Table of Contents

List of Illustrations vii

List of Tables xi

Contributors xiii

Acronyms xxi

Introduction xxiii

Louis Rice, University of the West of England
Matthew Jones, Birmingham City University

Part 1: Home 1

Chapter 1 For a Walk With... dementia, residential care and redevelopment 3
Anton Kats

Chapter 2 Health cost benefits of energy upgrades in France 25
Veronique Ezratty, Service des Etudes Médicales d'EDF (SEM), France
David Ormandy, Warwick Medical School, University of Warwick, UK
Marie-Helene Laurent, EDF R&D, Département TREE, Les Renardières, France
Anne Duburcq, Cemka, France
Fabienne Boutiere, EDF R&D, Département TREE, Les Renardières, France
Laurène Courouve, Cemka, France
Pierre-Andre Cabanes, Service des Etudes Médicales d'EDF (SEM), France
Chapter 3  The Australian dream or a roof over my head. An ecological view of housing for an ageing Australian population  
Matthew Hutchinson,  
Queensland University of Technology, Australia

Chapter 4  Integrating health equity into housing in African cities: case studies from Lagos and Maputo  
Ebele R.I. Mogo, McGill University, Canada; Engage Africa Foundation  
Jørgen Eskemose Andersen, School of Architecture, Denmark

Part 2: City

Chapter 5  Nudging towards urban walkability in a car-dependent New Zealand neighbourhood  
Sam Kebbell, Victoria University of Wellington, NZ; KebbellDaish Architects, NZ  
Jenny Ombler, University of Otago, Wellington, NZ

Chapter 6  Reality unraveled through camera lenses: environment as a key issue surrounding infant mortality in Saint Louis City  
Vindhya Kakarla, Saint Louis University, USA  
Anne Niyigena, Saint Louis University, USA  
Pamela Xaverius, Saint Louis University, USA  
Deborah Kiel, Missouri Foundation for Health, USA  
Edie Barnard, Missouri Charter Public School Association, USA

Chapter 7  Planning for well-being: a critical perspective on embedding well-being in community-led planning processes  
Matthew Jones, Birmingham City University, UK
Chapter 8  **A health map for architecture: The determinants of health and wellbeing in buildings**  
Louis Rice,  
*University of the West of England, Bristol, UK*  

Chapter 9  **Co-constructing community wellbeing: developing a framework to identify how student-community collaborative public space projects impact on community wellbeing**  
Rachel Sara,  
*University of the West of England, Bristol, UK*  
Matthew Jones,  
*Birmingham City University, UK*  

Chapter 10  **An inclusive design approach to improving community wellbeing: a case study of architectural interventions in Derry/Londonderry**  
Jak Spencer,  
*The Helen Hamlyn Centre for Design, Royal College of Art, UK*  
Ralf Alwani  
*The Helen Hamlyn Centre for Design, Royal College of Art, UK*  
Elizabeth Raby  
*The Helen Hamlyn Centre for Design, Royal College of Art, UK*  
Jo-Anne Bichard  
*The Helen Hamlyn Centre for Design, Royal College of Art, UK*  
Jonathan West,  
*The Helen Hamlyn Centre for Design, Royal College of Art, UK*
Chapter 11  Active ageing and urban sociability: a study on older women  219
Thaís Debli Libardoni,  
*Federal University of Pelotas, Brazil*
Lígia Maria Ávila Chiarelli  
*Federal University of Pelotas, Brazil*

Chapter 12  A place to die: New perspectives on preventive work in adolescent suicide  235
Charlotta Thodelius

Index  253
List of Illustrations

Figure 1.1 Care home resident Ted smoking a cigarette. Film still. *For a Walk With...* 2016 3
Figure 1.2 Antoinette, care manager, doing paperwork. Film still. *For a Walk With...* 2016 4
Figure 1.3 Frances, care home resident, driven in the wheelchair by Phyllis. Film still. *For a Walk With...* 2016 6
Figure 1.4 Ted, care home resident, shares his plans of escape. Film still. *For a Walk With...* 2016 7
Figure 1.5 Rosa, an agency worker, working in the laundry. Film still. *For a Walk With...* 2016 9
Figure 1.6 Nana, cleaner, hovering the care home. Film still. *For a Walk With...* 2016 10
Figure 1.7 Pete, kitchen assistant, working in the kitchen. Film still. *For a Walk With...* 2016 10
Figure 1.8 Mohammad, resident, on his way to have lunch. Film still. *For a Walk With...* 2016 12
Figure 1.9 Phyllis, activity manager, making a cup of tea. Film still. *For a Walk With...* 2016 13
Figure 1.10 Ted, resident, sitting at the table. Film still. *For a Walk With...* 2016 16
Figure 1.11 A map of themes and issues in the Publication *For a Walk With: Dementia in the City.* 2016 19
Figure 2.1 The HHSRS Formula 30
Figure 3.1 Compounding phenomena 46
Figure 3.2 Conceptualised ecology of housing and support 47
Figure 3.3 Housing and support continuum 50
Figure 3.4 Potential conceptual typology 58
Figure 3.5 The potential conceptual typology expanded 58
Figure 4.1 Bird’s eye view of Maputo with the formal city on the horizon. The three-story building in the front is a housing model developed for small narrow plots 63
Figure 4.2 Makoko, a vast slum of wooden shacks built on stilts in the polluted lagoon of Lagos 66
List of Illustrations

Figure 4.3a, b and c: Maputo houses built with lightweight alternative construction materials

Figure 4.4: Maputo solitary block housing model with four single room residences and two units with two room residences with shared facilities (kitchen and toilets) in two courtyards

Figure 4.5 Maputo house with a vertical addition to an existing house providing two more units with shared facilities in an outdoor building

Figure 4.6 Three floor Maputo house model on an 8 x 10 meters plot. Note the attempt to create a small public space in front of the house

Figure 5.1 Site plan of the proposed house showing proposed shared pathway zig-zagging towards the beach. Image credit: Adamson Shaw Surveyors and KebellDaish Architects, 2017

Figure 5.2 Aerial photograph of Mt Victoria showing the suburb of Mt Victoria on the left (West), Hataitai on the right (East), and the ‘town belt’ along the ridge line between

Figure 5.3 Aerial view of Hataitai. The white line is more than 800m long and does not cross a road

Figure 5.4 Location plan showing the site in relation to the beach and the no-exit street

Figure 5.5 Figure ground map of Hataitai, Wellington showing existing pedestrian pathways (continuous line) and potential paths (dotted line)

