SOCIAL AND ENVIRONMENTAL SERVICES OF BARCELONA'S GREEN SPACES

Executive Summary

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SOCIAL AND ENVIRONMENTAL SERVICES OF BARCELONA'S GREEN SPACES

Executive Summary

ANALYSIS OF SOCIAL AND ENVIRONMENTAL SERVICES

A tool for planning and managing green spaces

The city's strategy with regards to green infrastructure is detailed in the 2020 *Green Infrastructure and Biodiversity Plan*, which emphasizes the need to further develop social and environmental services. To fulfil this objective, a study must first be carried out to determine what social and environmental services these green spaces currently offer. The main objective of this study is to evaluate the social and environmental services provided by Barcelona's city parks, squares and the interior block courtyard, with the ultimate aim of presenting a tool that can be used for the planning, management and design of urban green spaces.

This is designed to be a dynamic tool that can adapt urban green spaces to the social and environmental needs of the present, as well as to the needs of the future.

From the perspective of social and environmental services, we can manage the complex reality of green spaces by comparing the differences that exist between them. These green spaces, which are heterogeneous areas with different functions and characteristics, can be considered a network intended to offer the maximum number of social and environmental services, in which the different spaces can complement each other.

SOCIAL AND ENVIRONMENTAL SERVICES DEFINED IN BARCELONA'S GREEN INFRASTRUCTURE STRATEGIC PLANS

Pla del verd i de la biodiversitat de Barcelona 2020

OBJECTIVE

Obtain the maximum number of social and environmental services from green infrastructure and biodiversity.

ACTIONS

2.1 Identify the city's ecological infrastructure.

5.1 Improve the management of the city's green spaces and trees.

7.3 Carry out further studies on the environmental benefits associated with green infrastructure and biodiversity.

10.1 Turn Barcelona into a green infrastructure benchmark.

MESURA DE GOVERN: PROGRAMA D'IMPULS DE LA INFRAESTRUCTURA VERDA URBANA

OBJECTIVE

Improve the health and quality of life of citizens by increasing and improving the green infrastructure and citizen co-responsibility.

ACTIONS

4.3. Complete the study of the ecosystem services of green spaces for the entire city.

A TOOL FOR PLANNING AND MANAGING GREEN SPACES

SOCIAL AND ENVIRONMENTAL SERVICES OF BARCELONA'S GREEN SPACES

DESIGN AND MANAGEMENT CRITERIA

Information on the services provided by space to enhance or maintain them.

URBAN PLANNING CRITERIA

Accessibility to the services shows which areas of the districts and neighbourhoods offer more services and which have a deficit of services.
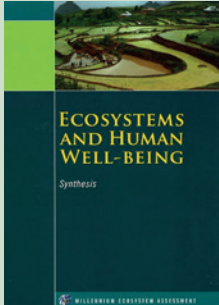
THE HISTORY OF SOCIAL AND ENVIRONMENTAL SERVICES

Ecosystem services or social and environmental services are the benefits that humans obtain from ecosystems and which contribute directly or indirectly to the well-being of people.

Research into ecosystem services or social and environmental services has increased in recent years, while being promoted as a means to assess, quantify, document and map these benefits, necessary for humans and cities. The concept first appeared at the beginning of the 1970s, although it was not implemented and applied until the end of the 1990s.

The model for cities advocated by the European Commission talks about sustainable, resilient, green and diverse cities, with a well-planned and accessible green infrastructure. One of the important topics being studied is the evaluation of ecosystem services, with the aim that this can then be subsequently used to define policies and territorial planning (The Economics of Ecosystems and Biodiversity, TEEB 2011).

At the international level there are several initiatives that describe and classify ecosystem services:

The MEA (Millennium Ecosystem Assessment, 2005) defines 21 ecosystem services and classifies them into four categories.

TEEB 2011 (The Economics of Ecosystems and Biodiversity) is an international initiative for evaluating and highlighting the benefits of biodiversity and ecosystem services so that they are taken into account in territorial planning and policy making. One of the proposals is based on the evaluation of ecosystem services in urban areas.

CLASSIFICATION OF ECOSYSTEM SERVICES
Source: TEEB, 2010. BR.

PROVISIONING SERVICES
Goods obtained from ecosystems

Food

Raw materials

Water

Medicinal plants

REGULATING SERVICES
Services obtained from ecological processes

Air quality

Pollination

CO_2 fixation

Natural disaster mitigation

Purification

Erosion

Biological control

CULTURAL SERVICES
Intangible benefits of ecosystems

Mental and physical health

Spiritual experience

Artistic inspiration

Tourism

SUPPORTING SERVICES
Essential ecological functions for the generation of services

Habitat

Genetic diversity

GREEN INFRASTRUCTURE

The concept of green infrastructure is defined in the report *Green Infrastructure: Enhancing Europe's Natural Capital*, drafted by the European Commission in May 2013 and approved by the European Parliament that same year. It is defined as "a network of natural and semi-natural areas with other environmental features designed and managed to deliver a wide range of ecosystem services". The green infrastructure concept emphasizes the need to maximize ecosystem services by integrate natural solutions into territorial planning and development.

The deployment of the green infrastructure concept in the field of territorial planning and management can offer many opportunities for the integration of urban development, nature conservation and the improvement of public health.

Green infrastructure is largely formed by natural ecosystems, but also by urban green infrastructure:

NATURAL OR SEMI-NATURAL ECOSYSTEMS

Forest ecosystems
and open spaces
Agricultural areas
Wetlands
Others

INFRAESTRUCTURA VERDE URBANA *

Parques
y jardines urbanos*
Arbolado trama urbana
Espacios intersticiales
Cubiertas y muros verdes
Huertos urbanos
Plazas y balcones
Otros

COUNTRYSIDE

- Water
- Purification
- Erosion

WETLANDS

- Food
- Fresh water
- Purification
- Natural disaster mitigation
- Habitat
- Leisure

AGRICULTURAL AREAS

- Food
- Erosion
- CO_2 fixation

CITY

- Air quality
- Spiritual experience
- Habitat
- Leisure

COAST

- Food
- Natural disaster mitigation
- Habitat
- Tourism

* The urban green infrastructure is designed as a network in which urban parks act as the nodes of that network and offer the vast majority of the social and environmental services, especially cultural services.

SOCIAL AND ENVIRONMENTAL SERVICES IN CITIES

Urban green spaces are also ecosystems which provide ecosystem services (also called *environmental services*) in a very direct way, since a large part of the population lives around them.

In cities, and especially in dense ones such as Barcelona, urban green spaces are the main areas that provide social and environmental services. In urban parks, unlike in natural areas, cultural services (such as walking, sporting activities or playgrounds for children) play a more prominent role, while provisioning services are less frequent. Therefore, in urban environments, **ecosystem services are known as socio–environmental services, offering a concept that encapsulates both environmental and social or cultural services**. Social and environmental services are grouped into eight categories. Seven of these groups of services are specifically cultural or social services, while the rest include ecological and regulating services.

Ecological / regulating

- Thermal regulation
- Carbon retention
- Air quality improvement
- Infiltration and permeability
- Ecosystem functionality

Leisure

- Walking
- Outdoor games
- Picnics and meals

Sports

- Jogging
- Cycling
- Sporting activities

Health

- Contribution to mental health
- Physical health benefits
- Active ageing
- Allergies

Psychological / Spiritual

- Artistic inspiration
- History
- Reflection, rest
- Urban landscape
- Connection with nature

Social / relational

- Meeting and interaction
- Group and family gatherings
- Large events, parties and shows
- Social cohesion
- Environmental education

Urban planning

- Reduction of urban density
- Peri-urban planning

Tourism / economy

- Sightseeing
- Increase in value of adjacent properties
- Increase in value of adjacent economic activities

METHODOLOGY

HOW WE ANALYSE SOCIAL AND ENVIRONMENTAL SERVICES

To evaluate social and environmental services, a system of indicators that are representative of green spaces must be used. The process of evaluating each social and environmental service requires the following steps:

1. Parameterization of indicators
2. Relationship between indicator and service
3. Relationship matrix
4. Calculation of the value of each indicator for each green space
5. Calculation of the value of each service for each green space

METHODOLOGY
Developed by Barcelona Regional

SOCIAL AND ENVIRONMENTAL SERVICES (29)

INDICATORS (52)

ANALYSIS OF SOCIAL AND ENVIRONMENTAL SERVICES

Web search

Field work

GIS

VALUATION OF SERVICES BY GREEN SPACE

ACCESSIBILITY TO SERVICES

PROVISION OF SERVICES IN THE TERRITORY

DEFICIT OF SERVICES IN THE TERRITORY
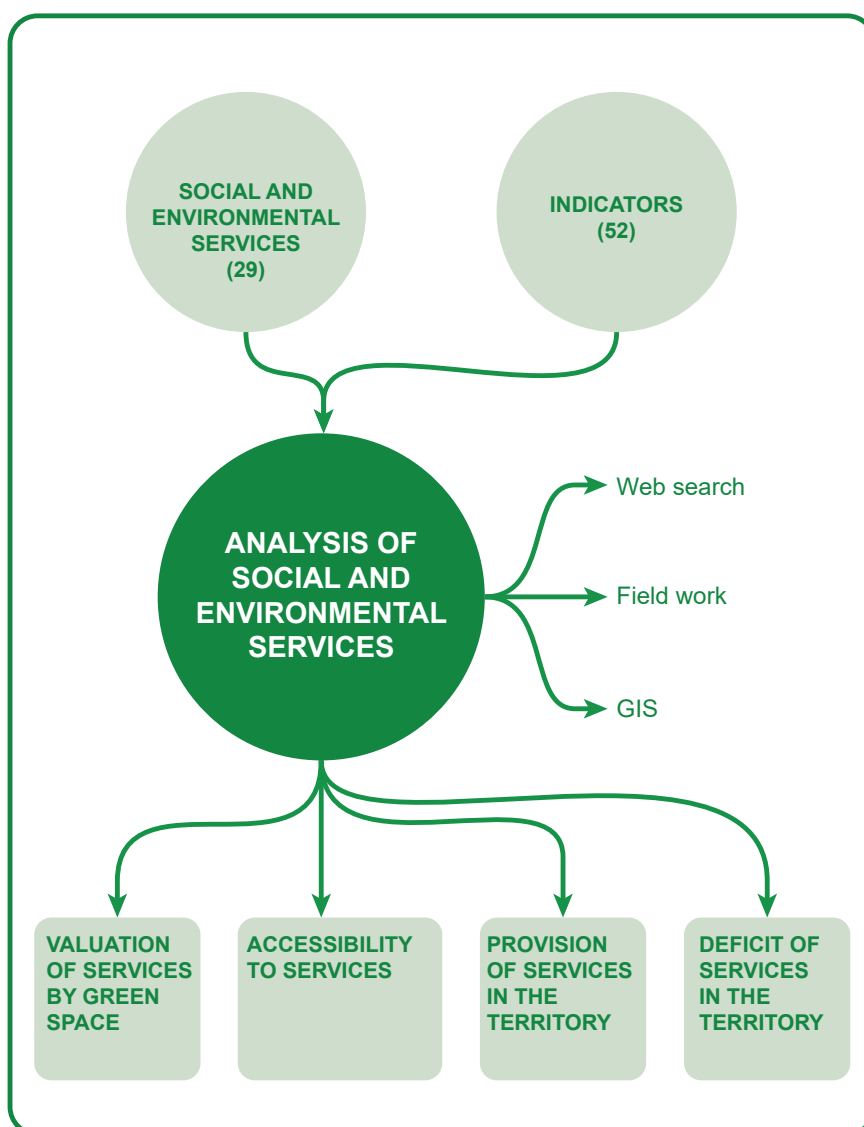
i Once a valuation has been obtained for each social and environmental service, we can then determine the accessibility within a five minute walk of each service, as well as the provision and deficit of all the social and environmental services in the area of study.

THE MATRIX

A relationship matrix is used to link indicators, influence of the indicator and social and environmental services in order to subsequently calculate the value of each service. The rows show the social and environmental services and the columns show the indicators. The weight of each indicator (between -1 and 5) for each service is entered in the box where the two meet.

Extra indicators are those indicators that, due to their relevance and uniqueness, are not included directly in the matrix, but are added or subtracted from the final value obtained for the service, so that they add or detract value from the service in question. The extra indicators are based on unique elements that only some of the green spaces have.

