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# **Social and Ecological Benefits of Urban Green Spaces**

*-- Cultural and Religious Perspectives*

*A thesis presented in partial fulfilment of the requirements for the degree of*

*Master of Science  
in  
Conservation Biology*

*at Massey University, Albany,  
New Zealand.*

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**2025**

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## Acknowledgements

After nearly 30 years of working, I made the decision to return to academia and pursue a Master's degree in Conservation Biology. This journey has been both a significant challenge and a rewarding experience for me and my family. The past two years at Massey University have been an incredibly enriching chapter in my life.

I would like to express my deepest gratitude to Professor Weihong Ji for her invaluable guidance. The research direction and inspiration for this thesis stemmed from her insightful suggestions. My interest in urban green spaces began with a literature review during my second semester, and the focus on the perspectives of people from different cultural and religious backgrounds originated from a presentation I gave in a group discussion on the relationship between various religions and conservation biology. Professor Ji recognized the potential in this topic and encouraged me to develop it into my thesis.

I am also sincerely grateful to Professor James Dale. Following the closure of the Science Faculty at Massey University's Auckland campus, he readily accepted me as his student, allowing me to continue my research under his supervision. His guidance and critical feedback during the later stages of my thesis were instrumental in refining and completing this work.

My heartfelt thanks go to Professor Dianne Brunton, whose kindness and unwavering support provided me with strength and comfort during some of my most difficult moments.

I would also like to extend my appreciation to Dr. Maria Minor from the Graduate School, who continuously monitored my academic progress and thesis development, always providing timely and reliable assistance.

I would also like to thank my fellow students, Konrad Müller and Evi Hanninger, for their generous help in distributing my survey questionnaires, which was invaluable to my research.

Special thanks to Estella Lee, the chairperson of the Chinese Conservation Education Trust (CCET), and my friends at CCET, who not only assisted in distributing and collecting a

significant number of surveys but also provided me with many learning opportunities through environmental activities.

I am grateful to the Massey University Albany campus library, where I spent most of my study time and completed the main body of my thesis. I will always cherish the focused yet relaxed learning environment and the kindness of the staff.

Above all, I want to express my deepest appreciation to my family for their unwavering support, which allowed me to pursue my studies without hesitation. I am especially grateful to my wife, Chen Ying, who carried the weight of our responsibilities alone while working in China, making countless sacrifices to support my dream. My heartfelt thanks also go to my son, Michael, who accompanied me in this journey, faced the challenges of a new environment alongside me, and continually inspired me to move forward.

Finally, I extend my gratitude to all those who have offered their kindness and support throughout my studies and thesis writing. Your generosity has been invaluable, and I deeply appreciate it.

My Human Ethics Application Risk Assessment Form has been approved by Massey University's Research Ethics Chairs' Committee. I would like to express my gratitude for their review and approval.

# **Social and ecological benefits of urban green spaces**

## **-- Cultural and Religious Perspectives**

### **Abstract**

I investigate the multifunctional roles and benefits of urban green spaces (UGS's), highlighting their ecological, social, and cultural importance within urban environments. My comprehensive literature review examines the impact of UGS's on physical and mental health, biodiversity, cultural integration, and economic activities, while also considering the challenges of urbanization and socio-economic disparities. To get a unique dimension of this research, and to reveal variations in preferences, taboos, and usage patterns by members of a urban communities, I conducted a questionnaire survey that explored how individuals from diverse cultural and religious backgrounds perceive and utilize UGS's in Auckland region.

The findings from 115 respondents indicate that UGS significantly enhance public health, environmental quality, and social cohesion, yet their perception and utilization are deeply influenced by cultural and religious contexts. While academic literature emphasizes biodiversity and sustainability as fundamental benefits of UGS's, survey respondents also prioritized practical aspects such as cleanliness and accessibility. These insights underscore the necessity for inclusive urban planning that harmonizes both the ecological objectives and the diverse needs of urban communities.

This study also reflects on the current state and future potential of UGS in Auckland, advocating for strategies that integrate green infrastructure, community involvement, and multifunctional designs. I conclude with recommendations for culturally sensitive and sustainable approaches to UGS development, with the ultimate aim to facilitate fostering resilient and inclusive urban ecosystems.

Key words: Urban green spaces, sustainability, biodiversity, physical health, mental health, cultural integration, religious perspectives, ethnic, urban planning, ecological conservation

# Chapter One: Introduction

Urban green spaces (UGS) have gained significant importance in urban planning and development in recent years (Cilliers, 2015). These spaces, historically integral to cities, offer numerous benefits to urban life. When humans inhabited jungles and grasslands, their environments were predominantly green, highlighting the long-standing and deep relationship between humans and green spaces.

Green spaces lack a universally accepted definition, that can vary by research focus. According to (Taylor & Hochuli, 2017), broadly speaking, they include ‘bodies of water or areas of vegetation in a landscape, such as forests and wilderness areas, street trees and parks, gardens and backyards, geological formations, farmland, coastal areas and food crops’. Alternatively however, a ‘second interpretation represents *urban* vegetation, including parks, gardens, yards, urban forests and urban farms – usually relating to a vegetated variant of open space. This interpretation could be described as a subset of the overarching concept of greenspace that is confined to the urban environment and a subset of open space.’ (Taylor & Hochuli, 2017). In this review, I use the second interpretation, which focuses on urban green spaces. The concept of urban green spaces has evolved with post-industrial city growth. Initially valued for aesthetic purposes, their significance has expanded to include benefits to residents' physical and mental health, economic contributions, and environmental impacts (Atiqul Haq, Islam, Siddhanta, Ahmed, & Chowdhury, 2021) . Indeed, urban green spaces now play a critical role in sustainable urban development.

This review explores the social and ecological benefits of urban green spaces, focusing on their role in urban life. It discusses the impact on physical and mental health, biodiversity, community cultural life, and economic activities, providing a comprehensive understanding of the multifaceted value of green spaces in cities.

Despite their universal appeal, the perception and use of UGS can vary significantly based on cultural, religious, and socio-economic contexts. This study aims to explore these complexities

by integrating findings from a comprehensive literature review and a questionnaire survey. The literature provides insights into the historical development, ecological functions, and social roles of UGS, while the survey captures the perspectives of individuals from diverse cultural and religious backgrounds in the Auckland region. By juxtaposing an academic framework with real-world perceptions, this study sheds light on the nuanced interplay between UGS and their users.

## **1.1 History and types of urban green spaces**

### **1.1.1 History**

From the earliest beginnings of human civilisation, the use of urban green space has a long history. As early as 4000 years ago, during the Achaemenid dynasty, the cities of Persia had the design of urban gardens. People enjoyed the coolness of the desert in man-made green landscapes (Rostami, Lamit, Khoshnava, Rostami, & Fitry Rosley, 2015) . In Mesopotamia and Egypt, each were developing their own garden art. Subsequently, the ancient Greek gardens and Roman gardens pioneered urban green spaces in Europe. (Chkird, Kouddane, Azizi, Boukroute, & Berrichi, 2024). In the far east, Chinese urban gardens have become another style of urban green space form. Classical Chinese gardens developed, evolved, and became more and more refined and perfected in a relatively closed cultural sphere, and this approach was introduced to the West by European missionaries and traders during the Ming and Qing dynasties after influencing Japan and Korea in East Asia (周维权, 1999) .



Figure 1. Suzhou garden, China (Photograph by the author).

More recently, in Europe for example, dating to the first generation of urban park development in the 19th century, planners have deployed green spaces as answers to various cultural, political, and economic conundrums of cities (Loughran, 2020).



Figure 2 . Frogner Park, Oslo, Norway (Photograph by author)

Contrasting figures 1 and 2, we can roughly observe the differences between Eastern and Western garden art: one emphasizes an impressionistic style, focusing on rhythmic beauty, while the other is precise and symmetrical, highlighting order and geometric aesthetics.

After World War II, human urbanisation began to accelerate and the need for green space became more diverse and urgent. This evolution has been interpreted as a need to rebuild war-damaged urban environments by incorporating more green space and plant diversity into cities (Chkird et al., 2024). After the 1970s, with the growing awareness of environmental protection and the concern about climate change (Onder & Dursun, 2011), urban green space has gradually transformed from an aesthetic idea to a modern concept associated with greenness, societal benefits, environmental protection and sustainable development (Aram, 2024).

### 1.1.2 Types

Bell et al. (2007) provide a categorical framework of green spaces based on Planning and Policy Guidance Note 17 (PPG17) and further elaborations from "Green Spaces, Better Places".

“The typology finally adopted is as follows:

1. *Parks and gardens.*
2. *Natural and semi-natural spaces.*
3. *Green corridors.*
4. *Outdoor sports facilities.*
5. *Amenity green spaces.*
6. *Provision for children and young people.*
7. *Allotments, community gardens and urban farms.*
8. *Cemeteries, disused churchyards and other burial grounds.*
9. *Public space.*” (Bell, Montarzino, & Travlou, 2007)

This framework covers a wide range of green spaces, ensuring no significant types are overlooked, and it allows for detailed analysis and planning.

In other studies, water bodies and farmland are also included as part of green space (Ha, Kim, & With, 2022). This provides a very important addition because in cities, streams, lakes, beaches, and small plots of farmland on the outskirts of town are all also important components of green space.

However, some studies do differentiate bodies of water as classified by another concept: “blue space” (Smith et al., 2021) , and in many studies, blue space and green space are described separately (Nutsford, Pearson, Kingham, & Reitsma, 2016). In this thesis, I consider greenspaces as a broad concept, that includes the elements of blue space. Therefore I take water bodies as a part of green space as the object of study. Especially in a country like New Zealand, water landscapes and other green spaces are essentially inseparable. As a result my classification of greenspaces in this study includes:

1. *Parks and gardens.*
2. *Natural and semi-natural spaces.*
3. *Green corridors.*
4. *Outdoor sports facilities.*
5. *Amenity green spaces.*
6. *Provision for children and young people.*
7. *Allotments, community gardens and urban farms.*
8. *Cemeteries, disused churchyards and other burial grounds.*
9. *Public space.*
10. *Water bodies*

# Chapter two: Analysis of urban green spaces users

Abstract: This chapter examines the multifunctionality of urban green spaces (UGS) through a review of their roles in physical health, mental health, biodiversity conservation, community cultural life, and urban economic activities. I synthesize global research to analyze how UGS enhance well-being, support ecosystems, and contribute to urban sustainability. Findings reveal that UGS improve physical and mental health—particularly in disadvantaged communities—while serving as vital habitats and cultural hubs, though socio-economic and planning challenges influence their effectiveness. Economically, UGS boost property values, tourism, and productivity. The study concludes that UGS are essential for sustainable cities, but equitable access and integrated planning are needed to maximize their environmental, social, and economic benefits. UGS contribute to physical health by fostering physical activity, improving air quality, and mitigating urban heat effects; though socio-economic factors, such as income, can influence these benefits. They also enhance mental health by reducing stress and promoting social interactions, with effects more pronounced in low-income areas. UGS support biodiversity as habitats and ecological corridors, despite challenges posed by urban fragmentation. They foster cultural integration and community engagement by providing inclusive public spaces, preserving historical heritage, and supporting cultural activities like art exhibitions and festivals. Economically, UGS increase property values, attract tourism, enhance public health productivity, create jobs, and drive urban renewal and sustainable growth (F. Zhang & Qian, 2024).

This review underscores the integral role of UGS in urban life, bridging environmental, social, and economic objectives to create healthier, more cohesive, and sustainable urban environments.

Most studies acknowledge the multifunctionality of urban green spaces. In this context, multifunctionality means that on the one hand that different types of urban green space can

provide different functions, and on the other hand that the same urban green space can provide corresponding functions for different needs (Kambites & Owen, 2006).

During our evolutionary history, the survival of human beings depends on the natural environment, just like any other organism, but the rapid development of urbanisation has led more and more people to work, study and live in cities that are at the surface removed from the natural environment. In this setting, urban green space, provides an important supplement: a variety of functions and benefits to the people living in cities (Vargas-Hernández, Pallagst, & Zdunek-Wielgołaska, 2023).

A fundamental impression is that urban green spaces are often used as places for people to relax, have fun, work out outdoors, socialise and unwind. People picnic, walk their dogs, play with their children, chat with friends, or read, sit in silence, or even meditate by themselves. People visit urban green spaces because they enjoy fresh air, plenty of sunshine, eye-catching views and the opportunity to enjoy wildlife (Vargas-Hernández et al., 2023). In the following synthesis, I will review the role of green spaces from the following perspectives:

1. Impact on residents' physical health
2. Impact on residents' mental health
3. Impact on biodiversity and conservation
4. Impact on community cultural life
5. Impact on urban economic activities

## **2.1 Impact of urban green spaces on the physical health of their users**

Intuitively, we assume that urban green spaces will provide health benefits. However, scientific research in methods and data is needed to support this view. Interestingly, it is actually quite complex because there are so many variables interact.

For example, in a New Zealand study, Richardson et al. reported that green space was correlated with a reduction in cardiovascular disease, but at the same time was not associated with a reduction in obesity rates and general health (E. A. Richardson, Pearce, Mitchell, & Kingham, 2013).

There are a number of studies showing that there is a positive correlation between urban green spaces and physical activity, and that proper physical activity can reduce the risk of certain diseases (McMorris, Villeneuve, Su, & Jerrett, 2015). Some studies have hypothesised that green spaces promote physical health simply through increased physical activity, but in reality the natural environment has a beneficial effect on some health measures even after controlling for the type of activity (Bowler, Buyung-Ali, Knight, & Pullin, 2010).

There is also research that argues that urban green spaces can reduce the heat island effect, mitigate air pollution, and reduce noise pollution, all of which also have a positive impact on human health (A. C. K. Lee, Jordan, & Horsley, 2015).

However, one hidden factor that should be taken into account is that the positive correlation between the degree of association with green spaces and house prices can be a condition that interferes with this study. Some studies have shown that the closer you are to green spaces, the higher house prices will be. In Warsaw, according to the model, the sales price of flats in newly built residential buildings close to the city's green spaces (at a distance of less than 100 metres) increased by 8.0-8.6 per cent (Trojanek, Gluszak, & Tanas, 2018). Similarly, in Castellón, Spain, house prices are inversely related to the distance to the city's green spaces, meaning that the closer the distance, the higher the price (Morancho, 2003).

In studies in the United States, household income and the median income of people living in neighbourhoods were strongly associated with the risk of death, that is, mortality rates decrease as income increases (Sorlie, Backlund, & Keller, 1995). In other studies, this correlation was found to be more pronounced in low-income groups, while it slowly weakened as income increased, i.e., the relationship was curvilinear (Ecob & Smith, 1999).

Combining these two areas of research, we may need to note that the confounding condition of income status needs to be considered when examining the relationship between green space and health. This is because homes in cities that are closer to urban green spaces, or, in other words, enjoy better green spaces, tend to have a higher price premium, which means that their residents tend to have better incomes. Whether their high health indicators are a result of green space or higher incomes, or both, needs to be analysed in more detail.

This issue has also been noted by some researchers, who have excluded income as a confounding factor in their studies and have found that the quantity and quality of urban greenspace is positively correlated with small-area life expectancy (LE)( the average life expectancy of the population within a specific neighbourhood or local community) and healthy life expectancy (HLE) in The Netherlands, and that this is independent of distance from the greenspace (Jonker, Van Lenthe, Donkers, Mackenbach, & Burdorf, 2014).

And another study showed that in Scotland, the positive impact of urban green spaces on people's health was even more pronounced in some low-income areas (Ward Thompson, Aspinall, Roe, Robertson, & Miller, 2016). The reason for this is that the improved socialisation of people in green spaces reduces their stress levels, while the provision of space for physical activity promotes overall health.

There have also been more controlled studies that have explored the impact of green space on health by considering the relationship between post-operative recovery and green landscapes, which also excludes many confounding terms. One study, for example, explored whether natural landscapes outside ward windows contributed to patients' recovery by looking at records of recovery after cholecystectomies performed between 1972 and 1981 in a suburban Pennsylvania hospital. The results showed that patients in wards with natural views outside their windows had shorter postoperative stays, fewer negative comments in nurses' notes, and less frequent use of strong painkillers than those in wards with windows facing a brick wall (Ulrich, 1984). A study in Taiwan of 296 women who had caesarean sections showed that patients in wards with high satisfaction with window views used fewer pain medications, had

lower overall pain perception and pain severity, and had less disruption of their lives from pain (Wang, Kuo, & Anthony, 2019).

Regarding the mechanism of the positive correlation between green space and human health, in addition to the physical and chemical effects of improving air quality, reducing the heat island effect, and reducing noise, which were mentioned earlier, there are also some studies that have found the effects of biodiversity on human health. There are three main hypotheses about the effects of biodiversity on human health: the ‘biophilia hypothesis’, the ‘biodiversity hypothesis’ and the ‘dilution effect hypothesis’. The ‘biophilia hypothesis’ involves psychological aspects, which we will not discuss for the time being. The biodiversity hypothesis, on the other hand, focuses on the benefits of microbiome diversity for the population, that is, exposure to biodiversity may improve the immune system by modulating the species composition of the human microbiome. The ‘dilution effect hypothesis’, on the other hand, suggests that pathogens are diluted when vertebrate populations are abundant, thus reducing the chance of human infection (Aerts, Honnay, & Van Nieuwenhuysse, 2018).

