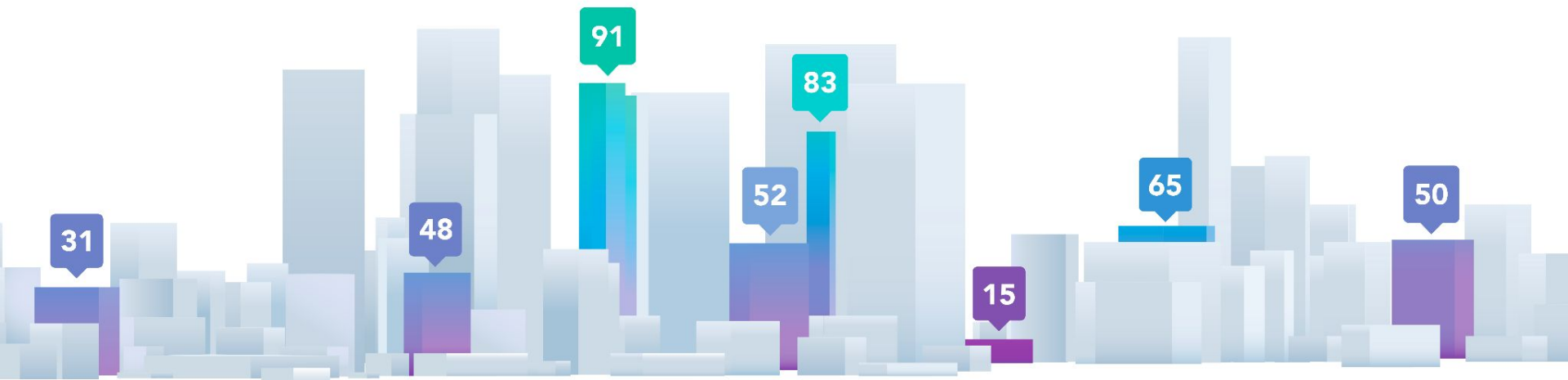


# The next generation of tech ecosystems.

Actionable benchmarks from **201 tech ecosystems** based on investment, innovation, talent, and outcome.

December, 2022



# Our mission: bringing data transparency to every tech ecosystem.

## Investors

Source deals & raise capital



## Providers

Provide services to startups & scaleups



## Strategists & researchers

Stay at forefront of innovation



## Enablers & public bodies

Build & foster the ecosystem



## Builders

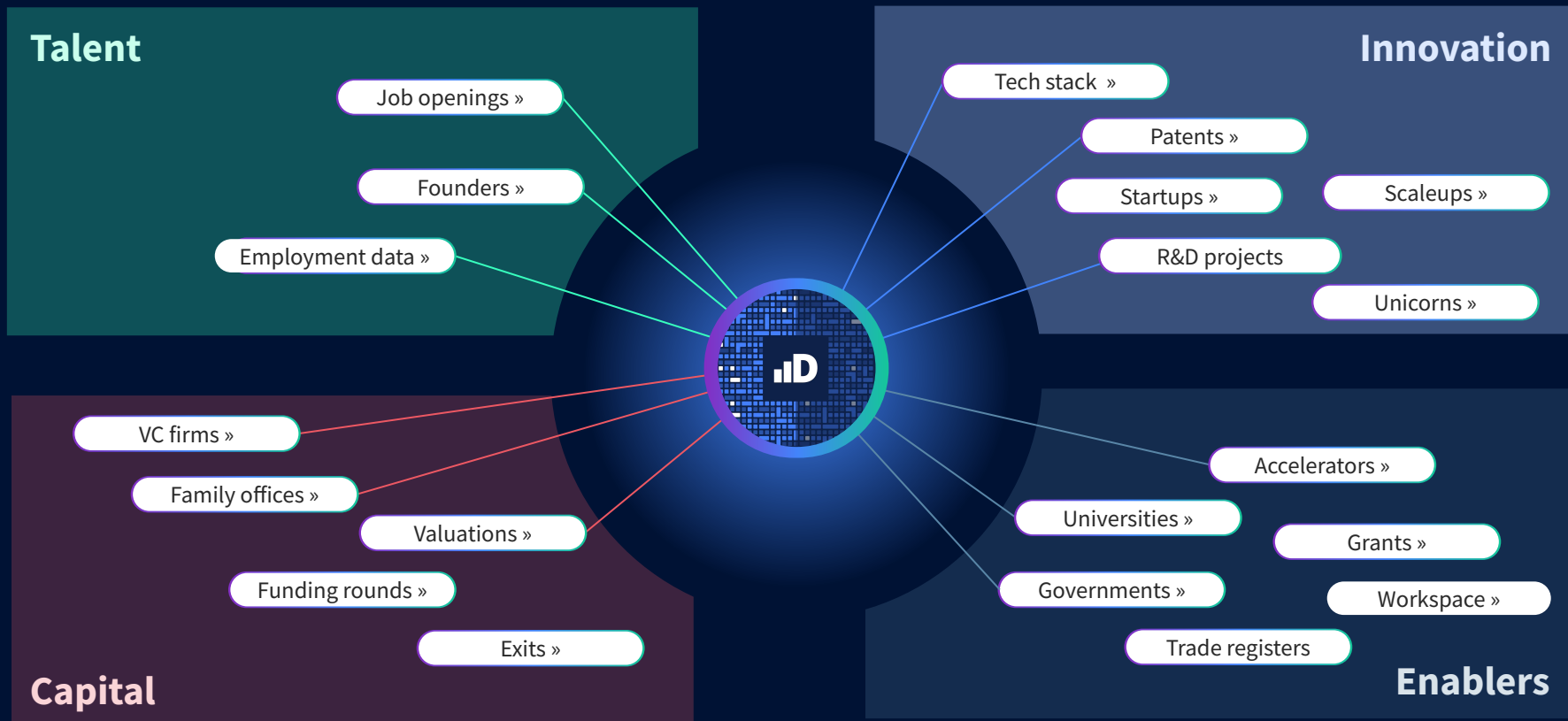
Raise capital, recruit, be visible in ecosystem



# We empower over 75 governments with innovation data and insights, enabling them to monitor & build their tech ecosystem.



# Providing a 360-degree view on tech ecosystems.





Global »

North America »

EMEA »

Africa »

Asia »

Oceania »

South America »

Top investors »

# **1 The next chapter in tech**

2 Capital & investment

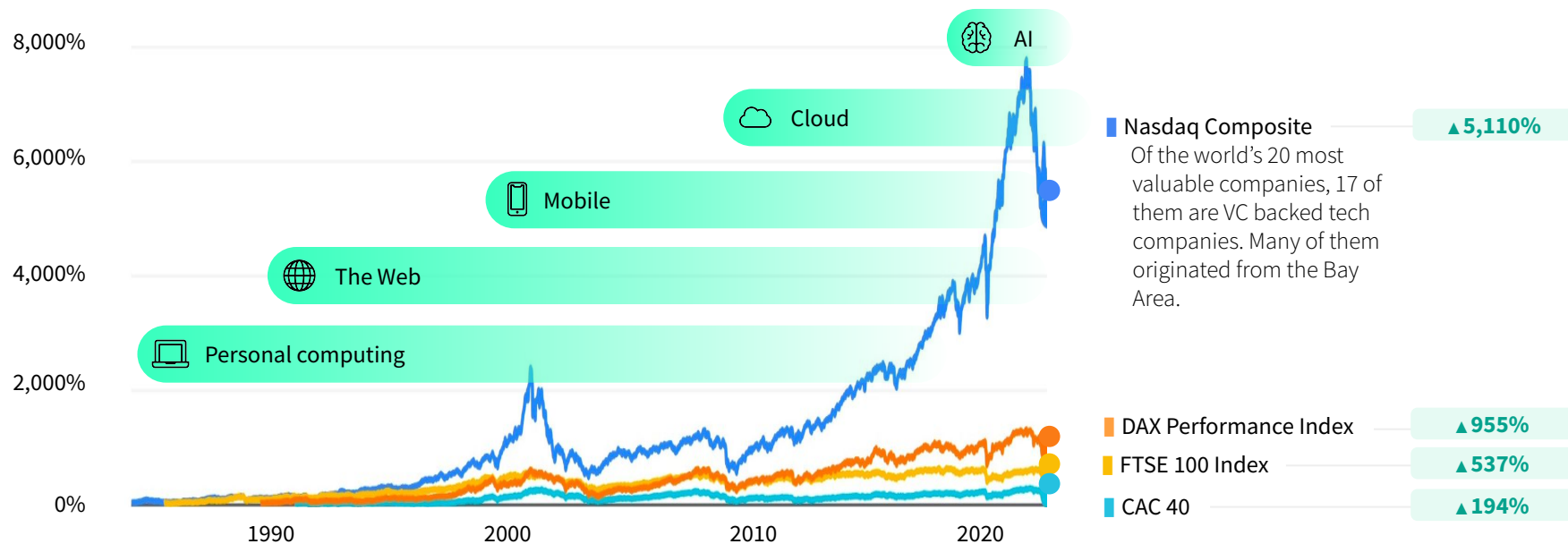
3 Innovation & talent

4 Economic outcomes

5 Regional lens

6 Methodology & about us

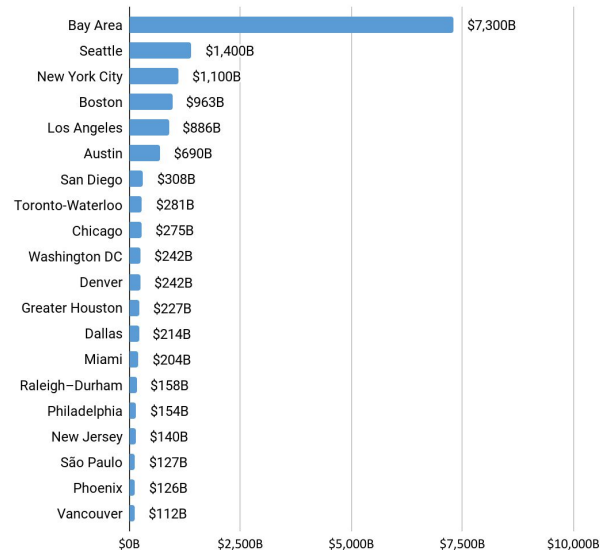
**During the past three decades, technology has eclipsed all sectors, driven by a series of technological inflection points. VC-backed companies have seized on this opportunity the most.**



**Inspired by the Bay Area, dozens of tech ecosystems have sprung up globally. Over 40 of them have created over \$100B in value.**

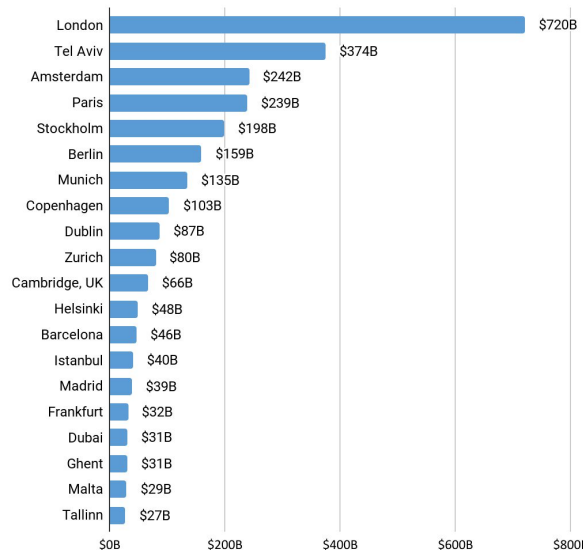
## Americas

Combined value of tech companies founded >1990



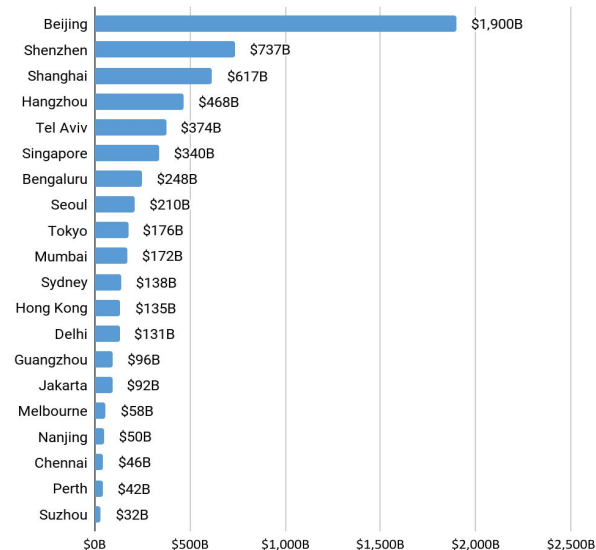
## EMEA

Combined value of tech companies founded >1990



## Asia & Oceania

Combined value of tech companies founded >1990

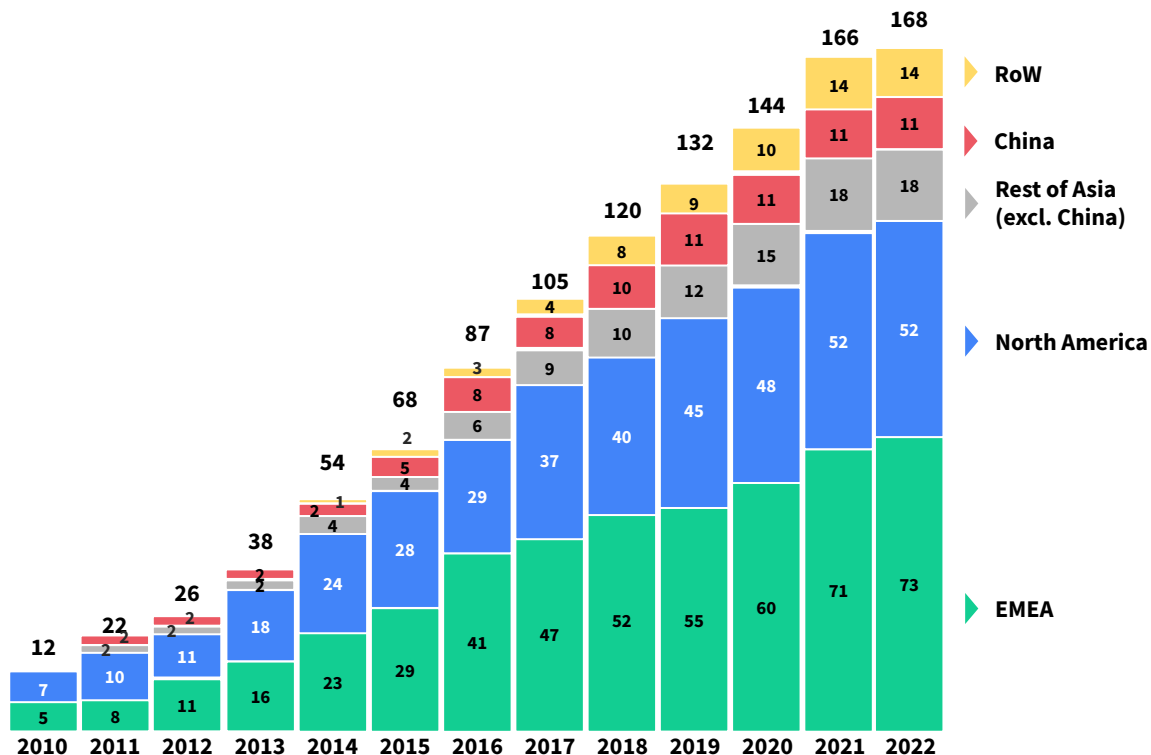


**There are now 168 cities with at least one unicorn or \$1B+ exit. Back in 2010, this number was just 12.**

Knowledge about building startups has become much more widespread in the last decade. These cities have acted as platforms that facilitate talent, capital, infrastructure and enablers.

The fact that there are now 168 unicorn cities bodes well for the future, as unicorns can be excellent founder factories, creating a positive flywheel effect. But the next ten years are unlikely to be similar to the last.

**Cities with at least one unicorn or \$1B+ exit**



# New breakthroughs in frontier technologies are driving a new phase of radical innovation.

Examples of novel domains in tech from upcoming Deep Tech report created with Lakestar and Walden Catalyst.

## Artificial Intelligence



Generative AI, AI-first biology, Privacy-preserving AI, Explainable AI, AI, acceleration, Autonomous systems, General purpose AI

## Future of Computing



Quantum computing, Silicon photonics, AR/VR/MR, Neuromorphic & advanced AI chips, Decentralized computing, Brain-computer interfaces

## Future of Energy



Nuclear fusion, Next-gen battery chemistries, Large-scale storage, Green hydrogen, Supercapacitors, Waste heat recovery

## Space Tech



Reusable and next-gen rockets, Satellites, In-space transportation, In-space manufacturing, Debris removal

## Synthetic Biology



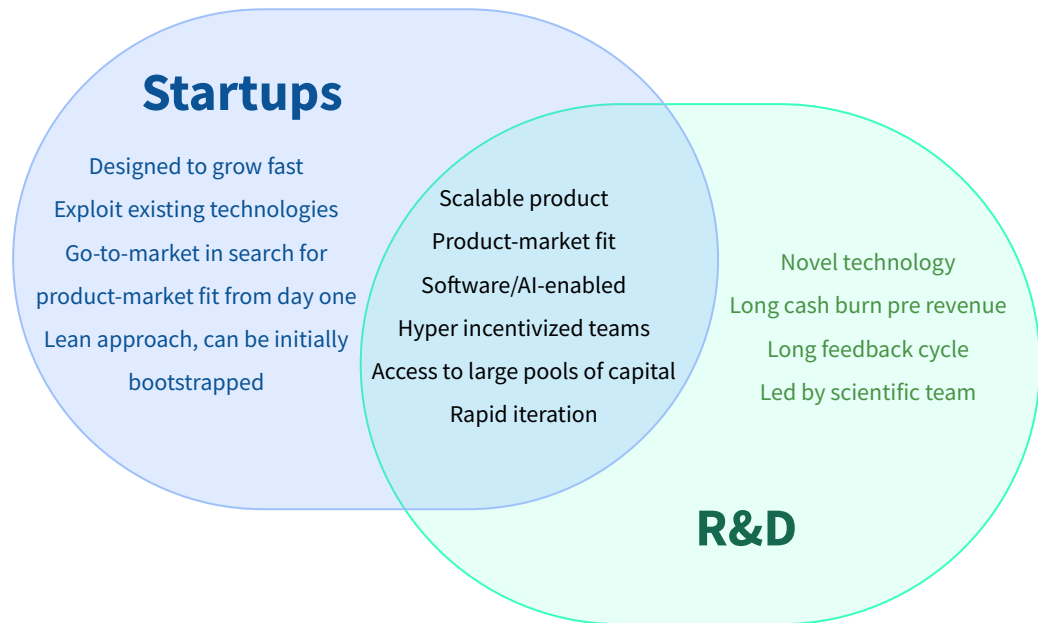
FoodTech & Agritech (cultivated meat, modified crops), Bio-fuels & bio-chemicals, DNA synthesis, Health

## Advanced Materials



CO2 negative materials, Bio-plastics, Synthetic diamonds, Graphene

Startups and frontier R&D do not naturally overlap, but the intersection is also where cutting-edge innovation is happening.





# The coming decade will require tech ecosystems to bring together capital, entrepreneurship, knowledge, frontier R&D, and science on one platform.