Service	Size of the space	Age of the park	Compactness index: area/perimeter	Length of the park	Green area cover	Tree cover	Stratification	Deciduous and evergreen trees	Maturity of the trees	Native vegetation	Grass area	Permeable soil	Presence of water areas	Spaces without vegetation	Peripheral vegetation (shrubs)	Diversity of shade and sun in frequented areas	Allergenic trees	Proximity to natural areas	Naturalized forest areas (% total area)	Structures to enhance biodiversity	Proximity to Collserola	Distance to the sea	Connectivity to the parks
	Age and morphology				Biophysical																		
Psychological / Spiritual																							
Artistic inspiration	1	0	0	0	0	1	0	0	1	0	0	0	1	0	0	1	0	0	0	0	0	0	0
History	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Reflection, rest	2	0	0	0	2	2	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0
Urban landscape	2	0	0	0	1	1	0	0	0	0	0	1	1	0	1	0	0	2	0	0	0	0	0
Connection with nature	1	1	0	0	1	1	1	1	0	1	0	1	1	0	0	0	0	0	1	0	0	0	1
Leisure																							
Walking	2	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Outdoor games	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
Picnics and meals	1	0	0	0	1	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0
Sports																							
Cycling	3	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Jogging	2	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Sporting activities	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Social / relational																							
Meeting and interaction	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
Group and family gatherings	2	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Large events, parties and shows	0	0	4	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0
Social cohesion	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Environmental education	2	1	0	0	1	1	1	1	1	0	0	1	0	0	0	0	0	0	0	1	0	0	0
Urban planning																							
Reduction of urban density	4	0	1	0	1	1	1	0	0	0	0	0	0	0	0	0	0	2	0	0	0	1	0
Peri-urban planning	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	2	0	0
Ecological / regulating																							
Ecosystem functionality	3	1	1	0	1	1	2	1	1	1	0	1	1	0	0	0	0	0	1	0	0	0	1
Thermal regulation	3	0	0	0	1	1	0	0	1	0	0	0	1	0	0	0	0	2	0	0	0	0	0
Carbon retention	3	0	0	0	1	3	2	0	-1	0	0	0	0	-1	0	0	0	0	1	0	0	0	0
Air quality improvement	3	0	0	0	1	1	1	0	1	0	0	0	0	0	1	0	0	0	1	0	0	0	1
Infiltration and permeability	3	0	0	0	1	1	1	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0
Tourism / economy																							
Sightseeing	1	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Increase in value of adjacent properties	1	0	0	0	1	1	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0
Increase in value of economic activities	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Health																							
Contribution to mental health	2	0	0	0	1	2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1
Physical health benefits	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Active ageing	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Allergenic potential	1	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	5	0	0	0	0	0	0

Extra indicators +/-

Indicator	Extra
Artistic inspiration	Poetic route +, rose garden +, viewpoint +
History	Listed trees +
Reflection, rest	Park entrance fee -
Connection with nature	Urban gardens +, biodiversity structures +, park entrance fee -
Walking	Park entrance fee -
Cycling	Cycle lane +, bike ban in historic parks -, park entrance fee -
Jogging	Circuito correr +, pago entrada parque –
Meeting and interaction	Park entrance fee -
Environmental education	Botanical route +, biodiversity structures +, nature classroom +
Ecosystem functionality	Biodiversity structures +
Infiltration and permeability	SUDS (sustainable urban drainage systems) ++
Sightseeing	Viewpoint +

Service	Urban density of the surrounding	Number of educational centres and retirement homes	Accessibility from the street	Public transport within 500 metres	Proximity to a 0 degree slope (inside the park)	Proximity to a 0 degree slope (surrounding slopes)	Internal facilities in the park	Cultural heritage	Playgrounds	Benches	Tables	Fountains	Areas for dogs	Sports courts	Bars or shops	Litter bins	Areas for lying down	Lighting	Internet access	Surrounding noise level	Air quality
Psychological / Spiritual																					
Artistic inspiration	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
History	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
Reflection, rest	0	0	0	0	0	0	0	0	0	2	0	0	0	0	-1	0	1	0	0	1	0
Urban landscape	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
Connection with nature	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
Leisure																					
Walking	1	0	1	1	0	0	0	1	0	1	0	0	1	0	0	0	0	1	0	1	0
Outdoor games	0	1	0	0	1	0	0	0	5	0	0	0	0	1	0	0	0	0	0	0	0
Picnics and meals	2	0	0	1	0	0	0	0	0	1	3	1	0	0	1	1	0	0	0	0	0
Sports																					
Cycling	0	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Jogging	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
Sporting activities	0	1	0	1	0	0	0	0	0	0	0	0	0	2	0	0	0	1	0	0	0
Social / relational																					
Meeting and interaction	2	1	1	1	0	0	1	0	1	1	0	0	1	1	1	0	0	0	0	0	0
Group and family gatherings	0	0	1	1	0	0	1	0	1	1	1	0	1	1	1	0	0	0	0	0	0
Large events, parties and shows	0	0	0	2	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0
Social cohesion	1	1	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0
Environmental education	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Urban planning																					
Reduction of urban density	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peri-urban planning	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ecological / regulating																					
Ecosystem functionality	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
Thermal regulation	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Carbon retention	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Air quality improvement	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
Infiltration and permeability	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tourism / economy																					
Sightseeing	0	0	0	1	0	0	0	3	0	0	0	0	0	0	1	0	0	0	0	0	0
Increase in value of adjacent properties	2	1	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0
Increase in value of economic activities	1	1	1	1	0	0	1	1	0	0	0	0	0	0	1	0	0	0	0	0	0
Health																					
Contribution to mental health	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1
Physical health benefits	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
Active ageing	0	0	0	1	1	1	0	0	0	1	0	0	0	1	0	0	0	0	0	1	1
Allergenic potential	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Column groups: **Accessibility** (Urban density … Proximity to a 0 degree slope surrounding slopes), **Facilities** (Internal facilities in the park … Internet access), **Pollution** (Surrounding noise level, Air quality).

THE GREEN SPACES ANALYSED

The study analyses the social and environmental services of the city's green spaces covering more than 0.2 hectares, classified into four categories:

- **Historic parks** (defined as historic by Barcelona City Council)
- **Parks and gardens** (they are the foundations of the city's urban green infrastructure)
- **Interior courtyards of blocks** (very important in the densest urban fabric of the Eixample district)
- **Green square**s (squares with more than 30% vegetation cover and 40% permeable soil)

Legend:
- **Historic parks**
- **Parks and gardens**
- **Interior courtyards of blocks**
- **Green squares**
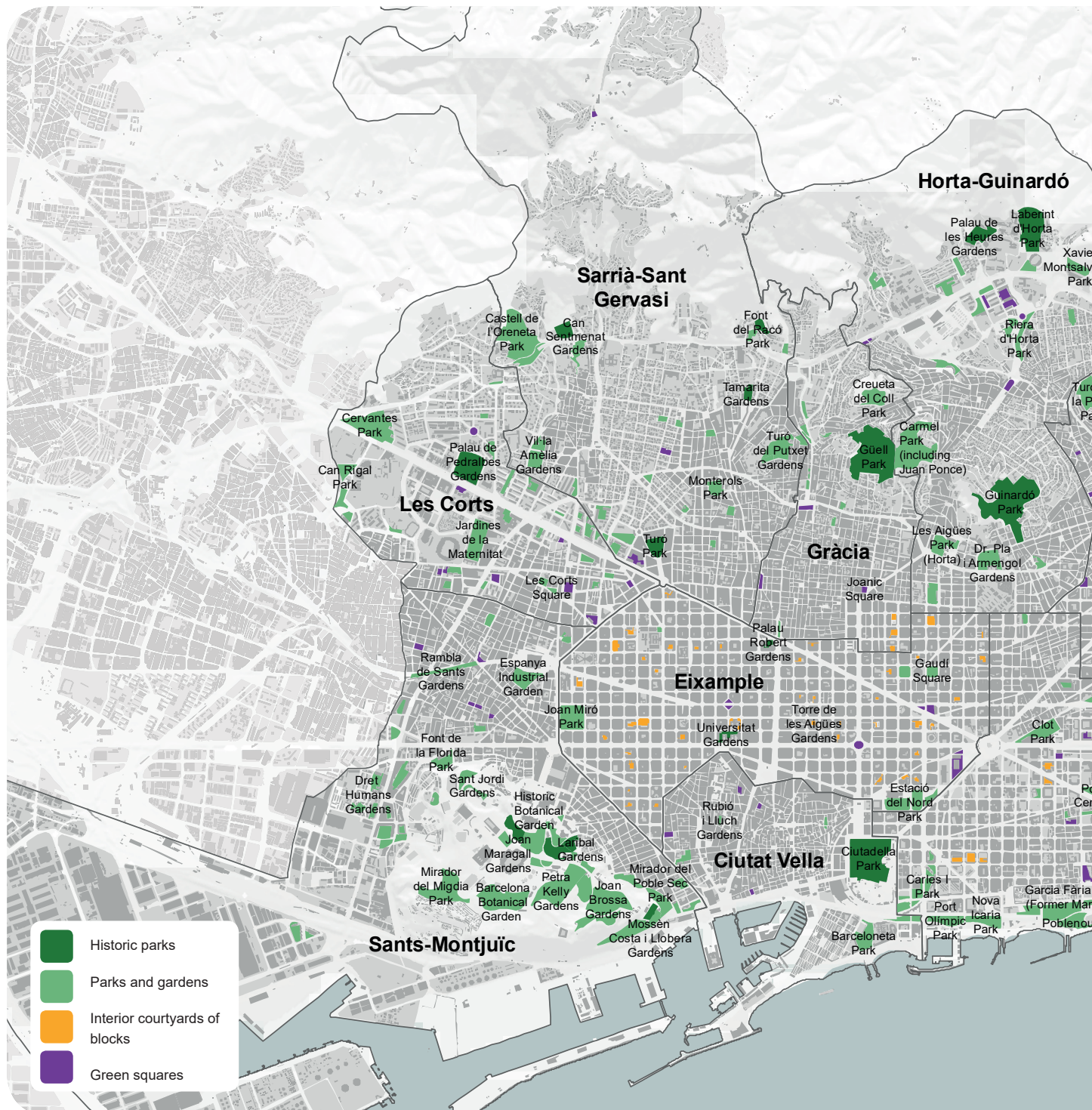
Collserola Natural Park, private gardens and other green spaces not managed by Barcelona City Council have not been included in this study because they are considered spaces of a different kind. This should be taken into account when interpreting the results since these spaces can also offer social and environmental services in certain areas of the city.

In total, 326 green spaces, covering a total of 498 hectares, have been included in the scope of this study.
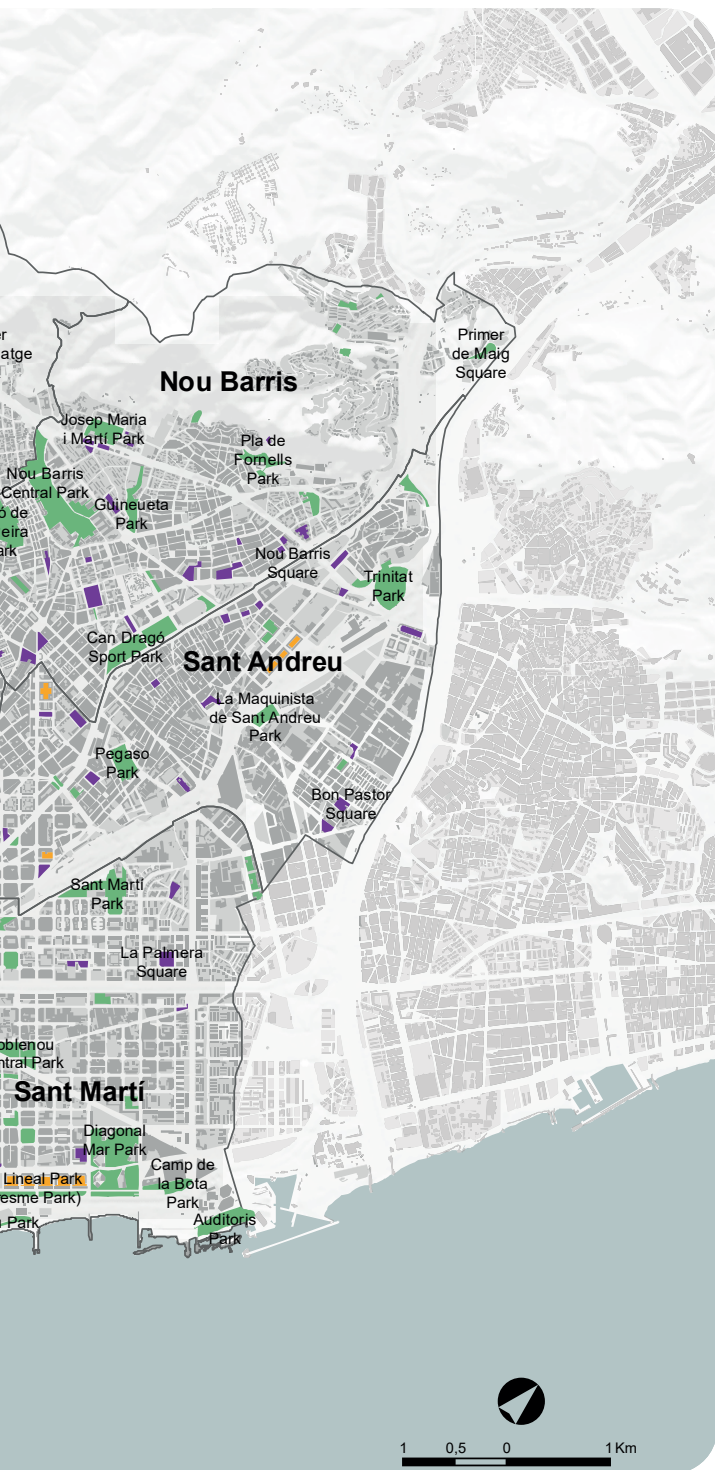
District	Number of green spaces	Total area (ha)
Ciutat Vella	10	24.0
Eixample	53	27.9
Sants-Montjuïc	48	94.3
Les Corts	33	33.8
Sarrià-Sant Gervasi	30	53.6
Gràcia	15	29.0
Horta-Guinardó	27	71.6
Nou Barris	35	54.3
Sant Andreu	32	27.4
Sant Martí	43	82.2

NUMBER OF GREEN SPACES

Historic parks 16
Green squares 79
Interior courtyards of blocks 57
Parks and gardens 174

