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What is a healthy place? Models for cities and neighbourhoods

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ABSTRACT

What is a healthy place? Focusing on the scale of the neighbourhood and city, this paper outlines six overlapping types of environments that chart the range of current thinking: healthy built environments, collaborative healthy cities, age-friendly/all-age communities, child-friendly communities, healthcare industrial cities, and smart health environments. The first three are based on a public health perspective and the fourth on child development concepts, with a comprehensive view. The last two deal mainly with the economy, personal information, and behaviour. If combined with the others, however, they might increase public interest and aid health monitoring and evaluation.

Introduction: approaches to building healthy places

Many planners and urban designers are interested in designing healthier neighbourhoods, districts, and cities but wonder how to do so. The answer depends on how they define health and how comprehensive the approach needs to be. This paper proposes three categories of healthy cities and neighbourhoods divided into six specific types. They are conceptually distinct and chart the range of what is being proposed in urban design, planning, and urban development as a healthy place. They include *basic healthy place* types, specifically healthy built environments and collaborative healthy cities; *population-based lenses*, chiefly age-friendly/all-age communities and child-friendly communities; and *technology-focused places*, both healthcare industrial cities and smart health environments.

These models have different histories and emphases. They range from more comprehensive approaches that focus on working to change communities physically, programmatically, and institutionally to those emphasizing individual behaviour and economic activity. Readers of the *Journal of Urban Design* are likely most familiar with the first type, healthy built environments. Governments and developers may ask them to design the fifth type, healthcare facilities and health related industrial areas, branding this as a health campus or park. They may be intrigued by the last type, smart health environments. However, understanding the entire landscape of approaches highlights how urban designers can interact with community-level health promotion programmes. These enlist multiple disciplines, diverse organizations and agencies, and the wider public in a holistic approach.

Currently, this range of alternatives is not easily identified, as they are dealt with in different literatures and championed by diverse disciplines. This paper fills that gap, if in a preliminary way. The paper first examines key challenges in studying multi-dimensional approaches to healthy places, explaining how the types were identified. It then introduces the six types and outlines them in terms of basic ideas, methods, and examples. It concludes that the first four types, while potentially very comprehensive, are often only partially implemented, leading to underwhelming results. In contrast, the health technology types may have only modest health benefits in themselves, creating a healthy economy, monitoring unhealthy behaviour, or treating illness after it occurs, however they can generate excitement. If melded with the other types they might increase interest in the more comprehensive models.

Charting the types' origins

The six types of healthy neighbourhoods and cities come from different but overlapping traditions (Table 1). The first three types draw on a range of sources including the nineteenth and early twentieth century public health and garden cities movements that promoted a role for governments in creating healthier places via infrastructure, community design, and local programmes. Their immediate antecedents, however, were a set of debates starting in the 1970s focused on the wider social determinants of health and the ability to influence health at a population level through policies and programmes outside of healthcare delivery (Hancock and Duhal 1986; Hancock 1993). Advocates of health promotion pointed out that genetics and other biological features, such as age and gender, are key in health. However, other dimensions also play a role including: behaviour; social circumstances such as education and income; and the physical and social environment from toxic products and workplace safety to road

Table 1. The six types of healthy places.

| | |
|---|---|
| Category: Basic healthy places | Idea: Develop a physical and/or institutional structure supportive of health |
| Types: Healthy built environments Healthy communities collaborations | Key fields: public health, urban planning, urban design, sustainability Methods: ● Evidence-based guidance ● Processes to combine local, expert, and research knowledge e.g. health impact assessment ● Ongoing collaboration among sectors ● Affordable housing/service options |
| Category: Population-based lenses | Idea: Focus on population groups with health vulnerabilities and wide relevance |
| Types: Age-friendly/All-age communities Child friendly communities | Key fields: public health, gerontology, education, child development Methods: ● Neighbourhood physical structures that focus on the young and/or the old ● Mechanisms to engage people in relevant decision making ● Programming for child development and ageing, e.g., education, exercise ● Multiple affordable housing/service options |
| Category: Health technology cities | Idea: Harness innovative technology to create a healthy economy and/or assist in health monitoring and promotion |
| Types: Healthcare industrial cities Smart health environments | Key fields: healthcare, technology, business Methods: ● Economic development strategies e.g., science cities, anchor institutions, innovation cluster development ● Monitoring and assistive technologies |

accidents (McGinnis, Williams-Russo, and Knickman 2002; Davies et al. 2014). While physical places may have a minor direct influence on health, they are also the settings in which behavioural choices are made, enlarging their influence. The fourth type, the child-friendly city, draws more strongly on work in child development and child rights but shares a focus on human development and well-being (van Vleit and Karsten 2015). The types can be combined; for example, in Europe members of the European Healthy Cities Network have adopted age-friendly strategies (Green 2013).

