

 PitchBook®
**Venture
Ecosystem
FactBook:
Boston**

2017





Introduction	3
Boston in the US Venture Ecosystem	4
Economy	5
Investment Activity	6-11
Exits & Fundraising	12-13
League Tables	14

The PitchBook Platform

The data in this report comes from the PitchBook Platform—our data software for VC, PE and M&A. Contact sales@pitchbook.com to request a free trial.

Credits & Contact

PitchBook Data, Inc.

JOHN GABBERT Founder, CEO

ADLEY BOWDEN Vice President,
Market Development & Analysis

Content

GARRETT JAMES BLACK Manager, Custom
Research & Publishing

DARREN KLEES Data Analyst

HANNAH DAVENPORT Graphic Designer

Contact PitchBook

pitchbook.com

RESEARCH

reports@pitchbook.com

EDITORIAL

editorial@pitchbook.com

SALES

sales@pitchbook.com

COPYRIGHT © 2017 by PitchBook Data, Inc. All rights reserved. No part of this publication may be reproduced in any form or by any means—graphic, electronic, or mechanical, including photocopying, recording, taping, and information storage and retrieval systems—without the express written permission of PitchBook Data, Inc. Contents are based on information from sources believed to be reliable, but accuracy and completeness cannot be guaranteed. Nothing herein should be construed as any past, current or future recommendation to buy or sell any security or an offer to sell, or a solicitation of an offer to buy any security. This material does not purport to contain all of the information that a prospective investor may wish to consider and is not to be relied upon as such or used in substitution for the exercise of independent judgment.

The burgeoning Boston VC scene

Introduction

Virtually every longer-term review of the Boston startup scene hearkens back to its first heyday of technical innovation, with mention of Route 128 typically denoting past decades of prominence. From there, the typical narrative segues into how the concentration of tech talent out west in Silicon Valley eventually grew to overshadow the Boston ecosystem, even though arguably the Boston biotech scene remains foremost in the US, or at least a close second. All of that may be more or less accurate, but there are shades of nuance that contribute to a more positive picture for the Boston ecosystem in the longer term. The sheer impact of intellectual talent concentrated in and around Boston due to its cluster of world-class universities is undeniable. As research during the course of producing this report revealed, academic entrepreneurs—professionals who remain within the confines of a university yet encourage the spinout of businesses based on internal innovations—cannot be underestimated. Recent headlines have trumpeted Massachusetts’ brain drain, but the most recent ranking from CBRE puts Boston at ninth place out of the top 50 US and Canadian cities when it comes to tech talent. That is hardly shabby, and, moreover, homegrown talent may be more prone to staying if the Bay Area loses its luster due to prohibitive living cost increases and congestion, among other detractors. If talent retention and/or attraction is the primary concern for the health of your venture ecosystem, then that is a good sign overall, as that is the case for every venture ecosystem from small to large. What will remain crucial for the Boston venture ecosystem is a continued nurturing of its sector diversity, beyond its well-known status as a biotech powerhouse. Boston appears to be moving to be more oriented toward enterprise applications, or technically demanding arenas, at least thus far.

This is just the latest entry in [our series of reports](#) focused on exploring US venture ecosystems at a more granular level, relying most heavily on PitchBook datasets but also including relevant figures sourced from outside providers. We welcome your feedback and questions—reach out to us at reports@pitchbook.com. Special thanks to Polaris Partners, Atlas Venture, General Catalyst, Accomplice VC, .406 Ventures and the National Venture Capital Association, among others, all of which assisted in the production of this report.



GARRETT JAMES BLACK
Manager, Custom Research & Publishing

**Look up a company.
And its cap table.
And its investors.
And its EBITDA
multiples.
And its board
members.**

In seconds.

The PitchBook Platform
has the data you need
to close your next deal.

[Learn more at
pitchbook.com](https://pitchbook.com)



Boston in the US Venture Ecosystem

Snapshot of the Boston MSA's size within the US venture ecosystem as a whole

In early August of last year, we released our first-ever national rankings of US venture ecosystems by size. Clearly, size is not necessarily an indicator of true health, but as the given health of an ecosystem is

remarkably difficult to assess—and highly subjective—we thought it best to stick to a snapshot of relatively current rankings by size. That said, our simple scoring methodology does produce some interesting results,

mainly toward the end of the list. However, Boston may stand out in one clear metric: Its overall exit value is remarkably robust, and, moreover, nearly on par with VC invested in the same timeframe.

Note: Using data as of 6/30/2016, this ranking was generated by weighting capital raised, VC invested, VC activity and venture-backed exit value equally, tallying up their ranking in each area, then summing and sorting from lowest to highest, with a lower score indicating a larger ecosystem.

MSA*	Size of VC ecosystem, ranked	Total VC funds raised since 2006	Total VC invested since 2010	Total # of VC rounds since 2010	Total exit value since 2010
San Francisco	#1	#1 \$117.6 billion	#1 \$101.4 billion	#1 9,710	#1 \$90.8 billion
San Jose	#2	#4 \$35.5 billion	#2 \$43.3 billion	#3 4,152	#2 \$63.5 billion
New York	#3*	#2 \$43.6 billion	#3 \$33.9 billion	#2 6,174	#4 \$17.6 billion
Boston	#4	#3 \$41.2 billion	#4 \$30.7 billion	#4 3,664	#3 \$28.7 billion
Los Angeles	#5	#9 \$2.7 billion	#5 \$21.3 billion	#5 3,403	#5 \$11.2 billion
Seattle	#6	#5 \$7.6 billion	#7 \$8.4 billion	#6 1,717	#10 \$6.7 billion
Chicago	#7	#7 \$3.4 billion	#8 \$8.3 billion	#9 1,348	#6 \$9.95 billion
Washington, DC	#8	#6 \$4.8 billion	#9 \$8.2 billion	#7 1,416	#9 \$7.4 billion
San Diego	#9	#11 \$1.5 billion	#6 \$9.4 billion	#10 1,317	#7 \$8.7 billion
Austin	#10	#10 \$1.9 billion	#10 \$6.6 billion	#8 1,376	#12 \$3.7 billion
Philadelphia	#11	#8 \$3.0 billion	#12 \$4.8 billion	#11 1,003	#11 \$5.4 billion
Atlanta	#12	#12 \$1.15 billion	#11 \$5.0 billion	#12 837	#8 \$7.8 billion

Source: PitchBook. *New York and San Jose technically tied but given San Jose's exit value and VC invested we gave it second place. Note that PitchBook uses the US Census Bureau definition and delineation of metropolitan statistical areas.

Common growing pains

Boston's current economic condition & recent trends

Boston presents an intriguing blend of trends that have been observed in other popular, urbanized metropolitan areas covered in our Venture Ecosystem series. The Boston MSA is one of the more expensive rental markets in the US—recently falling to fifth place from third place at the start of 2016 [per Zumper](#)—yet home price indices are toward the upper end of the market, judging by the S&P Case-Shiller Index, somewhat like parts of the New York MSA. Much like Seattle, it boasts a very lofty proportion of college-educated residents. Clearly the Boston MSA enjoys some of the benefits of concentrated wealth and talent, given the prices people are willing and able to pay. GE recently moved its headquarters to Boston's waterfront, reminiscent of the multiple corporations that recently moved to either the city of Chicago itself or its immediate suburbs. Last but not least, Boston's legacy both in tech and more historic industries affects its future and current status, contending with heritages much like those of Seattle, Los Angeles and New York.

