



STARTUP HEATMAP
EUROPE

Startup Heatmap Europe Report 2021

The Power of the Ecosystem



The Power of the Ecosystem

Startup Heatmap Europe Report 2021

We empower the most ambitious startup ecosystems to solve the biggest challenges of our times. The future tech ecosystem is transnational, driven by entrepreneurs, considerate of externalities and synergetic between all parts of society.

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Startup Heatmap Europe

The [Startup Heatmap](#) is published by DEEP Ecosystems, a company with the mission to build world leading innovation ecosystems.

With the Heatmap we provide founders, ecosystem builders, policy-makers, investors and corporates insights in the overall development of innovative cities and their startup communities.

We aggregate data from own and third party sources to offer a versatile dataset of >100 variables on startup cities, ranging from investments and job creation to meetup activities and international connectivity.

The unique focus on the city as a unit of analysis positions the Heatmap as an ideal partner to ecosystem builders and policy-makers interested to grow their startup community.

The [DEEP Ecosystem Conference and Accelerator](#) are our core instruments to support the scale-up of local and vertical ecosystems. Over the past years we have trained worked with and trained more than 180 ecosystem leaders on 3 continents in our multi-week programs.

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Executive Summary

The findings of the 2021 Startup Heatmap Europe report show a continued strong growth of European ecosystems despite international competition and the effects of Brexit and the COVID-19 pandemic. However, Europe suffers from a worsening funding gap in the seed stage and unrealized potentials of internationalization.

Positive Overall Performance:

- Overall funding grows by 14% to 46.3bn € in 2020
- Record high of 5.9bn € government funding balances COVID-19 shock
- Slow but steady growth: Europe now has 6 “unicorn ecosystems” with total investments of more than 1bn € / year

Challenges:

- Fierce competition: 27% of founders start their company abroad
- Brexit pushes London down, while Berlin takes the lead in founder popularity
- Virtualization of events generates 50-160% growth rates in meetups in top hubs.

Dangerous Developments:

- Discrimination against women entrepreneurs amounted to 3bn € in 2020
- 58% of startup communities shrank due to the pandemic
- Internationalization rate of startups falls below 50%

I) Most Attractive Cities to Start a Company in Europe

Our annual survey asks a robust sample of European founders what cities are most attractive to start a company in. The survey runs continuously since 2016 allowing a comparison over time. Based on 1,295 founder votes collected from April 2020 to August 2020, we find remarkable movement in the most popular startup hubs for founders in Europe.

While the top 10 had been very stable over the years with only 2 changes in 2019, we see that the year of COVID-19 and Brexit brought sizeable changes among the startup city brands: 15 positions are changed in the Top 20. This opens up several questions about the robustness of European ecosystems.

Diversification of Preferences

Since 2016 we have seen a diversification of preferences among founders with the top hubs losing percentages. In 2020 this trend continues with Paris even dropping out of the Top 5 for the first time since 2017, when it captured 19% of all founder votes. In 2020 Paris is down to 10% and falls slightly behind Munich and Lisbon.

Overall, after declines year over year the Top 5 capture 42% of the vote in 2020, as in 2019, indicating that we reached a new equilibrium with some 5-10 strong startup city brands, instead of 2-3 in 2016, where Berlin and London were the unreachable champions. Today, there is 7 hubs that reach more than 10% of founders – a new record high.

Berlin overtakes London in Popularity

In this remarkable year, Berlin performed outstandingly well with founders, boosting their result by 5% percentage points to 39% of the founder vote coming from 29 diverse countries. London in contrast continues to decline by -1% percentage point. One explanation might be the overwhelmingly positive perception of the German COVID-19 response during the time of the survey, but also the Brexit discussion that has supported uncertainty.

2019

City	Benelux	Nord.Balt	Med	West	CEE	Non-EU	UK.Ire
London	29.63%	13.21%	39.22%	26.85%	47.22%	40.91%	54.55%
Berlin	40.74%	33.96%	25.49%	39.81%	35.19%	50.00%	27.27%

2020:

City	Benelux	Nord.Balt	Med	West	CEE	Non-EU	UK.Ire
Berlin	20.51%	41.10%	34.94%	44.93%	36.45%	35.00%	36.36%
London	15.38%	24.66%	37.35%	23.19%	34.58%	55.00%	36.36%

Table 1: Popularity of London and Berlin by Region

Source: Startup Heatmap Europe Survey, 1,295 votes

In 2019 we observed a divide going through Europe with Central Eastern European founders leaning dramatically more to London, while the Nordics and Baltics turned to Berlin. In 2020 the positive trend for Berlin continues, but London sees a mixed picture: In the Nordics, London has regained grounds (+12% points), while in CEE their popularity tumbled (-12% points). The worst effect however is seen with founders based currently in the UK and Ireland, where London dropped from 55% of the vote to only 36% in 2020 (-19% points). This provides a strong argument for a negative perception of the consequences of the Brexit among founders who moved to

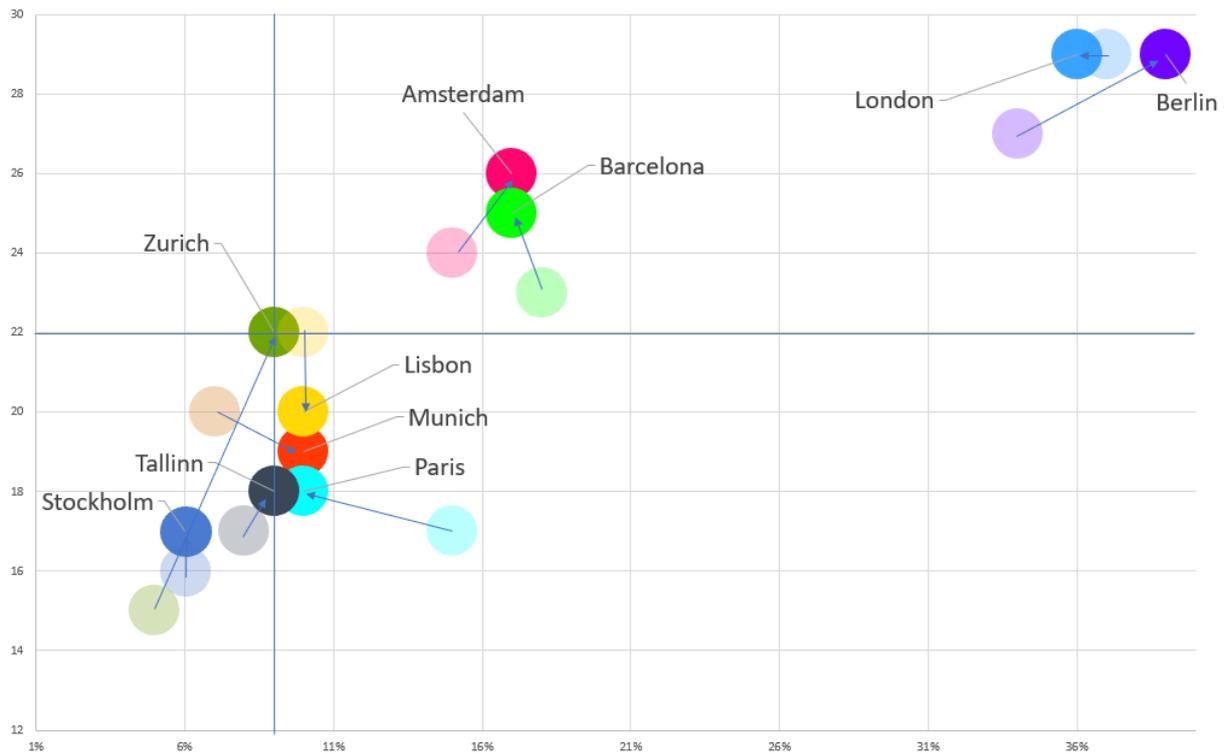
London or the UK – many of them clearly would not do so again. Across all European regions, London remains the top choice only in the Mediterranean countries.

Global Challengers: Amsterdam, Barcelona, Zurich

Amsterdam and Barcelona remain the closest challengers to the two leaders reaching both a high percentage and diversity of the vote. A remarkable increase of attention can be observed for Zurich, who lost its Top 10 ranking in 2019 and now sees an increase of reach by 4% points and 7 more countries reached.

Zurich is slightly less popular than Lisbon, Munich and Paris, but reaches a more diverse set of countries and therefore can be seen as more recognized as a global startup hub.

The rest of the top 10 is rather stable with Stockholm, Tallinn, and Lisbon holding their positions. Only Munich jumps 2 ranks replacing Paris in the Top 5 of most attractive startup hubs in Europe.



Graph 1: Popularity vs. Countries Reached

The scatter chart shows the change of perception of the most attractive startup hubs in Europe from 2019-2020. The horizontal axis shows the percentage of founders seeing the city as an attractive startup hub, while the vertical axis shows the number of diverse countries the founders come from.

Source: Startup Heatmap Europe Survey 2020

The Top 50

Rank	City	% of Founders	YoY Change	YoY % change	# of countries
1	Berlin	39%	1	5%	29
2	London	36%	-1	-1%	29
3	Amsterdam	17%	2	2%	26
3	Barcelona	17%	0	-1%	25
5	Munich	10%	2	2%	19
6	Lisbon	10%	0	0%	20
7	Paris	10%	-3	-5%	18
8	Zurich	9%	6	4%	22
9	Tallinn	9%	0	2%	18
10	Stockholm	6%	0	0%	17
11	Dublin	6%	0	1%	14
12	Vienna	6%	1	1%	15
13	Madrid	6%	-1	1%	10
14	Copenhagen	5%	2	1%	18
15	Tel Aviv	4%	0	0%	6
16	Warsaw	4%	1	0%	8
17	Milan	3%	-9	-4%	7
18	Porto	3%	38	2%	8
19	Bucharest	3%	2	0%	3
20	Geneva	2%	3	0%	8
21	Nice	2%	78	-1%	6
22	Gdansk	2%	25	2%	4
23	Helsinki	2%	12	0%	7
24	Luxembourg	2%	1	0%	10
25	Malta	2%	12	0%	11
26	Prague	2%	7	0%	8
27	Oslo	2%	-9	-1%	7
28	Riga	2%	26	1%	4
29	Rotterdam	2%	35	2%	4
30	Cologne	2%	-8	-1%	1
31	Nicosia	2%	65	2%	6
32	Athens	2%	-1	0%	4
33	Lausanne	2%	1	0%	5
34	Frankfurt	2%	5	0%	5
35	Manchester	2%	5	0%	1
35	Newcastle upon Tyne	2%	64	2%	1
37	Hamburg	2%	-13	0%	7

38	Stuttgart	2%	4	1%	5
39	Sofia	1%	60	0%	6
40	Palma de Mallorca	1%	10	0%	6
41	Bilbao	1%	21	1%	3
42	Valencia	1%	-10	-1%	3
43	Brussels	1%	-23	-2%	7
44	Istanbul	1%	1	0%	3
45	Lyon	1%	-9	-1%	3
46	Basel	1%	53	1%	5
47	Vilnius	1%	2	0%	5
48	Eindhoven	1%	-22	-1%	6
49	Kiev	1%	-19	-1%	4
50	Ljubljana	1%	3	0%	3
51	Cluj-Napoca	1%	-10	0%	2
52	Budapest	1%	-24	-1%	2

Table 2: Top 50 most popular startup hubs among founders in Europe

Source: Startup Heatmap Europe Survey, 1,295 votes

Regional Champions: Amsterdam leads the way

Amsterdam is the most popular hub among Benelux-based founders. This is indeed the first time since the start of the survey in 2016 that a regional hub is the most popular – and not London or Berlin. With 46% of the regional vote, Amsterdam pushes ahead and even marks the highest share of vote across all regions recorded. It is a further sign of the end of unchallenged domination of the top hubs and motivates to look for other challenger hubs, that could do the same in their region.

For founders in the Nordics and Baltics, no clear regional leader emerges. Berlin leads with 41% of the vote ahead of a stand-off between London, Tallinn, Copenhagen, Stockholm and Helsinki, all reaching 20-25% of regional founders. This shows that the Nordic and Baltic region is well developed and offers a great choice of hubs for founders.

The Mediterranean hubs are even more fragmented, with only Barcelona and Lisbon reaching a sizeable followership of 18% each. Remarkable are the increases of Athens (+5%) and Nicosia (+4%), who seem to have attracted more attention in 2020 than the years before.

Berlin dominates Western Europe with 45% of the vote. The stable picture shows that only Zurich (20%) and Munich (17%) reach a noteworthy prominence across the region over the years. Vienna is however catching up by increasing their regional vote in Western Europe by 11% points.

Central Eastern Europe's long-time favorite London is overtaken by Berlin in 2020 (36% vs. 35%). The region shows the highest fragmentation with no clear contender emerging from the local

ranks. Bucharest reaches 14%, Tallinn 13% and Prague 11% of the regional vote.

In the UK and Ireland, we see clearly the effects of Brexit on the preferences of founders. Next to London's downfall, Dublin shot to the third rank with a 21% point increase, overtaking Manchester, Edinburgh and Newcastle, who were the strongest local contenders in the past.

