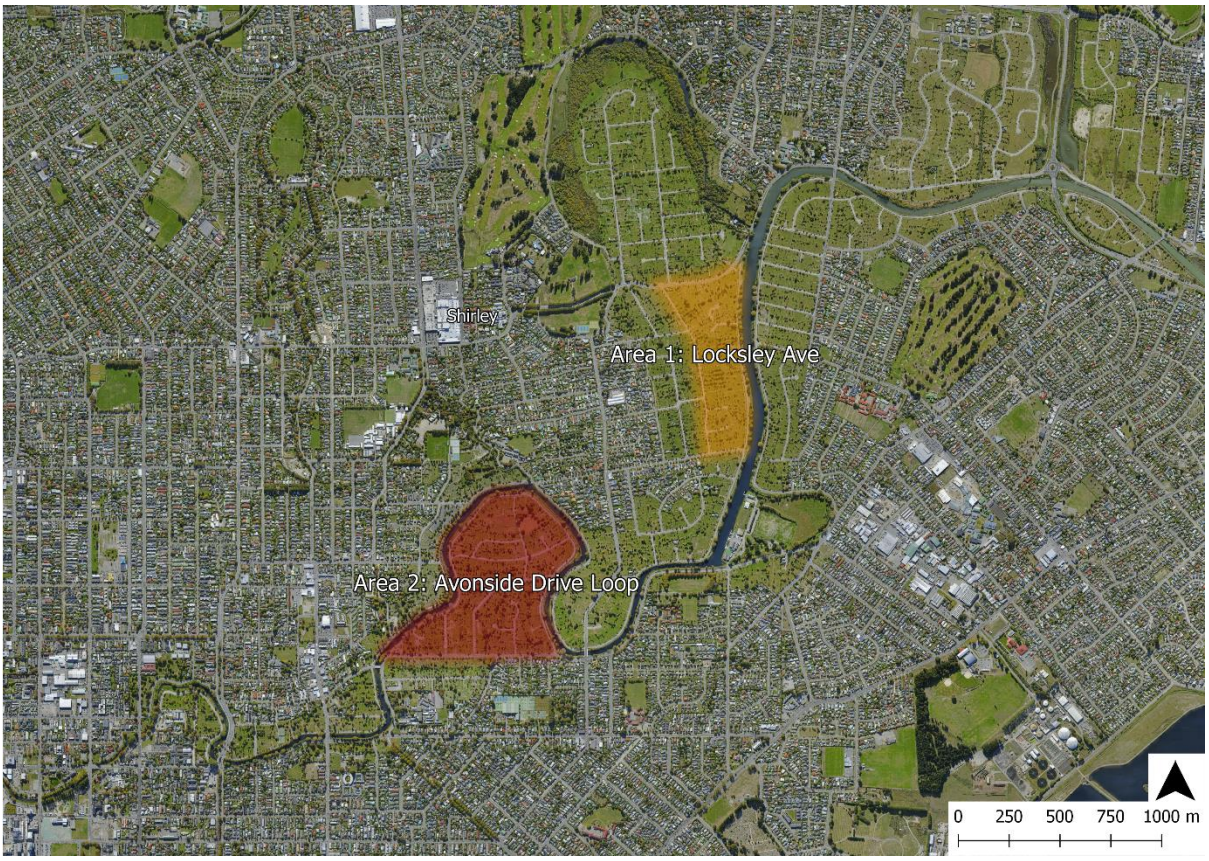


Figure 1 - Research areas of the Residential Red Zone showing the Avonside loop (red) and Locksley Ave (yellow) sites.

wanted to know about the people visiting.

Results

Over the 21 hours of observations, consisting of 13 different days at the two locations, 542 people were observed. Once the data was analysed this number dropped to 539, as a few data points were removed due to people on the Avon River unintentionally being counted as the river is not considered part of the R.R.Z.

The survey data was collected over 16 days in the month of September which resulted in 32 surveys completed.