While small scale versions of these types can be created by one organization, at the scale of the neighbourhood or city they need collaborations among different groups and organizations (RTPI 2009; APA 2017). These types also share a commitment to health equity – defined as paying attention to the needs of the most vulnerable including the young, old, those with low incomes, with pre-existing health problems, or otherwise marginalized in society (WHO 2018).

The health technology city types come from different origins. The healthcare industrial city uses healthcare and related industries – such as research or manufacturing – to generate economic development. It creates a healthy city via a healthy economy based on healthcare. The smart health environment focuses on the health of the individual, fostered using monitoring, treatment, and technology-aided assistance. Neither necessarily takes a comprehensive view of health promotion in the sense of looking at multiple health issues, health determinants, and vulnerable populations. They may merely provide healthcare jobs, measure bad health, and suggest individual-level solutions. However, they have stimulated interest among the public, professions, governments, and businesses. They could be enriched with ideas from the other types to make them into robust versions of healthy places.

Methods

A work of conceptualization, the paper draws on a review of research and practice in the area of healthy environments. Creating this typology involved defining key dimensions of healthy city and neighbourhood proposals and then synthesizing the diverse research and practice literatures.

Defining healthy environments

A key issue is defining the healthy neighbourhood or city. The answer varies with the populations served; the health issues of greatest concern; the values or theories of the proponents of the healthy place; and the wider social, cultural, economic, and political context. Identifying types of healthy places logically involves grappling with at least six key issues, examined below – healthy populations, health-promoting features, comprehensiveness, time, human versus environmental health, and the need to do more than change or develop a physical space.

One way to judge a healthy place might be to look for places where the healthiest people live. This requires agreement on the definition of health – whether a narrower definition of physical health; a broader World Health Organization-style definition of physical, mental, and social well-being; or a still broader sense of satisfaction with health and quality of life. Certainly, it is possible to find specific places with larger numbers of

healthy residents and workers. For example, Blue Zones are areas where people live longer (bluezones.com). But such better health may well be explained by education, income, policies, social support, health behaviours, or other features unrelated to planning and design. Even if such a place has been developed or promoted as a healthy city, and houses those with measurably better health, the reason for better health may be self-selection as those wanting a healthy lifestyle, or predisposed in other ways to be healthy, move somewhere they imagine will support them. This dimension is thus a complex one.

Alternatively one might propose that a healthy city is a place that has features thought to be health promoting such as trails or well-baby clinics. However, some dimensions, such as mixed use, might be helpful for one population, such as adult workers wanting to walk to do errands, but problematic for others, such as older people worried about being jostled on busy footpaths (Forsyth, Salomon, and Smead 2017). This particular issue can be managed through planning and design, but points to the need to consider populations when identifying those features.

Comprehensiveness relates to two different topics – size and scope. While not easy, it is certainly possible to create a small project that deals with multiple health issues, determinants, and populations. A number of eco-villages and co-housing developments could be reinterpreted as healthy places in this view. Again, while not simple, many larger places have managed to make innovations in the areas of one or two health topics, population groups, or intervention strategies. An example might be a bicycle-friendly city. However it is much more complicated to deal with multiple dimensions of health and multiple population groups or health issues across a very broad area. Many of the exemplars of healthy places are indeed quite small or do a few things well.

Time is a key issue. Many places have embraced some kind of healthy city or community, only to lose funding, political support, or interest. Model developments may discontinue programming. A very successful place with mainly market-rate housing may become more expensive, appearing healthier but really just attracting those with many advantages including health. A place with much social housing may have an influx of those with needs it was not designed to support. Some of the types in this paper are quite new, meaning that it is unclear how they will evolve over time.

This also raises a question about how these relate to other existing types such as sustainable and resilient cities and neighbourhoods? Can a place be healthy in an indirect sense, aiming to promote environmental health and improving human health as well? The short answer is there is a lot of overlap. The types in this article, however, specifically focus on human health.