SURFACE AREA (ha)

Green squares 40
Interior courtyards of blocks 16
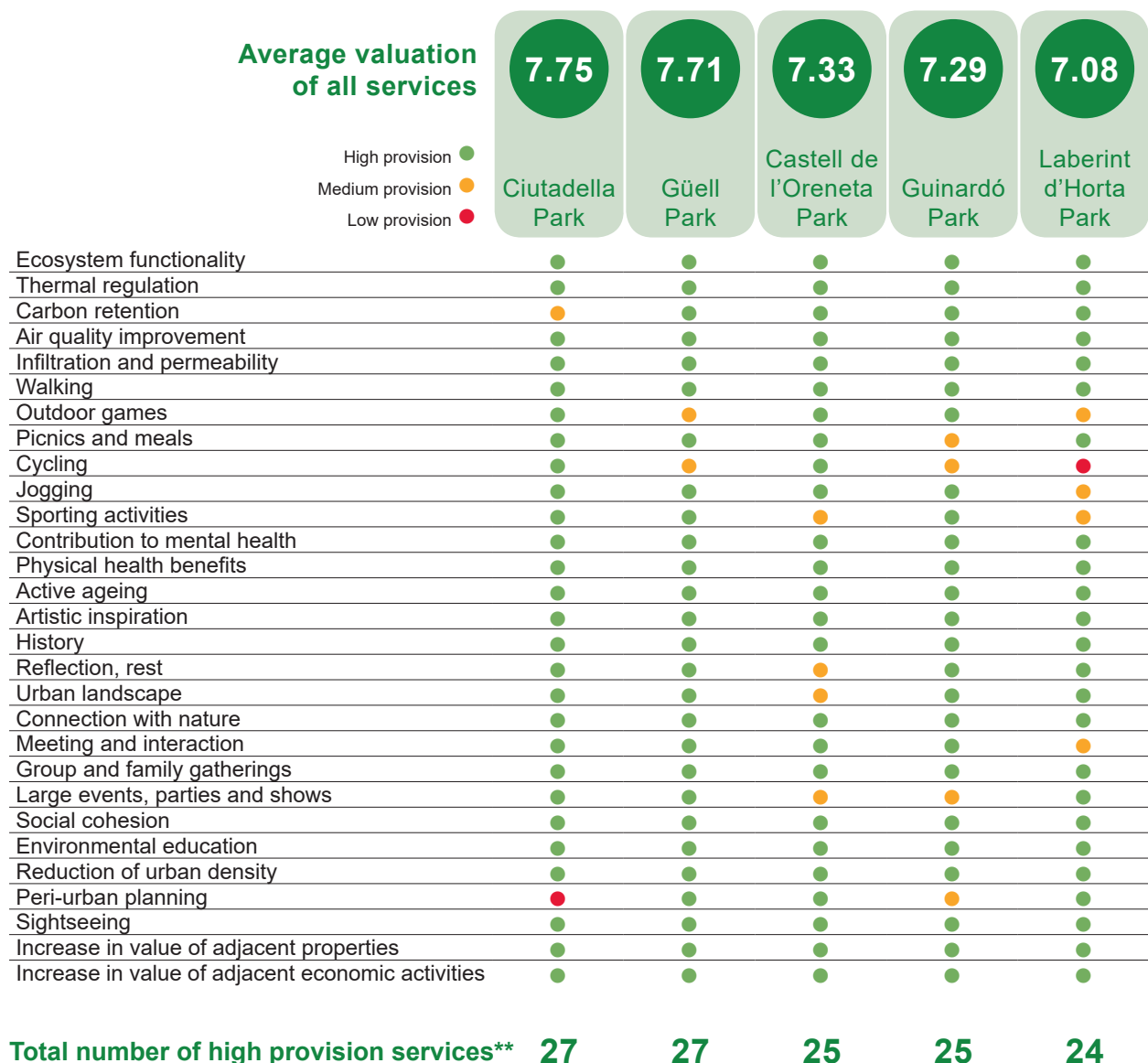Historic parks 95
Parks and gardens 346
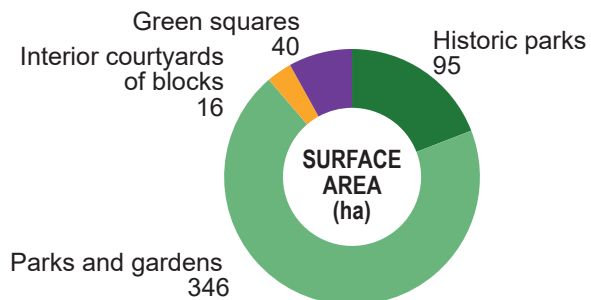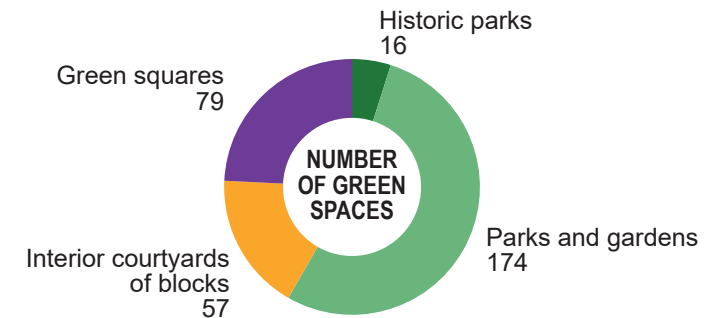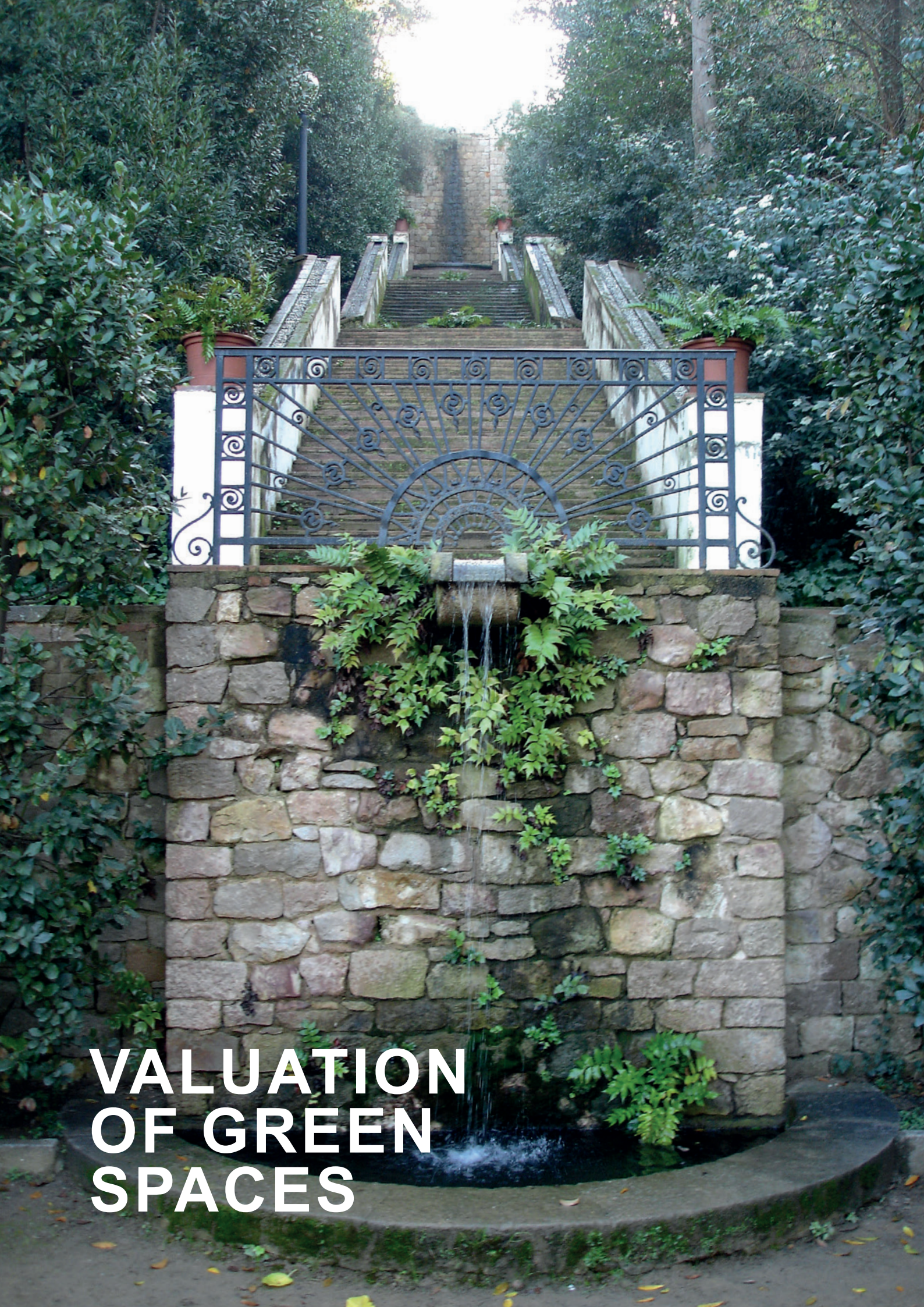
VALUATION
OF GREEN
SPACES

AVERAGE VALUATION OF SERVICES BY GREEN SPACE

Notable social environmental services of the spaces with the highest average valuation

The five parks with the highest average valuation offer a high provision* in the majority of social and environmental services. These are large parks, with mature vegetation, cultural heritage and different facilities, such as playgrounds, sports courts, networks of paths and environmental education classrooms. They are also usually spaces where people meet and/or hold activities and parties.

Average valuation of all services

	Ciutadella Park	Güell Park	Castell de l'Oreneta Park	Guinardó Park	Laberint d'Horta Park
	7.75	**7.71**	**7.33**	**7.29**	**7.08**

High provision ● (green) · Medium provision ● (orange) · Low provision ● (red)

Service	Ciutadella Park	Güell Park	Castell de l'Oreneta Park	Guinardó Park	Laberint d'Horta Park
Ecosystem functionality	High	High	High	High	High
Thermal regulation	High	High	High	High	High
Carbon retention	Medium	High	High	High	High
Air quality improvement	High	High	High	High	High
Infiltration and permeability	High	High	High	High	High
Walking	High	High	High	High	High
Outdoor games	High	Medium	High	High	Medium
Picnics and meals	High	High	High	Medium	High
Cycling	High	Medium	High	Medium	Low
Jogging	High	High	High	High	Medium
Sporting activities	High	High	Medium	High	Medium
Contribution to mental health	High	High	High	High	High
Physical health benefits	High	High	High	High	High
Active ageing	High	High	High	High	High
Artistic inspiration	High	High	High	High	High
History	High	High	High	High	High
Reflection, rest	High	High	Medium	High	High
Urban landscape	High	High	Medium	High	High
Connection with nature	High	High	High	High	High
Meeting and interaction	High	High	High	High	Medium
Group and family gatherings	High	High	High	High	High
Large events, parties and shows	High	High	Medium	Medium	High
Social cohesion	High	High	High	High	High
Environmental education	High	High	High	High	High
Reduction of urban density	High	High	High	High	High
Peri-urban planning	Low	High	High	Medium	High
Sightseeing	High	High	High	High	High
Increase in value of adjacent properties	High	High	High	High	High
Increase in value of adjacent economic activities	High	High	High	High	High
Total number of high provision services**	**27**	**27**	**25**	**25**	**24**

> ***** *The provision of a service is understood as the potential/offer of a green space in relation to a particular service.*

** The provision of a service is high when it obtains a valuation equal to or greater than 6.

VALUATION OF GREEN SPACES BY SERVICE
The five parks with highest provision of each service

Each of the green spaces analysed has characteristics and particularities that make it more or less suitable for the provision of a certain service. While some parks offer practically every service (for example, the five parks with the highest average valuation), other spaces are particularly suitable for a certain service, but less suitable for others. The park with the highest valuation for the provision of a service may vary depending on the service. For example, the list of five parks with the highest provision of the cycling service is very different to the list of the parks with the highest provision of the outdoor games service or the carbon retention service.

