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Validating a comprehensive plan scoring system for healthy community design in League City, Texas

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Abstract

Comprehensive plans provide an overall vision for a city's land use and development and influence community health conditions. As part of a community-engaged research project, a Healthy Living and Active Design Scorecard was applied to the comprehensive plan of League City, Texas, to identify health-promoting design and planning strategies. Although the plan scored similarly to published examples, several areas of improvement aligned with priorities from a community health assessment were identified, including improving public transportation and access to exercise and recreation. Future revisions of the plans and neighbourhood scaled designs targeting these issues could improve the health of the community.

Introduction

A community's comprehensive plan provides an overall strategic vision for land use and development (Berke et al. 2015). The principles and policies included in a comprehensive plan should reflect the priorities of the community and be equitable, implementable and promote sustainability (Berke and Conroy 2000; Godschalk and Rouse 2015). In part, because of their breadth – comprehensive plans include elements related to population demographics, economic development, natural and cultural resources, community infrastructure such as transportation, emergency services and facilities, housing and land use – these plans can play a major role in determining the future of a community's built, social and natural environment (Kelly 2009). In this way, comprehensive plans may affect the health of populations who live in the communities governed by the plan. For example, comprehensive plans can support or undermine opportunities for healthy living by prioritizing opportunities for exercise, healthy eating and the development of businesses that support a healthier lifestyle (Saelens and Handy 2008; Ricklin, Klein, and Musiol 2012; Robinson et al. 2013; Saunders et al. 2013; Kelly et al. 2014).

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Unfortunately, in the US, urban design still struggles to establish a major role in planning practice and the distinctions between comprehensive planning and community master planning have become blurred (Punter 2007). While research has shown that both effective comprehensive plans and urban design can play a vital role in dictating public health outcomes, much of this research has been qualitative or only indirectly links the two variables (Carmona 2018). One way of providing quantitative evidence that land use planning and urban/landscape design promote and improve public health is the use of a scorecard to evaluate comprehensive plans. This paper reports the results of the application of a new Healthy Living and Active Design Scorecard, developed by Maiden et al. (2016), to the comprehensive plan of League City, Texas, a rapidly growing suburb of Houston. The project entailed a research and engagement partnership between the Institute for Sustainable Communities at Texas A&M University and League City governmental agencies and residents. The goal of the partnership was to identify planning and design strategies that could be implemented to promote public health by reducing the health impacts of natural hazards.

Literature review

Historically, there was significant overlap between the fields of urban planning, urban design and public health, with each emerging in the US around the start of the twentieth century to counteract outbreaks of infectious diseases and issues stemming from rapid industrialization and urbanization in nineteenth-century American cities (Greenberg et al. 1994; Ricklin, Klein, and Musiol 2012). However, when the epidemiologic transition (McKeown 2009) of the twentieth century shifted mortality from primarily infectious causes to primarily chronic ones, many of the connections between urban design/planning and public health were weakened or disappeared entirely (Greenberg et al. 1994; Corburn 2004). For a time, there was no public health research agenda for urban health (Freudenberg 2000). At the same time, planners and designers were not addressing the movement of urban residents to edge cities and poorer suburbs or the effect of the resultant vacant land and structural abandonment (Freudenberg 2000; Newman et al. 2016). Public health and the design/planning fields were not collaborating on issues related to environmental remediation (Greenberg and Popper 1986), indoor air quality (National Research Council 1981) or the overall public health impacts of land use and infrastructure decisions (Greenberg et al. 1992).

However, more recently, international and national interest in reviving these linkages has increased, with the World Health Organization (Duhl and Sanchez 1999), the National Center for Environmental Health (Jackson and Kochtitzky 2001) and the Institute of Medicine (2001) publishing reports emphasizing the importance of recognizing and facilitating closer connections between health and planning. The Environmental Protection Agency's (EPA) Healthy Places for Healthy People programme (EPA, n.d.) is focused on understanding the ways in which community health facilities may act as economic drivers, facilitating health in ways related to both increased access to care and a more healthy built environment. At the place-based level, programmes such as the Texas Coastal Watershed Program's (TCWP) Center for Health and Resource Management work with researchers and communities to integrate measures of public health with resilience (TCWP, n.d.). The

emergence of the environmental justice movement, which focuses on addressing disproportionate pollution and other environmental stressors in minority and low-income neighbourhoods, has also offered new frameworks for reconnecting planning and public health (Bullard and Johnson 2000).