Place-based interventions have limitations. In many ways this is the most important problem. Creating a healthy physical environment, or even health-promoting programmes, can only go part way to improving health. Other factors such as biology and personal behaviours, education, income, and historic forms of marginalization, are only modestly affected by those components of places within the purview of urban design (RTPI 2009; McGinnis, Williams-Russo, and Knickman 2002). This limit suggests that a key is for approaches that combine multiple strategies.

These issues related to populations, features, comprehensiveness, time, focus, and combining physical places with other activities provided the lens for identifying types of healthy places at the city and neighbourhood scale.

Identifying and synthesizing diverse literatures

The types drawn on reflective practice, including a decade or more of teaching courses on healthy environments, conducting research in the area, providing advice to practitioners, and holding public workshops. Students, researchers in allied fields, practitioners, and members of the public asked for examples of healthy neighbourhoods and cities, and explained their own ideas.

The information base for answering their questions and responding to their ideas is very diverse with both professional and academic sources. It included programme descriptions and reports from major international organizations such as WHO and the UN; materials from professional associations such as the American Planning Association, Royal Town Planning Institute, and Urban Land Institute; and information from specific towns and cities. Some research was available evaluating programmes; other materials translated scholarly research into guidelines. Google Scholar was used as the backbone of the research literature search as it has been found to have a wider disciplinary reach than other search engines (Hodge and Lacasse 2011) but Web of Science was also used; Google provided access to practice documents.

Three of the types of environments were already well-articulated, represented by substantial international programmes sponsored by the World Health Organization (Healthy Cities [1986-] and Age-Friendly Communities [2005-]) and UNICEF (Child-friendly Communities [1996-]). These are described in web sites, reports, funder-oriented evaluations, and scholarly papers often based on conferences. There are, however, few scholarly *evaluations* in part because it is difficult to assess multifaceted projects where the effects of a healthy city programme might be modest among other programmes, policies, and population characteristics.

Healthy built environments are the subject of a great deal of research. Such work typically focuses on particular health outcomes (e.g., mental well-being), environmental features (e.g., green space), population groups (e.g., healthy adults), and times. In the past decade a number of professional organizations and research groups have drawn on research to propose evidence-based guidelines for neighbourhoods and cities (e.g., ULI 2015; RTPi 2009; NSW 2009). These guidelines formed the basis of this type. Individuals and groups have also used case studies as illustrations (e.g., Dannenberg, Frumkin, and Jackons 2011).

As can be seen in Table 1, healthcare industrial cities and smart health environments come from a somewhat different disciplinary base to the other types. They are included because over a decade of conversations with students, property developers, and members of the public revealed many who thought healthy places involved large healthcare facilities or various kinds of high-tech monitoring and assistance. Here the media is a major source as are various plans and proposals. This is a less well developed area and the names of the types are ones specifically developed in this research, less grounded in common practice. The following section explains each type in more detail.

Results: the types

Basic healthy places or communities

In the basic healthy place or community a neighbourhood, city, or region is developed to support healthy lifestyles through planning, design, programmes, and engagement. This category includes two distinct types that may be used separately or in combination: a built environment designed and planned to support health, and an ongoing collaborative process to develop and occupy the place.

Healthy built environments

The idea behind *healthy built environments* is that the physical environment can sustain health. It can protect from harmful exposures including air, soil, and water pollution; as well as noise, accidents, crime, temperature extremes, some infectious diseases, and disasters. It can connect people via motorized and non-motorized means to services, employment, affordable housing, and social networks. Finally it can support healthy behaviours such as healthy eating, physical activity, and mental restoration (RTPI 2009; APA 2017; ULI 2015; Forsyth, Salomon, and Smead 2017). For example, a neighbourhood might be designed to protect from noise pollution through building siting, connect people to each other through transit and community meeting rooms, support outdoor sports and recreation in parks and trails, and foster resilience through features from flood and drought management to evacuation planning. Contact with nature is often a key dimension, though this can include indoor plants, nature sounds, animal contact as well as parks, gardens, and wild areas (Largo-Wight 2011). This is the understanding most typical of the mainstream of the planning and design professions in recent decades (Sloan 2006; ULI 2015).