## Capital & Investment 💰

- Ability to attract venture capital across stages (early, breakout, late)

## Innovation & Talent 👤

- Development of intellectual property (patents)
- Linkage between universities and entrepreneurship

## Economic upside ⚡

- Performance relative to economic stage of development
- Affordability of living

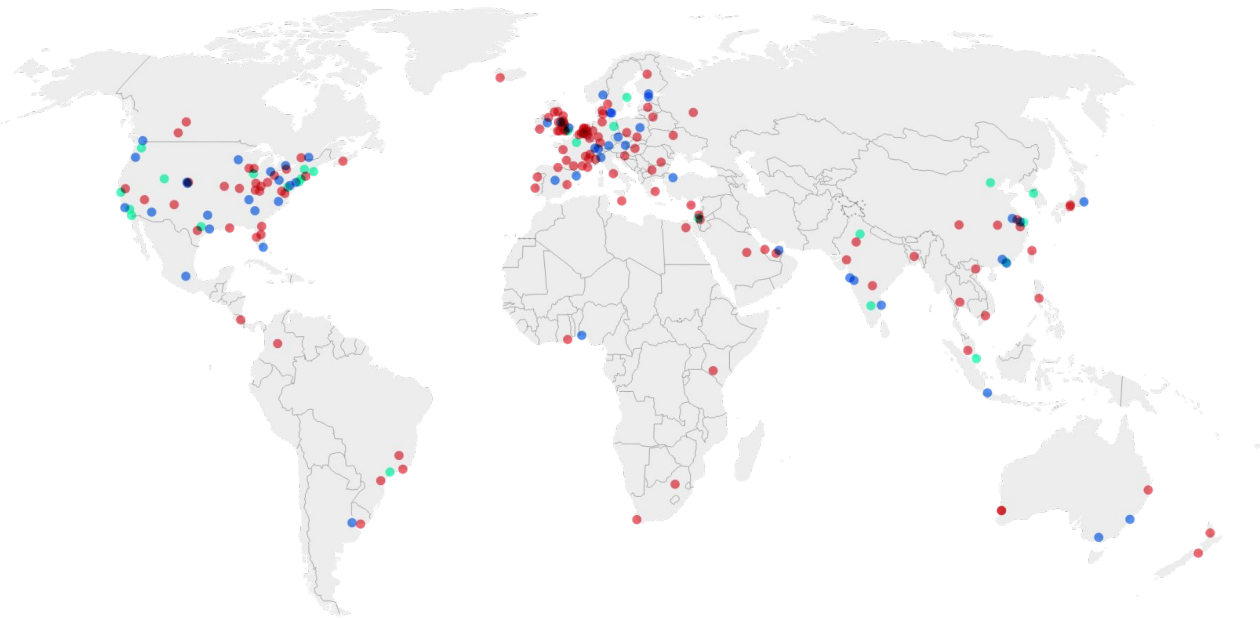
## Entrepreneurialism 💡

- Conversion from startup to \$1B+ company
- Ability to produce flywheel effect of multiple unicorns



## How prepared are cities for the next decade? 201 cities in 65 countries were analyzed for this report.

■ Cities with 20+ unicorns (25 cities) ■ 5–19 unicorns (52 cities) ■ 0–4 unicorns (92 cities)



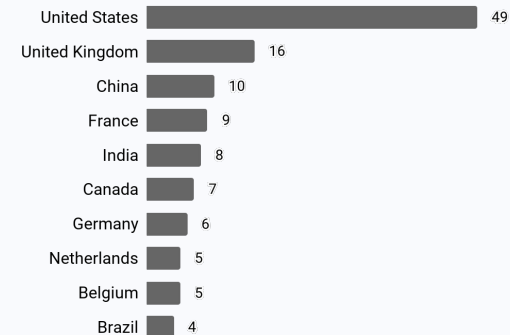
## Selection criteria

The dataset starts with 168 cities that have at least one unicorn. An additional 33 cities have at least >\$100M in funding and min 50 VC rounds since 2017.

In this report, each “city” is actually a metro area consisting of multiple cities, suburbs and nearby towns.

In forthcoming editions of this report we expect to add more cities and we welcome suggestions from readers.

## Number of qualified cities per country (top 10)



**Not all tech ecosystems are created equal. For instance, New York cannot be compared with Oxford. We created three lenses by which to benchmark ecosystems.**



Scale lens

## Trailblazers

Leading by metrics such as venture capital and creation of successful startups and scaleups.

Presence of established local venture capital sector and capital markets to support life cycle from seed to IPO.

\$1 trillion companies are most likely to get built here. The success of these ecosystems paves the way for others. A facilitator for other ecosystems globally.



Per capita lens

## Science Hubs

High output per inhabitant, driven by academic/research footprint. Strong universities-to-startups linkage.

Includes smaller cities like Oxford, Leuven, and Eindhoven.

Key for development of novel and cutting edge technology (Deep Tech).  
Often some specialisation in specific domains, such as semiconductors or life sciences.



Growth lens

## Rising Stars

Benefiting from globalization of venture capital and distributed teams. Ignited by the rise of a few local hero startups.

Often emerging economies with lower cost of living.

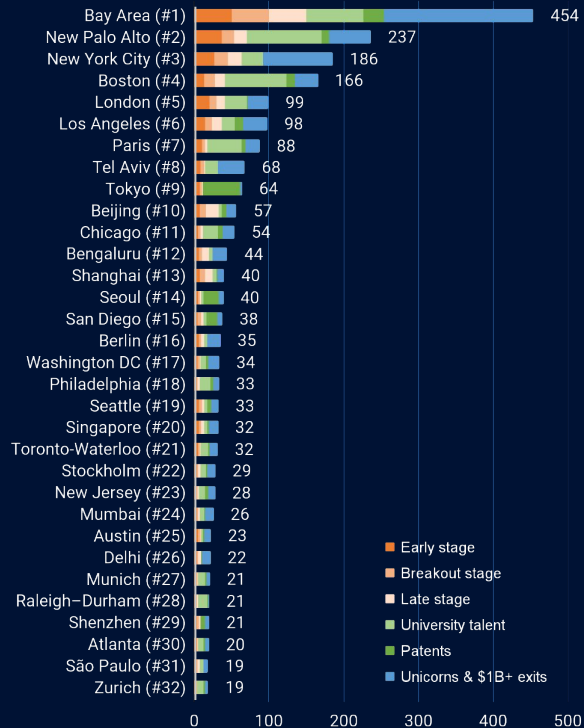
Presence of local early-stage VCs, but lacking depth of follow-on investors.  
Needs connectivity with bigger ecosystems to thrive.

# Transparent & actionable benchmarks to prepare for the next decade.



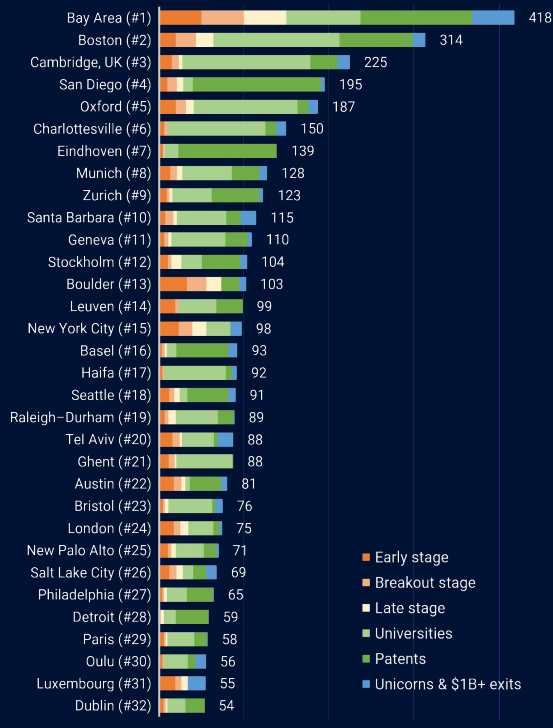
## Trailblazers

Scale lens



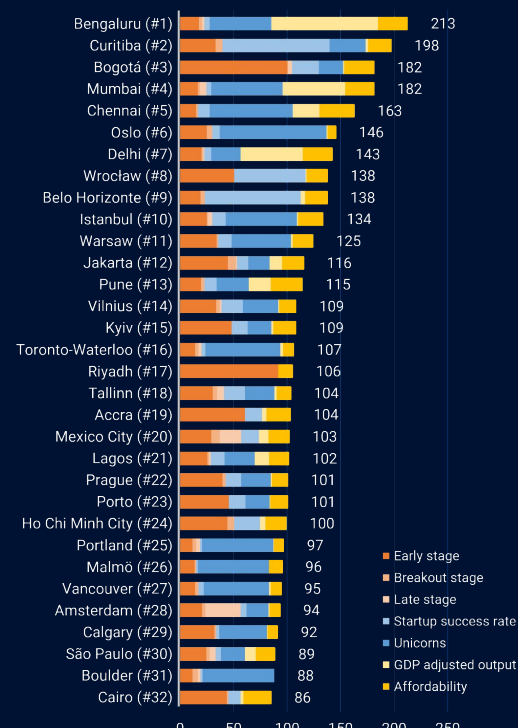
## Science Hubs

Per capita lens



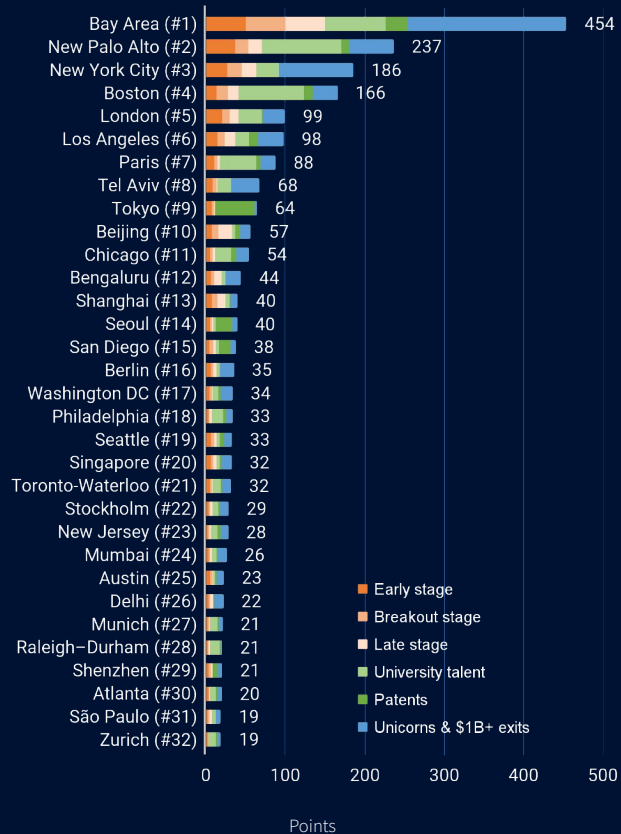
## Rising Stars

Growth lens



## Top Trailblazers

[view all results »](#)



## Scale lens: Trailblazers

When looking at the raw scale, the top spots are snagged by the usual suspects (**Bay Area, New York, Boston**), with noteworthy individual performances.

One new name makes the list: **New Palo Alto**, a cluster of European cities of close proximity, similar to the Bay Area. Within a four-hour train ride connecting London, Paris, and Amsterdam, lie some of the world's best universities, diverse talent pools, innovative tech companies, and globally the highest concentration of cities that have produced unicorns.

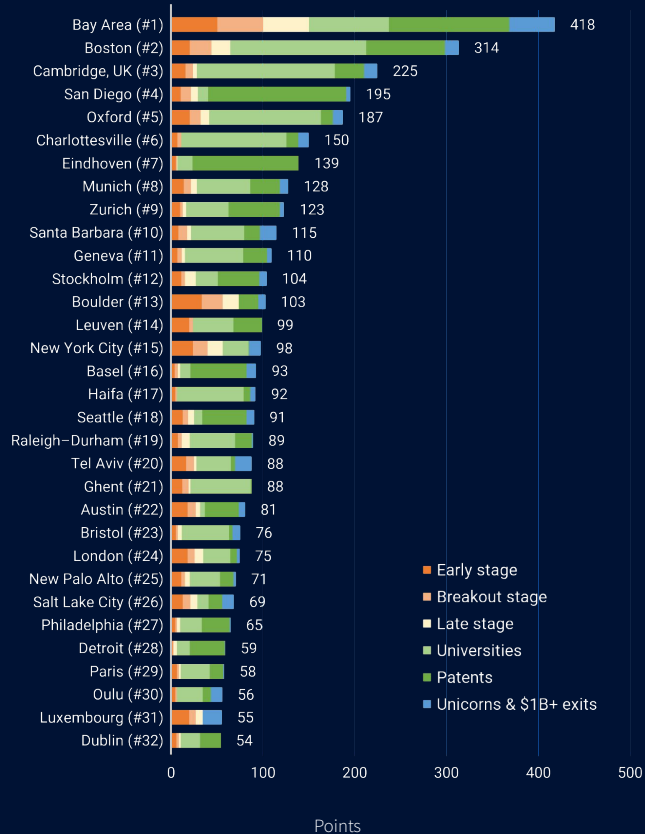
The Bay Area being the clear #1 won't surprise anyone. The chart on the left shows it does so by a wide margin. It leads by nearly every metric, but not all.

**Tokyo** is the frontrunner in Asia. It has a smaller startup ecosystem yet over-indexes on international patent registrations. The total number of active patents is perhaps a crude metric, but adding this quantifies Tokyo's massive innovative capacity from an industrial point of view.

The positions of **Beijing** and **Shanghai** are lower than they might have been a few years ago. China-only patents are not counted and the methodology puts emphasis on what happened since 2019 when China's tech sector was starting to decline relative to the rest of the world.

## Top Science Hubs

[view all results »](#)



## Per capita lens: Science Hubs

The Science hub lens places more emphasis on the development of deep tech, university talent, and patents on a per capita basis. Why? When it comes to science hubs, small can sometimes be a good thing, especially when there is specialization happening. The result is a mix of big generalist and small specialist science hubs.

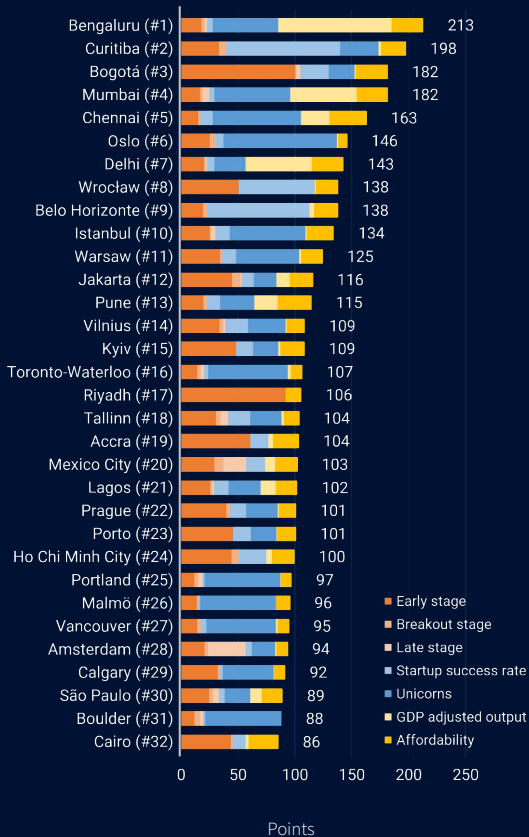
The **Bay Area** still tops the list, despite being a large ecosystem. Due to its sheer scale, it is still relatively dense despite being a much larger metro area. It also has a massive patent and deep tech footprint. It is, however, closely followed by **Cambridge (UK)** and **Boston**. Both score better on university talent.

Patent data combined with venture capital data helps create a powerful holistic picture of innovation. It helps us identify innovation hubs that would have been far less visible if we were looking only through a venture capital lens.

For instance, **San Diego** has a strong patent footprint, especially in telecommunications. Leuven, Zurich, and Boston excel in life sciences. Eindhoven and Cambridge are strong in semiconductors. Basel is strong in materials science, sensors & optics.

## Top Rising stars

[view all results »](#)



## Growth lens: Rising Stars

When looking at growth, many names emerge that are far less obvious. We constructed this benchmark with the explicit goal to discover ecosystems that may be relatively under the radar, but have undergone rapid transformation.

The results also show a very close call within the top 5 and again a very close call between numbers 10 to 32. But there are big differences in the way each city ended up there (their success factors).

For instance, **Bengaluru** tops this category for excelling in its high ratio of unicorns relative to GDP per capita. **Curitiba**, Brazil, does well thanks to its high conversion from series A to unicorn.

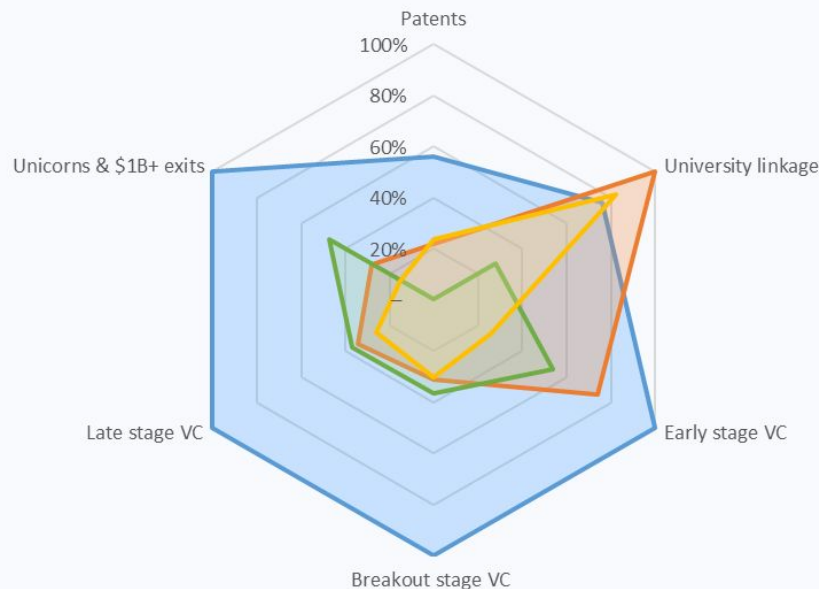
While **Bogotá**, the Columbia capital, ranks well thanks to its high conversion from series a to unicorn. **Oslo** scores well in unicorn growth; Amsterdam in terms of growth stage funding (megarounds).

This heterogeneity is visually apparent by every bar having a very different color composition – unlike the Trailblazers chart which is much more uniform.

## Scale lens: the top 4 Trailblazers ...

The Bay Area is #1 in everything except patent development and university linkage. New York over-indexes on number of unicorns and \$1B+ exits. New Palo Alto's strongest suit is it's highly connected university and venture capital networks.

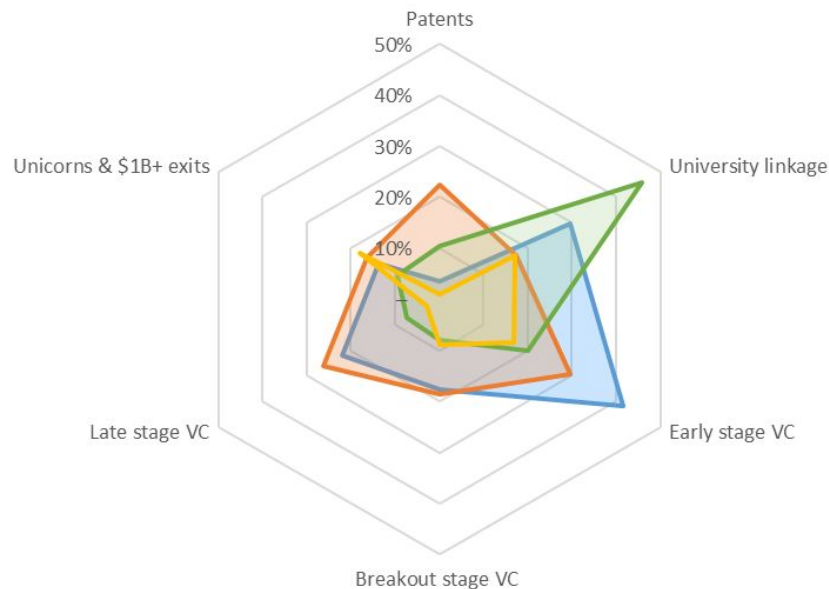
● Bay Area (#1) ● New Palo Alto (#2) ● New York (#3) ● Boston (#4)



## ... and the next 4.

Paris is over-indexing on university linkage with many startup founders from local universities. Los Angeles is more allround. London over-indexes on early stage funding and Tel Aviv outperforms on number of unicorns.

