







Table of Contents

06	ISOCARP President's Foreword

08 Editors' Foreword

Cheryl Williams

Towards Healthy Cities: An Urban Policy Perspective

- What to Learn from Vulnerable Regions for Healthy Cities: Extracting Embedded Components of Covid-19 Practices Ebru Kurt Özman · Zeynep Özdemir · Aysun Aygün Oğur
- The Intersection of Urban Planning and the Covid-19 Pandemic:
 Lessons for the Built Environment in 'Building Back' Resilient and
 Sustainable Cities
 Stephen Olus Okeyo
- Building the Future Generations of the Public Health Spatial Planning Workforce: Translating Healthy Places Policies into Reality

 Michael Chang · Marcus Grant · Liz Green · Lourdes Madigasekera-Elliott ·

Towards Healthy Cities: Innovative Urban Planning Mechanisms for Human Well-being

- Beyond Liveable: Planning Cities for Wellness
 Heather Banerd · Kimberly Lum · Yerin Hwang · Pablo Acebillo
- Sustainable Mobility Planning in Bologna: Towards Resilient Cities Between Climate Change, Health Emergency and Social Challenge Bruno Monardo · Chiara Ravagnan
- 90 Health as a Strategic Leverage towards Sustainable Cities: A
 Framework to Understand, Prioritise and Communicate Intersectoral Synergies of Health-promoting Measures in Urban Areas
 Laura Thomas · Ganesh Babu R.P. · Marianne Lefever

106	How to Integrate Urban Health into Planning Urban Public Amenities in Innovation Districts: Case Study of Optical Valley, Wuhan, China Wenjing Luo · Han Zou · Bei Yu
118	Shaping Healthier and Resilient Communities: Lessons from Participatory Community Micro-regeneration in Beijing, China Tongfei Jin
	Towards Healthy Cities: Lessons for Resilient and Inclusive Open and Green Spaces
135	Catchmentscape: A Novel Hierarchical Spatial Planning Unit for the Design of Ecologically-based Planning Practice Iresh Jayawardena
151	The Levels of Availability and Access to Open Space and Its Outcomes on Health: The Case of Camden, London Manasa Vinodkumar
163	Post-pandemic Urbanism for Healthy Cities: Evaluation of Urban Green Spaces in Izmir Dalya Hazar Kalonya · Aysun Aygün Oğur · Sinem Ozdede
177	Green Space Attributes for Enhancing Health and Well-being Mick Lennon · Owen Douglas · Mark Scott
189	Cultivating Culture towards a Healthy City Design: Learning from the Pandemic Tayseer Khairy · Shahzad Ahmed Malik
201	ISOCARP Award for Excellence 2021
207	Gerd Albers Award 2021 Book Award
212	About the Authors
224	About the Editors

106

ISOCARP President's Foreword



Pietro Elisei ISOCARP President 2021-2024

This Review of World Planning Practice (Volume 18), titled *Towards Healthy Cities: Urban Governance, Planning and Design for Human Well-being*, adds to the enormous debate on the role of cities and the phenomenon of urbanisation in relation to the pandemic triggered by the coronavirus. Its papers spontaneously prompt the question: Is it this uncontrolled urbanisation that creates conditions for pandemics, and specifically the dramatic experience linked to Covid-19, or is it the experience of the pandemic that will change the way we urbanise, also in the sense of slowing down urbanisation, and the way we will design the contemporary city?

The papers selected for this Review open up different perspectives, some utopian, as it should be when one talks about innovating and changing the city, others more founded on paths tested in other urban phenomena, such as urban regeneration, the fight against social exclusion, the quest for sustainability, or the design of public spaces.

There are constants, horizontal themes that cut across the different experiences and reflections reported by the contributors to this volume.

Without a doubt, the post-pandemic city is a cursor that seeks its balance on a thread hanging from two hinges, vulnerability, on the one hand, and resilience on the other. The equilibrium point of this cursor defines the location of the healthy city. A healthy city is different from the contemporary city and tends to reject the decisive characteristics of the modernist city, but also of the late or post-modern one.

The forces that keep this cursor in equilibrium refer to evident concepts:

- > Community: community engagement, community-based actions, community action networks, community health, community development, community spaces, etc.
- Sustainability: sustainability of the built environment, sustainability through integrated policies, sustainability as a key planning criterion, sustainability of mobility, environmental sustainability of cities, etc.
- Governance: community renewal governance, smart (or solution-oriented) governance, resilient governance, engaged governance, collaborative governance, etc.

Reading the articles, one sees how planning capable of responding to the needs of the contemporary city, which puts health at the forefront, must be built around these forces. Moreover, the requests coming from cities – or, rather, from citizens – clearly go in a direction characterised by the qualities required and proposed by the following adjectives: liveable, attractive, cohesive, safe, comfortable, inclusive, green, and accessible.

A healthy city necessitates these qualities, these features.

This volume gives us the right ingredients to plan a contemporary city that places the health and well-being of citizens at the centre of the urban planning processes for development, transformation, or regeneration. It is up to us, urban planners, to understand how to dose them in different urban and territorial contexts, because each of them is different in terms of territorial, human, social and political capital.

Finally, this Review could not be published without the commitment and dedication of the authors, urban planning scholars and practitioners, and the professionalism of editors, my fellow ISOCARP Board Members – Ana Perić, Ali A. Alraouf and Jua Cilliers. My sincere gratitude to all of them.

Enjoy the reading!

Editors' Foreword

Ana Perić ISOCARP Board Member 2016-2022



Ali A. Alraouf
ISOCARP Board Member 2019-2022



Jua Cilliers
ISOCARP Board Member 2021-2022

EdOGARFFREWEWd18

The Covid-19 pandemic of 2020 was one of the world's largest public health crises. It caused massive economic adversity, triggering further negative consequences for human life and well-being. In a global effort to envision cities for the post-Covid era, there is a worldwide call for a more just, green, and healthy urban environment. Accordingly, for us as editors, producing this issue of the ISOCARP Review of World Planning Practice titled Towards Healthy Cities: Urban Governance, Planning and Design for Human Well-being was a significant endeavour. Firstly, this volume tries to address one of the most notorious challenges that the global society confronted in contemporary history – the pandemic. Secondly, our objective was to enable transdisciplinary thinking that could articulate a holistic framework to conceive future healthy cities. Hence, we intended to reveal planning priorities aimed at conceptualising a comprehensive understanding of a healthy city and sketching a road map for its realisation. Finally, we were excited to work on the volume to be distributed to ISOCARP members in-person during our World Planning Congress in Brussels after almost three years of restricted movements and social encounters.

The papers included in this volume address crucial topics relevant to the planning paradigm shift towards healthy cities as a result of critical reflections on the unprecedented consequences of the pandemic. Selected papers deal comprehensively with the notions of urban governance, planning, and design in creating healthy cities and illustrate different instruments, mechanisms, procedures, and practical solutions for fostering human well-being. Accordingly, the papers address several research questions, starting with what the lessons learned from the still-unfolding drama of Covid-19 have been, and moving to more speculative, future-exploring questions, such as: How can we expect cities to recover once the pandemic has peaked? Is there a model of a pandemic-resistant city? How does the pandemic relate to the issues of social justice and resilience? When considering pandemics and other crises, should planners focus on only the physical form (size, shape, structure, density) and the material elements of the city (infrastructure, buildings, open spaces), or should they also consider the factors of global and place-based economy, culture, and politics? What types of urban innovation can we expect to promote based on the lessons learned during the Covid-19 crisis? Ultimately, the papers elucidate how we as planners can respond to these challenges in the quest for a more sustainable, resilient and healthy future. In addition, the papers included in this volume aim to familiarise readers with the nuances of adapting the global paradigm shift to context-specific conditions. Hence, the contributions vary in territorial scope, considering various scales (from transnational to local) and different perspectives (from policy recommendations to site-specific urban design solutions). Here we provide a quick roadmap that readers may follow to become acquainted with the contents of the various papers before exploring them in detail.

The first three chapters focus on different urban governance policies as developed and implemented across the globe to tackle the Covid-19 crisis. The first contribution, by Ebru Kurt Özman, Zeynep Özdemir, and Aysun Aygün Oğur, addresses the resilience of vulnerable regions affected by Covid-19 as tested on different case studies in the Global South – India, China, Brazil, South Africa, and Turkey. Focused on the actions taken to manage the pandemics and based on a thorough analysis, the paper provides a set of strategies for communities and community-based organisations to build a broader impact on healthy cities. The second chapter, by Stephen Olus Okeyo, discusses the intersection between urban planning and health policies, shifting the geographical focus to Africa. Building on a structured set of features of the built environment linked to infectious diseases and potential interventions to tackle the epidemic's adverse

effects, the paper offers policy recommendations revolving around three pillars: natural environment, urban design, and digitalisation. Enhancing the qualities of the public health spatial planning workforce to better contribute to the health of our communities is the focus of the third chapter. Using the lens of education and professional development activities in the United Kingdom, Michael Chang, Marcus Grant, Liz Green, Lourdes Madigasekera-Elliott, and Cheryl Williams offer evidence on the immediate need to invest in upskilling a workforce that can support and enable the creation of healthy places. The authors point out that such an effort is not to be seen as an economic cost but of social value in harnessing opportunities to put health and sustainability at the heart of planning.

The following thematic section, composed of five chapters, looks more closely at the instruments in urban planning and related disciplines aimed at achieving healthy and liveable cities. Firstly, Heather Banerd, Kimberly Lum, Yerin Hwang, and Pablo Acebillo offer a structured methodology to consider other factors instead of focusing only on liveability in order to achieve healthy cities and move towards comprehensive planning for people's wellness as the ultimate objectives in future cities. Although the paper addresses several case studies in Southeast Asia, the authors succeed in defining more general guidelines to be implemented in other spatial settings. The next contribution, by Bruno Monardo and Chiara Ravagnan, highlights innovative approaches in European Sustainable Mobility Plans, taking the metropolitan area of Bologna. Italy as a paradigmatic case where new strategic, inter-municipal, and mobility plans are based on resilience. cohesion, and connectivity. The third paper, written by Laura Thomas, Ganesh Babu R.P., and Marianne Lefever, and building on several cases, mainly from the Netherlands, proposes a framework to understand, prioritise and communicate inter-sectoral synergies of health-promoting measures in urban areas as a way of integrating them into concrete spatial strategies. The fourth contribution, by Wenjing Luo, Han Zou, and Bei Yu, considers both the health issues and urban public amenities of innovation districts in Wuhan, China, to determine the levels of spatial qualities, as well as social and economic vitality. Finally, the paper by Tongfei Jin reflects on the foundations of community resilience in Beijing, China, offering an array of mechanisms to boost participatory planning aimed at micro-regeneration practices.

The last five contributions shift the focus to open and green spaces and reveal various mechanisms (using both qualitative and quantitative methods) to improve the features of these spaces and enhance their positive effect on diverse populations. A paper by Iresh Jayawardena on 'catchmentscape', a novel hierarchical spatial planning unit, reflects on ecologically-based design as an integrative tool for meeting specific environmental challenges in the urban area of Warkworth, New Zealand, The next chapter, written by Manasa Vinodkumar, applies the space syntax methodology to mapping health variables and access to open spaces in areas of high deprivation in London's borough of Camden. The paper's highlight is its comparative analysis of the syntactic values of Camden's different types of green and open spaces, putting these into relation to the social factors influencing a healthy lifestyle. The third paper on post-pandemic urbanism for healthy cities, by Dalya Hazar Kalonya, Aysun Aygün Oğur, and Sinem Ozdede, reflects on green spaces in Izmir, Turkey and the specific ecosystem services they create and highlights their relationship with the health and spatial impacts of the Covid-19 pandemic. The authors' proposed Post Pandemic Green Spaces model reveals the minimum size of urban green space per capita needed to sustain social distancing and healthy living conditions. Similarly, attention to the attributes of green spaces as a tool to enhance health and well-being is the focus of the next chapter by Mick Lennon, Owen Douglas, and Mark Scott. Building

on the results of wide-ranging surveys conducted on three sites in Dublin and Waterford, Ireland, the findings reveal how populations in different urban contexts and at different stages in their adult life perceive and use the outdoor environment, also addressing the potential implications of such perceptions and behaviours for their health and well-being. Finally, the last chapter, written by Tayseer Khairy and Shahzad Ahmed Malik, illuminates the importance of (local) culture, largely neglected as an essential parameter in responding to the pandemic crisis, and consequently aiming at both physical and mental well-being. By sharing experiences from Egypt and India, the authors highlight how cultural interpretations of urban design contribute to a stronger sense of togetherness and social cohesiveness.

Addressing the recently growing narrative on the topic of healthy cities, this volume is directed at a broad audience: not only planning professionals and those in related disciplines, but also policy- and decision-makers, scholars, and those involved in advanced educational or professional development programmes. Finally, we are sincerely grateful to all the authors who compiled interesting planning practice examples and so genuinely contributed to the quality of this book. We look forward to future collaborative efforts and critical exchange of ideas!

Towards Healthy Cities: An Urban Policy Perspective



What to Learn from Vulnerable Regions for Healthy Cities: Extracting Embedded Components of Covid-19 Practices

Ebru Kurt Özman Zeynep Özdemir Aysun Aygün Oğur

Healthy Cities and Vulnerability

A healthy city is described with regard to its cleanliness, accessibility to environmental and health services, safety, and respect for different social norms and lifestyles. The purposes of healthy cities are to provide quality, safe and clean living areas, sustainable ecosystems, strong communities, citizen control of decision-making, participation, easy access to basic needs, interaction, and strong and innovative economies, maintain connections with citizens' cultural backgrounds, and ensure accessible health services and positive health status (WHO, n.d.). In the era of Covid-19 management and response, vulnerability levels of cities have been critical determinants in providing public health.

Many studies have been carried out on the vulnerability levels of cities to combat the Covid-19 pandemic, mostly tending to create indicators and indices for assessment. The widely used parameters of these indices are based on socio-economic, demographic, structural (housing), and health infrastructure data. The vulnerability indicators in these studies can be grouped as 'Urban infrastructure', 'Human capital', 'Income and work', 'Longevity/life expectancy', and 'Education' (Acharya & Porwal, 2020; de Souza et al., 2020; Daras et al., 2020; Biggs et al., 2021; Sahu & Mishra, 2021).

On the other hand, Covid-19 has been experienced differently in each country with different levels of vulnerabilities. However, studies on Covid-19 in the Global North and their inputs into vulnerability discourse dominate the literature. To empirically reveal the dominance of the Global North, the Web of Science (WOS) database was reviewed based on 'countries of research' and the findings were grouped into the seven regions as shown in Figure 2. The regions were based on the six WHO statistical regions except for 'Americas', which was divided into 'North America' and 'South America' in this study to facilitate comparative evaluation of the Global South and the Global North.

The WOS database review was constructed on 5 keywords: 'Covid-19 and Social Vulnerability', 'Covid-19 and Vulnerability Index', 'Covid-19 and Vulnerability (except vulnerability index and social vulnerability)', 'Covid-19 and Best Practices', and 'Covid-19 and Healthy Cities'. The review is narrowed down with regard to research area by omitting unrelated research. The resulting 141 pieces of research into social vulnerability, 122 on vulnerability indexes, 1,858 on vulnerability, 361 on best practices, and 53 on healthy cities are evaluated.

As shown in Figure 3, studies from North America and Europe accounted for 27 percent and 35 percent, respectively, of all research. The smallest number of studies came from the Eastern Mediterranean, Southeast Asia, Africa, and South America, respectively. For each of the five keyword-based categories examined, North America and Europe had the greatest number of studies.

Among targets of WHO Europe, 'a strong, mutually supportive and non-exploitative community' and 'access by the people to a wide variety of experiences and resources, with the chance for a wide variety of contact, interaction and communication' are two key factors related to social organisation which cannot be detected in indicator-based literature since they are not measurable. Yet, in the era of Covid-19, community engagement to promote well-being, enabling people to work together, and citizen participation in managing the pandemic and preventing transmission has been another critical component of health besides the efficiency of the health system (WHO, 2020). However, the Global North dominated, indicator-based literature may underestimate these collective actions in vulnerable regions. Therefore, the experiences of the Global South, considered vulnerable according to indices, in overcoming its vulnerabilities define an alternative pathway to healthy cities.



Figure 2. The regional categorisation of the literature review. Source: Authors

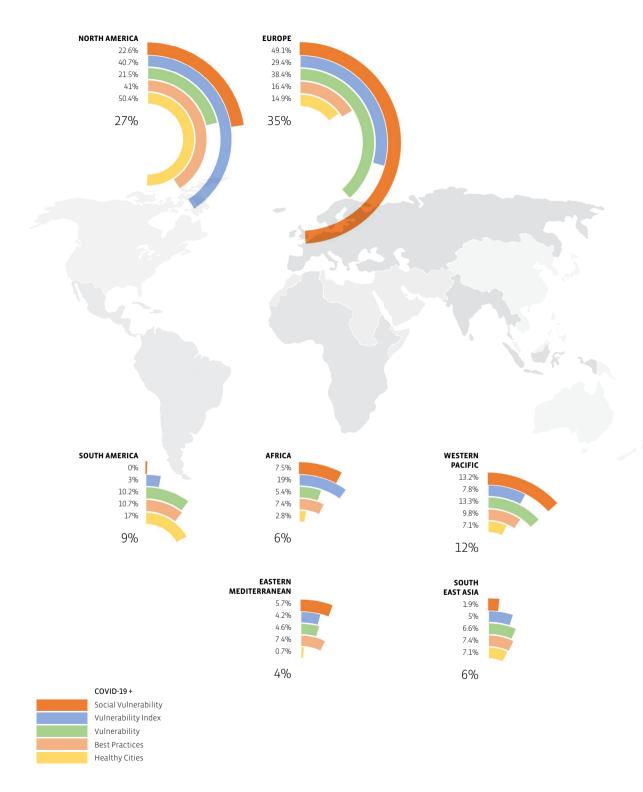


Figure 3. The distribution of studies regarding regional categorisation. Source: Authors



Figure 4. Research samples and good practices. Source: Authors

The aim of this research is to go beyond the reading of vulnerability based on indicators. This study seeks to explore the 'embedded' components that are ignored in Covid-19 process management and related indices/indicators and discuss healthy city policies through these components, by harnessing good practices and collective actions. The research sample (see Figure 4) comprises good practices in countries with high vulnerability in the Global South, namely Brazil, Turkey, India, South Africa, and China. A number of countries, including these, were firstly examined for their responses to the Covid-19 process in pandemic regions within the framework of urban resilience (Aygün Oğur et al., 2021). In addition to this elaboration, some parameters, including socio-economic structure, social, economic and spatial vulnerability of the countries, extent of social inequality, virus transmission rate in the population, data availability, and existence of alternative management approaches to Covid-19, singled out these countries for analysis. The role of different socio-spatial components in creating and governing healthy cities, which will be analysed qualitatively, will be considered through an examination of collective actions in these practices, rather than stereotyped vulnerability indicators.

COMMUNITY-BASED ORGANISATIONS

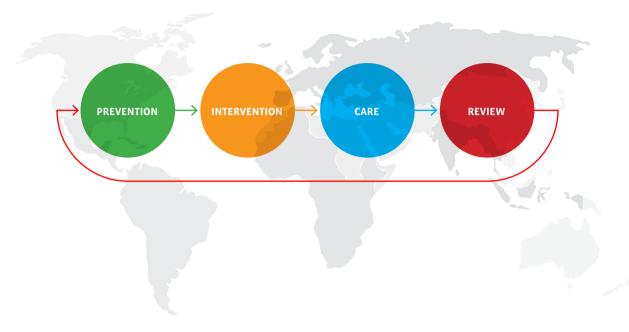


Figure 5. Dimensions of collective actions parallel to the Covid-19 process circle. Source: Authors

Dimensions of Collective Action Taken to Manage Covid-19

The dimensions are formed parallel to the Covid-19 process circle as shown in Figure 5. 'Prevention' represents the mitigation actions of the first stage of Covid-19 emergence, 'Intervention' denotes responses to Covid-19 responses, 'Care' stands for socio-economic recovery actions, and 'Review' presents the monitoring of initial processes, evaluation of responses, and targeting of outputs (Aygün Oğur et al., 2021). The study is constructed on the qualitative analysis of secondary sources. In addition to conventional publications such as articles and books, shadow literature, including reports on Covid-19 management process of case countries, online sources of non-governmental organisations (NGOs) and communities, and media data were analysed from a narrative perspective to read, classify, and create dimensions from collective action stories

Community-based actions on prevention

The actions taken to manage the Covid-19 in Dharavi, India were at the forefront of putting community engagement at the heart of the process. This locality was predicted to be devastated by the pandemic, since it was home to a densely populated informal settlement of 1.5 million people and confronted by multiple layers of issues. Nevertheless, prevention activities based on collaborative approaches helped mitigate the predicted effects of the outbreak. For instance, the Dharavi Dream Project (DDP), a non-profit initiative and volunteer group of masked rap-



Figure 6. Dharavi Dream Project (DDP). © Dharavi Dream Project, 2020

pers (Figure 6), wrote a song promoting public awareness of Covid-19 health instructions (Ghosh, 2020). The model utilised in Dharavi to combat Covid-19 has also been deemed a successful example of active collaboration between different community-oriented networks, also known as the 'Dharavi model of Covid-19 management' (Hassan, 2020).

In Brazil, *G10* das Favelas, a business support network aimed at favelas (Figure 7), trained community first aid brigades and organised information campaigns and hygiene procedures to help prevent Covid-19 transmission. One effective example of social protection is the use of popular music such as Funk'n Bossa Nova to raise awareness about personal care and hygiene (Duque Franco et al., 2020).

Also in Brazil, efforts were made to prevent the spread of the epidemic in informal communities. For example, In Morro dos Prazeres, gang members only allowed residents to roam in groups no larger than two, while smugglers declared a curfew in Rocinha, one of Latin America's largest favelas, and distributed soap in Santa Marta and instructed residents to wash their hands for hygiene. Gang members also told shops and churches to reduce their opening times in parts of the Complexo da Maré. In addition, favela activists operating as #COVID19NasFavelas organised donation and awareness-raising campaigns (Briso & Phillips, 2020) (Figure 8).

In China, social media provided the most support to efforts to prevent the pandemic and raise awareness in the community by means of transparent knowledge. Chinese social media – Sina Weibo and WeChat – plays a very im-

portant role in social interaction and political intervention to convey accurate information. Moreover, WeChat groups were established by Chinese nationals abroad for fundraising, collecting donations, and coordinating the shipment and distribution of healthcare supplies (Chen, 2020). The civil society was an important element in preventing the spread of Covid-19 inside China and directing relief to victims of the disease. Although restrictive policies toward civil society significantly limited the impact of civil society organisations during the pandemic, civil society nevertheless showed strength and vitality in constructing social resilience. Caritas Youth and Community Service, Health in Action, Lingnan University, and Hong Kong University organised the Ultra Violite Project in Hong Kong (Figure 9), which provided free and efficient ultraviolet light (UV) disinfection services for sanitising crowded living environments of informal settlements (Cai et al., 2021).

Community-based actions on process design for interventions

A case study was reviewed of community engagement that drew attention to the process design for interventions in Kolkata, West Bengal, India. An individually initiated group of doctors, health workers, and Covid-19 survivors and their families created a community under the name of COVID Care Network (CCN) (Loewenson et al., 2020). The Survivor's Network helped people in need by guiding them through telemedicine to raise awareness and counsel them in an effort to combat Covid-related anxiety. This network worked as a bridge between public services and the community (Yengkhom, 2020).

Cape Town Together, identifying themselves as a network of self-organising neighbourhood-based groups taking action, and responding in unique and diverse ways to Covid-19 and beyond appeared as a model of Community Action Networks (the CAN model) in South Africa (Qukula, 2020). These social solidarity networks, consisting of more than 150 community action networks, responded primarily to food needs (Hamann, 2020). At the same time, they organised volunteers to provide support for social activities, delivering care packages to the homeless, and making masks, blankets, and winter clothes (Loewenson et al., 2020).

In Brazil, CITA is a community that includes partnerships between the civil society, indigenous leaders, and private and local public sector institutions in the Amazon. It was originally established to support public policy related to education and local public sector institutions. CITA facilitated food distribution and donation of first aid products with support through crowdfunding. With the help of the Federal University of Western Pará, the movements of indigenous students in urban areas were tracked to prevent them from spreading the virus rapidly. The Health and Happiness Project (*Projeto Saúde e Alegria*) is a civil society organisation based in the Amazon. They launched the Health and Happiness without Corona (*Com Saúde e Alegria Sem Corona*) campaign to deliver resources (ambulance services and the like) to riverside communities during the pandemic (Figure 10). They also produced and distributed masks in partnership with other local civic organisations (Cavalcanti Muniz et al., 2021).

With crowdfunding campaigns, the Residents' Association in the Paraisópolis community of São Paulo worked with city health professionals, NGOs gathered under the Parceiros da Educação, and the Albert Einstein School of Medicine in São Paulo to turn local gyms and schools into quarantine centres and provide ambulance support in areas where the emergency response was inadequate. The association organised marches in São Paulo demanding water, food aid, public ambulances, and virus testing (Loewenson et al., 2020) (Figure 11). They mobilised



Figure 7. G10 das Favelas network. © G10favelas, 2020



Figure 8. #COVID19NasFavelas are organising donation and awareness campaigns. © Covid19nasfavelas, 2020



Figure 9. Ultra Violite Project in Hong Kong. © Ultra-Violite Project, 2021



Figure 10. Health and Happiness Project. © Health and Happiness Project, 2011

community volunteers to do a variety of relief work with private donations, such as communicating remotely with sick residents and responding to emergency calls in the area. They started a 'street presidents' programme' where community volunteers monitored families for symptoms of Covid-19. Activists from Paraisópolis and other favelas have been engaging in collective action for low-income and unemployed workers (Vilela, 2022; Duque Franco et al., 2020).

In China, The Lujiazui community in Shanghai has been successful in establishing a public health emergency management plan. They supported volunteer groups (soldiers and minorities) and social organisations to prevent pandemic-related damage by distributing masks, providing food aid, and delivering knowledge activities. Also, an outbreak management map, based on the population distribution map, was used to identify the various levels of risk (Liwei et al., 2021).

In Turkey, headmen of neighbourhoods had been key actors in the pandemic era due to their direct interaction with the community (Con Wright & Çelik, 2022). They acted like bridges between the government and citizens during the pandemic (Altunöz, 2020). They organised young people and volunteers to identify needs, supply food for people under curfew, direct donations to people in need, distribute local or central government aid, and work in coordination with neighbourhood solidarity networks (Con Wright & Çelik, 2022). For instance, the Kadıköy Solidarity Network (Figure 12) in İstanbul was established when pandemic restrictions started. Neighbourhood volunteers worked together to do grocery shopping for the elderly, feed stray animals, entertain children, and supply free food (Demirtaş, 2020). They also produced face shields for health professionals.

Both inhabitants and businesses located in the neighbourhood participated in this collective action. They created a collective budget to finance solidarity actions without any financial support from local or central government (Şenyıldız, 2021). The Vefa Social Support Group was established by the Ministry of Interior on March 22, 2020, with representatives of local public institutions, neighbourhood headmen, and local NGOs to meet the needs of disadvantaged groups during lockdowns (Figure 13). As an example of collaborative governance, the group operated nationwide, whilst various professional groups such as teachers, policemen, and local officials were assigned to help meet health and food needs (Yolcu & Sezgin, 2020).



Figure 11. Paraisópolis Residents' Association helps community members by having women sew masks and clothes for locals. © Paraisópolis Residents Association, 2020



Figure 12. Kadıköy Solidarity Network supplying free food in the neighbourhood. © Kadıköy Solidarity Network, 2020



Figure 13. Actions of Vefa Social Support Group. © Vefa Social Support Group, 2020

Community-based actions on building social and economic care

Lockdown restrictions challenged many sectors including rural production. This situation prompted key stakeholders in Satara, India to find a solution that would provide social and economic management against Covid-19. The 'farmers' led farm-to-home model' was created to overcome this threat (Loewenson et al., 2020). The Satara Farmers' Revolutionary New Model innovated the processing and marketing logistics involved in delivering vegetables to the localities. These actions worked both ways, benefiting both the farmer and the consumer within the new chain supply model by removing the middleman's cut (Chakrabarti, 2020; Pol, 2020). Another case of community-wide action on water and environmental protection to mitigate the resource crisis was an NGO called Paani Foundation (Loewenson et al., 2020; (Pol, 2020).

The social enterprise FoodFlow (Figure 14) has been one of the community action networks launched in Cape Town to deliver food to residents. This network was forging a link to bring together producers (farmers) and families in need of food with the help of collaborative partners for distribution (Loewenson et al., 2020; Hamann et al., 2020).

The Kudumbashree model with its three-tier structure across the Indian state of Kerala consists of Neighbourhood Groups (NHGs), Area Development Societies (ADS), and Community Development Societies (CDS) (Karat, 2021). Community Kitchens (local food systems) are one state supported community-driven programmes of the Kudumbashree model (Figure 15). These kitchens were operated by local women volunteers to provide nutrition to urban residents in need of food. They also supported basic needs and helped enable an early, decentralised, participatory state-wide response (Loewenson et al., 2020). Additionally, the Sneitha gender help desk, reflecting Kudumbashree's gender-sensitive attitude and online channels supporting rural India, assisted in the response to Covid-19, with participatory self-governance initiatives showing how democratic decentralisation has worked in favour of communities when it came to managing Covid-19 (Loewenson et al., 2020; Raghunandan, 2020). Finally, risk communication and community engagement in Kerala stand as an important response to Covid-19 (WHO, 2020).



Figure 14. FoodFlow action network. © FoodFlow, 2020



Figure 15. Kudumbashree community. © The Hindu Business Line, 2020

Community-based organisation Movement for Change and Social Justice (MCSJ) advocates health issues for Cape Town communities. They contributed to the management of Covid-19 by means of mitigation efforts, responding quickly and supporting key supplies such as food, water and sanitation, and delivering health care strategies (Loewenson et al., 2020). This health social movement was particularly important for the local response. Namely, the MCSJ helped fill the gap that could not be addressed by the government and other key actors by reaching local communities with its novel health and well-being education effort (Mbokazi, 2020).

Corona in the Outskirts (*Corona nas Periferias*), supported by Instituto Marielle Franco and Favela Em Pauta, is an initiative that raises awareness about the fight against coronavirus in the favelas of Brazil through the production of collective knowledge about the pandemic in informal settlements. Another important initiative is the Favela Mothers (*Mães de Favela*) campaign by Central Única das



Figure 16. Central Única das Favelas (CUFA) supports and cares for the children and elderly women living in slums. © CUFA, 2020

Favelas (CUFA), which supports and cares for children and elderly women living in slums (Figure 16). In addition, CUFA and the Marielle Franco Institute launched food collection campaigns (Duque Franco et al., 2020).

In Turkey, Deep Poverty Network (*Derin Yoksulluk Ağı*) was established in 2019 and launched its Change from Home Solidarity Campaign in 2020 due to rising inequalities caused by the pandemic (Deep Poverty Network, 2020). They connect donors and the needy via online marketplaces to provide basic requirements like food, hygiene products or baby products. Another social cooperative, Needs Map (*Ihtiyaç Haritası*), collects needs data from individuals, institutional sources, and NGOs throughout the country and presents them through a map on its website to increase visibility and direct support. During the pandemic, they provided an online shopping platform for donors.

Community-based actions on design and strategic review of responses

A case study in South Africa may provide an example of how community-based actions can engage with vaccine trials in a process of design and strategic review of responses. Community members and local-national health advocacy groups, including the Vaccine Advocacy Resource Group (VARG), Community Constituency Covid-19 Front, the South African National AIDS Council (SANAC) Labour Sector, the SANAC Civil Society Forum, the Tuberculosis TASK Team, Show Me Your Number, the Treatment Action Campaign, and the Stop TB Partnership actioned to be part of the planning of Covid-19 vaccine trial to overcome the lack of transparency with information (Loewenson et al., 2020; Karim, 2020)

In Rio de Janeiro in Brazil, the newspaper *Voz das Comunidades* updates information about on the Covid-19 pandemic (number of people infected, deceased, and recovered) with reporters in each favela every day (Duque Franco et al., 2020). Another alternative community-based organisation is FENATRAD, an old community of trade unions that played an important role in the struggle of domestic workers by informing them about their rights and organising seminars and conferences. It organised online events and national campaigns alongside traditional union activities to combat the pandemic (Loewenson et al., 2020; Cavalcanti Muniz et al., 2021) (Figure 17).



Figure 17. FANATRAD is an old community of trade unions for domestic workers. © Fanatrad, 2020

In China, the Shimo Document website enlisted the help of many volunteers to fill information gaps and create a health facilities directory in Wuhan by compiling lists of experts with various backgrounds (e.g., doctors, social workers, psychologists) to provide information and coordinate resources for treatment seekers (Chen, 2020).

From Vulnerable to Resilient Communities

strategies of healthy cities are:

Actions under each dimension of the Covid-19 circle (prevention-intervention-care-review) give important clues on how each community engaged in the process. Most of the actions taken to manage Covid-19 took place in the first two phases of the pandemic, when mitigation and response efforts took place, rather than its further stages. They reveal how challenging it is to act as a community or a community-based organisation to make a wider impact on social and economic recovery from Covid-19. When it comes to drawing a sketch of the regions in terms of their ability to produce collective actions, Brazil takes the spotlight with its independent local organisations. While the community engagement in China targets the national scale to collaborate, in Turkey, there is a tendency to include local and government agencies in the process of local networking. Further, community organisations in South Africa consider monitoring and evaluation for their activism, while model-based and well-rounded approaches are crucial for

the cases of India. To conclude, the embedded components expected to guide the

- > A sense of community ownership
- > Long-standing relationships and networks
- > Institutional flexibility
- > Existence of trustworthy interfaces (digital or on-site)
- > Vertical and horizontal knowledge providers
- > Individual-initiated engagement endeavours
- > An output-oriented aspect

As well as extracting key components, it is also important to address how the vulnerable regions should utilise them for building healthy environments. The centralised government approach emerges as a common denominator in the case study countries. However, the findings show that combating Covid-19 requires unique necessities at the local level rather than producing higher-level and generalised responses. It has been observed that actions taken by local people are more effective and accessible to individuals within the community. From this point of view, healthy city strategies can be summarised as:

- > Encouraging institutional/non-institutional organisations and communities
- > Enhancing communication between local communities and governments
- > Including a variety of public institutions into emergency action plans and defining responsibilities
- > Developing places for community engagement, such as public community houses/gardens to enhance relationships
- > Supporting transparent platforms that gather donors and beneficiaries that are under the control of civil organisations
- Ensuring central authorities play the role of facilitator rather than only that of controller or executive actor
- Developing a solution-oriented governance policy by identifying the needs of the vulnerable population in cooperation with local communities and NGOs
- > Harnessing the power of social media for access to transparent information

_

References

Acharya, R. & Porwal, A. (2020). A vulnerability index for the management of and response to the COVID-19 epidemic in India: an ecological study. *The Lancet Global Health*. 8(12), e1142–1151

Altunöz, H.B. (2020, December 14). Salgında Muhtarlar Devlet Ile Vatandaş Arasında Köprü Oldu (During the pandemic, the headmen became a bridge between the state and the citizens). AA. https://www.aa.com.tr/tr/turkiye/salginda-muhtarlar-devlet-ile-vatandas-a-rasinda-kopru-oldu-/2075963.

Aygün Oğur, A., Kurt Özman, E., & Özdemir, Z. (2021). Harnessing Covid-19 Experiences in Pandemic Regions for a Tentative Framework of Urban Resilience. *Regions*, 11. DOI: 10.1080/13673882.2021.00001108.

Biggs, E.N., Maloney, P.M., Rung, A.L., Peters, E.S., & Robinson, W.T. (2021). The Relationship Between Social Vulnerability and COVID-19 Incidence Among Louisiana Census Tracts. *Frontiers in Public Health*, 8, 617976. DOI: 10.3389/fpubh.2020.617976.

Briso, C.B. & Phillips, T. (2020, March 25). Brazil gangs impose strict curfews to slow coronavirus spread. *The Guardian*.

Cai, Q., Okada, A., Jeong, B., & Kim, S.J. (2021). Civil Society Responses to the COVID-19 Pandemic: A Comparative Study of China, Japan, and South Korea. *China Review*, 21(February), 107–137.

Cavalcanti Muniz, R., Macchiavello Ferradas, F., Gomez, G.M., & Pegler, L.J. (2021). Covid-19 in Brazil in an Era of Necropolitics: Resistance in the Face of Disaster. *Disasters*, 45(S1), 97–118.

Chen, X. (2020). Spaces of Care and Resistance in China: Public Engagement during the COVID-19 Outbreak. *Eurasian Geography and Economics*, 61(4-5), 435-447.

Con Wright, G. & Çelik, K. (2022). Farklı Sosyal Kırılganlık Düzeyine Sahip Mahalle Muhtarlarının Gözünden Covid-19 Salgın Deneyimi: İstanbul İli Örneği (Covid 19 Epidemic Experience from the Eyes of Neighborhood Headmen with Different Levels of Social Vulnerability: The Case of Istanbul Province). Çalışma ve Toplum, 1(January), 239–266.

Daras, K., Alexiou, A., Rose, T., Buchan, I., Taylor-Robinson, D., & Barr, B. (2020). How Does Vulnerability to COVID-19 Vary between Communities in England? Developing a Small Area Vulnerability Index (SAVI). SSRN Electronic Journal (July 2020). DOI:10.2139/ssrn.3650050.

Deep Poverty Network. (2020). Combating Poverty in the Context of the Pandemic. https://derin-yoksullukagi.org/wp-content/uploads/2020/12/DEEP-POVERTY-NETWORK-Combatting-Poverty-in-the-Context-of-the-Pandemic.pdf_Accessed on May 29, 2022.

Demirtaş, E. (2020, March 21). Koronaya Karşı 'Kadıköy Dayanışma Ağı' Kuruldu ('Kadıköy Solidarity Network' Established Against Corona). *Gazete Kadıköy*.

Duque Franco, I., Ortiz, C., Samper, J., & Millan, G. (2020). Mapping Repertoires of Collective Action Facing the COVID-19 Pandemic in Informal Settlements in Latin American Cities. *Environment and Urbanization*, 32(2), 523–546.

Ghosh, S. (2020, August 10). Why this inspirational rap anthem about Dharavi's fight against COVID-19 is what you need to listen to now! *The New Indian Express*.

Hamann, R., Surmeier, A., Delichte, J., & Drimie, S. (2020, May 14). Local networks can help people in distress: South Africa's COVID-19 response needs them. *The Conversation*.

Hassan, M. (2020, August 4). Dharavi model of COVID-19 management: A success story. *The Sentinel*.

Karat, B. (2021, December 4). The power of Kudumbashree. *The Hindu*.

Liwei, Z., Zhao, J., Liu, J., & Chen, K. (2021). Community Disaster Resilience in the COVID-19 Outbreak: Insights from Shanghai's Experience in China. *Risk Management and Healthcare Policy*, 13(January), 3259–3270.

Loewenson, R., Colvin, C., Rome, N., Nolan, E., Coelho, V., Szabzon, F., Das, S., Aich, U., Tiwari, P., Khanna, R., Gansane, Z., Traore, Y., Yao, S., Coulibaly, S., Asibu, W., & Chaikosa, S. (2020). 'We are subjects, not objects in health': Communities taking action on COVID-19. https://www.equinetafrica.org/sites/default/files/uploads/documents/EQ%20Community%20 Engagement%20synthesis%20rep%20Sep2020.pdf. Accessed on May 29, 2022.

Mbokazi, N. (2020, August 26). The Power and Importance of Community-Based Organisations: Initiative and Solidarity. *DSBS Fieldnotes*.

Pol, A. (2020, April 17). *In Lockdown, Satara Farmers' Revolutionary New Model*. NDTV. https://www.ndtv.com/opinion/in-lockdown-satara-farmers-revolutionary-new-model-2213476.

Qukula, Q. (2020, July 24). Community Action Networks Demonstrate 'Power of Collective Action' in Cape Town. *Cape Talk*.

Raghunandan, T.R. (2020, May 11). Responding to Covid-19 at the grassroots. *The Hindu*.

Sahu, N. & Mishra, M. (2021). Assessing the Vulnerability Index of Covid-19 Pandemic in India. *Geography, Environment, Sustainability,* 14(December), 131–139.

Şenyıldız, A. (2021, January 18). Dayanışma Bizi Kurtaracak (Solidarity Will Save Us). *Yesil Günebakan*.

de Souza, C.D.F., Machado, M.F., & do Carmo, R.F. (2020). Human development, social vulnerability and COVID-19 in Brazil: a study of the social determinants of health. *Infectious Diseases of Poverty*, 9, 124.

Vilela, R. (2021, January 15). Paraisópolis Street Presidents. Visura. https:// visura.co/rafaelvilela/stories/ paraispolis-street-presidents-organize-their-own-c.

WHO (World Health Organization). (2020). Role of community engagement in situations of extensive community transmission of COVID-19. Manila: WHO Regional Office for the Western Pacific.

WHO (World Health Organization) (n.d.). WHO Europe. https://www.euro.who.int/en/health-topics/environment-and-health/urban-health/who-european-healthy-cities-network/what-is-a-healthy-city/healthy-city-checklist. Accessed on May 15, 2022.

Yengkhom, S. (2020, June 29). Survivors' network to address Covid worries. *Times of India*.

Yolcu, T. & Sezgin, A.A. (2020). Public and Civil Society in Producing Social Capital in Pandemic: Vefa Social Support Group and Ahbap. *Tyb Akademi* (October), 143–164.





The Intersection of Urban Planning and the Covid-19 Pandemic: Lessons for the Built Environment in 'Building Back' Resilient and Sustainable Cities

Stephen Olus Okeyo

Introduction

There is growing support for integrating resilience and sustainability into national and even global responses to public health threats, such as the Covid-19 pandemic. To effectively engage with these concepts, it is important to reflect on the interactions and implications at the intersection of Covid-19, public health and the built environment. (Frank & Engelke, 2005; Bambra et al., 2010). This linkage is especially significant for infectious disease conditions such as Covid-19.

With the biology of the virus evolving (mutating to several variants), and its pathophysiology undergoing changes, the world is reluctantly coming to accept that the virus will be with us for a long time. Besides the stark health statistics, the Covid-19 pandemic has had devastating economic and social effects that will last for a long time to come. The Covid-19 pandemic is showing signs of transitioning to an endemic condition, with experts proposing several strategic interventions: limit disease through effective use of vaccines, therapeutics, and other countermeasures, and slow transmission through testing and environmental/workplace modifications (Charumilind et al., 2022). As we plan for long-term strategies, it is important to reflect on the biological and pathophysiological aspects, diverse contexts, and social determinants of health and related human behaviours that influence transmission of the virus within the environment we live, and the implications for health and well-being.

While work on Covid-19 is a work in progress, there is a wealth of information about the virus and human behaviours at the intersection of public health and built environment that is driving public discourse on how to build back better resilient and sustainable urban centres able to adapt to this epidemic and better prepared for future infectious disease threats (Wiersinga et al., 2020; Ming et al., 2020). Unfortunately, research in the majority of developing countries is still limited, although these countries have, due to their large populations and numerous infrastructural bottlenecks, suffered to a great extent during the pandemic. The most visible loss was in the largest cities (Figure 1).

To plug that knowledge gap, this paper shows the results of a study undertaken to generate answers to the main question: what is the interaction between the main features of the built environment and Covid-19 that influence transmission and pathophysiology? Based on an overview of the extensive literature (academic and professional articles, health reports, and policy guidelines), the relationship between the built environment, on the one hand, and public health and wellness metrics, on the other, is described. The results are grouped into three categories, each related to the specific aspects (i.e., substantive – the physical environment; and the procedural – policies and instruments or their integration) of the built environment, as described in the following sections. The concluding remarks provide basic recommendations for improving the built environment to tackle urban health issues in Kenya, but also applicable in other African cities.

Urban Planning amidst Covid-19 Pandemic

Specific features of the built environment that promote infection transmission, such as social distancing, surface contact, and hand sanitation have been well documented. The risk of transmission in outdoor settings appears to be lower than indoors, although close contact with an individual with Covid-19 remains a risk even outdoors (Bulfone et al., 2021). The low risk of the outdoor setting is

clearly reversed in situations where large numbers of people congregate together in small spaces. Other features influencing infectivity and transmission include sunlight, ultraviolet light, ambient temperature, relative humidity, and size of inoculum (Frank & Engelke, 2005; Bambra et al., 2010).

Landscapes and green neighbourhoods as enablers of healthy environments

Landscape characteristics of the environment around buildings have the potential to promote health as well as physical and mental well-being. For example, the presence of natural greenery has positive psychological and emotional impacts by reducing stress and enhances happiness, encouraging physical activity, and lowering noise levels and air pollution (Brattig et al., 2021; Mears et al., 2019) Urban green spaces encourage mental relaxation, restore social cohesion, and minimise exposure to extreme urban heat (WHO, 2021). The Covid-19 pandemic lockdown brought to the fore the importance of open spaces, not only in neighbourhood environments, but also in relation to buildings. External building spaces, such as terraces, shared courtyards, flat open rooftops, and balconies offer access to fresh air and sunlight which is good for health and can be designed for alternate use as kitchen gardens or for sports (Sofo & Sofo, 2020). Challenges, however, include space limitations and regulatory requirements.

