



Talent and bootcamps

We unpack the impact of the bootcamp market in Spain



**Barcelona
Digital Talent**

About this study

This study is sponsored by **Mobile World Capital Barcelona** with the support of the **Catalan Government's Ministry of Digital Policies** as part of the **Barcelona Digital Talent** alliance.

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The image shows a person's hand holding a printed document that contains code snippets, likely from a programming language like JavaScript or TypeScript. The document is held in front of a laptop and a large monitor. The laptop screen shows a code editor with a file explorer on the left and code on the right. The large monitor in the background also displays code. The scene is set in a well-lit room with a window in the background.

Executive summary

Bootcamps; additional training against a background of digital skills shortages

Bootcamps are **short, non-formal training** programmes which transfer the military concept of **intensive training** to technological skills and aim for **quick employability**.

These courses are addressed to people who are looking to redirect their professional career towards the digital field (**reskilling**) and also to technologists seeking to learn additional skills (**upskilling**).

As a result they do not compete with but rather **add to existing technological training options** such as qualifications in Engineering, Master's degrees and Vocational Training in ICT, all of which last longer and have a wider range of content.

The US leads the bootcamp market and its main customers are the big tech companies

Bootcamps started out **15 years ago** on the West Coast of the USA. At present the cities hosting the largest number of these programmes are **New York (46)** and **San Francisco (33)**. In 2019, the US market for this type of training boasted turnover coming to **\$460 million** and taught nearly **34,000** students compared to the more than 93,000 students qualifying in computer engineering. The main companies recruiting bootcamp graduates were **Google, Microsoft, Amazon and Facebook**.

Bootcamp opportunities by city in the US



New York City
46 bootcamps



San Francisco
33 bootcamps



Los Angeles
21 bootcamps



Seattle
18 bootcamps



Washington DC
18 bootcamps

Source: Career Karma Report, 2020. Market size USA

The typical bootcamp in Spain is run in Barcelona or Madrid, provides training in Web Development, lasts less than 6 months and requires some degree of face-to-face attendance

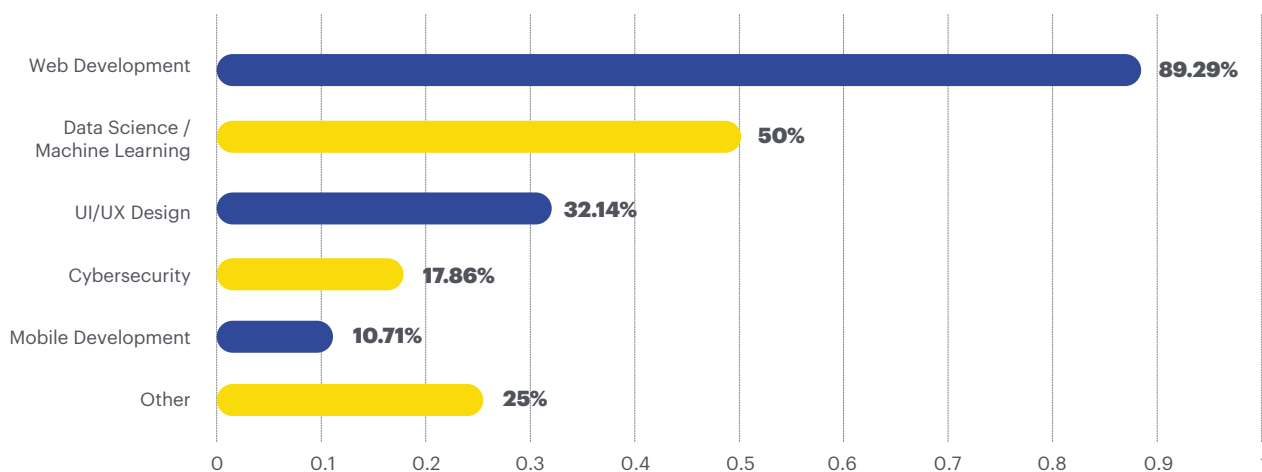
The first bootcamps were launched in Spain in **2013**, although **86%** of the programmes on the market have been set up in the past **five years**. There are currently 35 schools running bootcamps in Spain and **74%** of the courses on offer are in **Barcelona (41%)** and **Madrid (33%)**, followed by **Bilbao (7.1%)** and **Seville (4.8%)**.

In terms of format, due to Covid-19 most programmes have migrated to **hybrid courses**, although **96%** of the programmes on the market require some degree of face-to-face attendance. **Half of the courses** on offer last less than **three months** and **62%** less than **six months**.

Web Development is the most common subject on the market as it is delivered by **89%** of the schools, followed by **Data Science / Machine Learning (50%)** and **User Experience and Interface Design (32%)**. **JavaScript (86%)**, **HTML (79%)** and **Python (57%)** are the most taught programming languages.

Most in-demand digital knowledge areas in bootcamps

2020



Source: Mobile World Capital Barcelona. Barcelona Digital Talent.

Enrolments continue to grow, especially among women. The majority of students are over 25 years of age and find work within six months

The pandemic has not stopped the industry from continuing to grow its enrolment figures. In **2020**, more than **6,200** students were enrolled in Spanish bootcamps, a **36%** increase over 2019 and more than **double the number of students** enrolled in **2018**. The schools forecast enrolment growth coming to close to **75%** during **2021**.

In contrast to the **US** where **corporate training** accounts for **49%** of the market, in Spain this is still a **segment which is yet to be developed** and has a **share of 18%** compared to the **82%** of private enrolments.