● London (#5) ● Los Angeles (#6) ● Paris (#7) ● Tel Aviv (#8)

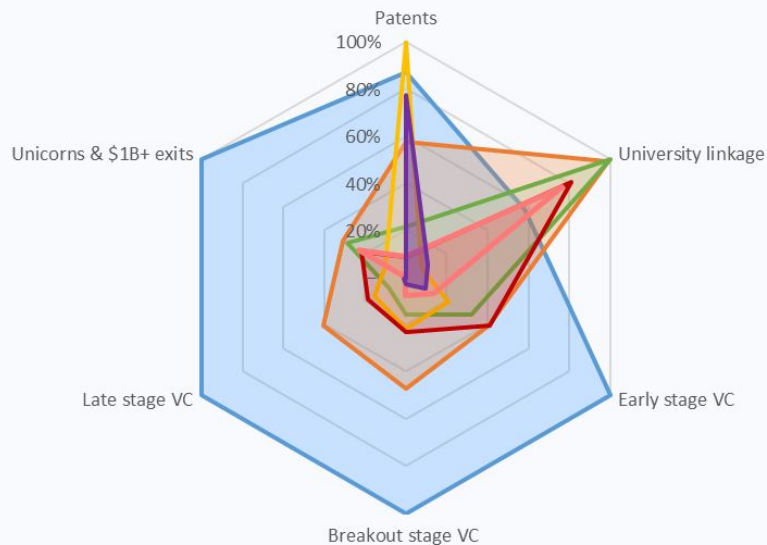




## Per capita lens: the top 7 Science Hubs ...

In the top 7 Science Hubs, the Bay Area is the allround leader, although it scores lower on university linkage (less academic startup founders). Science supercluster New Palo Alto is represented three times with Cambridge (UK), Oxford and Eindhoven.

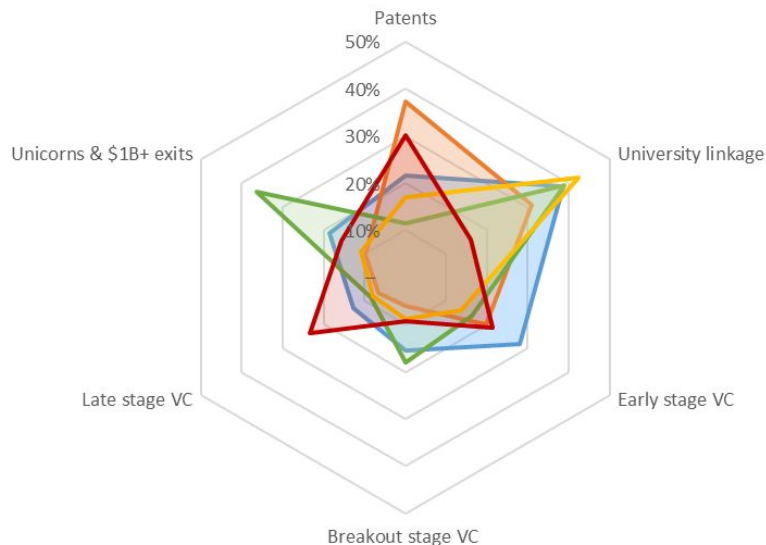
● Bay Area (#1) ● Boston (#2) ● Cambridge UK (#3) ● San Diego (#4)  
● Oxford (#5) ● Charlottesville (#6) ● Eindhoven (#7)



## ... and the next 5.

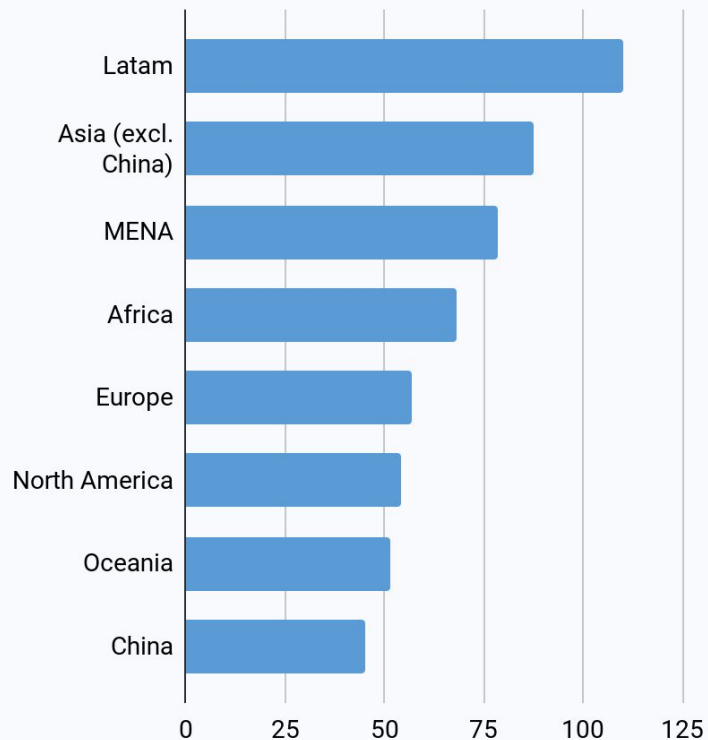
Munich scores high thanks to a life science and industrial tech focus. Zurich and Geneva are geographically close by with a similar field of specialisation. Santa Barbara has a high number of unicorns per inhabitant and strong university linkage.

● Munich (#8) ● Zurich (#9) ● Santa Barbara (#10)  
● Geneva (#11) ● Stockholm (#12)



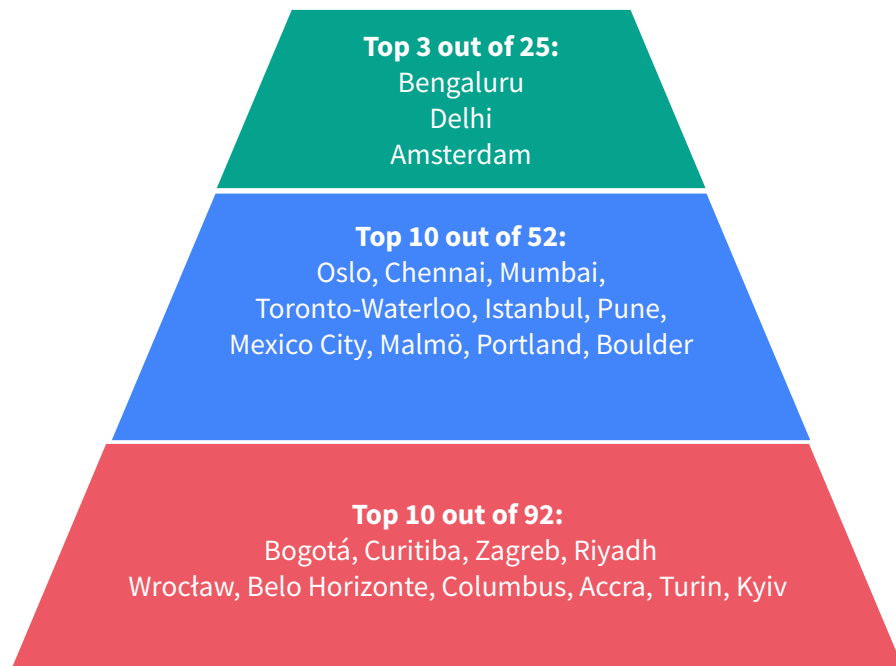
**Cities in Latin America and Asia (excl. China) score highest as Rising Stars (growth lens). China scores lowest.**

Average Rising Stars score per city (growth lens)



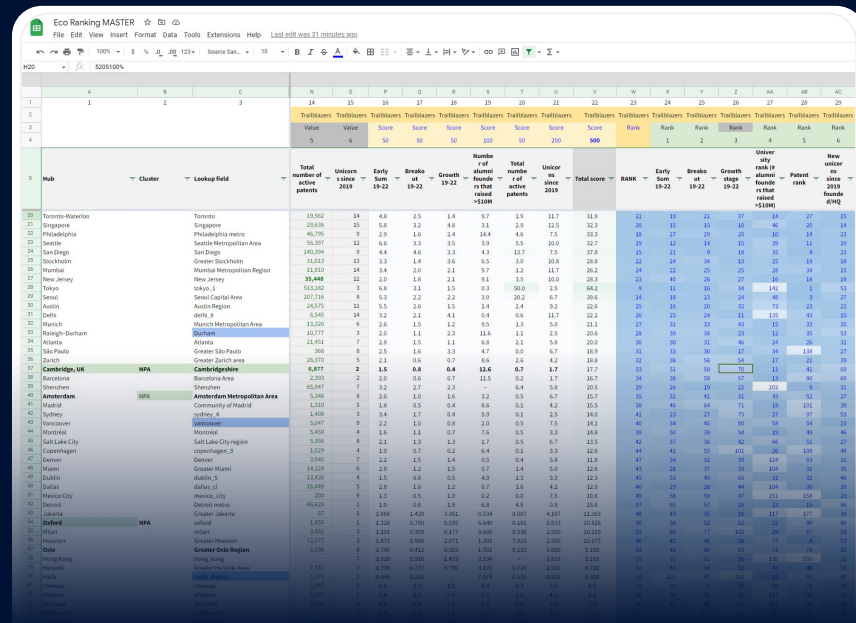
**Many top Rising Stars are growing from a smaller base. Of the bigger Rising Stars, two are in India (Bengaluru and Delhi), one in Europe (Amsterdam).**

■ Cities with 20+ unicorns ■ 5–19 unicorns ■ 0–4 unicorns



**... or go straight to the raw data.**

[Open Google Sheet »](#)



**Dealroom is official data partner with Startup Genome, the world-leading policy advisory and research organization for public and private organizations committed to accelerating the success of their startup ecosystem.**



“By working together, Dealroom and Startup Genome provide ecosystem leaders with actionable insights based on best-in-class data solutions and analytics. These are essential to devise proactive policy and program strategies to develop resilient tech ecosystems”



**Marc Penzel**  
Founder & President  
**Startup Genome**

1 The next chapter in tech

**2 Capital & investment**

3 Innovation & talent

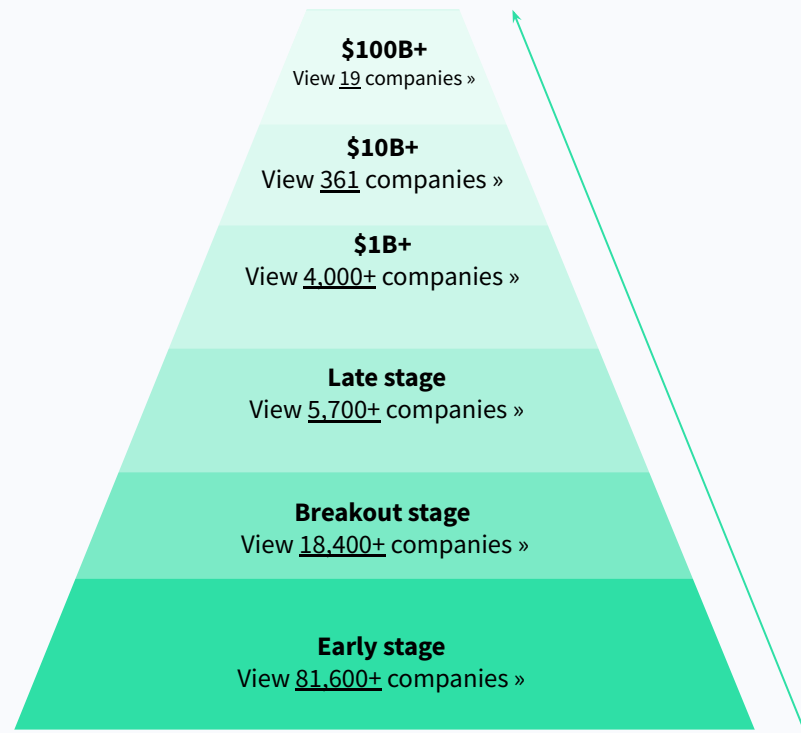
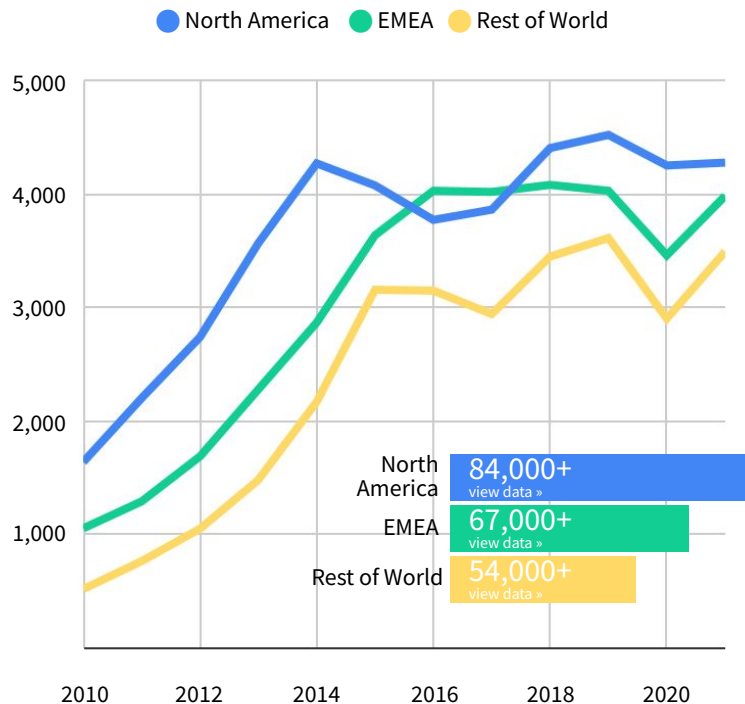
4 Economic outcomes

5 Regional lens

6 Methodology & about us

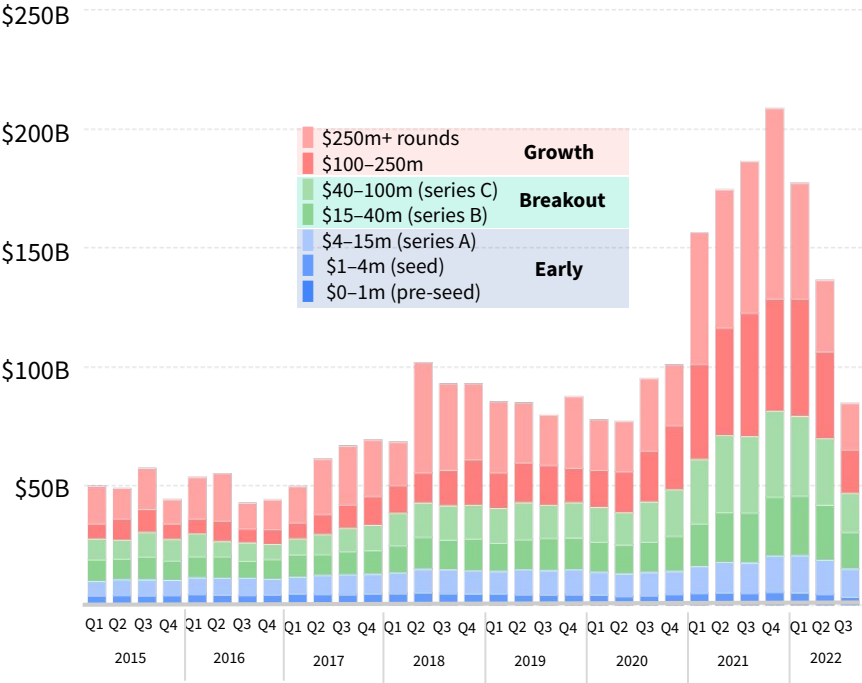
Every year, about 12,000 new startups receive their first investment from a VC.

There are roughly 207,000+ active VC-backed startups & scaleups globally.



# Global venture capital is back to pre-pandemic activity levels.

VC investment in Global startups » [view online](#)



## Explore the data.

- North America »
- Europe »
- Asia »
- Oceania »
- Africa »
- South America »

AMOUNT INVESTED Locations	2013	2014	2015	2016	2017	
Greater London	\$623m	\$899m	\$1.3b	\$1.6b	\$2.0b	
Ile-de-France (Paris Region)	\$364m	\$397m	\$628m	\$869m	\$1.1b	
Berlin/Brandenburg Metropolitan Region	\$232m	\$308m	\$326m	\$442m	\$665m	
Greater Stockholm	\$67.5m	\$176m	\$233m	\$395m	\$551m	
Munich Metropolitan Area	\$99.9m	\$108m	\$157m	\$141m	\$262m	
Amsterdam Metropolitan Area	\$99.4m	\$107m	\$86m	\$163m	\$174m	
Greater Oslo Region	\$15.5m	\$41.8m	\$61.7m	\$82m	\$127m	
Greater Helsinki Area	\$110m	\$169m	\$134m	\$224m	\$202m	
Greater Zurich area	\$53m	\$40.9m	\$79.5m	\$85.4m	\$223m	
Community of Madrid	\$50.8m	\$122m	\$101m	\$86.7m	\$145m	

“ Venture rounds are self-labelled without much consistency. Letters will never give a true sense of where a company is at in terms of their development whereas the amount of capital they consume is a much better reflection – by breaking down funding into phases of capital raised it gives founders a much better sense of what it takes to get from one stage to the next.



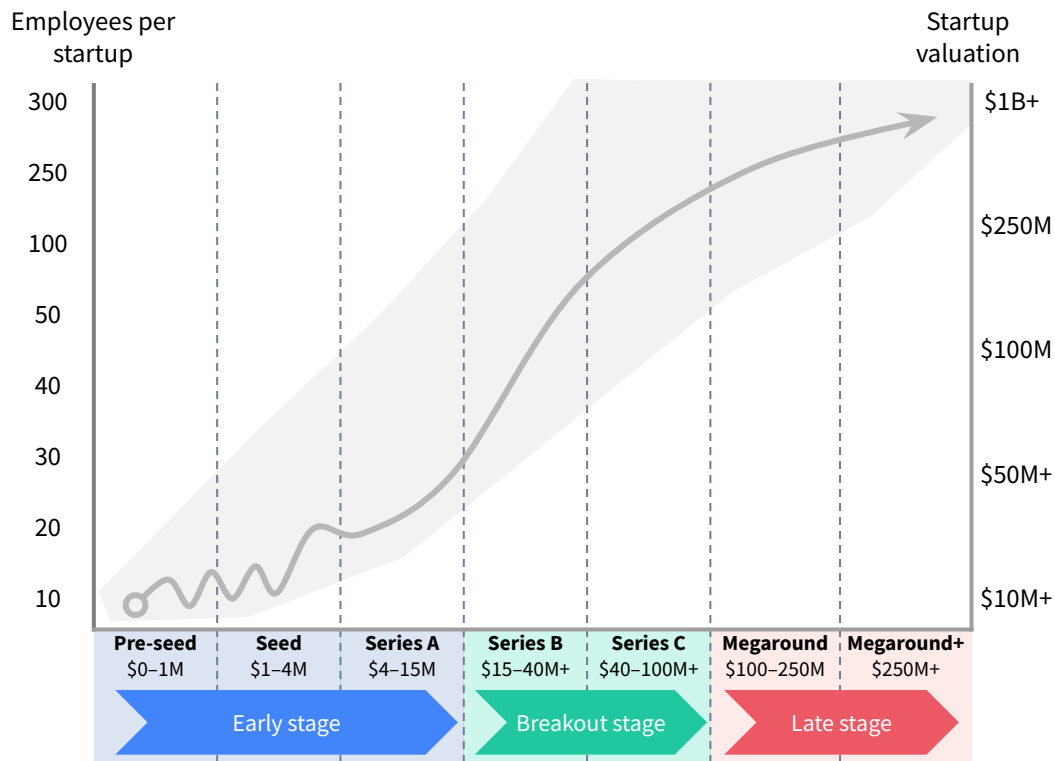
**Saul Klein**  
Co-founder of **LocalGlobe**

“ If I look back to the beginning of the current tech boom which started around 2009, we often wrote a \$3–5 million check and this was called an “A round” and 12 years later in an over-capitalized market this became known as a “Seed Round” but in truth what we do hasn’t changed much at all.”



