Introduction

In the coming decades, the world’s population will grow substantially reaching around 9.6 billion by 2050. Almost all of these additional people will live in towns and cities. How can the neighborhoods and districts people live, work, and socialize in be made healthier? What role can physical planning and design play?

Creating Healthy Neighborhoods: Evidence-Based Planning and Design Strategies is a guide for this practice, covering both the process and substance of making places healthier.
Creating Healthy Places focuses on health because this is a fundamental aspect of human quality of life and well-being. It emphasizes the neighborhood and district scale of development because such places are where people live out their daily existence, and they are important building blocks of larger urban places.

Research, Health, Well-being, and Place
Planners, designers, civic leaders, and activists seeking to change existing neighborhoods and districts or to revise proposals to make them healthier face a complex challenge. They need to consider a variety of topics relevant to health—from air quality to social interaction—and scales—from the blocks that make up the district to the town or city the blocks are embedded in. They also need to know the limits of how much the physical neighborhood environment can affect health. How much does a place matter compared with other sources of health and healthy behaviors from biology to culture? Healthy built environments are as much about how a place is used, maintained, and priced as they are about physical development and redevelopment. Policies matter. A beautiful play area that is too expensive to use is a visual amenity only.

This book helps planners, urban designers, activists, and public officials gain access to and assess the evidence base on healthy places, largely produced by other fields. Those in public health will be familiar with many of the ideas covered in the book. However, it provides insights into how to engage with planning, development, and redevelopment activities focused on neighborhoods and districts.

Making the leap from research to action can be tricky, however. There are three main reasons:

- In some topical areas there is a great deal of research that needs to be evaluated. Unfortunately it is often highly specific, requiring much sorting and analysis to find the big picture. This is the case even when only considering one scale, that of the neighborhood or district of a few hundred to a few thousand people or few hectares to a few hundred hectares or acres. While
there may be summaries of the research, they do not necessarily specify actions.

- In addition, there will never be research on everything of importance as there is so much environmental variation. So some kind of bridge is needed between theory and practice.

- Finally, much work on the connections between health and place focuses on the substance of the connections between health and built environments. To actually make change to places requires knowledge of both—process and substance. Further, the process is complex from prioritizing health issues and engaging stakeholders to finding the right tools for incorporating health into plans and programs.

This handbook bridges this gap by doing three things: synthesizing and adapting research findings, proposing how to make informed decisions in the absence of research, and embedding this in a health-informed planning process.

We use guidance based on research findings where those are available. However, because there are so many domains in which health and place are connected that have not been researched, we fill those gaps with guidance based on frameworks about how health and place are related. In addition, some aspects of making healthier places—the processes of developing proposals and implementing good ideas—are not unique to health but rather draw on a larger base of research evidence and professional experience.

This book creates an evidence-based approach to both the process and substance of making healthier places, taking a broadly international perspective. It draws on health research, conceptual frameworks about how health should matter, and the body of professional and research knowledge about the planning and design process. Overall, making healthy neighborhoods and districts is both a set of methods and products that build upon other aspects of neighborhood planning and design to create a rich and comprehensive approach to the quality of place.

This, of course, raises the issue of what is health. As we describe later, health is a topic of enduring interest that predates fields and professions, and interests...
Figure 1. How health, people, places, and wider context are linked over time

Health outcomes are related to biological and behavioral factors, and the context—which includes physical spaces, wider social influences, and change over time. The arrows illustrate the complex relationship between these elements.

Source: Synthesis of materials in this book with some adaptation from UCL Institute of Health Equity 2014
most people in a way few other issues do. While it can be seen narrowly as an absence of disease, those in public health typically see it as much broader—about physical, mental, and social well-being. Some would add spiritual well-being as well. As such, health deals with issues of disease, disability, and death, but it is cast in larger terms.

**Health and Place over Time**

Health is connected to place through a number of facets. Figure 1 shows generally how health outcomes relate to biology, behavior, and context over time. First, a person’s biology (gender, heritage, and age) affects health, and these factors interact with behaviors over decades.

Beyond the individual is the larger context, of which places such as neighborhoods and districts are a part. Places—at varying scales, from the room to the region—expose the biological person to various hazards either now or over time. These include harmful contaminants and hazards (from toxic chemicals to insect-borne diseases), irritants (like pollen), and events (for example, floods). Some of these are the direct or indirect result of human activity. But others—like earthquakes—are natural. These affect a person’s biology and behaviors to create health outcomes like diseases or disabilities.

The design of a local environment may support healthy behavior, making it interesting, fun, or easy. Examples include opportunities to eat well and exercise, to achieve mental health benefits from contact with nature, or to live in a safe environment. Design can also make unhealthy behavior inconvenient, expensive, or difficult.

Finally, places may provide access at varying levels to the resources for leading a healthier life, such as physical access to employment, healthcare, shopping, or social connections, for persons of all abilities. It should be noted that not all connections are positive. Some let people indulge in unhealthy behaviors and some social networks are not health promoting, but rather the reverse.