Population density, crowding, indoor air circulation, and ambient air pollution are documented as features of the built environment that increase the risk of Covid-19 transmission (Bulfone et al., 2021; Toderian, 2020). A report from China in the initial stages of the Covid-19 pandemic showed that the density of convenience shops, supermarkets, and shopping malls and inter-city population flow were the two most important variables that explained the ratio of cumulative infection cases, while population flow was the most important factor in measuring the policy effect metric (Ma et al., 2021b). Influencing factors also include poor neighbourhoods, especially slums, in cities such as Nairobi, Karachi, and Mumbai, which experience crowding indoors and even outdoors (Frumkin, 2012; Emeruwa et al., 2020). Other factors include health-promoting assets like wide streets, walkways, and parks/green spaces (Ma et al., 2021a). However, these are likely to be in short supply in low-income and minority communities due to poor planning, mismanagement, and even corrupt practices involving public land (Mensah, 2014; Cilliers, 2009).

The concentration of economic activities and services in specific areas in cities and towns means that large number of people routinely congregate in limited fractions of the total available space, which encourage transmission of infectious diseases such as Covid-19. The zoning of residential areas, workplaces, and service centres creates the need for transport systems, with implications for infection transmission (Brizuela et al., 2020; Neiderud, 2015). These reasons, among others, are strong drivers for rethinking the urban built environment. For example, a report from Rwanda documents that neighbourhood streets are increasingly becoming popular for recreational activities, and hence more valuable to users. This is facilitated by vehicle-free zones for pedestrian use (Malonza, 2020; Ferdinand et al., 2012). Also, urban green spaces could significantly improve physical and mental health for the citizens of cities like Nairobi, as well as act as logistical areas for humanitarian activities during a pandemic. Unfortunately, urban green spaces, such as those in Nairobi, have not been fully exploited to provide citizens with sufficient access to green spaces (Oketch & Nyadera, 2021). An example of a sustainable innovation neighbourhood is the innovative 'one cent levy', collected by the local government for services, to be used for creation of central park and

recreation upgrade of a local natural resource like a river or lakeshore (multiuse trail) (Urban Land Institute, 2013). The underlying health benefits of public spaces are largely grouped into three tracks: the provision of opportunities for physical activities, the recovery from stress and fatigue, and the facilitation of social contacts and cohesion.

High-risk neighbourhoods are more likely to be home to frontline workers – delivery workers, grocery store clerks, nursing home aides, and others whose jobs entail contact with the public, who were unable to work from home, and who often had to commute by public transit. The defining characteristics of Covid-19 hot spot neighbourhoods may vary from city to city. For example, in New York City, the concentration of frontline workers was the strongest predictor of disease incidence, whereas in Chicago, the levels of poverty and unemployment and the proportion of black residents were more predictive (Cox-Ganser & Henneberger, 2021). These and other reports reflect social determinants of health and ongoing inequities in the built environment as drivers of infectious pandemics, calling for economic, social, and political interventions (Naik et al., 2019).

Holistic approach towards healthy environments

Although not receiving adequate focus, built environment fits appropriately in the World Health Organization (WHO) Social Determinants of Health, including infectious disease pandemics such as the Covid-19 pandemic. Confounding factors such as economic/equity, social and behavioural factors compound limitations in proof of causal relations between built environment and Covid-19 pandemic transmission, as well weakness of evidence for the effectiveness of built environment interventions. However, available evidence strengthens the argument for an upstream shift to address key built and natural environment obstacles to enable people to increase control over, and improve their health. The Covid-19 pandemic provides opportunity for integrating health promotion and disease prevention into the built environment design. To achieve this, communication between built environment experts and health professionals is essential.

The changes observed during the Covid-19 pandemic point to potential long-term implications of Covid-19 for the built environment include changes in building design, increased teleworking, reconfigured streets, changing modes of travel, provision of parks and green space, and population shifts out of urban centres. Although it is too early to predict with confidence which of these responses may persist, identifying and monitoring them can help health professionals, architects, urban planners, and decision makers, as well as members of the public, optimise healthy built environments during and after recovery from the pandemic.

Planning for more local provision of services may contribute towards decentralisation and can restrict the occurrence of large clusters of people, which can be beneficial in preventing infectious diseases transmission, as well as reducing transport needs. The implications for and impact of Covid-19 on travel/transport systems are rather complex, and likely to be driven by economic considerations, though some authors assert that the shifts to walking and cycling may be a persisting effect of the pandemic, especially in cities that make long-term improvements to infrastructure such as dedicated streets, suggesting that the pandemic could propel the adoption of healthy, sustainable travel modes (King & Krizek, 2020; Schmidt et al., 2021).

The Covid-19 pandemic is reported to have driven people of means to move from urban centres to the periphery, leading to urban 'depopulation' and even businesses, though urban areas are likely to rebound after the pandemic. The implication of this is complex and uncertain. On balance, there would be re-

distribution away from the urban core toward the periphery, with far-reaching consequences, including shrinking of large cities and growth of intermediary and smaller cities, enabling more diverse urban populations, with positive implications for traffic congestion, housing shortages, and business models (Haag & Rubinstein, 2020).

Table 1 summarises potential interventions in reimagining the built environment for long term control and management of the Covid-19 pandemic and building resilience and sustainability for similar public health threats in the future.

The multiple interactions between features of built environment, Covid-19 mitigation strategies, health determinants, and health outcomes are depicted in Figure 2, showing the direction of influence.

Feature of built environment linked to infectious epidemics	Potential interventions
01 Buildings	> Spatial outlay that optimises landscape and neighbourhood reforms
02 Landscape, neighbourhood	 Urban planning for a sustainable built environment, integrating neighbourhood design: clean and open neighbourhoods, with larger public spaces with more organised layouts Political and policy decisions to reduce population densities, and specifically address the problem of urban slums
03 Public open spaces, green spaces	 Increase and make accessible green spaces and parks in urban centres Design innovative multi-use of open spaces
04 Streets, walkways	 Re-envisioning streets (wider pedestrian pathways, one-way walking paths, cycle tracks) Active mobility that is health promoting, encourages social distancing reduces public transport hence risk of infection transmission Reduced speed limits and use of public and personal vehicles to reduce combustion and greenhouse gas (GHG) emissions
05 Public equipment	› Design urban furniture in parks; safe water fountains
06 Transport systems	 Rethink travel modes, and social mobilisation for more healthy and sustainable modes based on active mobility (walking and biking)
07 Information technology	 > Growth of information technologies to facilitate access to public health information as well as capability to control indoor conditions > Leverage big data/Internet of Things for risk identification and gathering information for monitoring infection and response rates > Touch-free technologies or digital control, substituting specific common contact surfaces like switches and other types of interfaces, to reduce infection transmission, and energy and water costs
08 Protective barriers	> Systematic design of physical barriers, distance markings
09 Population shift	 Facilitatate public participation in order to develop a policy to guide shifting of population between rural and urban centres, and between cities and towns
10 Food environment	 Increase advocacy and support for more sustainable national agricultural and food/nutrition policy, integrating urban agriculture

Table 1. Summary of interventions for built environment in control of Covid-19 pandemic. Source: Author, based on multiple sources

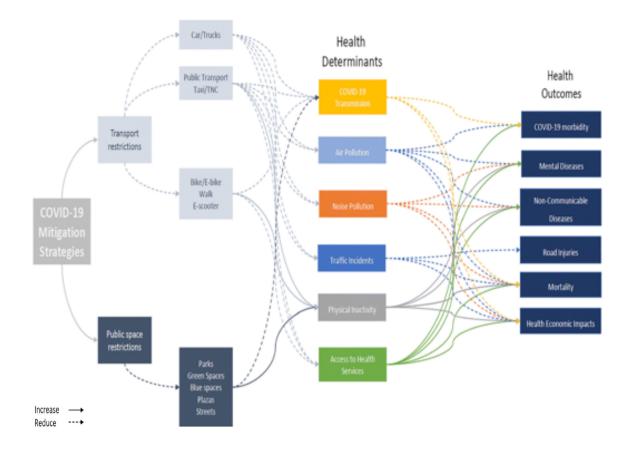


Figure 2. Framework of Covid-19 mitigation strategies, urban health determinants, and health outcomes. Source: Rojas-Rueda & Morales-Zamora, 2021

Built environment policy interventions

In many national Covid-19 responses, decision-makers have had to juggle between options with somewhat opposite outcomes, for example strategies focusing on life (health) versus those focusing on livelihood (economics). Similarly, decisions around built environment (re)design entail somewhat opposite effects. Wholesome responses should integrate equity interventions and affirmative action for vulnerable groups. Comprehensive long-term interventions should be integrated into national and organisational visions, with strategic objectives, as well as include the requisite resource allocation and mobilisation mechanisms. These perspectives mean that policy, and in some instances legislative, actions must be taken by government leaders and organisational boards. In countries with devolved governance, these policy decisions and coordination/oversight of implementation may be shared between national and devolved governments, such as county governments. Finally, cities and towns have legal mandates over policy issues under their jurisdictions as regulatory bodies in charge of reviewing codes and guidelines for buildings and neighbourhoods' open spaces.

In resource-constrained settings, interventions can be initiated as 'tactical urbanism', which refers to low-cost, temporary, and scalable interventions and policies intended to improve urban environments (Lydon & Garcia, 2015). Examples

of this include temporary bike lanes that do not require high-cost infrastructure and could be supported with temporary signalling and low-cost physical barriers (such as traffic cones). The Covid-19 pandemic offers a unique opportunity to test urban interventions that could reduce environmental health risks and inequities. Tactical urbanism interventions could be designed with a long-term vision to support a more permanent healthy urban design. Finally, specific considerations to improve urban services, the built environment, and mobility infrastructures should use an equity vision to adapt to the pandemic needs and provide a safe urban environment for vulnerable communities and groups and those working in essential services (Rojas-Rueda & Morales-Zamora, 2021).

Lessons for Kenyan Cities

Covid-19 measures are considered a challenge for rethinking urban areas and potentially leveraging sustainable built environment solutions with win-win outcomes. The previous analysis helps identify measures that may not only reduce the risk of Covid-19 transmission (or even prevent it), but also increase resilience, improve air quality, and lower energy requirements or the use of materials, and thus potentially increase the sustainability of the built environment.

Promising interventions collated from literature above require inclusive discourse at multiple levels, and include operational, administrative, strategic, policy and legal and regulatory actions at varying scales, with leadership and coordination by governments. Significant delegated roles must be played by organisations such as professional associations and societies, primarily the Public Health Society of Kenya and the Town and County Planners Association of Kenya. Appropriate local assessment needs to inform actions moving forward, coupled with public and stakeholder participation. Because proposed changes require significant investments, some actions require political interventions through parliamentary acts and national treasury allocation of funds. National and international collaboration is critical to leverage not only funding, but also technical capacities.

Specific intervention areas can broadly be categorised into three groups: natural environment, urban design, and digitalisation.

- 1. Utilisation of the natural environment. Nairobi, the capital City of Kenya, is credited with the rare occurrence of having a national park and a river within its city limits, while several other major Kenyan cities are also situated on rivers, lakes, and the ocean, which can be leveraged and developed into health-promoting built environment, including waterfront walkways and urban green spaces (Figure 3). As Kenyan rivers suffer from extensive pollution, coordinated measures that include activities of various governmental agencies and expert bodies are necessary. Recently, the Nairobi River Life Project, initiated by the United Nations Settlement Programme (UN-Habitat) and the Government of Kenya, was launched to transform the Nairobi River corridor into a public good accessible to everybody (UN-Habitat, 2021).
- 2. Improvement of urban design. In preparation for the 7th Africities Summit, Kisumu, the third largest city in Kenya, has demonstrated significant improvement of street design with pedestrian walkways and urban green spaces (UCLG, 2022). Walkability has been improved by wide and spacious walkways, while trees provide shade inviting more people to walk (Figure 4). In addition to public open spaces, innovative utilisation of semi-private and private areas, such

as kitchen gardens, rooftops, and terraces has recently proven easy to design. and need not be expensive (Sofo & Sofo, 2020). Some innovative approaches for raising funds for these designs include ring-fencing service levies (Urban Land Institute, 2013).

3. Leveraging digitalisation. Kenya has recently made big strides in digitalisation manifested through the unparalleled development of information and communication technologies (Republic of Kenya, 2019), while the just launched Joint National Mapping Project can easily be leveraged to facilitate teleworking and use of 'big data' for design of a healthy and safe built environment as well as efficient and timely location and access to preventive, promotive, curative, and rehabilitative resources (Republic of Kenya, President, 2022). Additional government commitment is to promote digitalisation to allow citizens to access services from the comfort of their homes or business premises during the pandemic. Enhanced internet connectivity across the country enables many youths across the country access opportunities through the Ajira ('Employment') Digital Platform, and also support online learning through the digital literacy programme. As well as innovation opportunities in the areas of health, education, transport, e-commerce, entertainment, etc. Nevertheless, some of the initiatives that were planned for the future, for instance fibre connectivity to the homes, which facilitates working from home, have been hastened by the crisis (KARA, n.d.).

Supporting policy instruments for sustainable built environment interventions include the National Planning Policy, which must be read in conjunction with the current planning and development regulations, e.g., the National Construction Code, county planning schemes, and relevant city and town policies, guidelines, codes, etc. Further description of specific elements of these set of measures requires additional evidence. There is thus need to develop and undertake research in identified priority areas, and this calls for international collaboration in funding and technical resources.





Figure 4. Footpaths with trees, Kisumu. © ITDP Africa, 2021

References

Bambra, C., Gibson, M., Sowden, A., Wright, K., Whitehead, M., & Petticrew, M. (2010). Tackling the wider social determinants of health and health inequalities: evidence from systematic reviews. *Journal of Epidemiology and Community Health*, 64(4), 284–291.

Brattig, N.W., Tanner, M., Bergquist, R., & Utzinger, J. (2021). Impact of environmental changes on infectious diseases: Key findings from an international conference in Trieste, Italy in May 2017. *Acta Tropica*, 123, 106165.

Brizuela, N.G., Garcia-Chan, N., Pulido, H.G., & Chowell, G. (2021). Understanding the role of urban design in disease spreading. *Proceedings of the Royal Society A*, *477*, 20200524.

Bulfone, T.C., Malekinejad M., Rutherford, G.W., & Razani, N. (2021). Outdoor Transmission of SARS-CoV-2 and Other Respiratory Viruses: A Systematic Review. *Journal of Infectious Diseases*, 223(4), 550–561.

Charumilind, S, Craven, M., Lamb J., Sabow, A., Singhal, S., & Wilson, M. (2022, March 1). When will the COVID-19 pandemic end? *McKinsey & Company*. https://www.mckinsey.com/industries/healthcare-systems-and-services/our-insights/when-will-the-covid-19-pandemic-end.

Cilliers, E.J. (2009). Bridging the Green-Value Gap: A South Africa Approach. International Journal of Environmental, Chemical, Ecological, Geological and Geophysical Engineering, 54, 1223–1228.

Cox-Ganser, J.M. & Henneberger, P.K. (2021).
Occupations by Proximity and Indoor/Outdoor Work:
Relevance to COVID-19 in All Workers and Black/
Hispanic Workers. American Journal of Preventive
Medicine, 60(5), 621–628.

Emeruwa, U.N., Ona, S., Shaman, J.L., Turitz, A., Wright, J.D., Gyamfi-Bannerman, C., & Melamed, A. (2020). Associations between built environment, neighbourhood socioeconomic status, and SARS-COV-2 infection among pregnant women in New York City. *JAMA*, 324(4), 390–392.

Ferdinand, A.O., Sen, B., Rahurkar, S., Engler, S., & Menachemi, N. (2012). The relationship between built environments and physical activity: a systematic review. *American Journal of Public Health*, 102(10), e7-e13.

Frank, L.D. & Engelke, P. (2005). Multiple impacts of the built environment on public health: walkable places and the exposure to air pollution. *International Regional Science Review*, 28(2), 193–216.

Frumkin, H. (2021). COVID-19, the Built Environment, and Health. *Environmental Health Perspectives*, 129(7), 075001.

Haag, M. & Rubinstein, D. (2020, December 11). Midtown is reeling. Should its offices become apartments? *The New York Times*.

KARA (Kenya Alliance of Residents Association). (n.d.). ICT: Government to enhance digitization of public services to improve service delivery. https://www.kara.or.ke/index.php/2015-01-22-08-51-09/kara-news/481-ict-government-to-enhance-digitization-of-public-services-to-improve-service-delivery. Accessed on June 29, 2022.

King, D.A. & Krizek, K.J. (2020). The power of reforming streets to boost access for human-scaled vehicles. Transportation Research Part D: Transport and Environment, 83, e102336.

Lydon, M. & Garcia, A. (2015). *Tactical urbanism: short-term action for long-term change*. Washington DC: Island Press.

Ma, A.T.H., Lam, T.W.L., Cheung, L.T.O., & Fok, L. (2021a). Protected areas as a space for pandemic disease adaptation: A case of COVID-19 in Hong Kong. *Landscape and Urban Planning*, 207, 103994.

Ma, S., Li, S., & Zhang, J. (2021b). Diverse and nonlinear influences of built environment factors on COVID-19 spread across townships in China at its initial stage. *Scientific reports*, 11, 12415.

Malonza, J.M. (2020). Neighbourhood Streets as Public Space. COVID-19 Public Life in Kimisange, Rwanda. *The Journal of Public Space*, *5*(3), 39–52.

Mears, M., Brindley, P., Jorgensen, A., Ersoy, E., & Maheswaran, R. (2019). Greenspace spatial characteristics and human health in an urban environment: An epidemiological study using landscape metrics in Sheffield, UK. *Ecological Indicators*, 106, 105464.

Mensah, C.A. (2014). Destruction of Urban Green Spaces: A Problem Beyond Urbanization in Kumasi City (Ghana). *American Journal of Environmental Protection*, 3(1), 1–9.

Ming, H., Roberts, J.D., Azevedo, G.P., & Milner, D. (2020). The role of built and social environmental factors in Covid-19 transmission: A look at America's capital city. *Sustainable Cities and Society*, 65(12), 102580.

Naik, Y., Baker, P., Ismail, S.A., Tillmann, T., Bash, K., Quantz, D., Hillier-Brown, F., Jayatunga, W., Kelly, G., Black, M., Gopfert, A., Roderick, P., Barr, B., & Bambra, C. (2019). Going upstream – an umbrella review of the macroeconomic determinants of health and health inequalities. *BMC Public Health*, 19, 1678.

Neiderud, C.J. (2015). How urbanization affects the epidemiology of emerging infectious diseases. *Infection Ecology & Epidemiology, 5*, 10.3402/iee.v5.27060.

Okech, E.A. & Nyadera, I.N. (2021). Urban green spaces in the wake of Covid-19 pandemic: reflections from Nairobi, Kenya. *GeoJournal* (online first), https://doi.org/10.1007/s10708-021-10540-0.

Republic of Kenya. (2019). Digital Economy Blueprint: Powering Kenya's Transformation. https://www.ict.go.ke/wp-content/uploads/2019/05/Kenya-Digital-Economy-2019.pdf. Accessed on June 29, 2022.

Republic of Kenya, President. (2022, June 21). President Kenyatta Unveils Final Report of the Nationwide Airborne Geophysical Survey. https://www.president.go.ke/2022/06/21/president-ken-yatta-unveils-final-report-of-the-nationwide-air-borne-geophysical-survey/.

Rojas-Rueda, D. & Morales-Zamora, E. (2021). Built Environment, Transport, and COVID-19: a Review. *Current Environmental Health Reports*, 8(2), 138–145.

Schmidt, K., Sieverding, T., Wallis, H., & Matthies, E. (2021). COVID-19 – A window of opportunity for the transition towards sustainable mobility? *Transportation Research Interdisciplinary Perspectives*, 10, 100374.

Sofo, A. & Sofo, A. (2020). Converting Home Spaces into Food Gardens at the Time of Covid-19
Quarantine: all the Benefits of Plants in this Difficult and Unprecedented Period. *Nature Public Health Emergency Collection*, 48(2), 131–139.

Toderian, B. (2020, April 6). Op-Ed: Dear Gov. Cuomo, The Problem Is Crowding Not 'Density'! *StreetsBlogNYC*. https://nyc.streetsblog.org/2020/04/06/op-ed-deargov-cuomo-the-problem-is-crowding-not-density/.

UCLG (United Cities and Local Governments in Africa). (2022). Tripartite Partnership for Networking for Partnership to Achieve SDG 11 and New Urban Agenda in Slums and Informal Settlements. https://africities.org/sessions/sou-21-tripartite-partnership-for-networking-for-psup-partnership-to-achieve-sdg-11-and-new-urbanagenda-in-slums-and-informal-settlements/. Accessed on June 29, 2022.

UN-Habitat. (2021, July 13). Promoting health and well-being through urban forests and green public spaces in Kenya and Ethiopia. https://unhabitat.org/promoting-health-and-well-being-through-urban-forests-and-green-public-spaces-in-kenya-and-ethiopia.

Urban Land Institute. (2013). Intersections: Health and the Built Environment. Washington DC: Urban Land Institute.

WHO (World Health Organization). (2021, September 22). Household air pollution and health. https://www.who.int/news-room/fact-sheets/detail/household-air-pollution-and-health.

Wiersinga, W.J., Rhodes, A., Cheng, A.C., Peacock, S.J., & Prescott, H.C. (2020). Pathophysiology, Transmission, Diagnosis, and Treatment of Coronavirus Disease 2019 (COVID-19): A Review. *JAMA*, 324(8), 782–793.



Building the Future Generations of the Public Health Spatial Planning Workforce: Translating Healthy Places Policies into Reality

Michael Chang Marcus Grant Liz Green Lourdes Madigasekera-Elliott Cheryl Williams

Introduction

There is an understanding that the relationship between the environment and population health and well-being is complex, with an established evidence base that where people live and work can have an impact on health and well-being (Grant, 2019). It follows that significant gains in population health and sustainability would be achieved by delivering consistent and integrated policy and practice through the built environment and public health professions working in close in partnership. Such integration has never been more important than now in responding to the effects of Covid-19, adapting to effects from climate change, and being resilient to future uncertainties (Green et al., 2022). In order to mitigate harm and maximise positive contributions to well-being, the actions that need to be taken in the environment are complex and inter-dependent across sectors and disciplines (Chang et al., 2022).

There is now a realisation that, in order to achieve healthy places, practitioners must have a working understanding of each other's legislative mechanisms, language and delivery tools (Ige-Elegbede et al., 2021). This means that, to improve the public's health and address health inequalities, public health practitioners must influence the spatial planning policy and development process. In tandem, when planning cities, towns and neighbourhoods, spatial planners and other built environment professionals, such as urban designers, transport planners and land-scape architects, must understand that policies or decisions which they make will impact on population health and well-being outcomes.

The emergence of spatial planning for health as a specific area of interest and 'reinvigorated relationship' has been evolving in its various and different permutations and use of terminologies (Kent & Thompson, 2012). This development is evidenced worldwide at city, national, and international levels through a range of policy and practice documents (UN-Habitat & WHO, 2020). These share similar objectives and trajectories in terms of using the levers available in spatial planning and design systems to achieve outcomes at population level in terms of health improvement and reducing health inequalities.

Current barriers can be attributed to several factors, but this paper focuses on addressing those relating to education and professional development activities and the systemic lack of academic and professional discourse on the cross-disciplinary skills and competencies necessary to deliver healthy places (Hunstone et al., 2018). Partly due to formal curricula being heavily influenced by professional bodies through accreditation, there is often a siloed approach among the workforce such as planners, architects, urban designers, building engineers, and landscape architects, and public health and medical professionals. This has become a barrier to necessary trans-disciplinarity and needs to change. Skillsets within the workforce are also being challenged by the need to meet both strengthening legislative and policy frameworks and professional commitments for healthier places.

This paper's proposition sets out the need to reflect the complexities and strengthening of policy requirements of the agenda by working in an inter-disciplinary way and improving current workforce development practices as a contributing factor to planning for health. This can help to invigorate, establish and ultimately sustain a new generation of public health spatial planning practitioners.

TOC

Essential Interdisciplinarity to Address Wider Determinants of Health

The complexity of the environment and people's relationship with the environment and health impacts and outcomes is articulated in literature. For example, an evidence review in 2017 set out the themes and principles that have direct or indirect impacts on physical and mental health outcomes (Bird et al., 2018). Under its 'healthier food' theme in Figure 2, by adopting the planning principle of 'providing healthier, affordable food for all', evidence suggest a positive impact on 'healthier eating and changes in dietary behaviours' which in turn can result in 'reduced risk of cardio-vascular disease and type 2 diabetes'.

Each theme and principles from Figure 2 may be the responsibility of different disciplines but be operationalised at different points of the planning process. Lawrence (2004) suggested this professionalisation and segmentation of expertise and knowledge can be a barrier to tackling the causes of health, as did Macfadyen (2013). But the solution towards gathering multi-disciplinary skills in some professionals is now commonly being adopted in practice by authorities as well as drawing on the involvement, participation and action by multiple professional groups and sectors as 'health in all policies' (HiAP) (LGA, 2016). This means that these workforces and the organisations who employ them need to be both aware of the cross dimensions and the evidence which underpins this, and have the skills to mobilise action, implement approaches such as HiAP, and the ability to adopt specific policy levers such as spatial planning.

If the themes and principles in Figure 2 are operationalised through planning and are to achieve the desired health outcomes, planners will be required to have a strategic competency and knowledge of the policy and practical connections between the themes and principles, and public health professionals will be required to assist in ensuring and validating the outcomes achieved.

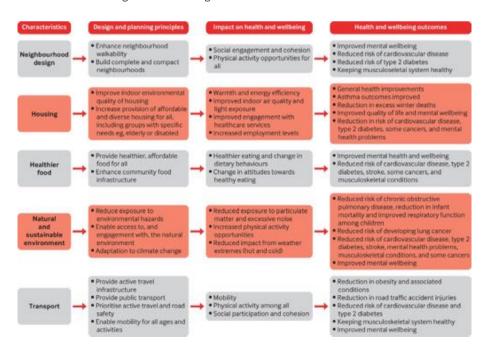


Figure 2. Associations between planning principles and health and well-being. Source: McKinnon et al., 2020

Strengthening Policy Integration and Prioritisation

Health and well-being have become central to many planning strategies and policy frameworks at national and local governmental levels, and acknowledged by the World Health Organization and UN-Habitat as essential to achieving the Sustainable Development Goals. There is greater policy recognition by the UK government that, as well as serving a regulatory land use and management function, planning places 'affect us from the air that we breathe to our ultimate sense of purpose and well-being. This is a question of social justice too' (MHCLG, 2020: 13).

Many spatial policy requirements extend beyond general health but address specific public health challenges. For example, in a statement to all local authority chief planning officers, the Welsh Government's Chief Planner highlighted that planning should play its part in helping to create better places which reduce opportunities for people to wilfully harm themselves or others (Welsh Government, 2019). National policy directives are given a statutory primacy to inform spatial planning policies and practices at all other spatial scales. So, statements of policy, at that high level, are welcome and necessary to drive action.

In addition, the proliferation of frameworks, guidance and accreditation schemes at international (WELL Building and Fitwel), national (Scotland Place Standard), and local levels (London Healthy Street and Essex Livewell Development) can provide a common focal point for policy makers, practitioners, communities and end users to start discussions. Many of these are instigated and implemented through assessments and accreditations of practitioners and the projects themselves, which can function as a de facto professional qualification process.

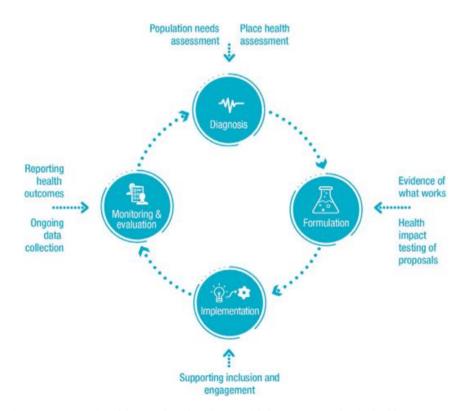


Figure 3. Representation of the UN-Habitat four phase spatial planning process showing health as an input. Source: UN-Habitat & WHO, 2020

However, there can be delays in the implementation of policy into practice from national and local levels, where there is a more depressing picture around planning and health integration. A comprehensive spatial plan review conducted by the Town and Country Planning Association found that the majority of local spatial plans in England have not taken into account local health needs and those priorities set out in local public health strategies, but more spatial plans in Wales do refer to health strategies (Chang, 2019). In a topic-based review undertaken by the planning and development consultancy Lichfields it was found that only a small minority of spatial plans in England, Wales, and Scotland included a specific requirement for housing for older people (Lichfields, 2019). In another review focusing on the food environment in England, the University of Cambridge found half of local government areas had a policy specifically targeting takeaway food outlets, of which only a third focused on health as a justification (Keeble et al., 2019).

The various policy reviews illustrate the fact that the regulatory and policy landscape is dynamic, and will always be so. It is vital for public health professionals to have the necessary knowledge to be aware and formalise their involvement and role in the local planning and development process. This will involve capitalising on the narrow 'windows of opportunity' in the formal planning process and also working with planners to provide their inputs across the whole planning cycle (Rose et al., 2020), as given in Figure 3.

Changing Workforce and Professional Boundaries

Public health functions and their institutional settings vary across different jurisdictions, and this affect the extent to which they can have a meaningful policy and working relationship with the planning system and planners. Conversely, planners have difficulties in identifying a consistent public health counterpart in order to have meaningful engagement and consultation, and this can often result in no action or lack of aligned action, as policy reviews have illustrated.

What is clear is that despite, and regardless of, varying institutional arrangements and regular reforms to systems, it will be people, professions, and relationships that will realise change. There is a need for greater clarity of roles and extended investment in building and sustaining workforce capacity and capability, which have been missing. These would underpin the more integrated approach to trans-disciplinary workforce planning that is necessary to realise health outcomes and benefits (House of Commons, Health Select Committee, 2007).

Qualitative research conducted to obtain insight from planning practitioners has yielded disappointing results. There are still practitioners who may not yet recognise their professional role and contribution to the health and well-being agenda (Lake et al., 2017). There are unrealised potential and opportunities for workforce development but also individual professional and career development that can help achieve planning for health aims by possessing the necessary core competencies (Pineo et al., 2021).

UK professional organisations, including the Faculty of Public Health and the Royal Town Planning Institute, came together to publish a joint statement to urge the providers of education and training for planning and for public health professionals to emphasise the importance of members of both professions acquiring at least a basic mutual understanding of planning and its role in public health (Faculty of Public Health, n.d.).

This call to action can and should extend to other practitioners who will naturally qualify through their respective 'home' professional expertise, including



PARTNERSHIP: THE KEY OF SUCCESS

Figure 4. Different disciplines and professions involved in whole systems approach to tackling obesity. Source: Tedstone, 2015

environmental health, nutrition, sustainability, transport, housing, and building services engineering. But, in working to develop their careers and expand their work experiences in planning for health, they become trans-disciplinary practitioners. This recognises the wider effect of their professional activities. An example is the 'whole systems approach' to tackling obesity, where multiple professions and policy areas are required to work in alignment because individual and isolated actions will not be effective in helping to supress complex obesity prevalence across western countries (Figure 4). This demonstrates where promoting good health can reap co-benefits.

In an exercise designed to better understand competency alignment between professionals, Public Health England mapped the competencies that a qualified town planner and a public health professional would use, as seen in Figure 5 (Public Health England, 2020). In the UK, public health practitioners are required to meet competencies set out in the Public Health Skills and Knowledge Framework, while accredited or chartered planners are required to meet competencies set out by the Royal Town Planning Institute. Figure 5 demonstrates that, even without embarking on wholesale reform and introduction of new competencies, planning or public health practitioners can already apply existing competencies, such as when operationalising health impact assessments in spatial planning. But competency frameworks should evolve to reflect new skills expected of practitioners to meet emerging challenges.

Similar exercises can also be undertaken with other professional competencies, such as for housing, urban design, transport, or environmental management professionals, and it is likely there will be similar competency alignments. But,

Royal Town Planning Institute10 towns planning competencies

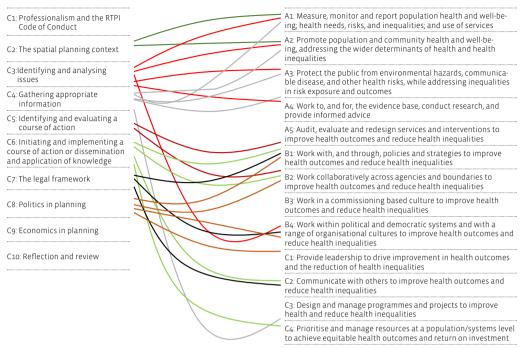


Figure 5. High-level mapping exercise to understand alignment of town planners' and public health professionals' competencies. Source: Public Health England, 2020

given that each profession will have their own responsibilities and regulatory basis, without additional mechanisms to systematically secure the right capacity and capability, it would not be a sustainable approach to rely solely on competency alignment to tackle the major issues facing society.

This recognition of the existence of specialised inter-disciplinary planning for health practitioners has meant there is a revealed interest from practitioners to work at the interface of spatial planning and public health systems at various levels of public authority (Chang, 2017), as evidenced by the examples provided below. Increasingly, practitioners from any profession are prepared to commit to achieving the shared and common aspiration of maximising public health outcomes for all individuals, communities, and places by seeking to develop the art and science of planning for health.

Example: Practitioners Embedded in National Public Health Agencies

In Wales, the planning framework has a clear focus on health and well-being, with the Well-being of Future Generations (Wales) Act 2015, Future Wales: The National Plan, and Planning Policy Wales recognising the role that planning has in the development of healthy places and communities. It was in this context that, in 2021, the Wales Health Impact Assessment Support Unit in Public Health Wales created a specialised public health and spatial planning role to increase capacity and knowledge and focus on integrating planning and public health, including promoting the use of health impact assessments. The responsibilities

of this role include working with planners and health professionals to develop their understanding of how to improve health and well-being and strengthen relationships. This includes providing training and expertise and producing evidence-based guidance for health professionals on how to be involved in local development plans and how to respond to planning applications from a public health perspective. The postholder is able to utilise skills in spatial planning and public health in order to improve systems and outcomes, such as early engagement of public health professionals in the planning processes. The impact of the role has been greater engagement and increasing understanding of how to create healthier places through joint working.

Example: Practitioners Embedded in Local Authorities

In England, the planning framework requires planning policies and decisions to support the delivery of local health strategies, with the first point of contact on population health improvement being the director of public health. The East Sussex County Council Public Health Team, for example, have a Healthy Places and Communities Team and have invested in recruiting Healthy Places Specialists, focused on Public Health and Planning. These specialists are planning professionals who are integrated into the public health team and work to support HiAP, which includes 'planning for health'. Across a two-tier authority, the roles are proving to be invaluable in 'getting health into place'. They are exposed to and are responsible for working across a number of public health priorities associated with the wider determinants but specifically focus on the built and natural environment. Areas of focus and interlap include housing, nature for health (including biodiversity net gain), fuel poverty, well-being economies, climate change, obesity, and food poverty. There will be a supportive and beneficial exchange of knowledge across the county as a result of cooperation between these healthy places specialists and the various disciplines and systems they work across. It also makes for a richer and dynamic interplay and learning opportunity across the whole of the public health team strengthening whole systems/matrix thinking and working.

Implications for Planning for Health in Practice

Public health spatial planning in practice is the process of practitioners from any profession working within their respective systems, structures, and policy areas related to the built and natural environment, committing to advance the practice of planning for health. It requires an understanding and working competency in the art and the legal and political science of implementing tangible and effective actions with a primary directive to improve public health outcomes and reduce health inequalities (Chang et al., 2022). In order to achieve this, it requires the workforce to recognise the following:

1. Better and more effective collaboration among the professions and practitioners should become standard practice, but with a greater focus on the integration of the skills and competencies needed to deliver and sustain planning healthy places (Figure 6). This may mean establishing and recruiting transdisciplinary posts, for example in public bodies, property development, and planning consultancies. Such added capacity is essential, in particular as efforts are stepping up to improve the use of health impact assessments and increase health-promoting

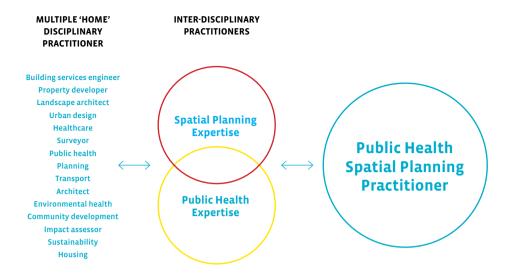


Figure 6. Towards a new generation of public health spatial planning practitioners. Source: Chang et al., 2022

planning and design policy and practice. This will require an examination and honest conversation about resources and also the state of current educational offer in universities and higher education institutions, as well as workplace initiatives such as mentoring and apprenticeships, to assess whether they are meeting the changing needs for integrated and transdisciplinary practitioners.

- 2. There is a need to bring principles of good workforce planning, such as those set out by the Chartered Institute of Personnel and Development (CIPD, 2021), to bear to address the systemic challenge of the skills deficit in public health spatial planning. While many organisations are upskilling and supporting existing employees' learning and development needs in-house, this approach may not be sufficient to plug the skills deficit. There are hurdles organisations face when it comes to workforce planning. These needs cannot be fulfilled and tackled by a single authority or locality, but will require a strategic and partnership-led approach to create a sustain and wider pool of talent and capability. This also means that taking a workforce planning approach is about embracing diversity of skills, competencies, and experiences, as well as so-cio-economic characteristics.
- 3. People have career needs and aspirations. But there is currently no formal infrastructure for nurturing such talent and commitment in planning for health. The authors advocate that there is a timely opportunity to secure a sustainable and lasting settlement for a career path in public service, third sector advocacy and private sector consultancy in public health spatial planning. There is a collective role here for national planning and public health departments, professional institutes and industry bodies to invest in capacity building initiatives.

There is an immediate need to invest in building a future generation of the workforce who can enable planning healthy places. This should not be seen as an economic cost, but of social value in harnessing opportunities to put health and sustainability at the heart of planning. The financial gains that can lead to a healthier population are diverse and provide benefits across the economy and society. Action needs to be taken now in the window of opportunity that the post-pandemic recovery period presents so that Public Health Spatial Planning in practice can match the political rhetoric on healthy places.

TOC

References

Bird E.L., Ige J.O., Pilkington P., Pinto A., Petrokofsky C., & Burgess-Allen J. (2018). Built and natural environment planning principles for promoting health: an umbrella review. *BMC Public Health*, *18*(1), 930.

Chang, M. (2017). Careers Advice: The rise of health planning specialists. Planning Jobs. https://jobs.planningresource.co.uk/article/careers-advice-the-rise-of-health-planning-specialists. Accessed on May 30, 2022.

Chang, M. (2019). The State of the Union: Reuniting Health with Planning in Promoting Healthy Communities. London: TCPA.

Chang, M., Green, L., & Petrokofsky, C. (2022). Public Health Spatial Planning in Practice: Improving Health and Well-being. Bristol: Policy Press.

CIPD (Chartered Institute of Personnel and Development). (2021). Workforce planning. https://www.cipd.co.uk/knowledge/strategy/organisational-development/workforce-planning-factsheet#gref. Accessed on May 30, 2022.

Faculty of Public Health. (n.d.) *Town planning and public health*. https://www.fph.org.uk/media/3206/town-planning-flyer-april-2021.pdf. Accessed on May 30, 2022.

Grant, M. (2019). Planning for Healthy Cities. In M. Nieuwenhuijsen & H. Khreis (Eds.), Integrating Human Health into Urban and Transport Planning: A Framework (pp. 221–250). Cham: Springer.

Green, L., Toner, S., Evans, L., Parry-Williams, L., Johnson, T., Christian, G., Williams, C., Azam, S., & Bellis, M.A. (2022). Maximising health and well-being opportunities for spatial planning in the COVID-19 pandemic recovery. Cardiff: Public Health Wales NHS Trust.

House of Commons, Health Select Committee. (2007). Workforce Planning Fourth Report of Session 2006–07. London: The Stationery Office Ltd.

Hunstone, K., Mesari, A., & Pinchera, E. (2018). *Healthy placemaking*. London: Design Council and Social Change UK.

Ige-Elegbede, J., Pilkington, P., Bird, E.L., Gray, S., Mindell, J.S., Chang, M., Stimpson, A., Gallagher, D., & Petrokofsky, C. (2021). Exploring the views of planners and public health practitioners on integrating health evidence into spatial planning in England: A mixed-methods study. *Journal of Public Health*, 43(3), 664–672.

Keeble, M., Burgoine, T., White, M., Summerbell, C., Cummins, S., & Adams, J. (2019). How does local government use the planning system to regulate hot food takeaway outlets? A census of current practice in England using document review. *Health and Place, 57*(May), 171–178.

Kent, J. & Thompson, S. (2012). Health and the built environment: exploring foundations for a new interdisciplinary profession. *Journal of Environmental and Public Health*, 2012, 958175.

Lake, A.A., Henderson, E.J., & Townshend, T.G. (2017). Exploring planners' and public health practitioners' views on addressing obesity: lessons from local government in England. *Cities & Health*, 1(2), 185–193.

Lawrence, R.J. (2004). Housing and health: from interdisciplinary principles to transdisciplinary research and practice. *Futures*, *36*, 487–502.

LGA (Local Government Association). (2016). Health in All Policies: a manual for local government. London: LGA.

Lichfields. (2019). Solutions to an age old problem: Planning for an ageing population. London: Lichfields.

Macfadyen, N. (2013). Health and Garden Cities. A re-publication of the Garden Cities and Town Planning Association pamphlet on the health benefits of Garden Cities. *Town & Country Planning* (*Tomorrow Series Paper 14*). London: TCPA.

McKinnon, G., Pineo, H., Chang, M., Taylor-Green, L., Johns, A., & Toms, R. (2020). Strengthening the links between planning and health in England. *BMJ*, 369:m795, http://dx.doi.org/10.1136/bmj.m795.

MHCLG (Ministry of Housing, Communities & Local Government). (2020). White Paper: Planning for the future. London: MHCLG.

Pineo, H., Thrift, J., & Chang, M. (2021). Planning for Health and Well-Being. In G. Parker & E. Street (Eds.), Contemporary Planning Practice: Skills, Specialisms and Knowledge (pp. 75–90). London: Bloomsbury Publishing.

Public Health England. (2020). Town planning and public health: shared competencies. UK Department of Health and Social Care. www.gov.uk/government/case-studies/town-planning-and-public-health-shared-competencies. Accessed on May 30, 2022.

Rose, D.C., Mukherjee, N., Simmons, B.I., Tew, E.R., Robertson, R.J., Vadrot, A.B.M., Doubleday, R., & Sutherland, W.J. (2020). Policy windows for the environment: Tips for improving the uptake of scientific knowledge. *Environmental Science & Policy*, 113, 47–54.

Tedstone, A. (2015, October 14). Health Matters:
Designing a 'whole systems approach' to prevent and tackle obesity. *Health Matters*. https://ukhsa.blog.gov.uk/2015/10/14/designing-a-whole-systems-approach-to-prevent-and-tackle-obesity.

UN-Habitat & WHO (World Health Organization). (2020). Integrating health in urban and territorial planning: A sourcebook for urban leaders, health and planning professionals. Geneva: WHO.

Welsh Government. (2019). Suicide prevention measures in building design and planning. Cardiff: Welsh Government.

Towards Healthy Cities: Innovative Urban Planning Mechanisms for Human Well-being



Beyond Liveable: Planning Cities for Wellness

Heather Banerd Kimberly Lum Yerin Hwang Pablo Acebillo

Introduction

The past two years have prompted much reflection among urban planners and designers as the Covid-19 pandemic has upended habits, assumptions, and urban spaces. For the first time in decades, issues of health have become dominant in planning discourse as our profession recalibrates and examines how we can respond to this new post-pandemic world. Of course, this is not a new world, but an old world seen through a new lens. The risk of a global pandemic has been increasing in recent decades, and, even two years into an outbreak, we see a lack of action to address root causes and risk factors. Alongside acute threats, economic and lifestyle changes throughout the past century have resulted in an exponential rise in chronic illnesses and so-called 'lifestyle diseases' (WHO, n.d.a), yet during this time there has been no collective examination of the intersection of public health and urban planning at the scale that is needed.

While our current state of reflection is overdue, it is also timely, as the place of health and healthcare in our society undergoes a paradigm shift. The prevalence of chronic illness has led to a shift towards long-term care and health maintenance (WHO, n.d.a). As healthcare facilities are still largely based on acute care models and doctor-led treatment, this requires us to rethink how and where new models of care may take place. Alongside this is a growing understanding of health and wellness from a holistic perspective, recognising the impact of psychological factors on mental and physical health. This has been accelerated by the pandemic, during which we have seen record levels of mental health issues come to the fore (Ellyatt, 2022), but the collective nature of the struggle has also broken down barriers in the discourse around mental health and helped cultivate a more holistic view of health and wellness.

Together, these trends have shone a light on the spaces in which we spend our lives: our homes, neighbourhoods, and cities. This has prompted reflection not only on how we might plan to avoid future risks, but also how we might plan for better lives in general, with wellness at their core. Now, we face the task of planning not only for health, through active health planning and resilience; but planning also for wellness, through designing spaces for physical activity, mental resilience, and social stability. The concept of liveable cities is no longer enough—we need cities in which people can not only survive, but thrive. Here, we explore how the groundwork for wellness can be laid by planning for a proactive city, an active city, and a connected city:

A proactive city: A city planning for wellness must implement policies and development that support the social and economic factors influencing health, and look ahead to anticipate and plan for risk management, as seen in strategic urban planning projects such as the Ben Tre Strategic Vision and the Thu Duc City master plan.

An active city: Planning for physical activity means enabling both incidental and intentional activity for all sectors of the population, through policies as broad as universal accessibility and an affordable public transit system, urban green cover, and access to public parks and shared spaces, as seen in policy-driven interventions in Fayetteville, Arkansas, USA and Singapore's city-wide urban greening strategy, as well as urban regeneration projects such as the Raval in Barcelona, Spain.

A connected city: Planning for resilient and connected communities prioritises the intangible social ties cultivated through heritage, identity, and purpose, as seen in district plans such as the North Dalat District (Figure 1), Thu Duc City master plan, site-specific interventions such as Kampung Admiralty, and grassroots initiatives such as Park(ing) Day.

