

# Digital Talent Overview 2020

Analysing the status of digital talent

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# About Barcelona Digital Talent

Barcelona Digital Talent promotes the market's competitiveness to deal with the current digital talent gap. With the goal of positioning Barcelona as a talent capital, the programme promotes reskilling in digital competences for professionals and attracting new domestic and international professionals to the market.

This alliance is spearheaded by Mobile World Capital Barcelona, the Cercle Tecnològic de Catalunya, the 22@Network, Barcelona Tech City, the Foment del Treball Nacional, Barcelona Global, the Barcelona City Council and the Generalitat de Catalunya.

For more information visit [barcelonadigitaltalent.com](https://barcelonadigitaltalent.com)

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This report was spearheaded by the **Generalitat de Catalunya**, **Mobile World Capital Barcelona** and the **Cercle Tecnològic de Catalunya** as part of the **Barcelona Digital Talent** alliance.

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# Executive summary

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## The digital sector is the engine driving job creation in Europe

The digital sector is continuing its quick pace of job creation. In the period spanning 2008 to 2018, jobs for ICT specialists rose **41.3%** in the EU-28, a figure that contrasts with overall modest job creation, which was **3.4%** for all sectors during the same period.

The United Kingdom and Germany are still the most important poles of tech talent in Europe. Together, they account for **36%** of tech professionals, even though they only account for **29%** of the population. The current migratory flows of tech talent are heading to the United Kingdom, which welcomes **15%** of the mobility in the EU and **21%** from outside the EU, which may become an opportunity for the European economies in the post-Brexit world.



**Employment of ICT  
specialists in Europe**  
**41,3%**



**Overall employment  
in Europe**  
**3,4%**

## Spain shows deficits in generating digital talent and in academic excellence

Spain, which accounts for more than **9%** of the EU-28 population, only has **6.6%** of the digital talent (323,000 professionals). In terms of mobility, it has a positive balance in tech talent flows: the country attracts 8.5% of tech talent mobility within the EU and only exports 4.3% of the total tech talent outside the EU.

Academic excellence in the field of technology is still a challenge for Spain. **None of its universities appear in the global and European rankings**, which highlight countries like the United States, the United Kingdom and Switzerland. The Polytechnic University of Catalonia stands out as the best recognised school in Computer Sciences and Information Systems in Spain.

## Digital jobs, the strongest demand during Covid-19

The Covid-19 crisis has heavily impacted the European job market and tech poles. Cities like **London, Paris and Amsterdam** have suddenly halted the pace of their job demands, in the digital sector as well.

Nonetheless, companies' and public administrations' need to digitalise in order to keep operating made it possible to sustain the demand. When we engage in a detailed analysis of the figures for Catalonia, we see that while it is true that the pace of hiring did decline, digital professionals were still in the highest demand during the pandemic. In the months of March, April and May 2020, more than **6,700 digital job offers** were posted. This figure is far higher than the next most in-demand job categories during the crisis, such as management and financial and business operations, which suffered from a much more significant decline in demand.

## The digital talent gap continues to grow in Barcelona

Barcelona continues to boost its position as a pole of tech talent. More than **77,000** professionals work in the ecosystem – **9,600** more than last year. Some of the engines of growth are technical universities (with 19% more graduates than the previous year) and migratory flows: there were **3,600** more digital professionals from other cities in 2019, and they now account for **31%** of the ecosystem. **Madrid, London and Buenos Aires** are the main markets sending these professionals.

Nonetheless, the digital talent demand in Barcelona is still rising more than the supply: **29%** in the past year (compared to **14%** of the professional supply) and a cumulative rate of **80%** in the past two years (compared to a **23%** rise in the supply).

These figures aggravate the lack of digital profiles: while in Barcelona there is an average of **36** professionals for each job offer published, in the digital field this proportion drops to **15**, and in fields like **big data and cybersecurity** it is under **7**.

**Software development** is the field with the highest demand for professionals, while **Artificial Intelligence** is the most in-demand emerging digital profession.



Average number professionals available for each job offer published

### Digital sector

1 = 15 professionals

### Any sector

1 = 36 professionals

## The digital professions are still far from gender parity in Barcelona

The proportion of women working in digital positions in Barcelona is **26.5%**. Even though it is slightly above the European average (**25.1%**), this percentage reveals a large margin for improvement. In programmes like vocational training in IT, the gender imbalance is even more pronounced: women account for only **6%** of newly enrolled students.

## A diverse business ecosystem

The variety of business categories that are seeking talent in Barcelona reflects the diversity and richness of its ecosystem. **IT consultants, global digital service hubs for multinationals working in Barcelona, research centres and scale-ups** (startups which are growing in the number of employees and invoicing after several years of strong growth) comprise the list of those that hire the most. There is also a wide heterogeneity of sectors: **56% of tech companies** work in industries other than IT, such as the media (**11%**), business services (**10%**), manufacturing (**8%**) and finances (**6%**).

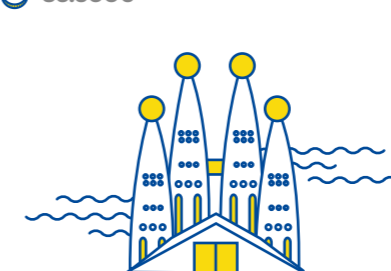
## Above-average salaries, but far from those in the leading European hubs

The gross salary of the digital professions in Barcelona is around **€37,500**, a figure significantly higher than the average salary of €30,807 in Barcelona for all sectors as a whole. However, it is far from the salaries of the digital hubs competing with Barcelona for global talent: the average salary in **London exceeds €73,000**. Yet it is worth noting that when these salaries are scaled with the cities' cost of living, Barcelona offers salaries that are competitive with cities like Amsterdam and Paris.



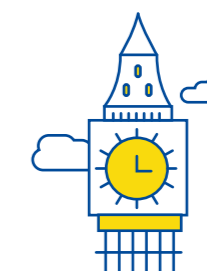
Average gross salaries in the digital sector

Difference 35.500€



**Barcelona**

€37,500 gross  
(annual average)



**London**

€73,000 gross  
(annual average)



## Global trends in digital talent

## The demand for digital talent in Europe

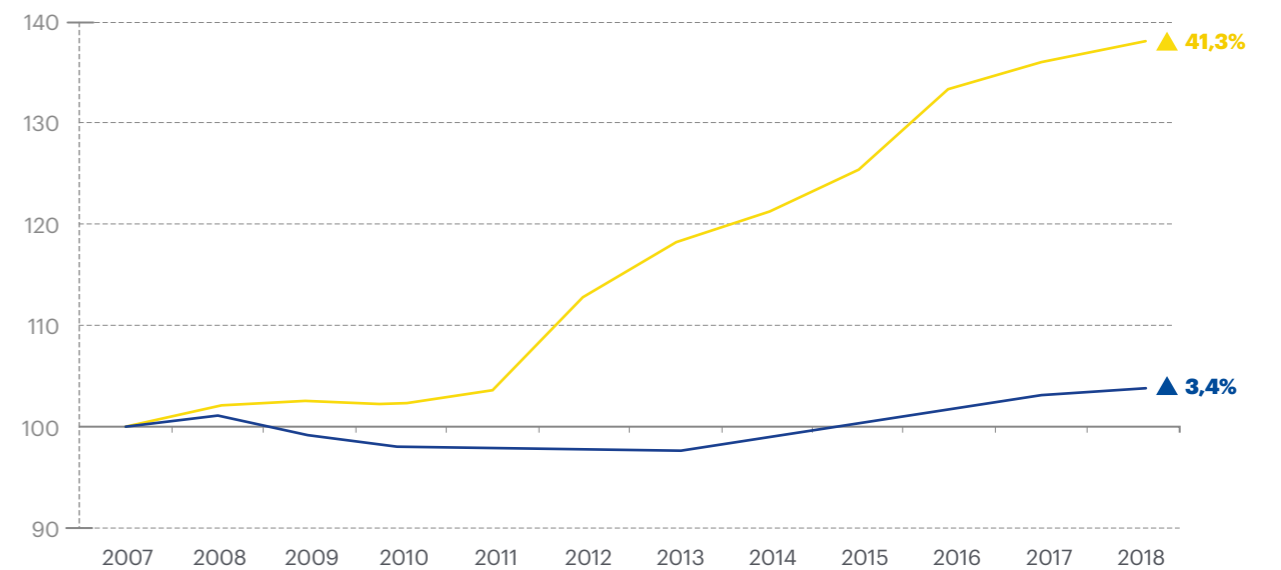
The demand for digital professionals in Europe has grown **41.3%**, compared to **3.4%** for the rest of the demand for professionals.

In Europe, the percentage of women in tech positions has dropped 5.7% since 2008. Men occupy 83.5% of the jobs in the digital sector.



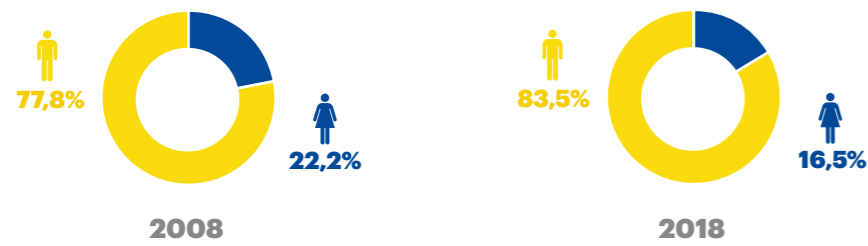
Index of the number of people hired as ICT specialists and total employment, EU-28  
2007 - 2018

■ ICT specialists ■ Total employment



Source: Eurostat

**Distribution of digital professionals by gender in a Europe (%)**  
2008 - 2018

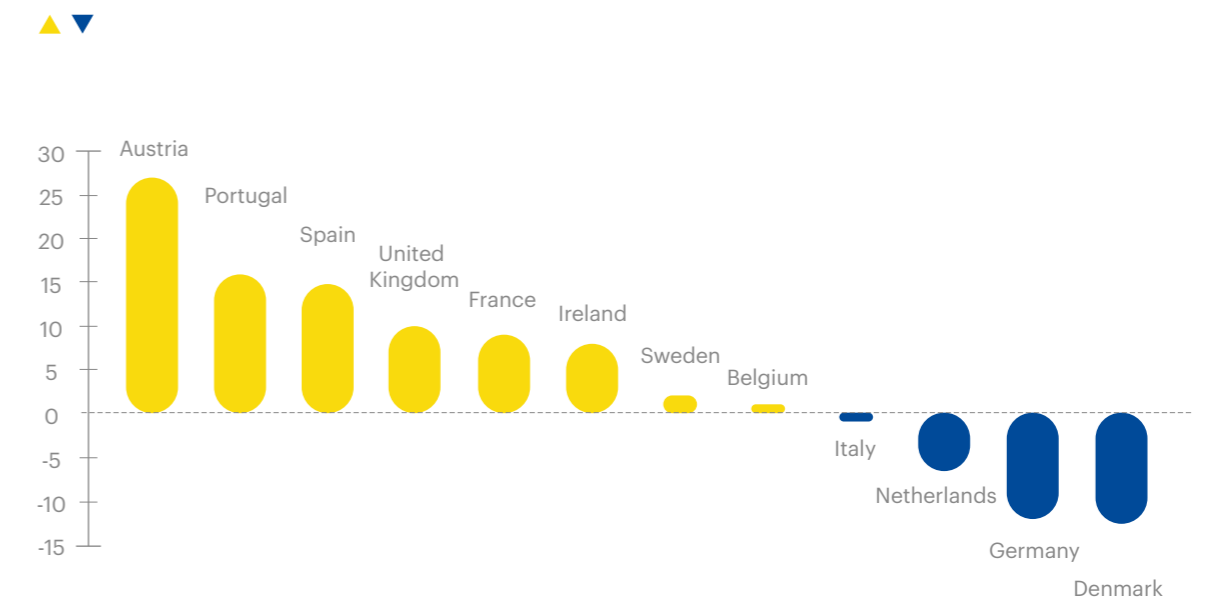


Source: Eurostat

## Spain is increasingly competitive in specialised jobs

**In the European Union, Spain is the country with the 3<sup>rd</sup> largest number of job offers in the digital field after Austria and Portugal.**

**Increase in difficult-to-fill job offers in software engineering**  
2018 vs 2019

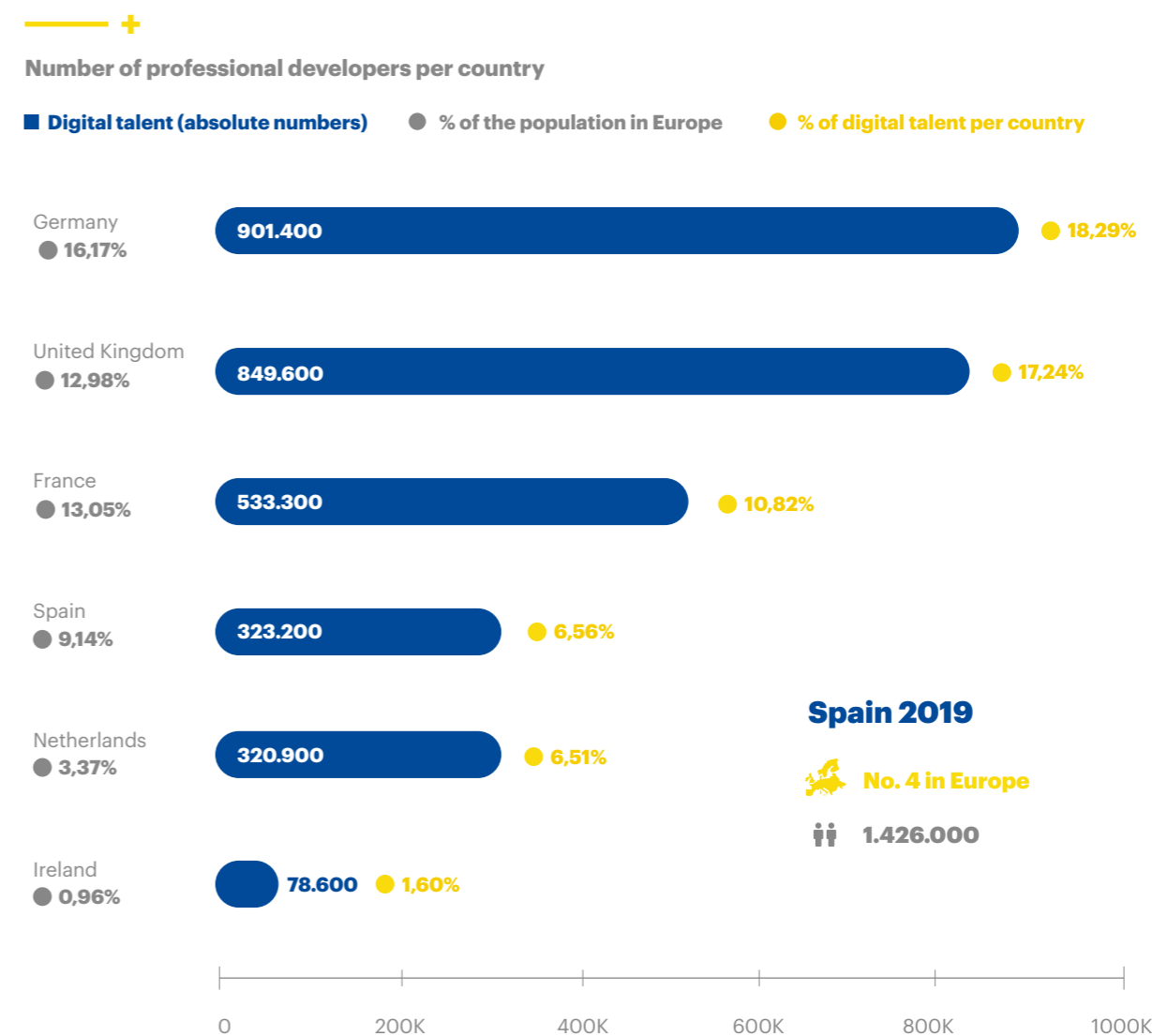


Source: INDEED, The State of European Tech 2019 (Atomico)

# The digital talent supply in Europe

**Europe has almost 5 million professional developers. The United Kingdom and Germany are the major poles of digital talent in Europe. Together they account for 36% of these professionals, although they only account for 29% of the population.**

Spain, which accounts for more than 9% of the population of the EU-29, has 6.6% of the digital talent (323,000 professionals).