The somewhat contradictory findings presented above indicate that wealth may act as a latent confounding variable in the investigation of the relationship between greenspace accessibility and population health. It can be seen that although the vast majority of studies have demonstrated the positive correlation between green space and human physical health, research on the mechanism of the impact of green space on human physical health, because it involves very complex conditions, the various hypotheses have yet to be verified by more experimental data, and it may take a long period of sustained research to come up with conclusions which are closer to the real ones.

## **2.2 Impact of urban green spaces on the mental health of residents**

In our literature review of the impact of urban green spaces on physical health, a lot of it has actually already touched on the impact on mental health, because improved mental health significantly improves physical health (Edwards & Cooper, 1988). Human proximity to nature seems to be a natural emotion, and it has also been suggested that this is a function retained in

human evolution (P. M. Blaschke, 2013), i.e., for people experiencing acute stress, exposure to nature can very quickly evoke positive emotions, which in turn block negative thoughts and feelings (Hartig, Mitchell, De Vries, & Frumkin, 2014).

One problem with studying mental health is that psychological well-being is not a value that can be objectively measured, but often requires a subjective assessment of the psychological condition of the person receiving the assessment. Some studies have used questionnaires to allow respondents to self-assess, which is then quantified into a numerical value (M. Van den Berg et al., 2016).

A long-term study of elderly people in the Netherlands showed a correlation between proximity to urban green spaces and mental health scores, meaning that the closer the proximity to a green space, the higher the mental health score (Noordzij, Beenackers, Groeniger, & Van Lenthe, 2020).

In a larger New Zealand study, the relationship between access to urban green space and the number of treatments for anxiety/mood disorders among Auckland residents (aged 15 years and over) was analysed using GIS technology. The proportion of total and available green space within 3 kilometres of the home, and the distance to the nearest available green space, suggest that increasing access to green space has a protective effect on the number of treatments for anxiety/mood disorders. This suggests that the mental health benefits of green space may be related to active participation in available green space near the home and observable green space in community settings (Nutsford, Pearson, & Kingham, 2013). This is one of the ways in which mental health research can be conducted, i.e. by replacing individual quantitative indicators with group-based data, which is relatively free from the interference of subjective factors.

The correlation between green space and mental health was further confirmed in a longitudinal study, where a longitudinal fixed-effects two-period difference regression showed that changes in individuals' perceptions of the amount of green space over a two-year period were positively associated with mental health. All associations remained significant after controlling for age,

gender, household income, education, occupation and neighbourhood disadvantage (Cleary et al., 2019).

In these studies above, people's use of green space is often passive. In contrast, some studies have found that people actively travel to green spaces when they are feeling increased psychological pressure on themselves. The fact that some groups of people who feel more stress are more likely to go to green spaces that are further away from their homes to relax (A. E. Van den Berg, Maas, Verheij, & Groenewegen, 2010) may also explain why some of the studies that have been done on the relationship between psychological stress and the accessibility of green spaces have failed to get very good linear correlation data.

Research in recent years has increasingly shown that neither physical nor mental health exists in isolation, but rather are causative of each other and closely intertwined (Bambling, 2006). Therefore, perhaps 'physical and mental health' is a more commonly used term in the future as we explore the relationship with green spaces.

## **2.3 Impact of urban green spaces on biological conservation and biodiversity.**

As urbanisation accelerates, the natural environment becomes increasingly fragmented and biological habitats become highly fragmented, the importance of urban green spaces for biodiversity conservation is becoming increasingly evident (Goddard, Dougill, & Benton, 2010). In many countries, cities are like reinforced concrete forests with small and scattered green spaces. How to maximise green space in limited space and how to connect these habitats is a challenge for urban planners and managers (Lepczyk et al., 2017).

In some highly urbanised countries such as the UK, studies have shown that home gardens are an important part of urban green spaces. Some 23 per cent of urban areas are covered by gardens in the UK (Evans, Newson, & Gaston, 2009). In New Zealand, the proportion of green space is somewhat higher, even reaching 65 per cent in the capital, Wellington. This compares with a

national average of 42 per cent of green space in cities (E. Richardson, Pearce, Mitchell, Day, & Kingham, 2010).

The urbanisation of human societies is changing the distribution of biodiversity, as urban land area is expected to triple between 2000 and 2030 (McDonald et al., 2020). Several studies have shown that urbanisation has increased habitat fragmentation and biodiversity loss (Aronson et al., 2014). Yet other studies have shown that, in some cases, urban centres support more species than natural reference systems, including endangered and threatened species (Aronson et al., 2014). The reason for this situation is that urban green spaces act as habitats and links to natural habitats (La Sorte, Aronson, Lepczyk, & Horton, 2020). Urban green spaces (UGS) have been a key strategy for conservation, providing habitat for wildlife, including bird communities (Rogers, 2022).

We can discuss the role of urban greenspaces for biodiversity in two ways,

### **2.3.1 Urban greenspaces as habitats for organisms.**

Urban green spaces provide supportive habitats for biodiversity (Jose, Karina, & Patricia, 2018). This is particularly important for species that have been encroached upon in their natural habitat. Of course, both the type of urban green space and the size of the patches have a direct impact on the variety and number of species (Lepczyk et al., 2017). Common sense suggests that the larger the green space, the better the support for biodiversity must be, but urban green spaces tend to be small, dispersed, and isolated (Lepczyk et al., 2017), so some studies have attempted to discuss thresholds for green space patch size for species support, with some suggesting that 10-35 hectares of contiguous green space is needed to support most urbanised species (Fernandez-Juricic & Jokimäki, 2001). While most urban green spaces do not reach this size, modelling studies have shown that even increasing the number of small patches of green space will have a positive effect on the enrichment of bird populations (Strohbach, Lerman, & Warren, 2013). The type of patch, on the other hand, has different effects on different species. Coyotes (*Canis latrans*), for example, can survive very well on golf courses, There is also a lot of wildlife that prefers to roost in cemeteries, including city parks and other urban green spaces

that can provide habitat for wildlife (Gallo, Fidino, Lehrer, & Magle, 2017). A study conducted in my hometown of Hefei showed that urban green spaces provide a very diverse choice of habitats for butterflies. After comparing various green space types, the researchers found that parks provided a more suitable habitat for butterflies than road and residential green spaces, as parks had a higher diversity of plants and a higher percentage of vegetation cover than other green space types (Zeng et al., 2024).

While urbanisation is seen in traditional ecology as an erosion and destruction of nature, in recent years some researchers have found that ecosystems are striking a new balance around the emerging surface form of cities. A survey of the ancient city walls of Nanjing, China, found 93 species of plants belonging to 84 genera and 50 families on the surface of this man-made urban object, demonstrating the extent of its biodiversity (Miao et al., 2023). In other words, urbanisation itself may bring about new ecological relationships as a result of the interaction between human activities and ecology.

### **2.3.2 Urban greenspaces as bridges between different fragmented natural habitats.**

It is undeniable that urbanisation must have caused the fragmentation of biological habitats.

From one point of view, fragmented habitats themselves can serve as a springboard for some wildlife to migrate, such as birds or butterflies (Sneep et al., 2006), but habitat fragmentation leads to segregation of urban greenspaces, increased mortality due to collisions between vehicles and wildlife, increased exposure to toxins and poisons, exposure to disease and competition with introduced species. Humans have begun to pay attention to this problem when cities are built and artificially construct ecological corridors that connect individual green spaces to natural habitats and serve as corridors for wildlife migration (Kowarik, 2011).

It is quite difficult to build biological corridors in already existing urban areas without prior planning. Firstly, the creation of urban green spaces was originally intended to serve the urban population, which is not entirely compatible with the aim of conserving biodiversity (Turo &

Gardiner, 2020). Secondly, in the complex structure of human societies, the establishment of trans-regional biological corridors often requires the co-ordination of different stakeholder groups to reach a consensus, which is increasingly difficult in today's cities (Gavin et al., 2018).

There are examples of successful biological corridors, such as the wildlife corridors in the greater Los Angeles area, where the idea is to conserve urban wildlife corridors through research, land acquisition, co-operation, restoration and management, as well as advocacy and education (Zellmer & Goto, 2022).

The special case of New Zealand should be particularly mentioned here because of the uniqueness of its native species. When designing and constructing wildlife corridors, it is necessary to take into account the different habits of native (non-mammalian) and invasive (mainly mammalian) species, so as to effectively differentiate between their different paths and control them effectively (Morse, 2022).

We should also note that with urbanisation, many wild animals inhabiting cities undergo corresponding adaptive changes in their behavioural patterns. For example, studies have shown that urban lizards become more adventurous and increase their risk-taking behaviour (Lapiedra, Chejanovski, & Kolbe, 2017). Other studies have found that spiders have adapted their webbing behaviour in urban areas, for example, by making their webs taller and their mesh widths smaller (Dahirel, Dierick, De Cock, & Bonte, 2017). It is undeniable that urbanisation, with its combination of green spaces and buildings, is changing the evolutionary direction of many wildlife species.

Urban green spaces are, ultimately, a compensatory measure for human encroachment on natural habitats to establish cities. Their patchy existence gives organisms, including animals, plants and micro-organisms, space to live in the concrete surroundings of the city, and gives humans living in the city the opportunity to access and enjoy nature (Sadler, Bates, Hale, & James, 2010).

## **2.4 Impact of urban green spaces on cultural life in cities**

The function of urban green spaces in serving the community to promote community communication and cultural integration has also been mentioned in some reports on the impact of urban green spaces on mental health, which is also an aspect that has a positive effect on mental health. Firstly, urban green spaces provide public spaces that can be shared by residents, where people engage in a variety of activities such as recreation and sports, increasing opportunities for people to meet and interact (Jennings, Larson, & Yun, 2016). A survey conducted in Adelaide, Australia, showed that green spaces have a significant effect on increasing community cohesion (Sugiyama, Leslie, Giles-Corti, & Owen, 2008). As a student from China, I came to New Zealand and the big difference I felt was that people here live quite spread out. If you know that just one Tiantongyuan residential community in Beijing can have half a million permanent residents, you can understand how I feel. Therefore, in New Zealand, I have observed that people socialise more through public green spaces, which serve as a link to the community. In densely populated urban areas in New Zealand, the municipal authorities will also set aside sufficient space to supply urban green spaces to increase the opportunities for the public to have access to green spaces (P. Blaschke et al., 2019).

The impact of urban green spaces on communities can be categorised as follows:

### **2.4.1 Historical and Cultural Heritage Preservation:**

Urban green spaces can play a role in the preservation and presentation of historical and cultural heritage. For example, many urban parks in Uzbekistan and China contain historical monuments, sculptures, and other cultural icons, and through these elements, green spaces become important places for cultural education (Ahn & Juraev, 2023; Yang, Qiu, & Fu, 2021). In my hometown, many of the parks are related to historical sites, for example, the many ruins of the Three Kingdoms period in China can be found in the Xiaoyaojin Park and the Three Kingdoms Ruins Park. While visiting these green spaces, people can also look for traces of history and gain a better understanding of the city.

## 2.4.2 Diversity and Inclusion:

Green spaces serve as venues where people from diverse cultural backgrounds can gather, organize multicultural events, and foster cross-cultural exchanges. A study in the Netherlands demonstrated that urban green spaces facilitate contact between individuals of varying incomes and backgrounds (De Haas, Hassink, & Stuver, 2021). A Swiss study shows that green spaces can be a place for local and immigrant youth to interact and make friends (Seeland, Dübendorfer, & Hansmann, 2009).

In New Zealand, the significance of UGS is particularly pronounced due to the country's diverse immigrant population. First and second-generation immigrants, representing a wide array of cultural and religious backgrounds, often use urban green spaces as social venues. This interaction within green spaces is crucial for promoting diversity and inclusion, as it provides a neutral ground for different communities to engage and integrate (Lovelock, Lovelock, Jellum, & Thompson, 2023).

Additionally, studies from other parts of the world have demonstrated similar trends. For example, in the United States, urban parks and green spaces have been shown to play a vital role in enhancing social cohesion among ethnically diverse communities. They provide a platform for community events, sports, and other recreational activities that encourage interaction and understanding among different cultural groups (Sister, Wolch, & Wilson, 2010). In Australia, urban green spaces have been found to support the social inclusion of refugees and asylum seekers, helping them to build social networks and integrate into their new communities (Rishbeth & Finney, 2006).

Moreover, the design and management of green spaces significantly influence their inclusiveness. Inclusive design practices that address the needs of diverse user groups—such as children, the elderly, and individuals with disabilities—can improve the accessibility and usability of these spaces. Furthermore, programs and policies encouraging community participation in planning and maintaining green spaces ensure that they cater to the

community's diverse needs. This approach also fosters a sense of ownership and belonging among all users (Rigolon, 2016)

### **2.4.3 Environmental Education:**

Urban green spaces (UGS) play a crucial role in environmental education, serving as dynamic venues for environmental protection activities, natural science education, and eco-tourism. These spaces not only enhance public environmental awareness but also improve cultural literacy and foster a deeper connection with nature.

Urban green spaces serve as open-air classrooms for natural science education. Schools and educational institutions frequently utilize these areas for outdoor learning experiences that complement traditional classroom teaching. Lessons conducted in green spaces can cover a wide range of topics, from botany and ecology to climate science and environmental ethics. A study in the UK demonstrated that students who participated in outdoor learning activities in urban green spaces showed improved understanding of ecological concepts and increased interest in science subjects (Dillon et al., 2016).

New Zealand is uniquely placed to educate about the outdoor environment. Regional parks, reserves, small forests and bodies of water scattered throughout the city are excellent places to educate people about the environment.

Eco-tourism is another important aspect of environmental education facilitated by UGS. Eco-tourism activities, such as guided nature walks, bird watching, and wildlife tours, provide opportunities for the public to learn about local flora and fauna and the importance of biodiversity. These activities not only educate participants about the natural environment but also generate economic benefits for the community, supporting the conservation and maintenance of green spaces. In Costa Rica, for example, eco-tourism in urban green spaces has been instrumental in raising awareness about biodiversity conservation and generating funding for environmental protection initiatives (Weaver, 1999).

#### **2.4.4 Artistic and Creative Spaces:**

Urban Green Spaces are increasingly recognised as important platforms for artistic and creative expression. These spaces provide unique venues for art exhibitions, concerts, theatre performances and other cultural activities that enrich the cultural life of the community and stimulate public interest in the arts.

Concerts and festivals are often held in urban green spaces, providing venues for live music performances that cater to a variety of audiences. These music events enhance the cultural vibrancy of the city and provide residents and visitors with the opportunity to enjoy performances in a relaxed outdoor environment (Mckay, 2011). Fine art exhibitions are also sometimes held in urban green spaces, such as the Sculpture by the Sea exhibition in Sydney, Australia, which transforms a coastal green space into a huge open-air gallery that attracts thousands of visitors each year and promotes the development of local and international artists. These exhibitions not only provide a unique platform for artists to display their work, but also allow the public to appreciate and interact with art in an unconventional setting (Maxwell & Ellison, 2020).

Theatre performances in green spaces are another way in which city parks contribute to the cultural life of the community. For example, Zhang Yimou's Impression of West Lake and other live-action opera and dance theatre provide audiences with a superb visual and auditory experience. This form not only diversifies access to the arts, but also enhances the audience's audio-visual experience by using the natural landscape as a dynamic backdrop (D. Zhang, 2010).

#### **2.4.5 Community Engagement and Planning:**

Community involvement in the planning and maintenance of urban green spaces (UGS) is crucial for fostering community cohesion and ensuring that these spaces meet the actual needs and cultural characteristics of the community. Engaging residents in these processes not only empowers communities but also leads to more sustainable and well-utilized green spaces.

An important aspect of community involvement in UGS is participatory planning. This approach involves residents in the decision-making process regarding the design, development and use of green spaces. Participatory planning can take many forms, including public consultations, workshops, and community meetings in which residents can express their preferences and concerns. For example, in Chicago, the participatory planning process for the Bloomingdale Trail involved extensive community input to transform the disused railway line into a vibrant green space that serves the local community (Lindsey, Maraj, & Kuan, 2001).

Community maintenance of green spaces is another vital aspect of resident involvement. When communities take part in the upkeep of these areas, it fosters a sense of ownership and responsibility. This can be achieved through volunteer programs, community gardening initiatives, and local stewardship groups. For instance, the Friends of the Public Garden in Boston is a volunteer organization that partners with the city to maintain and enhance the Boston Public Garden, demonstrating how community involvement can lead to the preservation and improvement of urban green spaces (Hou & Rios, 2003).

