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Healthy Neighbourhoods Hub (HNH) Framework: A Practical Guide for Fostering Healthy and Inclusive Living in Florence's Urban Environment

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Abstract: By 2050, an estimated 69% of the global population will reside in urban areas, underscoring the pivotal role of city neighbourhoods in enhancing quality of life by respecting and accommodating diverse identities and needs. The physical environment of neighbourhoods significantly influences community health and well-being, alongside social factors and access to health services. In Italy, prioritising health-promoting and accessible designs in neighbourhoods can form a solid foundation for urban health strategies. This study introduces a theoretical framework developed for the Healthy Neighbourhoods Hub (HNH) project in Florence, Italy, aiming to enhance health and accessibility across different scales. The HNH framework categorises healthy and inclusive neighbourhoods into 7 themes, 25 general characteristics, and 67 specific attributes, supported by verifiable variables derived from comprehensive research and design tools. This innovative framework addresses the need for multilevel, multidisciplinary approaches, and spatialization efforts to ensure equitable benefits for all community members.



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Keywords: healthy cities; healthy neighbourhoods; inclusive neighbourhood; health promotion; urban health; physical environment; theoretical framework; practical tool; multiscalarity; multidisciplinary

1. Introduction

1.1. Planning Models for Health in Urban Spaces: Approaches, Documents, and Tools

Extensive studies in public health, social sciences, and urban planning are consistently highlighting a concept that resonates with common understanding: the significance of the built environment in shaping health outcomes [1–3]. A growing body of evidence suggests that the built environment plays a significant role in determining urban health [4–7]. Urban health refers to a strategic orientation that integrates health protection and promotion actions into urban design, emphasising the strong dependence between physical, psychological, and social well-being and the urban environment in which people live [8]. The concept of urban space encompasses various scales, ranging from metropolitan areas to cities and neighbourhoods [9]. However, if health is generated in the context of daily life, i.e., in the neighbourhoods and communities where people live, form relationships, work, shop, and engage in leisure activities, the neighbourhood and community are identified as the primary dimensions in which to address the issue of health and well-being [10–12]. The resources available for planning healthy places are extensive, but the focus on the neighbourhood scale is relatively limited in this field [13–17]. To highlight the importance of integrating health in urban and territorial planning and policies, worldwide experimental case studies are presented [18,19] and public spaces are addressed as drivers of this

challenge [20,21]. Policy and planning levels are deeply investigated, proposing key actions to policymakers and urban planners to value the concept of the city health development plan, working mainly at a macro-level scale.

Strategic approaches are suggested by the European Healthy Cities Network to foster multi- and intersectoral work, including whole of city and health in all policies approaches. The healthy city standard is set by harmonising social, physical, and cultural surroundings to establish a space that actively promotes inclusivity and supports the endeavour for health and wellness for everyone [22]. The reference framework implements the 2030 Agenda for Sustainable Development and it is shaped around the themes presented in the Copenhagen Consensus of Mayors [23]. Overarching goals are operationalised through strategic approaches, including designing urban places that deliver for equity and community prosperity, and core themes, including designing urban places that improve health and well-being. In this framework, the physical built environment is considered at an urban planning scale in terms of air quality, road safety, active mobility, housing quality, green spaces, urban ecosystems, and urban food systems. The meso level of architectural projects and the micro level of product and service design are not being addressed. Targeted populations are younger and older people, disadvantaged people, and people with disabilities.

Adaptable tools and checklists related to evidence-informed guidance are suggested to design places that serve to improve health and well-being for all [9]. Technical resources address specific issues, such as age-friendly cities, air pollution, integrated transport, etc., and are a valuable thematic help for people working to improve the quality of places to foster improved health and well-being for all at the local and municipal levels.

In the effort of addressing health equity in urban context with a broader perspective, in 2017, Gehl, the former Gehl Institute, and the Robert Wood Johnson Foundation (RWJF) developed the Inclusive Healthy Places (IHP) Framework [24]. Thought as a tool to help public realm practitioners identify social determinants that their work can improve, and remove systemic barriers to health, the framework clusters drivers, indicators, and metrics under guiding principles—the context, process, design and programmes, and fostering conditions—to ensure these factors are integrated into and measured throughout the lifecycle of a public space project. Other approaches implement the concept of restorative urbanism [25], promoting mental health and well-being with a macro- and micro-perspective through city planning and urban design.

The consideration of urban space planning and design in the post-COVID-19 era has further validated the significance of the local and neighbourhood scale to make our cities more resilient to future pandemics. In 2021, UN-Habitat gave some recommendations for post-pandemic scenarios at the neighbourhood level [26], including (i) Emphasise neighbourhood-focused city planning promoting self-contained and socially inclusive communities; (ii) Enhance neighbourhood strategies with localised decision making and bottom-up processes; (iii) Prioritise accessibility and inclusion; (iv) Acknowledge the multifunctionality of public spaces; (v) Develop interconnected, accessible public space networks; and (vi) Investigate options for retrofitting city center neighbourhoods with mixed-use areas. The implications of the challenges posed by COVID-19 on the design of public spaces, transportation systems, and connectivity in cities remain open to further reflection and consideration by designers, planners, and policymakers all over the world [27,28].

At a national level, in Italy, an interesting starting point for integrating health in urban and territorial planning and policies could be considered the document titled “Gaining Health” (Guadagnare salute), resulting from a collaboration of the Italian Ministry of Health with the European region of the World Health Organisation [29]. The aim of this document was the definition of a European strategy to combat chronic diseases through the adoption of healthy lifestyles. The strategy is implemented with multicomponent interventions, including communication activities and actions. In some of the issues addressed, a conscious urban design is nominated as one of the actions that national authorities could foster to promote for example physical activity. Increasing attention to the relationship

between health and the urban environment, in 2017, the Italian Presidency of the Council of Ministers incorporated indications from the World Health Organisation and introduced the prior assessment of urban plans and support to the authorities in the definition of planning instruments [30]. Criteria used in urban plans assessment are related to the protection of living environments from environmental pollutants and the development of an environment conducive to health promotion and road safety. In 2021, the Italian Ministry of Health published the “Guidance document for urban planning with a focus on Public Health” (Documento di indirizzo per la pianificazione urbana in un’ottica di Salute Pubblica), a policy document with an avowedly cross-sectoral approach structured as a methodological operational guidance tool to support strategies and programmes of the Regional Plans for Prevention, in coherence with the provisions of the National Prevention Plan 2020–2025 [31]. This document, addressed to regional and local planners and administrators, explicitly calls into question the health, environmental, transport, and urban planning sectors, including their regulatory frameworks. It was elaborated from 2018 to 2021 by a group of experts joined at the “Working Group on Urban Health” (Tavolo di lavoro su Città e Salute) and has its roots on an important project by the Italian Centre for Disease Prevention and Control (CCM). The project, titled “Urban Health: best practices for assessing health impacts of urban redevelopment and environmental regeneration interventions” (Urban Health: buone pratiche per la valutazione di impatto sulla salute degli interventi di riqualificazione e rigenerazione urbana e ambientale), centres on urban health assessment with the purpose of developing and disseminating best practices [32]. The project goal is to transfer best practices to practitioners and decision-makers to guide urban policies towards improving the health of citizens, also with a view to equity. In a targeted initiative, the project developed a comprehensive multicriteria evaluation instrument, which integrates twenty indicators across seven broad thematic categories (environment, ground and underground, sustainability and hygiene in constructed spaces, urban and social progress, mobility and transportation, and outdoor areas). These categories are preceded by a set of universal criteria that encompass demographic and epidemiological information, both external and internal coherence, projections for construction, and designated purposes. The alignment of each indicator with urban health goals is assessed and assigned a level of performance—high, moderate, or low. The document acknowledges the significance of the city’s physical aspects, including its morphology and functions, in advancing urban health [33]. This marks a groundbreaking advancement for Italian guidelines in incorporating health considerations into urban planning, without extending this integration outside the urban planning scale, thereby missing out on the integration of various architectural disciplines.

A compelling and relatively unexplored scenario within the Italian regulatory framework pertains to the neighbourhood scale. Adopting an “urban health advantage” viewpoint, which highlights the health-related advantages of city living, requires neighbourhoods to have a physical environment that is designed to be supportive of health and well-being [34]. To reach that goal, health should be considered a driver of built environment design, and people’s bio-psycho-social well-being [35,36] should be treated as a fundamental input to the design process, not just an expected result. This expands the notions of inclusion, accessibility, and usability by also promoting the adoption of healthy behaviours in neighbourhood contexts.

1.2. A New Theoretical Framework for Healthy and Inclusive Neighbourhoods

Based on these premises, the Healthy Neighbourhoods Hub (HNH) (Quartieri Sani HUB) research project [37–39] aims to establish a theoretical framework that can steer the development of healthy and inclusive neighbourhoods across various scales, including the regional and urban design level (macro-scale), architecture design level (meso-scale), and product and service design level (micro-scale). The research project brings together researchers from the Department of Architecture at the University of Florence, spanning four different disciplines: urban and landscape planning, architecture, and product design.

The primary partners of the project, in addition to the University of Florence, are the Municipality of Florence, the Metropolitan City of Florence, the Local Health Authority (i.e., the Azienda USL Toscana Centro), the Florence Health Society (i.e., Società della Salute di Firenze), and an urban furniture manufacturing company (i.e., Metalco Group).

The introduction of a new framework is intended to address the lack of emphasis on multiscalarity, interdisciplinarity, and spatialization in previous endeavours, which are crucial for ensuring equity and broad benefits across all population segments. These aspects required systematic organisation within the Italian context, where policies may outline specific objectives such as health and equity promotion, so translating these into practical implementation often proves challenging in terms of maintaining a cohesive and efficient approach across various levels and domains.

The HNH project's main goal was to define a theoretical approach for advancing urban health [1,8] through a multidimensional strategy focused on the neighbourhood level. The two-year study was situated in two neighbourhood areas within the city of Florence, including the five districts of San Frediano, Pignone, Le Piagge, Nave a Petriolo, and Nave a Brozzi. In both neighbourhood areas is located a House of the Community (HoC), that is also a subject of this study, a primary healthcare structure that can serve as a focal point for a proximity network that extends beyond the traditional provision of health services, offering tailored social services and representing a driver for health promotion in the neighbourhood. This network can help foster social connections and promote community engagement, contributing to overall health and well-being at the neighbourhood level. Within the Healthy Neighbourhoods Hub (HNH) research project, through an action research process, urban spaces and HoCs were reimaged as physical infrastructures to promote healthy habits among diverse users [40].

1.3. Significance of the Paper

The paper outlines the development of the framework for healthy and inclusive neighbourhoods and discusses its originality and integration with subsequent research phases, encompassing user studies, engagement initiatives, and on-site environmental observations. The HNH framework interprets the urban health approach at the neighbourhood level, incorporates multidisciplinary contribution to the theme, and broadens the scope of disciplines involved in promoting health in urban contexts, fostering a more comprehensive understanding of the relationship between the built environment and health, not only focusing on urban planning as the primary design discipline for driving spatial transformations. This research illustrates how utilising a novel theoretical approach to the design of urban spaces in neighbourhoods can lead to modifications in the built environment that serve to advance both health and equity [1].

2. Materials and Methods

2.1. Proximity, Healthy Lifestyles, and Inclusion as Core Topics of the HNH Framework

Starting from the Ottawa Charter [41,42] as the core document introducing the promotion of health in urban environment, the research team engaged in an extensive multidisciplinary dialogue, with each member contributing their expertise and key references related to the subject, as detailed at the end of this paragraph. After a comprehensive discussion, three core aspects were identified as crucial for HNH research project to explore when examining the built environment as a health determinant in neighbourhoods.