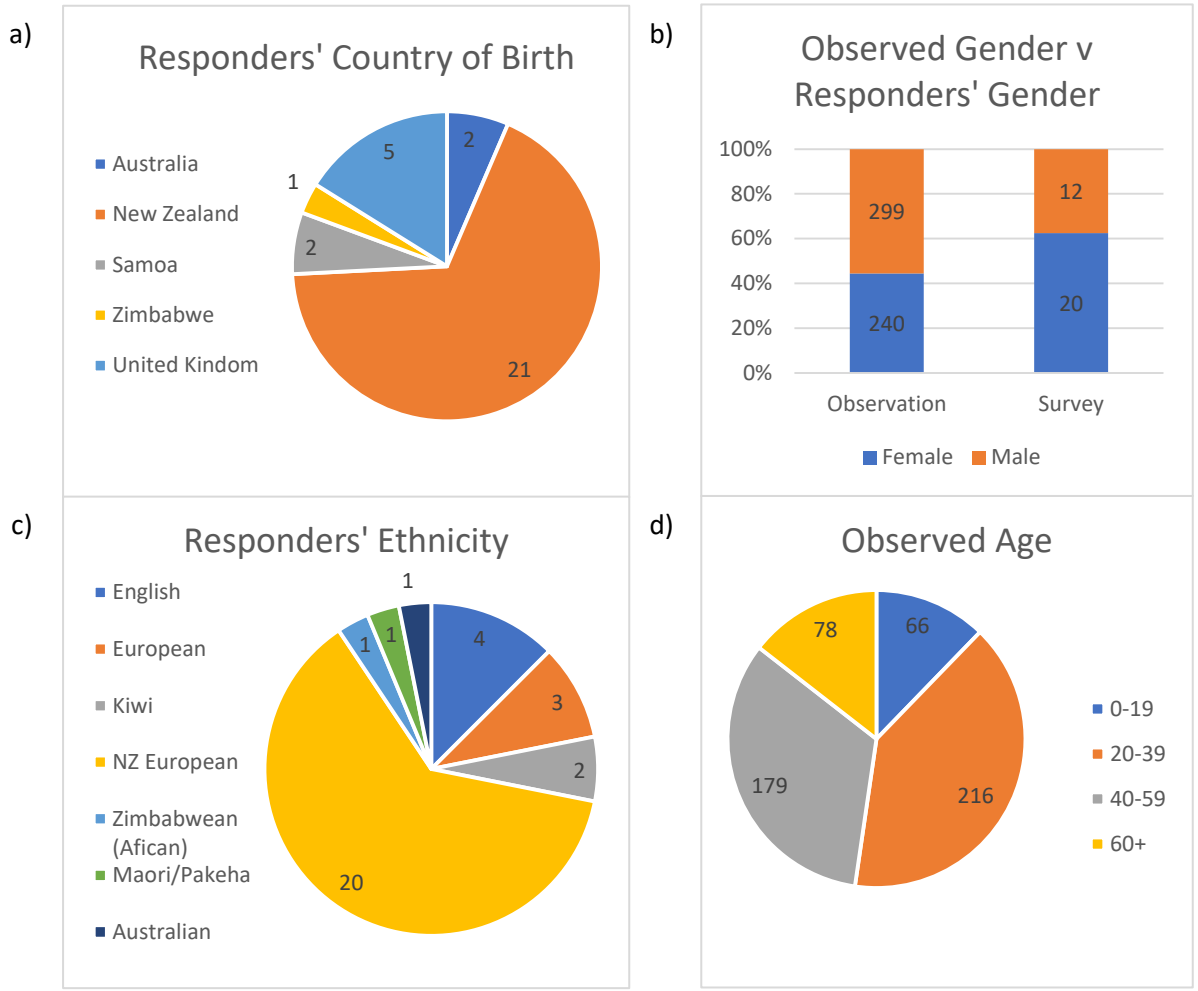


Figure 2 - Demographics of the R.R.Z. visitors, a) Country of birth of surveyed people, b) comparison of observed people and surveyed people in relation to gender, c) ethnicity of survey responders, d) age ranges of observed people

Demographics

Most of the people surveyed were from New Zealand, figure 2a, at a total of 21, the second largest group was people from the United Kingdom, at 5.

In figure 2b, more men were observed than women, 299 compared to 240, 55.5% compared to 44.5%. However, looking at the survey responses, far more women responded than men, 20 compared to 12, 62.5% compared to 37.5%.

When it comes to ethnicity, figure 2c, it is up to the person how they identify, this meant that NZ European was again the largest group, however, this does include those from the United Kingdom and Australia. The second largest group was English, at 4, then followed by European, at 3.

Most people that were observed, figured 2d, were in the age group 20-39, with 216, this was followed by the 40-59 age group, at 179.

