Regional Public Health
Better Health For The Greater Wellington Region

HEALTHY OPEN SPACES

A summary of the impact of open spaces on health and wellbeing

He aha te mea nui o tenei ao
Maku e ki atu
He tangata, He tangata, He tangata

What is the greatest thing in the world?
I say to you,
It is people, it is people, it is people

Regional Public Health Information Paper - March 2010

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Regional Public Health
Better Health For The Greater Wellington Region

Regional Public Health (RPH) is a business unit of the Hutt Valley District Health Board (DHB) providing public health services to the Greater Wellington region, which encompasses Capital and Coast, Hutt Valley and Wairarapa District Health Boards. Our business is public health action - working to improve the health and wellbeing of our population and to reduce health disparities. We aim to work with others to promote and protect good health, prevent disease, and improve quality of life across the population. We are funded mainly by the Ministry of Health, and we also have contracts with the DHBs and other agencies to deliver specific services. We have 150 staff with a diverse range of occupations, including Medical Officers, Public Health Advisors, Health Protection Officers, Public Health Nurses, analysts and evaluators.

Contents

Acknowledgement

A significant proportion of the source material for this document has been cited from the following two documents:

- Health Scotland, Greenspace Scotland, Scottish Natural Heritage, and Institute of Occupational Medicine (June 2008), Health Impact Assessment of Greenspace - A Guide, published by Greenspace Scotland.
- Regional Public Health (May 2008) A literature review on the value to health and wellbeing of urban open spaces, prepared under contract by Mary McIntyre and Flavia Prospero in the Department of Public Health, Otago University School of Medicine, Wellington

Introduction

This information paper outlines the connections between health and wellbeing, and urban open spaces. In addition, it summarises the relationship between open space in relation to physical and mental health, and environmental, economic, social and cultural wellbeing. This paper aims to inform and support the work of local and regional authorities, urban planners and developers, public health practitioners and community groups as we plan for sustainable and healthy cities.

It has long been recognised that open spaces are important for our wellbeing. Very early urban dwellers went to extraordinary lengths to build "natural" environments into their cities. Those early urban planners knew that open spaces provide opportunities for a wide range of social interactions and pursuits that support community health and wellbeing. They allow people to interact with their natural environment and provide habitats for wildlife. They can also be an important expression of social and cultural identity.[1]

What makes urban open spaces healthy?

Healthy urban open spaces:

- are of high quality, readily accessible, culturally appropriate, and well connected to streets and amenities
- are developed in partnership with the community
- provide variety of function including opportunities for physical activity, access to the natural environment, play for children
- respect and provide for a diverse range of cultures, ages, abilities and socio-economic status
- conserve and promote cultural heritage
- build on natural features to inspire a deep connection to place
- provide diverse habitats for appropriate species to enhance biodiversity
- create safe and healthy places for connecting with others, recreation and mental relaxation.

Background

New Zealand's population is highly urbanised. In 2009, 72 of every 100 New Zealand residents lived in one of New Zealand's 16 main urban areas.[2] This is expected to increase, with the Auckland region, in particular, expected to account for 62 percent of New Zealand's population growth between 2006 and 2031, with an increase of 560,000 from 1.37 million to 1.93 million.[3] This proportion is high by international standards. Around 50% of the world's population live in urban centres.[4] New Zealand has also urbanised rapidly, in 1890 only 35% of our population lived in urban centres. In a rapidly urbanising world, it is increasingly important to recognise how different features of cities affect health and wellbeing and to plan accordingly.[5]

Increasing urbanisation combined with local spatial planning policies of densification will result in more people living in residential environments with fewer green resources.[6] Because people who live in towns and cities have less access to the natural environment, the availability of urban and peri-urban open space and 'green' areas is an increasingly important part of a healthy urban environment, and will serve to safeguard health and wellbeing as the population in centres intensifies.

Current research shows that access to open, and especially green, spaces improves people's sense of wellbeing. In spite of this, the development of green and open space in urban planning has not always occurred in conjunction with other aspects of urban planning. There are recent signs of growing recognition that green space policies are an important part of urban planning, sustainable development, biodiversity, public health and community development.[7]

A key goal of both public health and local government planning must be to create and maintain quality open and green spaces that are relevant to and utilised by all sections of the community.

What are "Public Open Spaces"?

There is no single agreed definition of open space nationally or internationally. There is agreement however, that there are many types of urban public open space. Our regions' open space network is not just about playgrounds, parks and reserves, but incorporates diverse aspects of our wider environment, for example, neighbourhood streets, city centres, walkways, greenery, waterways, structures and views.

The working definition of open space given by the Wellington Regional Strategy "Open Spaces Working Group"[i] is:

"Any area of land or body of water to which the public has physical and/or visual access". [8]

This definition was also adopted by the Auckland Regional Growth Forum in the Auckland Regional Open Space Strategy[9], and encompasses both public and private open space. While this definition is very broad, these strategies mainly focus on the open space networks managed by local, regional and national authorities and therefore traditionally focus on parks, reserves and waterways.