These three aspects are:

- Proximity;
- Healthy lifestyles;
- Inclusion.

They are important topics that are related to the aforementioned context of healthy cities and the biopsychosocial health model, framing the 2030 Agenda for Sustainable Development goals SDG-3: Good Health and Well-Being, and SDG-11: Sustainable Cities and Communities. Each topic is explored according to the multidisciplinary approach of

the HNH research project with the aim of collecting relevant studies and documents useful to identify properties of the built environment implementing those three aspects (Figure 1).

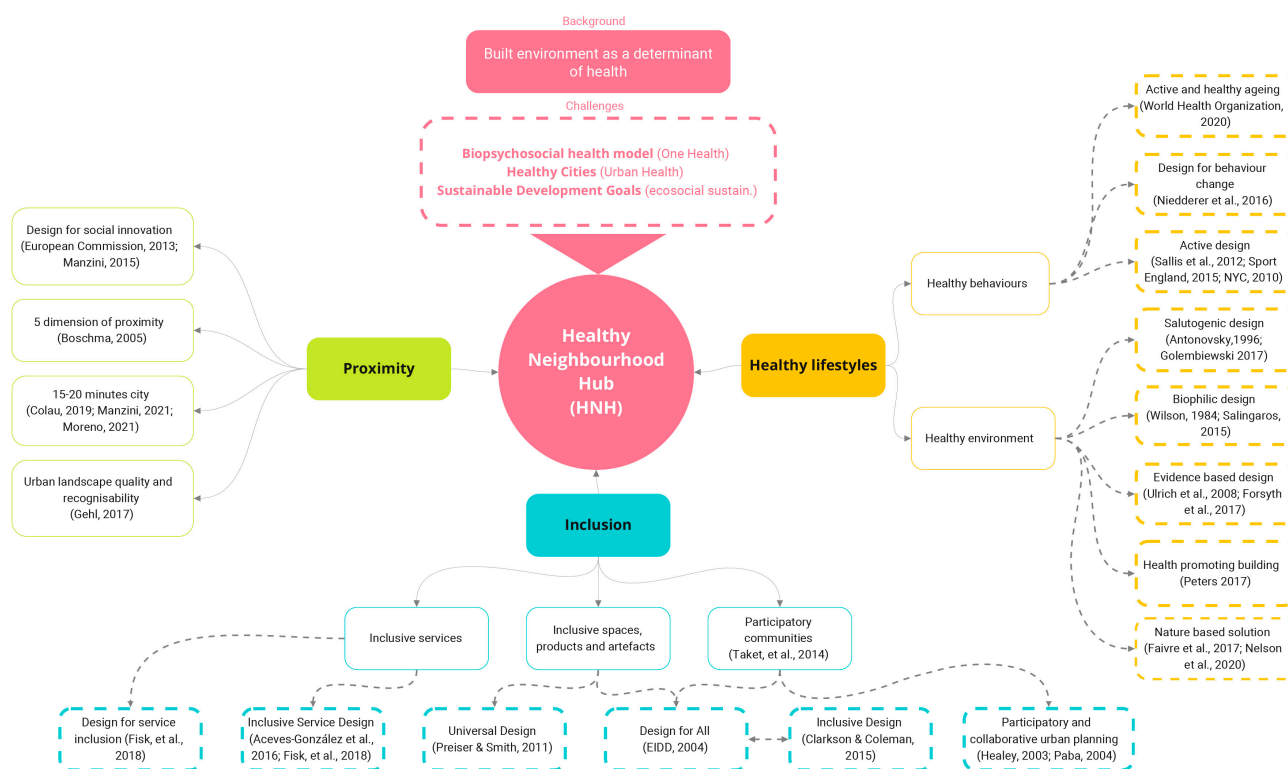


Figure 1. HNH core topics and relevant documents.

The topic of proximity examines the built environment in terms of accessibility to services and places [43]. It is explored from the viewpoint of design for social innovation [44–47]. Interpreting this topic through the caring concept [48] leads to the emergence of models for the 15 min and 20 min city [49–53] and dimensions of proximity [54]. Proximity is also examined under the perspective of urban landscape quality and recognisability [55–57].

Healthy lifestyles can be impacted by the built environment in two ways: directly, through immediate effects such as the quality of the indoor and outdoor environment, and indirectly, by altering behaviours that can influence health, for example, by promoting walking to increase physical activity [58,59]. Direct impact of built environment on health is considered in terms of health promoting buildings [60,61], salutogenic design [62,63], biophilic design [64–66], evidence-based design [14,67–69], and nature-based solutions [70,71]. Indirect impact on behaviours is considered in terms of active design [72–76], age-friendly environment and healthy ageing [77,78], and design for behaviour change [79–81].

The topic of inclusion explores the built environment regarding the presence of inclusive services, spaces, products, artefacts, and participatory communities [82–84]. It is investigated from the perspective of design for service inclusion [85–87], inclusive service design [88,89], universal design [90,91], design for all [92,93], inclusive design [94,95], and participatory and collaborative urban planning [96–98].

2.2. Identifying Built Environment Properties and Data Collection

During data collection, the multidisciplinary research team collaborated to collect key documents related to each topic. The data collection phase occurred in January 2022. For the search, the WHO directory of resources for planning healthy environments [99] was used as the initial source, with inclusion criteria focused on documents type (recommendations, design guide, toolkit, checklist, and best practices reports) and scale (city and neighbourhood). Documents referring to areas significantly different for geographical

and economic characteristics were excluded, and 24 documents were sorted. During the researchers' examination process, selected documents must have offered guidance intended for or adaptable to urban space design concerning proximity, healthy lifestyles, and inclusion topics. From the initial sorted list, 5 documents were selected [68,72,77,100,101]. Subsequently, the search was enhanced by incorporating crucial reference texts for specific approaches and perspectives highlighted in the preceding section (e.g., health promoting buildings, biophilic design, universal design, etc.), along with case study reports or articles (e.g., 20 min city, Barcelona's superblocks, etc.). Also, existing documents focusing on neighbourhood scale were added [13–17]. The research team has deliberately included seminal reference texts that are fundamental to specific approaches or fields. While primary reference texts in specific fields (e.g., universal design) may exceed five years in age, their significance persists due to the foundational concepts and definitions they originally introduced. The team members worked together with a multidisciplinary approach to identify properties and features relevant to built environment design that address the specific topic. For proximity topic 4, documents were collected, and 31 properties extracted, as shown in Table 1; for healthy lifestyles topic 11, documents were collected and 134 properties extracted, as shown in Table 2; and for inclusion topic 5, documents were collected and 47 properties extracted, as shown in Table 3.

Table 1. Collected documents related to proximity topic.

Reference	Title	Main Properties/Features Identified
Transport for London, 2017 [100]	Healthy Streets for London: Prioritising Walking, Cycling and Public Transport to Create a Healthy City	Pedestrians from all walks of life; People choose to walk, cycle, and use public transport; Clean air; People feel safe; Not too noisy; Easy to cross; Places to stop and rest; Shade and shelter; People feel relaxed; Things to see and do.
Center for Active Design, 2018 [101]	Introducing the Assembly: Civic Design Guidelines	Improve voting access and awareness; Increase access to community information; Elevate the visibility of local government; Support community-driven design processes.
Mehdipanah et al., 2019 [49]	Effects of Superblocks on health and health inequities: a proposed evaluation framework	Air/Noise pollution; Traffic safety; Walkability; Recreational spaces; Commercial availability; Housing value; Sense of community; Sense of security; Social networks.
Emery & Thrift, 2021 [53]	20 min Neighbourhoods—creating healthier, active, prosperous communities. An introduction for council planners in England	Diverse and affordable homes; Well connected paths, street, and spaces; Schools at the heart of communities; Good green spaces in the right places; Local food production; Keeping jobs and money local; Community health and well-being facilities; A place for all ages.

Table 2. Collected documents related to healthy lifestyles topic.

Reference	Title	Main Properties/Features Identified
The City of New York, 2010 [72]	The Active Design Guidelines: Promoting Physical Activity through Design	Land use mix; Transit and parking; Park, open spaces, and recreational facilities; Children's play areas; Public plazas; Grocery stores and fresh produce access; Street connectivity; Traffic calming; Designing pedestrian pathways; Programming streetscapes; Bicycle networks and connectivity; Bikeways; Bicycling infrastructure.

Table 2. Cont.

Reference	Title	Main Properties/Features Identified
Sallis et al., 2012 [74]	Role of built environments in physical activity, obesity, and cardiovascular disease	Walkable community design (density, connected streets, mixed land uses, access to transit); Pedestrian and bicycle facilities (access, connectivity, design, quality, safety); Building design (stairways, parking placement); Location of workplace/school (access to transit, access to sidewalks and bike paths); Home design and equipment (stairs, exercise, labour-saving, entertainment); Park and trails (access, design, quality); Private recreation facilities; Pedestrian and bicycle facilities; Trees and aesthetics.
Salingaros, 2015 [65]	Biophilia and healing environments. Healthy principles for designing the built world	Natural features; Geometrical stability; Ornamental variety; Light; Colour; Gravity; Fractals; Curves; Detail; Water; Life.
Urban Land Institute, 2015 [68]	Building healthy places toolkit: Strategies for enhancing health in the built environment	Mix of land uses; Well-connected street networks at the human scale; Sidewalks and enticing, pedestrian-oriented streetscapes; Infrastructure to support biking; Visible, enticing stairs to encourage everyday use; Stair prompts and signage; High-quality spaces for multigenerational play and recreation; Play spaces for children; Grocery store and farmers market accommodation; Healthy food retail; On-site gardening and farming; Access to drinking water; Smoking banned; Materials and products supporting healthy indoor air quality; Proper ventilation and airflow; Indoor lighting quality; Minimised noise pollution; Access to nature; Facilitation of social engagement; Pet-friendly policies.
Sport England, 2015 [75]	Active Design: Planning for Health and Well-being through Sport and Physical Activity	Activity for all; Walkable communities; Connected walking and cycling routes; Co-location of community facilities; Network of multifunctional open space; High-quality streets and spaces; Appropriate infrastructure; Active buildings; Management, maintenance, monitoring, and evaluation; Activity promotion and local champions.
World Health Organization, 2016 [77]	Age-Friendly Environments in Europe: Indicators, Monitoring and Assessments	Outdoor environments (Walkability, Accessibility of public spaces and buildings, Public safety); Transport and mobility (Availability and accessibility of public transport, Accessibility of public transportation vehicles and stops, Accessibility of priority vehicle parking); Housing (availability and affordability of housing, accessibility of housing, housing programmes and resources, ability to age in place, safety at home); Social participation (engagement in sociocultural activity, participation in leisure-time physical activity, engagement in lifelong learning, opportunities for participation, accessibility of participation opportunities); Social inclusion and non-discrimination (positive social attitude towards older people, availability of intergenerational activities, sense of belonging, influence in the community); Civic engagement and employment (engagement in paid employment, engagement in volunteering activity, participation in local decision-making); Communication and information (availability of information, usability of information material, Internet access, assistance available); Community and health services (access to health and dental care, supportive health services, availability of home- or community-based services, emergency preparedness).
Peters, 2017 [60]	Superarchitecture: Building for better health	Daylight; Airflow; Thermal comfort; Acoustic qualities; Spatial variation; Access to nature; Colour schemes.

Table 2. Cont.