Of course, the place itself is only part of the picture and patterns of use, only partly determined by the detailed specifics of a place, also play a key role. One’s social position—occupation, income, education, and the like—as well as wider community networks is crucially important for health. All these are set in a wider context from the economy and the wider media environment to specific policies and programs that shape places and health behaviors and outcomes. Physical places have a role, but there is a lot more happening.

**A Trilogy of Investigations and Proposals**

This book is one of a set of three books coming from a project at the Harvard University Graduate School of Design, the Health and Places Initiative (HAPI), investigating connections between health and urban environments. Each looks at part of this picture. This book provides a framework for connecting health and place, proposing actions for those planning and designing at the neighborhood and urban scale in
middle- and high-income countries. It is the most practice-oriented of the three.

*Urban Communities in China: Concepts, Contexts, and Well-Being*, by Peter Rowe, Har Ye Kan, and Ann Forsyth, uses a broad health lens to investigate a range of typical residential areas in four cities in China, built or redeveloped in recent decades. China is of interest because it has recently been an area of substantial urban growth and in the near future faces a challenging transition to an aging population. *Urban Communities in China* focuses on ordinary life as it currently exists.

The third book, *Life-Styled: Health and Place*, edited by Leire Asensio-Villoria and David Mah, is a more speculative work using the language of architecture and landscape architecture. It investigates how considering health can trigger design ideas, yielding novelty in design, and explores how computational design—which creates many iterations of a design—can be used as research, not just as a way of developing stylistically intriguing options.

All three books draw on previous HAPI work synthesizing research on the connections between health and place—tools called research briefs—and developing tools for health assessment including checklists and participatory formats. These resources, available for free online, provide the common ground for the three investigations.\(^4\)

Several fundamental ideas inform all three works:

- Research can inform design and planning. A key issue is to look at a balance of evidence from multiple studies.
- Health is a useful lens for investigating urban design and planning issues and can be a trigger for imagining better places.
- While environments are important, there are many other contributors to health from biology and behavior to culture and economics. So humility is needed about how much of a difference a physical place can make.
- There are many aspects of health that are somewhat universal, particularly more physical reactions to exposures such as air pollution. Others are deeply intertwined with an individual’s personal trajectory, behaviors, social networks, education, economic situation, and culture.
- Because the issue of an aging population is so large and unprecedented, a key focus is healthy design for longevity.

The three books are not the same, however. They differ in how much they value novelty over reliability, expertise over participation, and quantifiable over more qualitative aspects of health. They also vary in terms of interest in current versus proposed environments, and building versus urban scale. In doing this, they represent a range of approaches across the environmental design disciplines of architecture, landscape architecture, urban planning, and urban design.
As global population growth continues and then slows later in this century, some cities will still grow but others will shrink and the population will generally age.

This guidebook examines how to make healthier urban neighborhoods and districts and proposes a new way of thinking, a new lens, to shape ideas about what makes a healthy place and how to achieve it.

Planning and Design for a Changing World—Transitions

For at least two centuries people have been moving in large numbers to villages, towns, and cities—urban places—where they find work, education, and cultural opportunities. Increasingly an urban life is the only one people have ever experienced. Urban areas have sometimes been places where people were healthier than in rural ones, and sometimes sicker. Over time, however, the balance has tipped toward urban areas being places where lives are longer and less plagued by illness. This is not at all uniform, however. The landscape of disease is also changing, generally from contagious to chronic diseases, though with some complicated new threats.

The urban world in 2050 will also be different to that of today. Even more people, up to about 66 percent of the world’s population, will live in urban areas of various sizes. Of course some of those urban areas are quite small, a few thousand people, with currently half the world’s urban population in urban areas under 500,000. These smaller cities are important. As global population growth continues and then slows later in this century, some cities will still grow but others will shrink, and the population will generally age. In 1950 5.2 percent of the population was over 65, in 2000 this jumped to 6.9 percent, and by 2050 and 2100 it is projected to increase to 15.9 and 24.4 percent, respectively.

And this is just the start. Environmental changes of various sorts will continue. Poverty will be a
continuing problem for many, and inequality will raise other issues. New urban technologies will emerge—particularly in the areas of communication and mobility. Some people will benefit from these technologies but not all. In short, there will be much urban growth in coming decades—giving opportunities for building healthier places. However, even in areas with little growth, rebuilding will occur to evolve with shifts in demographic composition, incomes, natural systems, and technologies.

So the landscapes of both urban places and health are in transition, with implications for how health, wellness, and environments interact. This is an opportune time to explore these interactions. After a decade or so of renewed interest in how health and place are connected, there has been a great deal of progress made: research completed, summaries made, tools developed, case studies prepared, evaluations completed. This work is increasingly international.