Location and Previous residency

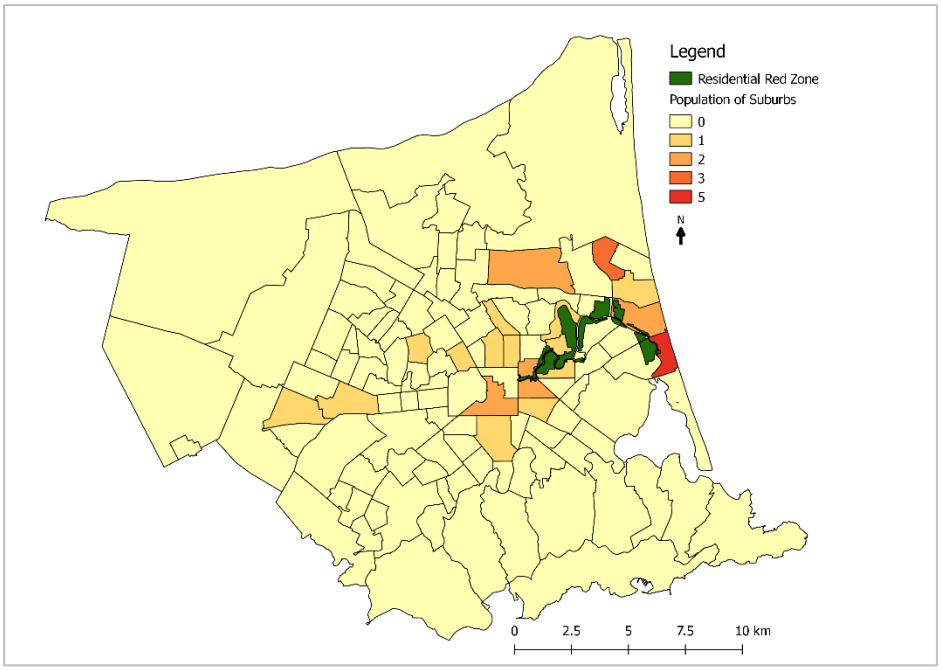


Figure 3 - Map display the count of responders' area they visited the R.R.Z. from

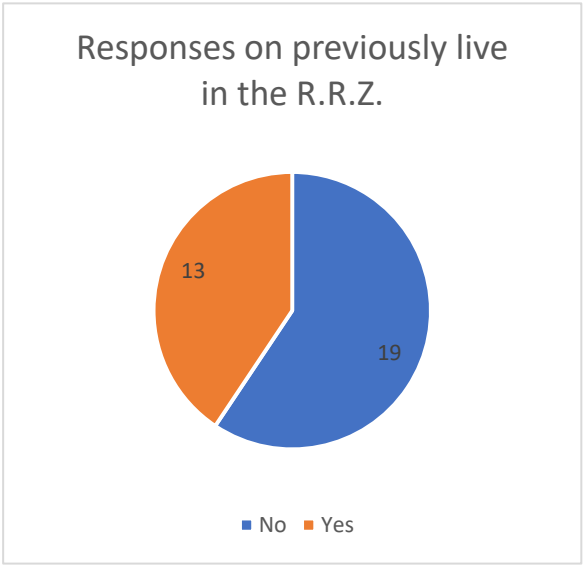


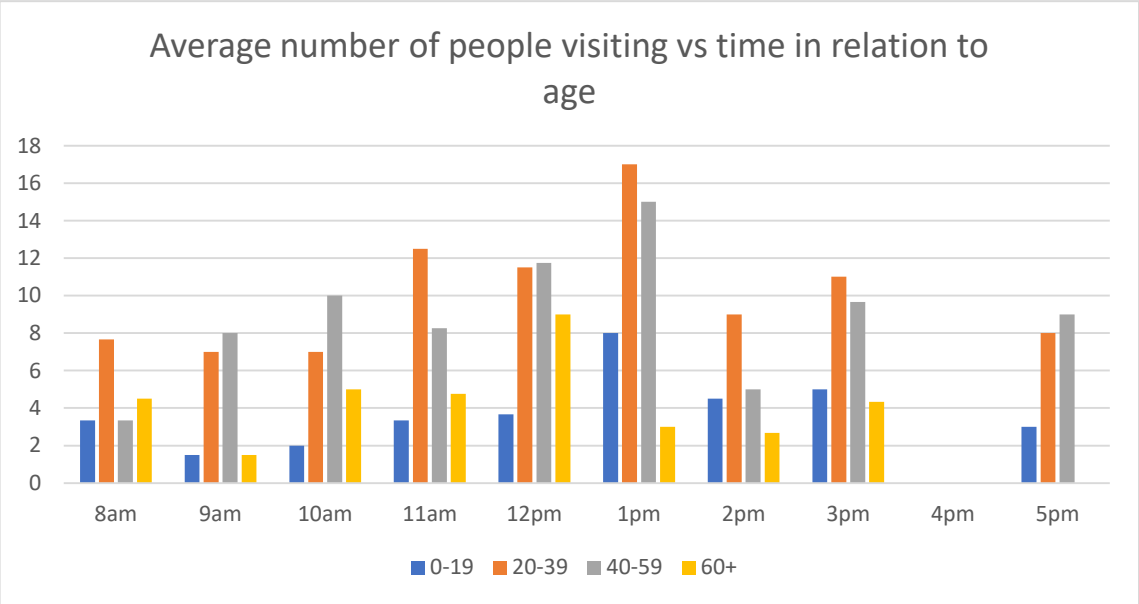
Figure 4 - Respondents count on whether they lived in the R.R.Z. before the earthquakes

The map in figure 3 displays the location where respondents came from to access the R.R.Z., this could have been their home, work, friend's home, etc. The most frequent answer was New Brighton, with 5 people. Followed by Parklands, at 3, then with 2 people each, Marshlands, Linwood, Richmond and Central City.

