Smart, Close, and Happy City: A Global Index for Measuring Urban Well-Being. The Case Study of the San Benedetto Neighbourhood, Cagliari (Italy)

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Abstract. This study explores the relationship between proximity and urban well-being, by combining qualitative and quantitative analyses of emotional perceptions of happiness at the neighbourhood level with an investigation of physical factors that measure spaces accessibility, services functionality, and citizens' social perceptions. The main goal is to enhance ongoing research on the Smart, Close and Happy City to create a "Global Index for Measuring Urban Well-Being", beginning with the human-scale "15-minute city" model. This research emphasises the need for an interdisciplinary approach that addresses the methodological gap present in traditional literature, which tends to separate the spatial analysis of urban infrastructures from the study of social dynamics. The methodology used for the overall assessment of neighbourhood proximity and urban well-being combines objective data with the subjective perceptions of users of the urban space regarding proximity, safety, comfort, well-being and spatial appreciation. The application of the adopted method on the San Benedetto (CA) neighbourhood highlights the importance of connecting the physical and emotional dimensions in evaluating the design effectiveness of a human-scale urban context.

Keywords: Happy City · Smart City · Healthy City · Accessibility · Walkability · Emotions · Proximity · Urban Happiness · Measuring Happiness · Urban Well-Being · Pedestrianisation · urban planning · 15-minute city · Cagliari

1 Introduction

The prevailing model of the "smart city", mostly centred on technological innovation and energy efficiency, risks of intensifying inequities while overlooking human well-being and the community dimension. In contrast to this vision, the importance of fundamental principles such as sustainability, circularity and proximity re-emerges, capable of

This paper is the result of the joint work of the authors. 'Abstract', 'San Benedetto Neighbourhood in Cagliari (Italy)' and 'Results' were written jointly by the authors. AT and CG wrote 'City of Proximity'. CP and CG wrote the 'Introduction'. CG wrote 'Methodological approach' with subparagraphs, 'Global Index for Measuring Urban Well-Being'. and 'Discussion and Conclusions'. CG coordinated and supervised the paper.

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O. Gervasi et al. (Eds.): ICCSA 2025 Workshops, LNCS 15896, pp. 69–87, 2026.
https://doi.org/10.1007/978-3-031-97654-4_5

orienting urban planning towards a more inclusive and resilient model. This article continues ongoing research on the smart and happy city, which investigates the complex relationship between the urban environment and emotional well-being [1]. In particular, this work focuses on the role of proximity, a concept that extends beyond physical proximity to services, including the social, emotional, and relational dimensions of the city experience.

The concept of proximity considers the 15-min city model proposed by Carlos Moreno [2], which has developed from the 1923 idea of the neighbourhood unit [3, 4]. It represents an attempt to actualise the aforementioned concepts, fostering the development of self-sustaining communities where inhabitants may fulfil their daily requirements efficiently. However, Moreno is not the only theoretician who has contributed to outlining the concept of the city on a human scale [4]; renowned personalities such as Ildefonso Cerdà, Jane Jacobs, Jan Gehl, Christopher Alexander, Léon Krier, Jeff Speck, and Salvador Rueda have historically and contemporaneously underscored the significance of designing urban environments that prioritise human and environmental well-being.

The key research question examines the impact of proximity on social cohesion and the sense of belonging within a neighbourhood: does proximity to public spaces, essential services, cultural activities, and shared meeting places enhance social interactions, fortify neighbourhood connections, and foster a collective identity? Conversely, can urban fragmentation, not sufficient public places, and distance from services contribute to resident isolation, undermine the social fabric, and heighten feelings of alienation? In this perspective, this paper intends to validate a global index for measuring urban well-being that measures the impact of proximity to services, as well the urban happiness perception, while also considering its effect on social cohesiveness. The San Benedetto neighbourhood in Cagliari will serve as a case study for this analysis. The authors aim to provide useful tools for planning more human, inclusive and resilient cities, where proximity becomes a key factor for individual and collective well-being.

This article therefore aims to demonstrate how proximity to quality services and places positively influences perceptions of urban well-being, emphasising the role of human-scale planning in enhancing psychological well-being and fostering the sense of belonging of citizens. To accomplish this objective, this paper after this introduction, presents Sect. 2 in which is analysed the Proximity City notion. Section 3 delineates a methodological approach for evaluating and quantifying the urban proximity. Section 4 tests the applicability of a new index to quantitatively assess urban proximity; this is followed by a qualitative analysis that investigates the subjective perception of citizens (Sect. 5). Followed by the results applied to the case study (Sects. 6 and 7), and the definition of the global index for measuring urban well-being (Sect. 8). Section 9 discusses the future prospects of the research.

2 City of Proximity

The concept of urban proximity, central to the current debate on urban development, encourages to critically reassess relationships between a new smartness of a city and the urban landscape. Proximity extends beyond the physical dimension, including the depth

of social connections, accessibility to services, and the vitality of public areas, thereby demonstrating remarkable complexity. While not an explicit goal of the 2030 Agenda, proximity is a fundamental notion. It enhances health and well-being (Goal 3) via accessible health services and "walkability," fosters sustainable and inclusive cities (Goal 11) by mitigating pollution and promoting social cohesion and diminishes disparities (Goal 10) by ensuring equitable opportunities. In accordance with the Agenda, proximity guarantees dignity for everyone and fosters resilient communities. Jane Jacobs examined the intangible element of proximity in her book "The Death and Life of Great American Cities" [5]. Her understanding of proximity is inherently connected to the notion of diversity, suggesting a synthesis of functions and a dynamic network of interactions that particularly flourish along lively and pedestrian-friendly streets. For Jacobs, the possibility of moving on foot is an essential factor in fostering connections and facilitating spontaneous observation. According to Jeff Speck [6], proximity is intricately connected to walkability, shaped and governed by the urban fabric, which must be structured to ensure the utility of walking, safety concerning environmental and physical elements, and comfort through a harmonious combination of buildings and landscape. The author also presents information about economic savings and advantages pertaining to health and environmental sustainability directly associated with the concepts of proximity.