How to Read this Book
This book takes health, urbanization, demographic, and environmental challenges and changes as a starting point, providing an overall framework for organizing the various tools, topics, and proposals. It communicates to planners, policy makers, and civic leaders how a health lens can help them understand and improve places, plans, and projects. It does this in a number of overlapping ways structured around a series of principles, propositions, and actions. They deal both with the process of creating a healthier place and the substance of what that involves. They were developed by reviewing a very broad literature on healthy places and healthy planning processes. Principles include the following:

Principle 1. Importance: Examine how much health may matter in this neighborhood or district. The first principle is preparing to do the work by doing enough investigation to figure out if health is an issue of concern in a neighborhood or district, identifying what kinds of health concerns are raised, and considering if anything is likely to be done from an assessment.

Principle 2. Balance: Make healthier places by balancing physical changes with other interventions to appeal to different kinds of people. This is about understanding how change occurs, particularly that big changes need to have many strategies happening all at once, make informed trade-offs, and demonstrate an understanding of scale and the pathways from environments to health.

Principle 3. Vulnerability: Plan and design for those with the most health vulnerabilities and fewest resources for making healthy choices. The aim is to help undo disparities in how long people live and how healthy they are with a particular focus on the young, the old, those with disabilities, and those who are disenfranchised, such as refugees, marginalized ethnic groups, and those with low incomes.
Principle 1
Importance: Examine how much health may matter in this neighborhood or district

Principle 2
Balance: Make healthier places by balancing physical changes with other interventions to appeal to different kinds of people

Principle 3
Vulnerability: Plan and design for those with the most health vulnerabilities and fewest resources for making healthy choices

Principle 4
Layout: Foster multiple dimensions of health through overall neighborhood layout

Principle 5
Access: Provide options for getting around and increasing geographic access

Principle 6
Connection: Create opportunities to interact with each other in positive ways

Principle 7
Protection: Reduce harmful exposures at a neighborhood level through a combination of wider policies and regulations along with local actions

Principle 8
Implementation: Coordinate diverse actions over time

Figure 2. Guidelines are framed through eight principles
The framework includes the process of creating healthier places (dark gray) and the components of such places (light gray).
Source: Developed by authors
Principle 4. Layout: Foster multiple dimensions of health through overall neighborhood layout. This area focuses on the big moves in setting out a neighborhood or district in terms of the locations of activities, distribution of people, the street and path configurations, and green space arrangements.

Principle 5. Access: Provide options for getting around and increasing geographic access. Meeting the mobility and geographic accessibility needs of an entire district or neighborhood is a challenge, so the key is to provide options.

Principle 6. Connection: Create opportunities to interact with each other in positive ways. Neighborhood planning and design can support and supplement the common interests, households and family ties, and events that bring people together; can increase people’s sense of belonging in their communities; and enhance informal control of anti-social activities.

Principle 7. Protection: Reduce harmful exposures at a neighborhood level through a combination of wider policies and regulations along with local actions. Reducing harmful exposures is a basic principle of healthy planning—reducing contaminants or hazards at the source, buffering people from exposure, and skillfully designing to mitigate problems.

Principle 8. Implementation: Coordinate diverse actions over time. Implementation is key. Large changes in how environments can support health require multiple strategies. These are not just changes to physical places but to how people use those places.

Principles 1, 2, and 8 address issues that any planning and design process needs to go through, though modified with an eye to how health can make a difference. Principles 3 through 7 draw on the evolving base of research on the connections between health and place related to issues such as urban form, housing, transportation, open space, and infrastructure.

These are operationalized through 20 more specific propositions and 83 actions that reflect key findings from our review of research. The principles engage larger questions and provide an overall framework for thinking about an issue and connections to other ideas and propositions; the propositions identify more specific areas of intervention related to the preceding principle; and the actions specify what to do. They can be used in two types of situations—creating a new neighborhood or district or retrofitting an older one.

Principles 1, 2, and 8 do not provide a whole planning process but point to how to make health relevant in such a process. They, and the associated propositions, refer to evidence—from experience and academic studies—of implementing complex proposals.
Principles 3 through 6 are based on a different body of evidence, research on the associations between health and place. As was noted earlier, there will never be complete research on all possible variations of places and their inhabitants and where research is missing, we provide conceptual frameworks that build logically from the research base to propose a wider set of solutions. Of course they are interconnected.

Propositions take one of two standard formats. The propositions following Principles 1, 2, and 8 provide the proposition, a clarifying statement, a discussion about how this concept works, specific actions, and connections to other propositions and ideas. Propositions within Principles 3 through 7 include evidence from health and place research, but they also draw on research about the process of planning and design. The connections found at the end of each proposition, and at the end of the introduction to each principle, help readers navigate to other relevant parts of the manual. They list topics that provide background or could allow readers to explore further. Not all possible connections are listed, but those that are listed provide a starting point for exploring linkages between topics.

The two appendices are key. Appendix A includes a complete checklist of all principles, propositions, and actions. Appendix B provides a matrix of specific health topics (e.g., air quality, water quality, social capital) and where they are referenced in the text. A glossary at the end of this introduction defines key terms.

Figure 3. How those in public health can use this book

This book is aimed at planners, urban designers, developers, residents, and civic leaders interested in specific neighborhoods and districts—they are living in them, planning them, and doing projects in them. They start with specific places, and they ask how health may matter.