Healthy communities collaborations

The healthy cities or healthy communities movement emerged in public health in the 1980s with the UN Healthy Cities programme starting in 1986 (Hancock 1993, 8). Hundreds if not thousands of cities and towns from around the globe have joined WHO-sponsored national and regional networks (Tsouros 2015; de Leeuw 2001; Tsouros and Green 2010; Hancock 1993). It drew on wider discussions, specifically the 1977 WHO Health for All (HFA) approach and the 1986 Ottawa Charter for Health Promotion (WHO 1997). As can be seen from Table 2, an early listing of healthy city qualities, it covers many determinants of health – from the ecosystem and economy to housing and participation. This listing concludes with high health status as an outcome, however the focus is on the process of improving health (Hancock and Duhl 1986). This means that a healthy community may not have yet achieved the outcome of high health status (Hancock 1993, 7).

Healthy cities aim to coordinate public, private, educational, and civic organizations to promote health across a wide spectrum of issues (WHO 1997). WHO Healthy Cities programmes often set up a special independent unit that can manage such relationships whether as an independent nonprofit or within government (Tsouros and Green 2010; WHO 1997). Many use the related Health in All Policies approaches and health impact assessment tools.

Table 2. Qualities of a healthy city.

-
1. A clean, safe physical environment of a high quality (including housing quality)
 2. An ecosystem that is stable now and sustainable in the long term
 3. A strong mutually supportive and non-exploitative community
 4. A high degree of participation in and control by the citizens over the decisions affecting their lives, health and well-being
 5. The meeting of basic needs (food, water, shelter, income, safety and work) for all the city's people
 6. Access by the people to a wide variety of experiences and resources, with the chance for a wide variety of contact, interaction and communication
 7. A diverse, vital and innovative economy
 8. The encouragement of connectedness with the past, with the cultural and biological heritage of city dwellers and with other groups and individuals
 9. A form that is compatible with and enhances the preceding characteristics
 10. An optimum level of appropriate public health and sickness care services, accessible to all; and
 11. High health status (high levels of positive health and low levels of disease)
-

Source: Hancock and Duhl (1986)

Methods and tools

Of course there is a great deal of overlap in the two types, so it is unsurprising that they share many common methods. A key tool is *evidence-based guidance*, where practice draws on thoughtfully synthesized results of multiple research studies across fields from health and environment to administration and design (APA 2017; Forsyth, Salomon, and Smead 2017). Research knowledge is not available on all topics so many healthy places proposals are more speculative. However, over time the base of research evidence is improving.

Process is also important, particularly how to engage information in addition to research. Local knowledge can be nuanced and specific but can have limits in assessing health effects. Professional knowledge provides expertise on the viability of different strategies. Those outside of health may lack subject expertise but those in health are frequently not aware about the challenges of making changes to environments and services. Broadly the process as a whole and key activities need to allow these forms of knowledge to interact with research knowledge using methods such as health impact assessment or healthy communities assessment (Hancock and Minkler 2012; Kemm 2013; Forsyth, Salomon, and Smead 2017).

Perhaps most important is a *structure for working on the project in an ongoing way*. Someone needs to care about creating a healthy place. This might involve a champion with some power to implement and an organization that can manage and monitor over the long term. The process needs to combine agencies, businesses, educational institutions, and various groups of people in an ongoing dialogue that also taps into real resources for implementation. Evaluating long-term effects, though difficult with the kinds of multifaceted problems dealt with in basic healthy places activities, requires someone to examine outputs and outcomes. Such interdisciplinary and inter-sectoral collaborations are notoriously difficult to implement over time (Bryson, Crosby, and Middleton Stone 2006).

Examples: basic healthy places

There are few examples of comprehensive healthy cities – even among cities that are seen as relatively successful parts of the WHO Healthy Cities programme. However, a number of places have many of the features of the basic healthy place.



Figure 1. Hammarby Sjostad built environment. Hammarby Sjostad's ecological design has health dimensions. Photo: Ann Forsyth

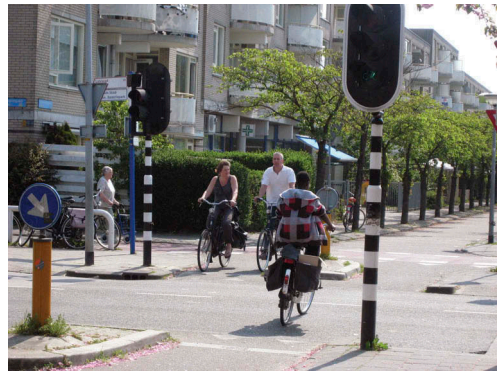


Figure 2. Almere built environment. Almere combines social and environmental programmes. Photo: Ann Forsyth