Source: The State of European Tech 2019 (Atomico); Startup Ecosystem Overview 2019 (Mobile World Capital Barcelona)

« »

« The Spanish market is in the European top 3 in attracting digital talent; consequently, companies have a road map for being and continuing in this position: we focus on profiles that know how to apply their tech knowledge versatily to different sectors and industries, or vice-versa, especially in terms of new management models or collecting, using and interpreting data.

Data Science, Data & Analytics, Big Data, Blockchain and all the disciplines related to data are increasingly a reality, and the demand for these profiles is growing because they are applicable in many sectors, from banking to healthcare, automotive, energy, etc.

We tech companies that come up with solutions have to address the training of teams based on our clients' needs, and even anticipate and predict how we can bring this added value. It is important to bear in mind that the profiles of the future will be those that evolve from the budding technologies that we see today, such as Artificial Intelligence, Machine Learning and IoT applied to businesses, as a merger between the physical and digital worlds.»

**Xavier Rovira**

Partner at Everis



## Spain has solidified its position as the 4<sup>th</sup>-ranked country exporting talent to European countries and the 5<sup>th</sup> to countries outside the EU.

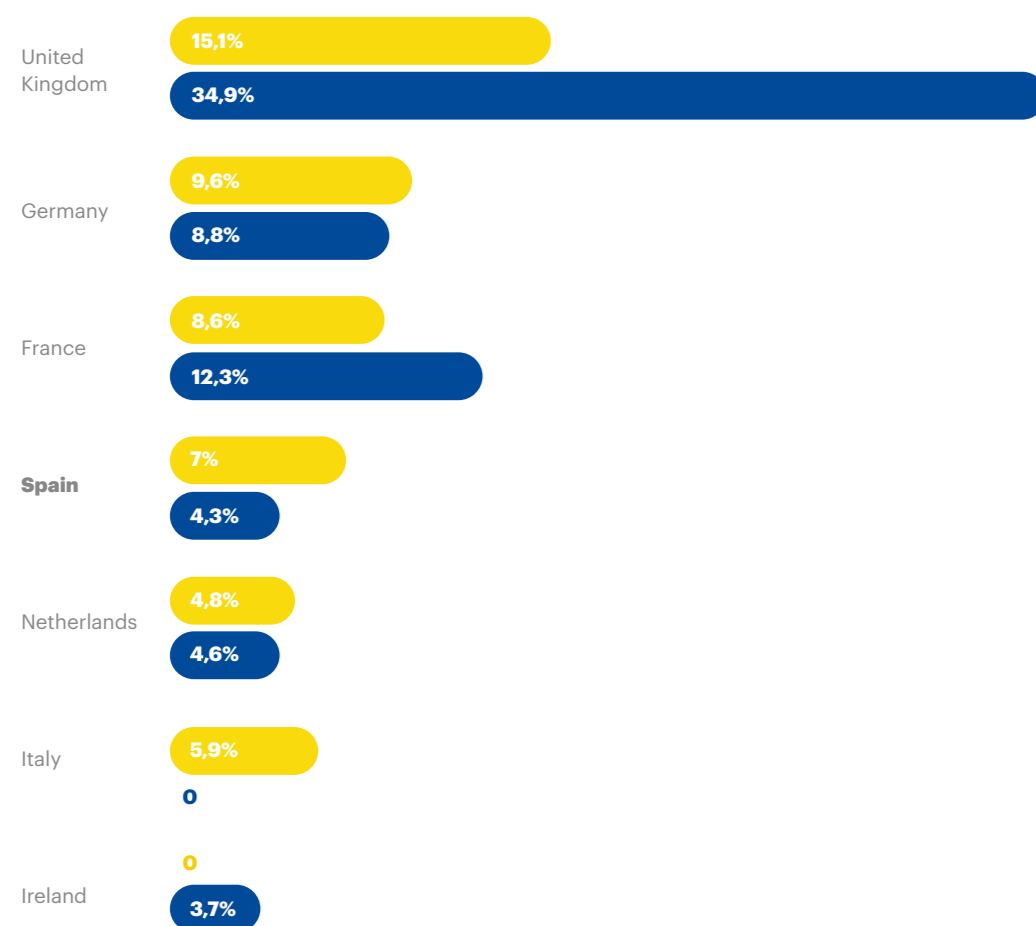
The United Kingdom is the leader in exporting digital talent. It is the home country of almost 35% of European talent emigrants.

Germany stands out for its retention of digital talent. It accounts for 17% of the professionals in the EU, yet it is the home country of only 8.8% of the talent moving abroad.



### Movements of ICT professionals by exporting country (2019)

Mobility within the EU (%)    All international mobility including the EU (%)



Source: The State of European Tech 2019 (Atomico); Startup Ecosystem Overview 2019 (Mobile World Capital Barcelona)



« Today, people with engineering training or knowledge in the digital field are much more productive, sought after and valued than ever. This digital talent has become the strategic asset of this new era.

It is estimated that to cover current needs, 350,000 specialists are needed all over Europe, and 40% of European companies state that they cannot find the digital professionals they need. In the past ten years, enrolment in engineering degrees has dropped 30% in Spain (and 25% in Europe), which only accentuates the lack of profiles and the competition among companies for these experts.

At Indra, we are involved in a profound process of cultural transformation to become the most attractive company for global digital talent. We want to meet our workers' professional needs and aspirations, as well as their personal needs, so we can be the best environment where they can grow and learn, have a real impact and develop as a whole.

Indra is one of the best platforms for having an impact on society through technology, and creating an appealing and inspiring work environment for digital professionals is crucial to our future. »

### Santiago Huertas

Talent Recruitment Director at Indra

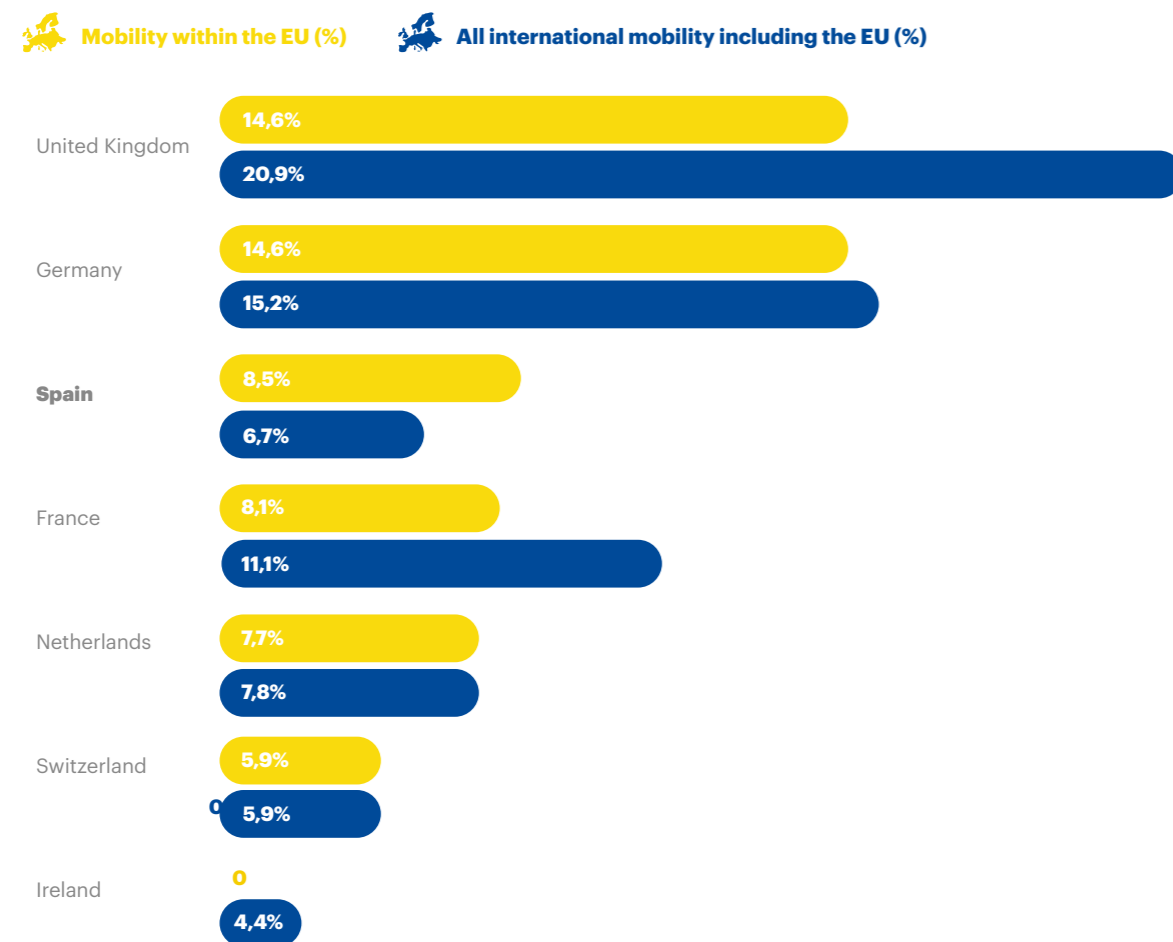
# High mobility of digital talent in Europe

**Yet another year, Spain is the country that imports the 3<sup>rd</sup> most European talent tech after the United Kingdom and Germany.**

Outside the EU, the countries that lead in attracting tech talent are the United Kingdom, Germany and France.



**Movements of ICT professionals by host country (2019)**



Source: Startup Ecosystem Overview 2019 (Mobile World Capital Barcelona); The State of European Tech 2019 (Atomico)

# Digital training

**North America and Europe lead academic excellence in digital competences.**

Barcelona is the home to the leading ICT training centre in Spain, the Polytechnic University of Catalonia (UPC). This institution of higher education is the referent in digital training in Spain, followed by University Carlos III in the Community of Madrid.

No Catalan university appears at the top of the international rankings. One of the challenges facing Catalan academia is to rise to join the top-ranked international universities, and for one of them to achieve European recognition in ICT training.



**Rankings of the most reputable training centres in "Computer Science & Information Systems"**

## Top 10 International



University	Country
1. Massachusetts Institute of Technology (MIT)	United States
2. Stanford University	United States
3. Carnegie Mellon University	United States
4. University of California, Berkeley	United States
5. University of Oxford	United Kingdom
6. University of Cambridge	United Kingdom
7. Harvard University	United States
8. École Polytechnique Fédérale de Lausanne (EPFL)	Switzerland
9. ETH Zurich	Switzerland
10. University of Toronto	Canada

Source: QA Top Universities

**Top 10 Europe**

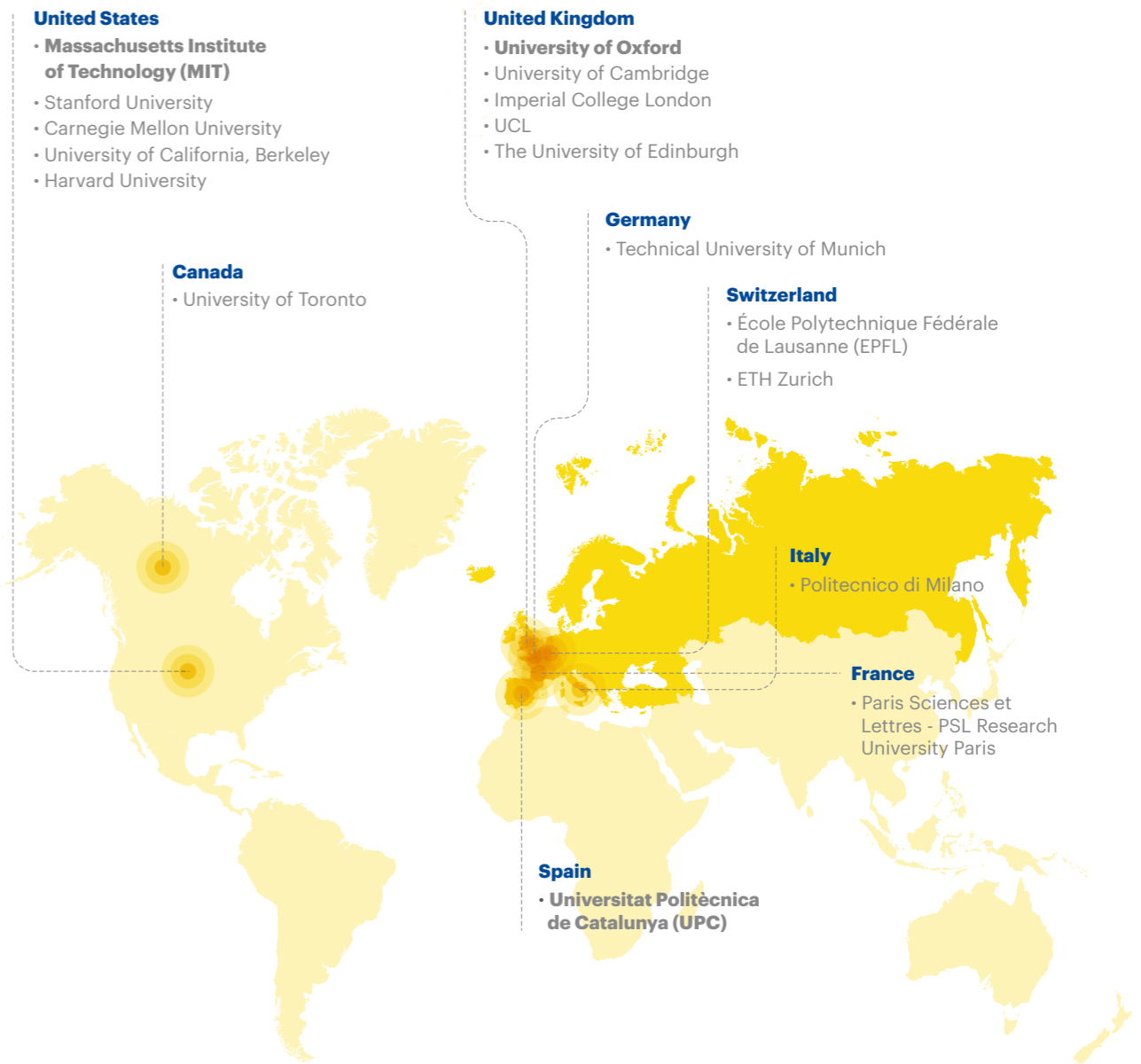
 <b>University</b>	 <b>Country</b>
<b>1. University of Oxford</b> .....	<b>United Kingdom</b>
<b>2. University of Cambridge</b> .....	United Kingdom
<b>3. École Polytechnique Fédérale de Lausanne (EPFL)</b> .....	Switzerland
<b>4. ETH Zurich</b> .....	Switzerland
<b>5. Imperial College London</b> .....	United Kingdom
<b>6. UCL</b> .....	United Kingdom
<b>7. The University of Edinburgh</b> .....	United Kingdom
<b>8. Technical University of Munich</b> .....	Germany
<b>9. Paris Sciences et Lettres - PSL Research University Paris</b> .....	France
<b>10. Politecnico di Milano</b> .....	Italy

**Top 10 Spain**

 <b>University</b>	 <b>Autonomous Community</b>
<b>1. Universitat Politècnica de Catalunya (UPC)</b> .....	<b>Catalonia</b>
<b>2. Universidad Carlos III</b> .....	Community of Madrid
<b>3. Universidad Politécnica de Madrid</b> .....	Community of Madrid
<b>4. Universitat de Barcelona</b> .....	Catalonia
<b>5. Universidad Complutense de Madrid</b> .....	Community of Madrid
<b>6. Universitat Politècnica de València (UPC)</b> .....	Community of Valencia
<b>7. Universidad de Granada</b> .....	Andalusia
<b>8. Universidad de Navarra</b> .....	Navarra
<b>9. Universidad Rey Juan Carlos</b> .....	Community of Madrid
<b>10. Universidad Ramon Llull</b> .....	Andalusia