Figure 5.6 A privately-owned path made available to the public which connects one public pathway to another

Figure 5.7 Illustration of the upper section of proposed pathway between new house (left) and existing house (right)

Figure 5.8: South elevation of the proposed house. South facade of the new house on Rewa Road that faces the shared pathway is largely opaque except for a glazed kitchen door, some translucent windows and a small balcony

Figure 5.9 Site plan of a potential medium density housing development within the existing blocks, showing proposed pathway between streets stitched together from existing private pathways

Figure 5.10 Exploded isometric view of proposed densification with varying degrees of privacy from private (lower) to semi-private (middle) and public (upper)
Figure 5.11 Study drawing of a public pathway passing over interior space of a private dwelling 101
Figure 5.12: Tolo House Álvaro Siza Vieira. Tolo House (2005) by Álvaro Siza Vieira 101
Figure 6.1a Sub-theme 1: Housing 118
Figure 6.1b Sub-theme 2: Economy 118
Figure 6.1c Sub-theme 3: Physical Environment 119
Figure 6.1d Sub-theme 4: Community Engagement 119
Figure 6.1e Sub-theme 5: Community Safety 120
Figure 6.2 Impact of Housing 121
Figure 6.3a Impact of economic factors 122
Figure 6.3b 123
Figure 6.4a Impact of physical environment 124
Figure 6.4b. Impact of physical environment 124
Figure 6.5a Impact of community engagement 125
Figure 6.5b Impact of community engagement 126
Figure 6.6a Impact of community safety 127
Figure 6.6b Impact of community safety 128
Figure 6.7 Pathway to the Future 130
Figure 7.1 The Shape My Town process 143
Figure 7.2 The Shape My Town website 144
Figure 7.3a and b The pilot workshops in progress 146
Figure 8.1 Health map for policy-makers 162
Figure 8.2 Health map for settlement planning 164
Figure 8.3 Health map for architecture 165
Figure 9.1 Redrawn from South et al.’s Theory of Change Model of Community Wellbeing 191
Figure 9.2 East Street Post-it Note Intervention 193
Figure 9.3 [Re]Claiming Totterdown 194
Figure 9.4 Elm Tree Farm, building for 4 Seasons 194
Figure 9.5 Participatory practices: litter picking, hosting a market stall and community art 195
Figure 9.6 Elm Tree Farm photo collage 197
Figure 9.7 Ebenezer Gate Photo Collage 198
Figure 9.8 Theory of Change Model of Co-Constructed Community Wellbeing (The evolved theory of change model) 200
List of Illustrations

Figure 10.1 Double diamond design process (adapted from Design Council, 2005) 208
Figure 10.2 The Foyle Reeds 212
Figure 10.3 The Foyle Bubbles 213
Figure 11.1 Synthesis map of each one of the typologies: overlap of the 12 behavioural maps. Authors, 2018 223
Figure 11.2 Antimanicomial manifestation on the esplanade of the Central Square. Wednesday afternoon, May 18 225
Figure 11.3 Antiques fair in the Largo of the Central Public Market. Saturday morning, September 17. Authors, 2016; 2017 225
Figures 11.4 and 11.5 Socialization nuclei of elderly men on the pedestrian street and in front of the cafes. Authors, 2016 226
Figure 11.6 People sitting at the monument observe the activities on the fitness equipment in the urban park. Sunday afternoon, September 18 228
Figure 11.7 Elderly couples place their own chairs to observe the movement of people on the avenue. Sunday afternoon, September 18. Authors, 2016 229
Figure 12.1 Typology of suicidal events 238
List of Tables

Table 2.1 Frequency of spread of harms by severity, adapted for France 31
Table 2.2 Relevant HHSRS Outcomes and Associated Costs (France) 31
Table 2.3 Estimated likelihood taking account of household income 35
Table 2.4 Outline of cost-effective measures 37
Table 2.5 Variations tested in the sensitivity analyses related to the overall estimation of annual medical costs 38
Table 2.6 Annual cost of upgrading energy inefficient dwellings compared with reduction in annual health costs 39
Table 7.1 The seven well-being goals described in the Well-being of Future Generations (Wales) Act 2015 141
Table 11.1 Age and gender frequency in each spatial typology. Authors, 2018 224
Table 12.1 Necessary spatial conditions 243
Table 12.2 Prevention and harm reductive aspects related to place 245
Contributors

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Matthew Hutchinson is an architect and PhD candidate at the Queensland University of Technology. In Brisbane, Australia. In 2016 he moved to full-time research after 23 years in architectural practice. His most recent position was Partner and National Sector Leader in Seniors Living design for Thomson Adsett architects. In this role, Matthew was responsible for the strategic design and business direction of the firm's Seniors Living sector. Through his professional experience he considers the traditional housing typologies for older people in themselves will be insufficient and inappropriate to meet the needs of the future and that relevant solutions may be found through consideration of socio-economic, policy and environmental forces bearing on this sector. His current PhD research is investigating the nature of potential new typologies to serve Australia's ageing population in the future from within a conceptualized contemporary ecological framework of housing and support for older people in Australia.

Matthew Jones is an architect and Associate Professor at the Birmingham School of Architecture & Design, Birmingham City University. He is a partner at Coombs Jones Architects, an Advocate in Practice for the Design Commission for Wales and a Fellow of the Higher Education Academy. Matthew's work focuses on collaborative and participatory approaches to design and research. He has particular experience in socially engaged and participatory place-making; community-led planning; housing design; and design in rural contexts.

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**Anton Kats** is an artist, musician and dancer, living and working in Berlin, Germany. Anton’s practice derives from informal everyday relationships within a vibrant neighbourhood in Kherson, Ukraine and is complemented through necessity and pragmatics of self-legalisation in Europe via entering formal institutions of education. After attending Masters programmes in Art in Context at the University of Arts Berlin and Interactive Media: Critical Theory and Practice at Goldsmiths College, Kats finalised his studies through a practice-based Ph.D. at Goldsmiths, University of London. In 2016, Kats was invited to join the education team of documenta14 as an artist where he initiated the Narrowcast House and the A-Letheia projects. His works have been exhibited and performed in venues including the Serpentine Galleries, Tate Modern, Tate Britain, Victoria and Albert Museum, the Showroom Gallery and The Haus der Kulturen der Welt among others. Homepage: www.antonkats.net

**Sam Kebbell** is a Senior Lecturer in the School of Architecture at Victoria University of Wellington (VUW) and a Director of KebbellDaish Architects. He graduated with a BArch (Hons) from Victoria University of Wellington and an MDes with Distinction (History and Theory) from Harvard University in 1999 before working in Europe and North America. He has won numerous awards for his work and has presented to both academic and professional audiences in New Zealand and around the world. In 2015, Sam was an ADAPT-r Research Fellow at the University of Westminster in London, and he completed his PhD at RMIT University in Melbourne in 2016.