In the middle-ring suburbs of Stockholm, Hammarby Sjöstad is a major, mixed-use brownfield redevelopment along a light rail line that can be seen as a healthy built environment (Figure 1). Well-designed housing in a waterfront setting is interspersed with carefully maintained open spaces. Coordinated by the City of Stockholm, this development is based on the Hammarby Model, a comprehensive environmental approach to reduce the ecological footprint (Brogren and Green 2003; Crewe and Forsyth 2011). It is not perfect. Brownfield cleanup was expensive adding to costs and reducing overall affordability; not all residents do their part in reaching environmental goals. In addition, while the kind of comprehensive strategy in the Hammarby Model is similar to those in healthy cities approaches, it has not been evaluated in terms of health (Barton, Grant, and Richard 2014)

A satellite city of Amsterdam, Almere's early government-led planning mixed environmental concerns about energy efficiency with a social housing programme and extensive greenspace (Figure 2). Like Hammarby Sjöstad, it has the physical base of a comprehensive healthy city, and the Dutch social welfare and governance adds many of the social components. Served by heavy rail, dedicated bus, bicycle, and pedestrian routes complement the circuitous automobile infrastructure. Social housing was a large part of early provision. In addition one third of the population is 'foreign' including 26% 'non-Western' (Zhou 2012, 130). While in the 1980s and 1990s there were some political struggles over diversity, the municipality is generally proud of the mix. By 2011 its population was a substantial 191,000 (Zhou 2012, 127–128; Berg and Provoost forthcoming).

There is no comprehensive list of communities in the WHO Healthy Cities programme. However, the European network, drawing on the resources of the WHO regional office in Copenhagen, has maintained a strong programme for decades (Tsouros 2015). While the cities in the programme have varied over time, some have maintained healthy city status since the late 1980s and early 1990s. How successful they have been is an open question as the specific programmes are often modest and targeted, and any changes in health status could be due to multiple other causes.

The Belfast Healthy Cities programme is one example, started in 1988 and running continuously in the three decades since (Belfast Healthy Cities 2018). Organized as a nonprofit it has close links to Northern Ireland government agencies like public health,

housing, and planning; the city council; foundations; universities; and other nonprofits. The project has been organized in 5-year phases related to WHO funding cycles. Early phases set up projects, programmes, and policies related to specific groups (e.g., children, older people, and travellers) and developed a city health plan. Later, the built environment was more of a focus, along with education, youth, and ageing. Recent phases have dealt with Health in All Policies, resilience, and empowerment (Belfast Healthy Cities. C. 2013).

Assessment

The healthy built environment is the type best known to urban designers, extending green, sustainable, and resilient city approaches. Collaborative healthy communities have much to add, however. Such approaches more explicitly engage multiple constituencies, consider health equity, and use a wide toolkit from policies and programmes to environmental changes. Combining the two types creates a robust and comprehensive approach.

Population based – age- and child-friendly communities

Population-based approaches are rather similar to the basic healthy place idea. However, they use age as a lens for improving intergenerational environments (van Vleit and Karsten 2015). Children and older people are appealing populations and a focus on their needs can potentially help build different kinds of collaborations than are possible with basic healthy places. While focused on specific populations, proponents emphasize a broad sense of well-being that includes health.

Age friendly and all-age communities

With increased longevity a larger proportion of people will reach ages where they face challenges with mobility, sensory perception, and cognition. Supportive physical, social, and healthcare environments can help older people maintain quality of life over time (Forsyth, Kan, and Molinsky 2019). Collaborative, though often with a narrower range of participants than a healthy city, age-friendly communities strategies have been tried globally since at least 2005 when WHO launched an international programme (WHO 2007; Lui et al. 2009). The AARP (2015) outlines eight domains for such programmes: (1) outdoor spaces and buildings (mostly gathering spaces), (2) transportation, (3) housing design and affordability, (4) social participation, (5) respect and social inclusion including intergenerational activities, (6) civic participation and employment, (7) communication and information, and (8) community and health services (also Lui et al. 2009). The WHO, in recent work on age-friendliness and healthy ageing, emphasizes a similar list but includes two more dimensions: (9) financial and (10) personal security (WHO 2015). Many age-friendly communities, focus on just a small subset of these issues but better examples cover a wide range of topics and needs.