**Most reputable training centres in "Computer Science & Information Systems"**



**1** **International**  
**Massachusetts Institute of Technology (MIT)**  
**United States**

**1** **European**  
**University of Oxford**  
**United Kingdom**

**1** **Spanish**  
**Universitat Politècnica de Catalunya (UPC)**  
**Catalonia**

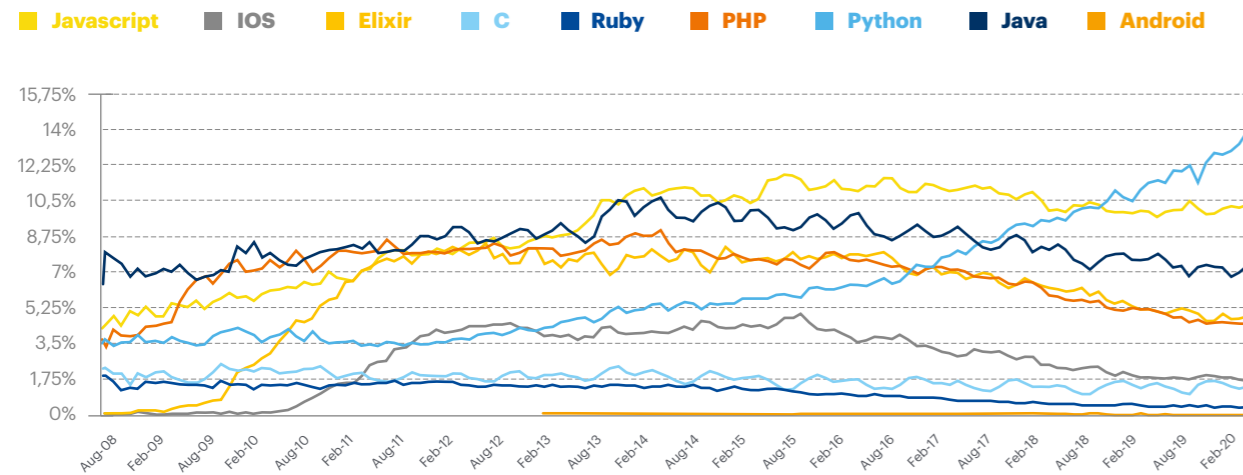
Source: QA Top Universities

# Use of companies' most popular languages

**The popularity of the language Python is directly related to the growth in Data Science built upon Big Data and its relationship with Artificial Intelligence, specifically with Machine Learning.**

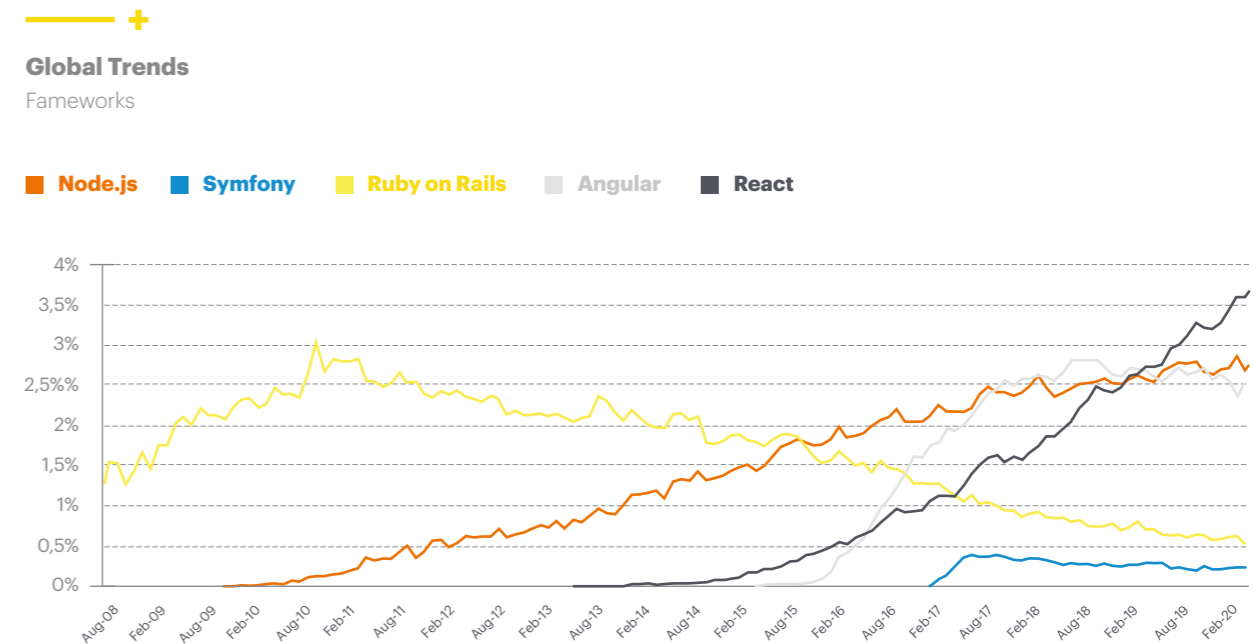
Since this is a multi-paradigm language, it can be used for functional imperative development geared at objects, which has helped its inclusion in numerous official and non-official training programmes.

**Global Trends**  
Programming languages



React is one of the frameworks that has grown the most in recent years. Working with a virtual DOM offers better performance than AngularJS. React is compatible with many programming languages, and therefore it is one of the most popular frameworks in the digital sector.

Source: TalentUp.io



« Digital technologies should make a key contribution to achieving the Sustainable Development Goals. In the short term, emerging digital technologies like Artificial Intelligence, new-generation networks (5G), the Internet of Things (IoT), interactive and immersive technologies, Cybersecurity and Blockchain are already unleashing and accelerating major economic and social changes.

The convergence of all these technologies will generate disruptive new opportunities and synergies in the middle term in the way we take decisions (with more information and smart algorithms), in in how we get about (sustainable and autonomous mobility), in how we interact (digital identity) and in how we produce and consume (in an immediate, personalised and integrative way).

The role of digital professionals is crucial to provide advanced technological knowledge, an integrative attitude promoting collaboration and creativity as factors that accelerate innovation, and the social commitment to design solutions which are aligned with and geared towards solving the needs and challenges of the future digital society while guaranteeing the principles of ethics and privacy. »

**Joan Manel Martin Almansa**

Managing Director at the i2CAT Foundation

Source: TalentUp.io

# 2

## The impact of Covid-19 on the digital talent market

### The talent demand by city in Europe

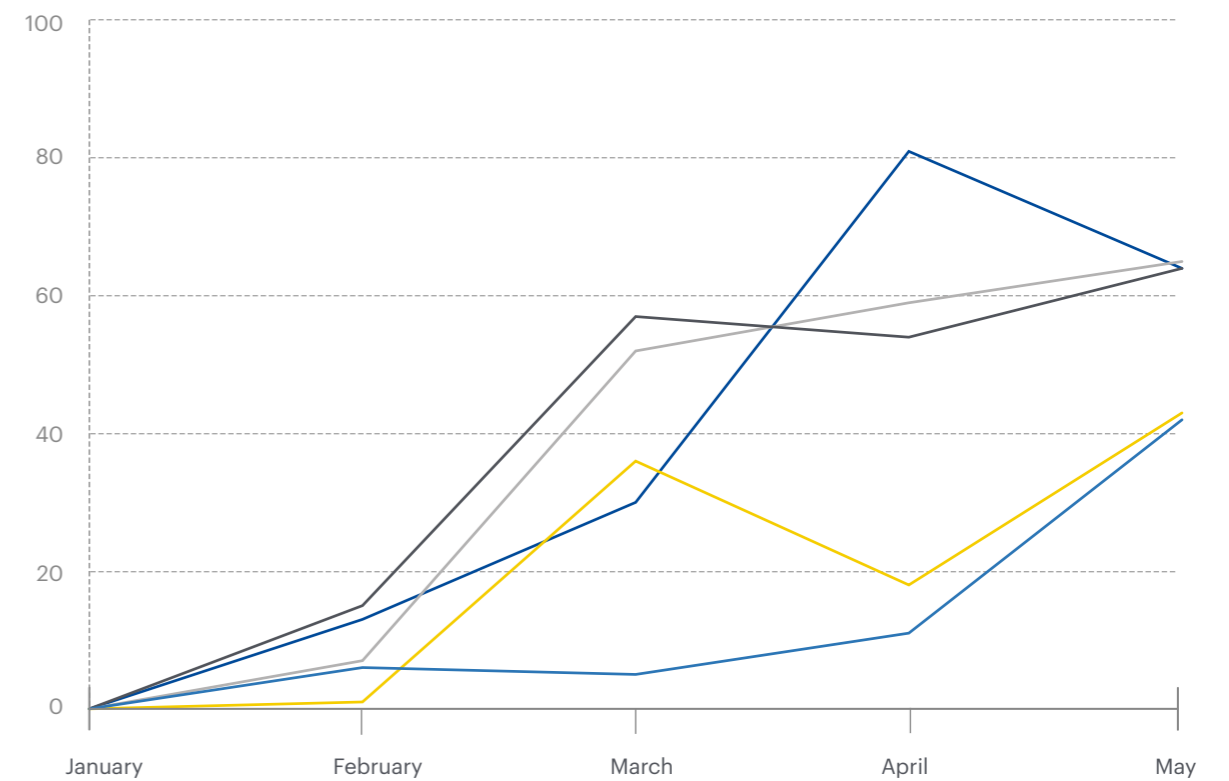
Amsterdam, Madrid and Barcelona are the cities whose demand for professionals dropped the most in the first few months of the coronavirus.



% of demand by city (all professional groups)

% reduction in demand compared to January.

■ Amsterdam ■ Barcelona ■ London ■ Madrid ■ Paris



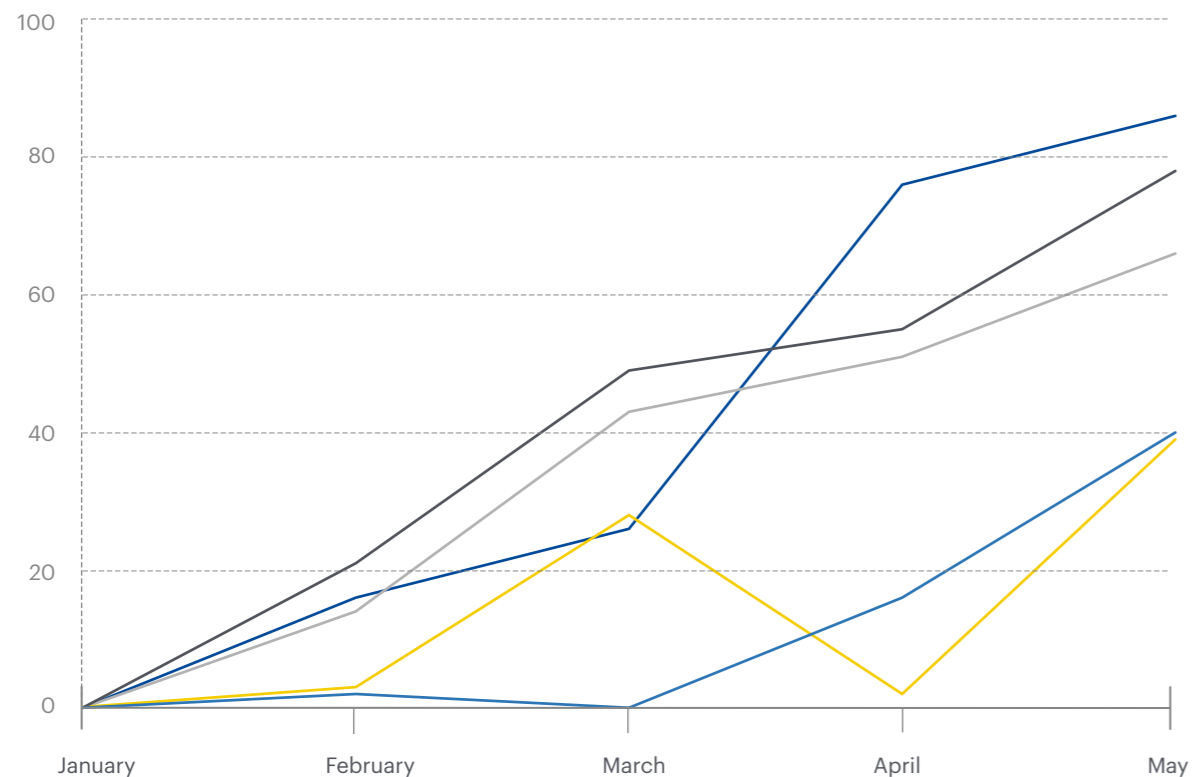
Source: TalentUp.io



**% of demand by city (ICT positions)**

% reduction in demand compared to January.

■ Amsterdam ■ Barcelona ■ London ■ Madrid ■ Paris



Source: TalentUp.io



« The main feature of the job market for tech profiles in Europe is that it is a candidate's market; that is, there are more job offers than candidates available. In recent years, this gap has only grown for the simple reason that the digitalisation of the economy and tech acceleration have grown more quickly than the generation of new tech talent. In addition to this acceleration, tech companies are increasingly asking for highly specific profiles. The programming languages are not in equal demand by period. For example, in 2019, we saw a boom in the demand for profiles with front-end.

The global diagnosis is the same, but the reality of each country varies widely, especially because of the different maturity level of the ecosystems in each local market and major differences in the local legal systems (labour law). In this war to attract tech talent, the "northern" countries (UK, FRA, GER, SUI) are still better equipped because they offer higher salaries, their tech ecosystem is more mature and their labour laws are better adapted (there are more freelancers, for example).

In the Mediterranean countries, and Spain in particular, the ecosystem has grown exponentially in the past three years due to the arrival of large tech hubs and many startups, which is fantastic news. For the time being, the main reason businesses are attracted to Spain is still its salary levels: for the same developer, the salary in London may be twice what it would be in Barcelona, yet it's just an hour-and-a-half flight away.

Although it's been very negative, the Covid-19 crisis could generate new opportunities for Spain and Barcelona: many large companies and investment funds may be attracted to Spain precisely because salary spending is lower. But then it will be our responsibilities to capitalise on these new arrivals and consolidate an appealing, mature system so that the advantage of having competitive salaries does not become an added value that is scalable ad infinitum.»

**Julien Mur**

Senior Manager at Hays

# The talent demand in Catalonia

Despite this situation, tech professionals are the most in-demand in the market. The digitalisation of companies and remote work are just some of the factors that have kept the activity going.

All the business sectors have experienced an overall decline in the demand for professionals. Tourism, restaurants and transport have been affected by Covid-19 the most.



## Demand by sector

Increases compared to January 2020.