In addition, involving communities in these processes can ensure that green spaces are culturally relevant. For example, in multicultural cities, incorporating elements that reflect the cultural heritage of different groups can make these spaces more inclusive. This may include planting native species, creating spaces for cultural festivals or installing artefacts that reflect the diversity of the community. At Hamilton Gardens in New Zealand, gardens from around the world are located next to each other on the same piece of land, creating a space with multicultural significance (Sergel, 2001).

Overall, urban parks and other public spaces can contribute to social cohesion if they facilitate social contact, communication, collective work, community building, empowerment, social networking and mutual trust (Abraham, Sommerhalder, & Abel, 2010). And cultural services provided by urban green spaces can be related to social and community contexts through factors such as social cohesion and civic engagement. (Jennings et al., 2016)

## **2.5 Research of the impact of urban green spaces on urban economic activities.**

Urban green spaces (UGS) play an important role in influencing various aspects of economic activity in cities. Their impacts can be broadly related to property values and property markets, tourism and local businesses, public health and productivity, and job creation and economic development.

### **2.5.1 Property Values and Real Estate Markets**

The positive impact of urban green spaces on property values is clear. Proximity to parks, gardens and other green spaces can significantly increase the attractiveness of both residential and commercial properties, resulting in higher property values and increased property market activity (Trojanek et al., 2018). Studies have shown that homes near urban parks command a premium of up to 20 per cent compared to similar properties further away (Crompton, 2001). This increase in property values benefits homeowners and may lead to increased property tax revenues for local governments, which in turn can benefit area residents in a variety of ways, including infrastructure development, health, culture and education.

### **2.5.2 Tourism and Local Businesses**

Urban green spaces attract visitors and tourists, boosting the local economy by increasing the income of nearby businesses. Parks, botanical gardens and nature reserves are often major attractions, drawing both domestic and international tourists. For example, New York City's Central Park is not only an important green space for residents, but also a major tourist destination, contributing significantly to the city's tourism revenue. New Zealand's many urban green spaces also provide an economic boost to local businesses, including restaurants, cafes and retail outlets, thereby creating jobs and economic growth for the region (Pearce, 2015).

### **2.5.3 Public Health and Productivity**

The presence of urban green spaces contributes to improved public health, which increases productivity and reduces healthcare costs. Access to parks and recreational areas encourages physical activity and reduces the incidence of chronic diseases such as obesity, diabetes and cardiovascular disease (A. C. Lee & Maheswaran, 2011). Healthier populations are typically more productive, have higher job performance, and lower healthcare costs. In addition, the mental health benefits of green spaces, such as reduced stress and improved mood, further contribute to a more productive workforce. Significant economic savings can be realised through reduced healthcare costs and increased productivity, benefiting individuals and society as a whole.

### **2.5.4 Job Creation and Economic Development**

The development and maintenance of urban green spaces creates jobs and stimulates economic development. This includes jobs in landscaping, park management, environmental education and tourism services. Investment in green infrastructure projects can also stimulate economic development by attracting new businesses and encouraging urban renewal. For example, Tiritiri Matangi Island in Auckland has transformed a deserted island through ecological restoration, eliminating invasive species to form a model island for ecological restoration with a focus on native birds, which has attracted people from around the world to the site for eco-tourism and eco-education, providing a positive boost to the local economy (Galbraith & Cooper, 2013).

# **Chapter Three: Perceptions of green space by people from different cultural and religious backgrounds**

## **Introduction**

Research on urban green space has been done in many countries and regions, but the definition, design and utilisation of green space is much more complex in multi-ethnic and multi-faith immigrant countries than in mono-ethnic or mono-faith countries.

A typical example is that in most Christian countries, cemeteries are an important part of urban green space, and many homes are adjacent to cemeteries (Evensen, Nordh, & Skår, 2017), but in East Asian cultures, the proximity of cemeteries is a disadvantage to homes, and can even have a serious impact on property prices (Tse & Love, 2000).

A literature search revealed that there are very few studies discussing the perception and utilisation of green space by people from different religious and cultural backgrounds.

Therefore, in a diversified immigrant country, the differences in the understanding and use of urban green space by people of different ethnic groups and faiths are also important references for urban planning and construction.

To study real-world perspectives on urban green spaces, we conducted a questionnaire survey on how people from different cultural and religious backgrounds perceive and utilise urban green space, and compared the similarities and differences between people from different cultural and religious backgrounds on this issue.

### **3.1 Methods**

I liked to utilise a questionnaire to conduct a relevant study, as this is a better way to conduct an opinion research using statistics. This is also inspired by another study conducted in Turkey, which is called Cultural Differences in Attitudes towards Urban Parks and Green Spaces (Özgüner, 2011), which statistically examined people's views on urban parks and green spaces in the context of Turkey's culture and religion through a questionnaire survey.

The questionnaire was designed to address New Zealand's unique cultural background and its multi-ethnic and multi-religious background. The purpose of the survey is to obtain as much information as possible about the perceptions, usage and concerns of different groups of people about urban green spaces, in order to outline the opportunities and challenges of urban green spaces in a culturally diverse immigrant country.

The questionnaire was ultimately in the form of an online completed questionnaire. Microsoft Form, a free tool, was used to distribute the questionnaire link through social media, email, etc. The survey began in September 2024 and lasted for over two months, concluding in November. Finally, 115 valid questionnaires were received. The number of questionnaires returned was already better than expected for an individual surveyor, given that there was no official promotion or financial support, but mainly relied on the promotion of contacts and social circles. Although the questionnaire was distributed widely, the responses showed a noticeable bias toward Asian participants, particularly those of Chinese background. This may be attributed to the influence of the survey distributor, as some individuals from other ethnic groups, who were less familiar with the distributor, did not provide valid feedback.

### **3.2 Questionnaire design**

The questionnaire was designed with mostly multiple-choice questions, which makes it easier to count the data, speeds up the completion of the questionnaire, and is more conducive to statistical data. At the end of the questionnaire, there are also open-ended questions so that

respondents can write down their thoughts without any word limit. (The full questionnaire can be found in the appendix)

### 3.3 Data Collection

I edited and published the questionnaire in Microsoft Forms to make it easy for people to answer the questionnaire online and to download the survey data as an XLSX file and analyse the statistics.

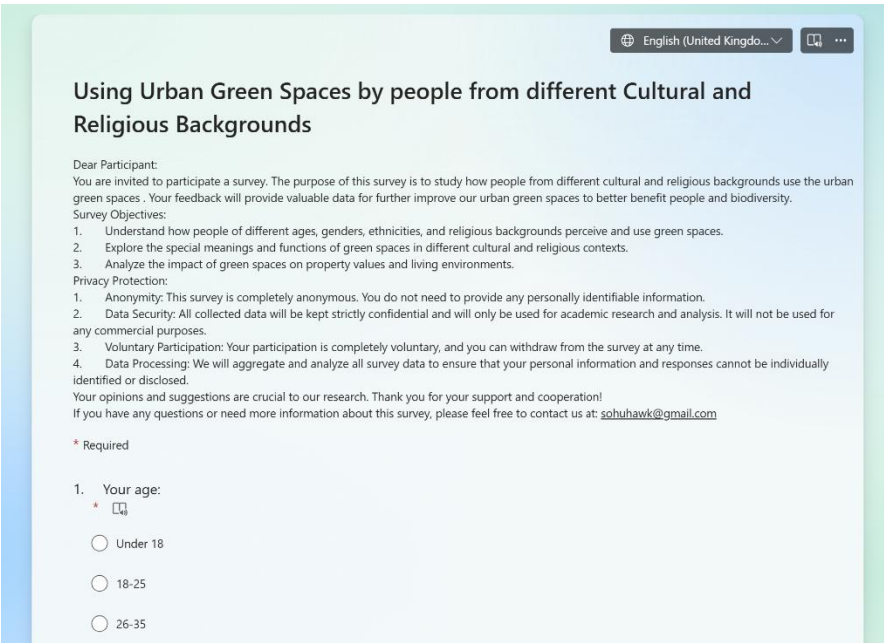


Figure.3. Web form of the questionnaire

### 3.4 Results:

#### Methods of analysis :

This questionnaire was statistically analysed using XLSX files generated by Microsoft Forms. Because of the design of the questionnaire, most of the statistics were relatively simple, with only certain questions that combined ethnic and religious backgrounds in a more complex cross-matching of data. And for open-ended questions, since there is no uniform standard answer, I

use word cloud to count the word frequency of keywords in the statement so as to find out the pattern.( Heatmaps and word clouds can be efficiently generated using online tools as WordArt.com that support direct import of Excel data.)

### 3.4.1 Part One: Basic Information

The questionnaire was released and 115 valid responses were received. Their ethnic distribution is shown in the figure below:

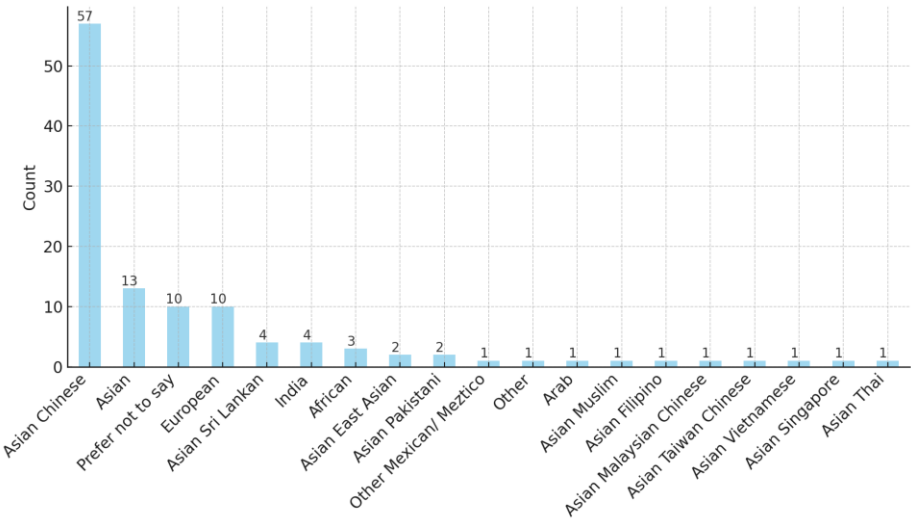


Figure. 5. Distribution of Ethnicities among 115 Respondents

The questionnaire was released and 115 valid responses were received. Their ethnic distribution is shown in the chart below: as can be seen from the chart, 57 of the 115 questionnaires were from the largest group of Asians, Chinese, while others, including Europeans and Asians of other ethnic origins, accounted for the majority of the population, while Afro-descendants, Mexicans, etc., had a sporadic distribution. It has to be said that this has a strong correlation with the questionnaire publisher's own social circle, and it is rare to be able to collect such a wide range of ethnic backgrounds without official publication and financial support.

The age distribution of the respondent group is shown in the figure below:

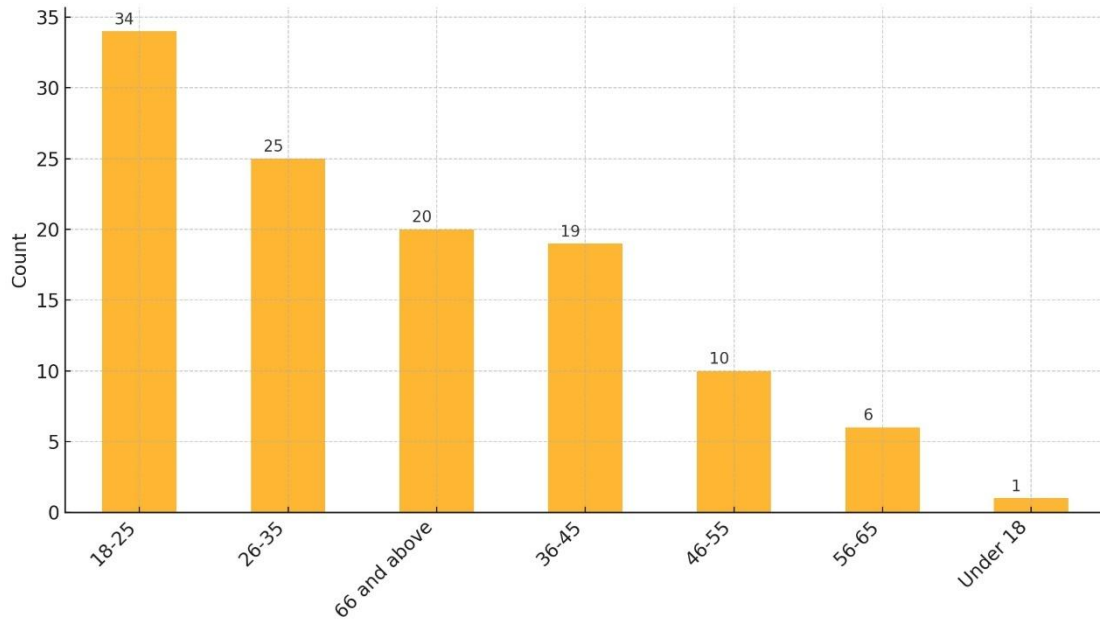


Figure. 6. Distribution of Age among 115 Respondents

The age distribution shows that 89 young and middle-aged people under the age of 55, accounting for 77.4 per cent of the total number of respondents, are the majority of the respondent group.

In terms of gender distribution, it is more or less equal.

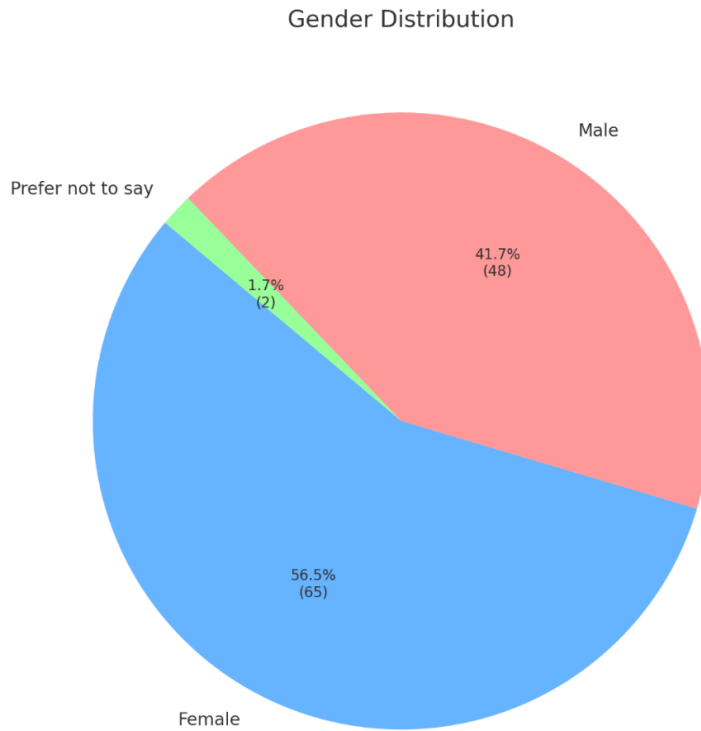


Figure. 7. Distribution of Gender among 115 Respondents

In terms of religious beliefs, the distribution is characterised by diversity. Of course, the largest single group of people still belongs to the irreligious group or, rather, considers itself to belong to the irreligious group.

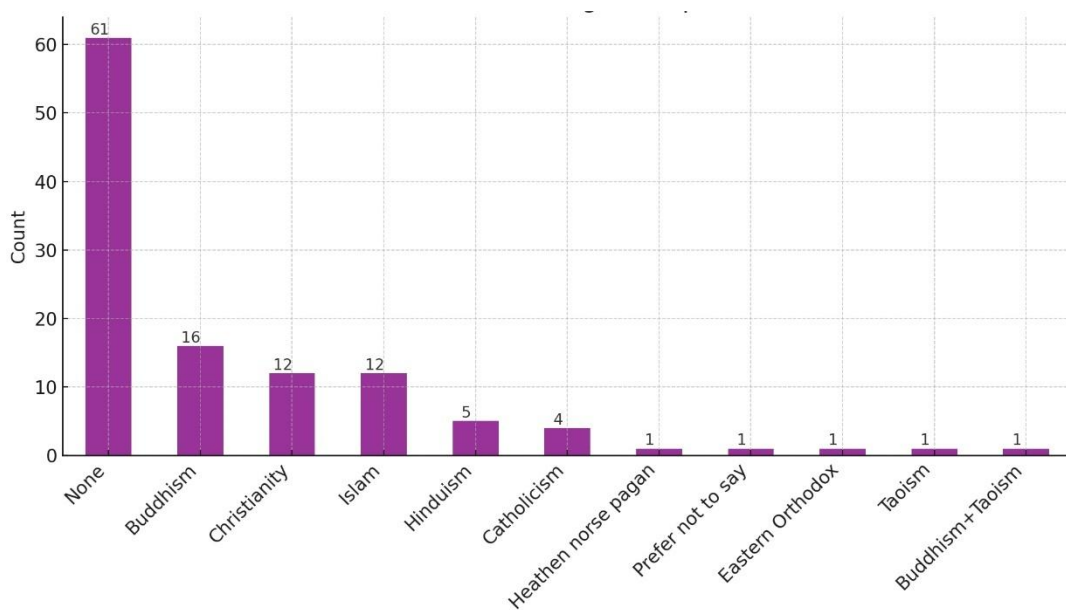


Figure. 8. Distribution of Religious Affiliations

Statistically, 67.8 per cent of the Chinese chose to have no religion, slightly higher than other ethnic groups. Many Chinese consider themselves to be non-religious, but in their daily activities, many folkways are inextricably linked to religion, such as ancestor worship and other festivals (楊國柱 & 吳金奇, 2021). It is actually important for me to discuss this point here, that is, religion often influences our daily choices in forms that we are not aware of.