Public health professionals typically work with populations such as children or those with asthma. Places are settings that expose people to potential health risks and benefits. They may need to go through a long process to decide on which places are key to their work. They start with health issues and ask how and which places may matter.

Given these differences in starting points, public health professionals can use this book to understand how others engage with health issues in neighborhoods. They could also use it to understand specific places, creating a short list of potential neighborhoods using a community health needs assessment (see health assessment in the Glossary) and then focusing in where they are likely to make a difference.
This book helps navigate the research landscape, sorting through evidence and providing clear frameworks linking health and place.

Action Evidence
In each case, actions are classified in terms of their level of certainty:

- The action recommendation comes directly from research evidence.
- The action recommendation is informed by research.
- The action is general good practice, often termed an emerging or promising practice in public health. These will not hurt but, in part because of the topic they relate to, there is not as much evidence as those in the other categories.

The action classification helps experienced planners understand which approaches may be strongly grounded in evidence versus basic good planning. For new planners, non-planner professionals, and community members, they provide an accessible checklist of healthy planning and urban design issues.

Using Research: Evidence-Based Practice in Making Better Neighborhoods
Because what it means to be healthy, well, or whole is so personal, intuitions and experiences are important guides providing compelling insights. But they can also be misleading. It may be commonsense that eating a local fish is a healthy thing to do, except when that fish comes from a polluted waterbody. For a designer, sensitized to the importance of space, it may be clear that a physical public space is needed to make social connections—except that for many people such connections are built or maintained in the buildings of faith communities, in the homes of extended family members, or online.

This is where the move to evidence-based practice—practice informed by research—has a role. It can place commonsense in context, identify causes beyond the obvious, and caution against simple solutions. But of course places—particularly at the urban scale of the
block, district, town, and metropolis—are extremely complex, multidimensional, and evolving. There is not and never will be research that can deal with all possible situations. So to make places that promote health, planners and designers need to make leaps of imagination.

This is more complex than it appears. Even where the local environment affects human health and well-being, the exact character of that effect may be difficult to figure out. This is a major reason for creating this book: to navigate the gap between research findings and practice. There are a number of ways in which this gap occurs.

**Research availability dilemma**

A first issue is the uneven availability of research. As we note, this was a key impetus for writing this book. Potential problems related to research availability are diverse:

- Some topics have a great deal of readily available and relevant research about the effects of environments on health, and other topics have far less. This has to do with patterns of funding, the difficulty of the research, and histories of academic fields. So it is far easier to learn about physical activity, where research has been well funded, than homelessness, for example, where it has not.
- Where there is a great deal of research, considerable effort is required to understand the overall balance of findings. Systematic reviews that carefully compare findings are one source for such overviews, but they are not available for all areas. They may also focus narrowly on specific kinds of studies—like randomized controlled trials—that are not typically available in areas related to urban and neighborhood effects on health. Other kinds of reviews and individual studies fill part of the gap but need to be carefully evaluated.
- Where there is not much research, it can be difficult to find relevant work. In those cases one has to extrapolate from what is known.
- All this is shaped by the problem of publication bias, where studies that find associations between health, wellness, and places are more likely to be published than those that do not. This is because they are more interesting to write, and journal editors and reviewers find them more interesting to review.
- Finally, even if research is available, it is often inaccessible to those outside large institutions as it requires costly subscriptions. So the research that practitioners can obtain may be a very partial list.

Books such as this can help navigate this landscape sorting through evidence and providing clear frameworks linking health and place.

**The complicated relationship between health and place**

A second issue is the very different pathways from environmental features to health outcomes, which are evident in the various propositions in this book.
Consciousness: Some health outcomes involve a largely involuntary reaction, such as to toxic exposure where the effect on health and well-being is relatively straightforward. Others, however, are deeply affected by perceptions, beliefs, and voluntary behaviors. For example, two people living in the same environment might engage in very different levels of outdoor walking and other exercise related to their perceptions of crime in the area or what is appropriate weather for outdoor activity.

Particularity: Some health outcomes are more universal, such as reactions to chemicals, but others are more influenced by cultural or age differences. Even toxic exposures will have different effects related to age, pre-existing conditions, and individual biology.

Significance and magnitude: Some effects of place on health found in the research are statistically significant but very small in magnitude. This can happen in very large studies where the large sample size means small effects can be detected. Given all the other causes of health, the importance of specific causes can be extremely modest—although if many people are affected, effects on the whole population may be important.

Likelihood: Some aspects of place may have a large effect on health in terms of magnitude, but the effect may be less certain or only apply in particular situations. Examples include flooding or earthquakes. Other aspects may have a small effect on many people that is more certain—for example, community noise leading to disturbed work patterns. Both need to be considered but in different ways.

Time: Some exposures and events affect people’s health very quickly and obviously, and others may only appear over a very long period. It can be very difficult to figure out a cause of something that emerges over decades, and many effects of environment and health are most important in childhood. Ellen et al. talk about the process of “‘weathering,’ whereby the accumulated stress, lower environmental quality, and limited resources of poorer communities, experienced over many years, erodes the health of residents in ways that make them more vulnerable to mortality from any given disease.” This makes it imperative to include the dimension of time in any framework.