**Mark Suster**  
Founder of **Upfront Ventures**

## Dealroom worked with leading VCs to develop a venture-backed scaling journey, that stands the test of time.

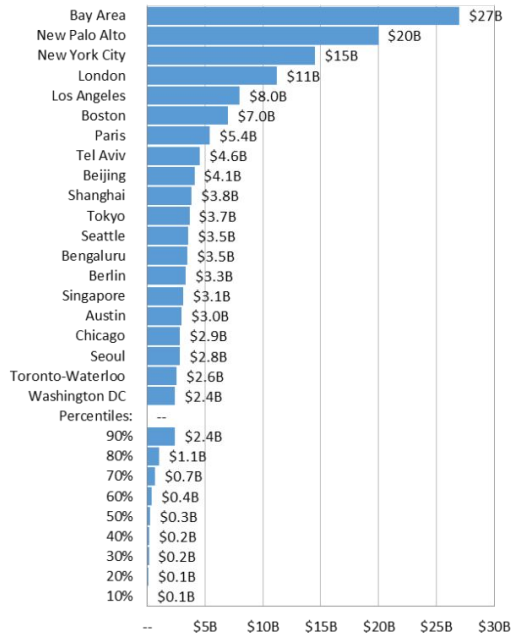




# The Bay Area startups raise more venture capital than the next three cities combined. But when it comes to early stage investing, the gap is much narrower.

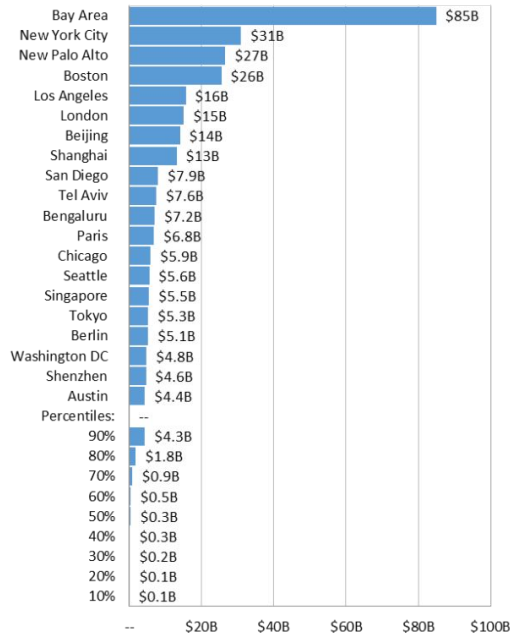
## Early stage

\$1M-\$15M rounds between 2019-2022



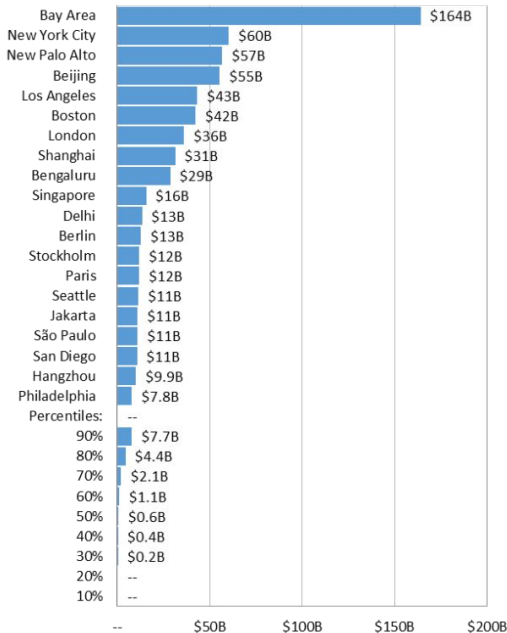
## Breakout stage

\$15M-\$100M rounds between 2019-2022



## Late stage

\$100M+ rounds between 2019-2022



# The Bay Area USA

<b>Cities &amp; towns</b>	San Francisco, Palo Alto, Menlo Park, Stanford
<b>Universities</b>	University of San Francisco & University of California
<b>First unicorn</b>	eBay in 1999
<b>Iconic companies</b>	Salesforce, Facebook, Google, Uber and Airbnb
<b>Top patents categories</b>	Information, Semiconductors and Telecommunications
<b>Notable spinouts</b>	Keysight Technologies, Medable and OmniAB
<b>Combined enterprise value</b>	\$7.4 trillion
<b>Cost of living</b>	95% of New York

#1

Unicorns since 2019

#1

Early stage funding

#1

Breakout funding

#1

Growth funding

#3

University alumni

#2

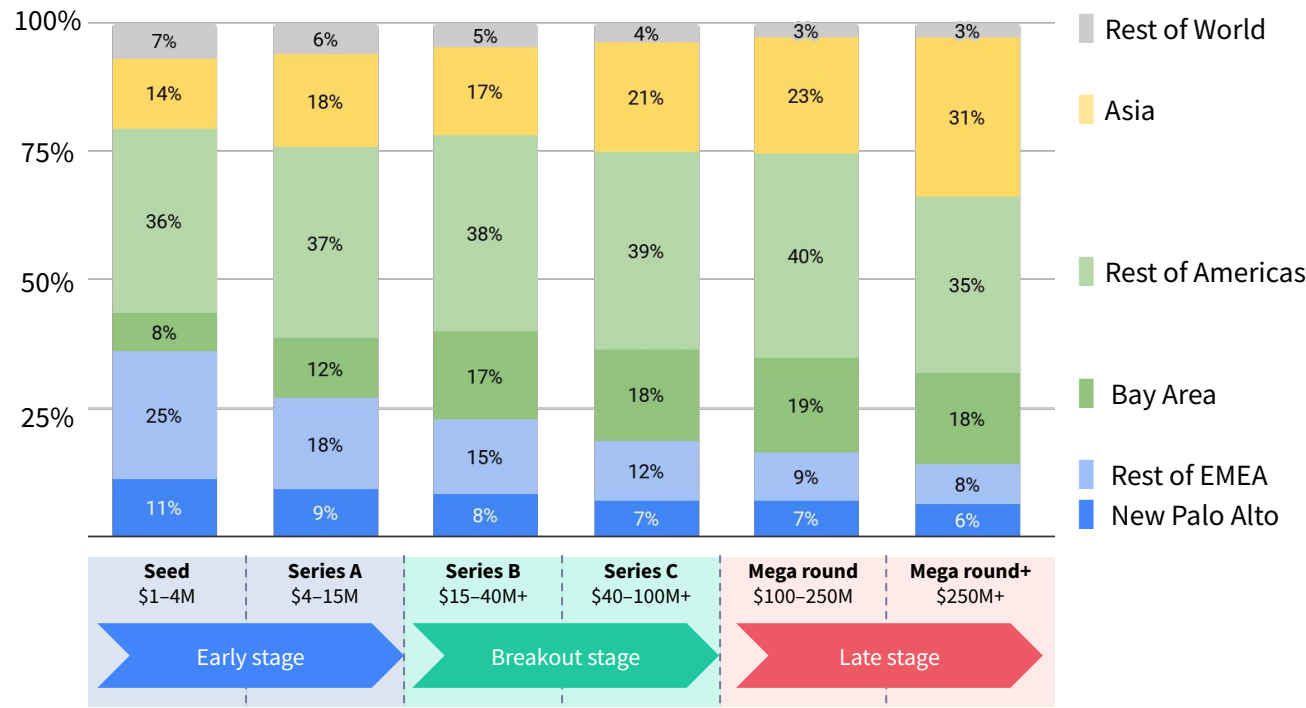
Patents

[Explore Bay Area »](#)

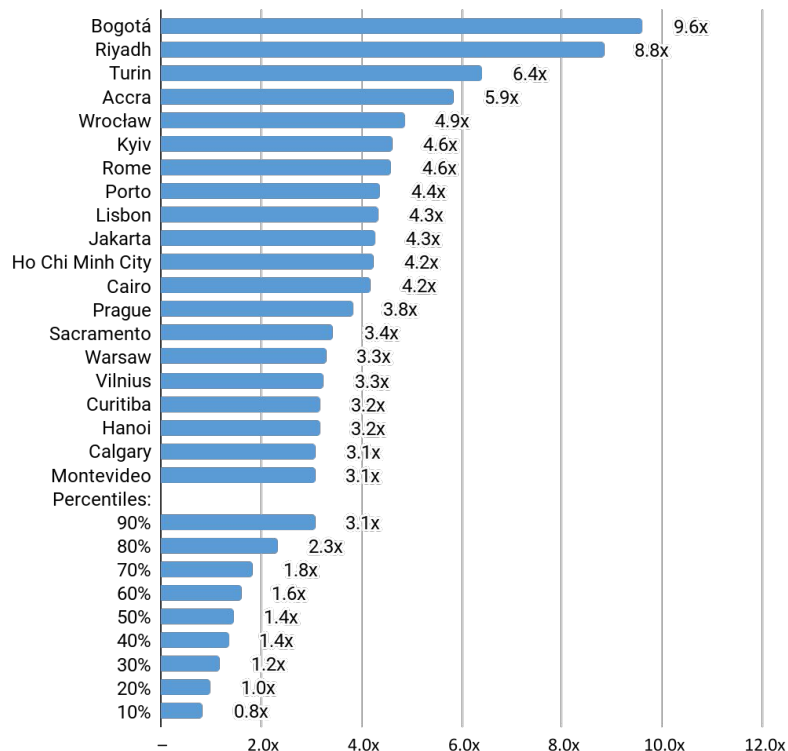


# New Palo Alto has nearly caught up with the Bay Area in early-stage investment. Asia over-indexes in super mega rounds.

Share of global VC investment by destination (2020-2022 YTD)



## Growth of early stage capital between 2015–2018 and 2019–2022 (\$1M–\$15M rounds size)



## Bogotá COLOMBIA

### Cities & towns

Soacha, Facatativá, Mosquera, Chía

### Universities

University of the Andes, National University of Colombia and the Pontifical Javeriana University

### First unicorn

Rappi in 2018

### Iconic companies

LINE, Nexon, Rakuten, Kakao

### Notable spinouts

Rappi, Habi and Addi

### Combined enterprise value

\$12.5 billion

### Cost of living

27% of New York

#5

Unicorn conversion

#1

Early stage  
funding growth

#173

Breakout stage  
funding growth

#51

Unicorn growth

#49

Unicorn to GDP ratio

#6

Affordability of  
living

Explore Bogotá»

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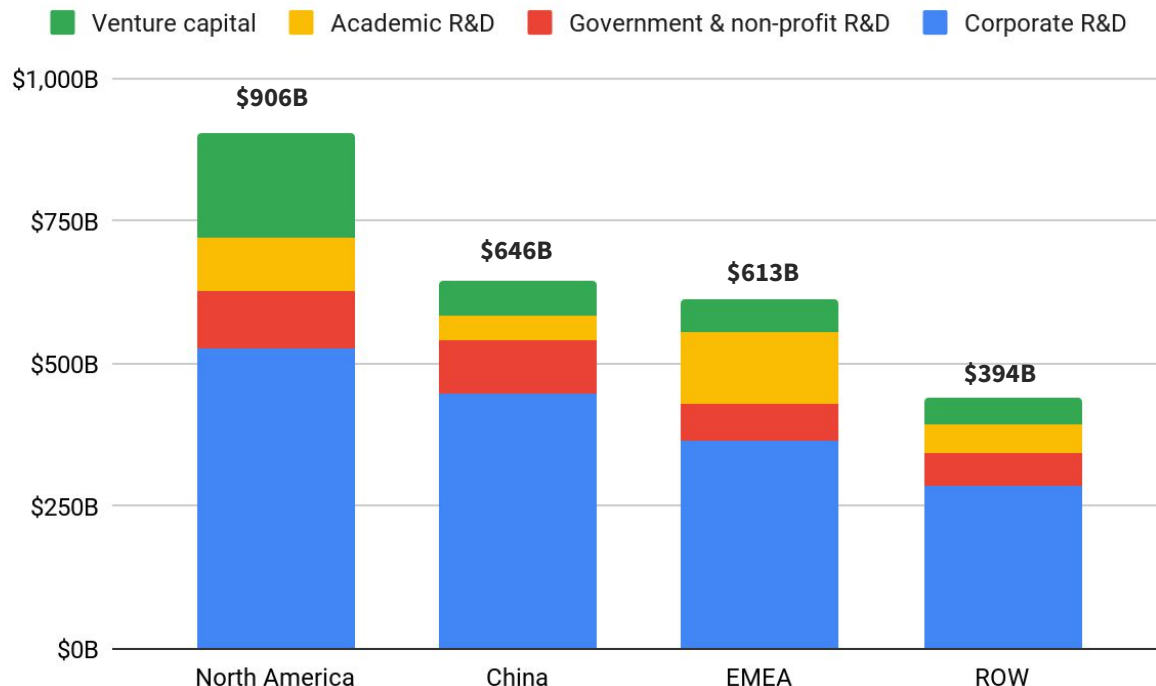
6 Methodology & about us

**Research & Development (R&D) investment is 6.5x higher than venture capital investment. Over 70% of R&D investment is done by corporates.**

Global venture capital has grown 4x over the last decade (ignoring the 2021 hype year).

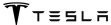
































But there's innovation happening beyond startups. Venture capital is still dwarfed by R&D investment, which has grown 2x over the same period.

**R&D and venture capital investment (2020).**



Source: Dealroom.co analysis of OECD data for R&D. EMEA region includes the EU27 countries including the UK, Israel and South Africa. VC data from Dealroom.co

# Frontier R&D is dominated by formerly venture-backed companies. Ergo, there's a indirect link between corporate R&D and venture capital.

	    	   	  	  	  	  	  	  	  	  
Corporate R&D spend (\$ billions)	United States	EU-27	Japan	China	South Korea	United Kingdom	Germany	France	Israel	Taiwan
Internet, software, hardware	114	9	9	15	17	1	4	2	1	3
Semiconductors	39	5	3	1	2	0	1	0	0	7
Pharma, biotech, healthcare	84	52	14	1	0	13	8	8	2	0
Automotive	19	46	39	6	4	4	34	8	0	0
Aerospace and Defense	11	8	0	0	0	2	0	2	0	0
Telecom	13	16	2	3	0	1	1	1	0	0
Oil & Gas	1	3	0	3	0	0	0	1	0	0

# Patents are an indicator of research output. Places such as Tokyo, Seoul, San Diego become more prominent when looking through this lens.

Registered Patents breakdown per category

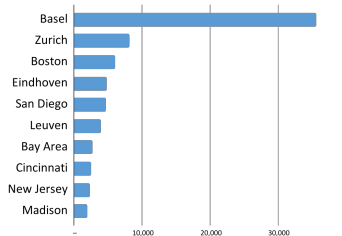
	Total	Information	Telecom	Electrical	Energy	Life sciences	Materials	Mechanical	Sensors & optics	Semi-conductors
Tokyo	513,182	131,819	27,575	73,044	24,681	54,852	37,923	41,372	67,690	53,053
Bay Area	287,776	108,709	35,966	23,066	5,543	20,905	6,309	10,151	21,247	53,546
Seoul	207,716	27,586	19,621	53,330	22,477	10,227	10,208	16,117	20,651	26,830
San Diego	140,394	36,233	47,700	9,856	1,873	15,618	2,168	5,004	10,929	9,369
Boston	120,420	19,818	5,840	13,795	13,154	29,740	5,612	13,463	11,000	6,642
Los Angeles	114,772	24,807	11,306	11,268	2,617	16,698	3,288	7,869	8,989	26,750
Houston	72,077	13,074	3,247	4,398	1,710	3,818	9,826	27,872	4,409	3,657
Shenzhen	65,947	12,813	29,746	8,490	1,824	1,633	969	2,491	5,001	2,419
Chicago	56,769	6,963	3,687	6,798	4,025	8,056	7,349	14,496	4,034	1,187
Seattle	56,397	32,359	5,496	3,304	783	3,173	701	3,265	4,041	3,211



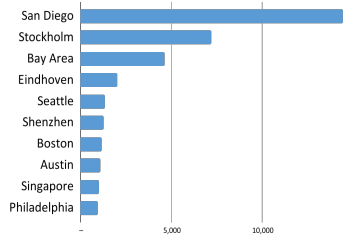
# Hubs such as Leuven, Eindhoven, and Basel are world-leading in their field of specialisation. Patent data helps identify such hubs.

Number of patents per inhabitant by category

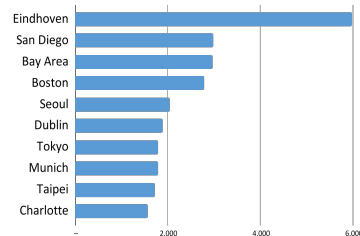
Life sciences



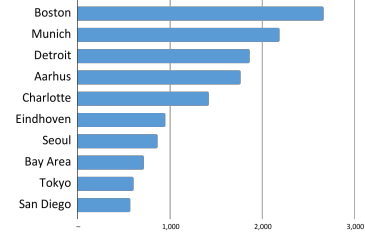
Telecom



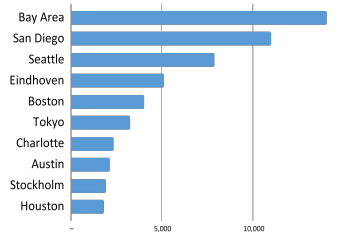
Electrical



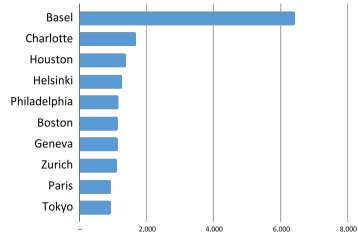
Energy



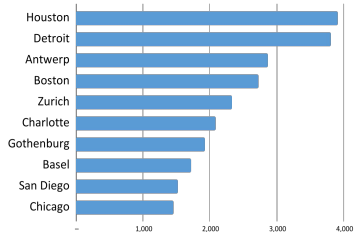
Information



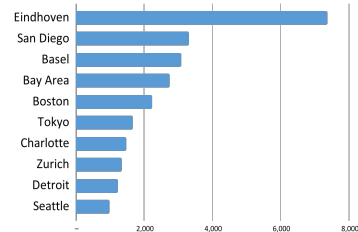
Materials



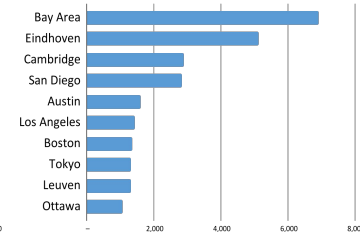
Mechanical



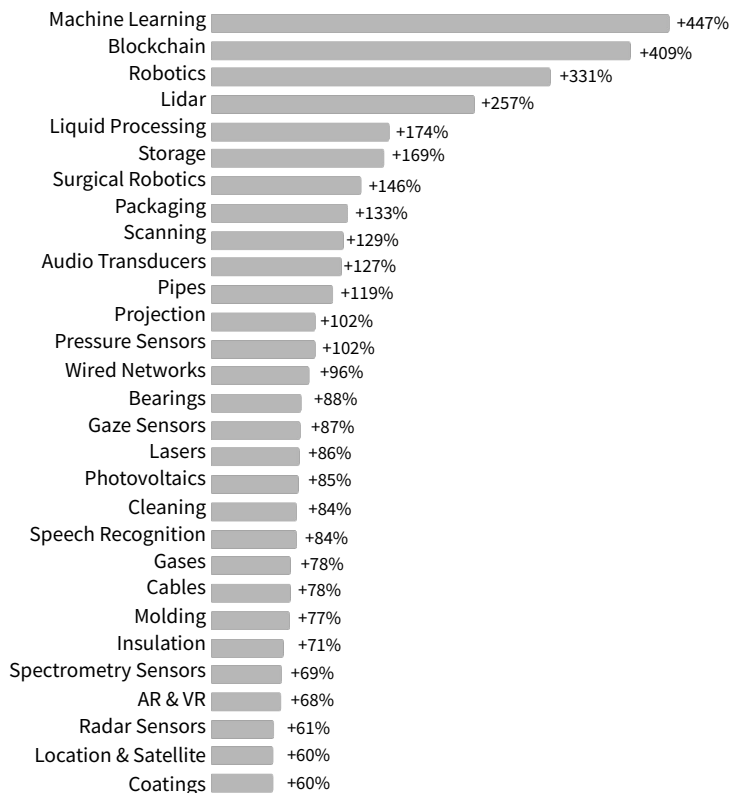
Sensors & optics



Semiconductors



### Fastest growing patent sub-categories (2017 vs. 2021)



## Patent intelligence from Cipher.

Cipher is recognized as the leading provider of strategic patent intelligence to major patent-owning organizations.