Regional Rankings:

Benelux	Nord.Balt	Med	West	CEE	UK.Ire
Amsterdam (+6%)	Berlin (+7%)	London (-2%)	Berlin (+5%)	Berlin (+1%)	Berlin (+9%)
Berlin (-20%)	London(+12%)	Berlin (+10%)	London (-4%)	London (-12%)	London (-19%)
Luxembourg (+10%)	Tallinn (-8%)	Amsterdam (+6%)	Zurich (+3%)	Bucharest (+6%)	Dublin (+21%)
London (-15%)	Copenhagen (+7%)	Barcelona (-12%)	Barcelona (+9%)	Barcelona (+1%)	Barcelona (-2%)
Barcelona (+8%)	Stockholm (-7%)	Lisbon (-13%)	Munich (+3%)	Tallinn (+3%)	Amsterdam (-8%)
Rotterdam (+15%)	Helsinki (-4%)	Madrid (-2%)	Vienna (+11%)	Vienna (-1%)	Lisbon (-5%)
Lisbon (+1%)	Amsterdam (+6%)	Athens (+5%)	Amsterdam (+6%)	Amsterdam (-1%)	Paris (+4%)
Paris (-2%)	Munich (+8%)	Paris (-5%)	Paris (-7%)	Prague (+2%)	Manchester (-1%)
Brussels (-9%)	Zurich (+9%)	Nicosia (+4%)	Lisbon (+/-)	Warsaw (+1%)	Newcastle (n/a)
Eindhoven (-5%)	Oslo (+1%)	Tallinn (+1%)	Dublin (+/-)	Munich (+3%)	Stockholm (-1%)

Table 3: Most popular hubs based on regional founders' votes, with change from last year

Source: Startup Heatmap Europe Survey 2020

Ecosystem Dynamics

Popularity and brand perception is an important indicator to foresee future developments in an ecosystem, as for example total investment sums will only adjust in 5-10 years to an increased activity in the early-stage support system for founders. However, there is of course more factors at play that we can look at. The Startup Heatmap has been aggregating many different sources to allow to capture ecosystem dynamics ranging from investments to job creation, diversity, accelerator support, developer availability and global connectivity.

On the Startup Heatmap Europe Platform you can find a variety of metrics to explore the performance of your favorite startup hubs. Here we restrict ourselves to show some highlights of the city comparison:

Industry Connections

In the survey we asked founders who picked a city as an attractive place to start their company to rate the destinations for various categories. One of them is how well the startup scene is connected to the industry. The value shows the percentage of very good or extremely good ratings. Only cities with a minimum of votes are included.

The cities of London, Tel Aviv, Munich reach an extremely high rating of >86% endorsements by their followers.

City	Value
London	90%
Tel Aviv	88%
Munich	86%

Table 4: Endorsements (= % of ratings >7 of 10) for Industry Connections
Source: Startup Heatmap Europe Survey 2020

Female

To determine which cities have the largest share of female entrepreneurs, we have compiled a dataset of >20,000 founder profiles across Europe. Oslo is ranked 3rd with 26%, behind Budapest and Vienna with 30% and 34% respectively.

City	Value
Vienna	34%
Budapest	30%
Oslo	26%

Table 5: Percentage of female names among founder names per city
Source: Startup Heatmap Europe Analysis of >20,000 founder profiles in 2020

Developer Availability

To understand the available talent pool, we track the number of full-stack developers per city as estimated by Atomico and Stackoverflow every year. The last estimate is from 2019 and shows that London is the largest labor market for IT specialists, followed by Paris and Amsterdam. Cologne in Germany is ranked 4th with a remarkably large pool.

City	Value
London	357,900
Paris	268,600
Amsterdam	216,800
Cologne	165,900

Table 6: Number of software developers per city
Source: Atomico / stackoverflow

Investment Growth

With 8bn € startup investments on average per year, London is by factor 2x the largest destination for VC funding in Europe – however will this remain like this forever? We are looking at the long-term investment growth by comparing the annual average of 2015-2017 with 2018-2020 based on dealroom.co data, showing which hubs have the largest gains. Here we look only at hubs with more than 200mn € investments per year.

Bucharest has seen the highest growth, shooting from barely any investments to an average of 300mn € per year in 2018-2020. In total investment sums it is behind Zurich, which grew also an impressive

444%. Tallinn is growing by 370% and maybe most remarkably Munich has increased its average annual investments to 880mn € (+290%), which is considerably harder to do coming from a higher level.

City	Investment (3yr avg.)	Growth
Bucharest	300mn €	3,231%
Zurich	450mn €	444%
Tallinn	210mn €	370%
Munich	880mn €	290%

Table 7: Average of total startup investments between 2018-2020 and growth from average in 2015-2017
Source: Own calculations based on data from dealroom.co

Value for Money

In the survey, we asked founders who voted for a destination to rate them from 1-10 on the criteria of “value for money”, meaning the balance of benefits and cost of the location in question. In the results only cities with a minimum threshold of votes were included.

The top destination in this category is Porto with a 94% positive rating. Porto, skyrocketed 38 ranks in this years survey ending up as the 18th most popular destination overall. It is followed by Ljubljana with a solid 90% endorsement rate for Value for Money and Tallinn with 88%.

City	Value
Porto	94%
Ljubljana	90%
Tallinn	88%

Table 8: Endorsements (= % of ratings >7 of 10) for Value for Money

Source: Startup Heatmap Europe Survey 2020

Job Creation

To understand which startup hubs create the most tech jobs, we are tracking job openings on public job boards related to startups.

Looking at the monthly data, we see Berlin leads over Berlin even though it has a smaller number of investments every year. Paris and Munich follow suite with also more than 1.000 job openings in the startup sector per month.

City	Monthly Startup Job Openings
Berlin	2,757
London	1,818
Paris	1,338
Munich	1,125

Table 9: Job openings in February 2021

Source: Startup Heatmap Europe tracking of job listings, 2020

Ease of Doing Business

Founder ratings for Ease of Doing Business show that startup friendly regulation pays off for governments and that smaller hubs are well positioned to outperform the incumbents in this category.

Dublin leads this category in 2020 with a marginal lead over Tallinn. Luxembourg still receives a rating of 90%.

City	Ease of Doing Business Rating
Dublin	94%
Tallinn	93%
Luxembourg	90%

Table 10: Endorsements (= % of ratings >7 of 10) for Ease of Doing Business
Source: Startup Heatmap Europe Survey 2020

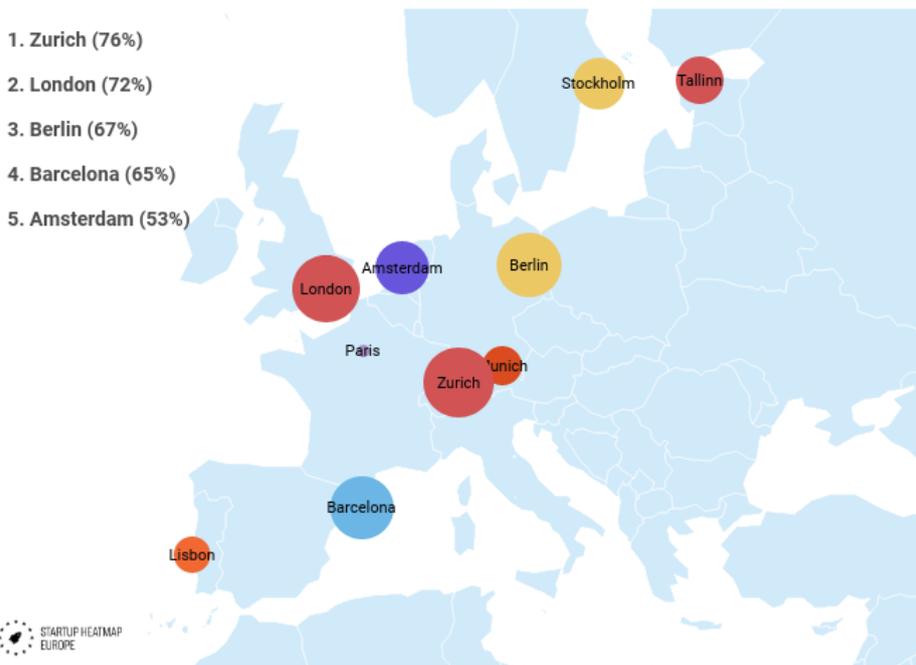
Case Study: How does Barcelona maintain the 3rd rank for 4 years?

It is four years in a row that Barcelona maintains as the 3rd most attractive hub for startups in Europe based on our annual survey on founders mobility since 2017-2020. For 2020, more than 17% of all European tech founders chose Barcelona as their location for their startup. This also translates into an exceptional high share of foreign-born founders in the city, where over 65% of startup founders in Barcelona are foreigners, placing Barcelona as the 4th most international European startup hub.

Barcelona keeps thriving as one of the most diverse startup ecosystems

Barcelona has one of the most dynamic startup ecosystems in Europe with over 1,197 startups (MWC Barcelona). The Catalan capital is also home for 7 international unicorns, who opened offices there, including N26. Further there are three homegrown unicorns, namely Glovo, Letgo and eDreams. eDreams went public and Letgo moved to New York, but both have their roots in the Catalan Capital.

Top European Cities with Highest % of Foreign-Born Founders



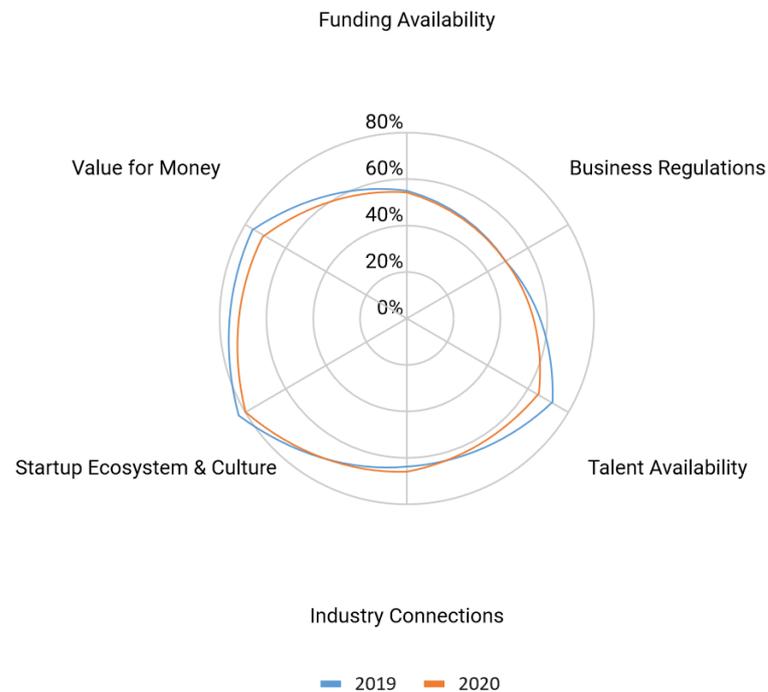
Graph 2: Largest percentage of foreign-born founders per city
Source: Startup Heatmap Europe Survey Data 2016-2020

According to the Dealroom, Barcelona startups raised over 3.56 bn € in investments between 2013 and 2020. It is the 8th largest investment hub measured by the average investments per year in Europe (620mn € / year). Capital invested in Barcelona has nearly doubled since 2016 showing how the ecosystem is developing and becoming more mature.

In the survey we have asked those who said they could imagine setting up their company in Barcelona to rate the ecosystem along 6 criteria: Funding availability, Business Regulations, Talent availability, Industry connections, Startup ecosystem & culture, and Value for money. Founders could rate each criteria from 1-5 in half point steps. The percentages in the graph below show the endorsements, i.e. ratings above 3 points, for each dimension. Overall, Barcelona receives high ratings and above the average on startup ecosystem

support (82%) and value for money (75%). To most of the European founders, the city resonates as a vibrant and growing hub full of opportunities.

Barcelona's Brand Perception 2019 vs. 2020



Graph 3: Founder endorsements for Barcelona based on categories over time
Source: Startup Heatmap Europe Surveys 2019 and 2020

Barcelona has a unique tech community

Barcelona has the second most tech-skilled founders among large tech hubs with >500mn € investments per year, giving way only to Tel Aviv. Over 32% of Barcelona startup founders are tech-skilled and have advanced programming and coding skills.

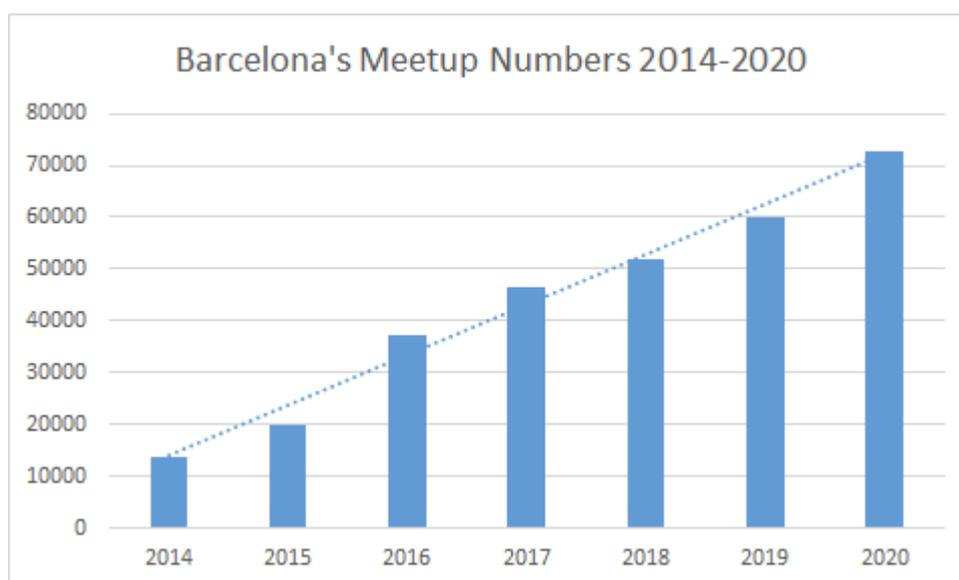
Based on the registered users on stackoverflow.com, a public platform for professional and enthusiast programmers that serves 100 million people every month, Barcelona is the 7th largest developer hub in Europe. The city has a strong digital community

with 77,000 professionals where 26% of digital professionals are women ([Barcelona Digital Talent](#)). The Catalan hub attracts most of the digital talent from Europe - over 31% of the digital professionals come from other cities, primarily from Madrid and Paris ([Barcelona Digital Talent](#)).