Accordingly, the picture emerging from the most recent influx of economic statistics is, by and large, one of a slowly growing, wealthy, highly educated urban area. Cost of living consequently is a concern yet, as observed in our prior coverage of New York seems to be an insufficient deterrent. That said, it remains an indicator for fledgling companies looking to rein in payroll costs. An interesting factor for the Boston scene in particular is that of real estate. As opposed to San Francisco, it's not

just an issue of affordable housing (although that is a concern, it's largely one for the broader population as opposed to specifically tech sector employees) but also that of lab space, given Boston is a biotech hub. Taking space constraints into consideration, greater Boston is now hosting more and more startups—Kendall Square has a vacancy rate of less than 1%, after all. Legislators and entrepreneurial

advocates are already pushing for solutions, and they are potentially getting them—after all, the Cambridge City Council just approved a zoning change that enables the construction of a 500-foot tower in Kendall Square, twice as tall as the prior height limit. Such measures will be needed; Boston College has just announced plans for a \$150 million science facility, which will surely lure more talent and potential for entrepreneurial collaboration.

Boston metropolitan statistical area (MSA)	Select statistics
Labor force (not seasonally adjusted), September 2017	2.7 million
Portion of residents aged 25 or older holding bachelor's degree, 2011-2015	45.3%
Population growth, 2015-2016	25,000
Population estimate, 2014	4.7 million
Total private nonagricultural employment, 12-month % change, September 2017	2.0%
Unemployment rate, September 2017	3.3%
Compensation cost change for private industry, 12-month, not seasonally adjusted, June '16-June '17	2.7%
Consumer price index YoY % change, September '16-September '17	2.7%
2017 ranking for startup activity	21
Average asking rate for Cambridge lab space, 2Q 2017	\$74.90
Current-dollar GDP % change, 2015-2016	4.1%
Per capital real GDP, % change, 2015-2016	1.5%
Overall growth ranking among largest 100 US metropolitan areas, 2010-2015	36
S&P Case-Shiller Boston Home Price NSA Index, 12-month % change, August 2017	6.91%
Approximate range of change in annual fair market rents, 2-bedroom, FY 2017-FY 2018	2.9%

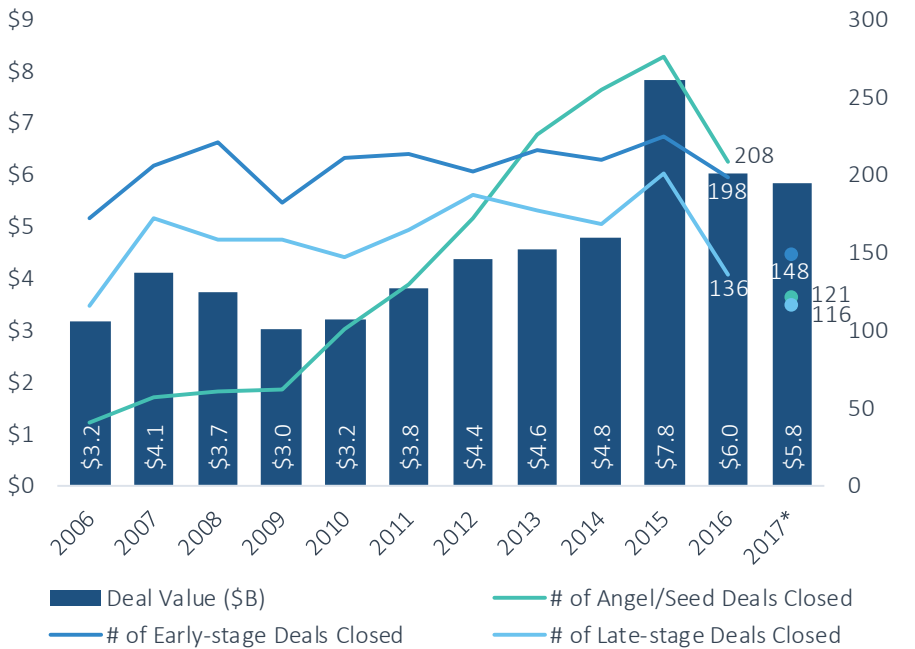
Sources: US Bureau of Labor Statistics, HUD FY 2017 Fair Market Rents, PayScale, Brookings Institution, US Bureau of Economic Analysis, The Kauffman Index, New York State Department of Labor, CBRE, National Apartment Association, Apartment List

The cycle has leveled off

An overview of Boston's venture investment activity

VC invested stays remarkably strong

Boston MSA venture activity



Source: PitchBook. *As of 9/25/2017

Boston's billions

Buoyed significantly by multiple mega-deals, such as Intarcia Therapeutics' \$524.6 million Series EE financing, the Boston ecosystem has raked in a remarkably large amount of capital given the decline in the number of companies receiving financing. Current US macro trends in venture financing are defined by an abundance of capital even as recent hubristic heights of sentiment are moderating; financing volume is diminishing even as capital invested, median deal sizes, etc. remain high. The Boston MSA is overall no exception as of late, but its numbers are quite healthy on a longer timeframe.

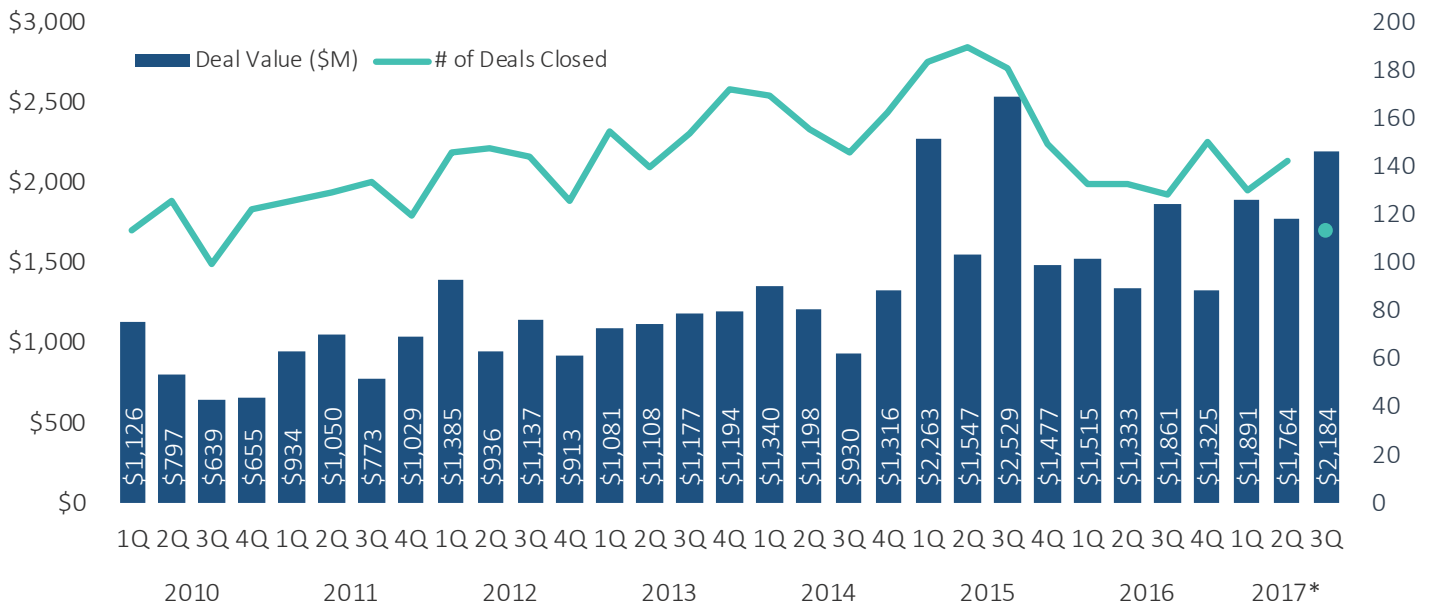
Boston MSA-based companies (#) receiving venture funding