The all-age community is an emerging model that adds multiple housing options to the age friendly idea within a broader mixed-age community. This combines the diversity and convenience of a well-serviced neighbourhood with the social and healthcare supports of a retirement community (Jones et al. 2008; Forsyth, Kan, and Molinsky 2019). As Table 3 demonstrates, this radically rethinks both the large scale retirement community, with its relatively narrow range of options, as well as age-integrated neighbourhoods that lack sufficient support for older people.

Table 3. Dimensions of the all-age community.

| | |
|---------------------------------|--|
| Enriched neighbourhoods | Combines physical design, services and programmes, and participation e.g., WHO age-friendly communities (WHO 2007) |
| Collective care | Coordinator/concierge, possibly with volunteers, arranges social activity and vetted services throughout a neighbourhood or town; government led or cooperative (Greenfield et al. 2013) |
| Clustered housing with services | Provides higher levels of support up to nursing home care either increasing over time (e.g., Apartments for Life) or in a domestic-scaled model (e.g., Green Houses, Abbeyfield). |
| Intergenerational homes | Informal support for small numbers of older people at a time. e.g., intergenerational cohousing, accessory apartments |
| Access and mobility options | Low tech and high tech e.g., accessible paths, delivery robots. |

Source: Forsyth, Kan, and Molinsky (2019).

Child-friendly communities

It has long been understood that environments need to support children, though frequently consideration has been limited to homes, schools, and parks. The UNICEF Child Friendly Cities initiative was launched in 1996, focused on the rights of the child and child development (UNICEF 2018; Table 4). To become an official UNICEF Child-Friendly City involves engaging issues related to participation, laws, and bureaucratic structures rather than merely the physical or social character of the place (UNICEF 2009).

Specific approaches to child-friendly cities vary – in scales, issues, and whether focusing on children’s rights to participate in decisions or their needs as users of environments (van Vleit and Karsten 2015; Malone 2013). Key issues related to urban planning and design include access to facilities like libraries, shops such as food stores, recreation including parks, safe surroundings including footpaths and crossings, transportation alternatives, and healthcare spaces. These places may affect options for independent mobility, play, physical activity, social interaction, exploration, and stimulation (Christian et al. 2015, 26; Broberg, Kytta, and Fagerholm 2013).

Methods and tools

Many of the methods are similar to those used in basic healthy places models such as collaborative partnerships and evidence-based practice. However, neighbourhoods that focus on the young and the old share some *key physical dimensions related to mobility, wayfinding, recreation, and services*. They accommodate wheeled transportation from baby strollers and child tricycles, to walking frames and wheelchairs. Legible environments help young children just learning to navigate the world and older people who may be forgetful. The area around the home is key – prioritizing safety from traffic, crime, and the potential to get lost (Björklid and Nordström 2007; Karsten and van Vleit 2006). Recreational opportunities beyond those attractive to robust adults include playgrounds and youth-oriented sports fields as well as benches with arms for older people. Such areas also have services and activities that are attractive to these age groups and those caring for them.

Engaging the very young and the very old in *decisions about their environments* is a challenge and opportunity. While teenagers are typically able to participate in multiple ways, more care needs to be taken when including much younger children (Malone 2013). Many older people can voice opinions in ways similar to other adults, and may have time to do this. However, for those experiencing substantial mobility, sensory, or

Table 4. UN rights of the child.

Rights to:

- Influence decisions about their city
- Express their opinion on the city they want
- Participate in family, community and social life
- Receive basic services such as health care, education and shelter
- Drink safe water and have access to proper sanitation
- Be protected from exploitation, violence and abuse
- Walk safely in the streets on their own
- Meet friends and play
- Have green spaces for plants and animals
- Live in an unpolluted environment
- Participate in cultural and social events
- Be an equal citizen of their city with access to every service, regardless of ethnic origin, religion, income, gender or disability.

Source: UNICEF (2009)

cognitive challenges this can be more complex. Generally there is a need to have relevant participation (van Vleit and Karsten 2015).

The activities in child and age friendly communities also need to match needs. Educational, play, and exercise needs for children change over time as capacities evolve. Older people need a combination of housing and services that likewise typically changes over time. Much change is slow and evolutionary but many important changes happen suddenly via a health crisis of some sort. In both cases a range of options is key.