Barcelona also offers a competitive gross salary for the digital professions- around €38K, while the average salary in London is €73K (Teleport). Based on our own tracking of job openings in Barcelona, we see AI & Data, SaaS and Fintech are the most in-demand recruitment areas in Barcelona.

7th fastest growing tech meetups hub

Barcelona's tech community is the 7th fastest growing in Europe with an increase of meetups by 426% from 2014 to 2020 as measured by followers on meetup.com. Despite COVID-19 and lockdowns, meetup participation in Barcelona increased by 21% in 2020. As most of the events were happening online, the meetups participants became global with founders joining from all parts of the world.



Graph 4: Participation in Meetup Groups in Barcelona over time
Source: Meetup.com

The top 10 biggest regular meetup groups with the most members in Barcelona:

Meetup Title	Group Members
Ironhack Barcelona - UX Design & Tech School	7,098
Barcelona Startup Founder 101	5,908
BCNewt Tech Talks	3,493
ThoughtWorks Barcelona	3,181
Glovo Tech Talks	2,944
allWomen	2,741
N26 Tech, Product & Design Events in Barcelona	2,575
Codeworks - Barcelona	2,402
Digital People Barcelona	2,081
Itnig - Tech & Startup	1,957

Table 10: Most active Meetup Groups in Barcelona
Source: meetup.com

The community's output on deep tech can be seen by the exceptional high focus on deep tech startups. In fact, based on Dealroom data Barcelona beats Paris, Berlin, and London in terms of the share of deep-tech based startups:

	Barcelona	Paris	Berlin	Amsterdam	London
Number of startups	2,248	8,227	7,191	5,016	23,946
Number of Deep Tech startups	296	762	649	378	1.803
Share Deep Tech	13.20%	9.30%	9.00%	7.50%	7.50%

Table 11: City comparison of number of Deep Tech related startups
Source: Dealroom.co

Besides the growing number of the tech community, Barcelona's startup scene attracts international attention through events like [Mobile World Congress \(MWC\)](#) (6th in the Startup Heatmap Tech Conference Ranking) that hosts [4YFN](#) (Four Years from Now) as a conference inside the conference, showcasing the latest technological advancements with a mix of activities including stage talks, startup pitches, VC meetups, workshops, corporate innovations and an investor program.

The MWC is the most international of the large tech conferences in Europe beating even Websummit with >77% international guests as we tracked in the Startup Heatmap Conference Monitor.

Barcelona has also a great number of incubators and accelerator programs with international mentors helping entrepreneurs get their ideas off the ground. Some of the most notable accelerator programs are Conector, Wayra Barcelona, Seedrocket, CRAASH Barcelona, and D-Health Barcelona. Remarkably, Wayra Barcelona is the top rated accelerator (10th) on the follow-on funding rate, where 43% of startups received additional funding following the initial investment based on our analysis. Another remarkable statistic is that D-Health

Barcelona has the 6th highest percentage of female participants among all accelerators in Europe with 33% of participants being women.

The Barcelona startup scene is made up of a rapidly growing and constantly evolving community of talented and international professionals with supporting organizations. It has all the necessary elements of a successful and healthy startup ecosystem to grow sustainable companies.

Here are some stories from corporates and founders on why they pick Barcelona:

**Marc Gómez, CEO of ABB in Spain, digital solutions company:
“Barcelona attracts talent and knows how to retain it”**

The Swiss company [ABB](#), a corporate specializing in digital solutions for all industry sectors, has opened its first European customer innovation centre in Barcelona. Marc says: “We chose Barcelona for four major reasons. Firstly, due to the region’s infrastructures. Secondly due to its important industrial base and the existing market in Catalonia, making it one of the pillars upon which a company can grow and progress.

And the other two reasons are intangible, but they are the ones that make the difference. Firstly, in Barcelona we can see an unbeatable ecosystem that brings together start-ups, universities and research centres: this is the differential factor that makes one decide to locate this kind of centres in the city. Secondly and finally – and probably what was key to the decision to locate in Barcelona – is the access to talent, and the ability to retain that talent.”

Carlos Buenosvinos, Head of SEAT:CODE, car manufacturing development centre: “Barcelona holds all the cards to be a major player in the mobility of the future”

Barcelona-based car manufacturer SEAT, part of the Volkswagen Group, opened the [SEAT:CODE](#) development centre in the city center, giving it the mission of finding new business models related to mobility and the transformation of the automotive sector. Carlos says: “From a technological perspective Barcelona is a city where there are major companies working on issues related to mobility. And not just mobility of people, but also logistics, delivery, food delivery, last mile, etc. Barcelona holds all the cards to be an important player in the mobility of the future.”

Davis Siksans, CEO of Printful, popular printing company: “Barcelona is a great location because it has a powerful entrepreneurial and tech scene”

[Printful](#) is an on-demand printing and warehousing company that fulfills and ships custom clothing, accessories, and home and living items for online businesses. In May 2020, Printful opened a fulfillment center right outside Barcelona after seeing an increasing demand of their services in the Western European markets.

“Barcelona is a great location for us because it has a powerful entrepreneurial and tech scene, and it’s close to other countries where we want to sell more of our products. That’s why Barcelona seemed like the place to be. We’re also excited to look into Barcelona’s talent pool. We’re especially interested in finding software developers”, says Davis.

Desiree Taboada, Founder of the food wasting app “I am perfect food”: “Barcelona, apart from being a great place to start a startup, is home to a lot of people that are open to joining their cause”

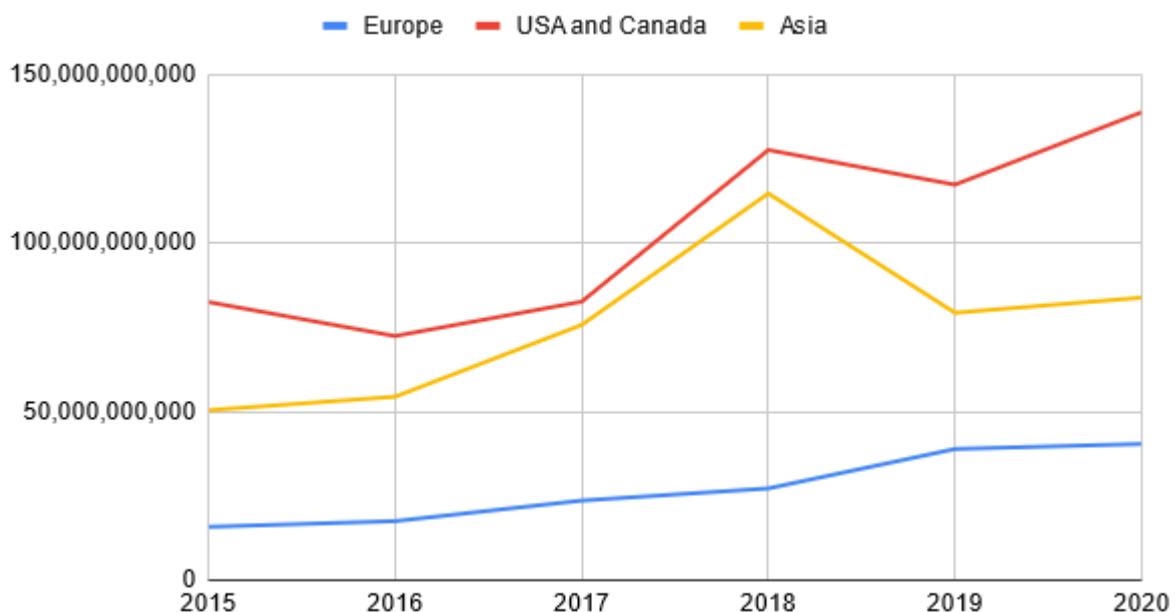
I am perfect food is a young Barcelona startup that fights against food waste via an app that allows users to order imperfect food products for up to 80% off. “Barcelona is a city where people are very concerned about their quality of life and the environment. They’re constantly working to make their lives better. They try to make conscious decisions like riding bicycles, buying local products and recycling. And that’s why it’s a good place for us to make the connection between reducing food waste and saving money for yourself”, says Desiree.

II) What is the Impact of “Ecosystems”?

When we speak of “ecosystems” we take a particular vanguard on analyzing startup success. The ecosystem is the cumulation of resources, networks, opportunities, and institutional settings that make the growth of a company possible.

Today, more than yesterday, local conditions play a crucial role in supporting entrepreneurial success and therefore the growth and development of a region. In comparison to other world regions, Europe continues to lag behind in the total number of startup investments by the factor of 2x versus Asia and a factor of more than 3x versus the US and Canada.

Europe, USA and Canada and Asia



Graph 5: Total Investments per year per Region
Source: Dealroom.co

The current shock of the COVID-19 pandemic is further affecting the social and economic environment and puts many European startup ecosystems under pressure and uncertainty is dominating the general business environment.

Top 3 Hubs capture >50% of investments

The performance picture is regionally diverging with a strong leadership group of only three hubs, that capture the bulk of investments: London, Paris and Berlin share >50% of all investments in Europe among themselves (based on the average annual investments raised in the past three years in 111 cities across Europe). However, we see several startup hubs increasing their annual investments raised. There is a total of 17 hubs, who doubled their 3 year average based on a comparison of 2015-2017 and 2018-2020.

The diverging performance clearly shows that locally embedded ecosystems are the driving factor behind startup success. Investment growth for startups is dependent mainly on location and connection to a functioning ecosystem. Rather than the place itself, the existence of a healthy ecosystem that empowers startups to succeed is crucial. From previous research we know that entrepreneurial talent aggregates in locations where support conditions are favorable, and capital follows suite. The key lever for cities to compete in this race is to support the build-up of world-class ecosystems comprised of entrepreneurial culture, talent availability and diversity, startup-friendly policies, international openness as well as the existence of vibrant communities. Capital is a result of this, not the source. It is therefore questionable if creating regional investment funds by the government as the main policy tool is advisable.

City	Avg. 15-17	Avg. 18-20	Growth	Rank 3-year Average	Rank Growth	Growth in Absolute Numbers
Bucharest	10mn €	302mn €	3231.25%	14	1	292mn €
Duesseldorf	10mn €	88mn €	571.83%	32	2	78mn €
Zurich	80mn €	450mn €	443.92%	9	3	370mn €
Vilnius	20mn €	110mn €	388.13%	29	4	90mn €
Lisbon	30mn €	149mn €	374.28%	21	5	119mn €
Tallinn	50mn €	213mn €	370.25%	17	6	173mn €
Munich	230mn €	882mn €	289.69%	7	7	652mn €
Amsterdam	290mn €	973mn €	234.25%	6	8	683mn €
Bristol	120mn €	356mn €	208.96%	13	9	246mn €
Utrecht	40mn €	125mn €	196.29%	26	10	85mn €

Table 12: Largest Percentage Increases in Total Investments Raised per City

Source: Own Calculations based on Dealroom.co

Europe has now 6 Unicorn Ecosystems

Instead of taking the number of unicorns created in an ecosystem, we suggest to look at the number of cities in Europe where startups managed to raise >1bn € total investment per year. There is only 4 hubs, who manage to raise this amount 3 years in a row (London, Berlin, Paris, Tel Aviv). Stockholm managed at least the last two years. Amsterdam and Munich in one since 2018.

2014	2015	2016	2017	2018	2019	2020
2	3	4	3	4	6	6
London, Berlin	London, Berlin, Paris	London, Berlin, Paris, Stockholm	London, Berlin, Paris	London, Berlin, Paris, Tel Aviv	London, Berlin, Paris, Tel Aviv, Stockholm, Munich	London, Berlin, Paris, Tel Aviv, Stockholm, Amsterdam

Table 13: Cities where startups raised cumulatively more than 1bn € per year over time

Source: Own recordings of Dealroom.co data year by year

In such a context, it becomes crucial to explore and understand place idiosyncrasies to identify opportunities, weaknesses and risks influencing the functioning of each ecosystem. This allows policy-makers and ecosystem builders to devise strategies to reroute the ecosystems onto a sustainable development path.

Performance & Impact of Startup Ecosystems

A first step to understand how startup ecosystems in Europe are performing is to analyze the investment growth – it serves as the dependent variable in our analysis if you like. Investments offer insights on the trust investors have in the future performance of regional or vertical ecosystems. It allows us to understand the big picture of general developments in Europe as well as to look into the regional and vertical heterogeneity.