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Within the department Technologies and Research in Energy Efficiency at EDF R & D, his research activity focuses on forecasting the energy and power demand of the building sector. She has participated in numerous prospective studies concerning the building sector in countries both in Europe and outside Europe. She is a board member of the London Loughborough Centre for Doctoral Training in Energy Demand and a member of the Scientific Council of the Scientific and Technical Building Center.

**Thaís Debli Libardoni** graduated in Architecture and Urbanism at the Federal University of Pelotas, UFPel (2010). Thaís holds a master’s degree at the Postgraduate Program in Architecture and Urbanism of the Federal University of Pelotas (2018) in the line of Perception and Environmental Assessment by the User. Her main field of research is Environmental Psychology, focusing on intergenerational relations and the promotion of more sustainable and healthier urban public spaces for ageing. She is currently a researcher in the project "Place-Making with Older Adults: Towards Age-Friendly Communities", a partnership between the Behaviour Studies Laboratory of UFPel in Brazil and Heriot-Watt University in Edinburgh, UK.

**Fidel Meraz** is an architectural educator who has been teaching for several years in Mexico and the UK. He has been a lecturer at both University of Nottingham and Nottingham Trent University. He also taught in the now University of Suffolk designing, validating and leading an Interior Architecture and Design programme. He currently teaches in the Department of Architecture and the Built Environment in UWE Bristol contributing to the theoretical and design studio areas in undergraduate and postgraduate levels. His experience merges informed teaching, theoretical research and contemporary debates aimed at educating with a comprehensive approach. In practice, he has worked in Mexico, Italy and Central America on diverse projects from private housing to commercial fashion malls, taking a leading role from conceptual stages to site supervision. His research interests focus now on philosophical issues about the relationship between architecture, temporality and place such as spatial collective memory, national identity and the perception of wellbeing; his PhD thesis offers a phenomenological account as a critique of modern heritage conservation.

**Ebele R.I. Mogo** is a Doctor of Public Health with a specialization in community and behavioural health. Her work focuses on research, planning and programming to create healthy communities at multiple scales, often with a focus on rapidly urbanizing emerging contexts and/or underserved
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Anne Niyigena is a graduate of Saint Louis University with a Master of Public Health in epidemiology. Her research work has focused on improving maternal and child health outcome through partnering with communities. Anne is also passionate about fighting against sex trafficking and other forms of abuse against women and vulnerable populations. She enjoys fellowship, gospel music and workout.

Jenny Ombler is a Research Fellow in the Department of Public Health, University of Otago Wellington. She graduated with a BA(Hons) and MA with Distinction from Victoria University of Wellington in 2016. Her research with the New Zealand Centre for Sustainable Cities at the University of Otago has included work as an author on Drivers of Urban Change (2015, Steele Roberts), and as co-editor of Cities in New Zealand: Preferences, patterns and possibilities (2017, Steele Roberts). In 2016, she began work on a five-year research programme on homelessness, and on expansion of wellbeing and rights-based frameworks for New Zealand policy.

David Ormandy has a background in public and environmental health. Now attached to Warwick Medical School, he joined Warwick Law School in 1995, where he was responsible for projects to develop the Housing Health and Safety Rating System (now adopted by the US Department for Housing and Urban Development). He has worked with the New Zealand Government, the US Department for Housing and Urban Development, He has been an advisor to the World Health Organization since 2002, involved with the development of the WHO LARES project and is currently a member of the WHO Working Group on Health Housing Guidelines. He is a member of the Scientific Committee of the US National Center for Healthy Housing.

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**Rachel Sara** is Associate Professor in Architecture and Programme Leader for the Master of Architecture degree at the University of the West of England, Bristol, UK. Her research particularly explores ‘other’ forms of architecture, particularly through hands-on, community-based architectural activism (see [http://www.hands-on-bristol.co.uk](http://www.hands-on-bristol.co.uk)).

**Amanda Spence** is an architect and founding partner at ALT-Architecture. ALT-Architecture’s ethos is to create buildings and places which are coherently simple, elegantly composed, progressive and imaginative, intrinsically sustainable and, most importantly, embrace the spirit of place. Based in Cardiff but working across Wales and beyond, ALT-Architecture’s alternative approach to practice explores the edge of architecture, where it meets the disciplines of art, landscape and theory. This intentionally places them away from the middle of the road and challenges preconceptions of value in architecture. Amanda also teaches at the Welsh School of Architecture, Cardiff University and is a member of the Design Commission for Wales’ Design Review Panel.

**Jak Spencer** is a Research Fellow and leader of the Social and Global Research Space at the Helen Hamlyn Centre for Design. His research interests lie in developing the methods and tools of people-centred design to solve difficult global social challenges. He has a PhD from Loughborough University which developed new models of design for sustainable behaviour from research in Brazil, India and the UK. His current research interests include using new technology to solve social challenges; understanding how
design can create new models for community wellbeing; and people-centred development solutions for low-income countries.

Charlotta Thodelius has an MA in Criminology and is currently conducting her PhD in Architecture. The dissertational research aims to rethink adolescents’ injury events and contribute to the development of situational preventive measurements, mainly by modification of the physical environment. The PhD-project is founded by the Swedish Civil Contingencies Agency (Myndigheten för Samhällsskydd och Beredskap).

Jonathan West has spent 13 years working in design and healthcare and leads the Healthcare Research Space at the Helen Hamlyn Centre for Design. Jonathan’s research interests include design for patient safety and inclusive design. His work on a new resuscitation trolley for the National Patient Safety Agency won two Medical Futures Innovation Awards and completed successful clinical trials prior to manufacture. He has shaped high profile projects such as Design Bugs Out and Design for Patient Dignity with the Department of Health and Design Council. He was Design Lead on the EPSRC-funded project, ‘Designing Out Medical Error’.