Furthermore, the architect and urban planner Jan Gehl, in "Life in the City" [7] articulates his concept of a human-scale city as the most effective and sustainable settlement model, emphasising the connection between urban life and architectural structures. The author examines the challenges urban planning must confront to enhance the city's liveability, citizen well-being and sociability, and to foster walkability. The notion of the 15-minute City, advocated by Carlos Moreno, effectively reemphasises the importance of proximity, which is essential for urban well-being. Nonetheless, Saverio Mecca underscores the danger of this term devolving into a simple and idealised conception of self-sufficient neighbourhoods [8]. While the 15-minute City offers the promise of enhanced accessibility to essential services, it is imperative to acknowledge the intricate nature of urban environments, requiring meticulous planning across several scales and efficient coordination across various governance levels. Salvador Rueda's "superblock" [9] concept provides a fundamental unit for the urban environment, focused on active and public mobility, as well as diversity and proximity, including both physical access to services and immaterial aspects related to the satisfaction of human needs. The organisation of urban spaces based on the idea of proximity is a crucial aspect in establishing a more efficient, ecological, and accessible transportation system for everyone. Combining services and activities in limited spaces promotes the use of sustainable transportation methods, enhances public transport efficiency, reduces private automobile use, and optimises urban logistics management. An urban planning approach that prioritises proximity is essential for developing human-scale cities that address community needs while mitigating pollution, transportation congestion, and enhancing both physical and mental well-being.

A city that adopts these values transforms into a more equal, inclusive, sustainable, healthy, and resilient environment. A city where proximity includes not just distance but also the quality of life. Proximity encompasses not just physical proximity but also an emotional connection derived from the diversity and complexity of urban environments. This subjective connection to diversity is essential for directing emotional experiences, as it may affect the emotional state, experience, and behaviour of individuals inside a space. Positive experiences in stimulating situations foster resilience, sustainability, social responsibility, and quality of life [10]. In the age of digitalisation and globalisation, both physical and emotional proximity have significantly diminished, resulting in a contemporary type of alienation. To mitigate this tendency, Franco Arminio [8, p. 194] advocates for a return to proximity via "walking", a slow and contemplative reflective practice that facilitates reconnection with the land and its inhabitants. This method fosters enhanced awareness and appreciation of places, rediscovering their uniqueness and beauty.

3 Methodological Approach

The method's definition focusses on estimating a neighbourhood's intervention potential based on its proximity, which may be measured qualitatively and quantitatively. The success of an approach that integrates both quantitative and qualitative research is extensively shown in several reputable academic publications [11–16].

In Italy and Europe, recent years have seen the establishment of many indices for assessing proximity, enabling the qualitative and quantitative identification of significant concerns and potential solutions to enhance proximity connections. The "15 Minute City Index" [17] is recognised as an urban planning measurement aimed at implementing the "15-minute city" model; this index comprises forty-nine indicators across thirteen service categories linked to population density and land use (Environment, Safety, Health, Food, Education, Entertainment, Public offices, Soft mobility, Fast mobility, Economy, Housing, Sports, and Culture).

Other indices identified in the literature include (i) the Inclusive Accessibility by Proximity Index (IAPI) [18], which assesses pedestrian and cyclist accessibility by evaluating the quality of spaces and routes, as well as citizen perceptions through tests and questionnaires; (ii) the NExt proXimity Index (NEXI) [19], which examines accessibility to services within a fifteen-minute walking distance; (iii) the High Quality of Social Life (HQSL) [20], which analyses social life quality through six fundamental functions (Living, Working, Supplying, Caring, Learning, Enjoying) based on interviews and data collection; and the Urban Diversity Index, which quantifies the diversity of urban services and activities grounded in biodiversity theory.

Although using varied methodologies, these indicators seek to qualitatively and quantitatively evaluate urban proximity. A prominent indication of proximity is the accessibility of an urban agglomeration, defined as the capacity and easy access of reaching a location, which is directly affected by its spatial arrangement. In literature, this metric is often assessed using the Space Syntax approach [21], which examines the city as a network of open spaces and how geometric and topological attributes influence its accessibility, hence affecting social, economic, and environmental factors. However, the literature lacks an approach that links indicators measuring proximity with urban happiness.

As a result, the methodology was organised into the following phases: (1) general framework of all environmental variables and contributions that influence human-environment interactions and definition of the indices that contribute to the evaluation of the "neighbourhood proximity index"; (2) identification of indicators and sub-indicators at the neighbourhood scale related to the respective indices; (3) research of methodologies and typical urban planning tools and selection of software (QGIS, DepthmapX) and methods of calculating the sub-indicators; (4) exclusion of non-applicable sub-indicators, whose evaluation procedure requires the provision of devices and software not directly available; (5) definition of a qualitative analysis to support and validate the results of the calculation process of the proximity index, which can also provide an overview of the needs, desires and critical issues perceived by users of the place; (6) comparison between the results of the quantitative and qualitative analysis; (7) definition of the "global index for measuring urban well-being", which systematises the "emotional perception index of the degree of happiness" [1] and the "neighbourhood proximity index". The next paragraph shows the definition of the indices that contribute to the evaluation of the "neighbourhood proximity index", seeing in detail how the indicators and sub-indicators were formulated.