The distribution of educational level among the population in this survey is shown in the figure below:

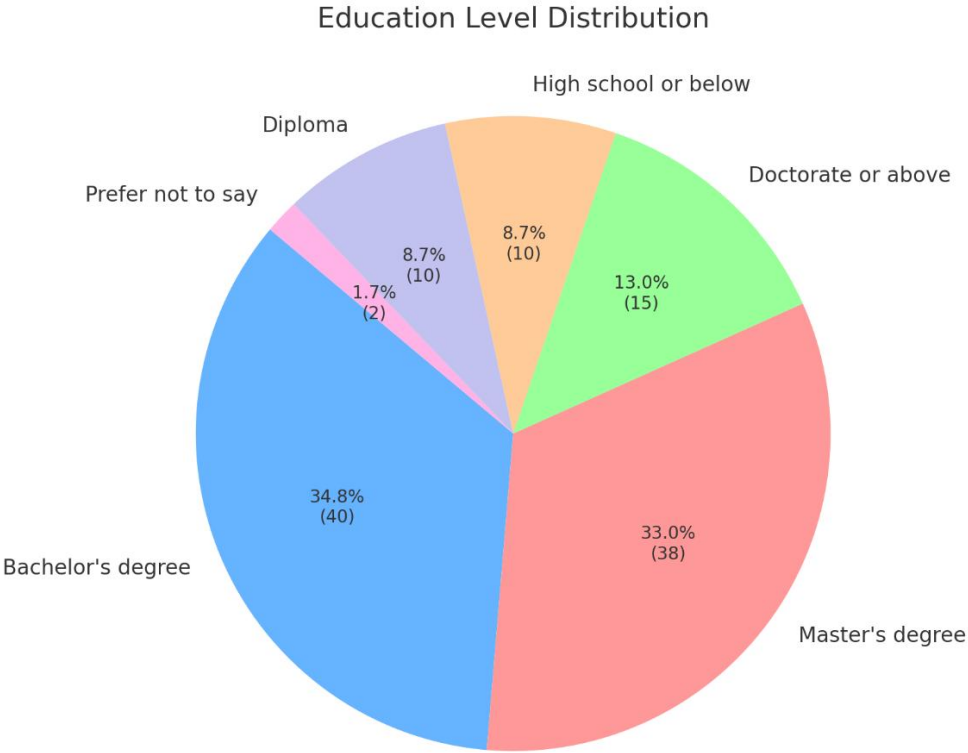


Figure. 9. Distribution of Educational Level among 115 Respondents

Regarding the education of the respondents of this survey, it can be seen that those with a bachelor's degree or higher occupy 80.9%, which is significantly higher than the average level of the society, which is related to the fact that the respondents of the survey mainly come from the social range of the author.

### 3.4.2 Part Two: Understanding of Green Spaces

In terms of the conceptual identification of Urban Greenspaces, multiple options were provided to give respondents the freedom to choose the type of Urban Greenspaces they felt they belonged to. We used a bar chart to count how many of these types people chose.

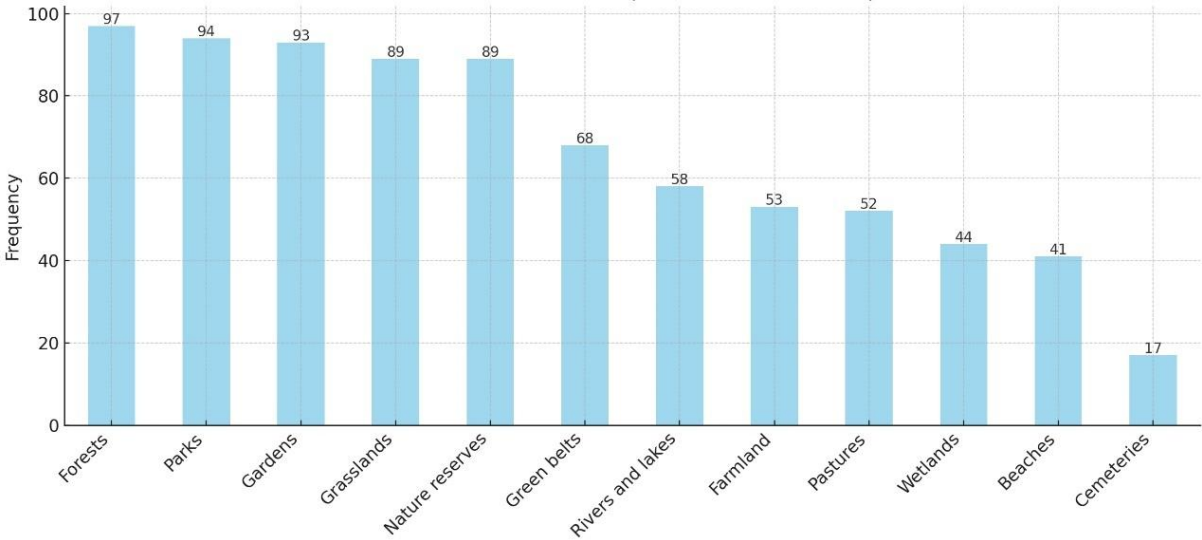


Figure. 10. Survey Responses on Types of Areas Considered Green Spaces

Unsurprisingly, forests, parks, gardens, and nature reserves are the most popular types of Green Spaces. Relatively few chose types related to water bodies and agricultural and livestock land. The number of people who chose Cemeteries was a very small number of 17, and of these 17 people, 13 of them were Chinese, which is an interesting phenomenon as the proportion is significantly higher than the proportion of Chinese respondents. Earlier we have said that in East Asian culture it is more taboo for cemeteries to be next to residences, but part of the Chinese will treat cemeteries as green spaces because of the existence of the sacrificial culture, but here we have to explain that there is a yin and yang concept in East Asian culture, and part of the people believe that cemeteries belong to the location of yin houses, and are not suitable for living people to reside for a long period of time. (Brunner, 2017)

In terms of the functions of green spaces, we listed the following multiple options: Recreation and leisure; Health and wellbeing; Beautifying the environment; Social activities; Ecological protection; Religious or cultural activities; Other. The statistical results are as follows:

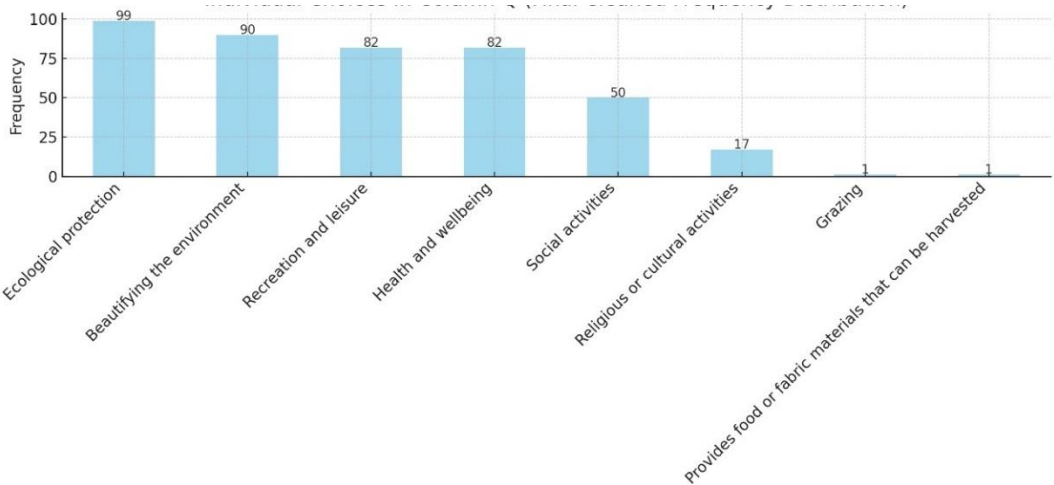


Figure. 11. Perceptions of the Functionality of Green Space

Ecological protection was the most popular choice, with 99 people choosing it, while Religious or cultural activities was the least popular choice, with only 17 people choosing it. In this multiple choice question, ethnicity and religious beliefs did not show significant differences.

In a survey question about ‘How well do you understand the concept of ‘Kaitiakitanga’ in Māori culture, the majority of people chose that they had never heard of it, or not very well.

This suggests that the part of Māori culture that deals with the relationship between people and nature is rarely understood. This may be a part of schooling that could be strengthened in the future.

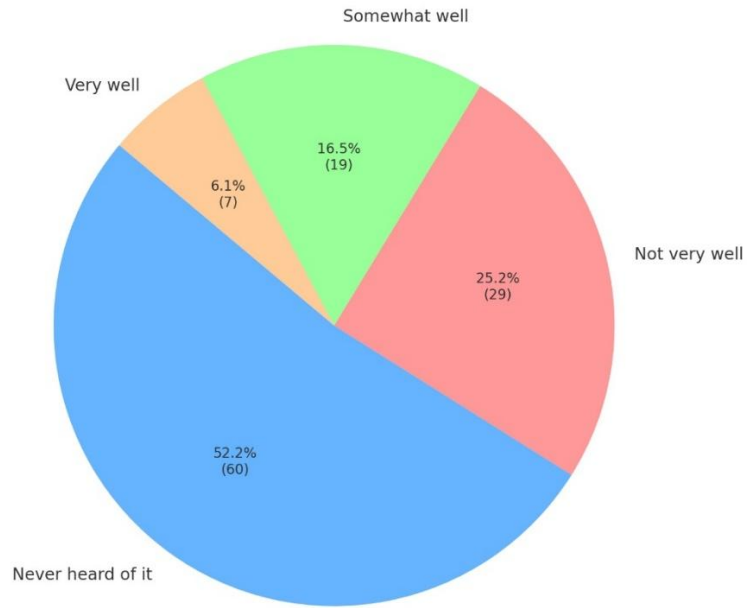


Figure. 12. How well do you understand the concept of "Kaitiakitanga"

### 3.4.3 Part Three: Usage of Green Spaces

Regarding the survey on the frequency of use of green spaces, the statistics are as follows:

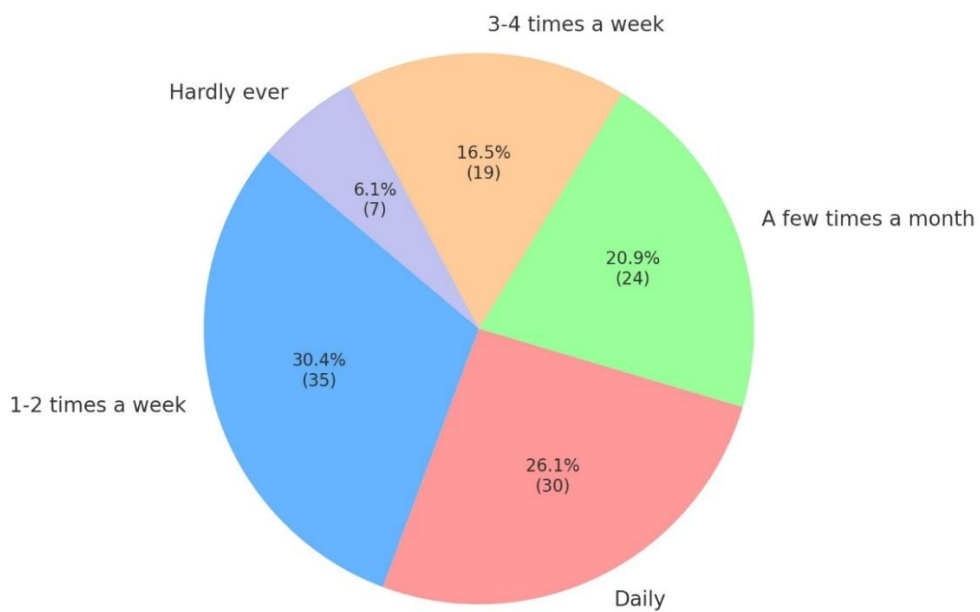


Figure. 13. Frequency of Use of Urban Green Spaces

We can see that the highest percentage of choices was 1-2 times per week, at 30.4 %, plus 3-4 times per week and daily use, which accounted for 73 % of the total. This means that most people use urban green spaces at least once a week or more.

Regarding the question ‘What activities do you usually do in green spaces?’, let's first look at the overall data distribution.

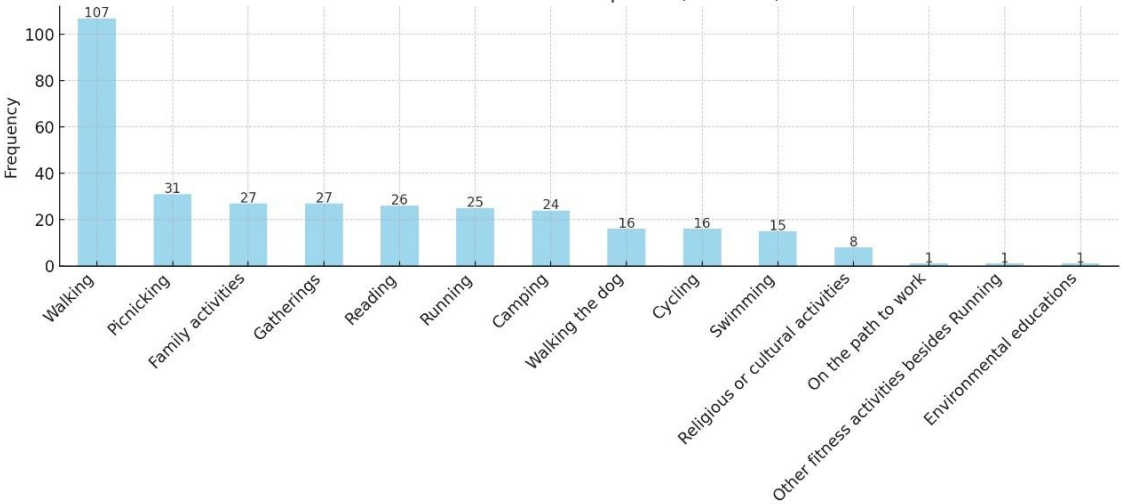


Figure. 14. Ranking of Activity in Urban Green Spaces

Here we can see an interesting phenomenon, walking is particularly notable as the most popular activity, with the vast majority of people choosing walking as the activity they use most often in public green spaces, while the other activities are relatively evenly distributed.

By breaking down the statistics(Not as shown in Figure 14), it was found that those holding Islamic beliefs did not choose dog walking or swimming at the UGS, while reading instead ranked very highly, a situation highly correlated with religious background.

Through the data, it was found that reading was ranked higher in all groups with religious beliefs, and in contrast, reading was ranked very low in the non-religious groups. (There is no judgement here, just a clear difference.)