2013	2014	2015	2016	2017*
574	589	654	513	378

Source: PitchBook. *As of 9/25/2017

Quarterly momentum has evened out, by and large

Boston MSA venture activity



Source: PitchBook. *As of 9/25/2017

A competitive, healthy pipeline underpins pricing increases across the capital stack

Early-stage VC in Boston is evolving, driven in part by the surplus of capital available even at the early stage given recent fundraising. Even if, for some, there can never be enough capital for nascent enterprises, on an anecdotal basis there are plenty of dollars to fund all the good ideas meriting injections

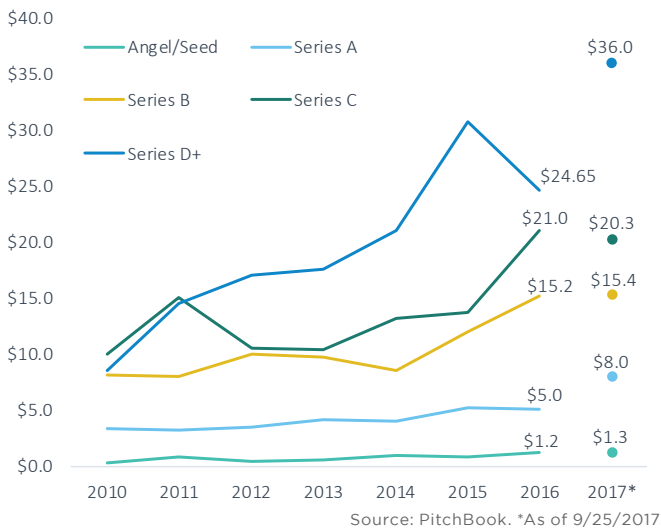
of capital. It is worth pointing out that as fundraising has grown more concentrated among larger funds, even if there is plenty of money available, a lack of firms with differing strategies by stage could hamper effective dispersion of said funds. That has yet to emerge definitively in the Boston ecosystem, however.

In addition, there has been growing sophistication on both sides of a

venture deal, as more and more resources become available for entrepreneurs and newer funding models such as angel syndicates are increasingly institutionalized. Accordingly, there has been a slow but steady increase in virtually every transactional metric, especially between this year and the last. Competition primarily drives such increases, as investors retain their discipline, by and large.

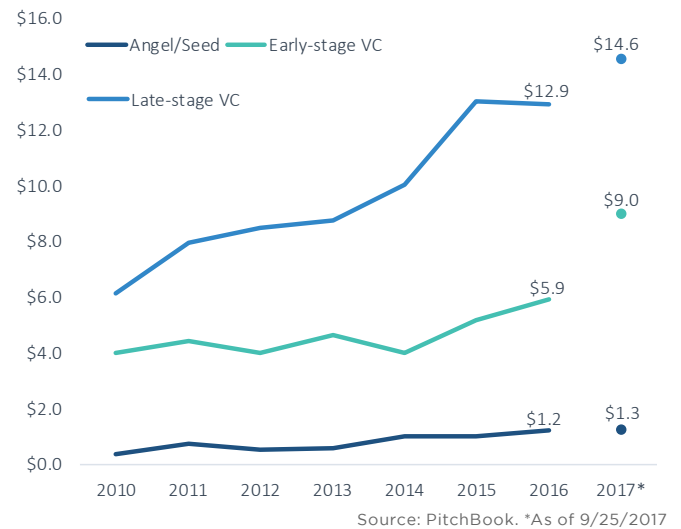
The latest series rebounds significantly

Median VC financing size (\$M), Boston MSA by series



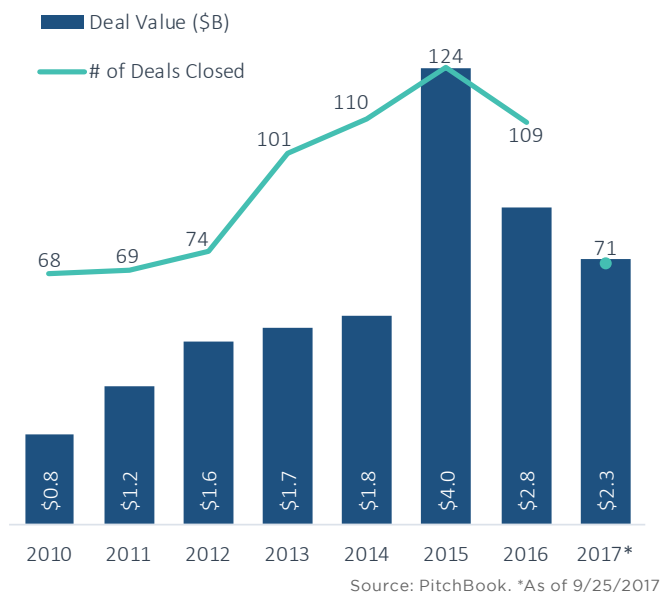
All stages hold steady or increase

Median VC financing size (\$M), Boston MSA by stage



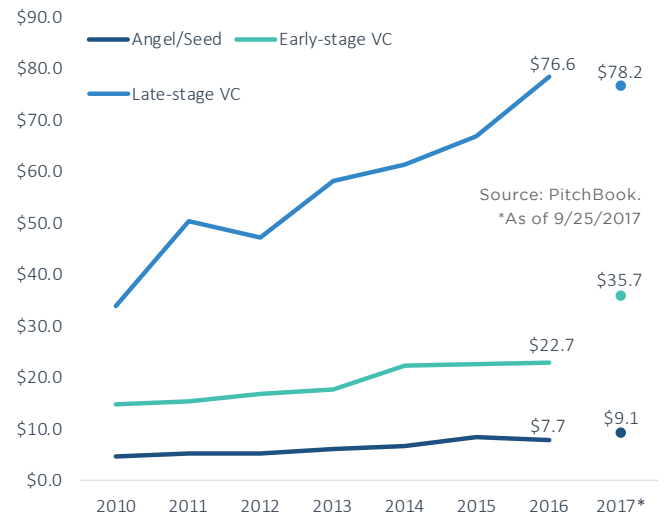
CVCs participate at historically healthy level