Reference	Title	Main Properties/Features Identified
Forsyth et al., 2017 [14]	Creating healthy neighbourhoods: evidence-based planning and design strategies	Variety of housing options; Universal design principles integrated into planning and design; Increased access and exposure to healthy food options; Mixed-use neighbourhoods with a balance of activities; Population density to support services; Connected, “healthier” travel circulation pattern; Increased access to recreational facilities and green spaces; Land-use planning and urban design coordinate with transit; Safer neighbourhood transportation options for all road users; Adequate pedestrian and cyclist infrastructure and amenities; Public spaces, programs, and events to support interaction; Reduced street crime and fear of crime in public realm; Reduced pollutants and separation of people from toxins; Resilience built in areas vulnerable to natural disasters; Reduced unwanted noise and separation of people from noise.
BC Centre for Disease Control, 2018 [13]	Healthy Built Environment Linkages Toolkit: Making the Links between Design, Planning and Health	Create complete neighbourhoods through mixed land use; Built compact neighbourhood through efficient planning; Enhance connectivity with efficient and safe networks; Prioritise new developments within or beside existing communities; Use streets designs which prioritize active transportation; Make active transportation networks safe and accessible for all ages and abilities; Design connected routes for active transportation and support multiple modalities; Consider the aesthetic of road, rail and waterway networks; Preserve and connect environmentally sensitive areas; Maximise opportunities for everyone to access natural environments; Reduce urban air pollution by expanding natural elements across the landscape; Mitigate urban heat islands by expanding natural elements across the landscape; Increase equitable access to and affordability of healthy food options; Protect agricultural land and increase the capacity of local food systems; Support community-based food programs; Prioritise affordable housing options through diverse housing forms and tenure type; Ensure adequate housing quality for everyone; Provide specialised housing options to support the needs of marginalised populations; Site and zone housing developments to minimise exposure to environmental hazards.
London, 2020 [102]	Healthy Placemaking: Well-being Through Urban Design	Clean air; Contact with nature; Social interaction; Feeling safe; Living somewhere healthy; Peace and tranquillity; Regular exercise.
Ministero della Salute, 2021 [31]	Documento di indirizzo per la pianificazione urbana in un’ottica di Salute Pubblica	Air and smell; Water supply; Noise; Ionising radiation; Soil consumption; Soil permeability and water management; Waste management; Energy efficiency; Population density; Functional and social mixité; Universal design and social inclusion; Road network and parking system; Public transport; Pedestrian and cycling networks; Outdoor spaces system; Green and blue areas; Lighting and visual comfort.

Table 3. Collected documents related to inclusion topic.

Reference	Title	Main Properties/Features Identified
Connell et al., 1997 [103]	The Principles of Universal Design	Equitable use; Flexibility in use; Simple and intuitive use; Perceptible information; Tolerance for error; Low physical effort; Size and space for approach and use.

Table 3. Cont.

Reference	Title	Main Properties/Features Identified
CABE, 2006 [104]	The principles of inclusive design	Inclusive design places people at the heart of the design process; Inclusive design acknowledges diversity and difference; Inclusive design offers choice where a single design solution cannot accommodate all users; Inclusive design provides for flexibility in use; Inclusive design provides buildings and environments that are convenient and enjoyable to use for everyone.
DESA, 2009 [105]	Creating an inclusive Society: Practical strategies to promote social integration	Inclusive policies and legislation; Access to clean and safe places for living, work and recreation; Access to information and communication; Access to public spaces; Access to resources; Access to basic services, including education, health care, clean water and sanitation; Access to transportation; Transparent and accountable decision-making processes; Adequate income and employment opportunities; Affirmation of human rights; Opportunity for personal development; Respect for diversity; Freedom (of choice, religion, etc.); Participation in decision-making; Social protection; Solidarity.
Bevan & Croucher, 2011 [15]	Lifetime Neighbourhoods	Resident-led activities; Voluntary sector delivery at local level; Variety of approaches for information and advice; Transport linking together different types of transportation to provide a coordinated service; Walkable environments; Orientation and wayfinding; Adequate provision of away from home toilets; Local access to retail outlets; Accessible food/fresh food; Inclusive and walkable environments (streets, pavements, footpaths and cycle routes that are sufficiently maintained, clean, well-lit, with adequate road crossing points and seating/places to rest in public places); Safe streets and play areas for children; Greenspace providing opportunities for social contact; Social networks to develop and reduce intergenerational tensions; Supported social networks/practical help tackling social isolation; Places for people to meet; Tackling of crime/fear of crime and anti-social behaviour.
Ministero della Salute, 2021 [31]	Documento di indirizzo per la pianificazione urbana in un'ottica di Salute Pubblica	Equal use of urban space by different categories of users; Wayfinding through different modes of communication (visual and sensory); Participation and involvement of various social stakeholders.

2.3. Data Analysis

The previously mentioned documents all generated qualitative data, which were analysed by the multidisciplinary research group and restructured according to two phases. The complete analysis process adhered to a design thinking approach and embraced a collaborative design perspective among the researchers.

2.3.1. Phase I (Diverging Phase)

Applying a multilevel approach, researchers working at the regional and urban design level (macro-scale), architecture design level (meso-scale), and product and service design level (micro-scale) identified relevant categories for their respective design levels to address the creation of a healthy and inclusive built environment in Florence's neighbourhoods.

They assigned properties related to the three core topics under investigation to each category. The researchers extracted and summarised the properties and features from the data collection tables. Criteria for relevant categories identification and for properties selection from the data collection tables are related to the significance of impact of these items on the built environment design of urban public space and areas surrounding HoCs, according to HNH research project perspective. The criteria for identifying relevant categories and selecting properties from the data collection tables are based on the impact significance of these elements on the design of the urban built environment and areas surrounding HoCs in Florence neighbourhoods, as viewed from the perspective of the HNH research project.

In this phase, three tables were generated, each pertaining to a specific scale and detailing the characteristics of the healthy neighbourhoods. From the macro-level analysis process, 2 relevant categories were identified, and 18 properties and features were assigned, of which 7 were related to the proximity topic, 8 to the healthy lifestyles topic, and 3 to the inclusion topic (Figure 2).

Regional and urban design level (MACRO-SCALE)

Categories	Properties and features	Topic*
<ul style="list-style-type: none"> Public policies and strategies; Urban design and planning. 	<ul style="list-style-type: none"> Integrated urban planning Promotion of public transport and sharing Essential neighbourhood services and schools within 15/20 min distance Functional and social mix within the neighbourhood Accessibility/presence of pedestrian paths Accessibility/presence of cycling routes Safe pedestrian crossings 	1
	<ul style="list-style-type: none"> National, supra-municipal and/or municipal strategies for the healthy city Collaboration between authorities (vertical and horizontal) and health societies Being part of the Healthy City Network Urban quality of life (air, water, noise, etc) Access to local food Age-friendly city Public green areas and green connections Presence of House of Community (HoC) in the neighbourhood 	2
	<ul style="list-style-type: none"> Citizen participation and empowerment Proximity services capable of activating and producing communities Open spaces for entertainment and socialising for all ages 	3

* 1: Proximity, 2: Healthy lifestyles, 3: Inclusion

Figure 2. Table of macro-level identified categories and assigned properties of HNH study.

From the meso-level analysis process, 4 relevant categories were identified, and 20 properties and features were assigned, of which 5 were related to the proximity topic, 11 to the healthy lifestyles topic, and 4 to the inclusion topic (Figure 3). From the micro-level analysis process, 6 relevant categories were identified, and 10 properties and features were assigned, of which 4 were related to the proximity topic, 3 to the healthy lifestyles topic, and 3 to the inclusion topic (Figure 4).

Architecture design level (MESO-SCALE)

Categories	Properties and features	Topic*
<ul style="list-style-type: none"> Urban public spaces Open public space adjacent to HoC and public buildings Access areas to HoC and public buildings Public interior spaces of HoC and public buildings (e.g. courtyards, waiting areas, corridors, etc) 	<ul style="list-style-type: none"> Availability of a nearby green space that is continuous and connected with other urban parks; Coexistence of different functions (workplaces, shops, municipal offices, post office, schools, churches, sports facilities, ecc); Services and activities that take place throughout the day at different times; Presence of collective means of transport such as car/bike sharing and car pooling; presence of safe walking and cycling routes; Presence of spaces/supports for planning and organising public events. 	1
	<ul style="list-style-type: none"> Support spaces for local food and urban agriculture at every stage of the food cycle, from cultivation to distribution and composting; Presence of blue and green areas, equipped for outdoor activities, with a high tree density and selection of tree species with health-promoting abilities; Presence of age-friendly spaces facilitating physical activity and outdoor social/recreational activities; Distance/shielding from sources of air, noise and visual pollution; Presence of pet-friendly spaces; Presence of art/artefacts by local artists; Presence of visible and attractive stairs to encourage daily use; Interior spaces quality: thermal comfort, acoustic quality and daylight supply; Presence of spaces/supports for the promotion of breastfeeding; Presence of spaces/supports for promotion of healthy lifestyles; Use of colour schemes and curved shapes. 	2
	<ul style="list-style-type: none"> Presence of an adequate and as homogeneous as possible urban night lighting system to ensure road safety and prevent crime and vandalism; Pathways that facilitate walkability for all (level paths for wheelchairs and pedestrian crossings); Presence of wide pavements with trees and seating options; Presence of wayfinding systems through different modes of communication (visual and sensory). 	3

* 1: Proximity, 2: Healthy lifestyles, 3: Inclusion

Figure 3. Table of meso-level identified categories and assigned properties of HNH study.

2.3.2. Phase II (Converging Phase)

After reviewing three tables created during Phase I and through a collaborative process between multidisciplinary researchers and lead investigators, the research team developed two insights. The first one is that the identified categories define the domains to consider for designing a healthy and inclusive neighbourhood responding to a multiscale perspective and can therefore be used as a reference point for establishing a conceptual framework adopting this viewpoint. At the same time, a framework orientated according to these categories will never merge the diverse scale considered. In other words, while a framework that is based on specific-scale categories can be useful for organising and analysing information, it may not be able to capture the complexity and nuances of a neighbourhood, which can be influenced by a wide range of factors operating at different scales. Therefore, the second insight to supplement it with a broader, more holistic perspective that takes into account the interplay of different scales and factors in shaping the neighbourhood. The research team observed a common thread running through various scales, with properties

and features converging around specific thematic areas, indicating overarching themes that cut across different levels of analysis. These overarching themes expanded the panorama of the initial three core topics considered, widening the view on built environment design in Florence neighbourhoods. The discovery of these cross-cutting themes broadened the scope of the initial set of three core topics. Information from the tables related to a specific scale was thus synthesised and consolidated into a single table (Figure 5) where properties and features were grouped around emerging transversal themes.

Product and service design level (MICRO-SCALE)

Categories	Properties and features	Topic*
<ul style="list-style-type: none"> • Health trails, equipped areas and products for physical activity; • Street furniture and vegetation supports; • Wayfinding systems; • Products supporting mobility and walkability; • Communication products and information supports; • Cultural, recreational and artistic products. 	<ul style="list-style-type: none"> - Presence of elements supporting the tangibility of geographical, social and cognitive proximity; - Result of co-design processes and presence of shared material among citizens; - Proximity to green areas and/or vegetation; or readiness to accommodate vegetation; - Manifestation of the proximity of a health-relevant service in the neighbourhood. 	1
	<ul style="list-style-type: none"> - Favourable physical and social context to motivate citizens to adopt new behaviours in relation to healthy diet, physical activity, and positive social relationships; - Presence of prompts/stimuli related to the required skills (gentle nudge); - Overall quality determined by pleasantness/pleasantness, durability of materials and perception of safety. 	2
	<ul style="list-style-type: none"> - Inclusive design for physical/cognitive abilities (7 UD principles); - Respect and support for cultural/economic diversity and different ways of life, lifestyles and behaviour; - Support for participation, social relations and mutual help in the community. 	3

* 1: Proximity, 2: Healthy lifestyles, 3: Inclusion

Figure 4. Table of micro-level identified categories and assigned properties of HNH study.