■ Lowest value ■ Percentile ■ Highest value

	February	March	April	May
Biotechnology and pharmacy	-11%	-24%	-12%	-33%
Business services	10%	-39%	-42%	-58%
Construction, repairs and maintenance	35%	-25%	-10%	-30%
Consumer services	-7%	-40%	-51%	-62%
Education	6%	-22%	-33%	-43%
Finances	2%	-28%	-19%	-36%
Healthcare	-14%	-43%	-28%	-6%
Information technology	26%	-9%	-25%	-50%
Insurance	25%	40%	46%	-44%
Manufacturing	-6%	-22%	-44%	-17%
Media	14%	-28%	10%	-53%
Oil, gas, energy and public utilities	-6%	-31%	-44%	-45%
Restaurants, bars and food services	-1%	-41%	-59%	-62%
Retail	-1%	-36%	-53%	-71%
Telecommunications	-9%	-20%	-26%	-69%
Transport and logistics	-17%	-40%	-52%	-49%
Travel and tourism	-2%	-54%	-70%	-76%

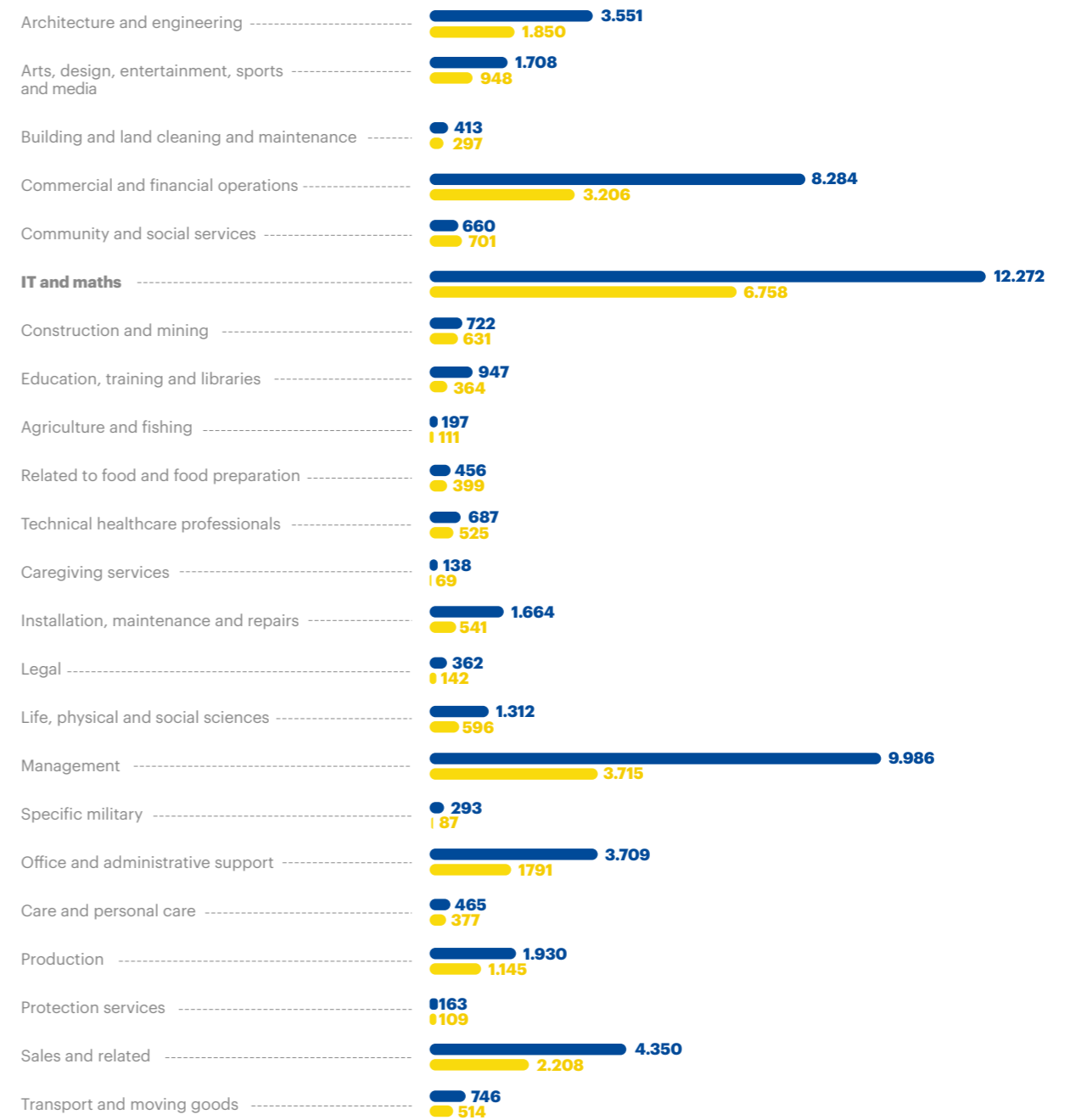
Source: TalentUp.io



## Demand by family

Absolute values

■ January and February ■ March, April and May



Source: TalentUp.io

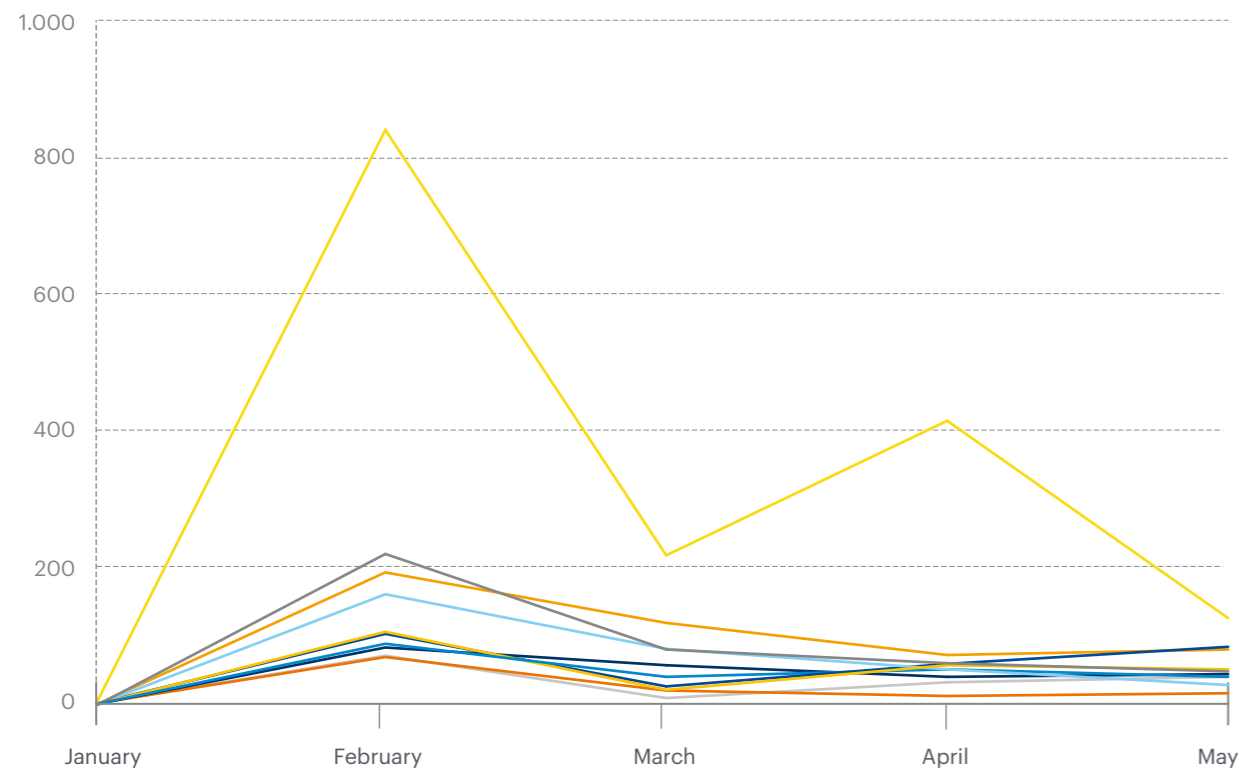
# Change in the demand for digital talent in Catalonia

Web development and the Cloud are the most in-demand digital profiles during Covid-19.



Digital talent demand by position in Catalonia (absolute values)

■ Web development 
 ■ App Development 
 ■ UX / UI 
 ■ CRM & ERP Consultant 
 ■ Agile / Scrum 
 ■ Cloud 
 ■ Cybersecurity 
 ■ Business Intelligence 
 ■ Big Data 
 ■ API

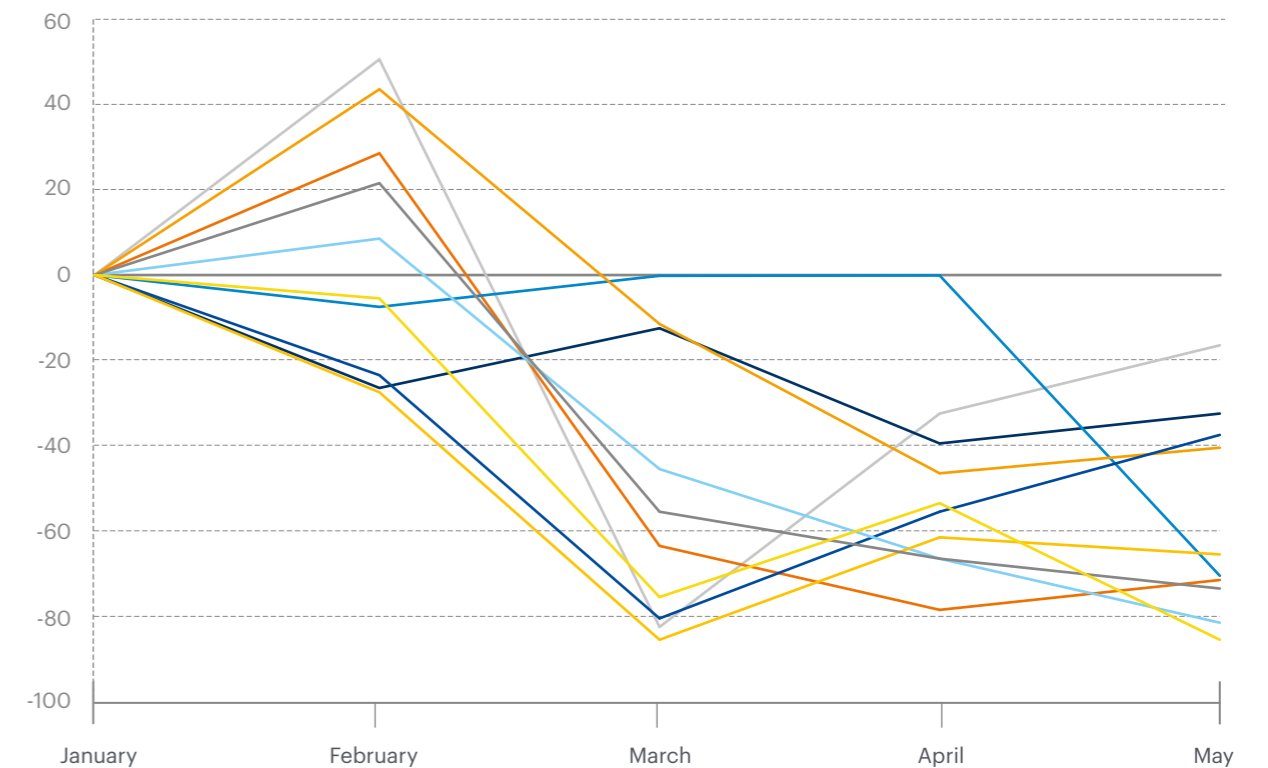


Source: TalentUp.io



Digital talent demand by position in Catalonia

■ Web development 
 ■ App Development 
 ■ UX / UI 
 ■ CRM & ERP Consultant 
 ■ Agile / Scrum 
 ■ Cloud 
 ■ Cybersecurity 
 ■ Business Intelligence 
 ■ Big Data 
 ■ API



« Digital talent has been a challenge for the market for almost a decade. The technological explosion we have experienced in recent years has not come hand-in-hand with a reconversion of the educational models needed to cover the market demand. This situation is compounded by the lack of a strategy to generate an interest in the STEM disciplines, which include training in engineering and science, which are largely the most urgently needed knowledge to continue developing IT solutions on the cloud, Artificial Intelligence, connectivity and Cybersecurity, just to cite the four cornerstones of the upcoming technological evolution.

The Covid-19 health crisis which we are currently experiencing has made 'digital talent' much more common and has clearly revealed that all citizens, regardless of their role within a company, have to have the tech skills to do our daily jobs. The 'new normal' where we are heading requires us to view technology as the tool of progress that it is, and for all of us to know how to use it as well as possible. Digital talent has gone from being a challenge that companies and the market have to resolve to being an obligation for society and for every single worker in other fields, or anyone who wants to join the job market. »

**Miguel Blanca**

VP Human Resources & Finance at T-Systems



# 3

## Digital talent in Barcelona

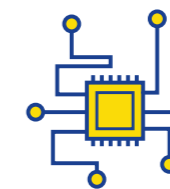
### The digital talent gap in Barcelona is growing each year

In the past two years, the digital talent demand in Barcelona has risen **80%**, while the supply of digital professionals available has only risen **23%**.

The city is becoming one of the most important tech hubs in Europe. Nonetheless, the gap is still growing because even though there are more than **77,000** professionals, the demand for tech developers is growing even more steeply.



**80%**  
**Digital talent**  
(Demand 2017-2019)



**23%**  
**Digital professionals**  
(Supply 2017 - 2019)



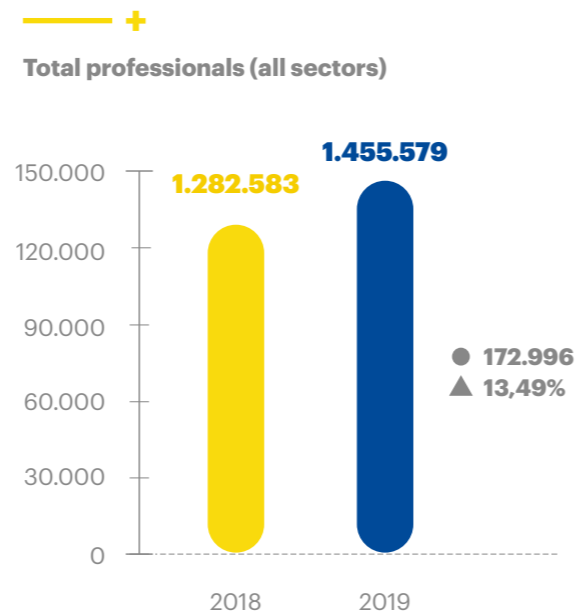
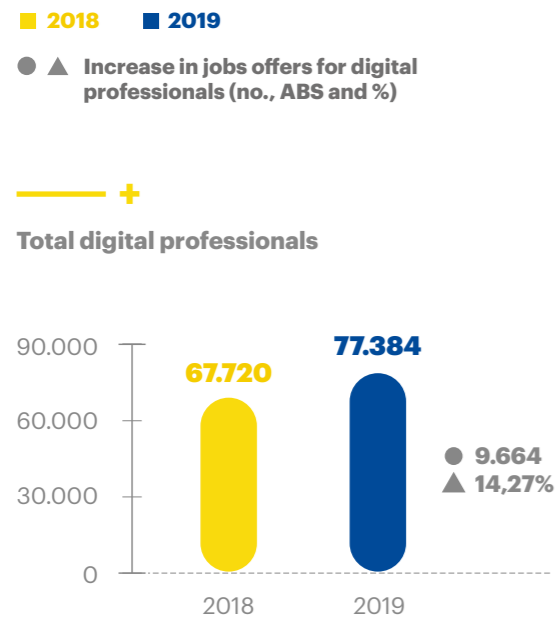
**26%**  
**Women**

Only 26% of digital professionals are women. This percentage shows that there is still a long road ahead to fix the gender gap in Barcelona.

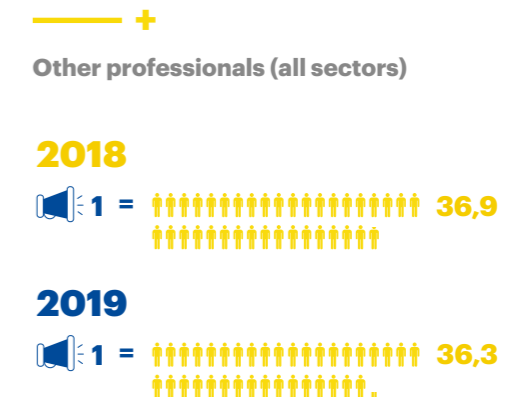
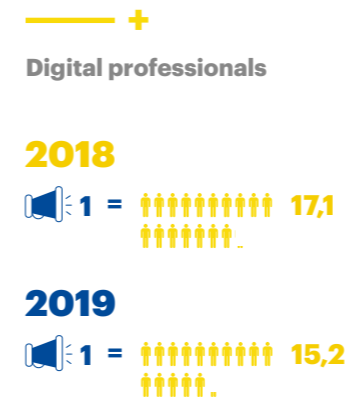
The only area of digital knowledge where there is gender parity is UX / UI, where women account for 51% of professionals.