Boston VC activity with corporate venture participation



Valuations remain lofty, especially at the early stage

Median venture post-valuation (\$M), Boston MSA



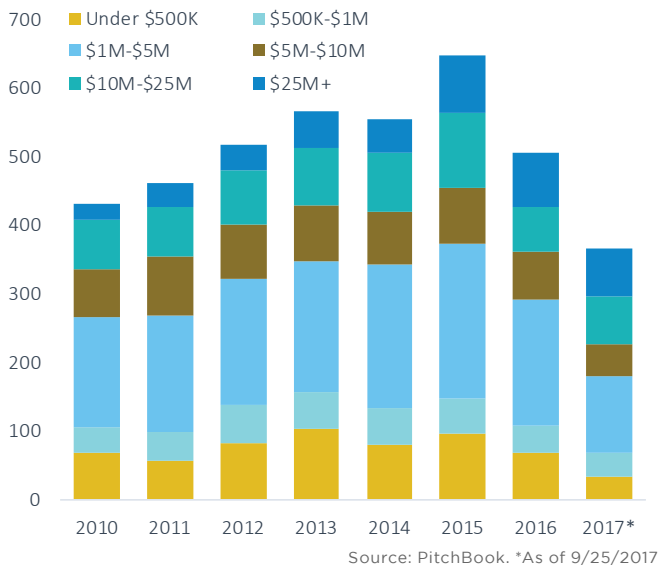
Early-stage growing more segmented, late stage more readily available

Competition and sophistication is further driven by not only significant local efforts at fostering the startup ecosystem but also is exemplified trends in follow-on financing. It's not just that the traditional nomenclature has shifted across the board, it's that the early stage has

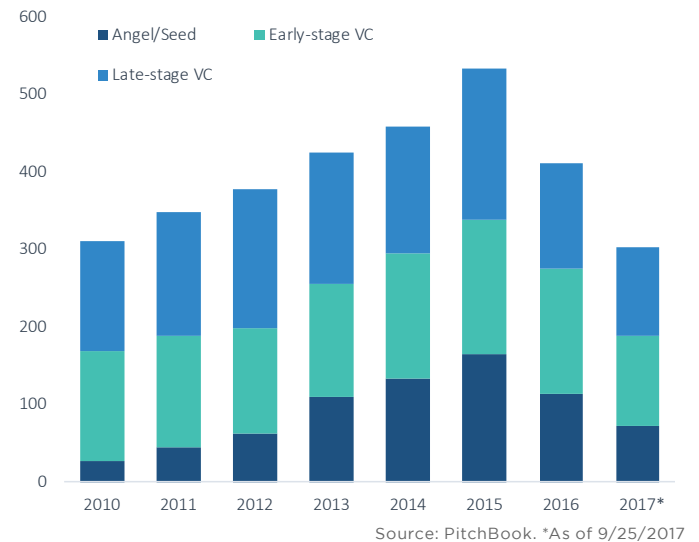
become much more segmented. As seen below, in 2016 and 2017 there was an appreciable increase in the proportion of capital in early-stage follow-on financings, which implies prolonged raises at earlier stages, as well as inflation of early-stage figures. Anecdotally, one investor remarked that Boston has become a staging ground of sorts, with local investors funding at the early stage more

frequently and then explicitly targeting Bay Area investor involvement in later rounds. What is interesting is that late-stage funds seem readily available for dispensing, yet anecdotally there are opinions it is still insufficient. Given the weight of evidence should lean toward the data, it is likeliest capital at the late stage is still accessible, yet not perhaps in such amounts as to satisfy all perceived opportunities, or hurdles are being placed just a bit higher.

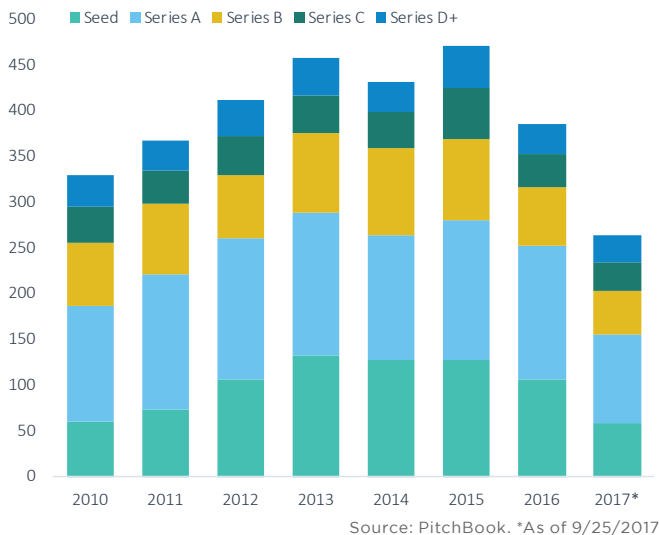
Pricing pressures shift proportions upward
Boston MSA VC activity (#) by round size



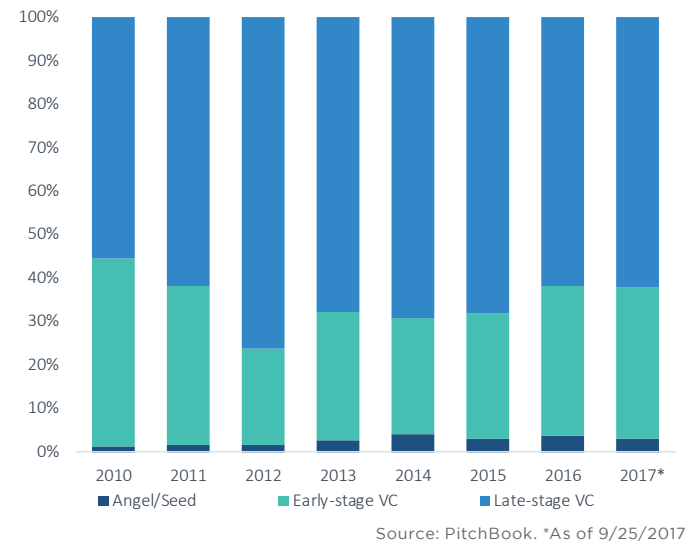
As cycle tempers, later-stage follow-ons are resilient
Boston MSA follow-on VC activity (#) by stage



Traditional nomenclature has changed
Boston MSA VC activity (#) by series



Follow-on VC invested suggests shifting dynamics
Boston MSA follow-on VC activity (\$B) by stage

