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The Three Domains of Urban Planning for Health and Well-being

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Abstract

Urban planning has an important role to play in supporting human health. While this is increasingly recognized in a burgeoning interdisciplinary body of literature, there remains an ongoing need to clarify and conceptualize the relationship between planning and health. This is especially the case from the perspective of built environment professionals, as they increasingly focus on health and well-being issues. The key contribution of this article is such a conceptualization—a framework to group and review the literature in this rapidly expanding area of research. We suggest three domains where urban planning can most effectively focus support for health and well-being. These domains address the principle risk factors for contemporary chronic disease—physical inactivity, obesity, and social isolation. Our framework is then used to review an evidence base that supports the development, prioritization, and implementation of healthy built environment practice. This article concludes with a critical discussion of theoretical and practical tensions identified as potential impediments to the progression of this new and exciting interdisciplinary area of research.

Keywords

health, planning practice, quality of life, recreation and open space, methods

Introduction

There is global concern about rising rates of serious physical and psychological conditions, particularly cancer, heart disease, diabetes, asthma, and depression in urban populations.[1] Many of these noncommunicable diseases have reached epidemic proportions (Rydin et al. 2012) affecting " ... people of all ages, nationalities and classes" (Daar et al. 2007, 494). In addition to placing a burden on public health care systems, these often-preventable diseases result in considerable loss of quality of life to the individual and place stress on families and communities.

Concurrent to changes in the epidemiology of disease has been a shift in conceptualizations of health, from the treatment of illness in the individual, to disease prevention and health promotion in populations. This has included increased focus on the impact of environments on collective well-being (McLeroy et al. 1988; Stokols 1996) and on the interdependence of environments and individual behavior (McLeroy et al. 1988; McLeroy et al. 1992; Anderson and O'Donnell 1994; Macintyre, Ellaway, and Cummins 2002; Sallis et al. 2006). There is now widespread appreciation of the importance of place, scale, and context in the promotion of societal health and well-being.

This approach has been used to demonstrate links between the modern epidemics of chronic noncommunicable diseases and the way we live in cities. Car-dominated transport, reduced opportunities for physical activity, increased fast-food availability, and lack of social connection are all implicated. As a result, health professionals increasingly recognize the importance of the built environment in directly affecting people's health. Further, and most importantly, there is growing appreciation of the central role that urban planners play in providing environments which support healthy behavior (e.g., Australian National Preventative Health Task Force: http://preventativehealth.org.au/; National Health Service London Urban Development Unit: http://www.healthyurbandevelopment.nhs.uk/; Oxford Alliance for Health: http://www.oxha.org; World Health Organization: http://www.who.int/healthy_settings/types/cities/en/index.html). Built environment professionals are responding to this recognition, arguing for health and the planning of the built environment to be closely aligned (see, e.g., special issues: American Planning Association Journal 2006; Australian Planner 2007).

While the relationship between health and the built environment is now an established research focus, there remains an ongoing need to conceptualize this relationship. This is especially the case from the perspective of built environment professionals as they increasingly focus on health and well-being issues. The key contribution of this article is such a conceptualization. We present a way to group the literature in this rapidly expanding area of scholarship and provide a comprehensive review of the literature on ways the built environment can be modified to promote good health.

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Our framework is based on three ''domains'' through which the built environment supports health:

- physical activity;
- community interaction; and
- healthy eating.

The first part of our article describes these three domains, provides a rationale for their specific recognition, and outlines the methods used to identify and collate the literature for its initial application. The second section of the article puts the three domains to work and presents a narrative review of existing research on the specific ways that the built environment influences each domain. Reference is made to key studies that have been chosen because of the strength of their findings and relevance to the urban context. We have also chosen to refer to studies that may not be the most well known or widely cited, yet are effective in describing the themes emerging from our review. Having used the three domains as a frame to review the literature, the final part of our article is dedicated to a discussion of areas of theoretical and practical asynchrony permeating across each domain and emerging between the traditions of urban planning and health. These critical reflections are informed by our review of the literature which identified a number of key methodological and theoretical debates. In conclusion, we discuss ideas for how these areas of practical and theoretical discord can be addressed as health and built environment practitioners and researchers seek to establish mutual understanding and respect.

Part 1: Introducing the Three Domains of Healthy Built Environments

The material presented here is a synthesis of a larger body of research examining the relationship between the built environment and health (Kent, Thompson, and Jalaludin 2011). This original project was undertaken to inform the research and policy directions of a newly established partnership between a university-built environment faculty and a state government department of health (the Healthy Built Environments Program; see Thompson, Kent, and Lyons 2013). This work resulted not only in the synthesis of an increasingly diverse body of research but also development of a concise and effective way to conceptualize links between the built environment and health—the three domains of healthy built environments. We outline them subsequently:

1. *The built environment and physical activity*: The built environment can support physical activity in different ways, including integrating land use and public transport to promote walking and cycling for transport; preserving a variety of open spaces for recreational use; designing street networks and providing infrastructure for walking and cycling for both recreation and transport.
2. *The built environment and connecting and strengthening communities*: The built environment can support community connection in different ways, including providing streets and public spaces that are safe, clean, and attractive; encouraging residential development that is connected to the street, yet private; enabling community empowerment through meaningful participation in land use decisions.
3. *The built environment and equitable access to healthy food*: The built environment can support healthy food access by reducing fast-food exposure in the vicinity of school environments; retaining peri-urban agricultural lands as a source of easily accessed healthy food; encouraging the establishment of farmers markets and community gardens.

While the built environment has the capacity to influence health in many ways, the domains we propose warrant direct attention for a number of reasons. First, these domains address some of the major risk factors for the escalating chronic noncommunicable diseases burdening urban populations across the globe. These risk factors are decreased physical activity in daily life, increased stress and social isolation, and less and less access to the foods comprising a healthy diet.

Second, the domains are broad areas where better planning of the built environment has potential to effect substantial health improvements specific to chronic noncommunicable diseases. They are areas where the built environment can most effectively and efficiently focus its support for human health. The domains provide a framework for targeted primary prevention measures that can be used explicitly by built environment professionals to develop, prioritize, and implement healthy built environment policy.

Third, these domains give coherency to a burgeoning base of ''healthy built environment'' literature. We found this relatively simple conceptualization invaluable in the unpacking and ordering of a vast and increasingly unwieldy body of relevant research in a way that can be readily applied to policy development and areas of evidence paucity. By incorporating both built and behavioral elements, we propose that our domains framework speaks to health as well as built environment professionals. Accordingly, it advances our ability to better collaborate in the creation of a built environment that supports the health and well-being of all communities.