Cipher's Universal Technology Taxonomy is a novel way to map patents to technologies using supervised machine learning.









This breakthrough makes it possible to establish objective and repeatable ways to communicate both the risk and value associated with patents to IP leaders, the board, and the investor community more broadly.



Many startups have their roots in academia. And universities are a breeding ground for entrepreneurs more generally. This report measures the linkage between universities and the startup ecosystem.

» Universities by number of startups

» University spinouts

NAME	LOCATIONS	ALUMNI-FOUNDED STARTUPS (Europe)	ALUMNI-FOUNDERS (Eurooe)	ALUMNI-FOUNDED UNICORNS (Europe)	ALUMNI-FOUNDED FUTURE UNICORNS (Europe)	ALUMNI-FOUNDED STARTUPS
 <b>Stanford University</b> Stanford University is one of the w...	Stanford Kentucky	828	649	7	14	5132
 <b>Harvard Business School</b> Harvard Business School educates...	Boston Massachusetts	752	607	12	21	3780
 <b>University of California, Berkeley</b> A wellspring of innovation, the sch...	Berkeley California	502	439	11	15	3301
 <b>Harvard University</b> Devoted to excellence in teaching, ...	Cambridge Massachusetts	619	485	11	18	3281
 <b>Massachusetts Institute of Technology (MIT)</b> MIT - Massachusetts Institute of Te...	Cambridge Massachusetts	600	461	3	7	3038
 <b>The Wharton School</b> The Wharton School of the Univers...	Philadelphia Pennsylvania	333	261	9	12	2450
 <b>Stanford Graduate School of Business</b> Business research, insights, & idea...	Stanford Kentucky	405	283	11	17	2323
 <b>University of Cambridge</b> One of the world's oldest universit...	Cambridgeshire England	1201	1058	12	26	2105

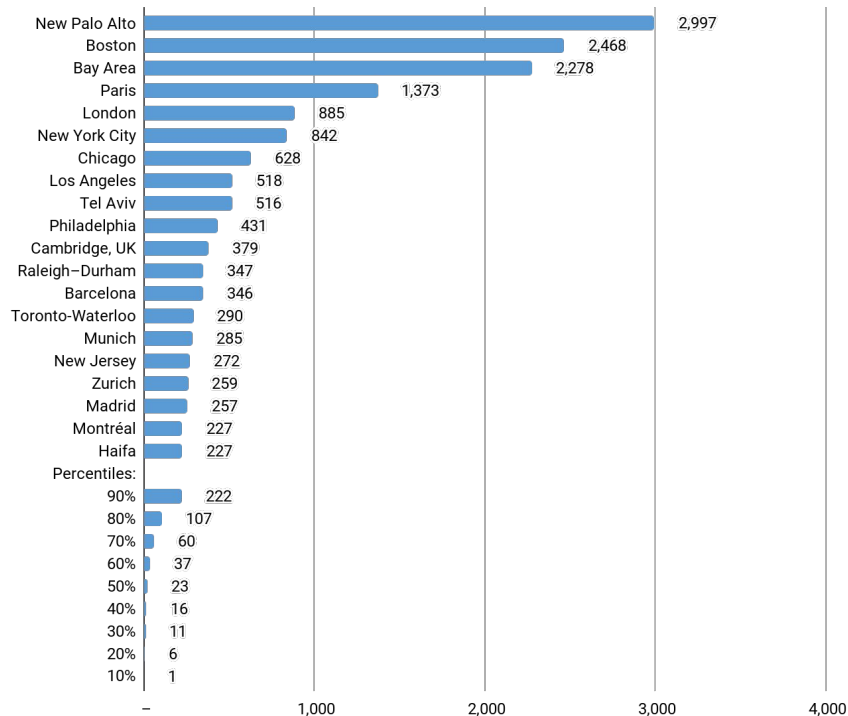
**New Palo Alto is a Science Supercluster:** three out of the top 10 science hubs within 4 hours commuting distance. A good example of an ecosystem that can combine science, entrepreneurship, capital, and frontier R&D.



[Explore New Palo Alto »](#)

# University talent

University alumni that founded startups that raised >\$10M



## Boston USA

<b>Cities &amp; towns</b>	Boston, Cambridge, Worcester, Providence, Lowell
<b>Universities</b>	Harvard, MIT, Boston University
<b>First unicorn</b>	Wayfair in 2011
<b>Iconic companies</b>	Moderna Therapeutics, Nuance Communications
<b>Top patents categories</b>	Life sciences, Information & Mechanical
<b>Notable spinouts</b>	Boston Meats and Kula Bio
<b>Combined enterprise value</b>	\$971.6 billion
<b>Cost of living</b>	80.5% of New York

#6

Unicorns since 2019

#6

Early stage funding

#4

Breakout stage funding

#6

Late stage funding

#2

University alumni

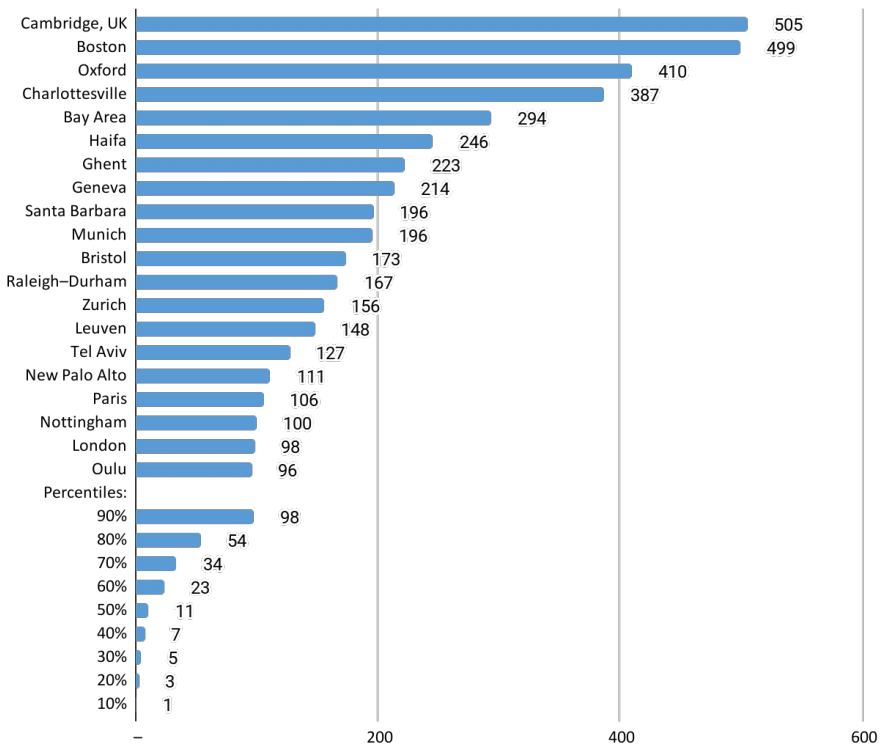
#5

Patents

Explore Boston »

# University talent per inhabitant

Per inhabitant number of university alumni founders who raised >\$10M



## Cambridge UK

Cities & towns	Cambridge, St Ives and Huntington
Universities	University of Cambridge
First unicorn	ARM in 1998
Iconic companies	ARM and Aveva
Top patents categories	Semiconductors, Life Sciences and Information
Notable spinouts	CamSemi, DarkTrace and BitBio
Combined enterprise value	\$66.9 billion
Cost of living	63.9% of New York

#6

Deep tech unicorns  
per inhabitant

#11

Early stage VC per  
inhabitant

#11

Breakout stage VC  
per inhabitant

#25

Late stage VC per  
inhabitant

#1

University alumni  
>\$10M per  
inhabitant

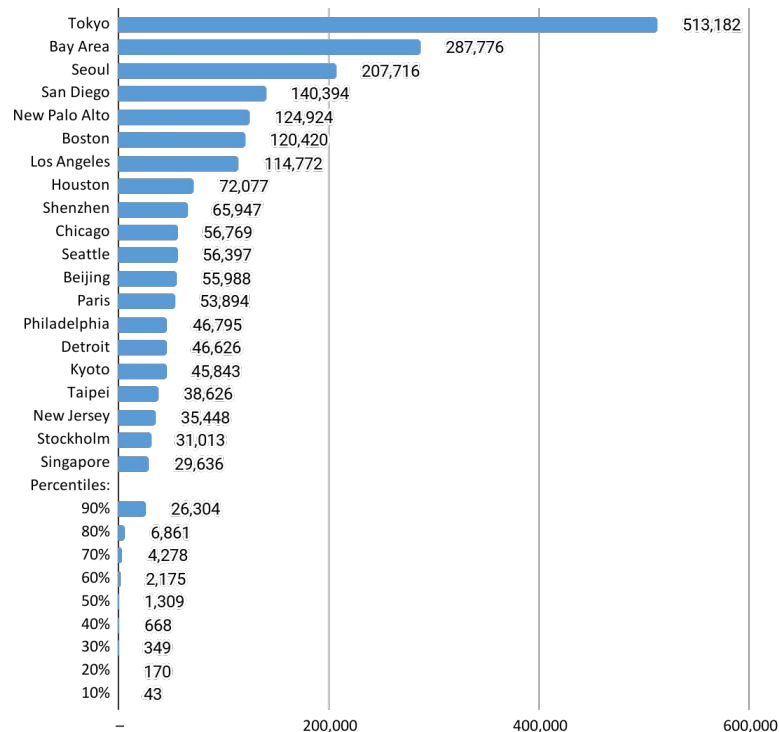
#14

Patents per  
inhabitant

Explore Cambridge »

# Patent development

Number of registered patents. Excluding China-only patents



## Tokyo JAPAN

### Cities & towns

Tokyo, Yokohama, Kawasaki, Saitama, Chiba, Sagami-hara

### Universities

Tokyo Institute of Technology, The University of Tokyo, Keio University

### First unicorn

DeNA in 2017

### Iconic companies

LINE, Nexon, Rakuten, Kakao

### Top patents categories

Heptares Therapeutics and Raptuya Robotics

### Notable spinouts

Information, Electrical and Sensors & Optics

### Combined enterprise value

\$175.5 billion

#35

Unicorns since 2019

#11

Early stage funding

#16

Breakout funding

#34

Growth funding

#142

University alumni

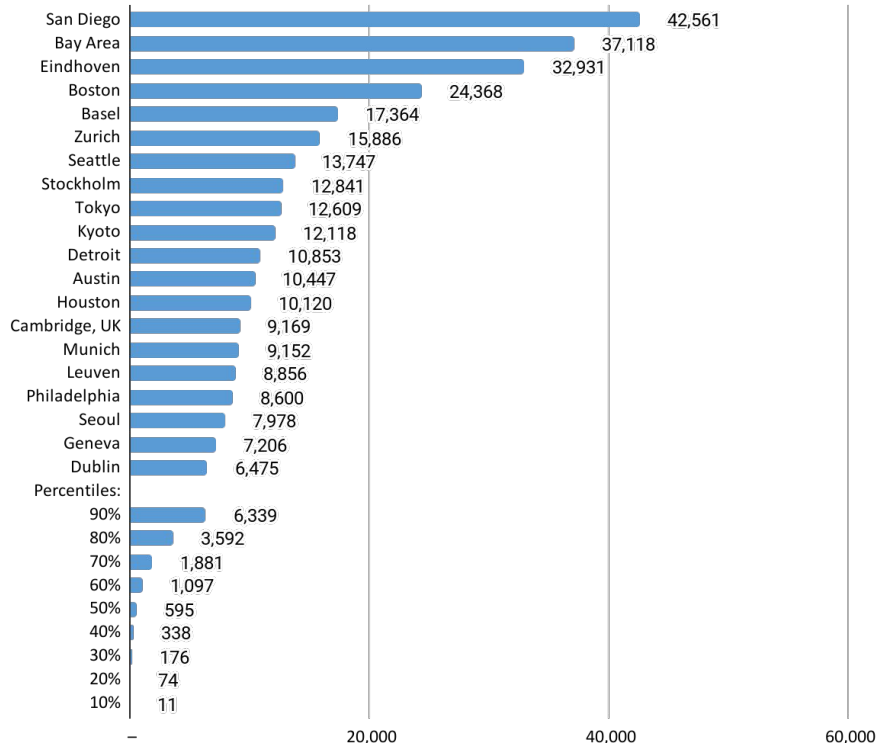
#1

Patents

Explore Tokyo »

# Patent development per inhabitant

Number of active patents excl. China-only patents per inhabitant



## Basel SWITZERLAND

<b>Cities &amp; towns</b>	Birsfelden, Binningen, Oberwil, and Riehen
<b>Universities</b>	University of Basel
<b>First unicorn</b>	Roivant Sciences in 2014
<b>Iconic companies</b>	Roivant Sciences, CRISPR Therapeutics and NBE-Therapeutics
<b>Notable spinouts</b>	Advancience and T3 Pharma
<b>Top patents categories</b>	Life Sciences, Materials and Information
<b>Combined enterprise value</b>	\$24.7 billion
<b>Cost of living</b>	119% of New York

#11

Deep tech unicorn per inhabitant

#65

Early stage VC per inhabitant

#26

Breakout stage VC per inhabitant

#37

Late stage VC per inhabitant

#5

Patents per inhabitant

#50

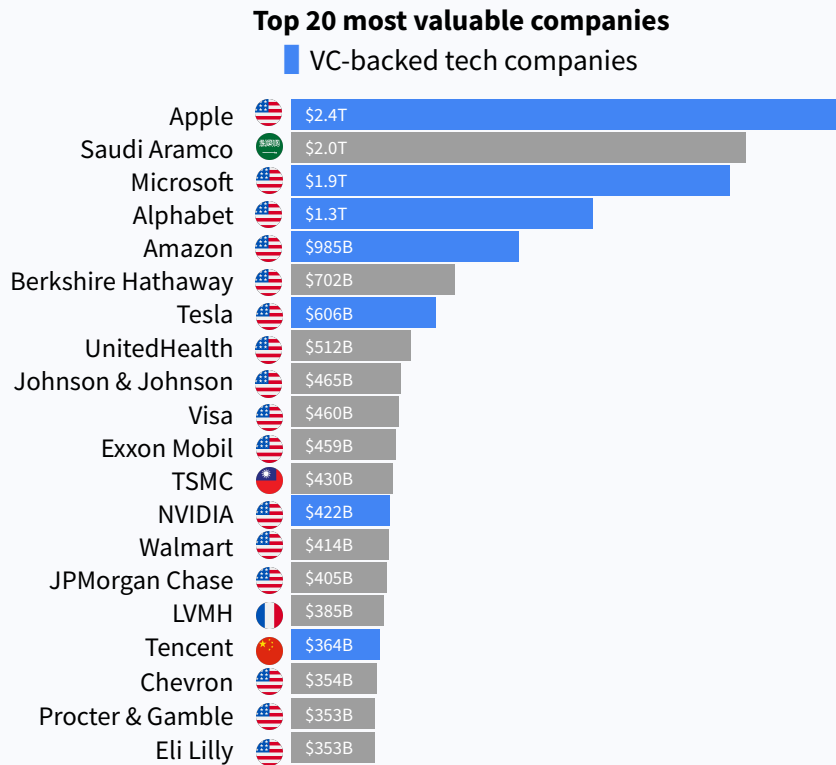
University alumni >\$10M per inhabitant

Explore Basel »

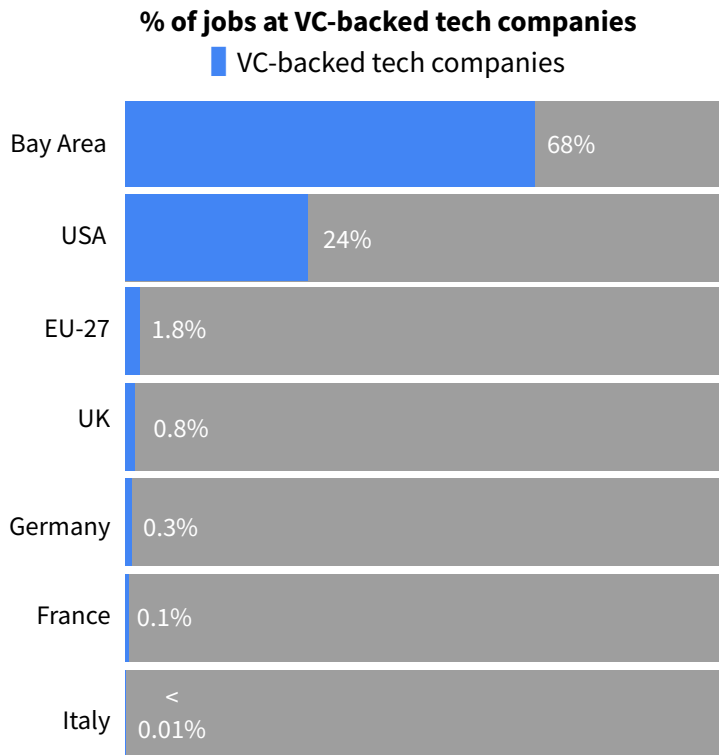


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- 3 Innovation & talent
- 4 Economic outcomes**
- 5 Regional lens
- 6 Methodology & about us

**Tech has created giant companies, many of whom were venture backed early on.**



**Job creation potential, as demonstrated by #1 Trailblazer: the Bay Area.**



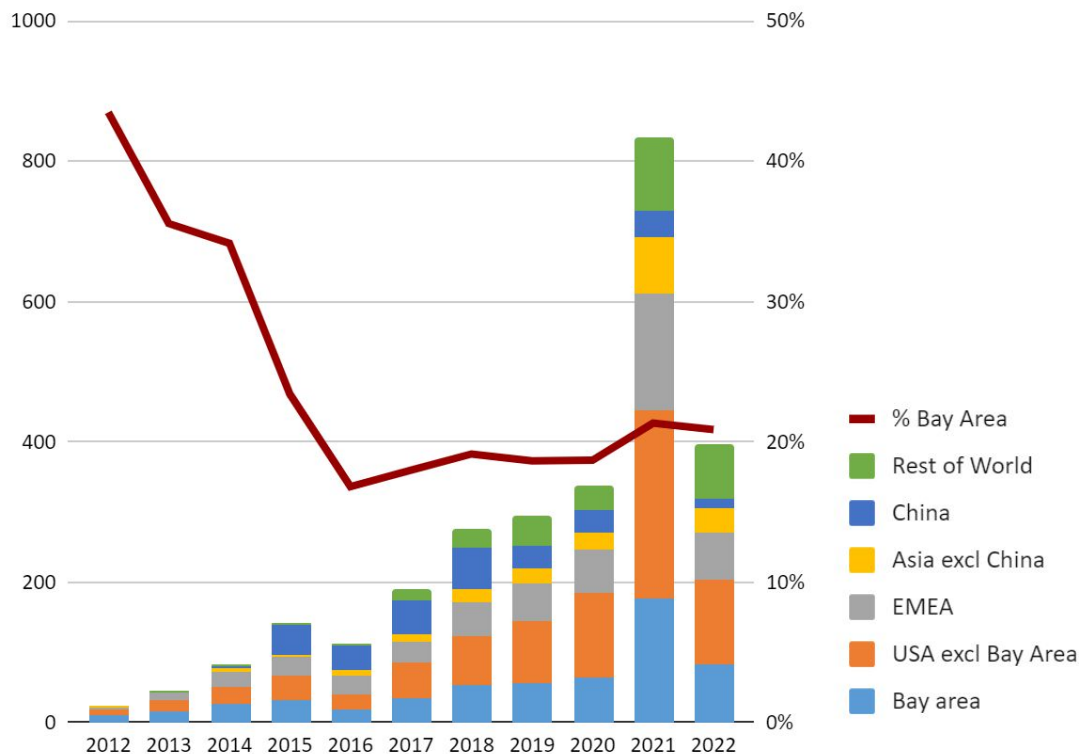
## The Bay Area no longer has a monopoly on VC-backed innovation. And no Big Tech company is impervious to disruption.