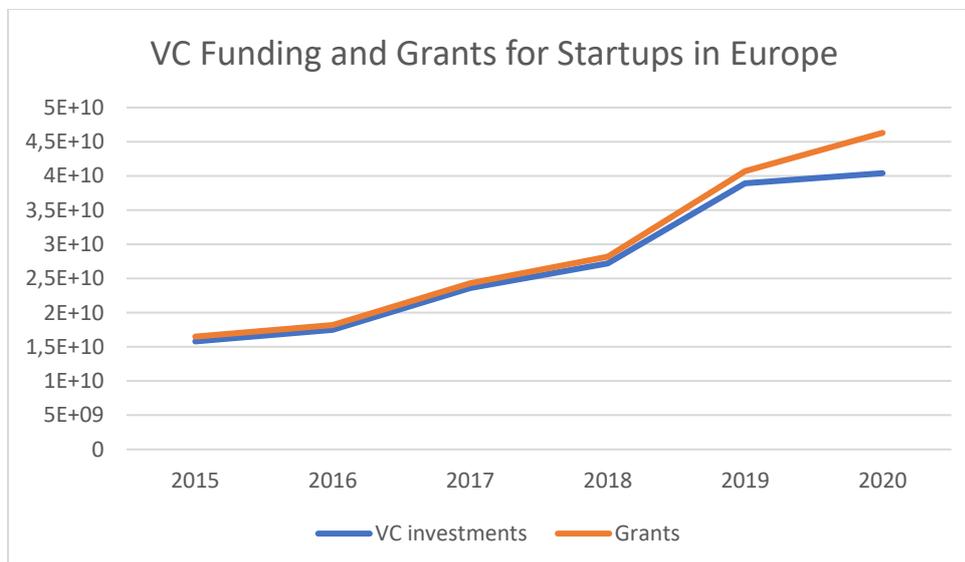
The EU's Covid Response boosted a 14% growth in investments

By exploiting both Dealroom and Crunchbase databases, we have investigated over time the total amount of investments per year, excluding non-tech startups and grant financing. From 2015 to 2020, we identify a steady and strong increase of total investments of on average 20% year over year. In 2020 funding increased only by 4% - which marks a dramatic stop to this growth path.

There is however, an important caveat: If we include government grants into the picture, we see an increase of 14% in 2020 spurred by a 5.9bn € injection of grants of governments, mostly as COVID-19 response.

	Total Investments	Growth Rate
2020	40.400.000.000	3,86%
2019	38.900.000.000	43,01%
2018	27.200.000.000	15,25%
2017	23.600.000.000	34,86%
2016	17.500.000.000	10,76%
2015	15.800.000.000	

Table 14: Total investments excluding grants in Europe and growth rate
Source: Dealroom.co



Graph 6: VC Funding and Grants for Startups in Europe
Source: Own calculation based on data from Dealroom.co

It is interesting to see, that the percentage of international participation in European rounds is further increasing, even at an accelerated pace.

International investments from outside into Europe				
	Funding amount (€)	Nr. of rounds	% of total investment amount in Europe	% of international rounds in Europe
2020	24.600.000.000	1.226	61%	25%
2019	23.200.000.000	1.189	60%	21%

2018	13.800.000.000	1.050	51%	17%
2017	11.900.000.000	1.150	50%	17%
2016	6.800.000.000	921	39%	14%
2015	7.600.000.000	765	48%	13%

Table 15: International Investments from outside Europe over time

Source: Dealroom.co

In 2020 one fourth of all rounds in Europe had non-European investors participating. This percentage was 13% five years ago. In terms of total funding, these rounds make up 61% of all capital invested in Europe in 2020.



Graph 7: Share of rounds with non-European Investors over time

Source: Own calculations based on data from Dealroom.co

Seed Investments shrink by 8% for 3 years in a row

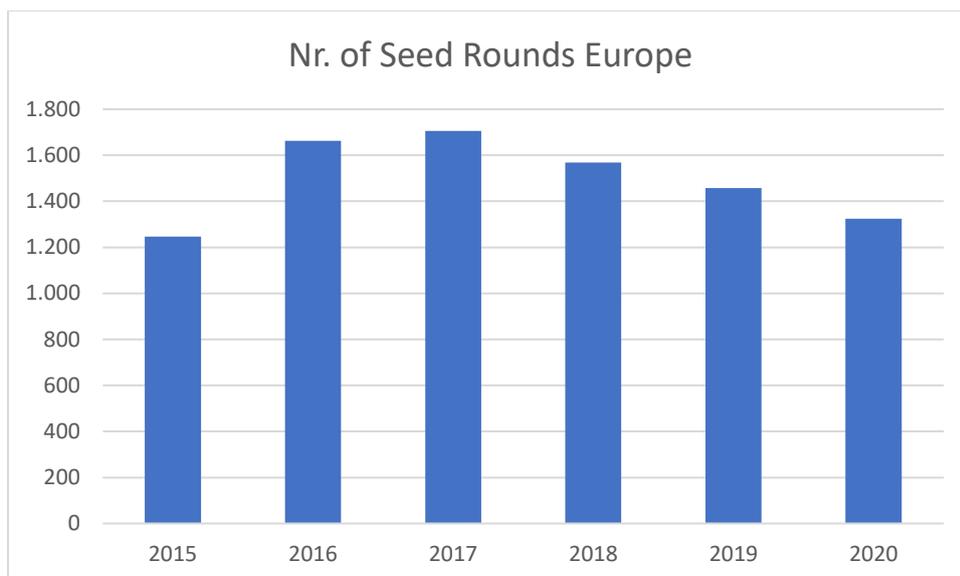
Despite the current positive trends of investments backed by international investors as well as European governments, there is a worrying trend to be observed. Seed investments as measured by rounds between 500k – 2mn € are in decline for 3 years in a row with an average of -8% per year. While in 2017, Europe saw 1,706 seed rounds, in 2020 the number was down to 1,325.

Seed investments are a particularly important metric as they indicate the potential of future larger VC rounds taking place. Simply said, if we do not see more seed rounds today, it is unlikely that we will see more mega rounds >100mn € in the coming 3-4 years. Thus, if this trend continues, total investments in Europe will be declining in the coming years. This trend might not be visible though, as already successful startups like Klarna or N26 keep raising larger rounds than before affecting the overall numbers. It is advisable to correct total investment sums by not taking into account startups older than a certain age or raising above a certain amount.

	Nr. of seed rounds Europe	Nr. of seed rounds with international source of funds	% of total seed funding	Growth Rate
2020	1.325	207	15,60%	-9.12%
2019	1.458	170	11,70%	-7.07%
2018	1.569	175	11,20%	-8.03%
2017	1.706	244	14,30%	2.59%
2016	1.663	182	10,90%	33.36%
2015	1.247	149	11,90%	

Table 16: Number of seed rounds (500k – 2mn €) with and without international participation

Source: Own Calculation based on data from Dealroom.co



Graph 8: Nr. of seed rounds (500k – 2mn €) per year in Europe

Source: Own Calculation based on data from Dealroom.co

48% of startup hubs are in decline

To get an idea of the regional differences we looked at 62 cities where data on seed investments was available for every year since 2015. 29 of these had a negative growth rate (48%), while 14 were able to double their seed investments over time (23%). The highest growth rates were recorded for Krakow, Utrecht and The Hague. The total amounts are not particularly high, but since we look at three year averages and only seed investments, the data is showing a robust growth.

City	Avg. 15-17	Avg. 18-20	Growth Seed
The Hague	0.62mn €	5.1mn €	732.43%
Utrecht	0.58mn €	5mn €	757.14%
Krakow	0.26mn €	2.6mn €	874.68%

Table 17: Highest growth rates in seed investments (500k – 2mn €) based on 3-year averages

Source: Own calculations based on dealroom.co

To get a more complete overview we list here the 10 startup hubs in Europe with the highest seed investment amounts based on a 3-year average from 2018-2020 as well as their growth rate compared to the 3-year average from 2015-2017. While the ranking of the seed investment sums confirms the usual picture, the growth rates show significant differences. Particularly interesting are Zurich (+96%) and Munich (+85%).

City	Avg. 15-17	Avg. 18-20	Growth Seed
London	179mn €	164mn €	-8.36%
Paris	119mn €	116mn €	-2.44%
Barcelona	32mn €	41mn €	27.16%
Berlin	45mn €	39mn €	-14.53%
Stockholm	33mn €	28mn €	-15.57%
Amsterdam	21mn €	23mn €	7.14%
Helsinki	14mn €	20mn €	39.44%
Munich	10mn €	19mn €	85.76%
Madrid	16mn €	18mn €	5.21%
Zurich	7mn €	14mn €	96.30%

Table 18: Cities with highest seed investments (500k – 2mn €) based on 3-year averages
Source: Own calculations based on dealroom.co

Figures on seed investments in Europe present some strong and some weak points confirming the important role of regional ecosystems. In addition, we are investigating what role vertical orientations play.

There is a basic challenge in measuring “verticals” or tech trends by investments, as the terms used by practitioners change frequently and databases have a hard time to find common definitions and re-tag their recorded investments accordingly. For example, what is considered an Artificial Intelligence startup? Where is the cut-off line between Biotech and Health Tech? What do you mean by CleanTech? It would be easier to talk about “industries”, but the classical definitions of classes like Software, Automotive or Manufacturing feel odd when analyzing the disruptive trends promoted by startup companies. Therefore we must find ways to categorize investments “on the fly”.

Crunchbase offers a very transparent system of tags, that allows to re-combine the tags used in their database on your own. Thus we tried to include only those tags that match our definitions of the verticals as we see them used by practitioners.

	Avg 2015-17	Rank t ₁	Avg 2018-20	Rank t ₂	Growth rate
AI&Data	€ 253.619.215	2	€ 288.027.010	1	13,57%
Mobile Internet (Internet services)	€ 339.207.380	1	€ 276.387.739	2	-18,52%
Fintech	€ 223.846.845	4	€ 268.468.635	3	19,93%
Health	€ 233.703.214	3	€ 261.182.166	4	11,76%
Biotech	€ 106.537.676	5	€ 101.389.176	5	-4,83%
Mobility	€ 91.537.034	6	€ 82.245.557	6	-10,15%
Logistics	€ 57.438.698	8	€ 66.805.773	7	16,31%
CleanTech	€ 64.763.494	7	€ 63.511.431	8	-1,93%
Gaming	€ 40.731.391	9	€ 45.767.633	9	12,36%
Agritech	€ 26.630.799	10	€ 36.329.556	10	36,42%
Cybersecurity	€ 22.310.006	11	€ 28.043.350	11	25,70%

Table 19: Seed Investments (500k – 2mn €) per vertical in Europe over time

Source: Own calculation based on Crunchbase data

AI & Data is the dominant investment sector in Europe

By using these definitions we can start to understand the different levels of importance played by the various verticals at the core of the startup ecosystem. We decided to investigate investments in each vertical by taking into account the average of seed investments (500k – 2mn €) in two different timespans comprising three years each: t₁ considering 2015-2017 and t₂ referring to 2018-2020.

It is not surprising to see the dominant positions played by FinTech, Health, AI&Data and Mobile Internet services. The latter have

experienced however a strong decline, which indicates that this established technology is reaching maturity and leaves the “innovation space” where venture capital is the main fuel for growth.

In fact it gives an interesting glimpse into the S-shaped growth of innovation and reminds us of the long cycles we are observing. Fintech (+20%) and AI&Data (+14%) for example are innovation fields still in the growth phase and we do not yet know when they will have reached their zenith. Both AI&Data and FinTech increase over the two periods moving respectively to the first and third position in the ranking. Despite the expectation after the frenzy on health solutions in 2020, Health has not yet risen dramatically, and the growth rate over the past 6 years remains moderate at 12%. Interestingly AgriTech has the highest growth rate of 36%, but also one of the lowest total amount of seed investments. It remains to be seen if this is going to be a major tech trend for Europe.

Overall, we see a rather stable picture on verticals with slow but steady changes. It is therefore clear that new verticals in the startup world emerge over the course of 5-6 years and we do not see sudden changes from one year to the other.

III) What Dynamics Spur the Growth of Ecosystems?

Investment give us a general overview of the performance of startup ecosystems, but what are the input factors and dynamics that shape these results?

The growth of regional innovation spaces is driven by a variety of factors. We try to capture these by analyzing the following questions:

- ➔ Communities & Their Purpose
- ➔ Transnational Connectivity
- ➔ Diversity
- ➔ Startup Support Organizations & Entrepreneurial Leadership

A) Communities & Their Purpose

Startup success is often credited to the support of a tight-knit community providing networks, access to resources and a helping hand in the early-stages of a company. As communities are rarely motivated by funding nor do they participate in the upside of equity investments, they are driven by a common purpose, that binds them together and motivates them to collaborate. It is therefore important to understand around which issues and trends tech communities organize – be it of benevolence, curiosity, or business ambition.

Paradox: Meetups Increased During Pandemic

A practical indicator for the level of activity of the community is to measure the participation in and frequency of startup related meetups.

First of all we observe a curious trend: During the pandemic the popularity of meetups overall did increase, not slow. The participation in tech related meetups tracked on meetup.com did increase by 13% throughout 2020. This shows that many of the meetups were held online and that founders rushed to participate.

Even more interesting are the emerging regional differences: Large startup hubs saw large increases, while less international known places lost participants. Stockholm is the city with the biggest jump in the sample with +156% participants in local meetups, showing that many international founders were tuning into the otherwise local exchanges. The same we observe for London (+64%) and Berlin (+51%). Other hubs, who did not benefit from that increased international attention, like Madrid (-58%) or Budapest (-45%) suffered from an expected decline in participation. In a way the pandemic allowed for a more level playing field, where founders were able to choose freely in which ecosystem, they would like to be embedded in.

