2023 REPORT

OBSERVATORI BARCELONA

Presentation

I am pleased to present the *2023 Report* from the Barcelona Observatory, its 21st edition. This initiative, led by the Barcelona City Council and the Barcelona Chamber of Commerce, presents Barcelona's ranking in relation to the world's leading cities through a set of economic and social indicators that make it possible to monitor key aspects of our city's competitiveness. The Observatory has established itself as a good example of public-private collaboration resulting from Barcelona's strong social capital. It is a useful tool for all economic and social stakeholders, enabling a thorough understanding and assessment of the city's socio-economic evolution from an international perspective.

In the global context where we operate, 2023 has been a better year than initially expected. Despite the slowdown in major economies, including the United States and China, GDP growth rates are holding up better than initially forecast. The European Union has weathered the energy crisis better than expected, although it has still had an impact. Inflationary pressures seem to be easing despite interest rates remaining high. Moreover, the conflicts in Ukraine and the Middle East impact the global economy, resulting in an increase in commodity prices and difficulties in international trade, and they pose one of the main unknown factors for 2024.

Barcelona continues to show strong economic dynamics and a solid international position in this complex international landscape, as detailed in this report. In this past year, Barcelona's economy has demonstrated great resilience in a turbulent context. In constant terms, during the first three quarters of 2023, the city's GDP showed a level of economic activity similar to the last quarter of 2019, i.e., before the pandemic, and the labour market was notably dynamic, ending 2023 with over 1,200,000 people registered with Social Security, the highest December figure since records began. This dynamism is driven by the province's strong exporting activity, leading Spain's export ranking and the recovery of the tourism sector.

Barcelona has shown itself to be a driving force, with a strong, dynamic, productive network, reaffirming a strong international position thanks to years of effort. Ultimately, the 2023 economic indicators and the city's appeal in a wide variety of fields mean that Barcelona is well positioned to seize any future opportunities that may arise in a context of more moderate global economic growth, with the implementation of transformative public policies such as the Next Generation funds.

International recognition is reflected in the way that Barcelona has cemented its role as a leading city, ranked 8th among the most attractive global cities for visitors, entrepreneurs, and residents, and placed 3rd in Europe in Resonance Consultancy's World's Best Cities 2024 ranking. Furthermore, for the eighth consecutive year, Barcelona is ranked among the 25 most competitive cities in the world, according to the 2023 Global Power City Index report. This attractiveness and competitiveness translates into the ability to attract investment. Barcelona is once again the European city with the best strategy for attracting foreign investment, according to the 2022/23 FDi Cities and Regions of the Future report.

In regard to the congress and trade fair sector, which is a key sector for the city, we have once again achieved first place in the ranking of world cities by number of delegates, and we remain 4th by number of international congresses organised, according to the ICCA. Barcelona is the only destination that has remained in the top 5 over the past 21 years, a leadership position reinforced by the consolidation of the MWC, the hosting of the ISE and other major events planned for 2024.

The attractiveness and dynamism of the city must make it possible to continue the process of economic diversification, which has been enhanced with the selection of strategic sectors for the city's economy, such as the ICT sector, the local economy and retail, the green and blue economy, research, knowledge, and innovation, creative industries, and the visitor economy. All these sectors add value to society and the city and can create high-quality jobs, while their competitiveness is supported by value creation.

Beyond the economic aspects, Barcelona is a friendly, open, inclusive city with a high quality of life, where its citizens can fulfil their life goals. We are leaders in cultural and creative vitality, focusing on human capital, local and international connections, tolerance and trust, as recognised by the European Commission's 2023 Cultural and Creative Cities Monitor, where Barcelona is listed 13th on the global index. In terms of sports, which has been a fundamental part of the city since it hosted the Olympic Games and a vital factor in our city model, it is worth noting that we are listed in seventh place globally among cities most associated with sports in the 2023 Ranking of Sports Cities, further reinforced by hosting the 2024 America's Cup.

This quality of life attracts talent. Barcelona is the 10th most attractive city for digital experts to work abroad, the 9th for global talent, and the 1st in Southern Europe. This means we can attract and retain talent, encouraging people to come to work and stay to pursue their life goals. Barcelona is a city that resonates with both its residents and those who wish to move here.

These are some examples that demonstrate Barcelona is a leading city with both potential and international recognition. We boast a strong natural, human, and social capital, which we must reinforce and preserve. What we are has made us a benchmark city, and it is important to continue developing our leading role from a metropolitan and European perspective. One way to do this is by making full use of our ties with the Mediterranean and Latin America, of which the UNESCO Ocean Decade Conference and the city's participation in the 2025 Guadalajara International Book Fair are clear examples.

Nevertheless, we must be aware of the challenges we face as a society and as a city. The creation of more quality jobs, the reduction of inequalities, digital transformation,and the incorporation of new technologies such as artificial intelligence, the development of an inclusive and sustainable socio-economic model that preserves natural capital while enhancing human and social capital are some examples shared with other cities in our region. In these times of political polarisation, reconciliation and cooperation are more necessary than ever to continue exercising our leadership as a city and addressing common challenges.

Finally, I would like to thank the technical teams from the City Council and the Chamber of Commerce. Their efforts have made it possible to publish this report year after year, providing a clear, comprehensive picture of this city's international positioning. A snapshot that once again shows Barcelona as an ideal place for living and working, but also for enjoying cultural activities and sports. A city full of challenges and opportunities for the future.

Jordi Valls Riera

Fourth Deputy Mayor
Area of Economy, Tax Office, Economic Promotion, and Tourism

Presentation

After 21 editions, the Barcelona Observatory Report has become a benchmark report in the field of international comparison of cities. The aim of the publication is to identify Barcelona's global standing in relation to other leading regions and cities in areas such as competitiveness, sustainability, innovation, talent, and social cohesion. The report therefore analyses the key aspects that will make Barcelona a dynamic, attractive city capable of leading and seizing opportunities related to the green and digital transformation of the economy in the coming years.

This publication is the result of collaboration between the Barcelona Chamber of Commerce and Barcelona City Council. In total, 35 international indicators have been analysed, grouped into six sections. Additionally, we have conducted two studies focusing on two areas particularly relevant to the city: the digital health sector and an analysis of the business climate based on a survey conducted by the Chamber and Idescat on nearly 1,000 companies located in the Barcelona Metropolitan Area.

The results are framed in a context in which Barcelona, in 2023, has solidified its economic recovery despite a complex economic and geopolitical environment characterised by high inflation, historically high interest rates, economic deceleration in the eurozone, and ongoing conflicts in Ukraine and the Middle East. Several indicators reflect Barcelona's remarkable resilience and dynamism throughout 2023, driven by the growth of the labour market and the recovery of tourism. Indeed, record-breaking employment figures have been reached, and several tourism indicators, such as overnight stays at hotels, have returned to pre-pandemic levels.

The city's positive reputation and attractiveness abroad are once again reflected in the number of international trade fairs and conferences it hosts, a sector that is key for the city.The success of events

such as Integrated Systems Europe (ISE) and the Mobile World Congress (MWC), two world-renowned trade fairs, consolidates the city's strong positioning in terms of the digital ecosystem, technological entrepreneurship and startups on a European and global scale.For example, for the sixth consecutive year Barcelona has consolidated its position as the third most popular city to establish a startup out of more than a hundred European cities , on the *Startup Heatmap Europe Report 2023*. The expansion of the digital health sector in Barcelona reflects the role the city can play in leading digital and technological development in various fields, leading to a clear positive impact on the progress and well-being of society.

In this environment, Barcelona continues to stand out as an attractive city for foreign investment, as reflected in various reports and benchmark indicators such as those published by fDi Markets and E&Y.

Just as Barcelona is a leading city in areas such as technology, talent attraction and innovation, it must also consolidate its position in the field of green transformation. The economic and social well-being of society

clearly depends on guaranteeing a sustainable and environmentally friendly economy. The Next Generation Funds offer a unique opportunity in this regard and must serve as a lever for Barcelona and Catalonia to lead this transformation. Certain indicators in the report show that we're on the right track, but we must continue to coordinate and work faster to address a phenomenon that is becoming increasingly relevant to our day-to-day lives.

With the aim of knowing where we stand and, especially, how we can leverage Barcelona's current position to face the challenges ahead, we at the Chamber would like to share with you this cross-cutting report on the economy and society, which provides a comparative analysis of global cities. I hope that this report will contribute to attracting further investment, trade fairs, business projects, talent, and knowledge, with the ultimate goal of improving the progress and well-being of our society.

Josep Santacreu i Bonjoch
President of the Official Chamber of Commerce, Industry, Services and Shipping of Barcelona

Acknowledgements

BARCELONA CITY COUNCIL

Jordi Valls Riera
Fourth Deputy Mayor
Area of Economy, Tax Office, Economic Promotion and Tourism

Laia Claverol Torres
Manager
Area of Economy and Economic Promotion

Miquel Rodríguez Planas
Manager for Economic Promotion

Àngels Santigosa i Copete
Head of the Economy and Economic Promotion Research Department

BARCELONA CHAMBER OF COMMERCE

Josep Santacreu i Bonjoch
President

Joan Ramon Rovira i Homs
Head of the Economic Studies and Infrastructure Office

Carmen Poveda Martínez
Director of Economic Analysis

TECHNICAL TEAM

Department of Studies at Barcelona City Council's
Management Office for the Economy and Economic Promotion

Cristina Cárcel Ferrer
Projects Coordinator

Belinda Lorenzo Chia
Economist

Economic Studies and Infrastructure Office of the Barcelona Chamber of Commerce

Sandra Gutiérrez Cubero
Statistician with a degree in market research and techniques

Ferran Esquius Torrubia
Economist

Graphic Design and Coordination

Toni Fresno
Barcelona Chamber of Commerce

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December 2023

INTRODUCTION

Introduction

We are pleased to present the*2023 report* of the Barcelona Observatory, which celebrates its 21st edition this year.The Barcelona Observatory is an initiative led by Barcelona City Council and the Barcelona Chamber of Commerce, with the collaboration of other city organisations which, year after year, provide information and make key contributions concerning their own sectors of activity.

This 21st edition of the Barcelona Observatory's annual report aims to offer various criteria to assist decision-making by economic stakeholders wishing to do business or become established in Barcelona, to attract talent and to provide support for bids to hold events or plans to open offices in the city of Barcelona. With this aim in mind, the report presents Barcelona's position in relation to the world's major cities across a set of economic and social indicators that make it possible to monitor key aspects of urban competitiveness. These indicators, as has been the case throughout the work on the project, align with the strategic priorities of the city's local development policy as established in the Barcelona Green Deal agenda, with an eye to 2030.

The 2023 report includes a number of features summarised below:

- A selection of 35 significant indicators that provide readers with an efficient summarised presentation of the most relevant figures from the point of view of the city's positioning, its characteristics and the goals it aims to achieve, all presented in six thematic areas: a hub for economic activity; quality of life, sustainability and social cohesion; labour market and professional development; knowledge society; tourism; and prices and costs.

As a new feature, this year's report includes two new indicators: resilient world cities, in the chapter "Quality of life, sustainability, and social cohesion" chapter, and innovation in world cities, in the "Knowledge society" chapter.

- A summary table presenting the series of indicators, in order to showcase the results, and a graph showing Barcelona's international positioning according to various rankings.
- Two focus articles prepared by the Chamber of Commerce. The first aims to analyse the positioning of Barcelona and Catalonia in the growing digital health sector, based on the available indicators at the local, regional and international level. The second focus article presents an analysis of the business climate in the Barcelona Metropolitan Area in the first three quarters of 2023 and the forecast for the fourth quarter of the same year, including a specific discussion of the main economic sectors. The business community's opinions are used to shed light on the greater context surrounding Catalonia and the city of Barcelona.

The Barcelona Observatory is based on the following principles:

- It is built on the basis of a set of indicators, preferably defined at city level, but which can be extended to other territorial scopes.
- The sources of information are all renowned international organisations and institutions.
- The majority of the sources are international rankings, and in the case of seven indicators, data come from a sample collected in the main urban areas.
- When possible, the indicators include a graphic representation of changes over time so that their progress in each specific area can be assessed.
- The data and information collected are as up to date as possible based on current availability.

FACTS AND FIGURES BARCELONA 2023

Facts and Figures Barcelona 2023

GEOGRAPHICAL ENVIRONMENT

Surface area (km²)	102.2
Population (January 1, 2023)	1,660,435
Foreign population (% of total) (January 1, 2023)	23.6%
Density (inhabitants/km²)	16,253.3
Climate (Fabra Observatory)	
Average monthly temperature	18.1ºC
Annual precipitation (mm)	307.7
Hours of sunshine	2,808.4

ECONOMIC ENVIRONMENT

MACROECONOMIC DATA

GDP (year-on-year variation%-Q3) - Catalonia	2.1
GDP (year-on-year variation%-Q3) - Barcelona	1.6
Persons registered with Social Security (December)	1,205,238
Unemployment rate 16-64 years (Q3 in %)	7.4
Employment rate 16-64 years (Q3 in %)	77.9
Activity rate 16-64 years (Q3 in %)	84.1
CPI (year-on-year variation %- December) - Barcelona province	3.2
Exports (millions of €) - Barcelona province (2022)	73,351.1
Imports (millions of €) - Barcelona province (2022)	88,121.4
Investments abroad (millions of €) – Catalonia (2022)	774.1
Foreign investments (millions of €) – Catalonia (2022)	3,924.9
Active companies - Barcelona province	445,119
Foreign companies in Catalonia	9,255

BUSINESS AND TOURISM

Retail establishments (2022)	24,289
Shopping hubs	43
Municipal markets (number and commercial area [m²])	43/125,675
Hotels	
Number	654
Beds	84,690
Tourists	8,278,156

INFRASTRUCTURE

Airport	
Runways (number and length [m])	3/3,352;2,660;2,528
Passengers	49,909,544
Port	
Land surface area (ha)	1,112.2
Total traffic (tonnes)	62,461,149
Trade fair and conference activity (2022)	
Trade fairs	69
Visits to Fira de Barcelona	1,174,910
Net area occupied by trade fairs (m²)	963,734
Congresses and conventions	1,639

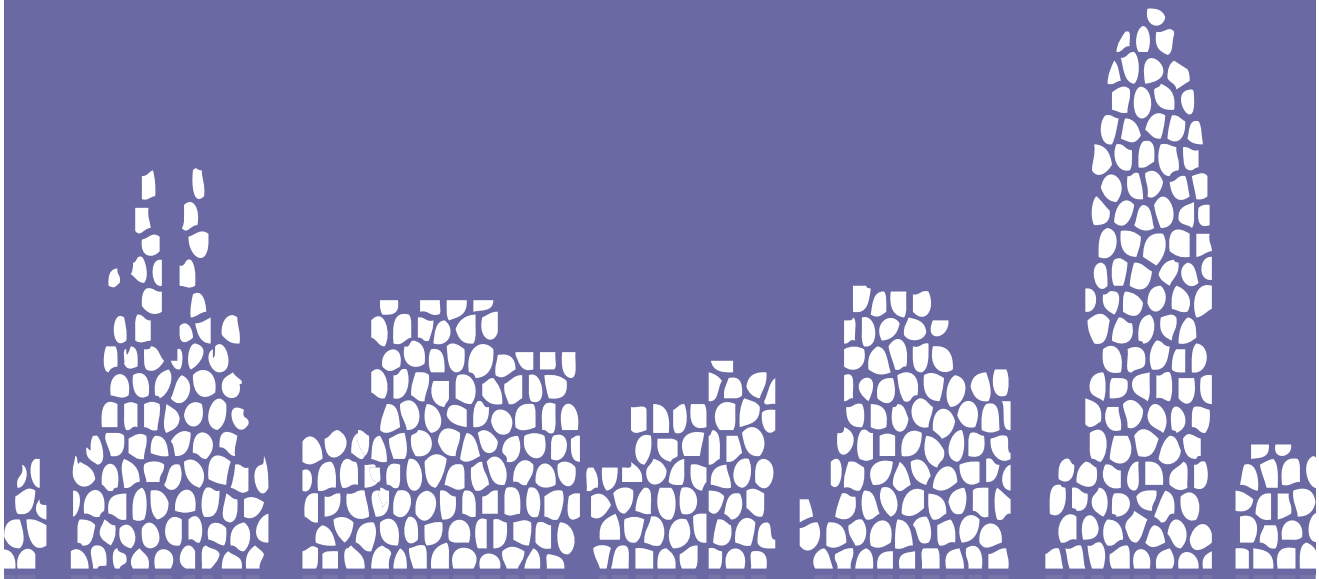
TRAINING AND KNOWLEDGE CITY

Catalan universities	12
University students in Catalonia (2021/2022 academic year)	298,463
Foreign students (Barcelona province) (academic year 2020/2021)	26,657
Innovative companies in Catalonia	5,762

QUALITY OF LIFE (2022)

Urban and forest green space per capita (m² per inhabitant)	17.8
Beaches (number and metres)	10; 4,780
Bike lane (km and Bicing + Electric Bicing subscribers)	247; 137,726
Public libraries (number and millions of users)	40; 4.8
Historic and cultural sites and large exhibition centres (number and millions of users)	58; 15.9
Performing arts (theatres and audience members in millions)	47; 2.5

Source: AENA, Barcelona City Council, Commerce Chamber of Barcelona, Fira de Barcelona, Government of Catalonia, Idescat, INE, State Ports, Secretary of State for Trade, Barcelona Tourism and Barcelona Institute of Culture, ICUB.



RESULTS

Hub of economic activity

OBSERVATORI BARCELONA

Introduction

The macroeconomic indicators of 2023 reveal that the global economy is in a phase of deceleration, following the intense growth seen since 2021. In this context, the annual variation of Catalonia's GDP in the third quarter reached a 2.1% increase –a significant rate and much higher than that of the eurozone (0.1%)– with growth in export activity and a resilient performance from the labour market and the tertiary sector. The forecasts for the Catalan economy in 2023 anticipate a GDP growth of 2.3% annually, which is expected to reach more a moderate level of 1.8% in 2024 according to estimates from the Barcelona Chamber of Commerce, amidst a climate of high uncertainty.

In this complex economic landscape, Barcelona maintains its strong position as a global city, ranking 8th worldwide and 3rd in Europe among the most attractive cities for visitors, entrepreneurs, and residents, according to Resonance Consultancy Ltd.'s *2024 World's Best Cities Report*. This places Barcelona in the global top 10, ahead of Amsterdam, Berlin, and Los Angeles, despite slipping two positions compared to the previous year. Furthermore, Barcelona maintains its position –for the eighth consecutive year– among the 25 most globally competitive cities, according to the Mori Memorial Foundation's 2023 *Global Power City Index* report, which ranked it 22nd in the world and 11th in Europe, ahead of Brussels, Geneva, San Francisco and Milan, and excelling in the categories of liveability (4th) and cultural interaction and accessibility (13th).

Barcelona solidifies its position as a leading *digital hub*, and in 2022 it was ranked the 13th top digital city in the world and 6th in Europe in the first edition of the *Digital Cities Index* published by Economist Impact (from The Economist group), ahead of cities such as Berlin, Madrid and Tokyo. Furthermore, on Yonsei DTTM and Cambridge IfM Engage's *Smart Cities Index Report 2022*, Barcelona ranks 2nd for smart urban services and urban intelligence during the 2019-2021 period, and 10th for urban sustainability.

Other indicators confirm Barcelona's attractiveness for doing business and the city's positive reputation abroad. The *Dubai FDI Annual Results & Rankings 2022*, compiled with data from the Financial Times Ltd.'s fDi Markets database, ranked Barcelona 7th among the world's leading cities in attracting *greenfield* foreign investment projects in 2022. Similarly, for the third consecutive year Barcelona maintains its position as the city in Europe with the best strategy for attracting foreign investment – surpassing London, Berlin, and Dublin– according to the *fDi Cities and Regions of the Future 2024* report (Financial Times Group). The report highlights the promotional efforts aimed at fostering growth in clusters such as supercomputing, artificial intelligence, health and biotechnology. Barcelona was also ranked as the 10th most attractive European city for international investors on the *EY Attractiveness Survey 2022*. Between 2018 and 2022, Catalonia attracted a total of 953 foreign direct investment (FDI) projects, amounting to €20.3 billion, and ranks as the third region in Western Europe in terms of jobs created by FDI, with 80,932 positions.

In terms of international trade fairs and congress activity, Barcelona ranks 1st in the world by number of delegates and remains 4th by number of international congresses organised. It is the only international destination to have consistently remained in the top 5 for the past 21 years in terms of meetings held. As of November 2023, according to the Barcelona Tourism Observatory, 80 congresses have been confirmed for the next few years, and there are around a hundred open bids extending until 2027.

With regard to entrepreneurship, in 2022, the total early-stage entrepreneurial activity (TEA) rate increased slightly in the Barcelona area, reaching 7.3%, This rate, like Catalonia's (6.9%), is above the Spanish average (6.0%) and the rates of Austria (6.8%), Japan (6.4%), and Poland (1.6%). Likewise, the female entrepreneurship rate in Barcelona (6.8%) grew compared to 2021, narrowing the gap with the male rate. The Barcelona Chamber of Commerce and Barcelona City Council are both working in this area to promote entrepreneurship and help to create high-quality jobs in the city.

Barcelona,
8th most attractive
global city
for visitors
and entrepreneurs

Attractive global cities for visitors and entrepreneurs in 2024

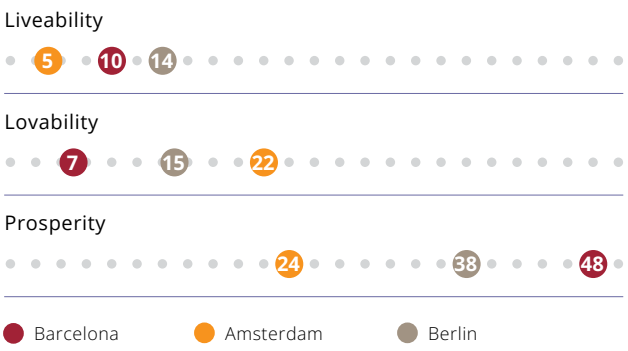
Barcelona is 8th among the world's cities and 3rd in Europe

Barcelona ranks 8th in the world and 3rd in Europe among the most attractive global cities for visitors, entrepreneurs and residents according to Resonance Consultancy Ltd.'s *2024 World's Best Cities Report*.The city remains in the top 10 of the global ranking for the sixth consecutive year –although it has dropped two positions compared to 2023–, retains its position in the European ranking and surpasses Amsterdam, Berlin and Los Angeles in a classification that is again topped by London, Paris and New York.

The ranking is based on the understanding that the factors influencing the attraction of talent, businesses, and visitors are constantly evolving. In this edition, indicators such as the number of Fortune 500 companies, airport connectivity, nightlife, outdoor leisure, and the volume of social media mentions and registrations are included. Thus, cities worldwide with more than 1 million inhabitants are ranked using a combination of statistical data and qualitative assessments from residents and visitors in relation to 24 different areas grouped into 3 main categories.

As regards the ranking's partial results, Barcelona's best are 7th place in lovability (including a notable 3rd place in nightlife and 5th place in Tripadvisor reviews) as well as 10th place in liveability. However, in terms of prosperity, it falls within the intermediate range (48th).

Ranking of Barcelona, Amsterdam and Berlin by assessment category. 2024



Source: *World's Best Cities report*. Resonance Consultancy Ltd. 2024.

The report highlights Barcelona's regulations on tourist rental accommodation –one of the most restrictive in the world– aimed at managing the impacts of tourism and the city's focus on people's well-being, with over 240 km of bike lanes and innovative initiatives such as the Green Axis project, which increases urban greenery and available space for citizens. As well as attracting digital nomads, Barcelona is making strides in attracting foreign investment with projects such as that of Lufthansa Group, which will open its first digital hub in southern Europe in the city, and Panattoni (a logistics space developer), which will invest $300 million to build the largest data center in the region.

Attractive global cities for visitors and entrepreneurs. 2024

2023 ranking	City	2024 ranking
1	London	1
2	Paris	2
3	New York	3
4	Tokyo	4
9	Singapore	5
5	Dubai	6
14	San Francisco	7
6	**Barcelona**	8
10	Amsterdam	9
26	Seoul	10
7	Rome	11
11	Prague	12
8	Madrid	13
15	Berlin	14
12	Los Angeles	15
13	Chicago	16
17	Washington	17
18	Beijing	18
20	Istanbul	19
19	Dublin	20

Source: *World's Best Cities report*. Resonance Consultancy Ltd. 2024.

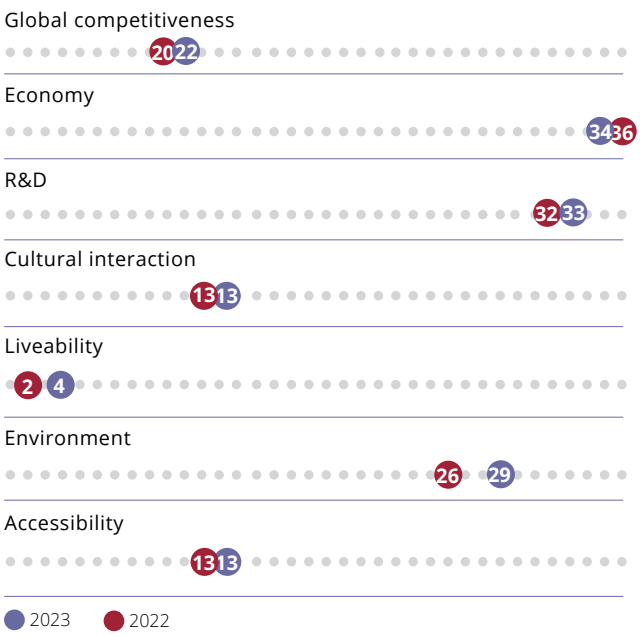
Global competitiveness of world cities in 2023

Barcelona, among the top 25 most globally competitive cities

In 2023, the *Global Power City Index* report, which compares 48 major world cities, ranked Barcelona 22nd in the world and 11th in Europe for global competitiveness. In a classification headed by the major cities of London, New York, Tokyo, Paris and Singapore, Barcelona is ahead of cities such as Brussels, Geneva, San Francisco and Milan, despite dropping two positions in the world ranking and one in the European ranking in relation to the previous edition. Barcelona, then, retains its place among the 25 global leading cities for the eighth consecutive year.

Since 2008, in collaboration with universities and internationally-renowned *think tanks*, the Japanese Mori Memorial Foundation has drawn up the *Global Power City Index* report based on the results of a total of seventy indicators arranged in six categories by areas of urban competitiveness. In the 2023 edition, Barcelona ranks 4th in the world for liveability, 13th for cultural interaction and accessibility and 29th for the environment, while occupying the 33rd and 34th places for R&D and the economy, respectively.Compared to the previous year, the city has risen in the economy category, maintains its position in cultural interaction and accessibility, and drops slightly in the liveability, environment, and R&D categories.

Categories of urban competitiveness
(Barcelona's ranking)



Source: *Global Power City Index 2023*. Institute of Urban Strategies. The Mori Memorial Foundation.

Meanwhile, from the point of view of qualified professionals, Barcelona is the 13th most valued city worldwide, while residents rank it 12th, tourists 13th and executives 32nd.

Global competitiveness of cities around the world. 2023

Position	City	European ranking
1	London	1
2	New York	
3	Tokyo	
4	Paris	2
5	Singapore	
6	Amsterdam	3
7	Seoul	
8	Dubai	
9	Melbourne	
10	Berlin	4
11	Copenhagen	5
12	Sydney	
13	Vienna	6
14	Madrid	7
15	Shanghai	
16	Stockholm	8
17	Beijing	
18	Hong Kong	
19	Zurich	9
20	Frankfurt	10
21	Los Angeles	
22	**Barcelona**	**11**
23	Toronto	
24	Brussels	12
25	Chicago	
26	Geneva	13
27	San Francisco	
28	Dublin	14
29	Boston	
30	Istanbul	
31	Helsinki	15
32	Vancouver	
33	Milan	16
34	Moscow	17
35	Taipei	

Source: *Global Power City Index 2023*. Institute of Urban Strategies. The Mori Memorial Foundation.

World's leading cities by international investment projects received in 2022

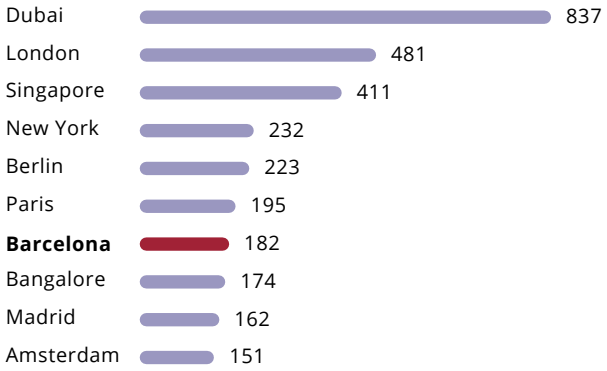
Barcelona, 7th global city for foreign investment projects

The Dubai FDI Annual Results & Rankings 2022 report, compiled with data from the Financial Times Ltd.'s fDi Markets database ranks Barcelona 7th among the world's leading cities in attracting *greenfield* foreign investment projects in 2022.The city is in the global top 10 –surpassing cities such as Bangalore, Madrid and Amsterdam– with a total of 182 foreign investment projects, in a ranking led by Dubai, London, and Singapore.

Barcelona maintains its position as the city in Europe with the best strategy for attracting foreign investment for the third consecutive year, surpassing London, Berlin, and Dublin, according to the *fDi European Cities and Regions of the Future 2024* report (Financial Times Group). The report highlights the city's promotional efforts aimed at fostering growth in clusters such as supercomputing, artificial intelligence, health, and biotechnology. Furthermore, according to the *EY Attractiveness Survey Europe 2022*, Barcelona is the 10th most attractive European city for international investors, in a difficult context marked by significant geopolitical risks which is affecting the volume of foreign investment throughout Europe.

In 2022, productive foreign investment in Catalonia amounted to €3.9 billion, with 9,255 foreign companies located here –a 62% increase compared to ten years ago– whose main countries or origin are the United States, France, and Germany. According to an ACCIO report based on data from fDi Markets (Financial Times Group), during the 2018-2022 period Catalonia attracted a total of 953 foreign investment projects, worth €20.3 billion, 28.9% more than in the 2013-17 period, creating 80,932 direct jobs, and it is ranked 3rd in the Western European region for jobs resulting from FDI.

World's leading cities in attracting foreign investment projects.2022 (Number of projects)



Source: *Dubai FDI Annual Results & Rankings 2022* based on data from "fDi Markets", *Financial Times Ltd.*

European cities with the best strategy for attracting foreign investment. 2024

Position 2024	City
1	**Barcelona**
2	London
3	Berlin
4	Dublin
5	Madrid
6	Milan
7	Munich
8	Warsaw
9	Tbilisi

Source: *fDi's European Cities and Regions of the Future 2024* (Financial Times group)

Digital cities of the world in 2022

Barcelona, 13th top digital city in the world and 6th in Europe

In 2022 Barcelona was ranked the 13th top digital city in the world and the 6th in Europe in the first edition of the *Digital Cities Index* published by Economist Impact (part of The Economist Group), in a classification led by Copenhagen, Amsterdam and Beijing.

This new index ranks 30 cities around the world in relation to four thematic pillars of digital transformation: connectivity, resident services, culture and sustainability, and combines qualitative and quantitative analysis of 17 indicators and 48 sub-indicators and the results of a survey of 3,000 residents of the same cities, taking into account the policies and projects under way to develop technologies such as 5G and artificial intelligence.

Barcelona excels in the categories of sustainability – in which it is in 4th position, only behind Copenhagen, Seoul and Toronto – and services, which includes subcategories such as digital finance, health and e-government, in which it ranks 7th, while it ranks in the intermediate range in culture (17th) and connectivity (21st). The report highlights Barcelona's leadership in areas such as the promotion of digital rights and the democratic use of data, the use of the Internet of Things to optimise the irrigation of public spaces and urban lighting, and the development of pioneering 5G initiatives in education, improved visitor experience and e-commerce.

Also, according to the *Smart Cities Index Report 2022* report by Yonsei DTTM and Cambridge IfM Engage, Barcelona is ranked as the city with the 2nd smartest urban services during the 2019-2021 period and comes in 2nd for urban intelligence, as well as 10th for urban sustainability. According to this report, Barcelona also stands out for having a municipal policy on ethical artificial intelligence, which establishes conditions for the use of algorithms and artificial intelligence in a way that respects digital rights, and for having opened up 99.4% of its public data in 37 machine-readable formats.

Top global cities in urban intelligence. 2022

Source: *Smart Cities Index Report 2022*, Yonsei DTTM and Cambridge IfM Engage.

Main digital cities of the world. 2022

Position in global ranking	City	Position among European cities	Index
1	Copenhagen	1	81.5
2	Amsterdam	2	74.6
3	Beijing		73.7
4	London	3	73.6
4	Seoul		73.6
6	New York		73.3
7	Sydney		72.6
8	Singapore		71.4
9	Washington DC		71.2
10	Paris	4	70.2
11	Toronto		70.1
11	Zurich	5	70.1
13	**Barcelona**	**6**	**69.7**
14	Frankfurt	7	69.1
15	Dallas		68.7
16	Berlin	8	68.2
17	Hong Kong		68.0
18	Dubai		63.8
19	Madrid	9	63.2
20	Tokyo		63.0
21	Rome	10	61.2
22	Auckland		60.1
23	Kuala Lumpur		58.2
24	São Paulo		50.7
25	Bangkok		49.1
26	Buenos Aires		45.1
27	Jakarta		43.5
28	Mexico City		42.6
29	New Delhi		40.3
30	Manila		39.1

Source: *Digital Cities Index 2022*, Economist Impact.

The female entrepreneurship rate is growing in Barcelona

According to data from the *Global Entrepreneurship Monitor* (GEM), in 2022, the Total Early-Stage Entrepreneurial Activity (TEA) rate among residents in the province of Barcelona stood at 7.3%, a figure 0.1 points higher than that of the previous year (7.2%). This rate, along with that of Catalonia (6.9%), remains above the Spanish average (6.0%), which is seeing a year-on-year increase of 0.5 percentage points.

This growth means that the TEA of Barcelona and Catalonia in 2022 exceeds that of countries such as Austria (6.8%), Japan (6.4%) and Poland (1.6%). Furthermore, Catalonia was once again the Spanish autonomous community with the highest entrepreneurial activity rate, above Madrid and the Spanish average, although below the European Union rate, where the increase in the rates in high-income countries has reached 9.2%.

When considering female TEA, the figures for Barcelona (6.8%) and Catalonia (6.5%) exceed those of Switzerland (6.3%), Austria (6.1%), and Spain as a whole (5.9%), although they are lower than those of high-income countries in the European Union (7.2%). In 2022, female entrepreneurship grew in Barcelona and the difference between male and female rates was reduced to 1 point.