These three steps lay the core foundation for a healthy city. A city that aspires to enrich and support the health of its residents may go beyond these measures and look to innovative technologies and strategies – as long as it begins with the basics.

A Healthy City Is a Proactive City

Healthy cities do not come about by accident. The most important step in building a healthy city is proactively planning to be a healthy city. A city that plans with health in mind, and implements these plans, will typically be healthier than a city that does not (WHO, n.d.b). Several nations have begun taking the first steps towards health planning. In 2020, the United Kingdom published a Health Index for England, measuring health outcomes, health-related behaviours and wider determinants of health, with the aim of developing an inclusive approach to health and focusing public debate and public policy on this topic (Office for National Statistics, 2020). Similarly, the Australian Urban Health Indicators project. will develop a suite of new indicator data, including demographic, socioeconomic, health service and environmental data, to generate new insights for health and social infrastructure planning in Australian cities (Australian Research Data Commons, 2022). In Singapore, a Healthy Precinct Framework and Toolkit to better understand the health behaviours of residents and socio-environmental determinants in housing precincts is in development (MOHT, 2021). Though far from being ubiquitously implemented, identifying and measuring social, economic, and environmental factors is a crucial first step for understanding the depth and spread of underlying issues and enabling cities to address these issues and proactively plan for health.

Proactive resilience planning

Beyond daily health planning, proactive resilience planning is needed, from health crises to climate resilience. The varied and often poor response to the pandemic across Western countries in particular has highlighted fundamental flaws in resilience planning. In contrast, many Asian countries that experienced the Severe Acute Respiratory Syndrome (SARS) outbreak in the early 2000s performed better in the early days of the pandemic, having learned from past mistakes. Extreme weather events resulting from climate change are both a direct threat to safety and well-being and an indirect threat. Flooding brings the risk of contaminated water and water-borne diseases; drought and extreme temperatures bring risk of respiratory and cardiovascular issues, as well as increased accident and mortality rates (ISGlobal, 2018). Climate adaptation at all scales is a fundamental component of a healthy city to ensure a baseline of safety and security for residents. This includes ensuring safe and clean management of storm water; flood prevention and management; drought resilience; managing microclimate at both a city-wide and neighbourhood scale. Even measures such as urban greening can have an impact, with data showing that heatwaves affect poor neighbourhoods disproportionately to wealthy ones due to disparity in tree cover and microclimate (Anderson & McMinn, 2019).

Climate resilience in Ben Tre province

The Ben Tre Strategic Vision Plan takes a holistic approach to addressing climate resilience at a regional scale. The province is made up of four low-lying coastal islands separated by branches of the Mekong River, and the predominantly agricul-



Figure 2. Water resource management in Ben Tre province. © enCity Urban Solutions, 2021



tural economy is under threat from fluvial flooding, sea level rise, and saltwater intrusion. The objective of the Strategic Vision Plan is to lay a strong framework for development, anchored in resilience and context-specific, nature-based solutions. It does this through strengthening intra- and inter-provincial infrastructure with two north-south highways. The coastal highway doubles as a dyke, enabling the water systems within the dyke to be redesigned, developing a land use system based on water resources to secure irrigation supplies and enabling agricultural adaptation (Figure 2). Urban development is applied in key locations, and designed to promote local water-sensitive urban morphologies already present across the province. Overall, the plan envisions an efficient and cohesive solution to potential climate threats, proactively preparing for risk to mitigate excessive impacts when crisis strikes (Figure 3).

Climate resilience in Thu Duc City

In Ho Chi Minh City, the 22,000-ha Thu Duc City Masterplan sets out the framework for the city's new innovation district. Among other interventions, flood mitigation strategies are of crucial importance given the district's low elevation and proximity to the Saigon River. In order to reduce the risk of urban flooding due to heavy rain and high tides, retention ponds and green infrastructure are proposed to capture runoff and increase permeability. These include existing natural systems such a canals, ponds and lakes, low-lying open spaces with water storage capacity such as parks, and newly built underground water storage tanks (Figure 4).

Overall, the concept behind a proactive city is simple: to understand the policy and planning factors that influence the health of a population, and implement those that support and promote health; and to anticipate risks and take preventative action. Together, these must be the baseline for any healthy city.

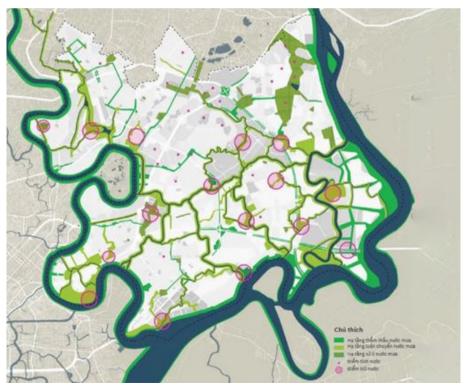


Figure 4. Proposed retention ponds (large dots) and detention ponds (small dots) for stormwater management in Thu Duc City. © enCity Urban Solutions, 2021

A Healthy City Is an Active City

Physical activity is at the core of both preventative healthcare and management of chronic conditions. It has positive impacts on everything from our immune system to brain chemistry and is a foundational element of health. Despite widespread awareness of this, many people still struggle to fit physical activity into their day-to-day routines. In planning a healthy city, creating opportunities for physical activity, both incidental and intentional, has the potential to create broad, far-reaching health impacts and positive feedback loops.

Planning for incidental activity

Of the two, planning opportunities for incidental activity has the largest potential for widespread impact, as it requires no specific location, allocation of time, equipment, or team mates. Incidental activity can be as simple as standing or walking instead of sitting. It has been shown to improve mood, energy and social and emotional well-being (AIHW, 2018), as well as reduce risk of chronic conditions and improve mobility (Diabetes WA, 2021).

Urban accessibility is a key determinant of incidental activity, through residential density, walkability, and transit networks. Residential density is an important starting point, as it creates the critical mass needed to support public transit and local amenities such as schools and shops. Density brings people closer to the things they need in their daily lives, and proximity encourages pedestrian activity. Increasing walkability in neighbourhoods, through small measures such as urban greening, shading, and even decreasing distance between traffic intersections, helps to get people out onto the street. This activity is increased where extensive public transit and cycle networks are provided within walking distance of residences, reducing reliance on private vehicles.

Aside from increasing incidental activity, these measures have broader impacts. Busier streets create safer neighbourhoods, increased foot traffic supports local economies, and regular informal interactions build stronger community networks. A reduction in parking requirements for businesses on Dickson Street in Fayetteville, Arkansas, USA, required shoppers to park further away and walk to their destination, increasing foot traffic. Rather than suffering, businesses saw an increase in revenue (Gould, 2022). Strong local economies also enable economic opportunity and increase social equality, which is strongly correlated to health. Finally, public transit and mobility networks not only support walkability, but increase accessibility across the city. This enables residents to reach more economic opportunities and engage with different areas of the city, both of which have been shown to improve social cohesion and equality, which are correlated to lower levels of stress and greater overall health in a society (Wilkinson & Marmot, 2003).

Planning for intentional activity

While incidental activity is supported through increasing accessibility in our day-to-day lives, planning opportunities for intentional activity requires ensuring accessibility to specific locations, venues, and networks. Primarily, this means green spaces such as parks and park connectors, but also includes public sports amenities, especially in cities where weather can be a barrier to activity.

Access to public green spaces is one of the most direct ways to create opportunities for intentional activity. Proximity to greenery decreases stress and

supports mental health; tree-lined streets that provide shading and thermal comfort increase walkability and provide ideal running and cycling routes; and local parks encourage outdoor gathering and play (Engemann et al., 2019). Access to these spaces removes common barriers to individual exercise and team sports such as cost concerns and travel time (Richardson et al., 2013; Wang et al., 2019). The International Union for Conservation of Nature (IUCN) has proposed a 3:30:300 approach – a view of three trees from every home, 30 percent tree canopy cover in every neighbourhood (or equal levels of vegetation, in arid climates), and a park or green space within 300 m (Konijnendijk, 2021).

Public green spaces came under the spotlight early on in the pandemic, as the use of parks and other green areas for socially-distanced socialising and exercise increased (Korpilo et al., 2021). However, so did the disparity in access to these spaces across different neighbourhoods and income groups and disparity in the quality of spaces (McPhearson et al., 2020). This is a concern for any aspiring healthy city, both in normal times and during a public health crisis. One study showed that proximity to green spaces was effective in protecting against depression and anxiety during the pandemic (Wortzel et al., 2021), while another found correlations between racial disparity, limited access to urban greenery, and higher Covid-19 case numbers (Spotswood et al., 2021). Increasing area and quality of green spaces should be a priority for cities, particularly in more vulnerable neighbourhoods.

Leveraging density for urban greening in Singapore

Singapore is one city that is actively increasing parks, green connections, and tree cover even as it expands development across the island on which it is built. From 36 percent green cover in 1986, targeted urban greening strategies have seen an increase to 56 percent green cover by 2020, even as urbanisation has increased. Green spaces are also highly connected, with over 300 km of green corridors, known as the Park Connector Network (PCN) and further expansion already underway (Lambert, 2020). The city has also implemented requirements for high-rise urban greening through the Landscaping for Urban Spaces and High-Rises (LUSH) policy, which provides incentives for developers to meet targets for the Green Plot Ratio (URA, 2017).

Injecting green public space through revitalisation of the Raval Boulevard

Public space can be a key tool for revitalising undermined neighbourhoods. This is the case of the Raval in Barcelona, which demonstrates how high-quality public space can socially transform a derelict neighbourhood into a district integrated into the city fabric. Like Haussmann's 19th-century renovation of Paris. France, in Barcelona the city council used 'creative destruction', demolishing 62 buildings to make way for a new public square. The main goals were to provide a central public space in a neighbourhood lacking one, and to 'sponge out' the dense urban fabric to provide light and natural ventilation (Figure 5). Residents were relocated to new housing nearby, and the new square became a focal point of community activity. Parallel interventions along the new Raval Boulevard used urban culture as a driving force for social transformation, such as the new Centre of Contemporary Culture or the Catalonia Film Archive. Since then, the neighbourhood generally, and the Raval Boulevard specifically, have become internationally recognised, and, with their commitment to the city, have contributed to a new cultural circuit and tourist itinerary in a re-emerging Raval (Figure 6).

An active city does much more than promote physical movement or provide a lot of parks. Planned effectively, it strengthens the social and economic fabric; en-



Figure 5. 'Sponging out' of the Raval to create a new public space: area in 1993 (left) and in 2022 (right). © ICGC.cat, 2020



Figure 6. Urban art as a means to promote quality public space. © Pablo Acebillo, 2018

ables opportunity and choice; and protects and restores mental resilience. Many of the strategies that enable an active city are also those that make a neighbourhood attractive and 'liveable'. When applied at a city-wide scale with care and intention, or in targeted interventions that have ripple effects beyond their site, they can have a much more equal and long-lasting impact.

A Healthy City Is a Connected City

Beyond physical activity, a sense of belonging, social equality and support networks are strong indicators of health. Some studies emphasise strong correlations between social and economic stress, and poor health and life expectancy (Wilkinson & Marmot, 2003). Stress elicits a physical response; long term stress can put pressure on our bodies and increase vulnerability to a range of conditions, such as high blood pressure, heart attack, and stroke. While broad policy approaches, such as an emphasis on education, support in finding secure employment, and better standards of housing are more direct-impact solutions, planning can lay a foundation for these by strengthening social fabric. This begins with building a sense of belonging and shared identity in cities and neighbourhoods through preserving heritage; connecting communities with shared public spaces that facilitate informal interactions; and empowering communities through participatory planning and grassroots initiatives.

Curating belonging through shared identity

Identity and belonging are tenuous concepts, particularly in the multi-cultural and transient populations that define most urban areas today. Yet they are also fundamental human needs, and they play a role in managing stress and mental health. Planning can help by cultivating spaces and enabling practices from which identity can grow over time, such as conserving or adapting built heritage, from historic buildings to distinctive elements such as old industrial structures. This helps to preserve and enhance each city's unique urban fabric and materiality; it also drives downtown regeneration and the back-to-the-city movement, which can improve economic opportunities for local residents; and, finally, regeneration has also been shown to create more and better-quality jobs with higher incomes compared to new construction, producing a greater multiplier effect (Rypkema, 2008).

Revitalising cultural heritage in North Dalat

The North Dalat District is a regeneration project within Dalat, the Vietnamese heritage city known for its rich local culture and distinctive colonial architecture (Figure 7). The proposed master plan preserves and adapts built heritage while expanding new development around the old, to create a vibrant town centre on the restored lake; a commercial spine facing onto a bioswale corridor that runs along the central valley; and new residential communities amid restored pine forests. The proposal emphasises creating new economic opportunities for existing and future residents, expanding amenities within the district, and enhancing tourism potential through both physical and intangible heritage. The architectural styles of the new development are designed to reference vernacular and heritage typologies, and public spaces highlight features of cultural value, from the central lake that will anchor community activities to the outlook over Lang Bian Mountain, a site considered sacred to local culture (Figure 8).

In the previously mentioned Thu Duc City project, the new developments to attract research and development labs and new tertiary services are carefully planned, respecting local culture and existing heritage assets. The newly proposed FinTech Hub in the Thu Thiem area blends with the existing Congregation of the Holy Cross Lovers (Figure 9). This strategy is aimed at preserving the history of the place and emphasising the identity of the area.





Figure 8. Outlook over the sacred Lang Bian Mountain. © enCity Urban Solutions, 2021



Cultivating belonging through community spaces

Beyond heritage and culture, shared public spaces and vibrant streets that enable informal interactions can also foster stronger, connected communities. The public transit and urban greening strategies discussed earlier are key elements in building these spaces; so too is a thriving local economic centre that provides employment, hosts amenities for the community, and acts as a collective destination. Particularly in new developments, zoning shared public spaces and pockets of commercial development is crucial to avoiding isolating bedroom communities. In Singapore, for example, the Housing Development Board (HDB) has made a concerted effort to do this from the earliest days of their public housing policy in the 1960s. As residents were relocated from traditional villages, or kampongs. authorities were concerned that community networks and social fabric would suffer. This risk has been proven in housing projects across the world, with poor design and short-sighted policies leading to a breakdown of social structures and subsequent rising crime: the Pruitt-Igoe project in St Louis, Missouri, USA is a salient example of such failed design. To prevent this, the HDB designed their developments to include shared public spaces such as 'void decks' at street level, where residents could gather informally or hire space to hold events, as well as shared neighbourhood parks, playgrounds and open green spaces. Developments also had commercial zoning clusters at street level where subsidised rents encouraged food vendors and other small businesses to set up shop. Combined, these strategies helped build habitual gathering spaces and foster a new shared identity centred on HDB living, which quickly became a distinctive feature of Singaporean life.





Village living in a high-rise city at Kampung Admiralty

Informal interactions also help to strengthen social ties and urban vibrancy in vulnerable communities. Kampung Admiralty is a pilot project by architectural practice WOHA in Singapore that applies this in a mixed-use, high-density aged care development. The development has a direct pedestrian connection to the train network and co-locates apartments for the elderly with public medical clinics, shops, a community centre, a food court, and a public plaza, topped with a terraced landscaped roof where residents can exercise and garden. Informal spaces allow residents to socialise with each other; spend quiet time in the rooftop gardens (Figure 10); see their doctor or get a meal; people-watch or participate in public events at the plaza (Figure 11); or hop on a train into the city, all within a few minutes of their residence. Residents have seen improvements in overall health and well-being as well as in chronic conditions such as diabetes (Zhuang, 2020). The success of the project has led to similar developments being planned across Singapore Island, with the next one being constructed in the nearby neighbourhood of Yew Tee.

Belonging through empowerment

Lastly, empowering communities through participatory planning and grassroots interventions is crucial to designing and implementing successful long-term planning solutions for a healthy city. Not only does this ensure more specific and targeted solutions that have the support of residents and suit local culture, habits and lifestyle, but is also fundamental for shaping how residents relate to their cities and see their place in the urban social structure. This process should also involve experts beyond the planning profession, particularly health professionals and social scientists who can advise on the potential psychological and social impacts of the proposals. Especially in disadvantaged communities, participation and grassroots initiatives can be a powerful way of taking back control and creating opportunities for unique solutions with direct positive impacts on community health.

Citizen-led design

Park(ing) Day is a global participatory project, typically hosted by advocacy groups and small civic organisations, where street parking spaces are temporarily repurposed as spaces for art, music, relaxation and activism (Park(ing) Day, 2022). Originally an installation in San Francisco to make a statement about car parking and a lack of open space in the city, Park(ing) Day has gained popularity across the globe, and spurred formal programmes and toolkits for the conversion of parking lots into 'parklets', providing clear guidelines and financial support for ground-up interventions. Projects like these encourage urban dwellers to take an active role in reappropriating and reimagining urban space for community- and health-centred objectives.

Social ties such as heritage, culture, belonging and purpose cannot really be created; yet they are often the secret ingredient that separates the generic from the iconic and successful urban spaces from failures. In terms of health, they determine the strength of a city's social fabric, and therefore its resilience and ability to thrive. As planners, all we can do to help this process is to identify the unique features that are important to maintaining this fabric in each place; to curate and cultivate the right conditions to enable them to take root and to flourish; to protect them when they are under threat; and to reimagine and adapt them as the city changes around them. Many of these strategies have far-reaching impacts and knock-on effects that support health in a multitude of ways, and many of the

	PROACTIVE CITY	ACTIVE CITY	CONNECTED CITY
	Study environmental, social + economic determinants of health Identify risks and prepare for resilience	 Design for and encourage incidental activity Support and enable intentional activity 	 › Build shared identity and community ties › Create opportunities for engagement and stewardship
BEN TRE STRATEGIC VISION PLAN	 Resilience through coastal adaptation Context-specific economic growth strategies 		 Development based on existing urban patterns and forms
THU DUC CITY MASTER PLAN	 Climate resilience strategies through WSUD and landscape 		 Preservation of heritage structures within new urban development
SINGAPORE URBAN GREENING POLICY	 Using urban greening to create clean air, shade and thermal comfort 	 Using urban greening to increase walkability, street activity, and opportunities for outdoor recreation 	
RAVAL BOULEVARD		 Using public space and urban greening as a tool for revitalisation and economic opportunity 	 Increasing social activity and engagement through shared spaces
NORTH DALAT DISTRICT MASTER PLAN	 Resilience through landscape restoration and WSUD strategies 	 Creating walkability and community spaces through landscape strategies 	 Integration of built and intangible heritage within new district plan
SINGAPORE HOUSING DEVELOPMENT BOARD POLICIES	Economic opportunity through accessible housing Social equity through mixed housing	 Supporting economic opportunity through accessible housing 	 Building community through shared 'void deck' spaces for formal and informal interactions
KAMPUNG ADMIRALTY	 Understanding of risk factors for residents WSUD strategies applied vertically through structure 	 Shared spaces for incidental and intentional activity for across all ages 	 Co-location of functions to keep residents engaged Spaces that support informal interactions
PARK(ING) DAY			 Engagement of public in design Reallocation of urban space for community activities

Figure 12. Health strategies. © enCity, 2021

case studies implement different forms of these strategies through a variety of approaches (Figure 12). There is no single formula for success; what matters most is to take the first steps towards understanding the context of each city, and then just start with the basics.

Where to Begin? With the Basics

The approaches outlined here - proactive planning, public transit, urban greening and community building – are broad, yet as we begin examining what health means for cities of today, it is important to begin with the fundamentals. The question of health is extremely complex; it means very different things in different places, and to different people; yet as humans we all share the same underlying needs. We need safety and stability; basic mobility, autonomy and opportunity; and a sense of belonging and purpose. Where any of these are lacking, more targeted initiatives such as personal health tracking devices or data-driven healthcare innovations can only be band-aid solutions. As planners, our task is to be proactive in understanding the social and economic factors influencing health, so that good planning can make the city the front line in preventative care, and to identify the risks faced by each individual place so that we can proactively prepare for them. Preventative care begins with planning for incidental and intentional activity, supporting physical health, autonomy, independence, and opportunity while promoting mental well-being. At the same time, cultivating a highly connected social fabric through heritage, belonging and purpose fosters both individual and collective resilience. Real, lasting planning strategies for healthy cities must be anchored in a deep understanding of the fundamental elements of health, and a broader understanding of wellness. We must set aside our assumptions to re-examine and recalibrate planning practices through this lens. Then, we may begin to see the emergence of cities that are truly healthy, where residents not only survive, but thrive.

References

AIHW (Australian Institute of Health and Welfare). (2018). *Physical activity across the life stages*. Canberra: AIHW.

Anderson, M. & McMinn, S. (2019, September 3). As Rising Heat Bakes U.S. Cities, The Poor Often Feel It Most. NPR. https://www.npr.org/2019/09/03/754044732/as-rising-heat-bakes-u-scities-the-poor-often-feel-it-most.

Australian Research Data Commons. (2022). Australian Urban Health Indicators. https://ardc.edu.au/project/australian-urban-health-indicators/. Accessed on June 23, 2022.

Diabetes WA. (2021). The benefits of incidental activity. https://www.diabeteswa.com.au/the-benefits-of-incidental-activity/#:~:text=%E2%80%9Clf%20 someone%20is%20living%20with,the%20washing%2C%20cleaning%20or%20shopping. Accessed on March 10, 2022.

Ellyatt, H. (2022, February 10). Last responders: Mental health damage from Covid could last a generation, professionals say. CNBC. https://www.cnbc.com/2022/02/10/covid-pandemic-mental-health-damage-could-last-a-generation.html.

Engemann, K., Pedersen, C.B., Arge, L., Tsirogiannis, C., Mortensen, P.B., & Svenning, J.K. (2019). Residential green space in childhood is associated with lower risk of psychiatric disorders from adolescence into adulthood. *Sustainability Science*, 116(11), 5188–5193.

Gould, C. (2022, February 22). No Minimum Parking Requirements? No Problem for Fayetteville, Arkansas. Sightline Institute. https://www.sightline.org/2022/02/22/no-minimum-parking-requirements-no-problem-for-fayetteville-arkansas/.

ISGlobal (Barcelona Institute for Global Health). (2018). 5 Keys to Healthier Cities. https://www.isglobal.org/en/ciudadesquequeremos. Accessed on June 23, 2022.

Konijnendijk, C. (2021, February 22). Promoting health and well-being through urban forests – Introducing the 3-30-300 rule. *IUCN Urban Alliance*. https://iucn-urban-forests-introducing-the-3-30-300-rule/.

Korpilo, S., Kajosaari, A., Rinne, T., Hasanzadeh, K., Raymond, C.M., & Kyttä, M. (2021). Coping With Crisis: Green Space Use in Helsinki Before and During the COVID-19 Pandemic. *Frontiers in Sustainable Cities*, *3*, 713977.

Lambert, R.B. (2020, October). Singapore a City in a Garden – A model for creating an integrated urban green walking network. *Natural Walking Cities*. http://naturalwalkingcities.com/singapore-a-city-in-a-garden-a-model-for-creating-an-integrated-urban-green-walking-network/.

McPhearson, T., Kennedy, C., Lopez, B., & Maxwell, E. (2020, October 6). Parks are Critical Urban Infrastructure: The Use of Urban Green Space in New York City During COVID-19. *The Nature of Cities*. https://www.thenatureofcities.com/2020/10/06/parks-are-critical-urban-infrastructure-the-use-of-urban-green-space-in-new-york-city-during-covid-19/.

MOHT (Moh Office for Healthcare Transformation). (2021). Integrated Health Promotion. https://www.moht.com.sg/3-years-integrated-health-promotion#:~:text=The%20Healthy%20Precinct%20 approach%20is,achieve%20and%20sustain%20 healthy%20lifestyles. Accessed on June 23, 2022.

Office for National Statistics. (2020). *Developing the Health Index for England*: 2015 to 2018. https://www.ons.gov.uk/peoplepopulationandcommunity/healthandsocialcare/healthandwell-being/articles/developingthehealthindexforengland/2015to2018. Accessed on June 23, 2022.

Park(ing) Day. (2022). https://www.myparkingday.org/about. Accessed on June 23, 2022.

Richardson, E.A., Pearce, J.R., Mitchell, R.J., & Kingham, S. (2013). Role of physical activity in the relationship between urban green space and health. *Public Health*, 127(4), 318–324.

Rypkema, D.D. (2008). Heritage Conservation and the Local Economy. *Global Urban Development Magazine*, 4(1), 1–8.

Spotswood, E.N., Benjamin, M., Stoneburner, L., Wheeler, M.M., Beller, E.E., Balk, D., McPhearson, T., Kuo, M., & McDonald, R.I. (2021). Nature inequity and higher COVID-19 case rates in less-green neighbourhoods in the United States. *Nature Sustainability, 4*, 1092–1098.

URA (Urban Redevelopment Authority). (2017, November 9). Updates to the Landscaping for Urban Spaces and High-Rises (LUSH) Programme: LUSH 3.0. https://www.ura.gov.sg/Corporate/Guidelines/Circulars/dc17-06. Accessed on June 23, 2022.

Wang, H., Dai, X., Wu, J., Wu, X., & Nie, X. (2019). Influence of urban green open space on residents' physical activity in China. *BMC Public Health*, 19, 1093.

WHO (World Health Organization).(n.d.a) *The global burden of chronic disease*. https://www.who.int/ nutrition/topics/2_background/en/. Accessed on June 19, 2019.

WHO (World Health Organization). (n.d.b). What is a healthy city? https://www.who.int/europe/become-a-member/what-is-a-healthy-city. Accessed on June 23, 2022.

Wilkinson, R. & Marmot, M. (2003). Social determinants of health: the solid facts. Copenhagen: WHO Regional Office for Europe.

Wortzel, J.D., Wiebe, D.J., DiDomenico, G.E., Visoki, E., South, E., Tam, V., Greenberg, D.M., Brown, L.A., Gur, R.C., Gur, R.E., & Barzilay, R. (2021). Association Between Urban Greenspace and Mental Wellbeing During the COVID-19 Pandemic in a U.S. Cohort. Frontiers in Sustainable Cities, 3, 686159.

Zhuang, J. (2020). Singapore, Kampung Admiralty: Ageing Well Together. *Urban Solutions*, 16. https://www.clc.gov.sg/docs/default-source/urban-solutions/urb-sol-iss-16-pdfs/13_case_study-singapore-ageing-together.pdf.



Sustainable Mobility Planning in Bologna: Towards Resilient Cities Between Climate Change, Health Emergency and Social Challenge

Bruno Monardo Chiara Ravagnan



Figure 2. Bologna, Central Station. © Chiara Ravagnan, 2019

Bologna Between Quality of Life and Resilience

Attractive, sustainable, inclusive: from the peaks of the Apennines to the wide horizons of the plain, from the amazing historical heritage to its 60 km of marvellous arcades (Figure 1), Bologna, recognised also as a UNESCO Creative City since 2006, preserves its cultural roots without fearing modernity, always ready to welcome new residents, workers, students, and visitors. As a cosmopolitan urban area, Bologna can manage the coexistence of a grassrooted population with thousands of young people who choose the metropolitan area every year to study in the oldest university in the Western world. It is a metropolitan context where cultural industries play a primary role for the wealth of the community and where creativity and innovation are key tools for social and economic development.

Bologna is also a multi-scalar crossroads in the core of the main southern continental rail and motorway systems (Figure 2). Their connections with the European corridors insert the city in the network of international exchanges. At the same time, Bologna is a model for local sustainable planning combining mobility innovation, environment protection, and public space conservation. Furthermore, it is a relevant welfare actor, firstly as a service provider and then as a promoter of local and territorial development, pursuing and practicing different forms of governance that have gradually opened up to the territory in its metropolitan dimension through agreements, municipality associations and, finally, with the 2015 establishment of the Metropolitan City that replaced the Province founded in 1951.

Ultimately, Bologna and its metropolitan area can be considered a paradigmatic case of a thriving community, a surprising cradle of policies, plans, and projects conceived, developed and implemented following the idea of an emerging identity as a 'small metropolis' based on resilience, cohesion, attractiveness, and connectivity to be pursued through the construction of innovative tools in which mobility networks are not conceived as a sectoral dimension but as a crucial bridge connecting *polis* to *civitas* and *urbs* (Figure 3).



Figure 3. Bologna, Piazza Santo Stefano. © Chiara Ravagnan, 2019



Figure 4. Bologna, Andratuttinbici campaign. © Dynamo La Velostazione, 2020

In recent years, Bologna has been at the forefront of the fight against environmental and health challenges, pointing out the systemic interactions that influence human well-being in urban contexts connecting the sustainability of mobility, the safety of social interactions, and the quality of public spaces and networks (EU, n.d.). This coincides with the recent spotlight on resilience as the key concept to rethink the multiple dimensions of regeneration in a holistic approach that combines spatial, environmental, social, economic, and institutional issues (Figures 4, 5).

Reflecting on the meaning of urban resilience through the Bologna case and, in particular, the city's mobility planning tools, this article elucidates the integrated approach of mobility strategies between public, green and movement spaces in the framework of climate changes, pandemic issues, and social challenges. The focus is on the Bologna mobility plans and projects, whilst finally drawing some lessons for new scenarios to be explored in the future.



Figure 5. Bologna, a cycling path within the city cycling network. © Chiara Ravagnan, 2019

Resilience: Interpretation Keys in the Emerging Urban Realm

The contemporary settlement forms and mobility models brought about by metropolisation (Indovina, 2005) became the bearers of environmental pathologies and socio-economic imbalances (Crutzen, 2000), exacerbated in the new millennium by the economic crisis of 2008 and the pandemic of 2020 (Honey-Rosés et al., 2021). The high levels of soil-sealing and gas emissions contribute to air pollution, a progressive lack of biodiversity, water risks, global warming, fostering frequent calamitous events in the framework of climate changes (IPCC, 2014; EEA, 2021). Urban sprawl is also accompanied by physical fragmentation of public space, lack of public accessibility, increasing social isolation, and poor cohesion, all phenomena affecting especially vulnerable categories of citizens during lockdowns when local public spaces are the first resources of social life and human well-being (UN-Habitat, 2020; OECD, 2020).

Environmental and health issues have revealed the weakness of urban strategies based only on mass transit and car mobility as well as indoor activities, highlighting the need to pay attention to the flexibility, intermodality, and interoperability of infrastructures and public spaces. In particular, these issues have increasingly emphasised the need for an authentically holistic perspective to urban resilience (UNDRR, n.d.).

Resilience, a polysemic term, used in different disciplinary fields, has recently entered urban studies, becoming one of the essential principles of urban and territorial policies fostered by institutions such as the European Union (EU) and the United Nations (UN). Resilience is an answer to the complexity of urban interaction, guiding all these sectors towards a sustainable urban metabolism, the use of smart technologies, the implementation of eco-friendly and adaptive urban spaces and networks, as well as the improvement of institutional cooperation (Chelleri, 2012). Moreover, resilience is related to the concept of anti-fragility (Blecic & Cecchini, 2016) that fosters the capability for adaptation to external

perturbations, facing vulnerability, preventing risks, and offering multiple, coordinated actions that enable system improvements within rapid stresses and long-lasting changes (Taleb, 2012).

Resilience, thus, fosters proactive adaptation to environmental, economic, and socio-cultural changes and pays attention to the uncertainty of the scenario-making approach and the scarcity of resources, as well as the need for data analysis, flexibility, and reversibility. At the same time, it affirms the importance of pursuing strategies rooted in the *milieu* – the local context – and place-based approaches, focusing on the overall and multi-scale quality of the networks of physical, cultural, economic, and social relationships.

Facing recent global challenges (massive migrations, pandemics, wars, commodity crises, increasing inequalities), the most innovative contemporary cities foster original interpretation models in terms of resilience, gambling on the ideas of inclusionary communities, participatory democracy, advocacy planning, and civic imagination. The rethinking of the fascinating concept of the 'right to the city' (Lefebvre, 1968) involves the careful distinction between 'matters of fact' and 'matters of concern' (Latour, 2004), unveiling the hidden and neglected factors that can influence and shape the physical reality. They can be defined as 'gatherings' of ideas, forces, players and arenas in which 'things' and issues, not facts, come to be and to persist, because they are supported, cared for, worried over.

Within such a risky context, it is evident that urban resilience requires a holistic approach to urban equity, efficiency, safety, and security, strengthening the relationships between physical networks (infrastructures and transports as well as green corridors) and intangible systems (ICT for information, communication, and dissemination, and for regulated social interactions) considered strategic vectors for creating cognitive urban platforms towards the development of a new collective intelligence. Distinguished schools of thought and international research teams agree that resilient cities should demonstrate at least seven indisputable qualities: reflectiveness, resourcefulness, robustness, redundancy, flexibility, inclusiveness, and integration (Arup International Development, 2015). To this end, urban resilience requires institutional cooperation for a shared cultural project and for smart governance of spaces, services, and processes (Lauri, 2021), combining infrastructures and ecosystems, leadership and strategy, health and well-being, and economy and society (Figure 6).

Sustainable Urban Mobility Plans Chasing Resilient Strategies

Urban resilience finds concreteness in the choices aimed at strengthening sustainable mobility, ecosystem services, and safe social interactions in the construction of urban networks, reconfiguring the methodological references for urban space planning, design, and management. The growing innovation of urban and metropolitan resilience strategies is increasingly played out on the enrichment of the territorial vision through the role of mobility networks. Looking at the 'space of movement', new planning strategies and tools can overcome traditional separations between mobility planning and land use design developing a particular attention to participatory democracy processes.

Many metropolitan cities are developing resilient strategies based on 'local mobility grids' (Cerasoli et al., 2021, Ravagnan et al., 2022) in order to improve public space quality, intermodality, and local accessibility to centralities and facility systems. This goal is supported by the theoretical concept of the '15-minute city' (Moreno, 2020) consolidated within years of studies and highlighted by the Paris

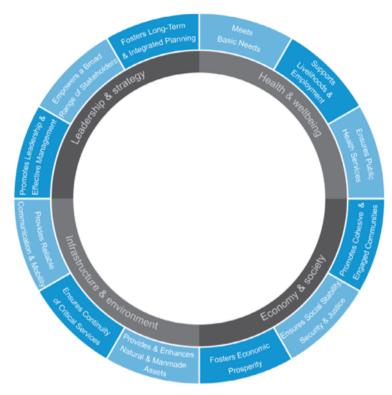


Figure 6. Resilience City Framework. Source: Arup International Development, 2015



Figure~7.~Healthy~Street~Indicators.~Source: London~Government, n.d.

Authority within the Covid-19 explosion. This concept promotes a reorganisation of local accessibility with compact fabrics and services, in order to enable an increase in the quality of life in normal times and risk reduction during environmental and health crises.

On the road toward sustainability and institutional cooperation, the EU Sustainable Urban Mobility Plan (SUMP) was officially introduced through the Mobility Urban Package (EC, 2013) and progressively implemented by the 27 EU Member States. It represents the ambition of combining mobility and transport infrastructures with the urban space design in order to implement the ecological transition through the coordination of different infrastructure networks and urban spaces, replacing a sectoral approach. Furthermore, SUMPs are often coordinated with previous sectoral bike plans, as in the most virtuous Italian interpretations.

Looking at European good practices, an intriguing proposal for an integrated approach combining urban fabric and mobility grid has been developed in the Good Move Mobility Plan for the Capital-Region of Brussels 2030 (awarded as the best SUMP in 2020), where the design strategy of the 'street space' (espace rue) proposes a hypothesis to reorganise relationships, interactions, and conflicts between public space use and mobility infrastructures at urban and local scale, highlighting the importance of a comprehensive approach to the public domain, in compliance with the indicators of the 'healthy street' method (Figure 7), defined at the international level (London Government, n.d.).

Recent experiences with the pandemic have informed the conception and implementation strategies based on flexible and reversible expansion of the space dedicated to pedestrians and soft and micro-mobility. For example, the 'superblocks' (superillas) of Barcelona (Rueda, 2017) and 'open squares' (piazze aperte) of Milan (Alberti & Radicchi, 2022), have outlined the framework of 'tactical urbanism' as a method for improving public space and implementing temporary bike lanes, or as experimentation for future structural projects of cycle systems in SUMP, in order to test the interest of citizens and the possible synergies and conflicts with other forms of mobility and public spaces.

Bologna: Metropolitan Identity Through Mobility Planning

At the end of 2019, Bologna was the first metropolitan city to approve its Sustainable Mobility Plan, the 'Italian interpretation' of the EU strategic tool of SUMP designed to meet the mobility demand of residents, economic activities, and city-users for quality-of-life improvement. The plan promotes the innovation of traditional approaches between 'stasis space' and 'movement space' through the principles of resilience, integration, and participation.

As formalised at the EU level, the SUMP is the climax of an evolutionary path starting from a consultation conducted on behalf of the European Commission (EC) from 2010 to 2013 with the involvement of numerous experts and sector players. The work finally led to the Urban Mobility Package (EC, 2013), which recognised the SUMP as a new strategic tool for integrating mobility, accessibility, and the city realm throughout EU urban and metropolitan areas. Some countries, such as France and Italy, have mandated SUMPs for cities or polycentric areas with at least 100,000 inhabitants. This joint work has merged into the first and second edition of the SUMP Guidelines (Rupprecht Consult, 2013, 2019), official EC documents addressing public and private stakeholders and aimed at the collective conception, implementation, and management of the plan with the ambition of integrating mobility networks, transportation systems, and urban planning strategies.

In Bologna, the Metropolitan Mobility Plan philosophy hinges on the participatory involvement of citizens and other stakeholders, the coordination of administrations at different levels, the harmonisation of sectoral strategies to enhance synergy, and progressive tools. The plan aims at participatory democracy, processualism, prefiguration and evaluation of evolutionary scenarios, and careful monitoring and remodelling of implementation phases.

In the first national Sustainable Mobility Inter-municipal Plan, the vision aims to 'make Bologna metropolitan area more attractive through high levels of urban quality and liveability in order to enhance the cohesion and attractiveness of the territorial system as a whole and strengthen the role of its capital as international city' (Metropolitan City of Bologna, 2019: 21). The tool pursues the objectives of territorial development and regeneration by placing the crucial focus on values, rights and primary needs of the community, from health to safety, from accessibility to essential services and social inclusion, and from education to work and leisure.

The holistic approach evoked in the disciplinary debate finds a concrete expression in the macro-objectives that outline the pillars of urban and territorial sustainability. The mobility and accessibility issues stand out in their kaleidoscopic interpretations: from the physical-spatial dimension of the reconnection between centrality and peripheries, to the 'environmental imperative' of tackling emissions and fostering resilience to climate change (Figure 8).

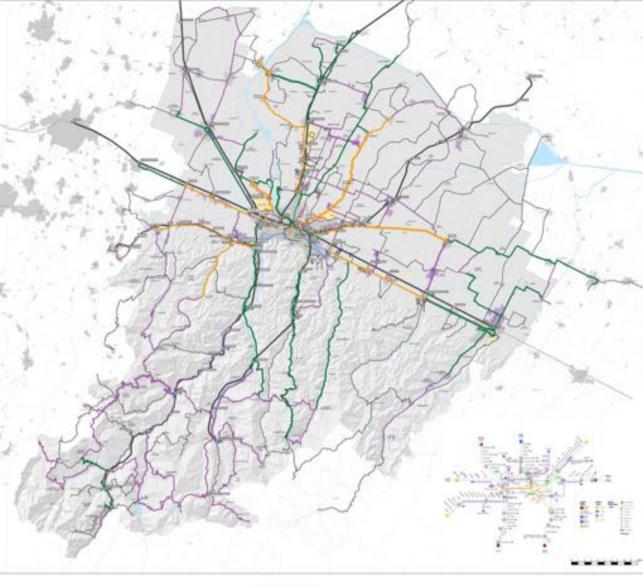
The accessibility ensured by collective transport networks and by encouraging micro-mobility is then seized on as an opportunity to restore urbanity, social cohesion, proximity facilities, and a 'sense of belonging' to the communities widespread across the territory (Monardo, 2020). Bologna, even during the pandemic, bore out the assumption that administrations traditionally active in outlining integrated policies and open, inclusionary processes tend to be resilient and capable of embracing adaptive and flexible power-geometries when faced with emergencies and disasters.

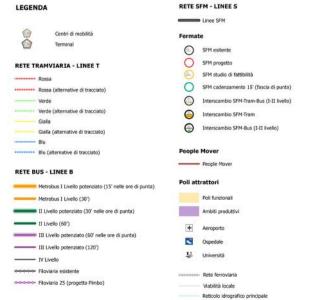
In the Bologna innovative tool, the resilience approach is highlighted by the *biciplan*, a sort of environmentally friendly cycle metro (inspired by the *Réseau Vélo* of the Paris region), conceived ex-ante and then integrated into the new plan (Figure 9). A precious resource for its capacity to create an organic framework, the *bicipolitana*, a structural and interconnected bike network that proved to be very effective both for the tactical interventions solicited by the health emergency and for the long-term strategic relationship system.

Resilient Mobility for a 'New Urbanity'

The Bologna experience shows how cities capable of promoting and implementing tools based on holistic and strategic approaches are able to reignite synergistically physical and intangible networks for urban and metropolitan resilience. Bologna's recent planning path shows the integration of mobility networks and public transportation systems with urban patterns, green-blue corridors, and public spaces to be planned through the steps of participatory democracy. The tools recently employed in the Bologna metropolitan area represent the essential matrix useful for rethinking and adapting the spaces and forms of mobility when confronted with unpredictable emergencies.

The original principles of new mobility plans transcend the sectoral dimension, assuming a strategic role through the ambition to integrate infrastructural space and land use design at a metropolitan scale. This is an attempt to prefigure a 'new urbanity' based on the synergy between the dimension of movement and





Confini amministrativi

Figure 8. Metropolitan public transport, fully operational scenario. Source: Metropolitan City of Bologna, 2019

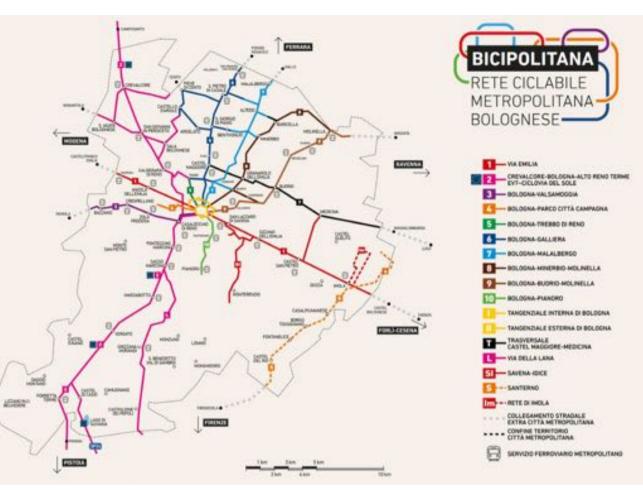


Figure 9. Bicipolitana Plan. Source: Metropolitan City of Bologna, 2019

the space of stasis that have been experimented during lockdowns (Monardo, 2020). Understood as the reciprocal adaptation of urban fabric morphology and conviviality form (Choay, 1994, 1996), 'new urbanity' represents the intertwining of the social mix, promoting integration and celebrating public space in all its forms, which then becomes the privileged place for further development. Hence, mobility spaces, with particular attention to pedestrian and cycle paths, offer original and creative interpretations of urbanity (Lévy, 1997).

In Bologna, the idea of 'urbanity through mobility' emphasises the crucial importance of flows and their spatial devices, connectors able to multiply opportunities and make it possible to meet 'otherness' (Figures 10, 11). The privileged dimension of urbanity is related to networks that 'build' the territory and to the assumption that the pedestrian realm, the public space metric, represents its structuring rationale (Lévy, 2004). The time of the pandemic confirmed the centrality of proximity space and the related 'active mobility', showing, paradoxically that the pedestrian metric can become the richest and fastest in terms of interaction, diversity, and serendipity. Mobility is not just an opportunity to create relationship spaces but embodies the essence of 'place' wherever it is produced. Hence, it is not just a technique to connect nodes and areas, but the vector of an everlasting new 'urbanogenesis'.

TOC

86



Figure 10. Pedestrian area of the Manifattura delle Arti. © Chiara Ravagnan, 2019



Figure 11. Pedestrian area of the Manifattura delle Arti. © Chiara Ravagnan, 2019

References

Alberti, F. & Radicchi, A. (2022). The Proximity City: a comparative analysis between Paris, Barcelona and Milan. Techne: Journal of Technology for Architecture and Environment. 23, 69–77.

Arup International Development. (2015). *City resilience framework*. New York: The Rockefeller Foundation.

Blecic, I. & Cecchini, A. (2016). Verso una pianificazione antifragile. Come pensare al futuro senza prevederlo. Milano: Franco Angeli.

Cerasoli, M., Amato, C., & Ravagnan C. (2022). An antifragile strategy for Rome post-Covid mobility. *Transportation Research Procedia*, 60, 338–345.

Chelleri, L. (2012). From the 'Resilient City' to Urban Resilience. A review essay on understanding and integrating the resilience perspective for urban systems. Documents d'Anàlisi Geogràfica, 58(2), 287–306.

Choay, F. (1994). Le Règne de l'urbain et la mort de la ville. In J. Dethier & A. Guiheux (Eds.), *La Ville, art et architecture en Europe, 1870-1993* (pp. 26–35). Paris: Editions du Centre Pompidou.

Choay, F. (1996). Urbanité. In P. Merlin & F. Choay (Eds.), Dictionnaire de l'urbanisme et de l'aménagement (pp. 11-17). Paris: PUF.

Crutzen, P.J. (2000). The "Anthropocene". In E. Ehlers & T. Krafft (Eds.), Earth System Science in the Anthropocene: Emerging Issues and Problems (pp. 13–18). Cham: Springer.