Percentage of students enrolled by source: corporate vs. private in Spain

2020



82%
Students enrolled
as private
individuals



18%
Students
enrolled via
companies

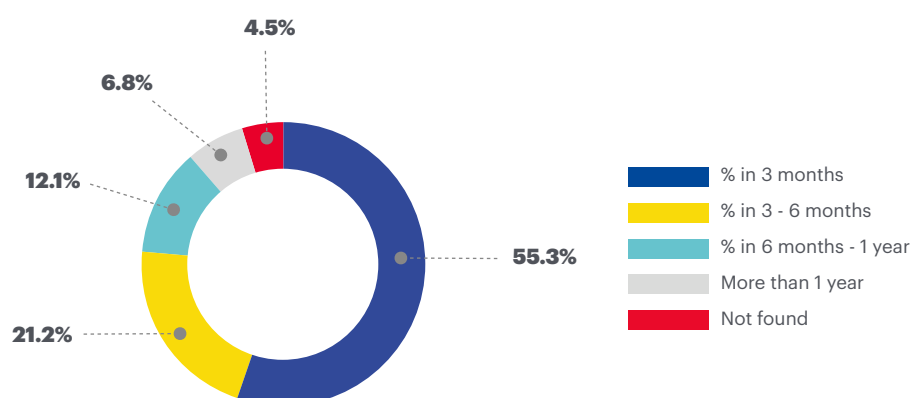
Source: Mobile World Capital Barcelona. Barcelona Digital Talent.

Due to their focus on skills recycling or specialisation, around **80%** of bootcamp students are **over 25 years old** and **25% are over 35**. Women made up **36%** of enrolments in **2020** and the industry expects to increase this figure to **40%** in **2021**. This is well above the share of women in total ICT jobs, which in Spain stood at **16.2%** in 2018 (EUROSTAT).

77% of people trained in bootcamps find an **ICT job within six months**. **Start-ups, ICT consultancy firms** and **corporations** engaged in digital transition are the three main employer segments.

Job placement of bootcamp-trained professionals by time period

2020



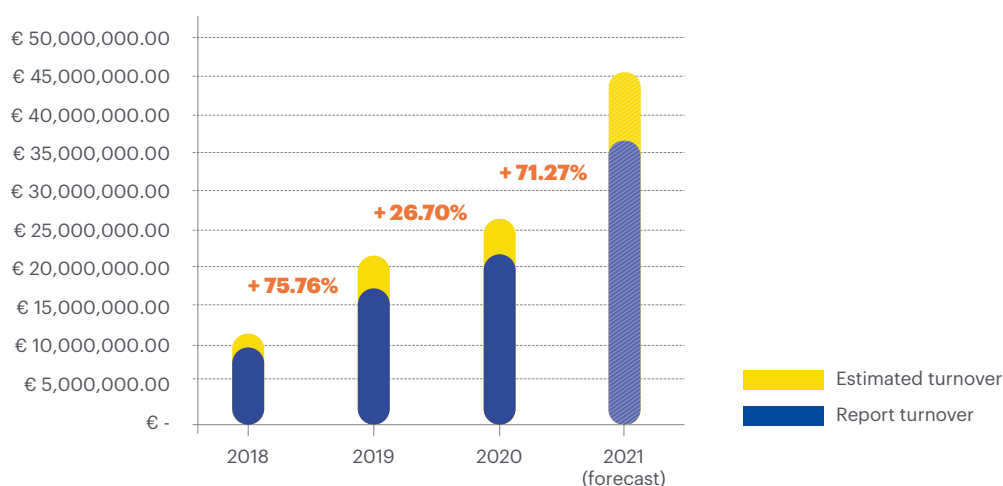
Source: Mobile World Capital Barcelona. Barcelona Digital Talent.

Turnover is still relatively small, yet has high growth potential

The Spanish bootcamps market is estimated to have been worth over **€26 million** in 2020, **42%** of which was generated by the **three main operators**. However, what is striking about the industry's turnover is the growth it has achieved over the last few years, with consecutive increases of **76%** in **2019** and **27%** in **2020**. In line with the forecast for enrolments, the schools are expecting a **71%** increase in turnover in **2021**.

Change in euros of estimated bootcamp enrolment income

2018 - 2021 (Forecast)



	2018	2019	2020	2021 (forecast)
Report turnover	€ 9,490,711	€ 16,681,049	€ 21,134,241	€ 36,196,000
Estimated turnover	€ 2,372,677	€ 4,170,262	€ 5,283,560	€ 9,049,000
Total turnover	€ 11,863,388	€ 20,851,311	€ 26,417,801	€ 45,245,000
Year-on-year growth –	–	+ 75.76%	+ 26.70%	+ 71.27%

Source: Mobile World Capital Barcelona. Barcelona Digital Talent.



Introduction

This report is the **first study to drill down into the bootcamps operating in the Spanish market** and seeks to understand their context, size and current impact on digital talent.

Bootcamps are short educational programmes (between three and 12 months) which transfer the military concept of intensive training to technological skills and aim for quick employability. This type of training option **gained popularity in San Francisco on the back of a nascent Silicon Valley** and its high demand for programmers and specialised staff. **They reached Spain around 2013 and since then have taken root as one of the ways to get into or specialise in STEM skills.**

The **digital talent gap** and the resultant shortfall in specialists in the technology industry **have spurred the rise of bootcamps over the last decade** in their role as quick trainers of digital talent for adult students. Most of their learners come along to fill junior vacancies in companies needing digital talent.

The yawning **mismatch between the demand for digital skills and the shortage of talent** in those skills generates room and opportunities for new players and formats in the talent supply mix.