In the province of Barcelona, the percentage of people expecting to start a business in the next three years is 10.4%, while in Catalonia, it stands at 9.9% (2.4 and 1.4 percentage points, respectively, higher than in 2021). Meanwhile, in Catalonia, only 2.4% of entrepreneurs have abandoned their business in the last 12 months, compared to 2.5% in Spain and 3.9% in Europe. Regarding the quality of entrepreneurial activity, in 2022, proactive motives for entrepreneurship (making a difference in the world or creating significant wealth) gained ground compared to during the pandemic period. Positive elements also include the increased prominence of new entrepreneurs with higher education, a higher percentage of women than men among nascent entrepreneurs, and a high proportion of early-stage entrepreneurs engaged in business services.

Overall, the assessment of the conditions for entrepreneurship in Catalonia (5.0 points) is around the EU average (5.1), with strengths including the existence of physical infrastructure and services and access to it (6.6 points), the presence of commercial and professional infrastructure and access to it, social and cultural norms, public programmes, and entrepreneurial education and training at the post-school stage. Areas for improvement include entrepreneurial education and training at the school stage, R&D transfer, internal market dynamics, funding for entrepreneurs, and barriers to accessing the internal market.

Entrepreneurial activity rate in countries around the world. 2022 (% of 18-64 year olds)

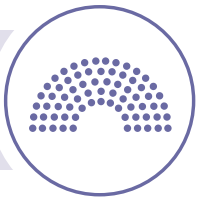
Female TEA	Country	Total TEA
17.2	Brazil	20.0
18.1	United States	19.2
10.7	United Kingdom	12.9
9.6	Netherlands	12.5
9.5	Slovakia	10.7
7.2	**EU average (high-income countries)**	**9.2**
7.1	Germany	9.1
7.1	Sweden	9.1
7.0	Israel	8.7
5.6	Slovenia	8.0
6.3	Switzerland	7.4
6.8	**Barcelona***	**7.3**
6.5	**Catalonia**	**6.9**
6.1	Austria	6.8
3.6	Japan	6.4
5.9	**Spain**	**6.0**
5.0	China	6.0
3.4	Greece	4.9
3.1	Morocco	4.2
1.6	Poland	1.6

Note: Entrepreneurial activity includes nascent companies (less than 3 months of business activity) and new companies (between 3 and 42 months of business activity).
The original database contains 63 countries, although the table only includes a selected sample of countries for reference.
* Provincial data.

Source: *Global Report* and *Informe Executiu Catalunya 2022-2023*, Global Entrepreneurship Monitor (GEM).

Top cities in the world by number of delegates at international congresses in 2022

Barcelona regains 1st place among world cities by number of delegates in international congresses



Barcelona regains the top spot in the 2022 ranking of world cities by number of delegates and retains 4th place by number of international congresses organised, according to the International Congress and Convention Association (ICCA). Throughout 2022, 133 international congresses were held in the city, 23 fewer compared to 2019 (156 conferences), but it retains the 4th position it has held since 2018 (no data for 2020). Moreover, the number of participants at international congresses in Barcelona in 2022 reached 135,000 delegates, which allows it to regain the top spot, surpassing cities such as Vienna and Paris.

Barcelona reaffirms its strong global position in hosting congresses and meetings, as it is the only international destination that has been in the top 5 for the past 21 years. Historically, it has also consistently ranked highly in terms of the number of delegates, often coming in first.

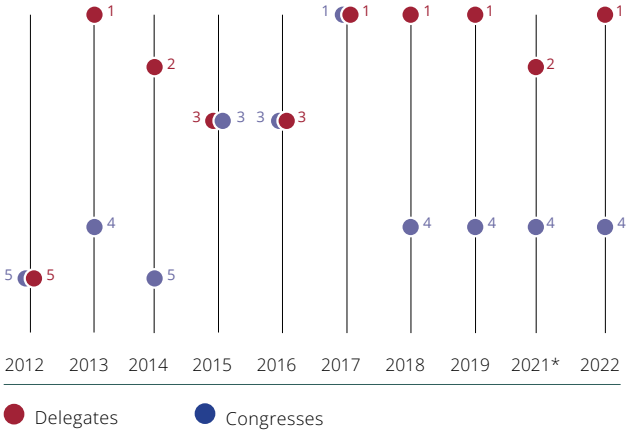
The ICCA has once again published its annual ranking of countries and cities for 2022, following a two-year hiatus and once the World Health Organization declared that Covid-19 is no longer a global emergency. This underscores the return to normalcy in the international meetings and trade fair sector. At the end of 2022, ICCA decided to return to the normal classification, given that roughly 85% of all meetings had resumed their in-person format (9,000 out of the 10,500 identified meetings).

Top cities in the world by number of delegates and meetings in international congresses. 2022

Cities	Congresses 2022	Cities	Delegates 2022 (in thousands)
Vienna	162	**Barcelona**	**135**
Lisbon	144	Vienna	105
Paris	134	Paris	101
Barcelona	**133**	Lisbon	88
Prague	129	Milan	78
Madrid	128	London	73
Berlin	113	Copenhagen	64
Athens	109	Madrid	59
Brussels	108	Prague	55
London	106	Singapore	52

Source: International Congress and Convention Association (ICCA) and Barcelona Tourism Observatory: city and region.

Barcelona's ranking



Source: International Congress and Convention Association (ICCA).
*Holding of meetings according to DPI

Quality of life, sustainability and social cohesion

observatori barcelona

Introduction

Barcelona has been involved in the launch of the UN's 2030 Agenda, which sets out 17 Sustainable Development Goals (SDGs) and seeks alliances with other cities, governments and players to tackle climate change and reduce inequalities, among other shared challenges. Barcelona City Council's municipal policies are aligned with the objectives of the 2030 Agenda, and Barcelona is also a committed actor in promoting the Sustainable Development Goals (SDGs) on a global scale.

Resilience is indeed a fundamental challenge for cities in a world facing unprecedented risks. In this context, it should be noted that in 2023 Barcelona is ranked as the 9th most resilient city in the world and the 4th in Europe in the first edition of the *Resilient Cities Index* report, published by Economist Impact (part of The Economist group), in a ranking headed by New York, Los Angeles and London, and in which Barcelona is ranked 2nd in mobility in public transport mobility for residents, 2nd in integration of vulnerable people and 6th in cybersecurity preparedness for a digital city.

The city is a leader in cultural vibrancy and creativity, according to the results of *The Cultural and Creative Cities Monitor 2023*, compiled by the European Commission. In this index, the Catalan capital ranks 13th globally and excels in the areas of human capital and education, local and international connections, and openness, tolerance, and trust (ranking 1st, 2nd, and 5th, respectively, among cities with more than one million inhabitants).

Regarding other dimensions associated with a good quality of life, Barcelona also stands out as an international leader in the field of sports and maintains 7th position in the *Ranking of Sports Cities 2023*, compiled by the consulting firm Burson Cohn and Wolfe, where it has been among the top ten since the first edition (2012), a position shared only with other Olympic cities such as London, Tokyo, and Los Angeles.Similarly, in the *Cities for the Best Work-Life Balance 2022* classification developed by Kisi, which assesses work-life balance, Barcelona ranks 50th among the 100 cities of the world compared, and 28th among European cities. It surpasses Lisbon, New York, and Milan, and excels in tolerance and inclusion (6th position), healthcare (13th), and well-being and physical fitness (15th).

With regard to social cohesion, in 2022, in the context of post-pandemic economic recovery, the risk of poverty or social exclusion rate in Catalonia decreased to 20.4%, lower than the Spanish rate (26.0%) and the EU-27 rate (21.6%). This represents a decrease of 1.9 percentage points compared to the previous year. If we calculate the population at risk of poverty based on the specific threshold for Catalonia, the AROPE rate stands at 24.7% in 2022, which is 1.2 percentage points lower than the previous year but still higher than that of 2019.

As for sustainability, Barcelona is committed to addressing the climate emergency and has had a Barcelona Climate Plan in place since 2018. This is the city's roadmap that sets out the necessary

Barcelona, among the ten most resilient cities in the world

measures to reduce the city's per capita emissions 50% by 2030 (compared to 1992) and achieve carbon neutrality by 2050. After becoming the World Capital of Sustainable Food in 2021, in 2022 the city established the Barcelona 2030 Healthy and Sustainable Food Strategy, a road map that sets out the objectives for the eight coming years to achieve a more sustainable food system for the benefit of citizens, the region and the planet.

In 2022, Barcelona was the 10th city in Europe most prepared for zero-emissions mobility, according to the first edition of the *Clean Cities Campaign city ranking*, ahead of cities such as London, Vienna and Berlin and excelling in categories such as pedestrian friendliness (2nd position), access to public transportation (5th), and cyclist safety (6th). However, the 2023 update highlights that the city faces significant challenges in the realm of shared mobility, where it ranks 32nd in Europe.

Barcelona was also ranked 20th in the world for sustainable urban mobility by the University of Berkeley and Oliver Wyman Forum's *Urban Mobility Readiness Index 2023* report. The city ranks 22nd in terms of public transportation and 24th in the overall urban mobility ranking –gaining one position compared to the previous edition. It stands out for having a first-class road system focused on safety, quality and connectivity, as well as for the implementation of superblocks –pedestrianised zones that make it one of the cities in Europe with the most pedestrian traffic– and for its network of 245 kilometres of bike lanes.

Barcelona has been chosen as the host city for the 2024 America's Cup sailing event, which will allow the city to showcase itself locally and internationally as a leader in this field. It represents a significant opportunity to promote sports and the blue economy in terms of employment, talent, and positioning in innovation and sustainability, in alignment with the Barcelona Green Deal strategy and the Sustainable Development Goals of the 2030 Agenda.

Barcelona has been chosen as the first European Capital of Democracy by the Innovation in Politics Institute. It won out among thirteen European cities thanks to its participatory projects such as the Decidim platform and the superblock model. The city will organise a programme of activities and different events through to 2024, in collaboration with various European civic organisations with the aim of promoting innovation and strengthening democracy in Europe.

Resilient cities in the world in 2023

Barcelona, among the 10 most resilient cities in the world

In 2023, Barcelona was ranked as the 9th most resilient city in the world and the 4th in Europe in the first edition of the *Resilient Cities Index* report, published by Economist Impact (part of The Economist group), in a ranking headed by New York, Los Angeles and London.

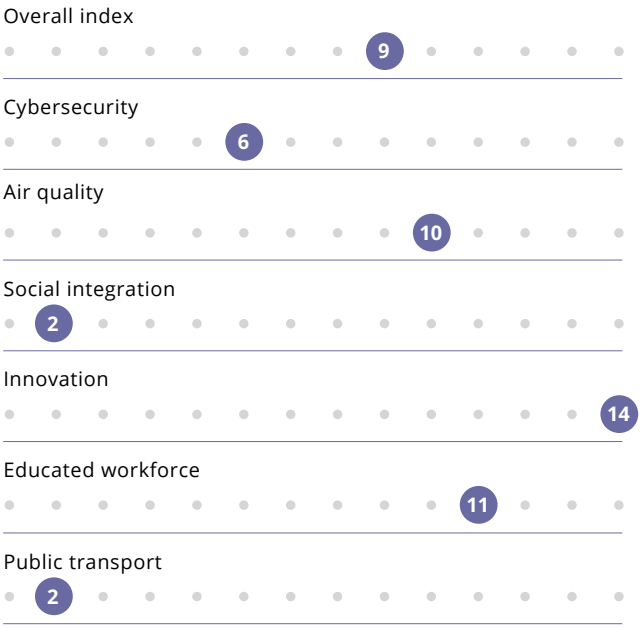
In a world facing unprecedented risks such as the climate emergency, social risks stemming from inequality, and cyberattacks, it becomes crucial for urban areas to develop a capacity for resilience and deploy it in three phases: preparation/mitigation, response, and recovery. This new index ranks 25 cities worldwide in relation to four pillars of resilience: infrastructure, environment, socio-institutional, and economic. It combines qualitative analysis of indicators with expert assessments of the strengths, weaknesses, and best practices of the cities analysed.

Barcelona achieves an overall index score of 79.0 points, and in terms of partial results, it ranks 2nd in public transport mobility for residents, 2nd in vulnerable group integration, 6th in cybersecurity preparedness for a digital city, 10th in air quality, 11th in educated workforce percentages, and 14th in incentivising innovation.

The report highlights policies implemented in Barcelona regarding the design of climate-resilient buildings through the substitution of vegetation with plants adapted to warm climates, as well as blue initiatives in the city aimed at capturing and storing rainwater, such as green and permeable roofs that enhance water retention. However, Barcelona also shows some risk factors, such as a lack of early warning systems with a multi-risk approach and a demographic situation where more 20% of the population is over the age of 65, a group that may increase considerably in the coming years.

Categories of resilience 2023

(Barcelona's ranking)



Source: *Resilient Cities Index 2023*, The Economist Impact.

Resilient cities. 2023

Position	City	Index out of 100
1	New York	84.9
2	Los Angeles	84.4
3	London	83.2
4	Singapore	82.0
5	Paris	81.3
6	Melbourne	80.9
7	Amsterdam	79.9
8	Tokyo	79.6
9	**Barcelona**	**79.0**
10	Munich	78.6
11	Hong Kong	77.0
12	Warsaw	75.4
13	Dubai	69.5
14	Shanghai	69.4
15	Santiago de Chile	66.1
16	Istanbul	65.9
17	Mexico City	62.7
17	São Paulo	62.7

Source: *Resilient Cities Index 2023*, The Economist Impact.

Sport in cities around the world 2023

Barcelona, the 7th city most associated with sport

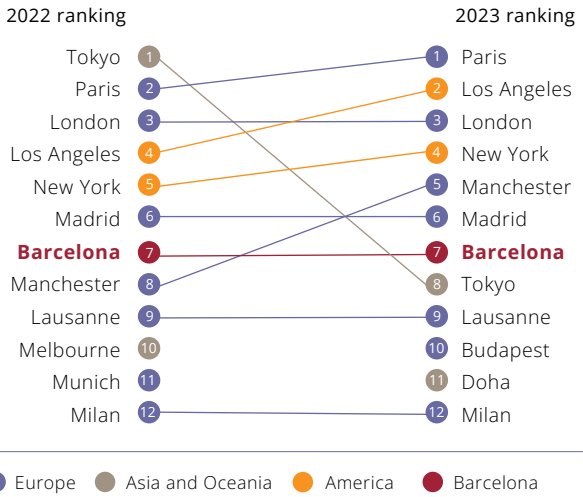
Barcelona ranks 7th among the cities most associated with sport, according to the *Ranking of Sports Cities 2023* prepared by the consulting firm Burson Cohn and Wolfe, based on a vote in which sports federations, specialised opinion leaders and mentions from the general public on social media determine which cities are most associated with sports. The city consolidates its 7th position compared to 2022 in a ranking that this year expands its scope from 50 to 100 cities and which is topped by Paris, the host of the upcoming 2024 Olympic Games.

Barcelona has remained among the top ten since the first edition (2012), a position only shared by other Olympic cities such as London, Tokyo and Los Angeles. Barcelona's international profile in the field of sport is thanks to its hosting of major sports events and top-level international competitions, the legacy of the 1992 Olympic and Paralympic Games, e-sports activities on digital platforms and the attraction created by major city clubs, positioning Barcelona as a leading sports tourism destination. Events such as the hosting of the 2030 FIFA World Cup in Spain, Morocco, Portugal, Argentina, Paraguay, and Uruguay contribute to reinforcing this projection.

Sport has a great economic and social impact on the city and contributes to a direct improvement in the quality of city residents' lives. According to the 2022 Survey on Barcelona's Sports Habits, 66.4% of those interviewed play sport. By sex, 69.0% of men and 64.2% of women play sport, and by age, playing sport is widespread among young people, with over 73% of people between the ages of 17 and 35 playing sport.

Barcelona has been chosen as the host city for the 2024 America's Cup sailing event, which will allow the city to showcase itself locally and internationally as a leader in this field. It represents a significant opportunity to promote sports and the blue economy in terms of employment, talent, and positioning in innovation and sustainability, in alignment with the Barcelona Green Deal strategy and the Sustainable Development Goals of the 2030 Agenda. It is estimated that the expenses associated with hosting the America's Cup will generate an economic impact of €1.2 billion in added value and nearly 19,000 jobs in the Catalan economy.

Sport in cities around the world. 2023



Source: *Ranking of Sports Cities 2023*. Burson Cohn & Wolfe.

Creative and cultural cities of Europe, 2023

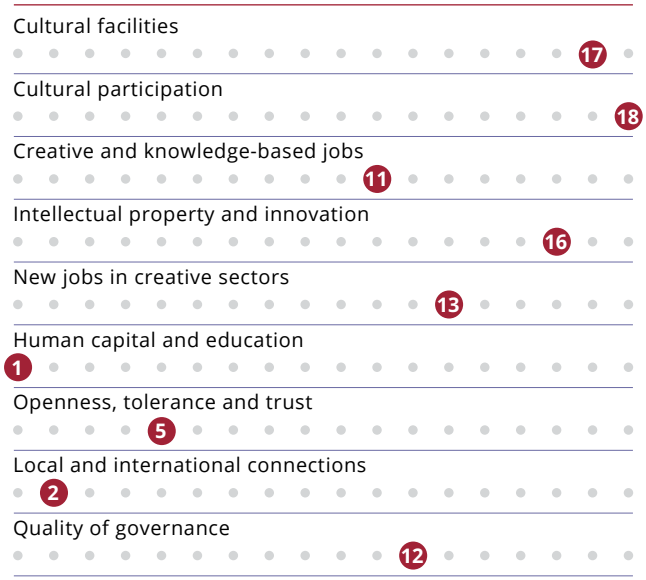
Barcelona, among the top 15 creative and cultural cities in Europe

Barcelona is ranked 13th in the European index of creative vibrancy according to the *Cultural and Creative Cities Monitor 2023*, an instrument created by the European Commission. It includes a wide range of indicators for 196 cities in 29 European countries that are actively committed to promoting culture and creativity. Through this tool, the Commission aims to underscore the importance of culture and creativity for urban life, specifically in relation to its resilience and development, as there is a clear correlation between cultural activity, in a broad sense, and economic growth.

The report presents the results by groups of cities based on population size, analyses aspects relating to cultural vibrancy, the creative economy and an enabling environment, and it groups them in an overall index of creative vibrancy, which is headed by Munich, Paris and Prague among cities with over one million inhabitants. Barcelona stands out especially in the enabling environment section, where it ranked 1st among cities with more than one million inhabitants. It came 1st in human capital and education, up one place compared to the 2019 edition, 2nd in local and international connections, 5th in the indicator of openness, tolerance and trust. In governance quality, it comes in 12th place.

Culture and Creativity Categories. 2023

(Barcelona's ranking)



Note: Cities with more than a million residents.

Source: *Cultural and Creative Cities Monitor 2023 Update.* Joint Research Centre of the European Commission.

As regards the creative economy, Barcelona scored well in jobs in creative and knowledge-based sectors –coming in 11th place ahead of Rome and Dublin, but behind Munich and Madrid– gaining one position in new jobs (13th) and ranking 16th in intellectual property. In terms of cultural vibrancy, Barcelona achieved more modest positions, ranking 17th in cultural facilities and 18th in cultural participation and attractiveness among the cities with more than a million inhabitants.

The results for 2023 show a significant improvement for Barcelona compared to the previous edition in dimensions related to an enabling environment, as well as a slight decrease in factors linked to cultural vibrancy, and mixed results in the creative economy, resulting in the city dropping four positions in the overall ranking. An analysis of larger geographical areas shows that cities in central and northern Europe achieve the best overall results, but it's worth noting the presence of 5 southern European cities in the top 20 of the index.

Creative and cultural cities. 2023

Position	City	Index of creative vibrancy
1	Munich	41
2	Paris	38
3	Prague	38
4	Lisbon	37
5	Stockholm	36
6	Budapest	35
7	Madrid	35
8	Vienna	34
9	Berlin	34
10	Brussels	33
11	Cologne	32
12	Warsaw	32
13	**Barcelona**	**32**
14	Lyon	31
15	Rome	31

Note: Cities with more than a million residents.

Source: *Cultural and Creative Cities Monitor 2023 Update.* Joint Research Centre of the European Commission.

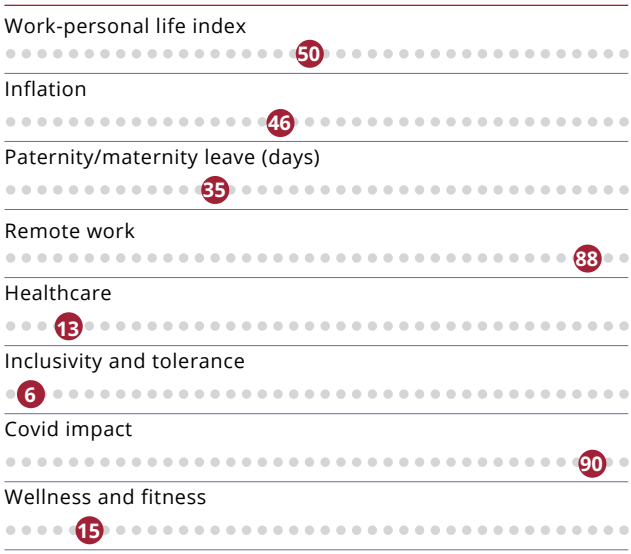
Work-life balance in world cities in 2022

Barcelona ranks in the intermediate range and stands out in terms of inclusivity and tolerance

On the *Cities for the Best Work-Life Balance 2022* ranking, drawn up by the secure technological-access company Kisi, Barcelona ranked 50th out of the 100 world cities compared, and 28th among European cities, based on 19 indicators relating to work intensity, social services and official support for equality, quality of life and the effects of the Covid-19 pandemic. The city improved its performance compared to the 2019 and 2020 editions, with an increase of 2.8 and 6.2 percentage points, respectively, although it dropped 25 positions compared to 2021 due to the increase in the number of cities analysed —from 50 in 2021 to 100 in 2022— and now holds a mid-level position in the index, in a ranking dominated by three European capitals: (Oslo, Bern and Helsinki). Nevertheless, Barcelona obtained a better result than Lisbon, New York and Milan.

By area, Barcelona excels in inclusivity and tolerance (where it ranks 6th), healthcare (13th) and wellness and fitness (15th), and ranks in the intermediate range in paid parental leave and inflation (35th and 46th, respectively). On the other hand, it ranks lower in terms of the impact of Covid – which the index measures taking into account the characteristics of the pandemic and its effects on the economic sphere – and in the implementation of remote work, an indicator that is incorporated for the first time and that is considered highly relevant to the quality of life in the current work environment.

Barcelona's ranking. 2022



Source: *Cities for the Best Work-Life Balance 2022*. Kisi.

Meanwhile, according to Forbes Advisor's *Worldwide Work-Life Balance Index 2023*, Barcelona was the 23rd city in the world and the 19th in Europe with the best work-life balance. It excels in aspects such as a low gender inequality index (14th position), percentage of remote work job vacancies (34%), and annual hours of sunlight (2,530 hours) in a ranking that analyses 128 cities, led by cities in northern Europe: Copenhagen, Helsinki and Stockholm.

Work-life balance index. 2022

Overall ranking	City	Total score
1	Oslo	100.0
2	Bern	99.5
3	Helsinki	99.2
4	Zurich	96.3
5	Copenhagen	96.2
6	Geneva	95.8
7	Ottawa	95.5
8	Sydney	94.0
9	Stuttgart	93.8
10	Munich	93.7
11	Stockholm	93.3
12	Melbourne	92.8
13	Amsterdam	92.6
14	Tokyo	92.5
15	Leipzig	92.4
16	Vancouver	92.2
17	Auckland	92.1
18	Hamburg	91.8
19	Toronto	91.1
20	Frankfurt	91.1
21	Düsseldorf	90.9
22	Berlin	90.8
23	Bremen	90.7
24	Liverpool	90.7
25	Glasgow	90.7
...	...	...
50	**Barcelona**	**84.9**

Source: *Cities for the Best Work-Life Balance 2022*. Kisi

Population at risk of poverty or social exclusion in European regions in 2022

Decrease in the rate of risk of poverty or social exclusion in Catalonia

According to Eurostat figures, the percentage of the population at risk of poverty or social exclusion (AROPE) in Catalonia was 20.4% in 2022. This was lower than the rate for Spain (26.0%) and for the EU-27 (21.6%). Regions with higher rates than Catalonia include Paris, Berlin, Rome and Brussels, among others, while the Warsaw and Prague regions, with figures under 10%, boast the lowest rates in the sample. Catalonia's rate has decreased by 1.9 percentage points compared to the previous year, which shows a significant recovery following the severe social impact of the Covid crisis and a more favourable trend than that seen in Europe (where the decrease is 0.1 points).

If we calculate the percentage of the population at risk of poverty based on the specific threshold for Catalonia (60% of the average annual disposable income of the Catalan population, after social transfers, rather than the average for Spain), the AROPE rate stood at 24.7%,[1] 1.2% lower than the figure for the previous year and also above the average for the European Union. In an environment of post-pandemic recovery, the components of the unemployment rate in relation to 2021 have improved. While the poverty rate remains at 19.9%, the low work intensity rate has decreased from 9.6% to 6.8%, and the severe material deprivation rate has decreased from 9.0% to 8.0%.

In the first post-pandemic year, the data on living conditions in the Barcelona metropolitan area for 2021-2022 show, in general terms, a rapid recovery of household incomes. However, there is also a resurgence of energy poverty and food vulnerability, which could be related to inflation and, more specifically, to the increase in the price of energy and food. Furthermore, housing continues to be a major factor in inequality, mainly affecting people living in rented accommodation. The poverty risk rate in the city of Barcelona calculated according to the poverty risk threshold of the Barcelona metropolitan area was 18.6% in 2021-2022, 5 percentage points lower than the rest of the metropolitan area and 0.9 points lower than in 2020-2021.

[1]Idescat data.

Population at risk of poverty or social exclusion. 2022

Country	Region (main city)	AROPE rate (%)
Poland	Warszawski stoleczny (Warsaw)	7.7
Czech Republic	Prague (Prague)	8.9
Slovakia	Bratislavský kraj (Bratislava)	10.9
Finland	Helsinki-Uusimaa (Helsinki)	13.7
Germany	Bavaria (Munich)	14.1
Portugal	Lisbon Metropolitan Area	14.5
Italy	Lombardy (Milan)	14.8
Sweden	Stockholm (Stockholm)	15.3
Norway	Oslo og Viken (Oslo)	15.8
Switzerland	Espace Mittelland (Bern)*	16.3
Ireland	Ireland – east and centre (Dublin)	18.0
Denmark	Hovedstaden (Copenhagen)	18.1
Netherlands	Netherlands – North (Amsterdam)	18.7
Romania	Bucuresti – Ilfov (Bucharest)	19.2
Spain	Community of Madrid (Madrid)	20.3
Spain	**Catalonia (Barcelona)**	**20.4**
Germany	Berlin (Berlin)	21.1
France	Île-de-France (Paris)	21.1
EU27 average		**21.6**
Greece	Attica (Athens)	21.8
Spain		**26.0**
Italy	Lazio (Rome)	26.1
Austria	Vienna (Vienna)	26.2
Belgium	Brussels-Capital Region (Brussels)	38.8

* Data from 2021

Note: The "At Risk of Poverty or Social Exclusion" (AROPE) rate indicates the percentage of the population that is at least in one of the following circumstances: at risk of poverty, severe material deprivation or living in households with very low work intensity.

Source: Eurostat

Cities most prepared for zero-emission mobility. 2022

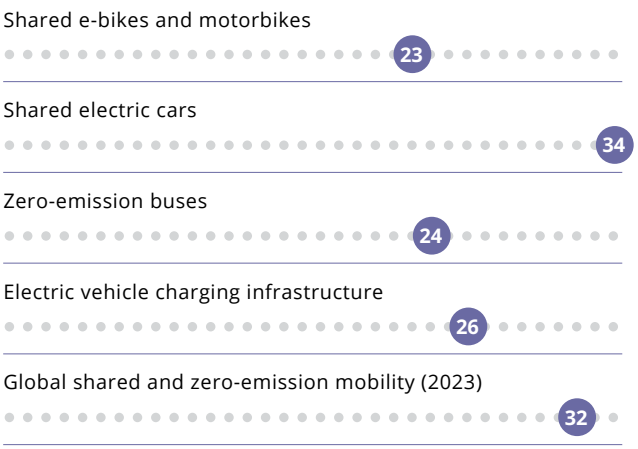
Barcelona, among the top ten European cities most prepared for zero-emission mobility

In 2022, Barcelona was the 10th city in Europe most prepared for zero-emission mobility, according to the first edition of the *Clean Cities Campaign city ranking*, and surpasses cities such as London, Vienna and Berlin in a ranking headed by Oslo, Amsterdam and Helsinki.

Urban areas – responsible for more than a fifth of all greenhouse gas emissions from transport in the European Union – must urgently reduce transport emissions to meet climate goals. To monitor this progress, the analysis of the Clean Cities Campaign – a coalition of non-governmental organisations – compares 36 European cities based on 11 indicators relating to five categories, such as road safety for pedestrians, access to climate-friendly mobility and air quality.

Barcelona scored particularly well in the categories of opportunity for walking (2nd), access to public transport (5th) and cyclist safety (6th), and was in the mid-range in terms of safe roads (14th) and congestion (17th).

Barcelona's ranking in shared and zero-emission mobility by indicator. Focus edition 2023



Source: *The state of shared and zero-emission mobility in Europe 2023 Clean Cities Campaign* Focus Edition, Bloomberg City Lab-Clean Cities Campaign.

In 2023, Bloomberg conducted a specific edition on the state of shared and zero-emission mobility in European cities with the report *"The state of shared and zero-emission mobility in Europe"*, where Barcelona came in 32nd place. The report highlights the challenges facing the city in the aspects that were analysed. Barcelona is 23rd in Europe in the number of shared bicycles and motorcycles per 1,000 inhabitants, 24th in the percentage of zero-emission buses, 26th in public infrastructure for electric vehicle charging, and 34th in the number of shared electric cars per 1,000 inhabitants.The report highlights the implementation of improvement measures in the city, such as the planned incorporation of up to 2,500 shared electric bicycles in 2023, which represents an increase in the fleet of over 50%.

Cities most prepared for zero-emission mobility. 2022

Position	City	Index
1	Oslo	71.5
2	Amsterdam	65.5
3	Helsinki	64.2
4	Copenhagen	62.3
5	Paris	61.9
6	Stockholm	61.7
7	Ghent	58.7
8	Munich	57.5
9	Brussels	57.0
10	**Barcelona**	**56.9**
11	Lyon	56.6
12	London	55.8
13	Vienna	55.5
14	Bilbao	55.0
15	Lisbon	53.5
16	Madrid	52.8
17	Birmingham	52.8
18	Antwerp	52.0
19	Berlin	51.6
20	Milan	51.1

Source: *Clean Cities Report 2022*. Bloomberg City Lab – Clean Cities Campaign.

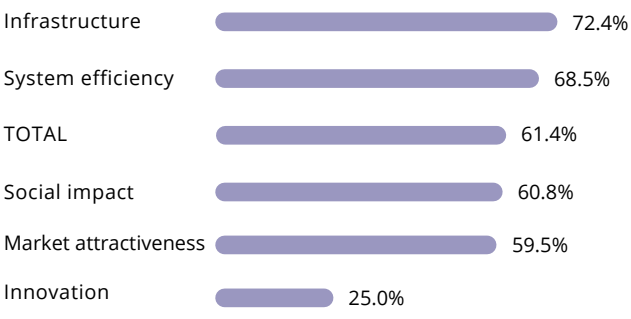
Barcelona, among the top 20 cities with the most sustainable urban mobility systems

Barcelona ranks 20th in the world for sustainable mobility on the University of Berkeley and the Oliver Wyman Forum's *Urban City Readiness Index 2023*. In a ranking headed by Oslo, Amsterdam and Copenhagen, Barcelona drops two positions and ranks similarly to Beijing and Madrid, while surpassing Toronto, New York and Milan.

In terms of the general urban mobility index, Barcelona comes in 24th, ahead of cities such as Toronto, Beijing and Milan, and rises one position compared to the previous edition, in a ranking headed by Helsinki, Amsterdam and Stockholm. Barcelona stands out for having a world-class road system focused on safety, quality, and connectivity, as well as for the implementation of superblocks – pedestrianised zones that make it one of the cities in Europe with the most pedestrian traffic– and for its network of 245 kilometres of bike lanes.

Barcelona is ranked 22nd in the world in terms of public transportation, an index that compares 65 global cities from various geographical regions based on their solutions for mobility challenges. The report emphasises the aspects in which Barcelona can improve and highlights the low density of public transport stations and long travel times due to low traffic speeds.

Barcelona's score by dimension. 2023



Source: *Urban Mobility Readiness Index 2023*, University of California, Berkeley and Oliver Wyman Forum.

At the same time, Barcelona's share of electric vehicles remains moderate compared to other European cities and it has a limited density of charging points, although it plans to have 1,000 charging points by the end of 2023.

By category, Barcelona scores best in infrastructure and system efficiency, with results around average in social impact and market attractiveness, and has its lowest score is in innovation.

Cities with the best urban mobility systems. 2023

Position in global ranking	City	Sustainable mobility ranking
14	Oslo	1
2	Amsterdam	2
9	Copenhagen	3
1	Helsinki	4
3	Stockholm	5
15	Hong Kong	6
5	Munich	7
7	Zurich	8
6	Singapore	9
10	Berlin	10
11	London	11
8	Paris	12
32	Shanghai	13
34	Dublin	14
16	Tokyo	15
21	Vancouver	16
13	Seoul	17
30	Beijing	18
20	Madrid	19
24	**Barcelona**	**20**
17	Washington DC	21

Source: *Urban Mobility Readiness Index 2023.* University of California, Berkeley and Oliver Wyman Forum.

Labour market and training

OBSERVATORI BARCELONA

Introduction

The macroeconomic indicators for 2023 highlight the notable resilience of the labour market in a context of slowing activity following the post-pandemic economic recovery phase. Therefore, in the third quarter of 2023, employment in the European Union (EU) increased by 1.3% in year-on-year terms, and during the same period, the economies of Barcelona, Catalonia and Spain achieved annual increases ranging from 2.5% to 4.5%. In Catalonia, the positive evolution of the labour market results in a year-on-year increase in employment of 156,600 people, according to the labour force survey published by the National Institute of Statistics (INE); and the city of Barcelona closes out the month of December with 1,205,238 people registered with Social Security, the highest end-of-year value on record.

The regional-level employment indicators presented in this chapter are for 2022, a period of economic recovery throughout the European Union, which has resulted in an improvement in labour market performance. In this context, Catalonia's employment rate stands at 69%, approaching the European average of 69.8%, while the unemployment rate, at 9.7%, has reached its lowest value since 2008, although it remains clearly above the EU average of 6.2%. It is worth noting that the female employment rate in Catalonia (65.6%) is above the European Union average (64.9%) and achieves the highest annual value on record.