4 Neighbourhood Proximity Index

The "Neighborhood Proximity" Index is expressed in formula 1 and incorporates the synthetic indices of "Accessibility" (I_A), "Social Perception" (I_{SP}), and "Functionality" (I_F), which are defined based on activities considered essential for a satisfying neighbourhood experience: walking, cycling, easily accessing services, fostering social connections, and utilising pleasant and functional spaces.

$$Inp = \frac{(Ia + Isp + If)}{3} \tag{1}$$

4.1 Accessibility Index

Accessibility refers to the ease of accessing locations and the degree to which land use and transport systems facilitate this via a combination of travel modes, particularly emphasising the concepts of walkability and cycling. The latter are examined by using radii of 400 and 700 m, respectively, from the central node for the computation of the indicators. The selection of these numbers is justified by the observation that, in macroscale situations, the metric radius used for for space syntax analysis often ranges from 400 to 800 m [22] (Table 1).

Table 1. Definition of the Index of "Accessibility".

Index	Indicators	Attributes	Sub-Indicators	Calculation Methods
Accessibility	a) Availability of services	Local Services [23]	Normalised distance from centroid space to secondary functions r = 700 m r = 400 m	$Dist_{norm} = \left(1 - \frac{cost-50}{Du-50}\right)$
	b) Availability of public transport	Nodes of the local public transport network [25]	Normalised distance from centroid space to nodes of LPT networks r = 700 m r = 400 m	$Dist_{\text{norm}_LPT} = \text{MAX}\left[1 - \frac{Di-50}{Du-50}\right]$
	c) Availability of green areas and areas used as parks	Configuration of the urban system [25]	Normalised distance from centroid space to nodes r = 700 m r = 400 m	$Dist_{norm} = \left(1 - \frac{cost-50}{Du-50}\right)$
	d) Potential as a destination	Urban system configuration [23–26]	Normalised angular integration r = 700 m r = 400 m	$NAIN = \frac{NC^{1.2}}{TD}$
	e) Potential as a transit space	Configuration of the urban system [23, 27, 28]	Normalised angular choice r = 700 m r = 400 m	$NACH = \frac{\log CH+1}{\log TD+3}$

4.2 Social Perception Index

The social perception of space is linked to the notion that human behaviours are influenced to differing degrees by perception. Space serves as a collection of locations, defined by individuals through utilisation, social perception, or a combination of both, encompassing various interpersonal relationships—whether positive or negative, characterised by meets or conflicts, emotionally charged or merely coexistent [29] (Table 2).

Table 2. Definition of the Index of "Social Perception".

Index	Indicators	Attributes	Sub-indicators	Calculation methods
Social perception	a) Vitality	Perceived liveliness [5]	Amenities	Number of Feature Types Amenities = 4 Score 1 Amenities = 3 Score 0.6 Amenities = 2 Score 0.3 Amenities = 1 Score 0.1
			Presence of urban points of attraction	Yes = 1 No = 0.1

(*continued*)

Table 2. (*continued*)

Index	Indicators	Attributes	Sub-indicators	Calculation methods
	b) Meeting acquaintances (spatial proximity)	Probability of frequent encounters [23–26]	Normalised angular integration r = 200 m	$NAIN = \frac{NC^{1.2}}{TD}$
	c) Knowing (situational proximity)	Casual Meet-Up Occasions [23]	Normalised distance from centroid space to services of urban scale	Distance from primary uses of urban scale R100 = 1 R200 = 0.8 R300 = 0.6 R700 = 0.3 R > 700 = 0.1

4.3 Functionality Index

The functionality is assessed concerning the practicality of pedestrian and cycling pathways and the availability of high-quality street furniture, designed to provide inhabitants solutions that enhance everyday life by making it more enjoyable and practical (Table 3).

Table 3. Definition of the Index of "Functionality".

Index	Indicators	Attributes	Sub-indicators	Calculation methods
Functionality	a) Movement	Usability of pedestrian – cycle – vehicular surfaces [23]	Cross-section	$L = \frac{P0\left(P^2 - 16 * A\right)^{0.5}}{4}$
			Slope	$P = \left(\frac{\text{zrange}}{\text{\$length}}\right)$
			Obstacles	No = 1 Rare = 0.5 Some = 0.3 Numerous = 0.1
			Condition	Optimal = 1 Good = 0.5 Inadequate = 0.3 Deficient = 0.1
	b) Comfort	Usability of the benches [7, 23, 30, 31]	Density	Yes = 1 No = 0.1
			Position	Front of buildings = 1 Marginals = 0.6 Isolated = 0.1
			View	Figurable space and diversity of uses = 1 Figurable space or diversity of uses = 0.6 Generic space = 0.1

(*continued*)

Table 3. (*continued*)