EC (European Commission). (2013). Together towards competitive and resource-efficient urban mobility. https://eur-lex.europa.eu/resource.html?uri=cellar:82155e82-67ca-11e3-a7e4-01aa75ed71a1.0011.02/DOC_3&format=PDF. Accessed on July 27, 2022.

EEA (European Environment Agency). (2021).

Greenhouse gas emissions from transport in Europe.

https://www.eea.europa.eu/ims/greenhouse-gasemissions-from-transport. Accessed on July 27, 2022.

EU (European Union). (n.d.). New European Bauhaus. https://europa.eu/new-european-bauhaus/about/about-initiative_en. Accessed on July 27, 2022.

Honey-Rosés, J., Anguelovski, I., Chireh, V.K., Daher, C., Konijnendijk van den Bosch, C., Litt, J.S., Mawani, V., McCall, M.K., Orellana, A., Oscilowicz, E., Sanchez, U., Senbel, M., Tan, X., Villagomez, E., Zapata, O., & Nieuwenhuijsen, M.J. (2021). The impact of COVID-19 on public space: an early review of the emerging questions – design, perceptions, and inequities. *Cities & Health*, *5*(1), 263–279.

Indovina, F. (2005). La metropolizzazione del territorio. Nuove gerarchie territoriali. In F. Indovina, L. Fregolent, & M. Savino (Eds.), *L'esplosione della città* (pp. 14–31). Bologna: Editrice Compositori.

IPCC (Integovernmental Panel on Climate Change). (2014). Climate Change 2014: Synthesis Report. Fifth Assessment Report of the Intergovernmental Panel on Climate Change. Geneva: IPCC.

Latour, B. (2004). Why has critique run out of steam? From matters of fact to matters of concern. *Critical Inquiry*, 30, 225–248.

Lauri, C. (2021). Smart mobility. Le sfide regolatorie alla mobilità urbana. *Rivista Trimestrale di Scienza dell'Amministrazione*, 1, 41–70.

Lefebvre, H. (1968). Droit à la ville. Paris: Anthropos.

Lévy, J. (1997). La mesure de l'urbanité. *Urbanisme,* 296, 58–60.

Lévy, J. (2004). Modèle de mobilité, modèle d'urbanité. In S. Allemand, F. Asher, & J. Lévy (Eds.), *Les sens du mouvement. Modernité et mobilité dans les sociétés contemporaines* (pp. 157–169). Paris: Belin.

London Government (n.d.) Healthy Streets Explained: A guide to the Healthy Streets Approach & how to apply it. www.london.gov.uk/sites/default/files/healthy_streets_explained.pdf. Accessed on July 27, 2022.

Metropolitan City of Bologna. (2019). SUMP General Report. Bologna: Metropolitan City of Bologna.

Monardo, B. (2020). Il ruolo delle reti della mobilità dolce per una nuova urbanità post-Covid-19. Urbanistica Informazioni, Special Issue, 289, 10–14.

Moreno, C. (2020). *Droit de cité: de la "ville-mon-de"* à *la "ville du quart d'heure"*. Paris: Editions de l'Observatoire.

OECD (Organisation for Economic Cooperation and Development). (2020). *Respacing our cities for resilience*. Paris: OECD.

Ravagnan, C., Cerasoli, M., & Amato, C. (2022). Post-Covid cities and mobility. *TeMA – Journal of Land Use, Mobility and Environment*, 1, 87–100.

Rueda, S. (2017). Supermanzanas. Nueva célula urbana para la construcción de un modelo funcional y urbanístico en Barcelona. In C. Ávila & P. De la Cal (Eds.), Jaca ciudadpaisaje/landscape city (pp. 52-79). Zaragoza: Prensas de la Universidad de Zaragoza.

Rupprecht Consult. (2013). Planning for People.
Guidelines. Developing and Implementing a
Sustainable Urban Mobility Plan. Brussels: European
Commission, Directorate-General for Mobility and
Transport.

Rupprecht Consult. (2019). Guidelines for Developing and Implementing a Sustainable Urban Mobility Plan (Second Edition). Brussels: European Commission, Directorate-General for Mobility and Transport.

Taleb, N. (2012). Antifragile: Things That Gain from Disorder. New York: Random House Publishing Group.

UNDRR (UN Office for Disaster Risk Reduction) (n.d.).

Making cities resilient. www.unisdr.org/campaign/
resilientcities/. Accessed on July 27, 2022.

UN-Habitat. (2020). UN-habitat Guidance on COVID-19 and Public Space. https://unhabitat.org/sites/default/files/2020/06/un-habitat_guidance_on_covid-19_and_public_space.pdf. Accessed on July 27, 2022.



Health as a Strategic Leverage towards Sustainable Cities: A Framework to Understand, Prioritise and Communicate Inter-sectoral Synergies of Healthpromoting Measures in Urban Areas

Laura Thomas Ganesh Babu R.P. Marianne Lefever

Introduction

Urban health is back on city agendas around the globe as city governments and citizens aim to transition towards positive health for everyone in the aftermath of the global Covid-19 pandemic. An individual's health is a complex interaction between their biological predisposition, their behaviour (lifestyle choices), so-cio-economic conditions, and the environment they live in. To generate a positive health outcome, all three components must be addressed, as given in Figure 2 (Pruss-Ustun et al., 2016).

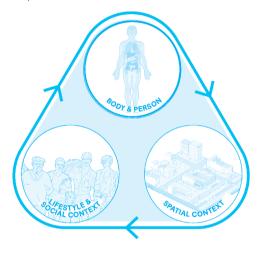


Figure 2. Healthy Urbanisation Tripod. © PosadMaxwan, 2018

Research in the field of urban health has unequivocally established that health is linked to and influenced by an individual's immediate environment (Brusseau, 2019). The strong correlation between positive spatial interventions and increased health benefits has been discussed broadly (Fróes & Lasthein, 2020; Pisoni et al., 2022; Grant, 2019; Barton et al., 2003; CEI, 2018).

Urban designers have come up with many design solutions and policy measures on spatially intervening in cities to promote the health and well-being of their citizens. Most recently, the authors of this paper developed such solutions and integrated these in A healthy city beyond cycling: A practical guide to building healthier cities (PosadMaxwan, 2021), which contains numerous insights about the influence of the built environment on health including inspiring examples that have already been realised and health-promoting measures in concrete spatial strategies for local, regional and national governments, such as the vision for Gezond Brabant ('Healthy Province of Brabant', the Netherlands) or Gezond Zuid-Holland ('Healthy Province of Zuid-Holland', the Netherlands). However, in practice, planners and policymakers have been struggling to implement these ideas and turn them into reality.

So far, the main problems encountered in practice have been:

1. Health is seen as yet another positive transition that will require additional space, resources, and investment – next to all the other transitions such as climate, mobility, and energy that cities are working towards. As such, the impression policy makers have is that there is not enough capacity within city governments to work on urban health.

 Achieving a positive health impact requires cross-sectoral collaboration, since health is interlinked with many other conventional city services. Most city governments do not have the organisational setup to facilitate such cross-sectoral collaborations.

3. As with most policy measures, there is a need to quantify the health impact of measures to help prioritise a starting point and justify any investment at all. This can be difficult in real world scenarios where there are too many variables at play.

This paper will share practical insights learnt from the field and propose a new lens – based on the authors' experience – through which to consider urban health. The paper employs this lens to imagine a new type of policy framework that can be used to adequately tackle the abovementioned problems. The first outlines of this framework are sketched in this paper.

The paper is built along the lines of the core messages which correspond to the three main problems described above:

- > Health is never a standalone ambition
- > Health: a strategic leverage for urban transformation
- > Follow the energy

Health is Never a Standalone Ambition

Health is an integral urban planning consideration in the quest for broader sustainability and liveability objectives. One of the main issues identified by the authors in endeavouring to implement health measures is that urban health is seen as yet another transition. It requires additional space, resources, and (time) investment next to all the other transitions cities are already working on. This can lead to competition between proposed projects and the need for prioritisation – if things land on the table in the first place. In the many cases the authors have identified in their practice, this meant health was pushed to the background for perceived lack of time. However, the authors believe health does not have to compete with other priorities. Although urban health and related spatial measures have to date often been tackled separately, positive health impacts are also achieved through measures that simultaneously benefit other transitions.

For instance, most spatial measures towards climate adaptation or mobility transition also have a direct or indirect positive health impact when designed for it from the start. Some of the examples are the Roc Boronat street in Barcelona, Spain, part of Barcelona's 'Superblock' project, in which car space is reclaimed by slow traffic and places for lingering (Figure 3) and a boulevard in Mechelen, Belgium, which forms a central axis running through the city centre and is designed largely as shared space (Figure 4).

There are hardly any spatial health measures that do not also benefit other domains. One way to understand the relationship between urban health and other domains is to create a visual overview of the direct and indirect interrelations between different transitions and spatial measures. A potential approach to visualising these is by drawing an impact wheel. The focus is on the interrelations between different measures. For example, Figure 5 shows the measures towards improving a cycling network and how it can have direct and indirect health impacts. (Figure 5).





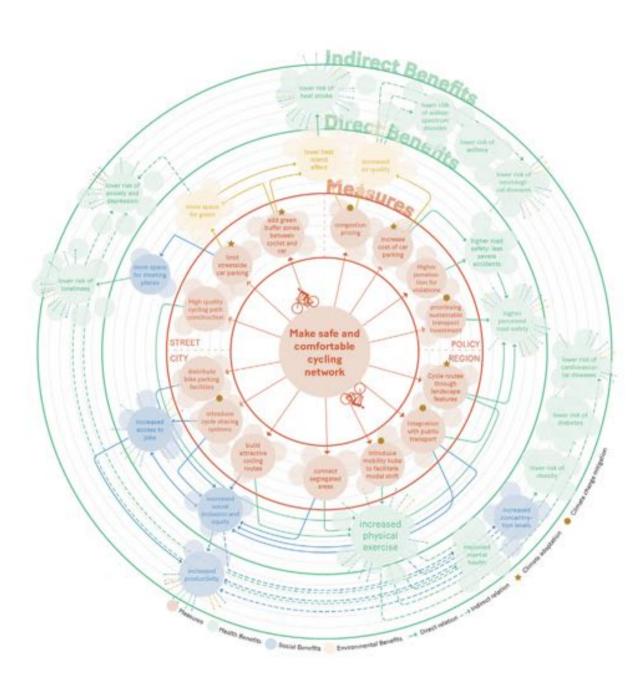


Figure 5. Healthy Cities Impact Wheel: Impact wheel illustrating the connections between spatial measures for a specific ambition and their direct/indirect benefits. © PosadMaxwan, 2022

The impact wheel starts with a specific ambition in the centre, in this case making a safe and comfortable cycling network. The ambition leads to various possible spatial measures that can help achieve this in the first band. These measures are also distinguished by their interconnectedness to climate change mitigation and climate adaptation to illustrate how spatial measures seldom have one isolated benefit. In the second and third band, the direct and indirect benefits are identified. The colours signify the different domains, and the lines denote strong or weak observable links. The impact wheel helps to illustrate how measures in other domains almost always lead to a direct or indirect health benefit too. It should be noted that the illustration does not paint a complete picture with every possible benefit but should be viewed more as a starting point to convey the idea. The impact wheel is backed by substantial academic research on the various topics, such as heat island effect (Smargiassi et al., 2009), air pollution exposure (Zheng et al., 2015), nature exposure in relation to mental health (Barton & Pretty, 2010), and walkability in relation to social capital (Leyden, 2003).

For an inner-city brownfield development in the Netherlands, the authors ran a session with the client exactly on this topic of standalone health measures. An extensive list of spatial measures promoting positive health was compiled. A larger and cross-sectoral team from the client worked through this list with the question: What do you recognise or already work on in your own field? In this online work session on the redevelopment of a brownfield area, each participant was asked to place a circle in their domain's colour next to the spatial measures that benefit health (in the three columns on the left) that they recognised within their own discipline. The outcome was that all urban health measures were cross-referenced with at least two other domains (Figure 6). The client had just never looked at it from the health perspective before.

Although health is never a standalone issue, working on other urban transitions does not automatically reap health benefits (Portney & Sansom, 2017). To activate the co-benefits, it is important to understand the extent to which the built environment impacts health and deliberately plan and design for it. Investing in an active mobility network might encourage physical activity but it will only have a net-positive health impact if that network is decoupled from the main air pollution arteries (usually the car network). Otherwise, there is a significant risk that physical activity will be promoted mainly in areas with high air pollution rates, as in the case in the province of South Holland (Figure 7).

With access to tools such as the impact wheel or others that illustrate these correlations, it can become increasingly easy for designers, planners, and policy makers to identify the overlap. Understanding the extent of the co-benefits between health and other domains is the first step towards planning and designing for combined positive outcomes. In the authors' experience, it is therefore more important to build this expertise and let a department or experts function as consultants on other domains, rather than set up isolated projects on urban health promotion.

This approach to health as a perspective and process embedded within other domains rather than a standalone entity can help alleviate pressure on the public domain and public funds and simultaneously create faster results. But it does require strong cross-sectoral collaboration and bringing the social and physical domain closer together. One way to do that is to consider health benefits as a strategic leverage to speed up other transformations in the public space.



Figure 6. Screenshot of online whiteboard tool Miro. © PosadMaxwan, 2022

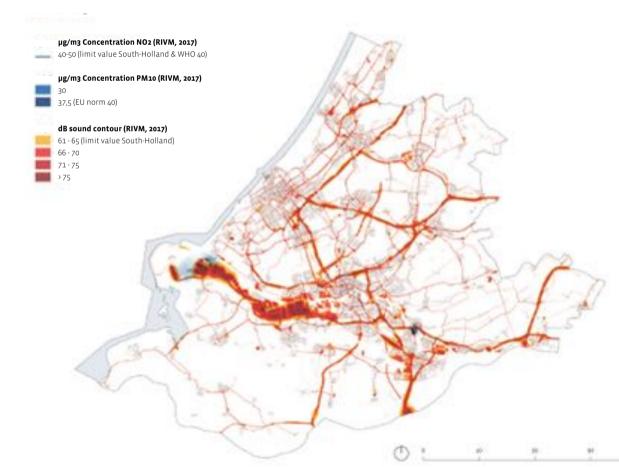


Figure 7. South-Holland: Overlap of the regional cycling network and air pollution arteries. © PosadMaxwan, 2017

97

Health: A Strategic Leverage for Urban Transformation

Most transitions cities face today, such as energy and climate transitions, can come across as very technical for the average citizen. Focusing on the health impacts of measures can help policy makers tell a more relatable story. Defined more as a process than as an outcome, the healthy cities narrative is a powerful communication device as it is personal and more relatable to most people than climate change or energy transition (WHO, n.d.)

The importance of effective communication in building consensus in the larger society can be understood through the example of Amsterdam. In the 1960s, Dutch cities were becoming increasingly automobile-focused. While at the start of the 20th century bikes accounted for more than 70 percent of the modal share in Amsterdam, the figure dropped below 30 percent by the end of the 1960s (Oldenziel & Albert de la Bruhèze, 2011). Entire neighbourhoods in Amsterdam were demolished to create wide highways for automobiles. As a consequence of this automobile focus, traffic related deaths reached a peak of 3,300 in 1971, of which 400 were children.

There were a lot of action groups that fought against this terrifying situation. One of the most successful groups – called Stop Child Murder (Stop de Kindermoord) – was quite successful in lobbying against this automobile focus and shifting the attention to cycling and walking infrastructure (Figure 8). Similarly, the success of the North American organisation, Mothers against Drunk Driving (MADD), in lobbying for stringent impaired driving policy is known worldwide.

The key takeaway from these examples is the importance of framing the narrative from the desired effect rather than from the measure itself. While it was



Figure 8. Cyclist demonstration in Amsterdam against 'car terror'. © Rob Bogaerts, 1982

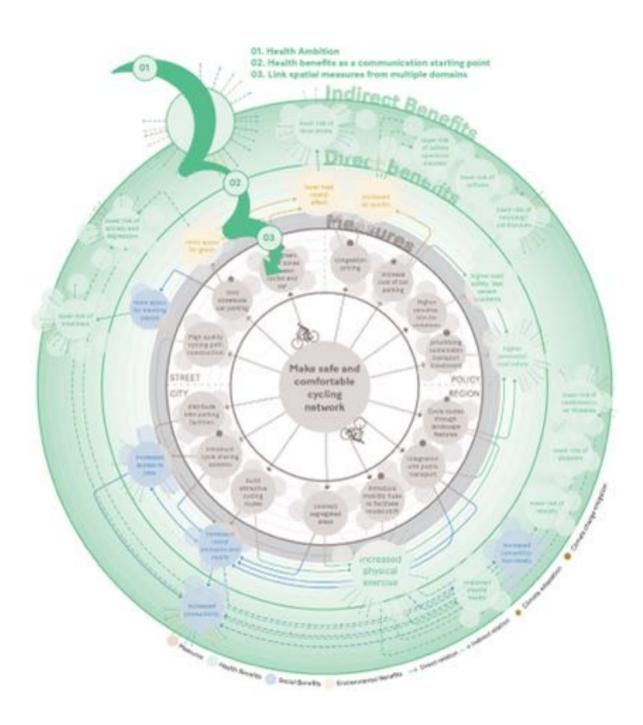


Figure 9. Healthy Cities Impact Wheel: Situating health as a strategic communication tool within the impact wheel. © PosadMaxwan, 2022

obvious the automobile focus was leading to more traffic casualties, framing it as child murder was an effective communication strategy to shock stakeholders and rally action. Similarly, the transitions that cities focus on today make technical sense and contribute to the larger public welfare, however, convincing people on technical grounds alone is a difficult task. This paper suggests that focusing on the larger health benefits for people as a strategic message can be effective in building consensus between stakeholders and the larger public. It is difficult to convince people to reduce their car use. It is a very different story, however, when trying to sell them on lowering child asthma rates. Still, the outcome might look very similar. The impact wheel can help to define the health ambition that a more strategic narrative can be based on, as given in Figure 9. Although framing interventions in cities' spaces from a health perspective can help to tell a relatable story and have people join in, the question still remains: where to start?

Follow the Energy: What Projects Can Be Built Upon?

In the public policy space, data-oriented decision making is becoming more and more commonplace as a means to prioritise choices and justify decisions to an increasingly polarised public. A positive example of this trend are children priority zones in Bogotá, Colombia, where a range of strategic interventions was proposed, each linked to the specificity of a place and informed by data analysis (Figure 10).

Data-oriented decision-making relies heavily on simulated models of reality where proposals are simulated to predict potential impacts and thus their value. Urban health is likewise influenced by this trend. What is often seen, in an attempt to understand health impacts, is that people try to compare the impact of different spatial health measures through models (Vich et al., 2019; Carnevale et al., 2018; Pisoni et al., 2022; Krieger et al., 2003). While models can be useful tools to understand the relationship between various parameters in a research environment, over-reliance on them in policy making can be detrimental as there is no single model that reflects reality accurately. The complexity of reality means that models can only be useful in very specific contexts.

Several problems can be identified in the use of simulation models to prioritise (health) investments. Firstly, it is problematic to treat health interventions and health impact as cause and effect. As models are used, deductions are attempted from them: how much healthier does one get if one implements measure X instead of measure Y? But, as human health is influenced both directly and indirectly by a complex variety of factors and some health implications take much longer to surface (Flanders Cushing & Miller, 2019; Krieger et al., 2003), it is difficult to directly link environmental design interventions to quantified health impacts through statistic models. In most cases, health measures cannot be seen as a causality – most often there is only a correlation between the environment and health. For example, there is increasing evidence of the link between air pollution and psychological defects such as dementia and autism (Peters et al., 2019; Lin et al., 2021), however there is no clear linear cause and effect, it is almost impossible to quantify the third order effects of different measures.

Secondly, although statistical models may seem objective, they raise difficult questions: what does one measure? How does one weigh the different indicators? What are the trade-offs? These are political decisions that cannot be answered objectively. Leaning too much on health impact assessment might lead to the false impression that health impacts can be precisely measured or predicted (Krieger et al., 2003).



Figure 10. Children priority zones in Bogotá. © Casa de la Infancia, 2020

Thirdly, using health simulating models to take policy decisions assumes that health impact is the only factor that matters, while health impact is only one of multiple factors affecting implementation policies (Krieger et al., 2003). This means that even if one does manage to develop a model that properly reflects the impact of different urban transformations on health, this does not necessarily mean one will be able to implement the best performing measure – thereby disregarding the model that took so much effort to be developed in the first place.

This brings the research to conclude that data and models are currently unsuitable to help policy makers prioritise where to invest to promote urban health. But how to prioritise, if not based on numbers and models? This paper advocates (for urban planners and designers) prioritisation of health measures through connecting people and acting on momentum, through a strategic turn in policy choice. Looking at what different stakeholders in a context are willing to contribute to health individually or as organisations, and understanding existing momentum and active stakeholders, can bring long-term change (Figure 11).

101

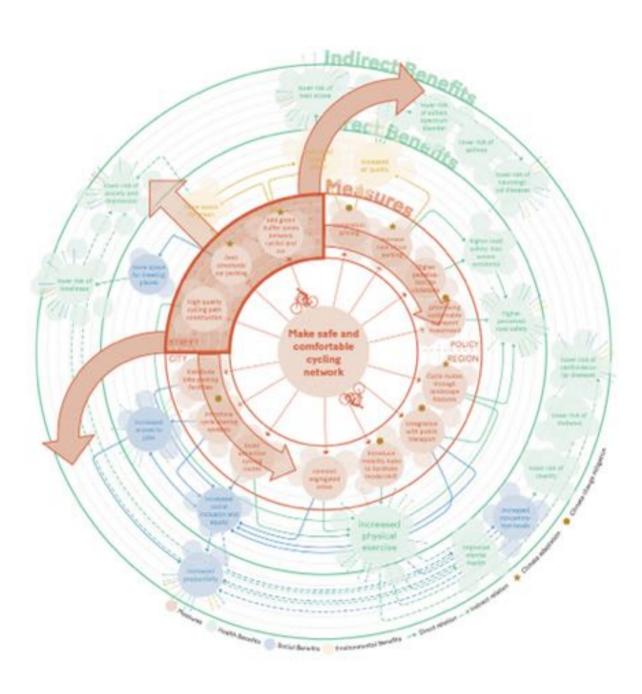


Figure 11. Healthy Cities Impact Wheel: Building on areas with existing momentum to expand along the impact wheel. © PosadMaxwan, 2022

Conclusion

The research identified three main problems towards building healthy cities. Firstly, health is seen as another positive transition that will require additional space, resources, investment next to all the other transitions such as climate, mobility, and energy and as such there is not enough capacity within city governments to work on it. This paper argues that health should always be seen as a different perspective to approach ongoing transition efforts in other domains. It is never a standalone aspect. To reap the full potential co-benefits, it is crucial to understand the correlations between health and the built environment and design or plan for a positive health impact.

Secondly, achieving positive health impact requires cross-sectoral collaboration since health is interlinked with other conventional city services. Most city governments do not have the organisational setup to facilitate cross-sectoral collaborations. Looking at health as a narrative tool can help build consensus across stakeholders with much more ease, as doing so brings a personal and relatable angle to issues. Using health as a strategic narrative can help achieve other transitions but with more stakeholders buy-in and the potential to pool resources across domains.

Thirdly, as with most policy measures, there is a need to quantify health impact of measures to help prioritise a starting point and justify any investment at all. In the case of urban health, this paper argues that this quantification is almost impossible and can take away time and effort from generating actual impact. The authors argue for a more strategic approach where the focus is on identifying easy wins towards nurturing a momentum. Develop the measures that support that momentum and that can develop into a flywheel effect over time. Follow the energy rather than searching for the one right starting point.

Understanding these potential roadblocks and their solutions can help city makers turn health ambitions into concrete actions. No matter if they are starting from a mobility perspective or climate ambitions, using health as the strategic narrative will help to bring different goals and perspectives together. The approach is also very compatible with a place-based approach to loop in local stakeholders and with the idea of the smart society. Using health as a strategic narrative provides a societal purpose to the use of technology. It gives direction to the selection of technologies to be used and how to use them, so they actively contribute to the purpose of improving population health.

References

Barton, H., Mitcham, C., & Tsourou, C. (Eds.) (2003). Healthy urban planning in practice: experience of European cities. Copenhagen: WHO Regional Office for Europe.

Barton, J. & Pretty, J. (2010). What is the best dose of nature and green exercise for improving mental health: A multi-study analysis. *Environmental Science and Technology*, 44(10), 3947–3955.

Brusseau, M.L., Ramirez-Andreotta, M., Pepper, I.L., & Maximillian, J. (2019). Environmental Impacts on Human Health and Well-Being. In M.L. Brusseau, I.L. Pepper, & C.P. Gerba (Eds.), Environmental and Pollution Science (pp. 477–499). Cambridge: Academic Press

Carnevale, C., de Angelis, E., Finzi, G., Turrini, E., & Volta, M. (2018). Evaluating economic and health impacts of active mobility through an integrated assessment model. *IFAC-PapersOnLine*, *51*(5), 49–54.

CEI (Council for the Environment and Infrastructure). (2018). The Healthy City: Delivering Health Through Environmental and Planning Policy. The Hague: CEI.

Flanders Cushing, D. & Miller, E. (2019). Creating Great Places: Evidence-Based Urban Design for Health and Well-being. New York: Routledge.

Fróes, I. & Lasthein, M.K. (2020). Co-creating sustainable urban metabolism towards healthier cities. *Urban Transformations*, 2, 5(2020).

Grant, M. (2019). Planning for Healthy Cities. In M. Nieuwenhuijsen & H. Khreis (Eds.), Integrating Human Health into Urban and Transport Planning: A Framework (pp. 221–250). Cham: Springer.

Krieger, N., Northridge, M., Gruskin, S., Quinn, M., Kriebel, D., Davet Smith, G., Basset, M., Rehkopf, D.H., & Miller, C. (2003). Assessing health impact assessment: multidisciplinary and international perspectives. Journal of Epidemiology and Community Health, 57(9), 659-662.

Leyden, K.M. (2003). Social Capital and the Built Environment: The Importance of Walkable Neighborhoods. *American Journal of Public Health*, 93(9), 1546–1551.

Lin, C.K., Chang, Y.T., Lee, F.S., Chen, S.T., & Christiani, D. (2021). Association between exposure to ambient particulate matters and risks of autism spectrum disorder in children: a systematic review and exposure-response meta-analysis. *Environmental Research Letters*, 16(6), 063003.

Oldenziel, R. & Albert de la Bruhèze, A. (2011). Contested Spaces. *Transfers*, 1(2), 29–49.

Peters, R., Ee, N., Peters, J., Booth, A., Mudway, I. & Anstey, K.J. (2019). Air Pollution and Dementia: A Systematic Review. *Journal of Alzheimer's disease*, *70*(1), 145–163.

Pisoni, E., Christidis, P., & Navajas Cawood, E. (2022). Active mobility versus motorized transport? User choices and benefits for the society. *Science of The Total Environment*, 806, 150627.

PosadMaxwan. (2021). A healthy city beyond cycling: A practical guide to building healthier cities. The Hague: PosadMaxwan. https://posadmaxwan.nl/en/news/80/a-practical-guide-to-healthy-cities. Accessed on February 27, 2022

Portney, K.E. & Sansom, G.T. (2017). Sustainable cities and healthy cities: Are they the same? *Urban Planning*, 2(3), 45–55.

Pru'ss-Ustu'n, A., Wolf, J., Corvalan, C., Bos, R., & Neira, M. (2016). Preventing disease through healthy environments: A global assessment of the burden of disease from environmental risks. Geneva: World Health Organization.

Smargiassi, A., Goldberg, M.S., Plante, C., Fournier, M., Baudouin, Y., & Kosatsky, T. (2009). Variation of daily warm season mortality as a function of micro-urban heat islands. *Journal of Epidemiology and Community Health*, 63(8), 659–664.

Vich, G., Marquet, O., & Miralles-Guasch, C. (2019). Green streetscape and walking: Exploring active mobility patterns in dense and compact cities. *Journal of Transport & Health*, 12, 50–59.

WHO (World Health Organization). (n.d.) What is a healthy city? https://www.euro.who.int/en/health-top-ics/environment-and-health/urban-health/who-euro-pean-healthy-cities-network/what-is-a-healthy-city. Accessed on March 15, 2022.

Zheng, S., Pozzer, A., Cao, C.X., & Lelieveld, J. (2015). Long-term (2001-2012) concentrations of fine particulate matter (PM2.5) and the impact on human health in Beijing, China. *Atmospheric Chemistry and Physics*, 15(10), 5715–5725.





How to Integrate
Urban Health into
Planning Urban
Public Amenities in
Innovation Districts:
Case Study of Optical
Valley, Wuhan, China

Wenjing Luo Han Zou Bei Yu

How does Urban Health Relate to Urban Public Amenities in Innovation Districts?

_

The features of innovation districts

Innovation districts, by their definition, are 'geographic areas where leading-edge anchor institutions and companies cluster and connect with start-ups, business incubators, and accelerators' (Katz & Wagner, 2014). The key distinguishing feature of innovation districts are that they constitute the ultimate mash-up of entrepreneurs, researchers, college teachers, and students, who can all be called knowledge workers or creative classes (Arup & UK Innovation Districts Group, 2018). Usually, at the age of between 25 and 45, knowledge workers in innovation districts suffer from pressures of high-intensity knowledge-related work. Thus, they tend to enjoy the high accessibility and highly mixed functions of urban public amenities which can save time in satisfying their various living needs and provide accessible spaces for timely communication (Cai, 2007; Dalvai. 2016; Wang et al., 2016b). Due to the uncertainties and complexity inherent to the process of innovation, another feature of innovation districts is that their development stages are slow to change compared to other districts (Yin. 2018). Thus, the provision of urban public amenities for innovation districts should not only satisfy the various needs of knowledge workers but also match with the development stages of innovation districts (Huang et al., 2012).

Innovation districts have been divided into three models including the 'anchor model', 're-imagined urban areas' and 'urbanised science park' (Katz & Wagner, 2014). As distinct from the 'anchor model' and 're-imagined urban areas', which can share urban amenities with the surrounding urbanised areas, the 'urbanised science park', which is usually located in suburban areas without sophisticated facilities to share with, would require establishing a whole system of urban public amenities on its own. Optical Valley, a typical urbanised science park located on the outskirts of Wuhan, builds up the whole system of urban public amenities, which could be used as an example to illustrate the topic.

Integration between health and urban public amenities in innovation districts

Although health as a concept should affect entire urban population, healthy city projects, which many cities have launched recently, mostly target the elderly and children. Knowledge workers, usually aged between 25 and 45, are easy to be neglected as they are assumed to be inherently healthier than the elderly and children. However, as a special group of young people, knowledge workers tend to have sub-optimal health problems more often due to their living habits and working pressures. Meanwhile, innovation districts which usually play the role of nodes of information flows, capital flows, and human flows in regional networks are susceptible to urban crises due to their frequent exchanges with other districts or cities. Thus, epidemic crises should be paid special attention to in the urban development of innovation districts.

Based on the above-mentioned points, two questions can be raised with regard to integrating urban heath into planning urban public amenities in innovation districts:

1. How can we prepare innovation districts for appropriate access to services and living needs of knowledge workers, to promote healthier living?

2. How can we use all the capabilities and abilities of innovation districts to prevent and prepare for epidemic crises?

To the first question, healthier living can be achieved by encouraging knowledge workers to be more physically active (Wang & Zhou, 2019). Studies show complicated systems are at play in the interaction between physical activities and physical environments, where the accessibility of urban amenities exerts a direct influence on health by determining active transit (Lu & Tan, 2015; Wang et al., 2018a; Wang et al., 2018b; Wang et al., 2016a; Tang et al., 2014; Zhang et al., 2017). When urban public amenities are at an accessible distance to homes or workplaces, knowledge workers will be more likely to access the facilities by means of active transit, such as walking and biking, which could promote greater physical activity.

As for the second question, to prevent and prepare for epidemic crises, strategies can be made in planning urban public amenities, including isolating sources of infection, cutting off transmission routes, and protecting contagious individuals (Wang et al., 2020). To isolate the sources of infection, community centres can be used to provide spaces for epidemic prevention. During epidemic outbreaks, sports centres and exhibition centres could also be transformed into isolation spaces for patients. Then, to cut off transmission routes, community centres should be provided with various facilities to lessen the range of activities to decrease the risk of transmission. Last but not the least, contagious individuals can be protected by improving the accessibility of medical facilities.

The Planning of Urban Public Amenities in Innovation Districts towards the Goal of Urban Health

Based on the features of innovation districts, with a view to achieving the goal of integrating urban health into urban amenity planning, the Optical Valley case study proposes strategies to deal with dilemmas in the four aspects of planning indexes, planning systems, spatial layouts, and planning implementation.

Adjusting the planning indexes of urban public amenities to the social structure of innovation districts

The planning indexes of urban amenities usually focus on residents, and, as such, apply to residential districts rather than innovation districts. It is thus necessary to develop planning indexes of urban public amenities in innovation districts to meet the requirements of both knowledge workers and residents based on the social structures of innovation districts.

Age distribution is the main factor affecting the development of planning strategies for urban public amenities. On the one hand, it is necessary to define the key focus of urban amenity supply according to the age distribution of knowledge workers and residents in innovation districts. Taking Optical Valley as an example, the elderly, middle-aged, and junior groups account for 10, 75, and 15 percent of the population, respectively. Although age distribution continues to fluctuate, there is increasing demand from the young and middle-aged group for high-quality urban public amenities with mixed functions, especially highly accessible cultural and sports facilities. Thus, the goal of planning urban public amenities at the current stage of development of Optical Valley should be focused on meeting the diverse requirements of young and middle-aged groups as well as other social groups.



Figure 2. Optical Valley Marathon, 2019. © Hubei Daily, 2019

On the other hand, a system of urban public amenities is suggested to be established according to the behavioural patterns of knowledge workers in innovation districts. The findings of the Optical Valley questionnaire suggest that knowledge workers and residents have different requirements for urban public amenities, especially in terms of the type of facilities, spatial preferences, and frequencies of use. Accordingly, the planning indexes of urban public amenities in Optical Valley are proposed to be adjusted, also in consideration of the age distribution. To meet the growing demands for sports activities, it is suggested to improve the planning standards of sports amenities beyond the baseline of national and municipal standards by applying the coefficient of 1.3 derived from the questionnaire to promote healthier living (Figure 2).

Considering that only residents are often considered when calculating the scales of urban public amenities, facilities tailored to knowledge workers, namely industrial service centres, should be established, which could be divided into industrial cluster levels and industrial park levels. While industrial cluster level centres are suggested to be established for every 50,000 knowledge workers with functions of culture, gyms, leisure, communication, and industry services, industrial park level centres are proposed to be set up for every 20,000 knowledge workers mixed with culture and sports facilities at a smaller scale (Figure 3).

Establishing the system of urban amenities to match the development stages of innovation districts

Innovation districts at different stages tend to be equipped with different systems of urban public amenities and present distinct spatial structures (Huang et al., 2012). Taking innovation districts undergoing urban expansion as an example, the spatial structure of urban public amenities usually ranges from the simplex model in centred layouts to the complex model in networks. At their early stages, innovation districts usually take the form of newly developed industrial parks,

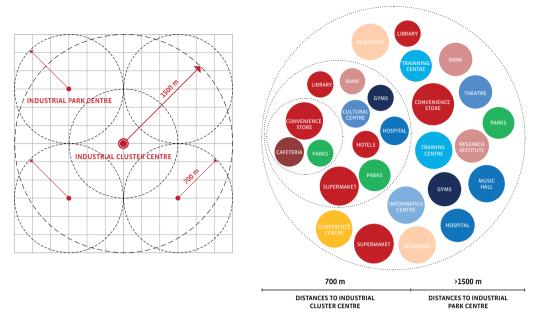


Figure 3. Models of industrial service centres tailored specifically to knowledge workers. Source: Authors

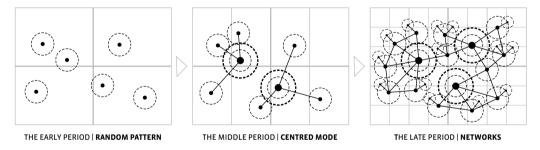


Figure 4. Evolution of spatial structures of urban public amenities. Source: Authors

and urban public amenities are usually distributed at random. With the development of innovation districts, new urban public amenities are often located in areas surrounding planned urban centres and have agglomeration effects. Once an innovation district has grown into the stage of urban centre, with the transition from industrial park to new town, more urban centres will emerge surrounded by larger numbers of urban amenities, which will then help establish a system of urban amenities in network patterns (Figure 4).

Therefore, a flexible system of urban public amenities, which could be divided into three phases corresponding to early, middle, and late periods, is suggested to be established to dynamically match the development stages of innovation districts. As Optical Valley is undergoing a transition from industrial park to new town, the current spatial structures of urban amenities in centred layouts fail to meet requirement stemming from the current population and development stage, which demand high-quality, high-level amenities and high-accessibility, low-level amenities. Thus, a system of urban amenities is suggested to be established including centred high-level amenities and scattered low-level amenities together in networks to match the development phase of Optical Valley.



Figure 5. Community centres in Optical Valley. © Administrative Committee of Wuhan East Lake High-tech Development Zone, 2022

Given the experience of other cities, municipal and district-level amenities could be considered high-level, while community amenities and industrial service centres could be defined as low-level. On the one hand, the quality of high-level amenities should be improved, and these ought to have particular distinguishing features. In Optical Valley, high-level amenities are suggested to provide comprehensive services, especially for technology and industrial developments, based on the development stage of the area. On the other hand, the accessibility of low-level amenities should be strengthened to establish a network of community centres reflecting the behaviour patterns of both residents and knowledge workers. Based on an analysis of the relationship between current living, working, and leisure activities in Optical Valley, community centres located within 15-minute walking distances from homes and workplaces are suggested to be established (Figure 5).

Developing co-location spatial layout models for different types of urban public amenities

The uneven distribution problems of current urban public amenities, which seemingly result from an imbalance between people, land, and buildings, are actually due to a mismatch between the spatial pattern and land use resources. Given the experiences of other innovation districts, a centralised layout of urban public amenities, which are usually located alongside commercial services and parks, has been identified as a reasonable model, especially for megacities. However, if adjusted to local conditions, the model can be used as a key for dealing with problems of uneven distribution.

Based on the current urban planning regulation of Wuhan, three spatial layout models of co-location have been explored for urban public amenities. First, urban public amenities of different types but at the same levels are suggested to be co-located on the same parcels or inside the same buildings, given limited land resources and high densities. The second model applies to district-level amenities, which are suggested to be located on the same parcels in a situation of abundant land resources and low densities. Quite differently from the previous two models, the third model attempts to locate urban public amenities in areas zoned for commercial facilities, which mainly applies to community amenities, especially in newly built areas (Figure 6).

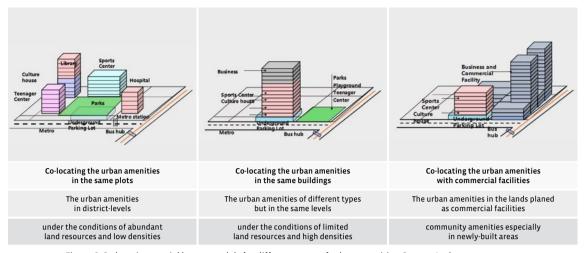


Figure 6. Co-location spatial layout models for different types of urban amenities. Source: Authors



Figure 7. Multiple uses of urban public amenities. Source: Authors

Analyses of co-location layout models have resulted in the development of strategies for different types and levels of urban public amenities, considering the land use resources in the various areas of Optical Valley. Areas with limited land resources can be defined as high-intensity zones, where all community-level amenities are suggested to be co-located in the same buildings. By contrast, areas with sufficient land resources in Optical Valley can be defined as low-intensity zones, where district-level and newly built community-level amenities are suggested to be co-located on the same parcels. The rest can be defined as medium-intensity zones, where only community-level amenities are suggested to be co-located on the same parcels. Application of those co-location strategies has improved the overall indexes of urban public amenities in Optical Valley have been improved to a level beyond national standards. In addition to this, to prevent and prepare for an epidemic crisis, high-level amenities should be equipped with multiple functions. For example, medical amenities should contain spaces for public health events, while sports and cultural facilities, which benefit from open structures and large spaces, are suggested to be reused as temporary hospitals for epidemic crises (Figure 7).

Establishing a mechanism to implement urban public amenities

The failure of implementation of urban public amenities in innovation districts is actually due to disagreement between the development, evaluation, administration, and implementation of planning, which fails to account for the uncertainty of development. Thus, a dynamic system covering the entire process of the development, evaluation, administration, and implementation of planning is suggested to be established especially for urban amenities.

On one hand, in the process of making planning regulations, specialised separate strategies have been introduced, including strict regulations on high-level, high-demand amenities and flexible guidance for low-level, low-demand ones. For example, high-level amenities in newly built areas are suggested to be represented in bold lines while low-level amenities in built-up areas are suggested to be regulated by indexes of building scales. On the other hand, the flexibility of planning regulations is suggested to be improved to meet the various and unpredictable requirements of building construction. Co-located urban amenities are suggested to be regulated in dashed lines as a whole, which could facilitate the adjustment of boundaries and location of each urban amenity according to the planning schemes (Figure 8).

Then, in the process of planning administration and evaluation, an intelligent evaluation and early warning system is suggested to be established as part of the planning information and management platform to assess current urban public amenities. The result of this effort can then be fed back into the process of planning development, regulation and implementation. For example, the Wuhan Planning Lab, intended as an intelligent planning information and management platform, has developed additional functions allowing it to evaluate the current population and urban public amenities online. This could help establish a 'traffic light' early warning system, where the 'red', 'yellow', and 'green' signals mean, respectively, failing to meet, coming close to, and reaching planning standards (Figure 9). Based on the result of the evaluation, strategies can be developed to examine and approve plans for newly built residential districts. Online evaluation can also be applied to the planning approval process, which is to set up the various thresholds of requirements for urban public amenities in residential developments based on evaluations of current situations and plans. Finally, an annual list of urban public amenities scheduled for construction could also be made based on the evaluations to improve implementation rates of urban public amenities.

Conclusions

An increasingly topical subject, urban health bears a complex relationship to urban planning, where the provision of urban public amenities not only directly determines the health of populations, but can also improve a city's resilience, in particular to epidemic crises. Innovation districts are an emerging global urban model and have been considered a major economic boon. Both the attractiveness and the resilience of innovation districts can be increased by improving the quality of their urban public amenities.

Hence, the integration of urban health into the planning of urban public amenities for innovation districts has proven to be an important issue for discussion, which appears to be lacking both in planning research and practice. Innovation districts differ from other areas both in terms of their population, which mainly consists of knowledge workers, and their development stages, which are subject

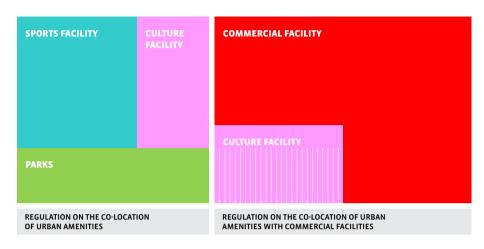


Figure 8. Regulation governing the co-location of different types of urban public amenities. Source: Authors



Figure 9. Wuhan Planning Lab early warning system for urban public amenities. Source: Authors

to change due to the uncertainty of innovation. With the goal of integrating urban health into urban public amenity planning, specific strategies should be developed that correspond to the features of innovation districts.

This research attempts to develop planning strategies based on an analysis of the features of innovation districts, as well as the relations between urban health and urban public amenities. The case of Optical Valley demonstrates that the differences between innovation districts and other districts lie in their populations and development stages, which directly determine the strategies governing the development of urban public amenities. On the one hand, the population of innovation districts mainly consists of knowledge workers aged between 25 and 45 who prefer to use mixed-use, high-accessibility urban public amenities. On the other hand, the uncertainty and complexity of innovation drive the dynamic development of innovation districts. These two primary features of innovation districts also require distinctive strategies of planning urban public amenities with the goal of achieving a healthy city. Not only should the accessibility of urban public amenities be improved to promote healthier living for knowledge workers, but the roles of urban public amenities should also be reconsidered to prevent and prepare for epidemic crises.

Based on the analysis above, strategies have been proposed for the planning of urban amenities that cover four aspects.

- 1. To meet the requirements of knowledge workers, the planning indexes of urban public amenities in innovation districts are proposed to be adjusted based on standards, and specialised amenities - industrial service centres - are proposed to be established.
- 2. A flexible system of urban public amenities is suggested to be set up, not only to match the development of innovation districts, but also to promote healthier lifestyles of knowledge workers.
- 3. Co-location layout models are discussed in terms of the levels of urban public amenities, the spatial resources of areas, and resilience requirements. These models could both increase access to urban public amenities and improve
- 4. Strategies are proposed for planning development and implementation, including improving the flexibility of regulations and setting up dynamic evaluation and early warning systems. Strategies that have been applied to the planning of urban public amenities in Optical Valley have proven effective in achieving the goal of a healthy innovation district, which may be reflected in the recent population growth of the area.

Thus, the experience of Optical Valley, a typical innovation district, with setting up a system of urban public amenities could both serve as a reference point for the planning practices of innovation districts, but also fill research gaps in the fields of both healthy cities and knowledge-based urban developments.

TOC

References

Arup & UK Innovation Districts Group. (2018). UK Innovation Districts and Knowledge Quarters: Driving More Productive Growth. London: UK Innovation Districts Group.

Cai, L. (2007). Research on the Urban Amenities of High-tech Industrial Park [Master's thesis, Tongji University].

Dalvai, W. (2016). Urban Cultural Amenities and the Migration of the Creative Class Thünen-Series of Applied Economic Theory, Working Paper 143. Rostock: Universität Rostock, Institut für Volkswirtschaftslehre.