The part-time employment rate in Catalonia in 2022 was 12.3%, placing it 5.3 percentage points below the EU average (17.6%) and similar to the Spanish average (13.3%). However, by gender, the part-time female employment rate is significantly higher (19%). The increase in the part-time employment rate since the crisis that began in 2008 —which has moderated since 2013— has been a widespread trend in Europe, with a much higher rate of voluntary part-time work in countries in the central and northern parts of the continent compared to those in the south.

One of Barcelona's key assets is a significant critical mass of skilled human capital. In this area, it should be noted that in 2022 the percentage of the working population with university degrees out of the total number of workers in Catalonia grew to 49.2% and, in the case of working women, exceeds 50% for the eighth time, clearly higher values than the European Union averages (37.1% and 42.4%, respectively). Barcelona is the 8th most attractive city in the world for international talent seeking to work abroad, according to the report *Decoding Global Talent 2024,* published by the Boston Consulting Group, ahead of Sydney, Paris and Los Angeles.

In 2022, Barcelona City Council and around sixty employment-focused associations and organisations signed the Barcelona Agreement for Quality Employment 2021-2030. The aim is to reduce temporary employment and inequalities in the job market through quality contracts, creating opportunities and increasing stability in the labour market. The agreement includes the Ten Pillars of Quality Employment in Barcelona, which lays the groundwork for outlining new policies and implementing them within the framework of public-private collaboration. It is structured around three strategic themes: equity, innovation, and social dialogue.

Finally, Barcelona continues to be a leading city of excellence in business education, as it is one of the only two European cities with two teaching institutions (IESE and ESADE) to appear in the top 10 MBA business schools in Europe on the Financial Times' *Global MBA Ranking 2023*.

The female employment rate in Catalonia has reached its highest value on record

Attractiveness of world cities for global talent in 2023

Barcelona moves up to 8th position in the world among the most attractive cities for talent

According to the Boston Consulting Group's *Decoding Global Talent 2024* report, Barcelona is the 8th most attractive city in the world for working abroad, ahead of Tokyo, Los Angeles and Paris, in a ranking led by London, – a city which stands out for its exceptional global talent network, significant economic and financial opportunities, a welcoming and multicultural brand, easy access to both Europe and the United States, and English as the primary language.

Barcelona has therefore risen in the ranking of the top ten cities preferred by global talent and moves up one position compared to the 2020 survey in a post-pandemic context that confirms the attractiveness of working abroad. In recent years, the strong position of European and Asia-Pacific cities has been maintained, with these continents having four and five cities, respectively, among the top ten positions in the ranking.

This research on the workforce and its preferences in a globalised world is based on an extensive online survey (the *Global Talent Survey*) with responses from 150,000 people in 188 countries. The report shows that 23% of the surveyed individuals are actively seeking employment abroad, a percentage that has increased by two points compared to the 2020 and 2018 editions, placing the size of this group at more than 800 million professionals worldwide. Meanwhile, 66% of the respondents would be willing to work remotely for a company that does not have a physical presence in their home country, representing a 9-point increase compared to 57% in the 2020 edition. In view of the current talent shortages in some sectors and countries, the emerging international remote work trend provides an opportunity for companies to gain qualified staff and cultural diversity, although it also entails challenges such as adapting tax matters, schedules and wages to this new reality.

Comparative positioning of cities in job attractiveness

Source: *Decoding Global Talent 2024 and Decoding the Digital Talent Challenge,* BCG

The world's most attractive cities for working abroad

Position in 2020	City	Position in 2023
1	London	1
2	Amsterdam	2
3	Dubai	3
5	Abu Dhabi	4
8	New York	5
4	Berlin	6
7	Singapore	7
9	**Barcelona**	**8**
6	Tokyo	**9**
10	Sydney	10
14	Toronto	11
12	Los Angeles	12
11	Paris	13
13	Melbourne	14
---	Austin	15
---	Auckland	16
---	Bangkok	17
---	Madrid	18
17	Zurich	19
---	Washington, DC	20
20	Vancouver	21
---	Atlanta	22
22	Vienna	23
---	Chicago	24
23	Beijing	25

Source: Boston Consulting Group, *Decoding Global Talent 2024*.

Employment rate in European regions in 2022

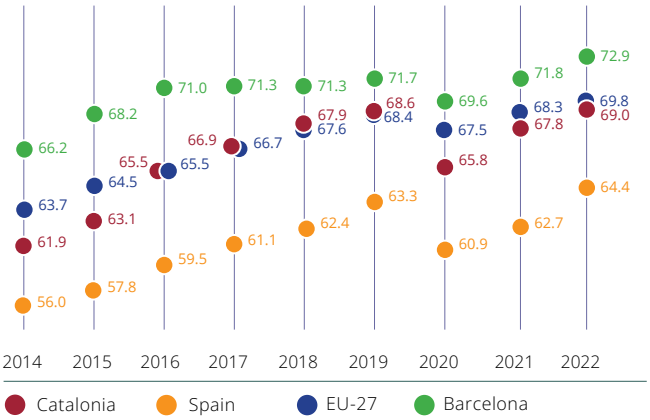
The female employment rate in Catalonia has reached its highest value on record

In 2022, the employment rate in the European Union increased by 1.5 percentage points compared to 2021, reaching 69.8%, according to Eurostat data, accelerating its recovery after the economic crisis resulting from the Covid-19 pandemic.

In this context, the employment rate in Catalonia and Spain continued the upward trend observed last year, with a growth of 1.2 and 1.7 percentage points, respectively, similar to that of the EU as a whole. However, they remain in the lower range for the continent, as has been the case since the financial crisis. The employment rate in Catalonia was 69.0% in 2022 —the highest value since 2008— and remains below the European average for the third consecutive year, although it is clearly above the Spanish average by 4.6 percentage points. It also surpasses the rates of regions such as Milan, Vienna and Brussels. Meanwhile, in 2022, the female employment rate in Catalonia increased by 1.2 percentage points, reaching 65.6% —the highest value on record— ahead of the European average (64.9%) and remaining above the Spanish average (59.5%) and that of regions such as Vienna and Brussels. Nevertheless, it still lags behind the leading territories on the continent (with rates above 75%) and is also lower than the overall employment rate in Catalonia.

According to the Labour Force Survey, for the annual average of 2022, the employment rate stands at 72.9% in the city of Barcelona —the highest value since 2008— marking an increase of 1.1 percentage points compared to 2021. This upward trend continued during 2023, with the city closing out the fourth quarter with an employment rate of 79.8% and a female employment rate of 77.9%, the highest values on record.

Employment rate (%)



Note: Annual average.

Source: Eurostat and the Department of Statistics and Municipal Data Dissemination.

Employment rate in European regions. 2022

Employment rate for women	Region (CITY)	Employment rate (%)
77.9	North Holland (AMSTERDAM)	82.2
76.8	Upper Bavaria (MUNICH)	80.7
76.8	South Holland (ROTTERDAM)	80.3
77.9	Stockholm (STOCKHOLM)	79.8
80.6	Sostines (VILNIUS)	79.5
76.4	Warszawski (WARSAW)	79.4
76.8	Central Hungary (BUDAPEST)	79.4
72.8	Prague (PRAGUE)	78.9
74.0	Stuttgart (STUTTGART)	78.7
77.7	Hovedstaden (COPENHAGEN)	78.5
76.1	Oslo (OSLO)	78.2
75.7	Southern Finland (HELSINKI)	76.5
74.0	Sofia (SOFIA)	75.8
72.0	Berlin (BERLIN)	75.5
70.2	Darmstadt (FRANKFURT)	74.5
69.3	East and Central Ireland (DUBLIN)	74.3
70.6	Bucharest – Ilfov (BUCHAREST)	74.2
70.5	Lisbon (LISBON)	71.8
70.2	Latvia (RIGA)	71.3
68.4	Rhône-Alpes (LYON)	71.2
67.5	Île-de-France (PARIS)	70.1
64.9	**EUROPEAN UNION**	**69.8**
65.2	Community of Madrid (MADRID)	69.1
65.6	**Catalonia (BARCELONA)**	**69.0**
65.1	Basque Country (BILBAO)	68.4
60.4	Lombardy (MILAN)	68.2
64.0	Vienna (VIENNA)	67.8
61.5	Languedoc-Roussillon (MONTPELLIER)	64.6
59.5	**Spain**	**64.4**
57.0	Attica (ATHENS)	64.0
54.1	Lazio (ROME)	61.8

Note: Population aged 15 to 64.
The original database includes around 450 regions but the table only shows a selection of benchmark regions.

Source: Eurostat

Part-time employment rate in European regions in 2022

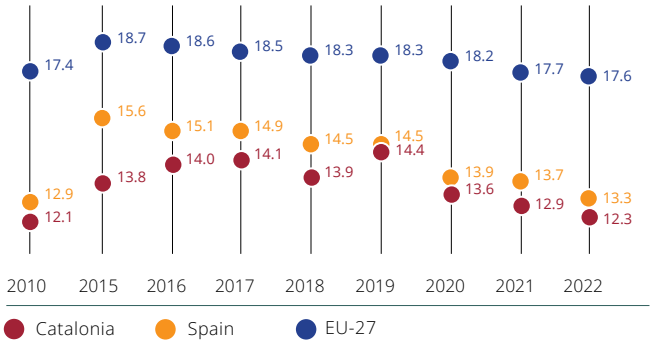
Part-time employment rates in Catalonia are below the European average

In Catalonia, the part-time employment rate, which measures the share of part-time workers as a proportion of all workers, reached 12.3% in 2022 according to Eurostat data. This places it 5.3 points below the EU average (17.6%), close to the Spanish average (13.3%) and far from the regions with the highest rates (Netherlands, Austria, Germany and Denmark), despite surpassing regions such as Prague (9.9%) and Lisbon (7.5%). Regarding the female part-time employment rate (which in all the regions analysed is higher than the total), in Catalonia it is 19.0% and is 9.4 points below the EU average (28.4%) and 2.5 percentage points below the Spanish average (21.5%), and again, lags far behind the regions of the mentioned leading countries, where voluntary female part-time work is very high.

With regard to the evolution over time, the part-time employment rate —a key indicator reflecting labour market flexibility— increased significantly both in the European Union and in Spain and Catalonia between 2007 and 2013. Since then, it has remained relatively stable with a slight downward trend, especially in Catalonia.

In terms of the city of Barcelona, according to the Labour Force Survey, in the fourth quarter of 2022 it had a total part-time employment rate of 10.7%, below that of Catalonia, Spain and –especially– the European Union. The female part-time employment rate in the city (16.5%) is also lower than the Catalan rate, the Spanish rate and, notably, the rate of the EU as a whole.

Part-time employment rate in European regions. 2010-2022. (%)



Source: Eurostat

Part-time employment rate in European regions. 2022

Part-time female employment rate (%)	Region (CITY)	Part-time employment rate (%)
59.7	South Holland (ROTTERDAM)	40.3
57.0	North Holland (AMSTERDAM)	38.7
44.6	Vienna (VIENNA)	30.8
45.9	Darmstadt (FRANKFURT)	28.2
38.3	Berlin (BERLIN)	27.6
48.1	Stuttgart (STUTTGART)	26.9
45.7	Upper Bavaria (MUNICH)	26.8
31.1	Denmark (COPENHAGEN)	24.0
32.5	Languedoc-Roussillon (MONTPELLIER)	20.7
29.1	Brussels (BRUSSELS)	19.8
30.7	Rhône-Alpes (LYON)	19.0
28.5	East and Central Ireland (DUBLIN)	18.7
28.4	**EUROPEAN UNION**	**17.6**
29.0	Lazio (ROME)	17.5
23.3	Stockholm (STOCKHOLM)	17.5
27.0	Provence-Alps-Cote d'Azur (MARSEILLE)	17.3
20.8	Southern Finland (HELSINKI)	15.8
24.2	Basque Country (BILBAO)	15.5
21.5	**Spain**	**13.3**
18.5	Estonia (TALLINN)	13.2
18.8	Île-de-France (PARIS)	13.1
18.6	Community of Madrid (MADRID)	12.5
19.0	**Catalonia (BARCELONA)**	**12.3**
16.0	Prague (PRAGUE)	9.9
11.6	Attica (ATHENS)	7.9
9.6	Lisbon (LISBON)	7.5
8.9	Latvia (RIGA)	6.6
6.0	Sostines (VILNIUS)	5.0
5.4	Central Hungary (BUDAPEST)	4.5

Note: Population aged 15 to 64.

Source: Eurostat

Unemployment rate in European regions in 2022

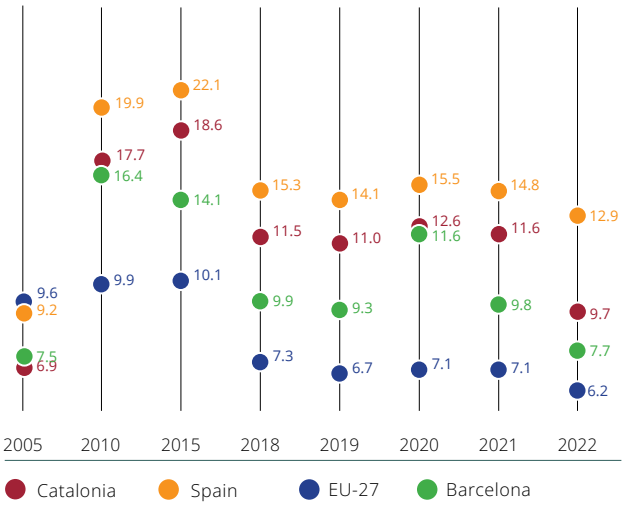
The unemployment rate in Catalonia is at its lowest level since 2008, but is still far higher the European average

In a context of economic recovery following the Covid-19 pandemic, the European Union closes out 2022 with an unemployment rate of 6.2%, 0.9 percentage points less than in 2021, according to Eurostat data. The decrease in unemployment has been more pronounced in southern European locations, such as Spain and Catalonia, where the gap with respect to the European average is narrowing after this indicator saw an annual decrease of 1.9 percentage points in both areas.

In this context, the unemployment rate in Catalonia stands at 9.7% on average in 2022 —the lowest value since 2008— placing it 3.5 percentage points above the European average and still much higher than the main leading regions, although it remains below the Spanish average (12.9%). At the same time, the unemployment rate for women was 10.4%, which is 2.5 points lower than in 2021, although it is above the overall average.

According to the Labour Force Survey, the unemployment rate in Barcelona reached an average of 7.7% in 2022 — the lowest since 2008— having dropped by 2.1 percentage points year-on-year. In 2023, the labour market continued to recover and the city closed the fourth quarter with an unemployment rate of 6.1%, the lowest since 2007 and similar to the EU average.

Unemployment rate (annual average in %)



Source: Eurostat and the Department of Statistics and Data Dissemination of the Barcelona City Council.

Unemployment rate in European regions. 2022

Unemployment rate for women (%)	Region (CITY)	Unemployment rate (%)
1.6	Prague (PRAGUE)	1.6
2.5	Upper Bavaria (MUNICH)	2.3
2.2	Central Hungary (BUDAPEST)	2.3
2.3	Bucharest – Ilfov (BUCHAREST)	2.7
2.7	Stuttgart (STUTTGART)	2.8
3.9	North Holland (AMSTERDAM)	3.6
3.6	Darmstadt (FRANKFURT)	4.0
4.3	South Holland (ROTTERDAM)	4.0
3.3	Hamburg (HAMBURG)	4.1
4.2	Sostines (VILNIUS)	4.6
4.9	Denmark (COPENHAGEN)	4.7
4.9	East and Central Ireland (DUBLIN)	4.7
4.7	Berlin (BERLIN)	4.8
6.2	Lombardy (MILAN)	4.9
5.1	Estonia (TALLINN)	5.6
6.5	**EUROPEAN UNION**	**6.2**
6.4	Rhône-Alpes (LYON)	6.6
6.5	Southern Finland (HELSINKI)	6.7
6.8	Provence-Alps-Cote d'Azur (MARSEILLE)	6.7
5.6	Latvia (RIGA)	6.9
7.3	Stockholm (STOCKHOLM)	7.0
7.7	Lisbon (LISBON)	7.2
7.5	Île-de-France (PARIS)	7.6
9.1	Lazio (ROME)	7.7
8.8	Basque Country (BILBAO)	8.6
8.2	Languedoc-Roussillon (MONTPELLIER)	9.0
8.6	Vienna (VIENNA)	9.2
10.4	**Catalonia (BARCELONA)**	**9.7**
12.3	Attica (ATHENS)	10.0
12.9	Community of Madrid (MADRID)	11.2
11.1	Brussels (BRUSSELS)	11.4
14.8	**Spain**	**12.9**

Note: Working population aged between 15 and 74. (*) Data from 2020. The original database includes around 450 regions but the table only shows a selection of benchmark regions.

Source: Eurostat

Working population with a higher education degree in European regions in 2022

More than half of female workers in Catalonia have a higher education degree

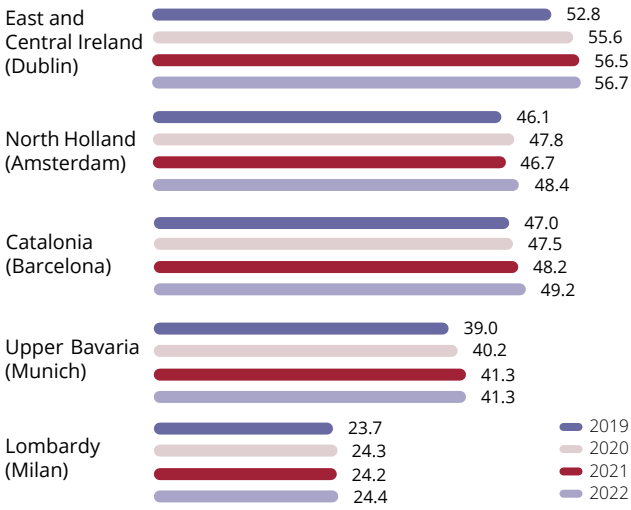
According to figures from Eurostat, 49.2% of the working population in Catalonia had a higher education degree in 2022, a rise of 1 percentage point compared to the previous year. This was more than 10 points above the EU average (37.1%) and also above benchmark regions such as Amsterdam, Frankfurt and Munich, as well as above average for Spain (46.4%).

More than 50% of Catalan female workers had a higher education degree (54.6%, an increase by 0.9 percentage points from 2021) for the eighth consecutive year. This indicator – yet again above the global one – also remains well above the EU value (42.4%) and higher than the benchmark European regions mentioned above as well as the Spanish average (53.2%).

These results highlight the gradual increase in the number of people with higher education degrees in Catalonia in recent years, particularly among women. However, we must continue working in order to reach the workforce education level of the northern European regions.

Working population with a tertiary degree

(% of total employment)



Source: Eurostat

Working population with higher education degrees in European regions. 2022

Female workers with higher education (%)	Region (CITY)	Total number of workers with higher education degrees (%)
70.2	Sostines (VILNIUS)	63.9
67.7	Brussels Region – capital (BRUSSELS)	62.4
67.5	Basque Country (BILBAO)	62.1
62.2	Île-de-France (PARIS)	58.4
60.8	Central Hungary (BUDAPEST)	57.2
60.8	East and Central Ireland (DUBLIN)	56.7
62.2	Stockholm (STOCKHOLM)	55.7
59.1	Community of Madrid (MADRID)	54.1
53.2	Prague (PRAGUE)	51.3
56.8	Oslo og Viken (OSLO)	51.1
56.5	Attica (ATHENS)	50.7
52.9	Berlin (BERLIN)	50.1
55.4	Capital (COPENHAGEN)	49.9
56.5	Helsinki-Uusimaa (HELSINKI)	49.7
52.4	Vienna (VIENNA)	49.6
54.6	**Catalonia**	**49.2**
51.5	North Holland (AMSTERDAM)	48.4
51.7	Bucuresti – Ilfov (BUCHAREST)	46.4
53.2	**Spain**	**46.4**
53.9	Southwest Bulgaria (BG) (SOFIA)	45.7
50.8	Lisbon (LISBON)	44.1
46.3	South Holland (THE HAGUE)	43.5
48.8	Community of Valencia (VALENCIA)	42.3
52.5	Latvia (RIGA)	41.9
39.1	Upper Bavaria (MUNICH)	41.3
42.4	**EUROPEAN UNION**	**37.1**
35.2	Darmstadt (FRANKFURT)	35.8
31.6	Stuttgart (STUTTGART)	35.5
30.8	Lombardy (MILAN)	24.4

Note: % of the employed population aged 15 or over with a higher education degree.
The original database includes around 450 regions but the table only shows a selection of benchmark regions.

Source: Eurostat

Best European business schools in 2023

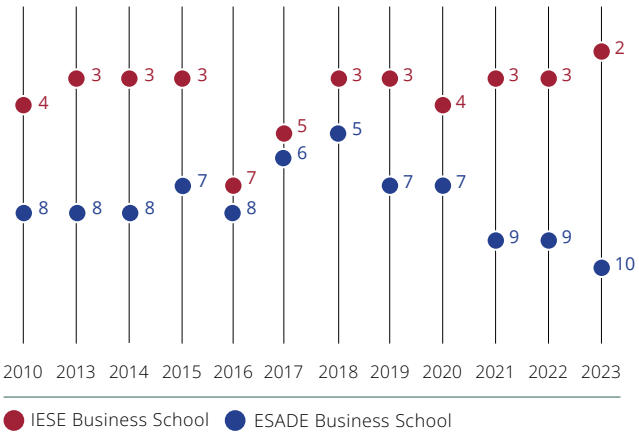
Barcelona and Paris, the only cities with two educational institutions among the top 10 MBA business schools in Europe

On the *Financial Times* ranking of the top 100 full-time MBA programmes, which it has been publishing for the last 23 years, Barcelona's IESE and ESADE business schools are 2nd and 10th in Europe, above well known schools such as Imperial College Business School and Warwick Business School. This makes Barcelona, along with Paris, one of the only two cities with two educational institutions in the top 10 best business schools for MBA programmes in Europe in 2023.

Furthermore, these two European top 10 institutions are among the 30 top schools worldwide, with IESE in 3rd and ESADE in 30th place. Compared to the previous year's results, IESE climbs one position in the European ranking, reaching second place for the first time, while ESADE drops one position. In the global ranking, they gain 7 and 4 positions, respectively.It should be noted that the IESE MBA ranks 2nd worldwide in teaching the SDGs and net zero emissions, and is 6th in emphasis on reducing the carbon footprint.

Year after year, these indicators cement Barcelona's place as a city of excellence and as a hub for business training on the international stage.

Position in the European ranking

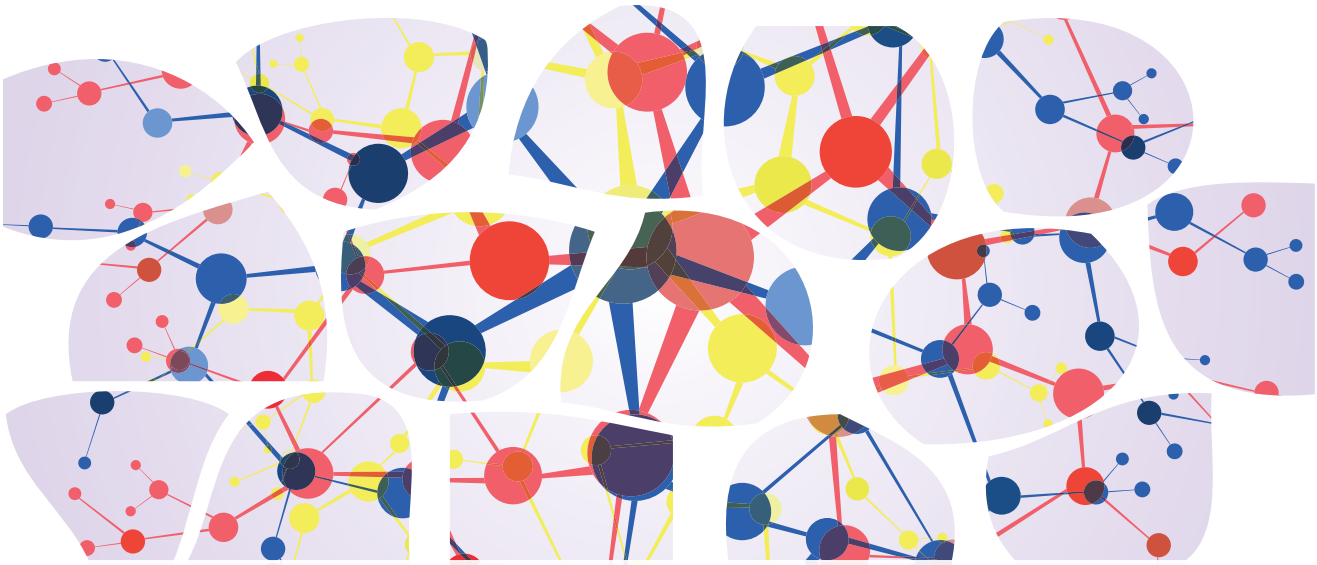


Source: *Global MBA Ranking,* Financial Times.

Best European business schools. 2023

European ranking	Business school	City	World ranking
1	Insead	Fontainebleau	2
2	**IESE Business School**	**Barcelona**	**3**
3	SDA Bocconi	Milan	6
4	London Business School	London	16
5	HEC Paris	Paris	17
6	IE Business School	Madrid	22
7	University of Cambridge: Judge	Cambridge	23
8	ESCP Business School	Paris	27
9	University of Oxford: Saïd	Oxford	28
10	**ESADE Business School**	**Barcelona**	**30**
11	IMD Business School	Lausanne	32
12	Imperial College Business School	London	37
13	Alliance Manchester Business School	Manchester	46
14	EDHEC Business School	Lille	47
15	Warwick Business School	Coventry	55
16	Mannheim Business School	Mannheim	56
17	University of St. Gallen	St. Gallen	59
18	Rotterdam School of Management, Erasmus University	Rotterdam	63
19	Bayes Business School	London	66
20	WHU-Otto Beisheim School of Management	Vallendar	68
21	ESSEC Business School	Cergy	70
22	EMLyon Business School	Lyon	76
23	Durham University Business School	Durham	78
24	The Lisbon MBA Católica|Nova	Carcavelos	85
25	Audencia Business School	Nantes	86

Source: *Global MBA Ranking 2023*. Financial Times.



Knowledge society

observatori barcelona

Introduction

Barcelona continued to cement its place as a hub of technological entrepreneurship among the major European cities in 2023, driven by the push for digitalisation in key sectors of the economy. The digital sector has been one of the drivers of Barcelona's economy, which in 2022 continued to create employment and played a key role in the transformation of the productive model. According to the *Digital Talent Overview 2023* report, the number of digital professionals in Barcelona increased to almost 101,000 by the end of 2022, 33,200 more than in 2018 (49% increase), and the digital sector accounted for 1 in every 4 job offers in the city (only 11% in 2018). Furthermore, in the last five years, the number of women working in the technology sector in Barcelona has doubled.

At the same time, other indicators reaffirm the Catalan capital's position as a leading hub for technological and digital entrepreneurship, and in many of these, it has maintained or improved its position.Thus, Barcelona climbs five positions and is now among the top 5 emerging ecosystems in the world, ranked as 4th in the world (and 2nd in Europe), on *The Global Startup Ecosystem Report 2023*. In the technological sphere, according to the *StartupBlink Ecosystem Index 2023*, Barcelona ranks as the 40th best ecosystem for emerging technology companies in the world in 2023, 6th in Europe, and 1st in Spain. The city ranks as the 11th European hub in terms of international investment received, according to the *State of European Tech 2022* report by Atomico.These positive results are reinforced thanks to the organisation of congresses and technological projects in the city, such as the Mobile World Congress– which in 2023 contributed 461 million euros to the city's economy and created over 9,100 part-time jobs, according to the economic impact report published by the GSMA–, the 4YFN and the Barcelona Deep Tech Summit, the leading deep tech event in southern Europe. The local government is deploying innovative measures such as the Barcelona Deep Tech Fund, an instrument through which Barcelona Activa invests in national or international private venture capital organisations with the aim of boosting the city's deep tech ecosystem within the framework of the Barcelona Green Deal economic agenda.

In terms of innovation, Barcelona is back among the top 10 most innovative cities in Europe (9th position) and ranks among the top 500 cities in the world (26th position), according to the results of the *Innovation Cities Index 2023* compiled by 2ThinkNow. These positive results —which are a significant improvement compared to the previous edition (2021), where it ranked 11th in Europe and 52nd in the world— highlight the importance of continuing to work to consolidate Barcelona on the international map and its potential to become a leader in innovation-related sectors.

In terms of attracting talent, Barcelona is highly attractive due to its climate and quality of life, as well as its world-renowned universities, technology centres, and business schools. Additionally, it boasts a resilient industrial fabric, good transportation connections, and a growing universe of startups in need of international talent. Furthermore, thanks in large part to remote work, professionals increasingly have the flexibility to choose where they want to live. Thus, according to the *Startup Heatmap Europe Report 2023*, for the sixth consecutive year Barcelona is still the 3rd favourite city out of more than 100 European cities for setting up a startup. Barcelona ranks as the 4th city in Europe for global connectivity and entrepreneurship in universities, the 7th in the percentage of foreign-born founders (a figure that exceeds 60%), the 7th in developer availability, and the 10th in investment raised and job creation.

The added-value sectors of the Catalan job market are strong and resilient. In 2022, Catalonia was once again in the top positions, having been ranked the 4th region in Europe in terms of employed population in high and medium-high technological intensity manufacturing, the 7th in employment in knowledge-intensive and high-tech services, and the 4th region with the highest number of individuals with higher education degrees working in the field of science and technology.

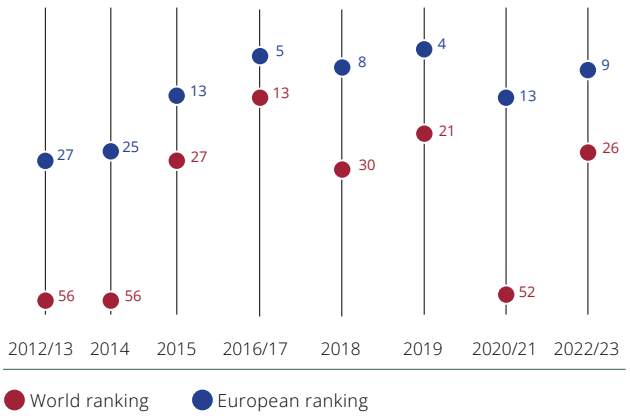
Barcelona once again ranks among the top 10 most innovative cities in Europe

Barcelona is the 9th most innovative city in Europe and 26th in the world

According to the 14th edition of the *Innovation Cities Index 2023*, in 2022, Barcelona ranked 9th in innovation among European cities and 26th globally among 500 cities analysed by the consultancy firm 2ThinkNow. Despite not reaching the heights of 2019 (4th in Europe and 21st globally), Barcelona has notably recovered from the setback of the 2021 edition, where it ranked 52nd globally and 13th in Europe. Thus, in a global ranking led by Tokyo, London, and New York, Barcelona climbs 26 positions compared to the 2021 edition and 4 positions in the European ranking (led by London, Paris, and Berlin), surpassing Oslo, Helsinki, Istanbul, and Moscow.

Barcelona has stood out for climbing up into leading positions in just a few years, and although it experienced a significant setback in the previous edition due to the notable improvement of several North American cities and the impact of the pandemic, in 2022 it returned to the upward trend. The index classifies 500 cities around the world into four categories for innovation, according to their scores in 162 indicators that measure the conditions conducive to creating innovation. Barcelona is in the highest category, Nexus, along with 46 other cities. They are followed by the Hub, Node and Upstart categories. These 162 indicators are grouped into 31 segments that cover all the economic, industrial and social functions of an economy, which are then summarised into three factors: cultural, human infrastructure and interconnected markets.

Barcelona's ranking as an innovative city



Source: 2thinknow *Innovation Cities™ Index.*

Index of innovative cities

City	World ranking 2022/23	City	European ranking 2022/23
Tokyo	1	London	1
London	2	Paris	2
New York	3	Berlin	3
Paris	4	Stockholm	**4**
Singapore	5	Munich	5
Los Angeles	6	Vienna	6
Boston	7	Madrid	7
Seoul	8	Amsterdam	8
San Francisco – San José	9	**Barcelona**	**9**
Houston	10	Milan	10
Berlin	11	Copenhagen	11
Chicago	12	Oslo	12
Stockholm	13	Dublin	13
Dubai	14	Helsinki	14
Toronto	15	Hamburg	15
Munich	16	Rome	16
Vienna	17	Brussels	17
Sydney	18	Istanbul	18
Madrid	19	Zurich	19
Amsterdam	20	Prague	20
Seattle	**21**	Lisbon	21
Dallas-Fort Worth	22	Basel	22
Melbourne	23	Athens	23
Montreal	24	Frankfurt	24
Atlanta	25	Moscow	25
Barcelona	**26**	Budapest	26
Milan	27	Porto	27
Beijing	28	Düsseldorf	28
Vancouver	29	Stuttgart	29
Copenhagen	30	Manchester	30

Source: 2thinknow *Innovation Cities™ Index 2022/23*.

Most popular European cities for establishing a *startup* in 2022

For the sixth consecutive year, Barcelona ranks as the third favourite city in Europe for establishing a startup

According to the eighth edition of the *Startup Heatmap Europe Report 2023*, 17.1% of startup founders and members of the technology community would choose Barcelona if they had to start a new business project tomorrow, which means that for the sixth consecutive year it ranks 3rd among more than 100 European cities. The ranking is led by the city of London, followed by Berlin (with 35% and 34% of the votes, respectively). Although these two cities maintain the top positions, in the last seven years they have dropped 15 and 17 percentage points in terms of support, respectively. With respect to Barcelona, the percentage of votes has remained between 17% and 20% since 2018. According to the report, Barcelona ranks as the 4th city in Europe for global connectivity and entrepreneurship in universities, the 7th in the percentage of foreign-born founders, the 7th in developer availability, and the 10th in investment raised and job creation. Barcelona is also becoming established as a technological hub and innovation centre, the birthplace of unicorns such as Glovo, Wallbox, and TravelPerk, largely thanks to the 22@, an urban development project driven by public-private collaboration.

Barcelona is also reinforcing its position in the field of digital entrepreneurship by hosting major events such as the Mobile World Congress, the 4YFN and the Barcelona Deep Tech Summit, which has placed the city at the heart of deep tech, i.e., startups working on artificial intelligence, blockchain, robotics, frontier materials, photonics, supercomputing, quantum technology and biomedicine. The second edition of this event, organised by Barcelona Activa and five universities, and attended by nearly 1,000 people, once again brought together companies, universities, investors, institutions, and experts with disruptive solutions to challenges as transcendental as climate change, energy transition, connectivity, the new industrial era, and biomedicine. In Catalonia there are around 300 startups in the sector, with 1,700 highly qualified workers and a turnover of more than 125 million euros, 42 spin-off centres, 9 incubators and accelerators and 31 venture capital funds.