Space: Finally, in contemporary society people inhabit more than one place over a day, week, year, and lifespan. As is shown in Figure 4, this makes it complicated or researchers to figure out the effects of any one particular space on health, particularly with conditions that only emerge over time.

The interplay between research, expert knowledge, and local knowledge
A final issue is the interplay between research and other forms of knowledge commonly used in creating local environments.
Local knowledge, such as the wisdom of residents, is crucial. It can tap into key values about health and well-being, identify important ways places are used, and provide a base of ideas for improving places in relevant ways. It can also be wrong—for example, underestimating contaminants in a river or overestimating the problems from a new business. This knowledge can be a problem for the locals if it means they are engaging in less than healthy activities.

In turn, professional judgment relies on prior training, experiences with similar projects, and knowledge of other places. Health research has little to say about the process or planning and design idea generation or implementation, and such expertise is key in filling that gap. However, such knowledge has not always been informed by a rigorous understanding of health, let alone the most recent research. It can be easy to dip into research studies that confirm one’s intuition but may not actually represent the balance of evidence. A path forward is to carefully consider all three types of knowledge—local, expert, and research.

It should be clear by now that undertaking evidence-based neighborhood planning and design is not simple, but neither is it impossible. Drawing on research, and logical frameworks to fill in the gaps, much can be done to make places healthier:

• A first set of strategies is to consider how to minimize exposures to hazards such as waterborne diseases, contaminated air, or excessive noise.

**Figure 4. Time-geography of daily life**
Within a single day, people travel to many places and engage in multiple activities, complicating the understanding of how places affect health outcomes.
Source: Developed by authors
• Drawing on evidence about the connection between health and place, where it is known, places can be planned to support healthy behaviors and connect people to resources.
• Finally, they are planned in the context of the wider geography and longer term beyond the immediate here and now of neighborhood and district life.

Examples of Healthy Places
How might health be incorporated in specific places? This involves a place performing well in the current period but also over time, for health-related concerns but also in relation to wider concepts of quality of life.

One example is where places have one purpose when built but can age gracefully beyond their initial program. A classic example is classical pleasure ground parks, large green spaces with lawns, trees, and meandering paths. Some nineteenth-and early twentieth-century versions may have been initially designed with the idea of fostering more middle-class behavior among workers. However, over a century or more, such types of parks have become the setting for many different kinds of behaviors beyond those initially intended, many of them health promoting. These include providing spaces for active sports, social gatherings, and individuals experiencing the restorative aspects of nature. Where there have been problems—such as violent crime in parts with poor visibility—the better places have provoked community networks to solve the problems for the parks and beyond. Such non-physical components—organizations, programs, and policies—are key to successful places.

A related strategy is to have places that nudge healthy behavior in multiple ways, or provide opportunities for people to do healthy things. Many universities make access to campus easy by cycling or walking, with dedicated bicycle and pedestrian paths. They combine pricing and physical design to make driving and parking expensive in both time and money.

But some places may only support healthier behaviors for certain people in certain kinds of places and periods. Planning and design have a history of models that created livable places in one context but tragic environments elsewhere. A high-rise tower can
be a positive home environment when well-located units are big enough and residents have resources to get out and about. They may not work so well for large households in cramped quarters in buildings that lack maintenance. A “climb-the-stairs” campaign that promotes beautiful stairs as a focal point for socializing and physical activity may make those in wheelchairs seem like second-class citizens, again.

Designs that separate cars from pedestrians and connect destinations along leafy paths (for example, Radburn-style superblocks) may promote traffic safety and community connections in a natural setting. However, ill-maintained spaces can provoke fear.15

Cumbernauld in Scotland provides a specific example of Radburn-style planning, dating from the 1950s and 1960s. Its very high-density, award-winning layout almost completely separated people from cars, dramatically decreasing accident rates to under one quarter of the national average in early years. In the core areas, the pedestrian paths are completely continuous with high-quality landscaping and modern architecture.

Over time, however, some of the pedestrian paths faced safety problems (related to crime) that offset the solutions the paths aimed to address (related to traffic). Although surveys in the 1990s found most people were fairly satisfied with life in the new town, vandalism and crime were concerns.16 While the story is complex—including some problems in privatizing the largely public housing—it does demonstrate how well-intentioned innovations do not always work.
Interventions beyond Place—Combining Types of Initiatives

Intervening in the built environment alone cannot be the sole solution to address health concerns. Approaches should combine a sensitivity to both social and physical aspects of place, and this involves not only changing place but changing relevant policies, programs, and organizations (see Table 1).

One of the book’s key arguments is that to make big changes, or to halt large trends, one needs to use many strategies at once—changing physical places, implementing policies that affect how they are used, developing programs, and altering pricing to tip the balance toward creating environments that support positive behaviors, minimize harmful exposures, and enhance healthy connections.

