



Guidelines for Healthier Public Spaces for the Elderly Population: Recommendations in the Spanish Context

3

Ester Higuera, Emilia Román, and José Fariña

3.1 Introduction

3.1.1 Healthy Urban Cities

Population ageing is accelerating all over the world. The World Health Organization (WHO) predicts that in 2050, those over 65 years will represent 66% of the world's population. The growth of the population over 60 years of age is growing at a rate of 3.26% annually (UN-Habitat 2016). This elderly population lives in cities with public spaces that have been created and transformed over time. Health depends on many elements such as genetic predisposition, lifestyle, environment and social relationships. Economic, energy, social and environmental factors also play a role. The WHO states that the older population is one of the most vulnerable groups in society.

Health, according to the WHO, is the full state of physical, mental and social well-being, and not only the absence of disease or infirmity. For this reason, the physical environment in which people live and carry out their activities is decisive to their health. The WHO defines a **healthy city** as one that is progressively increasing its physical, social and environmental well-being and that uses

its resources to improve them for all the people in the community. Also, the WHO defines the **quality of life** as the perception that an individual has of his or her place in existence, in the context of the culture and value system in which he/she lives and in relation to a person's objectives, expectations, rules and concerns. It is, therefore, a concept related also to the physical health of people, their psychological state, their level of independence, their social relations, as well as their relationship with the environment.

Lastly, health in cities is one of the main concerns of the European Union directives and plans (Europe Strategy 2020), such as Horizon 2020 Strategy, the “Health 2020 health and well-being strategy”, the European Territorial Agenda 2020 (TA2020), the European Disability Strategy 2010–2020 and its Action Plan. The WHO even recognises the importance of the Health Impact Assessment of environmental determinants, highlighting the importance of promoting less unhealthy or healthy urban environments through urban planning, the design of public spaces and non-polluting urban transport, mitigation of climate change, housing improvements and urban regeneration of the consolidated city. These goals are necessary to face the sustainability of the present city, through local proposal actions. The healthy city is also lined up with the Sustainable Development Goals (SDG) of the United Nations (2015), specifically SDG numbers 3, “Health and well-being” and 11, “Sustainable Cities and Communities”, and with the Climate Change scenario (WHO 2008).

E. Higuera (✉) · E. Román · J. Fariña
Department of Urban and Regional Planning, Escuela
Técnica Superior de Arquitectura, Universidad Politécnica
de Madrid, Madrid, Spain
e-mail: ester.higuera@upm.es; emilia.roman@upm.es;
jose.farina@upm.es

3.1.2 Elderly Urban Health Challenges

One of the WHO’s objectives (WHO 2010) is to make healthy ageing possible for people who are now living longer; this is defined as the “process to promote and maintain the functional capacity that allows well-being in old age”.

The elderly have special conditions with respect to the environment in which they live, and if it is urban there are dysfunctions and risks that must be determined in order to be resolved. Some of the main ones are shown below.

With regard to thermal comfort, the elderly are more sensitive to high temperatures and prefer lower temperatures than young adults. For physiological, psychological and physical reasons, there is a difference of between 0.2 and 4°C between the young (Baquero Larriva and Higuera García 2019) and the old in a particular place. We also found that the recommendations on comfort do not consider the specific considerations for adults, but the comfort diagrams consider a standard adult aged 40 years for the determination of thermal comfort in outdoor and indoor spaces (ASHRAE 1966). Heatwaves cause them a higher rate of collapse, episodes that have increased in many European cities in the last decade (D’Ippoliti et al. 2010).

- The cold also affects the elderly in a decisive way (Hajat and Haines 2002).
- Many of them have a significant cognitive loss from the age of 65 years, and generally in ages

over 75 years with the loss of vision and hearing mainly (WHO 2009).

- Their lack of reflexes, loss of muscle mass and walking difficulties make them suffer falls that can affect their autonomy completely (WHO 2018).
- Respiratory and cardiovascular diseases have a high rate in people over 65 years, producing very serious situations when urban pollution levels are high, or in the presence of heat waves during the summer (Baquero Larriva and Higuera García 2019).
- The elderly have a high rate of urinary incontinence, especially women (Kılıç 2016), which limits their autonomy, their journeys and can increase isolation and loneliness.
- Most of them have a higher level of insecurity and perceive the danger subjectively in a more pronounced way, which influences their movements through the city and confines them to their homes as the safest place.

It is considered that the method of ageing is determined 25% by genetic factors and 75% by environmental factors, lifestyle and habits (Comino Sanz and Sánchez 2018). Therefore, air quality, absence of noise, presence of green areas, density, location of urban uses and mobility determine the quality of urban life in old age. In this sense, the main diseases of European cities have been listed by HUDU, 2006 and it helps us to know the risks of the urban environment and the criteria of urban design. Table 3.1 shows how high density parameters, urban structure, the variety of building types, the absence of green areas,

Table 3.1 Risk for elderly population with urban design parameters and main urban diseases

Main Diseases European City	High density	Urban structure	Typological variety	Lack of green areas	Land use spatial distribution	Mobility by car
Obesity	High	High	High	High	High	High
Cardiovascular diseases	High	High	Low	High	High	High
Respiratory Diseases	High	High	High	High	Low	High
Heat or Cold Stress Shocks	High	Low	High	High	High	Low
Accidents	High	High	Low	Low	Low	High
Mental Health	High	High	High	High	High	High

Source: Authors’ own information based on data from “Delivering Healthier Communities in London”, HUDU, July 2006)

Fig. 3.1 Methodological scheme (source: Author's own data 2019)



the location of land uses and road mobility influence the environmental conditions that harm the elderly population.