The Bay Area is not in decline – far from it. However, its share of global VC-backed innovation has dropped from 40% to 20% and stabilized there.

The Tech sector is highly concentrated (“big tech”) but it is not static or monopolistic. It is highly dynamic and competitive. The life expectancy of companies is shorter than ever.

Younger cohorts are able to disrupt big incumbents (e.g. Tiktok). This means there is a massive opportunity for emerging tech ecosystems.

Number of new \$1B+ startups



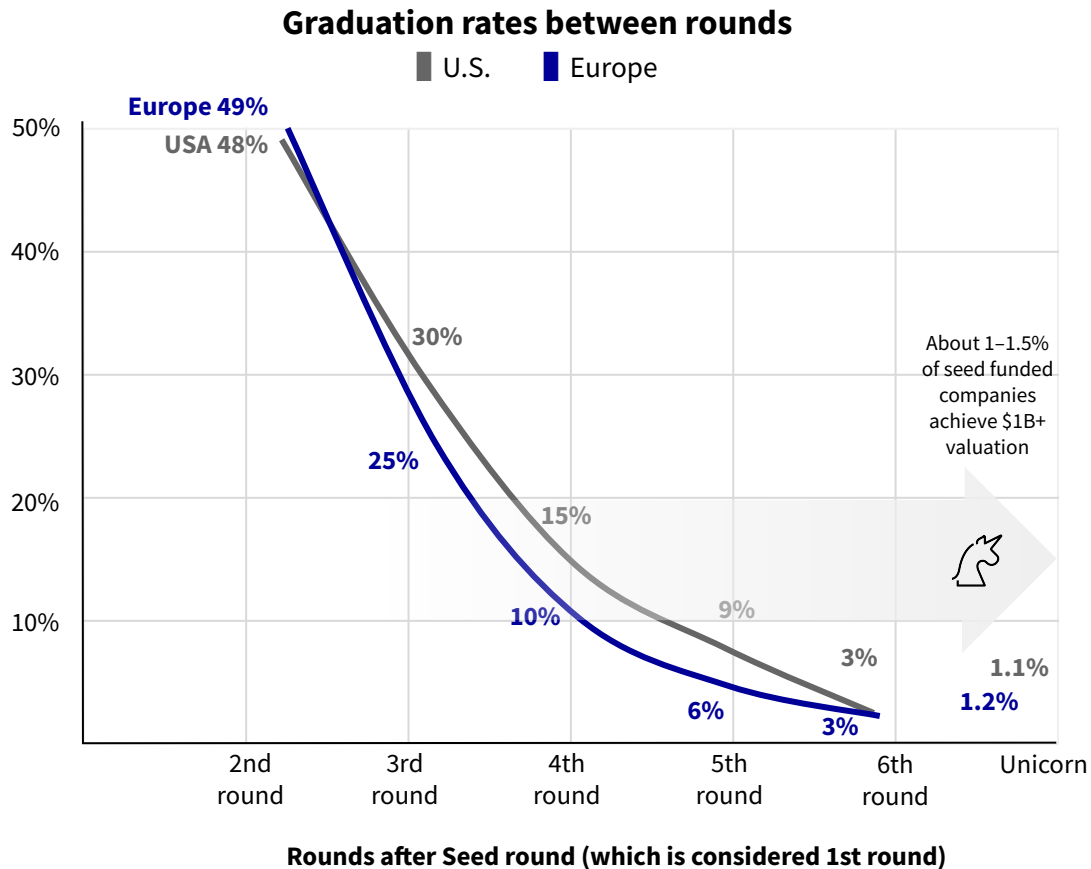
## About 1.0 to 1.5% of seed-funded startups reach the \$1B+ milestone – this is similar in both in the US and Europe.

Startup failure, while not desirable, is normal and likely. But are startups set up for success?

Dealroom data shows that a key success factor is the quality of the investor landscape. Dealroom conducted a European [study](#) on the performance of seed-stage investors, in partnership with VC firms Atomico and LocalGlobe.

19% of Seed companies raised a Series A after 36 months. But the probability was 40% for top-quartile investors and only 7% for bottom-quartile investors.

An [Angellist](#) study showed that in the US, graduation rates are much more uniform across investors. Lower graduation rates might also point to a lack of local follow-on capital (Series A, B, and beyond).



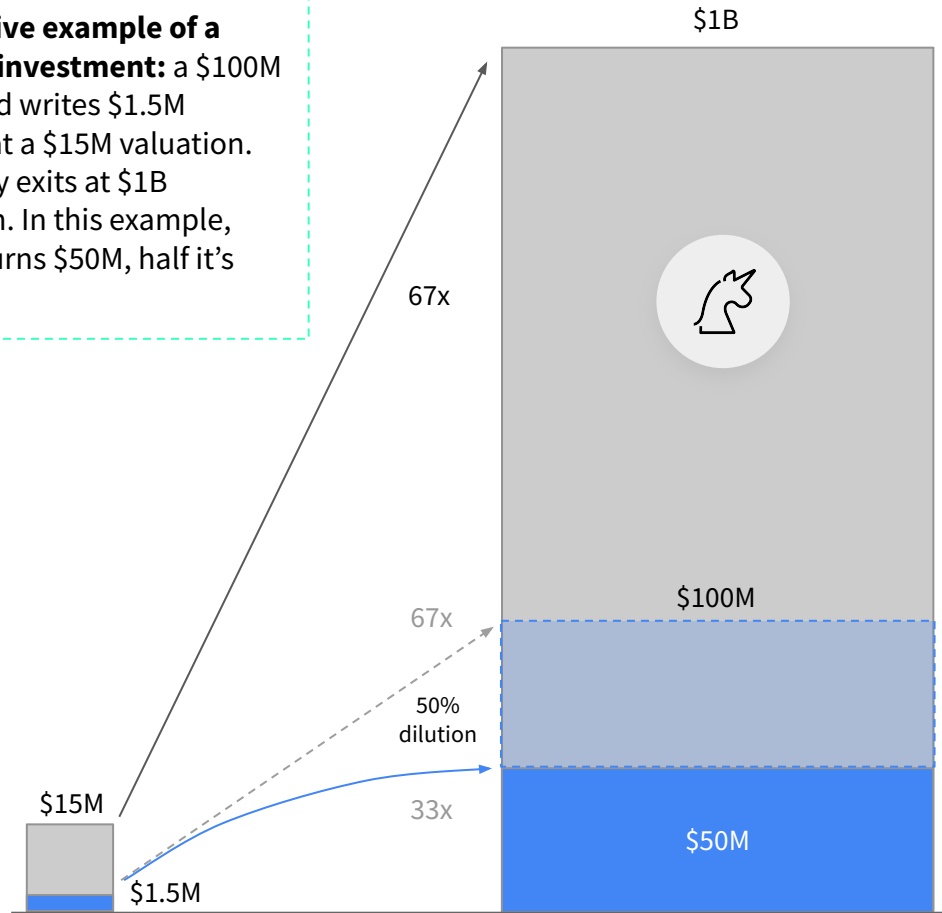
## Why VCs care about \$1B+ companies.

Unicorns are basically startups that are well on their way to being (very) successful. Important in the context of this report: they also have the potential to be a “fund returner” for a seed investor. The example on the right shows how that calculation works.

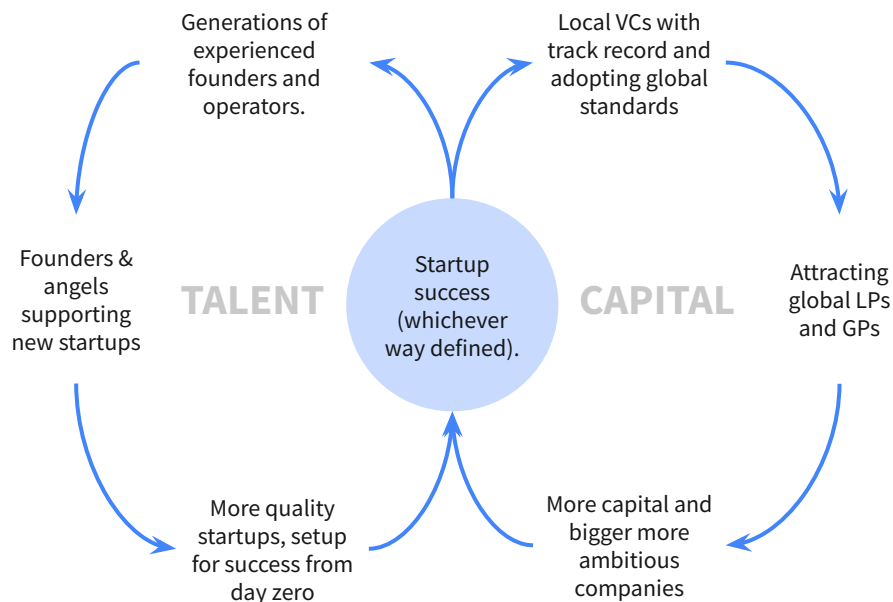
The Investor Rank assigns the same number of points to unicorns, whether they are exited or unrealized unicorns. A realized unicorn is a more tangible result. But unrealized unicorns are more forward-looking. Decacorns are valued the same as unicorns (for now).

Revenue is more meaningful than the paper value from a VC round but revenue data is reported with significant delays (if at all) and therefore a lagging indicator in the real world. Valuation, while far from perfect, is a more real-time and ubiquitous datapoint about the state of individual startups.

**Illustrative example of a unicorn investment:** a \$100M seed fund writes \$1.5M cheque at a \$15M valuation. Company exits at \$1B valuation. In this example, fund returns \$50M, half it's fund.



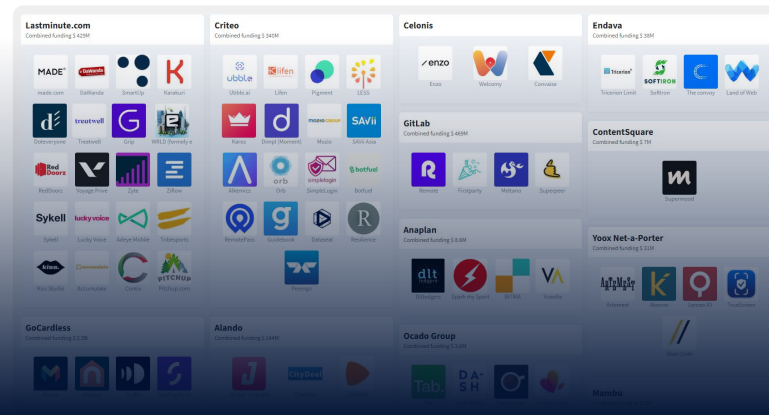
## Why ecosystems care about big outcomes: the startup ecosystem flywheel.



## Startup mafias identified

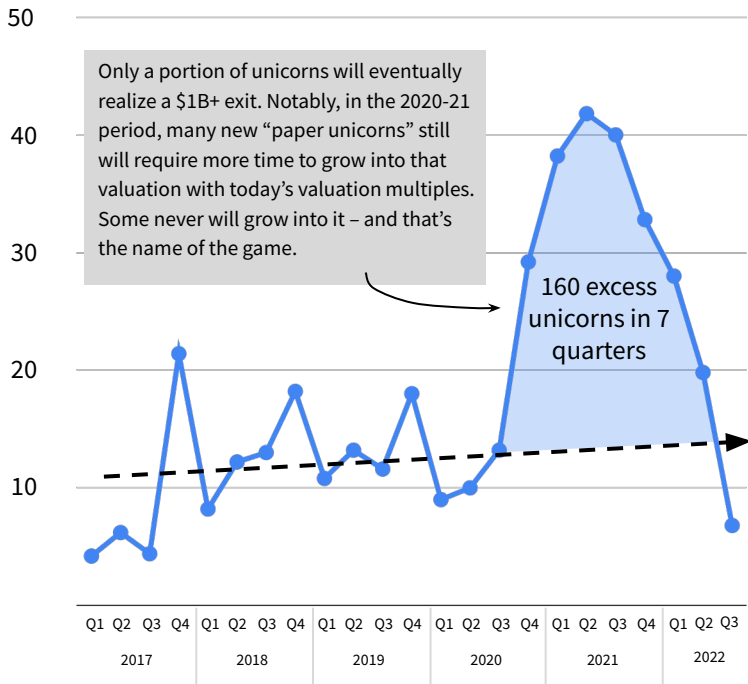
Success breeds success. Early tech ecosystem success not only creates value, but breeds a generation of operators with unique experience in starting and rapidly scaling successful businesses, who have the right network and at times the exit capital to start their next venture. It starts a snowball effect of success.

Most famously in the US, the founder and first-hire alumni of the "PayPal Mafia" went on to found Tesla, LinkedIn, Palantir, SpaceX, Square, Slide, Kiva, YouTube, Yelp, and Yammer. Then there are the European Startup Mafias. The training grounds that became the founder factories fuelling the European startup ecosystem. Check out 600+ startups (co-)founded by alumni of European unicorns:



# New unicorn creation is back to pre-pandemic level, similar to VC investing.

Number of new unicorns and \$1B+ exits » [view online](#)



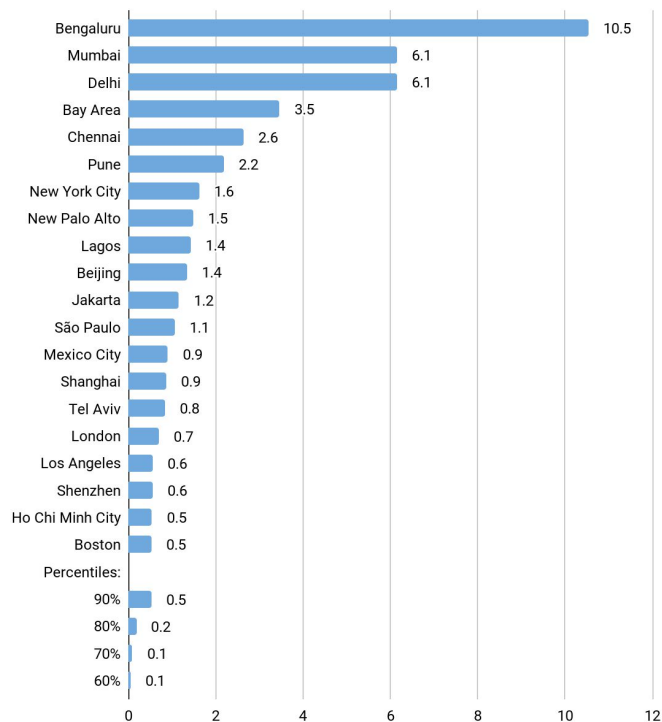
## Explore the unicorn data.

- North America »
- Europe »
- Asia »
- Oceania »
- Africa »
- South America »

VIEW BY Locations	2017	2018	2019	2020	2021	JP	2022
Greater London	7	5	10	9	23		11
Ile-de-France (Paris Region)	0	3	4	4	11		6
Greater Stockholm	1	2	2	5	7		5
Berlin/Brandenburg Metropolitan Region	0	3	3	1	15		4
Metropolitan City of Milan	0	0	1	0	1		3
Greater Zurich area	2	0	2	0	3		2
Greater Oslo Region	0	0	0	2	4		2
Greater Dublin Area	0	0	0	1	2		2
Amsterdam Metropolitan Area	0	2	3	2	5		1
Greater Helsinki Area	0	0	0	1	2		1
Vienna Metropolitan Area	0	1	0	0	2		1
Barcelona Area	0	0	1	0	2		1

# Unicorn to GDP ratio

Unicorns created since 2019 relative to GDP per capita



## Bengaluru INDIA

### Districts

Chikkaballapura, Chitradurga, Davanagere, Kolar, Ramanagara, Shimoga and Tumakuru

### Universities

Indian Institute of Management, Bangalore University

### First unicorn

InMobi in 2011

### Iconic companies

Infosys and Rajesh Exports

### Top patents categories

Information, Life Sciences and Materials

### Combined enterprise value

\$246.1 billion

### Cost of living

27% of New York

#1

Unicorns to GDP  
ratio

#68

Early stage  
funding growth

#73

Breakout  
funding growth

#47

Series A to unicorns  
conversion

#10

Unicorn growth  
since 2019

#7

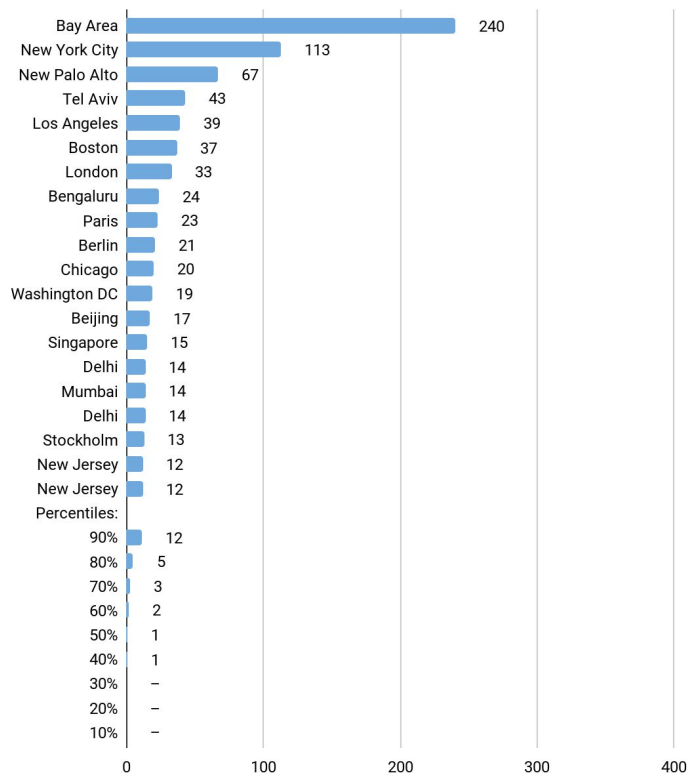
Affordability of  
living

[Explore Bengaluru »](#)



# New unicorn creation

Unicorns created since 2019



## Tel Aviv ISRAEL

### Cities & towns

Tel-Aviv, Yafo/Jaffa, Holon and Ramat Gan

### Universities

Weizmann Institute of Science, Tel Aviv University and Hebrew University of Jerusalem

### First unicorn

ironSource in 2015

### Notable companies

Wix, eToro and Monday.com

### Top patents categories

Life Sciences, Information and Telecommunications

### Combined enterprise value

\$181.1 billion

### Cost of living

82% of New York

#4

Unicorns since 2019

#10

Early stage  
VC per inhabitant

#8

Breakout stage VC  
per inhabitant

#35

Late stage  
VC per inhabitant

#70

Patents per  
inhabitant

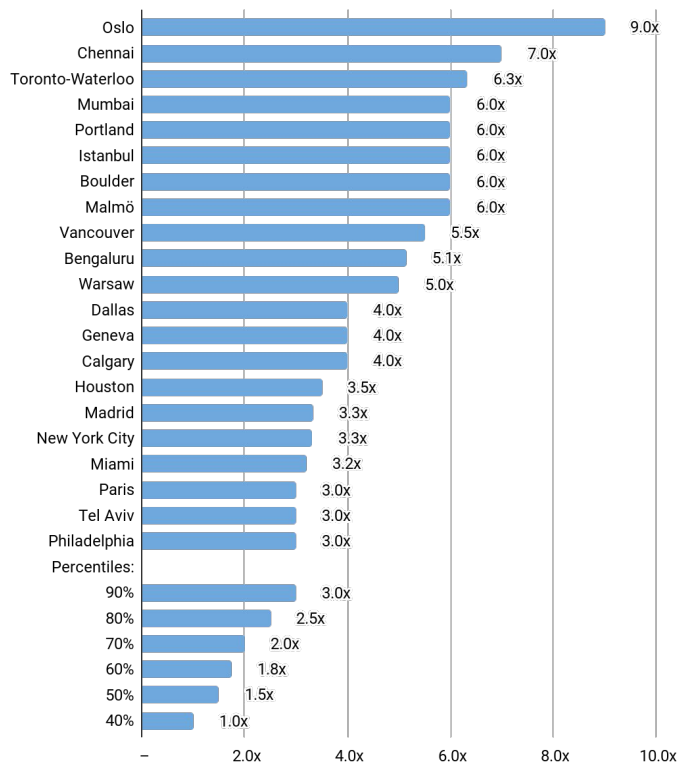
#4

Deep tech unicorn  
per inhabitant

Explore Tel Aviv »