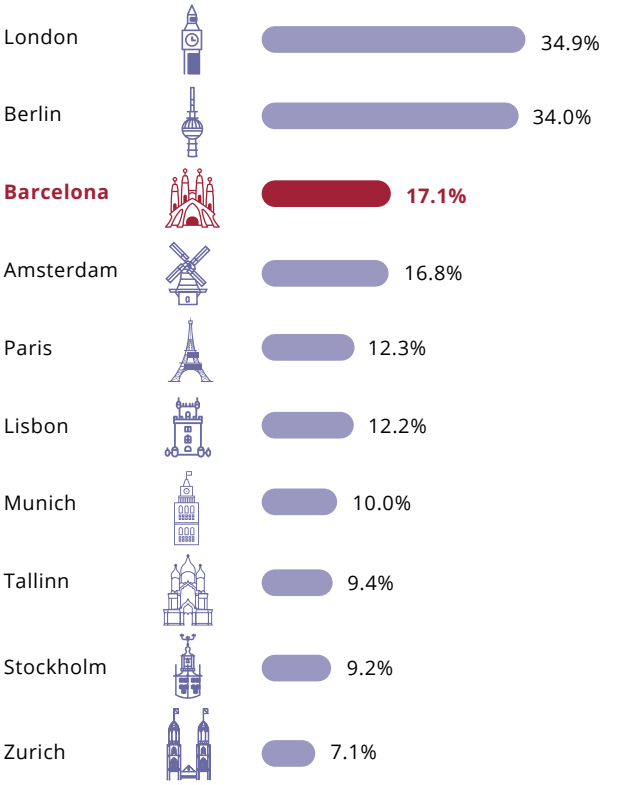
Preferred cities to locate a new *startup* in Europe

Ranking in 2021	City	Ranking in 2022
2	London	1
1	Berlin	2
3	**Barcelona**	**3**
5	Amsterdam	4
7	Paris	5
4	Lisbon	6
8	Munich	7
6	Tallinn	8
9	Stockholm	9
11	Zurich	10

Source: Startup Heatmap Europe, *2023 Startup Heatmap Europe Report*.

Percentage of entrepreneurs citing the city as the place to locate a new *startup* in 2022

(with a maximum of three votes per entrepreneur)



Source: Startup Heatmap Europe, *2023 Startup Heatmap Europe Report*.

Main startup ecosystems worldwide in 2023

Barcelona is ranked as the 6th startup ecosystem in the European Union and the 40th in the world

Barcelona is ranked as the 6th startup ecosystem in the European Union and 40th in the world in 2023 by StartupBlink's *Global Startup Ecosystem Index 2023*, which has been updated annually since 2017 and takes into account approximately 1,000 cities in 100 countries around the world. Compared to last year, Barcelona has dropped one position in the European ranking (being surpassed by Munich) and three positions globally. In Spain (which regains 7th and 15th place among countries in the European Union and the world, respectively), Barcelona continues to be the main startup ecosystem.This index gives each ecosystem a total score that is the sum of three subscores that measure the quantity, quality and business environment of startups. By sector, the report highlights Barcelona as an ideal location for foodtech startups (1st in the European Union and 13th in the world), and for energy and environmental startups (4th in the European Union in both cases). The city of Barcelona has established itself and demonstrates continuous growth, thanks to a high number of investment opportunities, innovation centres, digital hubs, and incentive programmes, resulting in notable companies and unicorns such as Glovo, Wallbox, Letgo, Edream, Factorial and TravelPerk. Likewise, the presence of global events such as the MWC Barcelona and the Smart City Expo World Congress are essential for promoting the city's entrepreneurial ecosystem abroad every year.

At the same time, according to Startup Genome's *Global Startup Ecosystem Report 2023*, Barcelona ranks as the 4th city in the *top 100* emerging ecosystems worldwide and the 2nd in Europe (only behind Copenhagen), climbing five positions and one position, respectively, compared to the previous year. In the six factors evaluated, Barcelona is rated (on a scale from 1 to 10) as follows: a 10 in funding, talent and experience, and connectedness; a 9 in performance; a 6 in market reach, and a 3 in knowledge. Similarly, Barcelona is considered the second strongest emerging ecosystem (*Strong Starter*) in the world, only behind Istanbul. According to the report, the highest-valued unicorn is Paack, a tech-enabled delivery platform, which was valued at 1.6 billion dollars. This valuation raises the ecosystem value to 21 billion dollars, which is 91% higher than in 2022. The report also highlights Barcelona as the second emerging ecosystem in the world where early-stage financing activity is most robust.

Top 10 emerging ecosystems in the world. 2023

Source: *The Global Startup Ecosystem Report. GSER 2023.* Startup Genome.

Main ecosystems of startups in the world. 2022

City	2022 ranking	2023 ranking
San Francisco	1	1
New York	2	2
London	3	3
Los Angeles	4	4
Boston	5	5
Beijing	6	6
Shanghai	7	7
Bangalore	8	8
Paris	10	9
Tel Aviv	9	10
Berlin	12	11
Seattle	11	12
New Delhi	13	13
Tokyo–Yokohama	15	14
Chicago	14	15
Shenzhen	18	16
São Paulo	16	17
Washington DC	19	18
Stockholm	23	19
Singapore	22	20
Austin	20	21
San Diego	21	22
Toronto	24	23
Seoul	25	24
...	...	...
Barcelona	**37**	**40**

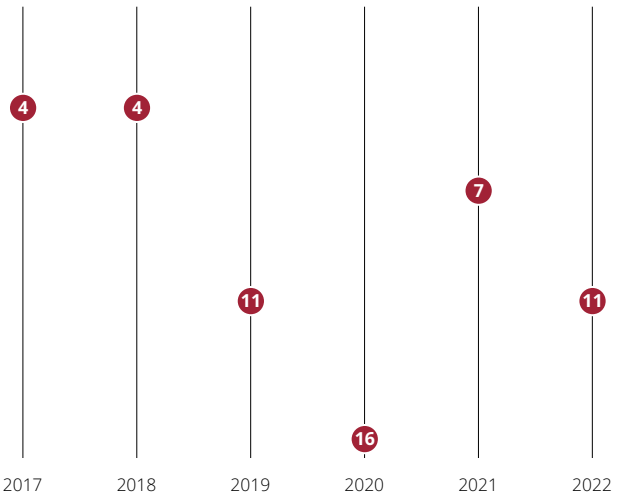
Source: *Global Startup Ecosystem Index 2023.* StartupBlink.

Investment in the technology ecosystem in European cities in 2022

Barcelona is the 11th European city in attracting technological investment

Barcelona ranks as the eleventh European city in attracting international technological investments in 2022, according to the Atomico consultancy's *State of European Tech 2022* report. The report estimates that the city's entrepreneurial ecosystem has received a total of $1.3 billion from international investors, 70% more than the 2019 figure, but 19% less than 2021. This decrease has been seen in most of the main cities receiving investment. The unprecedented volume of capital supply that drove investment to record levels in 2021 and the first half of 2022 was in part due to the acceleration in its pace of deployment. As a result, the average time between venture capital fundraising and execution decreased from a long-term average of 3.5 years to 2.4 years in 2022, and consequently had the effect of approximately increasing the amount of capital invested by around 50% per year. As of the second semester, investment activity has normalised after the extraordinary growth of 2021 and the first part of 2022. It should be mentioned that in 2022 the investment process has also been affected by the increase in interest rates and inflation, especially in the second half of the year.

Place in the ranking. Barcelona



Source: *State of European Tech 2022*. Atomico.

The number of investment deals is also declining in most major European cities in 2022. In this aspect, Barcelona is in ninth place in Europe and went from 167 agreements in 2021 to 126 in 2022. London remains the main European centre with a total of 895 agreements (514 fewer than in 2021), a figure that is more than double that of second place (Paris, with 419).

Although the ecosystem has matured, with Barcelona continuing to lead the investment volume of the Spanish technology sector, there is still enormous potential to tap into, and a commitment to innovation is still needed. It should also be noted that as of 2022 four of the nine unicorn companies[1] in Spain are from Catalonia (eDreams, Glovo, Wallbox and TravelPerk).

The 20 main European hubs in technology investment. 2022

	City	Variation 2022/2021 (%)	Invested Capital 2022[1] (millions of dollars)
1	London	-23	19,234
2	Paris	21	9,864
3	Berlin	-52	5,215
4	Stockholm	-41	4,151
5	Munich	-54	2,124
6	Amsterdam	-62	1,659
7	Zurich	210	1,523
8	Helsinki	33	1,397
9	Milan	94	1,386
10	Tallinn	46	1,330
11	**Barcelona**	**-19**	**1,326**
12	Vienna	-9	1,190
13	Madrid	-25	1,108
14	Oslo	-23	934
15	Dublin	-26	858
16	Zagreb	884	758
17	Hagen	-46	730

Source: *State of European Tech 2022*. Atomico.

1.Estimate using annualisation based on actual data up to October.

Top cities in the world for scientific academic production in 2022

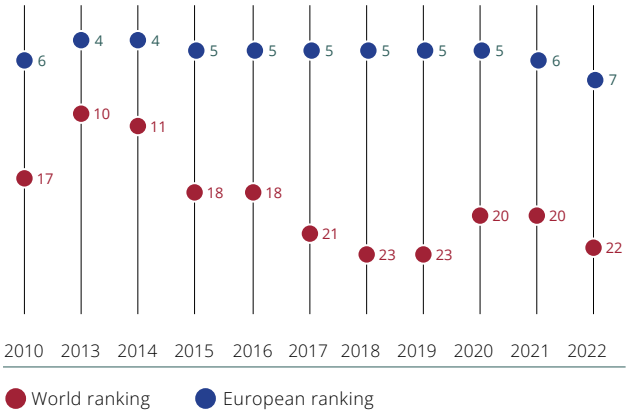
Barcelona ranks 22nd among the world's cities, and 7th in Europe

With 23,049 scientific publications, Barcelona is the 7th European city and the 22nd in the world in terms of scientific academic production on the *Knowledge Cities Ranking 2022*, compiled by the UPC's Land Policy and Valuations Centre, based on the Science Citation Indexes. The number of publications in the city of Barcelona decreased by 8.1% compared to the previous year. This places Barcelona in 22nd position in the global ranking (two positions lower than in 2021) and in a good position in Europe's top 10, where it ranks 7th, with a scientific output similar to that of Milan and Rome. Barcelona produces more scientific publications than major cities such as Cambridge (US), Berlin and Oxford, although it is still far behind the top cities in the ranking (such as Beijing and Shanghai, which have retained their leading positions since 2014). It is worth noting the emerging dynamics of Chinese cities, which in 2022 occupy seven positions out of the top 10 world cities for scientific production.

The Barcelona area is ranked 47th among the 200 main science cities in the world in the 2023 index compiled by *Nature* magazine. Furthermore, of the 218 Advanced Grants awarded to researchers by the European Research Council in 2022, 9 were for Catalan institutions, accounting for more than half of all grants awarded to Spain (16).

Barcelona's ranking in scientific production

(Barcelona's position in the world and European rankings)



Source: Compiled by the UPC's Land Policy and Valuations Centre (CPVS), based on data from the SCI (*Science Citation Index*)

Top cities in the world for scientific academic production. 2022

World ranking 2021	City	World ranking 2022	European ranking 2022	Publications 2022
1	Beijing	1		162,410
2	Shanghai	2		81,288
4	Nanjing	3		65,121
5	Guangzhou	4		55,428
3	London	5	1	55,139
9	Wuhan	6		50,086
6	New York	7		46,662
11	Xi'an	8		46,610
7	Boston	9		44,176
13	Hangzhou	10		42,572
14	Chengdu	11		42,082
8	Seoul	12		41,823
10	Tokyo	13		38,467
12	Paris	14	2	37,285
15	Madrid	15	3	27,784
17	Hong Kong	16		27,682
16	Moscow	17	4	25,089
18	Rome	18	5	23,662
19	Melbourne	19		23,568
21	Chicago	20		23,522
22	Milan	21	6	23,488
20	**Barcelona**	**22**	**7**	**23,049**
23	Toronto	23		22,833
24	Philadelphia	24		22,721
29	Houston	25		22,202
25	Los Angeles	26		22,058
26	Baltimore	27		21,704
27	Cambridge, (United States)	28		21,476
28	São Paulo	29		20,476
30	Singapore	30		20,206
31	Berlin	31	8	19,032

Source: Polytechnic University of Catalonia – Land Policy and Valuations Centre. Data extracted in November 2023.

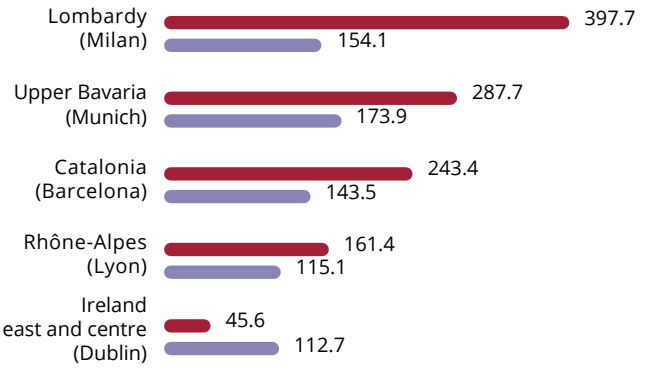
Population employed in technological manufacturing and services in European regions in 2022

Catalonia is once again the 4th European region in terms of people employed in manufacturing, and 7th in technological services

In 2022, Catalonia continues to rank 4th among the European regions with the largest population employed in manufacturing with high and medium-high technological intensity,[1] only surpassed by the regions of Stuttgart, Lombardy and Upper Bavaria, according to Eurostat data. Catalonia has a total of 243,400 people working in these sectors, nearly 20,000 more jobs than in 2021 (an increase of 8.8%), the second-highest growth among the top 20 regions (only behind the 23,600 in Rhône-Alps). Almost a third of this employed population are women (79,800), a 20% increase compared to the previous year. The number of people employed in high- and medium-high technology-intensive manufacturing sectors in Catalonia accounts for 6.9% of its employed population (6.5% in 2021), placing it in the medium-high range of the more than 300 European regions.

As for services, with a total of 143,500 workers, in 2022 the Catalan economy retains 7th place among European regions in terms of employment in knowledge-intensive and high-tech services,[2] behind Île-de-France, Madrid, Munich, Berlin, Lombardy and Lazio. Employment in Catalonia in these sectors went up again compared to the previous year by 5,800 people (a 4.2% increase). This increase comes entirely from the female employed population, which increased by 5,800 (a 13.8% increase), bringing the total to 47,700 women, one third of the total (30.4% in 2021). In addition, the percentage of people working in these sectors out of the total employed population rises by a tenth to 4.1%, a percentage that places it in the middle-high range of European regions.

People employed in knowledge-intensive and high-tech services and people employed in high and medium-high technological manufacturing. 2022



People employed in high and medium-high technological manufacturing (in thousands).

People employed in knowledge-intensive and high-tech services (in thousands).

Source: Eurostat

[1]Employed population where the main business of the employer includes the following groups of the 2009 Catalan Classification of Economic Activities (CCAE):21 and 26, and 20 and 27-30 respectively.

[2]Employed population where the main business of the employer includes the following groups of the 2009 Catalan Classification of Economic Activities (CCAE): 59-63 and 72.

Population employed in technological manufacturing and services in European regions. 2022

Knowledge-intensive and high tech services				High and medium-high technological intensity manufacturing		
% People employed/ total employed population	Employed women (thousands)	Total people employed (thousands)	Region (CITY)	% People employed/ total employed population	Employed women (thousands)	Total people employed (thousands)
3.7	28.7	85.5	Stuttgart (STUTTGART)	19.5	116.5	448.7
3.5	43.9	154.1	Lombardy (MILAN)	9.0	108.5	397.7
6.8	57.7	173.9	Upper Bavaria (MUNICH)	11.3	73.7	287.7
4.1	**47.7**	**143.5**	**Catalonia (BARCELONA)**	**6.9**	**79.8**	**243.4**
2.4	113.4	48.2	Emilia-Romagna (BOLOGNA)	10.5	59.4	208.6
6.9	31.3	97.0	Karlsruhe (KARLSRUHE)	13.4	40.3	188.2
3.4	18.0	61.2	Piedmont (TURIN)	10.1	48.9	179.5
3.0	:	31.6	Tübingen (TÜBINGEN)	16.9	46.1	179.4
2.4	13.7	52.1	Veneto (VENICE)	8.3	49.4	177.3
2.8	:	33.0	Freiburg (FREIBURG)	14.0	49.3	167.3
3.8	33.5	115.1	Rhône-Alpes (LYON)	5.4	50.8	161.4
3.5	28.7	89.5	Düsseldorf (DÜSSELDORF)	6.1	35.8	157.8
3.0	19.4	57.4	Upper Silesia (KATOWICE)	8.2	54.7	156.2
5.0	31.5	103.9	Darmstadt (FRANKFURT)	7.3	39.2	150.5
2.5	6.1	22.0	Western Slovakia (BRATISLAVA)	16.3	52.3	146.2
6.0	42.9	133.8	Cologne (COLOGNE)	6.5	33.5	145.0
3.2	17.8	57.0	Arsnberg (ARNSBERG)	8.0	36.7	142.1
1.1	:	7.9	Vest (TIMISOARA)	19.1	44.4	132.5
2.4	:	23.9	Swabia (AUGSBURG)	13.2	29.2	131.1
6.7	135.9	378.8	Île-de-France (PARIS)	2.3	44.9	129.4
7.7	75.8	245.6	Community of Madrid (MADRID)	3.6	37.1	116.4
8.8	58.6	166.5	Berlin (BERLIN)	4.4	25.4	84.1
2.5	10.3	41.1	Pays de la Loire (NANTES)	5.0	23.7	82.5
6.7	50.4	154.0	Lazio (ROME)	2.6	16.3	61.1
5.0	17.6	67.6	Midi-Pyrénées (TOULOUSE)	4.4	16.1	60.5
7.1	35.8	109.3	Masovia (WARSAW)	3.7	27.9	56.6
7.5	21.9	75.2	Capital Region (COPENHAGEN)	5.1	20.3	51.2
3.2	19.0	64.2	Provence-Alps-Cote d'Azur (MARSEILLE)	2.4	12.8	48.1

Source: Eurostat
Note: The original database contains a total of 344 European regions (NUTS2), although the table includes the first 20 according to the number of people employed in high and medium-high intensity manufacturing and remaining ten are a sample of selected regions of interest.
CCAE-09 Manufacturers with high technological intensity: 21 and 26.
Manufacturers with medium-high technological intensity: 20 and 27-30.
Knowledge-intensive and high-tech services 59-63 and 72.
344 regions.

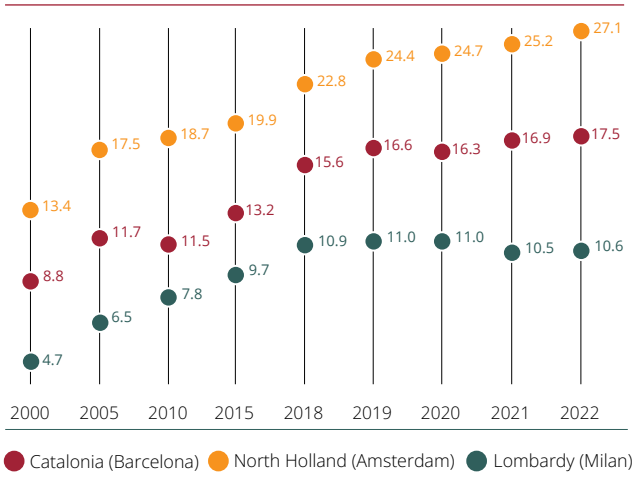
Population employed in science and technology in 2022, and research and development expenditure in European regions in 2021

Catalonia, fourth European region in employment in science and technology

Catalonia registered 1,006,000 workers with higher education in the field of science and technology[1] in 2022 and is the 4th European region with the most employment in this area, only behind Paris, Madrid and Lyon according to Eurostat. Despite an increase of 36,000 workers in this area compared to the previous year, Barcelona dropped one position as it was surpassed by Lyon, which increased by 54,600 workers. The number of people employed in science and technology accounts for 17.5% of Catalonia's overall population (0.6 percentage points more than in 2021), a percentage that places it in the medium-high range among more than 300 European regions. According to data from the Labour Force Survey (LFS), the number of people employed in the Information and Communication Technologies (ICT) sector reached 124,700 in the third quarter of 2023. This figure represents an increase of 3.2% compared to the previous year and accounts for 3.4% of the employed population.

In 2021, R&D expenditure in Catalonia stood at 1.8% of GDP, a value higher than regions such as Milan or Nantes and higher than the average in Spain (1.4%), but still below leading areas such as Stuttgart, Midi-Pyrenees and Upper Bavaria. It also falls short of the European Union average (2.3%), thus failing to meet the 3% target set by the European strategy for 2020. According to preliminary data from the INE for 2022, internal R&D expenditure in Catalonia and Spain stands at 1.89% and 1.44% of GDP, respectively, the highest figures on record. It is worth noting that R&D expenditure in Catalonia has increased by 18% in year-on-year terms and represents one quarter of the total expenditure in Spain.

Population employed in science and technology
(as a percentage of the population aged 15 to 74)



Note: Workers with higher education degrees employed in science and technology.

Source: Eurostat

[1] Technical or professional workers between 15 and 74 years of age with a higher education degree working in science and technology regardless of the employing company's sector (as defined in and in accordance with the concepts of the Canberra Manual).

[2] Employed population aged 16 and over who are salaried or self-employed, in a place where the main business activity of the establishment is in the ICT sector, which includes the following 2009 CCAE groups: 261, 262, 263, 264, 268, 465, 582, 611, 612, 613, 619, 620, 631 and 951.

Population employed in science and technology in 2022, and research and development expenditure in European regions in 2021

Total internal expenditure on R&D (%GDP) in 2021	Internal expenditure in business sector on R&D&I (% GDP) 2021	Region (CITY)	Workers in science and technology (% population) 2022	Workers in science and technology (in thousands) 2022
2.8	2.0	Île-de-France (PARIS)	25.8	2,318
1.9	1.1	Community of Madrid (MADRID)	21.2	1,096
3.0	2.2	Rhône-Alpes (LYON)	21.2	1,022
1.8	**1.1**	**Catalonia (BARCELONA)**	**17.5**	**1,006**
1.1	0.4	Andalusia (SEVILLE)	12.0	787
1.3	1.0	Lombardy (MILAN)	10.6	786
4.5	3.3	Upper Bavaria (MUNICH)	22.3	786
3.4	1.2	Berlin (BERLIN)	26.6	744
–	–	South Holland (ROTTERDAM)	23.7	668
2.7	1.9	Masovia (WARSAW)	28.6	648
2.2	1.2	Provence-Alps-Cote d'Azur (MARSEILLE)	16.8	609
3.3	1.5	Cologne (COLOGNE)	18.1	608
–	–	North Holland (AMSTERDAM)	27.1	597
6.8	6.3	Stuttgart (STUTTGART)	18.3	597
3.6	2.6	Stockholm (STOCKHOLM)	32.8	586
2.0	1.4	Düsseldorf (DÜSSELDORF)	14.2	565
3.4	2.5	Darmstadt (FRANKFURT)	17.4	541
2.0	0.7	Lazio (ROME)	12.5	535
1.2	0.6	Community of Valencia (VALENCIA)	13.3	516
1.0	0.6	Upper Silesia (KATOWICE)	15.5	502
1.8	1.0	Attica (ATHENS)	17.8	502
4.4	3.1	Midi-Pyrénées (TOULOUSE)	20.7	469
1.3	0.9	Pays de la Loire (NANTES)*	16.6	461
–	–	East and Central Ireland (DUBLIN)	23.9	449
2.0	1.1	Lisbon Metropolitan Area (LISBON)	21.1	441
2.5	1.7	Lesser Poland (KRAKOW)	17.8	430
2.0	1.2	Norte (PORTO)	15.6	429
–	–	North Brabant (EINDHOVEN)	21.7	427

Note: This is a ranking of the top 30 European regions (out of 344 in total) by number of people employed in science and technology.
Internal expenditure includes capital, current and employment expenditure (for both researchers and administrative personnel), linked to research activities in proportion to GDP.

Source: Eurostat

Tourism

OBSERVATORI BARCELONA

Introduction

In 2023, the tourism sector in Barcelona, which continues to be one of the city's main drivers, started the year strong and has reached pre-pandemic levels in some areas. In fact, the number of travellers from Spain staying overnight in hotels in the city already exceeds pre-crisis levels by 11.5%, while the number of foreign visitors (who represent 80.1% of the total) is only 5.8% below pre-pandemic levels. However, over the course of the year, the growth rate has lost momentum due to a combination of loss of purchasing power and an increase in trips abroad.

In the face of these obstacles, the sector must continue working towards the sustainability, equity, and quality of the tourism model. Barcelona has been working for years to build a tourism community that is respectful of the environment and culture, and that provides a social and economic return, within the framework of the Commitment to Sustainable Tourism Destination Barcelona Biosphere. This programme is driven by Barcelona Provincial Council and Barcelona City Council with the support of the Barcelona Chamber of Commerce and the Barcelona Tourism Consortium. Proof of this is Barcelona's ranking in the new European Union indicator Environmental Labels and Schemes, which specifically measures the number of accommodation establishments per destination that have demonstrated sustainable practices. In this indicator, the province of Barcelona stands out prominently, taking first place in the ranking with 283 points, far ahead of Stockholm with 134 points, Amsterdam with 95 points, the Greek island of Kalymnos with 83 points, and Vienna with 74 points. At the same time, Barcelona has obtained nearly 41 million euros in the call for the 2022 plan for the modernisation and competitiveness of the tourism sector, which is financed with European Next Generation funds and which will be used to finance 20 city projects focused on boosting the economic recovery and the resilience of the destination by decentralising tourism, promoting digitalisation, improving energy efficiency, creating new visions and furthering innovation, in addition to ensuring the sustainability and social return of tourism.

In this context, Barcelona's strong position as an international tourism destination is reflected in the leading rankings for 2022. On the City Destinations Alliance's *Benchmarking Report 2021-2022*, Barcelona comes in 4th place in Europe in European overnight stays and is the 2nd city with the highest increase in the total number of overnight stays in the *top 15* (only behind Rome). Furthermore, on Euromonitor International's *Top 100 City Destinations Index 2023*, Barcelona remains the 9th top international destination and climbs two positions in the European ranking to 6th place. Finally, Saffron's *2023 City Brand Barometer* ranks Barcelona as the 10th best branded city in the world, a ranking that measures the city's assets and reputation as an international tourist destination.

This strength of tourism in the city is reinforced by the good quality of the main infrastructure for international tourists to access the city. In 2022, the Josep Tarradellas Barcelona-El Prat airport returned to the European *top 10* in terms of passengers and is increasingly approaching pre-crisis record figures. Furthermore, regarding origin and destination cruise ship traffic, in 2022, Barcelona regained first place as Europe's leading home port by number of cruise passengers, a position it held for 19 consecutive years until 2019.Cruise ship activity in the city, with fewer restrictions especially from the second quarter of 2022 onwards, has been gradually returning throughout the year, reaching 2.3 million passengers, 26% less than in 2019.

Tourism continues to be one of the city's main economic drivers

Main European airports by passenger volume in 2022

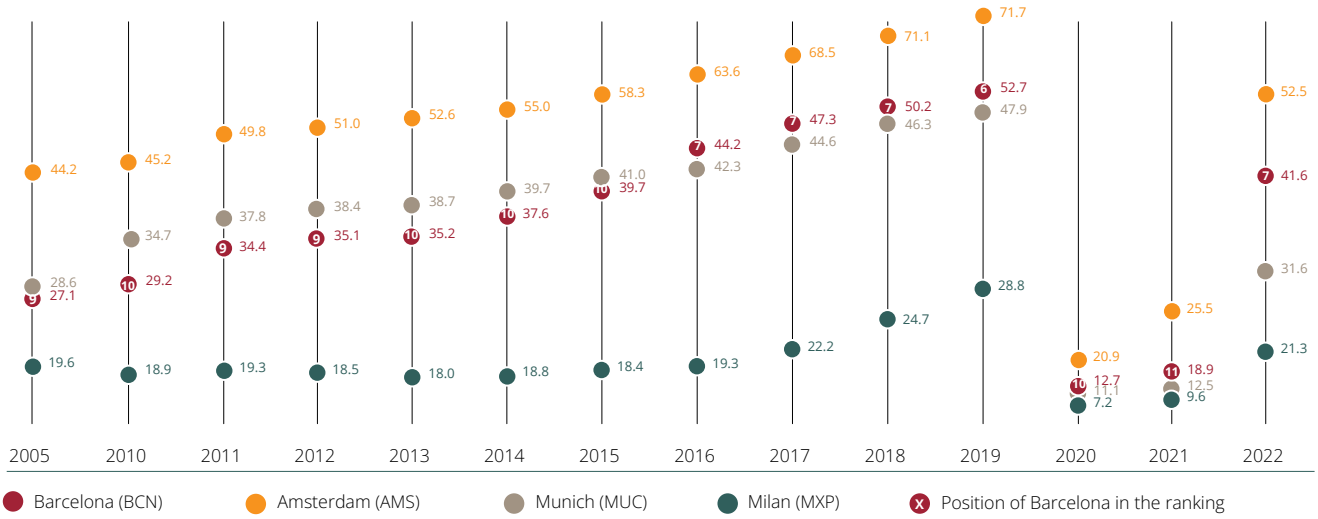
Barcelona airport once again ranks seventh in Europe in terms of passenger numbers

In 2022, Barcelona airport regained seventh place in Europe by passenger volume, a position it held in 2018. The number of passengers has risen to 41.6 million, according to provisional data from AENA. This figure is 120.6% higher than that of 2021 as a whole, but it is still 21% below the number reached in 2019 (52.7 million). According to origin, the increase has been more pronounced among international passengers (162.1%) – who represent 70.6% of the total – than among domestic passengers (59.4%). The annual increase in passenger volume is also observed at the rest of the 25 main European airports, with the exception of Moscow airport (SVO). Istanbul, London Heathrow and Paris Roissy airports remain in the first three positions of the ranking.

In 2023, the numbers have shown a significant and steady recovery throughout the year, reaching 49,909,544 passengers, 19.9% more than the previous year and only 5.3% lower than the 2019 figures. According to the Barcelona city and region Tourism Observatory, Barcelona airport is served by 78 airlines flying to 166 destinations, 41 of which are intercontinental. In the first quarter of 2024, around 4.6 million seats will be offered monthly, which is an 18.0% increase from last year and only 3.7% fewer than the 2019-2020 winter season.

Number of passengers at airports in European cities

(million)



Note: In 2010, Barcelona airport dropped one position due to the entry of Istanbul airport in the ACI statistics. If not for this inclusion, it would have remained 9th.

Source: *Airport Traffic Report*. Airports Council International, ACI Europe and Barcelona Air Routes Development Committee (CDRA).

Main airports by passenger volume. 2022

	City (airport)	Variation for 2022/2021 (%)	Passengers 2022
1	Istanbul (IST)	73.5	64,486,178
2	London Heathrow (LHR)	217.6	61,599,199
3	Paris Roissy (CDG)	119.4	57,474,033
4	Amsterdam (AMS)	105.8	52,472,188
5	Madrid (MAD)	109.8	50,633,652
6	Frankfurt (FRA)	97.1	48,918,482
7	**Barcelona (BCN)**	**120.6**	**41,639,622**
8	London Gatwick (LGW)	424.6	32,839,000
9	Munich (MUC)	153.2	31,642,702
10	Antalya (AYT)	41.8	31,210,119
11	Istanbul-Sabiha Gökçen (SAW)	23.6	30,769,728
12	Rome Fiumicino (FCO)	151.7	29,360,613
13	Paris-Orly (ORY)	85.6	29,187,269
14	Palma de Mallorca (PMI)	97.1	28,573,364
15	Moscow-Sheremetyevo (SVO)	-7.3	28,400,000
16	Lisbon (LIS)	132.6	28,262,000
17	Dublin (DUB)	236.2	27,787,556
18	Vienna (VIE)	127.6	23,682,133
19	Manchester (MAN)	283.2	23,369,770
20	London-Stansted (STN)	226.7	23,319,523
21	Athens (ATH)	84.1	22,728,750
22	Zurich (ZHR)	120.4	22,561,132
23	Oslo (OSL)	139.1	22,467,510
24	Copenhagen (CPH)	141.2	22,143,135
25	Milan Malpensa (MXP)	121.9	21,347,652

Note: Provisional data.

Source: Official airport statistics portals, AENA, Saber MiDT and Airports Council International (ACI).

International overnight stays in European cities in 2022

Barcelona is the fourth city in Europe with the most international overnight stays

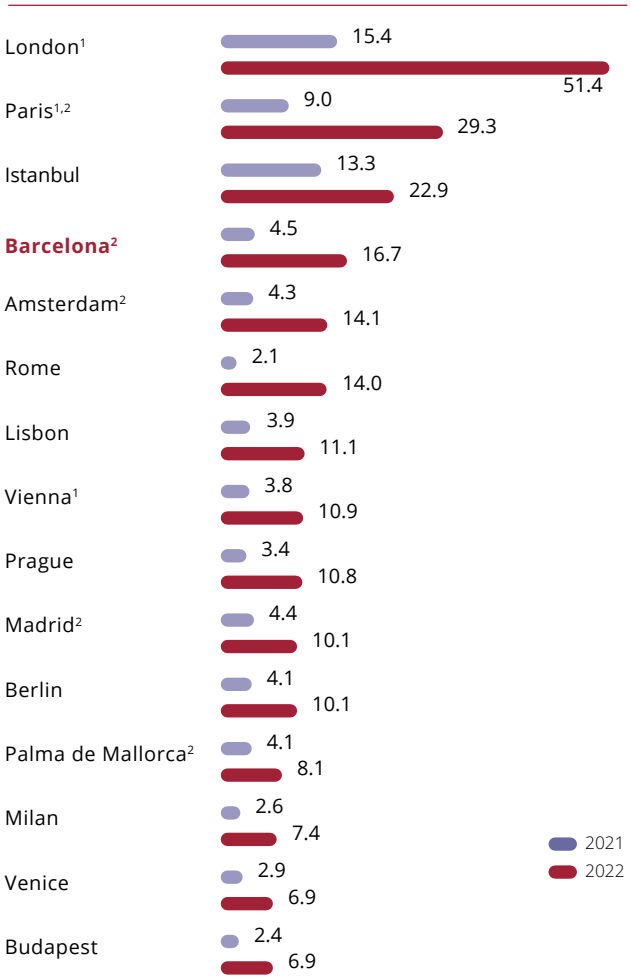
Barcelona ranks 4th in Europe for the number of international overnight stays in 2022 for the second year running, according to the *City Destinations Alliance Benchmarking Report 2021-2022*. The number of international overnight stays in hotels rose to 16.7 million, 12.2 million more than in 2021 (a 269% increase, the second highest relative growth of the *top 15* cities, just behind Rome's 563%).By the number of total overnight stays (national and international), Barcelona rises from 9th in Europe in 2021 to 6th in 2022, with 19.7 million overnight stays, 225% more than the previous year –the second highest increase in the *top 15* –and only 0.6% below the 2019 figure, making it the city that comes closest to pre-pandemic numbers.