Year	Meetup Participants
2017	1309352
2018	1387801
2019	1521415
2020	1722391

Table 20: Sum of group members on tech related meetups in 21 tracked cities

Source: Atomico / meetup.com

City	2020
London	64%
Berlin	51%
Paris	15%
Amsterdam	52%
Munich	-21%
Madrid	-58%
Barcelona	21%
Dublin	-3%
Zurich	-34%
Stockholm	156%
Manchester	4%
Budapest	-45%
Vienna	-38%
Copenhagen	23%
Frankfurt	-20%
Lisbon	22%

Table 21: Percentage change of meetup participation per city
Source: Atomico / meetup.com

City	Meetup Title	Group Members
London	Outreach Digital The Marketing, Analytics, UX & Tech Club	19,351
Stockholm	STHLM TECH Meetup	16,838
London	London New Tech	16,743
London	Technopreneurs - Tech Startups and Entrepreneurs	15,558
London	Silicon Roundabout	14,698
Tel Aviv	Full Stack Developers Israel	13,384
Tel Aviv	Meetups at Wix	13,274
London	ProductTank	12,513
Paris	Le Wagon Paris - Coding Bootcamp	11,948
Tel Aviv	Product Management Meetup (IL)	11,297

Table 22: Europe's largest tech meetup groups on meetup.com

Source: meetup.com

The increased online activity of the startup community during the pandemic allows us to understand the trends that move entrepreneurs in Europe. We therefore turn to analyze emerging topics by monitoring tech meetups, social media debates and tech news blogs. The Startup Heatmap has built up a monitoring system that tracks >1mn datapoints every year and allows for qualitative and quantitative text analysis. To understand the strength of a tech trend, we created an index based on buzzwords mentioned on twitter and tech blogs.

For FinTech Entrepreneurs it is either up or out

We open the analysis by looking at the Top 10 topics of the startup scene in 2020 and 2019. As presented in Table 2, AI & Data is dominating the debate, confirming the insight coming from the investment analysis. Fintech in contrast was sharply declining in attention of communities, dropping from 1st to 4th rank with only 7% share of voice in 2020. New emerging topics are indeed entering the debate making the general atmosphere extremely heterogenous. In term of share of voice, Creative & Culture, Mobility, Health & BioTech, CleanTech, Sustainability, Logistics and AgriTech are increasing. With the last three making a new entry into the top 10 this year.

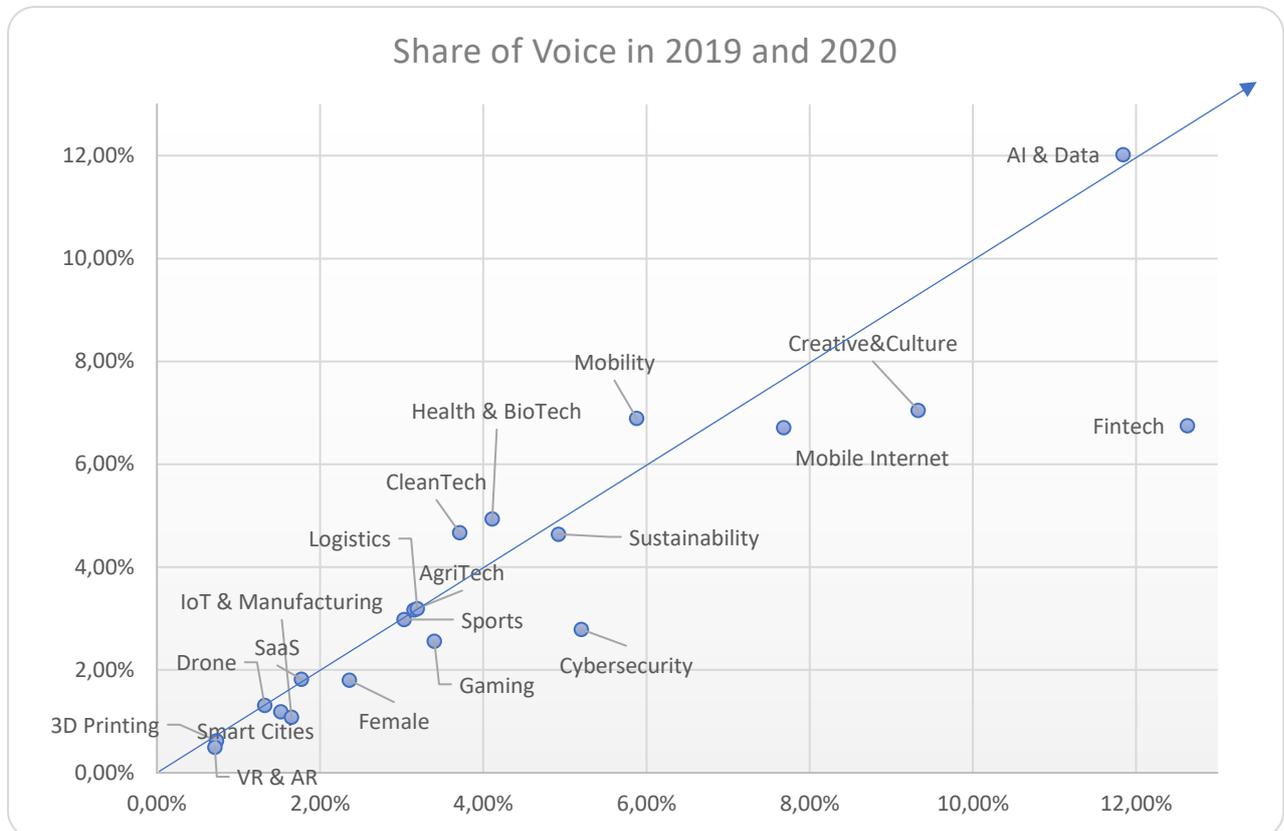
Top 10 Topics 2020		Share of voice	Top 10 topics 2019		Share of voice
1	AI & Data	12.02%	1	Fintech	12.63%
2	Creative & Culture	7.05%	2	AI & Data	11.84%
3	Mobility	6.89%	3	Creative & Culture	9.33%
4	Fintech	6.75%	4	Mobile Internet	7.68%
5	Mobile Internet	6.71%	5	Mobility	5.88%
6	Health & BioTech	4.94%	6	Cybersecurity	5.20%
7	CleanTech	4.67%	7	Sustainability	4.92%
8	Sustainability	4.64%	8	Health & BioTech	4.11%
9	Logistics	3.19%	9	CleanTech	3.71%
10	AgriTech	3.17%	10	Gaming	3.40%

Table 23: Share of voice of Top 10 Topics in 2019 and 2020

Source: Startup Heatmap Europe monitoring of social media and tech news

Mapping these results on a plotter chart, we see the large-scale decline for FinTech again. Graph 4 shows the data for 2019 on the horizontal and 2020 on the vertical axis. Consequently, all points above the line are increasing in relative attention, while those below the line are decreasing. This leads us to suppose that FinTech communities are declining, as the industry matures and entrepreneurs in this field are either “moving up”, i.e.

professionalizing and being less interested in community activity, or out of the sector. AI & Data, Mobility, Health & BioTech, and CleanTech seem to follow a positive trend instead and are emerging topics in the European startup scene.



Graph 9: Share of Voice by topics in 2019 and 2020

Source: Startup Heatmap Europe monitoring of social media and tech news

Example: Fintech nearing its zenith?

Fintech is the largest vertical by total investments in Europe (>8.3bn € in 2020). However, some signals point towards a slowing of the growth. While in 2019 Fintech was the most important trend for founders, its share of voice dropped from 13% to 7% in 2020. Also seed investments in Fintech, which can be seen as an indicator for future growth potential, started to decline in 2019 and shrank by 17% in 2020.

Betting on the Right Horse: Specializations Offer Growth Perspectives

Comparing this pattern of topic setting with an analysis of >3,000 regular community meetup groups in 102 cities, we see a similar pattern: AI & Data is a topic in 21% of the groups, while 14% focus on Creative & Cultural topics. Fintech lands on third rank with 7% of meetup groups being organized around this vertical.

More interesting are regional specializations. We analyzed where communities seem to have a particular focus by comparing the share of all local meetups and twitter mentions a topic captures. For the emerging topics of CleanTech, Health & BioTech and Mobility we find interesting results of hubs that have already built a strong community around these trends.

CleanTech:

Cologne has a strong focus on Cleantech, which is explained by the large number of traditional energy intensive corporations or energy producers in this part of Germany who are pushing for innovation in these sectors. There is for example an [active meetup community of >500 members](#) around Düsseldorf also reaching into Cologne, that focuses on the revolution of the energy market. Startups like Envelio, a developer of smart grids, or Einhundert Energie, providing digital green energy, are starting to make headlines with increasingly large Series A rounds.

Location	CleanTech Focus
Cologne	3%
Lisbon	2.6%
London	2.5%
Dublin	2.4%
Berlin	2.2%

Table 24: Largest share of voice of CleanTech topics per city in 2020

Source: Startup Heatmap Europe monitoring of social media and tech news

Health & BioTech:

Edinburgh has a unique position as a health tech cluster, driven for example by the Edinburgh bioQuarter and the vision to create Scotland's £1bn Health Innovation District. The 2nd most successful startup from Edinburgh after the world famous Skyscanner is a biotech called NuCana, who works on a cure for cancer patients.

Location	Health & BioTech
Edinburgh	8%
Helsinki	6.3%
London	5.1%
Warsaw	4.8%
Vienna	4.5%

Table 25: Largest share of voice of Health & BioTech topics per city in 2020

Source: Startup Heatmap Europe monitoring of social media and tech news

Mobility:

There is not yet a notable mobility startup from Prague, yet with the city's sustainable mobility plan as well as the opening of EIT's Central Eastern Headquarters for its Urban Mobility KIC, the activity around this trend has taken up. Shortly behind Prague we see Munich as a hub that has a strong focus on the mobility trend, with impressive startups like the flying taxi by Lilium Aviation or the e-car of Sono

Motors. Given the vicinity of both hubs, maybe there is a particular opportunity for collaboration on this trend?

Location	Mobility
Prague	8.6%
Munich	7.9%
Tel Aviv	6.8%
Edinburgh	5.8%
Budapest	5.4%

Table 24: Largest share of voice of Mobility-related topics per city in 2020

Source: Startup Heatmap Europe monitoring of social media and tech news

B) Talents & Diversity

The availability of talent and activation of a high diversity of knowledge bases is a crucial input factor for ecosystem growth. The diversity of knowledge bases, competences, and experiences enables an entrepreneurial ecosystem to quickly capture new trends and opportunities and thus spurs economic activity based on creative re-combination.

The US has 38% more developers per Capita than Europe

A key component of talent is the availability of IT developers. Based on the estimations of stackoverflow.com user statistics, Atomico has estimated the growth of full-stack developers in Europe (including Ukraine, Russia and Turkey) from 2017 to 2019 to be 11%, while the US developer population was declining. However per capita we see that Europe's developer base is still remarkably lower than in the US.

	2017	2018	2019
Europe	5.5mn	5.7mn	6.1mn (817 / 100k capita)
USA	4.4mn	4.4mn	4.3mn (1,310 / 100k capita)

Table 25: Number of Developers per region

Source: Atomico / Stackoverflow

The hubs with the highest developer communities in Europe are matching at least partly with the list of top hubs, with London and Paris on top, followed by Amsterdam. Interestingly, Berlin is missing from the Top 5, which could be explained by the relatively small corporate sector in Berlin. That is different for Cologne, one of Germany's industrial centers, that is positioned 4th based on the total amount of developers.

City	Professional developers
London	357900
Paris	268600
Amsterdam	216800
Cologne	165900
Moscow	160900

Table 26: Largest number of developers per City in Europe

Source: Atomico / Stackoverflow

31% of European Founders Know How to Code

But how large is the share of engineers and programmers among founders? It is of course not a requirement to be able to program yourself to start a digital company. However, when looking at >3,000 founder profiles we found the percentage of founders who know how to code surprising: Only 31% of European founders state IT skills as one of their strengths, while explicitly simple programming languages like HTML were included. Among male founders this percentage is slightly higher with 35% while only 16% of female entrepreneurs are familiar with programming.

There is also large differences between cities. In general cities in Eastern Europe seem to have more tech-skilled founders than Western Europe. Cluj-Napoca, a strongly developed nearshoring hub for Europe's industry, leads the list with an impressive 65% share of tech-skilled founders, followed by Timișoara (55%) and Brno (53%), the home of Avast, in Czechia.

City	Country	% Founders with Tech Skills
Cluj-Napoca	Romania	65.00
Timișoara	Romania	54.93
Brno	Czechia	52.94
Bucharest	Romania	51.61
Bratislava	Slovakia	45.16
Vilnius	Lithuania	45.00
Tel Aviv	Israel	44.57
Ljubliana	Slovenia	44.44
Helsinki	Finland	42.11
Zagreb	Croatia	42.11

Table 27: Largest share of founders with tech skills

Source: Startup Heatmap Europe, Analysis of >3,000 founder profiles in 2020

Tech skills are an important factor for startup success, but next to skills a crucial factor for success is the diversity of the talent pool, that allows a wide range of competencies but also experiences and backgrounds merge to a creative power that challenges the status quo and supports innovative growth.

To analyze diversity and inclusiveness in Europe we look at female founders and the percentage of foreign-born founders.

Discrimination against women founders costs 3bn € in 2020 alone

It is a known fact that female founders are widely underrepresented when it comes to VC funding. Startups with women in the founder team only attracted 8% of total investments in 2020 according to our analysis of data from dealroom.co. Even worse: The trend is negative, having decreased from 10% in 2018 to 8% in 2020.