There is now a fairly strong consensus in both the planning and public health literature that both physical and mental health can be profoundly impacted by a community's design and built environment (Dannenberg et al. 2003; Frank, Engelke, and Schmid 2003; Jackson 2003; Schweitzer, Gilpin, and Frampton 2004; Ferdinand et al. 2012; Cooper, Burton, and Cooper 2014). Specific health benefits related to increases in green space in urban areas, such as reduced mortality, morbidity, stress and mental fatigue, have been documented (Kondo et al. 2015). Linkages to increases in cardiovascular health, healthier patterns of cortisol secretion, improved pregnancy outcomes and physical health benefits, specifically in urban areas, have also been found (Suppakittpaisarn, Jiang, and Sullivan 2017). Several reviews have demonstrated the benefits of various elements of the built environment for physical and mental health and wellness. In a review of 23 studies of the relationship between the built environment and health, Renalds, Smith, and Hale (2010) demonstrated that more walkable neighbourhoods were associated with more physical activity and higher social capital, as well as lower rates of obesity, depression and alcohol abuse. The review of 55 studies by Suppakittpaisarn, Jiang, and Sullivan (2017) attempted to show health benefits from green infrastructure beyond trees and parks, calling for more research on the potential health impacts of bioswales, rain gardens, green roofs and other types of vegetation. However, while most studies report positive associations between green space and health, establishing a causal relationship – and developing planning and design-based strategies that could address them – has been difficult due to study design and statistical limitations (Lee and Maheswaran 2011). For example, important questions remain as to the relative importance of the quality of greenspace versus the quantity (Mitchell and Popham 2007), as well as the role that potential individual mediators of any reported associations between green space and health play on these relationships (Richardson et al. 2013).

Both descriptive epidemiological studies and clinical psychology studies have demonstrated that the amount of green space in a neighbourhood is positively associated with reductions in stress, fatigue, general mental health and longevity (Groenewegen et al. 2006). In particular, access to public green spaces and community facilities that are designed to provide a respite from crowding, noise and fear of crime are important for the promotion of mental well-being (Whitley and Prince 2005; Guite, Clark, and Ackrill 2006). In fact, there is growing evidence that increased exposure to higher amounts of green space is significantly related to public health outcomes. In the long term, increased exposure to urban green space has been shown to reduce levels of stress hormones, heart rate variability and skin temperature, promote mental fatigue recovery, improve attention spans and reduce the prevalence of mental illnesses (e.g., depression, anxiety), and increase social activity (Jiang et al. 2014). Additional prospective studies are needed to better understand the potential causal mechanisms for reported associations and to provide guidance for the most effective public health and urban planning interventions aimed at improving population mental health (Galea et al. 2005).

Similar research has been conducted in international settings. For example, satisfaction with their neighbourhood's built environment, safety and relationships was associated with higher self-rated physical and mental health among Korean adults (Cho, Park, and Echevarria-Cruz 2005). In Australia, the dearth of evidence about causal relationships between policies, the built environment and health and well-being led to the development of liveability indicators to measure the characteristics of healthy, liveable and sustainable cities (Lowe et al. 2015). More research has been called for in the UK to quantify the health benefits of the natural environment on a range of health challenges, from treatment for children with Attention Deficit Hyperactivity Disorder (ADHD) to well-being and mental health among elderly residents of dementia facilities (Bird 2007).