Proportion of Reading Activity Between Religious and Non-Religious Groups

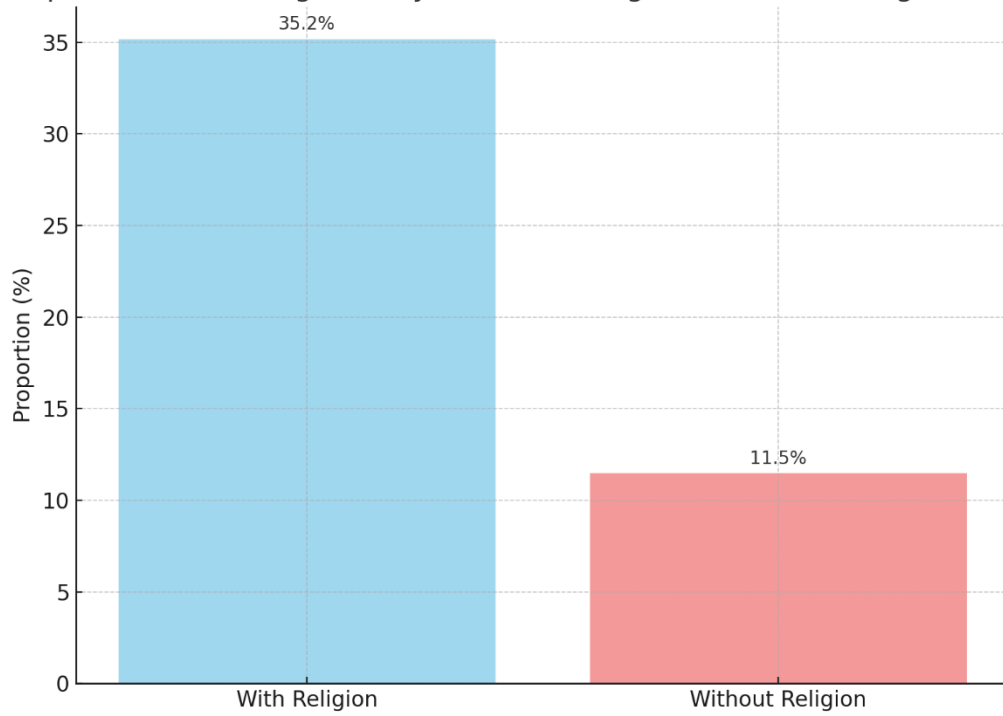


Figure. 15. The percentage of reading is significantly different between the religious and non-religious groups

Regarding the question 'Which type of green space do you visit most often?', the results are as follows:

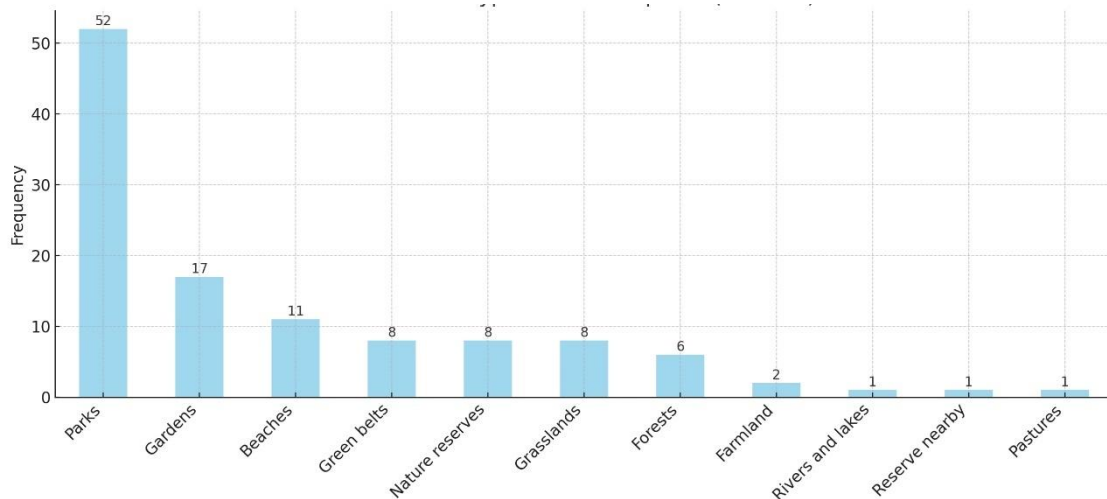


Figure. 16. Most Often Visited Type of Urban Green Space

The results of the analysis show that Parks are the most frequently visited green space, with other types of green space being sporadically distributed. The results did not differ significantly by ethnicity or religion.

When asked: How satisfied are you with the green spaces near your residence? 29.6 % feel very satisfied, 45.2 % feel satisfied and only 3.5 % feel unsatisfied:

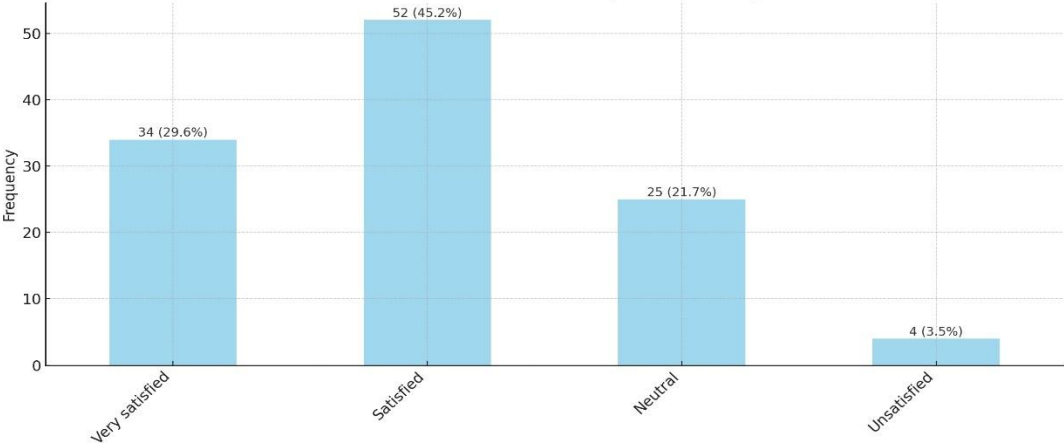


Figure. 17. Satisfaction Survey on Green Spaces Near Residence

There was no significant correlation between this result and ethnicity and religion.

The next question is more interesting: ‘How would you feel if there were bird songs near your residence every morning?’ The idea for this question came from a discussion in which a friend lamented the fact that there were a large number of birds near his residence every day, and that the birdsong was as mesmerising as music. Another friend exclaimed, ‘Wouldn't you have to be woken up by all that noise every morning?’ The statistics are shown below:

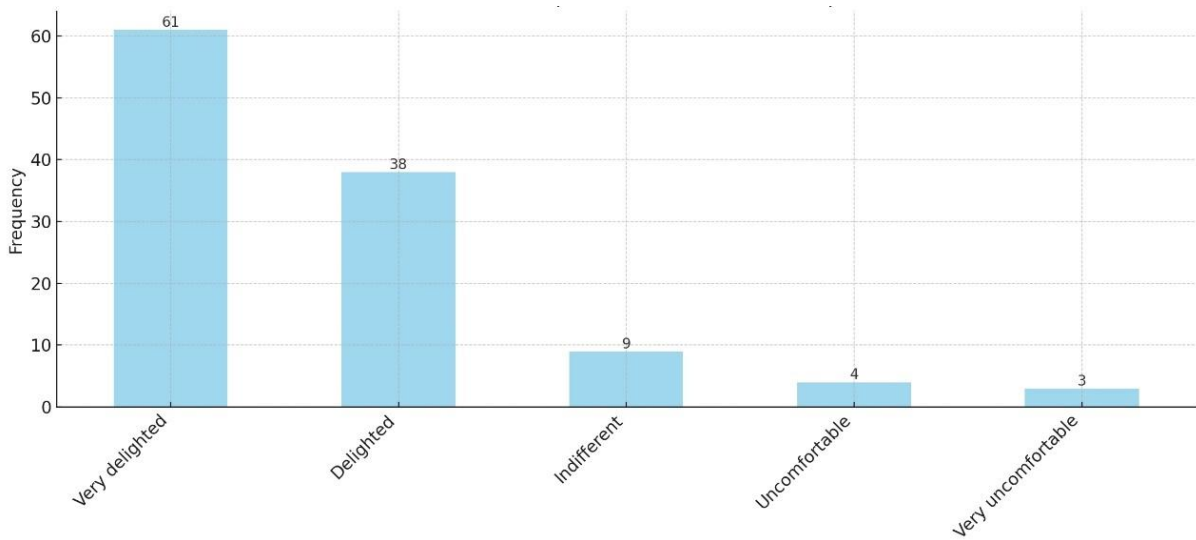


Figure. 18. Birdsong Acceptance Survey

It can be seen that most people feel delighted or very delighted by the birdsong near their residence, and there are single digit people who feel uncomfortable or very uncomfortable. The population that dislikes birdsong is predominantly of Asian and African.

In the next question, ‘How would you feel if leaves, petals, or fruits from trees near your residence frequently fall on your roof or garden?’, 34 and 36 people chose Very delighted and 36 people chose Delighted, and 60.9 people chose Uncomfortable or Very uncomfortable. Very delighted and delighted were each chosen by 34 and 36 people, or 60.9 % of the total, while uncomfortable or very uncomfortable was chosen by 13 % of the total, and the others chose indifferent.

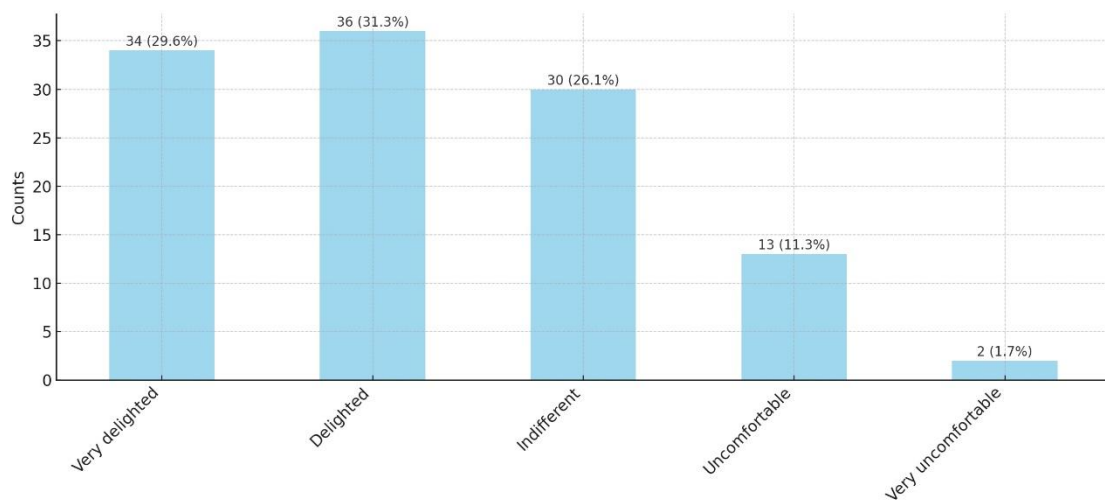


Figure. 19. Acceptance of Fallen Leaves, Petals and Fruits

Those who chose uncomfortable and very uncomfortable were all Asians, which may be due to the fact that in Asian gardening culture, falling leaves and other objects that naturally fall in the garden are seen as a sign of untidiness.

The next relevant question was about the level of preference for the sound of waves near the home, and the vast majority chose to find it very delighted and delighted. Five people, all Asian, chose negative feelings about the sound of waves.

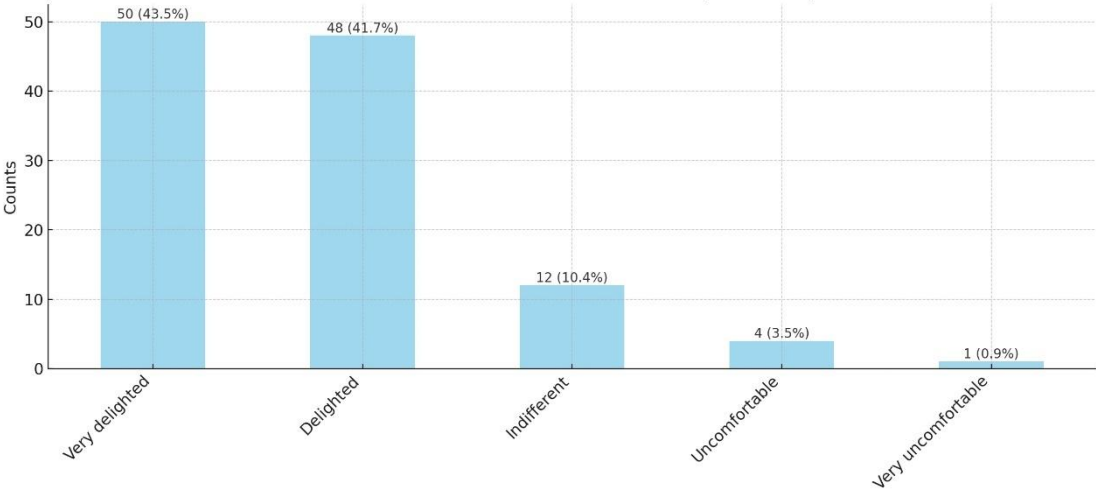


Figure. 20. Preference for the Sound of Waves

The next question was about the acceptability of having wildlife near homes. Those who felt very pleasant and pleasant were 35 and 43 respectively. Those who felt uncomfortable or very uncomfortable, on the other hand, were 18 people from Asian and African descent. However, no Buddhists chose uncomfortable and very uncomfortable, which could possibly come from the Buddhist concept of equality of all beings.

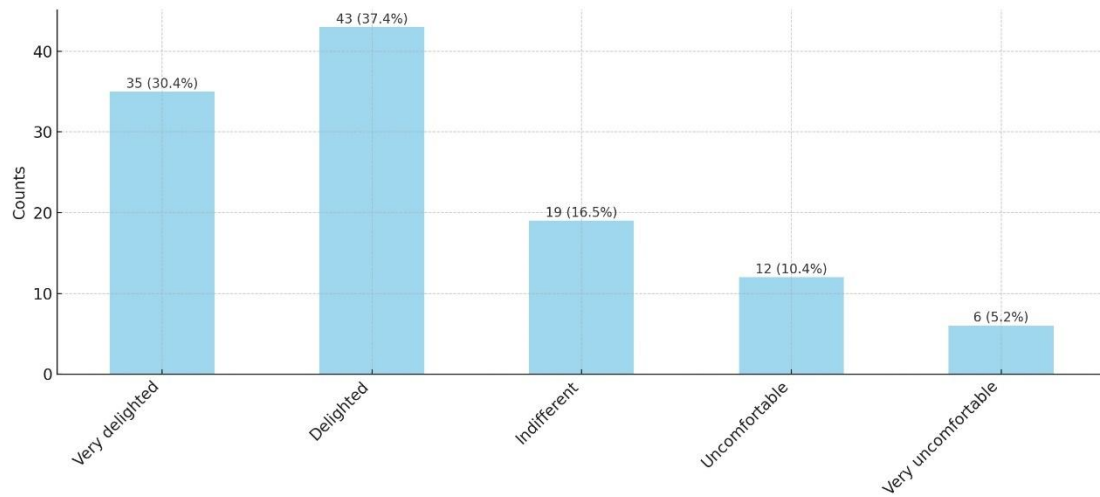


Figure. 21. Acceptance of Wildlife

The following question on acceptance of dog walking behaviour, ‘How do you feel about people walking their dogs or other pets in public green spaces near your residence?’ The following statistics are presented:

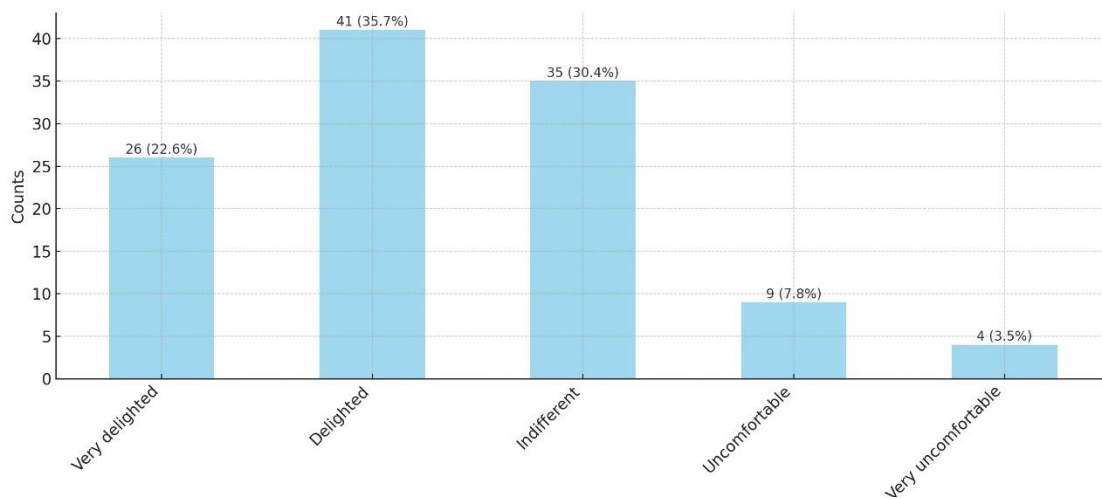


Figure. 22. Acceptance of Dog Walking

I specifically analysed the data on those who felt uncomfortable or very uncomfortable with the act of walking their dogs, the ethnicity was mainly from Asia and Africa, while the statistics on religious affiliation were scattered:

No religion: 6 persons

Christianity: 2 persons

Islam: 2 persons

Catholicism: 1 person

Hinduism: 1 person

Buddhism: 1 person

It is interesting to note that none of the respondents from the Islamic faith are in the habit of walking their dogs, but the percentage of those who dislike dog walking behaviour is very low.