The increase in temperature in urban areas, especially densely populated areas has given rise to the phenomenon of Urban Heat Islands (UHI) which can threaten the health and comfort of citizens (Leal Filho et al. 2018). These risks shown above, will also be intensified by the future effects of climate change.

The need to adapt the city and public spaces to the phenomenon of an ageing population, in order to achieve more inclusive, comfortable and healthy environments, is a twenty-first century challenge that must be tackled with a multidisciplinary approach, but where planning plays a determining role, due to factors such as density, land use, mobility, location and type of green spaces that condition the environmental aspects of cities. For this reason, it is considered necessary to present a line of action to improve the conditions of the urban environment, thinking first of the oldest population and then of all citizens.

3.1.3 The Methodology of the Guidelines

To achieve a healthier urban environment for the elderly population, urban planners and designers must assess the conditions of existing public

space, to articulate priority proposals and actions to be progressively implemented in all city streets and squares. The term **active ageing** emerged in 2002 (Fernández-Ballesteros 2008) which, according to (WHO 2002), is the process of optimising opportunities for health, participation and safety in order to improve people's quality of life as they age. This is the goal of the guidelines presented.

Though, each street and square is unique in its place, a detailed analysis must be done. Each city has its compositional, morphological, spatial, social, environmental and microclimatic conditions that will demand a personalised answer, as stated by the basic principles of bioclimatic urbanism (Higuera 2006). In this context, how can we propose a guideline to improve the urban design conditions of public areas in cities for the elderly population? In order to address this question, the method is to:

- Conduct a comprehensive review of existing handbooks and international guidelines;
- Summarise those dimensions that can be part of general guidelines for the elderly population in cities: general guidelines strategies; and
- Provide recommendations in the Spanish context.

These are the three parts into which the text presented below is divided and are described in Fig. 3.1.

3.2 A Comprehensive Review of Existing Handbooks and International Guidelines

The first step is an international review of good practices for these keywords: urban health, elderly urban population, spatial planning, public spaces, active ageing and urban planning. A systematic bibliographic review of the scientific literature was carried out, according to the PRISMA method (Liberati et al. 2009; Potchter et al. 2018). The search for studies was made in Scopus, Web of Knowledge, Google Scholar and Science Direct, with the key words: older adults, active ageing, manuals, etc. This has been complemented with a manual search that included the bibliographic references cited in the articles, focusing on those published between 2000 and June 2018. The final selection criteria for the good practice manuals and examples were as follows:

- Studies focusing on older people in urban areas;
- Good practices related to planning, mainly through European plans, programmes, actions, academic research or projects;
- Recent editions; and
- Countries of the developed world, where there is a relevant ageing population and the risks are similar.

The results are presented in Table 3.2, with their descriptive explanation.

3.2.1 The Main Common Strategies Detected

We found many different actions in the international context, with the aim of improving the conditions of the urban environment to ensure the welfare of the elderly. In order to establish lines that synthesize all the strategies listed in Table 3.2, they have been combined in Table 3.3, and from there, three major strategies have been proposed that include most of them (a,

b or c), so that they can be followed as guidelines in the general recommendations.

In view of the above tables, it is proposed to establish main strategies that summarise most of the guidelines found in the documents selected through three main lines of action, which are: *Safe and walkable neighbourhoods*; *Nature based solutions and more green areas*; and finally *intergenerational coexistence public areas*. Although there may be numerous responses it is hoped that planners will follow the above guidelines with these three lines of action. Therefore, it is established that the planning of healthier urban environments for the elderly necessarily involves articulating strategies in public space in the following ways: *Safe and walkable neighbourhoods*, *Nature based solutions and more green areas*; and finally, *intergenerational coexistence public areas*, which are detailed in the following section.

3.3 General Guideline Strategies

In this section we will detail each of the three strategies determined as the main considerations in the new planning and design of urban areas, as argued in the previous section.

3.3.1 Safe and Walkable Neighbourhoods

The city of the Industrial Revolution has probably been one of the most insane in the history of urbanism. In order to solve the problems created, they basically resorted to the separation of functions by segregated land use patterns. The arrival of the private car made it possible to increase the distances between activities. It soon became apparent that this solution entailed high ecological and environmental costs that the planet could not bear. Moreover, this brought very important health problems, different from those produced by the city of the Industrial Revolution, but which must be considered as a priority nowadays. One of the most important and evident is the pollution produced by vehicles. Therefore, an