LEISURE

Walking
1. Güell Park
2. Ciutadella Park
3. Joan Miró Park
4. Estació del Nord Park
5. Turó del Putxet Gardens

Outdoor games
1. Ciutadella Park
2. Joan Miró Park
3. Sant Martí Park
4. Ceràmiques Vicens Square
5. Eduard Torroja Square

Picnics and meals
1. Ciutadella Park
2. Guineueta Park
3. Güell Park
4. Cervantes Park
5. Turó de la Peira Park

SPORTS

Jogging
1. Ciutadella Park
2. Guinardó Park
3. Carmel Park
4. Turó de la Peira Park
5. Joan Brossa Gardens

Cycling
1. Poblenou Park
2. Can Dragó Sports Park
3. Maresme Park
4. Estació del Nord Park
5. Castell de l'Oreneta Park

Sporting activities
1. Barceloneta Park
2. Sant Martí Park
3. Espanya Industrial Park
4. Carmel Park
5. Ciutadella Park

HEALTH

Contribution to mental health
1. Güell Park
2. Laberint d'Horta Park
3. Guinardó Park
4. Turó de la Peira Park
5. Mirador del Poble-sec Park

Physical health benefits
1. Guinardó Park
2. Güell Park
3. Turó de la Peira Park
4. Carmel Park
5. Ciutadella Park

Active ageing
1. Ciutadella Park
2. Can Ferrero Gardens
3. Gandhi Gardens
4. Cervantes Park
5. Guinardó Park

Allergies
1. Ca n'Altamira Gardens
2. Miquel Martí i Pol Gardens
3. Manuel Blancafort Gardens
4. Creu de Pedralbes Gardens
5. Creu Casas Gardens

PSYCHOLOGICAL / SPIRITUAL

Artistic inspiration

1. Güell Park
2. Turó Park
3. Ciutadella Park
4. Cervantes Park
5. Palau de Pedralbes Gardens

History

1. Güell Park
2. Ciutadella Park
3. Palau de Pedralbes Gardens
4. Laberint d'Horta Park
5. Joan Maragall Gardens

Reflection/rest

1. Joan Brossa Gardens
2. Cervantes Park
3. Ciutadella Park
4. Guinardó Park
5. Güell Park

Urban landscape

1. Ciutadella Park
2. Turó Park
3. Guinardó Park
4. Güell Park
5. Poblenou Central Park

Connection with nature

1. Historic Botanical Garden
2. Laribal Gardens
3. Castell de l'Oreneta Park
4. Mirador del Poble-sec Park
5. Palau de Pedralbes Gardens

ECOLOGICAL / REGULATING

Thermal regulation

1. Guinardó Park
2. Ciutadella Park
3. Güell Park
4. Diagonal Mar Park
5. Palau de Pedralbes Gardens

Carbon retention

1. Laberint d'Horta Park
2. Güell Park
3. Guinardó Park
4. Castell de l'Oreneta Park
5. Mirador del Poble-sec Park

Air quality improvement

1. Laberint d'Horta Park
2. Güell Park
3. Turó de la Peira Park
4. Laribal Gardens
5. Mirador del Migdia Park

Infiltration and permeability

1. Ciutadella Park
2. Laberint d'Horta Park
3. Palau de Pedralbes Gardens
4. Drets Humans Gardens
5. Castell de l'Oreneta Park

Ecosystem functionality

1. Laberint d'Horta Park
2. Castell de l'Oreneta Park
3. Palau de Pedralbes Gardens
4. Güell Park
5. Laribal Gardens

SOCIAL RELATIONAL

Meeting and interaction

1. Joan Miró Park
2. Espanya Industrial Park
3. Ciutadella Park
4. Barceloneta Park
5. Sant Martí Park

Group and family gatherings

1. Ciutadella Park
2. Güell Park
3. Castell de l'Oreneta Park
4. Joan Miró Park
5. Guinardó Park

Large events

1. Joan Miró Park
2. Ciutadella Park
3. Maternitat Gardens
4. Palau de Pedralbes Gardens
5. Pegaso Park

Cohesión social

1. Castell de l'Oreneta Park
2. Sant Martí Park
3. Ciutadella Park
4. Espanya Industrial Park
5. Maternitat Gardens

Environmental education

1. Güell Park
2. Castell de l'Oreneta Park
3. Laberint d'Horta Park
4. Historic Botanical Garden
5. Palau de Pedralbes Gardens

URBAN PLANNING

Reduction of urban density

1. Guinardó Park
2. Ciutadella Park
3. Güell Park
4. Carmel Park
5. Palau de Pedralbes Gardens

Peri-urban planning

1. Castell de l'Oreneta Park
2. Laberint d'Horta Park
3. Palau de les Heures Gardens
4. Can Sentmenat Gardens
5. Pla de Fornells Park

TOURISM ECONOMY

Sightseeing

1. Güell Park
2. Ciutadella Park
3. Laberint d'Horta Park
4. Joan Miró Park
5. Turó Park

Increase in value of adjacent properties

1. Turó Park
2. Ciutadella Park
3. Guinardó Park
4. Espanya Industrial Park
5. Palau de Pedralbes Gardens

Increase in value of economic activities

1. Güell Park
2. Espanya Industrial Park
3. Joan Miró Park
4. Ciutadella Park
5. Barceloneta Park

AVERAGE VALUATION BY GREEN SPACE

The green spaces that offer the most social environmental services are large parks with lots of vegetation, and also those that contain urban furniture and facilities. The majority are historic parks characterized by having mature vegetation and a good supply of ecological and regulating services. In general, green squares and interior courtyards of blocks obtain a lower overall valuation, with some exceptions which are able to match the valuations of certain parks and even some historic parks. Nevertheless, the value that squares and interior courtyard of blocks have in the case of certain services and in certain neighbourhoods and/or districts, such as the Eixample, should not be overlooked.

Castell de l'Oreneta Park (3rd)

Cervantes Park (8th)

Palau de Pedralbes Gardens (6th)

Turó Park (10th)

Joan Miró Park (9th)

Sarrià-Sant Gervasi

Les Corts

Eixan

Sants-Montjuïc

7.3 5.7
6.7
6.7 5.9
6.1 6.6
6.4
6.6
5.9
5.6
5.9 6.2
5. 8 5.7

1   0,5   0   1 Km

A total of about 19 parks (historic and non-historic) offer a high provision of services, while in the remaining green spaces these levels are medium or low. The higher the average valuation the more complete the range of social and environmental services offered by the park. However, it should be noted that a green space can have a low average valuation but offer a high level of potential in some services and low in others.

> ℹ️ *The average valuation is the arithmetic mean of all the services for each green space.*
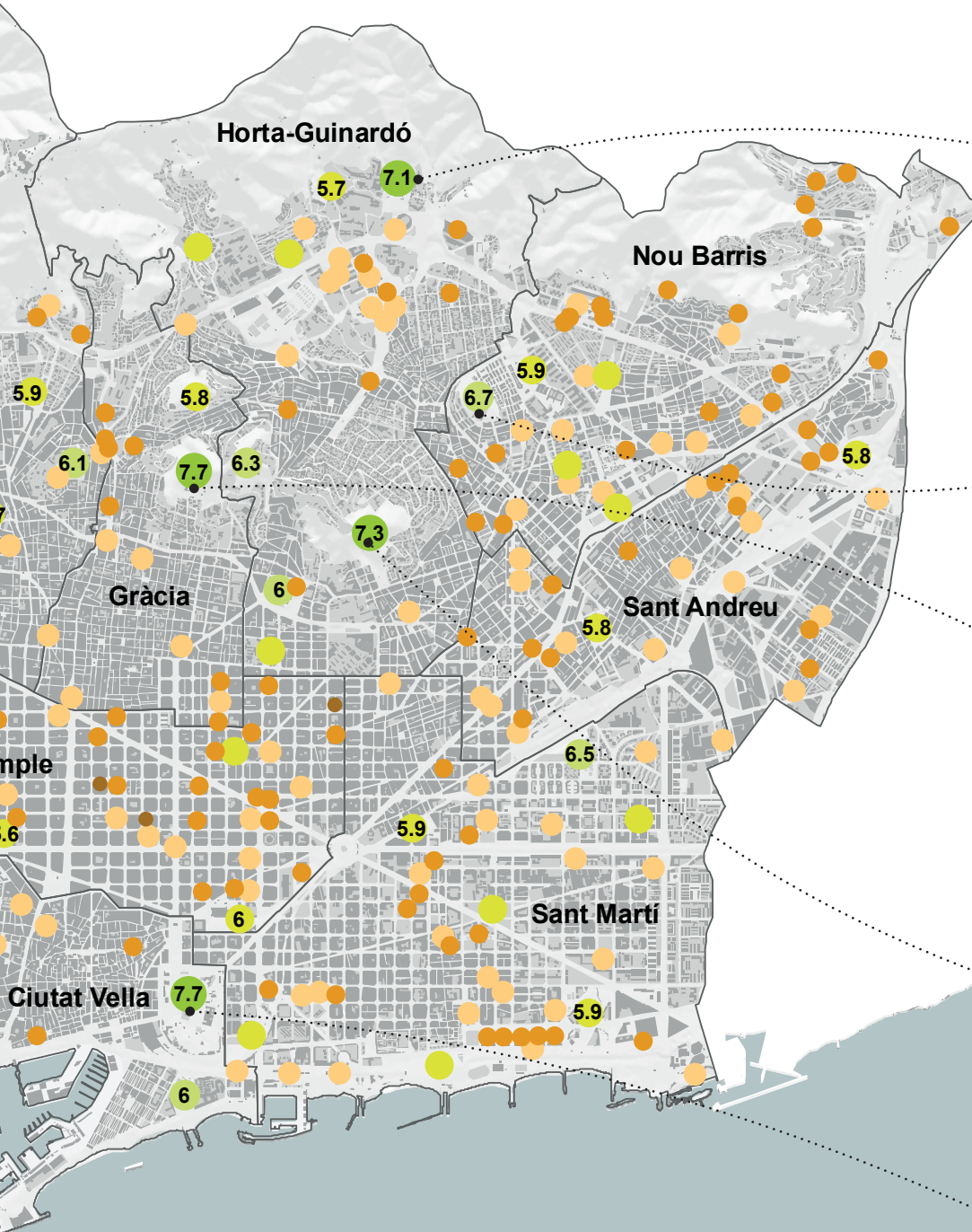
Laberint d'Horta Park (5th)

Turó de la Peira Park (7th)

Güell Park (2nd)

Guinardó Park (4th)

Ciutadella Park (1st)

AVERAGE VALUATION BY SPACE

The images correspond to the 10 parks with the highest average provision of all services.

Source: Barcelona Regional

Lowest → Highest

PROVISION OF SERVICES

ACCESSIBILITY
TO SERVICES

ACCESSIBILITY
Accessibility to green spaces within a 5 minute walk

The number of people with access to a green space is 1,466,859 (91.2% of the population), while the number of people with access to parks or historic parks (not counting green squares or interior courtyards of blocks) is 1,082,438 (67.2% of the population). Given the nature of the services analysed, the study considers that people have accessibility to a green space when this space is located within a 5 minute walking distance from their home.

While a large part of the urban matrix has access to a green space, accessibility to only historic parks and other parks is lower, and there are even areas without any accessibility in this regard, such as a good part of the Eixample, Ciutat Vella, Gràcia and the 22@ neighbourhoods.

91.2%
dof the population has a **green space** within a 5 minute walk

ACCESSIBILITY TO GREEN SPACES
Source: Barcelona Regional

Accessibility to all green spaces (historic parks, parks, squares and interior courtyards of blocks)
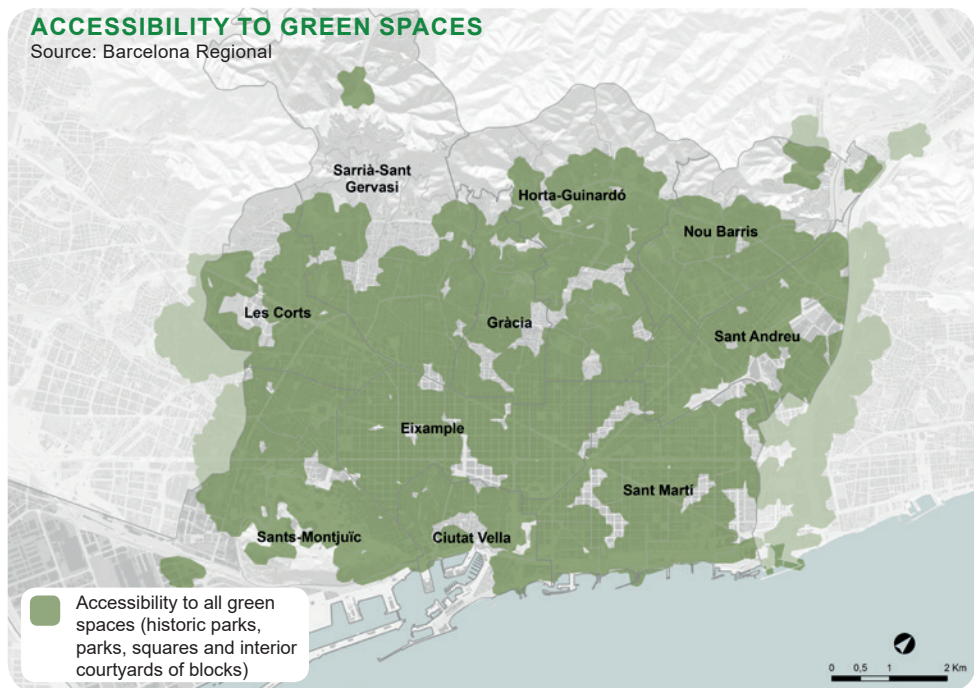
67.2%
of the population has a **park** within a 5 minute walk

ACCESSIBILITY TO HISTORIC PARKS AND PARKS
Source: Barcelona Regional

Accessibility to historic parks and parks

The areas with the most accessibility are those around the Tres Turons area; those around the large parks in Nou Barris (Central de Nou Barris Park, Turó de la Peira Park and Guineueta Park); other parks located on hills, such as Putxet Park or Monterols Park; some areas of Montjuïc; the areas around large parks, such as Ciutadella Park, Castell de l'Oreneta Park, Laberint d'Horta Park or Sant Martí Park, and the surrounding area of Joan Miró Park and Espanya Industrial Park.

The areas with the least accessibility are the Eixample, Gràcia and Ciutat Vella districts, as well as the old town of the Sant Andreu district, with very dense urban areas and very little presence of large parks. In these areas, the green spaces are made up mostly of interior courtyards of blocks and some green squares.