For the purposes of this information paper we will use a broad understanding of open space. Within this context, open space includes:

- green spaces (or green field developments) such as regional and local parks and reserves, sports fields, and other recreation areas,
- blue spaces such as the region's waterways and harbours,
- grey spaces such as civic squares, streets and transport corridors. It also includes the open vistas and views that surround the city.[9]

Open space is also often referred to by the narrower term 'green space'. Green spaces can be defined as 'any *vegetated* land or water within or adjoining an urban area'.[7] This includes natural habitats, green corridors such as paths and rivers, parks, gardens, playing fields, children's play areas, cemeteries, and countryside immediately adjoining a town.

Open spaces also include contaminated or vacant land, often called "brown fields", which can be developed into green spaces or parks. Undeveloped or poorly developed brown fields are not considered to be quality open spaces and can have a negative impact on health and wellbeing.

[i] This working group has been established to develop a Wellington Regional Open Space Strategy and action plan. It is comprised mainly of local and regional authorities and co-opted expertise, including input from the health sector.

Development of Open Spaces in Greater Wellington

Māori have a long history of settlement of the Greater Wellington region (Te Upoko o te Ika a Maui). This paper acknowledges a number of iwi as the mana whenua of the region.[ii]

When European settlers arrived in the early to mid 1800s, the hills and valleys were covered in dense native forest with a few strategically located Māori settlements. Settler land was apportioned to individual property owners, unlike their Māori neighbours who lived in small communal groups on marae surrounded by land owned by the whole tribe. The marae consisted of a central and sacred open space (marae ātea which is translated as a 'place of encounter') - an important, shared public space edged with communal buildings.

As settlers sought to tame the land, more and more forest was removed as the urban area spread on to the hills and up the river valley. Early settlers placed a high value on green space and the inclusion of nature into the urban form, but focused on importing European plants and bird life, rather than enhancing New Zealand's natural heritage.[10] In contrast to traditional Māori settlements, urban open spaces often developed on the periphery of built areas.

Many medium and larger New Zealand towns have established 'green'/'town' belts or botanic gardens.[iii] These were originally intended to create urban edges but as populations grew, development jumped over these edges. Although large tracts of natural green space remain in the greater Wellington region, especially in the Town Belt of Wellington City and in the adjacent regional parks in Wellington and the Hutt Valley, green spaces on flat areas and in Central Business Districts, remain under development pressure.[11]

Continued population growth, expansion of built areas and a move to infill and multiple unit housing has created a new range of roles for the original green spaces. These include providing a space for outdoor recreation and sports participation, as well as providing a 'pleasant and healthy' environment with benefits for mental and social wellbeing.

Management of parks and reserves in the Greater Wellington is shared between the regional authorities, territorial authorities and the Department of Conservation. While the regional council manages the regional parks and reserves, local councils manage sports grounds, playgrounds, urban parks and waterside developments. An example of the types of open spaces managed by local councils is the 2800 hectares managed by Wellington City Council. This includes 2,500 hectares of bush (native, exotic and mixed); 200 hectares of general purpose grass areas; 100 hectares of sports turf; 98.5 kilometres of maintained tracks; 104 children's play areas; 3,600m^2 of annual bedding; and 7 hectares of gardens and shrub areas.[12]

The New Zealand Urban Design Protocol[13] states that quality urban design:

- "facilitates green networks that link public and private open space;
- provides formal and informal opportunities for social and cultural interaction;
- provides environments that encourage people to become more physically active."[iv]

Public open spaces must address all of these design functions to be of high quality. There is recognition in Greater Wellington that there needs to be greater integration of open spaces, developing a network to connect up green spaces.[14]

[ii] The following section was written in consultation with Regional Public Health's Māori Strategic Advisor.

[iii] e.g. in the main centres and Wanganui, Rotorua, Palmerston North, Napier, Ashburton and Oamaru.

[iv] These design functions are three that are most relevant to this discussion, from a list of nine in the Urban Design Protocol.

Open Space and Local Government (the 'four well-being's')

Under the Local Government Act 2002, local authorities are required to 'promote the social, economic, environmental and cultural wellbeing of communities', commonly called the "four wellbeings". Social, economic, environmental and cultural factors are the four cornerstones of the sustainability framework. They also represent the four major factors that influence health (the wider determinants of health)[15] and are therefore fundamental to the development and maintenance of healthy communities. This section briefly describes the impact open spaces have on these four wellbeings.

Social

Open spaces provide places for people to meet and interact, thus increasing social cohesion and social inclusion. They provide opportunities for education and lifelong learning, for example Karori Wildlife Sanctuary (Zealandia), the Botanic Gardens, Otari Native Botanic Garden, Matiu/Somes Island and our regional parks. In addition, they create opportunities for community participation in caring for the environment. Well-designed spaces can promote a sense of place and be a source of community pride, helping to reduce crime and the fear of crime. They also provide opportunities for physical activity, helping to promote active and healthy lifestyles.

Economic

Open spaces bring measurable direct and flow-on economic benefits to local, regional and national economies. These economic benefits enable communities to function and prosper, allowing them to build social cohesion, social capital and healthy communities.[16] A recent review of literature undertaken by Deakin University summarised health and wellbeing outcomes of contact with nature, including benefits for economic wellbeing.[17] These included:

- Parks and nature tourism are significant contributors to our regional (and national) economy
- Parks and associated tourism provide employment
- Urban greening attracts new businesses, consumers and tourists
- Significant natural features raise real estate values
- Contact with nature can reduce the burden of disease on the current health care system, promoting health and healing.