Table 3.2 Review of existing handbooks and international guidelines

International Review					
UNITED KINGDOM					
	Delivering Healthier Communities in London. HUDU (NHS 2007)	Healthy Urban Development Checklist	National Planning Policy Framework	Active Design. Planning for Health and Wellbeing through sport and physical activity	The influence of land use mix, density and urban design on health: a critical literature review
Goal	Impact on the health of new developments	Prevention of skin cancer from the design of public space	Spaces where opportunities are fostered to meet people	Promote sports in open spaces for everybody	Design a diverse urban landscape, with trees, attractive architectural composition and water elements
Strategies	<ul style="list-style-type: none"> – Visual interest landscape to walk – Urban gardens Inclusive access to public spaces – Extensive tree plantations 	<ul style="list-style-type: none"> – Provide shade – Green areas within 400–500 m from housing, for a walk – “Green gyms” 	<ul style="list-style-type: none"> – Dynamic activity centres – Use of shared spaces to community services 	<ul style="list-style-type: none"> – School sports and facilities for students during school hours and for the community on week-ends – Sport England’s Guide 	<ul style="list-style-type: none"> – Public spaces safety and long maintenance – Good design – Local collaboration for its management
Agent	Public	Public	Public	Public	The University of York. Croucher K, Wallace A., Duffy S.
Reference	Land Use Consultants in association with the Centre for Research into Environment and Health	Department of Health, New South Wales NWS	Department for Communities and Local Government	Sports England	The University of York
Date	2007	2009	2012	2015	2012
International Review					
CANADA		UNITED STATES		SPAIN	
	Public Health and Land Use Planning: Highlights	Creating a healthy environment: the impact of the built environment on public health	Design for Health. Planning Information Sheet: Integrating Health into Comprehensive Planning	Spanish Network of Healthy Cities	Spanish Network of Elderly Friendly Cities (Spain “Secretaria de Estado de Servicios Sociales e Igualdad” 2017)
Goal	Design water structures from territorial to urban corridors	Safe traffic pedestrian actions in urban areas	Traffic calming in urban streets	Integrate health as a fundamental consideration in all local policies	Provide advice and facilitate membership
Strategies	<ul style="list-style-type: none"> – Manage groundwater reserves – Sustainable urban drainage in urban centres 	<ul style="list-style-type: none"> – Traffic calming measures, as crosswalks, protections at crossings 	<ul style="list-style-type: none"> – Speed limitation signs, overpasses, undulations in the route 	<ul style="list-style-type: none"> – Health promotion and protection strategies 	<ul style="list-style-type: none"> – Technical support and training to promote active ageing – Disseminate information and best practices

(continued)

Table 3.2 (continued)

	International Review				
	CANADA	UNITED STATES		SPAIN	
	<ul style="list-style-type: none"> – Update flood plans according to climate change – Energy efficiency criteria 	<ul style="list-style-type: none"> – Safe bike lanes – Traffic signs and traffic lights. – Walkable streets 	<ul style="list-style-type: none"> – Walkable routes – Texture and material of the road pavements and trees – Green roundabouts 	<ul style="list-style-type: none"> – Evaluation criteria and unified indicators for urban health – Disseminate information to the Regional and the European Networks 	
Agent	Public	Jackson R. and Kochtitzky C.	University of Minnesota	Public	Public
Reference	Clean Air Partnership (CAP) in partnership with the Ontario Public Health Association (OPHA)	Sprawl Watch Clearinghouse Monograph Series	University of Minnesota	Spanish Federation of local agents (FEMP), Spanish government	WHO and the IMSERSO (Institute for the Elderly and Social Services)
Date	2011	2010	2007	1998	2011
	International Review				
	SPAIN				
	UNI-Health Project (Higuera et al. 2019)	Health and sustainable urban development	Impact on health of Uretamendi-Betolaza urban renovation project	Medea and IneqCities Project (Borrell et al. 2012)	
Goal	Generate a common knowledge of environmental health through a workshop, with the elderly community, local agents and academics	Incorporate the health variable in the planning, development and urban management processes of local government	Identify the positive and negative impacts on the health of the project	Identify urban health inequalities and effective measures to reduce them	
Strategies	<ul style="list-style-type: none"> – Joint virtual library – Academic methodology to visualize urban health at the neighbourhood scale – Strategic action plan – Multidisciplinary network 	<ul style="list-style-type: none"> – Prioritize policies that reduce health inequalities and mitigate climate change – Improve the quality of “green” and open spaces – Promote active displacement 	<ul style="list-style-type: none"> – Estimate the magnitude and distribution (by age, sex, socioeconomic condition, etc.) of the health impacts – Propose indicators for monitoring the health impact – Make recommendations 	<ul style="list-style-type: none"> – Planning for health equity at an urban level – Prioritization of health problems and interventions – Monitoring and evaluation of the actions proposed 	
Agent	Academic Higuera et al. 2019	Udalsarea21 Basque Country	Public, Local government	Borrell et al. (2012)	
Reference	European Institute of Innovation and Technology. EIT Health. European Union	Practical guide for the analysis of the effect on health of local urban planning initiatives. Workbooks N° 17	Department of Health and Consumer Affairs Basque Government	European Union	
Date	2019	2014	2009	2012	

Source: Authors' own data 2019 with the selection criteria described, based on the on-line documents selected