VALUATION OF OVERALL ACCESSIBILITY
Source: Barcelona Regional

Highest accessibility

Lowest accessibility
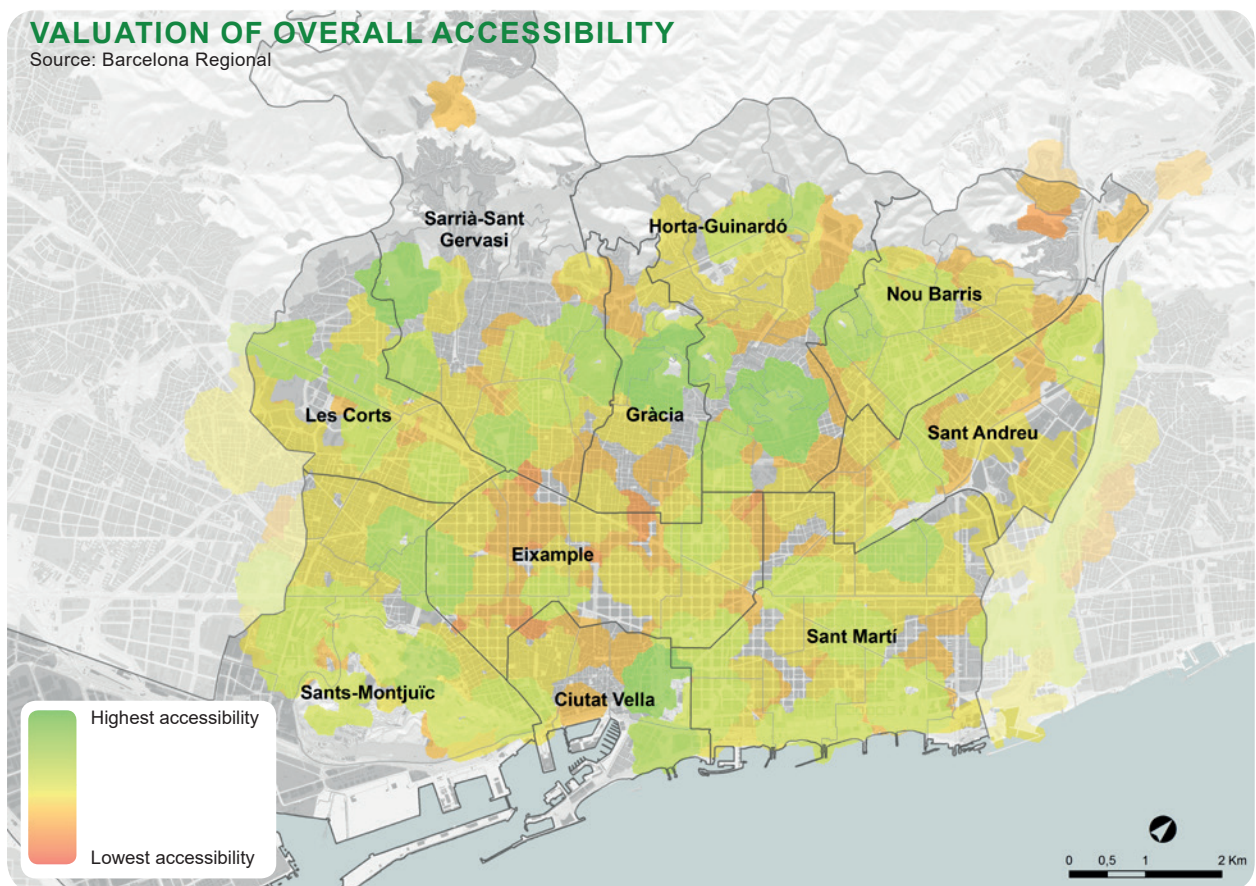
Accessibility can be measured as the proximity of citizens to green spaces. If we add to this variable the valuation of the social and environmental services offered by green spaces, we obtain a map of the overall accessibility to social environmental services.
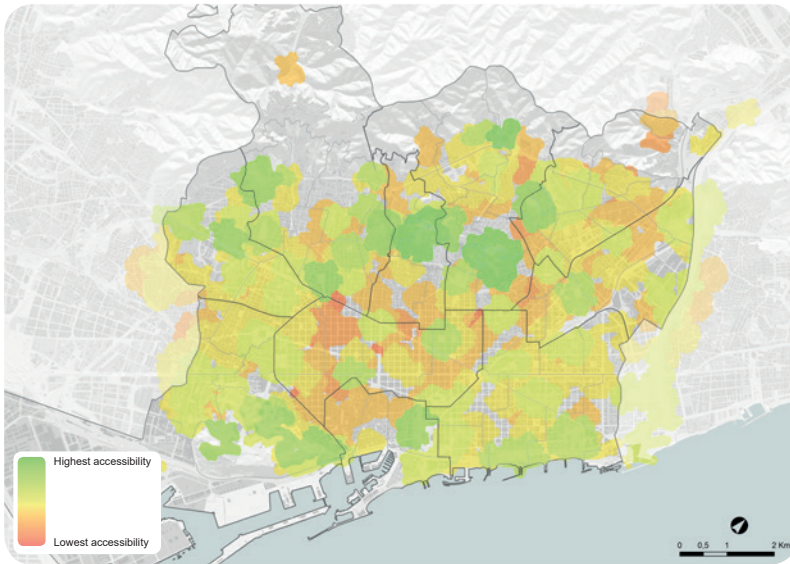
PARKS WITH THE GREATEST NUMBER OF ENVIRONMENTAL SERVICES

Environmental services: ecosystem functionality, thermal regulation, carbon retention, air quality improvement and infiltration and permeability.

The green spaces that offer the greatest number of environmental services are the **Laberint d'Horta, Guinardó, Güell and Castell de l'Oreneta parks, together with the Palau de Pedralbes Gardens**.

These services are mainly concentrated in the Tres Turons area, around the large parks and in the hills of Monterols, Turó del Putxet and Turó de la Peira, as well as in the mountain of Montjuïc.
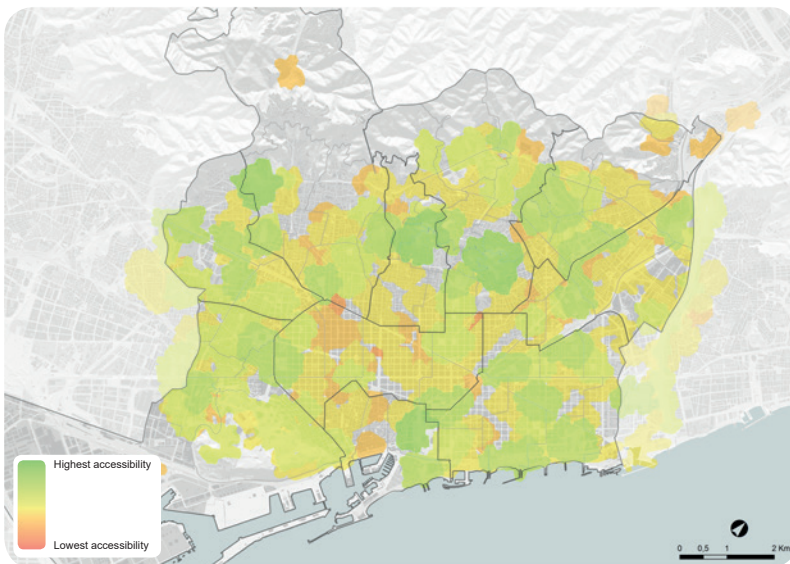
PARKS WITH THE GREATEST NUMBER OF SOCIAL SERVICES

Social services: urban landscape, connection and contact with nature, walking, outdoor games, picnics and meals, jogging, cycling, sports activities, meeting and inter-action, group and family gatherings, large events, social cohesion, environmental education, reflection and rest, contribution to mental health, physical health benefits and active ageing.

The spaces that offer the greatest number of social services are the **Ciutadella, Castell de l'Oreneta, Güell, Guinardó and Sant Martí parks**.

These services are more uniform and found mainly in large parks with a good number of facilities, such as children's playgrounds.
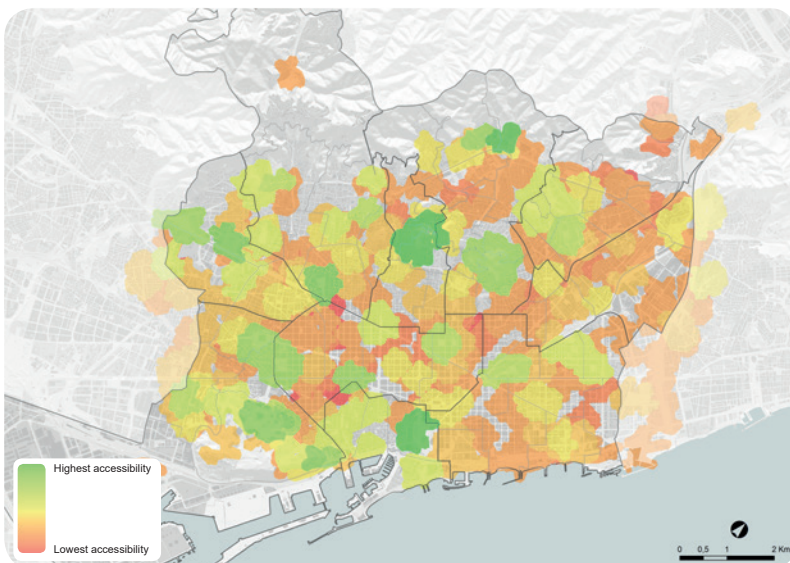
PARKS WITH THE GREATEST NUMBER OF HERITAGE/ HISTORIC SERVICES

Heritage/historic services: artistic inspiration, history and sightseeing.

The green spaces that offer the greatest number of heritage and historic services are the **Güell, Laberint d'Horta and Ciutadella parks, along with the Palau de Pedralbes Gardens and the Turó Park**.

These services differ greatly depending on the space and are most notable in historic parks.

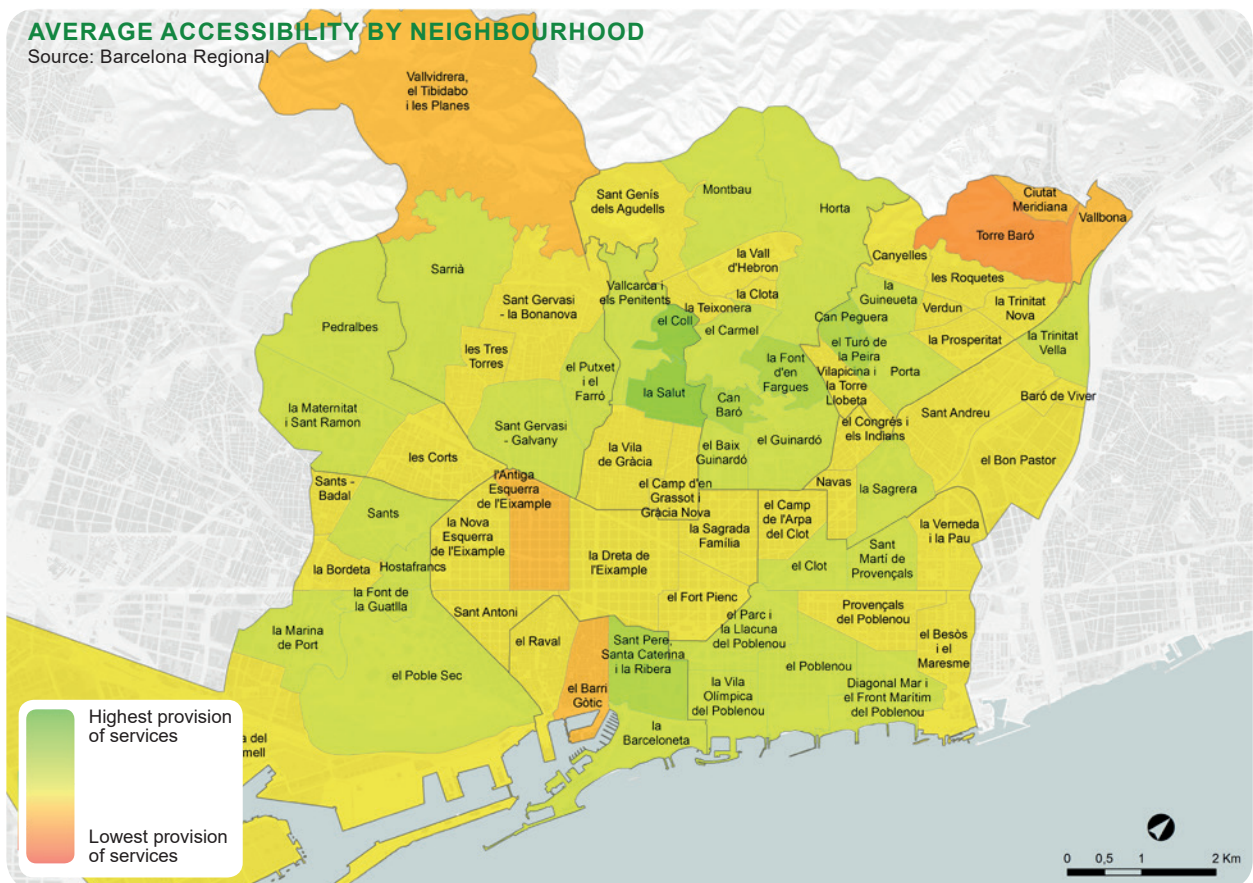Social and Environmental Services of Barcelona's Green Spaces

AVERAGE ACCESSIBILITY BY NEIGHBOURHOOD

There are several areas with a higher concentration of green spaces with high valuations (Montjuïc, Tres Turons, Turó del Putxet and Turó de la Peira). The low average accessibility valuation of the neighbourhoods near Collserola, such as Torre Baró or Ciutat Meridiana, are not necessarily critical, since these deficiencies are naturally covered by the wooded areas of Collserola.