Source: TalentUp.io

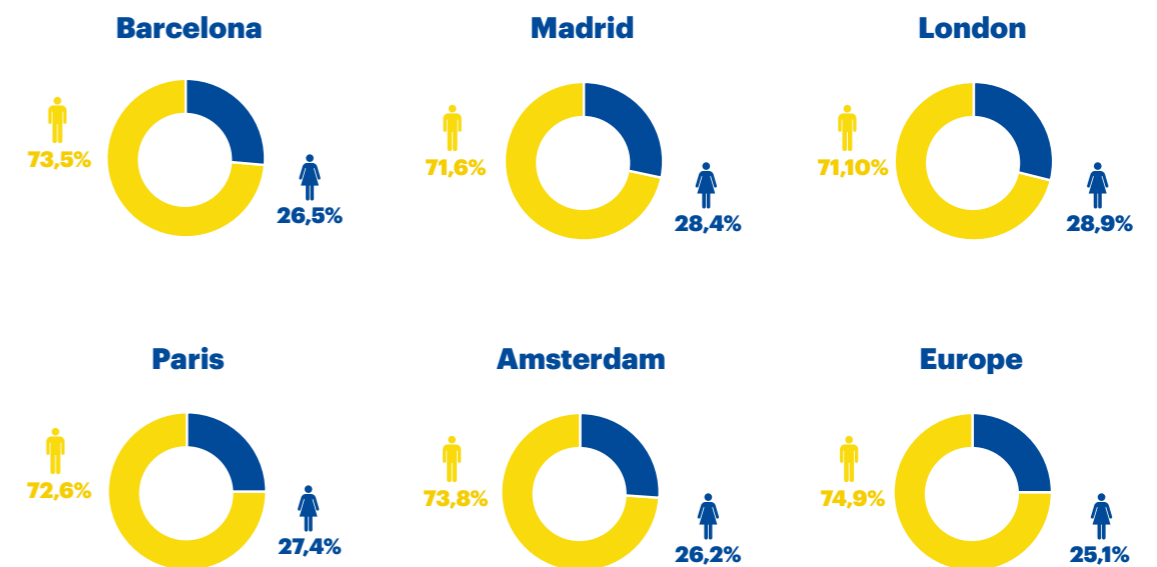
**The digital sector accounts for 5% of all professionals and 13% of all job offers.**



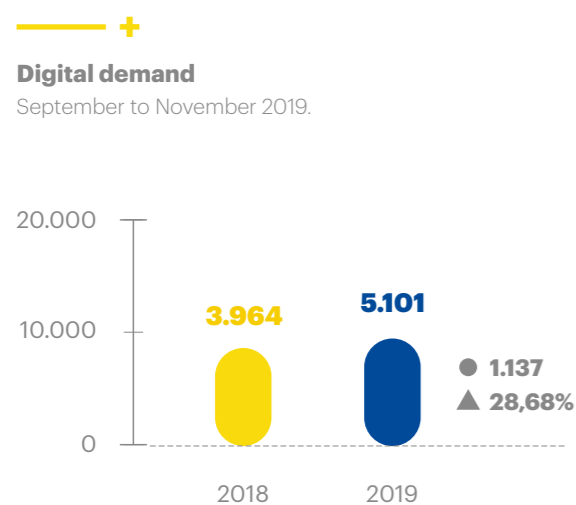
**The market tension between supply and demand in the digital sector is increasing. From 17.1 professionals per job offer in 2019, the rate has dropped to 15.2.**



**Percentage of women**

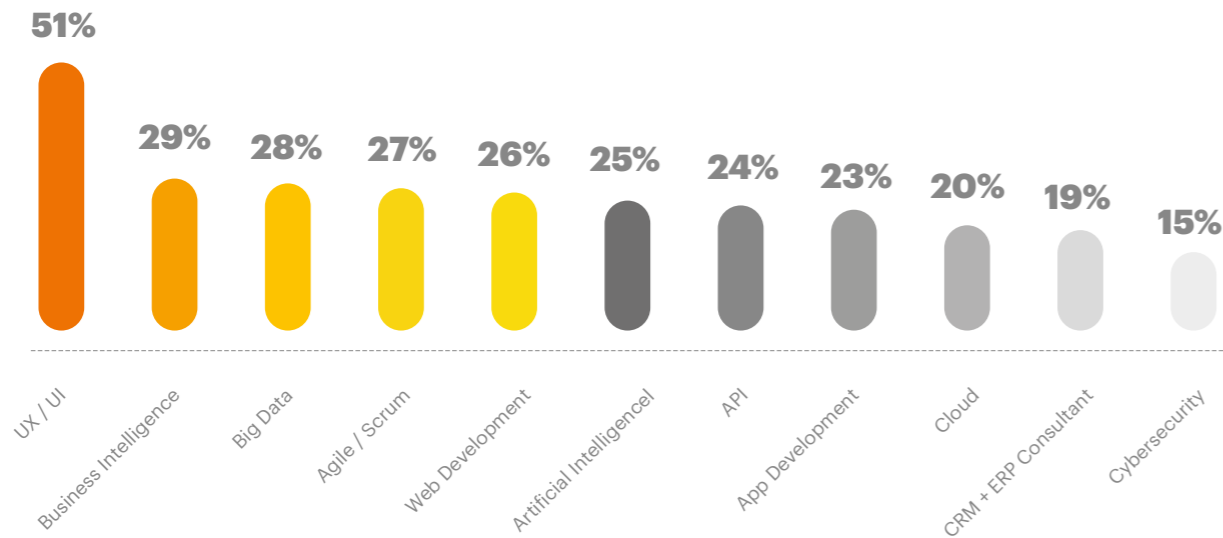


Source: TalentUp.io





Percentage of women by job



Source: TalentUp.io



« In recent years, banking has spearheaded a shift in its business model, immersed in a continuous transformation, and this process is moving forward for many reasons, including the hiring of new professional profiles aligned with businesses' new needs.

We are facing a new, highly technological scene, with tension in the war for talent, recruiting profiles, which is aggravated in the case of digital profiles and specialisations in the new technologies. Specifically, the situation Barcelona has only gotten worse, with a scarcity of talent that has reached its highest level in recent years.

All companies are interested in the same profiles in an environment in which banking has to position itself to compete with companies that are recognised as tech and digital by nature. To compete to attract this talent, you have to stand out with a model that approaches the candidates in a different way, creating an ecosystem of innovation, learning and talent around the brand and guaranteeing a market leadership position, generating reputation, sharing knowledge and managing talent with the goal of becoming a benchmark in attracting and developing these profiles through a unique experience which connects with the profiles of today and the future, meeting the new organisational needs required by the digital age. »

**Silvia Ciurana**

Recruiting and Talent Development Director at CaixaBank

## Profile of companies headquartered in Barcelona

The advance of the digital transformation means that digital professionals are increasingly transversal and work outside of ICT. Sectors like media, finance and different kinds of business services stand out.



Analysis of companies in the digital sector



**Information technology**

1.384 44%



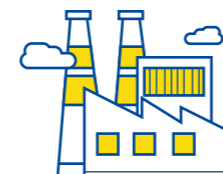
**Media**

347 11%



**Business services**

315 10%



**Manufacturing**

251 8%



**Finance**

189 6%



**Others**

661 21%

Source: TalentUp.io

# Consolidated technologies according to the city's talent demand

Yet another year, web developers are the most in-demand digital professionals in the market, with a 24% increase compared to 2018.

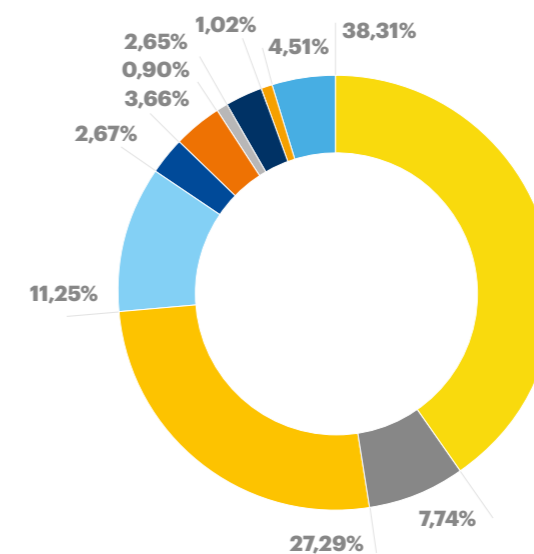
Cybersecurity, Cloud and Big Data are the profiles that show the highest market tension in Barcelona. For each job offer, only one or two professionals are available.

It is essential to make efforts to encourage training in these professional profiles in order to lower market tension and promote the competitiveness of the ecosystem.



Percentage of professionals in the most in-demand professions

- Web Development
- App Development
- UX / UI
- CRM & ERP Consultant
- Agile / Scrum
- Cloud
- Cybersecurity
- Business Intelligence
- Big Data
- API

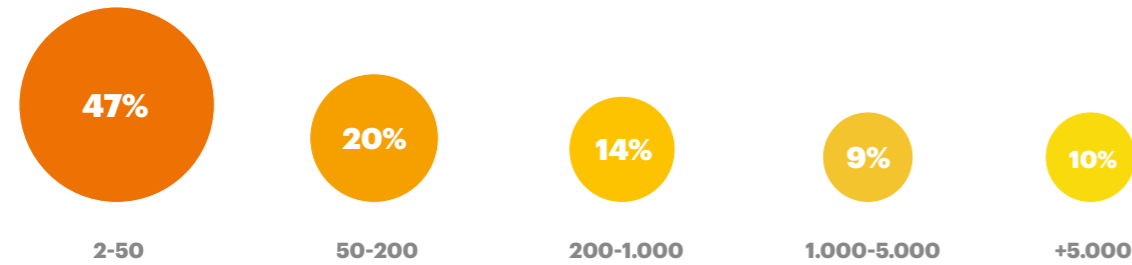


Source: TalentUp.io



## Analysis of companies in the digital sector

Company size by number of workers.



Source: TalentUp.io



« Large companies and multinationals, which usually operate in sectors other than digital, need to adapt and evolve through the use of technology and new ways of working. It is not enough just to improve internal processes. These companies have to pivot, diversify and discover new business opportunities and models.

**SEAT: CODE** was founded in this spirit, the spirit of creating and developing personal and corporate mobility solutions, to improve clients' digital experience and to make supply chains more efficient. These solutions not only improve SEAT but are also designed to be sold to other companies with similar needs, bringing different business lines other than vehicle sales.

Using an iterative Lean mindset based on validating hypotheses making Minimum Viable Products (MVP), focused on bringing the end client value by using agile methodologies, embracing devops + NoOps philosophy, and with technical rigour based on Extreme Programming (XP) and Domain-Driven Design (DDD), quicker, more frequently, with higher quality and a higher impact »

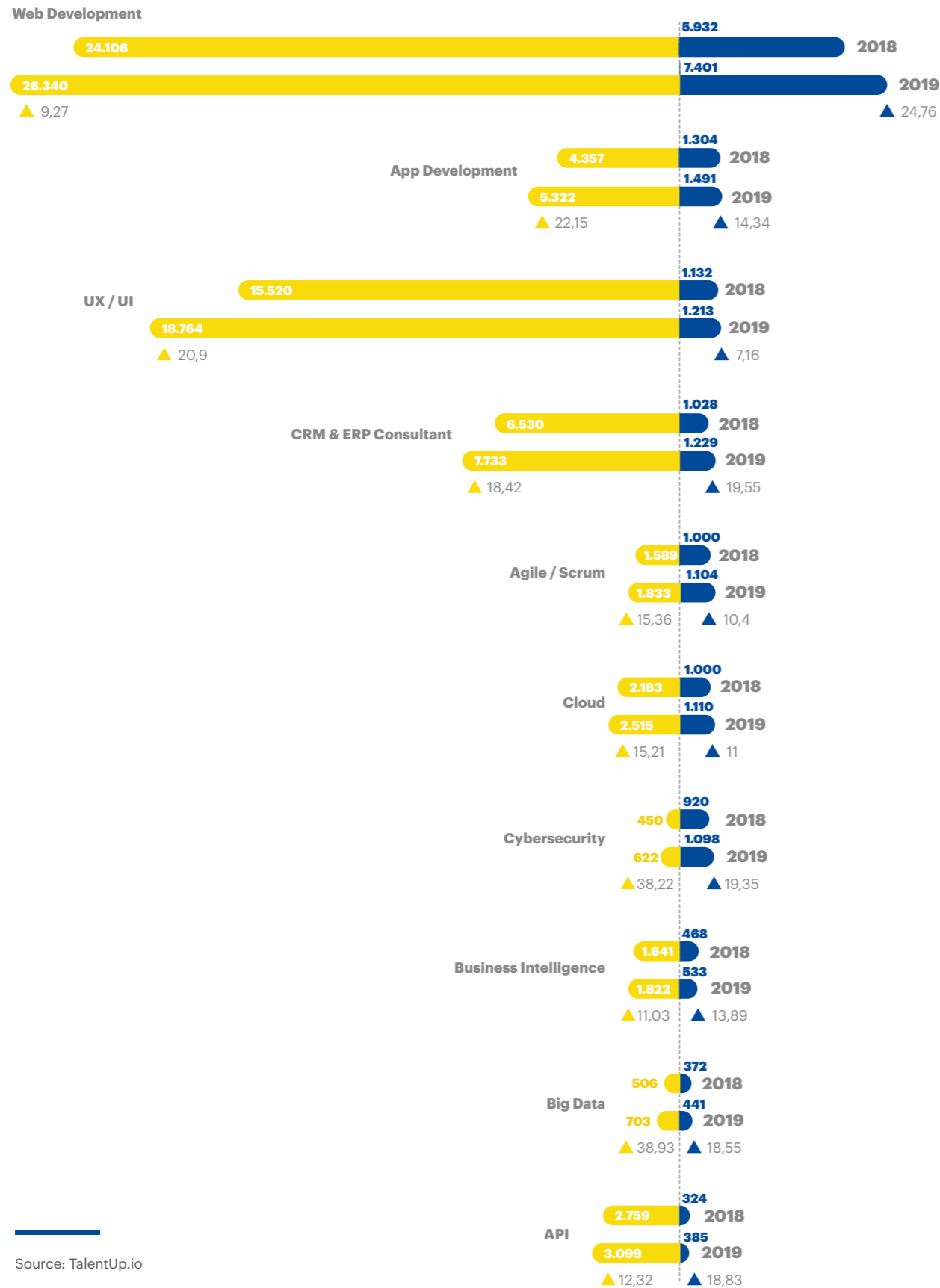
### Carlos Buenosvinos

CODE CEO & CTO at SEAT



**Supply and demand of consolidated technology professionals in Barcelona**

■ Supply ▲ Increase in supply ■ Annual demand ▲ Increase in demand



Source: TalentUp.io



**Number of professionals available for each job offer**

**Cybersecurity**

🔊 1 = 👤 . 2,27

**Big Data**

🔊 1 = 👤 . 6,38

**Agile / Scrum**

🔊 1 = 👤 . 6,64

**Cloud**

🔊 1 = 👤 . 9,06

**Business Intelligence**

🔊 1 = 👤 . 13,67

**Web Development**

🔊 1 = 👤 . 14,24

**App Development**

🔊 1 = 👤 . 14,28

**CRM & ERP Consultant**

🔊 1 = 👤 . 25,17

**API**

🔊 1 = 👤 . 32,20

**UX / UI**

🔊 1 = 👤 . 61,88

Source: TalentUp.io



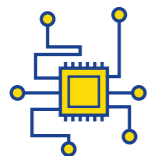
« The gaming sector is in a privileged situation in the Covid-19 crisis, with a strong growth trends in recent years which has even been boosted because of the pandemic. Many professionals see the sector as a place to learn, develop and explore new forms of work, organisation and innovation. It just keeps growing and attracting talent.

However, the availability of training to join this profession is still immature, and even though it is progressing in the right direction, it's still difficult to make it a strategic priority for all kinds of institutions. Meantime, more international companies are moving to Barcelona, which together with local projects make gaming one of the city's strongest levers in attracting talent, developing the city's digital culture and creating jobs with high added value in design, art, technology and data analysis or product development. »

**Joaquim Campa**

Human Resources Director at Social Point

**+**  
Most popular positions for consolidated technologies



1

2

3

<b>Web Development</b>	Software Development	Frontend Development	Fullstack Development
<b>App Development</b>	iOS Development	Android Development	Mobile Development
<b>UX / UI</b>	UI/UX Designer	Product Designer	Graphic Designer
<b>CRM &amp; ERP Consultant</b>	SAP Development	.NET Development	Salesforce Development
<b>Agile / Scrum</b>	Product Manager	Scrum Master	Software Engineer
<b>Cloud</b>	Software Engineer	Devops Engineer	Development
<b>Cybersecurity</b>	Security Engineer	IT Security Engineer	Security Analyst
<b>Business Intelligence</b>	BI Consultant	BI Development	BI Analyst
<b>Big Data</b>	Data Scientist	Data Engineer	Data Analyst
<b>API</b>	Software Engineer	Development	Backend Development

## Emerging technologies according to the talent demand

**Yet another year, Artificial Intelligence is the most in-demand technology in Barcelona, followed by the Internet of Things.**

Computer vision and Blockchain are the areas of digital knowledge that have experienced the highest growth in the demand for professionals in 2019.



« The digital transformation is a reality that is forcing our sector to innovative and change the way we do things. Public service utilities have the mission of being the leaders in innovation in order to keep competing with the wide range of services offered by digital natives, and this is why we are using new management models where the strategy is focused on the digital transformation.