### 3.4.4 Part Four: Green Spaces and Property

The next survey we're going to do is related to real estate. Let's start with a count of the form of residence that the respondents are currently living in:

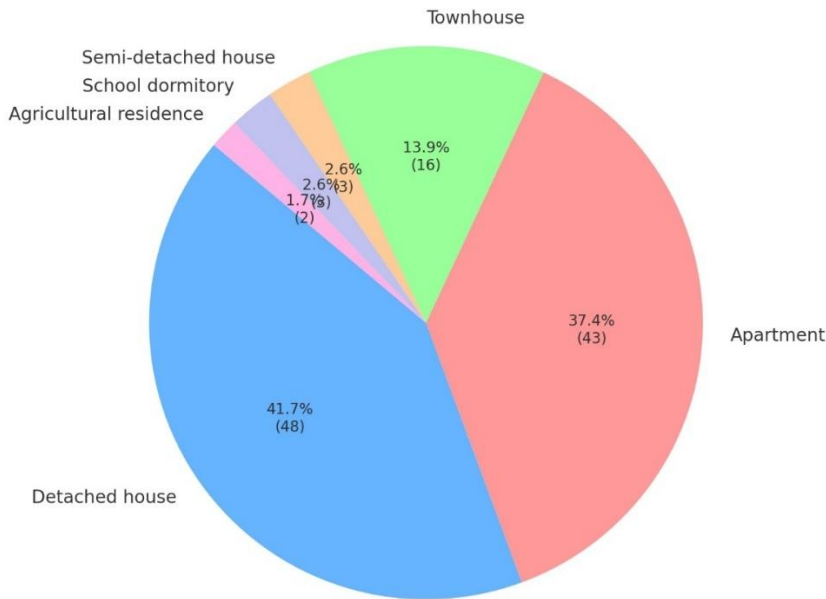


Figure. 23. Housing Type

More than half of the respondents are living in detached houses and town houses, and a large proportion of them are living in apartments and school dormitory of residence, which is related to the fact that a part of the respondents are students at school.

It is possible to cross-reference the data on religious affiliation with the data on housing type and show the correlation in a heatmap.

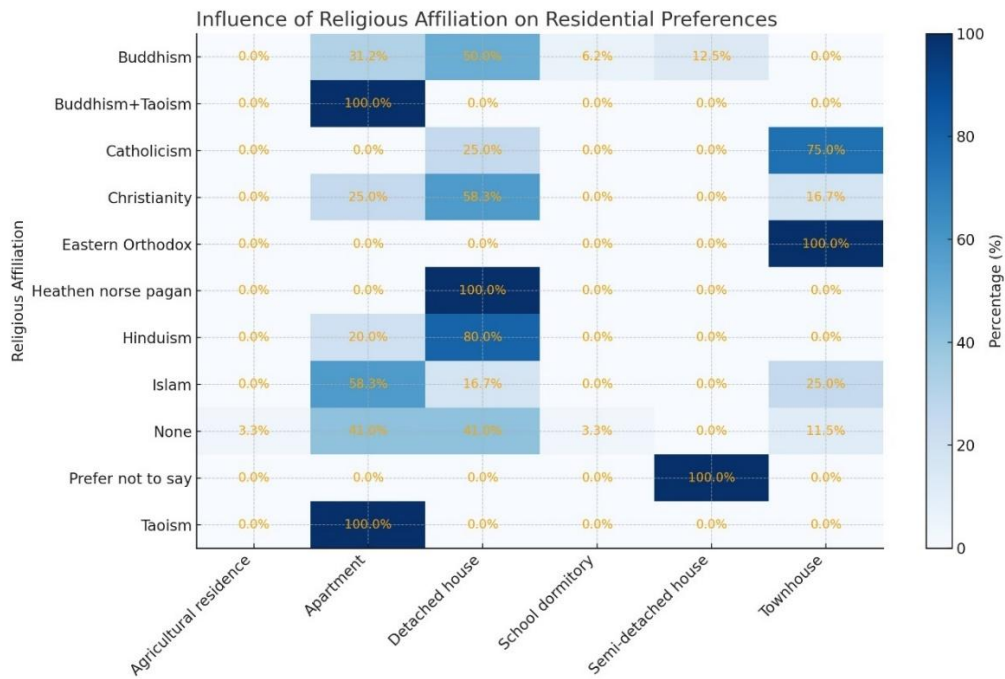


Figure. 24. Influence of Religious Affiliation on Residential Preferences

By removing data that are too small to be statistically significant, we can also observe some trends in the above graph: for example, Buddhists are less inclined to choose a housing type, Christian and Hindu faiths favour detached houses, and Islamic faiths choose apartments more often.

When asked ‘If you need to buy or rent a property, would you consider the presence of green spaces?’, the vast majority of people chose to answer in the affirmative.

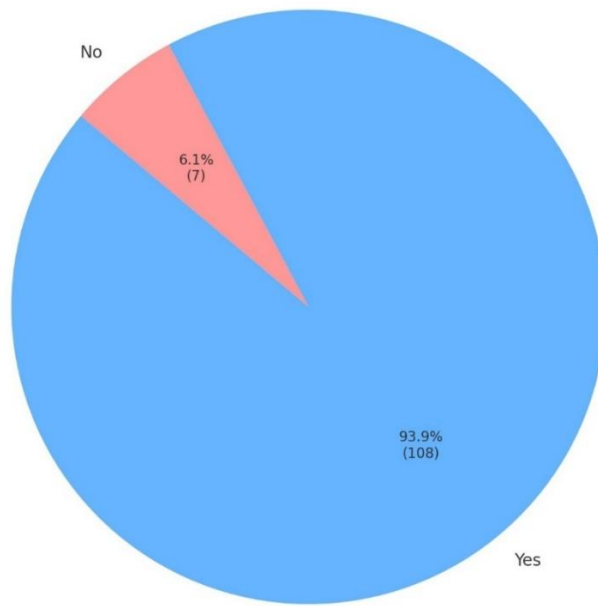


Figure. 25. Consideration of Green Spaces When Buying or Renting a Property

However, when asked 'Would you be willing to pay extra for a property with good green spaces?', the number of people who chose Yes was significantly lower.

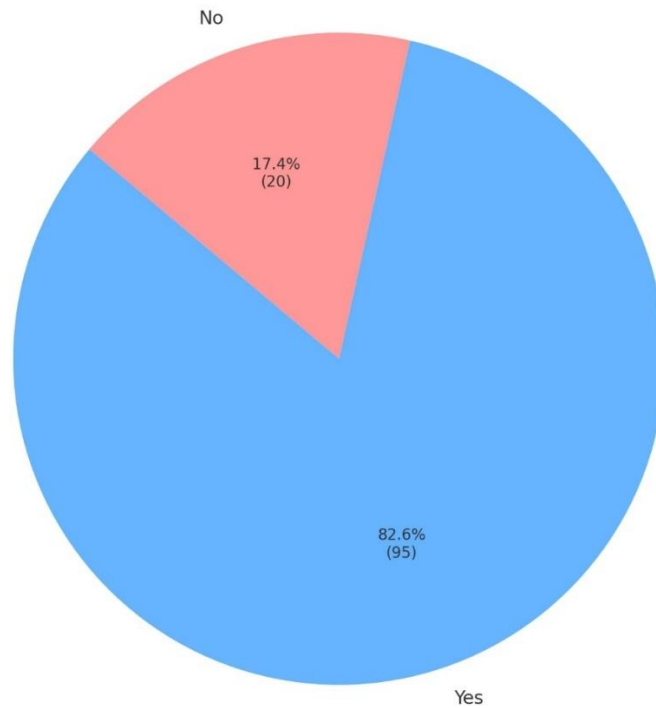


Figure. 26. Willingness to Pay Extra for Properties with Green Spaces

When asked the question ‘If yes, to what extent do you think green spaces affect property prices or rents?’, more than half thought it was significantly or very significantly. Analysed by ethnicity, all people of European and Indian origin chose significantly and very significantly.

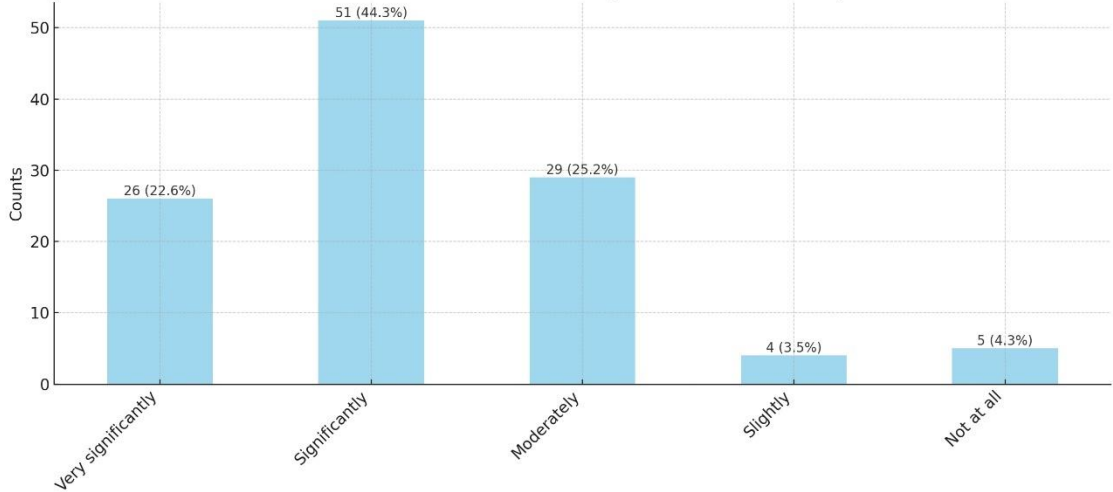


Figure. 27. Perceived Impact of Green Spaces on Property Prices or Rents

In the multiple choice question ‘What do you think is the greatest value of green spaces in a residential environment?’, the largest number of people chose ‘Enhancing quality of life’, while those who chose preservation of value, religion, and the environment were more likely to choose ‘Enhancing quality of life’, while relatively few people chose “Appreciation in value” and “cultural and religious activities”.

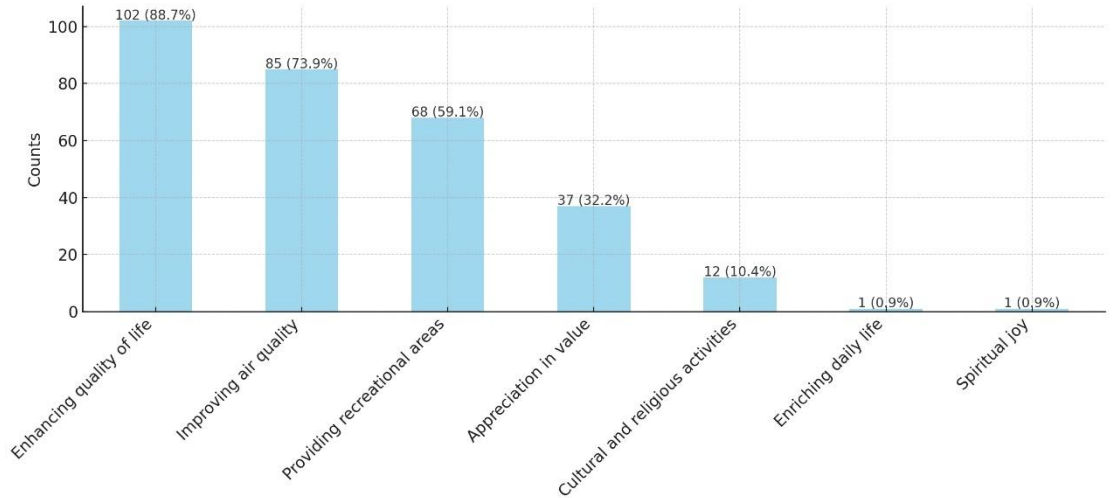


Figure. 28. Greatest Value of Green Spaces in Housing

In the survey question of whether respondents' homes had attached green space, 76.5 per cent of respondents answered yes.

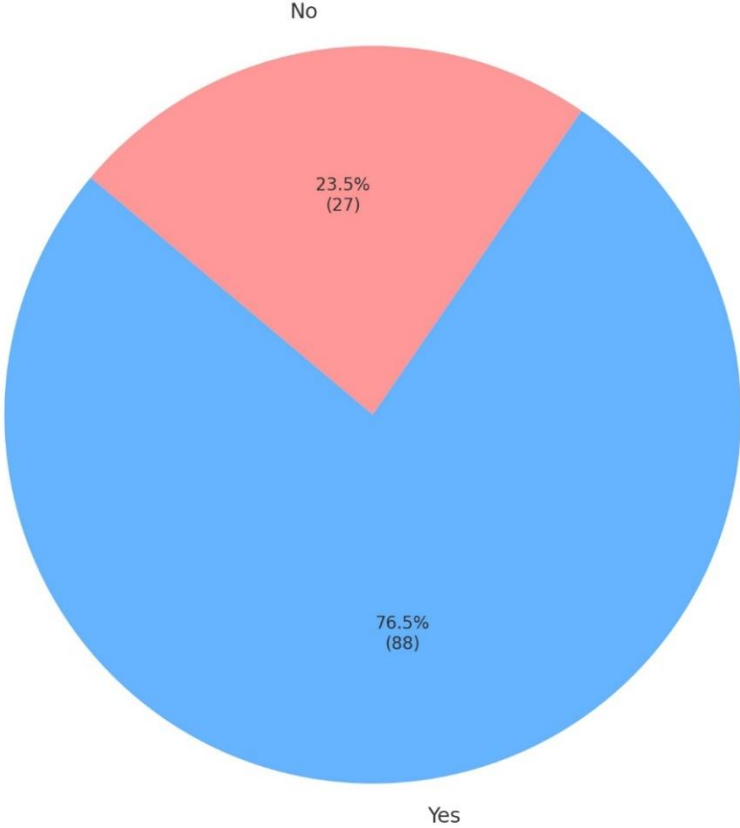


Figure. 29. Whether Respondents' homes had Attached Green Space

The majority of those who answered No were statistically found to be from apartment dwellers.

When asked the question 'What is the ideal proportion of green space to occupy the external area of your residence?', most people chose the 10-50% option. The majority of people chose 10-50 per cent when asked 'What is the ideal proportion of green space to occupy the external area of your residence?'

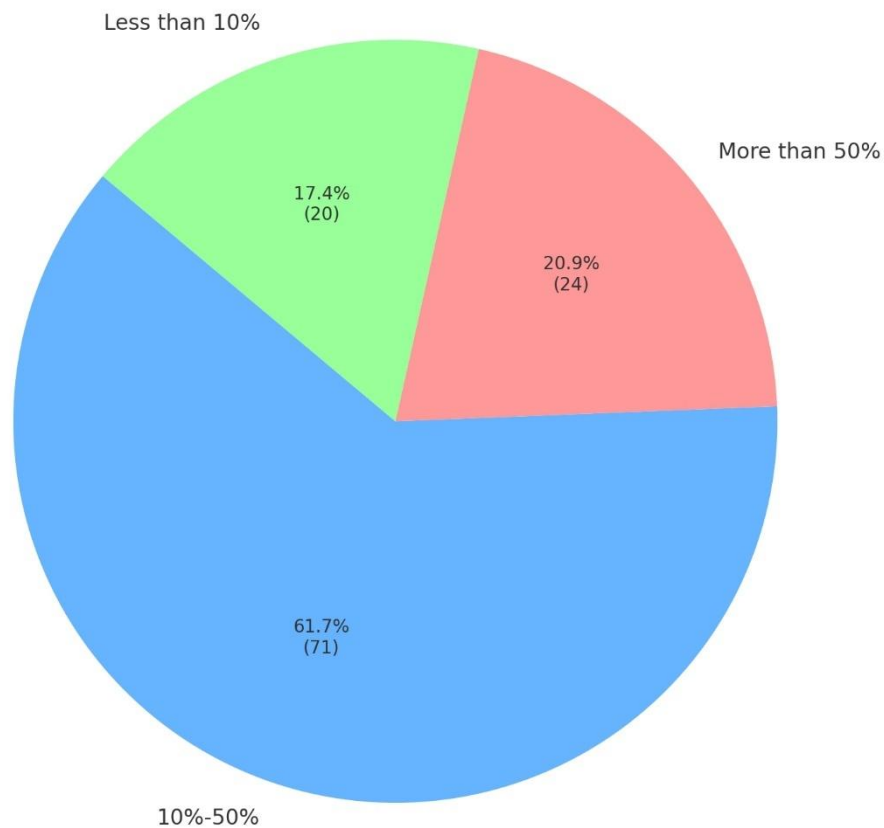


Figure. 30. Ideal Proportion of Green Space Around Residence

Statistically, we found a pattern: people with a large percentage of preference ('More than 50%')

prefer non-religious groups.

Dominant among Asian ethnic groups.

Those with a small percentage of preference ('Less than 10%')

Religion distribution has a high proportion of Islam.

Higher proportions of Asian ethnicities and minorities (e.g. Other, African).

In the multiple choice question about If your current residence has attached green spaces, what activities do you engage in? the top three were Gardening, Fruit tree planting, Vegetable Growing; we focused on these three options on planting, and the percentage of choices for Asians was significantly higher than that for Europeans. This shows that Asians are more inclined to planting as a skill.

