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CREATING A PIPELINE FOR STARTUPS IN HOUSTON, TEXAS

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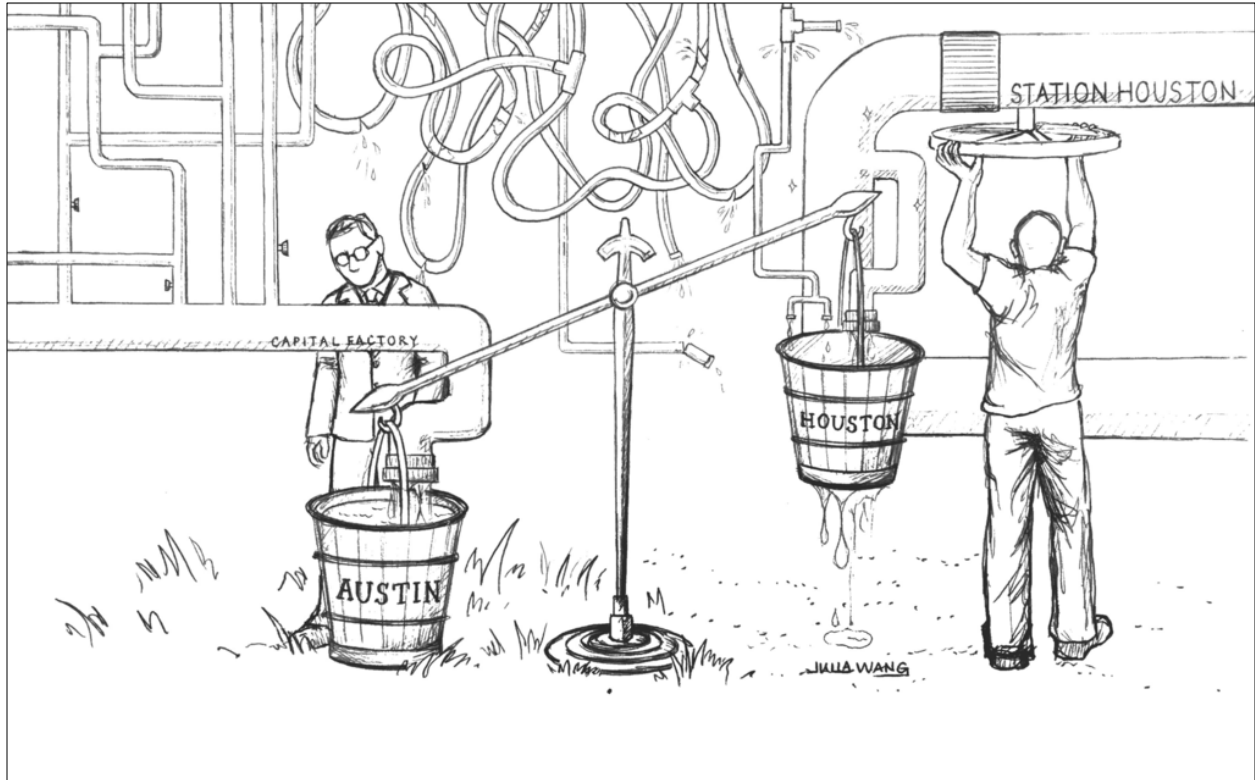
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“Creating a Pipeline for Startups in Houston, Texas”



Creating a Pipeline for Houston's Startups, by Julia Wang, McNair Center intern, 2017

Introduction

Along with entrepreneurs and their startups, a high-growth, high-technology entrepreneurship ecosystem is made up of lots of different types of specialized participants. Historically, the two most important types of participants primarily provided investment. These were venture capitalists and angels. Loosely speaking, venture capitalists raise funds from outside investors and buy equity in startup companies. Angels are similar but use their own money.

In the last decade or so, some new institutional forms have emerged that specialize in the training of startup firms. These include accelerators, incubators, and hubs, as well as cofounders and seed funds. They are all now mainstays of successful entrepreneurship ecosystems.