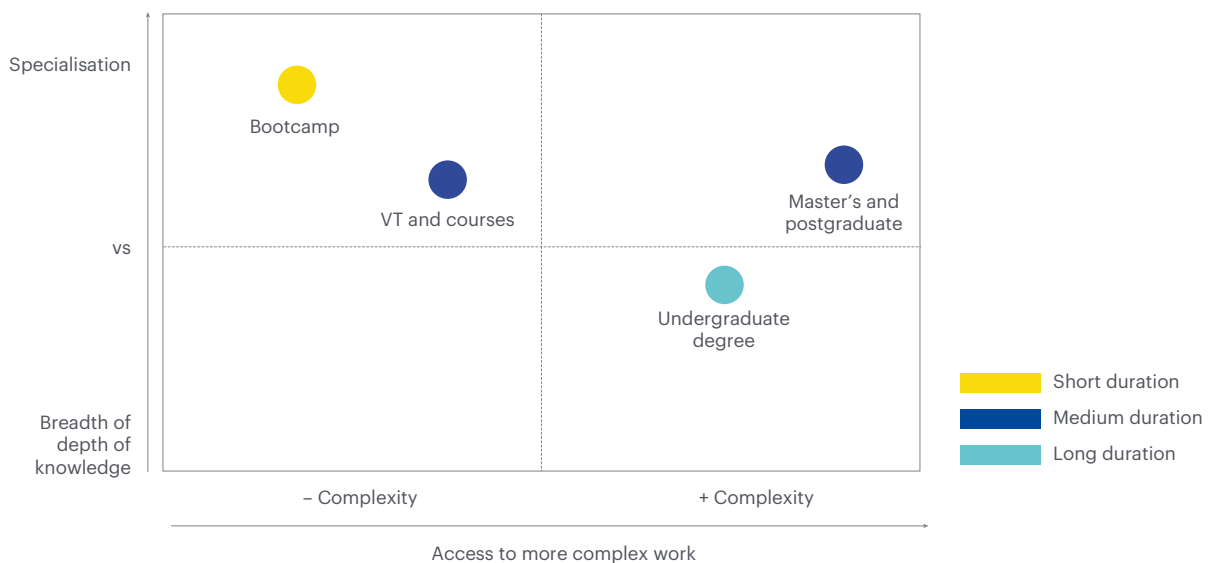
As such **bootcamps are only a small part of the programmes and courses related to job training in the STEM sector.** However, most of them are **taught in code academies** spread across the country. Consequently, the new generation training schools specialised in running these bootcamps are known as code academies.

However, it is important to note that **bootcamps are not exclusive to code academies, as this type of training can also be found in universities and corporate settings.** In practice, none of these new training players competes with the established providers but instead they add to them.

Moreover, although they started out by focusing on web development, their range of courses now encompasses a large number of specialised fields including data science, cybersecurity and other skills.

The **chart below shows the positioning of the main training players in the digital industry.** “Breadth of knowledge” is compared to “specialisation” on the vertical axis while the “duration” of the training is given on the horizontal axis.

Positioning of the main training players in the digital industry



Source: Mobile World Capital Barcelona. Barcelona Digital Talent.

Apart from the training options shown in the chart, there are also emerging formats which are rapidly penetrating the market. They include **MOOCs** (massive online open courses) and short training course platforms. There is a wide range of choices in these formats, including portals such as **Coursera** with 70 million students globally, **Udemy** with 35 million and **edX** with 24 million. Training platforms in Spain are led by **Codely**, **Foxize** and **Fundación Telefónica**.

In **order to describe and size the bootcamp market in Spain**, several **interviews** were conducted with the **leading players** in this new training provision model and a form was sent out to gather key data about the industry. A number of criteria were used when drawing up this report to size this process.

- Delivering intensive part-time and/or fulltime training
- Instruction in at least one technical skill (e.g. programming languages or frameworks)
- Having at least one site in Spain
- Occupational education geared towards entering the job market Specialisation

It is estimated that **the companies in this first bootcamp report account for 80% of the market.** The vast majority of them are private for-profit organisations which target all audiences, albeit with some exceptions such as:

- Organisations aimed at groups at risk of social exclusion (Factoria F5 and Migracode)
- Organisations aimed at women (Adalab, Allwomen and Codeop)
- Barcelona City Council's public bootcamp initiative (IT Academy)

All the **training schools participating in the study** are listed below.

Schools running bootcamp training programmes participating in the study

In alphabetical order

1 - 4Geeks Academy

2 - Adalab

3 - AllWomen.tech

4 - Assembler School of Software Engineering

5 - Bamboo Academy

6 - Barcelona Code School

7 - Code4jobs

8 - Codenotch

9 - CodeOp

10 - CodeWorks

11 - Coding Academy by EPITECH

12 - Datahack

13 - Factoria F5

14 - Hack A Boss

15 - Immune Technology Institute

16 - Ironhack

17 - IT Academy

18 - KeepCoding

19 - Le Wagon

20 - Let's Coder

21 - MigraCode Barcelona

22 - Nuclio Digital School

23 - Reboot Academy

24 - Skylab Coders Academy

25 - The Bridge

26 - Ubiquim Code Academy

27 - Uxer School

28 - Wild Code School



1

**Bootcamps,
born in the USA**

Bootcamps in digital training

The emergence of bootcamps in academia dates back just 15 years. In spite of their fledgling history, they graduated 33,959 US students in 2019 and have secured their position as a key player in the tech education ecosystem.

In 2019, bootcamps recorded an annual turnover growth rate standing at 4.81% and an increase in their number of graduates coming to 4.38%.

New York and San Francisco top the table as the cities with the highest number of bootcamps in the US with 46 and 33 bootcamps on offer respectively.

Size of the bootcamp market in the USA

Total turnover 2019	\$460,733,000
Annual turnover growth rate 2019	4.81%
Total bootcamp graduates 2019	33,959
Growth rate in number of graduates 2019	4.38%

Source: Career Karma Report, 2020. Market size USA

Bootcamps by city in the USA



New York City
46 bootcamps



San Francisco
33 bootcamps



Los Angeles
21 bootcamps



Seattle
18 bootcamps



Washington DC
18 bootcamps

Source: Career Karma Report, 2020. Market size USA

Top bootcamps and recruiting companies in the US market

General Assembly, Hack Reactor/Galvanize, Flatiron School and Ironhack top the table of the bootcamps with the highest number of students in the USA.

The tech industry virtually monopolises the ranking of employers with the highest rate of hiring bootcamp graduates.

Google, Microsoft and Amazon are the main recruiters of bootcamp graduates.

The “2019 Coding Bootcamp Market Size Study” published by Course Report shows that bootcamps in the US and Canada trained 23,043 private individuals and 22,549 students via corporate training partners in 2019. This is nearly 50% of the total share of students enrolled in these training programmes.

Top 10 bootcamps with the highest number of students enrolled in the US

1 - General Assembly	6 - Lambda School
2 - Hack Reactor / Galvanize	7 - App Academy
3 - Flatiron School	8 - Springboard
4 - Ironhack	9 - Thinkful
5 - Bloc	10 - Fullstack Academy

Source: Career Karma Report, 2020. Market size USA

Top five companies recruiting the highest number of bootcamp graduates in the USA

1 - Google

2 - Microsoft

3 - Amazon

4 - Facebook

5 - JPMorgan Chase & Co.