Table 3.3 Summarised international strategies in three main strategic lines

Selected plan or document, Country	Strategies by document	Determinant factors ^a
Delivering Healthier Communities in London. HUDU, UK	– Visual interest landscape to walk	a
	– Urban gardens	b
	– Inclusive access to public spaces	c
	– Extensive tree plantations	b
Healthy Urban Development Checklist, UK	– Provide shade	b
	– Green areas within 400–500 m from housing, for a walk	b
	– “Green gyms”	b-c
National Planning Policy Framework, UK	– Dynamic activity centres	c
	– Use of shared spaces to community services	c
Active Design. Planning for Health and Wellbeing through sport and physical activity, UK	– School sports and facilities for students during school hours and to the community on weekends	c
	– Sport England’s Guide	b-c
The influence of land use mix, density and urban design on health: a critical literature review, UK	– Public spaces safety and long maintenance	b
	– Good design	c
	– Local collaboration for its management	c
Public Health and Land Use Planning: Highlights, Canada	– Manage groundwater reserves	b
	– Sustainable urban drainage in urban centres	b
	– Update flood plans according to climate change	b
	– Energy efficiency criteria	a-b-c
Creating a healthy environment: the impact of the built environment on public health, the United States	– Traffic calming measures, as crosswalks, protections at crossings	a
	– Safe bike lanes	a
	– Traffic signs and traffic lights.	a
	– Walkable streets	a
Design for Health. Planning Information Sheet: Integrating Health into Comprehensive Planning, United States	– Speed limitation signs, overpasses, undulations in the route	a
	– Walkable routes	a-b
	– Texture and material of the road pavements and trees;	a-b
	– Green roundabouts	a-b
Spanish Network of Healthy Cities	– Health promotion and protection strategies	a-b-c
	– Evaluation criteria and unified indicators for urban health	a-b-c
	– Disseminate information to the Regional and the European Networks	a-b-c
Spanish Network of Elderly Friendly Cities	– Technical support and training to promote active ageing	a-b-c
	– Disseminate information and best practices	a-b-c
UNI-Health Project, EIT Health, European Union	– Joint virtual library	a-b-c
	– Academic methodology to visualise urban health at neighbourhood scale	a-b-c
	– Strategic action plan	a-b-c
	– Multidisciplinary network	a-b-c
Health and sustainable urban development, Spain	– Prioritise policies that reduce health inequalities and mitigate climate change	b
	– Improve the quality of “green” and open spaces	b-c
	– Promote active displacement	a-b-c

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Table 3.3 (continued)

Selected plan or document, Country	Strategies by document	Determinant factors ^a
Impact on health of Uretamendi-Betolaza urban renovation project, Spain	– Estimate the magnitude and distribution (by age, sex, socioeconomic condition, etc.) of the health impacts	a-b-c
	– Propose indicators for monitoring the health impact	a-b-c
	– Make recommendations	a-b-c
Medea and IneqCities Project, European Union	– Planning for health equity at the urban level	a-b-c
	– Prioritisation of health problems and interventions	b-c
	– Monitoring and evaluation of the actions proposed	a-b-c

Source: Authors' own data and summarised proposal on the three strategic guidelines

^aDeterminant factors. (a) Safer and walkable neighbourhoods, (b) Nature based solutions and more green spaces, (c) Intergenerational coexistence public areas

industrial pollution problem more or less solved by planning has been replaced by various other forms of pollution, some more diffuse and others more specific (amongst others, particles, gases, acoustics, visual) due to the transport of people and goods from one urban area to another. In spite of everything, it seems that it is one of those issues that can be solved more easily if the necessary conditions are put in place. Thus, the intended use of clean energy and much more efficient systems are being considered.

But probably, as many authors have denounced, the most important health problems are those derived from a sedentary lifestyle. Among others: obesity, cerebrovascular accidents, diabetes, some types of cancer, fibromyalgia, heart diseases such as heart attack, metabolic syndrome, cholesterol problems and high blood pressure, and many others of a psychological nature (such as depression) caused by the massive use of the car. This use progressively locks up the inhabitants of today's cities either in their homes or in their cars, in such a way that no type of physical exercise is carried out. And, above all, the cheapest and most elementary physical exercise such as walking is not frequently carried out. Also, active ageing is a way of understanding the old age that begins at birth. So, that reaching an advanced age in perfect physical and mental conditions has to start from childhood.

It is necessary to change the focus of current master urban plans and projects so that the goal is to build walkable cities, to be able to move pleasantly from one place to another on foot. There should be a series of six conditions that can be summarised. The first three are critical: sufficient density, complexity and contiguity. The other three are also important, but they act in a complementary way to the previous ones: comfort, security and a system of priorities that favour the pedestrian, (a low dose of moderate to vigorous physical activity reduces mortality by 22% in adults aged ≥ 60 years (Hupin et al. 2015).

Without density, there is no urban life possible. Sufficient density should be determined by the activities themselves. Thus, in order for children to be able to walk to school, it is necessary for enough schoolchildren to go to the school. It is the same with products that are acquired every day, or with a park, or with any facility of urban life. In other words, the density would be determined by the type of resident population and by the urban activities that this population has to carry out and that are considered critical. In this case, the critical activities would have to be directly associated with those that are frequently carried out after a certain age (Schaie and Pietrucha 2000).

The second necessary element has to do with complexity. Urban areas should be complex.

Complexity means the existence of diverse and interrelated elements. Thus, the more different elements and the more relationships between them, the greater the complexity. Diverse elements such as ages, jobs, economic conditions, hobbies, level of studies, etc. are necessary. A neighbourhood, district or urban area, only of elderly residents, of high economic capacity; or exclusively with residential buildings for protected housing is not sustainable. It is essential that, in addition to residences, there are offices, workshops, facilities, schools, day care centres, and even compatible industries. And, of course, that people of different social and economic status can find accommodation. Without this condition, it is impossible for an urban area to function in a more or less autonomous way. And as far as the elderly are concerned, it is precisely the opposite of confining them in separated zones and segregated from the rest of the population.

Finally, there is a need for continuity in the urban land use model. The present system occupying territory with urban fragments separated (sometimes tens of kilometres long) from each other, makes it impossible to move by foot. Furthermore, this is not only by walking but also by public transport, which also needs enough density to be profitable and which does not multiply the need for stops with the consequent lengthening of travel times between one place and another.