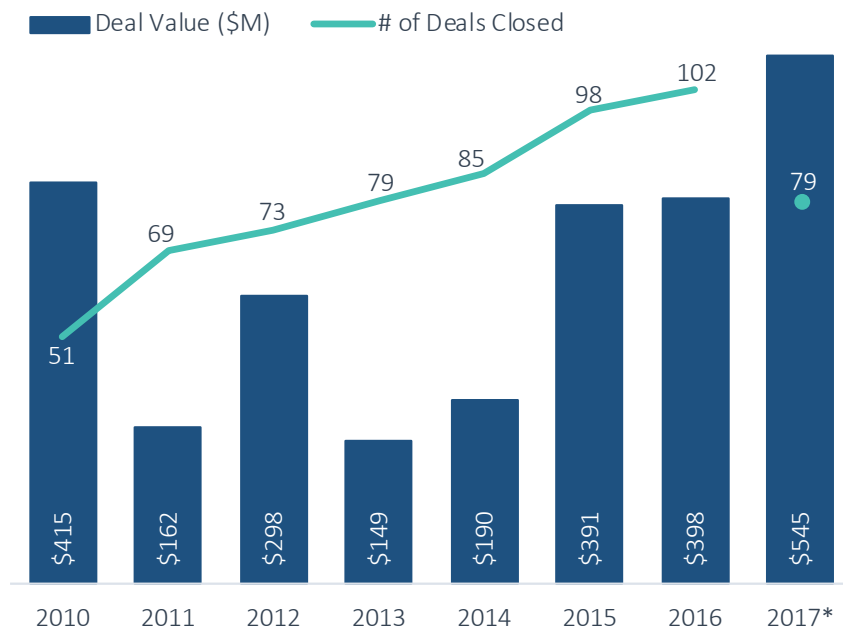


First-time financings reflect current prices & health of Boston ecosystem

A key leading indicator of a venture ecosystem's health is the rate of first financings—if plenty of money is being dispensed via a growing number of financings to young enterprises, it speaks to active investors, growing entrepreneurship and healthy fostering of pipelines, among other attributes. Boston is in very good standing in this regard, having seen steady growth in first-time financing volume over the past several years, as well as a mammoth new high for capital committed to nascent enterprises. Its sheer cluster of talent is a significant driver of this trend.

A new high for funding fledgling startups

First-time financings in Boston MSA



Source: PitchBook. *As of 9/25/2017

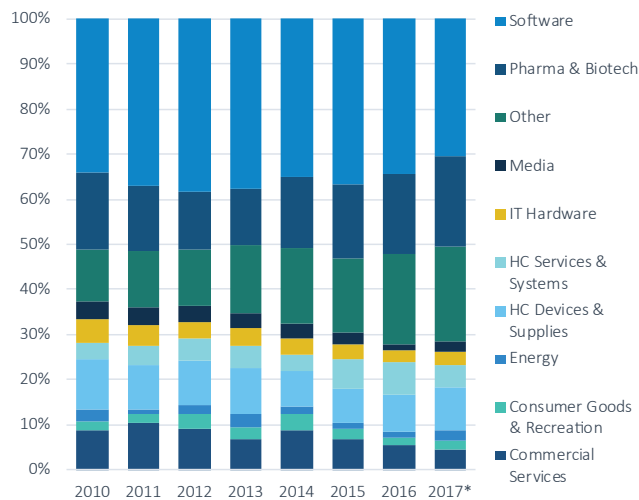
Atlas shrugs off competition, holds top spot

Most active investors in Boston MSA pharma & biotech, 2017*

Atlas Venture	10
Flagship Pioneering	5
Sofinnova Ventures	4
OrbiMed	4
Third Rock Ventures	4
Foresite Capital Management	4
SV Health Investors	3
RA Capital Management	3
Partners HealthCare Innovation	3
ARCH Venture Partners	3
Rock Springs Capital	3
Forbion Capital Partners	3
Deerfield Management	3
Osage University Partners	3
Hatteras Venture Partners	3

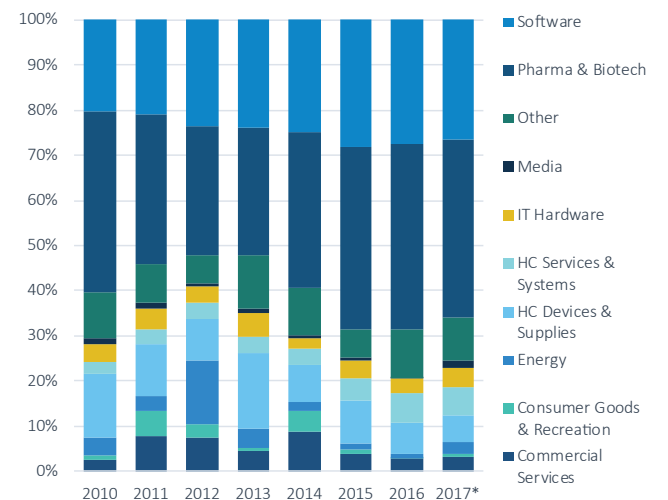
Source: PitchBook. *As of 9/25/2017

Boston MSA VC activity (#) by sector



Source: PitchBook. *As of 9/25/2017

Boston MSA VC activity (\$) by sector



Source: PitchBook. *As of 9/25/2017

Neuroscience & managing your own health intertwining among Boston startups

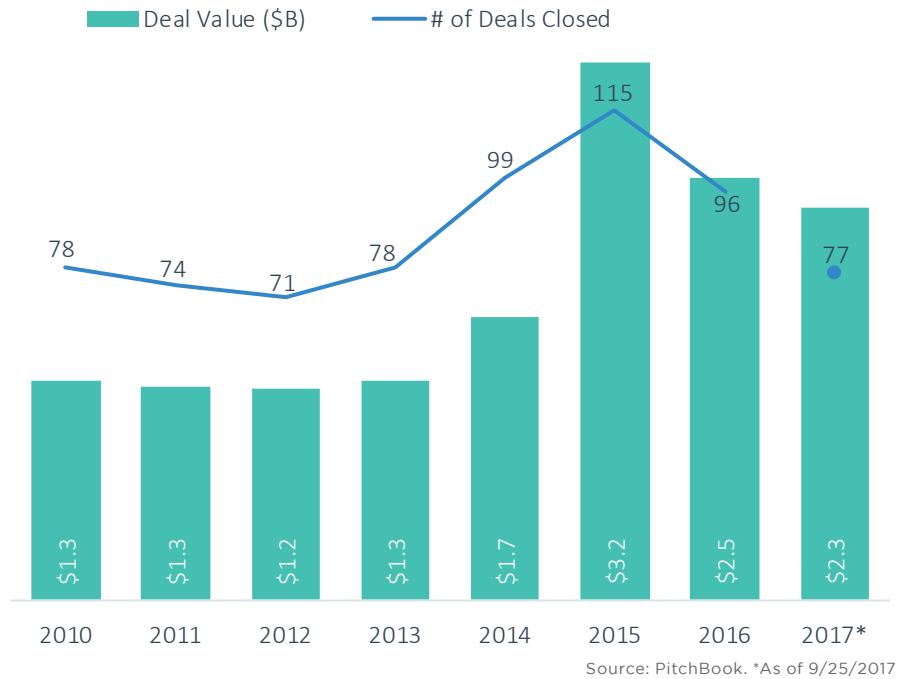
Bruce Booth, Ph.D., partner at Atlas Venture, recently opined that neuroscience is becoming a growing focus for startups in general. It's clear there is substantial need for more businesses to focus on neurological conditions, given the macro trend of aging populations in most developed nations. However, that isn't the sole driver.