In New Zealand, green spaces can also support primary industries by increased biodiversity. There are also significant opportunities for civic or urban agriculture, supporting local food production and supply.

Environmental

The contribution our green spaces make to our physical environment is immense. They maintain our clean air and water, enhance and protect biodiversity, cool our cities, store carbon, and protect the earth's outstanding natural features and processes.[18] Our open and green spaces also provide protection from environmental hazards and can support resilience of communities to hazards. For example, green space, particularly trees and large shrubs, can protect people from the harm of key environmental exposures such as flooding, air pollution, noise, and extremes of temperature in urban environments.[7] This protection is likely to become more important as the local impacts of climate change become more frequent and extreme.

Cultural

The importance to wellbeing of personal connections with nature is common to all cultures, and natural landscapes have traditionally been sources of inspiration for creative pursuits for all peoples throughout history.

Urban spaces have a special cultural significance to *tangata whenua*, providing a sense of place and belonging intimately connected to concepts of *tūrangawaewae*. Natural landscapes vegetation and waterways in urban areas, can provide Māori with access to

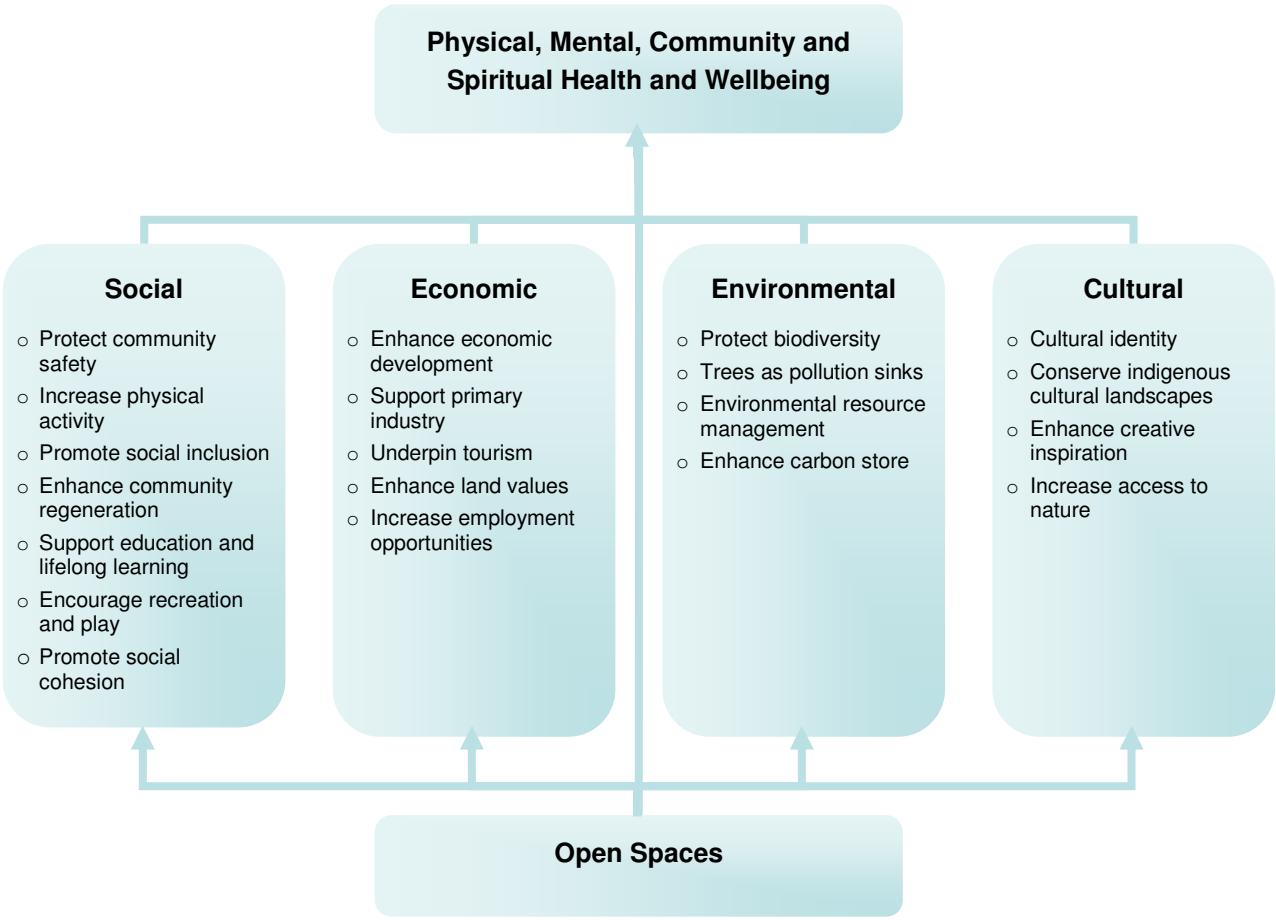
mahinga kai (traditional food sources), and protection of *wahi tapu* (sacred sites).[19]

Open spaces create opportunities for cultural interaction, bringing people of different cultures together to celebrate community diversity, or for communities to celebrate their own cultures.