- The Eixample district is the one with the lowest average valuation; in particular the Antiga Esquerra de l'Eixample stands out as one of the neighbourhoods with the lowest valuation.
- In Ciutat Vella, as with many of the services analysed, there is a strong contrast between the different neighbourhoods that make up the district.
- Sant Martí is fairly homogeneous and the valuations are average for most of the neighbourhoods, except for the ones located near the Besòs river and Sant Adrià.
- Sant Andreu is also a homogeneous district, in which the neighbourhood of La Sagrera and Trinitat Vella stand out.
- There is a big contrast in Nou Barris between the neighbourhoods located around Turó de la Peira and Nou Barris Central Park, and the neighbourhoods closest to Collserola and the Besòs River.
- Horta-Guinardó and Gràcia are heterogeneous districts, which follow the same pattern. The neighbourhoods located around the Tres Turons area obtain higher valuations, while the areas closest to the city centre obtain medium or low valuations.
- The district of Sarrià-Sant Gervasi is more homogeneous than the previous two, although it also shows notable differences between neighbourhoods.

AVERAGE ACCESSIBILITY BY NEIGHBOURHOOD
Source: Barcelona Regional

Highest provision of services

Lowest provision of services

0   0,5   1   2 Km

La Salut   El Coll   Can Baró   Can Peguera

Neighbourhoods with more accessibility to services

El Barri Gòtic   Antiga Esq. de l'Eixample   Les Tres Torres   La Teixonera

Neighbourhoods with less accessibility to services

COMPARISON BY TYPE OF GREEN SPACE

COMPARISON BY TYPE OF GREEN SPACE

Historic parks and other parks are the spaces with the highest average valuations. Some of the spaces with the highest valuations in the city are historic parks (Güell Park, Ciutadella Park and Guinardó Park), but there are also other historic parks with lower valuations (Font del Racó Park).

The interior courtyards of blocks and squares obtain similar lower overall valuations, with some exceptions which are able to match the valuations of certain parks and even some historic parks. Nevertheless, the value that squares and interior courtyards of blocks have in the case of certain services and in certain neighbourhoods and/or districts, such as the Eixample district, should not be overlooked. This is evident in services such as outdoor games, sports activities and active ageing.
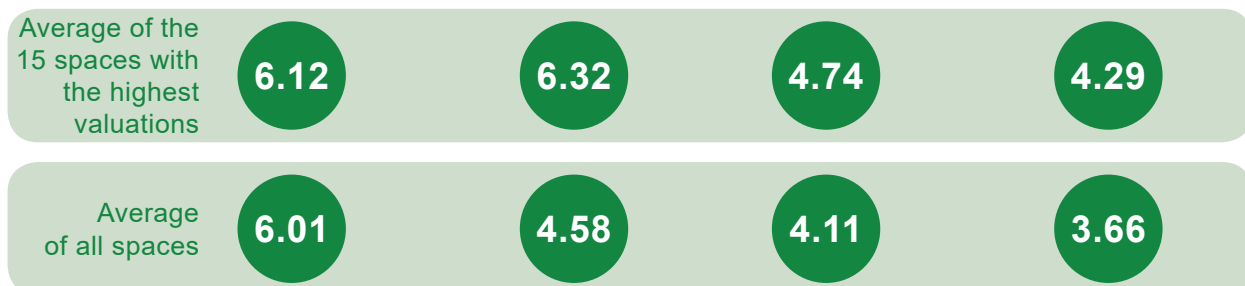
COMPARISON OF THE 15 SPACES WITH THE HIGHEST VALUATION BY TYPE

Source: Barcelona Regional
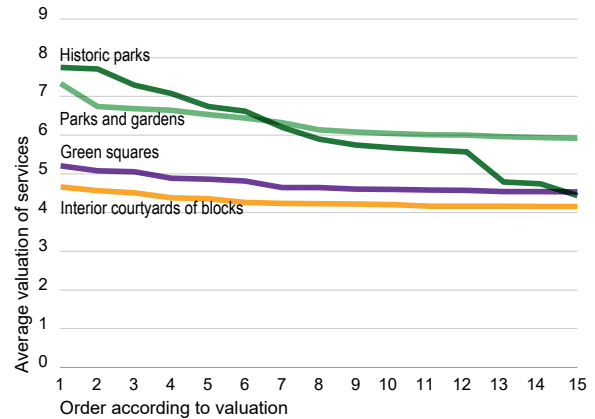
Ranking of the 15 best green spaces according to the average valuation of their services
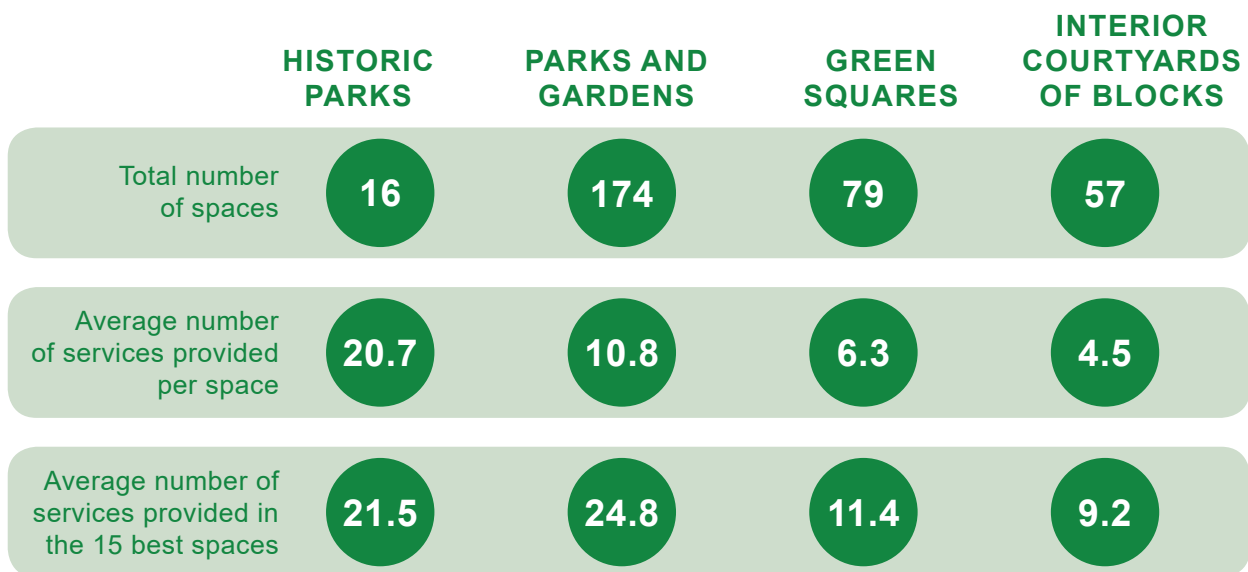
	HISTORIC PARKS		PARKS AND GARDENS		GREEN SQUARES		INTERIOR COURTYARDS OF BLOCKS	
1	Ciutadella Park	7.75	Castell de l'Oreneta Park	7.33	Les Corts Square	5.21	Montserrat Gardens	4.66
2	Güell Park	7.71	Turó de la Peira Park	6.73	Sóller Square	5.07	La Massana Gardens	4.57
3	Guinardó Park	7.29	Cervantes Park	6.68	La Palmera Square	5.05	Els Tres Tombs Gardens	4.51
4	Laberint d'Horta Park	7.08	Joan Miró Park	6.64	Assemblea de Catalunya Square	4.89	Càndida Pérez Gardens	4.38
5	Palau de Pedralbes Gardens	6.74	Sant Martí Park	6.53	La Farga Square	4.86	Flora Tristan Gardens	4.36
6	Turó Park	6.62	Espanya Industrial Park	6.45	Letamendi Square	4.81	Mercè Plantada Gardens	4.26
7	Laribal Gardens	6.20	Carmel Park	6.32	Lesseps Square	4.65	Torre de les Aigües Gardens	4.24
8	Tamarita Gardens	5.90	Turó del Putxet Gardens	6.14	Heron City Square	4.65	Jaume Perich Gardens	4.22
9	Palau de les Heures Gardens	5.74	Maternitat Gardens	6.08	Milagros Consarnau Sab Square	4.61	Clotilde Cerdà Gardens	4.22
10	Can Sentmenat Gardens	5.67	Barceloneta Park	6.04	Carrer Rosich Square	4.59	Emma de Barcelona Gardens	4.20
11	Historic Botanical Garden	5.61	Besòs Park	6.01	Sants Square	4.58	Antoni Puigvert Gardens	4.16
12	Universitat Gardens	5.57	Les Aigües Park	6.00	Sòl de Baix Square	4.58	Irene Polo Gardens	4.16
13	Palau Robert Gardens	4.79	Estació del Nord Park	5.96	Pau Casals Square	4.54	Paula Montal Gardens	4.16
14	Font del Racó Park	4.74	Vil·la Amèlia Gardens	5.94	Tetuan Square	4.54	Lina Òdena Gardens	4,16
15	Teatre Grec Gardens	4.44	Joan Maragall Gardens	5.92	Harry Walker Square	4.53	Sebastià Gasch Gardens	4.16

Average of the 15 spaces with the highest valuations	6.12	6.32	4.74	4.29
Average of all spaces	6.01	4.58	4.11	3.66

Provision of services by type of green space

The provision of social and environmental services differs depending on the type of space analysed. Historic parks and other parks and gardens offer on average more services than squares or the interior courtyards of blocks. The services most commonly offered by each type of space also vary.

> *i*   A service is considered to be provided when it obtains a valuation equal to or greater than 5.

	HISTORIC PARKS	**PARKS AND GARDENS**	**GREEN SQUARES**	**INTERIOR COURTYARDS OF BLOCKS**
Total number of spaces	16	174	79	57
Average number of services provided per space	20.7	10.8	6.3	4.5
Average number of services provided in the 15 best spaces	21.5	24.8	11.4	9.2

The 10 most commonly provided services		**HISTORIC PARKS**	**PARKS AND GARDENS**	**GREEN SQUARES**	**INTERIOR COURTYARDS OF BLOCKS**
	1	History	Infiltration and permeability	Active ageing	Active ageing
	2	Environmental education	Active ageing	Cycling	Infiltration and permeability
	3	Infiltration and permeability	Cycling	Increase in value of adjacent properties	Reflection, rest
	4	Sightseeing	Increase in value of adjacent properties	Infiltration and permeability	Walking
	5	Increase in value of adjacent properties	Thermal regulation	Thermal regulation	Outdoor games
	6	Artistic inspiration	Reduction of urban density	Walking	Thermal regulation
	7	Urban landscape	Walking	Outdoor games	Increase in value of adjacent properties
	8	Connection with nature	Physical health benefits	Reduction of urban density	Urban landscape
	9	Walking	Reflection, rest	Meeting and interaction	Cycling
	10	Reduction of urban density	Meeting and interaction	Sporting activities	Reduction of urban density

Ranking of the 20 best green spaces by social and environmental service

The types of green spaces that offer a higher provision in the majority of services are parks and historic parks. Historic parks lead the rankings in a large number of environmental services, such as ecosystem functionality, carbon retention and air quality improvement, and in those related to nature, such as connection with nature and environmental education. Historic parks have a more mature plant structure, which favours their environmental services.

Historic parks and large parks are the foundation of the network of green spaces, although in the case of certain services the interior courtyards of blocks and squares play a prominent role, in some areas enhancing the services offered by the total of green spaces as a whole. This is the case of outdoor games, reflection and rest and active ageing, services which some interior courtyards of blocks and green squares offer at levels comparable to those of parks.

