

A nighttime photograph of a cityscape, likely Baltimore, featuring a prominent tall brick building with a glowing red neon sign on top. The sign is a circular logo with a stylized figure. The sky is dark blue, and the city lights are visible, including a smaller red neon sign on a building in the distance. The foreground shows residential buildings and trees.

UPSURGE
BALTIMORE

**BALTIMORE'S STARTUP ECOSYSTEM IN 2021:
COMPANIES, CAPITAL, INDUSTRIES, INVESTORS**

PREPARED BY UPSURGE BALTIMORE

APRIL 2021

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**UPSURGE BALTIMORE: ON A MISSION TO
BUILD A NEW KIND OF STARTUP CITY.**

BACKGROUND

UpSurge Baltimore is launching to propel Baltimore into the top tier of innovation cities by building an engine to found, support, scale and celebrate high-impact startups. There's already significant momentum in Baltimore, from the launch of companies at our globally recognized universities—Johns Hopkins, UMB, Morgan State, and UMBC— to clusters of gamechanging startups in Life Sciences, Digital Health, Cybersecurity, FinTech, AdTech, and ClimateTech.

We have a distinct perspective in Baltimore. Startups here are uniquely sensitive to the dynamics of growing and innovating in an often-underestimated, culturally and racially diverse, post-industrial city.

OUR VISION: IN 2030, BALTIMORE WILL BE A MODEL FOR THE COUNTRY.

We don't want to be just the next great tech city; we want to be the world's first Equitech city.

Tech economies are at the heart of thriving US cities. Equitech is about building an innovation economy where all belong. It's a force-multiplier, building on the proven benefits of diverse teams, leaders and perspectives. Over time, not only will entrepreneurs and investors around the world look to Baltimore as a launching pad for transformational companies, but more Baltimoreans will see the knowledge economy as a pathway for their own upwardly mobile futures.

As the cultural framework for UpSurge, Equitech provides a lens to attract, align and support transformational startups – not a filter to exclude them. Equitech companies cross industry sectors and capture hearts, minds and wallets for a variety of reasons.

1 Companies whose culture and values are grounded in the advantages of diverse teams, leadership & perspectives.

2 Companies led by underestimated founders.

3 Companies in any industry using innovation to broaden access or reduce societal barriers.

WHY STARTUPS?

Startups are the backbone of the world's thriving cities. As they scale, they deliver the kind of quality jobs that provide pathways to prosperity, wealth creation, secure families and stable neighborhoods.

Our challenge is to build Baltimore into a startup city that draws broadly on the brilliance of its populace—across neighborhoods and cultures—as founders, workforce, mentors, investors and thought leaders. Growth in the number of private-sector, innovation economy jobs is foundational to Baltimore's future, but that growth alone won't be enough. To become an Equitech city, intentional growth will involve partnerships that focus on real estate, education, environment and transportation, in addition to the direct work of UpSurge. **If we can do it in Baltimore, it can be a model for the world.**



OUR PERSPECTIVE ON THE CURRENT STATE OF BALTIMORE'S STARTUP ECOSYSTEM

Baltimore's startup ecosystem has been rising in prominence over the last decade. Most recently, Baltimore was named **one of the best emerging economies for startups**. In the last few years, the number of deals and the total deal size in Baltimore has hit historic highs. Average deal size across all financially backed companies (pre-seed to late-stage) has grown from \$1.2 million to \$4.8 million since 2016. Increasingly, investors and founders recognize that Baltimore has what it takes to launch and grow profitable, high-growth businesses.

MEETING THE MOMENT POST-COVID

In the post-COVID era, Baltimore is poised to accelerate. With new City leadership, building momentum, the strength of our anchor institutions, and the commitment that both the public and private sector have made to the mission of UpSurge, all of the ingredients are in place. Baltimore is relatively affordable and highly accessible on the 1-95 corridor. With the untethering of companies and workers from traditional startup cities, Baltimore is ideally suited to meet the moment and propel our growth in a post-COVID economy.

In a recent Crunchbase article, Noah Carr, a partner at Unusual Ventures, said he expects "to see more high-quality founding teams attract VC funding outside of core markets. Early-stage startups based outside of core tech hubs like the Bay Area, NYC and Israel will have a better chance at securing funding in 2021. VCs and angel investors have preferred to invest in startups that are physically close to them given the preconceived notion that you need to be in the same room to collaborate effectively. That's changing as investors have gotten more comfortable with handling prospective investment discussions and portfolio company interactions entirely through digital means, and as founders get more confident in starting up with distributed teams."



BUILDING FROM STRENGTH

While there are significant opportunities to attract companies to Baltimore from other places, we believe that the preponderance of Baltimore's future major companies will not be imported, they'll be born here. We start with an incomparable platform on which to build:

- We're home to renowned institutions, like Johns Hopkins, University of Maryland (Medical System and professional schools), Morgan State, Coppin State, Loyola and UMBC (the #1 producer of African American undergraduates who go on to complete an M.D./Ph.D. and #2 nationally for African-American undergraduates who complete a STEM Ph.D).
- We are the largest city within the leading state for federal R&D spending. California and Maryland swapped places as the #1 region in 2014.
- Johns Hopkins is the leading university for R&D spending in the US. Company formation efforts at Johns Hopkins have accelerated dramatically over the past eight years; from under \$100 million in 2014, Hopkins companies have raised more than \$1 billion in FY2021.
- We offer unparalleled proximity to/presence of other anchor institutions, including:
 - Public: NIH, NSA, FDA, CIA, NASA / Goddard.
 - Private: Amazon, AstraZeneca, Lockheed Martin, Northrop Grumman, Constellation, Exelon, T. Rowe Price, Under Armour, McCormick, Stanley Black & Decker, Laureate, WR Grace, Applied Physics Laboratory.
- The region has the highest concentration of workers in the following fields: Computer sciences and mathematics, biomedical engineering, physicists, computer research, scientists, information security analysts, life / physical / social sciences, biological scientists (Bureau of Labor Statistics).
- We're situated in an ideal location, on the Amtrak corridor, with a major airport and an international port.
- We offer beautiful, affordable neighborhoods in a manageably sized city with world-class amenities.
- Our city is populated by diverse, creative, brilliant, tenacious, unpretentious residents, including leading entrepreneurs, scientists, policy leaders, writers, artists, and activists.



BETTING ON DIVERSITY

With our Equitech framework, we are poised to meet the moment as the country increasingly recognizes that diversity is an empirical economic advantage, not a compromise. According to the [Harvard Business Review](#), “Striving to increase workplace diversity is not an empty slogan — it is a good business decision. A McKinsey report on 366 public companies found that those in the top quartile for ethnic and racial diversity in management were 35% more likely to have financial returns above their industry mean, and those in the top quartile for gender diversity were 15% more likely to have returns above the industry mean.”

Morgan Stanley further underscored the potential of diverse founders in its eye-popping report, [The Trillion Dollar Blind Spot](#). “Multicultural and women-owned businesses could account for \$6.8 trillion if they matched their percentage of the labor force and business revenues were equal to traditional firms.”



BY THE NUMBERS

The work of UpSurge to build a high-velocity, thriving, diverse knowledge economy in Baltimore is a long-term vision. It will likely take several years to see notable change. We have established a set of benchmarks against which we will assess our progress over time. Available data for some of the metrics we seek to measure is limited and often imprecise, particularly as it relates to Equitech measures, so we are working with partners to develop analytics to capture this information.