For some time now it has become clear that personal ownership of health conditions, as well as a holistic view of how such conditions intertwine, is one of the more effective approaches to transforming the current healthcare model. A hotspot of biotech innovation, Boston is seeing plenty of activity with regard to central nervous systems disorders—although not in Boston, perhaps the most attention-grabbing relevant example of how popular the space is becoming is Denali Therapeutics' raise of \$130 million in Series B funding last year to develop therapies treating such diseases. The holistic, preventive approach is well exemplified by a Boston-based company—lora Health, a primary-care business that utilizes nonphysician health coaches to guide patients in their health management. lora Health also raised in summer 2016, a whopping \$75 million Series D round.

Such a model and developments in neurological therapies are more closely aligned than one may think, as true understanding of how mental activity affects overall health is one of the key frontiers in medicine currently. So, to effectively put the whole-person view of healthcare management in practice, greater understanding of neurological conditions will be necessary.

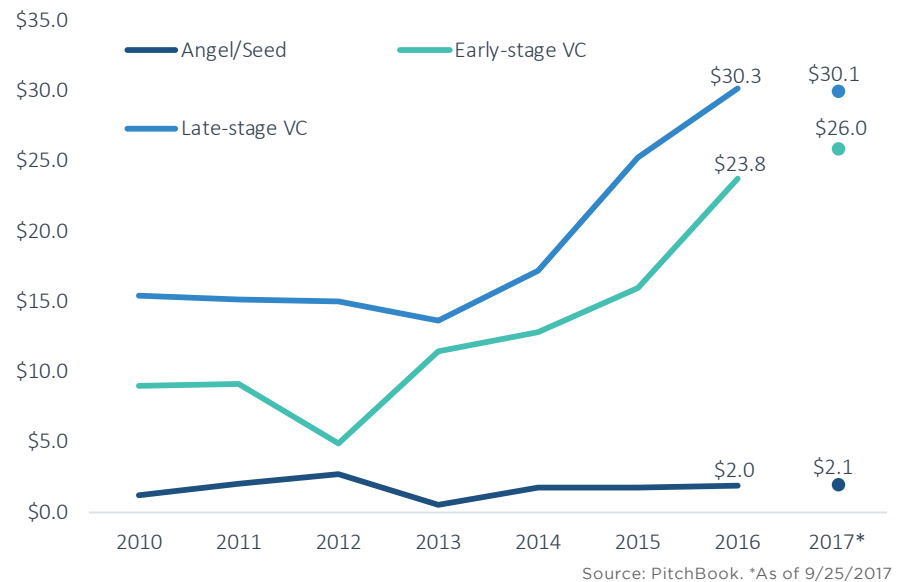
Larger biopharmas continue to outsource R&D

Pharma & biotech VC activity, Boston MSA



Unending rises at the early stage over the past three years

Median VC financing size (\$M) in pharma & biotech by stage, Boston MSA



Outside investors dial up the dollars

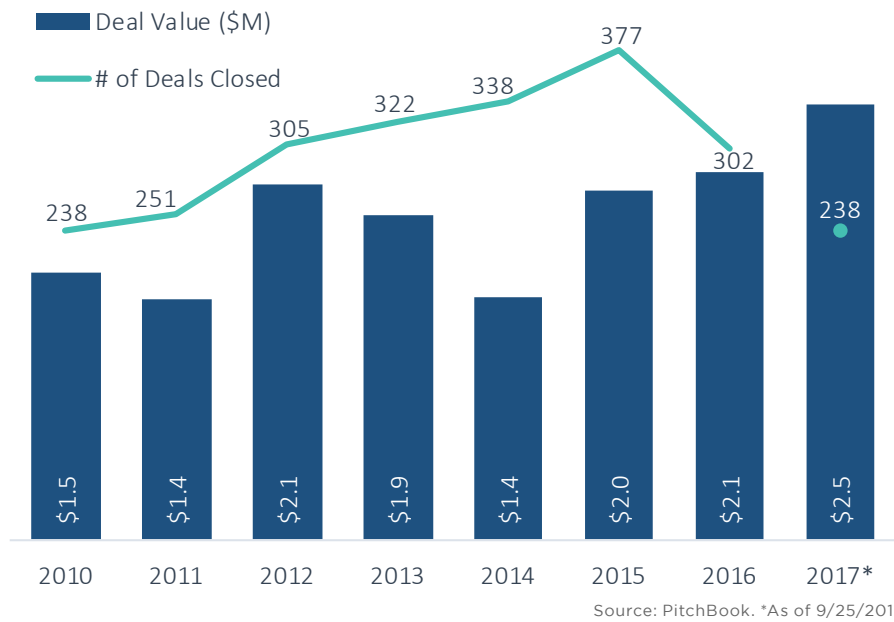
Although it is clear annual figures can vary considerably, 2017 has already seen the most invested by outside firms in Boston MSA-based companies in years, at \$2.5 billion across 238 financings—skewed heavily by mega-deals. Although volume has

slid somewhat since the 2015 peak, 2017 should end up about on par with 2016 by year's end. This speaks to the maturation of the US venture industry more than anything else, as larger firms look across the nation for worthwhile opportunities, tapping their satellite locations should they have

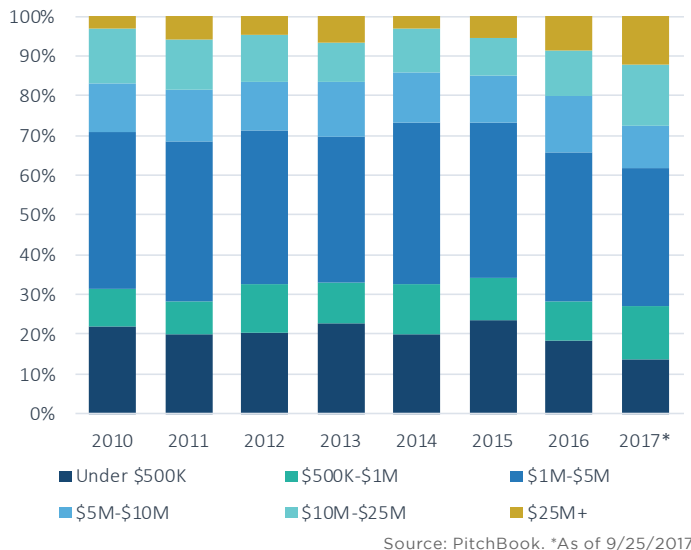
them. The concentration of capital between the Boston and New York metro axis also contributes to fruitful cross-pollination when it comes to flows of capital.

What is most striking, however, is the degree to which outside investors are contributing to overall surges in VC invested in later rounds. On an anecdotal basis, later-stage rounds can become much larger once a handful of established West Coast VC firms participate, although competition in those financings has yet to truly affect trends in term sheets. It should be noted that it isn't purely a phenomenon of outside investors rolling into Boston—at a certain point of scale, companies still often look west to fundraise, particularly as they stay private for longer. Although Boston does possess a more diverse and rich array of capital investors, there still is a need at times for significant injections of growth capital from outside. As Silicon Valley still remains preeminent as a venture ecosystem and, moreover, is also a thriving biotech hub, outside investment looks to remain strong going forward.