Meanwhile, on Euromonitor International's *Top 100 City Destinations Index 2023*, Barcelona is ranked as the 9th international destination and 6th in Europe; compared to the previous year, it remains the same on the international scale and rises two positions on the European scale. The Euromonitor index compares the attractiveness of 100 destinations based on 55 different metrics grouped into 6 key pillars, to create a global score of the city's capacity for attraction as an international destination.

Foreign tourist activity improved substantially in 2022 following the end of the state of alarm. Nonetheless, in 2023 the numbers have not reached the pre-pandemic record figures in 2023. According to the INE's Hotel Occupancy Survey, in 2023, the number of foreign travellers in Barcelona was only 4.4% lower than the number in 2019 (7,082,982 people in 2023 and 7,405,112 in 2019).

International overnight stays in European cities. 2022

(million)



Note: Overnight stays in all types of paid accommodation in the area of the city analysed, unless otherwise specified. 2022, provisional data.
[1] City and metropolitan area
[2] Only overnight stays in hotels

Source: Barcelona Tourism Observatory: City and Region, based on *City Destinations Alliance Benchmarking Report 2022-2023*.

Top 15 European cities for international overnight stays

	City	Variation for 2022/2021 (%)	International overnight stays in 2021 (millions)	International overnight stays in 2022 (millions)
1	London[1]	234.4	15.4	51.4
2	Paris[1,2]	226.1	9.0	29.3
3	Istanbul	71.6	13.3	22.9
4	**Barcelona[2]**	**269.0**	**4.5**	**16.7**
5	Amsterdam[2]	224.4	4.3	14.1
6	Rome	562.6	2.1	14.0
7	Lisbon	187.8	3.9	11.1
8	Vienna[1]	183.7	3.8	10.9
9	Prague	215.1	3.4	10.8
10	Madrid[2]	131.5	4.4	10.1
11	Berlin	149.5	4.1	10.1
12	Palma de Mallorca[2]	97.3	4.1	8.1
13	Milan	186.3	2.6	7.4
14	Venice	134.7	2.9	6.9
15	Budapest	192.1	2.4	6.9

[1] City and metropolitan area.
[2] Only overnight stays in hotels.
Note: Overnight stays in all types of paid accommodation in the area of the city analysed, unless otherwise specified. 2022 provisional data.

Source: *Barcelona Tourism Observatory: City and Region, based on City Destinations Alliance. Benchmarking report 2022-2023.*

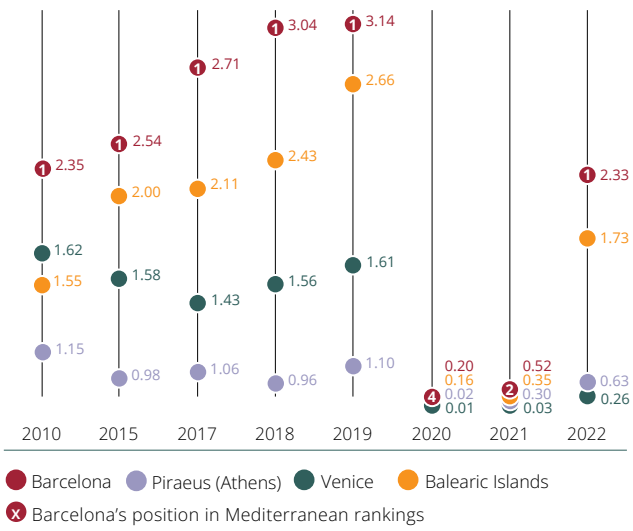
Cruise ships in Europe's main ports in 2022

Barcelona is once again the leading European base port by number of cruise passengers

In 2022, the port of Barcelona recorded 2.33 million passengers (a 347.2% increase compared to the previous year) and is the leading European base port in terms of number of cruise passengers. Barcelona regains its position as the leading base port by number of cruise passengers, a position it held for 19 consecutive years until 2019. Cruise ship activity, with fewer restrictions especially from the second quarter of 2022 onwards, recovered gradually throughout the year, and overall was 26% below the Barcelona pre-pandemic levels (3.1 million passengers in 2019).

In 2023, after the total lifting of lockdown measures, the pre-Covid figures have already been achieved and surpassed by a large margin. According to statistics from the State Ports Authority, Barcelona welcomed 3,138,174 cruise passengers between January and October 2023, a figure that represents an 11.8% increase compared to the same period in 2019 (2,804,538 cruise passengers). According to data from the Barcelona city and region Tourism Observatory, around 800 cruise ships will have operated at the port of Barcelona in 2023, a figure that is similar to both 2019 and 2022 levels.

Cruise-ship passengers (millions of passengers)



Source: Cruise Insight. MedCruise and Ports of the State

Cruise ships in Europe's main ports. 2022

	City	Variation for 2022/2021 (%)	Passengers 2022
1	**Barcelona**	**347.2**	**2,329,332**
2	Civitavecchia, Fiumicino, Gaeta	343.0	2,172,438
3	Balearic Islands	400.6	1,727,481
4	Genoa, Savona	165.7	1,571,567
5	Marseille	319.1	1,474,707
6	Naples, Salerno, Castellmmare di Stabia	378.5	1,260,605
7	Ports of Tenerife	149.6	759,918
8	Piraeus	108.3	632,642
9	Valencia	376.1	623,053
10	Kusadasi Bodrum	6,393.2	569,780
11	Palermo	426.7	563,979
12	La Spezia, Marina di Carrara	415.4	555,756
13	Valletta	259.7	529,247
14	Corfu	124.6	527,228
15	Lisbon	324.6	492,438
16	Bari, Brindisi, Manfredonia, Monopoli, Termoli	124.0	492,133
17	Livorno, Piombino, Portoferraio	730.5	467,863
18	Ports of Corsica	835.5	429,234
19	Cadiz	216.4	422,158
20	Madeira ports	256.2	417,730
21	Dubrovnik, Korcula	242.2	400,273
22	Messina, Milazzo, Calabria Region	147.9	387,898
23	Haifa	100.0	362,846
24	Malaga	189.1	342,046
25	Heraklion	153.7	304,257

Source: MedCruise Ports

Prices and costs

OBSERVATORI BARCELONA

Introduction

This chapter covers the trends in prices and costs in Barcelona in 2023 (until November) in terms of cost of living, the property market, taxes and wages. Although price rises have moderated considerably compared to 2022, the Catalan economy continues to face high inflation, especially in relation to food prices. Overall inflation in Catalonia has been gradually decreasing, from 5.3% in January to 3.4% in October. Looking ahead to 2024, the Barcelona Chamber of Commerce expects inflation to reach an annual average of 3.9% (five tenths higher than in 2023), due to the persistence of higher prices in the services sector. The conclusion is that price increases will remain above the ECB's target (2.0%) for longer than expected, and therefore, interest rates will continue high until inflationary pressures show a clearly downward trend.

Against this inflationary backdrop, the subsectors of the Catalan property market –residential housing, office rentals, and logistics land– have shown an upward trend in 2023 compared to 2022, according to the Cushman & Wakefield Research report. The same upward trend in prices is observed in nearly all the urban areas analysed, and in many cases to a greater extent, allowing Barcelona to maintain its relative position (for example, in housing) or drop in the ranking (in office rentals and logistics land). With regard to the cost of living in cities worldwide, according to Mercer Human Resource Consulting, Barcelona continued to rise in this indicator in 2023 for the third consecutive year, moving from the 78th to the 75th position. However, among European cities, it gains competitiveness and drops two positions in the cost of living ranking (from 17th to 19th place). In short, Barcelona remains in the various rankings' middle ranges, making it a competitive city compared to similar European metropolises.

In relation to taxation, as in previous years, Spain is more or less in line with the EU average for tax rates. The corporate tax rate is 25%, a figure that has remained unchanged for the past six years and is 5 percentage points above the EU-27 average (20%). Regarding indirect taxation, the general VAT rate remains at 21% in 2023 (half a percentage point lower than the EU-27 average). It is worth mentioning that, as a consequence of the persistence of high prices, the government has extended until June 2024 the executive decree reducing VAT on essential food items from 4% to 0% and on certain basic products from 10% to 5%.

The prices of office rentals and logistics space in Barcelona are becoming more competitive than in other European cities

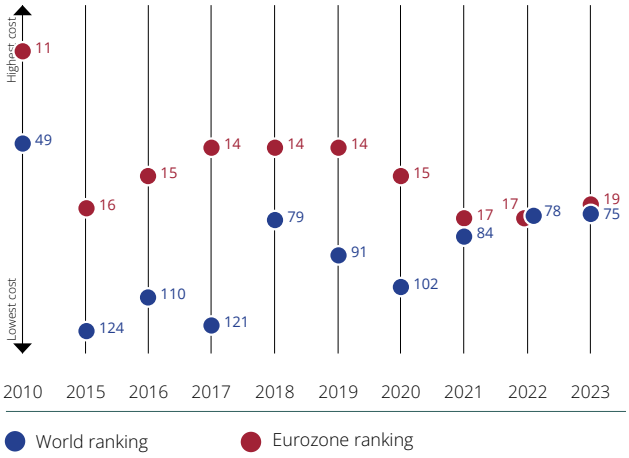
Cost of living in world cities in 2023

Barcelona maintains its international competitiveness in cost of living

Barcelona came in 75th position in the 2023 ranking of the 227 cities around the world with the highest cost of living in Mercer's *Worldwide Cost of Living Survey*, which is based on a study of over 200 basic products and services measured in March.This year, Barcelona has risen three places in the world cost of living ranking , reaching its highest position since 2014.This is primarily due to the increase in energy prices and certain components of the basket, which, despite moderating in the first half of the year, remain high and are unlikely to decrease further. However, it should be noted that this ranking (published in June) did not include the downward trend in inflation from the month of July.

Regarding the comparison with cities in the eurozone (31 in total), Barcelona drops two positions in the ranking of cities with the highest cost of living, moving from 17th in 2022 to 19th in 2023. Since 2012, the city has remained stable in this European classification, ranking between 14th in 2012 and 17th in 2022. This can be explained by the fact that the factors that have determined the cost of living in recent years have also occurred across the board in all cities, except for this past year, when the increase in the cost of living has occurred to a lesser extent in Barcelona.

Barcelona's ranking in cost of living



Source: *Worldwide Cost of Living Survey, City Ranking*. Mercer Human Resource Consulting.

Cost of living of world cities

Ranking 2022	City	Ranking 2023	Ranking 2022	City	Ranking 2023
1	Hong Kong	1	41	Djibouti	27
8	Singapore	2	25	Amsterdam	28
2	Zurich	3	42	Atlanta	29
3	Geneva	4	64	Luanda	30
4	Basel	5	45	Seattle	31
7	New York	6	53	Kinshasa	32
5	Bern	7	60	Prague	33
6	Tel Aviv	8	43	Helsinki	34
11	Copenhagen	9	35	Paris	35
16	Nassau	10	18	Guangzhou	36
17	Los Angeles	11	46	Berlin	37
12	Shanghai	12	33	Munich	38
10	Beijing	13	76	Conakry	39
19	San Francisco	14	80	N'Djamena	40
20	Honolulu	15	39	Brussels	41
14	Seoul	16	38	Victoria (Seychelles)	42
15	London	17	61	Abu Dhabi	43
31	Dubai	18	72	San Juan	44
9	Tokyo	19	114	Buenos Aires	45
13	Shenzhen	20	47	The Hague	46
30	Boston	21	55	Lagos	47
32	Miami	22	62	Frankfurt	48
29	Washington	23	48	Milan	49
36	Chicago	24	70	Philadelphia	50
21	Vienna	25	---	---	--
23	Bangui	26	**78**	**Barcelona**	**75**

Source: *Cost of Living Survey, City Ranking*, Mercer Human Resource Consulting.

Corporate income tax and VAT in the countries of the world in 2023

The main taxation rates remain in the middle range of European Union countries

Spain remains in the middle range of Europe in terms of the tax rates of the main tax figures (VAT and corporation tax), as shown by the comparison that PwC prepares and reviews regularly. As for indirect taxation, the general VAT rate has not changed with respect to 2018, remaining at 21%. This threshold is in line with the European Union average (21.5%) and is slightly below some neighbouring countries such as Portugal (23%) and Italy (22%), but above others, such as France (20%) and Germany (19%), and remains clearly lower than in Denmark, Sweden and Norway (25% in all three cases). However, although the general rate in Spain is 21%, there is a wide group of categories of goods and services that benefit from reduced (10%) and super-reduced (4%) rates. Likewise, the government has extended the executive decree reducing VAT on essential food items from 4% to 0% (bread, flour, milk, eggs, etc.) and some basic products from 10% to 5% (oil and pasta) until June 2024. This tax reduction, along with others implemented to cope with the increase in energy prices, has allowed city residents to better cope with the rise in the cost of the shopping basket.

As for direct taxes, the general corporate tax rate was 25% in 2023, above the EU average (20.0%). The last modification of the rate took place in 2016 with a reduction of 3 percentage points. However, in this case, it would be more appropriate to compare the effective rate (after deductions and discounts), given that the latter can be much lower than the nominal figure.

Corporation Tax. 2023 (%)

Source: *Worldwide Tax Summaries Online, PWC.*

VAT and corporate tax in countries around the world. 2023

Country	Base VAT rate (%)	Country	Base VAT rate (%)	Country	Base corporate tax (%)	Country	Base corporate tax (%)
Hungary	27.0	Estonia	20.0	Argentina	35.0	Slovakia	21.0
Denmark	25.0	France	20.0	Brazil	34.0	United States	21.0
Norway	25.0	United Kingdom	20.0	Australia	30.0	Portugal	21.0
Sweden	25.0	Turkey	20.0	Mexico	30.0	Sweden	20.6
Finland	24.0	Germany	19.0	South Africa	27.0	Saudi Arabia	20.0
Greece	24.0	Cyprus	19.0	Netherlands	25.8	Estonia	20.0
Ireland	23.0	Luxembourg	16.0	Belgium	25.0	Finland	20.0
Poland	23.0	Mexico	16.0	**Spain**	**25.0**	Latvia	20.0
Portugal	23.0	Saudi Arabia	15.0	France	25.0	Thailand	20.0
Slovenia	22.0	South Africa	15.0	United Kingdom	25.0	Slovenia	19.0
Italy	22.0	Egypt	14.0	Turkey	25.0	Poland	19.0
Argentina	21.0	Australia	10.0	China	25.0	Czech Republic	19.0
Belgium	21.0	Japan	10.0	Luxembourg	24.9	Germany	15.8
Spain	**21.0**	Switzerland	7.7	Austria	24.0	Canada	15.0
Latvia	21.0	Thailand	7.0	Italy	24.0	Lithuania	15.0
Lithuania	21.0	China	6-13	Japan	23.2	Ireland	12.5
Netherlands	21.0	Brazil	5-30	Egypt	22.5	Cyprus	12.5
Czech Republic	21.0	Canada	5-15	Denmark	22.0	Hungary	9.0
Austria	20.0	United States	---	Greece	22.0	Switzerland	8.5
Slovakia	20.0			Norway	22.0		

Source: *Worldwide Tax Summaries Online*, PWC

Office rental price in European cities 2023

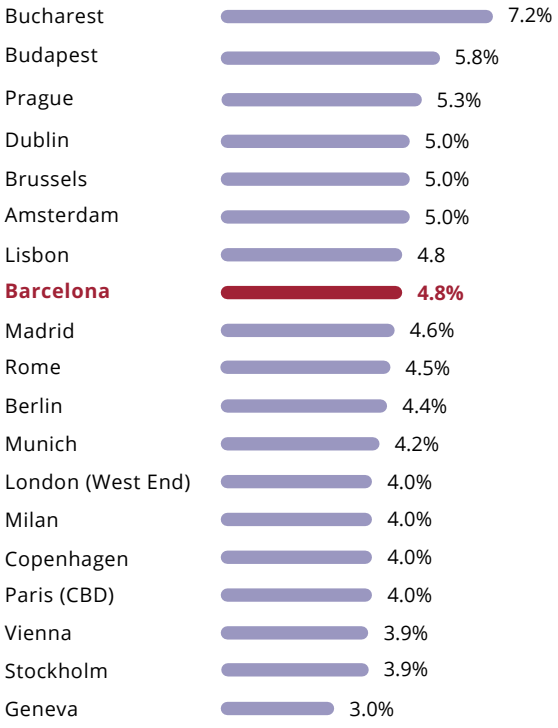
The office rental price remains the same in Barcelona and ranks in the lower-middle range among the main European cities

The price of office rentals in Barcelona was 336 euros per year per square metre in the third quarter of 2023, according to Cushman & Wakefield Research's *DNA of Real Estate* report. As a consequence of inflation, in 2023, 39 analysed cities saw increases in rental prices to varying degrees, six remained unchanged, and no city saw a decrease. The average growth across the sample of cities has been around 6%. The highest increases were seen in Düsseldorf (33.3%), Marseille (18.3%) and Rotterdam (13.2%). Barcelona, with an increase of 2.8% (the same as Geneva and Leeds), ranks as the 26th city with the highest growth. These variations in the analysed cities have caused the price of office rentals in the city of Barcelona to drop two positions, to 29th place, out of the 45 European cities analysed (one less than the previous year, as Istanbul was not analysed this year).

Regarding the profitability of renting offices (that is, the return on the investment made), in 2023 Barcelona increased the rate by 1 point to 4.75%, the highest in the last five years and similar to that found in Brussels, Amsterdam and Dublin. The cities with the highest profitability are Sofia, Newcastle and Bucharest (with rates above 7%), while at the other end are the Swiss cities of Geneva and Zurich (3.0% and 3.4%, respectively), as well as Stockholm and Vienna (with a profitability of 3.9% in both cases).

According to Colliers, during the first half of 2023, office leasing in the city of Barcelona reached 115,000 square metres, a considerable decrease compared to the nearly 200,000 square metres absorbed during the same period of the previous year. This trend is seen after an extraordinary increase in supply during the 2021-22 period and reflects, among other factors, the absence of major transactions, largely due to the uncertainty of the economic context.

Office rental market yields in European cities. 2023



Note: Yield refers to the return on investment in the office sector of each city.

Source: Cushman & Wakefield Research, *The DNA of Real Estate, 3T 2023 (Europe).*

Office rental price in European cities. 2023

City	Year-on-year variation 2023/2022 (%)	Office rental prices (€/m²/year)
London (WE)	10.4	1,650
Paris (CBD)	3.1	990
London (City)	6.9	965
Geneva	2.8	957
Zurich	0.0	827
Stockholm	12.1	802
Milan	2.9	700
Dublin	1.6	689
Luxembourg	0.0	648
Paris (La Défense)	0.9	580
Frankfurt	1.1	576
Rome	9.5	575
Amsterdam (South Axis)	3.7	555
Berlin	3.5	534
Munich	3.5	534
Birmingham	3.7	529
Bristol	0.0	529
Edinburgh	9.0	529
Oslo	10.5	515
Manchester	3.9	498
Helsinki	2.5	489
Düsseldorf	33.3	480
Glasgow	7.0	473
Leeds	2.8	461
Madrid	3.4	456
Hamburg	1.5	396
Prague	5.6	342
Brussels	0.0	340
Barcelona	**2.8**	**336**
Gothenburg	2.7	330
Lisbon	8.0	324
Vienna	1.9	324
Newcastle	0.0	324
Lyon	1.0	318
Budapest	2.0	300
Rotterdam	13.2	300
Malmö	9.7	295
Warsaw	2.1	294
Copenhagen	2.4	288
Marseilles	18.3	272
Bucharest	12.8	264
The Hague	4.2	250
Bratislava	5.9	216
Sofia	10.0	198
Antwerp	0.0	165

Source: Cushman & Wakefield Research, *The DNA of Real Estate, 3T/2023 (Europe).*

Rental prices of commercial premises in European cities in 2023

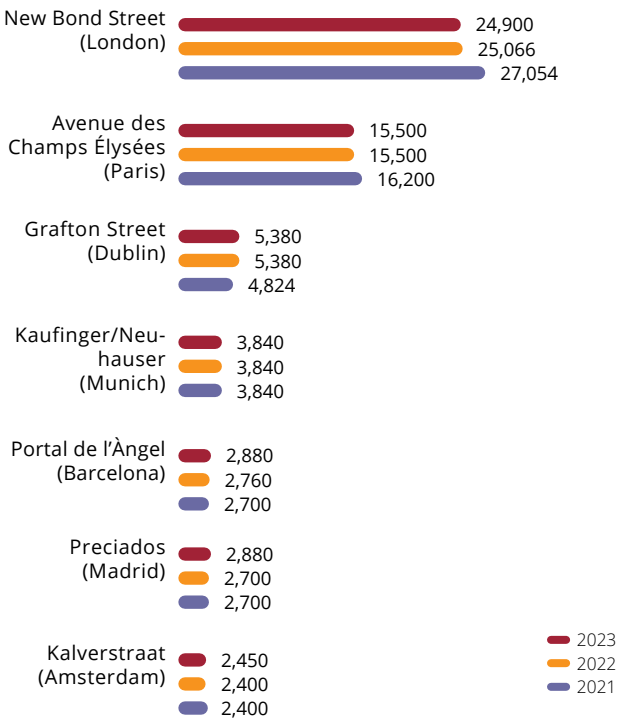
The Portal de l'Àngel remains among the 20 most expensive shopping streets in Europe

Portal de l'Àngel in Barcelona and Calle Preciados in Madrid remain the most expensive streets in Spain, with an annual rent of 2,880 euros per square metre, according to the *DNA of Real Estate 3T* report for 2022, prepared by Cushman & Wakefield Research. El Portal de l'Àngel is ranked 15th out of 40 European locations analysed. Compared to the same quarter of the previous year, the price increased by 4.3%, the fifth highest rise among the analysed locations, just behind Via Montenapoleone (Milan), Via Condotti (Rome), Nowy Swiat (Warsaw), and Preciados in Madrid.Other commercial locations with similar prices include Market Street in Manchester, with €2,801/m²/year, and Parizska in Prague, with €2,700/m²/year.The top four continue to be New Bond Street in London (€24,900/m²), Corso Vittorio Emanuele in Milan (€18,000/m²), Avenue des Champs-Élysées in Paris (€15,500/m²) and finally, Via Condotti in Rome (€14,500/m²). Prices have increased notably compared to the previous year on Italian streets (in Milan, by 20.0%, and in Rome, by 13.3%), while prices on streets in Paris and London have remained stable.

With regard to the yields of commercial premises, Portal de l'Àngel has maintained a return of 4.0% in the third quarter of 2023, half a point higher than the previous year. This value is identical to that of the streets analysed in Madrid, Berlin, Paris, Milan and Rome, slightly lower than others such as Kalverstraat in Amsterdam (4.4%) and the Grand Rue in Luxembourg (4.15%), and slightly higher than the Biblioteksgatan street in Stockholm and Strøget street in Copenhagen. As for the four most expensive streets, the yields of Paris, Milan and Rome have been the same as that of Barcelona, as mentioned, and that of London, 3.0%. Some of the locations offering the highest yields (over 6.5%) are the Calea Vitorei (Bucharest) and Vaci utca (Budapest) streets. It should be mentioned that Istiklal street (Istanbul) was not included in the sample of streets this year.

Price of renting commercial premises

(€/m²/year)



Source: Cushman & Wakefield Research, *The DNA of Real Estate*. Data 3Q 2021/2022/2023.

Price of renting commercial premises in European cities. 2023

City	Street	Commercial premises rental prices (€/m²/year)	Yields of commercial premises (%)
London	New Bond Street	24,900	3.00
Milan	Corso Vittorio Emanuele	18,000	4.00
Paris	Avenue des Champs Élysées	15,500	4.00
Rome	Via Condotti	14,500	4.00
Zurich	Bahnhofstrasse	9,205	2.90
Dublin	Grafton Street	5,380	5.00
Vienna	Kohlmarkt	5,160	3.75
Geneva	Rhone Street	4,137	4.60
Munich	Kaufinger/Neuhauser	3,840	3.80
Copenhagen	Stroget	3,487	3.75
Berlin	Tautentzienstrasse	3,000	4.00
Frankfurt	Sail	3,000	4.20
Hamburg	Spitalerstraße	3,000	4.30
Düsseldorf	Konigsallee	3,000	3.70
Barcelona	**Portal de l'Àngel**	**2,880**	**4.00**
Madrid	Preciados	2,880	4.00
Manchester	Market Street	2,801	
Prague	Parizska Street	2,700	5.50
Lyon	Rue de la République	2,500	4.75
Amsterdam	Kalverstraat	2,450	4.40
Birmingham	High Street	2,303	
Oslo	Karl Johan	1,955	4.25
Luxembourg	Grand Rue	1,740	4.15
Stockholm	Biblioteksgatan	1,691	3.85
Antwerp	Meir	1,650	4.85
Leeds	Commercial Road	1,618	
Brussels	Rue Nine	1,600	4.85
Lisbon	Chiado	1,500	4.75
Budapest	Vaci utca	1,320	6.75
Marseilles	Rue St Ferreol	1,300	6.25
Helsinki	City Centre	1,224	5.00
Rotterdam	Lijnbaan	1,100	5.45
Bristol	Broadmead	1,058	

Source: Cushman & Wakefield Research, *The DNA of Real Estate, 3T. 2023 (Europe).*

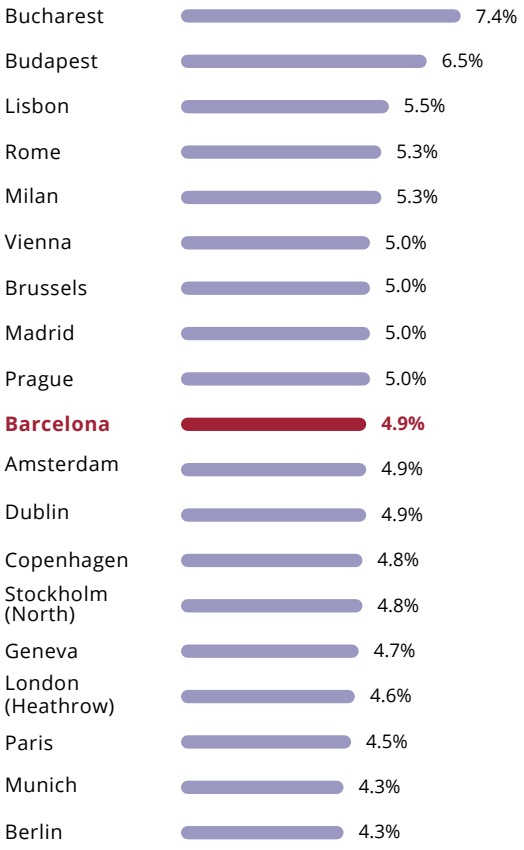
Rental prices for logistics land in Europe's main urban areas in 2023

Barcelona, in the middle range of prices in Europe for logistics land

The rental price of logistics land in Barcelona stands at 90 euros per square metre per year in 2023, with third-quarter data, which is 2% higher than the previous year and is in the middle range (22nd position) among the 42 cities analysed, according to the *The DNA of Real Estate 3Q 2023* report published by Cushman & Wakefield Research. Of all the cities analysed, Zurich and Luxembourg are the only ones whose rental price for logistics land remains the same, and of the rest, Madrid and Barcelona are the ones that have recorded the lowest annual increases (1.7% and 2.0%, respectively).Among the other cities analysed, the increases have varied wildly, ranging from 2.6% in Hamburg and Frankfurt to 30.0% in Oslo. In this context, Barcelona drops two positions in the ranking compared to the previous year (from 17th to 22nd), although this year the sample of selected cities does not include Istanbul.The average rent in Barcelona is similar to that of Düsseldorf, Copenhagen and Stockholm (93, 91 and 87 euros per square metre, respectively). The highest annual rents for logistics areas in Europe are once again found in London (Heathrow area, with 324 euros/m^2), Zurich (248 euros/m^2) and Geneva (212 euros/m^2).

As for the return rates on the logistics land market in 2023, the yield for Barcelona stands at 4.9%, which is 0.65 percentage points higher than the previous year. In most cases, the yield ranges between 4.3% and 6.0%, except in Sofia (7.5%), Bucharest (7.35%), Budapest (6.5%) and Luxembourg (6.5%). Among the 42 areas selected, Barcelona is in the middle range (24).

Profitability of the logistics land market in European urban areas. 2023



Note: The yield refers to the return on investment for logistics land in each city.

Source: Cushman & Wakefield Research, *The DNA of Real Estate, 3T. 2023 (Europe).*

Rental price of logistics land in European urban areas. 2023

Urban areas	Year-on-year variation 2023/2022 (%)	Logistics Land Rent (€/m²/year)	Urban areas	Year-on-year variation 2023/2022 (%)	Logistics Land Rent (€/m²/year)
London	8.3	324	**Barcelona**	**2.0**	**90**
Zurich	0.0	248	Stockholm	5.3	87
Geneva	7.9	212	Berlin	2.9	86
Oslo	30.0	173	Vienna	12.9	84
Helsinki	10.0	132	Gothenburg	12.5	78
Dublin	12.8	132	Paris	25.0	75
Birmingham	5.0	131	The Hague	2.7	75
Manchester	10.5	131	Madrid	1.7	73
Bristol	11.1	124	Budapest	12.4	71
Central United Kingdom	15.2	118	Malmö	6.7	69
Munich	8.3	117	Brussels	9.7	68
Leeds	9.4	109	Lyon	12.1	65
Luxembourg	0.0	108	Rome	8.3	65
Amsterdam (South Axis)	10.5	105	Milan	8.3	65
Rotterdam	15.6	104	Sofia	24.7	64
Newcastle	10.7	96	Warsaw	16.7	63
Frankfurt	2.6	95	Antwerp	17.0	62
Hamburg	2.6	95	Marseilles	20.0	60
Prague	6.9	93	Lisbon	16.3	60
Düsseldorf	3.3	93	Bratislava	16.7	59
Copenhagen	3.8	91	Bucharest	3.3	56

Source: Cushman & Wakefield Research, *The DNA of Real Estate, 3T. 2023 (Europe).*

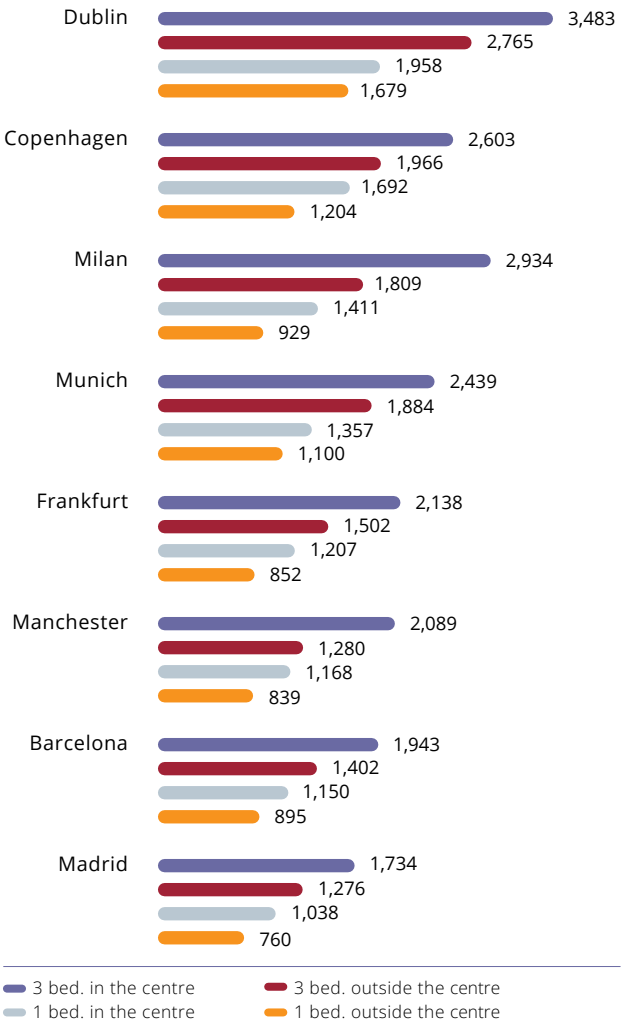
Housing rental prices in the main European cities in 2023

Housing rental prices in the centre of Barcelona remain in the medium-high range compared to the rest of Europe, despite the increase in prices

The monthly rental price of a one-bedroom property in the centre of the city of Barcelona is 1,150 euros on average, 12% more than in 2022 (1,028 euros), according to the Numbeo database in September 2023. Among the 244 European cities analysed, with an almost generalised increase in housing rental prices throughout the sample, Barcelona is in 42nd position. Compared to the other 12 Spanish cities analysed, the price of housing in the centre of Madrid is slightly lower (1,038 euros/month) and ranks 54th. It is followed by Bilbao (936 euros/month) and Palma de Mallorca (879 euros/month). If the same property were located outside Barcelona city centre, the monthly rent would drop to 895 euros per month, 22% less than in the centre. As for the rest of the cities, the Swiss cities of Zurich, Geneva and Zug, together with London and Dublin, have the highest monthly rents (more than 2,200 euros for a one-room apartment in the city centre).

For three-bedroom family homes or shared three-bedroom properties (also in the city centre), the monthly rent in Barcelona was 1,943 euros, 15% higher than that of the previous year (1,683 euros). Based on this criterion, the city's position is similar to that for a one-bedroom home: 44th, 27 places above Madrid, whose 1,734 euros per month makes it 71st. This difference in positions when comparing the price of renting small and large homes in Barcelona had been much more pronounced before the pandemic, since there was, in general, a greater supply of large homes but more demand for small homes. Likewise, among three-bedroom homes, there has been a lower price increase among those located outside the city centre (8%) compared to those in the centre (15%).

Rental price of housing in European cities. 2023
(€/month)



Source: Numbeo. Query carried out on 18 September 2023.