Within this same context, we have to continue adopting technologies like the Cloud, Artificial Intelligence, the Internet of Things, Blockchain, Computer Vision, user interfaces and 3D Printing to lower costs and gain agility and proximity to our clients. »

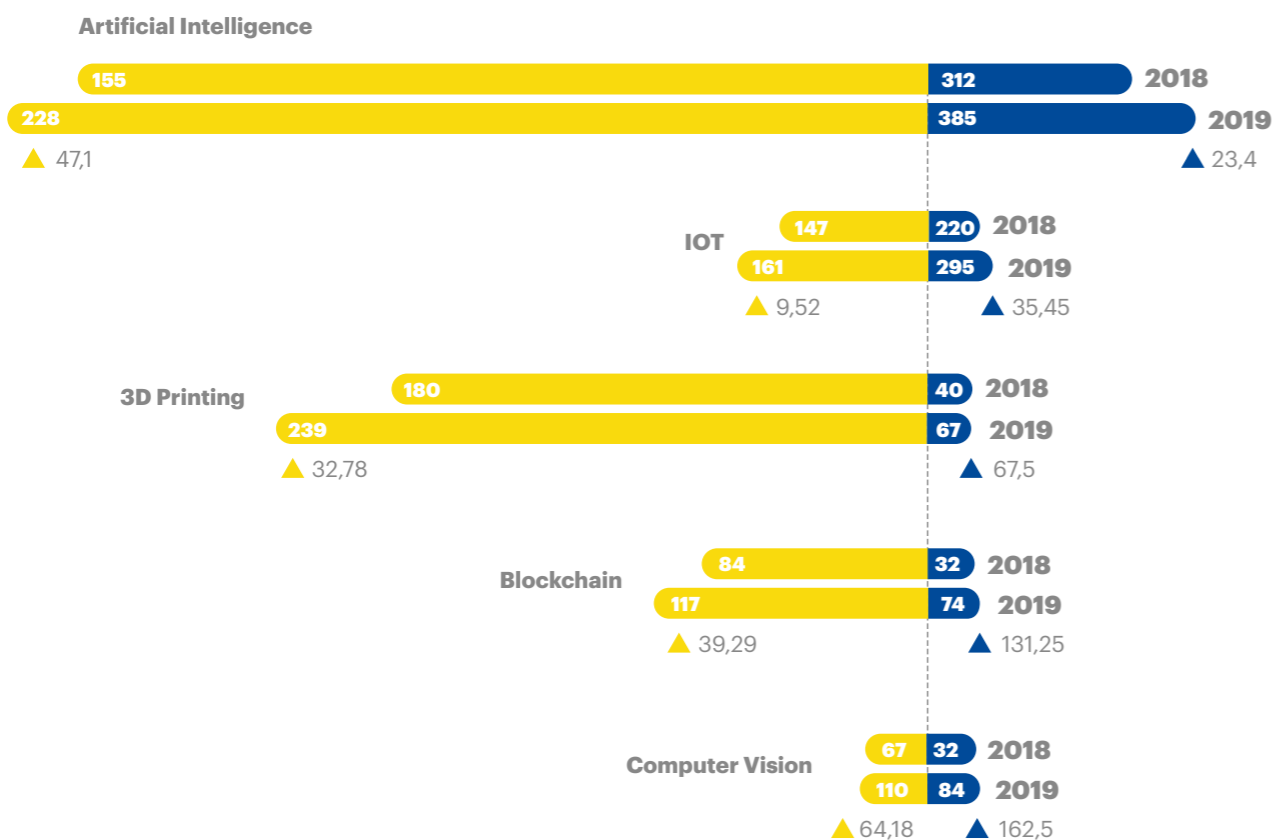
**Catalina Balseiro**

Chief Innovation Officer at Suez



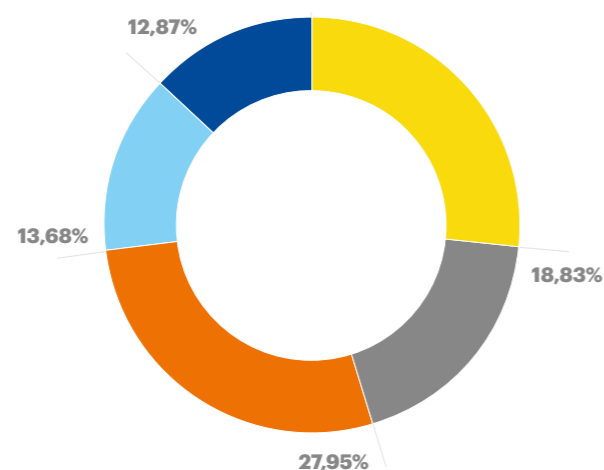
Supply and demand of emerging technology professionals in Barcelona

■ Supply ▲ Increase in supply ■ Annual demand ▲ Increase in demand



Percentage of professionals by emerging technologies

■ Artificial Intelligence ■ IOT  
■ Blockchain ■ Computer Vision  
■ 3D Printing



Emerging technology market

Internet of Things

🔊 1 = 📈 2,16

Artificial Intelligence

🔊 1 = 📈 2,37

Computer Vision

🔊 1 = 📈 5,24

Blockchain

🔊 1 = 📈 6,32

3D Printing

🔊 1 = 📈 14,27



Most popular positions by emerging technologies



<b>Artificial Intelligence</b>	Software Engineer	Development	Backend Development
<b>IOT</b>	Development	Fullstack Development	Backend Development
<b>3D Printing</b>	Product Manager	Technical Support Engineer	R&D Engineer
<b>Blockchain</b>	Blockchain Development	Blockchain Engineer	Blockchain Architect
<b>Computer Vision</b>	Computer Vision Engineer	Machine Learning Engineer	Data Scientist

Source: TalentUp.io

# Barcelona: pole of attraction for digital talent

## Thirty-one percent of the digital professionals in Barcelona come from other cities.

Madrid and Paris remain the cities that export the most talent to Barcelona.

Furthermore, the number of digital professionals from other cities coming to Barcelona increased by 3,600 in 2019.



« At Zurich, we are leading the way to provide insurance to the new generations with disruptive, innovative, flexible ideas (on demand, adaptable to different needs) in a wholly digital format).

We are bringing to market solutions that allow us to offer insurance policies that are fully adapted to the new needs and habits of the new digital society and its innovative ways of doing business. This enables us, in Spain, to become the leaders the digital experience a new generation of insurance policies in Europe and to make this sector much more attractive to digital talent.

For this reason, we are working to create an international digital talent hub which will serve a series of Group Zurich countries when designing and developing these unique proposals which can't be found in the insurance market. For this hub, our focus is Barcelona, which over time has become one of the most sophisticated and powerful digital talent ecosystems in the international market.»

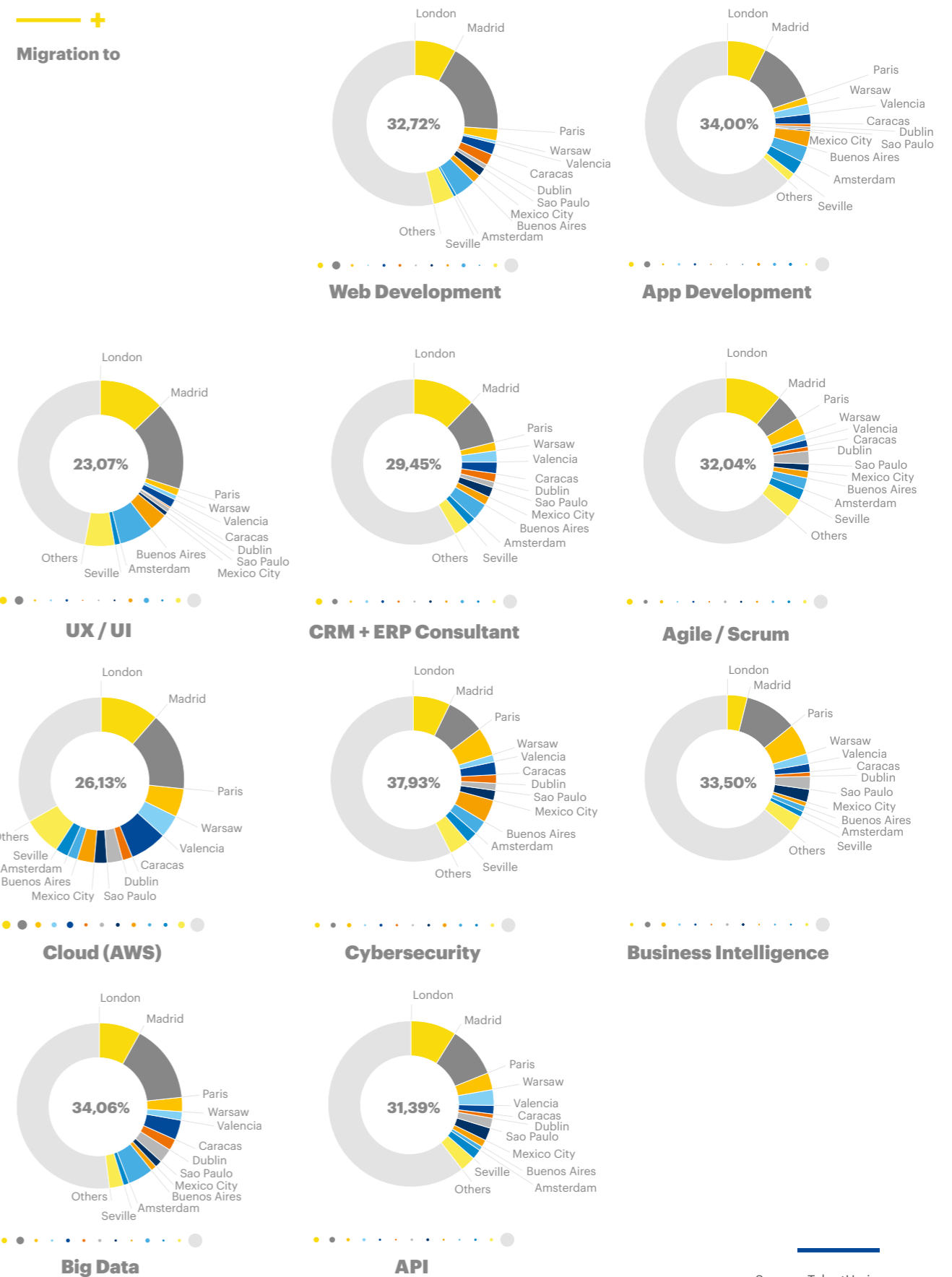
### Santiago Insula

Director of Human Resources and Corporate Responsibility at Zurich Spain

### Stefano de Liguoro

Director of Digital Business at Zurich Spain

**Migration to**



Source: TalentUp.io

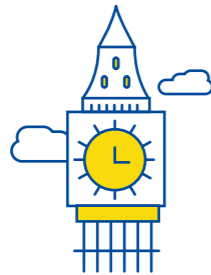




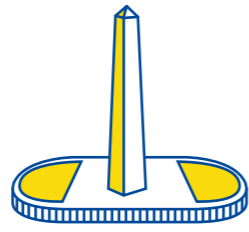
**Migration to Barcelona**



**Madrid**  
14,49%



**London**  
10,34%



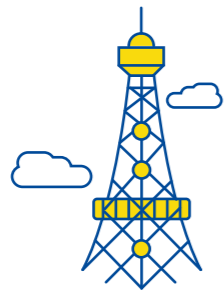
**Buenos Aires**  
4,76%



**Seville**  
4,17%



**Sao Paulo**  
2,90%



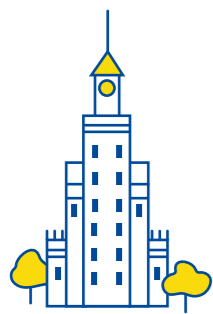
**Paris**  
2,66%



**Valencia**  
2,31%



**Amsterdam**  
1,68%



**Warsaw**  
1,64%



**Mexico City**  
1,51%



**Dublin**  
1,41%



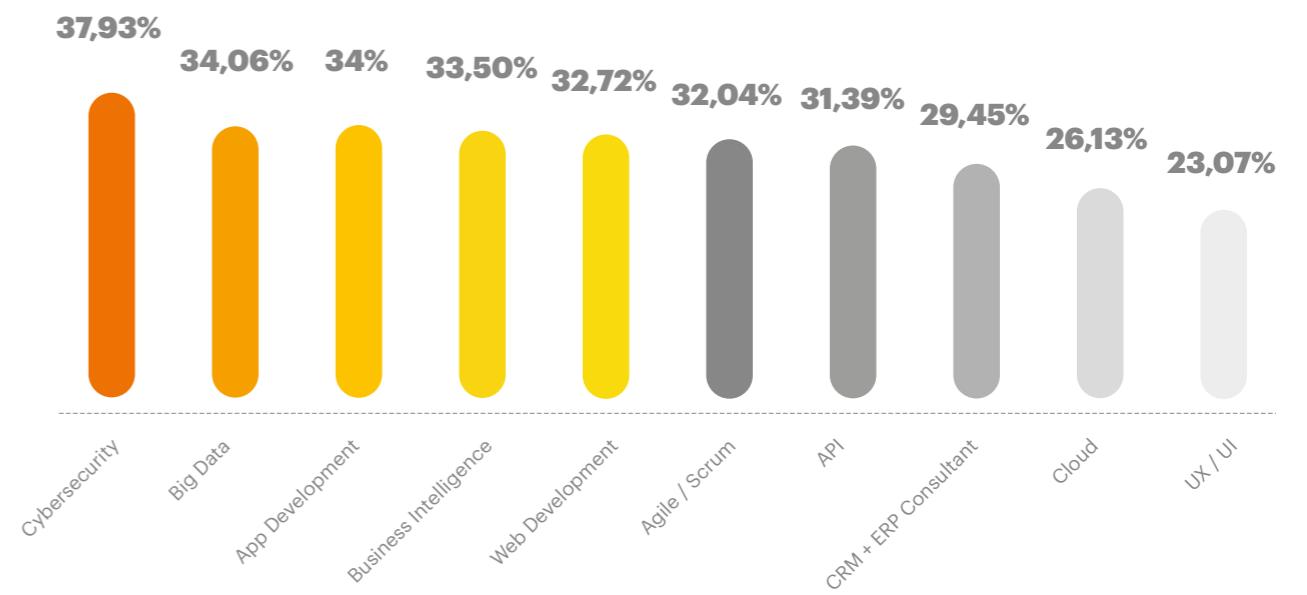
**Caracas**  
1,33%



**Others**  
50,80%



**Percentage of professionals from other cities**



Source: TalentUp.io

## The companies that hire the most digital profiles

The richness of the ecosystem has accelerated the demand for digital professionals. The need to recruit talent is widespread across the entire market.

Traditional and digital companies, startups, digital service hubs, consultants and tech suppliers lead the hiring of digital talent in Barcelona.



Companies that hire the most digital profiles



Web Development	Minsait	Everis	Between Technology
App Development	Glovo	Minsait	N26
UX / UI	Ubisoft	Glovo	King
CRM & ERP Consultant	Minsait	Accenture	Deloitte
Agile / Scrum	Adevinta	Atsistemas	Between Technology
Cloud	Netcentric	Altran	Adevinta
Cybersecurity	EY	GMV	Adevinta
Business Intelligence	Minsait	Glovo	Deloitte
Big Data	Glovo	Vistaprint	Adevinta
API	Wefox	Between	Glovo
Artificial Intelligence	Adevinta	Glovo	Nestlé
IOT	Between Technology	Worldsensing	i2Cat
3D Printing	HP	Autodesk	Between Technology
Blockchain	Accenture	Eurecat	i2Cat
Computer Vision	Glovo	Amazon	Eurecat

## Evolution in students enrolled in/graduated from ICT studies in Catalonia (2014-2019)

The interest in digital training is rising every year. Yet there is a notable difference between the number of enrolments and graduates.