In the next section, we outline the research methodology as a prelude to presenting a synthesis of findings under each domain.

Literature Review Methodology

The methodology employed for this project was tailored to the aims of the review, particularly the need to establish an evidence base that supports healthy built environment policy making and prioritization. Initially, a number of parameters for the review were established to enable a targeted synthesis of this vast body of scholarship. These parameters related primarily to the review's focus on ''chronic'' noncommunicable

disease—for example, a key parameter was that the review would not consider the "acute" health impacts of transport accidents. These parameters were subsequently used to develop various key word and term combinations. These key words and combinations were then used to search economic, health, medical, transport, and environmental research databases (as recommended in Weaver et al. 2002; Egan, Petticrew, and Ogilvie 2005). Experts working in healthy built environments were also questioned about relevant literature. The databases and key word and term combinations, together with a more detailed description and justification of the parameters for the review, can be found in Kent, Thompson, and Jalaludin (2011, 128–32).

The search results were then screened using article title and abstract, with duplications and obviously irrelevant studies removed. This led to the compilation of 1,615 references relevant to the built environment and health. The next step was to assess these references for inclusion in the review. This was done using the established parameters and the three domains of healthy built environments outlined previously. Each reference was allocated a code based on its "Health-Built Environment Domain" and the peer reviewed status checked against the criteria of Ulrich's Periodicals Directory.

In total, 1,080 references remained for inclusion. There was a dominance of literature related to the way the built environment shapes opportunities for physical activity—the *Physical Activity* domain—with 769 references located. It was subsequently decided to use a "review of reviews" methodology to examine this work. Thirty-seven reviews focusing on the built environment and physical activity were identified. Selection of reviews was based on the knowledge of the authors, experts in the field, together with a search of the physical activity references for the word "review" in the key words or title. In relation to the *Connecting and Strengthening Communities* domain, we found 224 references. For the *Providing Equitable Access to Healthy Food* domain, a total of 138 references was located. For these latter two domains, we used the primary references rather than the "review of reviews" method to examine the research evidence.

Having identified the latest research, we undertook an analysis of all sources. Key themes emerged through our reading of the literature. In the process of theme development, we were constantly guided by the review parameters. In particular, we were mindful of the need to ensure that the evidence could assist in establishing a dialogue between health and built environment professionals. These emerging themes were compared to those used in existing reviews, and subsequently clarified by a working party of experts from the field convened for the review. We now discuss these findings.

Part 2: The Built Environment and Health, A Review of the Literature

The Built Environment and Physical Activity

Setting the Scene: How can the built environment support physical activity? The built environment can be modified to facilitate or constrain physical activity. It can be structured in ways that increase opportunities for and reduce barriers to physical activity. Characteristics of the built environment that influence physical activity differ depending on population groups (e.g., children, youth, seniors, socially and economically disadvantaged, and differently abled), for varying purposes of physical activity (e.g., utilitarian activities such as cycling for transport or recreational activities, such as walking the dog), and in diverse contexts (e.g., inner city, suburban, regional, and rural). The form of the built environment, incorporating residential and commercial density, land use mix, connectivity, and accessibility, influences the way we move and what we do within that environment. In particular, the built environment can shape travel behavior, including the ability and desirability to walk and cycle, together with opportunities to drive. The time we spend on travel is also linked to the amount of leisure time available for other healthy pursuits. In addition, the built environment can facilitate opportunities for recreational physical activity, by providing well-maintained and useful open spaces, as well as safe and amenable streets for recreational walking and cycling.

The themes that follow selectively unpack a number of key elements regarding the relationship between the built environment and physical activity, starting with an analysis of the links between accessibility, land-use density, and the way we move in urban areas.

Accessibility and the importance of distance: Accessibility is generally measured as the distance between origin and destination. In the majority of the literature, distance is significantly correlated with the use of active transport (usually defined to include walking, cycling, and public transport use). Shorter distances represent increased convenience and reduced cost to the individual through time and effort required to be "actively mobile." The importance of distance is strongly emphasized in reviews of the uptake of active transport. Heinen, Van Wee, and Maat's (2010) review of commuting by bicycle, for example, cites at least eleven studies which conclude that an increase in trip distance results in cycling having a much lower share in mode choice. The same conclusion is confirmed by a review of Australian "Journey to Work" census data which indicate that bike commuters tend to live closer to their work than those commuting by other modes (Rissel and Garrard 2006). Distance is also a regularly cited variable that encourages utilitarian walking. Wen, Kite, and Rissel (2010) conclude that the inconvenience of distance is a major barrier to walking to work. Bauman and Bull (2007) cite proximity and walkable distance as often associated with both utilitarian and recreational walking. Further, Feng et al. (2010) found significant associations between geographically dispersed residential suburban development and the uptake of active transport.

Our review of the literature consistently found the relationship between health and the built environment to be characterized by complexity. Although the relationship between distance and the use of active transport modes is well researched, this relationship is by no means linear. As an example, research suggests both perceived and actual distance between destinations are

significantly and positively correlated with the use of active transport modes (Transportation Research Board [TRB] Report 2005; Bauman and Bull 2007). One of the most complicated relationships is between health and residential population density. We now progress to discuss this complex connection.

Residential population density: Higher residential densities essentially lead to shorter distances between origins and destinations. As established previously, shorter distances generally encourage the use of active transport modes. Indeed, land-use concepts, such as new urbanism (Katz, Scully, and Bressi 1994) link higher residential density levels with increased shares of nonmotorized travel. This suggests that in denser urban areas, distances between locations are shorter, and consequently can be bridged more easily on foot or by bicycle. The research evidence, however, is not straightforward.

In 2006, Leck assessed the way several travel variables interact with different urban form characteristics related to residential density. It was found that residential density was the most important built environment element that influenced active transport modes. Heinen, van Wee, and Maat's (2010) review also concluded that higher residential densities lead to a greater cycling share. Litman (2007) established that higher residential densities are related to lower levels of car ownership and car use. In turn, this has positive effects on walking and cycling environments. Witlox and Tindemans (2004) found that inhabitants of higher density city centers choose the bicycle as a mode of transport more often than residents in the suburbs. Finally, Bauman and Bull (2007) rate population density as significantly associated with physical activity. The research generally shows, therefore, that aggregate physical activity levels, particularly active transport share, will increase with residential density. It remains to be seen, however, whether we can confidently say just how much density will be enough to encourage active transport options.

The idea of "proper city densities" (Jacobs 1961, 221) has been the subject of debate in planning theory and practice for quite some time, although its relationship with physical activity is a more recent topic of discussion and theorization. The TRB Report (2005) cites a US study by Dunphy and Fisher (1996), which indicates that the total number of trips does decline (slightly) with density, while there is an increase in trips by public transport, walking, cycling, and taxi. This study showed trip share by walking and cycling increased markedly above densities of 7,500 people per square mile (original author's units). Conversely, more recent evidence reviewed by Feng et al. (2010) suggests that walking begins to increase at densities between 1,000 and 3,999 people per square mile. A population density of 3,000 people per square mile was found to be required to decrease distances travelled by car (reviewing author's units). These conflicting propositions of "proper" densities to encourage walking and cycling infer that the relationship between density and active travel is one of correlation rather than cause. As articulated by Feng et al. (2010), the variable of density might simply be a "surrogate for an unobserved ... latent construct" (Feng et al. 2010, 185).

The research on the relationships between physical activity and urban form concurs with the notion well established in the built environment literature that residential density is a proxy for other variables (TRB Report 2005). This leads many of the reviews in this area to conclude that density is less significant in the uptake of physical activity than other built form variables that often accompany density. A higher density neighborhood will typically have less parking, a greater variety of land use, more people out and about, houses and shops that abut the street, and the presence of footpaths (also termed sidewalks), straight roads, small blocks, and better public transport services. The review by Ewing and Dumbaugh (2009) also suggests higher density areas are safer in terms of incidence of traffic accidents. Nevertheless, the impact of any one of these factors is very difficult to isolate. This complexity is compounded by the undeniable importance of socioeconomic, demographic, and attitudinal factors in influencing travel patterns (Steg 2005) and physical activity in general (Loukaitou-Sideris 2006). Accordingly, increasing levels of residential density alone will not serve to promote more active transport (Buys and Miller 2011). It has to be done in tangent with mixing and connecting land uses to bring services and other destinations closer to where people live and work (TRB Report 2005). As a result, density, mixed use, and micro-design elements in some combination are most likely to influence levels of physical activity.

Destinations and mixed uses: Mixed land uses, such as breaking up the uniformity of residential development with commercial uses, can result in shorter distances between origins and destinations. As established earlier, shorter distances generally encourage people to be more physically active. Further, positive associations between mixed-use development and active travel behavior are consistently reported in the literature. Leck (2006) and Gebel et al. (2005) found mixed-land use and the provision of destinations to be an overwhelmingly significant built environment element influencing active travel behavior. Ewing and Cervero (2010) report that walking is most strongly related to measures of land use diversity, intersection density, and the number of destinations within walking distance.

Both residential density and land use mix are significantly and positively related to mode share by public transport and walking for work trips. They are negatively related to work trips by car (Frank and Pivo 1994, cited in TRB Report 2005). Further, propensity to walk for transport is most elastic (i.e. sensitive) to employment-housing balance and distance to shopping and services (Ewing and Cervero 2010). These are both features of an urban landscape characterized by mixed use.

Urban form, safety, and building qualities: A wide range of detailed design features in the built environment allow people to feel safe, confident, and comfortable when walking or cycling. Our review confirmed a strong evidence base that such feelings increase people's propensity to walk and cycle as a form of travel (see, e.g., Saelens and Handy 2008; Krizek, Barnes, and Thompson 2009; Pucher, Dill, and Handy 2010; Heinen, van

Wee, and Maat 2010). For cyclists, secure bicycle parking, end of trip facilities including showers and lockers, together with a supportive culture of cycling acceptance, are all positive enhancements. For walkers, the research indicates that well-maintained footpaths are a significant and positive correlate to walking. Safety, both perceived and real, is of paramount importance to all forms of active travel, as well as recreational physical activity (Galvez et al. 2009).

Legible (i.e., easy to find one's way) and direct street networks are particularly important in encouraging active transport in more vulnerable demographic groups such as children and seniors (Kerr et al. 2006; McMillan 2007; Hall and McAuley 2010). Grid-like street network patterns with high intersection densities create better street connectivity and decrease distances between origins and destinations. Such street patterns are also easier to navigate. These characteristics welcome and encourage walkers and cyclists (Wendel-Vos et al. 2007; Ewing and Cervero 2010).

Building design can also provide people with easy-to-access opportunities to be physically active as part of everyday mobility. For example, point-of-decision prompts can effectively encourage stair use as a substitute for taking escalators or elevators within buildings (Nocon et al. 2010). Point-of-choice prompts in this study were posters and banners at public transport stops, shopping malls, and office buildings advocating the benefits of stair use. A study by Eves et al. (2009) demonstrated that people are generally willing to use the stairs instead of an escalator in peak periods if the width of the stair well is sufficient to cater for demand.

The built environment provides opportunities for people to be active in public parks, walking trails, and on streets. Through land use zoning and regulation, the built environment can also support opportunities for recreation provided by indoor facilities, including publicly operated leisure centers, and privately owned health clubs. People who live close to a variety of recreation facilities are more physically active than those who do not enjoy such proximity (Wendel-Vos et al. 2007). Access to physical activity facilities is consistently correlated with physical activity levels in multiple population groups (Bauman and Bull 2007; Black and Macinko 2008). However, environments that encourage utilitarian walking and cycling are not necessarily conducive to walking and cycling for recreation. Perceived and actual safety remain of primary importance (Spangler-Murphy et al. 2005), as does the provision of street networks that are legible and well maintained, with footpaths, shade, and lighting (Saelens and Handy 2008). Aesthetics, however, replace destinations and network density, with recreational walkers not particularly interested in taking the most direct route (Agrawal, Schlossberg, and Irvin 2008).

This discussion of the scholarly literature clarifies that the built environment has a critical role in supporting physical activity as a key component of human health and well-being. While the evidence for strong policy interventions is mounting, to be effective, built environment interventions will need to be supported by a mix of social, economic, and political policies. We now consider the situation in relation to our second domain of the built environment and health—that of community support and connection.

The Built Environment and Connecting and Strengthening Communities

Setting the scene: How can the built environment connect and strengthen communities? A sense of community and belonging within the places where people live, work, and travel, is an influential determinant of mental and physical health (Hawe and Shiell 2000; Baum and Ziersch 2003; Ogunseitan 2005; Warr et al. 2007; Poortinga, Dunstan, and Fone 2007; Cohen, Inagami, and Finch 2008; Echeverría et al. 2008; Beard et al. 2009; Dahl and Malmberg-Heimonen 2010). Belonging fosters perceptions of security, confidence, and comfort that encourage people to be physically active in their neighborhoods, as well as socially connected to others (Berry 2007). Being ''out and about'' provides opportunities for incidental interactions—the day-to-day meeting and greeting of people who live, work, and travel in the same spaces during the same times (Putnam 2000; Miles and Song 2009). Incidental interaction augments connection and caring, increases perceptions of safety and decreases feelings of loneliness and isolation, all of which have proven links to positive mental health (Berry and Welsh 2010). The research shows that the built environment can foster a sense of community through enabling day-to-day interaction with people, nature, and other environments. This interaction occurs on streets and in public spaces that are safe, accessible to all, responsive to local cultural context, and aesthetically pleasing. Opportunities to promote community connectedness also apply well beyond the neighborhood to the work environment, commercial centers, recreational facilities, and spaces of mobility such as roads and footpaths, and while traveling on public transport. Fostering a sense of belonging, caring, and commitment, for example, among commuting cyclists or public transport users, increases the perception that these activities are safe (Daley, Rissel, and Lloyd 2007).

Of the three domains, the relationship between the built environment and community connection is potentially the most complex. Our review of key themes in this area therefore starts with acknowledgment of the undeniable role context plays in shaping community connections and their subsequent ability to support human health and well-being.

The contextuality of community: Literature discussing the role of the built environment in developing communities and promoting social interaction often highlights the contextual nature of these health determinants. What works to promote community in one locality or within a particular social group will not necessarily work elsewhere. Any attempt to examine, or even build community, needs to consider the ''subtleties of diversity'' (Evans 2009, 199). These subtleties apply across place and time. Social interactions, and the way built environments can facilitate them, will vary as neighborhoods develop and change. For example, social interaction and cohesion are more

easily encouraged in contexts of relative homogeneity and stability (Bridge 2006; Chaskin and Joseph 2010). Interactions in neighborhoods will also vary throughout the seasons (Hess 2008) and from morning to night (Kim, Ulfarsson, and Todd Hennessy 2007).

Engaging young people in positive neighborhood opportunities is worth special consideration, as they have the potential to either bridge or exacerbate social divisions (Chaskin and Joseph 2010). The elderly also interact with environments and each other in different ways (Patterson and Chapman 2004) as do people from varying socioeconomic groups (Burke et al. 2009), ethnicities (Tinsley, Tinsley, and Croskeys 2002; Sugiyama and Ward Thompson 2008), and genders (Burke et al. 2009).

Adding to the complexity of planning and building for community is that many contemporary urban dwellers are comfortable thinking about local community in essentially functional ways (Crang 2000). There is no longer social or popular pressure to seek and maintain community connections—often membership to community relies on convenience (Putnam 2000). In this sense, local relationships are still enjoyed but are largely casual and flexible (Paay and Kjeldskov 2008; Chaskin and Joseph 2010; Williams and Pocock 2010).

Finally, there is literature that questions whether the built environment has a role in shaping social capital and interaction. To measure the extent to which perceptions of social capital are contextual, Araya et al. (2006) compared results of factor analysis on individual questionnaire responses with results from analysis at household and postcode scales. They found little correlation between neighborhood and individual factors and concluded that there is a stronger individual determination of social capital rather than a contextual or neighborhood effect.

Nevertheless, the vast majority of literature concurs that there is a relationship between the built environment, social interaction, and social capital. Echoing research on the built environment and physical activity, however, this relationship is complicated and difficult to define. Allowing for the complexity inherent to any built environment context, the themes discussed in the following section have been identified to frame some of the ways the built environment can connect and strengthen communities to address contemporary health issues associated with disconnection from both social and natural environments.

Green open spaces and connected communities: The presence of green, natural settings is important in facilitating good mental health and community connection, as well as promoting physical activity. This is supported by a raft of research studies (see, e.g., Booth et al. 2000; Humpel et al. 2004; Frank, Andresen, and Schmid 2004; Ellaway, Macintyre, and Bonnefoy 2005; McNeill, Kreuter, and Subramanian 2006; Mobley et al. 2006; Roemmich et al. 2006; Bauman and Bull 2007; Neuvonen et al. 2007; Sugiyama and Ward Thompson 2008; Wendel-Vos et al. 2007; Bell, Wilson, and Liu 2008; Black and Macinko 2008; Kemperman and Timmermans 2009; Sallis and Glanz 2009; Galvez, Pearl, and Yen 2010). With foundations in the biophilia hypothesis (Wilson and Kelling 1984), this research highlights the instinctive bond between human beings and other living systems. An environment devoid of nature (including both views over, and direct experience of natural areas) has negative effects on health and quality of life. This is demonstrated in a number of different international studies (as reviewed by Grinde and Patil 2009). Health benefits include the promotion of mental well-being through stress reduction, social engagement, reducing feelings of loneliness, and enhancing participation in a community (Berry 2007).

Contact with nature is particularly important in highly urbanized environments (Hartig 2008; Maller, Henderson-Wilson, and Townsend 2010) where small-scale encounters with natural settings are equally as significant to health as access to large areas of open space (Townsend and Weerasuriya 2010). As cities densify, urban green space will be more important than ever to alleviate the stresses often associated with higher density living, including noise and lack of privacy. Interviewees in an Australian study focusing on public open space in dense urban environments said they preferred trees, parks, or bodies of water in such spaces (Maller, Henderson-Wilson, and Townsend 2010). They expressed that simply having a view of natural elements induced feelings of relaxation. Some residents had access to rooftop gardens that were described as important in providing a range of nutritional, physical, social, and psychological benefits. Not the least was an opportunity to better accommodate companion animals—a consistently cited catalyst for social capital and mental and physical health (see Cutt et al. 2007). These findings are supported by other researchers (see Beer, Delshammar, and Schildwacht 2003; Guite, Clark, and Ackrill 2006; Gidlöf-Gunnarsson and Öhrström 2007).

Interaction in community gardens and farms: Community gardens and farms exemplify the way that community spaces foster interaction. In a comprehensive study of the community garden movement in the United Kingdom, Holland (2004) used quantitative (surveys) and qualitative (in-depth interviews) methods to conclude that while some gardens played a strategic role in food production, all gardens were "based in a sense of community, with participation and involvement being particularly strong features" (Holland 2004, 1). Wakefield et al. (2007) researched the health impacts of community gardens in Toronto, Canada. Using a combination of participant observation, focus groups, and in-depth interviews, their study concludes that gardens encourage physical and psychological health. They attribute the latter to contact with nature as well as a general sense of community inherent to the opportunity to garden together.

The research also highlights many of the challenges faced in establishing community gardens in urban settings, including a general lack of understanding from both decision makers and community members, of the benefits of community gardens. Bartolomei et al. (2003) examined the social and health-promoting role of a community garden scheme in a high-rise public housing estate in Sydney, Australia. The findings of this study confirm the contributory role of community gardens in strengthening social interaction. The scheme was associated with increased opportunities for local residents to socialize and develop vital cross-cultural ties in a very diverse environment.

The authors note: ''there were many stories of how participating in the Gardens has helped to diminish cultural boundaries and negative racial stereotypes'' (Bartolomei et al. 2003, 5). Kingsley, Townsend, and Henderson-Wilson (2009) also studied community gardens in Australia. This Melbourne-based research describes gardens as places of refuge and social support, where knowledge is shared. These conclusions are generally echoed by other studies finding that the health benefits of community gardens extend well beyond physical activity and access to healthy food and include decreased likelihood of contracting mental illness (Hynes and Howe 2004; Wakefield et al. 2007; Thompson, Corkery, and Judd 2007; Macias 2008; Teig et al. 2009).

Interaction in neighbourhood spaces: Our review has already discussed the complex relationship between urban densities and health outcomes, highlighting a considerable body of research linking ''urban sprawl'' with poor health (see, e.g., Garden and Jalaudin 2009). As discussed under the first domain, the low density, uniform uses, and car dependency associated with sprawl can restrict opportunities for physical activity. This typology of urban development can also undermine social capital by reducing opportunities for social interaction. However, the research outcomes on the impact of sprawl on social interaction as a health determinant are mixed.

Nguyen (2010), for example, found that social interaction was more common in lower density, ''sprawling'' suburban areas. More compact, higher density areas displayed particularly low scores on different social interaction variables. The link between traditional neighborhood design (as distinguished from suburban sprawl) and social capital has been explored in other research. Residents from a small mining town in the United Kingdom forcibly relocated from a neighborhood with a consolidated street layout to a lower density area characterized by a curvilinear street pattern, experienced unwanted isolation, deterioration in collective identity, and weakened social support (Speller and Twigger-Ross 2009). Lund (2003), who examined new urbanist neighborhoods in California, also found empirical support for the idea that neighborhoods with consolidated grid like streets, nearby access to shopping, and good pedestrian environments, exhibit increased casual social interaction compared to more suburban cul-de-sac designs. Cozens and Hillier (2008) undertook a detailed examination of street layouts and their impact on social interaction in European and Australian contexts. They found that while some research shows social interaction is higher in communities with grid-like street layouts, other studies dispute this finding. From this work, it can be concluded that using design of street layouts to encourage social interaction is complex and requires a holistic approach that encompasses nuanced understandings of local and cultural conditions.

Nguyen's review cited previously draws on a substantial literature, which has examined the relationship between urban densities and opportunities for community connection (see, e.g., Friedrichs, Galster, and Musterd 2003). However, this literature gives less attention to the more direct link between suburban areas and health outcomes. Overall, the research suggests that there is a threshold to be found between high and low densities for the formation of social networks and social interaction generally. People need to be able to retreat to their private space, but they also require opportunities to randomly interact—whether that be in shared driveways, corridors, or at the mail box.

This finding is consistent with the previous discussion on the relationship between physical activity and density, where it was concluded that increasing density alone will not necessarily bring about the intended consequences for healthy built environments.

Interaction on streets: There is research suggesting that streets designed for walking and cycling are health promoting not only because they encourage physical activity but also because they promote the social interactions that support positive mental and physical health. This relates to the fact that both utilitarian and recreational walking and cycling increase the chance of incidental social encounters. This relationship has been the subject of various studies (see, e.g., Lund 2002; Brown et al. 2007). Richard et al. (2009) found regular walking to be a strong predictor of social participation by the elderly living in Montreal, Canada. Mehta (2007) observed commercial streets to examine their influence on social interaction. It was concluded that there is popular demand for high-quality commercial streets as social spaces for strolling and meeting, rather than simply channels of movement. Seating, places to meet in the foyer of buildings, and street furniture in town centers were all found to be particularly important in creating social and convivial streets. Highlighting the complexity of the link between walkable streets and social and psychological aspects of health, du Toit et al. (2007) used data from an Australian sample to explore the proposition that more walkable neighborhoods encourage local social interaction, a sense of community, informal social control, and social cohesion. They concluded that the relationship was weak and that sociability in general is impacted by more than urban form.

Third Places and Health: Studies have also explored the importance of ''third places''—places that provide for informal and unorganized social interaction. They can be public, such as a children's playground or park bench, or private, such as a pub, cafe, or shopping mall. They can be large, such as a town square or train station, or smaller, such as a stairwell or common entry to a building. Third places are distinguished from other areas where social interaction might occur in that there is no sense of having to perform a ''role''—third places are therefore not specifically at ''home,'' ''work,'' or ''school.''

Williams and Pocock (2010) argue that third places encourage connected networks of community. The more opportunities available, the greater the chance of developing tangible, lasting, and caring connections. These researchers go on to emphasize that third places are socially and generationally subjective, reinforcing the notion of community as complex. A place that might connect a group of teenagers will not necessarily work for a group of older residents.

Provision of a third place does not, by itself, guarantee a remedy to strengthen a weak community. Ganapati (2008) explored the impact of privately owned third places—an increasingly common arrangement where regulatory concessions can be granted to developers to provide places such as town squares, pedestrian malls, or pocket parks. Third places are often deeply political and contentious. Rules and regulations, as well as design, can be used to both intentionally and unintentionally exclude some users. The exclusion of homeless persons from parks by designing benches, so that they are impossible to sleep on is one such example (Davis 1990). Planning for public places therefore needs to go beyond simply allocating space and consider design and long-term management.

Regarding design, Zhang and Lawson (2009) surveyed activities in informal public and common places outside three high-density residential communities in Brisbane, the capital city of the state of Queensland in Australia. The study authors concluded that such places are important in facilitating day-to-day interactions. They recommend welcoming designs such as promoting common entries and inviting stairwells.

Rear laneways, or alleys, are a key element of new urbanist design which can act as a third place for social interaction. Laneways facilitate off street car parking, allow houses to have front doors and verandahs not dominated by driveways and garages, as well as front gardens that address public streets. The laneway importantly allows more pedestrian-oriented and sociable streets and can in itself act as a place for casual social interaction. In a survey of four San Diego neighborhoods with alleys, Ford (2001) discovered residents used these places for many purposes, including informal socializing with neighbors. More recently, Hess (2008) established that alleys in new urbanist developments create a secondary shared place that both supports causal interaction, yet competes with space in the formal street. Hess uncovered more interaction at the rear of properties than in the front and concluded that street presentation is subsequently neglected. In this sense, the provision of rear laneways can impact on the ability for new urbanist developments to provide Jane Jacobs' (1961) ''eyes on the street'' required for safety, as well as social interaction. Hess concludes that patterns of resident use of the front and back of their properties, and their impact on the sociability of neighbors, are complex.

Community interaction and governance: Healthy built environments in cities are often new and unfamiliar and urban planning has a role to play in educating communities about appropriate etiquette in these spaces. Opportunities for physical activity on pathways shared by pedestrians and cyclists, and for interaction in newly established community gardens and innovative outdoor town centers, are often novel opportunities. Consolidated residential areas and mixed-use neighborhoods are also unfamiliar living spaces for many. When people know how to behave in a space, the chance for friction between users is minimized and opportunities for positive, natural interaction enhanced. This community knowledge can be developed through proper placement of signage, facilitation of educational campaigns, and the provision of legible design (Gatersleben and Appleton 2007).

A sense of community ownership and engagement can also be integral to both the development and the maintenance of healthy built environment projects. Participation in the built environment fosters a sense of stewardship and empowerment. This is linked to community interaction (Baum et al. 2000; Shutkin 2001; Brand 2003) and mental and physical health (Baum et al. 2006). Baum et al. (2006), for example, examined the factors enabling the continuation of the ''Healthy Cities Noarlunga'' program over eighteen years (1987–2005). They concluded that the initiative being accorded value by the community, facilitated by genuine community engagement, was a major factor emerging in sustaining the initiative.

This section has reviewed contemporary literature on the way the built environment can be modified to promote different types of social interaction, positioning such interaction as key to positive mental and physical health. Safe, clean, and welcoming environments that provide an array of opportunities for interaction provide the foundations for community connectivity which in turn supports positive mental and physical health outcomes. Of course, physical activity and community interaction need to sit within a broader framework of healthy practices. Nutrition derived from fresh and healthy food plays a major role in this framework. We now turn to this final domain to explore the way built environments can provide equitable access to healthy food.

The Built Environment and Healthy Food Options

Setting the scene: How can the built environment support healthy eating? Although food is a fundamental human need, the way food is consumed in many developed countries contributes to alarmingly high levels of preventable disease (Jeffery and Utter 2003). Zoning and land use regulation can be used to create environments that support or inhibit healthy eating options. These all potentially impact on a community's access to healthy food. Our review of this area starts with some general commentary on the relationship between the built environment and healthy food accessibility and progresses to acknowledge the particularly strong link between food access and the socioeconomic gradient. We conclude with a discussion of the role of less obvious factors such as preservation of land for agricultural production and the importance of farmers' markets and community gardens.

Food accessibility: Echoing the direction of healthy built environment research, study of food environments has shifted to an examination of contextual, structural, and environmental factors influencing food choices. This includes geographical accessibility to supermarkets and fresh food stores, as well as the variety and price of foods within these stores (White 2007; Coveney and O'Dwyer 2009). The accessibility of healthy food is at the heart of this issue. A number of studies indicate convenience of food access as a determinant of food choice (Jilcott et al. 2009; Powell and Bao 2009). Various studies in the United States have convincingly linked exposure to energy dense foods, often featured in fast-food outlets, and

exposure to healthier choices offered by supermarkets, with weight status. This research positively associates neighborhoods with a high density of fast-food outlets with higher body weights. Similarly, the proximity of fresh fruit and vegetable outlets is often identified as important in encouraging healthy eating (White 2007; Bodor et al. 2008; Coveney and O'Dwyer 2009; Dengel et al. 2009; Galvez et al. 2009; Hosler 2009; Li et al. 2009; Zenk, Schulz, and Odoms-Young 2009; Dunn 2010; Fraser et al. 2010).

Indeed, there are ongoing debates about this relationship, particularly in relation to the influence of sociodemographic factors (Oreskovic, Kuhlthau, et al. 2009). Good access to chain supermarkets has, for example, been related to a higher weight status for women (Wang et al. 2007). Another study found that residents in New Zealand neighborhoods with the furthest access to a multinational fast-food outlet were more likely to eat the recommended intake of vegetables, but also be overweight (Pearce et al. 2009). The results of this study are reinforced by research in Australia examining the relationship between density of, and proximity to fast-food outlets (Crawford, Timperio, Giles-Corti, et al. 2008).

Various methods and measures have been used to calculate the dietary and health impacts of exposure to healthy versus unhealthy foods, with an array of conclusions the only tangible result. Many studies rely on quantitative methods that map the density of fast-food outlets against health data. Clearly, however, exposure to fast-food is not the only issue. As proposed by Mehta and Chang (2008, 127), "it is the availability of fast-food relative to other away from-home choices that appears salient for unhealthy weight outcomes." Crawford, Timperio, Salmon, et al. (2008) concur, explaining that the inverse relationship between fast-food exposure and averages of body mass index (BMI) is a product of the fact that "neighbourhoods, which have many fast-food outlets, also have many other types of food outlets where 'healthier' foods are available, thus diluting the exposure to fast-foods" (Crawford, Timperio, Salmon, et al. 2008, 253). It is therefore important to understand the nature of what food is available in all food outlets, rather than to simply quantify the number of fast-food outlets in a neighborhood. This analysis is required before the relationship between exposure to fast-food outlets and obesity can be dismissed.