Huang, S., Zhang, Y., Hua, C., & Tang, J. (2012). Supply and Demand of Public Services in Development Zone: Changes of Age Gradient and Evolution of Needs Hierarchy. China City Planning Review, 36(2), 16–22.

Katz, B. & Wagner, J. (2014). The Rise of Innovation
Districts: A New Geography of Innovation in America.
New York: Brookings.

Lu, F. & Tan, S. (2015). Built Environment's Influence on Physical Activity: Review and Thought. *Urban Planning International*, 28(2), 46–54.

Tang, Y., Liang, S., & Guo, L. (2014). Neighbourhood Planning Towards "Healthy Cities" – Introduction of Shaping Neighbourhoods: For Local Health and Global Sustainability. *Urban Planning International*, 29(6), 120–125.

Wang, L., Jia, Y., Li, X., & Yang, X. (2020). Urban Spatial Intervention Strategies for Infectious Disease Prevention and Control. *China City Planning Review,* 44(8), 13–32.

Wang, L., Jiang, X., Sun, W., Zhao, X., & Tang, J. (2018a). Impact of Urban Built Environment on Respiratory Health and its Planning Strategy: A Case Study of a District in Shanghai. *China City Planning Review*, 42(6), 15–22.

Wang, L., Liao, S., & Zhao, X. (2016a). Exploration of Approaches and Factors of Healthy City Planning. *Urban Planning International*, 31(4), 4–9.

Wang, L., Sun, W., & Gu, J. (2018b). The Methodological Development of Health-oriented Urban Design and its Practical Exploration: A Case Study of Huangpu District, Shanghai. *Urban Planning Forum*, 245(5), 71–79.

Wang, L., Wu, Z., & Qiu, S. (2016b). Creative Community Planning in the Context of Urban Regeneration: Based on a Study on Spatial Demand of Creative Class and Residents. *Urban Planning Forum*, 230(4), 54–61.

Wang, L. & Zhou, K. (2019). Performance Assessment of the Distribution of Community Sports Facility from the Perspective of Healthy Equity: A Case Study of the Central City of Shanghai. *Journal of Human Settlements in West China*, 34(2), 1–7.

Yin, Z. (2018). Research on the Functions and Spatial Layout of Innovation Districts. Beijing: Qinghua University Press.

Zhang, Y., Cai, C., & Wang, L. (2017). Application of Health Impact Assessment (HIA) in Urban Redevelopment: A Case Study of Atlanta Beltline. *Planners*, 33(11), 113–119.



Shaping Healthier and Resilient Communities: Lessons from Participatory Community Micro-regeneration in Beijing, China

Tongfei Jin

Introduction

Urban planning in China is undergoing a transformation – a process of urbanisation that has evolved from planning and design for growth to planning and design for quality. In the past several decades, incremental planning (in Chinese: zengliang guihua) has been the primary mode of urban development in China. Then, following the Shenzhen City Master Plan (2010–2020), in which stock-based planning first appeared, the term 'stock-based planning' (in Chinese: cunliang guihua) has been widely discussed and utilised by practitioners and politicians.

Over the last forty years, Chinese cities' rapid urbanisation and social transformation have been broadly discussed and researched. The speed of the process and its orientation on the creation of China as a modern, future-oriented urban nation put the historic parts of Chinese cities at the risk of being neglected. As a representative of these cities, Beijing has hundreds of thousands of old residential neighbourhoods, parts of which are replete with history and cannot be demolished. Nevertheless, this rapid urbanisation, which has focused on creating the contemporary urban fabric and brought economic development, has caused questions and controversies. The process has been criticised for leading to inequality, social injustice, and marginalisation of poorer and older strata of Chinese society. To address this situation, practitioners have attempted to introduce participatory design approaches and a 'micro-regeneration' strategy as experimental tools aimed at improving the dwelling environment in old neighbourhoods and enhancing community resilience and health.

Foundation of Community Resilience and Micro-regeneration Practices

_

Understanding community resilience

Resilience is a significant issue in urban development: the global attending to the concept of resilience is part of a more significant move to overcome the notion of sustainability (Davoudi et al., 2012). In the resilience research, community resilience receives significant attention in the context of urban, inner-city spaces, as it is at this level that resilience pathways are implemented on the ground (Walker & Cooper, 2011). Accordingly, resilience should be considered in relation not only to large-scale shocks, but also to everyday life and the problems people encounter (Trogal et al., 2015).

From the perspective of the social-ecological systems analysis, community resilience is rooted in ecological resilience, which is focused on systems' continuous change and renewal cycles (Berkes & Ross, 2012). A social-ecological system (SES) is one where the ecosystem and people are interdependent and co-evolving. Resilience in an SES highlights not only its biophysical aspects, but also its social elements confronted with disturbances. In this sense, one area of work on 'community resilience' is disaster risk reduction and response, which focuses on social learning (Wilson, 2012) and transformability (Folke et al., 2010). Moreover, a resilient process, in social-ecological systemic terms, considers how human communities interact with the environment and pays particular attention to governance (Biggs et al., 2012).

Another understanding of community resilience comes from community development, which originates in mental health and developmental psychology

(Berkes & Ross, 2012). In mental health and psychology, resilience emphasises the internal factors and strengths that help individuals cope with adversity (Buikstra et al., 2011). In this sense, building resilience is understood as a means of identifying and developing the strengths of individuals or communities rather than focusing primarily on identifying and overcoming weaknesses.

There are also integrated concepts of community resilience resulting from the overlap of social-ecological systems and community development. For instance, Berkes and Ross (2012) view community resilience as a function of the strengths or characteristics (i.e., knowledge, social networks, and engaged governance) leading to agency and self-organisation. This concept is concerned with how these community characteristics combine to produce the process of resilience (Berkes & Ross, 2012).

Micro-regeneration strategy in China

As urban construction has moved from incremental planning to stock-based planning, a gradual micro-regeneration strategy has become the primary mode of urban regeneration in China. Two aspects have informed the micro-regeneration concept. Firstly, rapid urbanisation, with demolition and construction as its primary approaches, carries high costs in terms of workforce and material and financial resources. The concept of urban micro-regeneration, which aims to revitalise the building stock and improve land use value, has been helping solve the above problems. Secondly, urbanisation has long entailed the disappearance of old culture and buildings to some extent. A city's unique charm and cultural soul gradually fade away with the newly built urban spaces. Against such challenges, micro-regeneration, aimed at preserving the historical and cultural context, provides strategic and practical support to ensure the continuation and development of urban tradition.

Micro-regeneration – based on public participation regarding micro-community open spaces and public space facilities (i.e., objects of renovation) and attending to the existing contextual values and use of existing resources (i.e., aims of renovation) – has become mainstream in regeneration of historic districts. In 2018, the Ministry of Housing and Urban and Rural Development put forward the concept of 'collaborative production' (in Chinese: gongtong dizao) in the field of community regeneration. This action indicates that the micro-regeneration model, which involves the participation of multiple parties, has become a new trend of community renewal governance, with community, market, and third-party organisations playing an increasingly significant role.

A review of the micro-regeneration strategy indicates that the crucial concept of the strategy resonates with the idea of community resilience. At the same time, in the stock-based planning context, the requirements and aims of micro-regeneration are also in line with the definition of community resilience. Resilience emphasises a community's capacities (e.g., its adaptive capacity) to deal with external and internal shocks. Therefore, communities as social-ecological systems need resilient governance to integrate top-down policies and bottom-up strategic initiatives to withstand long-term disturbances.

Micro-regeneration Practices in Beijing: The Case of Yuyuan Garden in Kevu Community

Project overview

The Yuyuan community garden in Keyu community covers an area of 600 sqm and is the pilot project of co-productive micro-regeneration in Beijing (Figure 1). The old urban community with a nearly 60-year history is located in the Zhongguancun sub-district of Haidian District in Beijing (Figure 2). It was built in the 1960s as the courtyard of a family dormitory of the Chinese Academy of Sciences. More precisely, Yuyuan is a public green space between the buildings in the Keyu community and belongs to the collective of owners.

In the 2010s, Keyu started to face the shortage of vibrant public spaces. In the community, there were many places covered by temporary houses, and many sanitary corners have not been cleaned up. The residents were not satisfied with the neglected environment dominating the community. Consequently, the site of Yuyuan became an abandoned corner (Figure 3). Three provisional, colourful steel houses divided the site into north and south parts. The wasteland on the south side was a temporary parking space for residents, and the ground was bare and dry, however, muddy when it rained. The wasteland on the north side was a derelict corner area of the community. Since access to it was controlled by lockable iron gates, few people have entered it in years. Various debris, garbage, overgrown weeds, mosquitoes, and foul odours troubled the surrounding residents, making residents of the community avoid the detour through this area. More importantly, the messy and unkempt state of the site inconvenienced community residents, harming the harmonious development of the community. Therefore, improving the environment of the area has become a community issue needed to be addressed as soon as possible by the Residents' Committee and the individual residents. All these considerations have prompted the site to be chosen as the experimental field of community micro-regeneration.

The mobilisation to redevelop the community started in 2017, when the sub-district office proposed a project aimed at enhancing the landscape of the corners of the old quarters and explore collaboration of the community in building a model. This project, jointly designed by design firm Gaiascape and local residents, has received the largest share of total funding extended by the sub-district. Multiple social and community forces came together to participate so that a 'poetic dwelling', i.e., a traditional Chinese house, was built with the involvement of local users based on the values of public participation, common knowledge and common action. The project took three years to finish, and it applies the concept of sustainable and resilient living on the land (Figure 4).

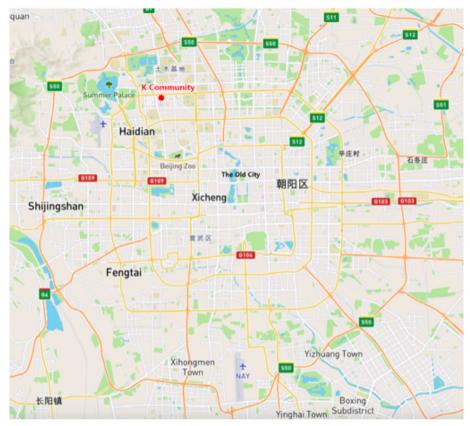


Figure 2. The location of Keyu community. Source: Author



Figure 3. The Yuyuan garden within Keyu community. Source: Author

Layout of the site (before regeneration)



Master plan of the Yuyuan garden (after regeneration)

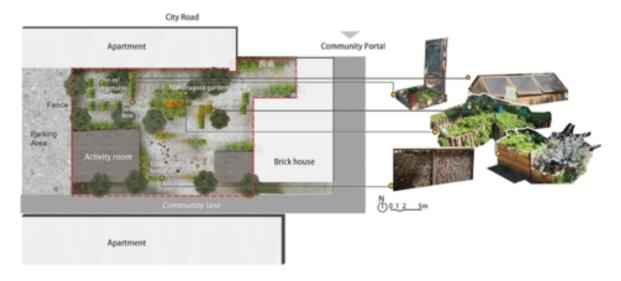


Figure 4. The Yuyuan garden before and after revitalisation. Source: Author

Actors involved and their integration

Although the project is a small-scale landscape construction effort, it adopted the strategy of multiple actor collaboration by introducing a professional design and management agency, becoming the first co-productive community garden in Beijing.

Local government: sub-district office

Following the principles of co-production, co-governance and benefit-sharing from the central government, the local government emphasised community revitalisation in managing the issues in old urban community regeneration. The staff of the sub-district office, prompting public engagement in neighbourhoods, were the catalyst for implementing this project. The local government also funded the project design.

Residents' committee

The Residents' Committee (RC) is the basic grassroots-level unit that promotes self-governance in urban residential areas. The RC aims to assist residents in managing their own day-to-day affairs whilst at the same time being entrusted with the provision of public services by the sub-district. In the case of the Yuyuan garden, the RC played an integral part in coordinating and informing the residents about the project as well as in mobilising resident engagement. The RC was requested by the Zhongguancun sub-district office to assist with construction of the community garden and facilitate community revitalisation. As the members of the RC knew very well who might be interested in the gardening project, they mobilised public participation using a hybrid method, i.e., the RC officially announced the project but then held private consultations with each resident.

The RC director played a crucial role in funding support and collaborative governance after the construction. When the sub-district office could not approve construction expenditure, the RC director proposed to apply for the building funds of the Communist Party of China community representatives. This suggestion finally helped to solve the funding dilemma: the party provided the funds at the initiative of the director. The director also assisted in organising the residents' self-governance team and encouraging RC members to join in maintaining the garden.

The design team

The professional design agency Gaiascape was selected as the design team for the Yuyuan garden. It built a cooperative relationship with the Zhongguancun sub-district office at the beginning of the project. Gaiascape established a platform for internal communication and discussion with the sub-district office, RC, and residents to break down information barriers. Divided into two parts – the online Keyu Community Volunteer Group and the offline Community Garden Construction and Maintenance Team – the platform also coordinated communication and information exchange between the various parties.

In the project's early days, the Gaiascape team investigated and surveyed the site, communicated with the RC to understand the site's basic information, and developed the community garden construction plan. The team held community garden training for staff of the sub-district office and invited the community to come up with a consensually agreed concept for the garden in question. Designers facilitated community green map workshops where local residents draw green maps, which allowed laymen to understand and describe the social and ecological aspects of the site and jointly reveal the green elements around the community. Activities and workshops organised by the design team further encouraged local

residents to discover the extraordinary beauty of the area. In this way, it helped the residents to increase their awareness of the 'think big, act small', begin to care about the neighbourhood, and strengthen community cohesion.

Residents

Residents were the main participants in revitalising the Yuyuan garden. During the three years of the implementation, 18 garden-building activities have been attended by 600 people. Residents participated all stages of the project, including scheme design, voting for the name, garden construction, and post-construction maintenance.

Other parties

The construction stage involved participants from outside the neighbourhood. For example, students from the Primary School no. 1 of Zhongguancun joined the construction of part of the garden, and the Yuyuan garden became the base for nature observation and education. Businesses and non-governmental organisations such as Mercedes-Benz Auto Finance Ltd. and BoKang Foundation also took part in constructing the garden. The publicity delivered by the media also inspired the involvement of other parties and gave rise to several revitalisation practices in other communities.

As presented, various participants played different roles in this project, and the multiple participatory and transdisciplinary approaches enhanced the implementation and impact of the project. The local government initiated and funded the effort, the design team was the organiser, whilst the RC played the role of coordinator and mediator. More importantly, the project involved the voluntary participation of many organisations based nearby, which facilitated the establishment of a local network.

Participatory design and post-construction maintenance

Gaiascape engaged in garden building in the community with the philosophy of 'everyone is a designer' and 'local users are the main design subjects'. The design panel mobilised the RC and community activists to carry out participatory design workshops, empowering the residents of the community to express their requirements and visions for garden construction, making up for the absence of knowledge of the designer's professional perspective on community life. Participants were divided into groups of children, young people, and the elderly.

Participatory design involved community garden building training, a participatory site survey performed by the residents, discussion of the results of participatory design, and design plan consensus meetings. Training took the form of co-learning lectures on environmental community planning and design principles and community garden cases. This allowed the residents to have a preliminary understanding of the environmental aspects of the community, permitting them to master the methods of community investigation and observation and the concept of creating sustainable communities. It also boosted the confidence of residents for transforming the rundown sites into shared co-productive community gardens. After the training, local residents participated in site surveys. Participants took a drawing of the current situation of the site to experience and observe the environment to find out the advantages and problems of the site. Summarising and analysing the situation collectively, they found the advantages of the site to be: 1) complete space and large area; 2) small house next to the garden can be used for supporting facilities; and 3) nearby Zhongguancun No.1 Primary School, convenient for student participation. The problems were: 1) large



Figure 6. The main construction activities on site. $\ensuremath{\mathbb{G}}$ Gaiascape, 2020



Figure 7. The revitalised Yuyuan garden. © Tongfei Jin, 2020

quantity of trash and mosquitoes; 2) privately built colourful steel houses, affecting the area and its aesthetics; and 3) informal parking spaces across the garden. Subsequently, during the participatory design and discussion period, 30 residents were divided into four groups. Residents exchanged opinions and interacted in the group, reached consensus, and used the method of drawing design sketches to transform the results of the consensus into four different design solutions. These processes served as the design bases for the design team. Following the workshop, Gaiascape turned residents' creativity into understandable drawings and solid models. A consensus meeting on the plan was held, which was attended by the sub-district office, the RC, and residents. After discussion at the meeting, the attendees settled on Yuyuan as the name of the garden. The main function of the garden was to be a sustainable community public garden, to meet the daily leisure needs of the residents, and serve as a venue for community activities and an outdoor classroom (Figures 5–7).

The implementation period included activities such as building a bird feeder, making a 1 sqm vegetable garden and seeding box, creating a rainwater harvesting system, and building a tyre climbing playground, according to the schedule given in Figure 8. As the project entered its third year, a number of garden construction enthusiasts emerged from the body of resident volunteers and took part in building the garden. They formed a garden maintenance team and arranged three volunteers for daily plant conservation (Figure 9). There was a person responsible for managing kitchen waste in compost bins. The RC staff were responsible for logistical support for garden construction and securing the resources needed. The RC invited experts to carry out horticultural lectures and training for

Yuyuan Garden



Figure 8. The Yuyuan garden project schedule. Source: Author

volunteers and residents, hence contributing to the positive interaction between the RC, residents, and specialists. Spontaneous engagement in construction by nearby residents reflects the fact that the residents have mastered the basic knowledge of gardening, hence empowering residents to build garden spontaneously. Students from the nearby primary school wrote and performed a play about the building of Yuyuan, which strengthened the bond between the school and the neighbourhood. The primary designer of the Yuyuan garden has claimed that the value of Yuyuan is that it has provided a mutual learning platform for multiple participants.



Figure 9. The Yuyuan garden maintenance team. © Tongfei Jin, 2020

The Yuyuan garden: multiple impacts

After three years of implementation, the project has been remarkably successful in terms of its impact on community networking, social capital building, and healthy development, as described in the following sections.

Networking

The long-term micro-regeneration practice has helped lay the groundwork for resilience networks and initiatives to emerge in the community, with various active individuals and organisations becoming actors and stakeholders in the process. During construction of the Yuyuan garden, the design team was invited to an adjacent community to develop a participatory design project (Figures 10, 11). Gaiascape has co-produced 13 community gardens in various neighbourhoods in Beijing with local residents. Moreover, many practitioners from other Beijing districts joined the Yuyuan project as volunteers and brought the participatory design strategy back to their own work, scaling up the community garden network across the whole city.

Building the social capital

The Yuyuan project has benefited the creation of social capital, enhancing the community's stability and cohesion. Activities organised by Gaiascape involved many residents in a mass gardening effort, which generated a social network comprised of these individuals. In addition, the co-production approach has contributed to collective action and overall trust between residents and local authorities, improving the community's capacity to cope with future changes. Further, the Yuyuan micro-regeneration project has advanced ordinary people's ability to engage in community development through social learning in venues such as workshops, group discussions, and collaborative construction.

Healthy community development

Effects on healthy community development have been twofold. Firstly, the community garden is environmentally friendly and solves problems identified in the survey. The garden is built of natural and recyclable materials. For instance, the bare land is covered by gravel conducive to rainwater permeation and storage and healthier water circulation. Seeding and vegetable boxes are made of timber, and residents can water plants using water gathered from the rainwater harvesting system. Secondly, the implementation of participatory design helps improve residents' mental health. Participants have reported that they met new friends in workshops and during construction activities, and that they were more willing to join public efforts. Residents' sense of belonging and identity has been enhanced since they have built their own garden step by step and have taken the responsibility of caring for the garden that will benefit the community's sustainable and healthy development over time.





Figures 10-11. The community gardens in the vicinity of the Yuyuan garden. © Tongfei Jin, 2020

Conclusion

strategy to be scaled up across the city.

The case of the Yuyuan garden is a successful experimental project that has facilitated Beijing's healthy community development by utilising residual spaces in the community to add green public space and introducing low-carbon techniques. It has built a platform that has brought together multiple stakeholders, such as the RC, residents, and non-governmental organisations. By knitting more actors together into a network, the effort has allowed power and resources to be redistributed more reasonably. As a result, it has enabled sustainable and resilient self-governance of the community garden and has allowed the participatory

Although participatory approaches have been accepted and utilised in many cases, the incomplete maturity of this strategy cannot be ignored. Planners need to keep in mind both the tangible and the intangible aspects of healthy community development. It is not only environmentally-friendly development that should be emphasised: rather, the ordinary people's understanding and engagement also need to be highlighted as these are the basis for equitable and healthy urban development at a higher level. The lessons learnt strongly suggest that healthy community planning needs to pay attention to previously neglected small spaces, and, more importantly, to go beyond physical boundaries and promote a holistic and multi-disciplinary participatory approach.

__

References

Berkes, F. & Ross, H. (2013). Community Resilience: Toward an Integrated Approach. Society and Natural Resources. 26(1). 5–20.

Biggs, R., Schlüter, M., Biggs, D., Bohensky, E.L., BurnSilver, S., Cundill, G., Dakos, V., Daw, T.M., Evans, L.S., Kotschy, K., Leitch, A.M., Meek, C., Quinlan, A., Raudsepp-Hearne, C., Robards, M.D., Schoon, M.L., Schultz, L., & West, P.C. (2012). Toward Principles for Enhancing the Resilience of Ecosystem Services. *Annual Review of Environment and Resources*, 37, 421–448.

Buikstra, E., Rogers-Clark, C., Ross, H., Hegney, D., King, C., Baker, P., & McLachlan, K. (2011). Ego-resilience and psychological wellness in rural people. In M.J. Celinski & K.M. Gow (Eds.), Continuity versus creative response to challenge: The primacy of resilience and resourcefulness in life and therapy (pp. 273–290). New York: Nova Science Publishers.

Davoudi, S., Shaw, K., Haider, L.J., Quinlan, A.E., Peterson, G.D., Wilkinson, C., Fünfgeld, H., McEvoy, D., & Porter, L. (2012). Resilience: A Bridging Concept or a Dead End? 'Reframing' Resilience: Challenges for Planning Theory and Practice Interacting Traps: Resilience Assessment of a Pasture Management System in Northern Afghanistan Urban Resilience: What Does It Mean in Planning Practice? Resilience as a Useful Concept for Climate Change Adaptation? The Politics of Resilience for Planning: A Cautionary Note. *Planning Theory and Practice*, *13*(2), 299–333.

Folke, C., Carpenter, S.R., Walker, B., Scheffer, M., Chapin, T., & Rockström, J. (2010). Resilience Thinking: Integrating Resilience, Adaptability and Transformability. *Ecology and Society*, 15(4), 20.

Trogal, K., Bauman, I., Lawrence, R., & Petrescu, D. (Eds.). (2018). Architecture and Resilience: Interdisciplinary Dialogues. Milton: Taylor & Francis Group.

Walker, J. & Cooper, M. (2011). Genealogies of Resilience: From Systems Ecology to the Political Economy of Crisis Adaptation. *Security Dialogue*, 42(2), 143–160.

Wilson, G.A. (2012). Community Resilience, Globalization, and Transitional Pathways of Decision-Making. *Geoforum*, 43(6), 1218–1231.

Towards Healthy Cities: Lessons for Resilient and Inclusive Open and Green Spaces



Catchmentscape:
A Novel Hierarchical
Spatial Planning Unit
for the Design of
Ecologically-based
Planning Practice

Iresh Jayawardena

Ecologically-based Design and Land Use Planning

Ecologically-based planning is one of the emerging approaches to spatial planning that guide planners in designing and developing urban spaces, adapting to human needs while balancing environmental concerns. Planning is well known to be an integrated process that deals with all aspects of urban development and is an important process for supporting and enhancing biophysical mechanisms. Technologically innovative concepts, such as Smart Cities, are developing alongside changing social and environmental attitudes in urban communities and have drawn increasing attention in modern planning practices in recent years (Rahmayanti et al., 2020). However, such methods and approaches have still to sufficiently address many environmental problems, in particular in the face of rapidly expanding cities. As a result, ecological functioning in urban areas has been degrading in response to incremental impacts created by urban planning practices.

There are arguments that planning practice and policies have not given enough attention to urban ecological systems (Ahern et al., 2014). To date, research on land use planning has mostly focused on development strategies and the need for approaches to respond to potential environmental impacts in cities and contribute to sustainable development. However, it remains unclear if planning and ecologically-based design concepts have been considered as an integrative tool for meeting specific environmental challenges in contemporary urban environment, including, for example, to respond to the current debate on adverse impacts of urbanisation on urban watersheds, ecosystems, terrestrial, freshwater, and coastal environments.

This paper proposes a novel ecologically-based spatial planning unit called 'catchmentscape' that can assist planners on how to integrate ecologically-based planning approaches and work within systems such as catchments to enable land use planning. Empirical evidence from a case study conducted in Auckland, New Zealand has been presented to demonstrate the potential of catchmentscape for broader practical application. The research focuses on investigating the extent to which historic theoretical planning practices have been used to integrate ecological design approaches to land use planning. As it is imperative to explore how catchmentscape can be introduced as a spatial unit for the design of ecologically-based planning to support such integration, the research reviewed theocratical and practical frameworks concerning ecological, landscape and land use planning as a foundation for putting forward the concept of catchmentscape.

A Novel Hierarchical Spatial Unit: Catchmentscape and Ecological Implications

_

Given limited space in our urban environments, planners often prioritise allocating a large amount of urban land for the development of human-made, social and physical infrastructure, including housing. However, planning cannot ultimately improve the quality and resilience of urban environments without taking into account the value of urban ecological resources and ecosystem management.

People enjoy the interaction between the natural and human-made environment offered in urban spaces. The combination of these two elements can make an urban space productive and meaningful for the community. Due to the interdependencies of ecosystems and their relationships with human habitats, under-



Figure 2. An area of greenfield landscape in Warkworth identified as a future urban area under the Auckland Unitary Plan. © Iresh Jayawardena, 2022

standing ecological effects provides opportunities to inform urban planning and design approaches. These ecologically-based approaches are mainly founded on the understanding of the existing character of land use, waterways and ecology in areas where urbanity occurs under changing urban environmental conditions.

This paper shows a potential application of catchmentscape using Warkworth in the Auckland Region of New Zealand as a case study (Figure 1). Warkworth is a rural town located 60 km north of Auckland CBD. Under the Warkworth Structure Plan 2019, an existing greenfield land area of approximately 1,000 ha has been identified as significant potential to accommodate future urban growth and zoned Future Urban Zone under the Auckland Unitary Plan (Figure 2). During conventional urbanisation, disruption of the existing biophysical characteristics of the land are inevitable. The concept of catchmentscape has reinforced the need and ability to change land use processes to improve and support ecological connectivity, biodiversity and water quality outcomes through the planning process.

138

Catchmentscape: A Framework for Developing Ecologically-based Spatial Planning

_

Theoretical origins of and trends in the integration of natural and human solutions into planning and design

From the Western perspective, the belief that urban nature was integrated into human design, or so-called ecological urbanism, appeared more than two thousand years ago when Hippocrates described the impacts of 'air, water and places' on public health and human society (Spirn, 1985). Much later, the concept of 'conservation' began to gain currency in Western theoretical understandings. In the 19th century, Olmsted, Patrick Geddes, and Lewis Mumford introduced various designs integrating nature into the city. Since the publication of Ian McHarg's *Design with Nature* in 1969, Kevin Lynch and Philip Lewis have also made outstanding contributions to developing the value of integrating natural environments and human objectives in order to achieve the goals of urban design.

Over the past decades, many researchers have reported on the serious impacts of urban growth and increasing interest in integrating urban ecological systems, landscape, and biodiversity into design and development strategies. Despite the enormous importance of these approaches, in the previous practices there was little discussion of planning frameworks and limited availability of tools that adequately measured ecological outcomes within the appropriate integration of spatial planning (Cook, 1991; Corry & Nassauer, 2005). However, theory and methodological frameworks for ecologically-oriented planning approaches later appeared in a range of disciplines, such as landscape planning (Grose, 2014; Hawkins & Selman, 2002), landscape and urban ecology (Naveh, 2001; Corry & Nassauer, 2005), ecosystem management (Cortinovis & Geneletti, 2018; Ahern et al., 2014), and landscape-ecological planning (Cook, 1991; Wu, 2013).

While there is a well-established history within the literature that emphasises the wide range of value and benefits that nature provides in human-created or modified environments, recent trends such as green infrastructure (Walmsley, 1995), nature-based solutions (Bell et al., 2021; Dhyani et al., 2020), Water Sensitive Urban Design (Barton & Argue, 2007; Morison & Brown, 2011), and Low Impact Development (Elliott & Trowsdale, 2007; Fletcher et al., 2015) reflect the integration and application of 'green' and 'blue' elements concepts into urban planning and design. These concepts are also linked to resilience concepts and emphasise the advantages of adaptation to climate risk and vulnerability. Considering growing concerns about climate resilience and impacts in urban systems, if planning incorporates a land use change based on the catchment that involves links between ecological landscape and human-induced development to provide a framework for spatial planning, it could improve resilience of our urban systems. In other words, the design of a holistic and integrated ecological approach will contribute to ensuring that future urban environments will be not only more readily adapt to climate change, but also have the capacity to remain in a healthy and resilient state during the planning process and changes in land use.

The catchment(scape) - based approach: the spatial pattern in landscape

Landscape pattern has a strong influence on its ecological process and the characteristics of urban systems. There is an opportunity to integrate urban ecology into planning and management of urban catchments by devising and applying a

framework that uses a combination of planning and design initiatives. Landscape ecology based understanding emphasizes broad spatial scales and the ecological effects of the spatial patterning of ecosystems, in particular the dynamics of spatial heterogeneity, interactions and exchanges between catchment and landscape (Turner & Gardner, 2015). To understand how the main structural elements in a landscape are crucial for articulating expected ecological impacts, a spatial unit form on the basis of catchment scale needs to be included in a spatially and functionally integrated land use planning process.

It is understood that there is a wider spatial heterogeneity of the landscape, and each natural element is self-dependent in nature (Turner & Gardner, 2015). Therefore, it is appropriate to analyse and evaluate the ecological structure of the landscape, i.e., spatial model and ecological dynamics, assuming the three basic characteristics of the landscape – structure, function and change.

« 'Structure' refers to the spatial relationships between distinctive ecosystems, that is, the distribution of energy, materials and species in relation to the sizes, shapes, numbers, and kinds of configurations of components. 'Function' refers to the interaction between the spatial elements, that is, the flow of energy, materials, and organisms among the components of ecosystems. 'Change' refers to alteration in the structure and function of the ecological mosaic through time. » (Turner, 1989: 173)

The research emphasises that analysis and evaluation of the dynamic interaction and configuration of structure and function of landscape are important for planners in planning and managing the change of ecology of the urban landscape more effectively. This is because of the focus on maintaining both the natural system and the human-dominated environment of land use. This process might involve work within spatial elements such as streams, wetlands, and aquatic and terrestrial elements and create ecological networks to maintain ecological processes and habitats to accommodate endangered species and safeguard biodiversity. From the planning practice point of view, foreseeing impacts through a process of impact assessment is often beneficial, as the land use change process and its foreseeable environmental implications can either positively or negatively impact on one another's activity.

From the link between the natural and social systems and human settlements, the landscape of the catchment can be seen in its cultural, social and economic dimension and is part of the ecological hierarchy. As urban environments develop, outcomes of dynamic interactions between nature and human settlements appear to be part of the total environment. Therefore, the Total Human Ecosystem (THE) is considered to be the new paradigm of the global ecological hierarchy (Naveh, 2000), because it recognises human dominance as an integral part of the total environment. To achieve better outcomes for the total environment, the research found that the most interesting observation emerging from the catchmentscape approach was to recognise the dynamics of the catchment landscape through spatial and biophysical disciplines. These dynamics can contribute to the sustainable development of urban landscapes. The integration of ecological planning requires a comprehensive understanding of spatial planning processes to establish a comprehensive spatial planning unit for guiding land use changes. It is in response to this need that catchmentscape is proposed.

Defining Catchmentscape

According to the Oxford dictionary, catchment is defined as 'the action of collecting water, especially the collection of rainfall over a natural drainage area'. Catchment identifies the pattern of natural water drainage, and comprises both natural, planned and unplanned processes in catchment context (Figure 3). The term landscape has its origins in the late 16th century (denoting a natural scenery) from the Middle Dutch *lantscap*, meaning 'land' + the suffix 'scape' (the English equivalent of '-ship'). Landscape is defined as 'all the visible features of an area of land, often considered in terms of their aesthetical appeal'. Accordingly, catchmentscape is defined as follows:

« Catchmentscape is a spatial unit recognised within hydrological (catchment) constraints, characterised by networks of ecological structures and human-induced forces, and formed by interactions of patterns, functions and connectivity across the landscape. »

This framework provides guidance to planners on what elements to consider in a planning policy framework and methods that provide an opportunity to maintain an ecologically-influenced planning outcome. The combination of these key elements provides important opportunities to identify the role of water and ecological structures of the landscape as central elements within catchments.

The use of a spatial boundary in a catchment context considers various biophysical elements and provides a more locally-specific approach to design and urban development. The interconnected nature of catchments and sub-catchments offers an opportunity to protect and enhance natural environmental values and restore ecological connectivity during the change in land use. For example, as depicted in Figure 4, smaller ecological patches of the landscape of various shapes are important, as are larger patches or corridors (greater than 10 ha) to ensure their long-term survival, facilitating wildlife movement and ecological and biodiversity functioning between patches. However, smaller patches are vulnerable to isolation or disappearance in heavily developing areas. Hence, the catchmentscape approach uses a combination of ecological characteristics through a network of patches and corridors and demonstrates how ecological integrity, value of ecosystems, and functioning can be maintained by restoring ecological connectivity in the urbanising landscape. The principles, policies, and strategies of urban design and development play an important role in enhancing and protecting this connectivity and in preventing further degradation within a catchmentscape of urbanisation. This part has been further discussed in the following section, using the proposed zoning scenario of Warkworth urban area as a case study.

Development and Use of Catchmentscape Concepts

As previously discussed, characterisation of the catchmentscape is crucial for the present research study. Therefore, this section summaries the criteria that were used for identifying the determinants of the catchmentscape for ecologically-based planning using the Warkworth case study. As depicted in Figure 4, the spatial pattern of the landscape consists of three basic elements that can be combined to form different landscape structures: a) patches; b) corridors; and c) land metrics that consist of patches and corridors (Forman, 2014). These structures

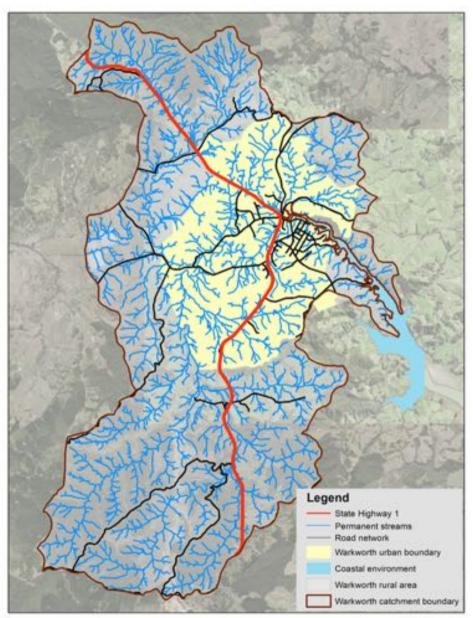


Figure 3. Warkworth catchment boundary. Source: Author, based on LINZ Data Service, Auckland Council

may consist of natural, planned, or unplanned elements in the landscape (Figures 4, 5). Natural structures, in particular, face serious threats and are increasingly becoming vulnerable to fragmentation when urban development modifies the catchment landscape during the planning and construction stages. However, understanding of the spatial relationships within each of these structural elements has become important for planners in arranging urban land uses.

As depicted in Figure 4, ecological processes operate consciously within a range of spatial scales between catchments in the landscape. However, when considering an individual catchment, it sets the pattern of natural structural elements such as *patches* and *corridors* on the catchment landscape. This can also be called the ecological footprint of the catchment. The opportunity to maintain the integrity of that ecological footprint can be obtained through a series of links called the *connectivity* of the catchment context. The existing ecological footprint can be unique between one catchment and another due to its natural existence or damage caused by other anthropogenic reasons, such as farming, agriculture, and urban development.

However, the existing structural footprint of the catchmentscape provides a holistic picture that assists and nudges planners to better understand current issues, and subsequently to search and think about alternative approaches to managing ecological processes during the urbanisation of greenfield environments. Figure 5 shows the proposed land use structure plan for the Warkworth urban area. Understanding the spatial relationships of these structural elements and the form and intensity of development appropriate to the environmental values within the catchment is important for planners in arranging urban land uses. The aim of using the catchmentscape is to help improve the linkages between the ecological landscape and the natural and man-made environments and to address key challenges of land use and the design and development of spatial planning strategies.

The conceptual framework of the development of catchmentscape is to take into account the fundamental aspects of the spatial and hydrological characteristics of the catchment in terms of landscapes and planning. Figure 6 gives a visual representation of the process framework for evaluating the catchmentscape. Protection and restoration of existing natural vegetation patches and corridors; and creating linkages between these ecological footprint through stream riparian buffers and green corridor forms dynamic ecological networks and contributes to the catchmentscape framework developed in the research.

This catchmentscape framework suggests that investigation of urban forms that minimises negative effects of the ecological landscape requires implementation of ecologically-based planning. These planning outcomes aim to achieve water-sensitive planning and design objectives. As Figure 6 shows, catchmentscape requires the aggregation of selected catchments/sub-catchments, taking into account the emphasis on 'connectivity' and other spatial structural elements of patches and corridors. The spatial analysis tools that use ArcGIS software are useful for analysing ecological patches and corridors and connecting those fragmented landscapes to strengthen stream riparian corridors or green belts that provide linkages in the catchmentscape (Figure 7). This contributes to managing long-term ecological integrity and outcomes of the catchmentscape within the catchment and sub-catchments. Investigating spatial elements using the three criteria of patch, corridor, and connectivity that are identified within the existing landscape matrix and defining the catchmentscape as a preferred spatial unit are considered imperative for the potentialities of applying ecologically-based planning and design.

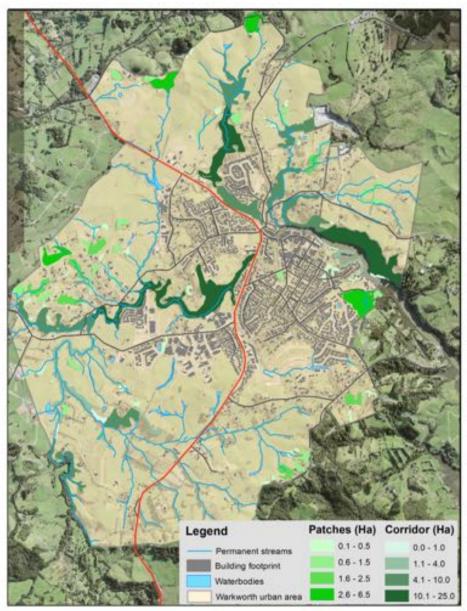


Figure 4. Patch-corridor landscape structures. Source: Author, based on LINZ Data Service, Auckland Council

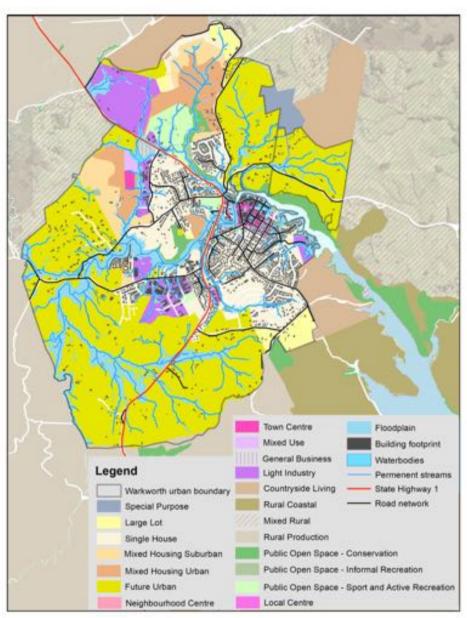


Figure 5. Existing and proposed landscape structures.
Source: Author, based on LINZ Data Service, Auckland Council

Catchmentscape

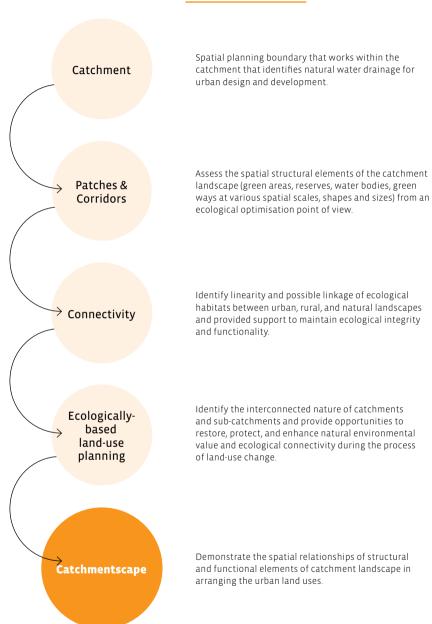


Figure 6. Conceptual framework for the new spatial planning unit of catchmentscape. Source: Author

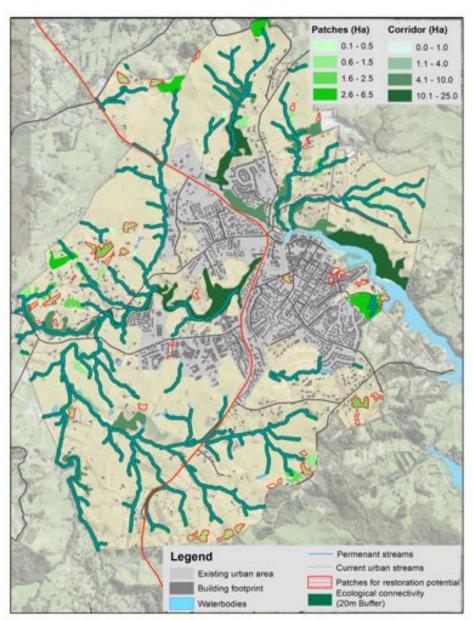


Figure 7. Catchmentscape for ecologically-based planning in the Warkworth urban area. Source: Author, based on LINZ Data Service, Auckland Council

Conclusion

This paper presents important insights into ecological implications in our urban catchments and proposes a novel hierarchical spatial unit called 'catchmentscape' that responds to ecological concerns with the appropriate integration of spatial planning to design and develop urban environments. This paper adopts an approach that considers stream catchment as a central element for developing locally-augmented strategies to integrate the ecological landscape into spatial planning. Considering the catchment basis approach and its relationships and connectivity between structural and functional elements of the landscape, the notion of catchmentscape was presented using the future urban area of Warkworth as a case study. Catchmentscape contributes to the existing knowledge of planning theory and practice and ecologically-inspired planning approaches by integrating patches, corridors, and connectivity of the catchment landscape. The catchmentscape concept can be a useful spatial planning unit and can be effectively explored in other regions or within urban catchments as part of urban planning, design, and management. Application of catchmentscape would improve ecological integrity by facilitating urban growth and thereby enhancing urban environmental quality in greenfield developments.

References

Ahern, J., Cilliers, S., & Niemelä, J. (2014). The Concept of Ecosystem Services in Adaptive Urban Planning and Design: A Framework for Supporting Innovation. *Landscape and Urban Planning*, 125, 254–259.

Barton, A.B. & Argue, J.R. (2007). A Review of the Application of Water Sensitive Urban Design (WSUD) to Residential Development in Australia. *Australasian Journal of Water Resources*, 11(1), 31–40.

Bell, S., Fleming, L.E., Grellier, J., Kuhlmann, F., Nieuwenhuijsen, M.J., & White, M.P. (Eds.) (2021). *Urban Blue Spaces: Planning and Desgin for Water, Health and Well-Being*. New York: Routledge.

Cook, E.A. (1991). Urban Landscape Networks: An Ecological Planning Framework. *Landscape Research*, 16(3), 7–15.

Corry, R.C. & Nassauer, J.I. (2005). Limitations of Using Landscape Pattern Indices to Evaluate the Ecological Consequences of Alternative Plans and Designs.

Landscape and Urban Planning, 72(4), 265–280.

Cortinovis, C. & Geneletti, D. (2018). Ecosystem Services in Urban Plans: What Is There, and What Is Still Needed for Better Decisions. *Land Use Policy, 70*, 298–312.

Dhyani, S., Gupta, A.K., & Karki, M. (2020). *Nature-Based Solutions for Resilient Ecosystems and Societies*. Singapore: Springer Nature.

Elliott, A.H. & Trowsdale, S. (2007). A Review of Models for Low Impact Urban Stormwater Drainage. Environmental Modelling & Software, 22(3), 394–405.

Fletcher, T.D., Shuster, W., Hunt, W.F., Ashley, R., Butler, D., Arthur, S., Trowsdale, S., Barraud, S., Semadeni-Davies, A., Bertrand-Krajewski, J.L., Mikkelsen, P.S., Rivard, G., Uhl, M., Dagenais, D., & Viklander, M. (2015). SUDS, LID, BMPs, WSUD and more – The evolution and application of terminology surrounding urban drainage. *Urban Water Journal*, 12(7), 525–542.

Forman, R.T.T. (2014). "Foundations", Land Mosaics: The Ecology of Landscapes and Regions (1995). In F.O. Ndubisi (Ed.), *The Ecological Design and Planning Reader* (pp. 217–234). Washington DC: Island Press.

Grose, M.J. (2014). Gaps and Futures in Working between Ecology and Design for Constructed Ecologies. Landscape and Urban Planning, 132, 69–78. Hawkins, V. & Selman, P. (2002). Landscape Scale Planning: Exploring Alternative Land Use Scenarios. Landscape and Urban Planning, 60(4), 211–224.

Morison, P.J. & Brown, R.R. (2011). Understanding the Nature of Publics and Local Policy Commitment to Water Sensitive Urban Design. *Landscape and Urban Planning*, 99(2), 83–92.