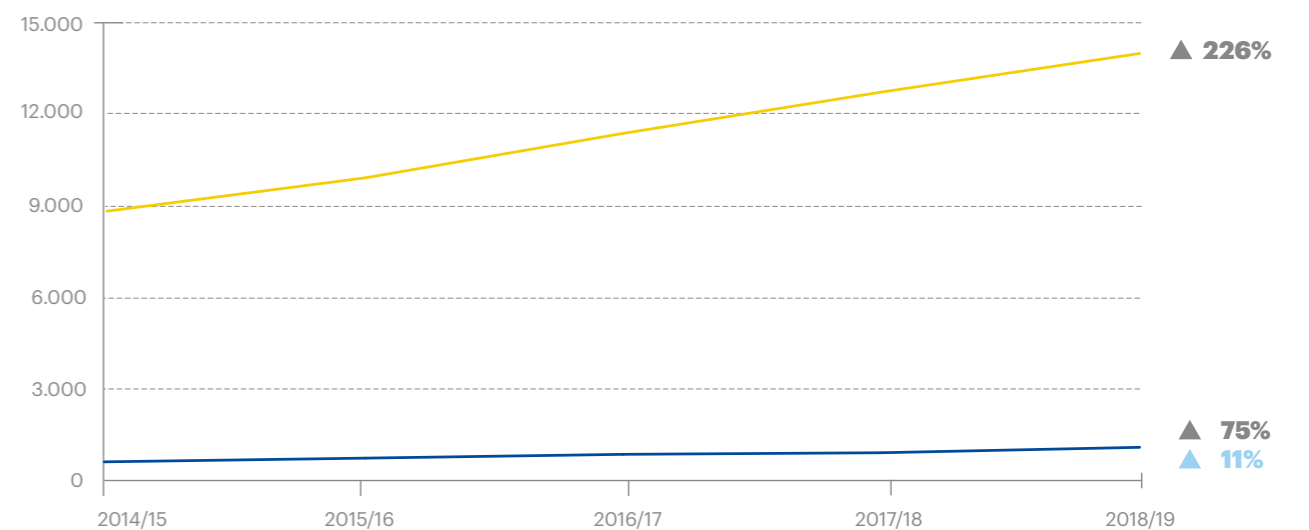
Efforts are needed to improve the enrolment-to-graduation ratio. Only 11% of students complete their university studies.



Total students enrolled and graduated  
2014 - 2019

Enrolled (50.965)
Graduated (4.317)
% growth compared to 2014-15

▲ % of graduates (2018-19) compared to enrolments 4 years earlier (2015-16)



Source: Secretaria d'Universitats i Recerca, Departament d'Empresa i Coneixement de la Generalitat de Catalunya

# Vocational training enrolment (in-person and blended) per professional family and sex. Total Barcelona Metropolitan Area, academic year 2018/19

**Only 6% of women enrolled in ICT training in 2019. This figure rises to 9% if it includes enrolments in remote programmes (remote programmes, IOC, IFP).**

In recent years, the number of women enrolled in vocational training in the Barcelona Metropolitan Area rose 13%, but we are still far from meeting market needs.

IT and communication are the second most popular choice for students pursuing training in the Barcelona Metropolitan Area.

« **The digital talent deficit is affecting approximately one out of every four ICT companies. Public-private cooperation is a fantastic way to overcome this deficit, facilitate employability and drive innovation. Suppliers, public administrations and industry as a whole have to work together to train youths and re-educate professionals in the most sought-after technologies such as cybersecurity, network automation, Artificial Intelligence and the Internet of Things.**

**Through the NetAcad and Digitalitza programmes, Cisco is firmly committed to training in digital technologies. This non-profit digital training model has already trained 200,000 Spanish students via 390 academies since 2000, and it aims to have trained 100,000 new students within the next two years. Our partners' cooperation is also essential in balancing the supply and demand and offering comprehensive training in both the latest technologies and the skills needed in the digital age, such as analytical capacity, teamwork and entrepreneurial self-confidence. »**

**Francesc Bert**

Cisco Sales Director in Catalonia

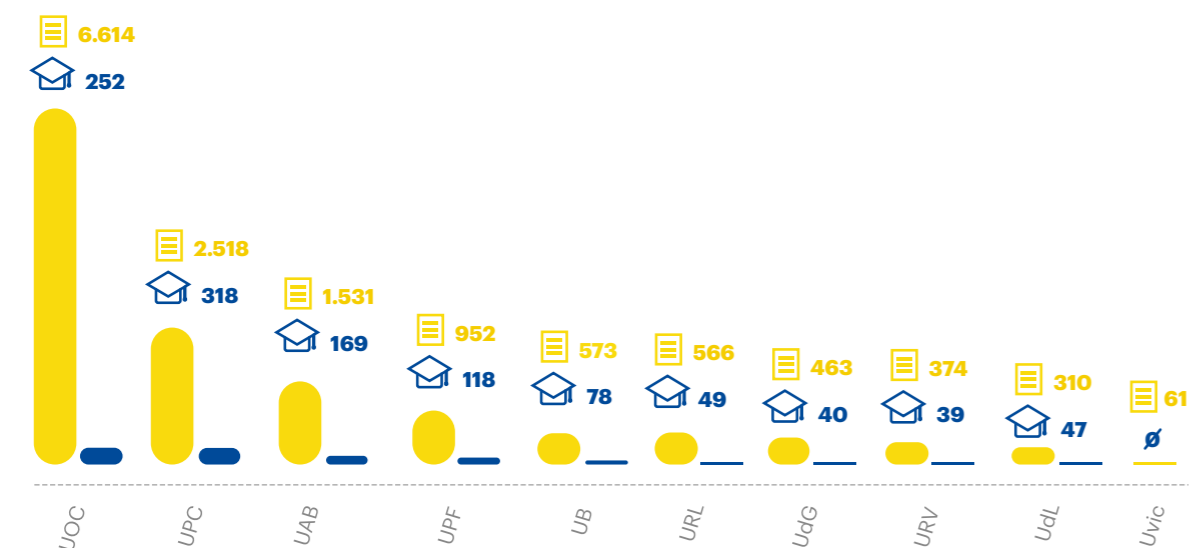


Centre of Digital Professional Studies of Catalonia

2018 - 2019

Enrolments

Graduates



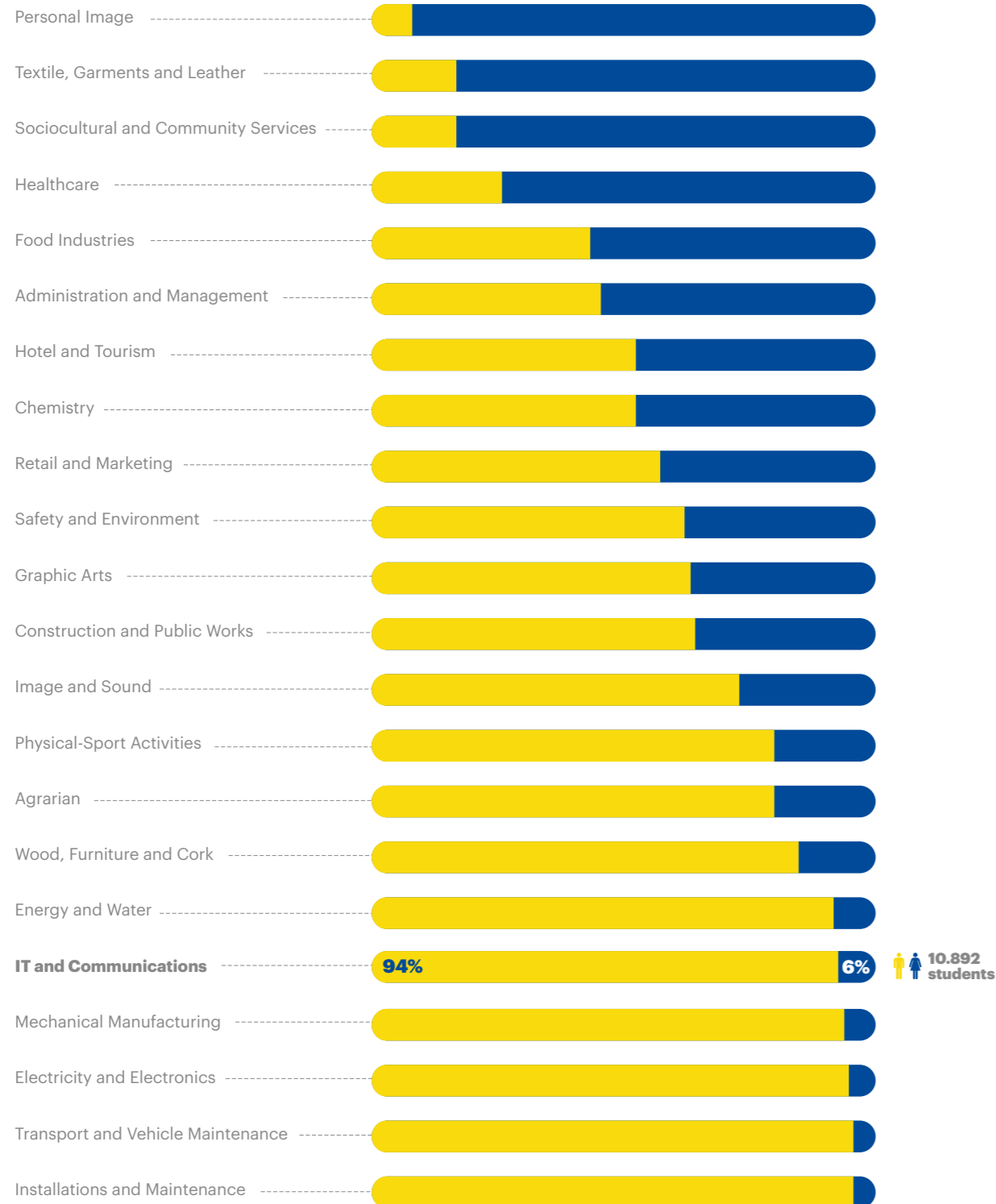
**\*Includes the following degrees:** Artistic Creation for Videogames and Applied Games, IT Engineering, IT Engineering / Mathematics, Telecommunication Systems Engineering / IT Engineering, IT and Services, Data Engineering, Computational Mathematics and Data Analytics, Data Science and Engineering, Design and Development of Videogames, Design and Development of Videogames (taught in English) (Barcelona Campus), Design, Animation and Digital Art "CITM", ICT Systems Engineering (IT and Communications Field), Bioinformatics, Design and Production of Videogames "Tecnocampus", Design and Production of Videogames / IT Management and Information Systems Engineering "Tecnocampus", IT Management and Information Systems Engineering "Tecnocampus", Mathematical Engineering in Data Science, Business Management / IT Engineering, Biotechnology / IT Engineering, Techniques to Develop Web and Mobile Applications, Animation, Audiovisual Systems Engineering, Software Application Techniques, Multimedia. Applications and Videogames, Digital Design and Creation, Multimedia.



**Enrolment in vocational training**

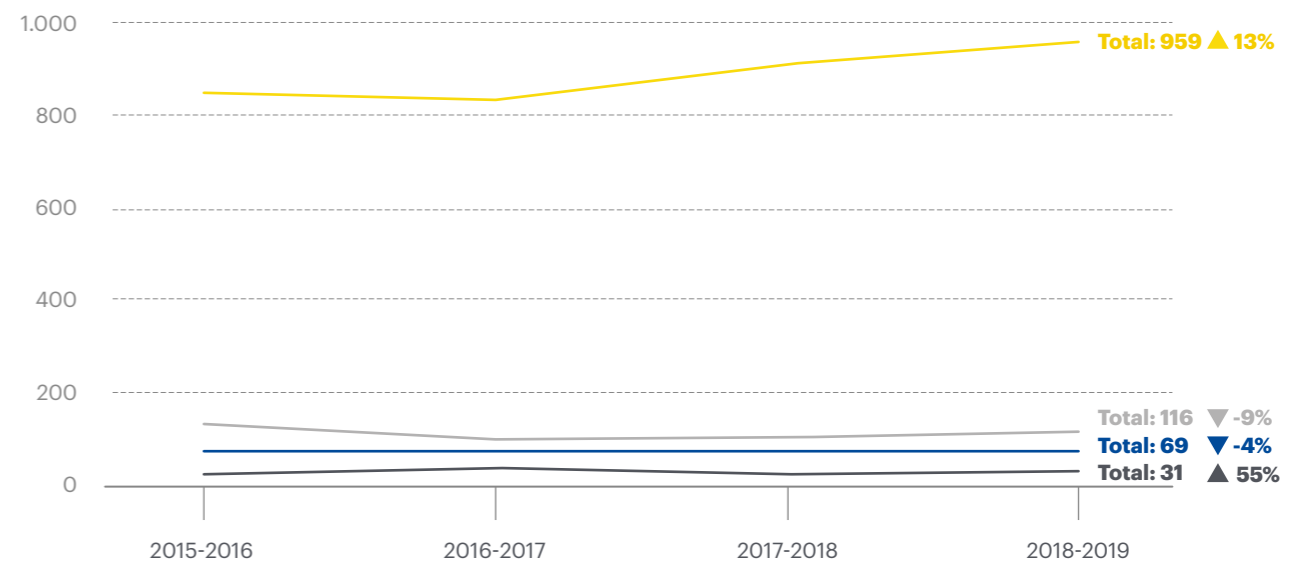
Barcelona Metropolitan Area

■ Men ■ Women



**Enrolment of women in professional families (Barcelona Metropolitan Area)**

■ Mechanical Manufacturing ■ Electricity and Electronics  
 ■ IT and Communications ■ Installations and Maintenance



Figures from the BCN Vocational Training Foundation based on data from the Department of Education of the Catalan Government

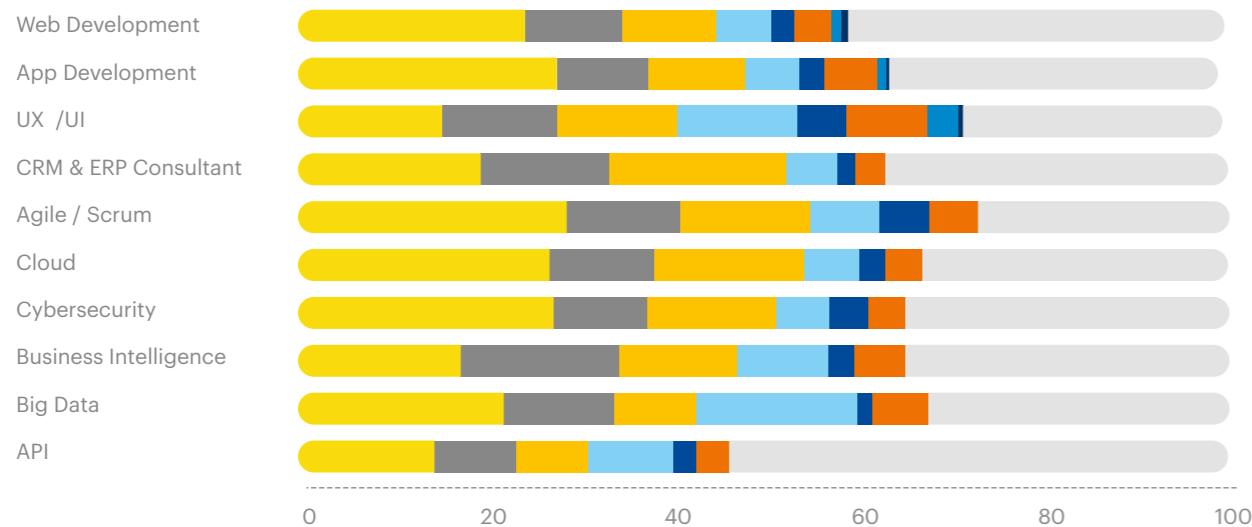
# Training in digital competences

The UPC continues to play a key role in training digital talent. It is the leading centre training digital professionals in Barcelona.

The UAB, UOC, UB and UPF are other prominent schools.