Source: Career Karma Report, 2020. Market size USA



2

The history of bootcamps in Spain

Bootcamps; a training option still in its infancy in Spain

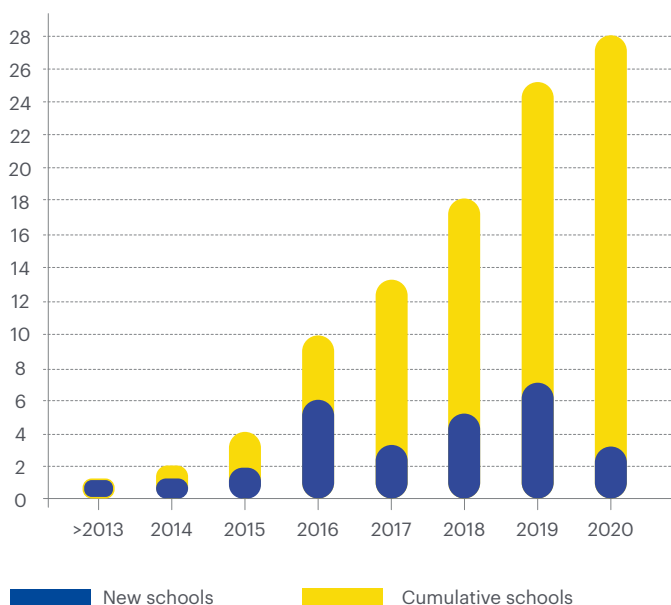
The vast majority of bootcamps in Spain have only recently been set up. Indeed, 86% of them have been founded in the last five years.

There has been a steady upward trend in the growth of bootcamps in Spain since 2013. In 2016 and 2019, there were peaks of six and seven training schools running bootcamps per year respectively.

The Covid-19 pandemic has slightly slowed down the establishment of bootcamps. In 2020, only three new schools running bootcamps were set up.

Schools running bootcamps by year of establishment

2013 - 2020



Year	New schools	Cumulative schools
>2013	+1	1
2014	+1	2
2015	+2	4
2016	+6	10
2017	+3	13
2018	+5	18
2019	+7	25
2020	+3	28

Source: Mobile World Capital Barcelona. Barcelona Digital Talent.

Bootcamp training hubs in Spain

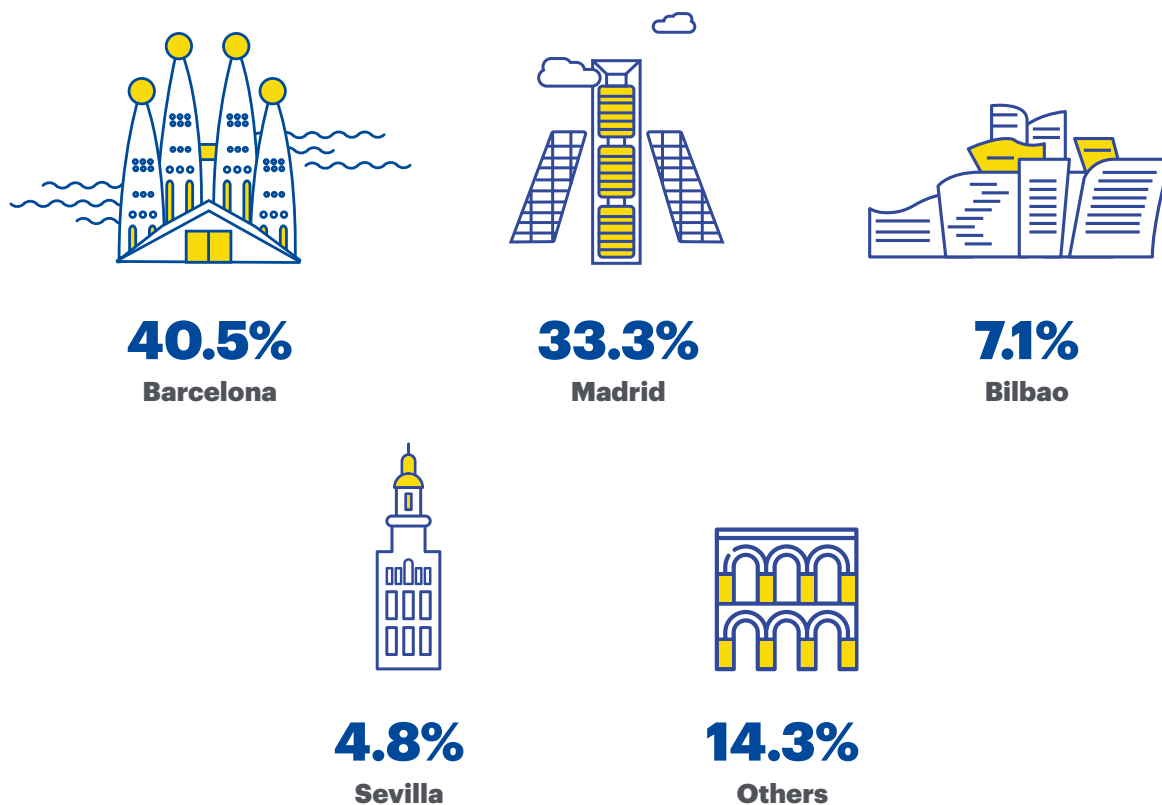
Barcelona and Madrid top the table of Spanish cities with the largest number of bootcamps in face-to-face and hybrid format.

Indeed, the two cities together account for 74% of bootcamp training in Spain.

In third and fourth positions are Bilbao and Seville, while cities such as A Coruña, Zaragoza, Vigo, Santa Cruz de Tenerife, Las Palmas de Gran Canaria and Gijón round off the training offering.

Bootcamp programmes with face-to-face or hybrid training by city in Spain

2020



Source: Mobile World Capital Barcelona. Barcelona Digital Talent.



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Diversity in the intensity and length of the training courses

Face-to-face training is still available to a greater or lesser extent as an option in this type of training. Only 4% of bootcamps offer fully online training.