Figure 4 shows the number of respondents that previously lived in the R.R.Z., the amount of people that did not live in the R.R.Z is at 19, a lot higher than thought at first.

Time and Frequency

a)



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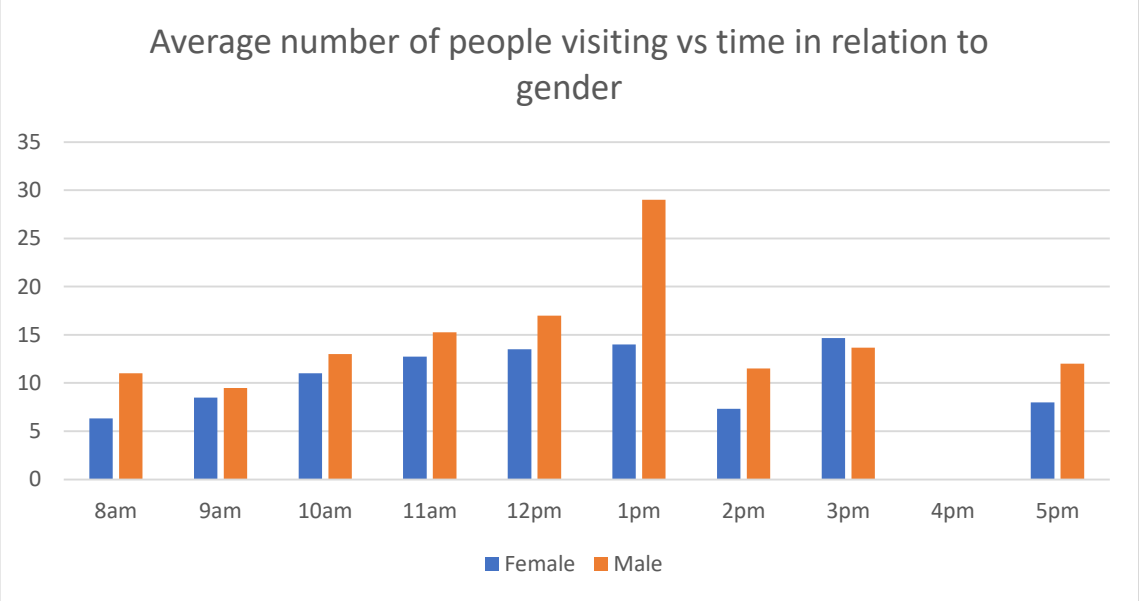

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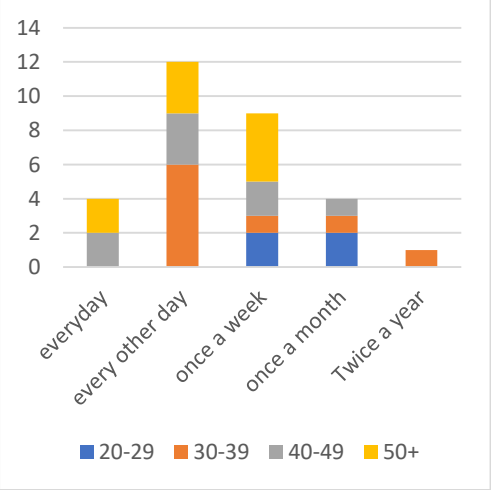

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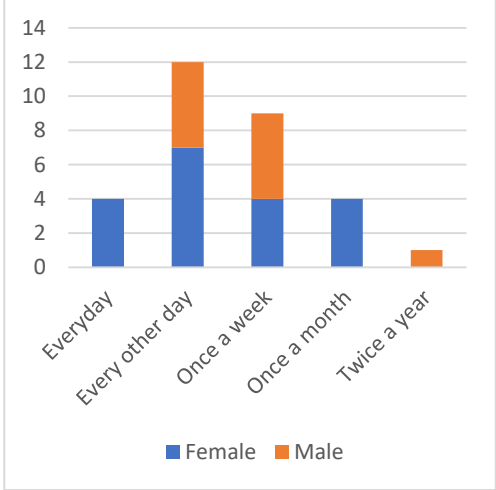

Figure 5 - Charts displaying time of visiting and frequency in relation to gender and age. a) Average visiting time in relation to age, b) Average visiting time in relation to gender, c) frequency of visiting based on age, d) frequency of visiting based in relation to gender

In figure 5a, the most visited time is again 1pm, with people from 20-39 and 40-59 being the largest groups. However, the second most visited for 20-39 is 11am, while for 40-59 it is 12pm. The average visiting time that people were observed was after 1pm, both male and female visited more at 1pm, figure 5b, but men visit far more often at 1pm than any other time, while female visiting times were more average.
The lack of 4pm data is not due to no one being observed in this period, but rather due to the lack of field trips during this time.