# Unicorn growth

Growth in unicorns between 2019-22



## Oslo NORWAY

<b>Cities &amp; towns</b>	Oslo, Ekeberg, Grünerløkka and Frogner
<b>Universities</b>	University of Oslo and Norwegian University of Science and Technology (NTNU)
<b>First unicorn</b>	Opera in 2016
<b>Iconic companies</b>	Oda, Kahoot, Dune Analytics and Cognite
<b>Notable spinouts</b>	Cimon Medical, Elliptic Labs, and Seram Coatings
<b>Top patents categories</b>	Mechanical and Sensors & Optics
<b>Combined enterprise value</b>	\$25.4 billion
<b>Cost of living</b>	90% of New York

#30

Series A to unicorns  
conversion

#37

Early stage  
funding growth

#35

Breakout  
funding growth

#1

Unicorn growth

#72

Unicorn to GDP ratio

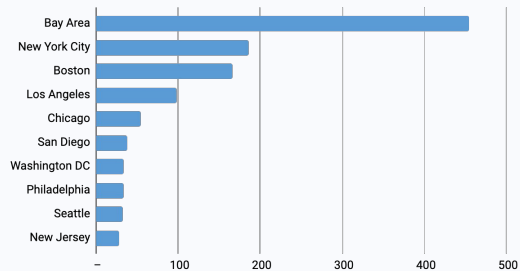
#180

Affordability of  
living

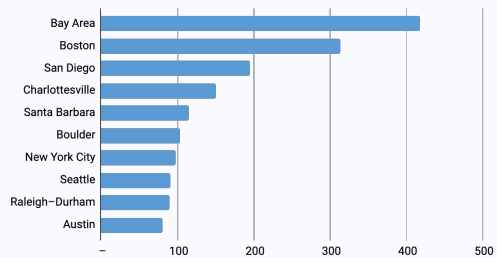
[Explore Oslo »](#)

- 1 The next chapter in tech
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- 5 Regional lens**
- 6 Methodology & about us

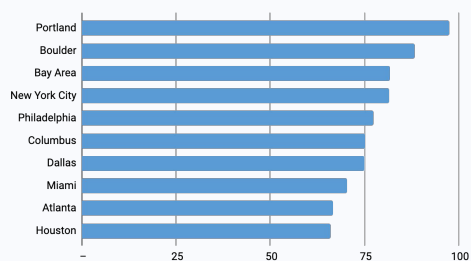
## Trailblazers



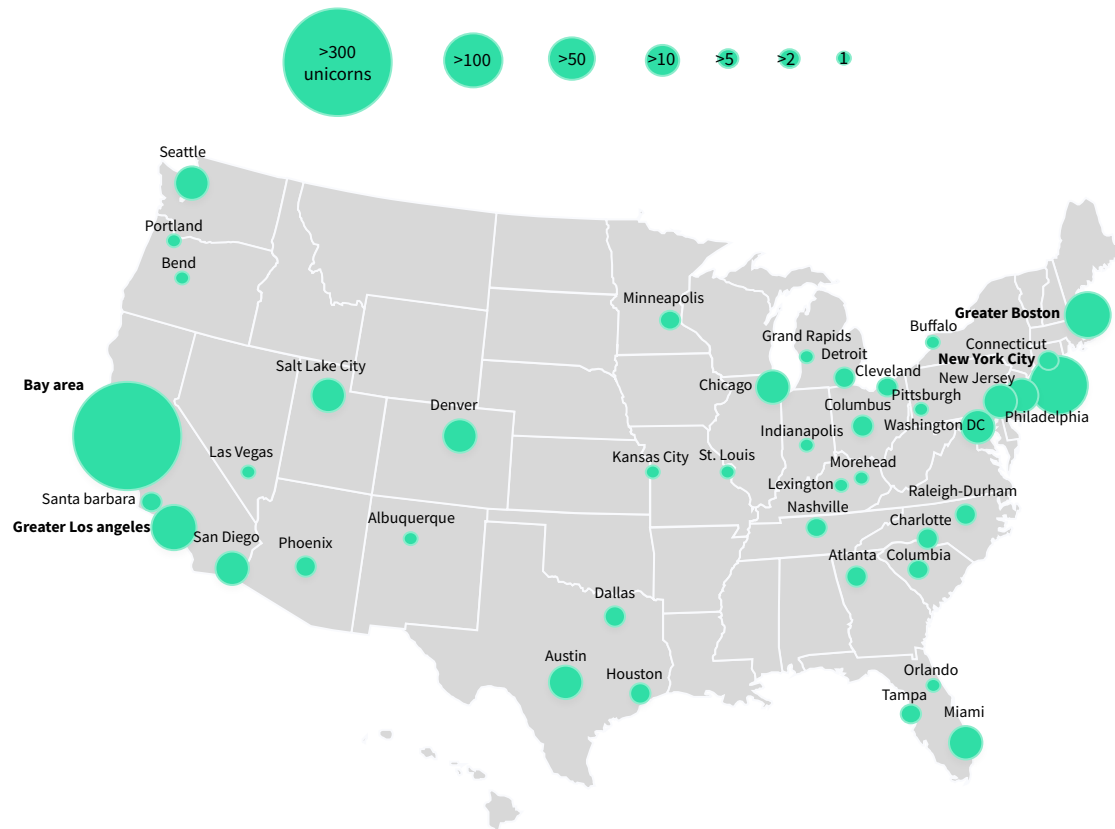
## Science Hubs



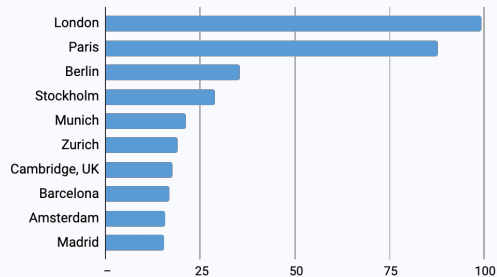
## Rising Stars



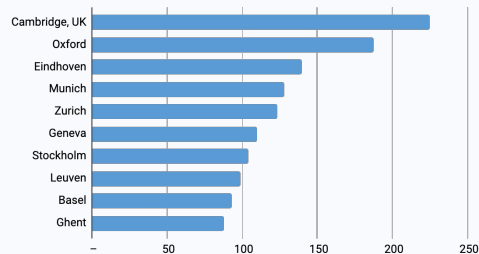
## Unicorn cities in USA



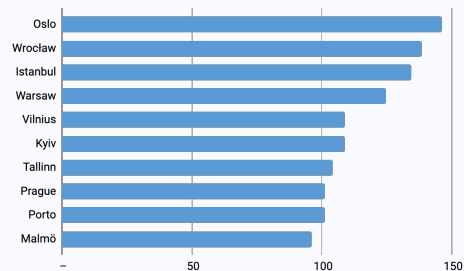
## Trailblazers



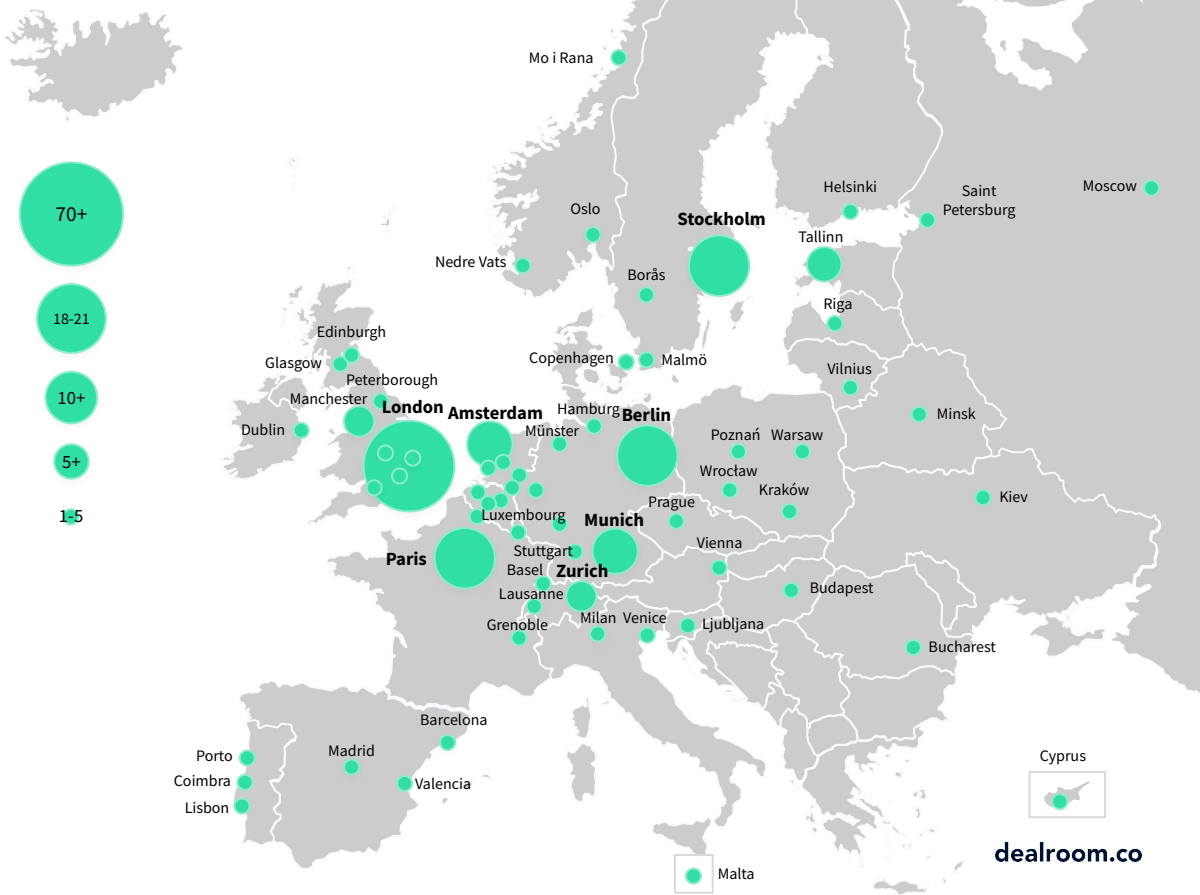
## Science Hubs



## Rising Stars



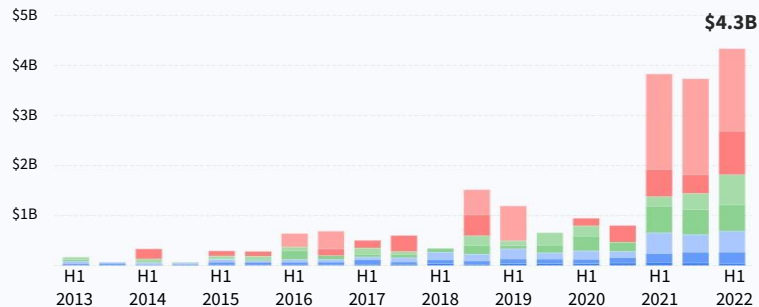
## Unicorn cities in Europe



# Middle East and North Africa

## VC investment

■ \$0-1M (pre-seed) 
 ■ \$1-4M (seed) 
 ■ \$4-15M (seed) 
 ■ \$15-40M (series A) 
 ■ \$40-100M (series B) 
 ■ \$100-250M (series C) 
 ■ \$250M+

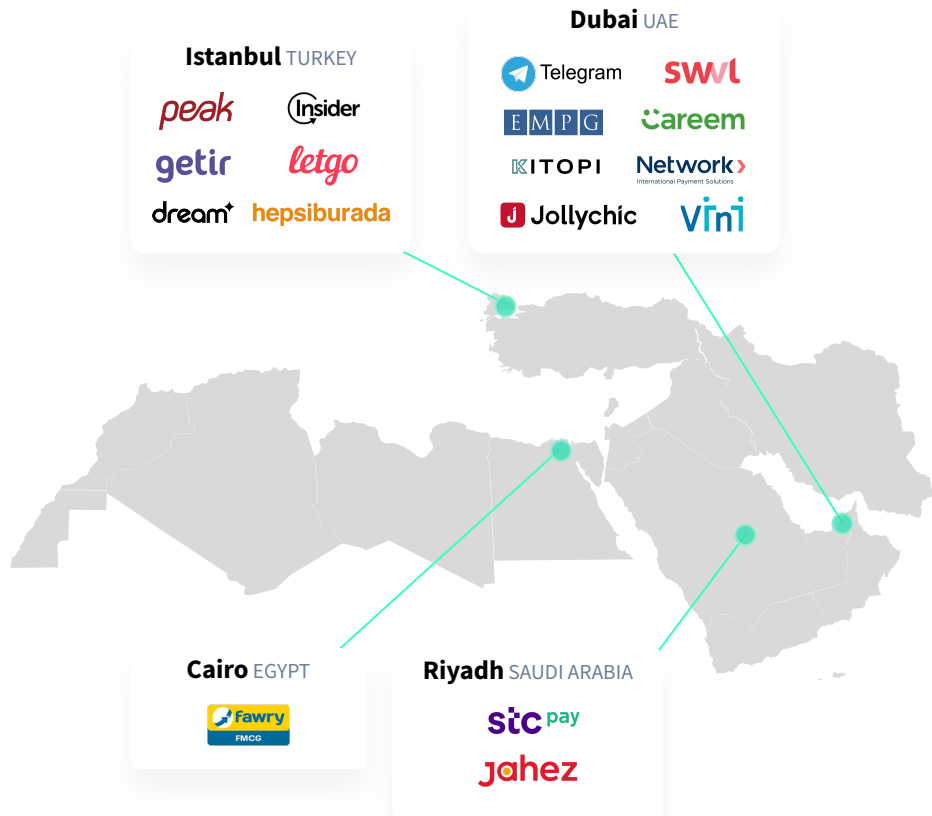


## Enterprise value (companies founded after 1990)

■ \$0-200M 
 ■ \$200M-1B (future unicorn) 
 ■ \$1-10B (unicorn) 
 ■ \$10B+ (decacorn)