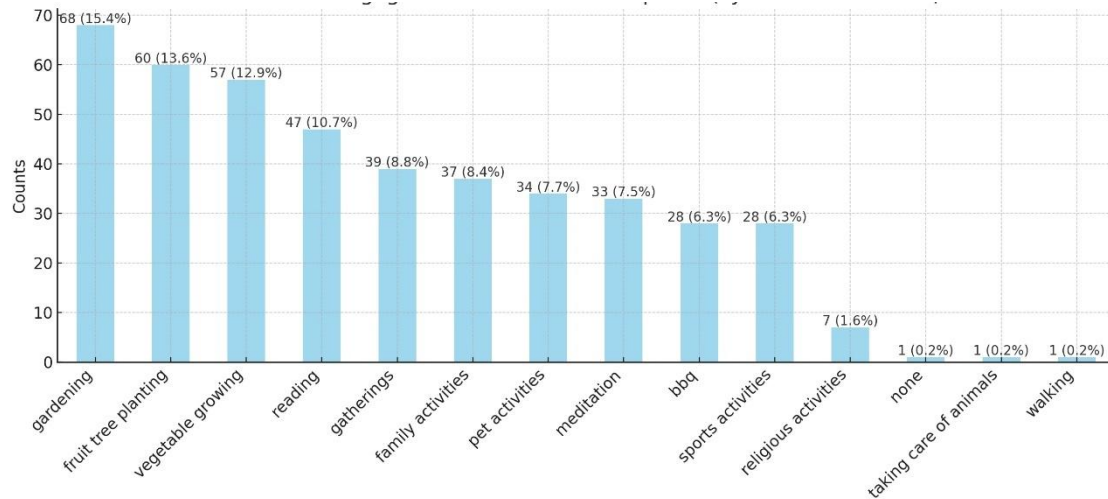


Figure. 31. Activities Engaged in Attached Green Spaces

Among these options, we notice some noteworthy patterns in the distribution of the population for the two options, meditation and religious activity:

**Meditation:**

A significant majority of participants who engage in meditation have religious beliefs, which aligns with the spiritual nature of the activity. This outcome is consistent with the understanding that meditation often holds a central place in many religious and spiritual practices.

**Religious Activities:**

Notably, none of the participants identifying as having no religious affiliation selected this option. This is consistent with the inherent nature of the activity, as it is closely tied to religious practices.

The distribution of participants with religious beliefs who chose this option is as follows:

**Buddhism:** 2 participants

**Islam:** 2 participants

**Heathen Norse Pagan:** 1 participant

**Hinduism:** 1 participant

**Eastern Orthodox:** 1 participant

The question immediately following was: If your current residence has attached green spaces, how much time do you spend maintaining it each week? This is a tendency question intended to investigate how much time people are willing to spend on their home's attached green spaces.

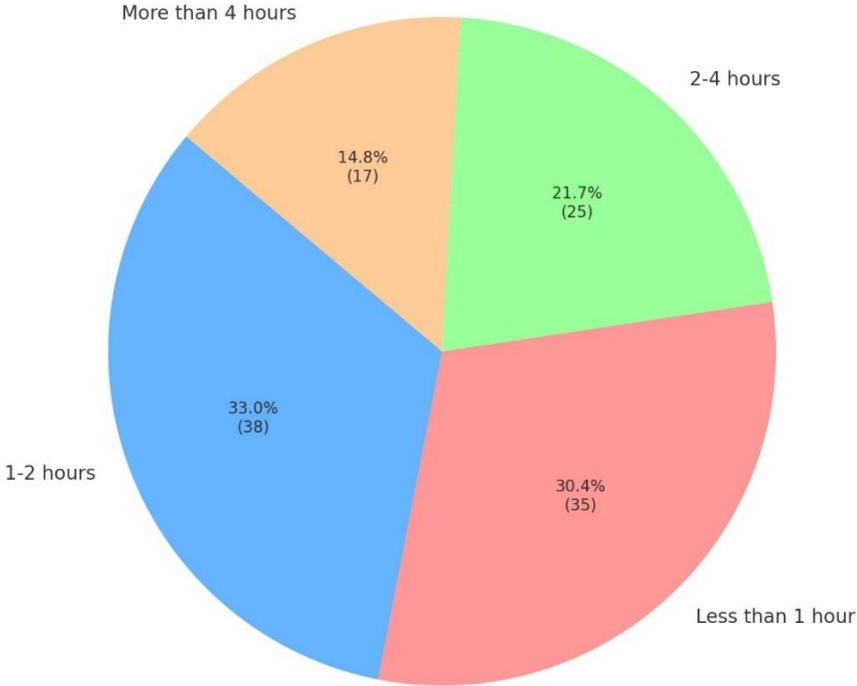


Figure. 32. Time Willingly Spent on Attached Green Space

There was a majority split between those who chose 1-2 hours per week and those who chose less than 1 hour per week. The smallest proportion, 14.8 per cent, chose more than four hours per week.

Ethnicity	More than 4 hours	2-4 hours	1-2 hours	Less than 1 hour
African	0	1	1	1
Arab	0	0	1	0
Asian	14	18	24	27
European	0	3	4	3
India	1	2	1	0

Other	1	0	1	2
Prefer not to say	1	1	6	2

By analysing the ethnicity of each option, it can be seen that Asians were in the majority when choosing more than four hours per week. This should be related to the fact that Asians love activities such as growing vegetables and fruit trees. At the other end of the spectrum, the option of less than one hour per week is also dominated by Asians. This is an observable phenomenon: many Asian properties will try to pave their yards with concrete or tarmac, reducing the amount of green space. This shows the bipolar attitudes of the Asian community towards the attached green space, which may be related to the urban-rural dichotomy of the Asian community unlike that of European and American countries.

In this last ranking of preferences for green space types, we first look at the overall ranking:

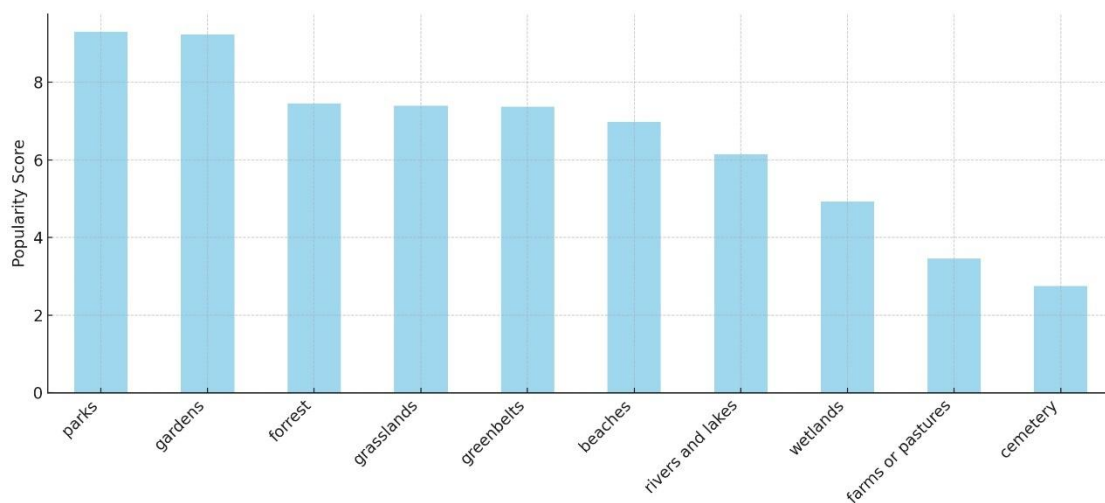


Figure. 33. Ranking of Green Space Preferences

This ranking of preferences for green space types is not surprising, with parks, gardens, and forests in the top three, and wetlands, farm pastures, and cemeteries in the bottom three.

However, we can use the heatmaps to explore the influence of different ethnic and religious backgrounds on choices. Let's start by looking at how ethnicities differ:

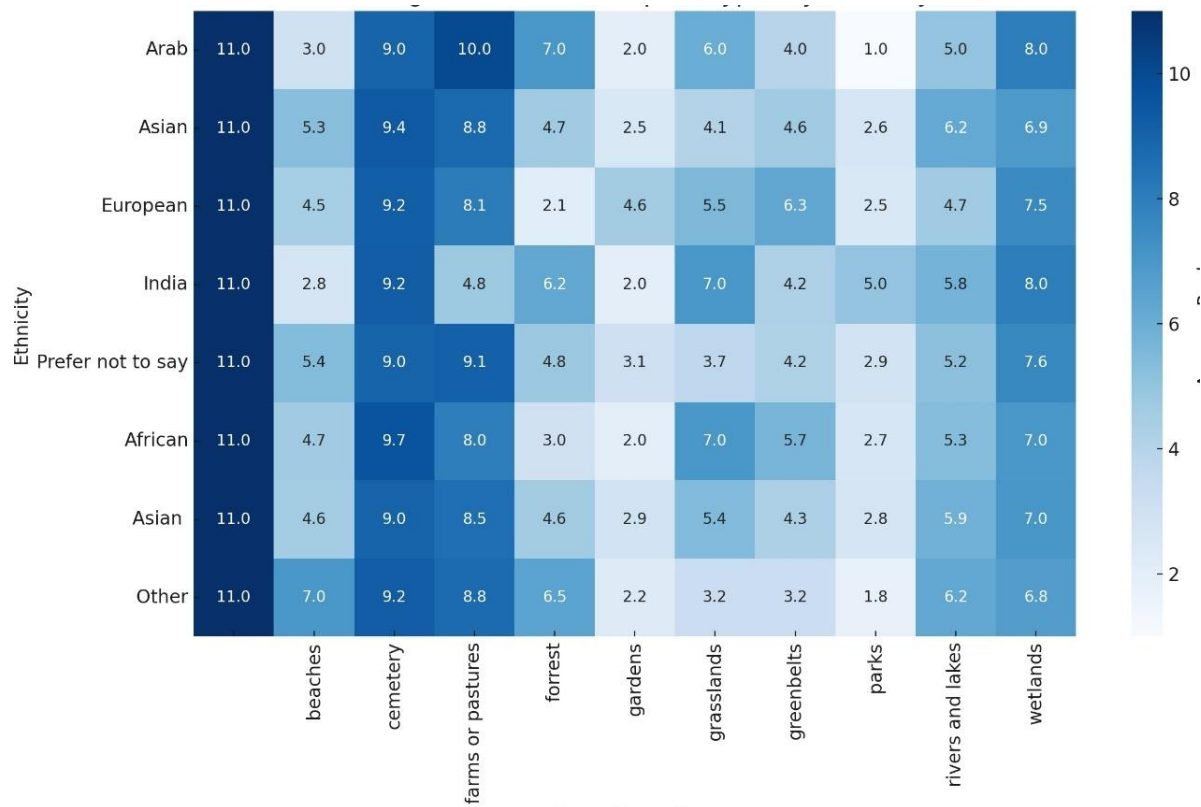


Figure. 34. Average Rank of Green Space Types by Ethnicity

Ethnicity trend analysis:

Parks ranks high among most ethnicities, especially Arab and Other.

Gardens ranked high among Asian and Prefer not to say.

Cemetery ranked high in India and Arab.

Wetlands generally ranked low.

Next, analyse the heat map for religious background:



Figure. 35. Average Rank of Green Space Types by Religious

Religion trends are analysed:

Gardens and Parks rank high in almost all religions.

Cemetery ranks high among Islam and Hinduism.

Forests and Rivers and Lakes are more popular among Buddhism and Christianity.

### 3.4.5 Part Five: Open-ended Questions (Optional)

The last three questions are open-ended and non-compulsory. We used a word cloud to analyse the content of the responses, as well as to analyse what was common and what was different about the responses based on ethnic and religious background.

First open-ended question: “Are there any specific requirements or taboos related to green spaces in your cultural or religious background? Please briefly describe.”

The most common words in the responses and their frequency of occurrence:

None / None / None / No (44 times in total): Most responses indicated that there were no specific requirements or taboos.

Gardens / Trees / Green Spaces (about 14 times): specific types or elements of green spaces were mentioned.

Cemetery / Cemeteries (a small number of occurrences): taboos associated with cemeteries.

Analysis of ethnic distribution

Commonality of responses for some ethnicities:

Asian:

Multiple mentions of 'none' or 'none'.

Some mentioned 'not near cemeteries'.

European:

Emphasised 'don't leave rubbish or waste'.

Indian:

Mentions that 'the neem tree is considered sacred'.

Analysis of Religion Distribution

Some of the commonalities in the religious responses:

Buddhism:

'Don't like green spaces near cemeteries' was mentioned several times.

Islam: No such taboos, e.g. 'Nope!'

Christianity: Emphasis on 'keeping green spaces clean'.

Hinduism: Mentioned 'the sanctity of the neem tree'.

## Word Cloud: Cultural or Religious Taboos on Green Spaces (English Only)



Figure. 36. Word Cloud of Cultural or Religious Taboos on Green Spaces

Here we see that Asians from Buddhist backgrounds are more sensitive to cemetery taboos, while Christians of European origin are more concerned with public morals such as keeping clean and not littering.

The second open-ended question was: How do you think the green spaces in your area could be improved?

The most common words in the responses and their frequency of occurrence:

More (14 times): emphasises the addition of some element (e.g. trees, community activities, etc.).

Trees (3 times): trees are mentioned several times.

Community (3 times): involves the enhancement of community activities.

Clean (3 times): emphasises keeping clean and free of rubbish.

### Ethnic distribution analysis

Commonality of responses for some ethnicities:

Asian: Chinese answers mentioned 'urban planning and construction' and 'as little rubbish as possible'. English answers mentioned 'Keep clean. No rubbish.'

European: Emphasis was placed on 'expanding green spaces and planting native plants'.



spaces (8 times): directly related to green spaces.  
 public areas (3 times): it is suggested to strengthen public areas.  
 trees (3 times): the need to plant trees.  
 nature (2 times): the natural environment.  
 native birds (2 times): concern for the protection of native birds.

### Ethnic distribution analysis

Commonality of responses from some ethnic groups:

Asian: The Chinese answer mentioned ‘urban planning needs mandatory standards’.

The English answer mentioned ‘more green belts along the road’.

European: Emphasis was placed on ‘banning dogs from certain green areas (e.g. forests, beaches)’.

Prefer not to say: suggests ‘more sheltered picnic tables and barbecue facilities’.

### Analysis of Religion Distribution

Commonality of responses for some religious beliefs:

Buddhism: Mentioned ‘Adequacy of public facilities (e.g., barbecue areas).’

Islam: emphasised ‘planting more trees’.

Christianity: suggested ‘more water points and seating’.

Taoism: the Chinese answer was ‘hope to reduce pests’.

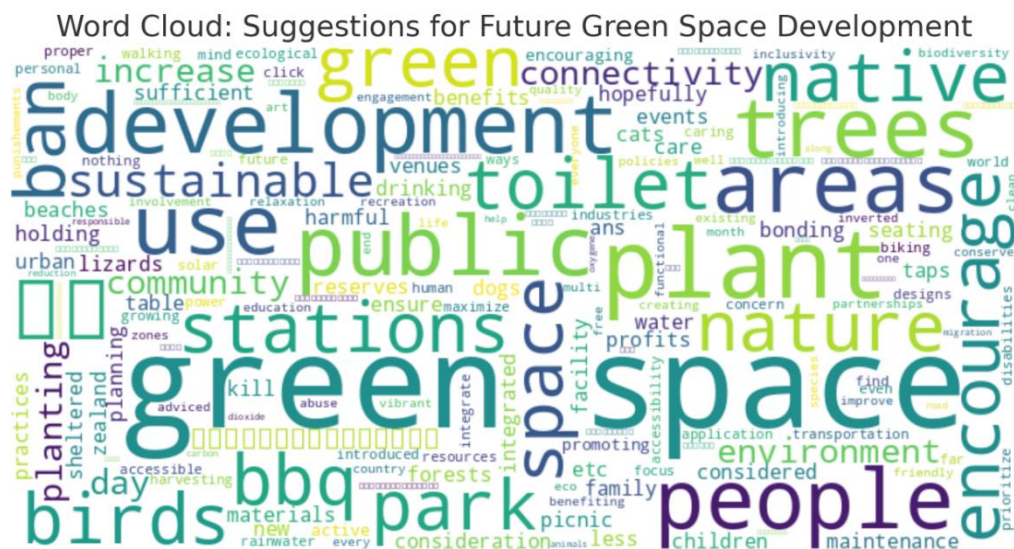


Figure. 38. Word Cloud of Suggestions for Future Green Space Development

Similar to the previous question, many Asians (mainly Chinese) would like to see mandatory standards to increase green space planning in cities. Europeans, on the other hand, proposed restricting dog-walking areas out of a sense of protecting New Zealand's native species. Buddhists mentioned increasing public conveniences, which is similar to Christians. Muslims, on the other hand, are still focussed on planting more trees.

# Chapter Four: Discussion

It was originally envisaged that this questionnaire would capture data from as wide a range of New Zealanders of all ethnicities as possible. However, the realistic factor was that as the author himself is an international student from China, his social circle and contact with the population was very limited, and there were many respondents who were not willing to spend time on completing the questionnaire without compensation, the final result was that 115 valid questionnaires were received. In terms of numbers, it is possible to do some basic statistics, however this number is by no means big data, so statistical bias is almost inevitable. For example, because of my study major, many respondents are therefore also enthusiastic supporters of environmental protection or even engaged in related work, which may affect the breadth of the statistical results.