Food accessibility and socioeconomic status (SES): Measures of the impact of food accessibility on health often rely on the socioeconomic stratification of the prevalence of overweight and obesity. The socioeconomic gradient to poor health is likely just as embedded in the relationships explored in our previous two domains. Our literature search, however, revealed a raft of studies that explore the hypothesis that the socioeconomic gradient to poor health is partly a result of healthy food being more expensive and more difficult to purchase in socioeconomically deprived neighborhoods (Inagami et al. 2006; Jetter and Cassady 2006; Kamphuis et al. 2006; Wang et al. 2007; Hemphill et al. 2008; Franco et al. 2009). The debate linking SES and accessibility to healthy food has subsequently informed the development of the concept of "food deserts"—defined as places where "cheap and varied food is only accessible to those who have private transport or are able to pay the costs of public transport if this is available" (Acheson 1998, 65, cited in Wrigley 2002). Although the actual existence of food deserts continues to be debated, research has attempted to quantify and qualify the relationship between the location of food outlets, SES, and poor health. This research consistently finds that residents of lower SES neighborhoods have the poorest access to supermarkets. Research further indicates that inequalities in this access have increased over time (Morland, Wing, and Roux 2002; Reidpath et al. 2002; Block, Scribner, and DeSalvo 2004; Rose and Richards 2004; Winkler, Turrell, and Patterson 2006; Boyle, Stone-Francisco, and Samuels 2007; Hackett et al. 2008; Hemphill et al. 2008; Lovasi et al. 2007; Lovasi et al. 2009; Moore et al. 2008; Franco et al. 2009; Hurvitz et al. 2009; Larsen and Gilliland 2009; Oreskovic, Winickoff, et al. 2009; Powell and Bao 2009; Sharkey et al. 2009; Zick et al. 2009; Stafford et al. 2010).

Land use around schools: The socioeconomic gradient to the obesity epidemic also applies to children (Maziak, Ward, and Stockton 2008). Our review suggests that one reason for this relates to differential exposure to food sources in school environments (Davis and Carpenter 2009). "School food environments" are conceived as the food provided within the school, as well as outlets serving foods within the vicinity. While the built environment has little sway over the interior food environment of schools, planning processes can, through land use zoning and regulation, influence the types of uses near educational establishments, including the density of fast-food outlets. Noting the policy-driven focus of our review, we found this relationship particularly interesting in the context of one specific way urban planning can facilitate positive health outcomes.

As mentioned previously, research has concentrated on quantifying the relationship between density of fast-food outlets around schools and obesity in children. Higher accessibility to fast-food outlets for schools in lower SES suburbs is consistently found to be associated with childhood obesity and unhealthy eating (consuming fewer servings of fruits and vegetables and drinking more soft drinks) in the research (Austin et al. 2005; Simon et al. 2008; Daniel et al. 2009; Kestens and Daniel 2010). Research on school environments, however, needs to be viewed in the context of the proven influence of parental food intake, which is a very strong determinant of childhood obesity (Withall, Jago, and Cross 2009). Once again, the message is that simply changing a single element of the built environment will not necessarily result in the desired health outcome.

Farmers' markets and community gardens: The community-based promotion and marketing of local agriculture is steadily gaining popular attention as demonstrated by the increasing numbers of farmers' markets and community gardens across Australia and abroad. Urban agriculture provides many health benefits including opportunities for physical activity and social connections (as discussed earlier in this article).

Importantly, farmers' markets and community gardens provide healthy food options as well. Our review demonstrates that they increase the availability of fresh vegetables and fruit, thereby resulting in more of these healthy foods being consumed (see, e.g., McCormack et al. 2010). Further, attitudes to buying, preparing, and eating healthy food are positively influenced. Farmers' markets and community gardens can also increase competition for nearby food stores, decreasing the price of fresh produce (Larsen and Gilliland 2009).

The built environment and larger scale food production: The importance of preserving urban agriculture, including market gardens and farming, on the peri-urban lands around large cities is increasingly recognized in the developed world, including Australia (Mason and Knowd 2010; Brinkley 2012). As well as supplying fresh quality produce to cities, local food production is an integral component of community building (Paster 2004). Farmers' markets also rely on local food production. The use of viable agricultural land around cities in Australia and the United States for low-density urban development has been the focus of recent attention. There is growing concern about how suburban development is destroying viable agricultural lands close to cities (Sinclair 2009). However, utilizing the urban fringe for agriculture poses particular difficulties for planners (Merson et al. 2010). In an effort to accommodate an ever-increasing population, areas of arable land are being rezoned for residential purposes, often at the expense of food production (Mason and Knowd 2010). The pressures of climate change, particularly the impact on oil-based transportation systems, make the preservation of productive lands in close proximity to consumers an imperative for the creation of a healthy planet able to support healthy people (Knight and Riggs 2010; Pearson, Pearson, and Pearson 2010). Land use zoning and regulation can be used to influence food production systems by protecting peri-urban agricultural lands capable of producing accessible healthy food.

The link between food accessibility, exposure, choice, SES, and health is generally accepted. However, research results are mixed and fail to indicate an enduringly consistent or quantifiable relationship. This is particularly so for environments outside the United States, as discussed in detail in Cummins and Macintyre (2006). The mixed results prompt consideration of the possibility that there is a particularly strong cultural attachment to the way food is purchased and consumed. The built environment's ability to provide healthy food options is potentially very sensitive to the specificities of cultural and social norms within place. Accordingly, reliance on an evidence base collated across geographical, legislative, and social boundaries is especially unhelpful and potentially misleading. This suggests the need for qualitative, culturally relevant research that is more attuned to the idiosyncrasies that define our complex relationship with food—both its purchase and consumption. The lack of such studies is a major weakness in this domain.

This concludes the second part of our article which has applied the framework of three domains established in the first section to undertake a comprehensive review of the burgeoning research literature on healthy built environments. This section has selectively detailed some of the policy-relevant evidence to support a key role for built environment professionals in health promotion. Despite the vast amount of research to date, there are a number of theoretical and practical tensions emerging as health and built environment practitioners and researchers seek new interdisciplinary ways of working. These areas of asynchrony have the potential to inhibit the translation of the three domains into practical policy (Kent and Thompson 2012). The final part of our article is dedicated to an exploration of these sticking points in the context of the research reviewed previously.

Part 3: Acknowledging Tensions

Progression of the healthy built environments agenda requires formation of strong interdisciplinary relationships. This process will inevitably encounter practical and theoretical discord that needs to be acknowledged and addressed. Our review of the literature identified a number of key methodological and theoretical debates running throughout the research. They generally relate to different understandings of the complexity of context, different ways of thinking about the nature of evidence required to justify policy change, together with more general misconstructions about ways to mix policies and disciplines. These identified areas of friction highlight some of the practical impediments to planning for healthy built environments.