Index	Indicators	Attributes	Sub-indicators	Calculation methods
			Seating comfort	Supports = 1 Backrest = 0.6 Seat = 0.1
		Usability of toilets [23]	Presence	Yes = 1 No = 0.1
			Distance	Distance $d \leq 50$ m = 1 50 m $< d \leq 100$ m = 0.7 100 m $< d \leq 200$ m = 0.5 200 m $< d \leq 400$ m = 0.3 $d > 400$ m = 0.1
			Condition	Good = 1 Adequate = 0.5 Deficient = 0.1
			Accessibility	Yes = 1 No = 0.1
		Usability of services for users with disabilities	Presence	Yes = 1 No = 0.1
			Condition	Good = 1 Adequate = 0.6 Deficient = 0.1
	c) Potential as a parking space	Usability of parking spaces [7, 30–32]	Presence of punctual and defined elements along the border, elements of mediation between internal and external space	Yes = 1 No = 0.1
			Presence of spaces that can potentially be converted through street experiments	Yes = 1 No = 0.1

5 Qualitative Analysis

To confirm the findings derived from the software's graphic processing, a qualitative evaluation questionnaire was developed among residents, visitors, or passersby within the neighbourhood. The well acknowledged saturation principle for sampling was used [11–16]. The questionnaire titled "Perceived Happiness, Accessibility, and Safety in the Neighbourhood," consisting of 32 questions organised into sections for simplicity of comparison with quantitative analysis findings, was developed and distributed. The categories addressed 1) accessibility to local services and transportation; 2) perceived safety; 3) comfort, aesthetic appeal, sociability, and overall satisfaction. The authors concentrate on 7 of the 32 questions that mainly examine factors of perceived proximity. These 7 questions are:

(I) How do you evaluate the provision of neighbourhood services? (Please give a rating from 1 Insufficient to 5 Excellent).
(II) Do you believe that getting to the services on foot is: (Please provide a rating from 1 to 5; 1 = Difficult; 5 = Simple). Briefly state the reason: ____.
(III) Within the neighbourhood you move more: • by car • by public transport • on foot or by bicycle. Briefly state the reason____.
(IV) If you move more on foot or by bicycle, how do you evaluate the ease of movement? (Please provide a rating from 1 to 5; 1 = Very difficult; 5 = Very easy) Briefly state the reason: ____.
(V) Do you think public transport is efficient for getting to or from the neighbourhood and getting around it? (Please provide a rating from 1 to 5; 1 = Not very efficient; 5 = Very efficient). Why? ____.
(VI) Do you think that the number of parking spaces for cars in the neighbourhood is sufficient? (Please give a rating from 1 to 5; 1 = Not at all; 5 = Excellent)
(VII) Do you think that the presence of public green spaces is sufficient? (Please provide a rating from 1 to 5; 1 = Insufficient; 5 = More than sufficient).

The next section presents the case study under examination on which the qualitative-quantitative method was defined and validated.

6 San Benedetto Neighbourhood in Cagliari (Italy)

The San Benedetto neighbourhood, in Cagliari (Sardinia), is a dynamic and densely populated neighbourhood. In 2022, the population was 7,921 residents, constituting nearly 5% of the city's total, with a density of 18,929 inhabitants per square kilometre. This urban configuration makes it an advantageous research location for examining walkability, accessibility, and resident well-being. Moreover, San Benedetto is distinguished for its variety of services. The attractiveness of the neighbourhood is further accentuated by the pedestrian flow generated by commercial activities, the historical value of some sites and the presence of two important urban landmarks: the Civic Market and the subway station.

Figure 1 shows the San Benedetto neighbourhood, in Cagliari (Sardinia).

The authors' subsequent section organises the data, emphasising the need of integrating quantitative and qualitative studies to get a comprehensive knowledge of the neighbourhood's urban proximity and its advantages.

7 Results

The quantitative analysis performed using QGIS, considers the central square of the neighbourhood as the reference node for the evaluation of distances and it led to the following results. The neighbourhood's average accessibility, assessed from the perspective of foot users, generated an inadequate evaluation mostly associated with the availability of amenities, urban transportation, and green spaces, as well as park areas situated at a considerable distance from the central hub (Fig. 2a). Concerning cycling users, a good level of accessibility emerges due to mostly positive opinions referring to the various sub-indicators (Fig. 2b).

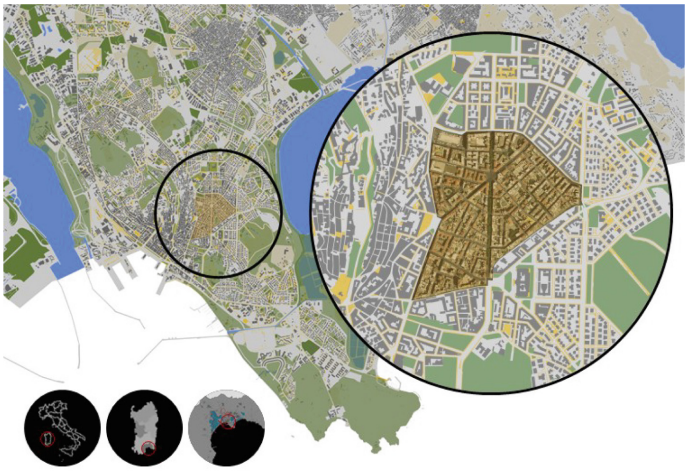

Fig. 1. San Benedetto Neighbourhood in Cagliari, Italy (authors' elaboration).