In terms of frequency of visitation to the R.R.Z., the most common frequency for people to visit is every other day at, 12 people.

Uses of the residential red zone and changes

Observational Data

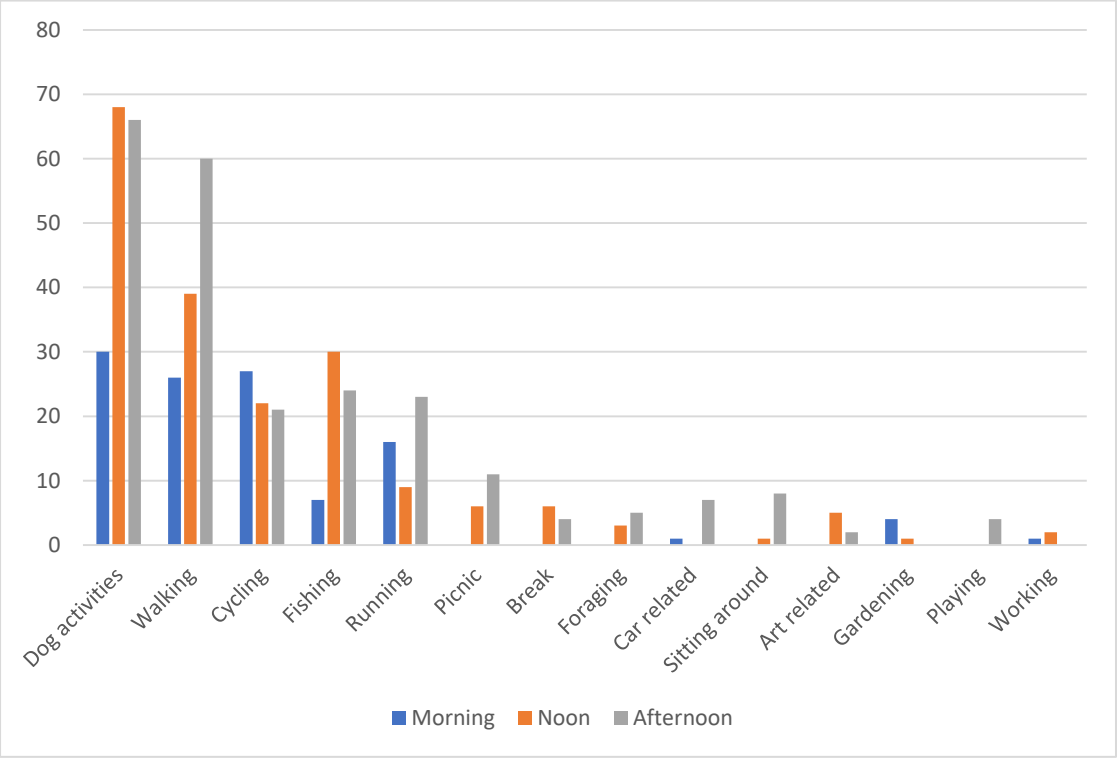

Figure 6 - Activities of the R.R.Z. compared to time of day, Morning, Noon, and Afternoon.

For comparing activities to time from the observational data, in figure 4, the time was split into three groups, morning being before 11 am, noon from 11 am to 1 pm, and afternoon is after 1 pm. This made it easier to compare the various activities that were observed in the R.R.Z.
The most common activities were those related to dogs, at a total of 164, these activities included walking/running the dog, dog school, etc. These activities were more present during noon, at 68, but closely followed by the afternoon, at 66. The second most observed activity was walking, at 125, this data set also included those who were in a wheelchair and a pram as they were accompanied by a person walking. Unlike dog-related activities walking was far more prevailing during the afternoon, at 60, while noon and morning far lower, at 39 and 26 respectively. Cycling as a total was the third most observed activity, at 70, it was more present in the morning, at 27, being only one of two activities that were so, the other being gardening. Cycling was the most average over the course of the day.