With regard to the other three conditions (elderly comfort (Guergova and Dufour 2011), safety and priority to the pedestrian) it should be said that they depend very much on the urban area considered and on the fulfilment of the previous ones. As far as comfort is concerned, mention should be made of the need to achieve a certain degree of climatic comfort, for which the urban designer has tools such as the bioclimatic chart, which, by manipulating certain parameters such as sunshine, wind or humidity, allows the conditions of the site to be thermally adapted so that it can be considered as comfortable. But also, especially in ageing societies, with topography without excessive slopes and accessibility conditions (cities for all) that meets the standards required by legislation. Similarly, that the rest

areas have adequate and well maintained facilities, benches in shaded or sunny situations when necessary, fountains, services and even in certain free Wi-Fi places or the possibility of access to them. In addition to comfort, security is essential. This is probably one of the issues that can most dissuade the use of public space in the case of elderly people. Firstly, there is the safety against accidents. It is necessary to take care of the design of sidewalks and traffic lanes so that as little interference as possible is produced and always produced in favour of the aged pedestrian (Takano et al. 2002). It is particularly important to think of the conflicts produced by shared traffic routes (bicycles, cars, pedestrians, scooters). In addition, maintenance is vital because a neglected sidewalk can lead to falls and problems. But also, security against crime has to be considered. There are methods such as CPTED (Crime Prevention Through Environmental Design) (Cozens et al. 2005) that allow the urban designer to achieve significant increases in the perception of security (subjective security) and also the reduction of certain types of crime such as the so-called “crimes of opportunity”.

Something very important in the design of cities is the priority for the pedestrian. In today’s city, the priority is clearly on the private car, whether one considers the widths of roads and sidewalks, waiting long times at traffic lights or even at many intersections. But priority must also be given to other transport systems such as bicycles or, more modern scooters. A different sector corresponds to public transport, in charge of transporting pedestrians over distances that exceed walking distances in normal times. So, it could be understood as a complement to pedestrian movements.

3.3.2 Nature Based Solutions and More Green Areas

Nearby green areas should be for public use and in the public domain, of an adequate size appropriate to the needs of the population they serve, although small enough to be managed by the residents themselves and distributed throughout

the urban fabric of the city. In addition, it is essential that they should be interconnected with each other by corridors that also provide additional uses that cannot be produced in small areas (paths for running or walking, routes carrying out sequences of physical exercises, bicycle lanes, etc.). This is known in specialised literature as urban green infrastructure (Aram et al. 2019).

Some authors, such as Shanahan et al. (2015), maintain the need to establish “minimum doses” of nature so that these nearby green spaces should be the vital public network of our cities. Even others like Louv (2008) speaks of the life that takes place in a cement-based urban environment as basically producing what is called in the specialist literature a disorder by “deficit of nature”. There are numerous studies that state this in such a way that, following Kaplan’s (2001) terminology, they act as “support environments” for the development of crucial activities in daily life, such as the static activities walking and physical exercise. That is to say, activities of relation and social interchange.

With regard to physical exercise, there are also quite a few works that relate the existence of proximity green spaces with an increase in the performance of physical exercise, which is essential if we want to act against a sedentary lifestyle, as shown in Choi’s works (Choi et al. 2017). Even the benefits in this aspect increase in relation to elderly people. Of course, these green areas must have the same conditions that have already been specified for public space in general. In other words: comfort, safety and priority for the pedestrian. Each one of them should take into account the considerations specified above: climatic comfort (temperature, relative humidity and wind in appropriate conditions), topographic comfort, accessibility, safety against accidents and delinquency, priority for pedestrians and public services. This is particularly important for the elderly, although often neglected.

There is much evidence of the physical and mental benefits of nearby green spaces (Shanahan et al. 2015). Thus, from Wilson’s works on biophilia (Wilson 1984) to Ulrich’s on stress reduction (Ulrich 1983) or Kaplan’s nature restorer effector, many authors highlight their importance.

Even according to Ulrich’s so-called “psych evolutionary theory” (PET), these benefits can be derived from the simple contemplation of trees that can be seen from a window.

However, the introduction of nature into the city should not only be done through a network of nearby green areas, but it is important to have green spaces of different sizes and with different activities and services. According to (Sukopp and Werner 1989), there is an inverse relationship between the size of nature areas and their frequentation, which does not mean that there should only be very small frequented areas. It is important that there should be diversity both in the sizes and in the objectives to be achieved in each of them. Thus, in a large city, small, almost domestic areas (green pockets) of daily frequentation to large, sporadically visited metropolitan parks, are necessary. This is due to the fact that certain functions of public space require conditions that cannot be provided in all of them. Particularly, those that refer to social relations between people who do not know each other, are typical of the urban way of life.

The green zones, besides having direct benefits on the physical and mental health of citizens, have other qualities that are necessary to mention. For example, green areas can help reduce the so-called “heat island effect” which, with climate change, will become an increasing problem in some cities (Demuzere et al. 2014). Cities have large energy consumption concentrations much of which is dissipated as heat in the surroundings. Green areas reduce temperature, increase humidity and also help if they are properly designed, to reduce air, noise and visual pollution.

As mentioned at the beginning of this section, the need to link all urban, peri-urban and metropolitan green areas should also be addressed. Not only because of ecological needs, maintenance of biodiversity and greater resilience, but also from the point of view of the possibility of carrying out some types of physical activity that are difficult to do in isolated spaces. The union of all the green areas with each other, accompanied by ecosystem services, is what has been known in specialist literature as “green infrastructure”. And precisely some of the ecosystem services provided by this

type of infrastructure are related to health, particularly of the elderly.