Following the analysis phase, the multidisciplinary research team further developed and structured each emerging theme, progressing towards the ultimate goal of establishing a comprehensive framework for designing healthy and inclusive neighbourhoods. This culmination of the analysis phase resulted in the formalisation of the HNH framework, representing the original scientific contribution outlined in this paper.

Multiscalar level (MACRO/MESO/MICRO-SCALE)

Reference categories	Properties and features	Emerging themes
<ul style="list-style-type: none"> ● Public policies and strategies; ● Urban design and planning; ● Urban public spaces ● Open public space adjacent to HoC and public buildings ● Access areas to HoC and public buildings ● Public interior spaces of HoC and public buildings (e.g. courtyards, waiting areas, corridors, etc); ● Health trails, equipped areas and products for physical activity; ● Street furniture and vegetation supports; ● Wayfinding systems; ● Products supporting mobility and walkability; ● Communication products and information supports; ● Cultural, recreational and artistic products. 	<ul style="list-style-type: none"> - Collaboration between authorities and health societies; - Citizen participation and empowerment, co-design processes; - Inclusive design principles for all physical/cognitive abilities; - Respect and support for cultural/economic diversity and different ways of life; - Presence of adequate and homogeneous urban night lighting system; - Pathways that facilitate walkability for all. 	Inclusion
	<ul style="list-style-type: none"> - Proximity services capable of activating and producing communities; - Open spaces for entertainment and socialising for all ages; - Support for participation, social relations and mutual help; - Presence of pet-friendly spaces; - Presence of art/artefacts by local artists. 	Social relations
	<ul style="list-style-type: none"> - Presence of spaces/supports for planning and organising public events. - Presence of age-friendly spaces facilitating physical activity and outdoor social/recreational activities; - Presence of visible and attractive stairs to encourage daily use; - Presence of wide pavements with trees and seating options; - Presence of spaces/supports for promotion of healthy lifestyles. 	Active and healthy lifestyles
	<ul style="list-style-type: none"> - Support spaces for local food and urban agriculture; - Promotion of breastfeeding; - Distance/shielding from sources of air, noise and visual pollution; - Spaces quality: thermal comfort, acoustic quality and daylight supply; - Use of colour schemes, curved shapes, pleasant materials. 	Sensoriality
	<ul style="list-style-type: none"> - Public green areas and green connections; - Presence of blue and green areas, equipped for outdoor activities; - high tree density and selection of tree species with health-promoting abilities. 	Green spaces
	<ul style="list-style-type: none"> - Presence of wayfinding systems through different modes of communication (visual and sensory); - Presence of prompts/stimuli (gentle nudge). 	Communication
	<ul style="list-style-type: none"> - Essential services and schools within 15/20 min distance; - Functional and social mix; - Promotion of public transport and sharing; - Availability of green space continuous and connected with other urban parks; - Services and activities that take place throughout the day at different times; - Presence of safe walking/cycling routes and crossings; - Proximity of a health-relevant service. 	Proximity

Figure 5. Multiple-scale table with properties and features grouped around emerging themes of HNH study.

3. Results

The HNH research has resulted in the development of a multidisciplinary and multiscalar conceptual framework (Figure 6). This framework synthesises and systematises the key characteristics of healthy and inclusive neighbourhoods into seven distinct themes: (i) the neighbourhood for all; (ii) the neighbourhood of the interactions; (iii) the active neighbourhood; (iv) the neighbourhood of the senses; (v) the green neighbourhood; (vi) the smart neighbourhood; and (vii) the neighbourhood of the 1500 m. The seven themes incorporate spatial and environmental elements that foster health and well-being goals at the neighbourhood level.

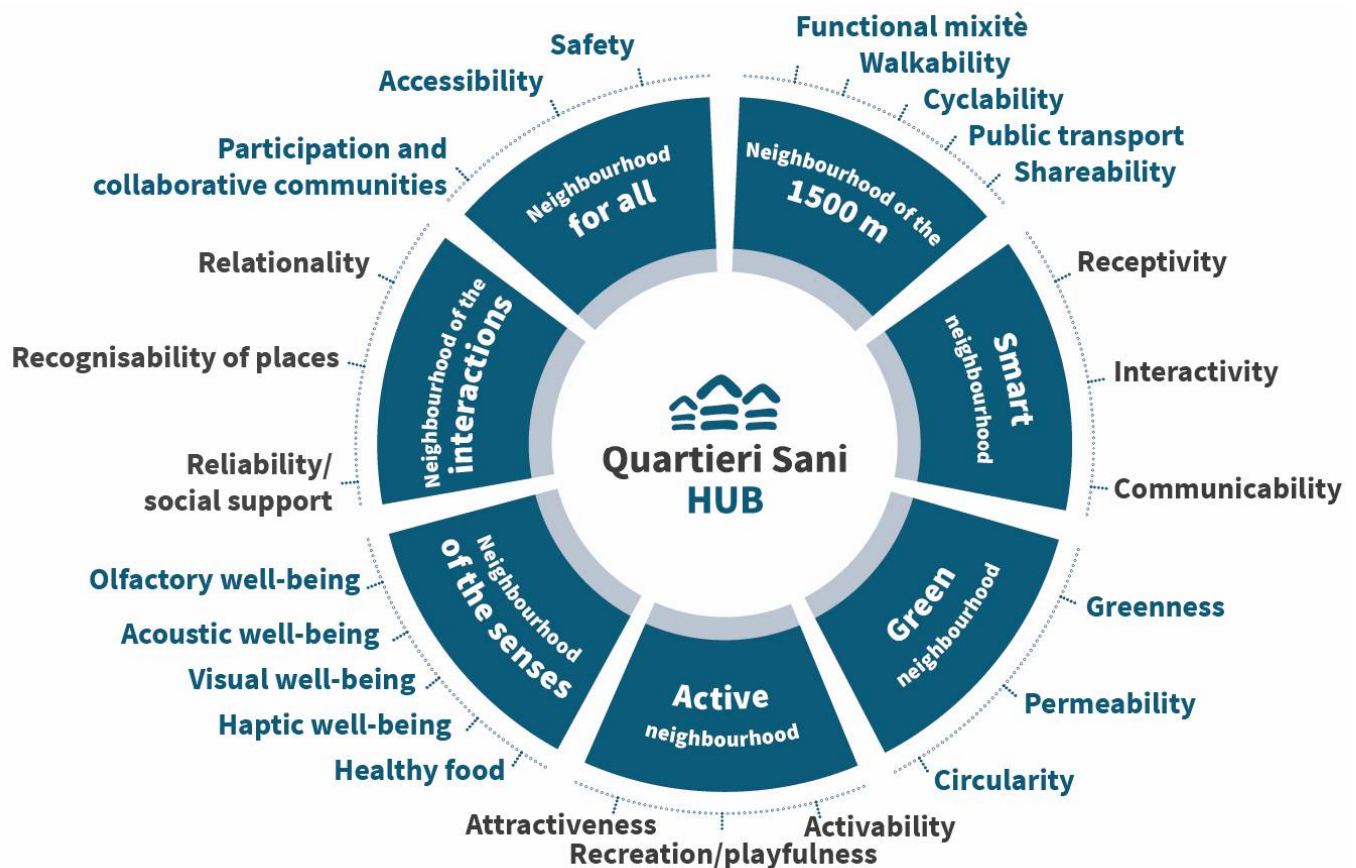


Figure 6. The HNH conceptual framework.

3.1. Seven Themes of the HNH Framework

In particular, a neighbourhood demonstrates health and inclusivity when it exhibits the following traits.

3.1.1. Neighbourhood for All

It expresses active citizen participation and encourages collaborative communities, with residents working together to address shared challenges and decision-making processes. The neighbourhood promotes equity and security, creating an environment where residents feel able and secure to freely engage with their community (Figure 7).

Neighbourhood for all

General characteristics	Specific characteristics	Variables
Participation and collaborative communities	Presence of an organised collaborative community acting in space	<ul style="list-style-type: none"> • Presence of spaces or common goods collectively maintained and managed by citizens in accordance with Common Goods Regulations; • Presence of Spaces, including furnishings utilised for structured community activities; • Mutual distance and distance of these spaces from buildings hosting collective functions; • Distance of these spaces to the local HoC; • Connections/walkability/reachability (within 500 m)/permeability of these spaces with local HoC; • Presence of tangible physical elements for recognisability (including wayfinding) of adopted spaces; • Presence of co-designed output.
	Active practices with users of schools and elderly/day centres	<ul style="list-style-type: none"> • Suitably dimensioned spaces; • Level of accessibility of spaces used for these practices; • Presence of tangible physical elements for recognisability (including wayfinding) of adopted spaces; • Presence of spaces for active practices with users from schools and elderly/day care centres.
	Permanent spaces for participation (Urban centre, Community hub)	<ul style="list-style-type: none"> • Variability of planned activities and options; • Presence of spaces designated for community activities; • Presence of high-quality urban architectural design permanent spaces for participation; • Presence of accessible permanent spaces for participation; • Mutual distance and distance from buildings hosting collective functions; • Distance to the local HoC; • Connections/walkability/reachability (within 500 m)/permeability with local HoC. • Level of pleasantness including materials and colours used; • Level of perceived safety; • Level of environmental comfort; • Presence of furniture for co-design, co-creation, co-production activities (including information, communication and recognition aspects).
Accessibility	Elements for collective use for the flexible, intuitive and equitable exploitation of public space	<ul style="list-style-type: none"> • Presence of an Intervention Programme for the removal of architectural and urban barriers (census of architectural barriers); • Presence of physical, cognitive and cultural barriers; • Presence of furniture respecting Universal Design principles; • Presence of a multi-sensory and multi-language wayfinding system; • Presence of design solutions for the flexible, intuitive and equitable use of HoC outdoor and indoor space.
	Spaces for the valorization of physical, cultural, social, political and economic diversity	<ul style="list-style-type: none"> • Presence of accessible spaces designated for community activities; • Presence of high-quality urban architectural design spaces; • Mutual distance and distance from buildings hosting collective functions; • Distance to the local HoC; • Connections/walkability/reachability (within 500 m)/permeability with local HoC; • Level of pleasantness including materials and colours used; • Level of perceived safety; • Level of environmental comfort; • Presence of a multi-sensory and multi-language wayfinding system; • Presence of furnishings that value diversity (physical, cultural, gender, social, political and economic).
	Multi-sensory wayfinding system integrated into public space to reach key places in the neighbourhood (e.g. mobility hubs, buildings with public functions, and services for primary and secondary needs)	<ul style="list-style-type: none"> • Presence of such systems; • Presence of multilingual and/or multi-cultural factors; • Presence of multisensory factors; • Size and style of information tools (including font, readability, contrast, volume and clarity in the case of sound information).
	Accessible pedestrian paths	<ul style="list-style-type: none"> • Presence of such elements; • Continuity of paths between buildings housing collective functions; • Level of integration of urban paths, based on visibility and number of changes of direction (geometric input, Space Syntax); • Presence of rest benches (compliance with Universal Design principles); • Presence of drinking fountains; • Presence of free public toilets.
Safety	Elements to guarantee safety and struggle against crime and acts of vandalism	<ul style="list-style-type: none"> • Presence of a homogeneous urban night lighting system (distance between lighting points, coverage of the illuminated field); • Use of the same spaces at different times of the day (rotation of users); • Presence of attractive and stimulating street furniture for specific activities (aesthetically appealing, dedicated to physical activity, social relations, use of active mobility means).
	Pedestrian safety of access to buildings hosting collective functions	<ul style="list-style-type: none"> • Presence of barriers preventing visibility of the entrance; • Intersection of pedestrian and vehicular flows; • Presence of separation elements / protection from road traffic.
	Safe pedestrian paths	<ul style="list-style-type: none"> • Presence of pedestrian crossings with a full and unobstructed view; • Presence of paths away from the vehicular network and intersections; • Presence of clearly recognisable paths separate from driveways; • Presence of crossings with timed traffic lights; • Presence of public transport stops included in safe pedestrian paths.