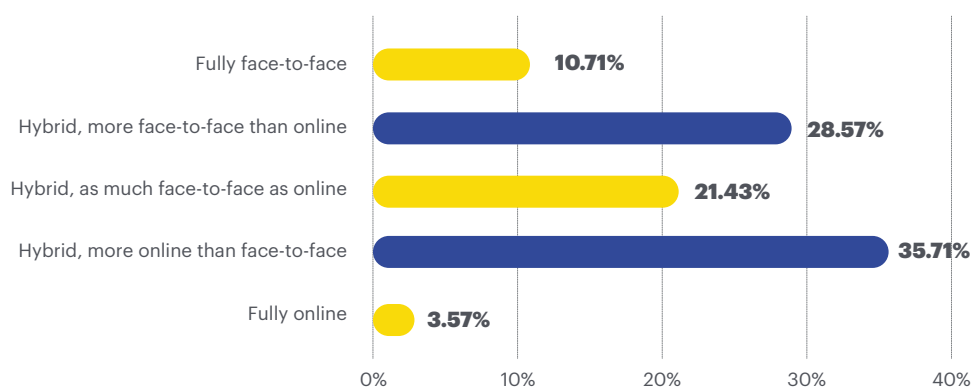
Face-to-face work and community building in the classroom are key aspects in this kind of training. Here the online option meets the need for additional home-based learning and extending the reach of the bootcamp to various geographical regions.

The training programmes are tailored to the diverse needs of learners and one and the same school often runs courses at varying levels of intensity: part-time and fulltime.

In terms of length, 62% of courses in the Spanish bootcamp market are completed within six months.

% online vs. face-to-face training in bootcamps

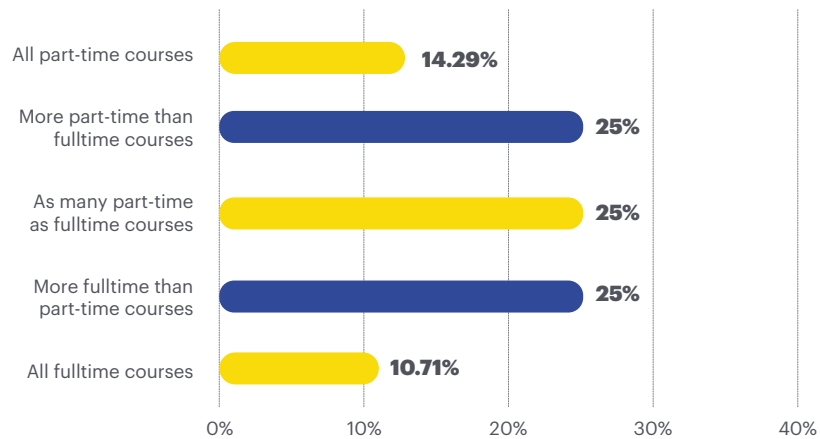
2020



Source: Mobile World Capital Barcelona. Barcelona Digital Talent.

Types of courses offered in bootcamps: part-time vs. fulltime

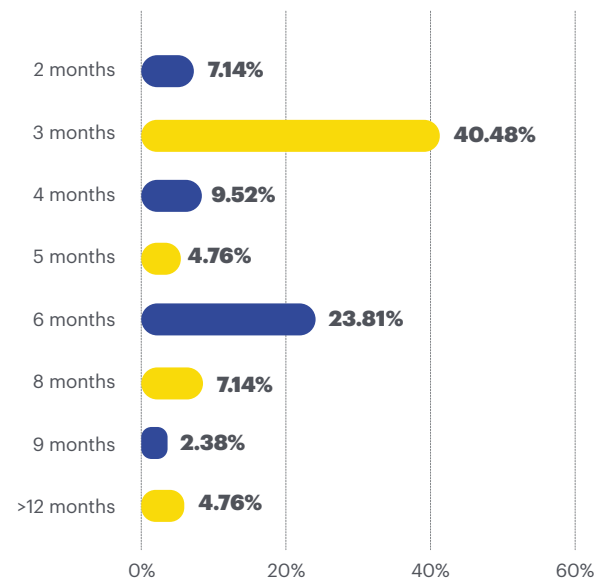
2020



Source: Mobile World Capital Barcelona. Barcelona Digital Talent.

Length of courses in the bootcamps

2020



Source: Mobile World Capital Barcelona. Barcelona Digital Talent.

Most taught tech training domains in the schools

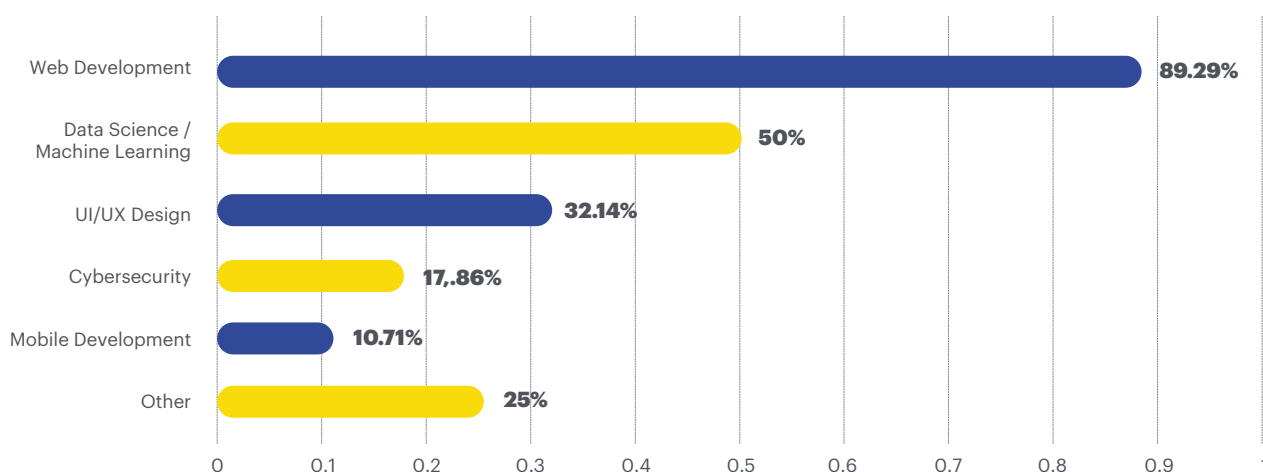
Web development is the most frequently taught training domain in the bootcamps. 89% of the schools provide tuition in this digital skill. Data Science and Machine Learning are in second place with 50% of the schools delivering teaching in this area while UX/UI Design is in third place at 32%.