There are around 500 high-growth, high-technology firms currently listed on the New York, NASDAQ, and American stock exchanges. Each of these firms received venture capital before its initial public offering (IPO).¹ There are also currently around 5,000 U.S.

¹ Data from COMPUSTAT from Wharton Research Data Services for publicly traded firms and Thomson VentureXpert for venture capital investments.

firms that are actively receiving venture capital investment. These firms hope to achieve a successful “exit,” generally either an IPO or an acquisition. Behind them, there are likely somewhere around 50,000 U.S. firms that aspire to receive venture capital. Many of these firms now take advantage of dedicated training programs to improve their odds of success.

In this paper, we examine the startup training institutions in Houston, Texas, and what they are doing to open up the city’s pipeline of startup firms. Recent academic research has shown that startup training institutions can have an enormous positive effect on an ecosystem’s growth. For example, Fehder and Hochberg (2014) claim that the opening of a new accelerator program leads to a 104% increase in the number of startups receiving seed and early-stage venture capital for the first time.²

Table 1. Houston’s Startup Institutions

Name	Type	Year
HTC	Incubator	1999
Fannin	Cofounder	2005
Redhouse	Incubator	2011
SURGE*	Accelerator	2011
START	Co-working	2012
OwlSpark	Accelerator	2013
RED Labs	Accelerator	2013
NextHIT	Accelerator	2014
TMCx	Accelerator	2014
JLABS @ TMC	Incubator	2016
AT&T @ TMC	Incubator	2016
Station	Hub	2016

The opening of a new accelerator program leads to a 104% increase in the number of startups receiving seed and early-stage venture capital.

Source: McNair Center

*Note: SURGE closed in early 2016

² Daniel C. Fehder and Yael V. Hochberg, “Accelerators and the regional supply of venture capital investment,” September 19, 2014, available on SSRN or at <http://www.seedrankings.com/pdf/accelerators-and-regional-supply-of-vc-investment.pdf>.

What are Accelerators and Incubators?

Accelerators are 12- to 16-week boot camp-style programs, where management teams of nascent startups go to get trained in all aspects of high-growth, high-technology entrepreneurship.³ Accelerators train up to four cohorts of startups each year, and each cohort company typically graduates with a public pitch event. Many accelerators take a small equity position in their cohort companies in exchange for their training, but some charge fees and some also provide financing. There are more than 250 high-growth, high-technology accelerator programs currently active in the U.S. that have provided training to more than 10,000 startup firms.⁴

Incubators provide managed working spaces, programs, and services, often in partnership with other service providers like accounting, marketing, and software development firms. They tend to not have a formal curriculum or a fixed duration to their programs. A startup firm will move in and pay (sometimes in equity) for rent and services, and have their growth guided by mentors. There are thousands of incubators in the U.S. but only a fraction of them specialize in high-technology, high-growth startups.

Expertise and Objectives

Accelerators and incubators fall into four main groups. Private (for-profit) accelerators and incubators are the most common. TechStars and Y Combinator are famous, prototypical examples. Private accelerators have to create value for their cohort firms to succeed themselves. Many private accelerators are run by highly successful serial entrepreneurs or venture capitalists.

Corporate programs are the second most common. They are run by large incumbent firms. JLABS—the Johnson & Johnson program—and Microsoft’s corporate incubator are famous examples. Sometimes corporate programs are set up with the goal of making money themselves, but sometimes their parent corporation’s main goal is to find new ideas in their space, which means that these programs can be less aggressive.⁵ Incumbent corporations engage with startups in many different ways—they acquire them, license technologies to and from them, enter into joint ventures with them, partner with them, and can be crucial and principal early adopters of their products. The leadership teams of corporate accelerators may be experienced in some or all of these activities.

³ Susan Cohen and Yael V. Hochberg, “Accelerating Startups: The Seed Accelerator Phenomenon,” March 30, 2014, <https://ssrn.com/abstract=2418000> or <http://dx.doi.org/10.2139/ssrn.2418000>.