In any case, we still got a relatively large number of questionnaire responses, and we can do some analyses and statistics now.

## **4.1 To discuss the similarities and differences between the results of the literature review and the questionnaire:**

We will explore the similarities and differences between the literature review section and the questionnaire survey on the perception of green space in the following aspects:

### **4.1.1 On the definition and function of green space**

#### **Literature Review:**

Definition of green space: Literature mostly adopts the narrow definition of ‘urban vegetation’, which includes parks, gardens, urban forests, etc.

Functions and values: Ecological protection: mitigate the heat island effect, improve air quality, provide habitats.

Community Functions: Promote cultural exchange, social inclusion and diversity.

Economic Impact: Increase house prices, boost local economy.

Health and well-being: the literature emphasises the dual role of green space on physical and mental health.

### **Questionnaire results**

Definitions in the survey were similar to the literature, covering a wide range of types such as parks, gardens, green belts, etc., with some respondents recognising that ‘blue spaces’ (e.g. rivers and lakes) were equally important.

Functional Perceptions: Landscaping and health benefits were the most cited functions, chosen by about 75 per cent of participants.

Cultural and religious activities were significantly more important in the Asian and Islamic groups than in the other groups.

### **Comparisons and Conclusions**

Commonalities: Both the literature and the questionnaire agree that green spaces are important for urban health, environmental protection and community culture.

Differences: The questionnaire highlighted religious contexts (e.g., cemetery taboos) and the need for diverse uses.

There is an interesting phenomenon here, in the literature review, it was found that there is no taboo on cemeteries in the western Christian cultural background, and in the questionnaire, there is really no European ethnicity mentioning the taboo of cemeteries, but when choosing the degree of preference for green space, people of all ethnic and religious backgrounds rank cemeteries very low, that is, in fact, the vast majority of cultural and religious backgrounds try to avoid cemeteries as an area for daily activities, which is also a common human culture.

## 4.1.2 The significance of green space for different groups

### Literature Review Perspectives

Cultural differences: The design and utilisation of green space is more complex in multicultural societies. For example:

Christian countries View cemeteries as an important part of green space.

East Asian cultures Avoid addresses near cemeteries.

Social inclusion and diversity: Green spaces promote interaction between immigrants and local residents and are important places for cultural mixing.

Religious activities: many green spaces host religious ceremonial functions, such as Islamic festival sites or Buddhist retreat areas.

### Questionnaire results

Ethnic differences:

Asian (Asian group): more emphasis on cleanliness, planting and gardening. Cemetery taboos are particularly evident in this group.

European (European origin): emphasis on nature conservation and social functions.

Religious differences:

Islam: mentions the need for more trees and plants.

Christianity: Mentioned the importance of children's areas and cleaning facilities.

Hinduism: Some of the green space types are considered to have religious significance.

Non-religious: prefers functional activities such as sports and family gatherings.

### Comparisons and conclusions

Commonalities: both the literature and the questionnaire point out that green spaces are an important link for multicultural integration, while reflecting the influence of religious background on their design.

Differences: the literature is mostly based on theories and case studies, while the questionnaire data better reflect specific cultural and religious practices.

### **4.1.3 Utilisation Patterns of Green Space**

#### Literature Viewpoints

Functional diversity: green space has ecological, social and economic functions.

Diversified activities: from walking, sports to eco-tourism, green space covers a wide range of use scenarios.

#### Questionnaire results

Common activities: walking (>80%), exercise (60%), meditation (30%).

#### Ethnic preference:

Asian: a high proportion choose gardening, planting activities.

European: Preferred social activities such as picnics and parties.

Religious activities: About 20% of the participants considered green spaces suitable for religious activities.

#### Comparisons and Conclusions

Commonality: Both the literature and the questionnaire show that green spaces are used in a wide range of scenarios and have obvious functional diversity.

Differences: The literature focuses more on theoretical analyses, while the questionnaire reveals the differences in the utilisation patterns of specific groups.

#### Suggestions for Improvement of Green Spaces

### **4.1.4 Suggestions for Improvement of Green Spaces**

#### Literature Perspectives

##### Design and Planning:

Incorporate diversified functions into the design, such as natural habitats, recreational spaces, and places for community activities.

Introduce ecological corridors to improve ecological connectivity in the city.

Community Participation: Enhance the efficiency of green space utilisation through public participation in planning and maintenance.

Policy support: Expand the coverage of green space through policy guidance and economic incentives.

#### Questionnaire Results

Common Suggestions:

Increase trees (>50%) and public facilities (>40%).

Increase the cleanliness and maintenance frequency of green space.

Open-ended comments:

Asian Groups: more areas suitable for family and personal activities.

Non-religious: Emphasis on a combination of economy and environmental protection.

#### Comparisons and Conclusions

Commonalities: Literature and questionnaires emphasise design versatility and improved cleanliness.

Differences: Most of the literature review adopts a holistic perspective and makes recommendations on government legislation and planning. The questionnaire survey, on the other hand, mostly takes a personal perspective, starting from the construction of facilities and the establishment of rules around us.

## **4.2 Current status and future perspectives of urban green spaces in Auckland.**

### **4.2.1 Current Status**

Auckland is New Zealand's largest city and is renowned for its extensive and varied urban green spaces. This includes parks, nature reserves, gardens and coastal areas, which play a vital role in improving the quality of life for residents. There are as many as 18 high quality REGIONAL

PARKS alone. Auckland is one of the greenest cities in the world, with more than 4,000 parks and reserves, which according to a recent assessment account for around 13 per cent of the city's total land area, and overall around 41.5 per cent of the land area is public green space (Cheung & Fernandez, 2021).

One of the most notable green spaces in Auckland is the Auckland Domain, which is the city's oldest park and one of its largest, covering 75 hectares. The park not only provides recreational facilities but also houses the Auckland War Memorial Museum, offering a blend of natural and cultural experiences (Auckland War Memorial Museum, 2021). Another significant green space is Cornwall Park, which includes a variety of landscapes, from open fields to native bush areas, and is a popular spot for both locals and tourists (Cornwall Park Trust, 2021).

Despite the abundance of green spaces, Auckland faces challenges related to urban development pressures, which threaten the availability and quality of these areas. Rapid population growth and urban sprawl have increased the demand for land, leading to concerns about the preservation of green spaces amidst ongoing development (Byrne, Sipe, & Searle, 2010).

## **4.2.2 Future Perspectives**

Looking towards the future, Auckland's urban green spaces are expected to play an increasingly important role in the city's sustainability and resilience strategies. Several initiatives and plans have been proposed to enhance and expand these spaces, ensuring they meet the needs of a growing and diverse population.

One of the key strategic documents guiding the future of green spaces in Auckland is the Auckland Plan 2050. This comprehensive plan emphasizes the importance of green spaces in creating a liveable and sustainable city. It outlines goals to increase the accessibility and quality of urban green spaces, ensuring that all residents live within a short walking distance of a park or natural area (Auckland Council, 2018).

Additionally, the city is focusing on integrating green infrastructure into urban development projects. This includes the creation of green roofs, walls, and corridors that connect existing parks and natural areas, enhancing biodiversity and providing ecological benefits. The Green Infrastructure Strategy aims to incorporate natural elements into urban design, promoting environmental sustainability and improving urban resilience to climate change (Auckland Council, 2019).

Community involvement is also a critical component of future green space planning. Engaging local communities in the design, development, and maintenance of green spaces ensures that these areas reflect the cultural and recreational needs of the population. Programs such as "Adopt a Park" and local stewardship initiatives encourage residents to take an active role in preserving and enhancing their local green spaces (Auckland Council, 2020).

Moreover, there is a growing emphasis on creating multifunctional green spaces that can serve various purposes, from recreation and relaxation to environmental education and community events. The development of parks that include playgrounds, sports facilities, community gardens, and natural habitats is a priority, aiming to maximize the benefits provided by these spaces (Shackleton et al., 2016).

## Chapter Five: Conclusion

This study explored the multifaceted benefits of urban green spaces (UGS) through a literature review and a survey capturing the perceptions of diverse cultural and religious groups. The findings highlight UGS's significant ecological, social, and cultural roles in urban environments.

While key insights from the literature review suggest that UGS contribute significantly to environmental sustainability, biodiversity conservation and public health, as well as fostering community participation and cultural integration, the literature review also focussed on the potential for confounding and biasing the results of different research methodologies in relation to the impacts of UGS on physical and mental health. These values were corroborated by the results of the questionnaire survey, with the majority of participants emphasising the importance of UGS for recreation and health promotion. However, different cultural and religious backgrounds showed significant differences in preferences for green spaces, such as cemetery taboos and usage patterns specific to each group.

While the findings align broadly with the literature, some contrasts emerged. For example, while biodiversity and ecological values dominate academic discourse, respondents prioritized practical aspects such as cleanliness, accessibility, and safety. These differences underscore the need for urban planners to adopt an inclusive approach that accommodates diverse needs.

This study faced limitations, including potential biases in sample size and demographic representation. If this study is continued and the survey sample can be expanded to a larger and more diverse population, it will certainly provide richer and more accurate findings.

Future urban planning must integrate cultural sensitivity and ecological priorities, ensuring UGS are accessible, multifunctional, and inclusive. By addressing these dimensions, cities can enhance the quality of urban life and promote sustainable coexistence between nature and society.

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# Appendix:

## **A. Survey: Using Urban Green Spaces by people from different Cultural and Religious Backgrounds**

### **Dear Participant:**

You are invited to participate a survey. The purpose of this survey is to study how people from different cultural and religious backgrounds use the urban green spaces. Your feedback will provide valuable data for further improve our urban green spaces to better benefit people and biodiversity.

### **Survey Objectives:**

1. Understand how people of different ages, genders, ethnicities, and religious backgrounds perceive and use green spaces.
2. Explore the special meanings and functions of green spaces in different cultural and religious contexts.
3. Analyse the impact of green spaces on property values and living environments.

### **Privacy Protection:**

1. Anonymity: This survey is completely anonymous. You do not need to provide any personally identifiable information.
2. Data Security: All collected data will be kept strictly confidential and will only be used for academic research and analysis. It will not be used for any commercial purposes.
3. Voluntary Participation: Your participation is completely voluntary, and you can withdraw from the survey at any time.
4. Data Processing: We will aggregate and analyze all survey data to ensure that your personal information and responses cannot be individually identified or disclosed.

**Your opinions and suggestions are crucial to our research. Thank you for your support and cooperation!**

**If you have any questions or need more information about this survey, please feel free to contact us at: [sohuhawk@gmail.com](mailto:sohuhawk@gmail.com)**

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### **Part One: Basic Information**

1. Your age:

- Under 18
- 18-25
- 26-35
- 36-45
- 46-55
- 56-65
- 66 and above

2. Your gender:

- Male
- Female
- Other
- Prefer not to say

3. Your marital status:

- Married
- Single
- Cohabiting
- Separated
- Divorced
- Widowed
- Other (please specify: \_\_\_\_\_)
- Prefer not to say

4. Do you have children?

- Yes
- No
- Prefer not to say

5. Your ethnic background:

- European
- Māori
- Pacific Islander
- Asian (please specify country or region: \_\_\_\_\_)
- African
- Other (please specify: \_\_\_\_\_)
- Prefer not to say

6. Your religious affiliation:

- None
- Christianity
- Catholicism
- Buddhism
- Islam
- Hinduism
- Sikhism
- Judaism
- Other (please specify: \_\_\_\_\_)
- Prefer not to say

7. Your highest educational qualification:

- High school or below
- Diploma
- Bachelor's degree
- Master's degree
- Doctorate or above
- Prefer not to say

**Part Two: Understanding of Green Spaces**

1. Which of the following do you consider as green spaces? (multiple choices allowed)

- Parks
- Gardens

- Green belts (a strip of vegetation planted alongside roads or buildings to provide green space and enhance the environment)
  - Forests
  - Grasslands
  - Beaches
  - Wetlands
  - Rivers and lakes
  - Cemeteries
  - Nature reserves
  - Farmland
  - Pastures
  - Other (please specify: \_\_\_\_\_)
2. What do you think are the main functions of green spaces? (multiple choices allowed)
- Recreation and leisure
  - Health and wellbeing
  - Beautifying the environment
  - Social activities
  - Ecological protection
  - Religious or cultural activities
  - Other (please specify: \_\_\_\_\_)
3. How well do you understand the concept of "Kaitiakitanga" (environmental guardianship and management) in Māori culture?
- Very well
  - Somewhat well
  - Not very well
  - Never heard of it

### **Part Three: Usage of Green Spaces**

1. How often do you use green spaces on average per week?
- Daily
  - 3-4 times a week

- 1-2 times a week
  - A few times a month
  - Hardly ever
2. What activities do you usually do in green spaces? (multiple choices allowed)
- Walking
  - Running
  - Reading
  - Walking the dog
  - Family activities
  - Picnicking
  - Swimming
  - Gathering
  - Cycling
  - Camping
  - Religious or cultural activities
  - Other (please specify: \_\_\_\_\_)
3. Which type of green space do you visit most often?
- Parks
  - Gardens
  - Green belts (a strip of vegetation planted alongside roads or buildings to provide green space and enhance the environment)
  - Forests
  - Grasslands
  - Beaches
  - Wetlands
  - Rivers and lakes
  - Cemeteries
  - Nature reserves
  - Farmland
  - Pastures

- Other (please specify: \_\_\_\_\_)
4. How satisfied are you with the green spaces near your residence?
- Very satisfied
  - Satisfied
  - Neutral
  - Unsatisfied
  - Very unsatisfied
5. How would you feel if there were bird songs near your residence every morning?
- Very delighted
  - Delighted
  - Indifferent
  - Uncomfortable
  - Very uncomfortable
6. How would you feel if leaves, petals, or fruits from trees near your residence frequently fall on your roof or garden?
- Very delighted
  - Delighted
  - Indifferent
  - Uncomfortable
  - Very uncomfortable
7. If your residence is by the seaside, how would you feel about the sound of the waves?
- Very delighted
  - Delighted
  - Indifferent
  - Uncomfortable
  - Very uncomfortable
8. How do you feel about wildlife appearing near your residence?
- Very delighted
  - Delighted
  - Indifferent

- Uncomfortable
  - Very uncomfortable
9. How do you feel about people walking their dogs or other pets in public green spaces near your residence?
- Very delighted
  - Delighted
  - Indifferent
  - Uncomfortable
  - Very uncomfortable

#### **Part Four: Green Spaces and Property**

1. Your current housing type:
- Detached house
  - Townhouse
  - Semi-detached house
  - Apartment
  - Agricultural residence
  - Other (please specify: \_\_\_\_\_)
2. Your household composition: (multiple choices allowed)
- Alone
  - Partner
  - Children
  - Parents
  - Siblings
  - Friends
  - Tenant
  - Landlord
  - Pets
  - Livestock or poultry
  - Other (please specify: \_\_\_\_\_)
3. If you need to buy or rent a property, would you consider the presence of green spaces?

- Yes
  - No
4. If yes, to what extent do you think green spaces affect property prices or rents?
- Very significantly
  - Significantly
  - Moderately
  - Slightly
  - Not at all
5. Would you be willing to pay extra for a property with good green spaces?
- Yes
  - No
6. What do you think is the greatest value of green spaces in a residential environment?  
(multiple choices allowed)
- Appreciation in value
  - Enhancing quality of life
  - Providing recreational areas
  - Improving air quality
  - Cultural and religious activities
  - Other (please specify: \_\_\_\_\_)
7. Do you have any attached green spaces in your current residence?
- Yes
  - No
8. What is the ideal proportion of green space to occupy the external area of your residence?
- Less than 10%
  - 10%-50%
  - More than 50%
9. If your current residence has attached green spaces, what activities do you engage in?  
(multiple choices allowed)
- Gardening
  - Vegetable growing

- Fruit tree planting
- Pet activities
- Family activities
- Gatherings
- Sports activities
- BBQ
- Reading
- Meditation
- Religious activities
- Other (please specify: \_\_\_\_\_)

10. If your current residence has attached green spaces, how much time do you spend maintaining it each week?

- Less than 1 hour
- 1-2 hours
- 2-4 hours
- More than 4 hours

11. If you could choose, what type of green space would you prefer near your property?  
(rate from 1-10, 1 being least preferred and 10 being most preferred)

- Parks
- Gardens
- Green belts
- Forests
- Grasslands
- Beaches
- Wetlands
- Rivers and lakes
- Cemeteries
- Nature reserves
- Farmland
- Pastures

- Other (please specify: \_\_\_\_\_)

### **Part Five: Open-ended Questions (Optional)**

1. Are there any specific requirements or taboos related to green spaces in your cultural or religious background? Please briefly describe.
2. How do you think the green spaces in your area could be improved?
3. What suggestions or expectations do you have for the future development of green spaces?

### **B. The link to the source data XLSX file downloaded from**

#### **Microsoft Forms**



Using Urban  
Green Spaces.xlsx