Finally, *healthy housing* protects from problematic exposures and accidents; *affordable housing* leaves more money for other things such as food, healthcare, education, and transport. Housing located near services and facilities – from shops to parks–makes it easier for people to routinely visit such spaces.

Examples: population based

Two examples chart out some of the range of possibilities. The Holly Street Comprehensive Estate Initiative in London is a somewhat accidental model of the all-age community (Jones et al. 2008). In the 1960s residents had moved in to the new area and aged in place. During redevelopment in the 1990s the council provided varied housing options for these older residents: smaller units integrated in the general development, a residential high rise for those 50 and over and including a concierge service, a senior centre with day care and other services linked to assisted care or sheltered housing, a highly serviced development of 40 units for the frail, as well as social services, health, and transportation (Jones et al. 2008, 53; Hanson 2001). Development is ongoing (Hackney 2016). It provides an evocative model of an environment enriched with multiple housing and service options, based in social housing. Singapore also has such models and New York is well known as an early adopter of the age-friendly approach (Forsyth, Kan, and Molinsky 2019).

Most child- and family-friendly programmes occur in existing environments adding programmes and small environmental upgrades such as footpath. Malone (2013, 1080) describes a more elaborate process where children engaged in participatory design of a 430-lot section of a master-planned community in Dapto near Wollongong, in Australia. Workshops were sponsored by the property developer, organized by university researchers who had been involved with the UNESCO Growing up in Cities project, and conducted in

public schools (Driskell 2002). Thirty 5–6 year old students and 120 students aged 9–10 years participated in visioning workshops for the development (Malone 2013). They synthesized eight key themes: supporting play, protecting nature, creating communities, allowing one to be active, promoting learning, being safe and clean, valuing children, and providing pathways (for safety from traffic and to protect plants). A participatory design process fed into the design of a park and path, which was constructed. The developer created an ongoing advisory role for the school (Designing with Children n.d.). While a modest intervention it demonstrates the potential for children to make a difference.

Assessment

Many urban environments are designed by and for robust adults. The population based models make more visible the needs and capacities of those at both ends of the human lifespan, potentially enriching urban design. Often focused on programmes and policies more than physical places, these types could also benefit from urban designers taking a more active role, clarifying how physical places matter.

Technology focused – health technology cities

In the final healthy city category health technology takes centre stage. The two types are not models much promoted by public health or planning but rather by those interested in technology and business. The healthcare industrial city is a version of the science-city or industrial town where a major economic activity is healthcare. Alternatively, the smart health environment is a form of smart city focused on the individual health, using monitoring and treatment via information technology, artificial intelligence, and machines including robots. Versions of a healthcare industrial city or smart health environment might not do much to promote human health among residents and workers. However it is also possible to meld the idea of the health technology cities with earlier types. This is the position of this paper.

Healthcare industrial cities

For the healthcare industrial city, healthcare is the economic base of the city. Economic activities might range from research and development, through advanced manufacturing, to medical tourism (e.g., <https://www.healthcapital.de/en/>). A better version would also incorporate health into the overall planning, design, and operation of the city or district. Rather than just add housing near a factory or research campus, as many such environments do, a healthier version would incorporate a wider range of health-promoting features – in terms of physical layout, available services, and institutional supports.

Smart health environments

The smart city with a health focus uses a number of individualized techniques – adding environmental sensors at home; or having residents wear activity monitors or use a telemedicine app (Boulos and Al-Shorbaji 2014). At the community scale, examples include garbage bin monitors (to manage waste), real-time bus information (to help people make transport choices), or technologies to help the home-bound connect with each other. A more substantial version would link to programmes to change the environment or people's health behaviour (Boulos and Al-Shorbaji 2014; Boulos, Tsouros, and Holopainen. 2015). Health

monitoring at a broad scale, however, faces substantial challenges to do with data quality, data privacy, and information synthesis. It is also not clear that it would improve health.

Methods and tools

Because a real health technology city is more than an industrial town or a smart city, many of the methods for implementing them overlap with the other types. However, some additional issues are worth noting.

Developing a relevant *concentration of businesses or other health related institutions*, such as hospitals and medical schools, may involve reinforcing an existing cluster or developing a new one, such as a science city (Forsyth 2014). Clusters are useful where goods and services need to be supplied locally, where regional funding networks are important, and where employee mobility between firms is an advantage (Porter 1998). However, it is also possible to locate a healthcare industrial city where services are undersupplied. This might, for example, be a regional centre for advanced medicine in a remote area.