⁴ McNair Center data on accelerators and their cohorts.

⁵ Recent research on corporate venture capital funds suggests that a typical fund is run to create absorptive capacity for its parent’s research and development activities. See Song Ma, “The Life Cycle of Corporate Venture Capital,” September 14, 2016, https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2691210. Similar findings may apply to corporate accelerators.

Nonprofit programs typically have the development of their local ecosystem as their primary objective. They are often started with federal or state-level support, and are frequently partially supported by philanthropy. Although the best way to develop an ecosystem is to create success, using donated or taxpayer money to make a small number of individuals rich can create tension.

Some nonprofits have overcome this issue. MassChallenge, a regional accelerator, had its curriculum and program designed by leading academics at MIT. Although MassChallenge is not trying to create wealth for its founders, it was explicitly designed—and studied and redesigned—to create success by some of the best academic minds specializing in this field.

Finally, university-based accelerator or incubator programs provide real-world entrepreneurship training to enrolled university students. Although they would like to create successful startups, they are generally more concerned with creating future entrepreneurs. Some universities do run nonprofit accelerators and incubators instead or as well. These are generally open to wider audiences. The success of both inward- and outward-facing university entrepreneurship programs likely depends on the quality of their associated faculty, especially in terms of their entrepreneurship experience, as well as their teaching and research.

Competition

Some accelerators and incubators operate multiple campuses in different cities. This is most common for private programs, which will open shop wherever they believe there is demand. Pre-existing deal flow—the volume of startups that are eligible to receive a first venture capital investment—is one important characteristic of a good market. But startup companies seeking training will go to whichever program location they think is best for them.

Startups nowadays are very “lean.” They focus on their core competency and rely on partnerships with other firms to do everything else.⁶ A good market for an accelerator or an incubator is therefore one where there are lots of potential partners and customers who will have a good fit with the companies they are training. This fit is particularly important during the program and when a startup is in the early stages of its development.

A good market for an accelerator or an incubator is therefore one where there are lots of potential partners and customers who will have a good fit with the companies they are training.

⁶ See, for example, Eric Ries, *The Lean Startup: How Today's Entrepreneurs Use Continuous Innovation to Create Radically Successful Businesses* (New York: Crown Business, 2011); or Steve Blank and Bob Dorf, *The Startup Owner's Manual: The Step-by-Step Guide for Building a Great Company* (K&S Ranch, 2012).

Entrepreneurship ecosystems can turn sour and stagnate. One cause of this phenomenon is called “crowding out.”⁷ Crowding out is when a nonmarket participant—one that is not taking money from professional investors with the expectation of making the best possible return—undercuts the offers of market-based participants, driving them out of the location. Although there is not empirical evidence that this has happened with accelerators and incubators, it is possible that crowding out has been a material issue for ecosystem participants other than venture capitalists.⁸

Houston Technology Center

The Houston Technology Center (HTC) is a nonprofit incubator. It was founded in 1999 through a collaboration between the City of Houston, Rice University, The University of Texas, NASA, the Greater Houston Partnership, and other notable local institutions and individuals.⁹ Even before the dot-com crash, the HTC’s founders observed that the city’s “entrepreneurial ventures often fail or relocate outside of Houston.”¹⁰ The HTC was created to be a catalyst to reverse that trend.

The HTC’s main location is a 50,000 sq. ft. facility in Midtown.¹¹ It focuses on assisting emerging companies from five technology sectors—energy, IT, life sciences, aerospace, and nanotech—by introducing them to its extensive “provider network” of local companies and individuals who offer access to services, mentorship, and capital. The HTC also provides office space to its client companies, as well as to other tenants.

⁷ See, for example, James A. Brander, Edward Egan, and Thomas F. Hellmann, “Government Sponsored versus Private Venture Capital: Canadian Evidence,” in *International Differences in Entrepreneurship*, eds. Josh Lerner and Antoinette Schoar (Chicago: University of Chicago Press, 2010); and Douglas J. Cumming and Jeffrey G. MacIntosh, “Crowding Out Private Equity: Canadian Evidence,” *Journal of Business Venturing* 21, no. 5 (2006): 569–609, among others.