The Health in All Policies (HiAP) approach, described in the following glossary, uses collaboration among agencies, community groups, businesses, and nongovernmental groups to incorporate

Figure 6. Radburn-style super blocks
This classic Radburn-style neighborhood emphasizes separation between pedestrians and motor vehicles. Homes face a continuous green space so people can walk to major destinations without crossing a road. Such designs have been successful in some locations, but less so in others.
Source: Adapted from United Kingdom Ministry of Transport (1963)
Figure 7. Radburn-style planning in Cumbernauld, Scotland

Motor vehicles and cars travel on separate routes in Cumbernauld. In the early years of the development, this layout achieved substantial gains in pedestrian safety. In the 1990s, vandalism and crime became concerns, especially along pedestrian pathways.
health-related aims and actions in a variety of areas from transportation to immigration. There are several different tools for doing this work of making places healthier, listed in Table 1.

Overall the aim of the book is to provide a balance between a broad sense of why creating healthy places matters, evidence–based advice about how to create healthier places at the neighborhood or district scale, and guidance about the process of making changes in neighborhood environments.
Use many strategies at once to tip the balance toward creating healthy environments.

Table 1. Approaches to intervening in places

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<th>Approach</th>
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| Coordinating, educating, and raising awareness | • WHO Healthy Cities and Age-friendly Communities  
• Health in All Policies  
• Place-based age-service cooperatives |
| Assessing health impacts                | • Comprehensive approaches (health impact assessment)  
• One dimension at a time (e.g. food assessment) |
| Making regulations and policies         | • Complete streets ordinances  
• Pedestrian zoning overlays  
• Water protection regulations |
| Proposing places                        | • Healthy neighborhood plans  
• Healthy transportation plans |
| Building physical places                | • Single issue such as bike paths  
• Comprehensive such as new neighborhoods or towns |
| Using places differently                | • Temporary uses (e.g. cyclovia)  
• Changed uses (e.g. candy store to bike repair) |

Sources: Developed by the authors
Glossary

A number of words have specific meanings in health, planning, or design but are used more informally in common speech or by other professions. We explain how we use these words in this book and how to tell the specific meaning from the context. Where we refer to another word in the glossary in an entry, we mark this with an *.

**Accessibility:** “At its simplest, the ease with which one place can be reached by another.” This is related to distance, time, cost, and social barriers and may be measured to a specific destination or destinations more generally (e.g. access to healthcare facilities). With the rise of new forms of communication accessibility is increasingly distinguished from (geographical) mobility or ease of movement. One can have access to important resources without being mobile.

**Active travel or transportation:** Forms of transport that require physical activity, most commonly walking and cycling. The term active travel is most commonly used to refer to all forms (walking, cycling, skiing, etc.); it may also be called physical activity for transport. More specific forms of active transport may be called walking for transport, cycling for transport, and the like. Active travel is a form of non-motorized transport but this is a larger category, and included forms that are not active e.g. riding in a horse-drawn cart.

**Activity:** This has several uses including physical activity and social activity. In work on mixed use we use it to describe the activities happening in places that are destinations for trips. It is related to activity-based models in transport that “work on the premise that travel demand is derived from the activities that people undertake.”

**Affordable housing:** While there are specific definitions for various cities and countries, broadly this refers lower income people being able to spend a manageable proportion of their income on housing (rent, mortgages, maintenance, and utilities). This often requires government action—providing housing directly, helping support nongovernmental developers, providing rent subsidies, helping lower income first home buyers, providing incentives for private developers to build for a lower-income market, or creating regulations to support innovations.

**Cause:** “An event, such as a change in one variable, that produces another event, such as a change in another variable.” While it sounds straightforward it can be very difficult to precisely identify causes in research on the relationship between health and place because there can be many plausible causes of a health related outcome only some of which can be measured at a particular time. Further, many effects have multiple causes. Much of the research in this area can only find associations which may be causes, but may not.

**Density:** Is the number of things (people, houses, trees, etc.) in an area. Densities can be measured at different scales from the site to the region; gross densities include the entire land area in calculations and net densities exclude certain components (e.g. parks or industrial areas). This makes it hard to compare density figures. Density is often confused with related terms such as crowding, sometimes called interior density, which is a perception of there being too many people in a space; and building bulk and site coverage which are related to the size of a building on the site.
**Destination:** A place someone is going to. In the context of mixed-use development this is often an activity generator like a shopping area, workplace, or key recreational site.

**District:** This is an area akin to a neighborhood but not necessarily residential in character as in an industrial or commercial district. While focused on residential and mixed-use neighborhoods most of the guidelines in this book also apply to districts.

**Environment:** When people say the environment deeply affects health they do not necessarily mean the environment of neighborhoods, parks, blocks, and streets but planners and designers may mistakenly think they do. The environment is at its base a wider context—it can range from the physical spaces around us to less tangible environments such as media, culture, or family. Planning and design distinguish between the built environment (shaped by people and including landscapes altered by people) and the natural* environment (the environment of vegetation and wildlife, that may also include environments shaped by people). To avoid confusion we talk about the built environment (including landscapes) and wild nature. In health the environment is seen far more broadly than in planning and design and may include the peer environment, family environment, media environment, policy and program environment, economic environment and the like. The food environment, for example, ranges in scale from what is available at a family meal to fast food advertising and international food systems. The actual physical built environment is a small aspect of that.