Other prominent training domains are Cybersecurity (18%) and Mobile Development (11%). Likewise, the academic range of the bootcamps is supplemented with other areas related to Agile, Clean Code, SCRUM, etc.

Digital skills are closely linked to expertise in programming languages. The most frequently taught languages include JavaScript, which is offered by 86% of the schools, followed by HTML at 79% and in third place Python at 57%.

Most sought-after digital knowledge domains in the bootcamps

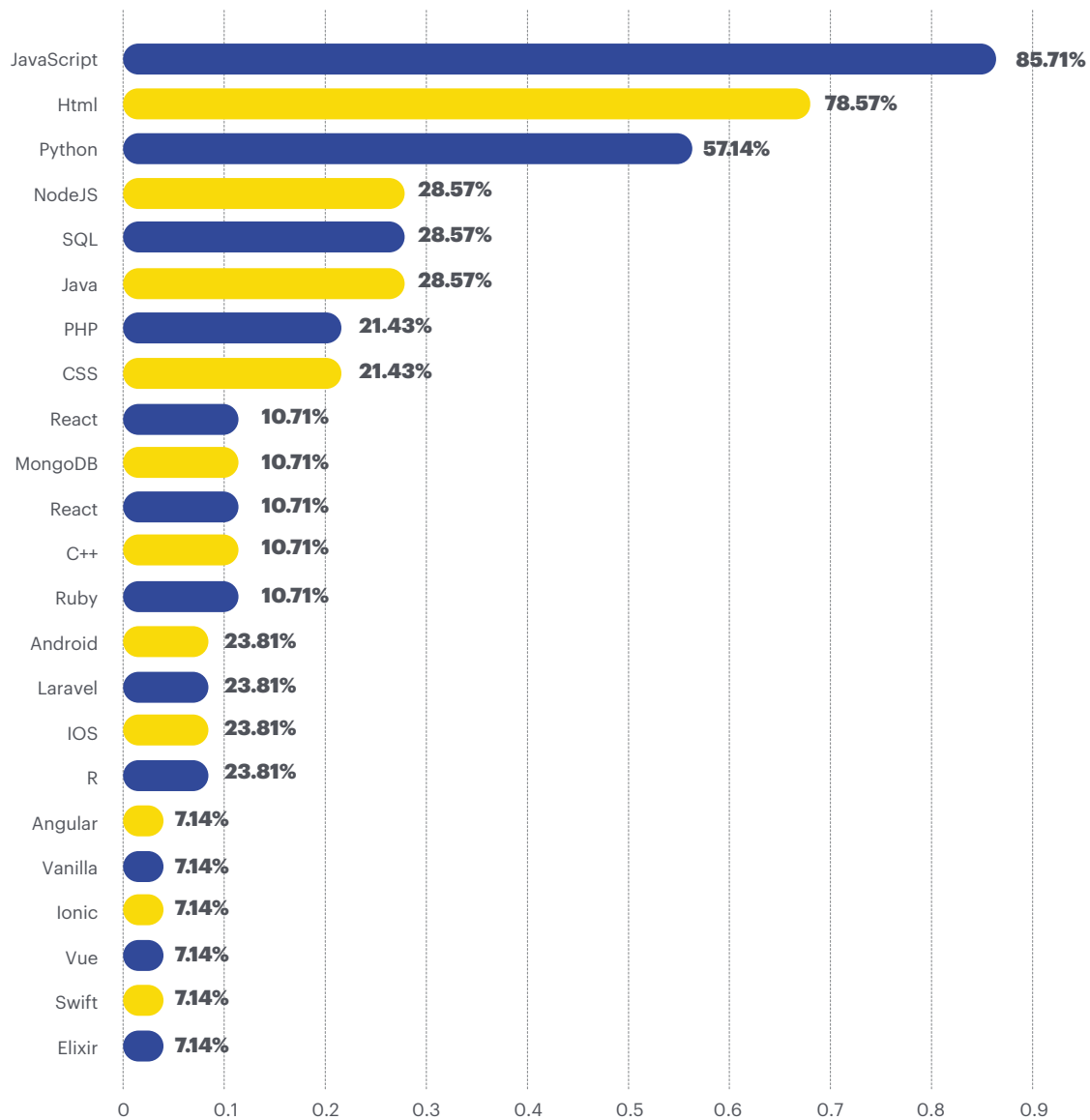
2020



Source: Mobile World Capital Barcelona. Barcelona Digital Talent.

Programming languages taught in the bootcamps

2020



Source: Mobile World Capital Barcelona. Barcelona Digital Talent.



"The IT market needs more talent by the day. This type of bootcamp training makes it easier to get professionals into the talent ecosystem quickly. Digital professionals who are trained in bootcamps are more likely to have a prior grounding close to the scientific and technological background, whether because they have a degree, a master's degree or have done a vocational training course. This is why we need to keep on investing in fostering scientific and technological career paths from the ground up.

"At everis we are looking for talent from universities, vocational training and bootcamps specialising in IT, and most of all we prize the person's competencies and skills."