⁸ There are three theoretical requirements for crowding out. First, there must be information problems that prevent the entrepreneurs from correctly discerning the quality of the ecosystem participants. Entrepreneurship is rife with such information problems. Second, success comes from both selection and treatment. For crowding out to occur, there must be an overlapping selection of startups between nonmarket and market-based participants, and the nonmarket participants must provide inferior treatment, lowering the odds and scale of success of their startups. And third, nonmarket participants must be able to survive despite making lower returns, or be replaced by other nonmarket participants. The second and third issues are closely linked. Nonmarket participants do not experience the market’s level of competitive pressure from their investors; they are not compelled to provide competitive levels and quality of treatment, and do survive while generating noncompetitive returns.

⁹ The HTC has been supported by federal grants, local tax initiatives, state funds, and philanthropic contributions, as well as the fees and warrants provided by its client companies. In recent years, the HTC has received between \$2m and \$3m per year from grants and contributions.

¹⁰ See www.houstontech.org/aboutus.htm, retrieved October 4, 1999, by the Internet Archive at <https://archive.org>.

¹¹ In August 2002, the HTC moved to its current headquarters — a then 26,000 sq. ft. space at 410 Pierce Street, with 12,000 sq. ft. set initially aside to provide office space to startup companies.

Over the course of its 18-year history, the HTC coordinated investment for a range of capital providers. These included a state-government venture fund, a local angel investment network, a prize competition, and a sidecar fund.¹² The HTC also expanded geographically, adding three additional campuses in the Greater Houston Area, as well as two international programs.

In 2010, the HTC moved from a model of only charging fees to one where it also took an equity position in its client companies. It currently charges a \$250 application fee, and successful applicants can choose between providing warrants for 4% of their ownership interest, or providing 2% in warrants and a \$1,500 per year fee.

Blurring the Lines

Seed funds and cofounding firms blur the lines between investors and accelerators or incubators. A seed fund provides investment, which typically comes with mentorship. And cofounding firms provide a cofounding mentor, who also typically provides their own investment or brings a syndicate of investors. Both may run training programs and provide facilities. When they do, they are often classified as accelerators or incubators, depending on whether they have a formal fixed-length curriculum.

Fannin Innovation Studio is a small for-profit cofounder based in Houston that opened its doors in 2005. Fannin reports that it has worked with nine startups to date. It advertises access to industry experts, on-board direction, and general startup services like conference rooms and business materials. However, the heart of Fannin is its three cofounders, who try to help guide their businesses to success.

Houston's only for-profit incubator also blurs the lines. Redhouse Associates has taken just five client companies into its incubator program since its inception in 2011. Its associated seed fund, which makes investments between \$50,000 and \$1 million, lists 13 active investments, as well as 10 successful exits. Three of the five founders of Redhouse were cofounders of one of these exits—The Planet, which was acquired by SoftLayer in 2010. Redhouse's chairman and principal is one of Houston's notable serial entrepreneurs.

¹² In 2004, the Houston Angel Network joined the HTC, which created its Technology Champions Program to showcase its firms. And in 2005, the HTC became the Gulf Coast Innovation Center (GCIC) for the newly formed Texas Emerging Technology Fund (TEFT). Gov. Rick Perry launched the TEFT with \$200m of state capital under management, and this was expanded to over \$500m by the Texas Legislature in the following years. The Goradia Innovation Prize offered \$100,000 to nine winners each year beginning in 2010. The McNair Houston Ignition Fund offered opt-in, warrant-based investment to any startup accepted to the HTC acceleration program beginning in 2014.

A Market for Success?

Beginning in 2011, a number of new accelerators entered the market for training entrepreneurs in Houston. These included SURGE Ventures, Houston Health Ventures' NextHIT, the TMCx and its associated resources, and two university accelerators—OwlSpark and RED Labs.