Open Space and Public Health

Social, economic, environmental and cultural factors provide the pathways between quality open spaces and their impact on health and wellbeing as represented in Figure 1.

Figure 1: How quality open spaces impact on wellbeing through social, economic, environmental and cultural factors



The physical, mental, social, cultural, environmental and economic connections between open spaces and health and wellbeing are discussed below. Of these, the connections that are the most related to public health are:

- Open spaces increasing people's contact with nature and spaces of cultural significance (cultural/spiritual wellbeing / *te taha wairua*[20])
- Open spaces promoting social interaction and cohesion (social wellbeing / *te taha whānau*[20])
- Open spaces promoting physical activity (physical wellbeing / *te taha tinana*[20])
- Open spaces reducing stress and promoting relaxation (mental wellbeing / *te taha hinengaro*[20])

Green spaces provide a place to be physically active, to socialise with others, to participate in community and cultural activity, improve the natural environment and support economic growth. A 2007 survey in Denmark indicated that access to a garden or green areas close to homes is associated with less stress and a lower likelihood of obesity.[21] A Netherlands study found that the perceived general health of people living in less built-up urban areas tended to be better and was strongly related to the extent of green space.[22]

Psychological/spiritual wellbeing (*Te taha wairua*)

Te taha wairua or spiritual wellbeing has been described as incorporating "the experience of mutually rewarding encounters between people, a sense of communion with the environment, and access to heritage and cultural integrity."[23] It incorporates many of the aspects of social and mental wellbeing, but also of cultural identity. People who feel secure in their identity, especially their cultural identity, are more likely to report a complete sense of wellbeing.

For urban Māori, some of whom may be disconnected from their *turangawaewae* ('a place to stand'), a sense of place in the urban environment is complex but vital to wellbeing. Hoskins describes it as "a de facto sense of place where one connects to place through a knowledge and respect for another iwi's connection to that place."[19] For iwi still living in their own urbanised *takiwa* (district), sense of place is connected to both '*rangitiratanga*', (control over one's environment) and '*kaitiakitanga*' (control over stewardship of resources). Hoskins gives examples of where iwi have negotiated revegetation of returned tribal lands. For example, Auckland City Council agreed with *Ngati Whatua o Orakei* to revegetate *Takaparawhau* (Bastion Point) cliff perimeter, bringing it as much as possible to its former natural character. Similarly, *Te Waiparuru*, a remnant forested stream and gully system below Grafton cemetery, is important to tangata whenua as offering a tangible link back to both *tupuna* (ancestors) and *mahinga kai*. Hoskins challenges local governments in urban areas "to explore similar opportunities in their own shared landscapes".[19]

Open spaces, especially places of cultural heritage, can enrich peoples' lives, often providing a deep and inspirational sense of community and landscape.[24] And increasingly, parks are providing opportunities for cultural celebration that support communities' sense of cultural identity and belonging.

Social wellbeing (*Te taha whānau*)

Green spaces can enhance social interaction and cohesion among communities. City parks, in particular, have been shown to be widely used and in different ways (perhaps because they are free), and help to make urban neighbourhoods more liveable.[7] They offer opportunities for recreation and exercise to at-risk and low-income children, youth, and families who might not be able to afford them elsewhere. They also provide places in low-income neighbourhoods where people can experience a sense of community.[25]

Public open spaces are ideal settings to promote social cohesion and inclusion and thus for enhancing 'social capital', a factor strongly associated with good health. "The aspect of social capital that makes it a classic public good is its property of non-excludability; that is, its benefits are available to all living within a particular community, and access to it cannot be restricted".[26] The degree to which this occurs is strongly mediated by quality and safety aspects of the park space and levels of pedestrian accessibility. Residents of neighbourhoods with greenery in common spaces are more likely to enjoy stronger social ties than those who live surrounded by barren concrete. A Chicago study found for urban public housing residents, that levels of vegetation in common spaces predicted the formation of neighbourhood social ties.[25] A study in England found that parks, and other types of public spaces, were a means of bringing different communities together for informal contact.[27] Another study found that participation in the local environment helped refugees integrate into a new society.[28]

"Parks are considered community assets and bring people in the surrounding areas to a common place for leisure purposes, a time when people are more likely to be open to what they see around them and receptive to others, because they are recreating together and sharing a common space".[29] Therefore, social capital can be enhanced within a diverse society by having open space for common use, such as parks.

A Health Council of the Netherlands[30] review of literature on environmental influences on health and wellbeing found that:

- the presence of greenery increases the use of public spaces

- the presence and views of green common space correlates positively with social ties in a neighbourhood
- there is a positive link between the social integration of the elderly in a neighbourhood and their exposure to green common spaces.

Community gardens are an important means of improving neighbourhoods and building community capacity, as well as increasing access to healthy foods.[31] Advocates of community gardens say they increase residents' sense of community ownership and stewardship, provide a focus for neighbourhood activities, expose inner city youth to nature, connect people from diverse cultures, reduce crime by cleaning up vacant lots, and build community leaders.[32] The social support that exists in the collective maintenance of shared community gardens can help to sustain healthy lifestyle changes.