This number is of course also dependent on the number of female founders active in the startup scene, which in 2020 stood at 15.5% as we revealed based on an analysis of 20,000 founder profiles in 2020. There are two issues to be observed separately when talking about gender parity:

1) Acceptance of Women as Founders

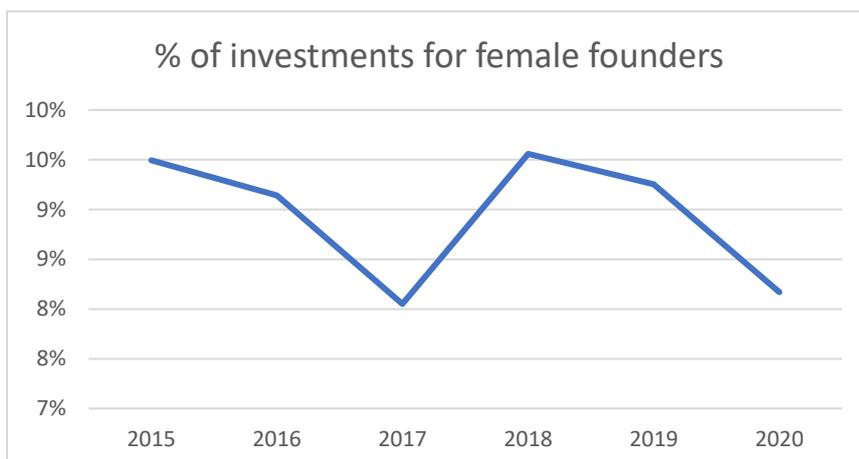
The percentage of 15.5 % female founders shows that there are strong barriers to entry for women who would like to start an entrepreneurial career. While a “fair” distribution might not be at 50-50, it is unrealistic to assume that there is such a strong imbalance of interest (85-15).

2) Equal opportunity to receive funding

Only if women entrepreneurs are not discriminated against in funding decisions can we speak of an inclusive ecosystem that truly is open and allows for an unhindered creative exchange of founders of people of different genders. To put this in a number, the funding statistics suggest that women entrepreneurs receive roughly 3bn € too little funding per year, as this is missing amount to match the 15.5%.

	Total investments in Europe		Female founders in Europe			
	Funding amount every 12 months (€)	Nr. of round every 12 months	Amount invested €	Nr. of rounds	% amount on total inv.	% rounds on the total
2020	40,400,000,000	4,967	3,300,000,000	554	8%	11%
2019	38,900,000,000	5,774	3,600,000,000	712	9%	12%
2018	27,200,000,000	6,104	2,600,000,000	810	10%	13%
2017	23,600,000,000	6,718	1,900,000,000	882	8%	13%
2016	17,500,000,000	6,819	1,600,000,000	842	9%	12%
2015	15,800,000,000	5,909	1,500,000,000	701	9%	12%

Table 28: Investments into startups with at least one female founder in Europe over time
Source: Dealroom.co



Graph 10: Share of investments attracted by female founders between 2015 and 2020
Source: Own calculations based on data from dealroom.co

A major question relevant for the estimation of gender parity in VC funding is of course the long-term effects of total investment sums. A lower share of female entrepreneurs in the years 2010-15 might still have an over proportional effect on today's dynamics. One could argue that changes in the VC industry taking place in the last 3-5 years still need time to take effect.

For this question we have analyzed how startups founded by female entrepreneurs performed when they joined an accelerator in the years 2017-2019. We found that 75% of women entrepreneurs manage to raise VC funding after the acceleration – the same rate as their male counterparts. However, the median amount raised is 38% lower for female founders and it takes them longer to achieve this result. See more on this in our recent [report on Women Entrepreneurs from 2020](#).

European startup hubs are however not homogenous in these trends, as the share of female founders across cities varies strongly. We might even contemplate that a low share of female entrepreneurs is a disease of the established large ecosystems in Western Europe. The largest shares among the big hubs are still below 20% with Stockholm leading this group (19%) followed by Berlin and London reaching each only 18%. In contrast to this, some small and mid-sized ecosystems reach a much higher share of female founders. Vienna is the overall champion in this category with 34% women entrepreneurs, followed by Budapest (30%) and Oslo (26%).

Large Ecosystems	Medium-Sized Ecosystems	Small Ecosystems
1 STOCKHOLM , 19%	1 VIENNA , 34%	1 BUDAPEST , 30%
2 BERLIN , 18%	2 OSLO , 26%	2 SOFIA , 25%
3 LONDON , 18%	3 BUCHAREST , 21%	3 LUXEMBOURG , 23%
4 AMSTERDAM , 16%	4 LISBON , 21%	4 ATHENS , 20%
5 ZURICH , 15%	5 BRUSSELS , 20%	5 ISTANBUL , 16%

Table 29: Share of female founders by city in categories based on investment size
Source: Women Entrepreneurs Report by Startup Heatmap Europe 2020

Female entrepreneurship is only one factor of diversity and inclusivity. Many other groups, suffering from exclusion and discrimination, are harder to measure and we must revert to assuming a similar pattern than for female entrepreneurs, if not worse.

Top Hubs have >65% foreign-born founders

One further indicator for the inclusiveness of the startup scene is the share of foreign-born founders. Here we rely on our aggregated survey data of the past five years, asking participants about their origins and destinations. There is an increasing trend over the years showing that more and more founders are international. Also we see a clear indication that tech hubs that are successful, base their success on the immigration of talent from abroad. Major hubs like London, Berlin and Barcelona have shares of 65-72% of international founders. This is only matched by Zurich (76%), which is a very international city but also benefits from the proximity to Germany and the low language barrier that favors immigration.

City	Country	% Foreign-Born Founders
Zurich	Switzerland	76.00
London	United Kingdom	71.58
Berlin	Germany	67.12
Barcelona	Spain	65.22
Amsterdam	Netherlands	52.73
Stockholm	Sweden	50.00
Helsinki	Finland	47.06
Tallinn	Estonia	45.16
Copenhagen	Denmark	40.91
Riga	Latvia	40.00
Vienna	Austria	40.00

Table 30: Largest share of foreign-born founders by city

Source: Aggregated data of Startup Heatmap Surveys 2016-2020

C) Transnational Connections

Why is it important to map the transnational connections of an ecosystem? Mobility and international connectivity describe the effectiveness of internal infrastructures in the creation of a visible and valuable ecosystem, forming the external players perception regarding the actual and potential value of the entrepreneurial ecosystem.

Since 2016, we run an annual survey among startup founders focused on the brand recognition of startup places and the actual mobility and transnational connectivity of startup founders in Europe. The exploitation of our results allow to understand implicit and explicit connectivity among startup hubs as well as the mapping of founder movements across European ecosystems.

a. Internationalization

The number of startups indicating that they have a transnational company setup with either employees, branches or investors abroad has declined from 57% in 2019 to 48% in 2020. This matches with the picture that 50% of startups usually expand already in their first year of operation and this was more difficult during the pandemic than before.

UK startups are the most international with 70% transnational footprint

When looking at the regional breakdown, we see that founders in the UK and Western Europe remain most international exploiting international relations at a rate of 70% and 68% respectively.

Region	% Transnational Setup
UK & Ireland	70%
Western Europe	68%
Nordics & Baltics	52%
CEE	46%
Mediterranean	32%
Benelux	25%

Table 32: Percentage of startups with international branches, investors or employees per region

Source: Startup Heatmap Europe Survey 2020

When looking at where startups have these international relations, we can see how global European startups are, with the US and Asia leading the ranking with 27% and 23% of startups having employees, investors or legal branches there. This is a drastic increase in comparison to 2019, where the US and Asia had 13% and 10% shares. Such a large scale difference cannot be explained only by statistical margins of error, especially as the results for other destinations is stable (UK 14% vs 15% and Germany 14% vs 13%). It can therefore also be seen as an increase of attention of European founders towards the US and Asia or an effect of the increased international participation in founding rounds of international VCs in Europe. In both ways, this is a positive development that underscores European founders ambitions to play on the world stage. However, the fact that startups from Europe increasingly look for larger markets outside Europe, might also be seen as a shortcoming of the European Digital Single Market, that still makes it hard to scale a company in Europe, forcing growth companies to quickly move to the US or China, where expansion is easier, even despite the geographic distance.

Where	%
In the US	27.27%
In Asia	23.38%
Germany	14.29%
Switzerland	14.29%
United Kingdom	14.29%
Netherlands	12.99%
Spain	7.79%
Denmark	6.49%
Estonia	6.49%
In South America	6.49%

Table 33: Locations and regions where European startups have the most relations
Source: Startup Heatmap Europe Survey 2020

b. Target markets

31% of European founders see the US as their most important target market

This observation matches with the importance founders give to the target market in the US and increasingly also Asia. To assess the founders' perception of geographical market trends, we asked them about their take on the most important target market in their industry. Interestingly, only a fraction of the founders chose to name a target market identical to their current location. Only in the UK & Ireland region and the North & Baltic region, about half of the

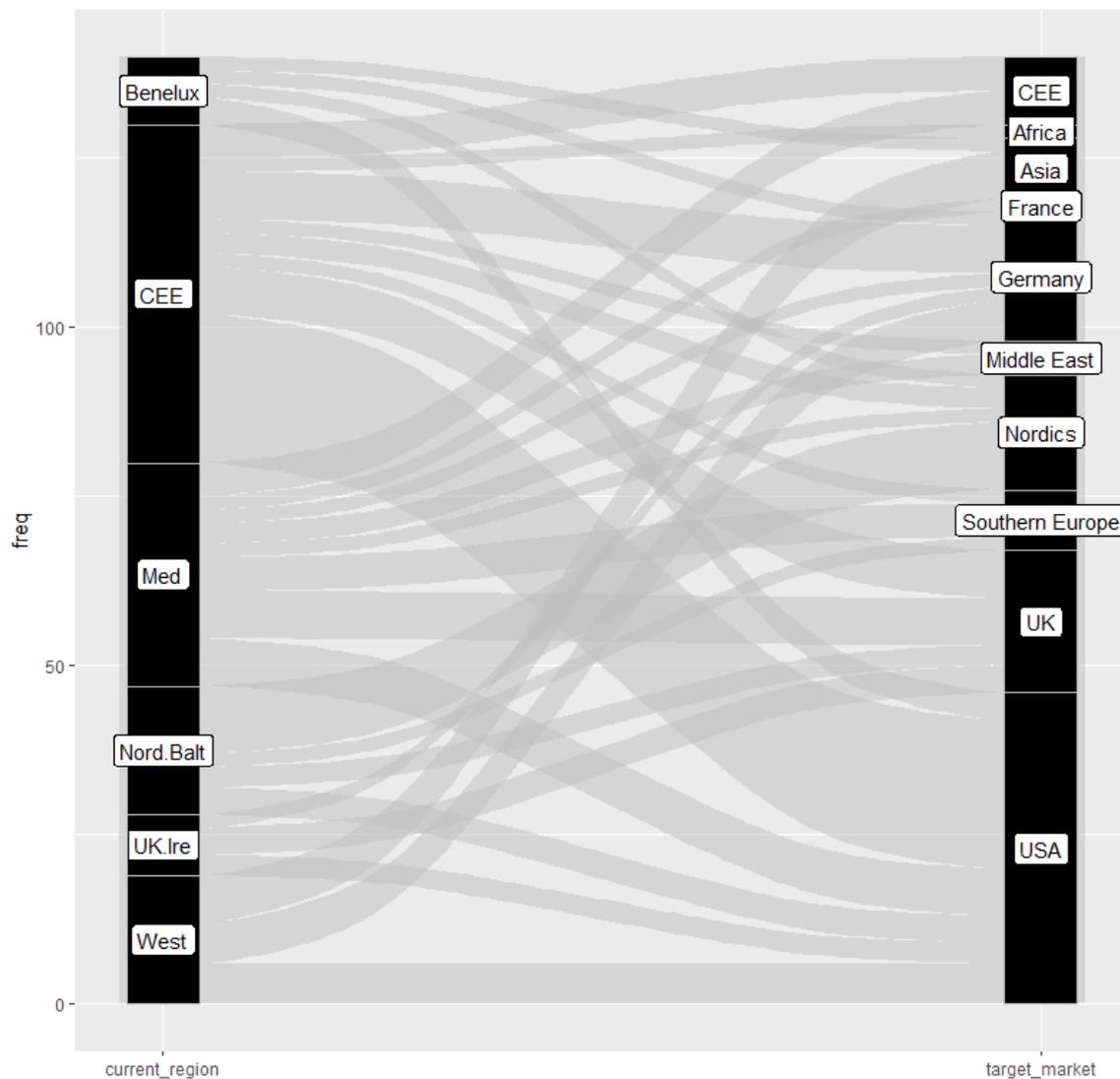
founders stated their respective home market as the most important target market.

Most important target market	%
USA	31.15%
UK	14.75%
Germany	13.11%
Asia	9.84%
Nordics	9.02%
CEE	6.56%
Southern Europe	6.56%
Middle East	4.10%
Africa	2.46%
France	1.64%
South America / LATAM	0.82%

Table 31: Most important target market for European startups based on founder opinions

Source: Startup Heatmap Europe Survey 2020

While the regions named most often were the United States, Germany, and the United Kingdom, many founders have a particular global take on target markets, with almost half (47%) choosing a market outside of Europe. Curiously, there are some regional differences in perceived target markets. While some founders from all regions named the US as the target market, founders currently located in the CEE region were significantly more focused on the US. On the other hand, only founders from the West and Benelux regions mentioned Asia as the target market at all.