Rental price of housing in European city centres (€/month). 2023

Ranking	City (Country)	3 bed.	1 bed.	Ranking	City	3 bed.	1 bed.
1	Zurich (Switzerland)	4,428	2,604	31	Berlin (Germany)	2,445	1,266
2	London (United Kingdom)	4,800	2,459	32	Oslo (Norway)	1,956	1,248
3	Geneva (Switzerland)	4,416	2,224	33	Leiden (Netherlands)	2,050	1,238
4	Zug (Switzerland)	4,382	2,214	34	Utrecht (The Netherlands)	1,906	1,236
5	Dublin (Ireland)	3,483	1,958	35	Stockholm (Sweden)	1,973	1,225
6	Amsterdam (The Netherlands)	2,672	1,751	36	Milton Keynes (United Kingdom)	1,959	1,224
7	Saint Helier (Jersey)	3,026	1,724	37	Delft (The Netherlands)	1,661	1,218
8	Copenhagen (Denmark)	2,603	1,692	38	Frankfurt (Germany)	2,138	1,207
9	Lausanne (Switzerland)	3,337	1,682	39	Bern (Switzerland)	2,386	1,184
10	Lugano (Switzerland)	3,187	1,629	40	Manchester (United Kingdom)	2,089	1,168
11	Luxembourg (Luxembourg)	2,717	1,624	41	Cascais (Portugal)	2,271	1,160
12	Reykjavik (Iceland)	2,458	1,613	**42**	**Barcelona (Spain)**	**1,943**	**1,150**
13	Oxford (United Kingdom)	2,941	1,563	43	Maastricht (Netherlands)	1,625	1,123
14	Basel (Switzerland)	2,959	1,533	44	Prague (Czech Republic)	1,918	1,107
15	Cambridge (United Kingdom)	2,653	1,497	45	Bournemouth (United Kingdom)	1,948	1,103
16	Harlem (Netherlands)	2,488	1,494	46	The Hague (The Netherlands)	1,791	1,102
17	Cork (Ireland)	2,459	1,475	47	Tromso (Norway)	1,819	1,101
18	Lucerne (Switzerland)	2,644	1,465	48	Ulm (Germany)	1,400	1,100
19	Brighton (United Kingdom)	2,645	1,443	49	Nijmegen (Netherlands)	1,610	1,083
20	Milan (Italy)	2,934	1,411	50	Rome (Italy)	2,070	1,073
21	Bristol (United Kingdom)	2,272	1,408	51	Espoo (Finland)	1,706	1,060
22	Galway (Ireland)	2,219	1,377	52	Douglas (Isle of Man)	1,659	1,055
23	Limerick (Ireland)	2,300	1,375	53	Birmingham (United Kingdom)	2,150	1,046
24	Munich (Germany)	2,439	1,357	54	Madrid (Spain)	1,734	1,038
25	Edinburgh (United Kingdom)	2,530	1,353	55	Trondheim (Norway)	1,878	1,035
26	Rotterdam (The Netherlands)	1,788	1,306	56	Glasgow (United Kingdom)	1,775	1,035
27	Paris (France)	2,857	1,302	57	Sliema (Malta)	1,854	1,034
28	Eindhoven (The Netherlands)	1,783	1,292	58	Belfast (United Kingdom)	1,573	1,023
29	Reading (United Kingdom)	2,053	1,289	59	Innsbruck (Austria)	1,829	1,022
30	Lisbon (Portugal)	2,334	1,272	60	Stavanger (Norway)	1,902	1,020

Source: Numbeo. Query carried out on 18 September 2023.

SUMMARY OF RESULTS

Summary of results

The 2023 macroeconomic indicators show that the recovery of post-pandemic activity is ongoing and that the Catalan economy has been resilient in the face of the rise in inflation. However, Catalan economic growth has fluctuated over the year, primarily influenced by increasing interest rates. Looking ahead to 2024, risks persist in relation to high inflation, tightening monetary policy, and the moderation of international economic growth, all within a landscape characterised by significant geopolitical risks. In this economic context, Barcelona has proven to be a resilient city able to maintain its attractiveness and strong economic and business positioning in Europe and the world, as observed in the 35 indicators covered in the 2023 Report of the Barcelona Observatory, which this year reaches its 21st edition.

In 2023, Barcelona maintains its strong position as a global city, ranking 8th worldwide and 3rd in Europe among the most attractive cities for visitors, entrepreneurs and residents, according to Resonance Consultancy Ltd.'s *2024 World's Best Cities Report,* which evaluates the city's quality and attractiveness from various perspectives. Similarly strong results can be seen in most of the other indicators analysed in the **economic activity hub** section. In this regard, Barcelona maintains its position –for the eighth consecutive year since 2016– among the 25 most globally competitive cities, according to the Mori Memorial Foundation's 2023 *Global Power City Index* report, which ranked it 22nd in the world and 11th in Europe, ahead of Brussels, Geneva, San Francisco and Milan. Likewise, Barcelona cements its place as a leading digital hub, and in 2022 it was ranked the 13th top digital city in the world and 6th in Europe in the first edition of the *Digital Cities Index* published by Economist Impact (from The Economist group). This index highlights Barcelona's leadership in areas such as promoting digital rights and democratic use of data, leveraging the Internet of Things, and pioneering initiatives in 5G development.

Other indicators underscore Barcelona's appeal for doing business and the city's positive image abroad. For example, Barcelona comes in 7th among the world's leading cities in attracting greenfield foreign investment projects in 2022, according to the *Dubai FDI Annual Results & Rankings 2022*, compiled using data from the Financial Times Ltd.'s "fDi Markets" database. Moreover, Barcelona maintains its position as the city in Europe with the best strategy for attracting foreign investment for the third consecutive year –surpassing London, Berlin, and Dublin– according to the *fDi Cities and Regions of the Future 2024* report (Financial Times Group). The report highlights the promotional efforts aimed at fostering growth in clusters such as supercomputing, artificial intelligence, health and biotechnology. Barcelona also ranks as the 10th most attractive European city for international investors on the *EY Attractiveness Survey 2022*. With regard to entrepreneurship, in 2022, the total early-stage entrepreneurial activity (TEA) rate increased slightly in the Barcelona area, reaching 7.3%, and continues to be ahead of the Spanish average (6.0%) and the rates of Austria (6.8%) and Japan (6.4%).

With regard to international fair and congress activity, the strength and resilience of Barcelona were evident once again in the ICCA 2022 ranking, where the city comes 1st in numbers of delegates and 4th in the organisation of meetings.In this regard it is worth noting that Barcelona is the only destination that has remained in the top 5 for international congresses and conventions over the last 21 years.

In terms of **quality of life, social cohesion, and sustainability**, Barcelona is ranked as the 9th most resilient city in the world and the 4th in Europe in the first edition of the *Resilient Cities Index*, published by Economist Impact (part of The Economist group), in a ranking headed by New York, Los Angeles and London. Barcelona particularly excels in areas such as public transport mobility for residents and integration of vulnerable individuals (ranked 2nd globally). Regarding other dimensions associated with a good quality of life, the city is a leader in cultural vitality and creativity, according to the results of *The Cultural and Creative Cities Monitor 2023*, compiled by the European Commission, where it ranks 13th globally and excels in the areas of human capital and education, local and international connections, and openness, tolerance, and trust (ranking 1st, 2nd, and 5th, respectively, among cities with more than one million inhabitants).Barcelona also stands out as an international leader in the field of sports and maintains 7th position in the *Ranking of Sports Cities 2023*, compiled by the consulting firm Burson Cohn and Wolfe, where it has been among the top ten since the first edition (2012), a position shared only with other Olympic cities such as London, Tokyo and Los Angeles.

In the area of social cohesion, the at risk of poverty or social exclusion rate in Catalonia decreased in 2022, in the context of post-pandemic economic recovery, standing at 20.4%, a value lower than the Spanish rate (26.0%) and the EU-27 rate (21.6%).In terms of sustainability, in 2022,

Barcelona was the 10th city in Europe most prepared for zero-emission mobility, according to the first edition of the *Clean Cities Campaign city ranking*, ahead of cities such as London, Vienna and Berlin and excelling in categories such as pedestrian friendliness (2nd position), access to public transport (5th), and cyclist safety (6th). At the same time, the 2023 update highlights that the city faces significant challenges in terms of shared mobility, where it ranks 32nd in Europe.Barcelona was also ranked 20th in the world for sustainable urban mobility by the University of Berkeley and the Oliver Wyman Forum's *Urban Mobility Readiness Index 2023* report. The city ranks 22nd in terms of public transport and 24th in the overall urban mobility ranking –gaining one position compared to the previous edition.

With regard to the **labour market**, the macroeconomic indicators for 2023 show the remarkable resilience and strength of the labour market in a context of slowing economic activity, with record employment figures. However, the comparable regional indicators presented in this sphere are for 2022, a year in which the figures highlighted the strong dynamism of the labour market. In this context, Catalonia's employment rate stood at 69%, close to the European average of 69.8%, while the unemployment rate, at 9.7%, reached its lowest value since 2008, while that of Barcelona (7.7%) was close to that of the EU (6.2%). It is worth noting that the female employment rate in Catalonia (65.6%) is ahead of the European Union average (64.9%) and has achieved the highest annual value on record. Regarding the female part-time employment rate (which in all the regions analysed is higher than the male equivalent), in Catalonia it stands at 19.0% and is 9.4 points below the EU average (28.4%). In terms of **higher education**, Barcelona continues to be a leading city of excellence in business education, as it is one of the only two European cities with two teaching institutions (IESE and ESADE) to be included among the top 10 MBA business schools in Europe, on the Financial Times' *Global MBA ranking 2023*. Similarly, the city stands out for its critical mass of qualified human capital: in 2022 the percentage of the working population with university degrees out of the total number of workers in Catalonia increased to 49.2% and exceeded 50% for the eighth year in a row in the case of working women, values clearly higher than the European Union averages, according to Eurostat.Meanwhile, according to the Boston Consulting Group's *Decoding Global Talent 2024* report, Barcelona is the 8th most attractive city in the world for working abroad, just ahead of Sydney, Paris and Los Angeles.

In the field of **knowledge and technology**, the tech entrepreneurship and startup ecosystem in the Catalan capital continues to be one of the most dynamic and attractive in Europe and the world, thanks to the drive for digitalisation in key economic sectors. Thus, various recent rankings place the city in leading positions. Barcelona rose five positions and made the ranking of the top 5 emerging ecosystems in the world, ranking 4th in the world (and 2nd in Europe), on Startup Genome's *Global Startup Ecosystem Report 2023*. In the technological sphere, according to the *StartupBlink Ecosystem Index 2023*, Barcelona ranks as the 40th city with the best ecosystem for emerging technology companies in the world in 2023, and comes in 6th in Europe and 1st in Spain. The city ranks as the 11th European hub in terms of international investment received, according to the *State of European Tech 2022* report by Atomico. In terms of innovation, Barcelona returns to the top 10 of the most innovative cities in Europe (9th position) and ranks among the top 500 cities in the world (26th position), on the *Innovation Cities Index 2023* compiled by 2ThinkNow. In the field of science, according to *Knowledge Cities Ranking 2022*, compiled by the UPC's Land Policy and Valuations Centre, the number of publications in Barcelona fell by 8.1% compared to 2021, placing it in the 22nd position in the global ranking and 7th at the European level.

In terms of attracting talent, Barcelona is highly attractive due to its climate and quality of life, as well as its world-renowned universities, leading technology centres, and business schools. Additionally, it boasts a resilient business network, good transportation connections and a growing universe of startups in need of international talent. Furthermore, thanks in large part to the expansion in remote work, many professionals choose the city as a place to live while they work remotely. Thus, according to the *Startup Heatmap Europe Report 2023*, for the sixth consecutive year, Barcelona is the 3rd favourite city out of more than 100 European cities for establishing a startup, and ranks 4th in global connectivity and university entrepreneurship. At the same time, the city has become a hub for the research and development (R&D) centres of multinational companies from all types of sectors. These results are bolstered by the growth of the labour market in high value-added sectors and the quality of scientific research. According to Eurostat, in 2022 Catalonia was once again in the top positions, having been ranked the 4th region in Europe in terms of employed population in high and medium-high technological intensity manufacturing (6th in 2020), the 7th in employment in knowledge-intensive high-tech services (8th in 2020), and the 4th region with

the highest number of individuals with higher education working in the field of science and technology (5th in 2020).

In 2023, the **tourism sector** in Barcelona, which continues to be one of the city's main drivers, started the year strong and reached pre-pandemic levels in some areas. It is worth mentioning that the rankings analysed in this area are from 2022, a year in which the Covid-19 crisis still had some impact on sector activity at the beginning of the year. In this context, Barcelona's strong position as an international tourism destination is reflected in the leading rankings. According to the City Destinations Alliance's *Benchmarking Report 2021-2022*, Barcelona is in 4th place in Europe in international European overnight stays and is the city with the second-highest increase in the total number of overnight stays in the top 15 (only behind Rome). Furthermore, on Euromonitor International's *Top 100 City Destinations Index 2023*, Barcelona remains the 9th top international destination and climbs two positions in the European ranking to 6th place. Finally, Saffron's *2023 City Brand Barometer* ranks Barcelona as the 10th best branded city in the world, measuring the city's assets and reputation as an international tourist destination. In terms of the main infrastructure for accessing the city, in 2022, the Josep Tarradellas Barcelona-El Prat airport returned to the European top 10, coming in 7th in terms of passengers, and is increasingly once again approaching the record figures seen before the crisis. Regarding origin and destination cruise ship traffic, Barcelona regained 1st place as Europe's leading home port in number of cruise passengers, a position it held for 19 consecutive years until 2019.

With regards to **prices and costs**, in a context of still-high inflation, the main indicators of the property market show a moderately upward trend in prices, but keep the city in a competitive position compared to other European reference cities. This is because a similar price trend is observed in nearly all the analysed cities, and in many cases to a greater extent. This fact has allowed Barcelona to maintain its relative position (for example, in housing) or drop positions (in office rentals and logistics land).With regard to the cost of living in cities worldwide, according to Mercer Human Resource Consulting, in 2023 Barcelona continues to rise in the ranking for the third consecutive year, from 78th to 75th place. However, among European cities, it gains competitiveness and drops two positions in the cost of living ranking (from 17th to 19th place). In terms of taxation, the corporate tax rate in Spain is 25%, a figure that has remained unchanged for the past six years and is 5 percentage points above the EU-27 average (20%). Regarding indirect taxation, the general VAT rate remains at 21% in 2023 (half a percentage point lower than the EU-27 average). It is worth mentioning that, as a consequence of the persistence of high prices, the government has extended until June 2024 the executive decree reducing VAT on essential food items from 4% to 0% and on some basic products from 10% to 5%.

Finally, the report includes two **focus articles**. First, the "*Business climate in the Barcelona Metropolitan Area (AMB)*" focus article, which for the 13th year running analyses the evolution of business activity based on the results of the Business climate survey for the Barcelona Metropolitan Area, prepared jointly by Idescat and the Barcelona Chamber of Commerce. The survey reflects a partial recovery of the economy across all sectors in the Barcelona Metropolitan Area, but there is a slowing down from third quarter onwards due to the impact of inflation and rising interest rates on economic activity. Secondly, the report presents the focus article on *"Barcelona's digital health sector in the international context",* which aims to analyse the positioning of Barcelona and Catalonia in the expanding sector of digital health (the convergence of digital transformation and health and healthcare), based on the available indicators at the local, regional and international levels. Digital health is a dynamic sector, which is expanding and has gained prominence in Catalonia in recent years, as shown by the data on the number of startups, revenue and investment raised. One of the main conclusions is that the environment in Catalonia, particularly Barcelona, is conducive to it to become a leading hub in the digital health sector.

	Attractive cities for visitors and entrepreneurs 2024	Global competitiveness 2023	Foreign invest-ment projects[2] 2022	Digital cities 2022	Entrepreneurial activity rate 2022	Delegates at international congresses 2022	Resilient cities 2023	Sports cities 2023	Creative and cultural cities 2023
1	London	London	Dubai	Copenhagen	Brazil	**Barcelona**	New York	Paris	Munich
2	Paris	New York	London	Amsterdam	United States	Vienna	Los Angeles	Los Angeles	Paris
3	New York	Tokyo	Singapore	Beijing	United Kingdom	Paris	London	London	Prague
4	Tokyo	Paris	New York	London	Netherlands	Lisbon	Singapore	New York	Lisbon
5	Singapore	Singapore	Berlin	Seoul	Slovakia	Milan	Paris	Manchester	Stockholm
6	Dubai	Amsterdam	Paris	New York	Germany	London	Melbourne	Madrid	Budapest
7	San Francisco	Seoul	**Barcelona**	Sydney	Sweden	Copenhagen	Amsterdam	**Barcelona**	Madrid
8	**Barcelona**	Dubai	Bangalore	Singapore	Israel	Madrid	Tokyo	Tokyo	Vienna
9	Amsterdam	Melbourne	Madrid	Washington DC	Slovenia	Prague	**Barcelona**	Lausanne	Berlin
10	Seoul	Berlin	Amsterdam	Paris	Switzerland	Singapore	Munich	Budapest	Brussels
11	Rome	Copenhagen		Toronto	**Barcelona**		Hong Kong	Doha	Cologne
12	Prague	Sydney		Zurich	Austria		Warsaw	Milan	Warsaw
13	Madrid	Vienna		**Barcelona**	Japan		Dubai		**Barcelona**
14	Berlin	---		Frankfurt	Spain		Shanghai		Lyon
15	Los Angeles	**22 Barcelona**		Dallas	China		Santiago de Chile		Rome

[1] The ranking is for a selected sample. [2] The ranking is for regions or provinces. [3] The ranking is for countries. [4] Ranking from lowest to highest.

	Work-life balance 2022	Rate of risk of poverty or social exclusion [1,2,4] 2022	Cities prepared for zero-emission mobility 2022	Sustainable urban mobility 2023	Attractive cities for talent 2023	Employment rate[1,2] 2022	Part-time employment rate[1,2] 2022	Unemployment rate[1,2,4] 2022	Workers with higher education degrees[1,2] 2022
1	Oslo	Warsaw	Oslo	Oslo	London	Amsterdam	Rotterdam	Prague	Vilnius
2	Bern	Prague	Amsterdam	Amsterdam	Amsterdam	Munich	Amsterdam	Munich	Brussels
3	Helsinki	Bratislava	Helsinki	Copenhagen	Dubai	Rotterdam	Vienna	Budapest	Bilbao
4	Zurich	Helsinki	Copenhagen	Helsinki	Abu Dhabi	Stockholm	Frankfurt	Bucharest	Paris
5	Copenhagen	Munich	Paris	Stockholm	New York	Vilnius	Berlin	Stuttgart	Budapest
6	Geneva	Lisbon	Stockholm	Hong Kong	Berlin	Warsaw	Stuttgart	Amsterdam	Dublin
7	Ottawa	Milan	Ghent	Munich	Singapore	Budapest	Munich	Frankfurt	Stockholm
8	Sydney	Stockholm	Munich	Zurich	**Barcelona**	Prague	Copenhagen	Rotterdam	Madrid
9	Stuttgart	Oslo	Brussels	Singapore	Tokyo	Stuttgart	Montpellier	Hamburg	Prague
10	Munich	Berne	**Barcelona**	Berlin	Sydney	Copenhagen	Brussels	Vilnius	Oslo
11	Stockholm	Dublin	Lyon	London	Toronto	Oslo	Lyon	Copenhagen	Athens
12	Melbourne	Copenhagen	London	Paris	Los Angeles	Helsinki	Dublin	Dublin	Berlin
13	Amsterdam	Amsterdam	Vienna	Shanghai	Paris	Sofia	Rome	Berlin	Copenhagen
14	---	---	Bilbao	---	Melbourne	---	---	---	---
15	**50 Barcelona**	**Barcelona**	Lisbon	**20 Barcelona**	Austin	**Barcelona**	**Barcelona**	**Barcelona**	**Barcelona**

[1] The ranking is for a selected sample. [2] The ranking is for regions or provinces. [3] The ranking is for countries. [4] Ranking from lowest to highest.

	Business schools 2023	Innovative cities 2022	Preferred cities for establishing a startup 2022	Ecosystems of Startups 2023	Investment in technological ecosystems 2022	Scientific production 2022	People employed high and medium-high technology manufacturing[2] 2022	Science and technology workers[2] 2022	Airports by passengers 2022
1	Fontainebleau INSEAD	Tokyo	London	San Francisco Bay	London	Beijing	Stuttgart	Paris	Istanbul (IST)
2	**Barcelona IESE Business School**	London	Berlin	New York	Paris	Shanghai	Milan	Madrid	London Heathrow (LHR)
3	Milan SDA Bocconi	New York	**Barcelona**	London	Berlin	Nanjing	Munich	Lyon	Paris-Roissy (CDG)
4	London London Business School	Paris	Amsterdam	Los Angeles	Stockholm	Guangzhou	**Barcelona**	**Barcelona**	Amsterdam (AMS)
5	Paris HEC Paris	Singapore	Paris	Boston	Munich	London	Bologna	Seville	Madrid (MAD)
6	Madrid IE Business School	Los Angeles	Lisbon	Beijing	Amsterdam	Wuhan	Karlsruhe	Milan	Frankfurt (FRA)
7	Cambridge University of Cambridge: Judge	Boston	Munich	Shanghai	Zurich	New York	Turin	Munich	**Barcelona (BCN)**
8	Paris ESCP Business School	Seoul	Tallinn	Bangalore	Helsinki	Xi'an	Tübingen	Berlin	London-Gatwick (LGW)
9	Oxford University of Oxford: Saïd	San Francisco - San José	Stockholm	Paris	Milan	Boston	Venice	Rotterdam	Munich (MUC)
10	**Barcelona ESADE Business School**	Houston	Zurich	Tel Aviv	Tallinn	Hangzhou	Freiburg	Warsaw	Antalya (AYT)
11	Lausanne IMD	Berlin		Berlin	**Barcelona**	Chengdu	Lyon	Marseille	Istanbul-Sabiha Gökçen (SAW)
12	London Imperial College Business School	Chicago		Seattle	Vienna	Seoul	Düsseldorf	Cologne	Rome-Fiumicino (FCO)
13	Manchester Alliance Manchester Business School	Stockholm		New Delhi	Madrid	Tokyo	Katowice	Amsterdam	Paris-Orly (ORY)
14	Lille EDHEC Business School	---		---	Oslo	---	Frankfurt	Stuttgart	Palma de Mallorca (PMI)
15	Coventry Warwick Business School	**26 Barcelona**		**40 Barcelona**	Dublin	**22 Barcelona**	Bratislava	Stockholm	Moscow-Sheremetyevo (SVO)

[1] The ranking is for a selected sample. [2] The ranking is for regions or provinces. [3] The ranking is for countries. [4] Ranking from lowest to highest.

	International overnight stays in Europe 2022	Cruise passengers in Europe 2022	Cost of living 2023	Corporation tax[1,3] 2023	Office rental prices 2023	Commercial pre-mises rental prices 2023	Logistics land rental prices 2023	Housing rental prices 2023
1	London	**Barcelona**	Hong Kong	Argentina	London (WE)	London New Bond Street	London	Zurich
2	Paris	Civitavecchia, Fiumicino, Gaeta	Singapore	Brazil	Paris (CBD)	Milan Corso Vittorio Emanuele	Zurich	London
3	Istanbul	Balearic Islands	Zurich	Australia	London (City)	Paris Avenue des Champs-Élysées	Geneva	Geneva
4	**Barcelona**	Genoa, Savona	Geneva	Mexico	Geneva	Rome Via Condotti	Oslo	Zug
5	Amsterdam	Marseille	Basel	South Africa	Zurich	Zurich Bahnhofstrasse	Helsinki	Dublin
6	Rome	Naples, Salerno, Castellammare di Stabia	New York	Netherlands	Stockholm	Dublin Grafton Street	Dublin	Amsterdam
7	Lisbon	Ports of Tenerife	Bern	Belgium	Milan	Vienna Kohlmarkt	Birmingham	Saint Helier
8	Vienna	Piraeus	Tel Aviv	**Spain**	Dublin	Geneva Rue de Rhone	Manchester	Copenhagen
9	Prague	Valencia	Copenhagen	France	Luxembourg	Munich Kaufinger Strasse/ Neuhauser Strasse	Bristol	Lausanne
10	Madrid	Kusadasi. Bodrum	Nassau	United Kingdom	Paris (La Défense)	Copenhagen Strøget	United Kingdom Central	Lugano
11	Berlin	Palermo	Los Angeles	Turkey	Frankfurt	Berlin Tautentzienstrasse	Munich	Luxembourg
12	Palma de Mallorca	La Spezia, Marina di Carrara	Shanghai	China	Rome	Frankfurt Zeil	Leeds	Reykjavik
13	Milan	Valletta	Beijing	Luxembourg	Amsterdam (South Axis)	Hamburg Hospitalistβthe	Luxembourg	Oxford
14	Venice	Corfu	---	Austria	---	Düsseldorf Konigsallee	---	---
15	Budapest	Lisbon	**75 Barcelona**	Italy	**Barcelona**	**Barcelona Portal de l'Àngel**	**Barcelona**	**Barcelona**

[1] The ranking is for a selected sample. [2] The ranking is for regions or provinces. [3] The ranking is for countries. [4] Ranking from lowest to highest.

Barcelona in international city rankings

Attractive cities for visitors and entrepreneurs. 2024

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
London	Paris	New York	Tokyo	Singapore	Dubai	San Francisco	**Barcelona**	Amsterdam	Seoul	Rome	Prague	Madrid	Berlin	Los Angeles

Global competitiveness. 2023

1	2	3	4	5	6	7	8	9	10	11	12	13	14	22
London	New York	Tokyo	Paris	Singapore	Amsterdam	Seoul	Dubai	Melbourne	Berlin	Copenhagen	Sydney	Vienna	...	**Barcelona**

Foreign investment projects. 2022

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Dubai	London	Singapore	New York	Berlin	Paris	**Barcelona**	Bangalore	Madrid	Amsterdam	...	...	...	...	...

Delegates at international congresses. 2022

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Barcelona	Vienna	Paris	Lisbon	Milan	London	Copenhagen	Madrid	Prague	Singapore	...	...	...	...	...

Resilient cities. 2023

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
New York	Los Angeles	London	Singapore	Paris	Melbourne	Amsterdam	Tokyo	**Barcelona**	Munich	Hong Kong	Warsaw	Dubai	Shanghai	Santiago de Chile

Creative and cultural cities in Europe. 2023

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Munich	Paris	Prague	Lisbon	Stockholm	Budapest	Madrid	Vienna	Berlin	Brussels	Cologne	Warsaw	**Barcelona**	Lyon	Rome

The world's most attractive cities for working abroad. 2023

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
London	Amsterdam	Dubai	Abu Dhabi	New York	Berlin	Singapore	**Barcelona**	Tokyo	Sydney	Toronto	Los Angeles	Paris	Melbourne	Austin

European business schools. 2023

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Fontainebleau INSEAD	**Barcelona** IESE Business School	Milan SDA Bocconi of Management	London London Business School	Paris HEC Paris	Madrid IE Business School	Cambridge University of Cambridge: Judge	Paris ESCP Business School	Oxford University of Oxford: Saïd	**Barcelona** ESADE Business School	Lausanne IMD	London Imperial College Business School	Manchester Alliance Manchester Business School	Lille Edhec Business School	Coventry Warwick Business School

Innovative cities. 2022

1	2	3	4	5	6	7	8	9	10	11	12	13	14	26
Tokyo	London	New York	Paris	Singapore	Los Angeles	Boston	Seoul	San Francisco-San Jose	Houston	Berlin	Chicago	Stockholm	...	**Barcelona**

Favourite European cities for establishing a startup. 2022

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
London	Berlin	**Barcelona**	Amsterdam	Paris	Lisbon	Munich	Tallinn	Stockholm	Zurich	...	...	...	...	...

Investment in technological ecosystems in Europe. 2022

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
London	Paris	Berlin	Stockholm	Munich	Amsterdam	Zurich	Helsinki	Milan	Tallinn	**Barcelona**	Vienna	Madrid	Oslo	Dublin

Scientific production. 2022

1	2	3	4	5	6	7	8	9	10	11	12	13	14	22
Beijing	Shanghai	Nanjing	Guangzhou	London	Wuhan	New York	Xi'an	Boston	Hangzhou	Chengdu	Seoul	Tokyo	...	**Barcelona**

European airports by passengers. 2022

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Istanbul (IST)	London Heathrow (LHR)	Paris Roissy (CDG)	Amsterdam (AMS)	Madrid (MAD)	Frankfurt (FRA)	**Barcelona** (BCN)	London Gatwick (LGW)	Munich (MUC)	Antalya (AYT)	Istanbul-Sabiha Gökçen (SAW)	Roma-Fiumicino (FCO)	Paris-Orly (ORY)	Palma de Mallorca (PMI)	Moscow-Sheremetyevo (SVO)

Cost of living. 2023

1	2	3	4	5	6	7	8	9	10	11	12	13	14	75
Hong Kong	Singapore	Zurich	Geneva	Basel	New York	Bern	Tel Aviv	Copenhagen	Nassau	Los Angeles	Shanghai	Beijing	...	**Barcelona**

FOCUS ARTICLE

Business climate in the Barcelona Metropolitan Area

Evolution of 2023

OBSERVATORI BARCELONA

Executive Summary

Positive trend in business performance in 2023

The Business Climate Survey conducted for the Barcelona Metropolitan Area reflects a partial recovery of the economy across all sectors, but there is a slowing down from Q3 onwards due to the impact of the energy crisis on economic activity and the more restrictive scenario expected in terms of monetary policy.

- Business performance improved until September, registering a positive balance, although it is also showing a slowdown in Q3.
- Employment trends were positive across all sectors in Q3, except in industry, which is stagnating, but with signs of moderating as the year progresses.
- Sales prices remain slightly high but moderate across all sectors in the Q3, especially in industry, with a slightly negative balance, a trend not seen for two years.

The hospitality sector was where the greatest improvement could be seen, with the most positive balances in 2023

- The most positive sectoral results in terms of business performance and employment are seen in hospitality.
- Retail was the only sector to see a decline in business performance in Q3.
- Construction stagnated in terms of business performance and employment.
- Industry showed the highest moderation in sales prices, and is the sector with the lowest positive balance.
- Other services saw positive balances across all variables, occupying an intermediate position compared to other sectors.

The business outlook for Q4 2023 is positive, but stabilises compared to the previous quarter

The positive forecasts for companies regarding business performance for Q4 stabilise compared to the previous quarter. In the short term, the upturn in activity will remain dynamic thanks to the contribution of the foreign sector and the strength of investment in public works (boosted by the Next Generation funds). In the medium term, it remains to be seen whether the tighter monetary policy scenario (due to the persistence of underlying inflation), as well as the worsening economic outlook, will hinder and dampen the outlook.

Increased competition and the lack of suitably skilled workers gained prominence as factors limiting business performance in 2022

- Weak demand continues to be the factor most frequently mentioned by businesses in the Barcelona Metropolitan Area, but notably less so than in the previous year.
- Competition and a lack of suitably skilled workers continued to rise in importance over the last year, occupying second and third place respectively.
- Funding difficulties remain an issue as in the previous year, but has lost much of its importance since the recovery from the economic crisis, occupying fourth place as a factor limiting business performance.

Business Performance. Developments and prospects

The Barcelona Metropolitan Area as a whole

The year 2022 saw continued economic recovery as the year progressed, despite the outbreak of the war in Ukraine, which triggered a severe energy crisis that has, in turn, led to an inflationary crisis not seen in decades. Despite this context, GDP in Catalonia increased by 5.5% in 2022 according to Idescat, thanks to the full recovery of the sectors most affected by the pandemic, such as hospitality and transport. This increase is almost two points higher than the growth of the eurozone as a whole (3.4%), but three-tenths less than the average for the Spanish economy (5.8%).

International organisations have lowered growth forecasts for the eurozone, especially for 2024, due to the convergence of external factors (such as the recent surge in oil prices) and internal factors, such as a more persistent-than-expected increase in interest rates. In this context of greater adversity, the Catalan economy continued to exceed expectations during the first half of 2023, thanks to certain tailwinds such as the moderation of energy prices, the consolidation of the recovery in foreign tourism, the dynamism of the foreign sector and the strength of public investment (driven by Next Generation EU funds). However, starting from the second quarter, a moderation in economic growth has been observed, largely due to the persistence of high inflation. According to estimates by the Barcelona Chamber of Commerce, GDP could end the year 2023 at 2.3%, highlighting a two-speed deceleration compared to the eurozone (0.7% according to the ECB).

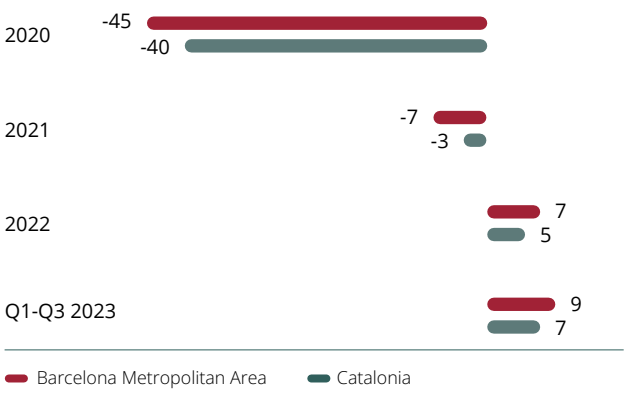
Against this economic backdrop, in 2023 (based on data up to Q3) **business performance** in the Barcelona Metropolitan Area recorded a positive balance of 9% (7% in Catalonia), according to data from the *Business Climate Survey* produced by the Barcelona Chamber of Commerce and Idescat.The quarterly evolution accelerated until the second quarter (from 8% in Q1 to 13% in Q2), and in the third quarter, it moderated again to 7%.The outlook for the fourth quarter is for stabilisation compared to the previous quarter (8%).

Economic sectors

In 2022, the consolidation of economic recovery had a positive impact on the major economic sectors. Overall business performance was positive in all sectors, but to varying degrees: 1% in construction and retail, 5% in industry, 11% in other services, and 15% in hospitality. Hospitality,

Business performance across the whole of the economy[1]

(balances[2], in %)



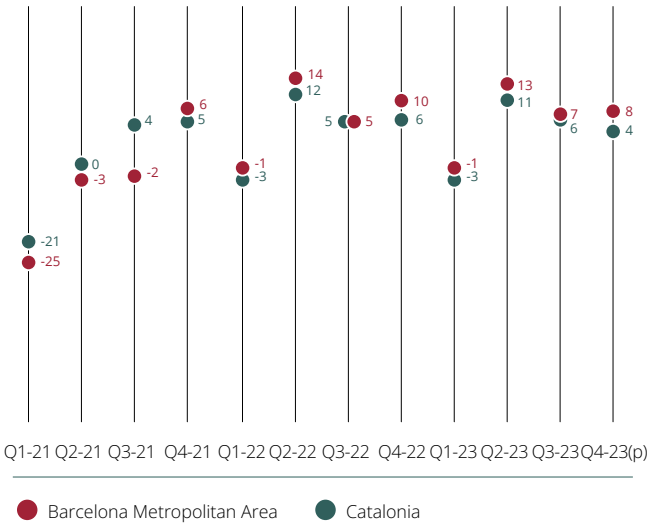
Source: Barcelona Chamber of Commerce and Idescat (Statistical Institute of Catalonia)

1.The results for the economy as a whole are the aggregate of the results for industry, construction, commerce, hospitality and other services. Results for Spain have not been presented in the survey since 2013, because they are not available. The INE (Spanish National Statistics Institute) only publishes the results of the Business Climate Indicator, compiled for Spain as a whole and by sector.