Physical wellbeing (*Te taha tinana*)

Obesity and sedentary lifestyles have been increasing in recent decades leading to increased risk of Type II diabetes, cardio-vascular disease and various cancers. The use of open spaces to promote physical activity is an important part of addressing these conditions in an urban setting. Active lifestyles depend, as much upon environmental settings as upon individual will. Open spaces, and especially green spaces, promote healthy behaviours by providing an accessible, affordable and enjoyable place to be physically active.

Open spaces encourage walking and outdoor activities such as outdoor games, sports, and cycling, increasingly recognised as some of the best ways to improve physical health and mental wellbeing. Most health advisory bodies recommend brisk walking and cycling as ways of improving cardio-vascular fitness, muscular strength and the maintenance of mobility, with other benefits including weight loss, reduced risk of Type II Diabetes, and reduced risk of osteoporosis (weight-bearing exercise only).[33] Physical activity in turn, has a positive impact on mental wellbeing.

Walking is the most commonly reported physical activity in New Zealand.[34] The role of the environment in shaping habitual behaviour patterns such as walking behaviour is important. The aesthetic of the local environment, the convenience of facilities for walking (footpaths, tracks), accessibility of places to walk to (shops, beach), level of traffic on roads, and composites of environmental attributes have all been found to be associated with walking for particular purposes.[35]

Participation in physical activity in the Wellington region is high by international standards (47.6% adults in Wellington participate in recommended levels of physical activity[36] compared with 29% in America[37]). However, based on international evidence, this proportion is likely to vary according to factors such as quality, suitability, proximity and accessibility of open spaces, as well as by socio-economic and other factors. It was found for instance, that Australian inner-city residents who lived close to a cycle trail used it more and longer than those who lived beyond that distance.[38] In an American study, adolescents who reported no access to a safe park, playground, or open space were significantly more likely to be physically inactive (10.3%) compared to teens with access to such settings (6.4%).[37] With respect to walking, quality attributes such as attractiveness, specific amenities, and size determine use, and need to be measured to develop a better understanding of the relationship between access to public spaces and physical activity.[39]

A recent New Zealand study examining neighbourhood access to open space and the relationship with physical activity found that there was little evidence of an association between locational access to open space destinations and physical activity.[40] The study indicated that factors other than locational access may be more important predictors of open space use across the population. The researchers concluded that access measures should incorporate dimensions such as amenity attractiveness and safety as well as travel time access. Measures should also differentiate physical activity outcome measures such as transport-related physical activity, and leisure.

Green Space Scotland's overall assessment of the key influences whereby greenspace promotes physical activity is as follows:

1. *Distance of residents from a green space* – the nearer the greenspace the more likely it is to be used regularly.[7]
2. *Ease of access* – the more accessible in terms of routes and entrances, and disability access, the more likely green space is to be used for some form of physical activity.[7]
3. *Size of the green space* – the larger the size of the green space, the more people are likely to use it.[7]
4. *Connectivity to residential and commercial areas* – the greater the degree of connectivity and links to residential and commercial areas, the more likely it is to be used, for example, people walking and cycling through green space to and from work.[7] In addition, the street network itself is often used as proxy open space due to lack of access to other public space. This makes it all the more important for streets to be pleasant, useable and well connected.
5. *Attractiveness* – the more diverse the flora and fauna found within the green space and the less litter and graffiti there is, the more likely it is that the green space will be used. According to Sallis *et al*, parks are also more likely to stimulate activity if they are aesthetically pleasing and have tree-lined walking paths rather than empty open space.[41] They also need to provide an environment where people feel safe.
6. *Multi-use* – the wider the range of amenities (e.g. children's play area, quiet garden with seating, playing areas for team games and picnic areas), the more likely the green space is to be used by different kinds of people.[7]

Mental wellbeing *(Te taha hinengaro*)

The World Bank and the World Health organisation estimate that mental health disorders currently constitute 10% of the global burden of disease. Projections suggest that by the year 2020 mental health disorders will rise to 15% of the global burden of disease, and depression alone will constitute one of the largest health problems worldwide.[42] The psychological/emotional benefits from contact with nature are widely recognised as relieving stress and tension and diminishing anxiety. These benefits may become more prominent as the global burden of disease changes over time.

Exposure to open space, and green space in particular, is important in promoting restoration and relaxation, and reducing stress.[7] A number of studies have investigated the impact of green space on mental health. As far back as 1979, Ulrich found Americans' stress levels to be less after exposure to nature scenes, compared with urban scenes. In contrast to nature scenery, urban scenes lacking natural elements tend to work against emotional wellbeing, significantly increasing sadness.[43] Ulrich et al later found that natural settings' restore positive effects, reduce anger/aggression and reduce fear.[44]

One study found that the psychological benefits of parks ranked higher in importance than the recreational and social aspects.[45] A Swedish study found that the more time people spend in outdoor public green space, the less stressed they feel, independent of age, gender and socio-economic status.[46] Green Space Scotland identified two USA studies[4748] which found respectively that residents who lived in public housing with exposure to nature (including both open space and views of trees) had greater capacity to cope with stress than those who lived in dwellings without nearby nature and that older peoples' stress levels were reduced by the use of urban parks.