Survey Data

From the 32 responses that the survey received over the course of September, there was a mix of answers. The survey included two questions that were related to activities in the R.R.Z., these were; What entices you to visit the R.R.Z., and What are your other uses of the R.R.Z.
From these two questions, the most mentioned activities were dog related, being mentioned a total of 18 times. After this the next most responded answer to 'What entices you to visit the R.R.Z.?' was the open spaces, the followed by the peace and quiet, with one person stating, "one else here, it's peaceful" with another saying, "good for the dog, no one around".

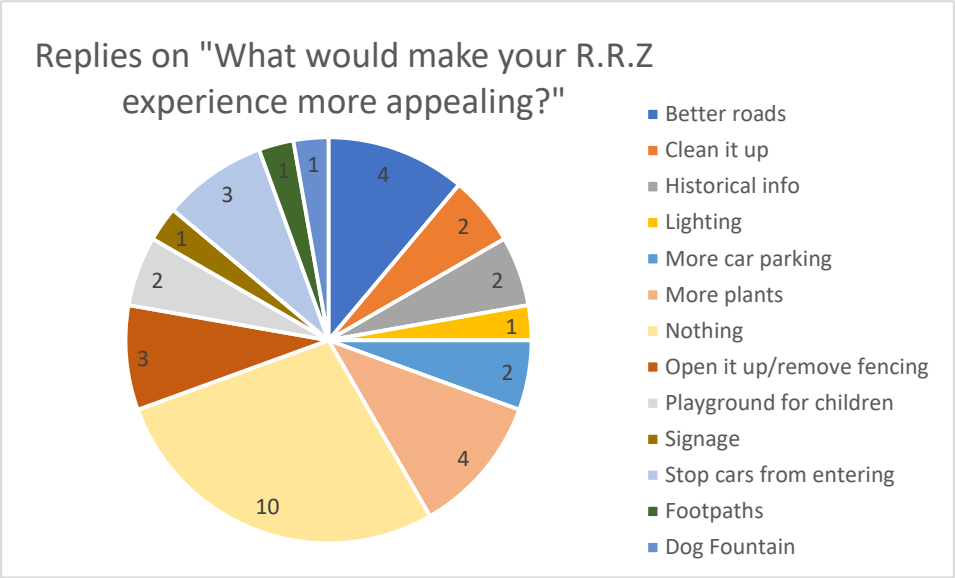

Figure 7 - Survey respondents' answers to "What would make your R.R.Z experience more appealing?"

This data, in figure 7, was compiled to show every response to the question, with a total of 36 responses, this included multiple answers from those who were surveyed. Surprisingly the most common answer to what changes could be done to the R.R.Z. was nothing, at 10 people. With the second and third answers being more plants and opening the area up, at 4 and 3 respectively.

Discussion and Analysis

From the results, the uses of the R.R.Z. suggest that physical activity is the primary use of the study areas. Public parks provide a valuable resource, particularly for nearby residents, to be active through walking, running, cycling and dog walking (Temple, Rhodes & Wharf Higgins, 2011). The results from this study have also found that the green spaces provide opportunities for families, friends and couples to spend time together through picnics, and breaks.

Visual appeal and park attributes

15 of the 32 surveyed respondents suggested that improvement on the visual appeal by planting trees, maintaining pathways, etc as a means of making their visits to the R.R.Z. more positive.

Figure 8 - Current roads at Locksley Ave

Figure 9 - Pathways at Avonside loop in need of repair

Previous studies on park attributes and features support these suggestions and that condition, accessibility, aesthetics, and safety are important park features that encourage park use (McCormack, et al, 2010) and that fixing any of these features or adding these features to a park where it is missing should be prioritised (Harnik, 2010).

As expected from the damage that the earthquakes have caused and the subsequent cost to repair these damages, road infrastructure and pathways have appeared to have been left since the earthquakes. To encourage the use of this area, it is recommended that repairs would need to be prioritised before any future works are undertaken.

Survey results found most of the responses indicated that they live in nearby or adjacent suburbs to the R.R.Z. Studies have found that proximity plays an important part in encouraging park use, especially when related to physical activity (Kaczynski, et al, 2014). From the observations conducted for this study, more than half of the users observed were doing some sort of physical activity – including walking, running, cycling, and dog-related activities. The results and evidence from previous studies suggests proximity of green space areas is a positive influence on park accessibility. The challenge for the R.R.Z green spaces is making the area accessible to members of the public who do not live in the surrounding area.