SURGE Ventures was an accelerator with an associated seed fund that focused exclusively on startups targeting opportunities in the energy sector, including the oil and gas industry. SURGE was run by a serial entrepreneur. It accelerated 32 companies through four cohorts of classes from its opening in 2011 until its closure in early 2016. Although SURGE cited a lack of industry support as a key reason for shutting down its accelerator, it was Houston's most successful entrepreneurship training program by many measures. SURGE closed its doors at a time when the price of oil was \$39.72 per barrel.¹³

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Houston Health Ventures' NextHIT accelerator has had just eight startups go through its program since its founding in 2014. Based at the University of Houston, the NextHIT accelerator runs an eight-week program for health care-based IT and medical device startups. The experience of some of its board of directors, its niche market position, and its pairing with the Houston Health Ventures fund makes the NextHIT accelerator a possible pipeline for startup firms in the future.

Houston, Texas, is home to the world's largest medical center, which boasts more than 100,000 employees working in more than 50 million developed sq. ft., and contributes \$25 billion to gross domestic product (GDP).¹⁴ The Texas Medical Center's (TMC) Innovation Institute occupies a 100,000 sq. ft. facility on the edge of the TMC's 1,345 acre campus. In 2014, the TMC Innovation Institute opened TMCx, an accelerator program designed to support early-stage digital health and medical device companies. This four-month program relies on a network of over 120 advisors who support its developing curriculum. TMCx takes applications from all over the world; around 40% of the 59 firms accelerated by TMCx so far have their main office in Houston.

¹³ The West Texas Intermediate crude closing price on April 8, 2016.

¹⁴ "About the Texas Medical Center," accessed May 2017, <http://www.tmc.edu/about-tmc/facts-and-figures/>.

Aside from TMCx, the TMC Innovation Institute is host to two corporate incubators—JLABS and AT&T Foundry. Both opened their Houston locations in 2016. AT&T Foundry has five other locations in North America; Johnson & Johnson’s JLABS has six. JLABS @ TMC has 34,000 sq. ft. of space and lists 37 past and current incubation clients on its website. We do not yet have data on the companies incubated at AT&T Foundry’s Houston location. The TMC Innovation Institute also provides TMCx+, a collection of 600 sq. ft. office spaces, and runs TMC Biodesign, a one-year innovation fellowship program.

OwlSpark at Rice University and RED Labs at the University of Houston are both university-run nonprofit accelerators. They are open to any firm as long as at least one founder is a university student, faculty, staff member, or alumnus. RED Labs requires alumni to be recent graduates, while OwlSpark allows alumni who graduated up to five years previously to participate. Neither program takes equity or charges fees.

Hubs and Co-working

Hubs are the latest and most complex institutional form to emerge as components of entrepreneurship ecosystems. At its core, a hub is a flexible co-working space specializing in startup firms that also provides dedicated programs, classes, and events. Most hubs have their own accelerator program and have office space that is dedicated to venture funds, angel investors, and startup service companies. Some hubs also have their own seed funds.

There are more than 30 hubs throughout the U.S. The Capital Factory in Austin, 1871 in Chicago, and 1776 in Washington, D.C., are famous, prototypical examples. Hubs provide extreme agglomeration; The Capital Factory in Austin provides membership to over 800 individuals working at more than 500 companies. This encourages peer mentorship and creates an informal market for the best ideas and people, letting them flow to where they can have the greatest impact.

One of Houston’s startup co-working spaces, START Houston, is too small to be a hub. START opened in 2012. Although it does not have an accelerator program, or many of the common aspects of a hub, it does provide some programming and services dedicated to startup firms, and it has its own (very small) fund targeted at seed-stage investments.

Station Houston, on the other hand, aspires to be a prototypical hub. It opened its doors at the SURGE Shack—the former home of SURGE Ventures—before moving to a 25,000 sq. ft. space downtown in December 2016. It may move again, likely to its permanent home, in mid-2018.