- Knowledge-economy companies: total and new by sector and stage
- Knowledge-economy jobs: total and new by sector
- Rate of new company formation
- Company growth
 - Funding
 - Employees
 - Revenue
- Capital invested into Baltimore companies, by sector, stage
- Adoption of Equitech principles
 - Diversity of Baltimore founders, workforce, mentors, funders
 - Wage mobility
 - Average wages
 - Investment in underestimated founders



THE BALTIMORE STARTUP ECOSYSTEM TODAY

The charts and data in the pages that follow set out a baseline for the existing Baltimore startup ecosystem in terms of financially-backed Baltimore based startups, and financially-backed companies with a significant Baltimore presence.

DEFINING THE BALTIMORE STARTUP ECOSYSTEM



*All financially backed
companies*



*Funding
> \$100,000*



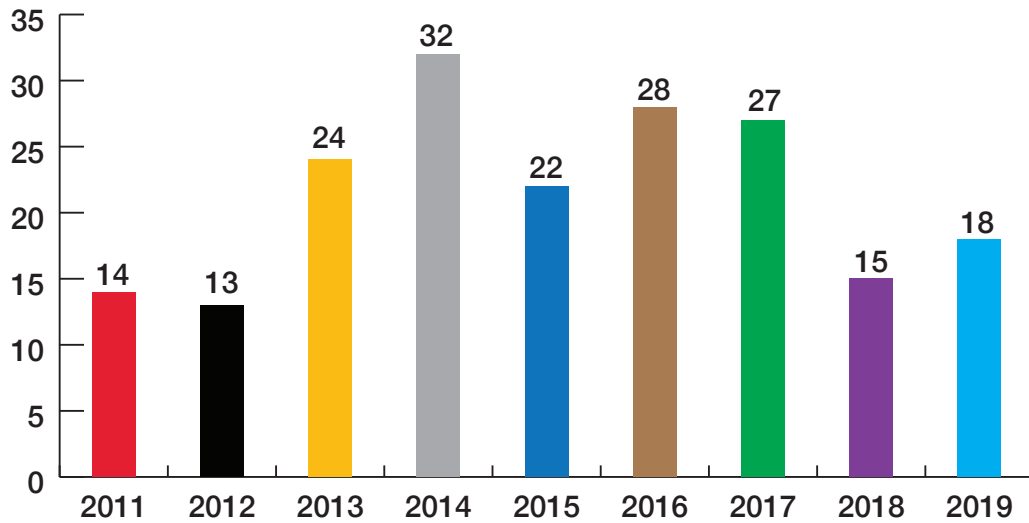
*Funding
> \$500,000*

Based on data provided by Pitchbook, there are 193 active Baltimore-based, financially backed companies founded since the beginning of 2011 that make up the foundation of our ecosystem¹. All data, except as noted, is through the end of 2020.

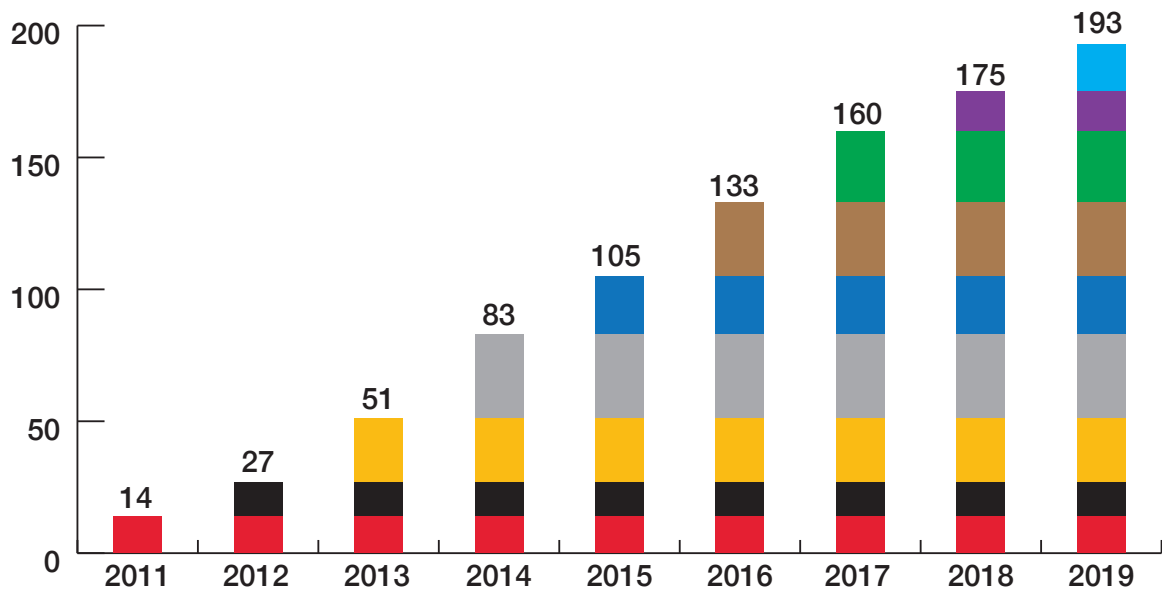


¹Reference Appendix for Pitchbook search criteria

FINANCIALLY BACKED BALTIMORE STARTUPS BY YEAR FOUNDED²



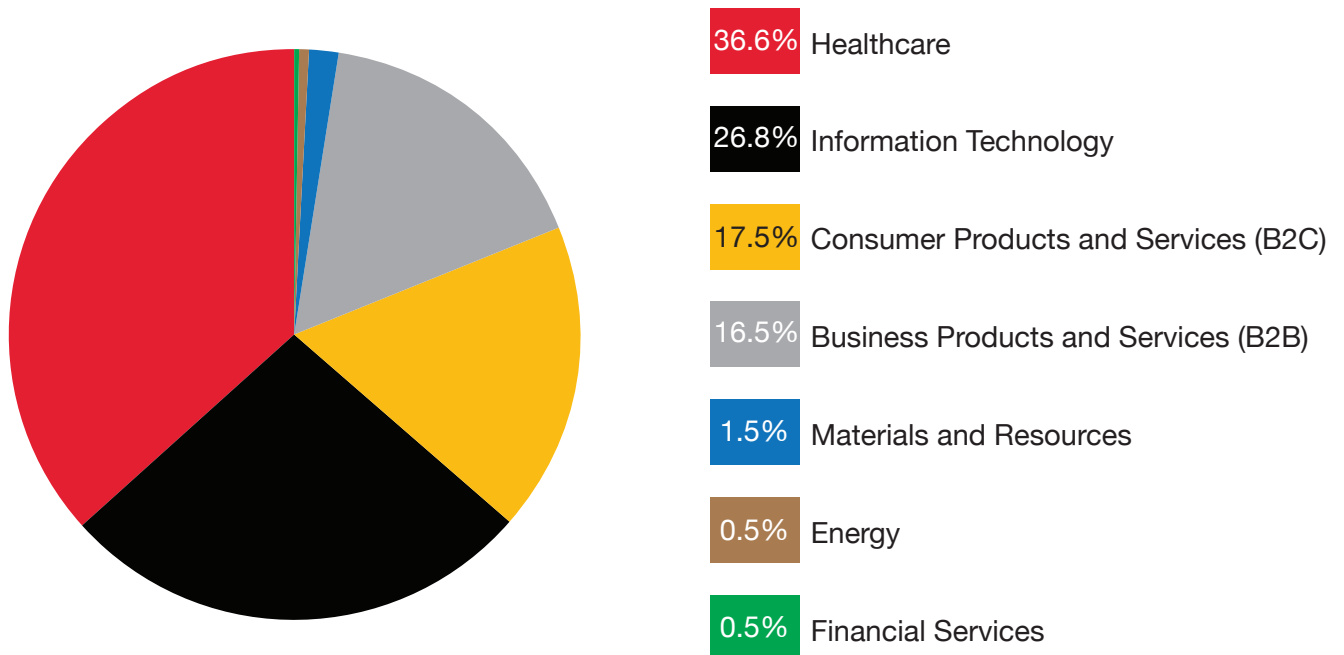
CUMULATIVE - FINANCIALLY BACKED STARTUPS



²There are no companies founded in 2020 that are already financially backed, which is why there is not a bar for 2020, although they are included in our broader analysis

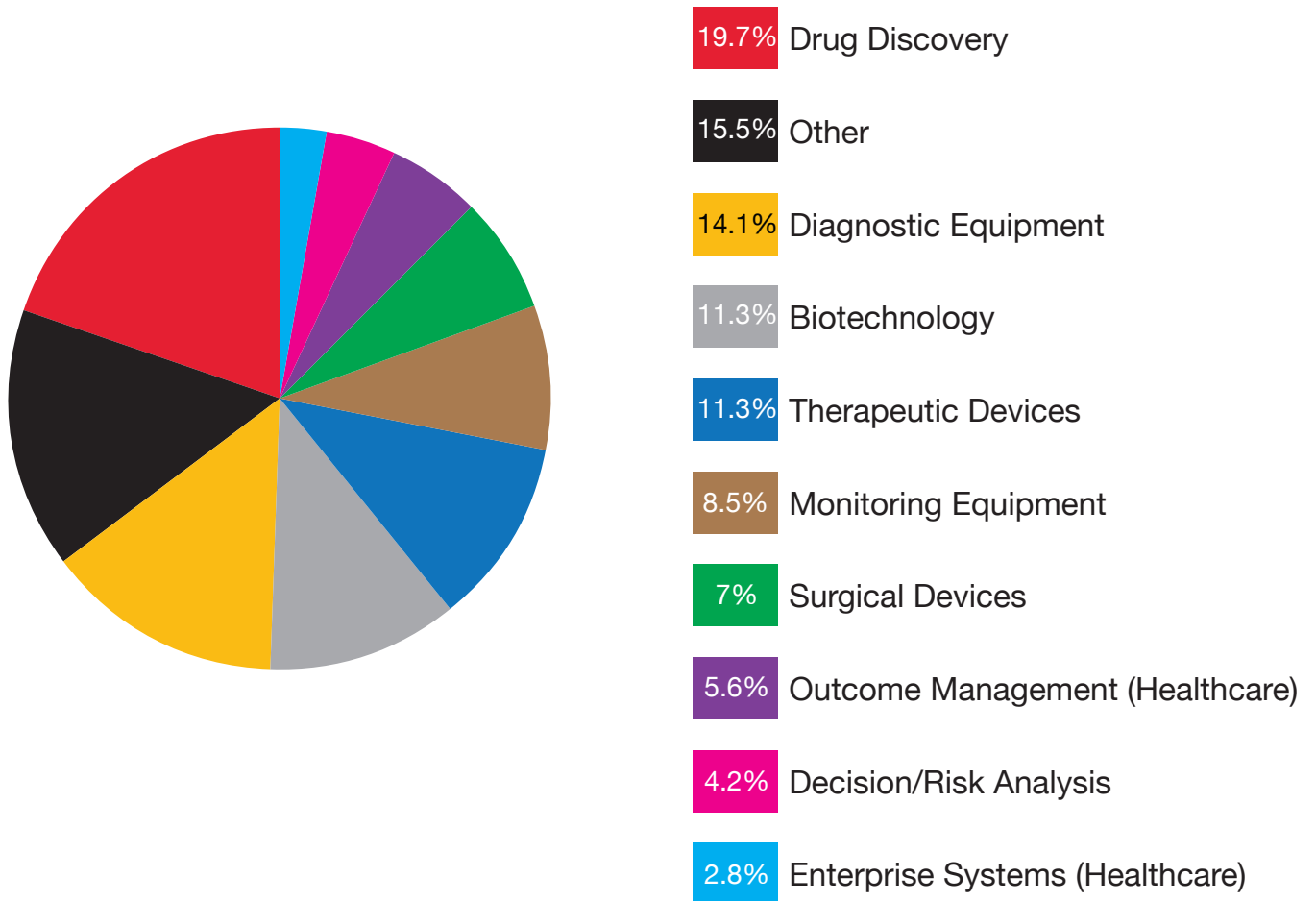
STARTUPS BY INDUSTRY

n=193 financially backed Baltimore companies through year-end 2020, founded after 2011, from Pitchbook data.



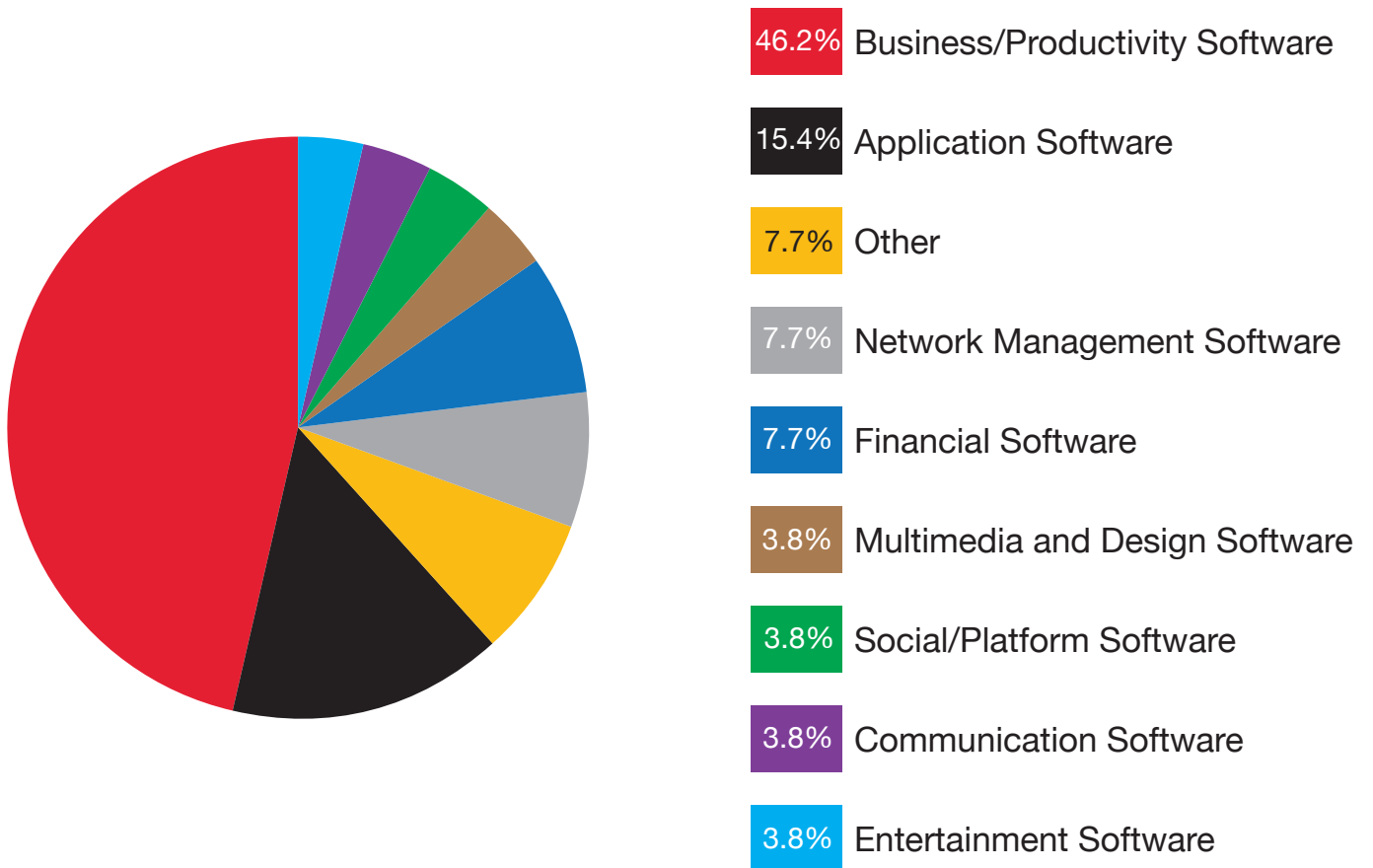
HEALTHCARE STARTUPS - SUB-INDUSTRIES

Total Healthcare Startups n = 71, financially backed as of year-end 2020, founded after 2011.



INFORMATION TECHNOLOGY - SUB-INDUSTRIES

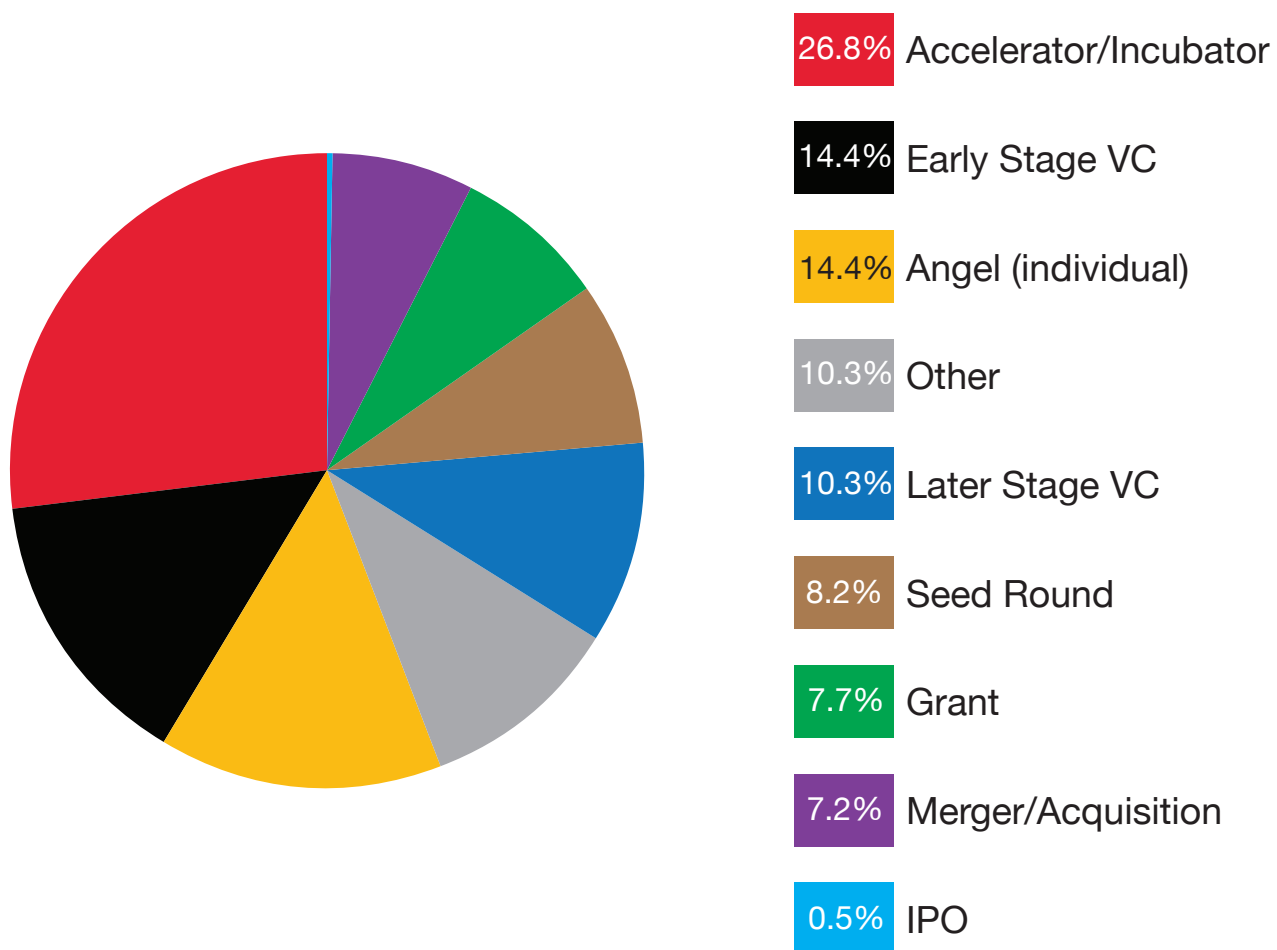
Total Information Technology Startups n = 52, financially backed as of year end 2020, founded after 2011.



CURRENT STARTUP STAGE³

The baseline Pitchbook search used in this analysis looked at startups founded since the beginning of 2011. Many are still in their early innings. More than 50% of the financially-backed companies included in our baseline analysis have yet to receive their Series A financing or beyond.

n=193 financially backed Baltimore companies as of year-end 2020, founded after 2011, from Pitchbook data.



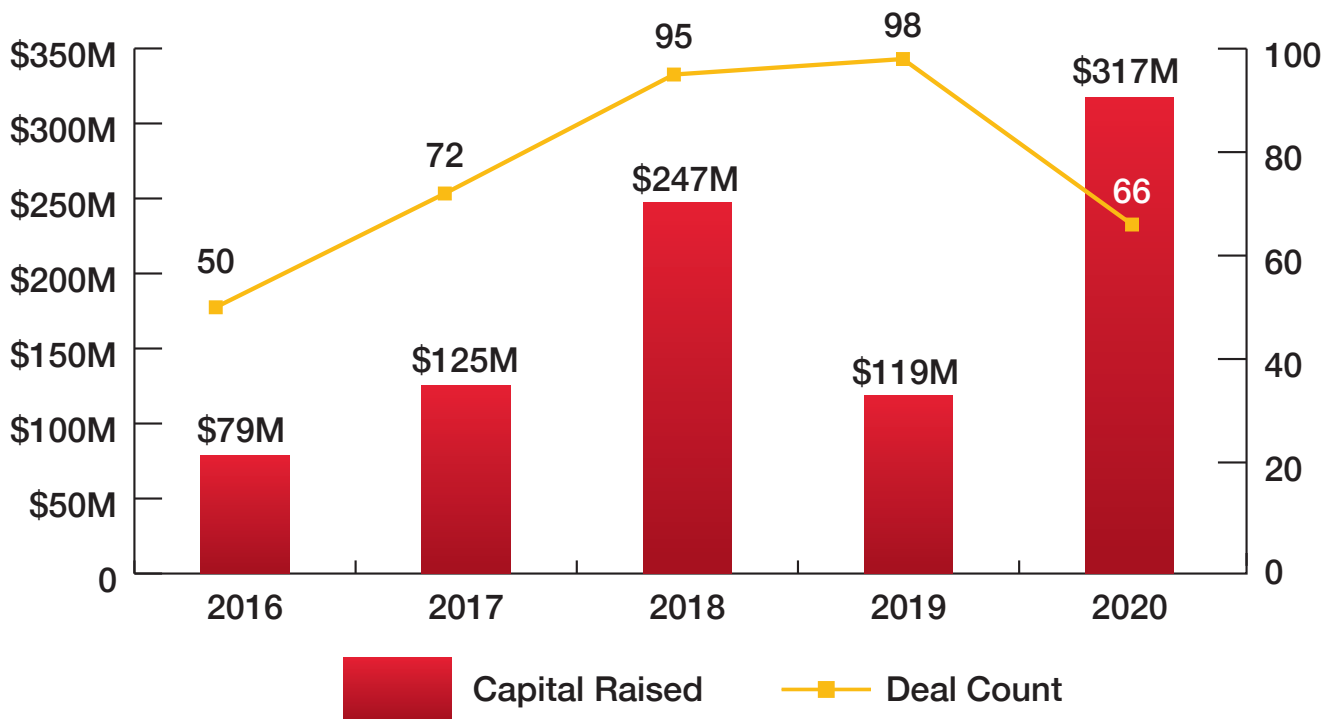
³Stage determined by last financing type

CAPITAL RAISED AND DEAL COUNT

Baltimore’s ecosystem has generally experienced a sharp increase in deals and deal size since 2016. In 2016, average deal size was just over \$1.2 million. In 2020, despite shifts in the economy due to the COVID-19 pandemic, Baltimore saw a huge jump in deal size, averaging \$4.8 million, due to the strength of local companies that benefited from the pandemic investment boom, particularly in life sciences and cybersecurity. In 2020, the largest round raised by a Baltimore-headquartered firm was \$74 million in a Series D round by cybersecurity company ZeroFox. Baltimore’s five largest rounds in 2020 were all above \$20 million. Baltimore companies represented 26% of the record \$1.159 billion in venture capital raised in Maryland in 2020.

Note: There were a number of other notable deals for companies that are not included here because they were founded prior to 2011 or they are no longer headquartered in Baltimore.

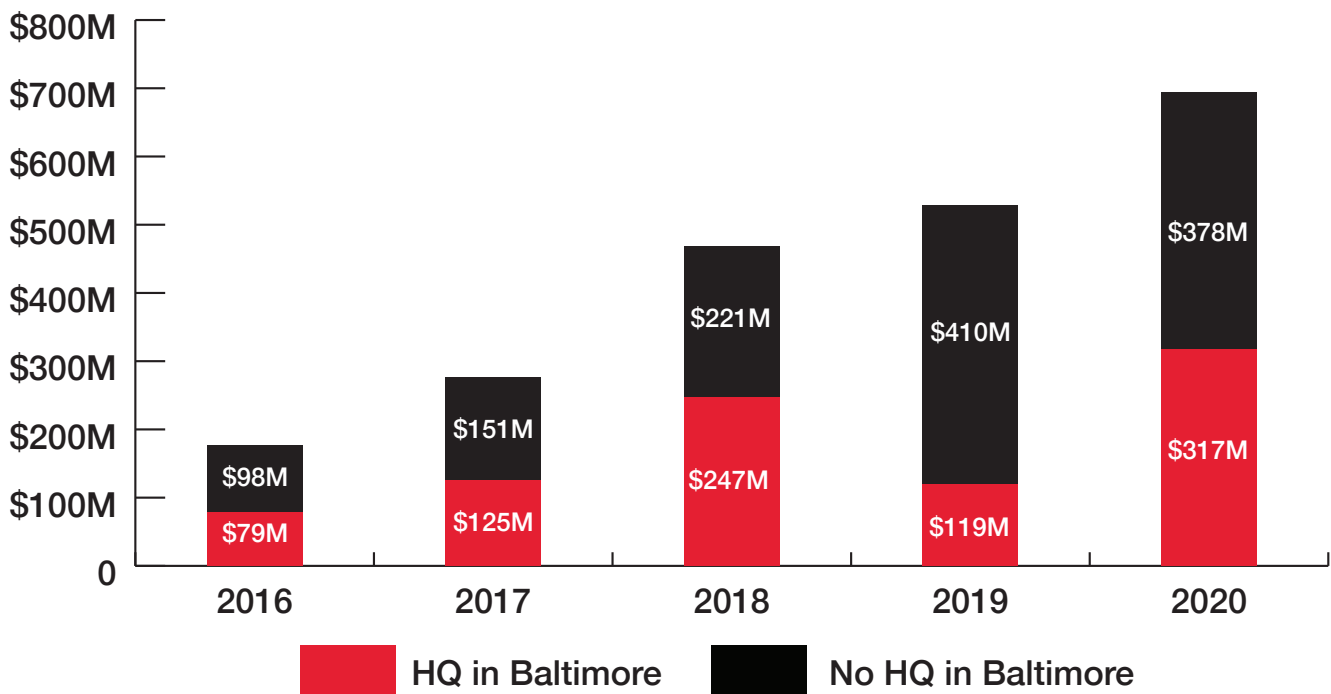
n=193 financially backed Baltimore headquartered companies as of year-end 2020, founded after 2011, from Pitchbook data.



BALTIMORE HQ VS NON-HQ - CAPITAL RAISED

As Baltimore's ecosystem trends upward, local startups are being acquired by companies located outside the region. Many maintain a substantial Baltimore presence as the acquirors continue to grow, like GrayBug Vision and Thrive Earlier Detection. This chart depicts the fundraising of both headquartered and non-headquartered companies.

[Looking ahead, UpSurge's work is focused on creating the ecosystem and infrastructure for Baltimore companies to grow to a point where they become the acquirors, and encouraging acquired companies to continue investing in Baltimore as a significant growth hub.]



INVESTMENT IN BALTIMORE COMPANIES: 20 MOST ACTIVE

Timeframe 2011-Present

TOP 20 MOST ACTIVE INVESTORS

INVESTOR NAME	DEALS	INVESTOR TYPE	INVESTOR HQ STATE
TEDCO	75	Government	Maryland
The Abell Foundation	24	Foundation	Maryland
VentureWell	22	Accelerator	Massachusetts
Accelerate Baltimore	21	Accelerator	Maryland
National Science Foundation	21	Government	Virginia
National Institutes of Health	20	Government	Maryland
U.S. Department of HHS	19	Government	DC
Baltimore Angels	18	Angel Group	Maryland
Dreamit Ventures	13	Accelerator	New York
TCP Venture Capital	10	Venture Capital	Maryland
Maryland Momentum Fund	8	Venture Capital	Maryland
UM Ventures	8	Venture Capital	Maryland
Conscious Venture Lab	7	Accelerator	Maryland
ETC Baltimore	7	Accelerator	Maryland
New Enterprise Associates	6	Venture Capital	Maryland
F-Prime Capital	5	Venture Capital	Massachusetts
Gaingels	5	Venture Capital	New York
JLABS	5	Accelerator	California
Maryland Industrial Partnerships	5	University	Maryland
A-Level Capital	4	Venture Capital	Maryland

Above are the top 20 most active investors in the 193 Baltimore-based startups that are the focus of this report. There are 512 total investors in these companies. Of those, 56 have participated in 3 or more deals; 389 have participated in only one.

INVESTMENT IN BALTIMORE COMPANIES

Timeframe 2011-Present

TOP 20 MOST ACTIVE INVESTORS - DEAL COUNT OVER TIME

INVESTOR NAME	INVESTMENTS			
	LAST 6 MONTHS	LAST 12 MONTHS	LAST 2 YEARS	LAST 5 YEARS
TEDCO	3	7	14	42
The Abell Foundation	1	4	4	17
VentureWell	1	7	10	18
Accelerate Baltimore				12
National Science Foundation	1	3	8	17
National Institutes of Health	1	1	5	16
U.S. Department of HHS			3	15
Baltimore Angels			2	8
Dreamit Ventures				3
TCP Venture Capital		2	2	7
Maryland Momentum Fund			4	8
UM Ventures		2	5	6
Conscious Venture Lab			2	6
ETC Baltimore				2
New Enterprise Associates			1	3
F-Prime Capital			1	5
Gaingels			2	3
JLABS			3	4
Maryland Industrial Partnerships				1
A-Level Capital				1

Above are the top 20 most active investors in the 193 Baltimore-based startups that are the focus of this report. There are 512 total investors in these companies. Of those, 56 have participated in 3 or more deals; 389 have participated in only one.

INVESTMENT IN BALTIMORE COMPANIES

Timeframe 2011-Present

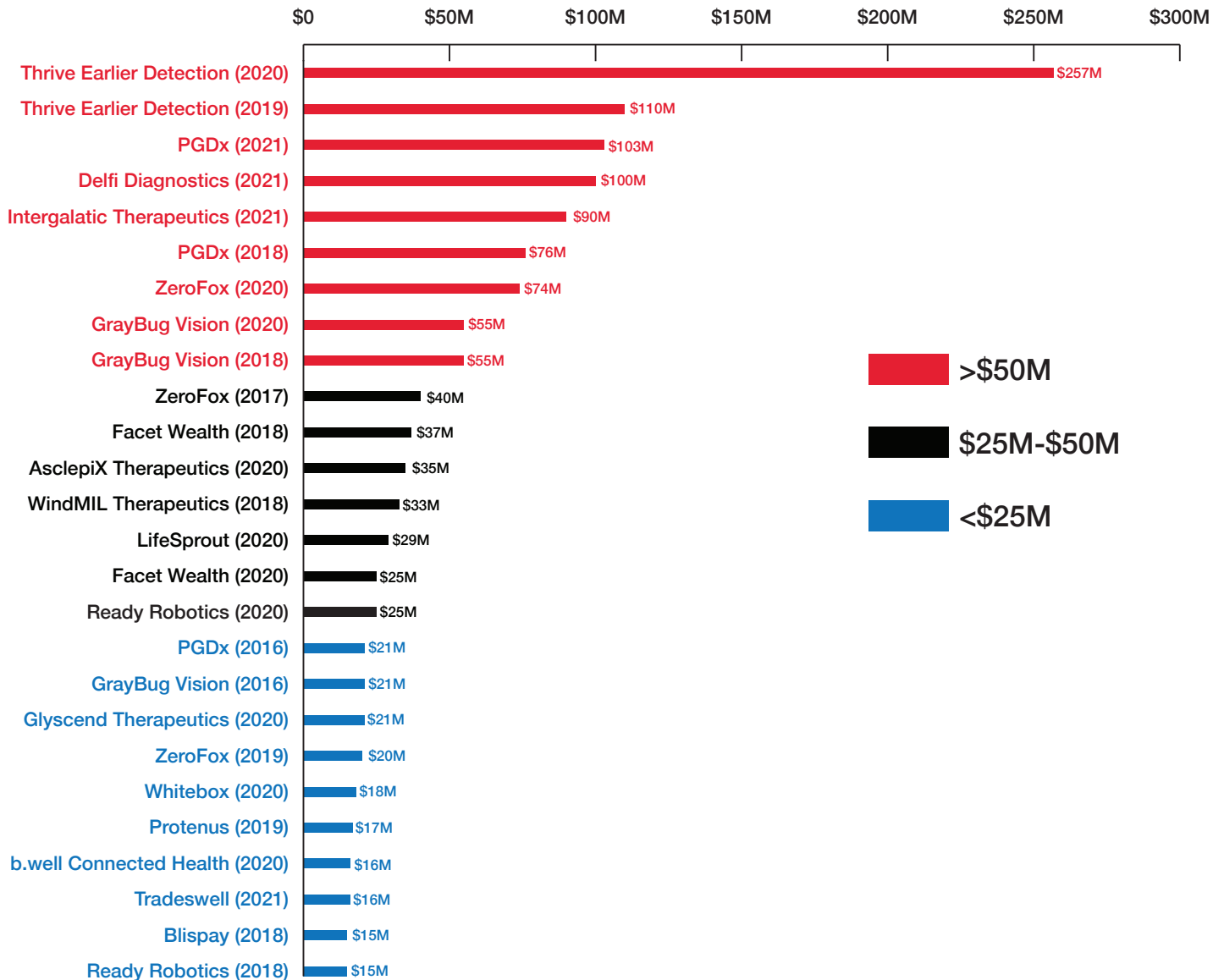
TOP 20 MOST ACTIVE INVESTORS OUTSIDE OF MD, DC, VA

INVESTOR NAME	DEALS	INVESTOR TYPE	INVESTOR HQ STATE
VentureWell	22	Accelerator	Massachusetts
Dreamit Ventures	13	Accelerator	New York
F-Prime Capital	5	Venture Capital	Massachusetts
Gaingels	5	Venture Capital	New York
JLABS	5	Accelerator	California
Capital Factory	4	Venture Capital	Texas
Creative Startups	4	Accelerator	New Mexico
Kapor Capital	4	Venture Capital	California
Keiretsu Capital	4	Venture Capital	Washington
Plug and Play Tech Center	4	Accelerator	California
SoGal Ventures	4	Venture Capital	New York
Arthur Ventures	3	Venture Capital	Minnesota
David Williams	3	Angel (individual)	California
Emerald Development Managers	3	Venture Capital	New York
Genacast Ventures	3	Venture Capital	New York
Health Catalyst Capital Management	3	Growth/Expansion	New York
Highland Capital Partners	3	Venture Capital	Massachusetts
Kaiser Permanente Ventures	3	Corporate VC	California
LionBird	3	Venture Capital	Illinois
MassChallenge	3	Accelerator	Massachusetts

Above are the top 20 most active investors based outside of MD, DC and VA in the 193 Baltimore-based startups that are the focus of this report. There are 512 total investors in these companies. Of those, 56 have participated in 3 or more deals; 389 have participated in only one.

LARGEST VENTURE DEALS, 2016 - 2021

Largest deals are based on startups headquartered in Baltimore, or those with a significant Baltimore presence, like Thrive Earlier Detection and GrayBug Vision.



NOTABLE EXITS, 2016-2021⁴

COMPANY	DATE	AMOUNT(\$M)	ACQUIROR/IPO
Thrive Earlier Detection	1/5/2021	\$2,150	Exact Sciences
Prometric	1/29/2018	\$1,000	Baring Private Equity Asia
GrayBug Vision	9/25/2020	\$320	IPO
eOriginal	12/16/2020	\$280	Wolters Kluwer
1st Mariner Bank	3/1/2018	\$174	Howard Bank
Flywheel Digital	11/1/2018	\$113	Ascential
Protego Labs	12/2/2019	\$40	Check Point Software
Vend Lease Company	6/27/2018	\$38	People's United Bank
eThink	12/4/2020	\$20	Learning Technologies
Blispay	2/7/2019	\$8	Alliance Data Systems
Analytical Informatics	11/24/2017		Philips
Avhana Health	1/13/2021		AmalgamRx
BridgeEdU	6/11/2019		Edquity
Fixt	8/17/2020		Assurant
Fractal Technology	9/12/2017		Sunayu
MET Laboratories	12/31/2017		Eurofins Scientific
Neuro Motor Innovations	11/11/2018		MindMaze
NextGen Venture Partners	2/12/2018		Brown Advisory
Parking Panda	4/13/2017		SpotHero
Pinkaloo	3/9/2021		Renaissance Administration
R3 Score Technologies	9/23/2020		Global Boatworks
StraighterLine	4/24/2020		BV Investment Partners
Teampassword	3/6/2018		Jungle Disk
Tissue Analytics	5/14/2020		Net Health Systems
Workbench	11/28/2018		Alphabet

⁴Not all acquisition amounts were disclosed

1ST QUARTER 2021 FUNDING CONTINUED TO ACCELERATE

ORGANIZATION NAME	LAST FUNDING AMOUNT	LAST FUNDING TYPE	INDUSTRIES
AbsoluteCARE	\$105,000,000	Private Equity	Health Care Services
PGDx	\$103,000,000	Series C	Bioinformatics, Health Diagnostics
Delfi Diagnostics	\$100,000,000	Series A	Health Diagnostics
Tradeswell	\$15,500,005	Series A	E-Commerce, Software
Insightin Health	\$12,000,000	Series A	Health Care, Information Technology
BurnAlong	\$7,000,000	Venture - Series Unknown	Health Care, Wellness
Mason Dixie Foods	\$6,300,000	Series A	Food and Beverage
emocha Health	\$6,100,000	Grant	Health Care, Information Technology
Elixirgen Therapeutics	\$4,199,985	Venture - Series Unknown	Health Care, Therapeutics
Nest Collaborative	\$2,100,000	Seed	Health Care, Internet
Dynamhex	\$1,500,000	Seed	CleanTech, GovTech
BondTrue	\$256,000	Grant	Health Care, Medical Device
TOTAL RAISED BY BALTIMORE COMPANIES IN Q1 2021		\$ 343,005,990	

This chart draws its data from the Crunchbase database, rather than Pitchbook, because it presents quarterly data on a more timely basis. This chart includes companies headquartered in Baltimore and those with a substantial Baltimore presence.

THE KEY PARTNER ECOSYSTEM IN BALTIMORE

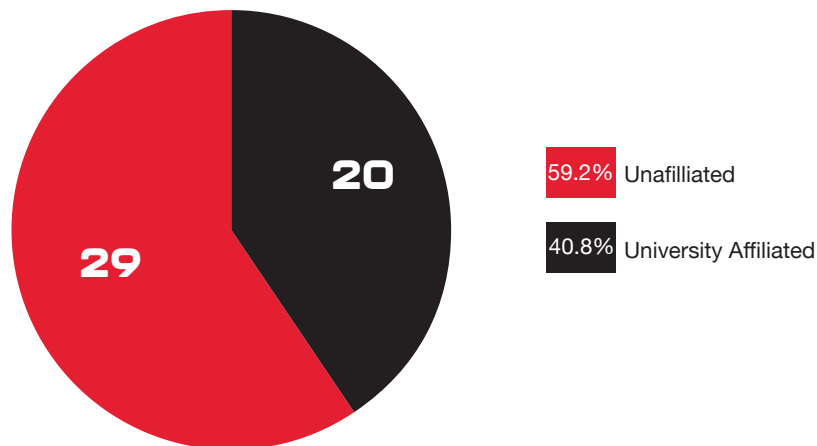
Baltimore is rich with partners working to advance the local innovation ecosystem. We have incubators and accelerators, co-working and collaboration spaces, labs, manufacturing and shared kitchen spaces. We have coalitions working to advance equity in entrepreneurship and investing, engines for creative entrepreneurship, and Baltimore-focused investment funds. Below is a list of many of those resources.

- 1501 Health (Healthworx)
- AccelerateBaltimore
- Baltimore Co-Lab
- Innov8MD AddVenture Pre-Accelerator
- Baltimore Angels
- Baltimore Creative Action Network (BCAN) Pilot
- Baltimore Creative Action Network (BCAN) The Founder Fellowship
- Baltimore Tracks
- Baltipreneurs Accelerator (Loyola University MD)
- Betamore
- BLCK VC
- B-more Kitchen Accelerator Space
- bwtech@UMBC
- CCBC Center for Business Innovation
- Chesapeake Digital Health Exchange (CDHx)
- City Garage
- Conscious Venture Lab
- Coppin State University (Center for Strategic Entrepreneurship)
- CreateU Business Ownership Academy
- Emerging Technology Centers
- Equalyze
- FastForward: Johns Hopkins Technology Ventures
- Fells Point Culinary Incubator
- Goldman Sachs 10,000 Small Businesses
- The GRID (UM Ventures)
- Harbor Launch at IMET
- HEXCITE Medical Accelerator
- The Hutch (Fearless Tech)
- Impact Hub Baltimore
- Innovation Works
- Johns Hopkins Social Innovation Lab
- Johns Hopkins Technology Ventures
- The LaunchPort
- Made In Baltimore Home-Run Accelerator
- Moms as Entrepreneurs Academy
- Morgan State University (I-Start)
- Open Works
- Propel Baltimore Fund (TCP Venture Capital)
- SBIR/STTR Proposal Lab
- Spark Baltimore
- Station North Tool Library
- TEDCO
- TEDCO (Builder Fund)
- TEDCO (Seed Fund)
- LifeBridge Health BioIncubator at Sinai Hospital
- Towson University StarTUP
- University of Baltimore Center for Entrepreneurship and Innovation
- University of Maryland, Maryland Momentum Fund
- University of Maryland, UM Ventures

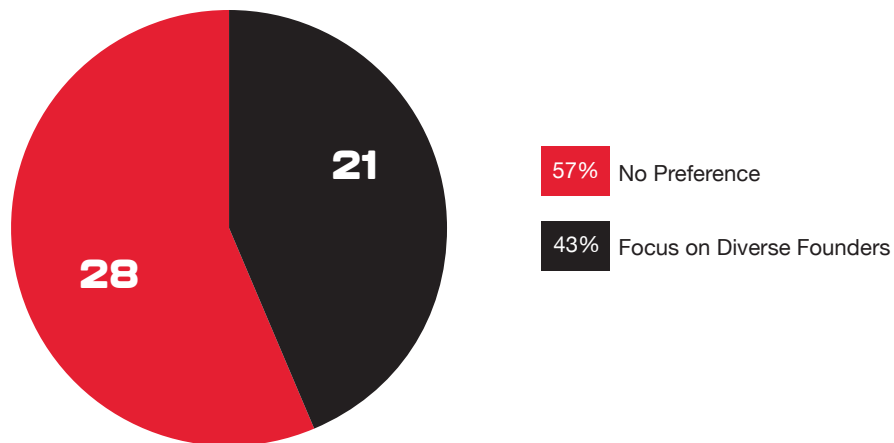
KEY DATA ON ECOSYSTEM PARTNERS

Partners listed on page 21; n=49

COLLEGE/UNIVERSITY AFFILIATION



PREFERENCE FOR UNDERESTIMATED FOUNDERS⁵

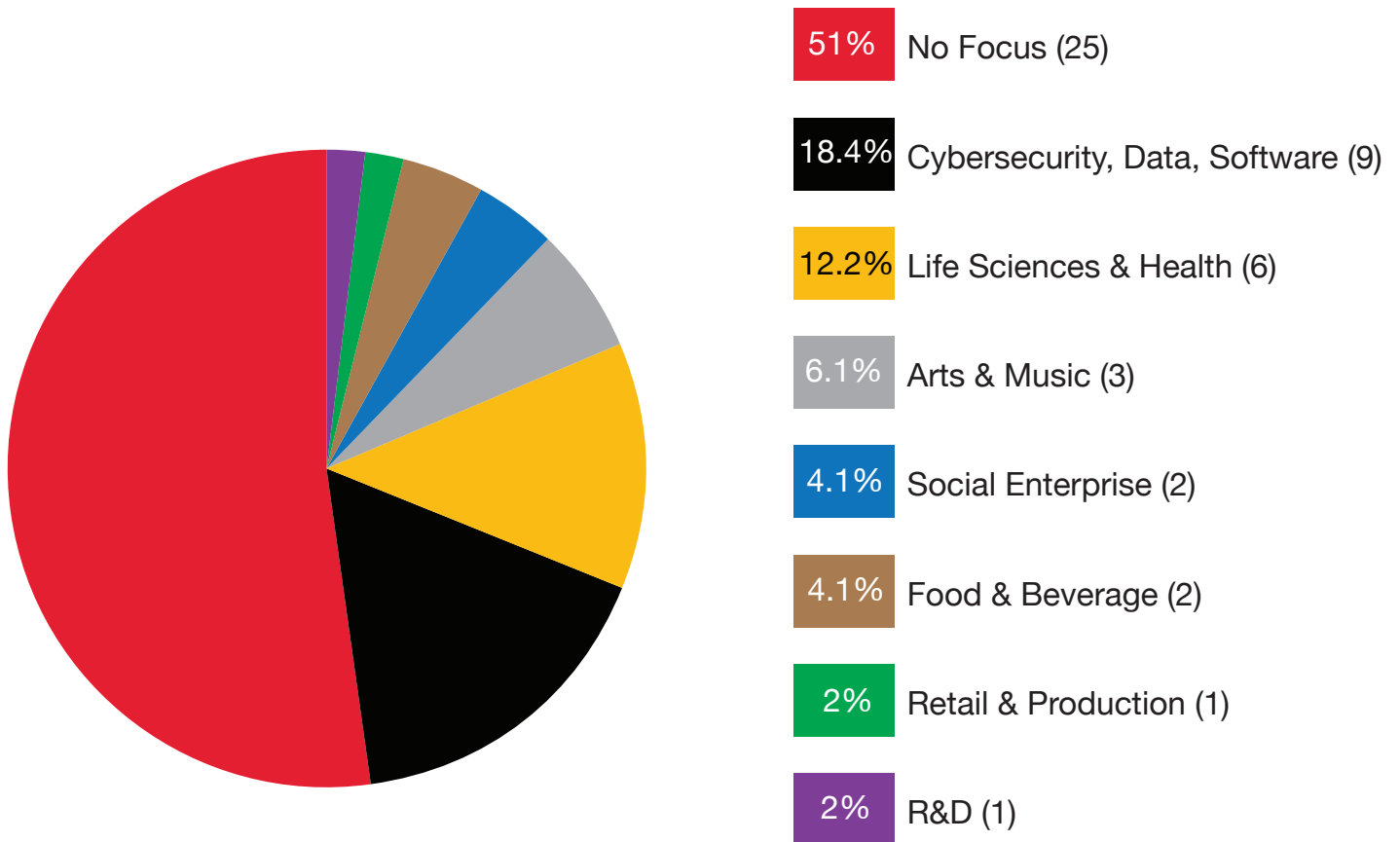


⁵Stated that they prefer underestimated founders/ entrepreneurs, including Black, Indigenous, or people of color; women or nonbinary persons; LGBTQ persons; veterans; or undocumented individuals.

INDUSTRY FOCUS (IF INDICATED)

Partners listed on page 21; n=49

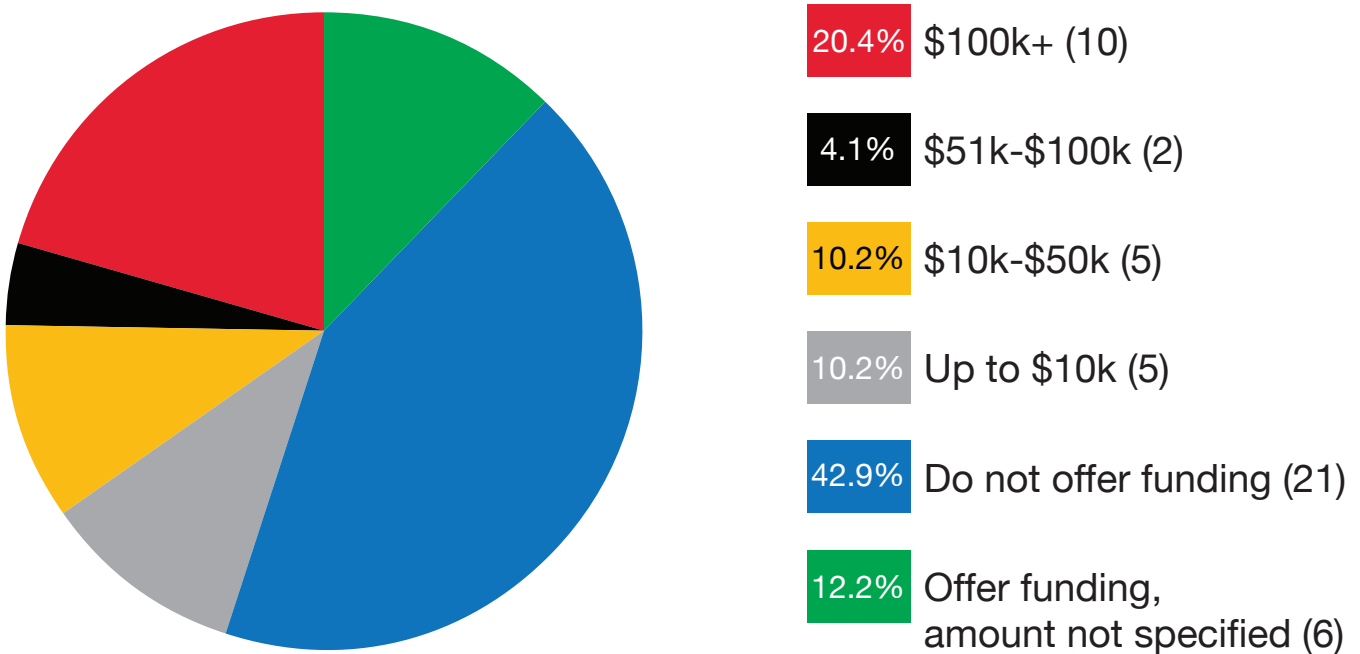
More than half of our key partners are industry agnostic and willing to support ventures from any field.



MAXIMUM FUNDING POTENTIALLY AVAILABLE TO COMPANIES

Partners listed on page 21; n=49

Of the 49 partners, 27 have funding available for ventures. Funding could be provided through grants, prizes, awards, pitch competitions, or equity capital.



SEARCH CRITERIA ON PITCHBOOK

Baltimore Startup Ecosystem Search

- Key fields
 - Ownership Status
 - Privately held, in IPO registration, Publicly Held, Acquired/Merged (operating subsidiary)
 - Location: Baltimore, MD and HQ only
 - Year Founded: >2011
- Deal Types
 - All VC Stages

Non-HQ Search

- Key fields
 - Ownership Status
 - Privately held, in IPO registration, Publicly Held, Acquired/Merged (operating subsidiary)
 - Location: Baltimore, MD and Non-HQ only
 - Year Founded: >2011
- Deal Types
 - All VC Stages

*Excludes acquired companies but includes acquired companies operating as subsidiaries.

THANK YOU

We're grateful to our partners for making this report, and the work of UpSurge, possible.

ABELL
FOUNDATION

 **Brown**ADVISORY
Thoughtful Investing.

 **CONTINENTAL
REALTY
CORPORATION**

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ASSOCIATES

JOHNS HOPKINS
UNIVERSITY & MEDICINE

POINT FIELD
PARTNERS

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