The causal explanations for the impact of green space on mental health vary, but include: outdoor activity and exercise, natural daylight, stimulation of the senses, and aesthetic experience.[7] Parks are ideal for restorative experiences due to their ability to satisfy fascination, a sense of being away, a sense of being part of a larger whole and compatibility with nature.[49] Natural environments that are easily accessible offer an important resource for unwinding after periods of intense concentration and stress. Moreover, "experience in natural environments can not only help mitigate stress it can also prevent it through aiding in recovery."[49]

Recovery from stress has also been shown to be faster and more complete when subjects were exposed to natural settings as opposed to either pedestrian malls or traffic environments.[44]

Open Space and Equity

There is convincing evidence that the availability of green spaces within urban areas benefits health and well being. The distribution and nature of these benefits vary significantly across the population due to mediating factors such as quality, appropriateness and access, thus contributing to differences in the distribution of health outcomes. Green space is related to improved health regardless of socio-economic status. However the quantity and quality of green space is important, as poor-quality green space can have a negative impact on health.[7]

There is also good evidence that certain populations will derive greater benefits from quality open space and that certain open space considerations will support these populations. These populations include children and adolescents, older persons, female heads of households and those with 'no time for exercise'[50] Open space designed to provide safe, connected and short distance routes, more community gardens and neighbourhood greening, and more programmes or facilities organising open space, provides more benefits to low socio-economic groups, low income ethnic minorities, and the elderly in particular.[51]

This section discusses the significance and impact of open spaces on specific population groups.

Low socio-economic communities

The association between socio-economic status and health has been well documented. As socio-economic status decreases, health status worsens across a population and health inequalities between rich and poor are evident. In New Zealand, as in other countries, increasing levels of deprivation are associated with increased death rates due to preventable causes, increased avoidable hospital admissions, and increased risk factors for heart disease and some cancers e.g. obesity, high blood pressure etc.[52]

Physical environments that promote good health, such as green spaces, may be associated with a reduction in socio-economic inequalities in health. One Scottish study has shown that populations that are exposed to the greenest environments also have the lowest levels of health inequality related to income deprivation.[53] (Indicators of health inequalities related to income deprivation were taken as all-cause mortality and morbidity from circulatory diseases.) This means that healthy urban planning must include a focus on accessible, quality urban open spaces in low socio-economic neighbourhoods.

A New Zealand quality of life survey found that more than nine in ten Wellington, Porirua and Hutt residents find it easy or very easy to get to a local park or other green space in their city or local area.[54] In another survey 57% of people in the region had visited at least one park or other green space in the past year and 22% use parks monthly or more often.[55] However, national and international research suggests that there is likely to be considerable regional variation in proximity, quality and access to open spaces, which in turn affects health and wellbeing. The highest groups of users in the Greater Wellington survey tended to be Pakeha aged between 30 to 49 years with an income of over $50,000. This is most likely to be because those particular groups are physically able, have access to a car, or live in close proximity to a regional park.

In the Auckland region, the better off (lower deciles) have the best access to green spaces (see Figure 2 below). While 41% of the better off communities have the highest access to green spaces, only 27% of the most deprived communities have high access.

Although a recent national study showed no relationship between locational access to open space and physical activity across neighbourhoods,[40] physical activity levels do vary greatly across socio-economic groups. In addition quality, safety and aesthetics of open space and streetscape also vary considerably across communities. People living in low socioeconomic areas also have lower private vehicle ownership rates[56] and are more likely to

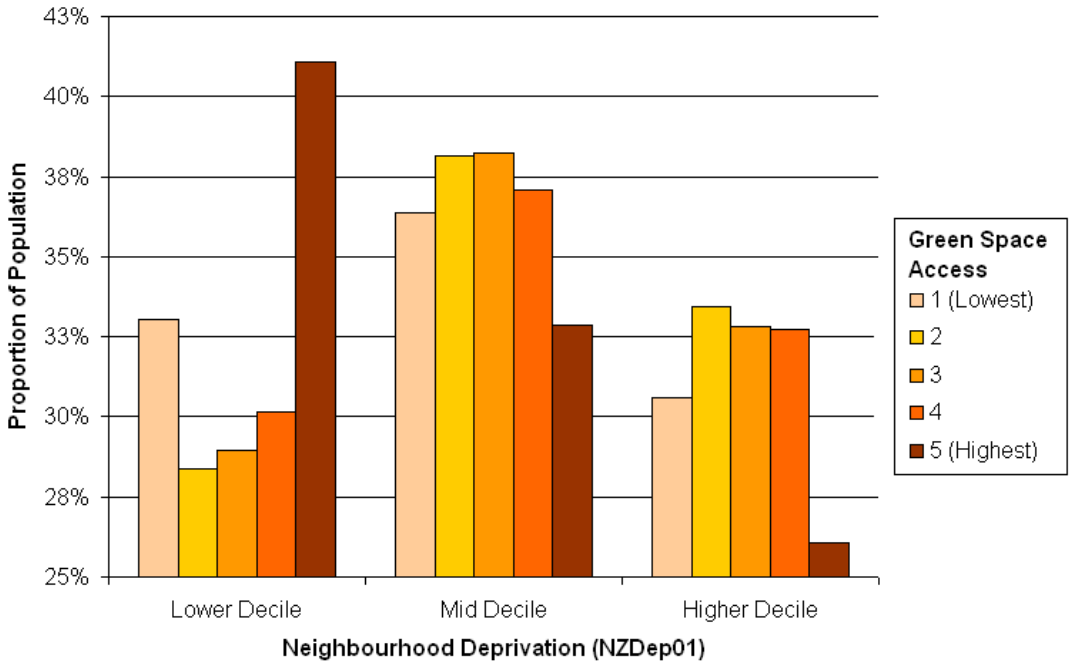


Figure 2. Population proportions by neighbourhood deprivation and green space accessibility in Auckland

Source: Auckland Regional Public Health Service. 2006. *State of Public Health in the Auckland Region*. Areas of high deprivation are also higher deciles.

rely on public transport and walking for access to key services and amenities.