In under a year, Station has become the de facto cornerstone of Houston’s entrepreneurship community.

“Station,” as it is locally known, was founded by two successful serial entrepreneurs and a venture capitalist. Although it is still in its infancy, Station already hosts many events, provides offices to venture capitalists, angel investors, and some of the most relevant local

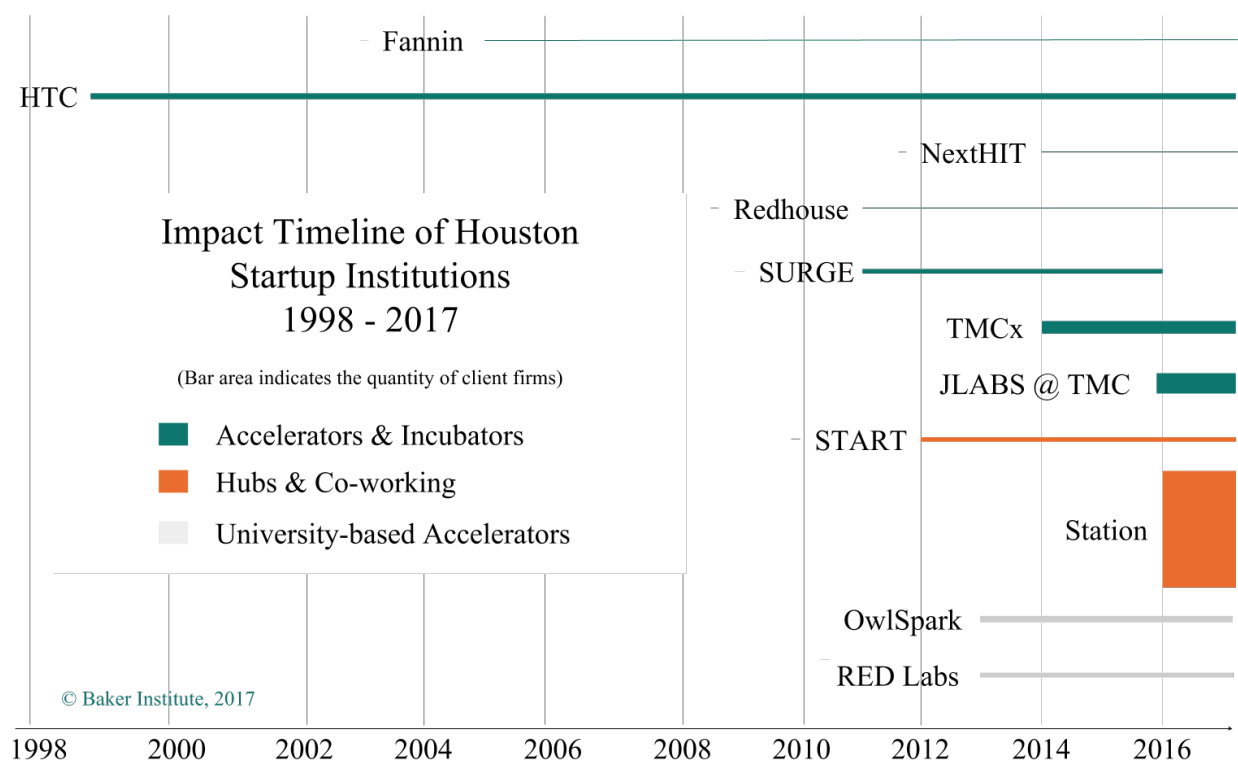
service providers, like application and website developers. In under a year, Station has become the de facto cornerstone of Houston’s entrepreneurship community.

Hubs can have complex business models. They usually charge fees for various tiers of membership and for access to classes and events, and they often take equity from startups accepted to their accelerator programs. Station currently charges membership fees. It has yet to launch its accelerator program. However, hubs sometimes also act as market makers, running government and private competitions and challenges, and coordinating activities for established firms. Given Houston’s unusual industry mix, the city likely needs a hub that can facilitate strong incumbent–startup interaction.