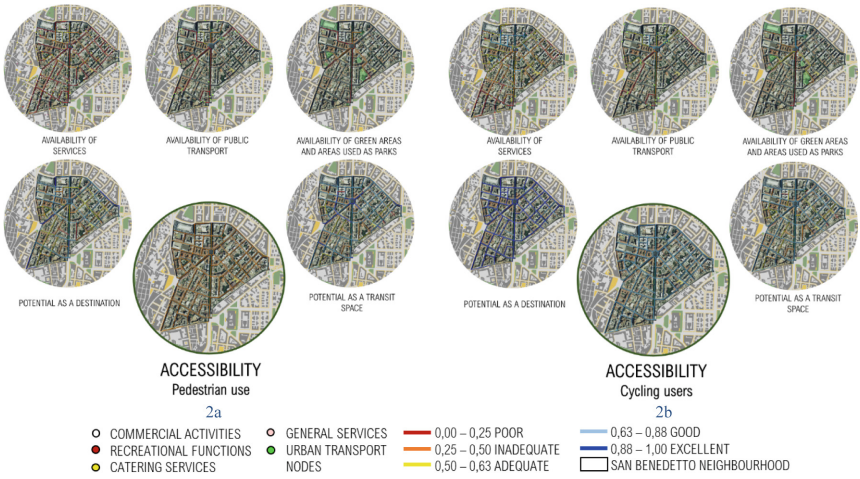

Fig. 2. Accessibility analyses (2.a Pedestrian use; 2.b Cycling use). Source: authors' elaboration.

Overall, the global accessibility of the neighbourhood (Fig. 3), determined by the average levels of pedestrian and cycling accessibility, produces an adequate rating.

As highlighted in the previous paragraph, the functionality index is given by the combination of different factors: 1) circulation, or rather the practicability of pedestrian and cycle paths; 2) the provision of quality street furniture, capable of offering citizens solutions that simplify daily life, making it more pleasant and practical. This criterion can for example be characterised by the usability of toilets also for disabled people; 3) the potential of the public space as a car park. In a nutshell, the functionality, linked to the indicators "Movement", "Comfort" and "Potential as a parking space", is inadequate (Fig. 4). Explaining in detail, "Movement" is the main way to gain experience of spaces,

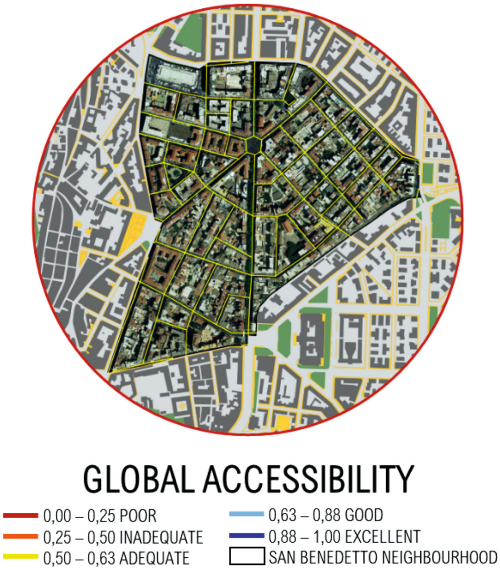

Fig. 3. Global Accessibility.

and it is strongly dependent on the characteristics of the surfaces that can facilitate or hinder it. For this reason, the spatial component investigated for the study of movement is the surface of cycle (Fig. 5a) and pedestrian paths (Fig. 5b), and the related attribute is the "Usability of surfaces".

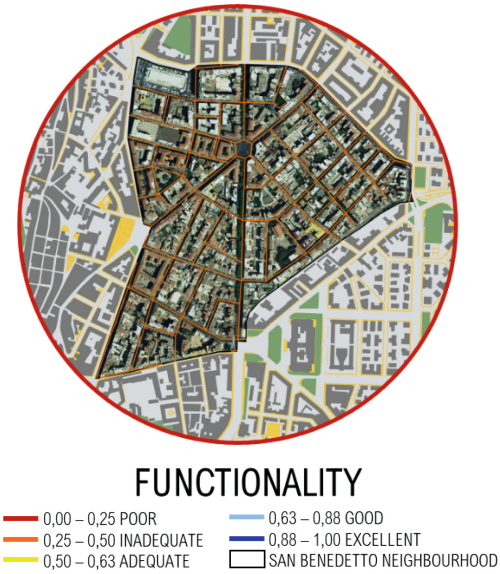

Fig. 4. Functionality. Source: authors' elaboration.

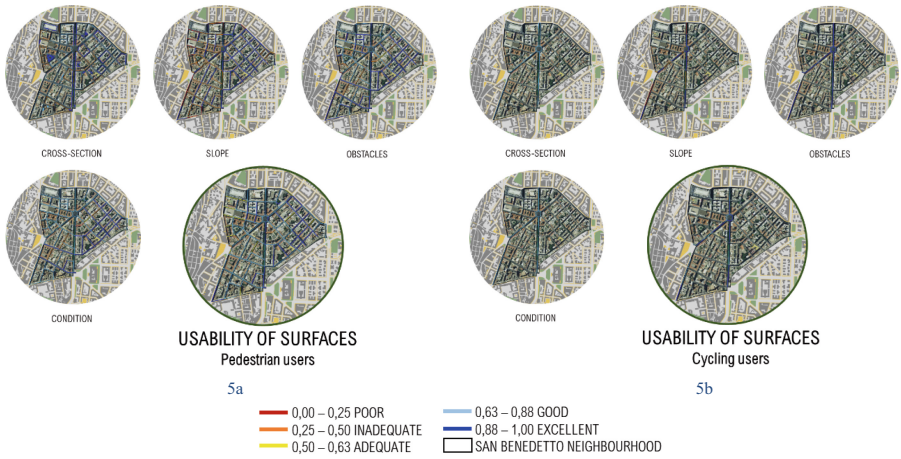

Fig. 5. Movement - usability of surfaces (a. Pedestrian users; b. Cycling users). *Source:* authors' elaboration.