Figure 7. Neighbourhood for all categories and variables.

The neighbourhood for all is expressed through the following:

- Public spaces that promote citizen engagement, facilitate self-organisation, foster spontaneous community activities, and are designed with adaptable features to meet diverse community needs. These spaces prioritise multicultural, intergenerational participation, and celebrate diversity across generations, genders, cultures, and social backgrounds;
- Pathways and spaces that are barrier-free, adaptable to multigenerational and multicultural needs and abilities, and complemented by architectural elements and furnishings that promote rest and relaxation. These include considerations such as the design of paths, rest areas, and communication spaces, with attention to materials, colours, lighting, sensory perceptions, and the integration of greenery and natural elements (e.g., water). Presence and quality of seating options, tables, public restrooms, and water fountains are also important. Pathways and spaces present wayfinding systems with multisensory characteristics cater to users with physical, cognitive, visual, and hearing impairments, as well as those from diverse cultural backgrounds.

3.1.2. Neighbourhood of the Interactions

It highlights the crucial role of social relations in promoting health and well-being within neighbourhoods. The built environment is designed to encourage and enable residents to connect with one another, fostering social support networks, positive social relations, relational activities, and dedicated spaces (Figure 8).

The neighbourhood of the interactions is expressed through the following:

- Aggregative architectural spaces that foster community gathering (e.g., squares and courtyards), designed to encourage appropriate use and interaction among people and featured by furnishings that facilitate dialogue and spontaneous engagement (e.g., benches, tables, open-air games, equipment for specific activities—work, study, cultural exchange—for physical activity and active breaks, shelters, and protection elements). The community's interactions are also visible in spaces that promote mutual aid, collaboration, and shared services, such as book-sharing activities. These spaces are designed with flexible and transformable products that simplify community activities, such as chairs, tables, covers, storage products, and landscaping materials for managing shared spaces like urban gardens;
- Quality of access to public buildings, such as HoCs, designed so that the architectural space and its elements are accessible, welcoming, and inclusive. This includes the integration of furnishings like seating and furniture that not only facilitate access to the services offered but also promote social interaction and inclusiveness;
- Identity elements of the neighbourhood consisting of architectural and landscape choices that define landmarks or an integrated design of furnishings and wayfinding systems that express the neighbourhood's brand.

3.1.3. Active Neighbourhood

It is an efficient, energetic, industrious neighbourhood that stimulates mind and body. The built environment is designed to encourage and facilitate physical activity, providing ample opportunities for residents to engage in movement, exercise, and playful recreation. It is culturally rich and engaging, fostering a sense of vibrancy and vitality (Figure 9).

Neighbourhood of interactions

General characteristics	Specific characteristics	Variables
Recognizability of places	Identity elements	<ul style="list-style-type: none"> • Presence of art / artefacts by local artists; • Presence of historical and/or peculiar activities of the place; • Mutual distance and distance from buildings hosting collective functions; • Distance to the local HoC; • Connections/walkability/reachability (within 500 m)/permeability with local HoC; • Presence of a wayfinding system to trace identity points and get information; • Presence of urban/landscape/architectural elements that connote the identity of the place.
	Branding and identity information system (neighbourhood branding)	<ul style="list-style-type: none"> • Presence of a coordinated and disseminated neighbourhood image system (including widespread applications, e.g. furniture coordinated with the branding system); • Usability of the language and availability of multi-language, multi-option, multi-sensory options; • Presence of tangible information systems (e.g. totems) related to the identity of the place.
Relationality	Proximity services and meeting spaces capable of activating and producing communities	<ul style="list-style-type: none"> • Presence of universally accessible, signposted, comprehensible indoor/outdoor spaces that stimulate social relations; • Presence of high-quality urban architectural design meeting spaces; • Mutual distance and distance from buildings hosting collective functions; • Distance to the local HoC; • Connections/walkability/reachability (within 500 m)/permeability with local HoC; • Level of pleasantness including materials and colours used; • Level of perceived safety; • Level of environmental comfort; • Presence of urban furniture systems that define the aggregative and proximity space (touchpoints); • Presence of seating options; • Morphology/arrangement of the seating and furniture system (quality assessment); • Presence of an information system (communication to the citizen).
	External public spaces (squares and courtyards)	<ul style="list-style-type: none"> • Presence of high-quality urban architectural design external public spaces; • Presence of universally accessible external public spaces; • Presence of safe external public spaces; • Mutual distance and distance from buildings hosting collective functions; • Distance to the local HoC; • Connections/walkability/reachability (within 500 m)/permeability with local HoC; • Level of pleasantness including materials and colours used; • Level of perceived safety; • Level of environmental comfort; • Presence of noise/air pollution level control systems; • Presence of waste management systems; • Presence of greenery and its management; • Presence of street furniture arranged to experience the outdoor space in a collective/shared way; • Morphology/arrangement of the seating and furniture system (quality assessment); • Presence of comprehensible elements for signposting the outdoor public space.
	Quality of access and ground connection of buildings hosting collective functions	<ul style="list-style-type: none"> • Access visibility; • Recognisability of accesses; • Permeability of the ground connection (Number and size of openings and glazed surfaces); • Presence of an information and wayfinding system; • Presence of communicating/active/stimulating interface spaces between the building and the neighbouring urban space.
Reliability / Social Support	Mutual help spaces and services	<ul style="list-style-type: none"> • Presence of high-quality urban architectural design mutual help spaces; • Presence of universally accessible mutual help spaces; • Presence of safe mutual help spaces; • Mutual distance and distance from buildings hosting collective functions; • Distance to the local HoC; • Connections/walkability/reachability (within 500 m)/permeability with local HoC; • Level of pleasantness including materials and colours used; • Level of perceived safety; • Level of environmental comfort; • Presence of furniture with touchpoints for mutual aid services; • Presence of areas equipped with devices for citizen support/help and for different users also in case of need/emergency.
	Shared spaces between neighbourhood communities	<ul style="list-style-type: none"> • Presence of community activities/initiatives; • Presence of active shared spaces for community activities; • Presence of high-quality urban architectural design shared spaces; • Presence of universally accessible shared spaces; • Presence of safe shared spaces; • Mutual distance and distance from buildings hosting collective functions; • Distance to the local HoC; • Connections/walkability/reachability (within 500 m)/permeability with local HoC; • Level of pleasantness including materials and colours used; • Level of perceived safety; • Level of environmental comfort; • Presence of flexible furniture to share space and to organise events/activities for neighbourhood communities.
	Neighbourhood services based on sharing	<ul style="list-style-type: none"> • Presence of active sharing tools/initiatives/projects; • Presence of an information system (communication to the citizen).

Figure 8. Neighbourhood of the interactions categories and variables.

Active neighbourhood

General characteristics	Specific characteristics	Variables
Activability	Spaces and urban furniture systems for physical activity	<ul style="list-style-type: none"> • Presence of safe, universally accessible, flexible and recognisable spaces and street furniture for physical activity; • Presence of high-quality urban architectural design spaces; • Mutual distance and distance from buildings hosting collective functions; • Distance to the local HoC; • Connections/walkability/reachability (within 500 m)/permeability with local HoC; • Level of pleasantness including materials and colours used; • Level of perceived safety; • Level of environmental comfort; • Quantity of options with respect to possible exercises and movements.
	Supporting accessories (e.g. attractor objects/actions, facilitators, stimulators, information and wayfinding systems)	<ul style="list-style-type: none"> • Presence of roofs and sheltered/repared areas to ensure use of the physical activity spaces even in adverse weather conditions; • Presence in the immediate vicinity of physical activity spaces of elements for rest and refreshment (including drinking fountains, showers, changing rooms); • Presence of areas dedicated to physical activity promotion within/close to the local HoC; • Presence of services and events dedicated to the promotion of physical activity; • Presence of information (for use of equipment) and wayfinding system.
	Visible - or indicated by signs - and attractive stairs in buildings that host public functions	<ul style="list-style-type: none"> • Presence of visible and easy-to-use ladders within the local HoC; • Presence of an information and wayfinding system; • Presence of entertaining/motivating stimuli.
Recreation /playfulness	High-quality multigenerational spaces for recreational and physical activities	<ul style="list-style-type: none"> • Presence of safe, universally accessible, flexible and recognisable urban spaces intended for recreational and leisure activities (play areas for children, entertainment spaces for young people, recreational areas for the elderly); • Mutual distance and distance from buildings hosting collective functions; • Distance to the local HoC; • Connections/walkability/reachability (within 500 m)/permeability with local HoC; • Level of pleasantness including materials and colours used; • Level of perceived safety; • Level of environmental comfort; • Presence of furniture dedicated to recreational activities and their support (e.g. benches for resting, water, toilets); • Flexibility (multigenerational) and accessibility of spaces and furniture; • Presence of information and wayfinding systems.
Attractiveness	Spaces designed to host temporary events related to physical and recreational activities	<ul style="list-style-type: none"> • Presence of safe, universally accessible, flexible and recognisable urban spaces intended for temporary neighbourhood activities (sporting and recreational events) (e.g. covered and uncovered squares, open spaces); • Mutual distance and distance from buildings hosting collective functions; • Distance to the local HoC; • Connections/walkability/reachability (within 500 m)/permeability with local HoC; • Level of pleasantness including materials and colours used; • Level of perceived safety; • Level of environmental comfort; • Presence of ancillary services to the spaces such as public toilets, drinking water fountains and roofs/shelters; • Presence of street furniture (including wayfinding).
	Collective, convivial, original, creative, interactive spaces designed to host artistic and cultural events	<ul style="list-style-type: none"> • Presence of safe, universally accessible, flexible and recognisable urban spaces capable of hosting artistic and cultural events; • Mutual distance and distance from buildings hosting collective functions; • Distance to the local HoC; • Connections/walkability/reachability (within 500 m)/permeability with local HoC; • Level of pleasantness including materials and colours used; • Level of perceived safety; • Level of environmental comfort; • Presence of flexible urban furnishings to support the collective space; • Presence of ancillary services to the spaces such as public toilets, drinking water fountains and roofs/shelters.

Figure 9. Active neighbourhood categories and variables.

The active neighbourhood is expressed through the following:

- Existence of areas and street furniture setups that promote secure physical activities, both individual and group-oriented, involving the provision of safe and appealing equipment, supported by inclusive information systems to ensure proper usage;
- Presence of pathways integrated in the normal routine of its inhabitants equipped with furniture products for light body movement, suitable for different ages and needs and favouring activities such as active breaks; presence of inclusive wayfinding systems to connect and enjoy the spaces described above, as well as street furniture accessories to be applied in the same spaces and dedicated to refreshment and rest (e.g., drinking fountains, benches for resting and stretching, tables for eating food, shelters and covers to protect from excessive heat, cold, and bad weather conditions);
- Signposted and attractive stairs in public buildings, stimulating physical activity;

- Spaces furnished with multigenerational games and dedicated to the stimulation of physical activities; spaces prepared to host temporary events related to physical and recreational activities; and collective, convivial, creative, interactive spaces prepared to host artistic and cultural events furnished with flexible and transformable furnishing products to handle different temporary needs.