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### Acronyms

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>3CL</td>
<td>Conventional Consumption Calculation</td>
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<tr>
<td>BRE</td>
<td>Building Research Establishment</td>
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<td>CALL</td>
<td>Culture Action Llandudno</td>
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<tr>
<td>CEE</td>
<td>Certificats d’Economie d’Energie</td>
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<tr>
<td>CCBC</td>
<td>Conwy County Borough Council</td>
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<tr>
<td>DCFW</td>
<td>Design Commission for Wales</td>
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<tr>
<td>D-I-Y</td>
<td>Do It Yourself</td>
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<td>DNUH</td>
<td>National Directorate of Housing</td>
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<tr>
<td>DPE</td>
<td>Diagnostic de Performance Énergétique</td>
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<td>EDF R&amp;D</td>
<td>Electricité de France Research and Development</td>
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<td>EHCS</td>
<td>English Housing Condition Survey</td>
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<td>EHS</td>
<td>English Housing Survey</td>
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<td>EPC</td>
<td>Energy Performance Certificate</td>
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<td>Eurofound</td>
<td>European Foundation for the Improvement of Living and Working Conditions</td>
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<td>FFH</td>
<td>National Housing Fund</td>
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<td>GDP</td>
<td>Gross Domestic Product</td>
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<td>HES</td>
<td>Hospital Episode Statistics</td>
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<td>HHSRS</td>
<td>Housing Health and Safety Rating System</td>
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<td>IPEL</td>
<td>Indice de Performance Énergétique du Logement</td>
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<tr>
<td>LBW</td>
<td>Low Birth Weight</td>
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<tr>
<td>LDP</td>
<td>Local Development Plan</td>
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<td>LSHTM</td>
<td>London School of Hygiene and Tropical Medicine</td>
</tr>
<tr>
<td>NCD</td>
<td>Non-Communicable Disease</td>
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<tr>
<td>NICE</td>
<td>National Institute for Health and Care Excellence</td>
</tr>
<tr>
<td>NIMBY</td>
<td>Not in my backyard</td>
</tr>
<tr>
<td>ONPE</td>
<td>Observatoire National de la Précarité Énergétique</td>
</tr>
<tr>
<td>PHEBUS</td>
<td>Performance de l’Habitat, Equipements, Besoins et Usages de l’énergie</td>
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<tr>
<td>PMSI</td>
<td>Medical Programme Information System</td>
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<td>PPP</td>
<td>Public-private partnerships</td>
</tr>
<tr>
<td>Rénovons</td>
<td>Initiative Rénovons</td>
</tr>
<tr>
<td>RTPI</td>
<td>Royal Town Planning Institute</td>
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<td>SAP</td>
<td>Standard Assessment Procedure</td>
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<td>SAS</td>
<td>Statistical Analysis System (a statistical package)</td>
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<tr>
<td>SWOT</td>
<td>Strengths, Weaknesses, Opportunities and Threats</td>
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<td>Acronym</td>
<td>Description</td>
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<td>UFPel</td>
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<td>United States</td>
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<tr>
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<td>World Health Organization</td>
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</tbody>
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Introduction

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This book presents critical thinking from practicing architects, academics, scholars, public health professionals, urban planners, designers, artists and activists from around the world to provide perspectives on design for health. The book reflects a broad set of interrelated concerns about health and the design of the spaces we inhabit. It seeks to better understand the interconnectedness and potential solutions to the problems associated with health and the built environment. To that end, it presents emerging research on healthy homes, walkable cities, design for ageing, dementia, health equality and urban poverty, community health services, neighbourhood support and wellbeing, urban sanitation and communicable disease, transport infrastructures and the cost implications of ‘unhealthy’ environments. Through a series of research chapters based on ‘real world’ research, it seeks to facilitate joined-up thinking about health and the built environment across disciplines, across scales and across countries. Divided into three key themes, home, city and society, each section presents chapters that explore global processes, transformative praxis and emergent trends in architecture, urban design and healthy city research. The first section explores how the design of homes and housing has an effect on human health and wellbeing. The second section examines the implications for health at a much larger scale - that of the city. The third section explores issues at the level of society, such as community engagement, participatory design and collective action. Through exploration across these scales, the book aims to reveal insights into how designers across disciplines are addressing issues of health in the built environment.

Health and wellbeing defined

Health is defined in the World Health Organisation (WHO) Constitution as “a state of complete physical, social and mental well-being, and not merely the absence of disease or infirmity”1. The interrelationships between
physiological, psychological and social factors are important in leading a healthy life; the WHO definition links health with wellbeing, a concept often associated with the idea of flourishing: “the experience of life going well… feeling good and functioning effectively”\(^2\). As the Office for National Statistics describe, “Wellbeing, put simply, is about ‘how we are doing’ as individuals, communities and as a nation and how sustainable this is for the future\(^3\). Wellbeing is seen a consisting of five elements: positive emotions, engagement, relationships, meaning and accomplishment\(^4\). Here, mental health is equally as important as physical health; health is a positive aspiration, a means to living well\(^5\): an everyday resource that enables people to lead individually, socially and economically productive lives.

Health issues and the built environment

The urban health threat

While health and wellbeing are influenced by a wide range of factors, an increasing body of research demonstrates that the design of the built environment is linked to our health\(^6\). The World Health Organisation identifies worldwide urbanisation as representing a major threat and challenge to personal and public health. In 1990, fewer than four in ten people lived in urban areas; by 2010, more than half lived in cities and by 2050 this proportion will grow to seven out of every ten people\(^7\). The ‘urban health threat’ is three-fold: infectious diseases; violence or injury (particularly road traffic); and non-communicable diseases\(^8\). Infectious diseases are more of an issue in the global south where one billion urban residents live in slums and squatter settlements, while countless others suffer from unsuitable living conditions and overcrowding\(^9\). In these informal settlements, the poor design and maintenance of sanitary systems and urban environments are linked with tuberculosis, pneumonia and diarrhoeal disease. In both the Global North and South, the quality and affordability of homes affects the health of inhabitants\(^10\). Evidence suggests refurbishing homes is associated with improvements in general health outcomes\(^11\); an appropriately designed thermally-efficient home has health and mental health benefits and reduces mortality\(^12\).

In cities and towns, the design of transport infrastructure tends to prioritise the motor vehicle which invariably leads to elevated levels of road traffic accidents, injuries and mortalities. Furthermore, investment in roads increases pollution which has a deleterious effect on health: respiratory illnesses such as asthma are associated with traffic congestion. The complex interrelationships between city layout, transport infrastructure, employment distribution and social conditions produce the urban living conditions that
can exacerbate anxiety, depression, insomnia and substance abuse\(^\text{13}\).