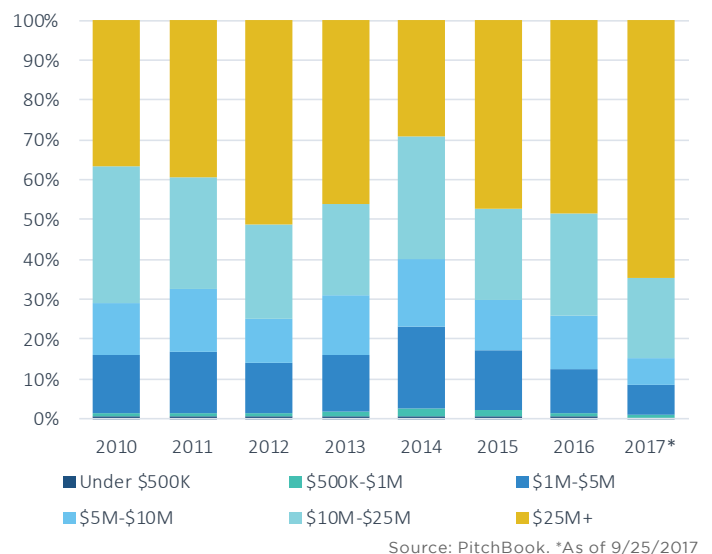
Investment in Boston MSA-based companies by investors HQ'd outside Massachusetts only



Investment (#) by size in Boston MSA-based companies by investors HQ'd outside Massachusetts only



Investment (\$) by size in Boston MSA-based companies by investors HQ'd outside Massachusetts only



A steady clip of liquidity

Datasets of venture-backed exits and local venture fundraising in Boston MSA

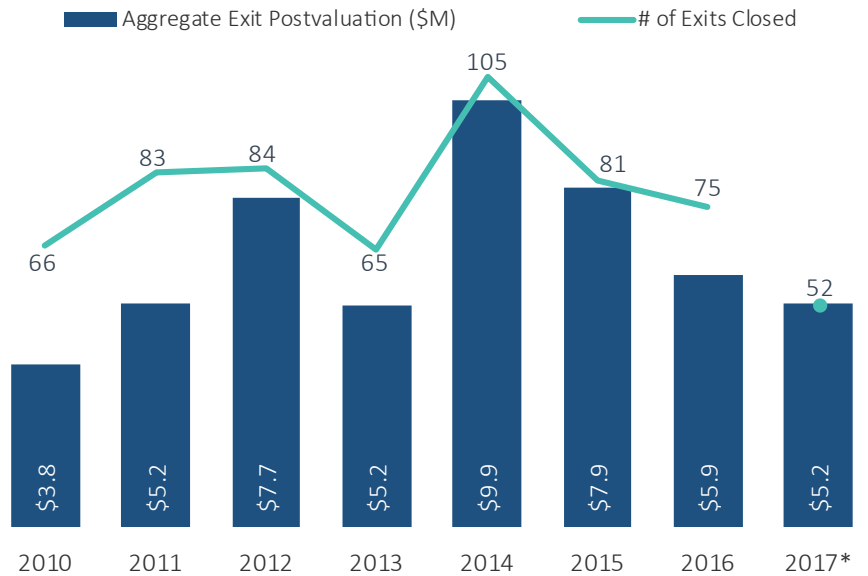
Liquidity trends underpinned by corporate acquirers

As larger biopharmas look to outsource R&D still, their importance to biotechs isn't solely restricted to corporate venture funding. Instead, the sheer prevalence of corporate acquisitions in fueling venture-backed liquidity speaks to how critical large strategics are in enabling a healthy recycling rate within the Boston ecosystem. Perhaps the most recent prominent example was Bristol-Myers' purchase of small-molecule drug developer IFM Therapeutics for \$2.3 billion in September.

It should be noted, however, that it's not just biotech powering Boston's steady exit rate. As the city's tech scene remains thriving, particularly in the realms of cybersecurity and

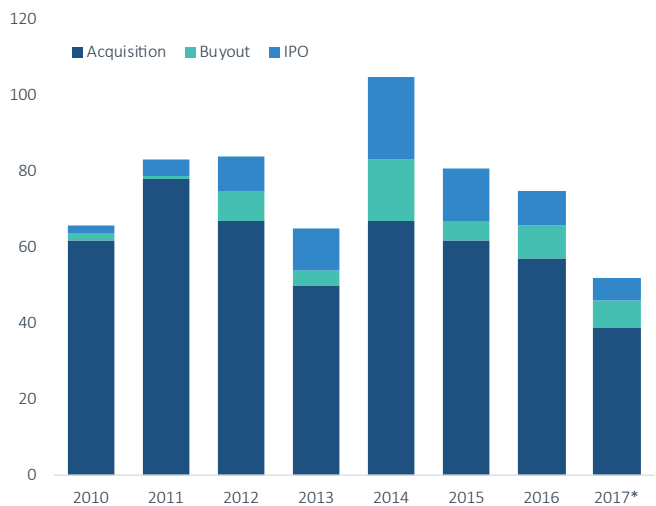
Volume roughly on par with historical levels, outlier-skewed values

Venture-backed exits of Boston MSA-based companies



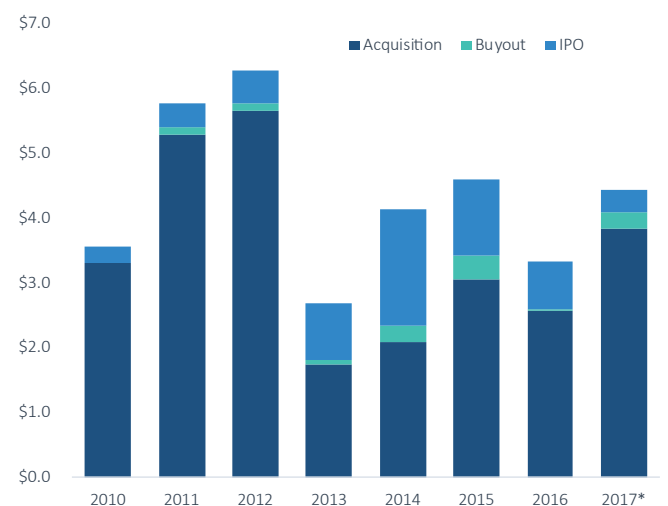
Source: PitchBook. *As of 9/25/2017. Note: Aggregate exit post-valuations are included to better represent the total value created by IPOs in particular. They include IPO post-valuations, which are calculated as total shares outstanding multiplied by offering share price.