Opening a Pipeline

A good ecosystem pipeline turns out a large quantity of high-quality startup firms that have received top-tier training. Figure 1 provides a timeline of Houston’s startup training programs. The size of the bars represents the total number of client companies each institution has supported to date.

Figure 1. Timeline of Houston’s Startup Institutions



Source: McNair Center data

There are three important findings in Figure 1. First, Station Houston stands out as being much bigger than everything else. This is in part because Station is a hub; only a fraction of its clients will ultimately show the necessary potential, and achieve the requisite maturity, to go through an accelerator program. Station is also very new, so it has been able to take on lots of clients in a short period. However, it still has a long way to go before it hits full scale.

Second, there is a clear burst of activity beginning in 2011, with a recent second wave of entry starting in 2014 and continuing through to the present. Even with the closure of SURGE Ventures, Houston's pipeline is 2,284% bigger today than it was 15 years ago; and it is 1,189% bigger than it was after SURGE's first cohort in 2011.

Finally, Houston's training ecosystem has become much more market oriented. Five out of the 11 institutions active today are for-profit, and two of the remaining six are corporate accelerators.

Measuring Performance

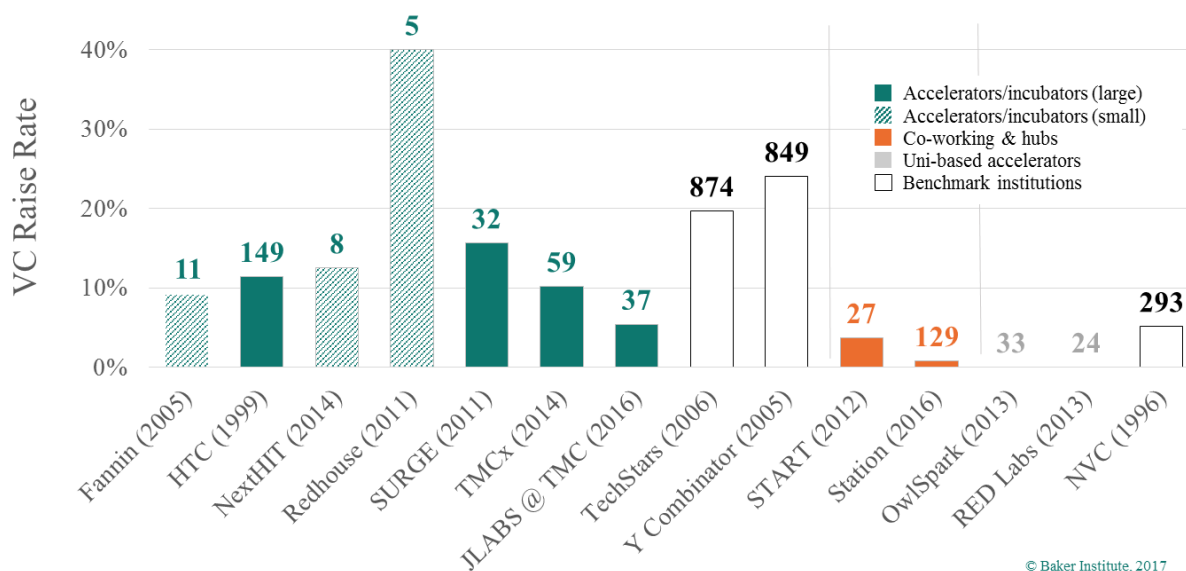
Ultimately, success to a high-technology, high-growth entrepreneur usually means either an IPO or selling their company to an incumbent. However, startups require enormous amounts of capital in order to reach these events. Venture capitalists are the primary providers of this capital. The main measures of performance for an accelerator, incubator, or hub are therefore the fraction of their cohorts that raise venture capital, and the fractions that ultimately go on to achieve an IPO or an acquisition.¹⁵

Houston's training ecosystem has become much more market oriented. Five out of the 11 institutions active today are for-profit.