Poverty, unemployment and misuse of alcohol or drugs, lead to increased violence and crime\(^\text{14}\).

Whilst infectious diseases and injuries are important urban health threats, Non-Communicable Diseases (NCDs), often referred to as lifestyle diseases, are the primary cause of ill-health in almost all countries globally. Lifestyle diseases are so-called because they are interconnected with the way society lives and behaves and the resultant health outcomes. Lifestyle factors such as: sedentary lives, inactivity, over-eating, eating unhealthily, smoking, insufficient sleep and other unhealthy behaviours, lead to a range of common health issues, including heart disease, cancer, diabetes and mental health issues. Furthermore, lifestyle diseases are impacted by factors such as changing neighborhood patterns that often erode community support systems. The design of the built environment is a factor in exacerbating these issues. As many societies are increasingly elderly, ageing populations are often house-bound partly as a result of the urban layout. What connects all aspects of the urban health threat tripartite is that these health issues are a political problem. The provision of healthcare and urban development are both influenced by political decisions.

**Health inequalities**

One of the outcomes of the urban health threat is the spatial influence of wealth; health inequalities are increasing. The holistic view of health, as defined by the WHO, has been described as difficult to achieve for most people\(^\text{15}\). Whilst some people do manage to achieve a high level of physical, social and mental well-being, there are severe inequalities, and many people fail to attain such positive health outcomes. Health inequalities have grown across the globe and are exacerbated depending on where you live, work and with whom you socialize. These are often accredited to systemic, socially produced and unfair factors such as social exclusion in housing, transport and access to facilities\(^\text{16}\). Health inequalities continue to persist in many countries despite general improvements in health outcomes\(^\text{17}\).

**Healthcare strategies: reactive and proactive**

Strategies for addressing healthcare issues can be categorized in two opposing fields\(^\text{18}\). The first is a reactive strategy, whereby healthcare reacts to health issues once they have already developed. This approach to health planning provides care for those that are ill but ignores the broader
environmental or social factors that might be contributing to the illness. The second strategy for health care is more proactive; healthcare is targeted towards the prevention of health issues developing in the first place. The reactive strategy describes the approach of most health systems globally; the vast majority of all funding and attention currently deals with problems once they arise. The proactive strategy is perhaps the aim of current public health programmes such as WHO Healthy Cities which aims to promote better health, governance, empowerment and participation to create equitable and prosperous communities. Designing environments to improve wellbeing is part of a proactive healthcare strategy. Designs for a healthy urban environment might have provision for:

“clean air and pure water, contact with nature... good quality and affordable housing, safe and convenient active travel networks... local facilities, ... outside play, convivial meeting places... , a location that gives excellent access to a wide range of jobs, high-level facilities... without recourse to the car”.

However, despite its significance as a determinant of health, there is scant attention paid by designers to the impact of buildings on health and wellbeing. While there is some awareness and progress at ‘healthifying’ urban planning, for example with greater inclusion of walking, cycling and green infrastructure, there is less action and less emphasis given to the design of the buildings themselves. There are some nascent attempts to better integrate health and architecture, for example, the Wellcome Trust Living with Health exhibition, the new Design for Health journal or the work of the International Well Building Institute. Nonetheless, in terms of architectural design, very few practitioners can yet demonstrate positive health impacts. This is despite the direct effect on health outcomes as a result of the design of individual buildings. As most of our time is increasingly spent in internal environments, architectural space is an increasingly important context for the consideration of health.

**Design for health**

Evidence from the previous subsections suggest that ‘design’ processes might enable healthier environments and lifestyles; but what is meant by ‘design’, in this context, in terms of proactively facilitating better health? “Design can be defined as the human nature to shape and make our environment” or “the conception and realization of new things”. Cross defines ‘design’ as the third field of knowledge; the first field being science, the second being the humanities. According to this conceptualization of the practice, ‘design’ is thus distinct from other approaches to producing
knowledge. Design is a processual activity or a form of practice and is characterized as “unstable, heterogeneous, multiply oriented, multivalent, multidisciplinary, polydiscursive”. Design is practiced by various persons, professions and organisations with differing values, ethics, philosophies, contexts, cultures and traditions, using a divergent variety of techniques and methodologies.

The term ‘design’ has traditionally referred to the activities and outcomes of design professionals, such as graphic designers, interior designers, product designers, and architectural designers. However, the term ‘design’ now incorporates an expanded field of designers including: “enterprise design, instructional design, social design, network design, user experience design, climate design, sound design, business design, applied design, green design, universal design and market design to name a few”. Indeed, there are claims that almost every aspect of the human experience and global environment is impacted by ‘design’. Baudrillard suggests, “everything belongs to design”; Latour agrees, saying “the term [design] no longer has any limit… design has been extended from the details of daily objects to cities, landscapes, nations, cultures, bodies, genes, and … nature itself.”

The range of design spans all scales: at the global scale, climate-change necessitates a redesign of our planetary climate, while at the smallest scale, genetic redesign of the human body is occurring.

Design is thus undertaken at distinct scales. These scales can be categorised as: individual product/service; integrated products/services; spatial design; and socio-economic systems. Effective ‘design for health’ should be achieved through action at all of these scales. The implication is two-fold. Firstly, ‘traditional’ designers need to incorporate greater consideration of health and wellbeing within their own practice and professions. At the scale of ‘spatial’ design, architects need to design healthier homes and workplaces and urban designers need to design healthier streets and cities. The second implication is that health professionals are becoming ‘designers’. At the ‘socio-economic’ scale this concerns redesigning issues such as diets, working patterns and the broader ‘choice architecture’ of contemporary life. It is at this broadest scale that the process of ‘design’ is perhaps the most difficult to achieve or undertake. The interventions and policies of the health professions, as they shift from a reactive to proactive stance, are (arguably) undertaking a process of (re)design of the human health of a population. Few health professionals see themselves as ‘designers’ (at present), most baulk at the suggestion; however, the interventions being proposed to improve the health of the population meet the definition of ‘design’. A logical conclusion of the trend towards greater interdisciplinary working between
professions from all disciplines: sciences, humanities and design, might be the emergence of a new discipline of ‘health design’ that endeavours to proactively engender healthier human populations. Just as the World Health Organisation promotes the concept of ‘health in all policies’, a paradigm shift would be required to deliver a ‘health in all designs’ approach. Might this paradigm shift in ethics and values perhaps even require the adoption of the Hippocratic Oath for built environment designers? Whilst interdisciplinarity in healthcare (at all scales) to proactively improve health is still in its infancy, in this interregnum between the old and new organizational orders it is not yet clear what new disciplines might evolve to enable greater ‘design for health’.