Dog walking

The most popular use of the R.R.Z. was dog-related, amounting to over 130 users observed. Many of those that were surveyed responded that they use the area to walk their dogs and commented that the open spaces make the area appealing and past studies on dog walkers in public parks have different expectations and needs compared to other park users (Iojă, Rozylowicz, Pătroescu, Niţă, & Vânau, 2011). The results from the survey suggest that those with dogs responded that they visit the R.R.Z more frequently than those without. However, further observational studies will need to be conducted to make any concluding correlation between dog walkers and frequency of visits. A study conducted by Temple, Rhodes & Wharf Higgins (2011), discussed that dog walkers would utilise large park areas to exercise or walk their dogs no matter the weather conditions whereas users without dogs were observed to only use the same park space during favourable weather and that visits from non-dog users would plummet when weather conditions deteriorated.

Limitations

A few limitations occurred while both in research and collection of data. While the limitations of the research were mentioned previously and are due to the unique situation of the R.R.Z.

The data collection limitations were due to the small group performing the data collection, consisting of only five men that had previous commitments, such as jobs and courses. This meant that the days and times available to observe and survey people were limited, and skewed towards the left, resulting in less data for the morning.

The number of people was limited to the times available for our group members, as it was a face-to-face survey. Several people asked if they could complete the survey online largely due to time constraints, if the survey was accessible online, the number of respondents would be higher. While also having the age ranges grouped into larger categories, making it easier to group people, however, it was still difficult and there could be incorrect data for the demographics from the observation.

Conclusions

Dog walking (mainly leashed, but some unleashed) and the river have been identified as the two major incentives for activity in the R.R.Z. The inner grassy areas are not used as much, however, this could be due to time of year (lots of rain causing wetland like areas), and fences making access more difficult.

In descending order, the most popular activities in the R.R.Z are Dog related activities, walking, cycling, fishing, running, picnic, breaks and foraging (figure 6). Less common but interesting uses include: vehicle-related, artistic (painting and photography), gardening and flying drones.

There were slightly more males than females recorded using the R.R.Z (figure 2b). The 20-39 age range was the most common, followed closely by 40-59, with Under 19 and over 60 being less common (figure 2d). From the surveys, the ratio of ethnicities showed a similar ratio to that of Christchurch city itself, with the primary users being New Zealand European (figure 2c). At any point in time during the day between 8am and 5pm, there is likely to be a minimum of 16 people using a specific area, providing it's not raining, and can reach over 40, peak time being 1pm (figure 5b).

Out of those surveyed, some suggestions include lighting, enhanced nature, planting usable trees, making access points through the fences into the grassy areas, repairing paths/roads, and frequent maintenance (figure 7). A reasonable number of people are satisfied with the current state of the R.R.Z. and didn't want anything changed. Approximately one-third of people surveyed used to live in the R.R.Z (figure 4).

Recommendations

Maintenance of paths, especially beside the river would be beneficial. Lighting will provide safety and visibility. Planting to enhance nature near the river will promote wildlife and lift public perceptions. Obvious access points for pedestrians through fences into grassy areas will mean more use. Planting additional usable trees in the green areas will promote community and foraging. Green areas, in general, should be maximized (Barbosa, et al., 2007), and made as accessibly as possible (Grunewald, et al., 2017). With dogs being so popular, waste bins may prove useful.

Future research

Public opinions on the future of the R.R.Z would be useful for policymakers. Knowledge of suitability of land for buildings, and how the land will be affected by disasters may help prevent future trauma. Planners may also wish to know the amount of maintenance required to keep the R.R.Z both usable and in harmony with the natural environment. Wildlife variety and abundance could also be studied.

Acknowledgements

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Appendix A

Satellite image with the Residential Red Zone displaying in green, with the central city located in the bottom left of the image.