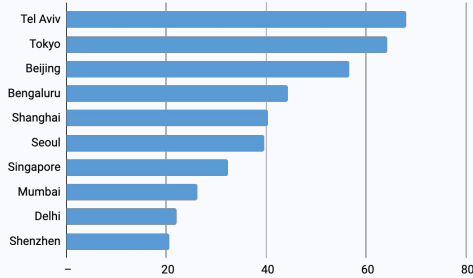


Source: Dealroom.co

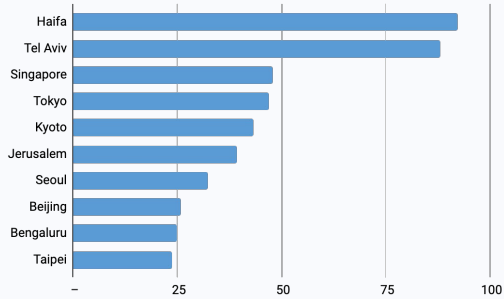


dealroom.co

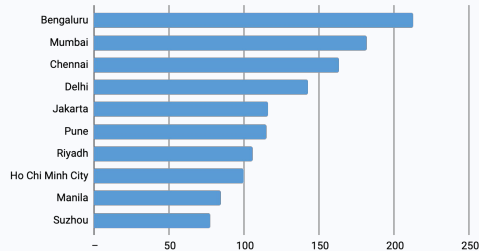
### Trailblazers



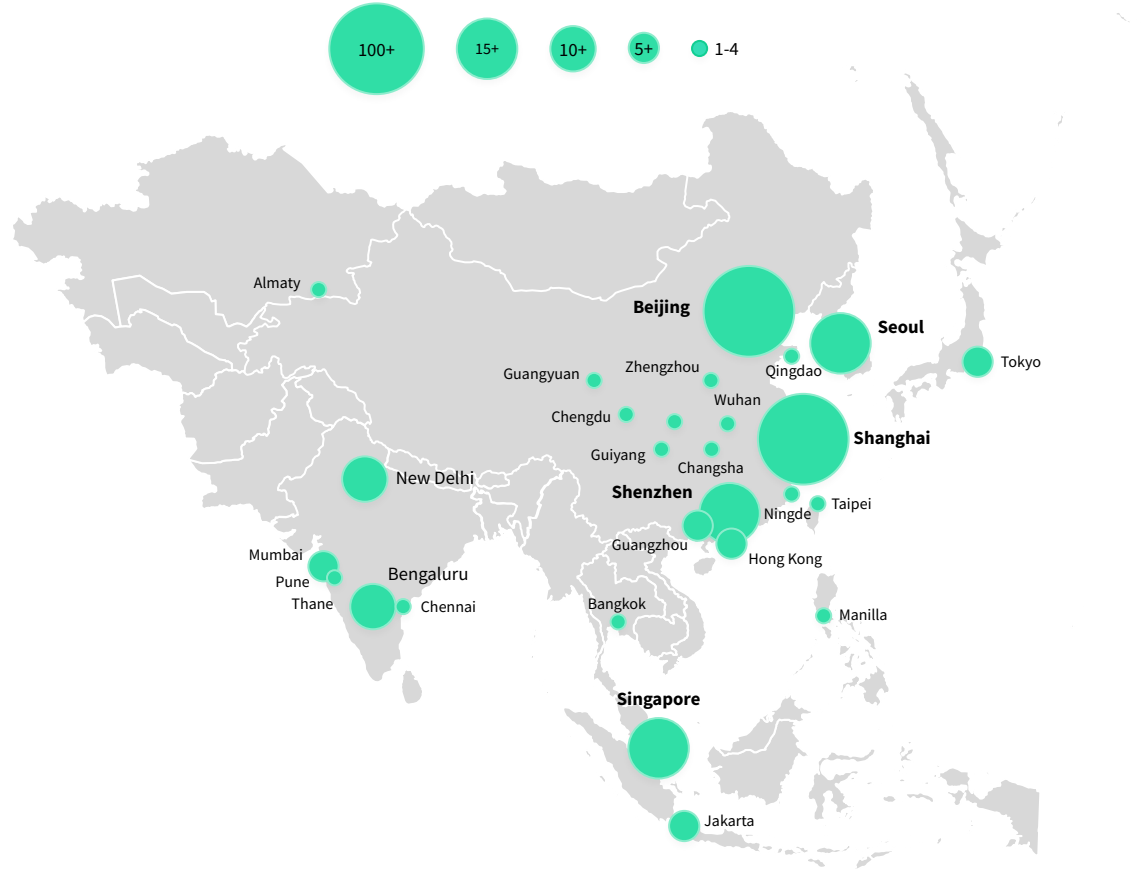
### Science Hubs



### Rising Stars

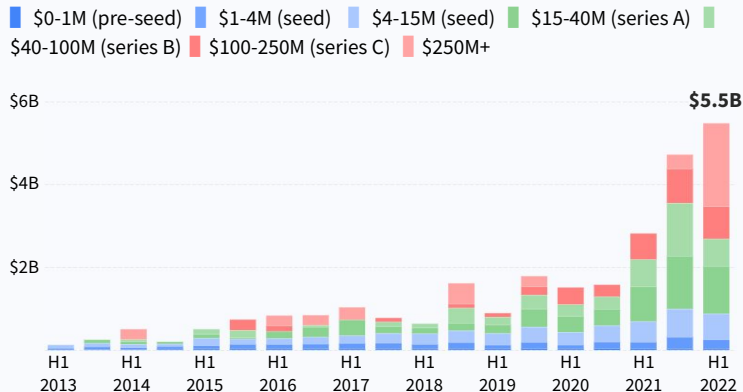


## Unicorn cities in Asia

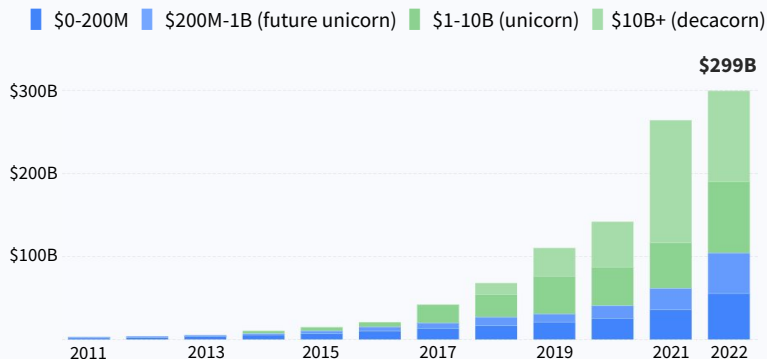


# Australia & New Zealand

## VC investment



## Enterprise value (companies founded after 1990)



## Sidney, NSW AUSTRALIA



## Brisbane, QLD AUSTRALIA



## Wellington NEW ZEALAND



## Melbourne, Victoria AUSTRALIA

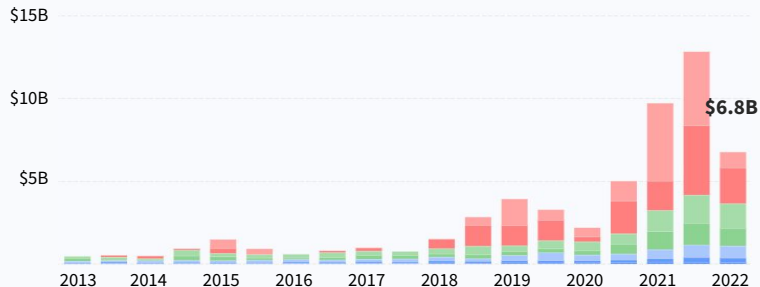




# Latin America

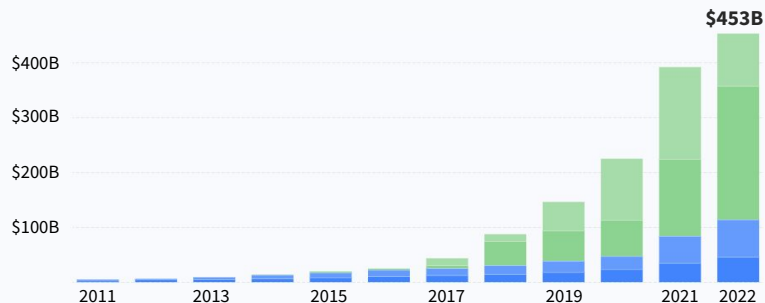
## VC investment

■ \$0-1M (pre-seed) 
 ■ \$1-4M (seed) 
 ■ \$4-15M (seed) 
 ■ \$15-40M (series A) 
 ■ \$40-100M (series B) 
 ■ \$100-250M (series C) 
 ■ \$250M+



## Enterprise value (companies founded after 1990)

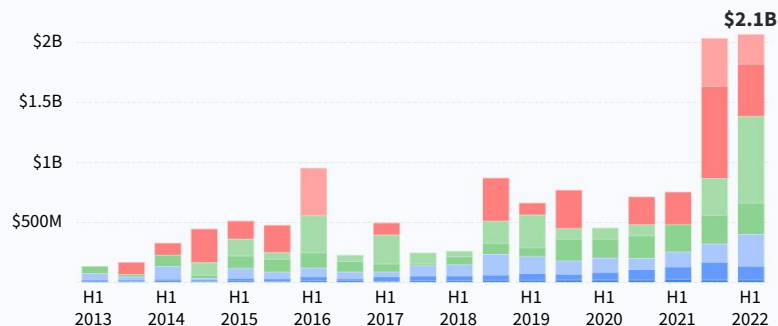
■ \$0-200M 
 ■ \$200M-1B (future unicorn) 
 ■ \$1-10B (unicorn) 
 ■ \$10B+ (decacorn)



# Sub-saharan Africa

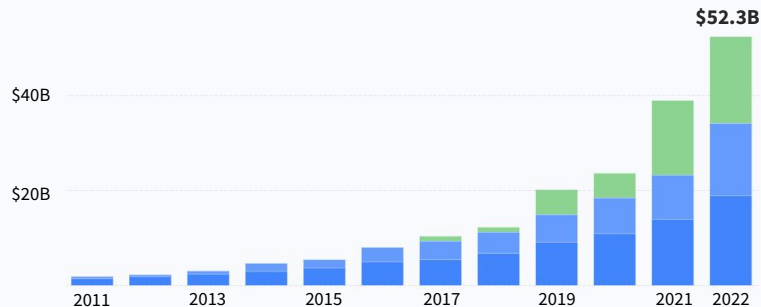
## VC investment

■ \$0-1M (pre-seed) 
 ■ \$1-4M (seed) 
 ■ \$4-15M (seed) 
 ■ \$15-40M (series A) 
 ■ \$40-100M (series B) 
 ■ \$100-250M (series C) 
 ■ \$250M+



## Enterprise value (companies founded after 1990)

■ \$0-200M 
 ■ \$200M-1B (future unicorn) 
 ■ \$1-10B (unicorn) 
 ■ \$10B+ (decacorn)



## Nigeria

### Unicorn



### Startups



## Senegal

### Unicorn



### Startups



## Ghana

### Unicorn



### Startups

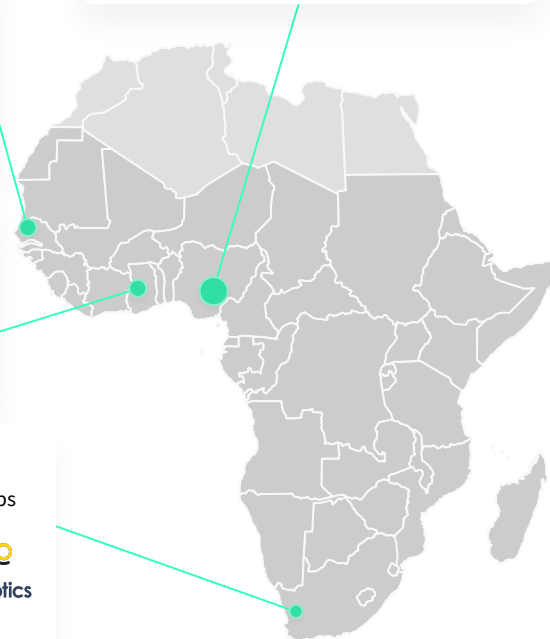


## South Africa

### Investors



### Startups



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# A unique combination of criteria and weightings is applied to each lens.



**Trailblazers**  
Absolute values  
2019-2022



**Science Hubs**  
Per capita values  
2019-2022



**Rising Stars**  
Growth rates  
From '15-'18 to '19-'22

	Weightings / total possible points	500	500	500
 <b>Capital &amp; investment</b>	Early stage venture capital Investment in \$1-15M rounds	50	50	100
	Breakout stage venture capital Investment in \$15-100M rounds	50	50	33
	Late stage venture capital Investment in \$100M+ rounds	50	50	33
 <b>Innovation &amp; talent</b>	University talent & linkage Founders from local universities that raised >\$10M	100	150	-
	Number of patents developed Powered by Cipher.ai	50	150	-
	Deep tech Number of deep tech unicorns & \$1B+	-	50	-
 <b>Entrepreneurship</b>	New unicorns and \$1B+ exits Startups that reach \$1B+ valuation milestone	200	-	100
	Conversion score Series A to unicorn	-	-	100
 <b>Economic upside</b>	Adjustment for GDP per capita GDP per capita from World Bank	-	-	100
	Affordability of living An index by Numbeo relative to New York	-	-	33

Each of the 201 hubs is benchmarked against all three lenses.

On the right is an example calculation for Boston, Massachusetts. Boston scores 13 points for early stage investing, where it ranks #6. The #1 scores 50 points. So Boston is at 13/50 of the #1 (the Bay Area).

Boston ranks #4 in the Trailblazer lens, #2 in the Science Hubs lens, and #87 in the Rising Stars lens.

The same total quantum of points is awarded in each lens so that useful comparisons between the three lenses can be made.

## Example: Boston, Massachusetts



### Trailblazer lens

166 points (out of 500)  
Ranked #4 (out of 195)



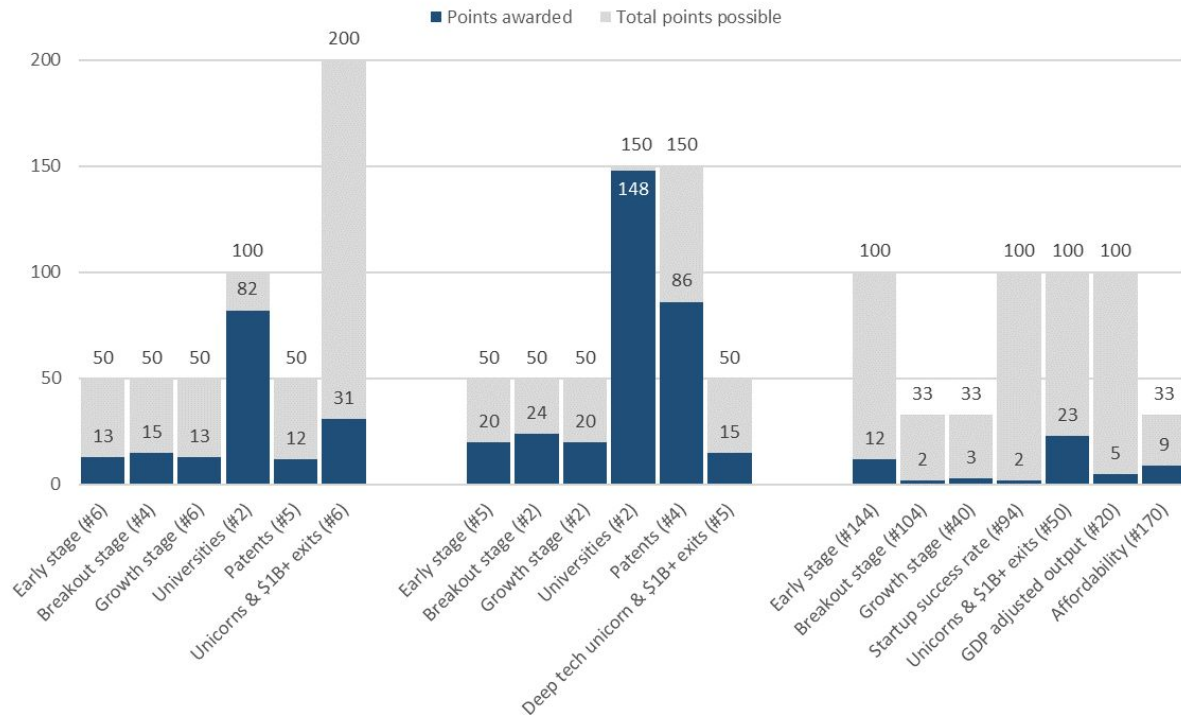
### Science Hubs lens

313 points (out of 500)  
Ranked #2 (out of 195)

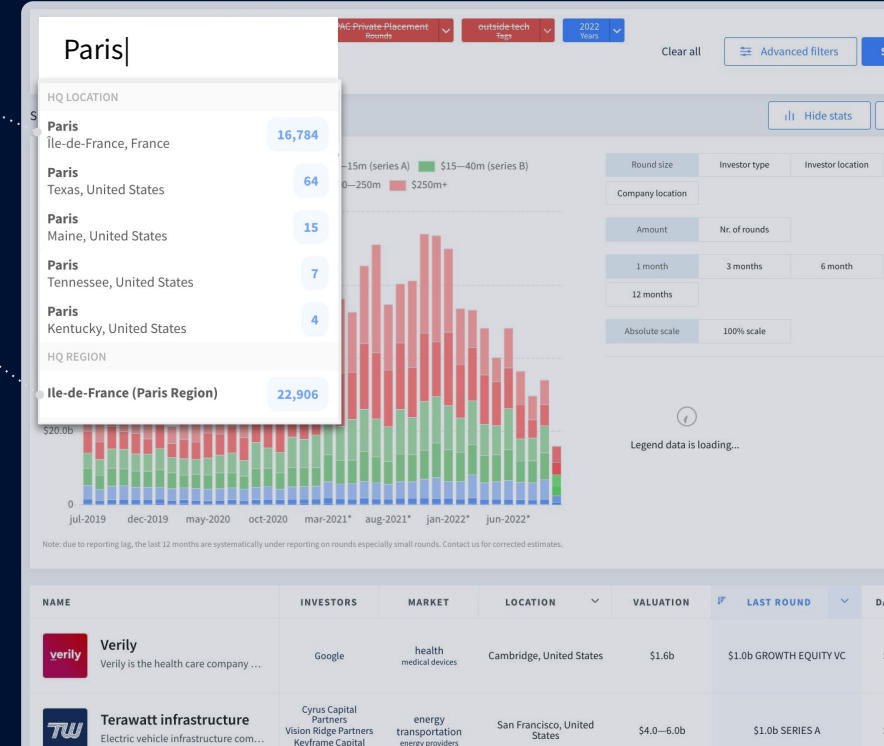
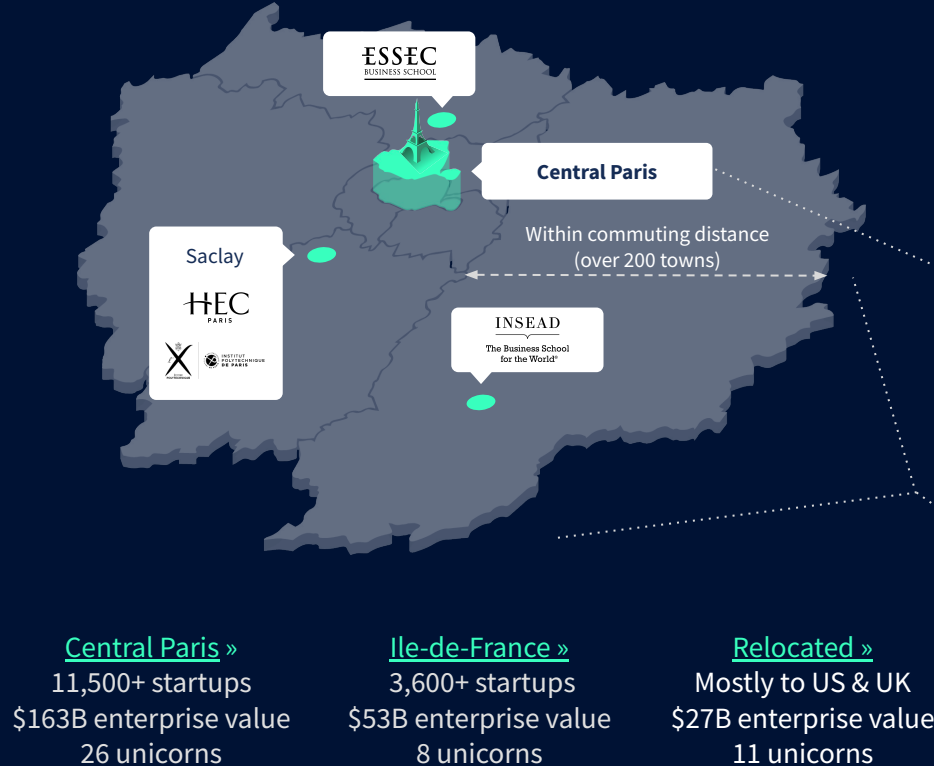


### Rising Stars lens

75 points (out of 500)  
Ranked #87 (out of 195)



For each metro area, suburbs and nearby towns were consolidated. Relocated companies are also counted towards their founding location (as well as their new location).



# Definitions.

## What is a startup?

Companies designed to grow fast. Such companies are VC-investable but not always VC-backed. This report focuses on VC-backed companies for consistency. When startups are successful, they develop into scaleups, and grownups and result in big companies; this is their objective by definition.

## What is a startup?

## What is a unicorn or \$1B+ exit?

Unicorns or \$1B+ exits are (former) startups that reached a US\$ 1B valuation or exited at one point in time.

## What is a Unicorn?

## Venture Capital

Investment numbers refer to rounds such as Early stage (Pre-Seed, Seed, and Series A), Breakout stage (Series B and Series C) and Late stage (Megarounds \$100M+). VC investment figures exclude debt or other non-equity funding, lending capital, grants, ICOs, and SPAC Private Placement.

## Valuation

The combined valuation of the tech ecosystem is based on its market cap or latest transaction value.

Transaction value is realized from an exit or implied unrealized valuation from the latest VC round, which is either announced or estimated by Dealroom based on benchmarks.

## Patent data

Patent analysis based on Cipher data. Considered are all active patents per ecosystem, but excluding are China-only patents. E.g we count patents by a Chinese company when the patent rights are located in territories outside of China, otherwise it's excluded.

## Underlying Data

Dealroom's proprietary database and software aggregate data from multiple sources: harvesting public information, user-submitted data verified by Dealroom, data engineering. All data is verified and curated with an extensive manual process. The data on which this report builds is available via [app.dealroom.co](https://app.dealroom.co). For more info please visit [dealroom.co](https://dealroom.co) or contact [support@dealroom.co](mailto:support@dealroom.co).






















# Predictive algorithms to detect emerging tech and promising companies.

(Pre)seed opportunities »

Series A opportunities »

Breakout opportunities »

Unicorns »

NAME	DEALROOM SIGNAL	MARKET	TYPE	GROWTH 12 months growth
 <b>Foundation Labs, Inc.</b> ★ Using the power of the internet an...	 95	B2B, B2C fintech media content production crypto and defi	blockchain commission marketplace & ecommerce	 277%
 <b>Overtone</b> Designer Hearing Tech for people ...	 95	B2C health medical devices	manufacturing	
 <b>Skytale</b> Enterprise-grade crypto asset trac...	 95	B2B fintech regtech crypto and defi	machine learning blockchain artificial intelligence subscription saas	 150%
 <b>CompPair</b> ✨ Developed a cutting-edge compo...	 87	B2B space	deep tech 3d technology commission manufacturing	
 <b>cadanapay</b> Supercharge team productivity wit...	 87	B2B fintech payments financial management solutions	saas	 115%
 <b>Mina</b> ★ ✨ Developed a simple EV charging so...	 86	B2B fintech transportation payments	subscription saas	
 <b>Evo Foods</b> ✨ ❤️ Creating India's first 100% plant ba...	 86	B2B food innovative food	selling own inventory manufacturing	



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OECD Countries

	2008	2009	2010	2011	2012
United States	\$30.5b	\$24.9b	\$34.3b	\$44.6b	\$43.9b
United Kingdom	\$1.6b	\$1.0b	\$2.0b	\$2.4b	\$3.3b
France	\$784m	\$457m	\$925m	\$674m	\$978m
Germany	\$803m	\$411m	\$663m	\$938m	\$1.0b
Canada	\$859m	\$510m	\$816m	\$918m	\$1.1b
Israel	\$722m	\$435m	\$600m	\$1.1b	\$1.1b
South Korea	\$62.9m	\$107m	\$80.3m	\$59.9m	\$85.1m

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Investment  
trends

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- Blockchain startups | Portugal
- Deep tech startups | Queensland
- Deep Tech startups | Malaga
- Deep tech startups | Eastern Partners
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- Health impact startups
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- Elderly care startups

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The State of European Early-Stage



Nordic Startup Jobs :

#### Top Tech Ecosystems

US States

	# Startups	# Unicorns	Future Unicorns
California	54k	704	902
New York, United States	21k	200	256
Texas, United States	13k	50	88
Florida, United States	9,290	26	33
Illinois, United States	8,322	36	44
Massachusetts, United States	7,903	116	214
Colorado, United States	4,800	20	34
Pennsylvania	3,003	11	20

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