3.1.4. Neighbourhood of the Senses

It aims to create an environment that is both stimulating and preserving the sensibilities of body and mind. This is achieved through the systematic integration of the five senses—smell, hearing, sight, touch, and taste—fostering a sensory-focused connection between the residents and the built environment around them (Figures 10 and 11). By engaging the senses in a holistic manner, this neighbourhood creates an immersive and enriching experience for its inhabitants.

Neighbourhood of the senses (part I)

General characteristics	Specific characteristics	Variables
Olfactory well-being	Protection from sources of odorous emissions (e.g. production activities, urban waste treatment, catering activities)	<ul style="list-style-type: none"> • Presence of sources of odorous emissions stimuli; • Distance of the emission source from public spaces/buildings; • Distance to the local HoC; • Geographical and/or temporal extent of the problem; • Presence of screens (type, size, number).
	Protection from sources of air pollution (e.g. traffic, production activities, combustions)	<ul style="list-style-type: none"> • Presence of a Municipal Air Quality Action Plan; • Presence of sources of air pollution; • Distance of the emission source from public spaces/buildings; • Distance to the local HoC; • Geographical and/or temporal extent of the problem; • Presence of screens (type, size, number) including dedicated furniture.
	Pleasant olfactory stimuli	<ul style="list-style-type: none"> • Presence of pleasant olfactory stimuli; • Distance of the pleasant stimuli source from public spaces/buildings; • Distance to the local HoC; • Geographical and/or temporal extent of the stimulation; • Presence of screens limiting the effect (type, size, number) (including dedicated furniture).
Acoustic well-being	Protection from noise (e.g. production activities, construction and road construction sites, vehicular traffic)	<ul style="list-style-type: none"> • Presence of a Municipal Noise Classification Plan; • Presence of noise; • Distance of the noise source from public spaces/buildings; • Distance to the local HoC; • Geographical and/or temporal extent of the problem; • Presence of shielding (type, size, number, absorption level) including furniture dedicated to this purpose; • Level of sound reverberation; • Level of integration and coordination of furniture used to reduce sources of noise nuisance;
	Pleasant acoustic stimuli	<ul style="list-style-type: none"> • Presence of pleasant acoustic stimuli; • Distance of the pleasant stimuli source from public spaces/buildings; • Distance to the local HoC; • Geographical and/or temporal extent of the stimulation; • Presence of screens limiting the effect (type, size, number) (including dedicated furniture); • Level of integration and coordination of furniture used to produce sounds and support soundscaping actions.
Visual well-being	Protection from visual and perceptive pollution (e.g. advertising signs, signs of commercial activities, unsuitable road signs without hierarchies, public lighting - dazzling, unsuitable or inappropriate - and antennas - mobile telephones, TV, satellite, power lines)	<ul style="list-style-type: none"> • Presence of visual and perceptive pollution; • Distance of the source from public spaces/buildings; • Distance to the local HoC; • Geographical and/or temporal extent of the problem; • Presence of shielding (type, size, number, absorption level) including furniture dedicated to this purpose.
	Use of colour	<ul style="list-style-type: none"> • Presence of indication on Municipal Building Regulations on Colour Scheme; • Use of colour schemes; • Use of chromatic variability; • Use of predominant colours and colour ranges; • Level of pleasantness; • Use of colour to enhance identity; • Use of colour to enhance recognisability (e.g. of a function).
	Natural light	<ul style="list-style-type: none"> • Number, size and orientation of transparent openings in public buildings; • Perceived quantity of natural light / illuminance levels in public spaces/buildings; • Perceived quality of natural light (colour rendering and colour temperature) in public spaces/buildings; • Presence of glare and discomfort phenomena in public spaces/buildings; • Level of perceived brightness in public spaces/buildings; • Variability of natural light during the day in public spaces/buildings; • Level of light shielding in public spaces/buildings from adjacent buildings; • Natural lighting level of the ground floor of public buildings.
	Elements that contribute to decoration, aesthetic sense and pleasantness	<ul style="list-style-type: none"> • Presence of elements that contribute to decoration, aesthetic sense and pleasantness; • Number of elements of historical-artistic value; • Mutual distance and distance from buildings hosting collective functions; • Distance to the local HoC; • Level of pleasantness of the furniture system (including level of recognisability and branding).
	Visual access to natural elements (e.g. green areas, water)	<ul style="list-style-type: none"> • Presence of visual access to natural elements; • Distance of the natural element from public spaces/buildings and from the local HoC; • Extent/size of the natural element; • Level of visibility, presence of screening (type, size, number); • Presence of an information and wayfinding system.

Figure 10. Neighbourhood of the senses categories and variables (part I).

Neighbourhood of the senses (part II)

General characteristics	Specific characteristics	Variables
Healthy food	Spaces and support for the direct sale of local food	<ul style="list-style-type: none"> • Presence of public policies for promoting accessibility to short food supply chain; • Presence of high-quality urban architectural design spaces; • Presence of universally accessible spaces; • Presence of safe spaces; • Mutual distance and distance from buildings hosting collective functions; • Distance to the local HoC; • Connections/walkability/reachability (within 500 m)/permeability with local HoC; • Level of pleasantness including materials and colours used; • Level of perceived safety; • Level of environmental comfort; • Presence of an information and wayfinding system; • Presence of modular and transformable spaces and products for the sale of food.
	Support for the fight against food waste	<ul style="list-style-type: none"> • Presence of a Food Plan; • Presence of public policies for promoting accessibility to short food supply chain; • Presence of projects on healthy food in schools; • Presence of an information and wayfinding system; • Level of recognisability of spaces and furniture used for this function.
	Spaces for the promotion of breastfeeding	<ul style="list-style-type: none"> • Presence of high-quality urban architectural design spaces; • Presence of universally accessible spaces; • Presence of safe spaces; • Mutual distance and distance from buildings hosting collective functions; • Distance to the local HoC; • Connections/walkability/reachability (within 500 m)/permeability with local HoC; • Level of pleasantness including materials and colours used; • Level of perceived safety; • Level of environmental comfort; • Presence of street furniture (touchpoints) to support the promotion of breastfeeding; • Presence of an information and wayfinding system.
	Spaces for recreational/cultural events related to food	<ul style="list-style-type: none"> • Presence of high-quality urban architectural design spaces; • Presence of universally accessible spaces; • Presence of safe spaces; • Mutual distance and distance from buildings hosting collective functions; • Distance to the local HoC; • Connections/walkability/reachability (within 500 m)/permeability with local HoC; • Level of pleasantness including materials and colours used; • Level of perceived safety; • Level of environmental comfort; • Presence of street furniture (touchpoints) to support recreational/cultural events related to food; • Presence of an information and wayfinding system.
	Spaces and supports for urban agriculture (at every stage of the food cycle, from cultivation to distribution and composting)	<ul style="list-style-type: none"> • Presence of high-quality urban architectural design spaces; • Presence of universally accessible spaces; • Presence of safe spaces; • Mutual distance and distance from buildings hosting collective functions; • Distance to the local HoC; • Connections/walkability/reachability (within 500 m)/permeability with local HoC; • Level of pleasantness including materials and colours used; • Level of perceived safety; • Level of environmental comfort; • Ease of use/usability of the urban furniture used to support urban agriculture; • Quality and quantity of the information conveyed and the communication system adopted for promotion; • Cost for the use of specific spaces and products; • Sizing of spaces and furnishings; • Quality of the materials used for furniture to support these activities.
Haptic well-being	Pleasant tactile stimuli	<ul style="list-style-type: none"> • Presence of pleasant tactile stimuli; • Distance of the pleasant stimuli source from public spaces/buildings; • Distance to the local HoC; • Pleasantness of the materials used for the realisation of street furniture; • Perceived temperature of the materials used for the realisation of the routes and street furniture (e.g. wood, steel, asphalt, stone, etc.); • Pleasantness of plants (tactile characteristics).

Figure 11. Neighbourhood of the senses categories and variables (part II).

The neighbourhood of the senses is expressed through the following:

- Pathways in which the citizen is protected from air and noise pollution, as well as stimulated through the emission of pleasant olfactory and acoustic stimuli (e.g., nature sounds), obtained through urban morphology, architectural elements, and street furniture products that produce shielding, mitigate noise and olfactory pollution and diffuse pleasant sounds, i.e., support and create soundscaping systems;
- Inclusive wayfinding systems that provide information and guidance towards sensory stimulation paths, access to natural elements, and visual exposure to nature, also raising awareness of noise and air pollution. Designs that carefully consider colour use, incorporate visually appealing products, and utilise materials that are pleasing to the touch and eye, with a preference for natural materials that blend with the surrounding context;
- Spaces and products that promote healthy food culture, providing spaces for urban agriculture (e.g., urban garden equipment) and raising awareness of food waste; spaces promoting care and nurturing practices during all stages of life, including childhood, such as breastfeeding stations.

3.1.5. Green Neighbourhood

It promotes health and well-being through the facilitation of contact between living beings, particularly between humans and nature (Figure 12). By intentionally integrating nature into the built environment, residents are able to experience the restorative effects of these interactions.

Green neighbourhood

General characteristics	Specific characteristics	Variables
Permeability	Connections with the open territory	<ul style="list-style-type: none"> • Projects and/or plans related to the multifunctional agricultural park; • Thematic routes mapped by local hiking associations (e.g. CAI, Francigena); • Presence of high-quality urban architectural design connections; • Continuity of connections; • Presence of accessible, signposted and comprehensible connections between the neighbourhood and existing routes in the surrounding area; • Presence of a wayfinding system.
	Ecological corridors	<ul style="list-style-type: none"> • Projects and/or plans related to the multifunctional agricultural park; • Presence of a River Contract; • Number and location of ecological corridors; • Mutual distance and distance from buildings hosting collective functions; • Distance to the local HoC; • Connections/walkability/reachability (within 500 m)/permeability with local HoC; • Presence of continuous ecological corridors from the neighbourhood to adjacent natural areas; • Presence of an information system.
Greenness	Quality and liveability of public green areas	<ul style="list-style-type: none"> • Presence of a Green Plan; • Adoption of available planning instruments (censuses, regulations and green plans); • Presence of accessible public green areas; • Square metres of green area per inhabitant; • Significant presence of trees and shrubs (tree density N/Ha); • Presence of biodiversity; • Presence and availability of various types of green areas (urban green areas, agricultural areas, protected natural areas); • Presence of various types of accessible green areas; • Presence of high-quality urban architectural design spaces; • Mutual distance and distance from buildings hosting collective functions; • Distance to the local HoC; • Connections/walkability/reachability (within 500 m)/permeability with local HoC; • Level of pleasantness including materials and colours used; • Level of perceived safety; • Level of environmental comfort; • Flexibility and equipment (including the presence of urban furniture such as benches, tables, equipment for physical activity; and also pet-friendly furniture and areas) of green areas (for different functions-activities/for different users/for different seasons/for different times of the day).
	Connection with other urban green areas	<ul style="list-style-type: none"> • Presence of high-quality urban architectural design connections; • Continuity of connections; • Presence of accessible, signposted, comprehensible connections between the different green spaces within the neighbourhood (Green network within the neighbourhood); • Presence of a wayfinding system.
	Citizen participation in the creation of urban greenery	<ul style="list-style-type: none"> • Participatory process for the Green Plan construction; • Presence of operative and active movements/associations/activities (including spontaneous ones) for the creation of green spaces in the neighbourhood; • Presence of furniture, objects, tools to facilitate and support the activities (including spontaneous ones) of urban green care.
	Access to riverbanks	<ul style="list-style-type: none"> • Actions aimed at riverbank management and care as part of the River Contract Action Plan; • Number of accesses; • Presence of high-quality urban architectural design accesses; • Presence of universally accessible accesses; • Mutual distance and distance from buildings hosting collective functions; • Distance to the local HoC; • Connections/walkability/reachability (within 500 m)/permeability with local HoC; • Presence of signalled and comprehensible "accessible" accesses to the river bank; • Presence of a wayfinding system; • Presence of furniture for stopping and using the space (e.g. drinking fountains).
Circularity	Citizen participation in the knowledge and management of urban nature	<ul style="list-style-type: none"> • Presence of associations, active communities (etc.) that promote/manage green spaces in the neighbourhood; • Presence of tangible information systems (e.g. totems).
	Promotion of circular economy	<ul style="list-style-type: none"> • Integrated policies; • Promotion of re-use (including information campaigns); • Actions towards waste reduction; • Presence of tangible information systems (e.g. totems); • Presence of furnishings for the collection of secondary raw materials; • Presence of furniture that favours and promotes separate waste with collection systems accessible to different types of users (e.g. tourists, occasional passers-by); • Presence of innovative/attractive/communicative systems for separate waste collection and to promote virtuous behaviour in terms of waste/recycling/reuse.