Naveh, Z. (2000). What Is Holistic Landscape Ecology? A Conceptual Introduction. *Landscape and Urban Planning*, 50(1–3), 7–26.

Naveh, Z. (2001). Ten Major Premises for a Holistic Conception of Multifunctional Landscapes. Landscape and Urban Planning, 57(3-4), 269-284.

Rahmayanti, H., Zajuli Ichsan, I., Oktaviani, V., Syani, Y., Hadi, W., & Marhento, G. (2020). Environmental Attitude for Smart City Technology: Need Assessment to Develop Smart Trash in Environmental Education. *International Journal of Advanced Science and Technology*, 29(3), 8374–8383.

Spirn, A.W. (1985). Urban Nature and Human Design: Renewing the Great Tradition. *Journal of Planning Education and Research*, *5*(1), 39–51.

Turner, M.G. (1989). Landscape Ecology: The Effect of Pattern on Process. *Annual Review of Ecology and Systematics*, 20(1), 171–197.

Turner, M.G. & Gardner, R.H. (2015). Landscape Ecology in Theory and Practice: Pattern and Process. New York: Springer.

Walmsley, A. (1995). Greenways and the Making of Urban Form. Landscape and Urban Planning, 33(1–3), 81–127.

Wu, J. (2013). Key Concepts and Research Topics in Landscape Ecology Revisited: 30 Years after the Allerton Park Workshop. *Landscape Ecology, 28*(1), 1–11.





The Levels of Availability and Access to Open Space and Its Outcomes on Health: The Case of Camden, London

Manasa Vinodkumar

Introduction

Today, urban green spaces, such as gardens, play areas, and suburban greenery, can promote physical and mental health, and reduce sickness and death in urban inhabitants by providing mental relaxation and motivating social unity, easing stress, supporting exercise, and reducing contact with air pollution, noise, and extreme heat (Takano et al., 2002). Urban green space can include publicly accessible areas with natural vegetation, such as grass, plants, or trees, and may include built environment features, such as urban parks while suburban, less managed areas, including woodland and nature reserves, tend to be found outside the city. Often social infrastructure is seen around urban green areas.

Green spaces comprise nearly half of London's surface area, equating to 31.69 sqm green space per person, of which parks (Figure 1) account for 16.13 sqm (Usborne, 2014). Green spaces are often used to provide controlled beneficial interventions for vulnerable groups such as young people at risk, persons living with depression, dementia or ill-health, and stressed workers. Interventions include creating pedestrian accessibility and creating or finding walkable areas in open, green spaces. For example, adolescents with behavioural or self-esteem issues spend weeks at a time in green spaces, which are then used as vehicles for reflection. Relevant psychological and behavioural improvements are frequently reported, such as enhanced self-esteem, self-efficacy, image, empowerment, control, self-confidence, and decision-making. For individuals living with dementia, interacting with green spaces can influence eating and sleeping rhythms, fitness and mobility, sense of comfort, self-confidence, and regulation related to enhanced social communication and a sense of fitting in.

London ranks a privileged 37th in the 2021 Cost-of-living Index rankings. Camden Borough, part of the city's centre, is an area that contains some of the most deprived wards and exhibits large health disparity gaps (MHCLG, 2019). These disparities are often influenced by socio-economic factors like housing, income, education, employment and so on that affects a healthy lifestyle. Camden's well-being measures go beyond access to medical facilities and include helping residents improve their social and physical health by giving them access to green and open spaces. The Camden Local Plan 2017 (SPI, 2017) refers to the availability of 4.3 sqm of green space per capita, which means 65.7 percent of homes in Camden deficient in access to local, small, or pocket parks. The Plan also outlines the intention of improving services and infrastructure.

As such, it is important to explore health impacts on the surrounding neighbourhoods and the measurable differences in access to green and/or open space within smaller neighbourhoods using spatial variables that account for local spatial configuration. This can be done through a series of tools and theories offered by space syntax analysis by identifying the impact of health values in regions of high social housing-residential density through metric step depth and catchment analysis to and from parks. This enhances the relevance of a study that can identify the multi-variables that influence usage of open and green spaces contributing to good health. Living in areas that offer mixed usage and easy connectivity, availability, and free access to all, can allow healthy networks. This study can be used to understand by certain areas within the same regions that have varying health levels. Thus, do people living in low deprivation areas have greater access to parks and streets with good walkability than those in low deprivation zones?

City Walkability: A Conceptual Overview

Walking is said to influence health. Based on studies interlinking urban morphology, land use location, and routes taken by users, good walkable areas are considered enablers of active neighbourhoods (Geddes & Vaughan, 2014). Street-level greenery can impact walkability, since, for example, people choose routes that are greener. Rapid urbanisation can deplete green coverage, which may have negative effects on residents' health and well-being (Yi et al., 2018). Studies on green space, urbanity, and health reveal show how these spaces in a 1 to 3 km radius or in local neighbourhoods can have positive impacts specifically in urban areas (Maas et al., 2006). Findings from Greater London boroughs reveal green spaces influence active travel (walking and cycling) and physical activity, and, therefore, health and mortality levels, which is studied against vehicular movement needs to encourage the creation of shared spaces (Sarkar et al., 2015).

The theory of cities as 'movement economies' (Hillier, 1996) derives from 'natural movement' (Hillier et al., 1993) that affects land use distribution across a city, which helps identify angular and metric attributes (Hannan & Freeman, 1977). The integration shows the sum of the shortest path between origin and destination. The higher its value, the likelier it is to become 'to-movement'. Choice shows the path overlap between origin and destination: the higher the value, the more likely it will be used as a through-movement path. These ideas are derived from graph theory describing the 'to and through movement potentials', i.e., configuration of streets and public spaces by users and how they transit within the streets of the city.

The physical attributes of a neighbourhood can affect the social 'behaviour' of its residents (Hickman, 2013). Therefore, as a result, not surprisingly, more of their social interactions occurred in open places (Sennett, 1992; Goodchild, 2008). The regions that are not centres have lower local and global choice at increasing radii values until they are consistent at global choice. This know-how can help decode the reasons for health level reports in different areas by understanding the position of activities within the community.

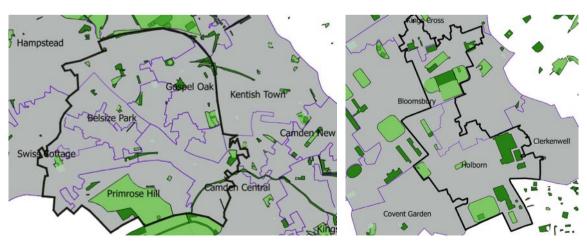


Figure 2. The boundaries of Study Areas 1 and 2 chosen for the study. Source: Author

Datasets and Methods

_

Study area and methodology

For the purpose of this study, two areas within Camden were selected (Figure 2). Study Area 1 is larger and bordered by metropolitan parks, whereas Study Area 2 has only pocket parks. These features were selected in order to exhibit the differences between the two zones in terms of availability and access. Hence, this research addresses the main question: What are the differences between Study Areas 1 and 2 in terms of their ratios of open to green spaces? However, access to social infrastructure (gyms, recreational spaces, shops, and activities for leisure) also plays a role in the reported health levels of a space. Therefore, the study will identify whether these facilities contribute to a measurable difference in health levels in areas 1 and 2 with the understanding that regions in study area 2 have more social infrastructure available.

The research follows a basic outline of using data within these areas mapped onto Geographical Information System (GIS) maps. Socio-economic data and Indices of Deprivation* are collected at the level of Lower Layer Super Output Areas (LSOAs) for both Study Area 1 and 2. In parallel, spatial models for these areas are prepared. The availability of open areas and green areas is measured against social infrastructure and social housing. This is done through angular segment analysis, metric step depth (from parks and social housing units) and catchment analysis of the areas around parks and social housing. Finally, the differences are noted and statistically tested, which is analysed with correlations and regression models.

Scope of study

The spatial accessibility and socio-economic parameters that are relevant to the impact study have been chosen by counts of social infrastructure, residential density of social housing, and number of green and open spaces available in the selected area. These are selected since they are important for comparing access and availability between areas of high and low health deprivation that can be traced back to areas of high or low residential density social housing units. Since health levels also suggest a significant connection to third places, the social infrastructure count of the region has been considered.

Mapping health

A question on self-assessed general health was included in both the 2001 and 2011 Censuses. In 2011, each member of a household was asked to rate their health in general. Unlike simple indicators based on the presence or absence of disease, an important property of the general health status indicator is that it includes the entire spectrum of health states ranging from 'good' to 'not good' health (Office for National Statistics, 2021). As a result, 81.2 percent of people reported their general health as either 'very good' or 'good' in London.

Angular segment analysis

An angular segment analysis was performed, the maps were stylised in QGIS. The spatial data were summarised to derive values of normalised angular integration (NAIN) and normalised angular choice (NACH) at selected radii for Study Areas 1 and 2 which are helpful for comparison. The distance measured is calculated through angular change due to movement from one segment to another, which

reflects people's actual movement patterns from space to space rather than intersections (Dhanani et al., 2017):

NACH = LOGCH+1/LOGTD+3 NAIN = NC^1 2/TD

Step depth and catchment analysis

Step depth shows the shortest angular path from a selected segment to all other segments within the system. The study aims to use the local centres identified as the selected segment to calculate step depth to all the segments in the system. Catchment analysis enables the examination of usage in a contained boundary to evaluate the walking accessibility of the chosen areas by the inhabitants. For both step depth and catchment analysis, a buffer zone is created depending on the intensity of the adjacent land use which helps define the buffer size through distance. The data is then merged with the segment, using a spatial join.

Availability ratios

To calculate availability ratios of each ward, social housing and social infrastructure in the region were mapped along with green and open spaces to compare the data for highly health deprived LSOAs and lesser deprived LSOAs. Each LSOA was given a number sequentially. The availability ratios for the following categories were observed:

- > Ratio 1: social housing (residential density): open spaces
- > Ratio 2: social housing (residential density): green spaces
- > Ratio 3: open spaces: green spaces
- > Ratio 4: green spaces: open space
- > Ratio 5: social housing: social infrastructure

Results

_

The values of NACH and NAIN were taken for R400, R800, R1000, R2000, R3000, and R5000 to show variations in the local and global scale. These are normalised measures so that they can be compared on various scales in different cities of different sizes.

Normalised angular choice

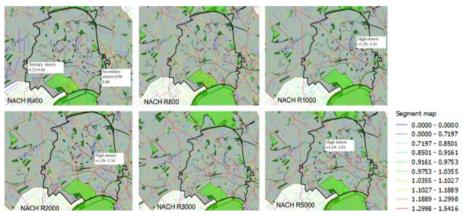


Figure 3a. Values for NACH R 400 to NACH R5000 for Study Area 1. Source: Author

Study Area 1: Normalised Choice value (Figure 3a) is higher on the high streets (Source-OSM) running across Camden and its perimeter at NACH R800, NACH R 1000, and NACH R 2000. There is high choice value on main streets (value = 1.29-1.54) and neighbourhood borders. However, at NACH R400 the value falls at the inner secondary (0.98-1.08) and tertiary street level (0.72-0.84).

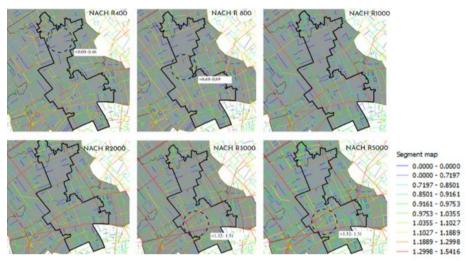


Figure 3b. Values for NACH R 400 to NACH R5000 for Study Area 2. Source: Author

Study Area 2: NACH R400 and NACH R800 indicated that the main roads cutting across the neighbourhoods have higher values and the inner tertiary routes have least choice, seen in blue (value = 0-0.89). NACH R3000 and NACH R5000 show high choice values of streets cutting through the centre of the neighbourhoods within the study area (1.10-1.46). The circled values indicate range of the region (Figure 3b).

Normalised angular integration

Study Area 1: NAIN R400 and NAIN R800 indicated that the main roads of the neighbourhood boundaries are highly integrated, and the inner routes are much less integrated (the value drops from 1.54 to 0.91). Near the neighbourhood boundaries

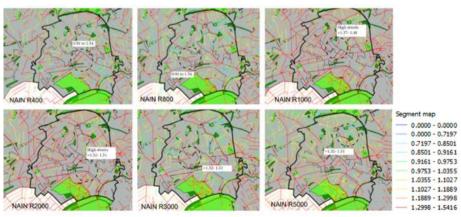


Figure 4a. Values for NAIN R 400 to NAIN R5000 for Study Area 1. Source: Author

at R1000 and R2000 the values are higher (between 1.32-1.51). NAIN R3000 and NAIN R5000 show a highly integrated street network in most neighbourhoods (slightly lower, 0.72-0.85 within the regions of a large park towards the north of Camden). Circled values indicate range of the region (Figure 4a).

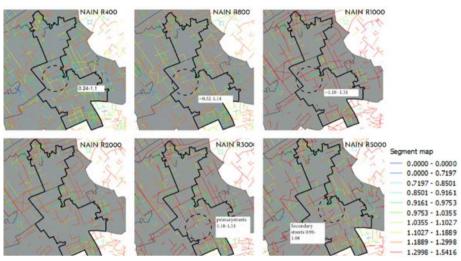


Figure 4b. Values for NAIN R 400 to NAIN R5000 for Study Area 2. Source: Author

Study Area 2: NAIN R400, NAIN R800 have very few streets with high integration (0.24-1.1) but in NAIN R1000, most streets are highly integrated within each LSOA. The values fall for tertiary street connections. NAIN R3000 and NAIN R5000 shows highly integrated primary and secondary streets. The circled values indicate range of the region (Figure 4b).

Catchment analysis

Study Area 1A: A spatial join was used to join the health deprivation data to the segment map (Figure 5a) and map it against Choice R1200. The centres of each LSOA have high choice (2-350) value, indicating the internal areas are well used. The areas near metropolitan open and green spaces have lower choice value (600-980).

Study Area 1B: A spatial join was used to join the park access points on the segment map and identify access to social infrastructure around them within a ten-minute walking distance (Figure 5b). This region has social infrastructure or third places centrally as opposed to near the boundary of the metropolitan park within each ward indicated by high values (82-194).

Study Area 2A: A spatial join between Health deprivation levels and Choice R1200 was made (Figure 5c). It is seen that less deprived areas lying in the northern region of the study area have higher choice values (3 -112) compared to the south, which has higher health deprivation rates and lower choice (846-972).

Study Area 2B: A spatial join was made between the access points of the parks in the study area on the segment map and the resulting data plotted against social infrastructure (4-91) available in the region (Figure 5d). All the wards have high access to social infrastructure towards the western ends of the study area from the parks.

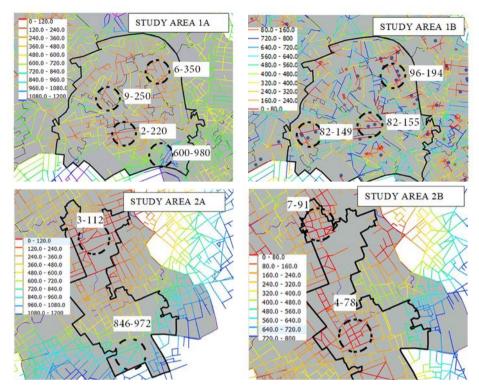


Figure 5a. Catchment analysis - Study Area 1A - Health deprivation and Choice R1200. Source: Author Figure 5b. Catchment analysis - Study Area 1B - Parks to Social Infrastructure R800. Source: Author Figure 5c. Catchment analysis - Study Area 2A - Health deprivation and Choice R1200. Source: Author Figure 5d. Catchment analysis - Study Area 2B - Parks to Social Infrastructure R800. Source: Author

Step depth analysis

A metric step depth analysis was conducted to railway stations in study areas 1 and 2 to compare access to transport within a ward unit surrounded by green and open spaces (Figure 6). Study Area 1: Railway stations lie along the high streets or very close to major road junctions. The centre of the study area also has a few stations, allowing access to the railway both in the centre and on the periphery. Study Area 2: The study area has access to railway stations at its western end. The values are higher (5- 122) around the railway station but fall at its periphery. The main roads connecting to high streets have low values (1541-1801).

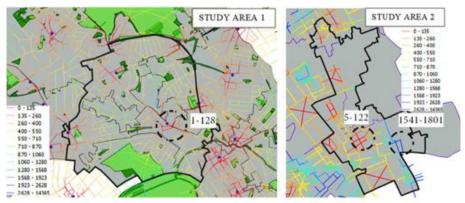
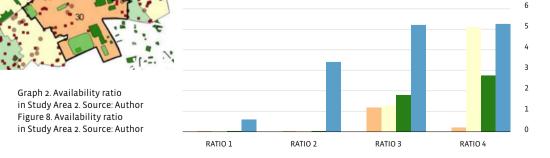


Figure 6. Metric step depth analysis: railway stations for Study Areas 1 and 2. Source: Author

Availability ratio

Study Areas 1 and 2 (Figure 7) were divided into their LSOA units and the values reported for health deprivation were plotted using Census data. The most deprived region lacks open and green spaces. The average value for each ratio was calculated based on the health deprivation colour for the region and shows the availability of open and green spaces and social infrastructure put side by side. Study Area 1 shows a higher overall ratio of open-green spaces because it is a larger area (Graph 1, Figure 7). However, the social infrastructure value is higher in Study Area 2 even though there are fewer parks, and it is not close to any large metropolitan area (Graph 2, Figure 8).

RATIO 2 RATIO 4 RATIO 1 RATIO 3 social housing (residential social housing (residential green spaces: social housing: density): open spaces density): green spaces open space social infrastructure RATIO 1 RATIO 2 RATIO 3 RED 0 0.3 0 ORANGE 0.088833333 0,037166667 YELLOW 0.137646683 3.472453163 1 962578281 GRFFN 1.24600887 3.213043684 2 733044357 BLUE 0,443122222 1,303197158 1,63137438 Graph 1. Availability ratio in Study Area 1. Source: Author Figure 7. Availability ratio in Study Area 1. Source: Author RATIO 1 RATIO 2 RATIO 3 RATIO 1 RATIO 2 RATIO 3 0.017 ORANGE 0.02 1.18 YELLOW 0,03 0,04 1,26 GREEN 0.032 181 BLUE 0,59 3,4 5,19



RATIO 4

0,62

0,789333333

2 45555556

2.733044357

1,649483311

RATIO 4

RATIO 4

0.2

5,1

2,75

5,25

1

0.5

Conclusions

From the segment map, catchment and metric step analysis, it is clear that the areas of high integration and choice have a local or pocket park within the neighbourhood they border. Highly integrated streets contain social infrastructure, lesser within the study area comparing to the centre. Access to social infrastructure along highly integrated streets within north and south wards is lacking compared to the central wards. As for the availability ratio, the regions in red (high deprivation) near the Belsize Park have almost no open and green spaces, while regions in blue (low deprivation) have higher values of open and green spaces, as well as social infrastructure values. Small deficiencies of access to open and green spaces are noticed along Haverstock Hill in Gospel Oak (east end) and the edge of Kentish Town's west end, with large deficiencies towards the southwest edge of Hampstead Town and Swiss Cottage. The results of linear regression indicate that out of the selected independent variables only residential density has a strong and positive Pearson's Correlation value (0.731) and the corresponding P value of .000 indicates that this correlation is also statistically significant.

Health depreciation is studied to identify direct impacts of the surrounding areas in Camden. It is understood that the extent of impact on health is limited to walking distance from parks, and the local communities lack extensive health benefits since no significant correlation was found. However, catering to people living in social housing units, particularly in deprived areas, by improving availability and accessibility of open green spaces and social infrastructure can improve health levels. For radii between 1,200 and 2,000 m from a park, it can be said with certainty that the health of residents increases closest to the park and decreases as one moves away. There are deficiencies in both study areas where not all residents have access to metropolitan parks within 3,200 m from home, district parks within 1,200 m, and pocket parks within 400 m from home. There is no significant advantage of living closer to a metropolitan park versus a local park. Study Area 1 has two major metropolitan parks around it and one inside it, while Study Area 2 has no metropolitan park nearby, but the health values of Study Area 2 show less deprived outcomes. Thus, it is advantageous to have any green or open space around. The limitation, however, is that the area chosen and the sample size for health deprivation values are lower in Study Area 1 than in Study Area 2, hence, no perfect comparison can be made. Though many people use open and green spaces for health benefits, access to a holistic combination of open-green and social infrastructure within a region could contribute to healthier, more inclusive communities.

Use of space cannot be attributed to just spatial variables, since many social and psychological factors, including motivation and personal tastes, and other local and global phenomena, such as bad weather and pandemics like Covid-19, constrain the use of green or open spaces. Even the time of day may be a factor. Also, only about 70 percent of the residents participated and reported health levels in the Census. Finally, for this study, only general health is considered, and other factors, such as various mental illnesses, provision of unpaid health care, and long-term disability were not considered.

_

Endnote

* The Index of Multiple Deprivation ranks every small area in England from 1 (most deprived area) to 32,844 (least deprived area) (Office for National Statistics, 2021). Deprivation 'deciles' are published alongside ranks. Deciles are calculated by ranking the 32,844 small areas in England from most deprived to least deprived and dividing them into 10 equal groups.W

References

Dhanani, A., Tarkhanyan, L., & Vaughan, L. (2017). Estimating pedestrian demand for active transport evaluation and planning. *Transportation Research Part A: Policy and Practice*, 103(C), 54–69.

Geddes, I. & Vaughan, L. (2014). Why Do People
Walk in the Suburbs? An Analysis of How Spatial
Configuration and Land Use Diversity Contribute to
Walkability. Working Paper 1/2014. London: University
College London.

Goodchild, B. (2008). Homes, Cities and Neighbourhoods: Planning the Residential Landscapes of Modern Britain. Aldershot: Ashgate.

Hannan, M. & Freeman, J. (1977). The Population Ecology of Public Organizations. *American Journal of Sociology*, 82(5), 929–964.

Hickman, P. (2013). "Third places" and social interaction in deprived neighbourhoods in Great Britain. *Journal of Housing and the Built Environment*, 28(2), 221–236.

Hillier, B. (1996). Space Is the Machine: A Configurational Theory of Architecture. Cambridge: Cambridge University Press.

Hillier, B., Penn, A., Hanson, J., Grajewski, T., & Wu, J. (1993). Natural Movement: or, Configuration and Attraction in Urban Pedestrian Movement. *Environment and Planning B*, 20(1), 29–66.

Maas, J., Verheij, R.A., Groenewegen, P.P., Vries, S., & Spreeuwenberg, P. (2006). Green Space, Urbanity, and Health: How Strong Is the Relation? *Journal of Epidemiology and Community Health*, 60, 587–592.

MHCLG (Ministry of Housing, Communities and Local Government). (2019). English Indices of Deprivation 2019 – Summaries at Local Authority Level. https://opendatacommunities.org/data/societal-well-being/imd2019/indicesbyla. Accessed on June 22, 2022.

Office for National Statistics. (2021). *Calculating IMD*. https://assets.publishing.service.gov.uk. Accessed on June 22, 2022.

Sarkar, C., Webster, C., Pryor, M., Tang, D., Melbourne, S., Zhang, X., & Jianzheng, L. (2015). Exploring Associations between Urban Green, Street Design and Walking: Results from the Greater London Boroughs. *Landscape and Urban Planning*, 143, 112–125.

Sennett, R. (1992). The Conscience of the Eye: The Design and Social Life of Cities. London: Faber and Faber.



Post-pandemic Urbanism for Healthy Cities: Evaluation of Urban Green Spaces in Izmir

Dalya Hazar Kalonya Aysun Aygün Oğur Sinem Ozdede

Introduction

Recently, the importance of urban open and green spaces has once again been highlighted by the Covid-19 pandemic. Restrictive policies designed to reduce infection have limited social interactions and concentration of activities. It is observed that the scarcities of public spaces and urban green spaces have been effective in keeping citizens in their homes due to the need for isolation. Yet, cities with more adequate open and green spaces have provided mobility to their citizens through individual transportation activities, such as pedestrian access and bicycle transportation, that permit less social interaction (Eltarabily & Elghezanwy, 2020; Ozdede et al., 2021). Accessibility to urban green spaces that maintain social distancing and a healthy environment has increased the resilience of citizens by reducing stress levels and providing physical activity. Accordingly, urban open and green spaces, especially urban parks and neighbourhood parks. have serious potential to create more liveable and healthy cities in the process of re-planning in the post-pandemic era. Designing resilient cities through revitalization of ecosystem services integrated with green infrastructure (GI) strategies is a requirement for preventing the negative externalities of the post-pandemic era. In this context, it is thought that accessible public open and green spaces, and bicycle and pedestrian routes at the neighbourhood scale should be standardised soon (Barbarossa, 2020; Ozdede et al., 2021).

According to Daily (1997), ecosystem services are the 'conditions and processes through which natural ecosystems, and the species that make them up, sustain and fulfil human life'. Ecosystem services maintain biodiversity, and the production of ecosystem goods represents a crucial part of the human economy. Ecosystem services are the actual life-support functions, such as cleansing, recycling, and renewal, and have many intangible and cultural benefits, which are the benefits people obtain from ecosystems and are co-produced by the interactions between ecosystems and societies (Daily, 1997; Balvanera et al., 2017). Thus, ecosystem services are vital to creating resilient and healthy cities, especially in the post-pandemic period within GI strategies. Emerged in Florida in 1994, the GI approach maintains that ecosystem services are crucial parts of urban infrastructure. The approach permits improvement and management of urban and rural biodiversity in the broader sense, improvement of air quality, water and ecosystem products and services, and connections between natural, semi-natural and urban systems, and maximisation of environmental, economic, and social benefits (IMM, 2017; EPA, 2019; Hazar & Ozkan, 2020).

It is crucial to constitute GI systems, adequate blue/green axes, and ecological corridors, especially for climate change mitigation strategies (e.g., heat island elimination, smart farming). The GI strategies cover areas such as industrial heritage, waterfront areas, green areas, transportation networks, military zones, squatter areas, and other possible areas for urban renewal (IMM, 2017; Hazar & Ozkan, 2020). Urban open and green space planning and design within GI strategies improve ecosystem services in urban areas, which are vital for creating resilient and healthy cities and increasing carbon absorption and heat island elimination capacity. Thus, along with climate change, the negative health impacts of Covid-19 restrictions may be mitigated by GI strategies and urban green space design that enables social distancing measures and accessibility within walking distance. The Covid-19 pandemic has highlighted the importance of urban green spaces and provided opportunities for future sustainable, resilient, and healthy cities. From this perspective, this study evaluates urban green spaces of central districts in Izmir in terms of accessibility and size as per capita units and proposes spatial

solutions for future planning practices. The evaluation was performed using the Post Pandemic Green Spaces (PP-GS) model, which reveals the required minimum size of urban green space per capita to sustain social distancing and healthy living conditions regarding Covid-19 transmission measures. The study reveals the deficiencies in terms of urban green spaces in Izmir and provides urban planning and design principles for sustainable, resilient, and healthy cities.

Urban Green Spaces in the Post-pandemic Era

Urban green spaces have been one of the most crucial parts of the cities in terms of ecosystem services and public spaces. The Covid-19 pandemic has drawn more attention to the importance of these aspects as it has triggered debates on urban areas, mostly focusing on public space and urban green area planning and design (Ozdede et al., 2021). The Covid-19 pandemic has also revealed the urgent need for the accessibility of public parks in terms of spatial equity (Ozturk & Senol, 2022). The primary criteria in planning adequate urban green space are known to be accessibility, number, and size. According to numerous studies, accessing green spaces should be possible within an average of 15-minute walking distance from settlement areas. Accordingly, neighbourhood parks should be within 20-minute walking distance (approx. 800 m), and urban parks should be within 30-minute walking distance (Manlun, 2003; Altunkasa, 2004; Aydemir, 2004; Onder & Polat, 2012).

Hierarchical distribution, size, quality of design in terms of active use, landscape design, materials (e.g., urban furniture), safety, and accessibility of multi-functional green spaces, such as children's playgrounds, neighbourhood parks, and sports areas, should be considered when planning and designing urban green spaces (Onder & Polat, 2012). Although the minimum amount of green space per capita varies among cities, the minimum size recommended by the World Health Organization (WHO) is 9 sqm (Kucukali et al., 2016). In addition, while accessibility is calculated by walking distance, public transportation routes and alternative modes of individual transportation (e.g., bicycle) to public parks are also important for accessibility.

Adaptation to the 'new normal' standards in urban space has become the priority agenda of post-pandemic urbanisation, which has directly affected the transportation preferences (e.g., individual over public transportation) and promoted new bicycle paths and pedestrianised streets in many cities (Roe & Whiteley, 2021). Also, it is emphasised that urban density can be diminished by designing walkable neighbourhoods, and that mass gatherings that increase the risk of contamination in public transportation can be prevented (Honey-Roses et al., 2020).

In some cities, Covid-19 restrictions have revealed the necessity of providing healthier environments that respect social distance regulations. Accordingly, new design approaches have been applied in green spaces aiming to provide safety in open areas by providing social distance regulations (e.g., Kordon social distance circles, Figure 1). Restrictive policies in response to Covid-19 have made the accessibility of urban green areas an important issue, especially in dense urban settlements. Thus, improving GI strategies has been an urgent requirement to ensure the spatial equity of residents. It is thought that temporary urban practices can contribute to GI strategies by creating temporary and/or movable parks (parklets), gardens, and green space designs as post-pandemic urbanism practices (Andres et al., 2021). Post-pandemic urbanism for urban green spaces requires both increased green space per capita and a holistic approach to the GI

system. Accordingly, natural and cultural landscapes such as rural areas, forests, pastures, and lakes can also be considered within GI strategies along with urban green spaces (Yucesu et al., 2017).

Previous studies have shown that the demand for urban open and green spaces has increased in the post-pandemic era. To preserve the quality of urban life, to create healthy cities, and to actively use green spaces, post-pandemic urbanism should focus on existing standards, multi-functional spatial distributions, accessibility, and continuity of urban green spaces.

Methodology

The study aims to understand the deficiencies of urban green spaces in four central districts of Izmir (Figure 4) by applying the the PP-GS model, which reveals the minimum amount of green space required per capita, based on social distancing principles that emerged during the pandemic (Ozdede et al., 2021). The study examines the required amount of green space and accessibility of neighbourhood parks and proposes spatial suggestions for the districts and neighbourhoods from the perspective of healthy cities. Urban open and green spaces were spatialised by evaluating the green spaces of Konak, Balcova, Narlidere and Guzelbahce districts. These districts have been chosen for being located on the waterfront and having variable population density.

The PP-GS model

The PP-GS model (Ozdede et al., 2021) is based on mathematical models used to quantify green space standards previously used by Gedikli (2002) and Aytatli (2013), according to the social distancing requirements and restrictions of the post-pandemic era. The model variables are 'social area size per capita', 'group size', 'distance between two groups', and 'intensity and frequency of use of the park'.

The model was constructed on a hypothetical neighbourhood of 10,000 people (with a medium density of 150 people/ha) with a walking distance of 400 m from a primary school and a neighbourhood park unit in the centre. The minimum distance between two people was determined as 2 m, considering the social distancing requirements of the pandemic era, and the group size was determined as two people and the distance between two groups was determined as 4 m for situations where more than two people are prohibited from being together in a public space (Figure 2 and Figure 3). In determining the intensity and frequency of park use, the frequency of physical activity (three times a week, half an hour) recommended by health authorities was taken as the basis.

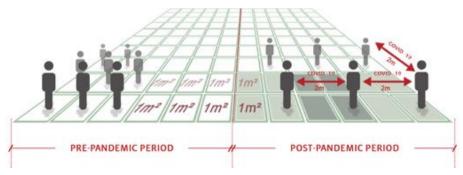


Figure 2. Minimum distance between two people before and after the pandemic. Source: Ozdede et al., 2021

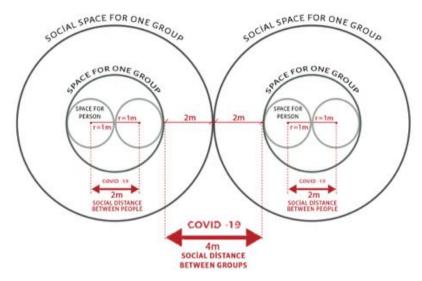


Figure 3. Social distance determined between individuals and groups. Source: Ozdede et al., 2021

According to the model, if everyone uses the neighbourhood park three days a week, the required size of neighbourhood parkland is 108,000 sqm in total, with a unit size of 10.8 sqm in a hypothetical neighbourhood of 10,000 inhabitants. When the size ratios among different levels of park determined in regulation are considered, the results revealed in Table 1 can be obtained for the total city.

In this context, it is revealed that the 10 sqm/pp standard specified in the regulations is insufficient in terms of quantity; and also, there is not any qualitative design guidance. Thus, urban open and green space standards need to be reconsidered in the post-pandemic era (Ozdede et al., 2021).

	NEIGHBOUR-HOOD PARK	CHILDREN'S PLAYGROUND	URBAN PARK	SPORTS AREA	TOTAL
TURKISH REGULATIONS	2	1.5	3.5	3	10
PP-GS	10.8	8.1	18.9	16.2	54

Table 1. The amount of green space per capita according to the PP-GS Model (sqm/pp). Source: Ozdede et al., 2021

Case study area and urban green areas evaluation approach

Izmir is the third largest metropolitan city of Turkey, located on the country's western coast, with a total population of 4,425,789, of which 2,959,355 people live in the central districts. In 2021, case study districts numbered 518,066 people including Konak, with a population of 336,545, Balcova, 80,513, Narlidere, 63,438, and Guzelbahce, 37,572 people (TURKSTAT, 2021). Konak is the former CBD of Izmir with a relatively greater population density, while the Balcova, Narlidere, and Guzelbahce districts are located on the southwestern growth axis of the city. The study area and central districts of Izmir are shown in Figure 4.

The urban green spaces in the case study area were evaluated in terms of their adequacy and accessibility for the PP-GS model requirement. Firstly, the existing total green space sizes was calculated using AutoCAD software and converted to the quantity of green space per capita (divided by neighbourhood populations) and used in the model comparison. The green space sizes of Izmir's central dis-

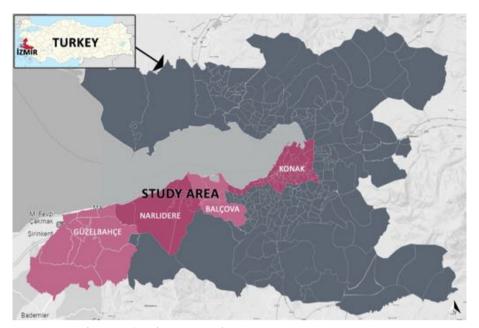
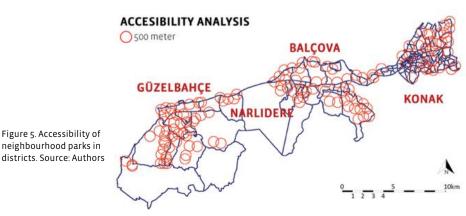


Figure 4. Case study area, Izmir, Turkey. Source: Authors

tricts were calculated using the 'area' tool in AutoCAD software on digital maps obtained from Izmir Metropolitan Municipality (IMM). Each neighbourhood was compared with standards produced by the PP-GS model in terms of their quantity of green space per capita and subsequently labelled as 'adequate' or 'inadequate'.

Secondly, accessibility was evaluated in terms of whether the size of each individual park could supply enough space for inhabitants within 500-metre walking distance. The population in a circle with a 500-metre radius was calculated using density data for each neighbourhood. In this calculation it was assumed that the population is distributed equally within the borders of neighbourhood. In this approach, the required minimum size of a park was determined for each neighbourhood. The parks larger or equal to a minimum size were retained, and the smaller ones were eliminated. To observe the spatial distribution of these parks and their range areas, 500-metre circles (accessible within walking distance) were drawn on a map (Figure 5). This map illustrates the spatial inequalities in the case study area.

Considering the often small, fragmented, and discontinuous green space morphology found in the 'park' layer, it is understood that passive green spaces such as 'refuges' are also included in the layers. However, it is understood that a clear distinction cannot be made without fieldwork; thus, all areas specified in the layers are included in the calculation.



Findings

The total surface area of neighbourhood parks has been determined to be 830,733 sqm within the district boundaries, which have a total population of 518,066 (TURKSTAT, 2021). These numbers were compared with those recommended by the PP-GS model for Izmir's central districts (Table 2). It is important to underline that green space data used for 'neighbourhood park' includes refuges and cemeteries, and that there is lack of data on children's playgrounds, urban parks, and sports area. The total area has not been calculated either because it represents the required park area for the whole city. The study is limited to the four central districts of Izmir.

	NEIGHBOURHOOD PARK	CHILDREN'S PLAYGROUND	URBAN PARK	SPORTS AREA	TOTAL
REGULATIONS	2	1.5	3.5	3	10
PP-GS	10.8	8.1	18.9	16.2	54
KONAK	9.1	-	-	-	-
NARLIDERE	14.1	-	-	-	-
BALCOVA	33.3	-	-	-	-
GUZELBAHCE	45.1	-	-	=	-

Table 2. The amount of green space per capita in the districts according to the PP-GS Model (sqm/pp). Source: Authors

According to Table 2, the Narlidere, Balcova, and Guzelbahce districts meet the minimum required green space per person proposed by the PP-GS model, while the Konak district does not. Of the four districts, Guzelbahce has the largest neighbourhood park area (45.1 sqm/pp) since it is located at the rural-urban fringe, and Konak has the smallest neighbourhood park area (9.1 sqm/pp) given that it is the former urban centre. It was observed that passive green areas (e.g., cemeteries) had been added to the 'neighbourhood park' layer, which limited the accuracy of green space evaluation (Figure 6).

The inclusion of passive green areas in digitised maps is very common in all green space digitalization of Turkey and, as such, it is believed that the real numbers are much lower than those revealed in the study. Also evaluated were density per person and green space adequacy per person at the neighbourhood scale. It was found that green area adequacy per person is lower than the PP-GS model standard (10.8 sqm/pp) in medium-high and very high-density areas, as well as in some low-density areas. At the neighbourhood scale, the number of inadequate (<10.8 sqm/pp) green areas is highest in the Konak district. The study prioritises the identified and mapped neighbourhoods for urban green space planning and design (Figures 7–11).

Accordingly, discontinuities and spatial inequalities are determined in terms of accessibility to urban green spaces in the neighbourhoods, especially in the Narlidere and Guzelbahce districts. Along with the lack of passive green areas leading to inadequate quantity and quality of urban green spaces, spatial inequalities in accessibility and discontinuities of urban green spaces are the main problems determined in the case study areas.



Figure 6. Examples of passive green areas in the case study area. Source: Authors



Figure 7. Density per person, Konak. Source: Authors

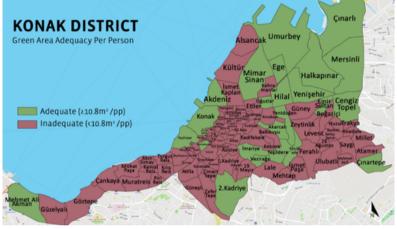


Figure 8. Green area adequacy per person, Konak. Source: Authors

Conclusions

The study reveals the urban green spaces of the four central districts of Izmir, namely Konak, Balcova, Narlidere, and Guzelbahce, in terms of accessibility and size as per capita unit. The Covid-19 pandemic has had significant consequences, especially in metropolitan cities, affecting the lifestyles of present and future generations. The pandemic has also revealed the inadequacy of urban open and green spaces in cities due to the risk of contamination in densely populated settlements. In addition, accessibility inequalities to parks in terms of size, quality, and spatial justice have become more visible.

Considering the needs that have emerged with the Covid-19 pandemic, the planning and design of urban green spaces that protect physical and mental health and the quality of life is crucial, and their evaluation from the perspective of healthy cities can guide GI strategies in post-pandemic urbanism. According to the findings, it is revealed that there is not adequate amount of urban green space per capita in the Konak district and there are spatial inequalities in accessibility to urban green spaces, especially in the Guzelbahce and Narlidere districts. Thus, the deficiencies of the districts in terms of open and green space systems can be summarised as: 1) the size of the urban green spaces is not sufficient in the Konak

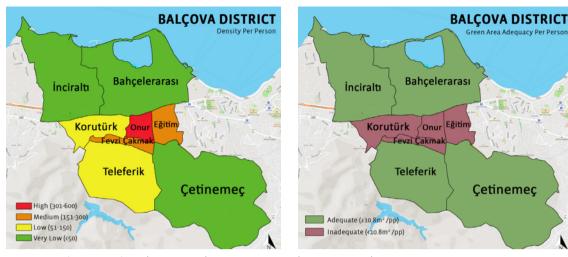


Figure 9. Density and green area adequacy per person, Balcova. Source: Authors

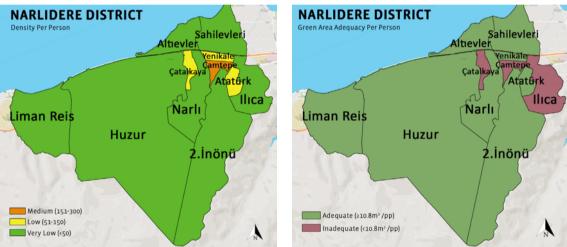


Figure 10. Density and green area adequacy per person, Narlidere. Source: Authors

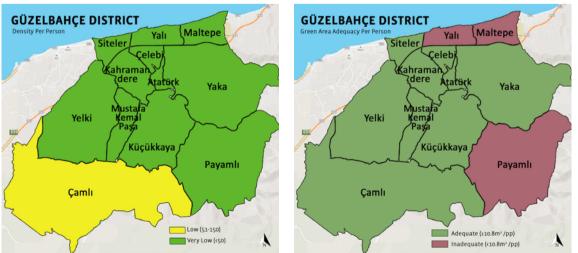


Figure 11. Density and green area adequacy per person, Guzelbahce. Source: Authors

district to meet the social distance rules; 2) passive green spaces are not suitable for the use of citizens are included in the green space systems; and 3) qualified green spaces exhibit a lack of continuity.

Regarding the deficiencies revealed by this study, the suggestions to guide future urban development strategies can be summarised as:

- 1. The green area per person standard in the regulation should be increased (10 sqm/pp is not sufficient.
- 2. Public spaces should be integrated into urban green system by designing pedestrian green paths, especially in dense urban areas like the Konak district.
- 3. The population within walking distance should be re-considered in determining the location and the size of parks in the plan.
- 4. Connections between parks should be provided by means of safe pedestrian and bicycle paths.
- 5. Contemporary design approaches such as 'tactical urbanism' can be influential for providing continuity in green infrastructure.

Moreover, waterfront neighbourhoods enjoy the advantage of having access to both natural open spaces and designed green spaces. However, the central areas of these neighbourhoods lack open spaces within walking distance and/or green connections to the waterfront. Higher density areas face greater difficulties in terms of urban green space per capita, yet the compactness of these neighbourhoods offers higher accessibility to adequately sized parks. The situation is quite different in low density areas, which districts have enough urban green space per capita as the population is relatively low. However, due to the nature of the fragmented settlement pattern of these districts, their accessibility to adequately sized parks is low. In other words, there are remarkably large parks in these districts, but they cannot serve inhabitants within walking distance, which creates spatial inequality.

From an ecological perspective, passive green spaces are quantitatively useful for the ecological sustainability of the cities as carbon sinks, which eliminates heat island effects and promotes biodiversity. However, urban green spaces have a great potential to become public spaces. For this purpose, both the quantity and the quality, active use, and accessibility of these spaces is important. Thus, urban green space planning and design in the post-pandemic era can help meet the needs of healthy cities and support ecological urbanism. All in all, the primary goal of Izmir should be to ensure the continuity of urban green spaces within current GI strategies, blue/green axes, and ecological corridors. Also, tactical and temporary urbanisation practices, including design elements such as pocket parks, pedestrian and bicycle paths, and accessible and qualified open and green space systems, can be designed throughout the city. It can be said that there are important advantages for post-pandemic urbanism in Izmir.

Each city has unique necessities in terms of its location, climate, population, and natural heritage. For example, Izmir, a city located on the Turkey's western coast, has natural open spaces that can be integrated with urban green spaces. The PP-GS model used in the study can be modified for other cities and/or settlements by considering the quantity and accessibility of the urban green spaces. In further studies, all 11 central districts of Izmir are projected to be comparatively evaluated for urban green space adequacy, continuity, and spatial justice in terms of accessibility within the necessities of post-pandemic urbanism. In addition, quality of design is another crucial factor to be measured in terms of active use, landscape design, materials, and safety. Multiple additional case studies and user surveys are required to evaluate the quality and active use of urban green spaces.

TOC

References

Altunkasa, M.F. (2004). Adana'nin kentsel gelisim sureci ve yesil alanlar (Urban development process and green spaces of Adana). In Adana City Council Environmental Working Group Individual Report. Adana: Faculty of Agriculture, Cukurova University.

Andres, L., Bryson, J.R., & Moawad, P. (2021). Temporary Urbanisms as Policy Alternatives to Enhance Health and Well-Being in the Post-Pandemic City. *Current Environmental Health Reports*, 8, 167–176.

Aydemir, S., Erkonak Aydemir, S., Sen Beyazlı, D., Okten, N., Oksuz, A.M., Sancar, C., Ozyaba, M., & Aydin Turk, Y. (2004). Kentsel alanlarin planlanmasi ve tasarimi (Planning and design of urban areas). Trabzon: Akademi Kitabevi.

Aytatlı, B. (2013). Erzurum kentinde kisi basina dusmesi gereken aktif acik ve yesil alan miktarinin matematiksel modelle belirlenmesi (Determination of active open and green space per capita required in Erzurum city with mathematical model) [Master thesis, Ataturk University].