Since establishing causal relationships or measuring the effectiveness of specific design and planning interventions on health is difficult due to the many underlying determinants, it is important to consider possible measurable elements of community design and land-use that may affect physical and mental health (Lee and Maheswaran 2011). For example, a series of case studies focusing on liveable and sustainable communities published by the American Institute of Architects (AIA) emphasize ways that architecture can help create healthier communities (AIA 2012). The Landscape Institute has developed a set of principles it considers essential in creating healthy places, highlighting the role that landscape architects play in improving public health (Landscape Institute 2013). Similarly, an academic-practice collaborative initiative developed by the Landscape Architecture Foundation includes 58 case studies that attempt to quantitatively assess the environmental, economic and social benefits of landscape design (Yang, Li, and Binder 2016).

Methods

Study location

League City is one of 13 incorporated communities located in Galveston County on the mainland of the Upper Texas Gulf Coast, approximately 30 miles south of Houston (Figure 1). It is part of the Houston-Woodlands-Sugar Land metropolitan area and has a population of approximately 100,000 (US Census Bureau 2016). Similar to most towns and cities in the State of Texas, the population of League City is growing rapidly, increasing by more than 80% between 2000 and 2010, surpassing Galveston as the largest city in Galveston County (Office of the State Demographer, Texas State Data Center, and Hobby Center for Public Policy 2014; US Census Bureau 2016). In 2013, NerdWallet ranked League City the best place in Texas to look for a job and in 2016, WalletHub ranked League City as the fastest growing city in the US. In 2016, the median household income was \$97,087 (US Census Bureau 2016). League City is located 23 miles south east of Houston and 23 miles north west of Galveston along Interstate Highway 45, providing easy access to Houston's Hobby Airport and Ellington Field, which is used by the National Aeronautics and Space Administration (NASA). NASA's Johnson Space Center is also located nearby.

According to the Galveston County Community Plan, this rapid population growth has resulted in the need to quickly expand the city's transportation and education infrastructure to meet the needs of new residents, many of whom relocated from Houston and Galveston in search of more affordable housing (Galveston County Community Planning Team 2011).

This has caused a demand for new housing in the city. However, the current land use in League City comprises approximately 21% vacant/undeveloped space, much of which are peripheral greenfields, prime land for single family, suburban-type development. The future land use plan for League City projects a drop to 0% vacant land. It is important that green space plays a role in the repurposing of these undeveloped lots for public health outcomes to remain stable or improve.

In 2012, a community health assessment was conducted in Galveston County as part of the Healthcare Transformation and Quality Improvement Program (Texas AHEC East 2012). Priority health issues identified by the assessment included lack of access to physical and mental health care; lack of access to comprehensive, low-cost public transportation; high rates of poverty; poor air and water quality; fast food accessibility; lack of built infrastructure to support exercise; high rates of obesity, tobacco use and chronic diseases; and lack of knowledge of available services.

The population of League City is projected to continue growing quickly. Given the priority health issues identified in the health assessment, this growth will increase demand for public health services. The city's plans suggest that its current policies generally support environmentally sensitive growth to provide space for leisure activities. The local hazard mitigation plan, for example, has a stated goal to 'preserve, rehabilitate, and enhance natural systems' (League City Emergency Services 2010, 118). The spirit of this goal is echoed in the city's parks and open space plan, which includes several provisions to preserve or acquire open space, and to use that space as a community amenity, albeit passively. However, while the preservation of existing open space may be a priority, open space provisions are not necessarily mandated. For example, according to its Future Land Use Plan, League City is projected to grow over 50% in residential uses but only 1% in green space. League City's comprehensive plan, which guides future development and management of the community, does focus several policies on limiting development in natural and sensitive areas, including wetlands and 100-year floodplains, suggesting ways to accomplish this through land acquisition, buffer zones, clustering development outside of sensitive zones (League City Planning and Development 2013).

League City was selected for this case study because it is one of 500 cities taking part in the 500 Cities Project: Local Data for Better Health, a collaboration between the Robert Wood Johnson Foundation and the Center for Disease Control and Prevention (CDC). The purpose of the 500 Cities Project was to provide high quality small area estimates for behavioural risk factors that influence health status and to develop and implement effective, targeted public health prevention activities (CDC 2016). According to the report from this project, 27.7% of the city's population was obese and more than one-third (34%) had high cholesterol. These findings were indirectly linked to the high rate of residents who reported little to no leisure time activity (17.9%). However, because the models used in analyzing the data could not detect any effects from local interventions, the resultant estimates are not able to be used for programme or policy evaluation. The application of the Healthy Living and Active Design Scorecard used in this research helps to fill this gap in public health evaluation.