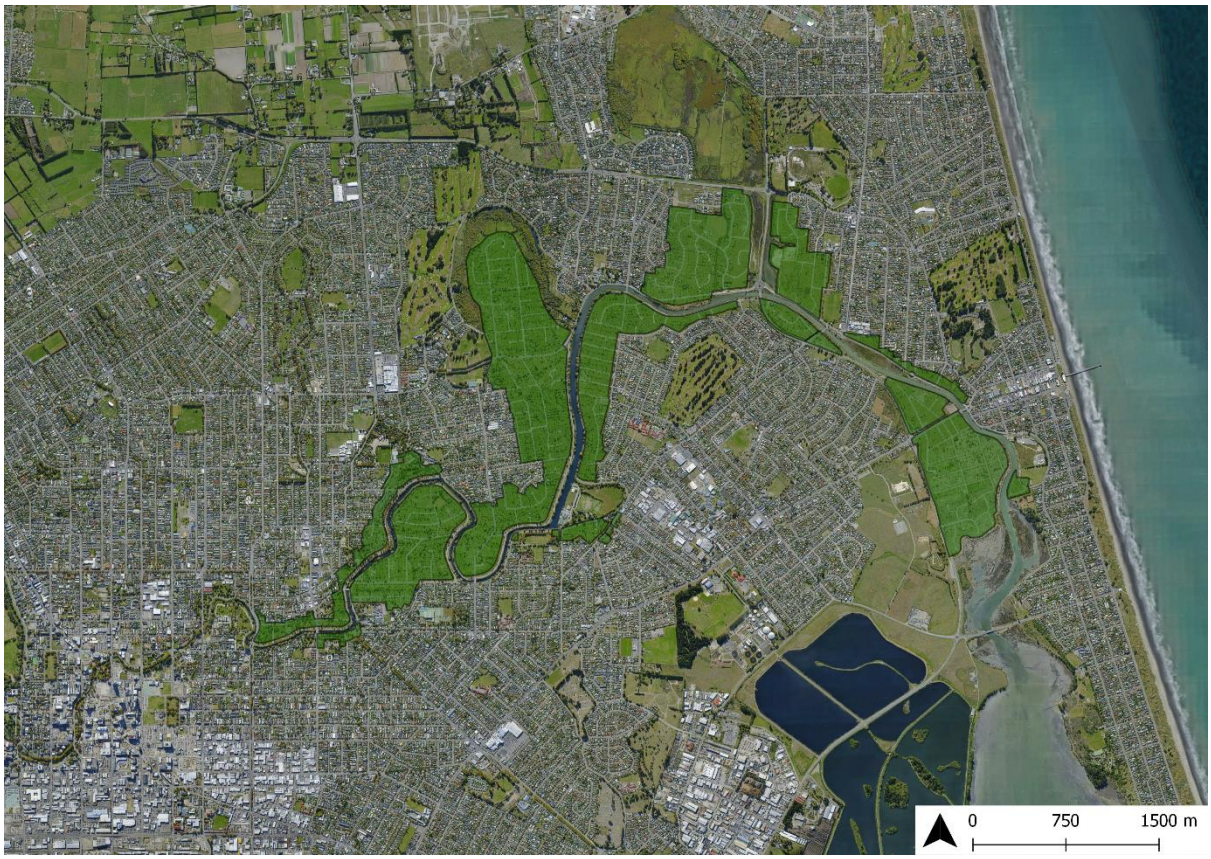

Figure A.1 - Map displaying the R.R.Z. in green

Appendix B

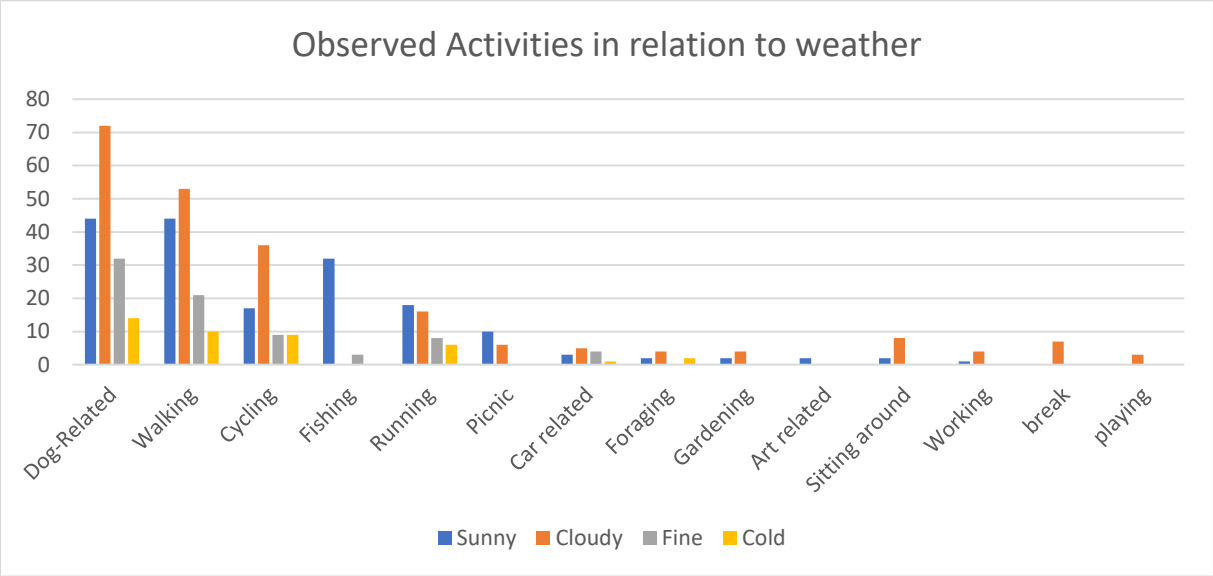

Figure A.2 - Observed activities in relation to weather

Chart showing the relation between weather and activities in the R.R.Z.