Open space development such as sports fields and larger parks is often on the edge of residential areas, with the residential area essentially turning its back on the open space. Although there may be high proximity, there may still be high separation due to roads and other features of urban design. Open space that provides a centre or a heart to a community may encourage greater usage and have more community relevance.

A 2006 study on the health benefits of parks found that communities with lower incomes, higher poverty rates, and higher proportions of racial/ethnic minorities are those most at risk of being sedentary and overweight, but also have the fewest opportunities for community-level physical activity.[37]

Patterns of urban development in Scotland have led to grassy spaces in high-deprivation areas, and high-quality green spaces in low-deprivation areas. A guide to health impact assessment of green space in Scotland describes both the least deprived and most deprived areas in Scotland as having high percentages of people living near a 'wildlife site'. But the most deprived areas are more likely to have high levels of industrial pollution, derelict land, and poor river water and air quality, and are less likely to live near areas of woodland.[7]

New Zealand research also shows a strong relationship between deprivation and contaminated land or "brown fields" development. One NZ study in 1999, found that 40% of those living in the most deprived socio-economic mesh blocks had hazardous sites in their area, compared to less than 10% of those in the most socio-economically advantaged areas.[57] A recent NZ example of this was the discovery in May 2009, of drums of dioxin and organo-phosphate insecticide, buried under Marfell Park in New Plymouth near a children's playground. Marfell Park is situated in an area with the highest deprivation score (NZDep 10) and was built over a landfill site that previously accepted toxic waste.

Poorly designed and maintained open spaces, lack of investment in green spaces, and limited community involvement in their development, can have a detrimental effect on the community. Deprived communities are most likely to

experience some or all of these effects. An Australian study found that public open spaces in the least deprived neighbourhoods had more amenities (e.g. picnic tables and drink fountains), were more likely to have trees that provided shade, a water feature, walking and cycling paths, lighting, signage. This suggests that public open spaces in high socio-economic neighbourhoods have more features that are likely to promote physical activity.[58]

Lack of access to quality green spaces due to lack of transport also affects the most deprived communities much more than the least deprived.

Patterns of planning, development and maintenance of green spaces have meant that while some people regularly use green spaces, not all communities or populations have equitable access to high-quality open spaces.

Māori

For Māori the urban landscape has important cultural and environmental implications for wellbeing. Hoskins lists the importance to Māori of maintaining the integrity of the land and waterways, of seeing cultural histories reflected in the urban environment that "allow for a visible and living *tangata whenua* urban presence", thus restoring a sense of place for *tangata whenua*.[19] He quotes the example of the use of a number of elements and symbols of cultural significance to *Ngati Whatua o Orakei* in the development of the Viaduct Basin, ensuring that the space "begins to reflect their *tangata whenua* status and tell some of their stories". Hoskins also stresses the significance of using intact tribal names for places. It is these factors that contribute to the wellbeing of urban Māori and reduce the potential for alienation from their surroundings.

Wellington City Council's Open Space Strategy recognises the importance of the *mana whenua* relationship with the land. It discusses the establishment of a forum where resource management and policy issues of mutual concern can be discussed and resolved. It states "Nowhere is this more important than in the development of open space policy where Māori interests are to maintain and restore the *mauri* or life essence of the *whenua* (land), water and air."[12]

However, in a recent consultation on building sustainable communities, some Māori expressed frustration at the barriers to utilising Māori land for residential development. One of these barriers was the expectation (from Councils) that Māori land will remain undeveloped to provide open space. Participants called for more flexibility in zoning rules.[59]

Children and Young People

The use of open space for physical activity is particularly important for children and young people. One of the major contributing factors to excess weight in children is inactivity.[60] In the New Zealand Health Survey 2006/07, one in twelve children (aged 2 to 14 years) were obese (8.3%), with Pacific girls and boys being 2.5 times more likely to be obese, and Māori girls and boys 1.5 times more likely to be obese than the general population. Children's access to quality open spaces for recreation and physical activity is therefore highly important.

In addition, children's play is fundamental to their development. Playing is learning, as it helps children develop muscle strength and coordination, language, cognitive thinking, and reasoning abilities. It has proven to be a critical element in a child's future success.[61] Play also teaches children how to interact and cooperate with others, laying foundations for success in school and the working world, and exercise has been shown to increase the brain's capacity for learning.