Research objective

A potential application of the Healthy Living and Active Design Scorecard is the capability to integrate analytical findings from both larger-scaled planning policies and community-scaled design strategies. This separates the instrument from many other existing tools; however, the tool's integration capabilities have not yet been assessed in the literature. This project sought to determine if the Healthy Living and Active Design Scorecard could be effectively used to evaluate the inclusion of important public health elements using urban planning and design concepts, including (1) vision and strategy, (2) healthy living and (3) active design.

Analytic approach

The Healthy Living and Active Design Scorecard developed by Maiden et al. (2016) provides 50 items that can be used to score a comprehensive plan with regard to its implementation of health concepts. The items are organized into three categories: overall plan, vision and strategy (N = 6); healthy living (N = 29); and active design (N = 15). The League City Comprehensive Plan 2035, which received the American Planning Association's Texas Chapter Award for comprehensive planning in 2011, was downloaded from the County's website (League City Planning and Development 2013). Information on each of the 50 items was extracted from the League City Comprehensive Plan by a Masters-level trained planner and entered into a Microsoft Excel spreadsheet (Version 10; Redmond, WA). Similar to other plan quality evaluations, each of the 50 items were assigned a score of 0 (not present), 1 (present, but limited in scope) or 2 (present with details, comprehensive, actionable), depending on the extent to which the observed plan content corresponded to the item (Berke and French 1994; Berke and Godschalk 2009; Ricklin, Klein, and Musiol 2012). Plan comprehensiveness scores were calculated by counting all the measures that scored a 1 or a 2, with a maximum possible score of 50 (Maiden et al. 2016). Plan strength was calculated by summing all scores, with a maximum possible score of 100 (Maiden et al. 2016).

Results

The total comprehensiveness score for the League City Comprehensive Plan was 30 out of 50, meaning 60% of the items were present. The total strength of the plan was 41 out of 100, with 19 of 50 items being scored as present but limited and 11 of 50 items being scored as present with details.

Overall plan, vision and strategy

The League City Comprehensive Plan only included one element from the overall plan, vision and strategy measures. While the plan discussed the potential social importance of informal public gathering places, also referred to as 'third places', no linkages between mental health and such land use were mentioned (Table 1).

Healthy living

The plan included eight of the 13 items of healthy living that related to 'how we move around' (Table 2). Although the plan mentioned the need to increase the types of public

transportation available, no specific information about reducing car dependency or improving public health were included. Recommendations for wheelchair, bicycle and pedestrian access in new communities, as well as reduced parking requirements for accessible developments (e.g., those with wheelchair, bicycle and pedestrian access and/or located near public transportation), were briefly mentioned or absent from the plan. 'Safe Routes to School' that accommodate walking or bicycling for children were suggested 'as long as impacts are appropriately addressed'.

Healthy living information related to 'how we eat and drink' were present for three of eight items, with detailed information included for only one item, the insufficiency of drinking water supplies. Measures that were present but lacking in detail included the preservation and development of urban farms and the creation of community gardens and farmers' markets. Although present, these measures focused on economic development rather than the potential health benefits.

Healthy living measures related to 'how we play and get exercise' were present with limited detail in three of five items. Specifically, goals related to open space, parks and recreation facilities were outlined, general amenities of parks were discussed, and areas underserved by planning for physical activity were mentioned as underserved planning areas. However, elements describing the need to improve access to these facilities, specific information about facility lighting, cleanliness and safety, and the potential health benefits of physical activity in underserved planning areas were lacking. One of the five healthy living measures, the provision of standards for developer-provided open spaces within new developments, included sufficient detail to achieve a full score. Although the local parks and recreation plan was mentioned, the League City Comprehensive Plan failed to address the Statewide Comprehensive Outdoor Recreation Plan.