2.The balance is the difference between the percentage of business establishments which report that the variable analysed has been positive and the percentage of establishments that report that it has been negative. It should be noted that, in the case of the hospitality sector, the balances show seasonal differences, but the series are too short to divide by season.

Quarterly evolution of business performance

(Balances in %)



Source: Barcelona Chamber of Commerce and Idescat (Statistical Institute of Catalonia)

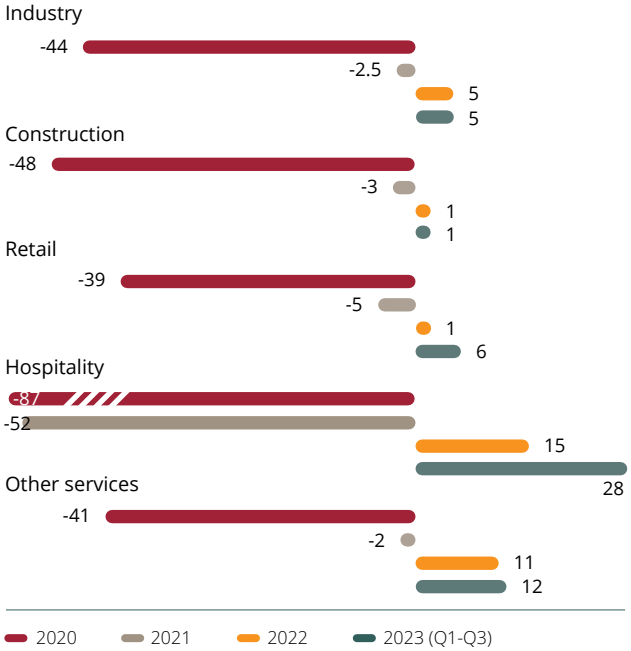
no longer affected by any health restrictions, went from being the most affected sector in 2021 to achieving the most positive balance in 2022, with one in three business establishments reporting that business performance was positive compared to 18% reporting the opposite.

Regarding 2023 (with data up to Q3), business performance continues to be positive across all sectors and shows improvement in hospitality, retail and other services (increases of 13%, 5% and 1%, respectively). Construction and industry saw stabilised balances.

For the fourth quarter, the outlook is positive across all sectors, in line with the average of the three previous quarters. The most positive balance seen in hospitality (17%), although it is the one that has moderated the most for seasonality reasons, followed by other services (12%), industry (7%), construction (4%) and finally, retail (1%).

Annual evolution of business performance by sector

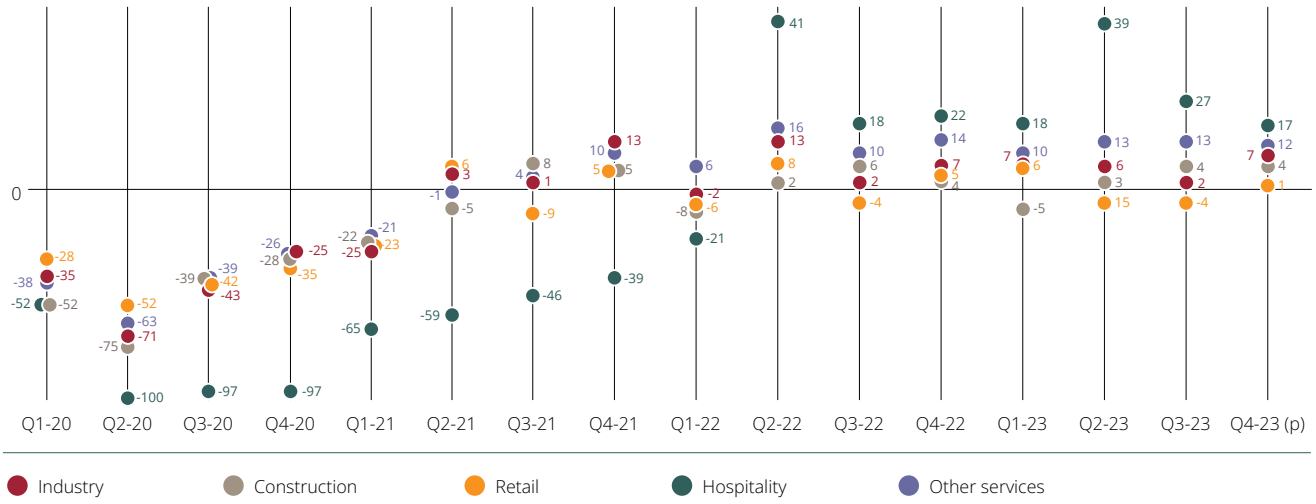
(Balances in %)



Source: Barcelona Chamber of Commerce and Idescat (Statistical Institute of Catalonia)

Quarterly evolution of business performance by sector in the Barcelona Metropolitan Area

(Balances in %)



Source: Barcelona Chamber of Commerce and Idescat (Statistical Institute of Catalonia)

Factors that limited strong business performance in 2022

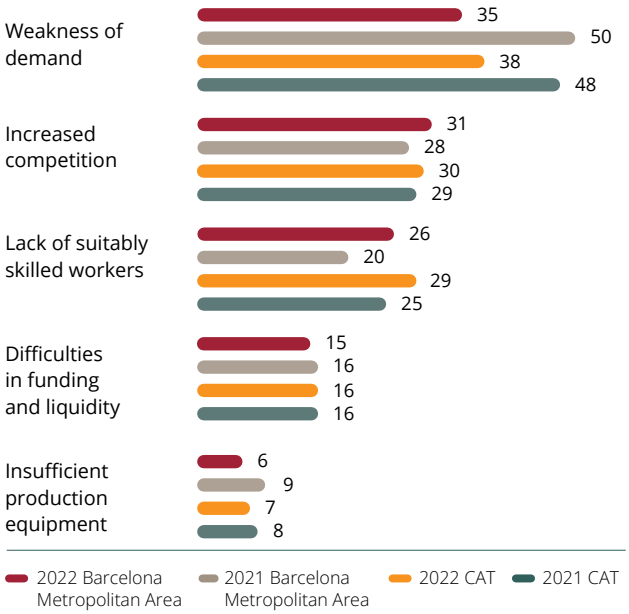
For the city's economy as a whole, **weak demand** was the factor that most limited strong business performance in 2022 (last available data, as the factors that limit strong business performance only appear in survey questions in the last quarter of the year, referring to the year as a whole). This factor has progressively lost importance since 2012 —except for 2020 due to the health crisis— thanks to the economic recovery. It has gone from being mentioned by 90% of the business community in 2012 to 35% in 2022. By contrast, the second most mentioned factor, increased competition, has gained in significance, cited by 31% of the business community and coming in just three percentage points below the first factor.Similarly, the lack of suitably skilled workers has also gained importance as a limiting factor, now mentioned by one in four business establishments, or 26%, marking the highest percentage since 2009 (when records began). In turn, difficulties in funding and liquidity, along with insufficient production equipment, rank 4th and 5th, at 15% and 6% respectively.

By **sector**, weak demand was the main limiting factor in 2022 solely for the industrial sector (mentioned by 45% of businesses). For retail and the rest of services, increased competition was the foremost factor (with 38% and 33%, respectively). Finally, the lack of suitably skilled workers was the primary limiting factor for hospitality and construction (at 44% and 37% respectively).

If the results for the Barcelona Metropolitan Area are viewed alongside those for **Catalonia as a whole**, Catalan businesses also mentioned the limiting factors in the same order, with very similar percentages to those for the metropolitan area.The most mentioned factor by all Catalan businesses was weak demand, with 38% (compared to 35% in the Barcelona Metropolitan Area), followed by increased competition with 30% (31% in the Barcelona Metropolitan Area), and the lack of suitably skilled workers with 29% (26% in the Barcelona Metropolitan Area).

Factors that limit strong business performance in the economy as a whole

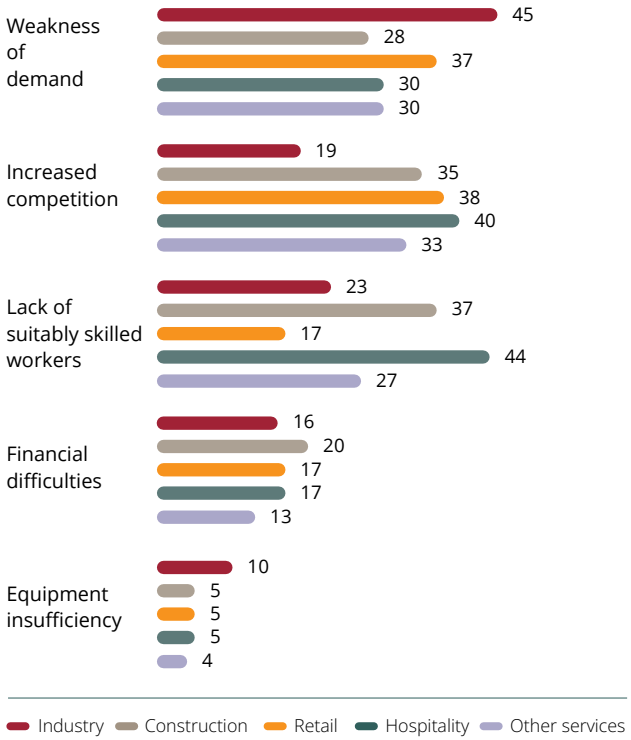
(in %)



Source: Barcelona Chamber of Commerce and Idescat (Statistical Institute of Catalonia)

Factors that limit strong business performance in the Barcelona Metropolitan Area by sector. 2022

(in %)



Source: Barcelona Chamber of Commerce and Idescat (Statistical Institute of Catalonia)

Developments and prospects of the main business variables

The Barcelona Metropolitan Area as a whole

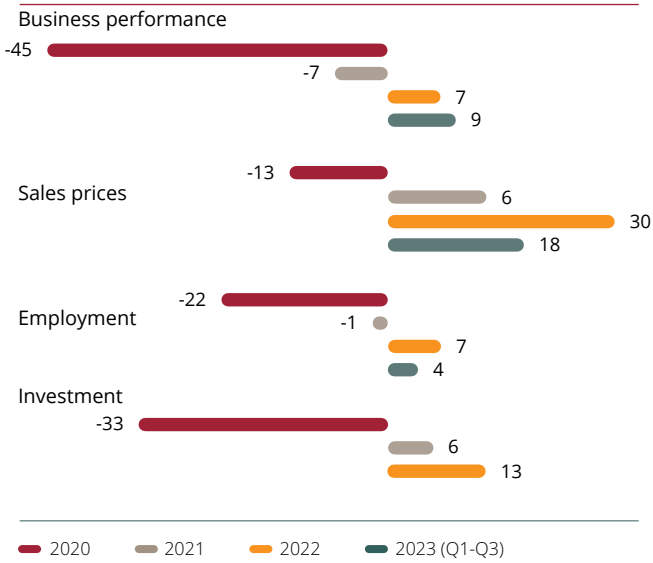
According to business establishments, **sales prices** remain at high levels but have notably moderated as 2023 has progressed, with a balance averaging 18%, the second highest since 2009, just behind the record peak of 30% the previous year. The slowdown in energy prices and supply chain crises, along with restrictive monetary policy, have contributed to this moderation.Thus, up to the third quarter almost a quarter of the business community reported that sales prices had increased, compared with only 5% who reported the opposite. With regard to the fourth quarter, the outlook for price growth is the same as in the third quarter (6% in both cases). In fact, inflation in Catalonia has moderated since the beginning of the year to 3.4% in October, almost two percentage points lower than a year ago (5.2%). However, inflation is showing signs of lingering at high levels, which has led to a tightening of the ECB's interest rate scenario.

The Barcelona Metropolitan Area economy has continued to create **employment** throughout 2023.The number of registered workers remains at record highs in the metropolitan area, but the rate of growth is starting to show signs of slowing down. The employment balance is up 4% on average as of the third quarter of 2023 (7% in 2022).The percentage of positive responses was 15%, compared to 11% that were negative.For the fourth quarter, it is expected that job creation will almost stabilise, with a balance of 1%.

Investment over the course of 2022 (the most recent data available as this variable is only included in the survey for the last quarter, for the whole year) has a balance of 13%, with 23% of businesses considering that it had increased compared with 9% that say that it had decreased.This evolution is seven percentage points more positive than the previous year (a 6% increase). The economic recovery in 2022 favoured this increase in gross fixed capital formation in Catalonia (3.8% in 2022).

Annual evolution of the main business variables in the Barcelona Metropolitan Area

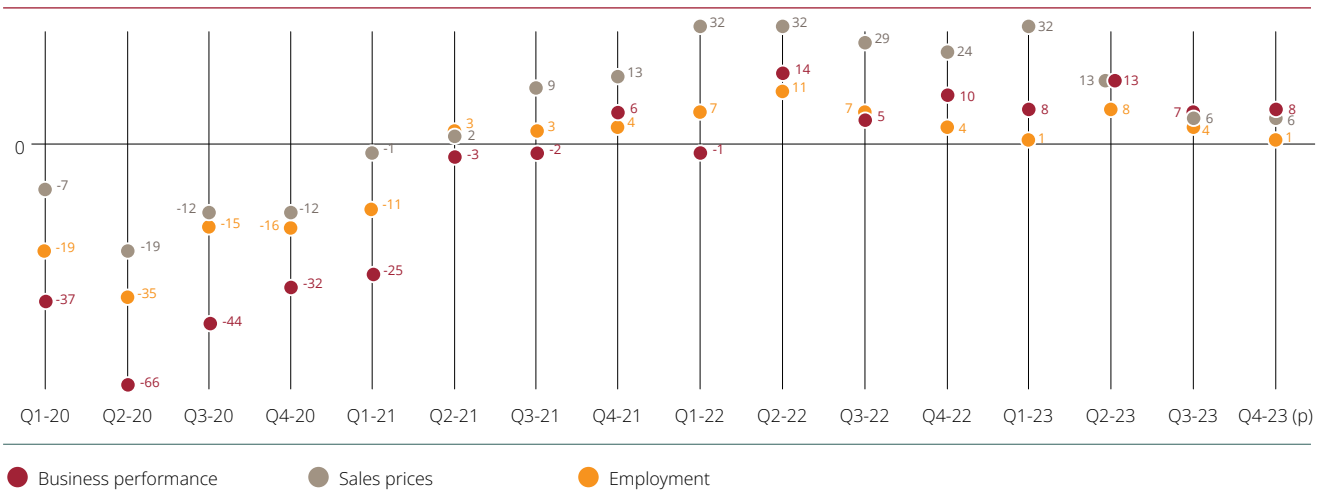
(Balances in %)



Source: Barcelona Chamber of Commerce and Idescat (Statistical Institute of Catalonia)

Quarterly evolution of business performance by sector in the Barcelona Metropolitan Area

(Balances in %)



Source: Barcelona Chamber of Commerce and Idescat (Statistical Institute of Catalonia)

Sector results

If we analyse business performance by major economic sector (up to Q3 2023), all sectors show positive balances; however, in industry, construction and other services, there is stagnation compared to the previous year, while hospitality and retail show improvement. In terms of employment, positive balances are seen in all sectors, to varying degrees, except for construction, which has stabilised at 0%. As far as sales prices are concerned, the balances are very positive in all sectors, but lower than the previous year. Overall, hospitality is the sector with the most positive balances for all variables analysed. This is because it has come back strong, benefitting from a rebound effect (given its starting point with the most negative balances in 2020).

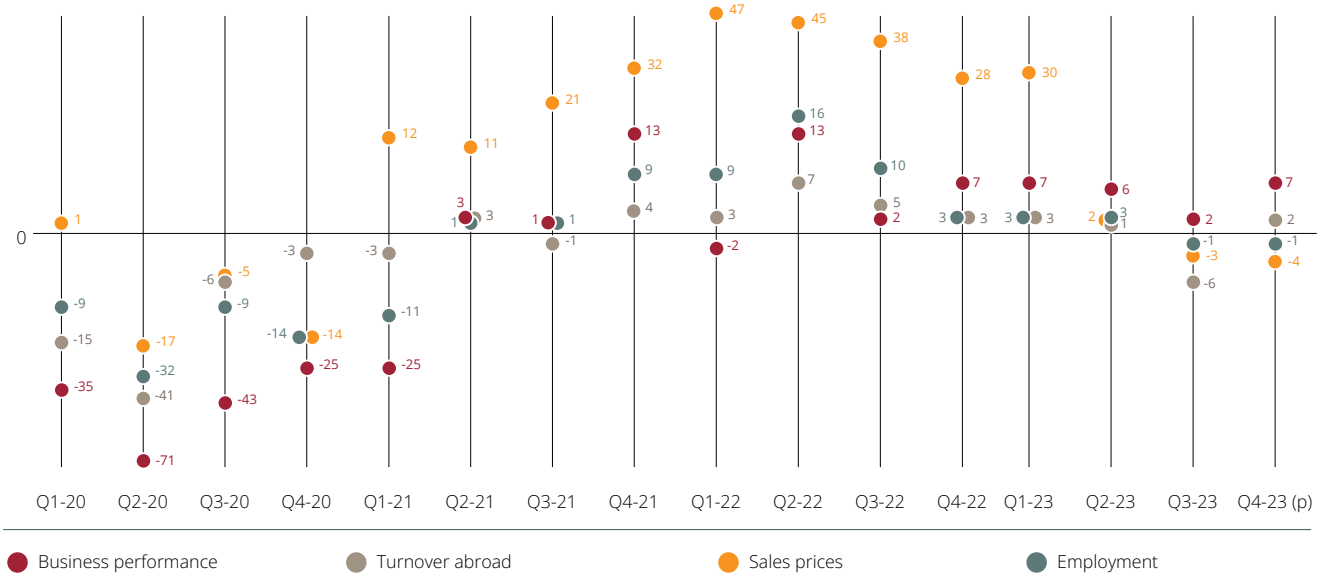
Industry

Industrial sector activity has stagnated over the course of 2023 compared to the previous year.Thus, the performance of industrial companies has been positive overall for the year, at 5% up to the third quarter of 2023 (the same as for all of 2022), the second least positive sectoral percentage, just behind 1% in construction.However, this average aggregate result masks a weakening trend as the year has progressed: 7% in Q1, 6% in Q2 and 2% in Q3. The industrial production index in Catalonia confirms that the sector has moderately declined, with a cumulative 0.4% decrease up to September.However, the outlook for the fourth quarter indicates a slight improvement in business performance (a 7% increase).

Sales prices have fallen very significantly and show the least positive sectoral balance, despite the persistence of high prices for energy and raw materials, as mentioned earlier. On average for the first three quarters of 2023, 18% of industrial establishments report that prices have increased, compared to 8% that report that prices have decreased.Likewise, there is a clear quarterly slowdown in the first half of the year (30% balance in Q1 and 2% in Q2) and a decrease in Q3 (of 3%), a trend observed only in this sector and for the first time since Q4 2020. Looking ahead to the fourth quarter, business establishments continue to anticipate a decrease in prices (of 4%). Consistent with the above, in Catalonia the Industrial Price Index fell by 2.2% from the beginning of the year to September 2023.

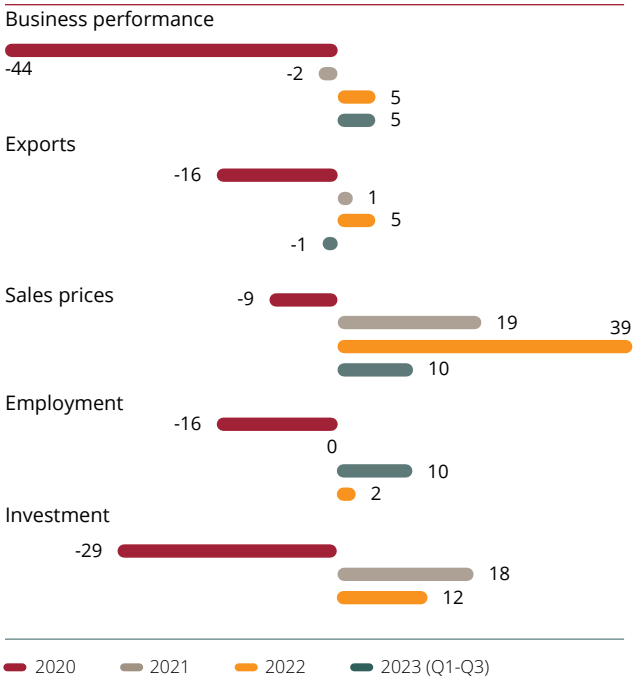
Employment in industry shows the second least positive sectoral balance (2%), coming in behind only construction (0%). However, the quarterly evolution shows a deceleration as the year progresses, leading to a decrease in the third quarter and also in the outlook for the fourth quarter (a decrease of 1% in both cases). Thus, the official data record shows that the rate of growth of the labour market in industry is lower than in other sectors: while the number of registered workers in Catalonia increased by 2.9% cumulatively up to October compared to the same

Quarterly evolution of the main business variables for industry in the Barcelona Metropolitan Area (balances, in %)



Source: Barcelona Chamber of Commerce and Idescat (Statistical Institute of Catalonia)

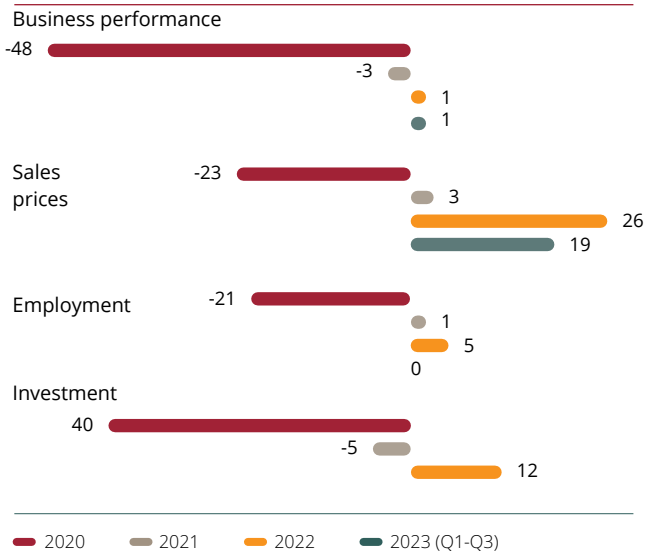
Annual evolution of the main business variables in industry in the Barcelona Metropolitan Area
(Balances in %)



Source: Barcelona Chamber of Commerce and Idescat (Statistical Institute of Catalonia)

period the previous year, in the case of the industrial sector, this variation was only 1.4% (the lowest sectoral growth rate).

Annual evolution of the business main variables in construction in the Barcelona Metropolitan Area
(Balances in %)



Source: Barcelona Chamber of Commerce and Idescat (Statistical Institute of Catalonia)

Taking into account the backdrop of efforts to contain rising prices, **sales abroad** have stagnated, with 12% of industrial establishments reporting an increase in turnover compared to 13% that report the opposite. The slowdown in the European economy, particularly in Germany and Italy, and the reconfiguration of trade flows associated with the armed conflict in Ukraine, have ultimately impacted the performance of exports.

Quarterly evolution of the main business variables for construction in the Barcelona Metropolitan Area (balances, in %)

Investment, based on data for 2022, remains positive but has moderated compared to the previous year (from 18% in 2021 to 12% in 2022), and obtains a very similar balance to the rest of the sectors, except for hospitality, which stands out with the most positive balance among all sectors (40%).

Construction

The positive evolution of the construction sector was curtailed in 2023 by the tightening of monetary policy and the persistence of inflationary pressures, along with the depletion of savings accumulated during the pandemic, factors that have contributed to the reduction in housing demand. As a result, construction activity indicators have shown a decline throughout the year 2023: up to September, there was an accumulated annual decrease of 8.1% in cement consumption, a reduction of 18.9% in the number of mortgages granted, and up to August, a 7.6% decrease in the number of homes under construction.

In this context, **the performance of construction businesses** during the first three quarters of the year ended with a nearly stagnant balance (1.0%), the sector's least positive result and identical to the overall result of the previous year. When analysing the quarterly evolution, it can be seen that this aggregate result derives from ups and downs: a negative Q1 (5% decrease), a Q2 where business performance recovered (3% increase) and a Q3 where it remains stable compared to the previous one (4% increase). For the fourth quarter of 2023, a stabilisation is expected with respect to the two previous quarters (4% increase).

Sales prices have gradually moderated throughout the year, reaching an accumulated balance of 19% during the first three quarters; the construction sector ranks third in terms of the highest recorded balance, behind the hospitality industry (32%) and retail (26%). This balance is the result of 24% of businesses reporting that sales prices have increased, and 6% saying that they think they will fall. The outlook for price increases is more moderate for the fourth quarter: 13% of establishments forecast an increase in prices as opposed to 6% who believe that prices will fall (balance 8%).

Employment in the sector recorded the least positive result over the first three quarters of 2023, remaining stagnant (balance of 0%). The outlook for the fourth quarter shows a slight contraction of the labour market (-1%).

Finally, **investment** in construction in 2022 improved notably compared to the previous year, achieving a positive balance (12%), very similar to other sectors, except for hospitality, which stands out with the most positive balance of all sectors (40%).

Retail

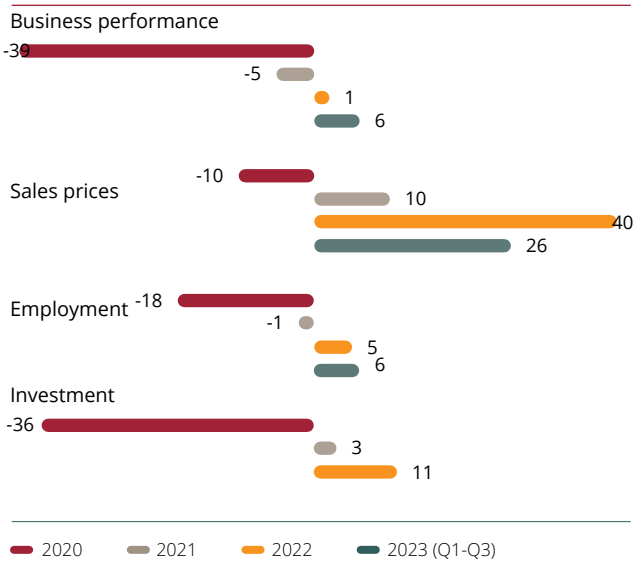
The results of the 2023 Climate Survey show a positive trend in the retail sector regarding business performance and employment, but sales prices remain quite high, despite moderating compared to the previous year. Household savings during lockdown contributed to maintaining turnover in the sector throughout 2022 and part of 2023, but the persistent increase in prices may lead to a reduction in consumption in the coming months.

Business performance in the retail sector in the Barcelona Metropolitan Area in 2023 has improved compared to the previous year, with a positive balance of 6% up to Q3 2023 (compared to 1% in 2022), with 24% of responses reporting an upward trend and 18% a downward trend. This accumulated balance is the result of a growth up to Q2 (6% in Q1 and 15% in Q2) and a decrease in Q3 (of 4%). For the fourth quarter (which includes the Christmas season), retail establishments in the Barcelona Metropolitan Area anticipate a positive result (an increase of 4%).

The increase in **sales prices** has moderated as the year has progressed: with a balance of 43% in Q1, 22% in Q2 and

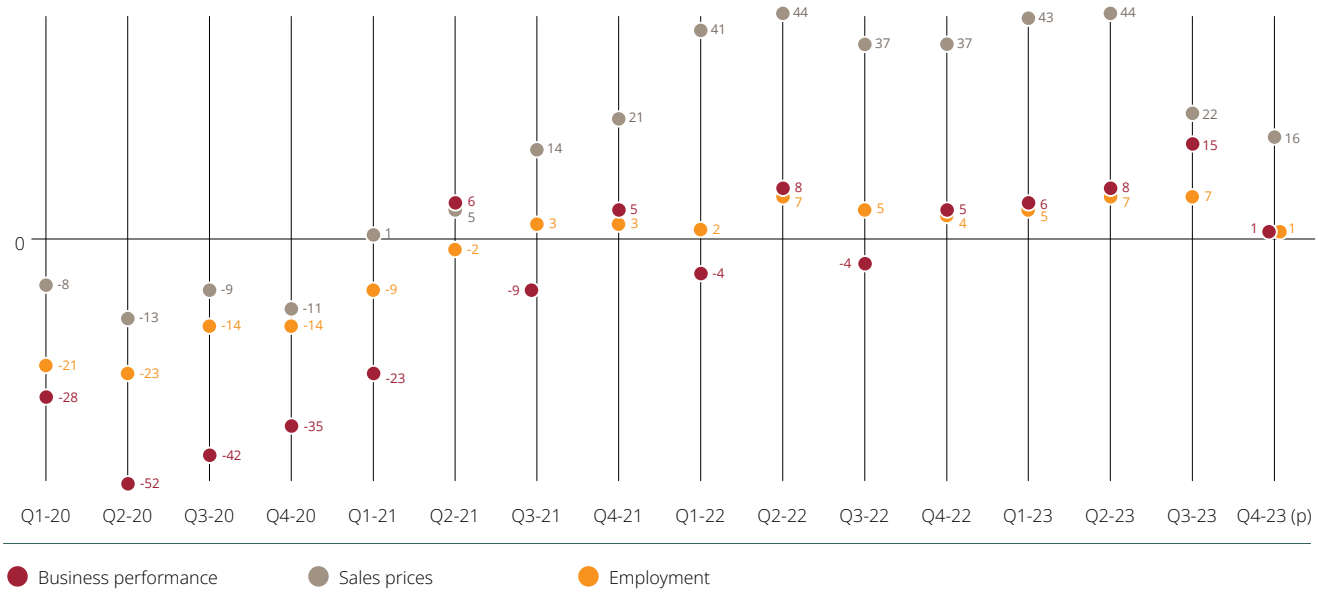
Annual evolution of the main retail business variables in the Barcelona Metropolitan Area

(Balances in %)



Source: Barcelona Chamber of Commerce and Idescat (Statistical Institute of Catalonia)

Quarterly evolution of the main retail business variables in the Barcelona Metropolitan Area
(Balances in %)



Source: Barcelona Chamber of Commerce and Idescat (Statistical Institute of Catalonia)

14% in Q3, resulting in an accumulated balance of 26% up to Q3. Despite this trend, this is the second highest sectoral balance, behind only the hospitality industry (32%). For the fourth quarter, retail establishments anticipate an increase in sales prices identical to the previous quarter (balance of 14%).

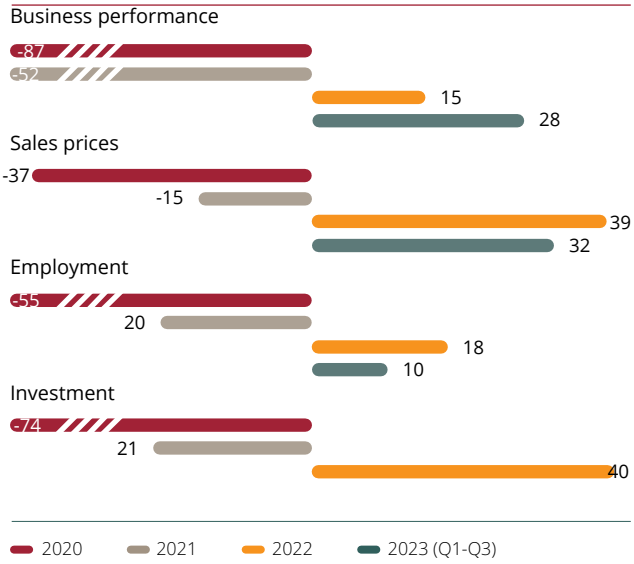
In terms of **employment**, positive balances continue to be seen throughout the year, 6% on average in the first three quarters of the year, as 15% of businesses report that there has been an overall increase in the number of available jobs compared to 9% who say the opposite.Looking ahead to Q4, the positive balance moderates compared to the previous quarter and nearly stabilises (1%).

Meanwhile, in 2022, investment in **retail** improved from 3% in 2021 to 11% in 2022. However, this balance is two percentage points below the average for the economy of the Barcelona Metropolitan Area (a 13% increase).

Hospitality

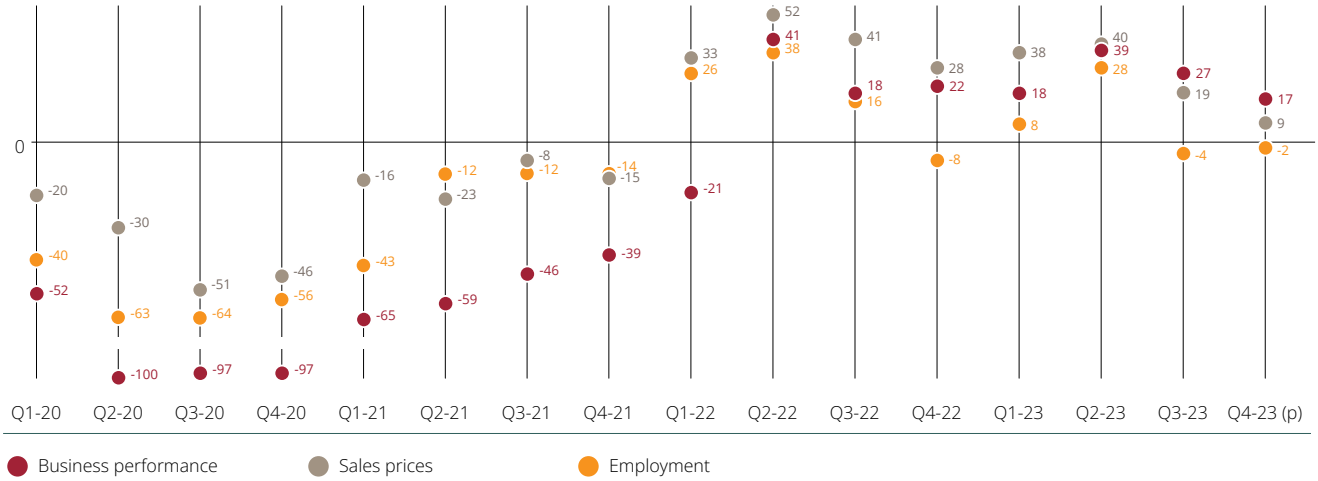
In recent years, the hospitality sector has gone from being the sector with the highest degree of uncertainty to becoming one of the driving forces of growth. Indeed, the hospitality sector has improved the most and also showed the best sectoral results in 2022, thanks to the growth of both domestic and international tourism throughout the year, especially during the summer. The sector's activity indicators show an almost complete recovery in relation to pre-pandemic figures. It remains to be seen whether the prospects of a slowdown in the European economy and the growing competitiveness of the international tourism market will maintain the sector's good results.