**Home**

The first four chapters are organized around the theme ‘home’. The first chapter uses an artistic-research perspective to creatively explore experiences of living with dementia. The artist Anton Kats investigates walking as a non-representative activity within a diversity of institutional agencies. Elderly people experiencing dementia are invited to ‘take a walk…’. This process address issues of care work, residential care, care home redevelopment and care in the city. The case study interweaves participatory methods of art practice and academic research to examine questions of access and infrastructure together with those of art and knowledge production in the context of residential care. The research aims to contribute towards the development of collaborative, dementia friendly and interactive design. In the second chapter, Véronique Ezratty and David Ormandy examine the financial implications of poor health related to housing conditions. A number of different health conditions may arise or be exacerbated due to such poor housing. Many houses cannot attain appropriate internal temperatures because they are difficult or too expensive to heat. Firstly, the research explores the financial cost of these illnesses to the healthcare system and secondly describes the financial cost of upgrading the thermal performance of housing. Whilst all households would benefit from improvements to health it is particularly those households on lower incomes with the greatest financial benefit and health outcomes. The research contributes empirical data to support a financially viable healthcare strategy for proactively intervening in the design of the built environment in order to prevent illnesses. In the following chapter, Matthew Hutchinson examines the implications of housing shortages. The research is located in Australia but the issues addressed are relevant in many countries worldwide. At present, Australia is facing the prospect of a serious shortage of appropriate housing,
particularly for its ageing population. The desire to age at home is not well supported partly due to the configuration of the existing housing stock. The effect is most acute for those on lower incomes and experienced by greater numbers of women. The findings establish a number of factors that contribute to the problem, including the prevalence of homogenous car-dependent suburban developments, an ageing population, changes to care funding and inequalities in wealth. Furthermore, new urban development fails to address this challenge. In light of this, a new conceptual typology of housing that is physically appropriate, socially supportive and financially accessible for this context is developed.

The final chapter of the ‘home’ section looks at the issue from an African perspective. Ebele R.I. Mogo & Jørgen Eskemose examine how urban development strategies in Africa exacerbate health inequities. Informal settlements are very common. Over one billion people now inhabit informal cities and their inhabitants experience higher levels of health inequalities. The physical environment is one of the factors contributing to this inequality: poor sanitation, crime, unsafe housing and exposure to higher risk of natural disaster. Economic factors are also relevant; inhabitants of the informal settlements are often informally employed and are financially excluded from mortgages, health insurance and loans, partly as a result of their informal status. The key challenge to be addressed in informal development is how to provide housing that deals with the incumbent health issues in this context in an affordable manner. The research involves an innovative and creative mode of action research that physically constructs new housing pilot projects within an informal settlement in Maputo, Mozambique. The pilot study contributes to the evidence-base for supporting development mechanisms through which to achieve affordable, healthier housing. Furthermore, the Pan-African empirical work provides much needed, context-specific, knowledge for this urgent issue. Research relating health, homes and informal settlements is essential for improving health outcomes in these urban environments.

City

The second section of the book examines health at the scale of the ‘city’. In the first of these chapters, Sam Kebbell & Jenny Ombler explore the possibilities of redesigning a car-dependent suburb in New Zealand. Suburban development, dependent on the motor car as a means of transport, is a driver of much urban sprawl in countries globally and is a significant contributor to climate change emissions. Such suburbs are also associated with more sedentary lifestyles and increased incidence of non-
communicable diseases such as obesity, heart disease and type two diabetes. Recent city planning policies have attempted to reverse urban sprawl trends by increasing densities and encouraging or mandating greater use of active travel. However, retrofitting existing communities remains a difficult design task. In order to explore this challenge further, a ‘design research’ methodology is applied to a case-study project. Visualisations of retrofit solutions to make city neighbourhoods more walkable are designed and critically evaluated as part of this exploratory pilot study. The next chapter by Vindhya Kakarla, Anne Niyigena, Pamela Xaverius, Deborah Kiel & Edie Barnard looks at the prevalence of child mortality in the city of St. Louis, USA. There are severe health inequalities in this city, with African American children particularly suffering from higher rates of mortality. Whilst many factors relate to access to, and the quality of, medical care, there are a number of contributing urban and spatial issues that this research focuses on. The research methodology interweaves photos, narratives and the voices of women who live with the experience of infant death to provide a more integrated and holistic approach in considering environmental influences on infant mortality. A number of themes related to the design of the built environment emerge: housing, physical environment, economy, community safety and community engagement. The aim of the research is to provide knowledge that may aid in reducing risk factors and improving infant health outcomes.

The third chapter in the ‘city’ section explores wellbeing in relation to community-level participatory design. The research is borne from the introduction of the Well-being of Future Generations (Wales) Act (2015). This legislation embeds healthy and sustainable development into the Welsh national political framework, committing all public bodies to improving social, economic, cultural and environmental wellbeing. Accompanying this top-down legislative mechanism is an emerging determination to also increase bottom-up participation of individuals and communities in this process. The research focuses on how wellbeing might be better integrated into the design of the built environment through the participation of the local community. However, there is little guidance or support available for local people in considering the wellbeing of their community. A ‘Shape my Town’ toolkit is devised to engage local people in considering the health and well-being of their built environments. This research adopts an exploratory ‘design research’ strategy, merging aspects of the design and governance of the built environment with community-level participatory approaches in order to improve wellbeing. The findings determine that whilst the tool can contribute to community participation and the identification of key health issues for each context, there is still a need for design professionals within
the process in order to fully realize the potential benefits of the wellbeing legislation.

In the last chapter in the ‘city’ section, Louis Rice develops a new framework and definition for ‘healthy architecture’. The chapter identifies specific issues within the scope of built environment design professionals for creating healthier architectural environments. The research reveals that ‘healthy architecture’ goes beyond the relatively narrow focus of current safety regulations or environmental health legislation. The proposed conceptualisation of ‘healthy architecture’ considers broader social, mental and physical health and wellbeing issues. The methodology is based on a review of research from medical and public health fields to establish evidence-based interrelationships between health and architecture. A ‘health map for architecture’ establishes four domains of architectural design related to health: materials, environments, agency and behaviours. Each of the four domains is considered with respect to the three facets of human health: mental, physical and social. The framework may be used by built environment experts, architects, engineers, clients, user groups, public health professionals and planning and policy makers to inform and improve the design of the built environments to promote and facilitate health and wellbeing.