Context

The need for consistent and objective measurement of built environment and physical activity variables is a commonly cited weakness in research on the built environment and health. As an example, Kirk, Penney, and McHugh (2010) recommend standardization of measurement in seeking to characterize ''obesogenic'' environments. This comprehensive review of 146 primary studies concludes that the ''environment may play a critical role in obesity development, prevention and management, but we have yet to determine the best method for measuring that effect accurately and consistently, or develop an appropriate theory to encompass this very complex and dynamic system'' (Kirk, Penney, and McHugh 2010, 116). There are other studies recommending consistency in measurement of built environment variables. These include Cunningham and Michael (2004) measuring the impact of the built environment on older people's physical activity, Davison and Lawson (2006) and Davison, Werder, and Lawson (2008) measuring environmental characteristics associated with children's physical activity, and Pucher, Dill, and Handy (2010) and Heinen, van Wee, and Maat (2010) analyzing the built environment's impact on cycling.

Policy responses will differ according to context. This includes spatial context and extends to embrace the diversity inherent within demographic and cultural character, environmental quality, and temporality. Recommendations for standardized measurements risk underestimating the diversity of people and place, particularly when attempts are made to

compare results between and across populations and locations. And while there is a role for standardizing some variables, standardized measures should not be viewed as a prerequisite to ''prove'' the relationship between the built environment and health.

Acknowledging contextuality in research on the health determinants of place must not be viewed as an impediment to the search for elements of commonality. Context needs to be taken seriously in both the application of research to policy and the design of future research agendas. Various studies reviewed previously discuss ways to avoid the ''excuse'' of context, with the strongest recommendation being that methods should be transparent and at least situated within, but not necessarily echoing, the existing research agenda. This implies that future research should build on the findings of previous work and comprehensively detail all measures and methods used.

Evidence of Causality

Linked to the common call for standardization is an identified need to establish that the relationship between the built environment and health is a causal relationship. Studies have consistently found a significant association between health and the built environment, generally through cross-sectional research; however, associations are insufficient to establish causality.

Establishing nonspuriousness by removing confounding variables (such as residential self-selection) is often cited as a major weakness in research on the health-built environment relationship (see, e.g., Tzoulas et al. 2007; Reynolds et al. 2009; Story et al. 2009; Ewing and Cervero 2010). The lack of longitudinal research required to prove time precedence is also identified as another missing element of causal proof (Humpel, Owen, and Leslie 2002; Owen et al. 2004; Gebel et al. 2005; Brownson, Haire-Joshu, and Luke 2006; Davison and Lawson 2006; Heath et al. 2006; van der Horst et al. 2007; Wendel-Vos et al. 2007; Black and Macinko 2008; Saelens and Handy 2008; Cao, Mokhtarian, and Handy 2009; Faulkner et al. 2009; Handy, Cao, and Mokhtarian 2009; Reynolds et al. 2009; Feng et al. 2010; Heinen, van Wee, and Maat 2010; Renalds, Smith, and Hale 2010). Juxtaposed to the call for causality is research accepting that the kind of experimental evidence used to demonstrate a high standard of causal proof is simply not practical for studies on the built environment and health (Brownson, Haire-Joshu, and Luke 2006; Bauman and Bull 2007). These calls accept that inability of the research agenda to date to establish causality, rather than mere association, is a product of the intricate complexities of the relationship between people and place.

The question about evidence cuts to a core division between the health and urban planning traditions. In the past, the nature of evidence planners use to develop policy has differed from that used by public health officials. Australian urban planning's early to mid-twentieth-Century focus on greenbelt cities, for example, was based on a historical appreciation of the health benefits of open space for overcrowded and dirty cities (Cullingworth and Nadin 2006). Schemes such as Sydney's County of Cumberland Plan and Perth's Endowment Lands project reflect this appreciation. Basing policy change on an ''appreciation,'' rather than hard evidence, is unusual for a public health based intervention. While urban planners are increasingly acknowledging the need to base planning decisions on a robust evidence base, there remains a need to generate better understandings of the type of evidence required to justify healthy built environment interventions. Research must obviously continue in the spirit of establishing a stronger evidence base on the relationship between the built environment and health. Attention also needs to be directed, however, toward the acceptance of a practical standard of proof acceptable to justify and subsequently defend policy change (Ogilvie et al. 2006; Cavill et al. 2008; Story et al. 2009).

Mixing Policies and Disciplines

Research on the links between health and the built environment often concludes with the acknowledgment that structural modifications to the built environment need to be part of a policy mix if they are to be successful. For example, Ewing and Cervero (2010) use the concept of ''elasticity'' to give quantifiable justification that active transport behavior is shaped by an integrated range of built environment modifications, educational programs, incentives, and restrictions. Theoretically, this conceptualization reflects the increasingly ecological orientation of the health promotion field (McLeroy et al. 1988; Stokols 1996; Cerin et al. 2010; Langille and Rodgers 2010). Ecological models of health promotion are underpinned by the understanding that an individual's health is shaped by multiple factors and contexts. Translating this understanding into policy requires consistent and meaningful interdisciplinary collaboration. Successful healthy built environment partnerships rest on deliberative interdisciplinary engagement. Researchers and practitioners from the built environment and health need to recognize that their accepted wisdoms and assumptions are not necessarily shared, nor understood, beyond their own disciplinary boundaries. We will both benefit from a preparedness to listen and learn about the new ways of collecting, interpreting and presenting evidence and enacting policy.

Conclusion

Our article has presented a framework that can be used to group and review the literature on the links between health and the built environment. We have used this conceptualization to present a narrative review of existing research and subsequently discussed areas of theoretical and practical asynchrony commonly identified in the literature. We acknowledge that our review has a number of limitations. In particular, its policy-relevant focus limits our ability to delve deeply into the intricacies inherent to the relationship between the built environment and health.

Nevertheless, the research evidence reviewed here demonstrates a strong relationship between people's health and the built environment. This relationship is complex and contextual. Conceptualization of this relationship through frameworks such as

the three domains enables built environment professionals to unpick this complexity and more effectively promote health and well-being in their practice. Translating this framework into action, however, requires the development of genuinely interdisciplinary working relationships that must be based on mutual understanding and respect. The final section of this article has outlined some very real differences in the research and practical traditions unique to health and built environment professionals. While these disparities are not insurmountable, they reveal that this is a disciplinary area in its infancy. Our hope is that the fledgling discipline develops to create built environments that effectively promote the health and well-being of all communities.

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Note

1. We note that rural populations are increasingly affected (see, e.g., Hosler 2009; Frost et al. 2010; Maley, Warren, and Devine 2010). The focus of our article, however, is on urban populations.

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