Annual evolution of the main business variables in the hospitality industry in the Barcelona Metropolitan Area (Balances in %)



Source: Barcelona Chamber of Commerce and Idescat (Statistical Institute of Catalonia)

Quarterly evolution of the main business variables in the hospitality industry in the Barcelona Metropolitan Area
(Balances in %)



Source: Barcelona Chamber of Commerce and Idescat (Statistical Institute of Catalonia)

Business performance in hospitality was positive for 42% of businesses in the first nine months of the year (33% in 2022 as a whole) and negative for 15% (18% in 2021). The resulting balance of 28% is the best sectoral result by far. The improvement was particularly noticeable from the second quarter onwards, thanks to the positive results of both domestic and foreign tourism during the Easter period and summer holidays, driving the sector's recovery.Looking ahead to Q4 2023, the outlook for hospitality businesses remains the most positive among all sectors (17%), with 31% believing that the situation will improve, and 14% believing that business will slow down.

Sales prices have moderated slightly, from 39% in 2022 as a whole to 32% up to the third quarter of 2022. The reduction in prices has mainly occurred from the second quarter of the year: 38% in Q1, 40% in Q2 and 19% in Q3.For the fourth quarter, businesses expect prices to continue to moderate (9%).

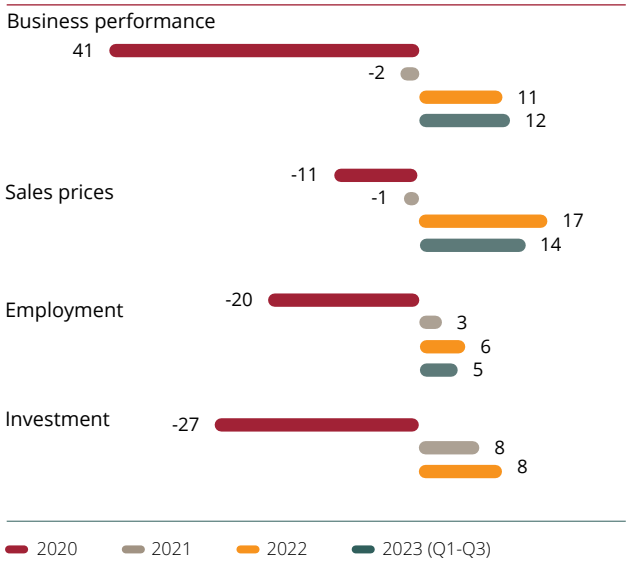
As for the number of **people employed**, the balance was 10% in 2023 (up to Q3), the best result among all sectors despite its moderation compared to 2022 as a whole (18%). For the first quarter of the year, establishments foresee a slight decrease (of 2%).

In 2022, **investment** in the sector was positive, which had not been the case since 2019. With a balance of 40% –the result of 46% of establishments reporting an increase in investment compared to the previous year, contrasted with 6% reporting otherwise– hospitality has the best sectoral results.

Other services

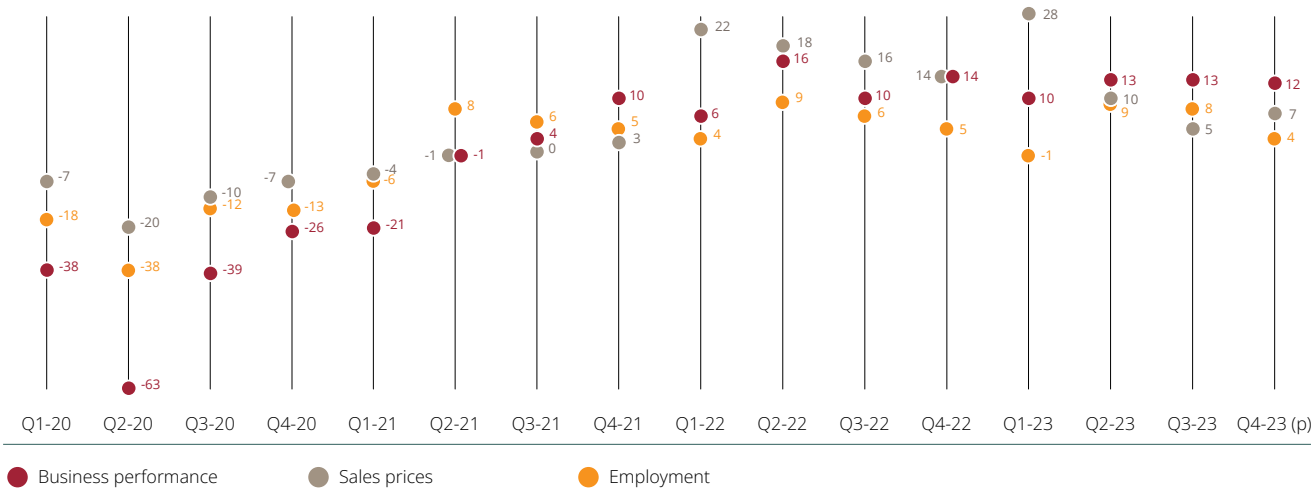
The **other services** sector (all services other than retail and hospitality) shows higher levels of recovery than the economy on average up to the third quarter of 2023,

Annual evolution of the main business variables in other services in the Barcelona Metropolitan Area
(Balances in %)



Source: Barcelona Chamber of Commerce and Idescat (Statistical Institute of Catalonia)

Quarterly evolution of the main business variables in other services in the Barcelona Metropolitan Area
(Balances in %)



Source: Barcelona Chamber of Commerce and Idescat (Statistical Institute of Catalonia)

both in terms of business performance and employment. Thus, in comparison with the other sectors, the other services category came in second best in terms of business performance (behind hospitality) and third best in terms of employment. In terms of sales prices, the other services category had the second least positive result.

As far as **business performance** is concerned, the balance is 12% up to the third quarter, with 23% of businesses in the sector considering that business performance has been strong, compared to 11% who report that it has been poor. Looking ahead to the fourth quarter, the sector predicts that the business performance will continue to be positive (12%).

As for the **sales prices**, after the considerable increase in 2022 (17%), as 2023 progressed the increase has slowed (28% in Q1, 10% in Q2 and 5% in Q3) resulting in an average balance of 14%, four percentage points below the average across all sectors. For the last quarter of 2023, sales prices are expected to continue to fall (7%).

The **labour market** in other services shows a positive result and the third best of all sectors (5%), the result of the difference between 15% of establishments saying that employment has increased and 10% saying that it has decreased. For the fourth quarter of 2023, businesses in the sector expect an increase in the number of workers, consistent with the three preceding quarters (4%).

Finally, in 2022, **investment** showed a positive balance (11%), very much in line with the average for all sectors (13%). This was the result of 20% of establishments reporting that it had increased, compared with 9% reporting that it had decreased.

Comparison with Catalonia

In terms of the evolution of economic activity compared by area, the Barcelona Metropolitan Area shows a more positive **business performance** than the rest of Catalonia in the first three quarters of 2023 for both hospitality and other services. It is important to bear in mind the significant role of Barcelona in the Barcelona Metropolitan Area as a whole, as well as the greater dependence on exports and international tourism, the sector with the best overall results during this year.

The increase in **sales prices** was greater in Catalonia as a whole than in the Barcelona Metropolitan Area, across all sectors.Finally, the evolution of **employment** in the Barcelona Metropolitan Area was slightly less positive than in Catalonia in construction, hospitality and other services, while it was the same in industry and retail**.**

Main business variables with Catalonia. Year 2023 (Average Q1-Q3)

(Balances in %)

Source: Barcelona Chamber of Commerce and Idescat (Statistical Institute of Catalonia)

Methodological annex

Sectors included in the *Business Climate Survey*

Industry

01 Food, beverages and tobacco (CCAE-2009: 10 to 12)

02 Textiles, clothing manufacture, leather and footwear (CCAE-2009: 13 to 15)

03 Wood and cork industries, paper and graphic arts (CCAE-2009: 16 to 18)

04 Chemical industries, rubber and other non-metal mineral products (CCAE-2009: 20 to 23)

05 Metalworking and manufacture of metal products (CCAE-2009: 24 and 25)

06 Production of machinery and mechanical and electrical equipment, and IT, electronic and optical products (CCAE-2009: 26 to 28)

07 Other industries (CCAE-2009: 05 to 09, 19, 29 to 33, 35 to 39)

Construction

The whole of Section F of the CCAE-2009 is taken into account:

41 Building construction

42 Construction of civil engineering works

43 Specialised construction activities

Retail

01 Retail trade in food, beverages and tobacco products in specialist establishments (CCAE-2009: 472)

02 Retail trade in domestic, cultural and recreational products in specialist establishments (CCAE: 475 and 476)

03 Other types of retail trade (CCAE-2009: 473, 474, 477, 478, 479)

04 Retail trade in non-specialist establishments (CCAE-2009: 471)

05 Sale and repair of motor vehicles and motorcycles (CCAE-2009: 45)

06 Wholesale and intermediaries (CCAE-2009: 46)

Hospitality

CCAE-2009: 55 and 56

55 Accommodation services

56 Food and drink services

Other services

01 Information and communications (CCAE-2009: 58 to 63)

02 Legal and accountancy activities (CCAE-2009: 69)

03 R&D, advertising and market studies and scientific and technical activities (CCAE-2009: 71 to 75)

04 Administrative activities and auxiliary services (CCAE-2009: 77 to 82)

05 Other services (CCAE-2009: 49 to 53, 64 to 66, 68, 92, 93 and 96)

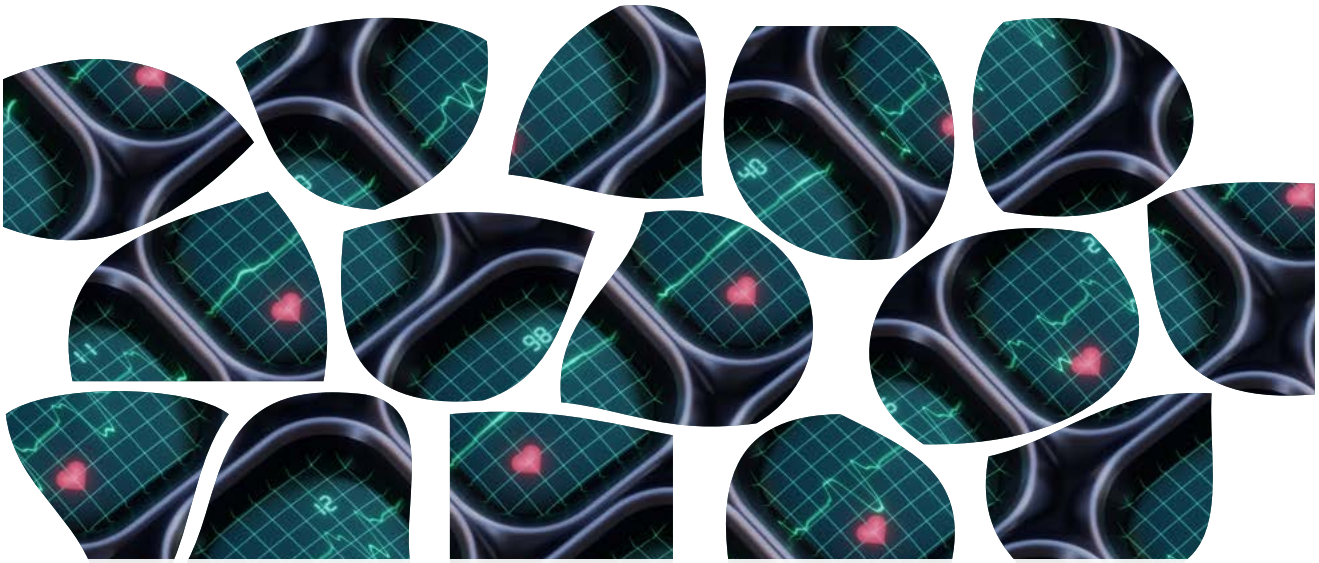
Sampling errors. Barcelona Metropolitan Area 2023*

Sectors	Sample	Error[3]
Industry	156	7.8%
Construction	83	10.8%
Retail	192	7.1%
Hospitality	71	11.6%
Other services	496	4.4%
Total	**998**	**3.1%**

* Average for quarters Q1-Q3.

Source: Barcelona Chamber of Commerce and Idescat (Statistical Institute of Catalonia)

3. Maximum possible error calculated on the basis of a single random sample.



Barcelona's digital health sector in the international context

December 2023

OBSERVATORI BARCELONA

Barcelona's digital health sector in the international context

The aim of this report is to analyse the positioning of Barcelona and Catalonia in the expanding sector of digital health, based on the available indicators at the local, regional and international level. The report is divided into four sections. The first section defines what we mean by "digital health". The second section analyses the main economic indicators of the digital health sector in Barcelona and Catalonia. The third section presents the four factors that make Barcelona the ideal candidate to become a leading hub in the digital health sector in Europe and the world. Finally, the article offers a brief summary of the conclusions.

1. What does Digital Health mean?

The life sciences and health sector is defined as the sum of four major subsectors, most notably digital health:

1. **Pharmaceutical**: comprises the activities of research, development, production, and sale of medicines and other health-related products.
2. **Biotechnology**: encompasses the development of products and services through living organisms or biological substances with applications in various fields such as agriculture and the pharmaceutical industry.
3. **Medtech**: focuses on research, development, production, and commercialisation of systems and technologies for medical applications in humans and animals.
4. **Digital Health**: as defined by the European Commission, it is the set of tools and services that use information and communication technologies (ICTs) to improve prevention, diagnosis, treatment, monitoring and management of health-related issues and to monitor and manage lifestyle-habits that impact health.

Therefore, Digital Health is the field where digital transformation meets health and healthcare. The goal of digital health is to enhance the efficiency of healthcare services and make medicine more personalised and accurate. Some of the applications that Digital Health incorporates include artificial intelligence, big data analysis, 3D printing, robotics and remote consultations.

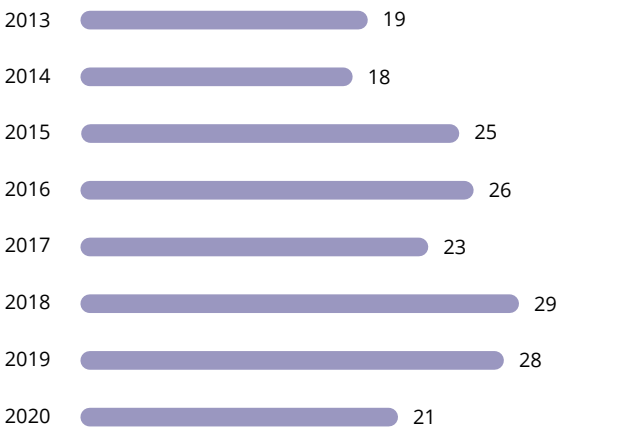
Due to its cross-cutting nature, a wide range of stakeholders are involved in the Digital Health subsector. In addition to the companies specialising in the different fields of application identified above, other stakeholders also play an important role in the areas of research, promotion and funding. These include research and technological centres, hospital research institutes, hospitals themselves, and universities and educational centres, as well as innovation acceleration programmes, associations and networks such as the Barcelona Health Hub, and finally, public authorities and institutions.

2. Main economic indicators of the digital health sector in Barcelona and Catalonia

According to data from Biocat, the digital health sector consists of 212 companies in Catalonia, accounting for 16% of the total companies in the life sciences and health sector. Of these digital health companies, 91% are SMEs (with less than 250 employees). In recent years, the Digital Health segment has gained prominence in digital entrepreneurship, representing between 30% and 40% of the total new startups registered annually in Catalonia since 2013 in the life sciences and health sector, with an average of twenty new companies per year (Figure 1).

Some of the key factors that help explain this dynamism and consolidation of the sector are (i) the major interest from investors due to the dynamism of the sector, and (ii) the significant growth in the number of venture capital firms specialising in life sciences and health established in Barcelona (it has multiplied by four in the last ten years).

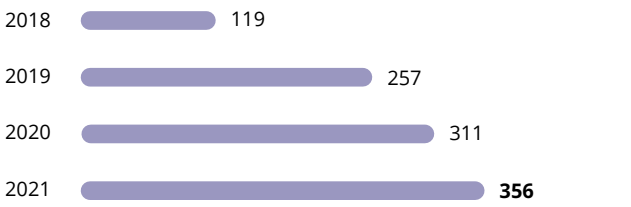
Figure 1. **Number of startups and spinoffs created in the Digital Health sector**
(number)



*The process of detecting startup activity does not stabilise until two years later, which is why the 2021-2022 indicators are provisional and pending completion.

Source: Biocat (2023).

Figure 2. **Turnover of the digital health sector up to 2021.Catalonia**
(millions of euros)



Source: Biocat.

Turnover also reflects this remarkable growth in the Digital Health segment in recent years. Specifically, turnover in 2021 stood at 356 million euros, 3.4% of the total turnover of the life sciences and health sector, almost 200% more than three years ago (Figure 2). The sector is made up of mostly young companies with relatively small turnover: 73% of the companies are less than ten years old, 25% have a turnover of more than 1 million euros, and 3.6% more than 10 million euros.

Regarding the investment raised in 2022, despite it having been a particularly strong year for the life sciences and health sector, investment in the digital health segment fell by 40% for the first time in the last five years, to 39 million euros (Figure 3). Even so, it is the second highest figure since records began in 2018. Furthermore, despite the reduction in total investment, it should be noted that the number of transactions has increased from 21 in 2021 to 25 in 2022. This means that more transactions have been carried out, but they are lower in value.

3. Barcelona: a conducive environment to becoming a leading hub in the digital health sector

Barcelona has four major assets that contribute to its positioning on the global stage as a potential leading hub in the digital health sector. These assets are:

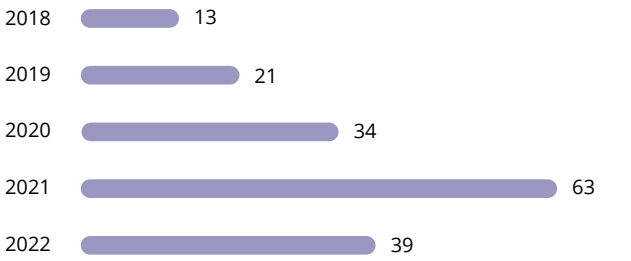
1. Having a consolidated and growing life sciences and health ecosystem thanks to its startups

The life and health sciences sector, as defined previously, consists of over 1,350 companies and 91 research institutions in Catalonia, with the biotech sector accounting for the largest number of companies (25% of the total). Most of these companies and research organisations are located in the city of Barcelona and the surrounding area.

In 2021, the life sciences and health sector represented 4.3% of Catalonia's GDP and accounted for 1.7% of the employed population, reflecting high productivity within the sector. Moreover, employment is significantly dynamic, growing 12% over the last five years (Figure 4).

In terms of turnover, the life sciences and health sector has also experienced significant growth in recent years, reaching €21.976 billion in 2021, excluding healthcare services (Figure 5). The pharmaceutical and supplier segments account for a large part of the sector's total turnover (38% and 34%, respectively).

Figure 3. **Investment raised in the Digital Health sector up to 2022.Catalonia**
(millions of euros)

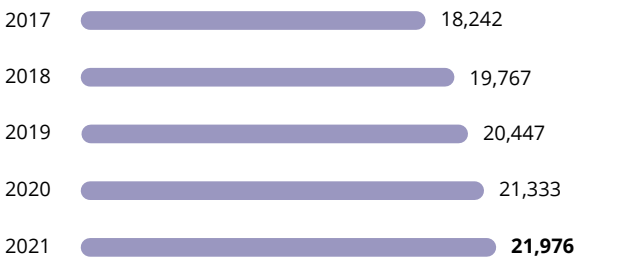


Source: Biocat.

Figure 4. **Population employed in Catalonia in the life and health sciences sector up to 2021**
(individuals)

Source: Biocat.

Figure 5. **Turnover of the life and health sciences sector up to 2021.Catalonia**
(millions of euros)

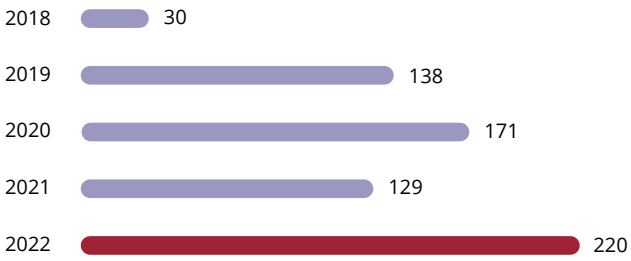


Source: Biocat.

In terms of foreign direct investment (FDI) received and investment raised, the sector has consolidated an upward trend, with 2022 being particularly positive. Firstly, FDI in Catalonia's life sciences and health sector has notably increased in 2022 to €220 million (a 70% year-on-year increase) following the moderation of the previous year (Figure 6). Over the past five years, accumulated FDI has amounted to €689 million and has been primarily directed towards corporate headquarters, offices and plants (€322 million), manufacturing (€188 million), and logistics, transportation and professional services (€103 million). Research and development has attracted €48 million in the form of FDI during the same period.

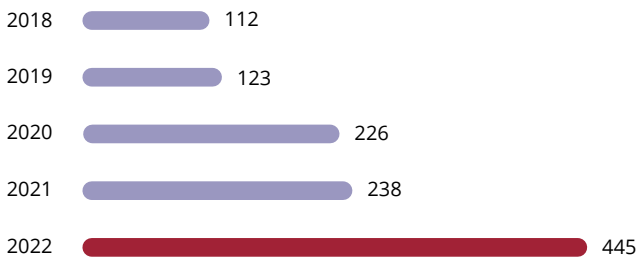
Secondly 2022 has been a particularly strong year in terms of investment raised. Investment in health startups and scaleups amounted to €450 million, almost doubling the records of previous years (Chart 7). In addition, the sector also saw a mega-round (more than €100 million) for the first time.

Figure 6. **FDI in the life sciences and health sector up to 2022. Catalonia**
(millions of euros)



Source: Biocat.

Figure 7. **Investment raised in the life sciences and health sector up to 2022. Catalonia**
(millions of euros)



Source: Biocat.

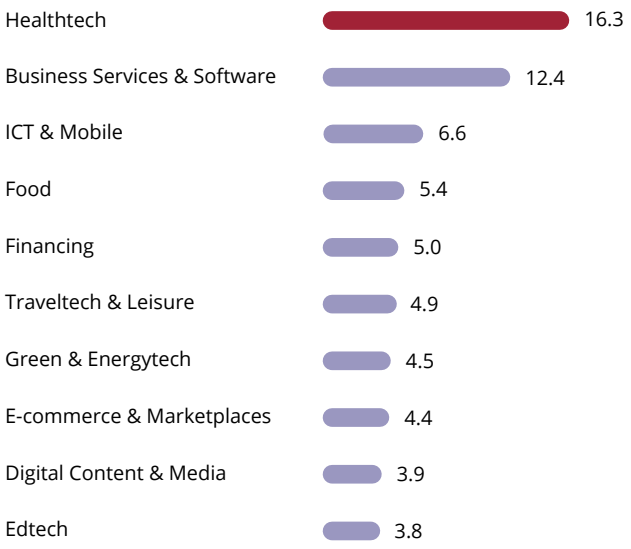
2. Barcelona is one of the main hubs for startups in Europe, led by the healthtech sector

In 2022, the entrepreneurial ecosystem in Barcelona continued to be one of the most dynamic and attractive in Europe and the world, consisting of a combination of investors, accelerator organisations and incubators that make up a major hub for attracting startups and talent. Various international rankings demonstrate this:

- Out of over a hundred European cities, Barcelona is the third preferred *hub* for locating a new startup, for the sixth consecutive year, according to the Startup Heatmap Europe 2023. 17% of startup founders and members of the technology community would choose Barcelona if they had to start a new business project tomorrow.
- According to the Global Startup Ecosystem Index 2023 by StartupBlink, the Catalan capital ranks 40th as the best ecosystem for tech startups in the world, 6th among cities in the European Union, and 1st in Spain.
- Similarly, Barcelona ranks as the 4th emerging startup ecosystem in the world and the 2nd in Europe, according to The Global Startup Ecosystem Report 2023 by Startup Genome.

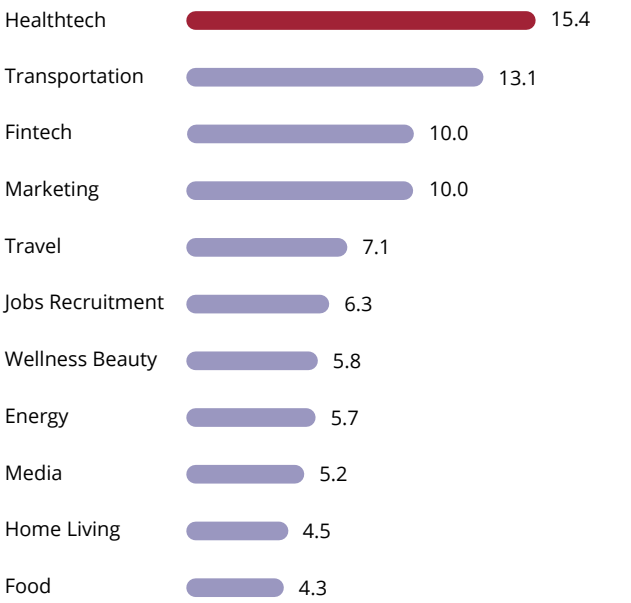
Rankings aside, the city of Barcelona demonstrates continuous growth in the number of startups, thanks to investment opportunities, talent, innovation centre and digital hubs, and incentive programmes. The number of startups identified by ACCIÓ in Catalonia in 2022 was 2,022, which is almost double the number for 2016 (1,086) and 6.3% higher than in 2021. Moreover, 58.8% of startups have been created in the last five years (2017-2022), demonstrating the dynamic nature of the ecosystem in Catalonia.

Figure 8. **Sectoral distribution of startups. *Top 10*. Catalonia. 2022**
(% of total)



Source: Barcelona & Catalonia Startup Hub Analysis 2022. ACCIÓ (2023).

Figure 9. **Investment attracted by Catalan startups. Sectoral distribution. *Top 10*. Catalonia. 2022**
(% of total)



Source: Barcelona & Catalonia Startup Hub Analysis 2022. ACCIÓ (2023).

The number of startups identified by Barcelona & Catalonia Startup Hub in the healthtech sector reached 329 in 2021, making it the sector with the most startups in Catalonia, specifically accounting for 16.3% of the total (Figure 8). It is followed, in order of importance, by the Business Services & Software (12.4%), ICT & Mobile (6.6%), Food (5.4%) and Financing (5.0%) sectors.

Moreover, startups in the healthtech sector have attracted the largest volume of investment. Specifically, they attracted €351.7 million in 2022, accounting for 15.4% of a total of €2.281 billion raised by Catalan startups as a whole, according to data from ACCIÓ (Figure 9).

Moving forward, one positive aspect is the new Spanish startup law in force since January 2023, which recognises this new legal concept (startup: innovative company up to five years old, or seven years if it is in the biotechnology sector, with a maximum turnover of five million and which does not distribute dividends). This law establishes tax breaks, eliminates bureaucratic procedures for creating a startup and attracting professionals who live abroad, and encourages the attraction of capital. This new regulatory framework is a significant step forward in attracting investment in the digital sector while also fostering innovation and building a more competitive country on an international scale.

3. Catalonia and Barcelona as international innovation hubs in sectors related to health

Catalonia is considered a highly innovative region in 2023 (*strong innovator*), according to the *European Innovation Scoreboard* published by the European Commission. This means that Catalonia's aggregate index of innovation indicators is above the European Union average.

This indicator is based on four main factors: framework conditions (examples: education level, international scientific publications, digitalisation penetration), investments (examples: public and private R&D expenditure, innovation expenditure, ICT employment), innovation activities (examples: SMEs with product innovation, labour mobility in the scientific and technological sector, PCT patent applications), and impacts (examples: employment in highly qualified sectors, exports of high-tech products, productivity).

Specifically, Catalonia's Innovation Index in 2023 is 5.9% above the European Union average, comparable to other regions in Spain such as Basque Country (9.8%) and the Community of Madrid (6.6%). Catalonia has been considered a highly innovative region since at least 2016, when it was positioned 3.4% above the average.

Table 1. **International patent applications (via PCT) by major technological fields (2010-2015)**

	Catalonia	Spain	EU-28	CAT/SP (%)	CAT/EU (%)
Biotech	334	1,119	16,980	29.8	2.0
ICT	858	2,727	84,018	31.4	1.0
Medical	289	879	22,339	32.8	1.3
Nanotech	34	165	1,744	20.8	2.0
Pharmaceutical	462	1,175	15,473	39.3	3.0
TOTAL TECH AREA	**1,976**	**6,066**	**140,554**	**32.6**	**1.4**
General total	3,294	10,878	300,253	30.3	1.1
% TECH AREA	60%	56%	47%		

Source: OECD. Regional Statistics (12/01/2022).

Some of the indicators where Catalonia excels in 2023 include sales of new innovative products in the market, population with higher education degrees, digital skills, employment in highly qualified sectors, cited publications, and PCT patent applications.

Regarding this last point, the international patent applications (via PCT) made by Catalonia in the technological field between 2010 and 2015 accounted for 32.6% and 1.4% of the total applications made by Spain and the EU-28, respectively (Table 1). These proportions are higher than the total number of applications made, reflecting a greater innovative relevance in the Catalan technological sector. The pharmaceutical, biotech and nanotech sectors stand out especially in the European comparison.

With more recent data for the 2016-2019 period and in terms of European patent applications (EPO) related to the digital health and biotechnology sectors, Catalonia stands out in some segments for having a relative advantage measured in terms of the Relative Technological Advantage index (RTA). An RTA index value above 1 indicates that, in this case, Catalonia has a relative advantage in this area. Therefore, in terms of European patent applications, Catalonia has a relative advantage in biological materials analysis instruments, medical technology and biotechnology (Table 2).

Table 2. **European Patent Applications (EPO) 2016-2019 by technological area**

		Patent applications					
		Total	Spain	Catalonia	CAT/Total (%)	CAT/SP (%)	RTA Index Catalonia
Instruments	Total	119,324	1,020	318	0.3	31.2	1.0
	Optics	15,689	59	25	0.2	42.8	0.6
	Measurement	33,218	257	80	0.2	31.1	0.9
	Analysis of biological materials	5,478	144	31	0.6	21.3	2.1
	Control	11,781	116	27	0.2	23.3	0.9
	Medical technology	53,158	444	155	0.3	34.9	1.1
Chemistry	Biotechnology	24,993	449	103	0.4	23.0	1.5
Total European patent applica-		**678,344**	**6,836**	**1,829**	**0.3**	**26.8**	**1.0**

Notes:

- European patent applications include direct European applications and international (PCT) applications that entered the European phase during the reporting period.
- The definition of the fields is based on the WIPO IPC technology concordance.The table is available at: http://www.wipo.int/export/sites/www/ipstats/en/statistics/patents/xls/ipc_technology.xls
- Refers to the total number of patents filed at the EPO, whether by organisations domiciled in the EU or in other countries around the world.

Source: EPO. Data 1.2.2021.

Table 3. **Expenditure on innovative activities. Catalonia. 2019**

	Expenditure on innovative activities (thousands of €)[1]	Distribution of the expenditure: % Expenditure on R&D (internal and external)	Distribution of the expenditure: Expenditure on other innovative activities	% of total expenditure on innovation
Pharmaceutical products	610,618	75.5	24.5	11.6
Information and communication	574,985	51.3	48.7	11.0
Health and social service activities	57,820	59.0	41.0	1.1
Total selected subsectors	1,243,423	63.6	36.4	23.7
Total	**5,246,846**	**56.7**	**43.3**	**100**

(1) Expenditure on innovative activities carried out in Catalonia by companies engaged in innovation, regardless of where their headquarters are located.

Source: Idescat, based on the INE's Survey on innovation in companies.

It is worth highlighting the percentage of European patent applications filed by Catalonia in relation to the Spanish total in the field of optical instruments (42.8% of Spain's total applications), medical technology (34.9%, where it also has a relative advantage) and measurement (31.1%), placing it above Catalonia's average share in Spain's applications (26.8%) in the 2016-2019 period.

The Business Innovation Survey conducted by the INE and expanded to Catalonia by Idescat also reflects the innovative relevance (R&D and other innovative activities) of sectors most closely associated with digital health (Table 3). Taking data from 2019, the pharmaceutical and information and communication sectors led innovation expenditure in Catalonia (11.6% and 11.0% of the total innovation expenditure), only behind the manufacturing of motor vehicles and other transport materials (19.6%). If health and social services activities (1.1%) are included, the sum of the three sectors represented almost a quarter of the total innovation expenditure in Catalonia (23.7%).

4. Barcelona generates a talent attraction effect

Barcelona is highly attractive due to its climate and quality of life, but also its universities, business schools and technology centres. Additionally, it has excellent transport infrastructure and a growing ecosystem of startups that need international talent, at a time when remote work is on the rise and individuals now have increasing flexibility to choose where they want to live. In this regard, the BCG Digital Talent report also shows that 14% of job offers for digital professionals are for remote work.

According to the Decoding Global Talent and Digital Talent 2021 reports by Boston Consulting Group, Barcelona is the 9th most attractive city in the world for working abroad, just ahead of Sydney, Paris and Los Angeles, in a ranking led by London. In terms of digital talent, Barcelona is the tenth most attractive city in the world for professionals in the digital sector who want to work abroad., just ahead of Los Angeles, Vancouver, and Paris in a ranking led by London and Singapore.

4. Conclusions

- The Digital Health sector is where digital transformation meets health and healthcare to improve the efficiency of healthcare services provided and make medicine more personalised and accurate.
- Digital health is a dynamic, expanding sector which has gained prominence in Catalonia in recent years, as shown by the data on the number of startups, revenue and investment raised.
- The environment of Catalonia, and especially Barcelona, is conducive to it becoming a leading hub in the Digital Health sector:

  1. It has a consolidated and growing life sciences and health ecosystem thanks to its startups.In 2021, this sector represented 4.3% of Catalonia's GDP and accounted for 1.7% of the employed population, reflecting high productivity within the sector.

2. Barcelona is one of the main hubs for startups in Europe, led by the healthtech sector.This sector accounted for the largest number of startups in Catalonia (16.3% of the total) and attracted investment (15.4% of the total) in 2022.Additionally, various rankings reflect Barcelona's attractiveness for establishing a new startup and the ecosystem of emerging technology companies in the Catalan capital.

3. Catalonia and Barcelona are leading international innovation hubs in sectors related to health. Catalonia is considered a highly innovative region, with a relative advantage in sectors linked to digital health. Innovation expenditure (R&D and other innovative activities) is led by the pharmaceutical and information and communication sectors.

4. Barcelona generates a talent attraction effect, standing out as one of the most attractive cities in the world to work in, particularly for professionals in the digital sector.

Ajuntament de Barcelona

Cambra de Comerç de Barcelona