**Society**

The final section of the book brings together research that examines health from a ‘societal’ perspective. Rachel Sara & Matthew Jones present the work of the Hands-on-Bristol collective, a platform bringing together community members, architects, trainee architects and academics to work together to empower local communities. The practice of the collective is conceived of as a form of spatial agency to empower communities through involvement in making and re-making their local urban spaces. The research draws on theories for improving community wellbeing through the interrelated processes of empowerment and activism. The chapter describes how the ‘design research’ projects involve an ongoing process of community engagement, participation and co-creation to generate and catalyze possibilities that might otherwise not be unlocked. Empirical case-study projects are evaluated to better understand the impacts on community wellbeing. The research identifies a positive impact for these projects on wellbeing and empowerment, but highlights the complexities of real-world timeframes and negotiating with the structures of power. The next chapter explores creative processes for improving community wellbeing. An interdisciplinary team worked with a local community in Northern Ireland to co-design solutions to local social
Introduction and health issues. The case-study area has high levels of mental health problems combined with very low levels of employment. The case-study projects worked with universal design principles to create two physical interventions in the built environment that respond to the community's issues. The approach is particularly innovative in combining a mixture of disciplines, using art practice with architectural interventions and participatory design, anthropology and healthcare research. The findings point to the contribution that built environment solutions might make to social, behavioural and psychological health issues in an urban context.

In the penultimate chapter, Thais Libardoni and Ligia Chiarelli explore urban sociability, particularly for older women, in Brazil. Ageing populations are an emerging issue for many nations and raise a number of health issues and challenges. The project explores the issue from an urban design perspective. The World Health Organisation (2002) describe ‘active ageing’ as, “the process of optimizing opportunities for health, participation and security in order to enhance quality of life as people age”\(^{41}\). In urban settings, this may include greater social participation of the elderly, for example through the design of public space to encourage social interaction. The chapter examines an empirical case-study mapping approach to explore intergenerational issues in urban space. The research focuses on elderly women and points out that despite the majority of the elderly population being female, they are under-represented in publicly accessible city-spaces. The research points to the need to address this spatial asymmetry in order to improve health inequalities. The final chapter of the book ends with an examination of suicidogenic environments. Globally, over 800,000 individuals die due to suicide each year. In Sweden alone, approximately forty adolescents under the age of twenty commit suicide annually. The design of the built environment can be conceived as part of strategic thinking toward the prevention of suicide. Charlotta Thodelius describes the importance of ‘place’ for suicidal acts; the chapter reveals that by analysing spatial elements, more effective preventive strategies can be developed to help reduce the incidence of suicide.

Critical reflections

The book reveals a body of interdisciplinary research exploring the boundaries of health and built environment design. Such interdisciplinarity is welcome as it enables health issues to be approached from a variety of perspectives through different strategies and tactics. The book brings together healthcare design, community activism, architecture, epidemiology, product design, design anthropology, public health, art
practice, urban planning, criminology, action research, participatory design, environmental science and philosophy. Whilst this interdisciplinarity is creative, innovative and often sheds new light onto these research areas, there are tensions in working across, and within, different methodologies, research practices and sometimes conflicting discourses. There is much work yet to do to better integrate these diverse disciplines and professions; ‘design for health’ is a relatively young field. Researching through a ‘designerly way of knowing’, sometimes described as a ‘design research methodology’, is often unfamiliar to those from a science or humanities background. This book provides substantive evidence of a designerly approach to research. This research is timely and urgent; the health issues facing society are burgeoning. The design of homes, cities and societies plays an important role in determining many health outcomes. At present, too many design decisions are (perhaps inadvertently) nudging individuals towards unhealthy lifestyles. A radical paradigm shift in values and ethics may be required to enable the ‘health in all policies’ aspiration to be translated into a ‘health in all designs’ reality.

References


34 Peter Sloterdijk, *Terror from the Air* (Los Angeles: Semiotext(e), 2009).


# Index

## A

<table>
<thead>
<tr>
<th>Term</th>
<th>Page Numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abergavenny</td>
<td>144, 145</td>
</tr>
<tr>
<td>Active ageing</td>
<td>219</td>
</tr>
<tr>
<td>Active Travel (Wales) Act 2013</td>
<td>140, 147</td>
</tr>
<tr>
<td>adolescent</td>
<td>235</td>
</tr>
<tr>
<td>affordability</td>
<td>xxiv, 46, 115, 120</td>
</tr>
<tr>
<td>affordable housing</td>
<td>xxvi, 18, 69, 71, 88</td>
</tr>
<tr>
<td>age-friendly</td>
<td>220</td>
</tr>
<tr>
<td>ageing</td>
<td>xxiii, xxix, xxxii, 14, 46, 48, 53, 59, 149, 214, 219, 220</td>
</tr>
<tr>
<td>agency</td>
<td>xxxi, 8, 9, 12, 17, 155, 166, 168, 169, 188, 189, 193, 198, 204</td>
</tr>
<tr>
<td>air pollution</td>
<td>64, 70, 114, 123</td>
</tr>
<tr>
<td>architecture</td>
<td>xxvi, 9, 76, 87, 155, 159, 200</td>
</tr>
</tbody>
</table>

## B

<table>
<thead>
<tr>
<th>Term</th>
<th>Page Numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td>behavioural mapping</td>
<td>222</td>
</tr>
<tr>
<td>Brazil</td>
<td>219</td>
</tr>
<tr>
<td>Brecon Beacons National Park</td>
<td>141, 144, 147, 150</td>
</tr>
</tbody>
</table>

## C

<table>
<thead>
<tr>
<th>Term</th>
<th>Page Numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td>civic agency</td>
<td>188, 189</td>
</tr>
<tr>
<td>civic agent</td>
<td>200, 202</td>
</tr>
<tr>
<td>co-design</td>
<td>xxxi, 193, 196, 201, 206, 208</td>
</tr>
<tr>
<td>collaboration</td>
<td>5, 17, 65, 69, 73, 128, 152, 160, 197, 206</td>
</tr>
<tr>
<td>community engagement</td>
<td>xxiii, xxx, xxxi, 117, 119, 120, 125, 139, 150, 151, 192, 213</td>
</tr>
<tr>
<td>community safety</td>
<td>xxx, 117, 120, 127</td>
</tr>
</tbody>
</table>