The "Comfort" indicator is constituted by the sub-indicators "Usability of benches", "Usability of services for users with disabilities" and "Usability of toilets". Figure 6 shows the sub-indicators "Usability of benches". The work for sub-indicators has been done for all of them, but due to space limitations, only this example is reported. Figure 7 shows the indicator of Comfort.

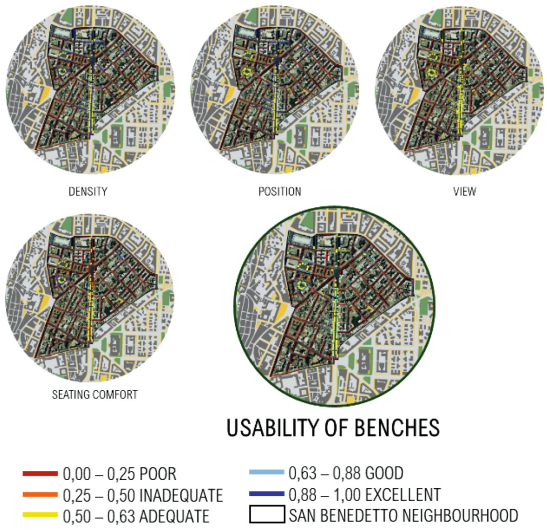

Fig. 6. The sub-indicator "Usability of benches".

The last indicator that is connected with functionality is the "potential as a parking space" (Fig. 8) and is identified with the presence of border elements and spaces

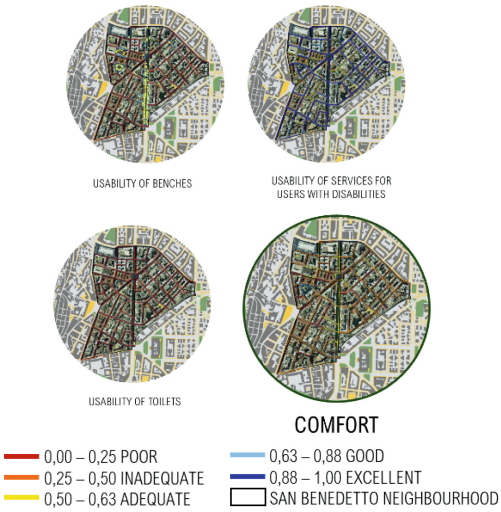

Fig. 7. The "Comfort" indicator. *Source:* authors' elaboration.

potentially convertible with Tactical Urban Planning interventions or street experiments [33–35].

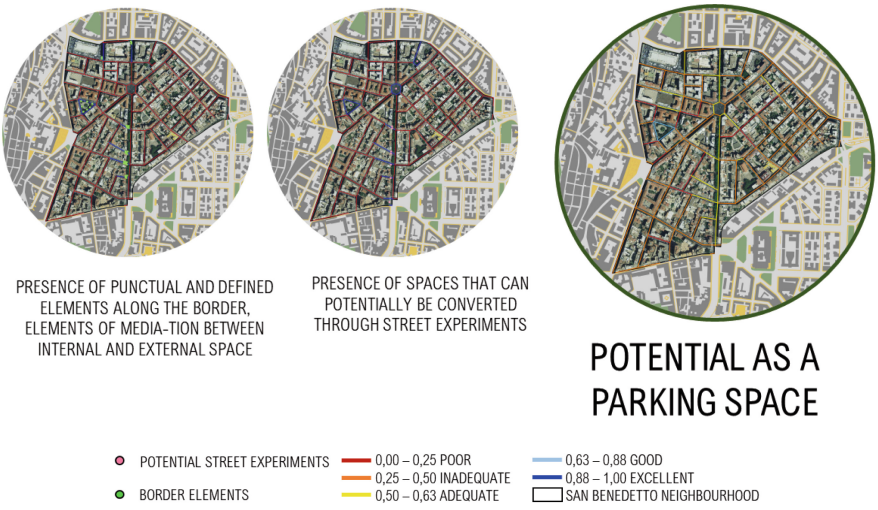

Fig. 8. The "Potential as a parking space" indicator. *Source:* authors' elaboration.

The social perception of the neighbourhood (Fig. 9), based on the average of the indicators "Vitality", "Meeting acquaintances (spatial proximity)" and "Knowing (situational proximity)" reflects a good level. Indeed, the situational proximity, a factor affecting prospects for casual meetings, is optimal due to the presence of the San Benedetto Market, a service on a metropolitan scale.

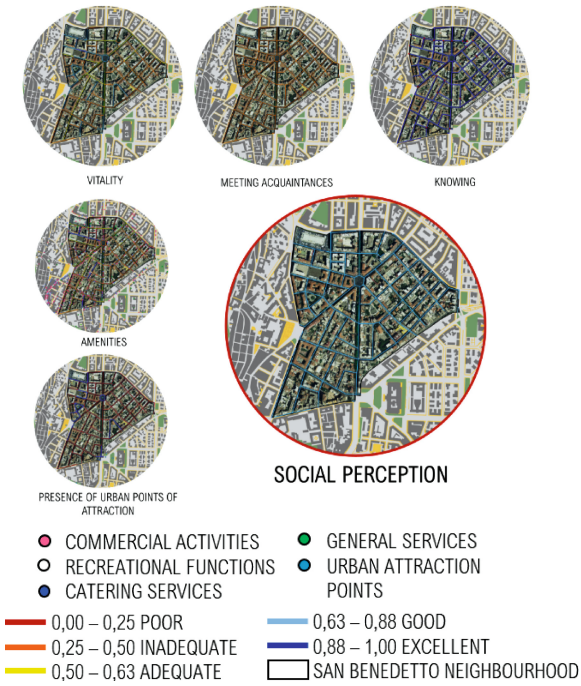

Fig. 9. Social perception.