Graph 12: Business relations of startups between regions
Source: Startup Heatmap Europe Survey 2020

c. Founder Mobility

27% of European founders are foreign-born

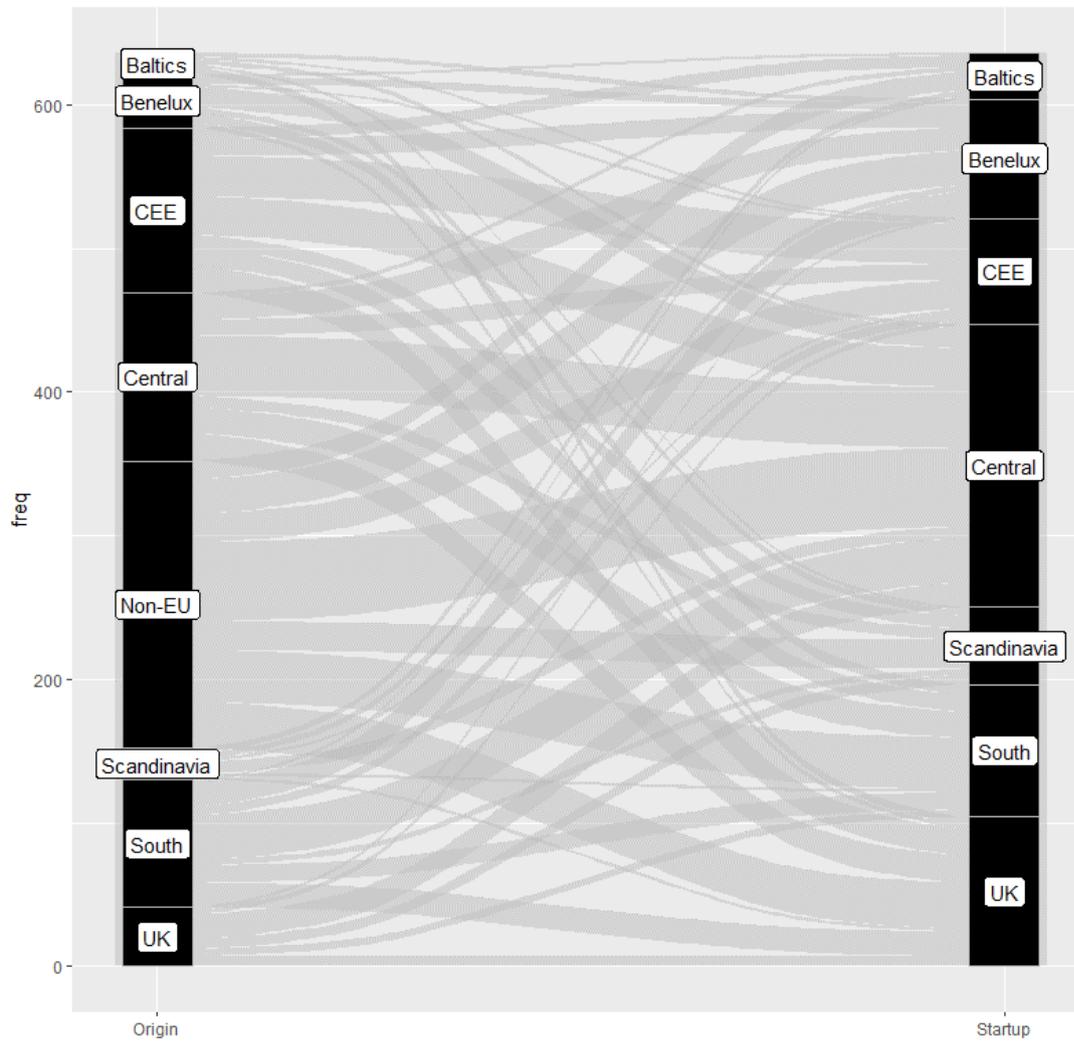
The most drastic form of internationalization is a change of location of the founders themselves. The results of the survey imply immense importance of personal mobility for the startup scene. About 54% of the respondents stated that their startup is not located in the city they grew up in and more than 27% moved between countries.

This number has been increasing over the years reaching a maximum in 2019 with 29% of foreign-born founders. This year there was only

a slight decrease and likely there was no effect of Brexit or Covid-19 to be observed yet.

The patterns of personal mobility clearly show the attractiveness of the leading ecosystems. Indeed, about 38% of all respondents moved into one of the founder's top 20 ecosystems in Europe from a place not in the list, while only 8% moved out of one of the top 20 ecosystems.

About a third of foreign-born respondents immigrated from outside of Europe. While the United States, India, and Russia are the most important countries of origin in this sense, the list includes 35 countries on all continents. These numbers illustrate the immense importance of external immigration for the European startup scene. However, there is also much mobility of founders within Europe and the flows of respondents between European regions reveal some interesting patterns:



Graph 11: Movements of founders between regions
 Source: Aggregated data of Startup Heatmap Surveys 2016-2020

The UK & Ireland (still) benefit the most from founder migration

Almost 80% of the movements in the dataset are between regions, but there are huge regional differences in mobility gains and losses. The following numbers are the net gains and losses related to all respondents based in the respective region or country:

While especially the UK & Ireland (+16%) and Benelux (+12%) regions benefit from founder migration, the CEE (-6%) and Southern Europe (-5%) regions lose founders. On the country level, the differences are even more striking. In Central Eastern Europe, Poland and Czechia have moderate gains of +5% each, while Hungary (-15%), Serbia (-30%), and Ukraine (-63%) have significant losses. A similar diverging pattern can be found in Southern Europe, where Spain (+11%) and Portugal (+4%) gain founders, while Italy (-28%) and Greece (-37%) lose founders. France also has a negative balance with -22%. On the other side, some countries benefit disproportionately. This applies especially to Switzerland (+34%), Luxembourg (+14%), the UK (+13%), and the Netherlands (+13%).

The underlying reasons for these patterns are complex and as well related to the personal biographies of the founders as to the characteristics of the respective ecosystems. There does not seem to be a noteworthy correlation with the country size or the macro-economic performance. Last year's survey collected data on the mobility backgrounds of founders. Interestingly, a third of founders living abroad (33%) stated that they relocated to their current location specifically to start a company there. However, job

prospects or previous jobs (32%), personal reasons (22%), and university studies (9%) were also important reasons to relocate.

D) Startup Support System (Accelerators)

Accelerators have become a staple in ecosystems, after the concept has seen a rapid proliferation in the past five to ten years. However, some of the new accelerators have yet to make an impact, as there is sometimes little tangible impact of individual programs.

For startups, helpful accelerators select promising startups to establish ties with investors or offer helpful knowledge gains for founders, for example. From an ecosystem perspective, accelerators can offer important support, especially if they operate in a meaningful niche. For example, accelerators can act as rule or agenda setters by creating well-known rules of engagement for cooperation or mentoring. Therefore, established accelerators are often important central reference points within ecosystems. However, poorly run accelerators can also be a liability for an ecosystem, for example by setting bad examples and draining the resources of mentors or volunteers without real returns for the ecosystem.

Further, accelerators can benefit the local ecosystem by stimulating ties and new connections among startups and, for example, corporates. These connections can even reach far beyond the local community, since many startups participate in accelerators in other regions, but keep the ties formed during participating in the accelerator program after returning home.

Top Accelerators in Europe

To understand which accelerators are contributing in a meaningful way to the development of ecosystems, we have gathered a large set of indicators ranging from the popularity to their success in raising follow-up funding. Our team has assessed in detail the companies who participated in 114 accelerators tracking not only where the founders come from to understand how international a program is or whether the CEO is a women, but also what happened after the acceleration. Here we analyzed the job growth and the investment raised. Another important aspect for us was the number of impact and sustainability related startups, which we measure under the metric “Purpose Orientation”. The scoring for each category is explained in the annex of the downloadable version of this report. Generally speaking the highest score of 100 represents the median value of the leadership group per category. Thus if the top 5 accelerators have raised a median of 1,000,000 € an accelerator whose startups raised 500,000 € would reach a score of 50.

Looking at the top 10 we see that four out of the 10 best accelerators are located in London. Seedcamp and Entrepreneur First are tied with 63 points. On third rank is the Europe wide, virtual program of EIT Digital for scale-ups (62). Surprisingly, none of them is leading in the Follow-on funding category. Seedcamp has the highest total amount of follow-up investments in the sample, but is ranked 9th for the percentage of startups raising capital after acceleration. The leader in the follow-up funding category is Alpine House by Superangel in Tallinn (Overall Rank 15th).

The Top 10 has also a few high-performing accelerators in unexpected locations. Plug and Play Accelerator is present with two

programs (Munich and Stuttgart), Merck's Accelerator for Health and BioTech scores 53 points overall and ranks 5th and ABC Accelerator in Ljubljana lands on 8th rank overall. We can conclude that it is definitely possible to build world-class accelerators outside established tech hubs.

Score Total	Program Name	City	Popularity Score	Follow-on Funding	Female Participation	Purpose Orientation
63	Seedcamp	London	98	88	22	55
63	Entrepreneur First	London	97	41	45	55
62	EIT Digital	Europe Wide	100	55	15	100
58	Plug and Play Accelerator – InsurTech	Munich	99	81	20	18
53	Merck Accelerator	Darmstadt	73	75	62	0
52	Plug and Play Accelerator – Startup Autobahn	Stuttgart	99	89	18	0
51	Barclays Accelerator	London	96	100	42	36
51	ABC Accelerator	Ljubljana	92	39	22	55
51	EIT Climate-KIC Accelerator	Europe-wide	95	31	37	100
48	Founders Factory	London	99	94	33	36
46	Techstars Berlin	Berlin	100	55	76	36
45	Startupbootcamp Commerce Amsterdam	Amsterdam	96	27	86	36
45	Techstars London	London	100	56	75	36

44	APX – Axel Springer & Porsche	Berlin	98	37	19	55
42	Alpine House by Superangel	Tallinn	78	100	17	18
42	TechFounders	Munich	88	34	21	100
42	MassChallenge Switzerland	Lausanne	94	41	30	100
41	Wayra UK	London	93	100	42	36
41	Startupbootcamp Digital Health Berlin	Berlin	96	38	100	0
41	INiTS	Vienna	69	46	27	0

Table 32: Top 20 Ranking of European Accelerators

Source: Startup Heatmap Europe 2021

Regional Champions

The six different regional rankings show a significant divergence. We see for example that the popularity of accelerators diverges extremely between regions. This implies that most accelerators are more recognized close to their home region. In some cases, this is the result of deliberate strategy decisions to target specific geographies, while in general it can also be seen as a result of the proliferation and diversification of the accelerator model. However, there is a handful of accelerator organizations that have built strong brands throughout most regions, notably Techstars, Founder Institute and Seedcamp. In conclusion, this implies that accelerators indeed provide opportunities to link local ecosystems closer together and that there is both a regional and a Europe-wide layer of integration.

Benelux

Score_Total	Accelerator	Program Name	City
45	Startupbootcamp	Startupbootcamp Commerce Amsterdam	Amsterdam
36	Rockstart	Rockstart Smart Energy Program	Amsterdam
32	Rockstart	Rockstart AgriFood Program	Amsterdam

Table 33: Top Accelerators Benelux

Source: Startup Heatmap Europe 2021

CEE

Score_Total	Accelerator	Program Name	City
51	ABC Accelerator	ABC Accelerator	Ljubljana
32	Startup Yard	Startup Yard	Prague
29	Health Venture Lab	Health Venture Lab	Budapest

Table 34: Top Accelerators CEE

Source: Startup Heatmap Europe 2021

Southern Europe:

Score_Total	Accelerator	Program Name	City
39	Techstars	Techstars Smart Mobility Accelerator	Turin
37	LUISS EnLabs	LUISS EnLabs	Rome
36	Beta-i	Beta-i	Lisbon

Table 35: Top Accelerators Southern Europe

Source: Startup Heatmap Europe 2021

Nordics & Baltics:

Score_Total	Accelerator	Program Name	City
42	Superangel	Alpine House by Superangel	Tallinn
40	STING Accelerate	STING Accelerate	Stockholm
38	Startup Wise Guys	SaaS Accelerator by Startup Wise Guys	Riga

Table 36: Top Accelerators Nordics & Baltics

Source: Startup Heatmap Europe 2021

UK & Ireland

Score_Total	Accelerator	Program Name	City
63	Seedcamp	Seedcamp	London
63	Entrepreneur First	Entrepreneur First	London
51	Barclays Accelerator	Barclays Accelerator	London