Coordinating smart monitoring and assistive technologies with each other and with the more low-tech basic healthy places strategies is also a challenge. An example is providing apps to help people locate and use accessible paths for wheelchairs. On top of typical problems with intersectoral and public-private collaborations are problems of individual vs collective services (Albino, Berardi, and Dangelico 2015).

Examples: technology-focused

An example of a healthcare industrial city is Rochester, Minnesota. The location of the Mayo Clinic, in late 2018 fully 40% of their labour force was employed in education and health services (BLS 2019). While the area's healthcare infrastructure has been growing for over a century, in recent times the state of Minnesota has also heavily invested in the area. A 20-year collaborative development plan started in 2013 focuses on six districts in what is called the Destination Medical Centre (DMC 2019). Other initiatives include Healthy Living Rochester with an active living component. However, the healthcare industrial city is not fully integrated with a basic healthy city approach. For example, Rochester's (2010) downtown plan diagram has 6 components, using the term livable city rather than health; the first principle of the plan talks about economic health, not human health (City of Rochester 2010). It is a short step, however, to meld this with a healthy built environment.

Under development since 2005 on 273 ha of land, on the train line to Tsukuba Science City, Kashiwa-No-Ha Smart City involves inputs from the University of Tokyo, Chiba University, Chiba Prefecture, and the City of Kashiwa (Deiningner and Yamamoto 2017; Kashiwa-No-Ha smart City 2019). With 5,000 residents by 2017 and 1,000 workers, it hosts university campuses, industrial parks, and the National Cancer Centre. With a focus on health and longevity, it already includes a health station, visualization of personal health monitoring data, health promotion programmes (e.g., exercise classes), and some specialized housing developments such as one minimizing problematic chemicals. However, the vision is larger and an urban design centre 'provides support for urban design, the introduction of advanced technologies and services, and the creation of a new lifestyle and community. In addition to public and private entities, UDCK gives the citizens a voice in the evolution of their community' (Deiningner and Yamamoto 2017). Again, while many health

features are oriented towards the individual, and the design is focused on environmental goals, Kashiwa-No-Ha Smart City is on the cusp of having a more comprehensive approach.

Assessment

These types can be lacking a community health promotion emphasis as their focus is on the economy, medical treatment, and individual behaviour. However, urban designers and others working on them have an opportunity to take a more holistic approach. They can also help build interest from the public, businesses, and civic leaders in creating healthier environments.

Discussion

The body of research and theory on how places connect to health, and a review of development practice, points to at least three common categories of cities and neighbourhoods, each with two subtypes. The types tend to be valued differently by different kinds of proponents including planners, those from public health, developers, entrepreneurs, educators, gerontologists, and activists.

At the core of the basic healthy place category, is a holistic approach to creating a physical, social, and institutional environment that supports health. Collaborative healthy communities use an adaptive process to improve the environment over time. However, for urban design and planning the healthy built environment is also important. Because of its foundational character, a version of the basic healthy community – combining built environment and collaboration – should be the backbone of any comprehensive approach to making healthier places. However, the other types are also important in building partnerships. Overall, healthy cities can provide a guiding vision that is inherently multi-dimensional and engages a timespan beyond the election cycle.

Urban designers have been most active in working on healthy built environments often drawing on related expertise in sustainability and resilience. However, that type is limited. Drawing on insights from other types can be a way of creating a more holistic approach to designing healthy places. Designers would benefit from appreciating the importance of individual and collective behaviours. Some of the more socially or technologically focused approaches would also benefit from design expertise. This is more than mixing and matching approaches but rather combining knowledge from research, different professional domains, and local experience to create relevant healthy places.

All the types can be implemented in existing and proposed urban areas. A holistically planned new city or town built from the ground up has strengths and weaknesses in terms of creating a healthy place. As it is new it is relatively simple to provide an environment that is clean and safe with a variety of housing options and ubiquitous universal design features. However, new towns typically suffer from lagging infrastructure. Networks of social interaction and support need to be built from scratch and the lack of such networks can lead to loneliness and other social problems (Forsyth 2005). In an existing area, however, it may be difficult to provide a very comprehensive design, instead focusing on one or two issues.

There is in the end no one answer to what makes a healthy city. There is room, however, for a more sophisticated understanding of the multiple ways in which places can support healthier lives.

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