The average of the "Accessibility", "Social Perception" and "Functionality" indices allows us to determine the "Neighbourhood Proximity Index" (Fig. 10).

The data obtained from the quantitative analysis were integrated with the information collected through the questionnaire "Perceived Happiness, Accessibility, and Safety in the Neighbourhood," conducted among the residents of the San Benedetto neighbourhood.

The questionnaire, distributed over 30 days, collected 117 responses. The research focused on the most representative responses, revealing a diverse age distribution: 33.3% aged 31–45 years, 30.8% aged 46–60 years, 21.4% aged 18–30 years, and 14.5% aged beyond 60 years.

A majority of participants (57.3%) reside in San Benedetto. The survey showed that the availability of neighbourhood services is mostly good/excellent and that reaching these services on foot is easy (52.2%), indicating among the reasons the proximity, the optimal distribution and the efficiency of the public transport service.

On the other hand, those who complain about difficulties in accessing services on foot, report the presence of architectural barriers, high car traffic, persistent construction sites and lack of supermarkets. 76.1% of the sample stated that they move around the neighbourhood mostly on foot or by bicycle, compared to 12.8% who move by car and 11.1% by public transport.

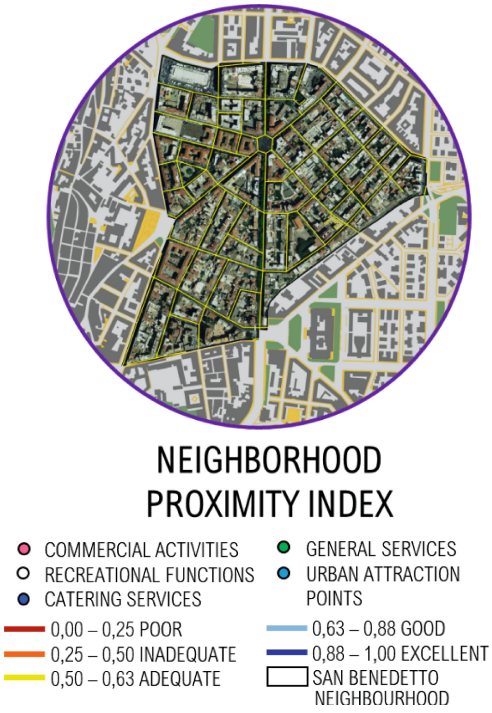

Fig. 10. Neighbourhood Proximity Index. Source: authors' elaboration.

The ease of movement on foot or by bicycle did not register any extremely critical evaluation, however, those who complain of difficulty in movement justify their choice by denouncing dangerous cycle paths, chaotic traffic and double-row parking.

Users of the neighbourhood evaluate the public transport service positively, highlighting the good connection with the rest of the city. Despite the temporary suspension of the tram service, many users recognise the potential of the MetroCagliari once the extension of the route is completed.

The neighbourhood has chaotic traffic flow, characterised by very congested roadways and inadequate parking facilities. 31.6% of the sample perceives the availability of public green areas as scarcely sufficient, while 46.2% express overall dissatisfaction.

8 Global Index for Measuring Urban Well-Being

By integrating the conclusions of the article on urban happiness [1] with the analysis of the literature and the considerations brought forward in the present study, it is possible to create a complete framework to evaluate "neighbourhood happiness" in a holistic way.

This approach, which leads to the definition of the Global Index of for Measuring Urban Well-Being allows to correlate the data on happiness, as well as the data on proximity with the indicators of subjective well-being of the residents. From the average of the "Neighbourhood Proximity Index" and the "Emotional Perception Index of the

Degree of Happiness", it follows that the neighbourhood of San Benedetto is "adequately happy".

Figure 11 shows the representation of the Global Index of for Measuring Urban Well-Being.