ECOLOGICAL / REGULATING

ECOSYSTEM FUNCTIONALITY	THERMAL REGULATION	CARBON RETENTION	AIR QUALITY IMPROVEMENT	INFILTRATION AND PERMEABILITY
Laberint d'Horta Park	Guinardó Park	Laberint d'Horta Park	Laberint d'Horta Park	Ciutadella Park
Castell de l'Oreneta Park	Ciutadella Park	Güell Park	Güell Park	Laberint d'Horta Park
Palau de Pedralbes Gardens	Güell Park	Guinardó Park	Turó de la Peira Park	Palau de Pedralbes Gardens
Güell Park	Diagonal Mar Park	Castell de l'Oreneta Park	Laribal Gardens	Drets Humans Gardens
Laribal Gardens	Palau de Pedralbes Gardens	Mirador del Poble-sec Park	Mirador del Migdia Park	Castell de l'Oreneta Park
Guinardó Park	Espanya Industrial Park	Laribal Gardens	Joan Brossa Gardens	Can Mantega Gardens
Turó de la Peira Park	Turó Park	Turó de la Peira Park	Guinardó Park	Guinardó Park
Joan Maragall Gardens	Joan Miró Park	Font del Racó Park	Castell de l'Oreneta Park	Turó Park
Mirador del Poble-sec Park	Les Aigües Park	Turó del Putxet Gardens	Joan Maragall Gardens	Mirador del Migdia Park
Palau de les Heures Gardens	Sant Martí Park	Mirador del Migdia Park	Carmel Park	Joan Brossa Gardens
Ciutadella Park	Pegaso Park	Historic Botanical Garden	Mirador del Poble-sec Park	Cervantes Park
Mirador del Migdia Park	Carmel Park	Palau de les Heures Gardens	Turó del Putxet Gardens	Rieres d'Horta Park
Historic Botanical Garden	Poblenou Park	Palau de Pedralbes Gardens	Palau de les Heures Gardens	Clot Park
Turó Park	Laberint d'Horta Park	Monterols Park	Can Sentmenat Gardens	Poblenou Park
Institut Cartogràfic Gardens	Estació del Nord Park	Joan Maragall Gardens	Historic Botanical Garden	Joan Raventós Park
Joan Brossa Gardens	Barceloneta Park	Joan Brossa Gardens	Palau de Pedralbes Gardens	Carmel Park
Turó del Putxet Gardens	Piscines i Esports Gardens	Turó Park	Turó Park	Güell Park
Font del Racó Park	Carles I Park	Tamarita Gardens	Font del Racó Park	Turó de la Peira Park
Can Sentmenat Gardens	Joan Maragall Gardens	Carmel Park	Petra Kelly Gardens	Joan Maragall Gardens
Carmel Park	Clot Park	Can Sentmenat Gardens	Institut Cartogràfic Gardens	Palau de les Heures Gardens

LEISURE

WALKING	OUTDOOR GAMES	PICNICS AND MEALS
Güell Park	Ciutadella Park	Ciutadella Park
Ciutadella Park	Joan Miró Park	Guineueta Park
Joan Miró Park	Sant Martí Park	Güell Park
Estació del Nord Park	Ceràmiques Vicens Square	Cervantes Park
Turó del Putxet Gardens	Eduard Torroja Square	Turó de la Peira Park
Clot Park	Clot Park	Castell de l'Oreneta Park
Espanya Industrial Park	Can Dragó sports Park	Les Aigües Park
Sant Martí Park	Diagonal Mar Park	Trinitat Park
Cervantes Park	Castell de l'Oreneta Park	Creueta del Coll Park
Turó Park	Els Tres Tombs Gardens	Laberint d'Horta Park
Turó de la Peira Park	Espanya Industrial Park	Poblenou Park
Carles I Park	Josep Pallach Square	Joan Brossa Gardens
Guinardó Park	Mossèn Joan Cortinas Square	Nou Barris Square
Pegaso Park	Poblenou Central Park	Pedro Muñoz Seca Gardens
Laribal Gardens	Harry Walker Square	Les Tres Xemeneies Gardens
Palau de Pedralbes Gardens	Turó Park	Drets Humans Gardens
Barceloneta Park	Lina Òdena Gardens	Elvira Farreras Gardens
Can Dragó sports park	Flora Tristan Gardens	Manuel J. Arnalot Gardens
Poblenou Central Park	Manuel J. Arnalot Gardens	Gandhi Gardens
Can Sabaté Park	Barceloneta Park	Joan Miró Park

Legend:
- Historic parks
- Parks and gardens
- Interior courtyards of blocks
- Green squares

Legend:
- Historic parks
- Parks and gardens
- Interior courtyards of blocks
- Green squares

SPORTS

CYCLING	JOGGING	SPORTING ACTIVITIES
Poblenou Park	Ciutadella Park	Barceloneta Park
Can Dragó Sports park	Guinardó Park	Sant Martí Park
Garcia Fària Linear Park (former Maresme Park)	Carmel Park	Espanya Industrial Park
Estació del Nord Park	Turó de la Peira Park	Carmel Park
Castell de l'Oreneta Park	Joan Brossa Gardens	Ciutadella Park
Diagonal Mar Park	Petra Kelly Gardens	Cervantes Park
Nou Barris Central Park	Nou Barris Central Park	Príncep de Girona Gardens
Port Olímpic Park	Turó del Putxet Gardens	Joan Miró Park
Maternitat Gardens	Castell de l'Oreneta Park	Els Infants Gardens
Carles I Park	Can Dragó sports park	Enric Sagnier Gardens
Sant Martí Park	Rambla de Sants Gardens	Josep Pallach Square
Joan Brossa Gardens	Poblenou Park	Pedro Muñoz Seca Gardens
Walter Benjamin Gardens	Joan Maragall Gardens	Farga Square
Joan Miró Park	Diagonal Mar Park	Rambla de Sants Gardens
Turó de la Peira Park	Mirador del Migdia Park	Les Tres Xemeneies Gardens
Mirador del Migdia Park	Joan Miró Park	Estació del Nord Park
Carmel Park	Mossèn Costa i Llobera Gardens	Can Pujades sports area
Poblenou Central Park	Güell Park	Can Sabaté Park
Barceloneta Park	Clot Park	Clot de la Mel Gardens
Trinitat Park	Mossèn Cinto Verdaguer Gardens	Josep Munté Gardens

HEALTH

CONTRIBUTION TO MENTAL HEALTH	PHYSICAL HEALTH BENEFITS	ACTIVE AGEING	ALLERGENIC POTENTIAL
Güell Park	Guinardó Park	Ciutadella Park	Ca n'Altamira Gardens
Laberint d'Horta Park	Güell Park	Can Ferrero Gardens	Miquel Martí i Pol Gardens
Guinardó Park	Turó de la Peira Park	Gandhi Gardens	Manuel Blancafort Gardens
Turó de la Peira Park	Carmel Park	Cervantes Park	Creu de Pedralbes Gardens
Mirador del Poble-sec Park	Ciutadella Park	Guinardó Park	Creu Casas Gardens
Castell de l'Oreneta Park	Can Ferrero Gardens	Sant Martí Park	Ciutat de Mallorca Passage
Laribal Gardens	Cervantes Park	Espanya Industrial Park	Sibil·les Square
Mirador del Migdia Park	Turó del Putxet Gardens	Els Tres Tombs Gardens	Tamarita Gardens
Institut Cartogràfic Gardens	Laberint d'Horta Park	Farga Square	Monterols Park
Turó del Putxet Gardens	Barceloneta Park	Josep Munté Gardens	Olga Sacharoff Gardens
Joan Brossa Gardens	Vil·la Cecília Gardens	Turó de la Peira Park	Ferran Reyes Square
Font Florida Park	Castell de l'Oreneta Park	Barceloneta Park	Alícia de Larrocha Gardens
Carmel Park	Can Sabaté Park	Assemblea de Catalunya Square	Rosa Luxemburg Gardens
Joan Maragall Gardens	Trinitat Park	Nou Barris Square	Joan Vinyoli Gardens
Palau de les Heures Gardens	Creueta del Coll Park	Joan Miró Park	Laribal Gardens
Font del Racó Park	Sant Martí Park	Güell Park	Duc de Medinaceli Square
Creu Casas Gardens	Mirador del Poble-sec park	Can Sabaté Park	Els Tres Tombs Gardens
Historic Botanical Garden	Monterols Park	Clot Park	Can Cuiàs Gardens
Can Ferrero Gardens	Gandhi Gardens	Vil·la Cecília Gardens	Can Ferrero Gardens
Can Sentmenat Gardens	Poblenou Park	Estació del Nord Park	La Sedeta Gardens

PSYCHOLOGICAL / SPIRITUAL

ARTISTIC INSPIRATION	HISTORY	REFLECTION, REST	URBAN LANDSCAPE	CONNECTION WITH NATURE
Güell Park	Güell Park	Joan Brossa Gardens	Ciutadella Park	Historic Botanical Garden
Turó Park	Ciutadella Park	Cervantes Park	Turó Park	Laribal Gardens
Ciutadella Park	Palau de Pedralbes Gardens	Ciutadella Park	Guinardó Park	Castell de l'Oreneta Park
Cervantes Park	Laberint d'Horta Park	Guinardó Park	Güell Park	Mirador del Poble-sec Park
Palau de Pedralbes Gardens	Joan Maragall Gardens	Güell Park	Poblenou Central Park	Palau de Pedralbes Gardens
Laberint d'Horta Park	Historic Botanical Garden	Turó del Putxet Gardens	Palau de Pedralbes Gardens	Güell Park
Espanya Industrial Park	Miramar Gardens	Gandhi Gardens	Universitat Gardens	Guinardó Park
Guinardó Park	Universitat Gardens	Laberint d'Horta Park	Joan Miró Park	Laberint d'Horta Park
Joan Maragall Gardens	Teatre Grec Gardens	Turó de la Peira Park	Laberint d'Horta Park	Institut Cartogràfic Gardens
Joan Miró Park	Forestier Stairs	Eusebi Güell Square	Sant Martí Park	Palau de les Heures Gardens
Can Sentmenat Gardens	Tetuan Square	Can Sabaté Park	Joan Maragall Gardens	Joan Maragall Gardens
Drets Humans Gardens	Laribal Gardens	Laribal Gardens	Clot Park	Turó de la Peira Park
Historic Botanical Garden	Turó Park	Tamarita Gardens	Les Aigües Park	Font del Racó Park
Palau de les Heures Gardens	Sagrada Família Square	Les Aigües Park	Pegaso Park	Ciutadella Park
Tamarita Gardens	Guinardó Park	Mirador del Migdia Park	Historic Botanical Garden	Turó Park
Laribal Gardens	Castell de l'Oreneta Park	Rubió i Tudurí Gardens	Espanya Industrial Park	Sant Martí Park
Sóller Square	Vicenç Martorell Square	Guineueta Park	Laribal Gardens	Can Sentmenat Gardens
Miramar Gardens	Institut Cartogràfic Gardens	Pegaso Park	Sagrada Família Square	Mirador del Migdia Park
Les Escultures Gardens	Duc de Medinaceli Square	Vil·la Amèlia Gardens	Diagonal Mar Park	Universitat Gardens
Sant Martí Park	Letamendi Square	Sebastià Gasch Gardens	Vil·la Amèlia Gardens	Turó del Putxet Gardens

SOCIAL / RELATIONAL

MEETING AND INTERACTION	GROUP AND FAMILY GATHERINGS	LARGE EVENTS, PARTIES AND SHOWS	SOCIAL COHESION	ENVIRONMENTAL EDUCATION
Joan Miró Park	Ciutadella Park	Joan Miró Park	Castell de l'Oreneta Park	Güell Park
Espanya Industrial Park	Güell Park	Ciutadella Park	Sant Martí Park	Castell de l'Oreneta Park
Ciutadella Park	Castell de l'Oreneta Park	Maternitat Gardens	Ciutadella Park	Laberint d'Horta Park
Barceloneta Park	Joan Miró Park	Palau de Pedralbes Gardens	Espanya Industrial Park	Historic Botanical Garden
Sant Martí Park	Guinardó Park	Pegaso Park	Maternitat Gardens	Palau de Pedralbes Gardens
Estació del Nord Park	Turó de la Peira Park	Can Dragó sports park	Rieres d'Horta Park	Cervantes Park
Pegaso Park	Espanya Industrial Park	Trinitat Park	Nou Barris Central Park	Universitat Gardens
Güell Park	Estació del Nord Park	Espanya Industrial Park	Tamarita Gardens	Ciutadella Park
Castell de l'Oreneta Park	Laberint d'Horta Park	La Maquinista de Sant Andreu Park	Carmel Park	Guinardó Park
Príncep de Girona Gardens	Pegaso Park	Diagonal Mar Park	Guinardó Park	Turó Park
Rambla de Sants Gardens	Barceloneta Park	Estació del Nord Park	Diagonal Mar Park	Laribal Gardens
Guinardó Park	Nou Barris Central Park	Güell Park	Les Aigües Park	Turó del Putxet Gardens
Les Aigües Park	Sant Martí Park	Sant Martí Park	Güell Park	Joan Brossa Gardens
Manuel J. Arnalot Gardens	Trinitat Park	Laberint d'Horta Park	Barceloneta Park	Joan Maragall Gardens
Clot Park	Turó del Putxet Gardens	Sóller Square	Palau de Pedralbes Gardens	Institut Cartogràfic Gardens
Can Sabaté Park	Diagonal Mar Park	Clot de la Mel Gardens	Joan Miró Park	Mirador del Poble-sec Park
Can Dragó sports park	Can Dragó sports park	Clot Park	Rambla de Sants Gardens	Sant Jordi Gardens
Els Tres Tombs Gardens	Les Aigües Park	Els Auditoris Park	Can Sabaté Park	Monterols Park
Turó del Putxet Gardens	Clot Park	Port Olímpic Park	Manuel J. Arnalot Gardens	Mossèn Cinto Verdaguer Gardens
Pedro Muñoz Seca Gardens	Turó Park	Turó Park	Montbau Gardens	Font del Racó Park

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URBAN PLANNING

REDUCTION OF URBAN DENSITY	PERI-URBAN PLANNING
Guinardó Park	Castell de l'Oreneta Park
Ciutadella Park	Laberint d'Horta Park
Güell Park	Palau de les Heures Gardens
Carmel Park	Can Sentmenat Gardens
Palau de Pedralbes Gardens	Pla de Fornells Park
Turó de la Peira Park	Font del Racó Park
Les Aigües Park	Turó de la Peira Park
Turó Park	Güell Park
Diagonal Mar Park	Creueta del Coll Park
Laberint d'Horta Park	Cervantes Park
Turó del Putxet Gardens	Nou Barris Central Park
Castell de l'Oreneta Park	Xavier Montsalvatge Park
Pegaso Park	Josep Maria Serra i Martí Park
Poblenou Park	Manuel J. Arnalot Gardens
Estació del Nord Park	Guineueta Park
Sant Martí Park	Joan Raventós Park
Maternitat Gardens	Marià Cañardo Lacasta Gardens
Joan Miró Park	Trinitat Park
Joan Maragall Gardens	Montbau Gardens
Joan Brossa Gardens	Primer de Maig Square