**Exposure:** For health exposure is the “contact between an organism and a chemical or physical agent, by swallowing, breathing, or direct contact (such as through the skin or eyes).” Second-hand exposure e.g. to tobacco smoke in a room still involves direct contact. In disaster work it has a different meaning related to the “total value of elements at-risk. It is expressed as the number of human lives, and value of the properties, that can potentially be affected by hazards.”

**Goals and objectives:** Goals are typically broad aims that cannot be easily measured, such as “improving health”. Objectives are more specific and measurable aims, such as increasing the number of people who walk or cycle to work. Actions and strategies are the specific approaches you will use to achieve the goals and objectives.

**Hazard:** A source of potential harm. More technically in the area of weather it is a “potentially damaging physical event that may cause the loss of life or injury, property damage, social and economic disruption or environmental degradation.”

**Health:** Health has a number of standard definitions from the absence of disease to the constitution of the World Health Organization—“a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity.” This book typically takes the broader view.
**Health assessment:** A neighborhood health assessment or audit can take a number of forms. In this book it includes health impact assessment (assessing the effects of policies, plans, projects, and proposals), and healthy community assessment (collaborative approaches to understanding health in a place, taking account of both history and the population). Both can be focused on places at the scale of the neighborhood or district. A neighborhood health assessment is different to typical community health needs assessments or community health assessments used in public health that are often more technical analyses focused on the health status of people in wider communities, risk factors, and preventive measures.

**Healthy housing:** This is the idea that improving housing can improve health, an issue international concern. One example is the U.S. National Standard for Healthy Housing, developed by the National Center for Healthy Housing and the American Public Health Association. It involves topics such as space, plumbing, lighting, thermal comfort, moisture, waste, chemicals, and personal safety and security.

**Health in All Policies (HiAP):** This is a collaborative approach to integrating health considerations into policy and planning across a range of sectors from housing and transportation to environment and multicultural affairs.

**Healthy neighborhood:** In this book it refers to a neighborhood where health is a part of the process of planning as well as a key outcome. It is related to the idea of the complete neighborhood that according to the City of Portland, Oregon, “refers to a neighborhood where one has safe and convenient access to the goods and services needed in daily life. This includes a range of housing options, grocery stores and other neighborhood-serving commercial services; quality public schools; public open spaces and recreational facilities; and access to frequent transit. In a complete neighborhood, the network of streets and sidewalks is interconnected, which makes walking and bicycling to these places safe and relatively easy for people of all ages and abilities.” It is one of many kinds of neighborhoods and districts.

**Irritant:** “A substance that produces an irritating effect when it comes into contact with the skin, eyes, nose, or respiratory system.”

**Knowledge** is typically about understanding. For this book the key issue is that knowledge has many sources including scientific information, personal experience, or professional activities. These forms of knowledge have different strengths.

**Life course:** “An expression denoting an individual’s passage through life, analyzed as a sequence of significant life-events, including birth, marriage, parenthood, divorce, and retirement.” It is a more contemporary version of the life cycle that does not imply regression to childhood at the end and accommodates varied household types.
**Mobility**: In transportation it is about movement including circulation (short-term movements outside the home, daily travel, touristic travel, etc.), migration (permanent moves), and social mobility. We typically use it to mean circulation and compare it with accessibility*. It may also be used more loosely to mean getting around even within the home in the context of universal design.

**Modifiable (causes of health)**: Much an individual’s health is predetermined by our genetic inheritance, age, and gender. Modifiable causes are such factors as diet and physical activity.

**Nature**: The issue of importance here is a confusion in the literature between nature as untouched wilderness vs. nature as vegetation and animals which may well be altered by humans. Ecologists often mean the first; environmental psychologists, the latter. We typically do not use the term nature but rather specify the type of environment more clearly.

**Neighborhood**: this is a controversial term with many different definitions though it typically includes residential activities. Research on perceived neighborhoods has found great variety in terms of size and important components. A functional neighborhood is related to a healthy neighborhood* in that they provide a balance of resource. In this book we see the basic neighborhood as a small area from a few blocks (an area of 4–5 hectares or 10–12 acres) up to a district of a few hundred hectares. At a very brisk 4 miles or 6 kilometers an hour, someone can walk from the center to the edge of round district of 314 hectares or 778 acres in 10 minutes. This is a wide range.

**Neighborhood Health Assessment or Audit**: See health assessment.

**Place**: This often refers to space* inhabited by people as a setting for social interaction or in terms of the perceived sense of place. In this book we use it loosely, interchangeable with built environment*.

**Plan**: Generally one can plan for the future with specific actions in a given timeframe. In this book we use it typically in the sense of a spatial plan related to future actions in a place. This may be a public or private activity but as the scale of a plan gets larger, beyond the parcel or block, the public sector is more likely to be involved. A secondary meaning of plan is of the plan view, or the view from directly overhead.