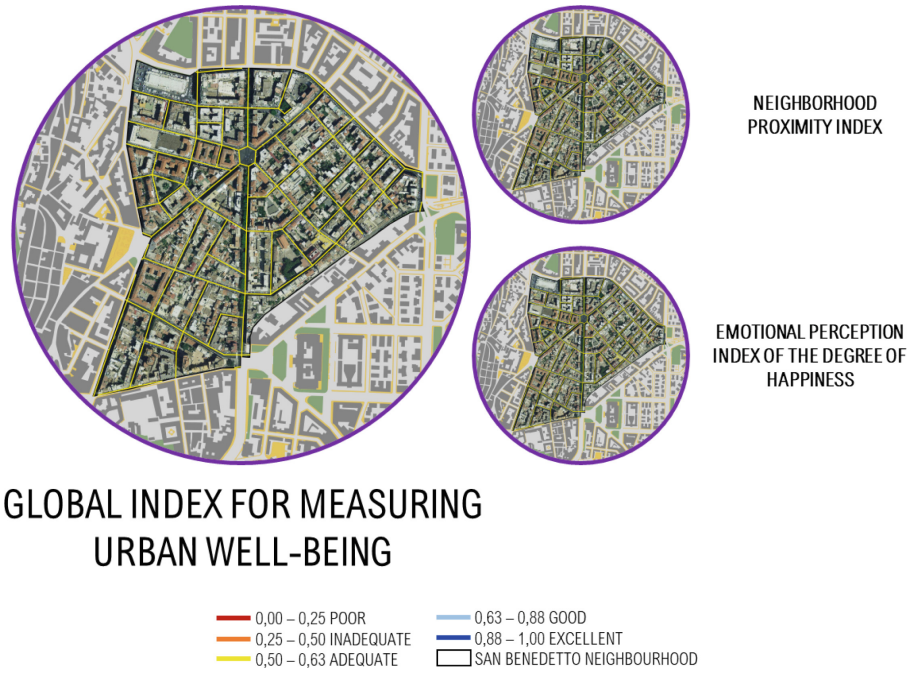

Fig. 11. Global Index for Measuring Urban Well-Being. Source: authors' elaboration.

9 Discussion and Conclusions

This study explores the crucial link between urban proximity and residents' well-being, integrating the qualitative and quantitative analysis of the emotional perception of happiness with the investigation of the physical factors needed to measure the accessibility of spaces, the functionality of services and the social perception of citizens. The primary objective was to develop a global index for measuring urban well-being, a tool to quantify and compare the level of satisfaction and well-being of the population in specific urban contexts.

The results support the hypothesis that proximity to services and spaces of socialisation positively affects social cohesion and the sense of belonging. On the other hand, urban fragmentation and distance from such services are correlated with phenomena of social isolation. However, the spatial analysis revealed in some areas a potential discrepancy between the objective evaluation of infrastructures and the emotional perception of

residents, underlining the multifactorial nature of well-being and the concept of urban happiness.

The analysis finds that achieving an optimal assessment can be limited by factors such as the lack of areas dedicated to pedestrians, which limits the usability of the space; the difficulty of accessing and using some essential services; the high intensity of vehicular traffic, which negatively affects air quality and safety and the lack of adequate safety measures, which negatively influences the perception of well-being of residents.

Therefore, the results obtained support the need for an interdisciplinary approach that integrates spatial analysis with the study of socio-cultural dynamics and confirming the need to qualitatively and quantitatively consider both objective parameters, such as proximity, and subjective indicators, such as the perception of happiness and quality of life.

Furthermore, the importance of pedestrianisation and an efficient organisation of the road system is emphasised, considering the mobility needs of the entire city to improve and re-educate the habits of users and plan a sustainable mobility network.

For the future, the research may be replicated in other neighbourhoods of the city or in other contexts, using the same indicators or integrating them with new ones that include the well-being of particular vulnerable categories of users. In addition, it is suggested to deepen the study of the relationship between proximity and perception of urban space, especially in crisis situations. It is also important to examine the impact of digital technologies, develop models to predict the effects of urban policies, compare the results in different contexts, involve citizens in planning, analyse the perceptions of different social groups and study the effect of specific urban micro interventions. In fact, the implementation of urban investigation methodologies that integrate the analysis of individual and collective perceptions, in relation to socio-cultural factors and personal experiences, represents a necessary evolution to understand and modulate the use of urban spaces, and this approach goes beyond mere physical evaluation, favouring the understanding of experiential interactions between users and the environment. In this sense, the idea of implementing playful technological activities to be done outdoors, designed and configured as effective analysis tools of perception, sense of belonging and collective identity, is supported. This approach would also contribute to a deeper and more participatory understanding of the urban context, promoting its safety and enhancement.

The comparison of different analysis methodologies, as demonstrated in this study, is therefore an essential element for a holistic understanding of urban well-being. The integration of quantitative and qualitative data, together with the analysis of individual and collective perceptions, allows for the development of more effective and targeted urban policies, capable of responding to the real needs of citizens and promoting more inclusive and sustainable cities.

Acknowledgements. This study was partially supported within the "e.INS – Ecosystem of Innovation for Next Generation Sardinia" funded by the Italian Ministry of University and Research under the Next-Generation EU Programme (National Recovery and Resilience Plan – PNRR, M4C2, INVESTMENT 1.5 –DD 1056 of 23/06/2022, ECS00000038). In particular, the "Methodological approach" was funded by eINS. This study reflects only the authors' views and opinions, and neither the European Union nor the European Commission can be considered responsible for

them. This study was also partially supported by the project "RAMÉ RegCITIES: spatial analyses foR co-creAting the future of sMartest and happiEst REGions/CITIES. Comparisons between Cagliari in Italy and Des Moines in the US", founded by the program "Bando 2023 Mobilità Giovani Ricercatori (MGR)", financed by the Autonomous Region of Sardinia (under the Regional Law of 7 August 2007, n. 7 "Promotion of Scientific Research and Technological Innovation in Sardinia"). This study was also partially supported by the MUR through the project "SMART3R-FLITS: SMART Transport for Travellers and Freight Logistics Integration Towards Sustainability" (Project protocol: 2022J38SR9; CUP Code: F53D23005630006), financed with the PRIN 2022 (Research Projects of National Relevance) program. We authorise the MUR to reproduce and distribute reprints for Governmental purposes, notwithstanding any copyright notations thereon. Any opinions, findings, and conclusions, or recommendations expressed in this material are those of the authors and do not necessarily reflect the views of the MUR.

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