Legend:
- Historic parks
- Parks and gardens
- Interior courtyards of blocks
- Green squares

TOURISM / ECONOMY

SIGHTSEEING	INCREASE IN VALUE OF ADJACENT PROPERTIES	INCREASE IN VALUE OF ADJACENT ECONOMIC ACTIVITIES
Güell Park	Turó Park	Güell Park
Ciutadella Park	Ciutadella Park	Espanya Industrial Park
Laberint d'Horta Park	Guinardó Park	Joan Miró Park
Joan Miró Park	Espanya Industrial Park	Ciutadella Park
Turó Park	Palau de Pedralbes Gardens	Barceloneta Park
Laribal Gardens	Tamarita Gardens	Sant Martí Park
Miramar Gardens	Güell Park	Maternitat Gardens
Palau de Pedralbes Gardens	Can Sabaté Park	Castell de l'Oreneta Park
Joan Maragall Gardens	Joan Miró Park	Nou Barris Central Park
Cervantes Park	Vil·la Amèlia Gardens	Rambla de Sants Gardens
Universitat Gardens	Castell de l'Oreneta Park	Estació del Nord Park
Espanya Industrial Park	Cervantes Park	Tamarita Gardens
Historic Botanical Garden	Laberint d'Horta Park	Palau de Pedralbes Gardens
Barceloneta Park	Barceloneta Park	Drets Humans Gardens
Castell de l'Oreneta Park	Joan Maragall Gardens	Laribal Gardens
Tetuan Square	Sant Martí Park	Can Sabaté Park
Palau de les Heures Gardens	Universitat Gardens	Guinardó Park
Can Sentmenat Gardens	Les Corts Square	Vil·la Florida Gardens
Guinardó Park	Monterols Park	Les Aigües Park
Forestier Stairs	Les Aigües Park	Rieres d'Horta Park

OVERALL VALUATION

- Ciutadella Park
- Güell Park
- Castell de l'Oreneta Park
- Guinardó Park
- Laberint d'Horta Park
- Palau de Pedralbes Gardens
- Turó de la Peira Park
- Cervantes Park
- Joan Miró Park
- Turó Park
- Sant Martí Park
- Espanya Industrial Park
- Carmel Park
- Laribal Gardens
- Turó del Putxet Gardens
- Maternitat Gardens
- Barceloneta Park
- Les Aigües Park
- Estació del Nord Park
- Vil·la Amèlia Gardens

PROVISION
AND
DEFICITS

PROVISION OF SOCIAL AND ENVIRONMENTAL SERVICES

The areas in which more services are provided are:

- Tres Turons and surrounding area
- Turó de la Peira and surrounding area
- Montjuïc
- Area of Joan Miró Park and Espanya Industrial Park
- Area of Vil·la Amèlia and Vil·la Cecília gardens
- Surrounding areas of many of the historic parks (Turó Park, Ciutadella Park, Castell de l'Oreneta Park, Tamarita Gardens, Laberint d'Horta Park, Palau de Pedralbes Gardens, etc.)
- Main large parks (Sant Martí Park, Diagonal Mar Park, Nou Barris Central Park, etc.)
- Surrounding areas of Sagrada Família Square and Gaudí Square

The number of services provided by area is heterogeneous throughout the city.

There are areas with a high provision of services and others with little or no provision of services. The areas in which more services are detected are, as a general rule, those in which the parks with the highest degree of access to services are concentrated, such as the Tres Turons area (except the Carmel Park area), much of Montjuïc, historic parks such as Turó Park and Ciutadella Park, and other large parks, such as Sant Martí Park, Turó de la Peira Park, Castell de l'Oreneta Park and Cervantes Park. Apart from these important hubs which provide access to social environmental services, other areas also stand out thanks to the sum of the services provided by the various green spaces found there. This is the case of the surrounding areas of the Joan Miró Park, Sagrada Família, the area of the Montbau neighbourhood in the Palau de les Heures Gardens and a part of the Marina de Port neighbourhood.

NUMBER OF SERVICES PROVIDED
Source: Barcelona Regional
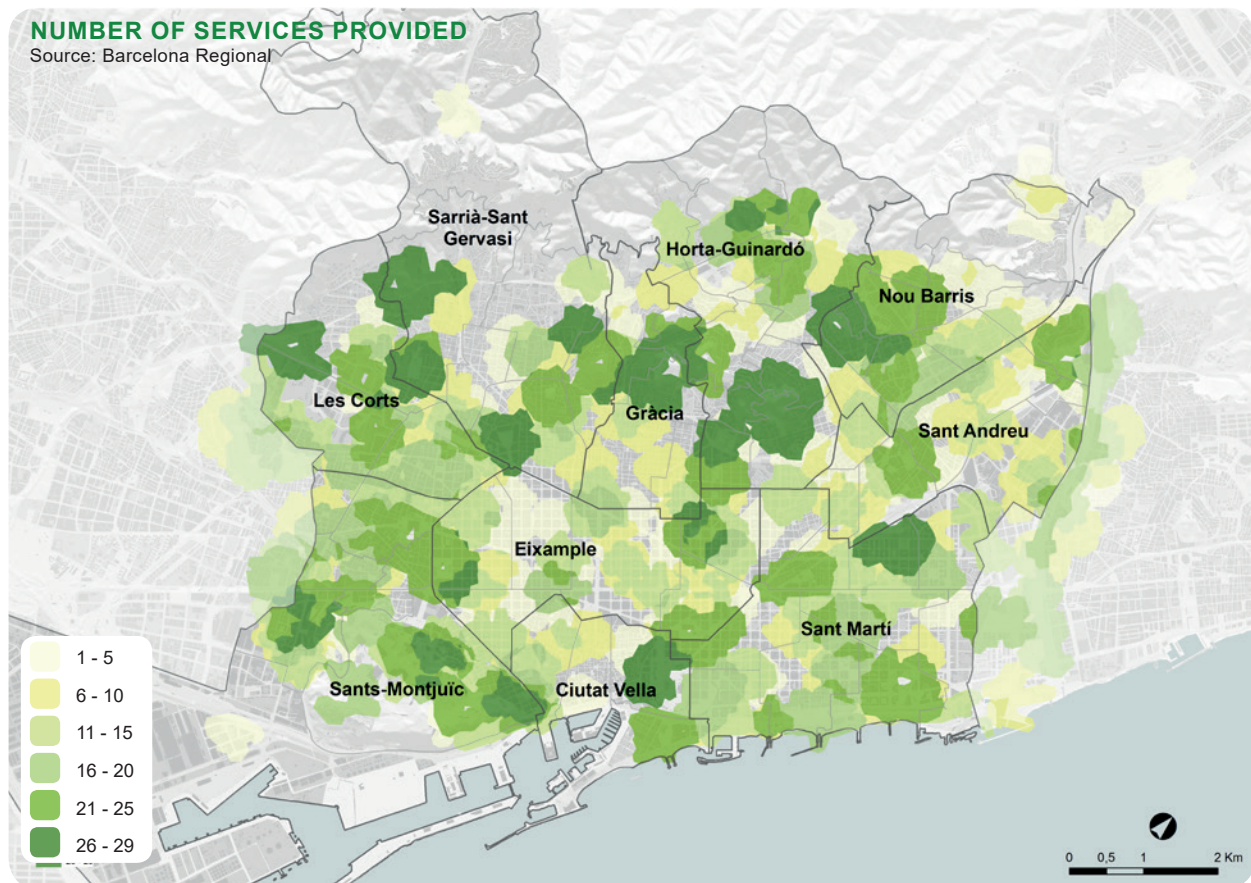
Services provided	Population
0	151,977
1 a 5	183,225
6 a 10	229,486
11 a 15	300,106
16 a 20	269,836
21 a 25	262,070
26 a 29	212,046
	1,608,746

The data on the services provided by each of the green spaces is cross referenced to obtain the number of services provided for each area of the city.
A service is considered to be provided when it obtains a valuation equal to or greater than 5.
The number of services provided by area provides a territorialized overview of the services offered in each area of the urban fabric, showing which areas have more services and which have less.

Social and Environmental Services of Barcelona's Green Spaces
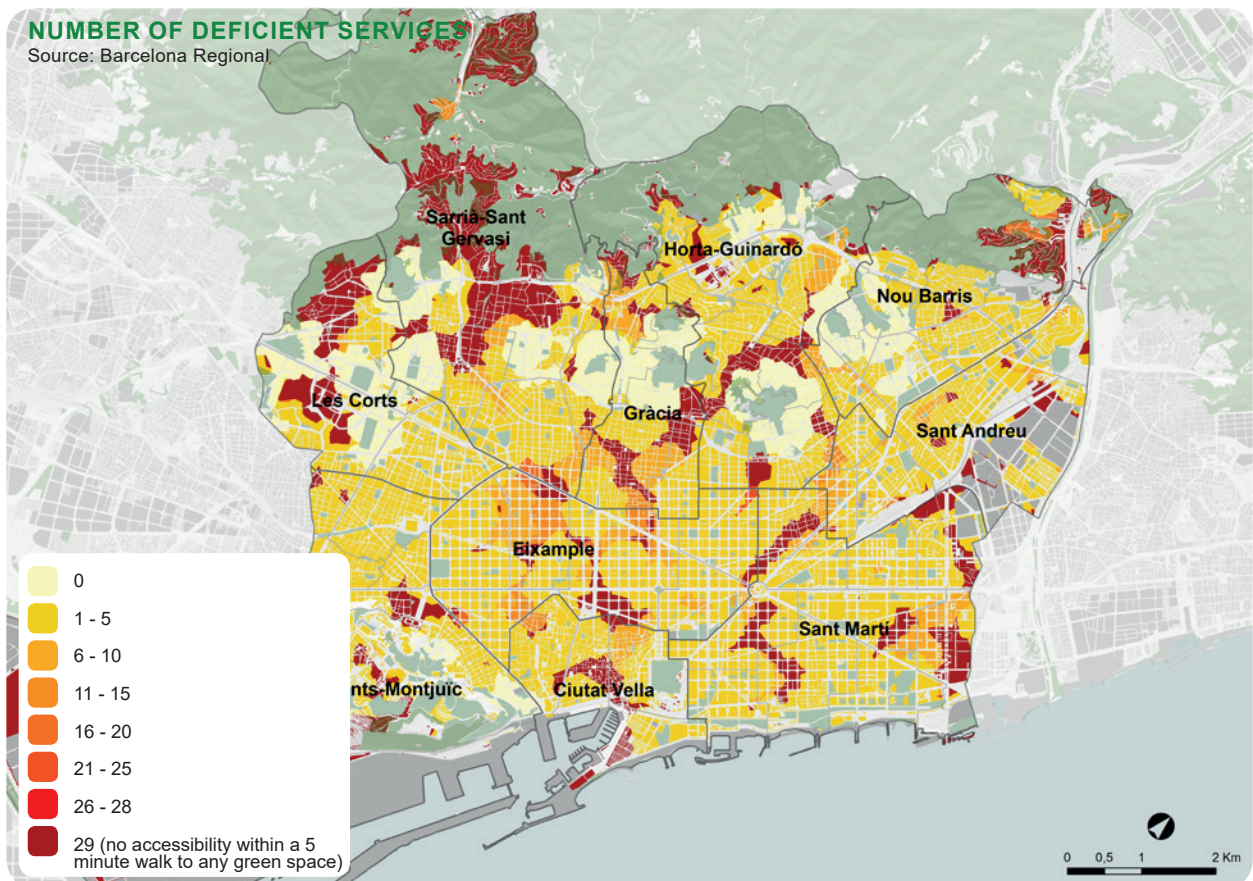
DEFICITS OF SOCIAL AND ENVIRONMENTAL SERVICES

Main areas with deficits:

- Centre of the Eixample (especially the Antiga Esquerra de l'Eixample neighbourhood)
- Area surrounding Ronda Sant Pere
- Much of Gràcia
- Area surrounding Sant Jaume Square and Via Laietana
- Part of 22@
- Area surrounding Maragall Square
- Vallbona and Torre Baró
- Much of the El Besòs i el Maresme neighbourhood
- Bonanova neighbourhood
- Northern area of the Horta neighbourhood
- Part of the Pedralbes neighbourhood

- Northern part of the Vallcarca i els Penitents neighbourhood
- Area surrounding Ronda Sant Antoni in the Raval and Sant Antoni neighbourhoods
- Sant Pere neighbourhood
- Camp de l'Arpa neighbourhood near Glòries

Keep in mind that this study does not include Collserola Natural Park, nor the private gardens or other spaces not managed by the Municipal Institute of Parks and Gardens.

These spaces may also offer social and environmental services in some areas of the city, complementing or covering areas where there is a deficit of services offered by urban parks.

NUMBER OF DEFICIENT SERVICES
Source: Barcelona Regional

Legend:
- 0
- 1 - 5
- 6 - 10
- 11 - 15
- 16 - 20
- 21 - 25
- 26 - 28
- 29 (no accessibility within a 5 minute walk to any green space)

Services provided	Population
0	195,812
1 a 5	1,106,214
6 a 10	120,610
11 a 15	35,241
16 a 20	6,777
21 a 25	2,186
26 a 29	141,906
	1,608,746

A service is considered to be deficient when it obtains a valuation lower than 3.