Figure 12. Green neighbourhood categories and variables.

The green neighbourhood is expressed through the following:

- Connections with open territory and ecological corridors; related wayfinding systems to orient and inform citizens about the presence and use of these aspects;
- Public green areas with spaces, paths and furnishing products that encourage outdoor activities (such as sport, physical activity, socialising, study, work); the space is furnished with products that integrate into the natural system with as little impact as possible and through the use of materials and shapes that are as natural as possible. Inclusive wayfinding systems inform and guide citizens towards contact with urban nature and green areas, as well as highlighting and enabling access to riverbanks;
- Street furniture systems, which are modular and can be equipped with plants and vegetation, to encourage citizen participation in the creation of urban greenery;
- Systems (including information and wayfinding) to support separate collection and bottom-up actions of circular economy (e.g., collection of used clothes, used and still usable products, recycling of reusable raw materials).

3.1.6. Smart Neighbourhood

It is capable of harnessing contemporary technologies and knowledge to create a direct, informative, and self-generating contact with its residents (Figure 13). This approach is data-based and human-centred, with the aim of improving people's understanding of elements relevant to health promotion. The built environment utilises cutting-edge technologies to interact nimbly with the citizen, tailoring its interactions and services to the diverse needs and preferences of its residents.

Smart neighbourhood

General characteristics	Specific characteristics	Variables
Receptivity	Non-invasive and transparent systems for the collection and monitoring of data (including those relevant to health, and data on mobility and walkability levels) and the expression of citizens' feedback and opinions	<ul style="list-style-type: none"> • Presence of safe, universally accessible, flexible and recognisable spaces and furniture dedicated to data collection and expression of feedback, included in surrounding areas of / within local HoC; • Mutual distance and distance from buildings hosting collective functions; • Presence of an information and wayfinding system.
Interactivity	Furnishings for immediate interaction with neighbourhood services (including personal assistance services and security)	<ul style="list-style-type: none"> • Presence of safe, universally accessible, flexible and recognisable spaces and furnishings (touchpoints) dedicated to immediate interaction with the services of the neighbourhood, included in surrounding areas of / within local HoC; • Mutual distance and distance from buildings hosting collective functions; • Presence of an information and wayfinding system.
	Accessories for the collection and management of energy resources	<ul style="list-style-type: none"> • Presence of spaces equipped with furniture and accessories that harness renewable energy; • Presence of spaces in surrounding areas of / within local HoC that collect and manage renewable energy; • Presence of an information and wayfinding system.
	Multi-option, multi-channel interactive wayfinding systems	<ul style="list-style-type: none"> • Presence of spaces provided with interactive and accessible wayfinding systems; • Presence of spaces in surrounding areas of / within local HoC provided with interactive and accessible wayfinding systems; • Presence of a relevant information system; • Presence of an information and wayfinding system.
Communicability	Spaces and systems for communication, information and citizen awareness	<ul style="list-style-type: none"> • Presence of spaces provided with systems and furniture for communication, information and awareness-raising for citizens; • Presence of spaces in surrounding areas of / within local HoC provided with systems and furniture for communication, information and awareness-raising for citizens; • Level of accessibility and ease of language; • Presence of a multi-language, multi-culture, multi-sensory system.

Figure 13. Smart neighbourhood categories and variables.

The smart neighbourhood is expressed through the following:

- Presence of inclusive information systems, i.e., connected, interactive, and attractive furniture products in terms of setting up information spots (e.g., interactive kiosks) mainly aimed at disseminating and receiving information for more efficient citizen services;
- Furniture items designed to utilise renewable energy sources by encouraging direct engagement with citizens, such as charging stations for small devices and interactive information points that are energy self-sufficient;

- Furniture products and information systems that raise awareness on issues such as the promotion of healthy lifestyles also through creative operations (e.g., guerrilla communication).

3.1.7. Neighbourhood of the 1500 m

It promotes the use of urban space based on the principle of proximity (Figures 14 and 15). This approach encourages healthy activities and the accessibility of essential services within the local sphere. The proximity of these elements is measured and evaluated according to their reachability through slow modes of transportation, such as walking or cycling, within a radius of 1500 m.

Neighbourhood of the 1500 m (part I)

General characteristics	Specific characteristics	Variables
Functional mixité	Proximity to services and activities	<ul style="list-style-type: none"> • Presence of public policies for the promotion of mixité through specific strategies; • Distance of main services and activities to the local HoC; • Connections/walkability/reachability (within 500 m)/permeability with local HoC; • Presence of an information and wayfinding system.
	Diversification of times for the use of spaces	<ul style="list-style-type: none"> • Presence of activities taking place throughout the day (diversified hours of use); • Presence of flexible street furniture .
Walkability	Pedestrian paths and areas	<ul style="list-style-type: none"> • Presence of footpaths and pedestrian areas within the neighbourhood; • Presence of pedestrian routes to the local HoC; • Presence of safe, universally accessible, flexible and recognisable pet-friendly areas; • Presence of footpaths and shaded pedestrian areas; • Presence of attractive and accessible furnishing elements; • Presence of a multi-sensory wayfinding and information system encouraging walking; • Presence and visibility of information to signal crossings, routes and pedestrian areas (quality of wayfinding system, active paving).
	Presence of spaces and furnishings for refreshment, accessories to support walkability	<ul style="list-style-type: none"> • Presence of shading systems on footpaths and pedestrian areas; • Presence of rest/relaxing areas equipped with drinking fountains, seating, tables, etc; • Mutual distance and distance from buildings hosting collective functions; • Distance to the local HoC; • Connections/walkability/reachability (within 500 m)/permeability with local HoC; • Level of pleasantness including materials and colours used; • Level of perceived safety; • Level of environmental comfort; • Level of visibility and recognisability of these areas; • Presence of attractive and accessible furnishing elements; • Presence of an information and wayfinding system.
	Active flooring	<ul style="list-style-type: none"> • Presence of areas with active flooring; • Mutual distance and distance from buildings hosting collective functions; • Presence of an effective connection between these areas; • Amount of senses involved (e.g. visual, auditory, tactile); • Level of integration with the context and perceived pleasantness; • Level of usability with respect to an integrated and connected wayfinding system.
	Presence of public hygiene areas (toilets)	<ul style="list-style-type: none"> • Presence of public hygiene areas in the neighbourhood; • Mutual distance and distance from buildings hosting collective functions; • Distance to the local HoC; • Connections/walkability/reachability (within 500 m)/permeability with local HoC; • Level of safety and cleanliness; • Quality of the wayfinding system; • Presence of a multi-sensory wayfinding and information system that encourages walking.

Figure 14. Neighbourhood of the 1500 m categories and variables (part I).

The neighbourhood of the 1500 m is expressed through the following:

- Enhancing sustainable transportation (e.g., soft mobility) by implementing support systems for public mobility and interconnectivity, optimising pedestrian pathways for walkability. This includes information services, interactive tools for ticketing, and assistance features, along with designing spaces and connecting routes to improve overall mobility;
- Furniture products that promote the use of active mobility means and modes such as safe and connected bicycle and light vehicle (e.g., scooters) parking spaces, bicycle repair stations, and information points and wayfinding systems dedicated specifically to active mobility;
- Spaces and furniture products that encourage the use of active transportation methods, such as safe and interconnected parking spaces for bicycles and light vehicles (e.g.,

scooters), bicycle repair stations, and information points and wayfinding systems specifically designed for active mobility;

- Spaces and systems to support the use of mobility sharing also through information products, user-friendly, well-marked, connected, and interactive parking spaces;
- Spaces furnished with products that promote the best conditions for walkability of accessible routes, e.g., through the presence of benches, tables, fountains, and covers;
- Support spaces and systems to improve the safety of crossings and traffic areas;
- Application of close-to-citizen attractions that enhance the walking experience through active interaction; products and spaces furnished with playful recreational solutions to improve waiting and parking in public urban mobility (e.g., through shelters and waiting or intermodal exchange spaces).

Neighbourhood of the 1500 m (part II)

General characteristics	Specific characteristics	Variables
Cyclability	Presence of cycle paths	<ul style="list-style-type: none"> • Presence of a Urban Sustainable Mobility Plan; • Presence of safe cycle paths; • Connectedness and continuity of cycle paths within the neighbourhood; • Continuity and coverage of cycle paths to buildings hosting collective functions; • Connections with local HoC; • Presence of an information and wayfinding system.
	Presence of safe, protected and connected car parks and garages	<ul style="list-style-type: none"> • Presence of secure park areas and garages without risk of damage/theft; • Presence of secure park areas and garages without risk of damage/theft in surrounding areas of / within local HoC and buildings hosting collective functions; • Quantity and quality of racks and similar supports; • Distribution and frequency of parking spaces, racks and hubs; • Quantity and quality of facilitators as hubs for bicycle storage and protection; • Safe intersections between bicycle and pedestrian flows at entrances to buildings with public functions.
	Presence of spaces/services to support light mobility	<ul style="list-style-type: none"> • Presence of spaces and furniture supporting light mobility (e.g. bike maintenance stations, charging stations for electric scooters, etc.); • Presence of spaces and furniture supporting light mobility (e.g. bicycle maintenance stations, electric scooter charging stations, etc.) in surrounding areas of / within local HoC and buildings hosting collective functions; • Visibility and frequency/distribution in space; • Cost.
Public transport	Intermodality	<ul style="list-style-type: none"> • Presence of a Sustainable Urban Mobility Plan; • Presence of areas intended for the purchase of tickets for public transport; • Presence of areas destined for the purchase of tickets for public transport in surrounding areas of / within local HoC and buildings hosting collective functions; • Distance between interchanges; • Presence of a tangible physical information and wayfinding system; • Costs.
	Continuity of the routes about the buildings that host collective functions	<ul style="list-style-type: none"> • Presence of a public transport network (including sharing options) able to connect buildings with public/collective functions; • Presence of a wayfinding system.
	Proximity of welcoming stops to buildings that host collective functions	<ul style="list-style-type: none"> • Presence of comfortable stops close to buildings hosting public/collective functions; • Presence of comfortable stops near the local HoC; • Presence of street furniture for waiting (number, type, durability); • Presence of shading (type, material); • Presence of water fountains; • Presence of an information and wayfinding system.
	Information system for consulting timetables, stops, news, emergencies	<ul style="list-style-type: none"> • Presence of areas designed for easy and immediate access to information on the public transport network; • Presence of areas and furnishing products intended for the easy and immediate access to information on public transport network in surrounding areas of / within local HoC and buildings hosting collective functions; • Presence of a multilingual, multi-sensory, energy-independent information and wayfinding system; • Costs and number of options accepted for payment.
Shareability	Multi-function stations and parking areas, safe, covered and protected for shared mobility (including micro, soft-mobility, and car-sharing, as well as collective use of a fleet of vehicles, rented temporarily)	<ul style="list-style-type: none"> • Presence of a Urban Sustainable Mobility Plan; • Presence of spaces and products used as sharing stations (scooters, bicycles, cars, etc.); • Presence of spaces used as sharing stations in surrounding areas of / within local HoC and buildings hosting collective functions; • Presence of a multilingual, multisense, energy autonomous information and wayfinding system.
	Information and promotion system for sharing mobility through integrated street furniture	<ul style="list-style-type: none"> • Presence of areas dedicated to the information system and the promotion of mobility sharing services; • Presence of areas dedicated to the information system and the promotion of mobility sharing services in surrounding areas of / within local HoC and buildings hosting collective functions; • Presence of support products for persuasive campaigns; • Presence of a multi-language, multi-sensory, pleasant and accessible information system; • Affinity with neighbourhood branding.