**Policy**: general principles about how to act. It may not be related to a specific place but rather provides broader framework. As the United Nations Food and Agriculture Organization (FAO) states: “A policy is a set of coherent decisions with a common long-term purpose(s)... The terms “policy”, “plan”, “program” and “project” are progressively more specific in time and place. Policies are usually national policies (not district or provincial) and are not normally limited in time: one does not usually speak in terms of “2-year policies” as one does of “2-year programs” or “5-year plans.”

**Pollutant**: Something that causes pollution or contamination by polluting with “harmful or poisonous substances.”

**Program**: A program is generally an ongoing set of events. Examples relevant to this book include a programs to prevent crime or promote exercise.

**Project**: A specific collaborative enterprise to achieve an aim. It may be more specifically a development project such as a redevelopment project or a neighborhood upgrading project.
Reliable: In health this means a result can be replicated (and such replication comes in several forms). For tools completed by an expert inter-rater reliability is used to see if two different people get the same result. For tools completed by an individual being studied, the core form is test-retest reliability—will they provide the same answers for stable phenomena over time. There are other forms but this captures key concerns. It is related to the word validity* or truthfulness. In common language however, reliability simply means it can be relied upon.

Resilience: “The rate at which a system regains structure and function following a stress or perturbation.” This is related to vulnerability.*

Resources: Refers to “sources of human satisfaction, wealth, or strength.” In the context of this book they often refer to the resources to lead a healthy life.

Risk: In disasters the “probable impacts, expressed in terms of expected loss of lives, people injured, property, livelihoods, economic activity disrupted or environmental damage.”

Significance: Broadly this is about how meaningful or important a result is. It can be used narrowly to refer to statistical significance, where something is “larger or smaller than would be expected by chance.” The key issue here is that something may be statistically significant (that is the relationship is likely to be true within some confidence interval (e.g. one is 95 percent sure) but it can be such a small value or magnitude as to be relatively unimportant. It may also be an unimportant or obvious association. There are many such results.

Social capital/social connections: This is broadly the connections among individuals or groups that facilitate collective action. It can be seen to have a number of components: membership of groups and networks, interpersonal trust and solidarity, collective action and cooperation, social cohesion and inclusion, and improved information and communication. As we describe later, on one side these relate to perceptions of reciprocity and trust (cognitive social capital), and on the other interpersonal networks and engagement (structural social capital). They may be strong bonds of close-knit communities and families or the more distant bridging links between people with not as much in common.

Social Determinants of Health: as the World Health Organization outlines “The social determinants of health (SDH) are the conditions in which people are born, grow, work, live, and age, and the wider set of forces and systems shaping the conditions of daily life. These forces and systems include economic policies and systems, development agendas, social norms, social policies and political systems.” Neighborhoods provide some of these conditions.

Space: This is typically a physical area in contrast with place* that has social and perceptual dimensions.

Systematic reviews: These are forms of literature reviews with very clear criteria for inclusion in the review and a systematic approach to analyzing findings. They are often contrasted with narrative reviews. They are common in the area of health and less common in planning and design.
Toxic and toxin: Something that is toxic is poisonous and a poisonous substance is a toxicant. Strictly speaking a toxin is “a poisonous substance that is a specific product of the metabolic activities of a living organism” however it is often used interchangeably with toxicant.48

Transit, public transportation, collective transportation, and shared transportation:
Public transport or transit involves shared rides along scheduled routes on vehicles available to the public. Common modes are trains, trams, and buses. There is not a good alternative word for demand responsive systems that provide individuals with point to point service, more private forms of group transportation, and including traditional paratransit (vans for disabled people); shared cars and vans; work-based van shares, bike-share systems; and taxis. We divide these roughly into collective transportation (e.g. shared vans, paratransit, and work-based shuttles) and shared vehicles where the riders are often individuals (like bike or car share systems). There is obviously a lot of overlap and this is just to indicate the great range of such systems.

Validity: This refers to a research approach that ensures what is meant to be measured is in fact being measured. In other words, truthfulness of the measure. This is particularly important when one is not measuring a variable directly e.g. using the area of parks to measure park accessibility. There are several forms of validity including face validity (does it appear to be valid), content validity (does it include the broad range of the phenomenon), and criterion validity (does it agree with an external gold standard).49

Vulnerability: This has different meanings depending on context. Socially it can refer to the possibility that disadvantaged or vulnerable groups may be affected. Such groups typically involve the young, the old, those with existing disabilities, those with low incomes, and people who are otherwise marginalized in a way that could affect health. Environmentally it is also called fragility and related to the “sensitivity, resilience*, and capacity of a system to adapt to stress or perturbation.”50

Well-being, wellness: Where people “perceive that their lives are going well.”51 This has a number of aspects including physical, economic, social, emotional, and psychological well-being as well as satisfaction with life and engagement with activities.52

Urban heat island: “A dome of raised air temperatures that lies over an urban area and is caused by the heat absorbed by buildings and structures.”53