Venture-backed exits (#) by type of Boston MSA-based companies



Source: PitchBook. *As of 9/25/2017

Venture-backed exits (\$B) by type of Boston MSA-based companies



Source: PitchBook. *As of 9/25/2017

The bulk tends toward the healthy midrange

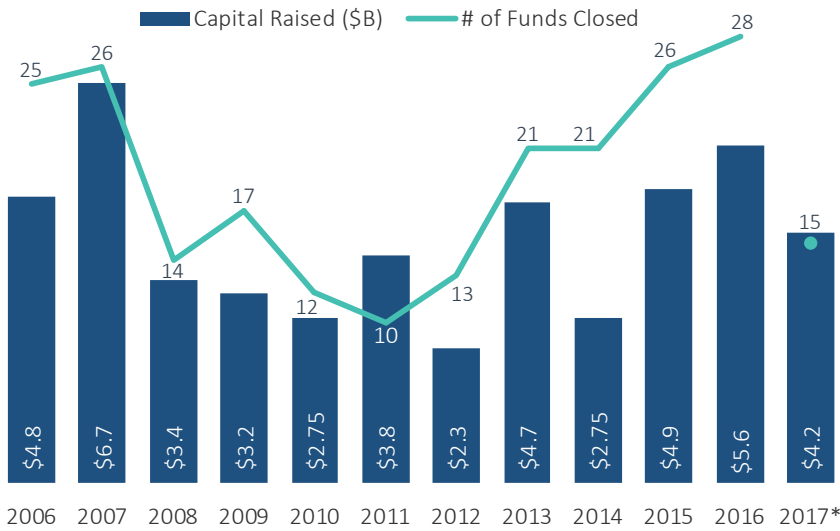
Percentage of Boston exits separated by multiple on invested capital (MOIC), 2006-2017*

Under 1x	1-2x	2-3x	3-5x	5-10x	10-15x	15-20x	20-25x	25-30x	30x+
17.7%	14.3%	12.7%	18.7%	21.3%	4.3%	3.0%	1.7%	2.0%	4.3%

Source: PitchBook. *As of 9/25/2017. This table recreated and updated the same methodology as used in this article, excepting the inclusion of buyouts in this dataset. <https://pitchbook.com/news/articles/which-us-cities-generate-the-best-vc-returns>

Fundraising has been on a tear

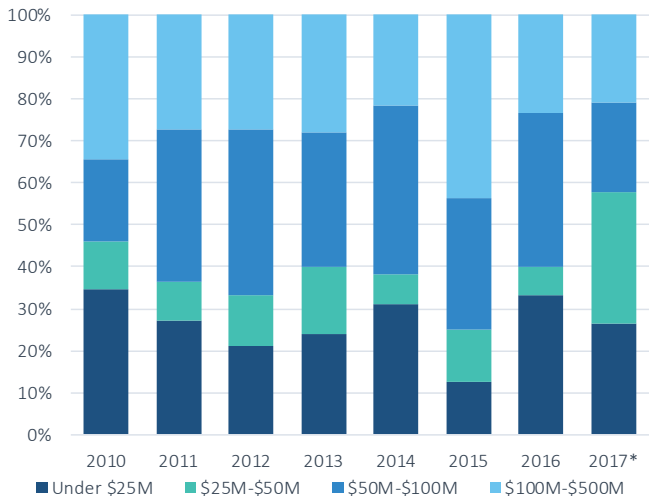
Boston MSA venture fundraising



Source: PitchBook. *As of 9/25/2017

Fewer but larger exits by size in 2017 to date

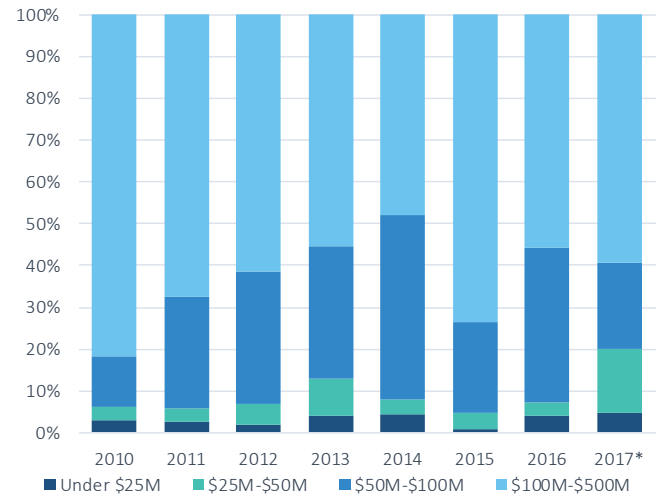
Venture-backed exits of Boston MSA-based companies (#) by size



Source: PitchBook. *As of 9/25/2017

Exits have tended toward the larger as of late

Venture-backed exits of Boston MSA-based companies (\$) by size



Source: PitchBook. *As of 9/25/2017

robotics thanks to its significant engineering talent clusters among other factors, businesses such as autonomous driving software producer nuTonomy are to be found. Delphi Automotive agreed to purchase that company recently for \$450 million all told; nuTonomy received only one official round of funding, a \$23.35 million Series A infusion in 2016. It's worth pointing out that given the preponderance of biotechs in the area, such relatively early exits aren't unheard of in the Boston area. Drug developers don't necessarily need as much time for development as is perceived, they simply need to reveal transformative therapies' potential to justify an acquisition or debut on public exchanges.

Select League Tables

Select rankings of most active investors and deals in Boston

Ready for the next round: companies (#) by time since most recent round

Most recent round type	9-12 months	12-18 months	18-24 months
Angel/seed	45	53	36
A	25	22	21
B	12	12	10
C	58	76	65

Source: PitchBook. *As of 9/25/2017

Most active investors in Boston MSA, 2017*, across all stages

Launchpad Venture Group**	14
Accomplice VC**	13
GV	12
General Catalyst Partners**	10
Atlas Venture**	10
New Enterprise Associates	9
Alexandria Venture Investments	7
Matrix Partners	6
F-Prime Capital Partners**	6
Founder Collective**	6
Flagship Pioneering**	6

Source: PitchBook. *As of 9/25/2017. **Denotes a Boston MSA-based firm.

Top 2017* venture rounds of companies headquartered in Boston MSA

Company	Deal size (\$M)	Series/stage	Sector
Intarcia Therapeutics	\$524.6	Series EE	Drug Discovery
WuXi NextCODE	\$240.0	Series B	Enterprise Systems (Healthcare)
Fuze	\$134.0	Series F	Communication Software
Rubius Therapeutics	\$120.0	Series B	Biotechnology
DraftKings	\$118.7	Series E1	Entertainment Software
Desktop Metal	\$115.0	Series D	Electrical Equipment
Toast (restaurant management)	\$101.0	Series C	Business/Productivity Software
PatientsLikeMe	\$100.0	Late-stage	Information Services (B2C)
Cybereason	\$100.0	Series D	Network Management Software
ClearMotion	\$100.0	Series C	Automotive
Homology Medicines	\$83.5	Series B	Biotechnology
Kaminario	\$75.0	Series F	Storage (IT)

Source: PitchBook. *As of 9/25/2017

League tables are compiled using the number of completed VC rounds for Boston MSA-based companies. To ensure your firm is accurately represented in future PitchBook reports, please contact survey@pitchbook.com.

Venture capital

Venture capital, for the purposes of this report, is defined as institutional investors that have raised a fund structured as a limited partnership from a group of accredited investors, or a corporate entity making venture capital investments.

Valuations

Pre-money valuation: the valuation of a company prior to the round of investment. Post-money valuation: the valuation of a company following an investment.

Exits

This report includes both full and partial exits via mergers and acquisitions, private equity buyouts and IPOs.

Fundraising

This report includes Boston MSA-based venture capital funds that have held a final close. Funds-of-funds and secondary funds are not included.

We do
pre-money valuations,
cap tables,
series terms,
custom search,
growth metrics.

You invest
in the next big thing.

See how the PitchBook Platform can
help VCs invest smarter.

demo@pitchbook.com

 **PitchBook**