Parks are ideal settings for children's play because they are safe, natural and accessible, offering opportunity for different types of unstructured physical activities. Children who have access to safe green space, such as parks and playgrounds, are more likely to be physically active and less likely to be overweight.[7] Quality, safety and ease of use are also important aspects of open space for children. Concerns about safety can impact on their use. Children's mobility is often limited to their immediate surroundings and the constraints of their parents or guardians.[60] "Parental perceptions rather than children's perceptions of road safety had

stronger associations with children's walking and cycling in the neighbourhood suggesting that parents influence and/or control these behaviours".[62] Children's perceptions of neighbourhood also change as they grow older, making it important to provide developmentally appropriate opportunities for play and physical activity in neighbourhoods. "Both the type of neighbourhood and age moderate children's perceptions of places where they could play and be physically active, this highlights the importance of providing developmentally appropriate opportunities for play and physical activity in neighbourhoods."[63] Parks in New Zealand have the uniqueness of being reasonably safe and accessible as well as natural (including elements of nature such as trees and plants) and so have great capacity to provide relevant space for children's and adolescents.

People with disabilities

A well-designed urban environment has the potential to substantially improve the quality of life of people with disabilities, by providing opportunities for physical activity and for access to the natural environment. A *Universal Design approach*[64] *(*also called *Inclusive Design*, *Accessible Design* or just *Accessibility*) *to open space development* would accommodate the widest range of potential users, including people with mobility and visual impairments (disabilities) and other special needs e.g. wheelchair accessible, ramps rather than steps, sufficiently wide pathways - kept in good repair and well-lit, and include benches for resting.[65] Planning well for the needs of people with disabilities will also improve access for older people, and other groups with special access needs, improving their opportunities for physical activity and social interaction.

Planning for Healthy Open Spaces – an International Example

Pressures on the urban environment into the future can, and are, readily predicted. Most cities will face an increase in their populations that will need to be properly housed, with relevant supporting infrastructure. Most local authorities recognise the need to move away from the urban sprawl policies of the twentieth century, towards increased population density, especially of city centres. But there is an inherent tension between needing to house more people in a given area, and the need for quality open spaces for health and wellbeing. Development pressures mean that open spaces need to be identified, well planned, and protected, to avoid being turned into building sites or their quality compromised.

Many international case studies recommend strong public participation in urban planning, including for public open spaces. Local people, including representation from all communities and interests, need to be involved in planning their own environments. In New Zealand, participation of local iwi/Māori would be a priority.

The following example is a summarised planning model that was successful through its strong partnerships and community involvement, as much as through its resultant open spaces plan. It was led by Open Spaces Seattle 2100, a partnership between the City of Seattle, University of Washington and the Urban Land Institute, with participation by a very wide range of environmentalists, planners, architects, designers, artists, academics, city developers and open space advocates. Open spaces planning involved 300 people over two days, allowing every part of the city to be viewed from multiple perspectives (the Green Futures Charrette as part of Open Space Seattle 2100). The exercise aimed to create:

> *"a bold integrated Open Space Plan with implementation strategies for Seattle's next hundred years, which will enhance the health and wellbeing of both our cultural and natural environments. This vision of a regenerative green infrastructure will strive to create a healthy, beautiful Seattle while maximising our economic, social and ecological sustainability."*[66]

The two-day 'charrette' was preceded by a year of careful preparation and study. Eight principles for open space plans, collaboratively developed, guided the work. These included: 'Regional Responsiveness; Integrated and Multi-functional; Equity and Accessibility; Connectivity/ Coherence; Quality, Beauty, Identity and Rootedness; Ecological Function and Integrity; Health and Safety; and Feasibility, Flexibility and Stewardship'.

Charrette participants worked on eighteen watershed areas, basing their ideas on existing site conditions, city plans, predicted population figures, anticipated changes in modes of transport, climate disruption and other potential natural hazard impacts. The resulting recommendations from the charrette for planning included:

- create **integrated, connected "green infrastructure"** – bikeways, green freeways, natural drainage filtration, and tree canopy cover
- balance **density and community** by focusing development into urban nodes that contain civic spaces, local identities, walkable amenities and abundant public transit
- strive for **ecological open spaces** that restore ecological functions and promote aquatic and terrestrial biodiversity
- provide **democratic access** to open space so that all people, in all neighbourhoods can reap the benefits of a multi-faceted open space system.

Conclusion

This paper has illustrated that the quality and type of open space provided within communities can have a significant and sustained impact on community health and wellbeing. Local, regional and central government play a key role in shaping this important community asset and Regional Public Health recognises the contribution that this makes to public health outcomes such as physically active lives, good mental health and cohesive and connected communities.

The promotion of health and social benefits, as well as those related to the environment and the economy are important in commending to decision makers the significance of open spaces in shaping our communities now and in the future.

Decision makers have opportunities to:

- Maximise the use of existing space and use approaches that invest in community gardens, pocket parks, and multifunctional spaces designed for diverse communities.
- Consider opportunities for rationalisation of land as a way to increase the number of open space destinations.
- Prioritise green and open space development within urban settings over space for vehicle parking for example.
- Involve communities in the design of spaces making them culturally and locally relevant.
- Focus on those areas most in need of open space improvements e.g. some lower socio economic areas, areas with existing poor quality open space.
- Consider street greening initiatives and improvements to street connectivity, roading design and traffic management that will increase the neighbourhoods' walkability.

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