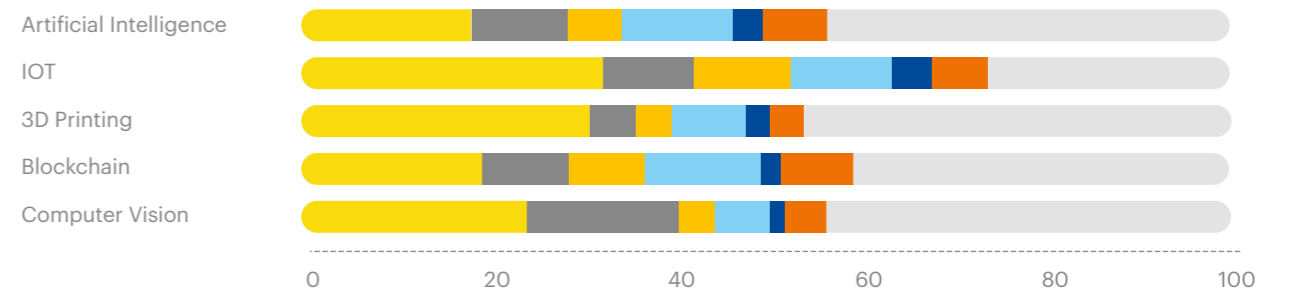
Consolidated technologies (%)



Source: TalentUp.io



Emerging technologies (%)



Source: TalentUp.io



« Nowadays, the digital industry has become one of the engines of development in global economies. Nonetheless, we are lacking the digital talent to allow this industry to continue growing at the same pace. In recent years, based on traditional digital training that is not up to date with current market demands, what are known as 'tech schools' have appeared. They offer an educational model based on the needs and speed of the digital economy. The courses offered at tech academies have two premises: the first is to offer a totally practical education aligned with market needs, and the second is to transform the professional profile of any person without any need for previous experience in the field. The success of the tech schools can be corroborated with their employability rates of 80-90% just a few months after finishing the programmes.

We at Ironhack were the pioneering 'tech school' in the European market. Since 2013, we have managed to be present in 8 countries around the world and graduate more than 5,000 students, who we know are continuing to help different digital industries grow. »

Adrià Baqués

General Manager at Ironhack

# Barcelona has more competitive digital salaries than other European cities

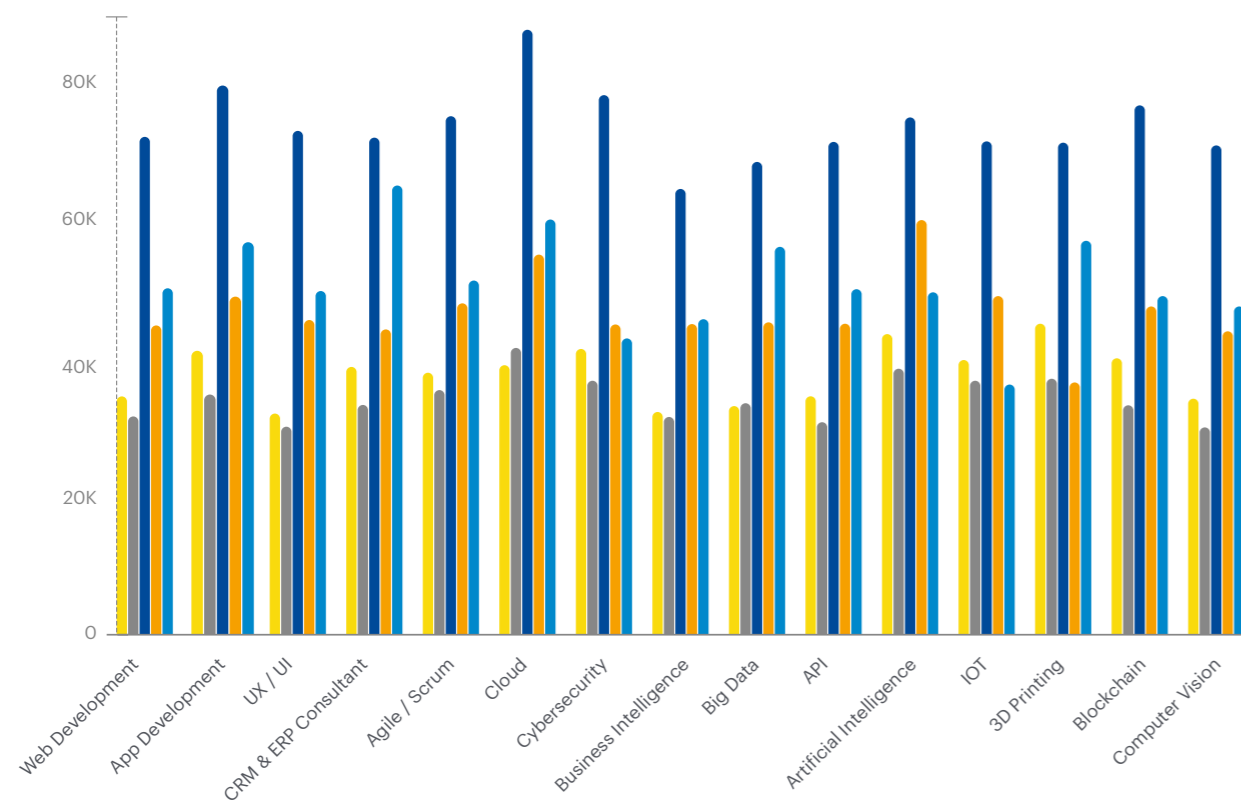
The highest salaries are in digital hubs like London and Amsterdam. They can actually be twice the salaries offered in other cities like Barcelona or Madrid.

But when these salaries are scaled with the cost of living, Barcelona gains in competitiveness compared to the other cities, with the exception of Madrid.



Salaries by city

■ Barcelona (mean: 37.510€) 
 ■ Madrid (mean: 34.072€) 
 ■ London (mean: 73.206€) 
 ■ Paris (mean: 46.559€) 
 ■ Amsterdam (mean: 50.746€)

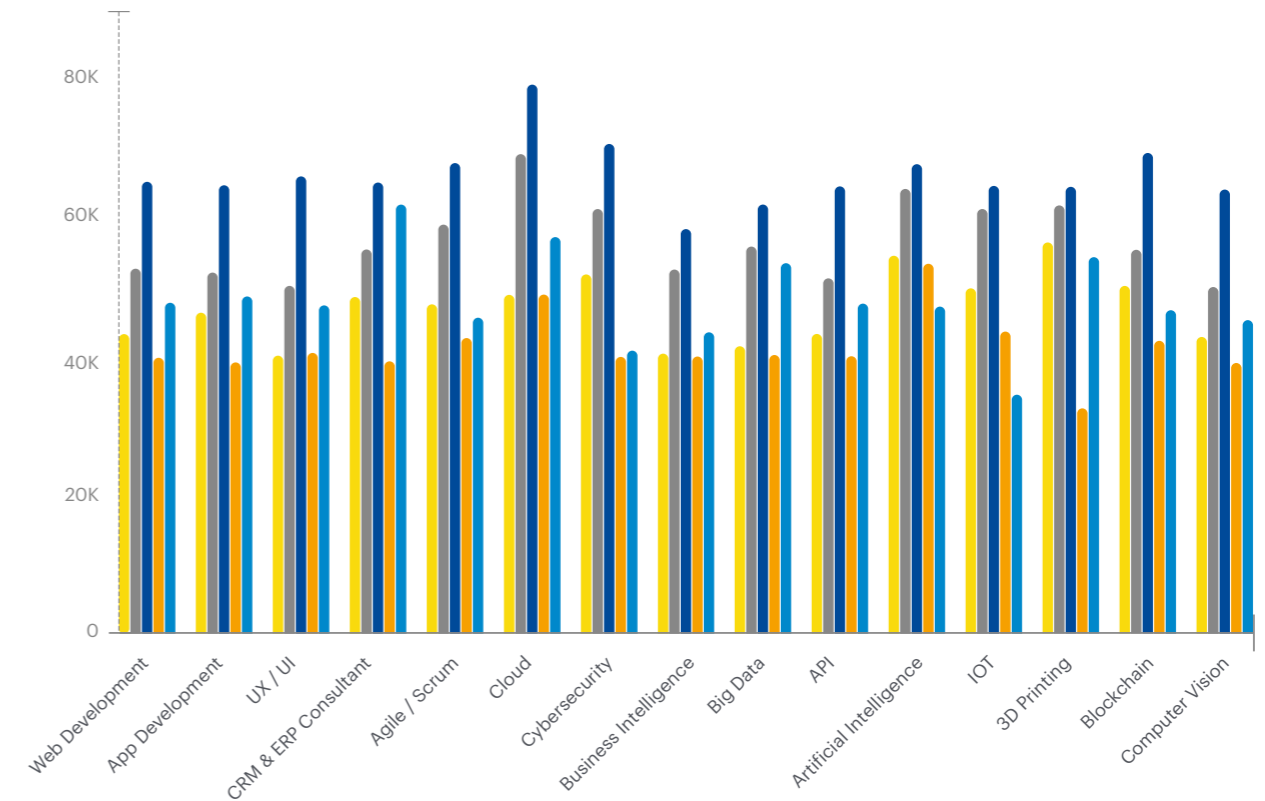


Source: TalentUp.io



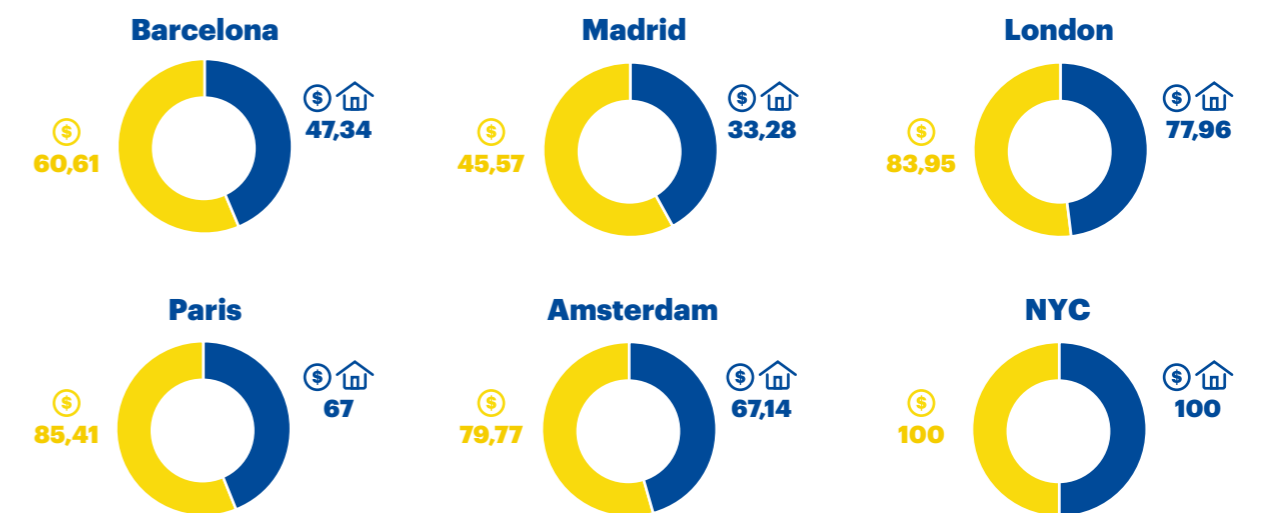
Salaries scaled by cost of living

■ Barcelona (mean: 37.510€) 
 ■ Madrid (mean: 45.317€) 
 ■ Paris (mean: 33.040€) 
 ■ Amsterdam (mean: 38.386€) 
 ■ London (mean: 52.853€)



Cost of living\* vs cost of living + rent

🏠 Cost of living 
 🏠 Cost of living + rent



Source: numbeo.com

\*Note: For example, for the normalised salary in Madrid:  $\text{Salary\_Madrid} \times \text{cost\_of\_living\_bcn} / \text{cost\_of\_living\_madrid}$ . All the salaries are multiplied by the cost of living in Barcelona (BCN) and divided by the cost of living in each city.

# 4

## Combatting the digital talent gap. Avenues of action 2020-2022

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### Priority action strands

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**An economy's level of digital development is directly correlated to the wealth it is capable of generating.**

For example, the DESI Index developed by the European Commission cites Finland, Sweden, Denmark and Netherlands as the digitally most advanced economies; these countries are also at the top of the GDP per capita rankings in the EU-28.

Likewise, **the availability of digital talent is one of the main factors explaining an economy's degree of digitalisation.** Therefore, in what is known as the fourth Industrial Revolution, generating and attracting tech talent is a source of **economic competitiveness.**

Digital professionals, along with technology, have become the leading activators of **growth in tech-based companies,** as well as of the **transformation** of companies that are not digital natives.

This talent is also a **source of attraction of foreign investment:** companies consider access to digital talent a fundamental criterion for choosing the location of new projects.

The economic divide is joined by the **social facet** of the economies that focus on digital talent:

The digital sector is an **engine of job-creation,** and in the leading tech poles, the demand far exceeds the availability of professionals. This becomes even more noticeable in the current economic crisis, in which the **digital sector could absorb many of the jobs destroyed in the industries that have been the most severely affected by Covid-19.**

Furthermore, the **qualifications of jobs in the digital field** are usually above the mean in the market as a whole in terms of both the **added value of the activity** performed and the **pay level.**

The Barcelona Digital Talent Overview 2020 finds that the city is consolidating its growth as a pole of digital talent. **More talent is being generated and more professionals from other economies are being attracted here,** while the companies that employ these profiles are increasingly diverse and offer more competitive salaries, a sign of the robustness of Barcelona's digital ecosystem.

Nonetheless, this report also highlights important areas of improvement that must be resolved, such as the **increasing tech talent gap** in the city, especially in emerging technologies like Big Data and cybersecurity; the **gender gap** among digital professionals; the **lack of tools to attract tech talent** from other ecosystems; and the work that our universities must do in order to attain academic excellence and come on par with the other major tech poles.

**In this sense, below we describe the main avenues of action proposed by Barcelona Digital Talent, with the goal of making Barcelona and its metropolitan area reach all the economic and social potential of the digital economy by promoting talent.**

## More talent

### 1 Encouraging tech vocations among youths and adults



- Boosting the interest in technology and digital competences at early ages in order to accelerate the increase in enrolments in tech vocational training programmes and university degrees in the forthcoming years.
- Promoting these vocations among adults as well by using communication and information to promote the new digital professions among audiences who are likely to acquire new digital competences.

### 2 Encouraging retraining of non-tech talent



- Helping non-tech professionals through the entire process of reorienting their job profiles, from promoting these vocations, as mentioned above, to familiarising them with the digital professions, to training and joining the digital sector.
- The sectors that are not digital natives, like finance, industry and healthcare, as well as SMEs, face the challenge of promoting the retraining of their professionals who work in jobs at risk of automation in the competences required as a result of this very digital transformation.

### 3 Encouraging female digital talent



- Women's vocation and reorientation towards digital jobs and professions should particularly be encouraged with the goal of increasing female training and jobs in the sector. This can occur from both education and by promoting their access to the job market by providing incentives for them to work there. The hiring of more women in the sector will positively contribute to lowering the gender salary gap, given that the salaries in the sector are higher than the average; promote the competitiveness of companies, because of the positive effects of diversity on productivity; and become one of the main levers to close the digital divide and meet the talent demand in our ecosystem.

### 4 Attracting talent from other cities



- Promoting proactive actions from our ecosystem in other tech poles, such as marketing initiatives or promotional missions. The goal should be to attract talent in markets where Barcelona can offer their professionals advantages, such as Eastern Europe and Latin America, or among professionals who are looking for new destinations within the European Union because of Brexit.
- Creating favourable conditions from the administrative and legal standpoint to foster the attraction of digital talent from outside the EU. The specific initiatives proposed include:
  - Establishing a tech visa based on other models around us, such as Portugal.
  - Establishing a visa for digital nomads inspired by cases like the Estonian model.
  - Simplifying bureaucratic paperwork and making it more flexible in order to bring talent here more quickly.



## Better talent

### 5 Promoting talent in digital professions with high added value



- Focusing efforts on both the public and private sector by prioritising the development local digital talent and attracting international talent in the more emerging disciplines and those with the greatest added value like Big Data, Cybersecurity and Artificial Intelligence. The differentiation in specialisation, not in salary costs, should allow Barcelona to create a model of its own while keeping our ecosystem competitive compared to other European tech poles.
- To provide more incentives for academic excellence among the network of tech universities in Catalonia in order to rise in the global rankings of the most recognised centres.

### 6 Training according to market needs



- To base the identification of market needs on Big Data: public and private training centres should have analytical tools and work platforms that provide an accurate picture of the digital competences demanded by companies in their job offers and the extent to which the talent in our ecosystem covers these competences.
- To constantly update the training paths: given the ever-changing nature of the needs in the tech sector, training centres should be able to adjust and even anticipate the needs of profiles in the market.



# Barcelona Digital Talent

Promoted by:

