



Financing Baltimore's Growth: Venture Capital Support for Small Companies

by Mary Miller, Ben Seigel, Mac McComas, and Lee Scrivener | October 2018

Executive Summary

In 2017, the Johns Hopkins 21st Century Cities Initiative documented financial flows to small companies located in the City of Baltimore, considering both working capital and venture capital. The purpose was to measure the capacity of the city to support economic development, specifically with regard to the contribution that small companies can make towards job creation and growing the city's tax base. Earlier this year we published a second report on small business lending, focusing on the availability of bank loans in Baltimore.¹

This report represents a deeper dive into the dynamics of equity capital provided to small companies located in Baltimore.² This type of capital is not needed by every startup in the city, but is critical to many that are testing a business concept before reaching a revenue producing stage. It often begins with "friends and family" investments, followed by so called "angel investors" that are typically unrelated parties making small, high risk investments in startup companies. The next stage is more formal financing rounds from increasingly sophisticated and larger investors. The number of companies that grow into these late stages of investment is miniscule compared to the number of startups each year, but the successful ones can yield enormous returns to their investors and the local economy.

We identified 252 companies located in Baltimore with fewer than 500 employees that received at least one equity investment from 2007 to September 2018. In addition to total dollars raised, we captured the size of individual investments and the number of times they tapped the market. We also captured the survival rate of these companies over the 12 years of data, the location of the companies today and how many jobs they report. Finally, we look at the location of the venture capital investors to get a sense of local, regional and national sources of funding.

¹ "Financing Baltimore's Growth: Strengthening Lending to Small Businesses", 21st Century Cities Initiative, August 2018.

² Unless referencing the Baltimore Metropolitan area explicitly, we are referring to Baltimore City exclusively.

Some of the key observations from this report include:

- During the nearly 12 year period from 2007 to September 2018 a total of \$1.8 billion was raised by Baltimore based companies.
- Almost half of all dollars and nearly 40 percent of all funding rounds went to healthcare related companies (pharmaceuticals and biotechnology, healthcare services and systems, and healthcare devices and supplies).
- Software companies raised the second highest amount of funds, over a quarter of the total dollar amount and over a third of all deals, but in smaller average funding rounds than the healthcare sector.
- Of the 252 startups we identified, 21 percent have closed, 13 percent have relocated outside of Baltimore either in Maryland (five percent) or elsewhere (eight percent), and 64 percent remain open and headquartered in Baltimore City.
- Significantly, of the \$1.8 billion invested in these companies over the period measured, 74 percent of the funding went to companies that are still active and based in Baltimore.
- Notable are the especially high survival and retention rates of Baltimore based companies within the sectors of healthcare devices and supplies (92 percent), consumer goods and recreation (76 percent) and pharmaceuticals and biotechnology (68 percent).
- Altogether, we counted 3,745 jobs in these Baltimore funded companies and 278 jobs elsewhere in Maryland. Over 1,000 jobs are in 54 software companies. Another 770 jobs are in the pharmaceuticals and biotechnology sector and an additional 829 jobs were counted in healthcare services and systems.
- Keeping companies in Baltimore and helping them find funding is key to job creation: firms that received later stage capital, meaning funding rounds that raised more than \$5 million, have the greatest number of jobs both in the city and the state.
- The majority of individual investments come from investors located in the US, but outside the region. In recent years, an increasing share of high value investments have come from Baltimore based investors.

Baltimore is demonstrating healthy growth in funding new companies with more capital, larger funding rounds, and increasing participation from investors. While still small in terms of dollars and job creation compared to national figures, the local trends are quite positive.



Introduction

The growth of venture capital (VC) over the past decade has been significant and reflects broader trends in American capitalism. The weakness in public capital markets following the financial crisis of 2008 created the opening for more companies to remain private and access capital differently. At the same time, the investor base for equity investment in high growth companies was also developing with corporations, family offices, foundations and others joining traditional VC fund investors.

Today, new companies are staying private longer, providing returns to their early investors during these growth stages and more often selling themselves instead of seeking an initial public offering (IPO). At the national level VC investments grew from \$37 billion invested in 4,716 companies in 2008 to \$82 billion invested in 8,815 companies in 2017. 2018 is on pace to be another record year.³

As the market for VC investment has deepened and grown, the investments remain concentrated in California, Massachusetts, and New York, which capture roughly 75 percent of all VC dollars, but are beginning to spread across the country.⁴ The high cost of starting a business in these traditional areas is encouraging startups in new locations.⁵ A funding campaign launched in 2014 called the “Rise of the Rest” argues that good ideas are not concentrated in particular geographies and that we need to showcase the locational advantages of startups across the country.

So where does Baltimore land in this picture? Baltimore is very well positioned to participate in developing this market locally. In any analysis of VC ecosystems Baltimore has many of the key ingredients: excellent locational and cost advantages, strong universities with deep talent and research capacity to support commercial ideas, a growing network of investors and supportive government initiatives.

The data also support this view: equity investments in dollars and number of financings have grown steadily over the last 12 years for companies based in Baltimore. While our focus is on Baltimore City, outside reports rank the Baltimore metropolitan area 15th in the top 20 metro areas for VC first round financings⁶ and the state lands in the top 10-15 states on measures of investment relative to population.⁷

There are also a number of gaps to close in terms of positioning more VC capital locally, developing more talent with experience starting and growing companies, keeping a focus on industries that offer strong employment, and making this an attractive place for serial entrepreneurs to stay. This report is principally concerned with financial flows and not the entire menu of support for a healthy small company environment. We should also note that we are not measuring the return on capital to investors, or whether the companies are profitable, which are important factors in attracting further investment.

³ “Venture Monitor 2Q 2018”, Pitchbook and the National Venture Capital Association, 2018.

⁴ “The Coders of Kentucky”, Arlie Hochschild, New York Times, September 21, 2018.

⁵ “Silicon Valley, A Victim of its Own Success”, The Economist, September 1, 2018.

⁶ “America’s Rising Startup Communities”, Center for American Entrepreneurship, August 2018.

⁷ “VC Ecosystems”, PitchBook, June 2018.



Rather than choosing a neat decade for analysis, we deliberately picked a starting point of 2007 through September 2018 to incorporate a pre-recession year, a deep recession, and a protracted recovery to look at the resilience of this type of capital over different economic and market cycles.

We performed our analysis for this 12-year period using data accessed through Pitchbook and Crunchbase, web-based services that provide investment information about VC and other types of funding to public and private companies. Where we could, we cross-checked and supplemented the information with data provided to us from individuals, local investment funds, and companies that have received investments. Despite our best efforts to build a complete dataset for the 12-year period, there are several limitations that are important to note:

- Our dataset does not capture investments from friends and family, an important first stage of funding for many startups. Our data sources focus on the next stages of investment from investors that are independent of company founders or owners.
- By performing cross checks directly from select investment funds⁸ and companies who shared their own data with us, we identified instances where data from the web-based services were incomplete. In these cases, we supplemented our dataset. Nevertheless, we are likely understating total VC investment in this report.
- For each investment or funding round, the web-based services provide dollar amount data for the entire funding round and list individual investors in the round. While we can identify individual investors by the companies they invest in, we cannot analyze the dollar amount invested by each investor.

Despite these limitations, we are confident that the data we have is robust enough to draw some meaningful observations about local VC activity in Baltimore.

Venture Capital Flows to Baltimore Based Companies

Chart 1 below shows total VC dollars invested annually between 2007 to September 2018, as well as funding ranges. Overall, during the nearly 12 year period a total of \$1.8 billion was raised. Investments increased almost steadily over the time period, with the largest dollar increases occurring in the funding range over \$10 million, although there is notable growth in the \$1-5 million range as well. Investments in the \$5-10 million range have seen less growth over the period.

Chart 2 shows the percentage of fund raising rounds represented by each funding range. This perspective makes a different point: as opposed to dollars raised, the largest number of fund raising rounds – roughly 80 percent – is occurring in the under \$5 million dollar ranges.

⁸ Investment data were provided to us from the following individual sources: the Abell Foundation, Baltimore Angels, Camden Partners, Johns Hopkins Technology Ventures, Propel, and TEDCO.



Chart 1: Equity Investments by Total Dollar Amount and Funding Range to Baltimore Small Companies, 2007-2018

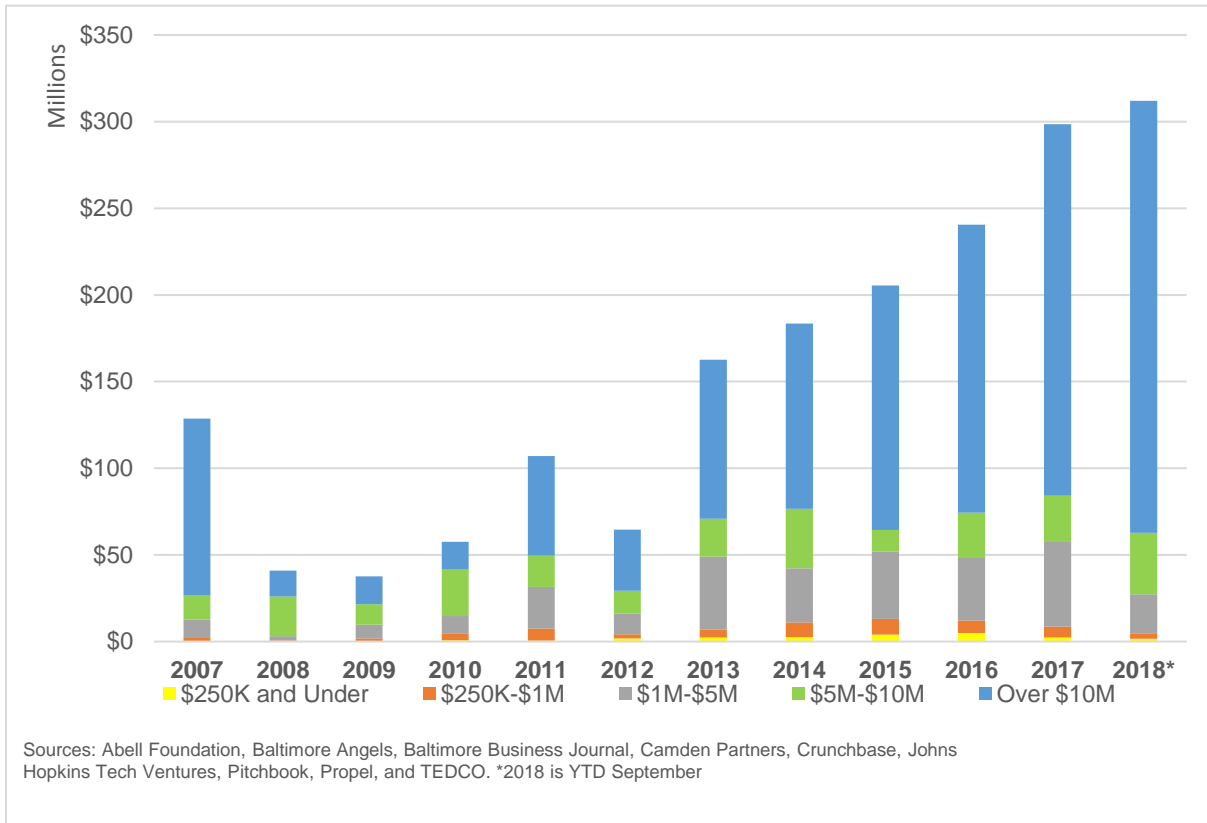


Chart 2: Equity Investments by Funding Range and Percent Share to Baltimore Small Companies, 2007-2018

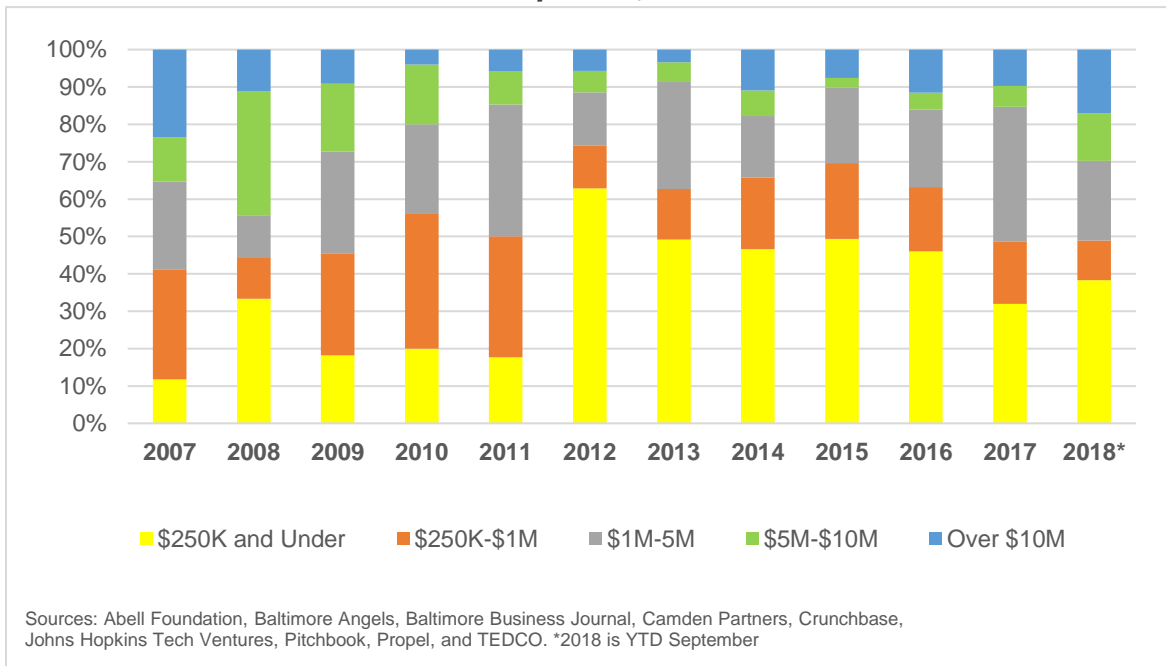


Table 1 shows the actual data for funding rounds. A funding round represents a single fund raising event that often includes multiple investors. The highest number of unique companies receiving VC was in 2016, and the lowest was in 2008, which corresponds to the highest and lowest years of overall funding rounds. The decline in the number of funding rounds in 2017 and YTD 2018 is offset by the total amount of capital raised, matching national trends towards larger late stage funding rounds.

Table 1: Equity Investments by Funding Range and Number of Investments to Baltimore Small Companies, 2007-2018

	Total \$ Amount	\$250K and Under	\$250K-\$1M	\$1M-\$5M	\$5M-\$10M	Over \$10M	Total Rounds
2007	\$128,614,000	2	5	4	2	4	17
2008	\$40,912,497	3	1	1	3	1	9
2009	\$37,634,350	2	3	3	2	1	11
2010	\$57,559,000	5	9	6	4	1	25
2011	\$107,114,027	6	11	12	3	2	34
2012	\$64,554,056	22	4	5	2	2	35
2013	\$162,652,450	29	8	17	3	2	59
2014	\$183,505,481	34	14	12	5	8	73
2015	\$205,381,301	39	16	16	2	6	79
2016	\$240,606,911	40	15	18	4	10	87
2017	\$298,462,725	23	12	26	4	7	72
2018*	\$312,054,117	18	5	10	6	8	47
Total	\$1,839,050,915	223	103	130	40	52	548

Sources: Abell Foundation, Baltimore Angels, Baltimore Business Journal, Camden Partners, Crunchbase, Johns Hopkins Tech Ventures, Pitchbook, Propel, and TEDCO. *2018 is YTD September.

The data in Table 1 show healthy growth in the number of funding rounds under \$5 million, although the total dollars raised have grown modestly since 2013, staying at around \$50 million per year. Funding rounds raising \$5-10 million have remained relatively unchanged, while funding rounds raising over \$10 million show a clear upward trend. Over the entire period, 125 companies, or almost 50 percent of all companies, have received more than one funding round, 67 companies, or 27 percent of all companies, have received three or more, and 26 companies, or 10 percent of all companies, have received five or more.



The Companies

Next we took a look at the 252 companies that raised VC during the period.⁹ These companies fall into 27 primary industries, as defined by our primary data source, Pitchbook, and were further combined by Pitchbook into 10 broader industry groups to be analyzed more generally. Table 2 shows the breakdown of VC dollars invested and number of funding rounds by industry. (See Appendix A for annual data.)

Table 2: Venture Capital Raised by Industry Group, 2007 – September 2018

Industry	Total \$ Amount	% Share \$ Amount	Total Funding Rounds	% Share Funding Rounds	# of Companies	% Share of Companies
Pharmaceuticals & Biotechnology	\$575,377,575	31.7%	83	15.2%	34	13.5%
Software	\$513,363,861	28.3%	176	32.2%	88	34.9%
Commercial Services	\$189,162,122	10.4%	61	11.2%	31	12.3%
Healthcare Services & Systems	\$185,009,199	10.2%	66	12.1%	27	10.7%
Healthcare Devices & Supplies	\$126,342,493	7.0%	62	11.4%	24	9.5%
Consumer Goods & Recreation	\$75,639,301	4.2%	46	8.4%	22	8.7%
Other	\$62,924,247	3.5%	25	4.6%	14	5.6%
Energy	\$43,426,000	2.4%	13	2.4%	2	0.8%
IT	\$42,531,117	2.3%	8	1.5%	3	1.2%
Media	\$25,275,000	1.4%	8	1.5%	7	2.8%
Total	\$1,839,050,915	100.0%	548	100.0%	252	100.0%

Sources: Abell Foundation, Baltimore Angels, Baltimore Business Journal, Camden Partners, Crunchbase, Johns Hopkins Tech Ventures, Pitchbook, Propel, and TEDCO.

The data reveal that close to half of all dollars and nearly 40 percent of all funding rounds went to healthcare related companies (pharmaceuticals and biotechnology, healthcare services and systems, and healthcare devices and supplies companies), representing a third of the companies.

⁹ To put this in context, Baltimore has nearly 12,500 business establishments with at least one employee. County Business Patterns, Census Bureau, 2016.

Pharmaceutical and biotechnology companies alone received the largest share of funding over the period, with nearly one third of the total dollar amount and 13 percent of all funding rounds.

Software companies received the second highest amount of funds, just over a quarter of the total dollar amount, and over a third of all deals, which raised funds for 88 companies. They received much smaller average amounts per funding round than pharmaceutical and biotechnology companies, \$3 million compared to nearly \$7 million on average. This is most likely due to the fact that pharmaceutical and biotechnology companies require more funding to commercialize products by undertaking clinical trials, an expensive step.

Cybersecurity is an important industry in the Baltimore region, but has less of a presence in the city. Companies like RedOwl and ZeroFOX clearly got off the ground in Baltimore, benefiting from close proximity to the national security agencies and engineering talent in the area, and are counted in the software industry group above. However, a 2018 company directory for cybersecurity companies located in Maryland identified 57 such companies, but only four with an address in Baltimore.¹⁰ Nevertheless, the success of companies like Tenable in Columbia, MD, which went public in the summer of 2018, is very positive for building local momentum in this sector.

The other sectors show a higher degree of variability in dollars raised as well as much smaller numbers of funding rounds, with less clear trends.

How does Baltimore compare to national data on VC investments? Nationally, a larger share of VC goes to software companies, around 40 percent of funding rounds and dollars. However, Baltimore healthcare related companies receive a larger share of the number of funding rounds than healthcare companies nationally, 33 percent compared to 19 percent. This is especially true for pharmaceutical and biotechnology companies in Baltimore that received more than double the national share of funding in terms of both total dollar amount and funding rounds.

Company Retention in Baltimore

While VC funding for startups in Baltimore shows steady progression since 2007, the important questions for Baltimore are how many of these companies survive and remain in the city, and how many jobs they create. A Baltimore based company like Under Armour, whose early growth period pre-dates our report, is a great example of how a successful startup can create significant economic impact in a city.

Of the 252 startups we identified, Table 3 shows their current status and location: 21 percent have closed, 13 percent have relocated outside of Baltimore either in Maryland (five percent) or elsewhere (eight percent), and 66 percent remain open and located in Baltimore. Because the closure rate is cumulative and likely to increase for more recent startups, we also measured the closure rate since 2012, which is 18 percent.

¹⁰ “Maryland Cybersecurity Buyer’s Guide 2018”, Baltimore Business Journal, Advertising Supplement in conjunction with the Cybersecurity Association of Maryland Inc. March 24, 2018.



Table 3: Current Location of Baltimore-founded, VC-funded companies and proportion of VC funds retained or lost by Baltimore

	Companies		Amount of VC capital invested while in Baltimore	
	Total	%	Total	%
Baltimore	161	64%	\$1,359,685,061	74%
Baltimore (Acquired)	4	2%	\$34,030,000	2%
Closed	53	21%	\$62,481,106	3%
Maryland	13	5%	\$142,316,445	8%
Out of state (Acquired)	10	4%	\$160,977,271	9%
Out of state (Moved)	11	4%	\$79,561,032	4%
Total	252	100%	\$1,839,050,915	100%

Sources: Abell Foundation, Baltimore Angels, Baltimore Business Journal, The Baltimore Sun, BusinessWire, Camden Partners, Crunchbase, Johns Hopkins Tech Ventures, LinkedIn, Pitchbook, Propel, Technical.ly Baltimore, and TEDCO.

Significantly, of the \$1.8 billion invested in these companies over the nearly 12 year period, 74 percent of the funding went to companies that are still active and based in Baltimore. The closed companies represented 21 percent of the startups that received funding, but only three percent of the invested capital.

Taking a more fine-grained look at this, we examined the current status and location of companies by industry as shown in Table 4. Notable are the especially high retention rates of Baltimore based companies within the sectors of healthcare devices and supplies (92 percent), consumer goods and recreation (76 percent) and pharmaceuticals and biotechnology (68 percent). In contrast, companies that are more likely to close or relocate, falling below the average survival and retention rate of 64 percent, are in the sectors of software, commercial services, energy, and media, although for some of these sectors the company numbers are very small.

Table 4: Current location/status of Baltimore-founded companies, By Industry

	Original	Still in Baltimore		Still in Maryland		Out of State (Acquired & Moved)		Closed	
	#	#	%	#	%	#	%	#	%
Software	88	54	61%	1	1%	10	11%	23	26%
Pharmaceuticals & Biotechnology	35	24	68%	4	11%	2	6%	5	14%
Healthcare Services & Systems	28	17	62%	1	4%	3	10%	7	24%
Consumer Goods & Recreation	25	19	76%	1	3%	2	8%	3	12%
Healthcare Devices & Supplies	24	22	92%	0	0%	0	0%	2	8%
Commercial Services	21	12	57%	2	10%	3	14%	4	19%
Other	16	9	56%	1	6%	1	6%	5	31%
Media	7	3	43%	1	14%	0	0%	3	43%
IT	4	3	75%	1	25%	0	0%	0	0%
Energy	4	2	50%	1	25%	0	0%	1	25%
Total	252	165		13		21		52	

Sources: Abell Foundation, Baltimore Angels, Baltimore Business Journal, The Baltimore Sun, BusinessWire, Camden Partners, Crunchbase, Johns Hopkins Tech Ventures, LinkedIn, Pitchbook, Propel, Technical.ly Baltimore, and TEDCO.

These figures reflect an unsurprising pattern: industries that have higher relocation and closure rates are related to services, and those that are less likely to relocate or close are related to university support systems such as laboratory space, physical production, or proximity to customers. Service-related companies tend to be easier to start, but are by nature both volatile and mobile.

Another observation from the data is that pharmaceutical and biotechnology companies have earned the largest share of total VC funds (32 percent, or \$575 million) and have the highest retention rate in Baltimore and among the lowest closure and out-of-state relocation rate (18 percent). In contrast, software companies claim the second-highest share of VC (28 percent, or \$513 million), while those companies have among the highest closure and out-of-state relocation rates (37 percent).



In summary, despite closures and high-profile relocations out of state, the majority of these investments went to companies that have remained grounded and viable in the Baltimore economy. Among relocations, eight percent of the funds went to thirteen companies that relocated within Maryland, many of them within 20 miles of the city. Only 21 Baltimore-founded companies moved out of state since 2007 (Table 3). However those companies represent a higher proportion (13 percent, or \$240 million) of the total VC funds invested. For the subset of companies that moved out of state as a result of an acquisition, these sales do not necessarily mean an economic drain for the city if the original company's leadership remains in Baltimore to start or invest in new Baltimore-based companies.

Baltimore and Regional Job Creation by VC-Backed Companies

After retention, the next most important question for Baltimore is how many jobs have been created by these VC backed companies? Table 5 provides our best effort to count every job reported by these companies to date. Our sources include company websites, news articles and social media. While this may be “unofficial” data they offer some valuable insights.

The numbers show good alignment between jobs and capital raised, with some difference between the sectors. Altogether, we counted 3,745 jobs in these Baltimore funded companies that currently contribute to the city's work-force and 278 jobs elsewhere in Maryland. Over 1,000 jobs are in 54 software companies. Another 770 jobs are in the pharmaceuticals and biotechnology sector and an additional 829 jobs were counted in healthcare services and systems.

To put these figures into perspective, Baltimore's private sector companies employ approximately 350,000 people, meaning that the number of jobs supported by these VC backed firms in Baltimore is just over one percent. The percentages are much higher in the key VC industry groups. Baltimore software development firms employ about 2,700 people, which makes the more than 1,000 employees in VC backed software firms responsible for almost 40 percent of software company jobs. Meanwhile, Baltimore pharmaceutical and biotech firms employ about 2,200 people in total. The 770 jobs in VC-backed firms in this industry represent about 35 percent of all industry jobs in Baltimore.¹¹

¹¹ Longitudinal Employer-Household Dynamics, U.S. Census Bureau, 2017.



Table 5: Jobs in Companies Currently Located in Baltimore and Maryland, By Industry

	Baltimore		Maryland	
	Jobs	Companies	Jobs	Companies
Software	1,072	54	5	1
Healthcare Services & Systems	829	18	65	1
Pharmaceuticals & Biotechnology	770	24	71	4
Commercial Services	275	12	56	2
Healthcare Devices & Supplies	258	22	0	0
Consumer Goods & Recreation	219	19	11	1
Other	149	9	5	1
Energy	65	2	7	1
IT	54	3	3	1
Media	54	3	55	1
Total	3,745	165	278	13

Sources: Abell Foundation, Baltimore Angels, Baltimore Business Journal, The Baltimore Sun, BusinessWire, Camden Partners, Crunchbase, Johns Hopkins Tech Ventures, LinkedIn, Pitchbook, Propel, Technical.ly Baltimore, and TEDCO.

The data also show the benefit from a job creation standpoint of keeping companies in Baltimore and helping them grow. Firms that received more than \$5 million in VC have the greatest number of jobs both in the city and the state. These 43 Baltimore based companies employ 2,363 people, more than all the other companies combined. These include companies like Catalyte, basys inc., Paragon Bioservices, Personal Genome Diagnostics, and Profectus Biosciences.



Table 6: Job Creation by Baltimore and Maryland-based Companies by Company’s Venture Capital Raised

	Baltimore		Maryland	
	(Acquired and Standalone)		(Outside Baltimore)	
	Jobs	Companies	Jobs	Companies
\$250K and under	329	50	26	4
\$250K-\$1.25M	386	32	11	2
\$1.25M-\$5M	667	40	11	1
Over \$5M	2,363	43	230	6
Total	3,745	165	278	13

Sources: Abell Foundation, Baltimore Angels, Baltimore Business Journal, The Baltimore Sun, BusinessWire, Camden Partners, Crunchbase, Johns Hopkins Tech Ventures, LinkedIn, Pitchbook, Propel, Technical.ly Baltimore, and TEDCO.

Location of Investors

We are also interested in the sources of funding for Baltimore based companies, to learn how reliant these companies are on both local and outside funders. Our data provides location information for 747 investors, representing 70 percent of funding rounds. For these rounds, the name of the investor and their address is provided, although in some cases, not all investors are identified in a funding round. As previously noted, we also do not have the amounts contributed by each investor, just their location.

With the data that are available, recognizing that it is incomplete, we were interested in comparing investments from local investors compared to non-local. Table 7 shows the breakdown of investors by funding range in Baltimore and outside Baltimore.

Table 7: Origin of Venture Capital Investments by Funding Range, 2007 – September 2018

	\$250K and Under	\$250K-\$1M	\$1M-\$5M	\$5M-\$10M	Over \$10M	Total
Individual Investors	154	101	229	64	199	747
% of investors from Baltimore	51%	40%	30%	17%	9%	29%
% of investors from Maryland (outside Baltimore)	21%	15%	18%	10%	14%	17%
% of investors from region (DC, PA, VA)	1%	9%	12%	15%	14%	9%
% of investors from other US states	23%	31%	33%	48%	55%	38%
% of investors from outside US	4%	5%	7%	10%	8%	7%

Sources: Abell Foundation, Baltimore Angels, Baltimore Business Journal, Camden Partners, Crunchbase, Johns Hopkins Tech Ventures, Pitchbook, Propel, and TEDCO.

Overall, the majority of individual investments came from investors located in the US, but outside the region. In recent years, however there is an increasing participation rate in high value investments from Baltimore based investors. From 2007 to 2012, only four percent of investors in funding rounds of \$10 million or higher were from Baltimore, compared to 10 percent from 2013 to September 2018. In the first nine months of 2018, this share was 18 percent for Baltimore.

Funding rounds of \$250,000 and under were dominated by Baltimore based investors, mostly through angel funding and convertible notes and other forms of financing associated with accelerators and incubators. As the funding ranges increase, investors from Baltimore were less likely to participate in funding rounds, and companies were more likely to have to seek funding outside of Baltimore.



Table 8: Top 10 Origin Locations for Venture Capital Originating Outside Maryland

Rank	State/Country	# of Investments
1	New York	99
2	California	76
3	Virginia	42
4	Massachusetts	38
5	Washington, DC	20
6	United Kingdom	14
7	Pennsylvania	13
8	Florida	11
9	Texas	9
T10	Colorado	7
T10	Ireland	7
T10	Washington	7

Sources: Abell Foundation, Baltimore Angels, Baltimore Business Journal, Camden Partners, Crunchbase, Johns Hopkins Tech Ventures, Pitchbook, Propel, and TEDCO.

As Table 8 shows, New York, California, Virginia, and Massachusetts are the top four investor locations for Baltimore companies, coming from outside of Maryland.

Public Support for Venture Capital in Baltimore

This report focuses on private investors in Baltimore based companies, but we would be remiss to not mention financial support from the public sector. As mentioned in our 2017 report, Baltimore fares well in the receipt of federal grants for research and development that can function as non-dilutive equity capital, meaning the company is not giving up share ownership in return for grant funds.¹²

The principal sources of grant funds for startups are two programs coordinated by the federal Small Business Administration: the Small Business Innovation Research (SBIR) grants to companies, and the Small Business Technology Transfer (STTR) grants to companies and researchers. The National Institutes of Health also award grants outside of these two programs. Over an 11 year period from

¹² “Financing Baltimore’s Growth: Measuring Small Companies’ Access to Capital”, 21st Century Cities Initiative, September 2017.



2007 through 2017, \$295 million in 352 grants were awarded to 122 Baltimore companies (See Appendix B for details).

We also note that of the 122 companies that received grants, 55 went on to receive \$518 million in VC funding, 28 percent of the \$1.8 billion total. This demonstrates both a good return on the grant funds provided, as well as a capacity to transition from public support to private investment. In one national study conducted in 2008, only six percent of companies receiving these grants went on to attract VC, compared to the much higher rate in Baltimore.¹³

The State of Maryland has also been very supportive of VC investment, sponsoring the Excel Maryland initiative in 2017 to attract more support for biotechnology and cyber security firms in Maryland, offering investor tax credits for investments in both of these sectors, and supporting direct investment from the Maryland Technology Development Corporation (TEDCO) in a wide array of area companies.

Outside of the government sector, a small percent of support for VC comes from foundations. Among local foundations, the Abell Foundation stands out for committing 20 percent of its endowment to VC with a focus on local companies, and direct support for startups located at the City's Emerging Technology Center incubator.

Summary

Baltimore is following national trends demonstrating healthy growth in funding new companies with more capital, larger funding rounds, and increasing participation from local and outside investors. While still small in terms of dollars and job creation compared to the national stage, the trends are quite positive. The dominance of the healthcare sector in fund raising success is not surprising given Baltimore's strong academic presence in the medical system. Yet half of all companies raising funds here are in software and other sectors, contributing to a broader network of emerging companies. Connecting more investors to successful companies originating here should fuel further growth.

This look back at the evolution of VC flows in Baltimore illustrates the value of providing broad based support for companies with high job growth potential and of positioning more local capital to support higher investment ranges. While Baltimore is retaining a high percentage of startups, later stage growth that yields higher economic returns and employment is still very reliant on outside funding. There is a growing list of new companies that have originated in Baltimore and are still here, contributing to the city's jobs and tax base. More local success stories should encourage entrepreneurs to recognize Baltimore's many locational advantages and help build the talent pool for creating and leading companies.

¹³ pp. 123, "An Assessment of the SBIR Program", National Research Council of the National Academies, 2008.



Appendix

Appendix A: Equity Investments by Primary Industry Group, 2007 – September 2018 (Dollars are in Millions)

		'07	'08	'09	'10	'11	'12	'13	'14	'15	'16	'17	'18	Total
Software	Total \$	\$50	\$15	\$4	\$25	\$39	\$28	\$80	\$59	\$71	\$28	\$69	\$46	\$513
	# of Rounds	4	1	3	7	10	14	23	25	32	25	21	11	176
Pharma & Biotech	Total \$	\$1	\$17	\$0	\$6	\$15	\$23	\$40	\$49	\$80	\$51	\$159	\$134	\$575
	# of Rounds	1	2	1	6	10	7	7	9	11	9	14	7	84
Healthcare Services & Systems	Total \$	\$50	\$0	\$0	\$8	\$0	\$0	\$2	\$22	\$34	\$17	\$24	\$28	\$185
	# of Rounds	2	0	1	1	0	2	6	14	13	11	9	6	65
Consumer Goods & Recreation	Total \$	\$0	\$0	\$0	\$0	\$1	\$2	\$1	\$11	\$1	\$26	\$19	\$0	\$60
	# of Rounds	0	0	0	2	2	2	5	4	4	10	5	2	36
Healthcare Devices & Supplies	Total \$	\$0	\$0	\$0	\$0	\$0	\$0	\$4	\$13	\$3	\$39	\$12	\$54	\$126
	# of Rounds	1	1	0	0	0	1	5	7	9	15	11	12	62
Commercial Services	Total \$	\$24	\$2	\$21	\$11	\$30	\$6	\$11	\$0	\$12	\$51	\$4	\$11	\$184
	# of Rounds	3	1	2	4	4	5	4	4	6	10	3	4	50
Other	Total \$	\$1	\$1	\$2	\$1	\$16	\$1	\$21	\$11	\$0	\$14	\$5	\$10	\$83
	# of Rounds	2	3	2	3	7	3	7	4	1	4	5	3	44
Media	Total \$	\$0	\$0	\$0	\$1	\$6	\$0	\$0	\$12	\$0	\$0	\$6	\$0	\$25
	# of Rounds	1	0	0	1	1	0	0	2	0	0	3	0	8
IT	Total \$	\$1	\$0	\$0	\$0	\$0	\$0	\$0	\$1	\$0	\$12	\$0	\$30	\$43
	# of Rounds	1	0	0	0	0	0	1	3	1	1	1	2	10
Energy	Total \$	\$2	\$6	\$10	\$6	\$0	\$4	\$3	\$4	\$4	\$4	\$0	\$0	\$43
	# of Rounds	2	1	2	1	0	1	1	1	2	2	0	0	13
Total \$ Amount		\$129	\$41	\$38	\$58	\$107	\$65	\$163	\$184	\$205	\$241	\$298	\$312	\$1,839
Total #		17	9	11	25	34	35	59	73	79	87	72	47	548

Sources: Abell Foundation, Baltimore Angels, Baltimore Business Journal, Camden Partners, Crunchbase, Johns Hopkins Tech Ventures, Pitchbook, Propel, and TEDCO.



Appendix B: Federal Innovation Research and Other Grant Funding in Baltimore Companies, 2007 – 2017

	Total \$ Amount	# of Grants	# of Unique Companies
2007	\$6,646,656	17	12
2008	\$6,100,315	20	17
2009	\$8,314,479	19	15
2010	\$26,844,361	25	15
2011	\$65,522,903	28	21
2012	\$34,650,849	35	25
2013	\$17,271,922	33	30
2014	\$51,802,165	52	34
2015	\$33,359,739	47	32
2016	\$14,913,086	38	28
2017	\$31,480,843	38	27
Total	\$294,907,318	352	122

Sources: Maryland Department of Commerce, Pitchbook, SBIR, STTR, and TEDCO.