Balvanera, P., Quijas, S., Karp, D.S., Ash, N., Bennett, E.M., Boumans, R., Brown, B., Chan, K.M.A., Chaplin-Kramer, R., Halpern, B.S., Honey-Rosés, J., Kim, C., Cramer, W., Martínez-Harms, M. J., Mooney, H., Mwampamba, T., Nel, J., Polasky, S., Reyers, B., Roman, J., Turner, W., Scholes, R.J., Tallis, H., Thonicke, K., Villa, F., Walpole, M., & Walz, A. (2017). Ecosystem services. In M. Walters & J. Scholes (Eds.), *The GEO Handbook on Biodiversity Observation Networks* (pp. 39–78). Cham: Springer.

Barbarossa, L. (2020). The Post Pandemic City: Challenges and Opportunities for a Non-Motorized Urban Environment. An Overview of Italian Cases. *Sustainability*, 12(17), 7172.

Daily, G.C. (1997). Introduction: What Are Ecosystem Services. In G.C. Daily (Ed.), *Nature's Services: Societal Dependence on Natural Ecosystems* (pp. 1–10). Washington DC: Island Press.

Eltarabily, S. & Elghezanwy, D. (2020). Post-pandemic cities-the impact of COVID-19 on cities and urban design. *Architecture Research*, 10(3), 75–84.

EPA (United States Environmental Protection Agency). (2019). *Green Infrastructure*. https://www.epa.gov/green-infrastructure. Accessed on July 10, 2021.

Gedikli, R. (2002). Kentlerde, kisi basina dusmesi gereken acik yesil alan buyuklugunun degerlendirilmesinde kullanilabilecek matematik model onerisi (Mathematical model suggestion that can be used to evaluate the open green area size per capita in cities). *Planlama*, 4(1), 62-76.

Hazar, D. & Ozkan, S.P. (2020). Urban Growth of a Mediterranean City from the Fringe Belt Perspective. In Space and Process in Architecture and Planning (Proceedings of ICONARCH IV – International Congress of Architecture and Planning) (549–564). Konya: Konya Technical University.

Honey-Rosés, J., Anguelovski, I., Chireh, V.K., Daher, C., Konijnendijk van den Bosch, C., Litt, J.S., Mawani, V., McCall, M.K., Orellana, A., Oscilowicz, E., Sanchez, U., Senbel, M., Tan, X., Villagomez, E., Zapata, O., & Nieuwenhuijsen, M.J. (2020). The impact of COVID-19 on public space: an early review of the emerging questions – design, perceptions, and inequities. *Cities & Health*, 5(1), 263–279.

IMM (Izmir Metropolitan Municipality) (2017). *Open Green Infrastructure Strategy of Izmir*. Izmir Metropolitan Municipality.

Kucukali, H., Kucukali, I., & Tasdemir, M. (2016). Sagligin yesil belirleyicileri: Parklar (Green Determinants of Health: Parks). Journal of Health Thought and Medical Culture, 38, 40–45.

Manlun, Y. (2003). Suitability analysis of urban green space system based on GIS [Master thesis, International Institute for Geo-Information Science and Earth Observation Enschede].

Onder, S. & Polat, A.T. (2012). Kentsel acik-yesil alanlarin kent yasamindaki yeri ve onemi (Urban opengreen areas in urban life and its importance). Seminar of Formation and Maintenance Principles of Urban Landscape Areas, 19, 73–96.

Ozdede, S., Hazar Kalonya, D., & Aygun, A. (2021). Pandemi Sonrasi Donemde Kisi Basina Dusen Kentsel Yesil Alan Ihtiyacini Yeniden Dusunmek (Rethinking the Need for Urban Green Space Per Capita in the Post-Pandemic Era). *Idealkent*, 12, 362–388.

Ozturk, S.P. & Senol, F. (2022). Do Spatial Development Plans Provide Spatial Equity in Access to Public Parks: A Case with a Residential Area in Karabaglar and Buca (Izmir). *Planlama*, 32(1), 132–142.

Roe, D. & Whiteley, J. (2021). Post-Pandemic Urbanism (A Discussion Paper on Planning and Urban Design Considerations for Cities During the Pandemic and After). St. Louis: City of St. Louis Planning and Urban Design Agency.

TURKSTAT. (2022). Izmir Population Statistics. https://www.tuik.gov.tr/. Accessed on February 20, 2022.

Yucesu, O., Korkut, A., & Kiper, T. (2017). Kirklareli Kent Merkezinin Acik ve Yesil Alanlarin Analizi ve Bir Sistem Onerisi (Analysis of the Open and Green Areas of Kirkareli City Center and a System Proposal). *Artium*, *5*(2), 22–37.

176



Green Space Attributes for Enhancing Health and Well-being

Mick Lennon Owen Douglas Mark Scott

Introduction

The Covid-19 pandemic has challenged assumptions on how we think about and use urban environments (McCormack et al., 2022; Ottoni et al., 2022; Lennon 2021; Guida & Carpentieri, 2021; Lai et al., 2020). With their movements restricted and many working from home, city residents sought health and well-being opportunities within their neighbourhoods (Officer et al., 2022; Scott, 2020; Mitra et al., 2020). While pre-pandemic research identified the importance of positive perceptions of green and open spaces for neighbourhood quality of life (Douglas et al. 2019; Olsen et al., 2019; Weimann, 2019; Farahani & Maller, 2018), the pandemic has laid bare the importance of proximity and access to high quality public green space for urban residents (Noszczyk et al., 2022; Venter et al., 2021; Ugolini et al., 2020).

The health and well-being benefits and the multifunctional services provided by greenspaces have been increasingly recognised in policy and planning practice at international, national, and local levels (Kim & Song, 2019; Hansen et al., 2019; WHO, 2016). The United Nations' Sustainable Development Goal 11 includes the target of providing universal access to safe, inclusive and accessible, green and public spaces by 2030 (United Nations, 2015). While such policy guidance clearly supports an emphasis on green space provision for population health and well-being, it does not provide detailed guidance for planning in terms of the specific attributes required to tackle lifestyle illnesses in multiple cohorts and respond to the localisation of lifestyles facilitated by hybrid working in the wake of the Covid-19 pandemic. This is partly consequent on the aggregation and homogenisation of different spatial typologies in much planning policy into a measure of so called 'green space', without further qualification as to the type or quality of such spaces (Douglas et al., 2017; Bell et al., 2014).

Yet, as Barton (2010: 97) argues, professional planners can take a jaundiced view of the exponential growth of expectations placed on them by a society desperate to find solutions to difficult problems in the built environment, such as how to plan our public outdoor spaces to enhance health and well-being. This paper responds to planners' need for a clear evidence-based approach to how to better plan public green spaces in our cities. This is achieved by drawing on the results of a household survey which was specifically designed to understand the use of outdoor environments by adults in urban and suburban contexts in the cities of Dublin and Waterford in Ireland. These two cities capture the experience of a booming medium-sized European national capital city with considerable inflow of investment and high levels of development pressure on green spaces (Dublin, Figure 1), and the contrasting experience of a smaller city serving as the main urban centre in an increasingly challenged region confronting investment outflows and population migration to other regions (Waterford). As such, the analysis presented below has relevance to urban and suburban contexts in both high performing cities at the centre of commerce, administration and culture, and more provincial cities facing social and economic difficulties.

Specifically, the findings pertaining to the reported use and use-desires of the outdoor environment are explored. Use and perceptions of local and nearby green spaces in three locations are examined – an affluent suburb and a suburb characterised by high levels of socio-economic deprivation in Waterford, and an urban centre in Dublin characterised by a mix of affluence and socio-economic deprivation. The empirical investigation focused on variation by life-course and by environment type. Although the survey was conducted before the pandemic, by collecting and analysing this information using a 'Where? What? Why?' formulation, it is possible to better understand how populations in different urban

contexts and at different stages in their adult life perceive and use the outdoor environment, and the potential implications of such perceptions and behaviours for their health and well-being. Thus, by better understanding the characteristics of favoured outdoor environments, planners can replicate such characteristics as a means of responding to user-desires, thereby encouraging more frequent and meaningful use of public open spaces in our cities.

Visits to Outdoor Environments

To elicit responses, a standardised interviewer-administered household survey questionnaire with a mixture of closed and open-ended questions was designed with a particular focus on nearby green spaces. The survey was divided into six sections: (A) you and the outdoor environment; (B) your outdoor activity preferences; (C) your local area; (D) your health and well-being; (E) household information; and (F) general questions about you. The survey booklet extended to 20 A4 pages, comprising 217 unique variables. In each of the suburban case study locations in Waterford, a random sample of 300 addresses was drawn from the address model of the An Post GeoDirectory, a complete database of every address in Ireland (Fahey & Finch, 2012). In the urban environment, an inflated random sample of 600 addresses was drawn on the basis that earlier research had recorded low response rates in urban environments, particularly in locations where secure apartment blocks predominate (Douglas et al., 2019). This procedure resulted in 298 questionnaires being completed overall, 204 in the suburban environment within nine days, and 94 in the urban environment within ten days.

VARIABLE	URBAN (N=94) (%)	SUBURBAN (N=204) (%)	
GENDER			
FEMALE	42.6	54.4	
MALE	56.4	45.6	
AGE			
18-34	53.2	21.6	
35-54	37.2	35.3	
55+	9.6	43.1	
ORIGIN			
IRELAND (INCL. NORTHERN IRELAND)	25.2	91.2	
ELSEWHERE	73.4	8.8	

Table 1. Sample statistics for each neighbourhood type. Source: Authors

Table 1 reveals substantial diversity between the urban environment types which would be reflective of the typical profiles of such environment types in Ireland. The respondent age profile in the urban case study site was substantially younger than the combined suburban locations, with over 50% of respondents being younger than 35 compared to just under 22% in the suburban environment. Indeed, 43.1% of suburban respondents were aged 55 or over, compared to just

9.6% in the urban environment. As well as being older, over 90% of respondents in the suburban environment indicated their origin as Ireland, versus only 25.2% of urban residents. This clearly demonstrates the need to acknowledge population composition when considering user desires for green and open space attributes.

The survey opened with the administrator defining an outdoor space as 'any area outside of buildings', before asking respondents what type of outdoor environments they use or visit regularly. Respondents could identify up to four outdoor spaces that they used or visited regularly.

Where?

Respondents were first asked to identify the outdoor environment type where they undertake outdoor activity. Across the total sample, 'a public park or green space' emerged as the most commonly used or visited type of outdoor space. Following this, a canal or riverbank emerged as the second most commonly visited outdoor space. Respondents were also asked to indicate whether their most visited outdoor environment was in their local area, where 86.9% responded in the affirmative.

Disaggregating these responses, the most visited outdoor environment type by 18–35-year-olds was 'a public park or green space', with over half of respondents in this age cohort identifying this environment type. This suggests the potential importance of green space hubs such as parks for this age group. For the 35-54 age group, 'a public park or green space' was also the most visited environment. However, combined responses for 'a canal or riverbank', 'a coastal area or beach' and 'a greenway' exceeded 'a public park or green space' as the most visited environment types. This finding suggests that this middle-aged cohort (35-54) is more varied in the type of environment they visit, with linear green/blue environments emerging as important. For the 55+ cohort, 'a canal or riverbank' and 'a public park or green space' were almost equally identified as the most visited outdoor environments, followed by a 'coastal area or beach' and 'own garden'. The emergence of 'own garden' suggests the importance of nearby spaces for those in the upper age cohort who may be less mobile. Accordingly, this suggests the potential appropriateness of creating accessible environments which facilitate light or moderate physical activity.

The type of environment where each cohort walked was found to vary by context. In the urban context, 65.1% of those aged 18–34 identified public parks as the outdoor environment where they walked. This was followed by streets, roads, and footpaths (27.9%). Similar proportions were identified for the 35–54 cohort in the urban environment: parks and green spaces (61.5%); and streets, roads, and footpaths (26.9%). These two age cohorts comprised 89.7% of urban respondents who were active outdoors. This highlights the particular importance of public parks and green spaces (in conjunction with streets roads and footpaths) as locations for walking in the urban environment (Figure 2).

In the suburban context, different preferences were recorded, with greenways and trails emerging as the preferred location for walking among the 18–34 cohort (35.1%). Streets, roads and footpaths were next (29.7%), followed only then by parks (21.6%). Given the local availability of parks in the suburban case study locations, this potentially demonstrates a preference among 18–34-year-olds for linear and looped walks integrated into the urban landscape as opposed to dedicated park provision (i.e., green space hubs). For 30.6% of suburban 35–54-year-olds, streets, roads, and footpaths were the environment types where walking took place, followed by parks (27.4%) and greenways/trails (17.7%). For the 55+ age group in the suburban context, streets, roads and footpaths (38.6%) were the most common



Figure 2. Poorly designed public urban green space in Dublin. Source: Authors



Figure 3. Poorly designed suburban urban green space in Waterford. Source: Authors.

environment for walking, followed jointly by parks (20%) and greenways (20%). These results affirm the central importance of streets, roads, and footpaths for activity across all age groups in the suburban environment. Furthermore, it highlights the potential importance of green networks as opposed to green space hubs for activity across all age cohorts. As such, it provides nuance regarding the use desires of different cohorts in different parts of the urban environment, thereby countering presumptions that all city residents value parks above everything else in the creation of health and well-being enhancing environments (Figure 3).

What?

Across the entire sample, walking (including dog walking) was by far the most popular activity undertaken in the outdoor environment. This was quite consistent across age cohorts. In the urban environment, 66.2% of respondents identified walking as their primary outdoor activity. This was followed by visits to the playground, with 20.5% of respondents aged 18–34 and 19.2% of 35–54-year-olds offering this response. This suggests the potential importance of destinations for children's play in addition to adequate walking routes for these cohorts. Here, respondents identified a secondary activity, with public parks specified by the majority in all age groups as the location where this activity took place, followed by streets, roads, and footpaths. Cycling (30.8%), running/jogging (23.1%), and socialising (23.1%) were identified as secondary activities for the 18–34 age group. For the 35–54 group, cycling (33.3%) and running/jogging (22.2%) were the key secondary activities identified. A negligible number of respondents aged 55+ in the urban environment identified a secondary activity.

In the suburban environment, walking was again the key recorded activity, with 81.7% of respondents identifying this as the primary activity they undertook outdoors. A total of 4.2% of 18–34-year-olds, 5.9% of 35–54-year-olds, and 2.3% of 55+ year olds identified visits to the playground as the activity they undertook in the outdoor environment. Here, 52 respondents identified a secondary activity. For the 18–34 and 35–54 cohorts, greenways and/or green routes/trails (including river and canal walks) were identified as the location where this took place. Cycling was identified by 50% of the 18–34 and 35–54 cohorts as a secondary activity that they undertook outdoors, dropping to 13.6% for those aged 55+. For this latter age cohort, socialising was an important secondary activity (27.3%), followed by another sport (22.7%), suggesting different use desires by different age cohorts in urban and suburban contexts.

Why?

Across the entire sample, 'quiteness', followed by 'green landscape character' were identified as the key characteristics that attracted respondents to their favourite outdoor environments. A preference for 'quiteness' indicates the role that many green spaces play as urban refuges from noise pollution and other urban stressors, which can be enhanced through effective landscape design. However, when compared across the urban and suburban samples, key differences could be identified according to age cohort. In the urban environment, 'green landscape character' (45.5%) was the most attractive characteristic for the 18-34 cohort. followed by 'quiteness' (22.7%). For the 35-54 cohort, green landscape character was also highly valued (33.3%), followed by 'quiteness' (29.6%). For the 55+ cohort, 'quiteness' was the most valued characteristic in the urban environment (42.9%). This suggests that, within the urban environment, significant value is placed on 'green character' which may well be perceived as lacking from their immediate residential environment, with 'quiteness' also being important, particularly for the 55+ age cohort. In the suburban environment, 'quiteness' was highly valued by all cohorts as a primary characteristic of their favourite outdoor environment - 18-34, 47.2%; 35-54, 51.7%; and 55+, 48.6% - substantially more than green landscape character, which was the second most highly ranked primary characteristic: 18-34, 13.9%; 35-54, 25%; and 55+, 31.4%.

Respondents were also asked to identify specific attributes, defined as 'additions and improvements', which would encourage them to use the outdoor en-

vironment. These ranged from streets, roads, and footpaths, to parks, greenways, and wilderness areas. Pre-defined response options were not provided. Instead, respondents were free to propose their own attributes in an open field, and these responses were subsequently grouped into 15 common themes. The table below categorises the responses and identifies the proportion of urban and suburban respondents who suggested each attribute.

ATTRIBUTE	URBAN (%)	SUBURBAN (%)
ENHANCED PEDESTRIAN INFRASTRUCTURE	28.7	43.6
IMPROVED PLAY FACILITIES FOR CHILDREN	9.6	21.6
MORE BINS, PARTICULARLY FOR DOG LITTER	10.6	20.1
ENHANCEMENT OF EXISTING PARKS AND GI	12.8	19.1
ENHANCED CYCLING INFRASTRUCTURE	4.3	9.8
IMPROVED STREET AND PATH LIGHTING	6.4	6.9
ADDITIONAL SEATING INCLUDING PICNIC BENCHES	4.3	3.4
ADDITION OF NEW PARKS INCLUDING DOG PARKS/AREAS	6.4	2.9
ADULT GYM EQUIPMENT	2.1	2.9
IMPROVED SPORTS FACILITIES	N/A	2.9
IMPROVED SECURITY	7.4	2.5
TOILET FACILITIES	2.1	2.5
ADDITION AND ENHANCEMENT OF GREEN ROUTES	3.2	N/A
CATERING FACILITIES INCLUDING COFFEE STAND	2.1	N/A

Table 2. Attributes for increased use of the outdoor environment. Source: Authors

Clear differences in responses emerged between urban and suburban environments, with a greater variety of attributes desired in the urban environment. This likely reflects the more heterogeneous profile of the inhabitants in this environment compared to the more homogenous profile of the suburban environment as recorded in the survey.

Planning Healthy Cities

In both urban and suburban environments, the enhancement of pedestrian infrastructure emerged as the most sought-after attribute which would encourage increased usage of outdoor environments. This includes the addition and enhancement of footpaths, pedestrianised areas, and pedestrian crossings, in addition to improved pedestrian signage and pedestrian safety measures, such as safety railings and traffic calming measures like speed ramps. Other attributes identified in both environment types included the enhancement of existing parks, including the extension thereof and the improved surfacing of walkways/cycleways. The addition of bins, particularly for dog litter, improved street and path lighting and more seating, including picnic benches, were also identified as

attributes which would increase the use of outdoor spaces. Other attributes, identified as important for the increased usage of the outdoor environment include improved play facilities for children, which was identified by over 20% of suburban and 9.6% of urban respondents. Similarly, enhanced cycling infrastructure was mentioned by both urban and suburban respondents. These findings supply greater nuance to our understanding of user-desires by clearly suggesting that some additions and improvements may be more effective in urban rather than suburban environments, and vice versa.

A notable finding across all age cohorts was the relative failure of 'sports fields' or dedicated 'sporting infrastructure' to emerge as the most visited environment type for a substantial proportion of respondents. Indeed, while 18–34-year-olds recorded the greatest proportion of primary visits to sports fields, this represented less than 5% of primary visits to outdoor environments for this cohort. However, this study did not include youth respondents (under 18), so this finding may well be exaggerated in the absence of views from the full life-course. It does, however, bring into question the tendency of open space policy and funding streams to focus on the provision of sports fields and other dedicated sporting infrastructure for health and well-being. Instead, for all age cohorts, key outdoor assets such as public green spaces (including city and town parks) and linking green and blue corridors (i.e., canals, riverbanks, coastal walks, greenways, etc.) emerged as the most visited environments (Figure 4). Based on our survey findings, in Box 1 we outline how this evidence translates to green space design principles.

Green space principles

- Accessible spaces with good links (pedestrian paths and cycleways) to nearby neighbourhoods
- A networked approach: emphasising green infrastructure networks (rather than isolated parks) can provide new opportunities for connecting existing and new green spaces and creating new linkages between urban and rural areas. Examples include greenways and linear parks, local greenways or cycleways that link to regional and national greenways, de-culverting watercourses to provide new blue corridors.
- Inclusive design, catering for local needs from young to old and all physical abilities. Green spaces that are designed to support very specific functions tend to attract limited groups of users
- Well managed and maintained, creating a high-quality environment: poorly managed spaces or vandalism prompt negative perceptions among potential users
- Multifunctional uses: examples include spaces that encourage active mobility, physical activity and sports, relaxation and tranquillity, and opportunities for social exchange (e.g., incorporate community gardens, encourage park runs etc)
- > Enhance urban greening through planting strategies that mitigate noise and air pollution and maximise local biodiversity gain and facilitate sustainable drainage (e.g., deciduous wooded and wildflower meadow areas)
- > Create multisensory restorative environments that help mitigate the psychological stresses of modern living through the provision of 'restive places for rejuvenation'.



Figure 4. An accessible, networked and multifunctional approach to public urban green space provision (Naas Road Local Area Plan: greening strategy: Dublin). © Áit-Place, Urbanism + Landscape, 2013

Conclusion

There is general scientific consensus that public outdoor space, and green space in particular, provides benefits for enhancing health and well-being, both physical and mental. However, the identified benefits have yet to be fully translated into actionable interventions to be implemented in urban and regional planning. To address this 'implementation gap', the analysis presented in this paper adopted a 'Where? What? Why?' formulation that enabled the probing of those reasons for use and non-use of existing public outdoor spaces, with a particular focus on green spaces.

The analysis presented above suggests that the planning of public green space should be underpinned by an evidence-informed approach that understands in greater detail how these spaces relate to diverse 'user' needs across different cohorts. This suggests that enhancing public green spaces as health promoting environments requires that consideration be given not only to proximity and accessibility of green space, but also the specific design attributes that afford different groups opportunities for healthy activities and how peoples' needs vary over their life-course (Douglas et al., 2017). As such, it is clearly important to understand the salient aspects of green space that have a bearing on health and quality of life for each cohort (Figure 5).



Figure 5. An inclusive, networked, multifunctional and restorative environment (Balbriggan Riverpark: Dublin). © Áit-Place, Urbanism + Landscape, 2020

The study found that high quality green spaces and linking pedestrian infrastructures were identified as key features for health and well-being for adults of all ages in both urban and suburban environments. Furthermore, 'quiteness' and 'green landscape character' were identified as the overriding characteristics of favourite outdoor environments. These findings are corroborated by research undertaken during the Covid and post-Covid era, which identified the importance of greenspaces for population health and well-being (e.g., Noszczyk et al., 2022; Officer et al., 2022).

The analysis reveals that different age cohorts in different contexts (urban/ suburban) value differently the attributes of public outdoor spaces. Hence, presumptions that ensuring proximity or access to green space might adequately addresses the challenge of healthy city planning are erroneous and may do little to encourage the more frequent use of such spaces. The study found that, while most respondents valued the opportunities that their local environments provided for walking and cycling, they were not fully satisfied with the current provision of pedestrian infrastructure and walking routes. The kind of provision that would increase their satisfaction and potentially their usage varied by environment type and age cohort. Hence, those involved in planning the public realm would do well to heed the need for greater sensitivity to a life-course perspective in the planning of healthy cities. More specifically, this study identified preferences among adults for a networked approach in the design of pedestrian routes in the urban and suburban environment and the need for a multifunctional approach to greenspace design which is context appropriate and responsive to local users' needs. While this study did not include children and youth, the wider literature would support a similar perspective whereby multifunctional spaces are also important to this cohort (e.g., Mitra et al., 2020). As such, this study provides some further direction for action as we negotiate new challenges in the planning of public green spaces posed by the intensification of their use resultant from the pandemic-prompted localisation of living, working, and recreating.

References

Barton, H. (2010). Strengthening the Roots of Planning. *Planning Theory & Practice*, 11(1), 95–101.

Bell, S.L., Phoenix, C., Lovell, R., & Wheeler, B.W. (2014). Green space, health and well-being: Making space for individual agency. *Health & Place*, 30, 287–292.

Douglas, O., Lennon, M., & Scott, M. (2017). Green space benefits for health and well-being: a life-course approach for urban planning, design and management. *Cities*, 66, 53–62.

Douglas, O., Russell, P., & Scott, M. (2019). Positive perceptions of green and open space as predictors of neighbourhood quality of life: implications for urban planning across the city region. *Journal of Environmental Planning and Management*, 62(4), 626–646.

Fahey, D. & Finch, F. (2012). *GeoDirectory Technical Guide* 9.4 (An Post/Ordnance Survey). Dublin.

Farahani, L.M. & Maller, C.J. (2018). Perceptions and Preferences of Urban Greenspaces: A Literature Review and Framework for Policy and Practice. *Landscape Online*, 61, https://doi.org/10.3097/L0.201861.

Guida, C. & Carpentieri, G. (2021). Quality of life in the urban environment and primary health services for the elderly during the Covid-19 pandemic: An application to the city of Milan (Italy). *Cities*, 120, 103038.

Hansen, R., Olafsson, A.S., Van Der Jagt, A.P., Rall, E., & Pauleit, S. (2019). Planning multifunctional green infrastructure for compact cities: What is the state of practice? *Ecological Indicators*, *96*, 99–110.

Kim, D. & Song, S.K. (2019). The multifunctional benefits of green infrastructure in community development: An analytical review based on 447 cases. *Sustainability*, 11(14), 3917.

Lai, K.Y., Webster, C., Kumari, S., & Sarkar, C. (2020). The nature of cities and the Covid-19 pandemic. *Current Opinion in Environmental Sustainability*, 46, 27–31.

Lennon, M. (2021). Planning and the Post-Pandemic City. *Planning Theory & Practice* (online first), https://doi.org/10.1080/14649357.2021.1960733.

McCormack, G.R., Petersen, J., Naish, C., Ghoneim, D., & Doyle-Baker, P.K. (2022). Neighbourhood environment facilitators and barriers to outdoor activity during the first wave of the COVID-19 pandemic in Canada: A qualitative study. *Cities & Health* (online first), https://doi.org/10.1080/23748834.2021.2016218.

Mitra, R., Moore, S.A., Gillespie, M., Faulkner, G., Vanderloo, L.M., Chulak-Bozzer, T., Rhodes, R.E., Brussoni, M., & Tremblay, M.S. (2020). Healthy movement behaviours in children and youth during the COVID-19 pandemic: Exploring the role of the neighbourhood environment. *Health & Place*, 65, 102418.

Noszczyk, T., Gorzelany, J., Kukulska-Kozieł, A., & Hernik, J. (2022). The impact of the COVID-19 pandemic on the importance of urban green spaces to the public. *Land Use Policy*, 113, 105925.

Officer, T.N., Imlach, F., McKinlay, E., Kennedy, J., Pledger, M., Russell, L., Churchward, M., Cumming, J., & McBride-Henry, K. (2022). COVID-19 Pandemic Lockdown and Wellbeing. Experiences from Aotearoa New Zealand in 2020. International Journal of Environmental Research and Public Health, 19(4), 2269.

Olsen, J.R., Nicholls, N., & Mitchell, R. (2019). Are urban landscapes associated with reported life satisfaction and inequalities in life satisfaction at the city level? A cross-sectional study of 66 European cities. Social Science & Medicine, 226, 263–274.

Ottoni, C.A., Winters, M., & Sims-Gould, J. (2022). "We see each other from a distance": Neighbourhood social relationships during the COVID-19 pandemic matter for older adults' social connectedness. *Health & Place*, 76(8), 102844.

Scott, M. (2020). Covid-19, Place-making and Health. *Planning Theory & Practice*, 21(3), 343–348.

Ugolini, F., Massetti, L., Calaza-Martínez, P., Cariñanos, P., Dobbs, C., Ostoić, S.K., Marin, A.M., Pearlmutter, D., Saaroni, H., Šaulienė, I., & Simoneti, M. (2020). Effects of the COVID-19 pandemic on the use and perceptions of urban green space: An international exploratory study. *Urban Forestry & Urban Greening*, 56, 126888.

United Nations (2015). Transforming Our World: The 2030 Agenda for Sustainable Development. New York: UN Publishing.

Venter, Z.S., Barton, D.N., Gundersen, V., Figari, H., & Nowell, M.S. (2021). Back to nature: Norwegians sustain increased recreational use of urban green space months after the COVID-19 outbreak. *Landscape and Urban Planning*, 214, 104175.

Weimann, H., Björk, J., & Håkansson, C. (2019). Experiences of the urban green local environment as a factor for well-being among adults: An exploratory qualitative study in southern Sweden. International Journal of Environmental Research and Public Health, 16(14), 2464.

WHO (World Health Organization). (2016). *Urban greenspaces and health: A review of evidence*. Copenhagen: WHO Regional Office for Europe.



Cultivating Culture towards a Healthy City Design: Learning from the Pandemic

Tayseer Khairy Shahzad Ahmed Malik

Introduction

Contemporary urbanisation patterns reveal that our cities are getting populated with people from rural backgrounds lured by infrastructural facilities and better living conditions. The rural-to-urban migration of people in an anticipation of the good life also brings a great deal of diversity to cities. Multicultural identities and the intermixing of faiths, religions, beliefs and convictions in urban centres give rise to inclusivity and mutual prosperity or become a cause of conflicts and chaos if not managed (Demikhov & Dehtyarova, 2020). Growing trends in the urban planning and design of cities have reached a point where planners, architects, city managers and, most importantly, their citizens begin to question planning paradigms and what they mean for an entity such as a city that is always flexible and adaptive yet holds a distinct identity (Mir, 2020).

Due to the Covid-19 pandemic and its manifold mpact on cities the world around, the concept of healthy city design has become an immediate agenda of governments and their allied agencies tasked with planning and managing city services, both in normal times as well as in health emergencies (Dagli & Dagli, 2021). When people face drastic mental health and well-being challenges, culture, an intangible aspect of everybody's identity, becomes essential for keeping spirits up in pandemic times. Culture has long been regarded as a vital aspect of designing cities sustainably and inclusively as it instigates human emotions marked by a set of beliefs and customs (UCLG Committee on Culture, 2011). The interconnection of culture and spatial planning pre-dates the growth of the scientific body of knowledge on urban planning and design (Kunzmann, 2004).

Against that background, this paper will discuss various examples of cultural factors (beliefs, attitudes, and habits) as tools for re-connecting and remaining engaged at the community level that are precursors to building bases for healthy city design. The paper will cite examples from Egypt and India during the Covid-19 pandemic to showcase the positives and innate success of culture as a driving force towards normalising the shift of urban planning towards healthy city design.

Physical and Mental Health Issues during Covid-19

Covid-19 has been a health emergency that has forced governments and city administrations to take precautionary measures to restrict the physical interconnection of humans and so prevent the spread of the virus (Arredondo, 2021). Lockdowns and home isolations or quarantine have been regarded as one of the most vital aspects of controlling the spread of the Covid-19 virus. Restrictions on physical contact have been adopted as the most stringent measures and have been enforced by lockdowns and mobility restrictions. Measures against Covid-19 were studied on a wide scale, with researchers and medical experts weighing their opinions to either justify the lockdowns or to pinpoint why lockdowns are not a long-term solution (Kharroubi & Saleh, 2020). The impact of Covid-19 on health protection has varied greatly, impacting health infrastructure, awareness of quarantine-based issues on individual health, and lack of public spaces in immediate vicinities of homes along with differences in age and gender (Sayed, 2020). Notably, lockdowns imposed to break the chain of infection tend to neglect the various psychological problems, such as adjustment disorders, depression, anxiety and panic disorders, apart from the various physical health issues (Eedara et al., 2022).

Studies and surveys done by Field (2020), Owens et al. (2022) and Fore (2020) documented an increase in the number of reports showing symptoms of stress, anxiety, depression and insomnia in adults before and after Covid-19. The disruption of the life routines of people has also led to a substantial increase in the use of alcohol and drugs. Having more free time due to the closure of schools and universities, business, and offices led to increased usage of electronic devices, to the point where internet-enabled mobile phones were regarded as the best pastime and a means of learning what was happening around the world over during the pandemic (Raj & Fatima, 2020). The closure of public parks and playgrounds, physical sports, gyms, and other institutions has led to various physical health issues due to a lack of physical activity. The impacts on physical health due to lack of open spaces and restricted access to nature have severely impacted the development of children: with no schools to attend and harsh quarantine rules imposed. children of various age groups suffered mentally and physically and were left confined within their homes (Reuge et al., 2021). With Covid-19 into its third year. data from the United Nations Children's Fund (UNICEF) show that, globally, 1 in 7 children have been directly affected by lockdowns.

Covid-19 has been a catalyst in highlighting the physical and mental health issues in people and has posed serious challenges for urban health experts around the world. The pandemic and its impact on health have raised questions regarding the spatial planning of our cities throughout the world (Kyriazis et al., 2020). Urban planning through the lens of urban health has emerged as a proactive thematic area that requires considerable funding and time for research and practical implication as a mitigation measure against possible future pandemic-like health disasters. The involvement of health as a driver of space configuration, design and construction of built spaces, and allocation of equitable open public spaces seems vital for the post-Covid-19 world.

Cultural Beliefs: A Cornerstone of Community Resilience

Culture has long been perceived as a tool of resilience in the community (Skevington, 2020). Indigenous knowledge and traditions passed through generations are aligned with the geographical and climatic factors shaping the lives of people. Culture is a part of the normal daily routine of people around the world. People of various religious and cultural beliefs practise activities individually and in groups at different hours of the day, sometimes connected with the lunar calendar or aligned with seasonal variations and agricultural practices (Rodin, 2014). Festivals and fairs of South Asia are famous for their integrated linkages to centuries-old traditions, events and even cities were designed to accommodate such large public gatherings. The health resilience of communities and individuals is a direct result of culinary customs, natural vegetation, and lifestyles, which have their roots in the cultural upbringing of the people of various geographical regions.

Although geographically and climatically different, both Egypt and India trace their roots to river-based civilisations. The Nile and the Indus were the centres of Egyptian and Indus Valley civilizations dating back thousands of years. The present-day cultures of Egypt and India boasts diversity and high significance of natural rivers and religious practices focused on ancient heritage and traditions (Kashdan, 2012). The cultural interpretations of both countries are documented and are a source of future resilience offering cuisine, heritage and traditions, and language and festivals. The impact of natural topography also plays a major role in shaping cultural connections between people. Festivals and social gatherings

were largely associated with agricultural practices, religious events and land-marks and were celebrated as community festivals enhancing mutual happiness and harmony.

Egyptian civilisation: a brief overview

According to Hamdan (1967), ordinary regional geography is the description of a place, the regional character is the philosophy of a place, and the study of the character of the region is the pinnacle of geographical studies. Therefore, studying Egypt's natural character to serve as the basis for Egypt's human personality is vital. The features of the natural Egyptian environment are determined by the Nile River, which penetrates the land of Egypt, dividing it into the eastern desert of Egypt and Sinai on the one hand and the western side (Hamdan, 1967). The Nile Valley is divided between the delta and the level, which, in turn, balances in a clear straight line between the north and the south, and correspond to two major seas in the north and east, i.e., the Mediterranean and the Red Sea, respectively. Any description of the geographical map of Egypt must consider this trio of natural lines (river - desert - sea) to form balance and diversity in the natural landscape of Egypt. This geographical nature, with its natural contradictions, has affected the characteristics of the built environment and the influence of man in the formation and adaptation of geographical nature and the ensuing urbanisation. Hamdan (2000) believes the best and most appropriate way to study human geography is to understand the spatial distribution of resources and the variation of the impact of the natural environment on human activity and behaviour, and study the manifestations and results of human action in modifying the environment and other aspects of highlighting the relationship between man and the environment. The Egyptian human envelope is separated by the Nile as the most important factor in the distribution of the population (Soliemal et al., 2020).

Egyptian urban homogeneity is the product of both natural and material homogeneity. The Egyptian society is cooperatively organised, and its interest and existence depend on solidarity and interdependence, as the village is the basic building unit of Egyptian society and the pillar of agricultural activity, which relied on man's connection with nature and spending his time outside his home, which in turn made him socially human and not isolated (Figure 1). Egyptian cultural unity is the heritage of both language and religions. For agriculture, the Egyptian depends not on rain but on irrigation (where the river overflows and irrigates fields, and harnessing this effect depends mainly on controlling the river in terms of understanding the seasons of drought and flood and people controlling the rules governing the equitable distribution of water) (Satoh & Aboulroos, 2017).

Indian civilisation: a brief overview

India, home to more than 1.38 billion people, boasts a rich and diverse cultural kaleidoscope. The geographical features of the country exhibit sub-continental elements including the Himalayas, fertile alluvial plains irrigated by perennial rivers, desert, plains, the Western Ghat mountains, and a vast coastline. The geographical features mean the lifestyle of the people responds to climatic variations and generate a more heterogenic belief system that emerges from a complex understanding of multiple religions. The historical journey of the country also manifests an amalgamation of different religions and belief systems that find their expression in architectural wonders across the country. More than 60 percent of the population of India still lives in villages and primarily depends on agricultural practices based on both rain and river water and according to Dey (2018) there is

a clear divide between urban and rural people in their perceptions of culture and its impact on the routine lifestyles of Indians. The religious practices of praying to the rain-god are still prevalent along with worship of the Ganges and Yamuna – two major rivers irrigating the vast alluvial plain of North India – as goddesses. The system of living in a extended family with sufficient housing space is being replaced by the new concept of nuclear families living in mid-rise and high-rise urban apartments as barely sufficient space to house all the inhabitants. One of the main aspects important for understanding the cultural characteristics of Indians is the celebration of festivals, which are considered shared events where the use of public spaces is predominant. Feasts and fairs are common sights in both urban and rural settings during the festivities across different religions.

Globalisation and commercialisation have been serious disruptors that have brought a wave of Western traditions, changing the lifestyle, clothing, food practices, and entertainment activities of Indians. Indian culture gives individual space to all religions and people to follow their respective traditions. The impact of healthcare decisions is also largely governed by religious pre-existing norms and the large influence of herbal medicines. The cultural upbringing and its impact on healthcare decisions can be understood from the work of Worthington & Gogne (2011), who highlight the role of religious practices and belief systems on care, caregivers, and patients during the primary phase of an illness. Various healthcare ecosystems find relevance amongst the Indian people and also integrate with the cultural practices and belief systems that focus on managing individual lifestyle, eating habits, sleep and work habits in alignment with religious writings (Basu, 1990).

Cultural Practices: An Incentive for Healthy Habits in Urban Environments

_

Egyptian stories

In Egypt, Covid-19 has been associated with fear and stress due to not knowing when the curfew will end and whether there will be a cure for the illness. Egyptians started to develop tools to cope with stress and find ways and practices to attain psychological resilience. This section describes some cultural practices that appeared during the lockdown.

Although the Egyptian Ministry of the Environment and the Governor of Cairo launched a green-roof initiative as early as 2019 to encourage planting roofs to reduce pollution levels and provide an eco-friendly use of space (Velazquez, 2020), before lockdown, the balconies, rooftops, and urban voids were in a sense abandoned or neglected spaces of the home. However, during the pandemic, many residents began to experiment with urban farming to grow small home gardens (Figure 2), as, as well as to join groups on social media to promote such activities and exchange knowledge and experience. Urban farming was considered a tool for developing habits that boost different aspects of mental health, too: some felt satisfaction for taking care of the usually neglected small open areas, whilst others enjoyed observing the continuous growth of plants. Ultimately, such activities encouraged positive thinking and a mental release.

Another popular activity during the lockdowns was to spend time outdoors in the neighbourhood flying homemade kites to celebrate the spring and Sham Ennessim, a religious national holiday in Egypt. This practice is a shared activity



Figure 2. Watermelon and tomato grown at home. © Amal Wagy, 2021

among different ages and genders. Many residents used their roofs for the largest or most beautiful kite competitions and promoted using social media to mobilise the idea. In many areas, neighbours of different ages and genders were able to remain connected socially and interact while keeping physical distance to avoid Covid-19 infection (Figures 3, 4). The sky became the public sphere where residents met, interacted, and connected. These practices have certain limitations, where residents of apartment buildings may confine themselves to their gated communities and may not be able to engage, whereas people living in traditional settlements of one- or two-storey houses with access to roofs can more easily engage in this community activity.

Ramadan, the holy month and the most spiritual event for Muslims, is well known as a month for devotion to God and charity to people in need, including sick people and poor families. During the Covid-19 lockdown, the informal sector was severely affected due to the curfew and restrictions on many activities, such as the movement of street vendors and the cessation of construction work. Many groups in the informal sector suffered greatly as a result. A regional donation campaign was organised to support and involve families working in the informal sector in Egypt. During Ramadan, Muslims attend religious lessons after prayer times inside mosques. But, due to the closing of mosques, Muslim groups used technology to overcome the restrictions and and disseminate culture like in the normal times of Ramadan, by gathering for lessons via Zoom or in online meetings.

During the lockdown, many adults engaged in birdwatching from their homes. As a positive impact of Covid-19, due to a drop in pollution and human activity during lockdowns, the environment flourishes and nature breathes. Egyptians in many areas observed new birds to the extent that events were held online to encourage documenting these phenomena and spreading knowledge about birds' names and their natural habitats (Figure 5). Such uses and interpretations of psychological resilience are contextually reflected in cultural practices seen in both urban and rural areas of either connecting with the sky or watching the birds. Such practices have been useful for interacting socially whilst observing physical distancing (Birdwatching from Home, 2020).



Figure 3. Flying kites in the Saft al-Laban district of the city of Giza, near the Egyptian capital. © Arabnews.com, 2020



Figure 4. Kites flying over Cairo during Covid-19 lockdown. © Hady-Ameen, 2020



Figure 5. Birdwatching from home (online event on April 30, 2020). © Sarah Rifaat, 2020

Indian stories

In India, governments have promoted entertainment-based resilience measures such as the airing of religious drama series, as well as healthy living habits involving exercise and yoga, to improve the physical and mental health of people. Also, religious influences on the lifestyles of people in India dictates healthy living and advise seeking medical aid only when ill. Thus, for the adherents of various religions, and predominately for the Hindu population, one of India's largest groups, wake-up calls from temples were considered a crucial measure in facing the pandemic. The early wake-up calls also helped people observe the custom of 'soaking' oneself with the rising sun as a way of greeting the sun-god under the name of Pranayam. Medically, this is linked with absorbing the rays of the rising sun to obtain vitamin D. After completing the Pranayam, people perform the other asanas of yoga to obtain health benefits. Religious places also perform morning prayers which are well integrated into the sleep cycle of people, thereby helping them maintain a healthy schedule.

The Covid-19 pandemic was a harsh reminder to the younger generation to resume good religious practices they had ceased to follow due to the pressures of day-to-day life. Covid-19 made people realise the importance of learning about and invest in a proper health-based lifestyle. The cultural manifestation of healthy living is reflected in the regular use of medicinal herbs by Indian people. 'Holy basil' or tulsi (Ocimum tenuiflorum) is a vegetable grown in kitchen gardens and as an indoor plant (Figure 6). It is considered sacred in Hindu philosophy and is a must in every Indian Hindu household, with the Hindu religion followed by more than 75 percent of the total population. The medicinal properties of holy basil enable it to be used in the treatment of respiratory, digestive, and skin diseases.



Figure 6. Tulsi or holy basil, commonly found in most of Indian households, has become central to a health-based lifestyle. © Nishtha Teberiwal, 2020

India is probably the only country where multiple forms of healthcare knowledge and systems of traditional and cultural practices are still prevalent (Payyappallimana et al., 2020). Ayurveda is an ancient medical knowledge system of preventive care that is more than 5,000 years old. This ancient science enables Indians to prepare home remedies and natural food supplements which boost immunity and enables people to live a healthy and safe lifestyle. Faced with a steep increase in Covid-19 infections, the Government of India under the Ayush Ministry promoted the use of homemade Ayurvedic medicines by people along with herbal doses for people quarantined in various government-operated facilities (Joseph et. al., 2021). Various successful cases were documented during 2020 and 2021 to assess the qualitative results of Ayurveda medicines as immune modulators. The faith of the people in the cultural aspect of Ayurveda was reinforced and Ayurvedic home-based remedies were extensively used by people all over the country.

Conclusion

Cities and public spaces respond to the needs and aspirations of the people. Modern work patterns and lifestyles before the appearance of Covid-19 reflected the pressures of day-to-day life, which reduced the observance of cultural practices. The Covid-19 lockdown forced a shift in this trend, which motivated people to seek cultural practices and inculcate habits aimed at enhancing individual and societal health. The need to design healthy cities for the future must incorporate cultural manifestations and practices.

As evident from the examples shown in this paper, the cultural aspects of managing health and well-being play a significant role in immunity to future pandemics. Medicinal values embedded in culture can be integrated with landuse planning to enhance the awareness and knowledge of the city-wide people. Developing healthy city design guidelines must evolve from the cultural and religious ties of the people so that a greater degree of acceptance of future cities can be inculcated within the citizens. Cultural practices are a source of resilience and community brotherhood, unity, and harmony. Using the principles of cultural tolerance and affinity to human brotherhood and integrating it with health and well-being will empower city planners and managers to share responsibility with the people, thereby sharing mutual accountability, which can cause more proactive behavioural change. The aspect of living with health and well-being must be the key conclusion of the cultural interpretations as shown in the examples described in this paper as against the concept of seeking medical help only when required. A healthy city design based on cultural knowledge and wisdom should provide a change in lifestyle that is based on healthy living.

TOC

References

Arredondo, A. (2021). Health Disparities and COVID-19. *Health Affairs*, 40(9), 1514.

Basu, A.M. (1990). Cultural Influences on Health Care Use: Two Regional Groups in India. *Studies in Family Planning*, 21(5), 275.

Birdwatching from Home. (2020, April 30). Home [Facebook page]. Facebook. https://web.facebook.com/events/1103427076697444/?active_tab=discussion. Accessed on July 11, 2022.