## D

<table>
<thead>
<tr>
<th>Term</th>
<th>Page Numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td>densification</td>
<td>57, 73, 98, 100, 103</td>
</tr>
<tr>
<td>Derry/Londonderry</td>
<td>206, 207, 214</td>
</tr>
<tr>
<td>Design Commission for Wales</td>
<td>141</td>
</tr>
<tr>
<td>design for health</td>
<td>xxiii, xxvi, xxvii</td>
</tr>
<tr>
<td>design research</td>
<td>xxx, xxxi, 104, 138, 208</td>
</tr>
<tr>
<td>desperate suicide</td>
<td>238, 243, 248</td>
</tr>
<tr>
<td>determinants of health</td>
<td>155</td>
</tr>
<tr>
<td>diseasogenic</td>
<td>156, 171</td>
</tr>
<tr>
<td>dramatic performance</td>
<td>236</td>
</tr>
</tbody>
</table>

## E

<table>
<thead>
<tr>
<th>Term</th>
<th>Page Numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td>economy</td>
<td>xxx, 47, 117, 118, 120, 163, 210, 215, 216</td>
</tr>
<tr>
<td>education</td>
<td>18, 25, 39, 77, 109, 122, 146, 158, 161, 214</td>
</tr>
<tr>
<td>elderly women</td>
<td>xxxii, 220, 223, 229</td>
</tr>
<tr>
<td>energy efficiency</td>
<td>27, 29</td>
</tr>
<tr>
<td>environmental health</td>
<td>xxxi, 30</td>
</tr>
<tr>
<td>environmental stressors</td>
<td>111, 205</td>
</tr>
<tr>
<td>excess cold</td>
<td>28, 30</td>
</tr>
</tbody>
</table>

## F

<table>
<thead>
<tr>
<th>Term</th>
<th>Page Numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td>fuel poverty</td>
<td>27</td>
</tr>
</tbody>
</table>

## G

<table>
<thead>
<tr>
<th>Term</th>
<th>Page Numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td>gender representation</td>
<td>229</td>
</tr>
<tr>
<td>green space</td>
<td>98, 104, 143, 150</td>
</tr>
</tbody>
</table>
Index

H
health map, 155, 162, 164, 170
healthy ageing, 219
healthy architecture, xxxi, 160, 165, 170, 171
housing access, 65, 68
housing health and safety rating system, 26, 28
housing quality, 71

I
identity, xvii, 15, 20, 149, 223, 227
Inclusive Design, 206, 207, 208, 214, 216
infant, 109
infant health, xxx, 110, 114, 120, 122, 127
infant mortality, 109, 111
infrastructure, xxiv, xxviii, 8, 58, 64, 66, 68, 71, 73, 77, 88, 92, 94, 99, 126, 138
instrumental suicide, 238, 241, 243, 246, 248
investment, xxiv, 18, 37, 40, 64, 67, 69, 76, 152, 211

L
live project, 189, 197
Llandudno, 145, 147, 149, 150
localism, 138, 140

M
materials, xxxi, 66, 68, 71, 76, 143, 155, 166
mental health, xxiv, xxxii, 5, 48, 103, 156, 157, 160, 166, 168, 170, 199, 205, 207, 210, 211, 214, 215, 220

N
neighbourhood, xxx, 9, 11, 12, 17, 18, 47, 88, 92, 93, 97, 102, 103, 113, 138, 139, 158, 169, 191, 196, 199
neighbourhood planning, 139
New Zealand, xxix, 26, 28, 39, 87, 110
non-communicable disease, xxiv, xxv, xxx, 156
nudge, 102, 156

O
Our Future Foyle, 206, 214

P
pan-African, xxix, 64, 65, 76
participation, xxvi, xxx, xxxi, 16, 103, 116, 137, 138, 140, 144, 152, 188, 189, 192, 196, 201, 220, 230
participatory action research, 189
pedestrian, 89, 92, 103, 145, 211, 222, 226, 230
Pelotas, 221
photovoice, 116, 125, 128
physical environment, xxix, xxx, 55, 117, 120, 168, 236, 244
place analysis, 237
place-based interventions, 245, 247
Planning (Wales) Act 2015, 139, 140
planning policy, 139, 140, 147, 148, 150
prevention, xxvi, xxxii, 166, 209, 219, 244, 248
public housing, 67
public-private partnerships, 66, 74, 77

R
regeneration, 7, 18, 140, 149, 152, 187, 216
Index

S
Saint Louis, 110, 129
sanitation, xxiii, xxix, 64, 67, 71, 123
sense of place, 143, 227
Shape My Town, xxx, 138, 141, 143, 147, 152
slum communities, 67
slum formation, 64, 67, 77
socioeconomic factors, 65, 77, 110
substandard housing, 112, 121
suburb, xxix, 48, 50, 57, 89, 91, 93, 97, 98, 104
suburban housing, 156
suicidal script, 241, 243
suicidal situation, 235, 238, 239, 241, 242, 243, 244, 247, 248
suicidogenic places, 245, 248

T
thermal comfort, 26
third space, 96, 103, 227
traditional suicide, 238, 243, 244, 247, 248
transport, xxiv, xxv, xxix, 6, 47, 70, 87, 91, 98, 102, 103, 148, 149, 157, 163

U
United States, 109, 113
University, 28, 129, 188, 189
urban design, xxiii, xxxii, 89, 101, 102, 104, 138, 143, 152, 163, 214, 216
urban health, xxiv, 64
urban poor, 64, 65, 67, 74
urbanization, 65, 66, 74

W
Wales, 26, 28, 137, 140, 141, 147, 150, 151
walkability, 87, 102
wellbeing, xxiii, xxvi, xxvii, xxx, 14, 64, 87, 103, 104, 120, 123, 155, 157, 160, 164, 169, 187, 188, 189, 202, 206, 207, 211, 214, 216
Well-being of Future Generations (Wales) Act 2015, 137, 140, 147
Wellington, 88, 91, 94, 104
World Health Organisation, xxiii, xxiv, xxviii, xxxii, 157, 189
We have been together for five months, but I have just found out one ex was an Olympic swimmer and another a professional NFL player. How can I get past my feelings of inadequacy? My girlfriend's athletic exes have given me an inferiority complex.

Eventbrite - Architecture Today presents Designing for Health and Wellbeing - Wednesday, 18 September 2019 at The Building Centre, London, England. Find event and ticket information. What is the latest thinking and where are the exemplar projects? This free-to-attend half-day conference will explore how architects are responding to the needs of today’s organisations and the occupants of buildings.