Table 37: Top Accelerators UK & Ireland

Source: Startup Heatmap Europe 2021

Western Europe

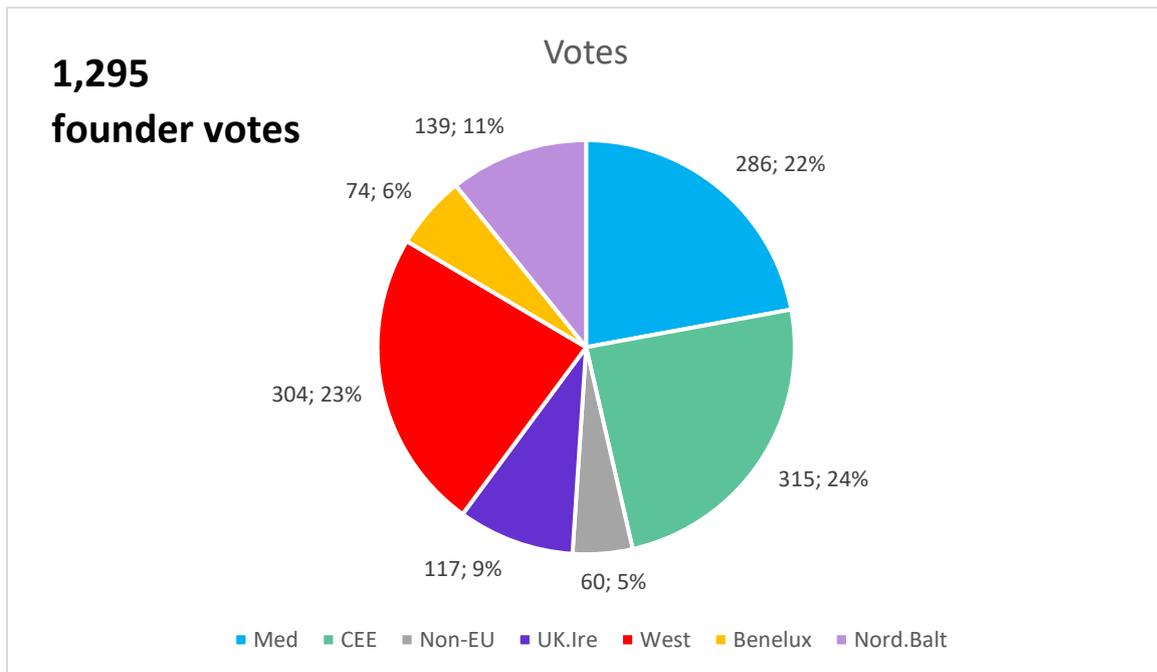
Score_Total	Accelerator	Program Name	City
58	Plug and Play Accelerator	Plug and Play Accelerator – InsurTech	Munich
53	Merck Accelerator	Merck Accelerator	Darmstadt
52	Plug and Play Accelerator	Plug and Play Accelerator – Startup Autobahn	Stuttgart

Table 38: Top Accelerators Western Europe

Source: Startup Heatmap Europe 2021

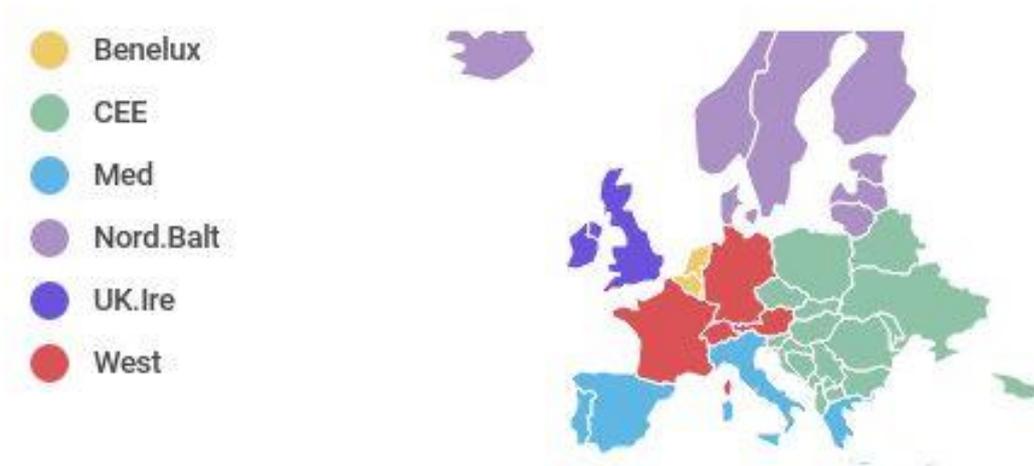
ANNEX

2020 Startup Heatmap Europe Survey – Participation



Definition of regions in the Startup Heatmap Europe Survey

HEATMAP REGIONS



2020 Startup Heatmap Europe Survey - Founder Distribution

Current Country	% of participants	Weighing Factor
Germany	7%	1,85
Portugal	6%	0,50
Romania	6%	0,57
Netherlands	5%	0,59
Poland	5%	1,39
Spain	5%	1,47
United Kingdom	4%	2,00
Denmark	4%	0,50
Greece	4%	0,50
Austria	3%	0,50
Italy	3%	2,00

Switzerland	3%	0,53
Sweden	3%	0,50
Ireland	3%	0,50
France	3%	2,00
Czech Republic	3%	0,57
Estonia	3%	0,50
Serbia	2%	0,70
Belgium	2%	0,79
Finland	2%	0,50
Bulgaria	2%	0,50
Norway	2%	0,50
Luxembourg	2%	0,50
Ukraine	2%	0,50
Israel	2%	0,50
Slovakia	1%	0,76
Croatia	1%	0,96
Bosnia and Herzegovina	1%	0,61
Hungary	1%	1,14
Latvia	1%	0,50
Lithuania	1%	0,50
Cyprus	1%	0,50
Turkey	1%	0,50
United States	1%	0,50

Description of Composite Variables and Metrics

Unit of Analysis	Composite Variable	Metric	Source	Sample size
Accelerator	Connectivity	Origins of founders (CEOs) of startups participating in accelerators by city / country / regions	Primary data collection of origin country and city of the CEOs of accelerated startups since 2015 by social media monitoring, forums, blogs and websites	> 5.000 companies
	Community	Accelerated startups per year	Primary data collection since 2015 from accelerator websites and portfolio overviews on secondary sources	> 5.000 companies
	Community	Accelerator specialization	Primary and secondary data collection on company descriptions of accelerated startups and extraction of industry keywords since 2015 by social media monitoring, forums, blogs and websites	> 5.000 companies
	Perception & Trust	Trust Score	SHM annual survey since 2018 on preferred accelerators of founders in Europe ("Which accelerators would you recommend to an early-stage founder?")	> 3.000 responses
	Performance	Funding raised by participating startups	Secondary data collection since 2015 by social media monitoring and websites	> 5.000 companies
	Performance	Follow-on funding rate of participating startups	Secondary data collection since 2015 by social media monitoring and websites	> 5.000 companies
	Impact	Jobs created by participating startups	Secondary data collection since 2015 by social media monitoring and websites	> 5.000 companies
	Impact	Follow-up investors	Secondary data collection since 2015 on investors who invested at least €100k in companies after acceleration based on social media monitoring and websites	> 5.000 companies
	City	Connectivity	Regional reach by country and region based on founders' preferences	Regional breakdown of founder responses on their preferred startup location, based on their current location via SHM annual survey since 2015

	Connectivity	Share of foreign-born founders	Identification of foreign-born founders based on their responses to the question of origin (“Where did you spend most time growing up?”) and their current location, via SHM annual survey since 2015.	> 1.400 CEOs
	Connectivity	Share of international investors among early stage investments (€100k – 5 mn)	Pitchbook investment database in 2013-2016	> 4.000 deals
	Connectivity	International conference participants	Primary data collection on origin country of Facebook followers of leading tech conferences in Europe (last sample from 2018)	> 35 conferences
	Connectivity	International accelerator participants	Primary data collection since 2015 on origin city and country of CEOs of startups participating in leading tech accelerators in Europe	> 5.000 CEOs
	Connectivity	Presence of international leading startups	Primary data collection on office locations of the top 100 startups in Europe identified by Startup Europe in 2018. Since 2020, primary data collection of the office locations of the currently active unicorns as identified by CBinsights.	> 700 offices
	Perception & Trust	Trust Score	SHM annual survey since 2015 on preferred startup hubs of founders in Europe (“If you were going to start a company in Europe tomorrow, where would you like to do it? Choose up to 3 cities, in the order of your preference.”)	> 6.300 responses
	Perception & Trust	City future outlook	Perception of local founders on the future development of their city’s startup ecosystem, via SHM annual survey since 2015	> 6.300 responses
	Perception & Trust	City visibility	Primary data collection on visibility of cities based on mentions of the cities in	> 1.200.000 tweets

			connection with startups on Twitter	
	Perception & Trust	Category ratings	Qualitative assessment of cities' strengths and weaknesses based on the ratings of founders in various categories (funding, talent, regulations etc.), via SHM annual survey since 2015. The percentage indicates how many founders gave positive ratings.	> 6.300 responses
	Perception & Trust	City brand perception	Founders' impressions about foreign startup ecosystems based on a list of word associations to choose from via SHM annual survey since 2019.	> 500 responses
	Community	Meetups	Primary data collection from startup-related internet calendars since 2019	> 33.000 events
	Community	Availability Developers	Number of full stack developers registered on Stack Overflow by city since 2017, as listed by Atomico	> 30 cities
	Community	City specialization	Primary data collection on technology focus of cities based on trending keywords on Twitter	> 1.200.000 tweets
	Community	Meetup Participants Variation	Secondary data on number of tech-related meetup group members per city provided by meetup.com since 2014, as listed by Atomico	> 20 cities
	Community	Salary Level Developers	Median salary levels of senior software developers provided by Teleport	> 80 cities
	Performance	Sum of funds raised	Secondary data collection from Dealroom since 2014	> 50 cities
	Performance	Sum of exits realized	Secondary data collection from Dealroom since 2014	> 50 cities

Definition of Verticals based on Crunchbase Tags

Vertical	Crunchbase Category	Selected Tags
FinTech	CB Financial Services	Accounting, Asset Management, Auto Insurance,

		Banking, Bitcoin, Commercial Insurance, Commercial Lending, Consumer Lending, Credit, Credit Bureau, Credit Cards, Crowdfunding, Cryptocurrency, Debit Cards, Debt Collections, Finance, Financial Exchanges, Financial Services, FinTech, Fraud Detection, Funding Platform, Gift Card, Health Insurance, Impact Investing, Incubators, Insurance, InsurTech, Leasing, Lending, Life Insurance, Micro Lending, Mobile Payments, Payments, Personal Finance, Prediction Markets, Property Insurance, Real Estate Investment, Stock Exchanges, Trading Platform, Transaction Processing, Virtual Currency, Wealth Management
AI & Data	CB Artificial Intelligence	Artificial Intelligence, Intelligent Systems, Machine Learning, Natural Language Processing, Predictive Analytics
	CB Data & Analytics	A/B Testing, Analytics, Application Performance Management, Artificial Intelligence, Big Data, Bioinformatics, Biometrics, Business Intelligence, Consumer Research, Data Integration, Data Mining, Data Visualization, Database, Facial Recognition, Geospatial, Image Recognition, Intelligent Systems, Location Based Services, Machine Learning, Market Research, Natural Language Processing, Predictive Analytics, Product Research, Quantified Self, Speech Recognition, Test and Measurement, Text Analytics, Usability Testing
AgriTech	CB Agriculture and farming	Agriculture, AgTech, Animal Feed, Aquaculture, Equestrian, Farming, Forestry, Horticulture, Hydroponics, Livestock
CleanTech	CB Sustainability	Biofuel, Biomass Energy, Clean Energy, CleanTech, Energy

		Efficiency, Environmental Engineering, Green Building, Green Consumer Goods, GreenTech, Natural Resources, Organic, Pollution Control, Recycling, Renewable Energy, Solar, Sustainability, Waste Management, Water Purification, Wind Energy
Biotech	CB Biotechnology	Bioinformatics, Biometrics, Biopharma, Biotechnology, Genetics, Life Science, Neuroscience, Quantified Self
Health	CB Health Care	Alternative Medicine, Assisted Living, Assistive Technology, Biopharma, Cannabis, Child Care, Clinical Trials, Cosmetic Surgery, Dental, Diabetes, Dietary Supplements, Elder Care, Electronic Health Record (EHR), Emergency Medicine, Employee Benefits, Fertility, First Aid, Funerals, Genetics, Health Care, Health Diagnostics, Home Health Care, Hospital, Medical, Medical Device, mHealth, Nursing and Residential Care, Nutraceutical, Nutrition, Outpatient Care, Personal Health, Pharmaceutical, Psychology, Rehabilitation, Therapeutics, Veterinary, Wellness
Mobility	CB Transportation	Air Transportation, Automotive, Autonomous Vehicles, Car Sharing, Electric Vehicle, Ferry Service, Fleet Management, Last Mile Transportation, Limousine Service, Marine Transportation, Parking, Public Transportation, Railroad, Recreational Vehicles, Ride Sharing, Space Travel, Taxi Service, Transportation, Water Transportation
Mobile Internet	CB internet Services	Cloud Computing, Cloud Data Services, Cloud Infrastructure, Cloud Management, Cloud Storage, Darknet, Domain Registrar, E-Commerce Platforms, Ediscovery, Email,

		Internet, Internet of Things, ISP, Location Based Services, Messaging, Music Streaming, Online Forums, Online Portals, Private Cloud, Product Search, Search Engine, SEM, Semantic Search, Semantic Web, SEO, SMS, Social Media, Social Media Management, Social Network, Unified Communications, Vertical Search, Video Chat, Video Conferencing, Visual Search, VoIP, Web Browsers, Web Hosting
Logistics	CB Transportation	Courier Service, Delivery Service, Food Delivery, Freight Service, Logistics, Ports and Harbors, Procurement, Same Day Delivery, Shipping, Shipping Broker, Supply Chain Management, Warehousing
Cybersecurity	CB IT	Cyber security
Gaming	CB Gaming	Casual Games, Console Games, Contests, Fantasy Sports, Gambling, Gamification, Gaming, MMO Games, Online Games, PC Games, Serious Games, Video Games