Finally, only one of three possible healthy living measures related to 'how we get and stay well' was included in the comprehensive plan. This included the mention of policies to support ageing in place, such as life cycle housing and granny flats. Items addressing access to health care and wellness services among the general population were absent. Unmet measures within this category included the number of available health and human service outlets and strategies to improve access to healthcare services through collaboration with relevant state agencies.

Active design

Of the 15 active design measures, 13 were included in the League City Comprehensive Plan, seven as present and six as present with details (Table 3). For items that were mentioned without detail, the plan specifically supported mixed-use development, but did not include details about the walkability of these developments. The use of third-party standards such as Leadership in Energy and Environmental Design (LEED) was limited to parks and recreation facilities. Redevelopment of greyfields was deemed preferable, but not as an alternative to new construction on greenfields. Compact development, connectivity, accessory dwellings, 'third places' and public spaces, and the use of shade trees to enhance walkability were explicitly discussed. Intergovernmental coordination was included with

detail throughout the plan, specifically as it related to hazard mitigation and community facilities.

Discussion and conclusion

A community-engaged, integrated planning and design process is necessary to ensure that comprehensive plans include public health in their overall strategic vision for land use and development. While several international and national planning and landscape architecture organizations, as well as the EPA, have developed programmes, principles and case studies to draw attention to the importance of integrating health and planning, there are few ways to quantitatively access the health benefits of comprehensive planning and urban design. The Healthy Living and Active Design Scorecard developed by Maiden et al. (2016) is a new tool that has been validated in this research to evaluate the inclusion of important public health concepts, including vision and strategy, healthy living and active design, in comprehensive plans. While inclusion in plans is only a first step, it is an essential one. For example, by prospectively studying the incidence of various physical and mental health outcomes as planning and design-based strategies are included in plans, and subsequently adopted and phased in, temporal and statistical limitations may be able to be addressed (Lee and Maheswaran 2011). As League City grows and its population changes, carefully designed epidemiologic studies could also be used to assess the roles of individual and community social factors in the relationship between comprehensive planning, green space and physical and mental health outcomes (Richardson et al. 2013).

Measures of comprehensiveness and strength were used to evaluate the overall quality of the League City Comprehensive Plan. The comprehensiveness score of this plan (30 out of 50; 60%) was similar to Maiden's assessment of 42 comprehensive land-use plans, in which comprehensiveness scores ranged from 10 out of 50 (20%) to 39 out of 50 (78%) (Maiden et al. 2016). In terms of strength, League City's plan score (41 out of 100) was also similar to Maiden's assessment, in which the 42 plans they assessed scoring between 13 and 69 (Maiden et al. 2016). Out of the three categories of items (overall vision and strategy, healthy living and active design), the League City Comprehensive Plan was most comprehensive and strongest with relation to active design. The inclusion of items such as neighbourhood connectivity, dwelling layouts that foster cohesion and the promotion of 'third place' land uses are all design features that can contribute to better public health. The plan was weakest in terms of both comprehensiveness and strength with regard to vision and strategy, failing to explicitly recognize the relationship between the built environment and public health or demonstrate collaboration with public health officials, advocates or stakeholder groups. Since the plan included a detailed description of intergovernmental coordination around mobility and access to services, linkages with public health officials and the local government could be incorporated in future plan revisions with relative ease.

While the items included in the Scorecard are not explicitly tied to specific spatial locations, the inclusion of local health data, such as unmet needs identified in community health assessments, would facilitate data-driven decision making. Plan visioning, design elements and priorities should be linked to both community- and site-level scales to facilitate community engagement and achieve informed design. Community-scale measures provide a

means in which to forecast the potential health impacts of future developments and to evaluate the performance of existing urban designs. For example, landscape performance tools from the Landscape Architecture Foundation provide a series of calculators that can measure the hydrological, economic, social and ecological impacts of schematic and implemented designs. However, existing tools lack the capacity to reliably project the public health impacts of community-scaled designs. Therefore, resources are still needed to better quantify and improve the public health implications of urban planning/design.