Finally, and in relation to the point that will be seen below, also to the benefits mentioned (amongst others) of controlling the urban micro-climate, reducing pollution, fighting sedentary lifestyles or improving the mental conditions of neighbours, there are many other studies that show the importance of the introduction of nature in cities related to welfare and social cohesion. For example, a study carried out by (Kuo and Sullivan 2001, pg 45) with 145 people in a relocation neighbourhood, after classifying buildings according to their proximity to natural or naturalised environments, anticipates that “proximity to nature is positively related to a greater capacity for attention, more positive social behaviour and the reduction in the appearance of aggressive behaviour and even the reduction of criminal activities”. In other words, the proximity of green areas helps to improve psychological balance and the probability of a higher level of social cohesion.

3.3.3 Intergenerational Coexistence Urban Places

Although all that has been said so far is no more than the search for spaces for coexistence, it is necessary to attend to certain issues of almost priority interest related to what could be called “intergenerational coexistence”. It has already been mentioned for the need for a sufficient density that supports urban relationships. If there are few or no people, it is difficult to establish interpersonal relationships. It has also been said that complexity is essential, and in the case that we are dealing with, with demographic complexity. All ages should be present in public space (in streets, squares, parks) because older people feel comfortable and more animated in the company of young people and children (White 1980), and children need their elders because they learn from them. If there are only older people (or only young people and children) in an urban area, urban life suffers.

And at least one paragraph should be devoted to urban facilities. It is not well known why children’s games are usually separated (and at a long distance) from the facilities that are now normally placed in parks or boulevards for the elderly to exercise or rest. If they come together, there can be communication and mutual help between them. It is also necessary to study very carefully the case of dogs and how to achieve a peaceful coexistence between them. And if we are talking about urban furniture, it is almost essential to place fountains, benches and public urinals in the places and at a sufficient distance to make the walk or stay comfortable (and sometimes simply possible) (Takano et al. 2002).

For common use by all, a public space must meet a set of appropriate conditions. It is necessary to “activate” this space. Explicitly, to give it social and relational content. This can be done from an institutional perspective or by the people who live in the area. Initially, it is usually necessary that the local institutions are the ones that start the process. This is usually carried out and is quite understandable in some cases. There are many examples of how a space with the correct conditions can become a welcoming space (Maas et al. 2009). In the Lumpini Park, in Bangkok, at certain times of the afternoon, you can see groups of people who, commanded by the corresponding instructor, carry out aerobic exercises. In Madrid, certain spaces have become community gardens run by collectives that are in charge of their cultivation and harvesting. In the *Puerta del Sol* in Fuengirola, groups of teenagers, adults, parents and children congregate to play and exchange materials through the Internet, as there is free Wi-Fi in the park. In a square in Vitoria-Gasteiz, a giant chess game brings together chess players. In Cali, a park and a street have become an improvised museum of modern art. All these are examples of different ways of activating public space and turning it into a pleasant and nice place.

With regard to public facilities, same methodologically guidelines mentioned in previous sections should be followed. In such a way that multifunctional spaces should be prioritized over more specialized ones. The so-called “old people’s clubs” and the like should be changed

Table 3.4 General guidelines in the three strategic areas determined by the literature review

General guidelines strategies		
1. Safe and walkable neighbourhoods	2. Nature Based solutions and more green areas	3. Intergenerational coexistence urban places
Thermal comfort	Nearby green areas	Facilities location
Acoustic comfort	Drainage and soil permeability	Proximity
Safer streets	CO ₂ sink elements	Accessibility
Identity	Acoustic control	Social networks
Commercial streets	Brown field control	Mixed uses
Pedestrian mobility priority	Microclimatic urban conditions	Diversity
Public transport	Thermal comfort	Identity
Bike lanes		
Accessibility		

Source: Author's own data 2019

into places where events are held for everyone (also for the elderly). Increasing complexity improves coexistence by giving more opportunities for interaction and also improves the economic performance of the equipment.

In general, one could say that one of the most important problems faced by the elderly is loneliness. In the words of Pirostka Östlin at the International Forum on Solitude, Health and Care, held in Madrid in November 2018, “unwanted solitude can be defined as a perception of social isolation” (Östlin 1989, pg 77.), that is, something subjective, as opposed to social isolation, which is something objective: “Isolated people feel much more alone than those who are not, but loneliness as a sensation can be present in people who are constantly in company”. There is an important relationship between loneliness and health in a double sense. On the one hand, mental health issues increase the risk of isolation and unwanted loneliness and also the difficulty of maintaining social relationships: “Out of 10 people who were classified as ‘alone’, 6 of them blamed their mental and physical health issues,” notes Östlin. In addition, loneliness has an impact on health. An American study, which followed 3.4 million people for 7 years, found that 26% of people with a close relationship to loneliness had an increased risk of premature death. So, according to the conclusions of this Forum, “people who feel lonely have a greater tendency to suffer cognitive impairment and there is a greater relationship between loneliness and heart attacks,

depression, alcoholism and anxiety” (Maas et al. 2009, pg 167.).