Figure 15. Neighbourhood of the 1500 m categories and variables (part II).

3.2. Characteristics and Variables of a Healthy and Inclusive Neighbourhood

Each of the seven themes is defined by a set of general characteristics that capture the multifaceted nature of healthy and inclusive neighbourhoods. For each of the general characteristics identified, the research has also defined a corresponding set of specific characteristics and subsequent variables. The HNH framework structure is thus composed of themes ($n = 7$), general characteristics ($n = 25$), specific characteristics ($n = 67$), and related variables. The components of this assessment framework can be applied to the analysis of the built environment, allowing for a comprehensive evaluation of the neighbourhood's performance across the various themes, or they can be used as driving factors and variables to achieve a high-quality neighbourhood design.

4. Discussion

4.1. Contribution to Current Planning Models and Resources for Urban Health

The HNH framework, like earlier resources focused on planning healthy environments, aims to make a contribution by addressing key inquiries such as defining a healthy city [19], determining metrics for a healthy urban planning [31,106], and devising strategies to raise public awareness about urban health [107,108].

Although there is an extensive array of resources available for creating urban spaces with a focus on health from an urban planning perspective [99], only a small fraction of these resources specifically addresses the neighbourhood scale [13–17], out of which none provide guidance for lower design scales (e.g., product design for urban furniture). The HNH Framework aims to fill this gap by offering a unique and modest contribution to the development of procedures for identifying strengths and areas for improvement in the design of urban neighbourhoods, thereby addressing the need for more detailed and nuanced guidance at the local level.

Key aspects of the HNH Framework that promote advancement in this context are as follows:

1. **Multidisciplinary Approach:** HNH framework adopts an interdisciplinary perspective, drawing insights from various academic disciplines to provide a comprehensive understanding of neighbourhood dynamics;
2. **Multiscalar Perspective:** HNH framework operates at multiple scales, examining neighbourhood characteristics at both the local and broader societal levels;
3. **Thematic Organisation:** The neighbourhood characteristics are organised into seven overarching themes, allowing for a structured and coherent analysis of the various factors that shape a neighbourhood's healthy built environment;
4. **Synthesis and Systematization:** HNH framework synthesises and systematises the complex web of neighbourhood characteristics, providing a clear and structured way to analyse and understand these dynamics;
5. **Spatialization and Design Focus:** The HNH framework establishes spatial variables essential for comprehending how to translate the analysis from checklists into design insights for transforming the built environment of neighbourhoods.

By adopting this multidisciplinary and multiscalar approach, the HNH conceptual framework has made significant strides in advancing our understanding of the multifaceted nature of neighbourhoods and the factors that contribute to their overall well-being and sustainability, pursuing the following objectives:

- **Focusing on the neighbourhood scale:** rather than approaching health from a solely individual or broader societal perspective, the HNH framework recognises the crucial role that the neighbourhood built environment design plays in shaping the health and well-being of its residents and in facilitating appropriate access to primary healthcare services (e.g., HoCs);
- **Emphasising the community dimension:** by focusing on the community dimension, the research acknowledges the importance of social connections, collective engagement, and the shared experiences of residents in promoting overall health and inclusivity;

- Promoting design that is sensitive to differences and not biased towards the dominant culture or norm: the HNH framework strives to create environments that are welcoming, supportive, and responsive to the diverse range of individuals and groups that make up a community;
- Recognizing the neighbourhood as a holistic system: the HNH framework views the neighbourhood as a complex, interconnected system, where various factors, such as the built environment, social dynamics, and access to resources, all contribute to the health and well-being of the community.

By positioning the neighbourhood and community as the central focus for addressing health-related concerns, the HNH framework offers a comprehensive and holistic approach to understanding and improving the overall well-being of urban populations. This shift in perspective underscores the importance of considering the local context and the unique characteristics of each community when developing design strategies and interventions aimed at promoting health and inclusivity.

4.2. Contribution to the HNH Research Project Development

To address citizens' needs, structure dialogical activities with stakeholders, and establish design contexts, the HNH framework was utilised as a research tool in both desk and in-the-field activities during the research project's subsequent phases [31]. The outcomes of all activities contributed to enhancing and informing the HNH framework, as shown in the operational model in Figure 16.

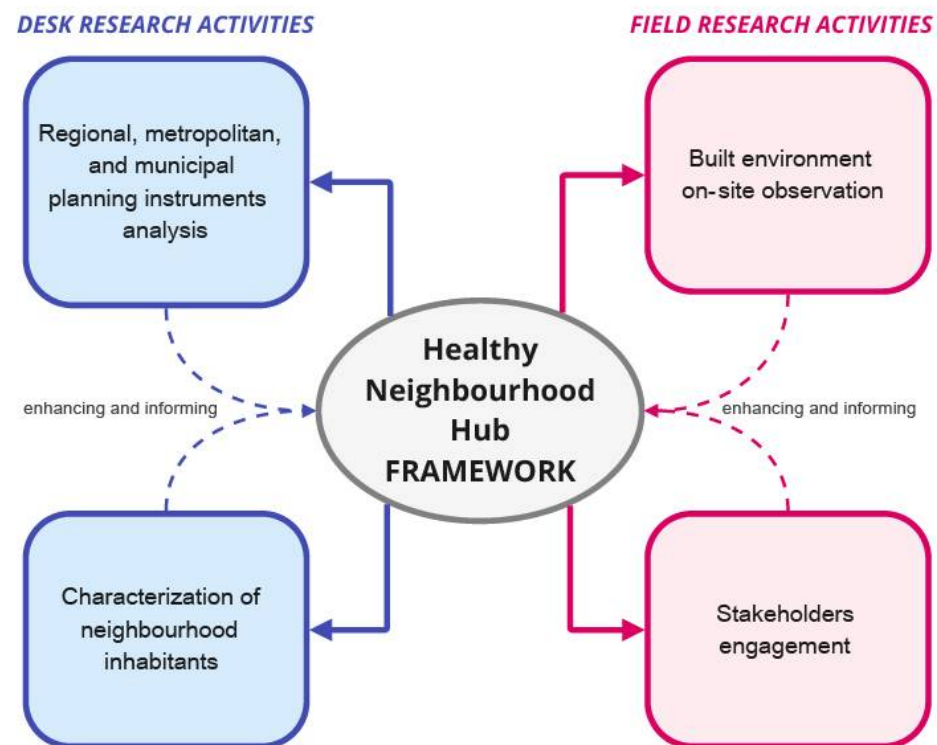


Figure 16. HNH operational model.

Desk activities encompassed the examination of regional, metropolitan, and municipal planning as well as the analysis of neighbourhood inhabitants and their characterization in relation to the HNH framework. In-the-field activities moved on two parallel tracks.

The first field activity involved on-site observation of the built environment of the two selected neighbourhood areas within the city of Florence for cartographic elaboration. An interdisciplinary survey of the area was conducted, using the HNH framework as a guide to identify and observe various elements of the built environment. This was followed by the creation of an open-Source map, which defined and localised areas, spaces, and buildings

that contribute to the seven themes of the HNH. The open-Source map could be divided into seven thematic maps, each corresponding to a HNH framework theme. These maps would highlight the strengths and weaknesses of the neighbourhood area, which will be discussed in future publications. The second field activity focused on the engagement phase, which entailed involving various stakeholders from institutions, Houses of Community (HoCs), associations, and citizens through diverse participatory methods and tools. Utilising the HNH framework as a research instrument, stakeholders participated in semi-structured interviews, healthy labs, and open space labs [109]. Innovative techniques like card sorting were employed to prioritise themes during interviews. The collective outcomes of these activities, along with survey findings, were analysed to create a comprehensive overview of the neighbourhood's strengths, weaknesses, strategies, and insights, aligning these results with the conceptual framework's seven themes.

4.3. The HNH Framework Value in Practical Use

The theoretical framework developed in the HNH research project can serve as a practical valuable reference for analysing and designing public spaces and functions, with the aim of promoting health and inclusivity in the neighbourhood.

For instance, the HNH framework can be used (i) to evaluate the performance of a neighbourhood in terms of health and inclusivity; (ii) to design or renovate a healthy neighbourhood; (iii) to run a collaborative design process with a focus on health promotion; and (iv) to increase public awareness of health concerns.

Municipal administrations can use the seven themes to assess the health of their city's neighbourhoods in terms of the built environment, i.e., public spaces and pathways. By identifying the presence or absence of spatial variables associated with each theme in the urban space, maps can be created to represent the neighbourhood's strengths and weaknesses. By processing these maps, it is possible to create a health map that can be used as a tool to raise awareness about health issues among citizens. Additionally, the HNH framework offers design insights to integrate health-promoting features into the neighbourhood built environment through interconnected actions that link the House of Community with the surrounding environment and network it with the community at both the physical and social levels. The creation of design strategies according to the HNH framework will be discussed in further publications.

The model of the seven themes also serves as a tool to facilitate the participatory process with interested stakeholders (active citizenship, informal groups, third sector organisations, representatives of local government—e.g., neighbourhood councillors) to define priority themes for the design of redevelopment interventions; local residents can use the HNH framework to pinpoint priority areas for action that offer the greatest potential to enhance the health of their communities.

In conclusion, the HNH framework can aid city institutions responsible for health and care promotion by providing crucial guidance on emphasising health-promoting factors to encourage healthy lifestyles, behaviours, and a health-conscious approach to urban space use.

4.4. Limits of the Research

The HNH research project started in January 2022, and the research phase related to the definition of the HNH framework was conducted in the first 6 months. This timeline influenced the referenced timing for the citations used in the work. Moreover, none of the publications included in Tables 1–3 directly explore the correlation between pandemics and healthy neighbourhoods or cities concerning the impacts of COVID-19. It is worth noting that, for instance, the Italian Ministry of Health's document titled "Guidance Document for Urban Planning with a Focus on Public Health" was primarily established before the COVID-19 health emergency. Despite this timing, the document asserts that its validity is not diminished; rather, it underscores its relevance.

Another limitation of the research could be the fact that the HNH project is an action-research initiative focused on developing a tool tailored to the local context of Florence. Given this objective, the need for international compliance of the framework was not considered as a crucial factor in selecting the research methods.

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Institutional Review Board Statement: The study was conducted in accordance with the Declaration of Helsinki.

Data Availability Statement: The data presented in this study are available in the article itself.

Conflicts of Interest: The authors declare no conflicts of interest.

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