Vanessa Paulino

Head of Recruitment and Employer Branding at Everis



4

Profile of digital talent trained in bootcamps

Growing number of bootcamp students in spite of Covid-19

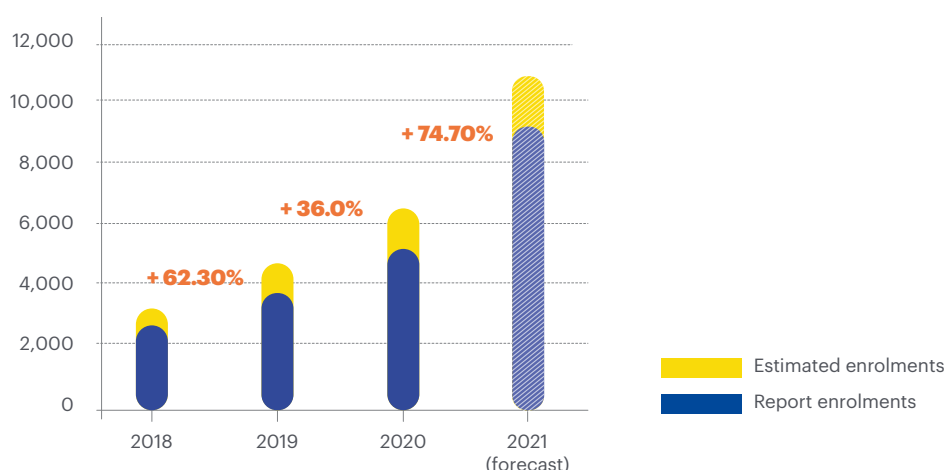
Increasing numbers of students are enrolling for bootcamps every year. The programmes have seen a steady rise in enrolments since 2018; in 2019, growth came to 62.30%, and in 2020, 36.10%.

Notwithstanding the circumstances brought about by Covid-19, it is estimated that there will be a 74.70% increase in the number of students enrolled in schools running bootcamps in 2021.

As for the source of enrolments, 82% of the students enrol on a personal basis while 18% come from company or corporate training.

Evolution of the number of students enrolled in bootcamps in Spain

2018 - 2021 (Forecast)



	2018	2019	2020	2021 (forecast)
Report enrolments	2,260	3,668	4,992	8,721
Estimated enrolments	565	917	1,248	2,180
Total enrolments	2,825	4,585	6,240	10,901
Year-on-year growth		+ 62.30%	+ 36.10%	+ 74.70%

Note: estimated enrolments have been calculated by extrapolating the average number of students enrolled in the schools participating in the study (which account for 80% of the market) to the rest of the schools.

Source: Mobile World Capital Barcelona. Barcelona Digital Talent.

Percentage of students enrolled by source: company vs. personal in Spain

2020



82%

**Students enrolled
as private
individuals**



18%

**Students
enrolled via
companies**

Source: Mobile World Capital Barcelona. Barcelona Digital Talent.



"Bootcamps are a very appealing option since they enable students to gain the technological and digital skills which are crucial nowadays in a short period of time and in a practical and applied way. We believe that at the very least they will be around for a long time in the market given the high demand for the skills which are taught in these schools. Moreover, the type of training they deliver is very much in line with the contemporary needs of businesses, needs that as we have said are difficult to meet.

"One of the challenges of bootcamps is that depending on the candidate's previous basic training, there may be skills which are not really at the level required by companies like ours. Nonetheless, we think that bootcamps can be a very tangible and specific add-on to the training of many people who want to learn more, refocus their careers or refresh their technological knowledge."

Susana Barrios

Recruitment Manager at CaixaBank

80% of students are over 25 years of age

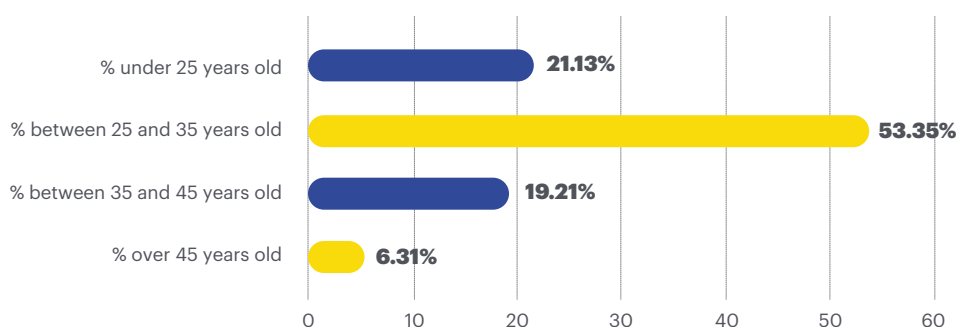
53% of bootcamp students are between 25 and 35 years of age. Adults between 35 and 45 years of age account for 19% of the classrooms. The bootcamps' training programmes geared towards skills recycling and specialisation through lifelong learning attract senior professionals.

Bootcamps have a more encouraging gender representation than other forms of tech training. In 2020, the percentage of women enrolled came to 36% compared to 64% men. In 2021, women are expected to account for 40% of all students.

The figures show swift progress in the percentage of women enrolled, pointing to a shift towards parity in the coming years. Here the efforts of schools such as Allwomen.tech, Adalab and Codeop, which are exclusively aimed at women, stand out.

Number of students enrolled in bootcamps by age bracket

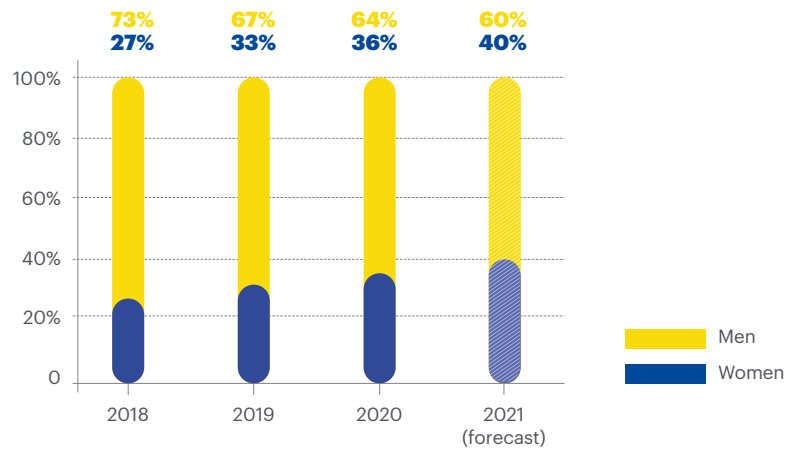
2020



Source: Mobile World Capital Barcelona. Barcelona Digital Talent.