It is therefore essential to the proper functioning of this type of space to help to avoid one of the biggest problems faced by older people such as loneliness. But, probably, this functioning cannot be maintained indefinitely by the institutions, but it will be necessary to leave it partly in the hands of the users themselves. Thus, the need arises for real and effective participation on the part of the population involved. However, in order to be effective, three conditions should be satisfied: an initial commitment on the part of the administration; constant and permanent structures over time, and finally, the convenient existence of a physical place of reference located in a suitable place co-managed by the administration and by the neighbours themselves. In addition, support for new technologies seems to be an influential factor in the process.

Table 3.4 summarizes the general guidelines in the three strategic areas determined by the literature review.

3.4 Recommendations in the Spanish Context

Most of the Spanish population live in urban contexts by 2019, where more people aged over 60 live, according to INE data for 2018 (Abellán et al. 2019), the percentage in this age range reaches almost 25% of the total (as opposed to 15% less than 14 years old).

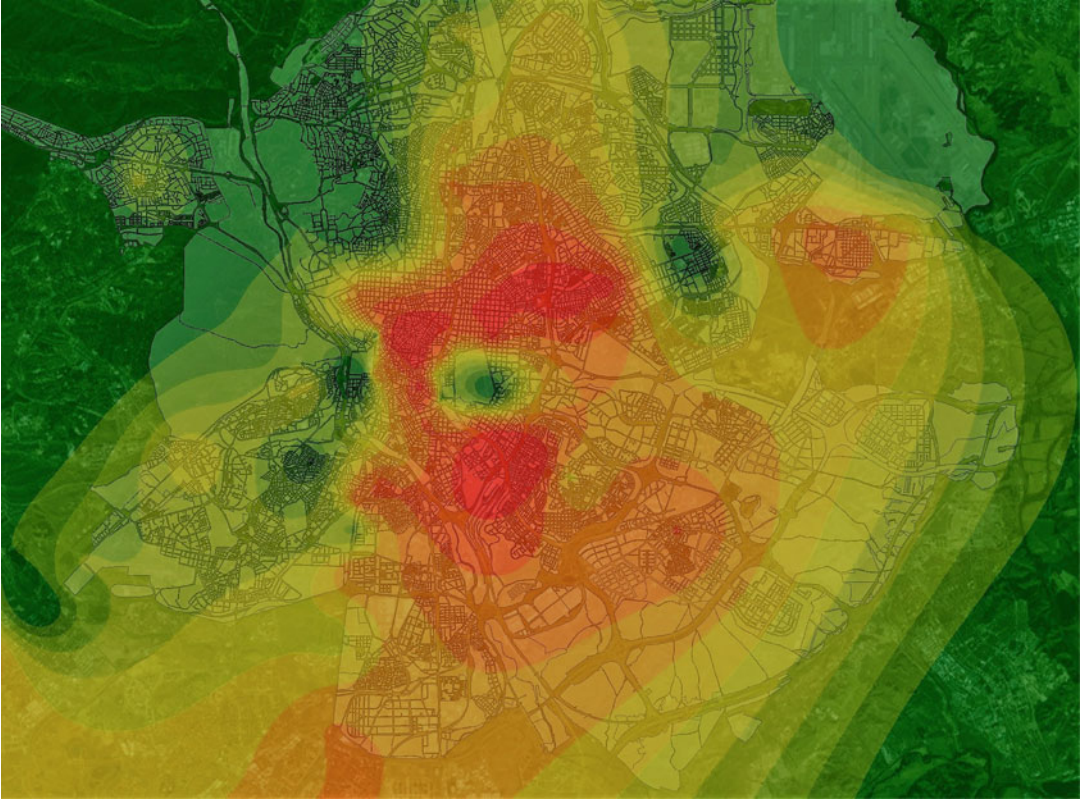


Fig. 3.2 Urban heat island in Madrid 2015. There are several hot spots (more dense areas) and cold spots related to the presence of large parks (in green) (source: MODIFICA Project, ABIO Research Group-UPM, Núñez Peiró et al. 2017)

The quality of life of the elderly has been the object of study from the local and state administration in Spain. Elderly people living in Spanish cities are at high risk for respiratory and cardiovascular diseases. Pollution of urban areas and the presence of urban heat island or heat islands, are a real threat in large cities such as Madrid.

In the city of Madrid, (Fig. 3.2), recent studies have determined the existence of several heat sources due to the growth in extension of the constructed zone, the increase in pollution, the smaller presence of the wooded zones with respect to the constructed zones and the greater number of impermeable and low albedo surfaces (Román et al. 2017).

Madrid, Barcelona, Valencia, Seville and Bilbao are the five cities with the highest mortality rates attributable to the increase in temperatures for the coming decades, so it will be necessary to incorporate new elements of

urban design (Nikolopoulou and Steemers 2003) to achieve a suitable outdoor microclimate for older people living in the city.

Spain is a territory with a lot of diversity due to its geomorphological and climatic conditions, which have determined the population settlements since remote times (Pozo Menéndez 2019), so in order to establish a general recommendation it is necessary to consider factors related to climate, population density, urban size, the presence of heat islands, social and economic conditions, etc. Accordingly, Table 3.5 presents in a simplified, schematic and approximate way the decisive factors that influence citizens' health, adapted from Borrell et al. (2012), according to the guidelines proposed.