The Scorecard was created to include measures that reflect comprehensive land use plan activities pertaining to active living and healthy design (Maiden et al. 2016). The Scorecard does not capture important data about broader issues related to social, economic and environmental sustainability, which clearly impact the health and well-being of both individuals and the community (Lowe et al. 2015). While it is understood that the presence of an item within a comprehensive plan is not a guarantee that it will be implemented, this tool has shown the flexibility to be used by both planners and urban designers for (1) plan evaluation and assessment, (2) identifying areas in need of improvement through local or community scaled design interventions, or (3) as a landscape performance calculator for projecting the potential impacts of master plans. Future iterations of the Scorecard could also incorporate more measures related to the larger concept of sustainability as opposed to the current focus on liveability (van Dorst 2000).

There are several important limitations to this approach. Only one trained reviewer assessed the comprehensive plan of League City, so no statistics related to coding agreement could be calculated. However, the reviewer is a Master's level-trained professional in urban planning who is also a certified planner and a member of the American Institute of Certified Planners (AICP). This project assessed only the contents of the League City Comprehensive Plan and not the implementation of the plan. Therefore, while plan elements related to healthy design and active living can be evaluated with the Scorecard, health outcomes resulting from these items cannot be discerned in the absence of future studies. Direct linkages cannot be made using individual-level health data to quantify potential positive impacts from areas of the plan. Protections provided by the Health Insurance Portability and Accountability Act (HIPAA) limit access to health information and individual-level data that may be necessary to measure plan impacts.

Measuring health outcomes and assigning impacts to policy change is complex and multi-disciplinary. Therefore, unmeasured or unmeasurable confounders make causal relationships between planning and health difficult to identify. For example, a community with a comprehensive plan containing each of the Scorecard measures may be subjected to factors such as a lack of income or access that inhibit its ability to achieve improved health outcomes. This is the key limitation that has been identified in the literature; addressing it will require substantial investments in long-term, multi-disciplinary research studies, as well as ongoing partnerships between researchers, governments and private and community groups to integrate, and study the impacts of integrating, planning and design with health (Holden 2012). For example, integration must be achieved both vertically, from local jurisdictions to County and State levels, and horizontally across departments and plans (de Leeuw 2006; Gleeson, Dodson, and Spiller 2010; Berke et al. 2015). Barriers include a lack

of collaboration across sectors, workforce capacity and training issues, and the variation in planning requirements and mandates (Berke 2002; Lowe et al. 2015).

As part of a community-engaged research project, a new scorecard developed by Maiden et al. (2016) was applied to an award-winning comprehensive plan from one highly vulnerable Texas Gulf Coast City. The plan's comprehensiveness and strength scores were within the range of scores for 42 counties presented by Maiden et al. (2016). Strengths included supporting compact development, the development of 'third places' and public spaces, and addressing concerns about access to quality drinking water. Specific opportunities for improvement that align with priority needs identified in a community health assessment include reducing car dependency, increasing access to health and wellness services and agencies, and targeting 'underserved planning areas' with parks and other developments that provide opportunities for physical activity.

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Figure 1.
League City, Galveston County, Texas, US Gulf Coast. Source: GIS Open Data, Texas
Natural Resources Information System.

Table 1.

Healthy Living and Active Design Scorecard^a for the League City, Texas, comprehensive plan: overall plan, vision and strategy.

Measure	Score
Overall plan, vision and strategy	
The plan explicitly recognizes the relationship of the built environment to obesity, chronic disease and public health in general.	0
The plan demonstrates collaboration with public health officials, public health advocates and relevant institutions and stakeholder groups.	0
The plan addresses health inequities among populations within its jurisdiction.	0
The plan contains a standalone health chapter or element.	0
The plan refers to Health Impact Assessments (HIAs).	0
The plan establishes a relationship between land use decisions and social cohesion/mental health.	1
Total score	1

^aSource: Maiden et al. 2016

Table 2.

Healthy Living and Active Design Scorecard^a for the League City, Texas, comprehensive plan: healthy living.