Change in the number of women enrolled in bootcamps

2018 - 2021 (Forecast)



Source: Mobile World Capital Barcelona. Barcelona Digital Talent.





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**Job placement of
digital professionals
trained in bootcamps**

Bootcamp learners find jobs within 90 days

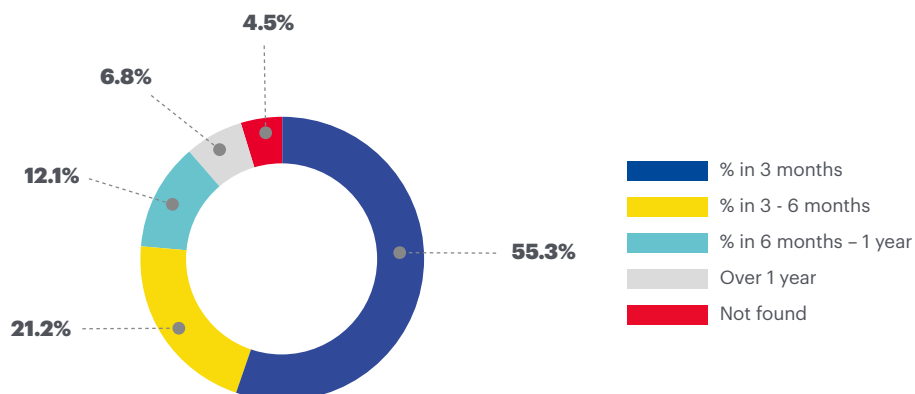
After completing the course, more than half of bootcamp graduates (55%) find a job within three months.

The employability rate of bootcamp graduates rises to 77% within six months of completing the training programme.

The main recruiters include start-ups, consultancy firms and large companies specialising in IT.

Job placement of bootcamp-trained professionals by time period 2020

2020



Source: Mobile World Capital Barcelona. Barcelona Digital Talent.

Top recruiters of digital talent trained in bootcamps

2020

Start-up / Scale-up	Consultancy firms	Large company with new IT approach
Red Points	Capgemini	Banco Santander
Glovo	Accenture Digital	SEAT
N26	Deloitte	Telefónica
Idealista	Everis	Ogilvy
Wallapop	Tata	Zara

Source: Mobile World Capital Barcelona. Barcelona Digital Talent.

« »

"Bootcamps are one of the great levers businesses have to hand to grow both digitally and professionally. I would like to see a greater connection between the code academies and bootcamp training schools and the job market by generating synergies with workshops and specific tests in companies.

"When we need managers or senior staff, we look for highly experienced professionals, even though they may not necessarily have a specific academic background. While digital training through bootcamps is in principle aimed at more junior staff, we have faith in the ability of professionals to learn. If they are eager to improve, they will grow both professionally and in their skills."

Marcel Sanz

Senior Human Resources Business Partner at Zurich

Turnover has increased steadily over the last few years

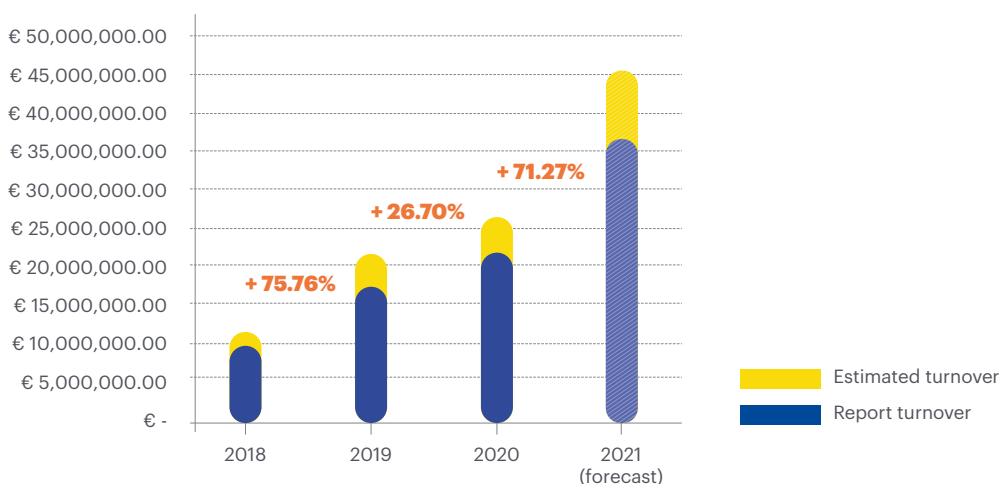
Turnover in the bootcamp industry has grown exponentially over the last two years, increasing by 75.76% in 2019 and by 26.70% in 2020.

In the midst of the health and economic crisis, it is estimated that bootcamp turnover growth will reach 71.27% in 2021.

8.57% of the market accounts for 42% of turnover. Hence, it can be seen that the market has a number of players who are leaders in bootcamp training, while the rest of the market is quite fragmented.

Change in euros in estimated income from bootcamp enrolments

2018 - 2021 (Forecast)



	2018	2019	2020	2021 (forecast)
Report turnover	€ 9,490,711	€ 16,681,049	€ 21,134,241	€ 36,196,000
Estimated turnover	€ 2,372,677	€ 4,170,262	€ 5,283,560	€ 9,049,000
Total turnover	€ 11,863,388	€ 20,851,311	€ 26,417,801	€ 45,245,000
Year-on-year growth	–	+ 75.76%	+ 26.70%	+ 71.27%

Note 1: estimated turnover has been calculated by extrapolating the average turnover of the schools participating in the study (which account for 80% of the market) to the rest of the schools.

Note 2: budget data have been used in the case of the IT Academy since it delivers free tuition provided by a public agency.

Source: Mobile World Capital Barcelona. Barcelona Digital Talent.

Turnover ranking of the three and 10 leading bootcamp training schools in 2020

2020

Start-ups / Digital Natives	Top 3 turnover 2020	Top 10 turnover 2020
Market volume	8.57% of the academies total	28.57% of the academies total
Turnover volume	€ 11,130,000.00	€ 16,720,000.00
Market share	42%	63%

Source: Mobile World Capital Barcelona. Barcelona Digital Talent.



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