The need to establish a different response to each situation will require the development of plans, actions, policies and programmes of very diverse nature in the Spanish context. The three

Table 3.5 Determining factors for a healthy city in the Spanish context

Three strategic lines proposed	Considering the difference on Spanish areas		
	Environmental	Built and urban conditions	Social and economic factors
1. Safe and walkable neighbourhoods	Climatic zones in Spain ^a Urban microclimate (wind, sun and vegetation conditions) Climate Change effects	National Code Legislation: (CTE) (MFOM 2019) Urban heat island (UHI) Projections of UHI, facing climate change Air pollution and air quality Master Plan and urban determinations Building types and characteristics Accessibility	Population size Economic factors (Borrell et al. 2012) Predominant activity Employment and working conditions Public policies: health, social services, education Security
2. Nature Based solutions and more green areas	Geographical conditions Green Infrastructure Blue Infrastructure Climate Change effects Pollution and air quality	Geographical conditions Urban green areas Urban heat island (UHI) Projections of UHI, facing climate change Accessibility	Management and conservation Proximity agriculture
3. Intergenerational coexistence urban places	Climatic zones in Spain Climate Change effects Urban microclimate (wind, sun and vegetation conditions)	Master Plan and urban determinations Social transfers Accessibility	Family, social structure Social networks Community participation Security, Identity Energy poverty

Source: Author’s own data based on Borrell et al. (2012) and general actions lines proposed

^aClimatic regions of Spain according to the National Geographic Institute are: Oceanic: Coastal, Transition, Mediterranean, Continental sub humid, Continental with cold winters, Continental with warm summers, Warm interior, Shoreline, Arid and sub arid, Subtropical and Warm Coast

priority actions: *Safe and walkable neighbourhood, Nature Based solutions and more green areas and intergenerational coexistence urban places*, should form part of most of the planning instruments that will be drafted in the coming years in order to establish priorities on active ageing.

3.5 Conclusions

Cities have to consider the needs of the older population living in them, as they are hampered by numerous factors, such as less mobility, lower cognitive capacities, different response times to eventualities and setbacks, greater fatigue, differentiated perception of risk and insecurity in the streets, amongst others. However, there are

many studies that establish the need for the socialisation of the elderly and the enormous damage caused by being kept in their homes, where loneliness and lack of self-confidence and mobility condemn them to worse living conditions. In many situations, the street is not friendly to them. It is for this reason that a multi-disciplinary new approach must be delivered, having planners as an important role.

The first conclusion is that there are a large number of proposals and regulations already underway, which establish the consolidation of these research issues and the need to adapt the general lines to the specific conditions of each city and each neighbourhood.

A summarised approach has been carried out, in order to condense all the urban design strategies into three large ones: nominated as

Safe and walkable neighbourhoods; Nature Based solutions and more green areas and finally new intergenerational coexistence urban places.

A contextualisation of these general guidelines in the Spanish context has been achieved, considering its environmental, built-up and socio-economic characteristics.

Finally, it is necessary to be cautious about what urbanism can really do. It has a certain capacity to make possible environments favourable to a healthy city or, on the contrary, to make them impossible. But there are many other fields that have capacity for influence. By means of urban design, it is possible to achieve friendly streets that invite people to walk or green places in proximity that make it possible, for example, for the neighbours to get to know each other. However, education or public awareness campaigns can have as much influence as planning. In other words, by means of a series of urban planning techniques, it is possible to achieve streets and more friendly neighbourhoods that make healthier cities possible for the elderly. It will therefore, be necessary to establish appropriate policies, campaigns, roundtables and child education in accordance with the model of active ageing that the local administration wishes to promote towards the rest of the actors of civil society, and planners should be able to proffer real active ageing solutions in urban public spaces.

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Ester Higuera She is Full Professor at Universidad Politécnica de Madrid and belongs to ABIO Research Group (Bioclimatic Architecture in a Sustainable Environment). She has carried out researches on the bioclimatic and sustainable aspects that are related to building design, construction and urban planning activities such as potential collaboration modalities, thermal solar energy systems at urban scale, sustainable Urban design, Local Agenda 21, Environmental assessment in neighborhoods and healthier communities.

Emilia Román She holds a PhD in Architecture by the Universidad Politécnica de Madrid (UPM) since December 2014. Graduated in Architecture at the Universidad Politécnica de Madrid (UPM) in 1999, and cc60 architectural firm co-founder partner (<http://www.cc60.com/>), she is currently Assistant Professor in the Urban and Regional Planning Department at Escuela Técnica Superior de Arquitectura de Madrid, Universidad Politécnica de Madrid. Member of UPM's Grupo de Investigación en Arquitectura, Urbanismo y Sostenibilidad (Research Group in Architecture, Urbanism and

Sustainability, GIAU + S), she has taken part in studies, investigations, and projects about bioclimatic and environmentally integrated architecture, and urban regeneration, since 2009. She has participated in different publications and taught in several professional associations as well as national and international universities.

José Fariña Tojo He is an Emeritus Professor, Department of Urban and Regional Planning at Escuela Técnica Superior de Arquitectura de Madrid, Universidad Politécnica de Madrid. He has conducted numerous researches about environment, sustainability, public health and urban planning, and also related to tourism and heritage topics. He has presented nearly 250 papers at national and international conferences, and directed more than 40 doctoral thesis. Fariña is also Expert in Good Practices from the Ministry of Development, the FEMP, the Working Group on Urban Design for Sustainability of the European Union and Member of the CF + S Editorial Board, the Scientific Committee of TRIA, RETICULA, URBS, PLANUR-e-magazines, and the Spanish Habitat Committee as well as Director of the journal "*Cuadernos de Investigación Urbanística*" ("*Urbanistic Research Notebooks*"). He has authored or co-authored 19 books in this area, and published over 170 articles in specialized magazines.