Healthy Living		
How we move around	The plan mentions reducing car dependency as a means of improving public health.	0
	The plan includes a goal or objective to increase the number of citizens who walk or bike to work and other daily activities.	0
	The plan references 'Complete Streets' principles.	1
	The plan includes a bicycle/pedestrian plan.	1
	The plan includes traffic calming goals and measures.	2
	The plan includes references to measures that improve pedestrian mobility and safety.	2
	The plan requires developers to provide bicycle, pedestrian and wheelchair access in new communities.	1
	The plan seeks the development or extension of off-road greenways and trails for biking and walking.	2
	The plan recommends reduced parking requirements for developments located near transit stops and/or with bicycle, pedestrian and wheelchair access.	1
	The plan identifies access to health care and mobility as issues of special concern to ageing populations.	0
	The plan identifies access to health care and mobility as issues of special concern to disadvantaged populations.	0
	The plan supports 'Safe Routes to School' for children or other mechanisms that support children walking or riding bikes to schools, including locating schools closer to residential areas.	1
	The plan supports the co-location of community services in school buildings.	0
Total score		11
How we eat and drink	The plan supports the preservation of existing working farms.	0
	The plan supports the preservation or development of 'urban' or specialty farms, which grow products such as vegetables, herbs, honey, eggs, flowers and plants for local distribution and sale (in addition to or instead of commodity crops such as corn and soybeans).	1
	The plan cites the need to increase access to healthy food, especially in low-income communities where 'food deserts' may exist.	0
	The plan supports the creation and sustainability of community gardens.	1
	The plan addresses the creation and sustainability of farmers' markets.	1
	The plan includes an objective to increase the number of full-service grocery stores in underserved areas.	0
	The plan supports businesses that provide healthier food and drink options, especially in documented underserved areas.	0
	The plan addresses access to drinking water and/or promotes installation of water fountains.	2
Total score		5
How we play and get exercise	The plan sets goals for access to open space, parks and recreational facilities.	1
	The plan refers to the latest Statewide Comprehensive Outdoor Recreation Plan (SCORP).	0
	The plan establishes a high level of service for parks – for factors such as lighting, cleanliness and safety.	1
	The plan establishes standards for developer-provided open space within developments.	2
	The plan identifies geographic areas with the greatest need for more physical activity.	1
Total score		5
How we get and stay well	The plan includes data on the number of health and human service outlets available to populations in need in the jurisdiction.	0
	The plan includes policies to work with relevant state agencies to improve access of all citizens to health care and wellness services.	0
	The plan supports policies that enable ageing in place.	1

TOTAL	1
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^aSource: Maiden et al. 2016

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Table 3.Healthy Living and Active Design Scorecard^a for the League City, Texas, comprehensive plan: active design.

Active Design	The plan supports walkable, mixed-use development.	1
	The plan identifies the need to plan and build connected street networks in mixed-use areas that are pedestrian-friendly.	2
	The plan promotes compact development to promote liveability, walkability and transportation efficiency.	1
	The plan addresses transit-oriented design.	0
	The plan supports Traditional Neighbourhood Development or village-style development.	1
	The plan supports infill and redevelopment of greyfields in areas already served by public infrastructure.	1
	The plan supports repurposing, adaptation and reuse of older buildings rather than demolition and new construction on greenfields.	1
	The plan supports connectivity between developments.	2
	The plan supports accessory dwelling units in appropriate locations to create affordable options in existing communities and foster social cohesion for older citizens, young people just starting out, and others who cannot afford or do not want to live in a single-family dwelling.	2
	The plan promotes 'third places' and public spaces.	2
	The plan addresses the use of street trees for shade and to enhance walkability.	2
	The plan supports the orientation of buildings to face the street or include windows that face the street (promoting 'natural surveillance' and making walking safer).	0
	The plan supports recognized third-party standards for healthy building design and operations, such as Leadership in Energy and Environmental Design (LEED).	1
	The plan supports recognized third-party standards for sustainable, healthy mixed-use communities such as STAR Communities or LEED for Neighbourhood Development.	0
	The plan supports intergovernmental coordination that ensures mobility and seamless access to services between jurisdictions.	2
Total		18

^a Source: Maiden et al. 2016