Dagli, N. & Dagli, R. (2021). Perceived stress during lockdown due to corona pandemic in Indian urban population: A questionnaire-based study. *Journal of Health Research and Reviews*, 8(1), 23–26.

Demikhov, O. & Dehtyarova, I. (2020). The city as a healthy lifestyle cluster: connection of public health policy and health culture formation. *Democratic Governance*, 25(1), 1–10.

Dey, D. (2018). Global Capital, Comprador Business Class and Urban-Rural Divide in India. SSRN Electronic Journal. https://doi.org/10.2139/ssrn.3095423

Eedara, B., Kaphle, S., West, S., Lopez, V., & Cleary, M. (2022). Will the Lockdown Blues Linger? Impacts of COVID-19 Lockdowns on Mental Health of Adult Populations. *Issues in Mental Health Nursing*, 43(6), 582–586.

Field, T. (2020). Stress and Sleep Disturbances During a COVID-19 Lockdown April 2020. *Psychology and Mental Health Care*, 4(5), 092.

Fore, H.H. (2020). A wake-up call: COVID-19 and its impact on children's health and well-being. *The Lancet Global Health*, *8*(7), e861–e862.

Gupta, A. & Coffey, D. (2020). Caste, Religion, and Mental Health in India. *Population Research and Policy Review*, 39(6), 1119–1141.

Hamdan, G. (1967). The Character of Egypt: A Study in the Genius of the Place (in Arabic). Cairo: Dar Al-Hilal Foundation Al-Silsilah

Hamdan, S. (Ed.) (2000). Gamal Hamdan: Studies on Sudan; Studies on Arab World; Studies on Africa (Collected Works, Part 2). Cairo: Foreign Cultural Information Department.

Joseph, S.M., Iyer, D.S., & Pillai, R.V. (2021). Ayurvedic Response to COVID-19 Pandemic in Kerala, India and Its Impact on Quarantined Individuals – A Community Case Study. *Frontiers in Public Health*, 9, 732523.

Kashdan, H.E. (2012). Religious Politics and Secular States: Egypt, India, and the United States. *Journal of Cultural Geography*, 29(1), 125–126.

Kharroubi, S. & Saleh, F. (2020). Are Lockdown Measures Effective Against COVID-19? Frontiers in Public Health, 8, 549692.

Kunzmann, K. (2004). Culture, creativity and spatial planning. *Town Planning Review*, 75(4), 383-404.

Kyriazis, A., Mews, G., Belpaire, E., Aerts, J., & Malik, S.A. (2020). Physical distancing, children and urban health. *Cities & Health*, 5(1), 83–88.

Mir, V. (2020). Post-Pandemic City: Historical Context for New Urban Design. *Transylvanian Review of Administrative Sciences* (Special Issue 2020), 94–108.

Owens, M., Townsend, E., Hall, E., Bhatia, T., Fitzgibbon, R., & Miller-Lakin, F. (2022). Mental Health and Wellbeing in Young People in the UK during Lockdown (COVID-19). International Journal of Environmental Research and Public Health, 19(3), 1132.

Payyappallimana, U., Patwardhan, K., Mangalath, P., Kessler, C.S., Jayasundar, R., Kizhakkeveettil, A., Morandi, A., & Puthiyedath, R. (2020). The COVID-19 Pandemic and the Relevance of Ayurveda's Whole Systems Approach to Health and Disease Management. The Journal of Alternative and Complementary Medicine, 26(12), 1089–1092.

Raj, U. & Fatima, A. (2020). Stress in Students after Lockdown Due to COVID-19 Thereat and the Effects of Attending Online Classes. *SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.3584220.

Reuge, N., Jenkins, R., Brossard, M., Soobrayan, B., Mizunoya, S., Ackers, J., Jones, L., & Taulo, W.G. (2021). Education response to COVID 19 pandemic. International Journal of Educational Development, 87, 102485.

Satoh, M. & Aboulroos, S. (Eds.). (2017). Irrigated Agriculture in Egypt: Past, Present and Future. Cham: Springer.

Sayed, A. (2020). Shortfalls to the Healthcare System

and Recommendations During the COVID-19 Crisis. *Public Health Open Access*, 4(1), 000153.

Skevington, S.M. (2020). Is Culture Important to the Relationship Between Quality of Life and Resilience? Global Implications for Preparing Communities for Environmental and Health Disasters. Frontiers in Psychology, 11, 1492.

Soliemal, N., Barghash, R.M., & Sawalhy, H.A. (2020). Current Situation of Water Use Efficiency in Egyptian Agriculture. *Egyptian Journal of Agronomy*, 42(1), 93–103.

UCLG Committee on Culture. (2011). United Cities and Local Governments (UCLG) Policy Statement: 'Culture: Fourth Pillar of Sustainable Development.' *Culture and Local Governance*, 3(1-2), 161–164.

Velazquez, A. (2020, May 28). Urban Gardening: The Rooftop Gardens of Cairo. *Greenroofs*. https://www.greenroofs.com/2020/05/28/ urban-gardening-the-rooftop-gardens-of-cairo/.

Worthington, R.P. & Gogne, A. (2011). Cultural aspects of primary healthcare in India: A case-based analysis. *Asia Pacific Family Medicine*, 10(1), 8.

ISOCARP Award for Excellence 2021



The ISOCARP Award for Excellence (AfE) rewards plans at the design stage as well as projects in progress or already implemented, and is open to a wide range of professionals and institutions operating in the domain of urban and regional planning. Participants are invited to submit different tools used in planners' daily practice: normative plans, strategic plans, urban projects, programmes, policies, research works, software, smart tools facilitating planners, etc. This prestigious award is bestowed in two categories: Grand Award and Merit Award.

In 2021, a record number of 22 eligible entries were submitted:

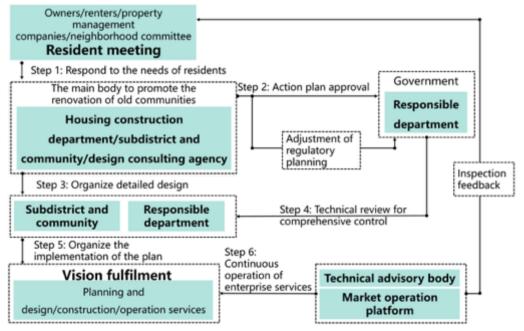
- Growing Resilience: A Comprehensive Design Framework for Decision-making, by ARUP International Consultants (Shanghai), Co. Ltd., China;
- 2. Mobility Development Strategy for the North Hanoi Smart City, by Oriental Consultants Global Co. Ltd., Japan;
- 3. The Post-Pandemic Revitalization Plan of Wuhan, by Wuhan Planning and Design Institute, China;
- General Planning and Design Control of Sanlin Waterfront, Shanghai, by ECADI, China;
- 5. Nur-Sultan 2030, by Space Syntax, UK;
- 6. Planning and Practice of "Internet+" Continuous Revitalization of the Decaying Villages in Northeast Guangzhou, by Guangzhou Urban Renewal Planning Institute, China;
- Wuhan Quantitative Analysis Platform for Planning, by Wuhan Planning and Design Institute, China;
- 8. Guideline for Regeneration of the Old Communities in Jiangsu, by Jiangsu Provincial Department of Housing and Urban-Rural Development and Jiangsu Planning and Design Group Co. Ltd., China;
- 9. China Grana Canal (Jiangsu Section) National Cultural Park Construction and Protection Plan, by Jiangsu Planning and Design Group Co. Ltd., China;
- 10. The Local Area Development Plan for Ezbet El Nasr, Cairo, by the Ministry of Housing Utilities and Urban Communities, Egypt;
- 11. North Dalat District Master Plan, by enCity, Singapore;
- 12. Ben Tre Strategic Vision Plan, by enCity, Singapore;
- 13. "Cities for All": Jiangsu Provincial Habitat Coordinated Quality-Promotion Action Plan, by Jiangsu Provincial Department of Housing and Urban-Rural Development & Urbanization and Urban-Rural Planning Research Center of Jiangsu, China;
- 14. ENOT Sustainable Development Strategy of Mexico, by the Secretariat of Urban Development, Mexico;
- 15. Participatory Community Planning through Socio-spatial Co-production: "New Qinghe Experiment" in Beijing, China, by the School of Architecture, Tsinghua University and Beijing Tsinghua Tongheng Urban Planning & Design Institute Co. Ltd., China;
- 16. Urban Design and General Control for the Northern Part of Yancheng, China, by ECADI. China:
- 17. Dubai Traditional Markets Project, by the Dubai Municipality, UAE;
- 18. Dubai Urban Plan 2040, by the Dubai Municipality, UAE;
- 19. Emancipatory Urbanization, by Dan Narita, Hong Kong;
- 20. Community Governance and Urban Renewal of Historical District through Multiactor Collaboration: A Case Study of Wuhan Tanhualin Historic and Cultural District, by Wuhan Land Use and Urban Spatial Planning Research Center, China;
- 21. Dongguan Great Bay: Seashore Landscape Corridor Area Urban Design, by IFADUR, France;
- 22. The Plan of Coastal Landscapes in Jiangsu Province, by Jiangsu Planning and Design Group Co. Ltd., China.

The evaluation process was demanding due to the quality of the entries and their diversity in terms of the challenges and issues they faced, their themes and visions, environmental issues, and, finally, their scale (from the regional to metropolitan to urban level). The jury, comprising four experienced professional planners – Charles-Edouard Delpierre (Belgium), Serin Geambazu (Romania), Tamara Maričić (Serbia), and Kate Holmquist (United States) as the jury president – bestowed two awards in the Grand Award category, as well as three awards in the Merit Award category.

2021 Grand Award for Excellence winners:

Guideline for Regeneration of the Old Communities in Jiangsu, by Jiangsu Provincial Department of Housing and Urban-Rural Development and Jiangsu Planning and Design Group Co. Ltd.

The Guideline for Regeneration of the Old Communities in Jiangsu presents a progressive alternative to top-down renewal models that often 'stop at demolition and reconstruction' and lead to displacement. Instead, these guidelines not only represent a framework for integrated renewal and regeneration to address spatial, social, and economic conditions in 170,000 old communities in Chinese cities and towns, but establishes a unique people-centred 'co-creation' planning and governance model that incorporates active resident participation in all phases of planning, participatory design, construction, and eventual self-governance. In Jiangsu Province, 6,274 old communities have already benefitted from these guidelines that balance the use of big data and strategic planning with community involvement and present a replicable innovative approach for equitable urban regeneration.



2021 Grand Award Winner: Guideline for Regeneration of the Old Communities in Jiangsu

Nur-Sultan 2030, by Space Syntax

The Nur-Sultan 2030 Master Plan takes a strategic, outcome-focused, and evidence-based approach to planning for climate extremes in Kazakhstan, and is centred on densification and improvement over greenfield development. The multidisciplinary design team and stakeholder engagement processes identified regeneration opportunities that integrate systems across multiple scales and respond to community needs. Leveraging smart planning methodologies like urban modelling and scenario testing, the Master Plan provides for long-term accountability and ensures that strategic renewal plans support the 2030 vision.



2021 Grand Award Winner: Nur-Sultan 2030 Master Plan

2021 Merit Award for Excellence winners:

Mobility Development Strategy for the North Hanoi Smart City, by Oriental Consultants Global Co. Ltd.

The Mobility Development Strategy for the North Hanoi Smart City boldly goes beyond multi-modal visions to present a model for zero-emission transportation and walkable urbanism. The project demonstrates the potential of smart technologies, presenting AI and smart systems as means of reinventing the public realm at both the systems level and the human scale, and subverting automobile dependence.

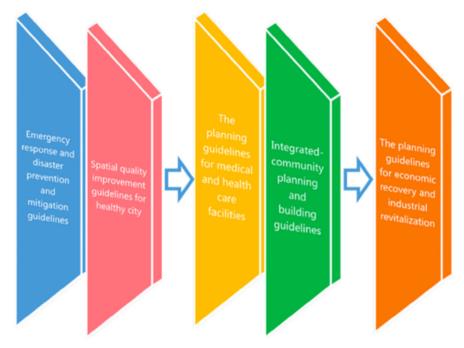
The Post-Pandemic Revitalization Plan of Wuhan, by Wuhan Planning and Design Institute

The Post-Pandemic Revitalization Plan of Wuhan rethinks community resilience, liveability, economic vitality in the context of urban pandemics, and presents a holistic plan for establishing a smart city planned around health infrastructure. The plan showcases an innovative comprehensive planning approach incorporating impressive stakeholder engagement, to tackle a timely global issue.

Participatory Community Planning through Socio-spatial Co-production: "New Qinghe Experiment" in Beijing, China, by the School of Architecture, Tsinghua University and Beijing Tsinghua Tongheng Urban Planning & Design Institute Co. Ltd.

This multidisciplinary university student investigation explores grassroots community development, engagement, and participatory planning methodologies and studies the potential for an integrated spatial planning and community revitalisation approach to address community sustainability and liveability. As a result, the entry proposes the innovative socio-spatial co-production mechanism, relevant for application in similar cases.

SDGs related to SDGs based Strategic Mobility **Mobility Themes** Upstream Policies and Plans in Hanol Improve safety 1. Safe & Healthy Hanoi Capital Construction Improve public health Lifestyle Master Plan 2030 and Vision Connectivity & Improving energy efficiency Accessibility Hanoi Transport Master Plan Low-emission technology 2030 and Vision 2050 3. Clean & Green Increase efficiency Mobility Increase financial viability Vision and Missions of NHSC Encourage innovation 4. Convenient & Inclusive Mobility NHSC Development Concept Service Improve accessibility Vision and Core value Promote equal access · NHSC Mobility Development Attractive & Integrate the diverse needs Vision and Mission Prosperous Promote modal shift Competitive & Reduce CO2 emission Innovative Technology

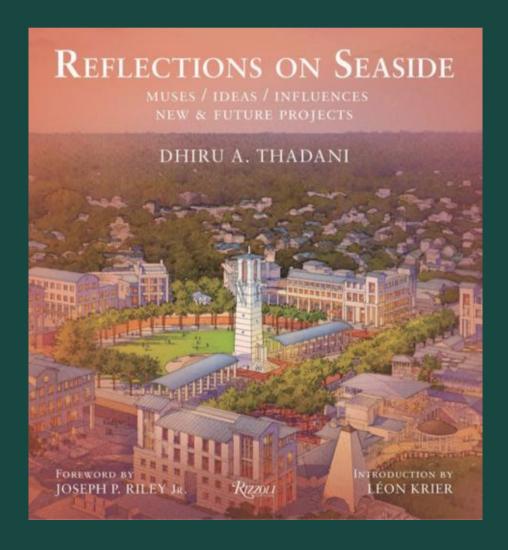


2021 Merit Award Winner: Post-pandemic Revitalization Plan of Wuhan



2021 Merit Award Winner: Participatory Community Planning through Socio-spatial Co-production: "New Qinghe Experiment" in Beijing, China

Gerd Albers Award 2021 Book Award



Reflections on Seaside: Muses / Ideas / Influences / New & Future Projects

by Dhiru A. Thadani Rizzoli International Inc., 2021, 848 pp, \$82.55

Book Review by Ana Perić

Reflections on Seaside: Muses / Ideas / Influences / New & Future Projects, the sequel to the acclaimed Visions of Seaside: Foundation / Evolution / Imagination / Built & Unbuilt Architecture (Rizzoli, 2013), for which its author, Dhiru A. Thadani, received the ISOCARP Gerd Albers Award in 2014, firmly succeeds in extending the merits of the last publication. Briefly put, in annotating the fortieth anniversary of the city of Seaside, Florida, the book attends to the history of the place and its current urban achievements, including an array of new development proposals and built projects, to finally provide guidelines for its future development. As such, the publication is considered the most comprehensive volume on the most influential town in the United States shaped by the principles of the New Urbanism movement.

What contributes to the comprehensiveness of the book is not only its content, including historical principles and placemaking tools and mechanisms, nor the period covered by the holistic analysis, spanning over forty years of Seaside's development. Its richness lies in Thadani's determination to compile an astonishing number of 125 essays. These pieces span a diverse range of topics, such as city art, the advantages, or lack thereof, of being a resort town, walkability, mixed uses, incremental development, and the town architect, to name just a few, and are written by some of the most influential proponents of New Urbanism, like Andrés Duany, Elizabeth Plater-Zyberk, Robert A. M. Stern, but also lay people. The mix of inputs covering both professionals' technical insight into various architectural principles and urban design techniques applied, as well as intangible factors like emotions, perceptions, and feeling about the place, makes the book an appealing reading for a wide range of readers interested in the complex story of Seaside's growth.

The book is divided into six core sections. The first one includes Foreword, Prologue, and Introduction by, respectively, Charles, the Prince of Wales, Léon Krier, one of the five main advocates of New Urbanism, and Joseph R. Riley Jr., one of America's most visionary local leaders, Mayor of the City of Charleston from 1975 to 2016, as well as a Preface and Background by Thadani, reflecting upon the history, evolution, and current development of Seaside. The core part of the book is composed of the four main sections on Muses, Ideas, Influences, and New & Future Projects, comprising 125 essays, 40 of them authored by Thadani. The last section is devoted to concluding words by Robert Smolian

Davis, Seaside's visionary developer, and Thadani, both pointing to the critical messages of *Reflections on Seaside*, hopefully serving as inspiration and guidance for the town's future evolution. The book is accompanied by extensive illustration, numbering almost 2,000 photos, sketches, and diagrams. Although the 848-page masterpiece can be read in different ways, for example, attending to the most significant current initiatives, particular projects, or the most influential contributors to Seaside's evolution, this review offers the most important messages from the four central sections of the book.

Muses, the book's first section, presents 22 reflections by the professionals who not only advocated New Urbanism, but also tested its principles on Seaside. In his concise 'flight through time', Steven W. Hurtt sheds light on the people, concepts, and ideas that emerged or were particularly influential between 1978 and 1984. The convergence of work by Colin Rowe and Léon Krier marked the denial of Modernist architecture and planning and, as such, found fruitful ground in the opus of Duany and Plater-Zyberk that combined the post-modern idea with American sensibility to build a new movement, New Urbanism, which was institutionalised some ten years later (in 1993). Duany wisely ponders on why New Urbanism, and Seaside as its exemplary spatial manifestation, flourished in the capitalist society of the United States, built not only by the ideas and virtues of New Urbanism, but also by developers. Similarly, in the last chapter. Thadani tackles the merits of large-masses endorsement of Seaside through the movie The Truman Show: not only was Seaside's reputation of a town 'too good to be true' promoted despite all the Modernist propaganda, but the wider acceptance made the place also boom financially.

Ideas, the second section, continues with 23 pieces that critically reflect on the design principles of Seaside, as well as the legacy the place made over time. In its opening chapter, Nathan Norris succinctly describes what differs Seaside from the contemporary developments in 1980s America. Seaside's 'Town Founders', Robert and Daryl Davis, did not only envision a neotraditional holiday town - they also decided to live in that town and collectively manage the needs of others with similar dreams. Accordingly, many critical principles, spanning building use, form, and management procedures, must have been considered to make Seaside the place people love. Among the first principles applied was the integrated mixed-use, resurrected in Seaside to secure convenience for everyone. Further, the new element of the so-called flexhouse or 'live-work unit' - nowadays considered a common practice, but so rare at the time - was introduced to contribute to even greater vibrancy. Regarding zoning, form-based codes, or as Duany and Plater-Zyberk defined it, the 'Urban Code', focused on the form of the public realm shaped by the buildings. Finally, as for the town management perspective, the concept of town architect in charge of supervising and guiding the character of the town was introduced, together with offering larger room to non-profit organisations as enablers of greater educational and cultural activities.

Influences, the third section, comprises 41 essays that comprehensively address Seaside's impact on urbanism, resulting in new spatial structures, neighbourhoods, and towns across America, including Beall Hill, Hampstead, New Town at St. Charles, and Seabrook. The closing chapters of this section situate Seaside within critical debates on how cities should evolve and for whom. Michael Mehaffy describes Seaside as a 'radical new approach', i.e., a counterweight to the Corbusian glorification of cities as machines for living and architects as avant-garde artists. David Mohney celebrates the ideas of New Urbanism as being coherently applied in Seaside yet pointing to the adverse effects of marketing campaigns on its development over time. Finally, for Daniel

Solomon, who admires all of Seaside's charms but does not hesitate to highlight its flaws, Seaside is simply 'out-of-category'. Among the shortcomings is a sobering one: 'none of the people who work in Seaside can afford to live there'.

The final core section, New & Future Projects, comprises 39 essays and is mainly an assemblage of Thadani's reflections on Seaside's current conditions and future development. The narrative starts with the Opus Building and spans across the relocated Post Office Building, praising towers, hotels, and educational facilities to offer a convincing story on the quality of the buildings that, above everything, 'speak' with their environment, hence creating public spaces for all. An excellent example in this regard is Quincy Plaza, recently transformed into a 'shared space'. Finally, great attention is devoted to other green and open spaces dispersed across Seaside, including the Gardens of the Forking Paths, the Chapel Memorial Gardens, Jaque Robertson Park, the Seaside Piazzetta, and Seaside's Central Square.

These four core sections provide a comprehensive overview of Seaside's development, highlighting some of the crucial ideas of New Urbanism, their manifestation in Seaside's urban form and zoning, the ways the town fought against the dominant modernist narrative of the time, but also some of the town's flaws, particularly noticed in recent years and probably jeopardising the future growth of Seaside. However, the book is a masterpiece due to a subtle yet omnipresent personal note by Thadani. His 'love affair with Seaside' is a golden thread that ties all the opinion pieces together, underpinned by the author's lived experience and contribution to Seaside's maturation. In Thadani's words: 'Seaside stands as evidence that good things take time, small is beautiful, democratic freedom can be achieved within a set of rules, and beauty is essential to uplift the human spirit'.

Reading this rich, well-structured, and massive piece was an informative but, above all, exciting journey through Seaside's historical development and contemporary challenges. Undoubtfully, Thadani must be lauded for all the effort put into compiling the book in terms of its organisation, writing, and illustration, but also for the virtue of bringing diverse topics together into a vivid and consistent narrative. However, the crucial value of the book lies in its final assessment of Seaside as a well-known and influential project of New Urbanism, as described by some of the movement's key protagonists. At first sight, the book seems to tackle an 'old topic', thus lacking relevance and originality, but that is an illusion: the book offers a new, mature perspective on Seaside, beautifully arranged and easy to absorb regardless of its quantity of material. As such, it is of tremendous academic and professional merit.

TOC



About the Authors

Pablo Acebillo Shahzad Ahmed Malik Aysun Aygün Oğur Ganesh Babu R.P. Heather Banerd Michael Chang Owen Douglas Marcus Grant Liz Green Dalya Hazar Kalonya Yerin Hwang Iresh Jayawardena Tongfei Jin Tayseer Khairy Ebru Kurt Özman Marianne Lefever Mick Lennon Kimberly Lum Wenjing Luo Lourdes Madigasekera-Elliott Bruno Monardo Stephen Olus Okeyo Sinem Ozdede Zeynep Özdemir Chiara Ravagnan Mark Scott Laura Thomas Manasa Vinodkumar Cheryl Williams Bei Yu Han Zou

Pablo Acebillo



Pablo Acebillo is an urban planner and the current Manager for Master Planning at enCity Singapore. He has international experience in large-scale urban developments as well as urban research on innovation ecosystems. His interests are the new geography of innovation districts and industrial hubs unfolding around the world and its impact on local economies. In his current capacity at enCity, Pablo oversees multiple projects ranging from 50 to 5,000 ha across Vietnam, Singapore and Middle East. His expertise lies in the integration of planning, design and transport infrastructures. In particular, he manages several industrial-township development projects and innovation districts, where design, land use planning, economic promotion and infrastructure design are synchronised. Prior to joining enCity, Pablo worked in both research and the planning consulting industry in Switzerland, United States, United Arab Emirates, Russia, and Singapore.

_

Shahzad Ahmed Malik



Shahzad Ahmed Malik is a researcher, architect and academic based in the Himalayan state of Uttarakhand in the north of India. He is a trained urban regeneration professional with a master's degree in Urban Regeneration from the Department of Architecture and Ekistics, Jamia Millia Islamia, New Delhi. Since 2019, Shahzad has been a member of the International Council on Monuments and Sites (ICO-MOS) and is part of the Emerging Professionals Working Group, ICO-MOS India National Scientific Committee on Risk Preparedness, and Shared Built Heritage. He is also member of the International Society of City and Regional Planners (ISOCARP), ISOCARP Community of Practice on Urban Health, and associate member of the Indian Institute of Architects (IIA), Uttarakhand chapter. His interests align with the post-2015 Sendai Framework on Disaster Risk Reduction, heritage-led regeneration, and urban planning.

_

Aysun Aygün Oğur



Aysun Aygün Oğur received her bachelor's degree from Middle East Technical University, Department of City and Regional Planning, and her master's degree from the same department of Istanbul Technical University. She studied at KU Leuven as a guest researcher in 2017–2018 and completed her PhD degree at the Department of City and Regional Planning at Istanbul Technical University in February 2021. Her PhD dissertation is titled 'Impacts of Climate Change on Tourism Sector in Turkey: Challenges and Future Prospects.' She currently works as Research Assistant at Pamukkale University, Faculty of Architecture and Design, Department of Urban and Regional Planning in Denizli, Turkey. Aysun does research in climate change adaptation and mitigation, strategic planning, urban resilience and regional planning and development.

_

Ganesh Babu R.P.



Ganesh Babu R.P. is an architect and urbanist. He has been working as a designer with PosadMaxwan since obtaining his master's degree. His previous experience in India included contributing to a seven-part, illustrated 'Complete Streets Framework Toolkit' that helped urban local bodies in India to design inclusive and liveable streets. His work has also involved capacity development of government agencies across India. To build on this experience, he decided to specialise in urbanism in Delft, where he gained research skills and knowledge in the fields of circular economy, energy transition, climate adaptation, spatial justice, and participatory planning. With PosadMaxwan, he has worked on a variety of projects at different scales, ranging from public space design and area visions to mobility transitions and regional development strategies. His strengths lie in systems thinking to understand problems holistically and connecting the dots towards integrated solutions that are sustainable in the long term.

Heather Banerd



As a sustainable designer, Heather Banerd brings an integrated, holistic approach to developing enduring solutions for complex urban contexts. Her work highlights the unique qualities of each project through context-specific design solutions, intelligent, forward-thinking urban and natural systems, striving through each project to bring the world a step closer to a sustainable and self-sufficient future. As a Senior Associate at enCity, Heather leads sustainable development initiatives and regenerative design principles in projects of all scales and programmes, designing healthier places for both people and planet.

Michael Chang



Michael Chang is a strategic leader on issues of place, environment, spatial planning and public health. Michael is a chartered town planner. He has led programmes on spatial planning and health, which includes writing guidance to support policy development and implementation, and working across government departments, agencies, local authorities, and built environment stakeholders. These programmes have helped contribute to a resurgence in interest on planning for and delivering improvements in public health, particularly in local government. He is a Visiting Fellow at the World Health Organization Collaborating Centre (WHOCC) for Healthy Urban Environments and undertaking a part time PhD at the University of Bristol researching points in complex urban development systems to maximise health outcomes.

Owen Douglas



Owen Douglas is a Member of the Planning Section and the European Union Project Officer at the Eastern and Midland Regional Assembly in Ireland. His research interests and professional practice centre on spatial planning, sustainable development, ecosystem services and population well-being. Owen was post-doctoral research fellow on the Eco-Health project at University College Dublin. Eco-Health supplied evidence and planning and design tools for health promoting environments across urban and rural space and across the life course (more at www.ecohealth.ie).

Marcus Grant



Marcus Grant is an urban designer and chartered landscape architect specialising in people and planetary health through place-shaping. As an academic practitioner, Marcus has a track record in making connections across disciplinary and societal silos. His work has informed spatial policy and the assessment of proposed schemes in light of their impact on health. He currently acts as an expert advisor to the World Health Organization (WHO) and United Nations Human Settlement Programme (UN-Habitat), for which he has developed international health guidance for urban and territorial planning. Marcus is Editor-in-Chief of international journal *Cities & Health* and former Deputy Director of the World Health Organization Collaborating Centre (WHOCC) for Healthy Cities.

Liz Green



Liz Green is Consultant in Public Health for Policy and International Health and the Programme Director for Health Impact Assessment (HIA) at the World Health Organization Collaborating Centre (WHOCC) on Investment for Health and Well-being in Public Health Wales (PHW). Liz is the Lead for the International Health Coordinating Centre in PHW. She is also Visiting Professor at the WHOCC for Healthy Urban Environments at the University of West of England, UK. Liz has extensive knowledge, understanding and practical application of 'Health in All Policies' and spatial planning and provides training, advice, and guidance about HIA and other impact assessment processes.

Dalya Hazar Kalonya



Dalya Hazar Kalonya received her bachelor's degree from Izmir Institute of Technology, Department of City and Regional Planning in 2009, her master's degree from Istanbul Technical University, Urban Design Interdisciplinary Program in 2012, and her PhD from Izmir Institute of Technology, Department of City and Regional Planning in 2018. Dalya is currently Assistant Professor at Pamukkale University, Faculty of Architecture and Design, Department of Urban and Regional Planning in Denizli, Turkey. Dalya does research in urban planning, urban design, urban morphology, rural planning, commons, gender and local sustainable development.

Yerin Hwang



Yerin Hwang's background in East Asian political economy studies has equipped her to apply forward-thinking governance concepts to an understanding of the context of socioeconomics and needs of the people. A Master of Urban Planning from the National University of Singapore, she brings interdisciplinary approaches to urban problem-solving with high cultural sensitivity. Yerin's interest in planning ranges from human scale to regional level to design of high-performing and liveable cities. As an Associate in Urban Planning at enCity, her expertise includes land use planning and urban design. Before joining enCity, Yerin conducted social and economic research on urban studies and participatory design through community engagement.

_

Iresh Jayawardena



Iresh Jayawardena is Lecturer in Urban Planning attached to the School of Architecture and Planning at the University of Auckland. Iresh is an Associate Member of the New Zealand Planning Institute (NZPI) and Chartered Member of the Institute of Town Planners Sri Lanka (ITPSL). Iresh's planning experience spans academic, industry, and international contexts in both New Zealand and Sri Lanka. Following completion of his PhD in 2018, Iresh worked as a practical planner at Auckland Council and held several positions across planning departments. Iresh's practical planning involved working towards improved freshwater management and environmental results through planning and technical advice for various Auckland development planning projects. Iresh's current research includes application of lessons learned from his practical planning and specialises in ecologically-based planning approaches, planning for climate change and impact adaptation, sustainability, environmental ethics and governance issues.

_

Tongfei Jin



Tongfei Jin is a PhD candidate in Urban Design at the University of Sheffield. She graduated from Beijing Forestry University with a BE degree in Urban Planning and received her MA in Urban Design from the University of Sheffield in 2018. After obtaining her master's degree, she took a gap year and interned with the Beijing Municipal Institute of City Planning and Design to explore community regeneration. Her research currently focuses on the definition, development and impact of community resilience in the process of urban and community micro-regeneration in China, especially in residential historic districts, and the co-production procedure as well as multi-stakeholder collaboration in urban regeneration.

Tayseer Khairy



Tayseer Khairy is a PhD researcher at the Urban and Regional Planning Department of the Faculty of Engineering, Ain Shams University. She is the Founder and Director of WE, Co-Design Studio, a cooperative design platform. She is guided by her passion for participatory planning and well-developed skills in contacting community members and local administrative bodies, as well as substantial analytical capabilities. Tayseer gained extensive experience working for more than twelve years with NGOs on different community and urban development projects related to upgrading poor urban areas, heritage, and conservation, planning for refuges, social infrastructure, human development projects, design for sensitive areas, environmental research, climate change adaptation initiatives, education and innovation, training, and capacity-building.

Ebru Kurt Özman



Ebru Kurt Özman is a PhD candidate in Urban Planning at the University of Amsterdam. Her research investigates the relationship of entrepreneurial governance, state entrepreneurialism and re-politicisation of policy networks with the 'mega' urban regeneration in Istanbul, Turkey. She currently works as researcher on the WHIG (What is Governed in Cities?) Project. She is also trainer at the Green Certification for Buildings and Settlements YeS-TR Training Program in Turkey. She also coordinates organisational and conceptual outreach activities as a member of the Urban Governance Research Network (UGoveRN). Ebru holds an MSc in Regional Planning and a BSc in Urban and Regional Planning from Istanbul Technical University. Her MSc thesis, evaluating how local economic development indicators are perceived and prioritised by different institutional structures in the regions with various socio-economic development levels, received the Best Thesis Award from the Living Cities Platform (Izmir, Turkey) in 2020. The PhD research framework she developed was awarded the Postgraduate Thesis Support Grant by the Marmara Municipalities Union Urban Policy Centre, Istanbul.

Marianne Lefever



Marianne Lefever approaches urban development from a strong systems thinking perspective across different contemporary transitions. Through her natural interest in technological development and foresight, in her projects she investigates how new technologies and trends can have an impact on the use of space and the liveability of cities. This is supported by her more than thirteen years of substantive expertise on climate change, resilient design, renewable energy, and healthy city design. Marianne obtained her master's degree in Architecture from Sint-Lucas in Brussels, where she graduated cum laude in 2007. Throughout her career in Europe and North America, Marianne has been able to approach urban development from different perspectives, both

as an engineer, and a designer and from the private development market, as well as through the public sector through her close cooperation with numerous government agencies. She is always looking for integrated system solutions and the implementation of new innovations to make our cities healthier and more liveable.

_

Mick Lennon



Mick Lennon is Associate Professor in the School of Architecture, Planning and Environmental Policy, University College Dublin. His work focuses on the intersections between planning and environmental policy, with a particular emphasis on green-blue infrastructures, sustainable communities, climate change adaptation and cultivating resilience in the context of environmental transitions. Mick was a practicing town planner for several years prior to entering academia. This included experience working in the public and private sectors, both nationally and internationally in policy formulation and development management roles.

_

Kimberly Lum



Kimberly Lum is an urban planner with a background in planning and human geography. She has a passion for context-sensitive planning and envisioning spaces for high-quality lived experiences. As the world continues to urbanise and cities increasingly shape human experience through form and function, she aims to be part of a driving force in creating liveable, equitable, and sustainable cities where people from all walks of life can thrive. Kimberly has experience in urban research and land use planning. At enCity, she works on strategic planning and master planning projects in Singapore and Vietnam. She has an educational background in Urban Planning from Harvard Graduate School of Design and Geography from the London School of Economics.

_

Wenjing Luo



As a national registered urban planner working with Wuhan Planning and Design Institute (WPDI) in Wuhan, China, Wenjing Luo has participated in nearly a hundred planning practices and taken charge of a broad variety of projects, ranging from urban strategic planning, master planning, industrial planning, and planning consultation, to sustainable urban design, regulatory planning, and urban renewal. With more than ten years of working experience, she has published almost thirty academic papers in English and Chinese and set up a solid research foundation in knowledge-based urban development. She was selected as Co-rapporteur with Peter Newman and Stephen Goldie for the International Society of City and Regional Planners (ISOCARP) World Planning Congress in 2019 and is a currently a member of the ISOCARP's Scientific Committee.

_

Lourdes Madigasekera-Elliott



Lourdes Madigasekera-Elliott is Public Health Strategic Lead for Creating Healthy and Sustainable Places in East Sussex Public Health Team with responsibility for 'Health in All Policies,' 'Planning for Health,' 'Getting Health into Place,' focusing on the built and natural environment and the wider determinants of health. She specialises in Health Impact Assessments and Sustainability. Lourdes has worked in Essex and West Sussex County Council where she has led the development of the 'Creating Healthy and Sustainable Places – A Framework for West Sussex'. Lourdes is passionate about planetary health and ecological public health.

Bruno Monardo



Bruno Monardo, architect with a PhD in Urban and Regional Planning, is Associate Professor of Urban and Regional Planning at the Department of Planning, Design, Technology of Architecture, Sapienza University of Rome. Bruno is visiting professor and invited scholar at institutions worldwide, including the Massachusetts Institute of Technology, Northeastern University, San Diego State University, and Institut d'Aménagement et d'Urbanisme Ile-de-France. He has directed and still coordinates international research projects on various topics, such as the relationship between mobility planning and urban regeneration, the phenomenon of 'urban centres' as engines of participatory democracy, the impact of innovation districts on local and regional development and has edited numerous volumes, essays, and articles on these issues. He was recently member of the Scientific Committee for the Sustainable Urban Mobility Plan of Rome, Italy.

Stephen Olus Okeyo



Stephen Olus Okeyo is an experienced reproductive and public health professional currently active in academia as Head of Department, School of Clinical Medicine at Uzima University. Stephen is Vice-Chairman of the Public Health Society of Kenya and Chairman of the Board of East African Medical Journal. He has competence and experience in leading teams to focus on high performance and achievement of desired outputs and outcomes, as demonstrated in current and previous work with leaders and managers in government ministries and departments, private organisations and NGOs, and at local, national, regional and international levels. Specific examples include the Health Systems Global (HSG) Africa Region convening of the 6th HSG Global Symposium in Dubai in November 2020 on just and equitable care of older persons. In the past, he successfully convened and coordinated Kenya country teams collaborating in the Consortium for Health Policy and System Analysis in Africa (CHEPSAA) and the Association of Schools of Public Health in Africa (ASPHA).

TOC

Sinem Ozdede



Sinem Ozdede received her bachelor's degree from Ankara University, Department of Landscape Architecture in 2008, her master's degree from Duzce University, Department of Landscape Architecture in 2011, and her PhD degree from Duzce University, Department of Landscape Design in 2017. She is currently Assistant Professor at Pamukkale University, Faculty of Architecture and Design, Department of Landscape Architecture in Denizli, Turkey. Sinem does research in landscape architecture, landscape design, urban design and sustainability.

...

Zeynep Özdemir



Zeynep Özdemir graduated from Erciyes University, Faculty of Yozgat, Engineering, Architecture, City and Regional Planning Department in 2009. In 2013, she obtained her master's degree from Gazi University, Department of City and Regional Planning, with a thesis entitled 'The analysis of the integration problems of river cities with the river in terms of planning and design'. During her master's course, in 2011 she studied Urban Design at the Silesian University of Technology. Zeynep received her PhD from Istanbul Technical University in 2021, where her thesis was 'Definition of urban conservation site features by spatial statistical methods'. She also did doctoral research in urban segregation in 2017 at the Kassel University. In 2010, she joined Amasya University, Faculty of Architecture, Department of City and Regional Planning as Research Assistant, moving from 2011 to 2013 to Gazi University Department of City and Regional Planning, and working as Research Assistant at Istanbul Technical University, Department of City and Regional Planning from 2014 to 2020. She is currently Assistant Professor at Amasya University, Faculty of Architecture, City and Regional Planning Department. Her research interests are urban conservation, urban sociology, urban design, migration, and spatial analysis.

_

Chiara Ravagnan



Chiara Ravagnan is an architect with a PhD in Rehabilitation and Urban Regeneration, and Assistant Professor in Urban Planning at the Department of Planning Design and Technology of Architecture, Sapienza University of Rome. She teaches in the international master's degree course in Architecture – Urban Regeneration (Sapienza University of Rome). She has participated in international scientific activities (research, seminars, workshops) with European, Asian and American universities and coordinated international research groups between Italy, Spain and France on topics of urban regeneration and mobility. She has worked at the Municipality of Rome for the General Urban Plan approved in 2008 and at the Presidency of the Council of Ministers of Italy for the National Regeneration Programme of the Metropolitan Peripheries (2016). Her main research topic is sustainable and resilient urban regeneration in connection with mobility, public space and landscape design.

_

Mark Scott



Mark Scott is Professor of Planning and Dean in the School of Architecture, Planning and Environmental Policy, University College Dublin. Mark's research is focused on the environmental and sustainability dimensions of spatial planning theory and practice, specifically related to rural planning, land-use governance, climate action, green infrastructure and green space, and health and the built environment. Mark is an editor of the international journal Planning Theory & Practice and also serves on the editorial board of Town Planning Review. He is a Fellow of the Regional Studies Association and has held visiting appointments at the University of Pisa and the University of New South Wales.

_

Laura Thomas



Laura Thomas is an urban designer at PosadMaxwan. She obtained her master's degree in Urbanism at TU Delft in 2021, where she graduated cum laude with her design research into sustainable refugee accommodation as a means to revitalise dilapidated border towns. During her studies, she worked at various design and research firms, focusing on cities at different scales and from different perspectives. At PosadMaxwan, Laura has been involved in setting up a new research team that dives into current transitions within the field and takes position on all kinds of themes: from inclusive data analysis to floating cities. She prefers to focus on how to bring beautiful words and vague ambitions to reality.

Manasa Vinodkumar



Manasa Vinodkumar is a spatial analyst with an MSc in Space Syntax from the Bartlett School of Architecture, University College London, and has experience as an urban researcher and architect involved with the design and detailing of buildings at various firms in Bangalore and other cities in India. During her studies, Manasa was keen on learning new perspectives and evidence-based methods of design research that could inform her design practice. Manasa is enthusiastic to find ways of engaging quantitative and social-scientific methods of built environment research with ethnographic perspectives in order to ground her design thinking in the complexity of real urban places. Her interests lie in spatial configurations and informality in space. She would like to understand historic-cultural geographies, every-day co-presence in sustainable, global urban design practices. She enjoys exploring multi-faceted stories in cities whenever she has the time.

_

Cheryl Williams



Cheryl Williams is Principal Health Promotion Specialist in Cardiff and Vale Public Health Team, working in the field of health improvement. In Cardiff and Vale, her role includes working with local authorities on planning and health. Cheryl has spent many years working in public health but early in her career she worked as a planning officer in Cardiff Council, having initially studied town planning before having a career change and moving first into a housing association and then into public health. She undertook a secondment in the Wales Health Impact Assessment (HIA) Support Unit in Public Health Wales as a Principal HIA Development Officer for Spatial Planning and HIA.

Bei Yu



As a national registered urban planner working with the Wuhan Planning and Design Institute (WPDI) in Wuhan, China, Bei Yu has more than ten years of experience in master planning, industrial planning, planning consultation, regulatory planning, and urban renewal. She has published almost ten academic papers and co-authored the book *The Spatial Evolvement of National Development Zones: Taking the Example of the National Independent Innovation Zone of Eastlake as an Example*.

Han Zou



Han Zou is Associate Professor in the Department of Architecture and Urban Planning, Hubei University of Technology. Her research areas include urban planning history and theory, urban renewal, and historic architecture conservation. She has published more than fifty papers and hosted several national research funding.

About the Editors

Ana Perić Ali A. Alraouf Jua Cilliers

Ana Perić



Ana Perić, an architect with a PhD in Urban Planning, is Assistant Professor in the School of Architecture, Planning and Environmental Policy, University College Dublin, and is also currently appointed as Senior Researcher at the Institute for Spatial and Landscape Development of the Swiss Federal Institute of Technology (ETH Zurich) and Senior Research Associate at the Faculty of Architecture, University of Belgrade. Her research revolves around urban governance mechanisms in complex spatial phenomena observed through the lens of planning culture. Financed by ETH Zurich, RL (Academy for Spatial Development, Hannover), Future Cities Lab (Singapore ETH Zurich Centre), Swiss Government and Fulbright Foundation, she has participated in ten research projects on various topics and scales: from spatial development in European macro-regions to green and dense neighbourhoods. Dedicated to combining research with practical assignments, she has been active in several policy- and professional working groups, including the International Society of City and Regional Planners (ISOCARP), serving as a Board Member (2016-2022), UN-Habitat/ISOCARP Community of Practice on Urban Innovation, the Western Balkan Network on Territorial Governance, and the European Commission Corridor Coordinators.

Ali A. Alraouf



Ali A. Alraouf is Professor at HBK University in Qatar Education City and Head of Research and Development at the Ministry of Municipality in Oatar. His research on theory, criticism and creativity in architecture and urbanism was published in more than 160 journal articles, critical reviews, and essays, in addition to books and book chapters. Ali was a Visiting Scholar at the University of California at Berkeley and presented his research work at international institutions such as the University of Oregon, Illinois Institute of Technology, Drury University, Cambridge University, University of Seoul, Malaysia International University, University of Belgrade, and American Universities in Beirut, Sharjah, Kuwait, and Cairo. He is the recipient of several international teaching and research awards, including Best Research Paper at the International Academy of Science, Technology, Engineering and Management (IASTEM) Conference in 2018. He is a Board Member (2019–2022) of the International Society of City and Regional Planners (ISOCARP), an Advisory Board Member for the Gulf Architecture Program at QNL, and the leader of the Green Urbanism and Planning Group at Qatar Green Building Council (QGBC).

Jua Cilliers



lua Cilliers is Head of the School of Built Environment and Professor of Urban Planning at the University of Technology Sydney (Australia). She has almost twenty years of experience as a planner, with professional registrations from the South African Council for Planners (SACPLAN) and the Planning Institute of Australia (PIA). She is currently appointed as an Adjunct Professor of Planning at the North-West University (South Africa), following her position as Head of Urban Planning and Leader of the Research Programme for Sustainable Development, Implementation and Planning, Jua is the Co-chair of the Commonwealth Association of Planners Climate Action Group and a Board Member of the International Society of City and Regional Planners (ISOCARP) (2021-2022). She has been awarded several accolades, such as the recipient of the National South African Teaching Award for Teaching Excellence in South Africa (2019), finalist of the National Science and Technology Forum Awards (2019), finalist of the South African Woman in Science Awards (2019), and recipient of the North-West University Award for Excellence in Community Engagement (2021). Her research expertise pertains to the planning of sustainable cities, nature-based solutions and community engagement to enhance quality of life. She is actively involved in science communication through public speaking events, guest lectures and media engagements.









ISOCARP International Society of City and Regional Planners

AIU Association Internationale des Urbanistes

IGSRP Internationale Gesellschaft der Stadt- und Regionalplaner