¹⁵ Performance is also a function of age and measurement timing. Startups take time to mature enough to receive venture investment. When an institution takes on a large new cohort, its performance rating drops until after these startups graduate. Performance measures of very young accelerators and incubators will understate their potential for the same reason. On the other hand, a startup that fails to raise investment within perhaps two years of going through an accelerator program, or within perhaps three years of joining an incubator, is unlikely to ever succeed. Some accelerators and incubators take stagnant startups out of their portfolio, or only declare startups once they appear likely to be successful, which can lead these measures to overstate performance. We generally record each company that appears on an accelerator or incubator's website as a client in our counts. However, in some cases, in order to provide fair comparisons, we are restrictive about which types of clients we include. Our objective is to include client companies that have gone through or are going through a program, rather than those that are just present, using facilities, or receiving informal advice, etc. For hubs, we retrieved member lists from the institutions directly and reviewed them carefully.

Figure 2, below, shows the VC raise rates of Houston’s ecosystem participants against a benchmark accelerator (TechStars) and incubator (Y Combinator).^{16,17} The number of client companies serviced by each ecosystem participant is included at the top of its bar.

Figure 2. Venture Capital Raise Rates for Houston’s Startup Institutions



Source: McNair Center data and Thomson-Reuter’s VentureXpert

Houston’s accelerators and incubators do not perform at the levels of benchmark institutions. Redhouse stands as a sole exception, but with just five cohort companies its measure is not particularly meaningful or impactful. SURGE is around the median in terms of performance for institutions with meaningful counts of cohort companies. JLABS @ TMC is new, having started in 2016, so its performance may increase.

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¹⁶ We restrict venture capital investments to those that are included in National Venture Capital Association (NVCA) annual data, as compiled by Thomson-Reuters VentureXpert. Although not all of the investors in this data belong to the NVCA, the vast majority of “traditional” venture capitalists do. Almost anyone can represent themselves as a venture capitalist. A traditional venture capitalist has institutional investors as limited partners and invests predominantly, if not exclusively, in equity instruments in privately held, high-growth, high-technology companies. This restriction is important as it allows fair comparisons between cities and industries.

¹⁷ We use TechStars and Y Combinator as benchmark institutions for several reasons: they are top quartile accelerators and incubators, but not outliers in terms of their performance; they are both mature with high counts of startups, which makes their performance fairly stable—though TechStar’s VC raise rate does still oscillate between 20% and 25% as it takes in and puts out its new cohorts; and they serve core (rather than niche) markets using methods that anecdotally are considered close to best practices.

It currently has a 5% raise rate, but 22% of all of its cohort companies have secured venture capital. It appears that JLABS @ TMC accepts unusually mature firms into its program.¹⁸ University accelerators try to launch companies with students and so, unsurprisingly, have lower average performance rates than accelerators that provide training to dedicated entrepreneurs. We include the New Venture Challenge (NVC) at the University of Chicago as a benchmark for this type of accelerator.¹⁹

In a similar vein, many startups located in a hub are there for just the environment and the low-cost, flexible working space. The average hub-based startup is too nascent to attend an accelerator program. However, some Station clients have already been accepted to top-tier accelerator programs elsewhere in the United States.

IPOs and Acquisitions

Houston has had only one IPO of a high-growth, high-technology firm that was backed by traditional venture capital: Bellicum Pharmaceuticals. However, it has had 19 acquisitions. Eighteen of these 19 acquisitions were incubated at the HTC. The other one was Meshify, a SURGE Ventures client that was sold to Hartford Steam Boiler, a Connecticut-based insurance and inspection company. The terms of the deal were not disclosed, but Meshify was backed by the Houston Angel Network and Mercury fund, which may make it a local success.

It is equally telling that five outstanding venture capitalists ... have invested in Houston-based firms over the last decade, but none ... went through a Houston-based accelerator or incubator.

Meshify highlights one issue with acquisitions as a performance measure. Unless an acquisition is sufficiently large, or is made by an acquirer that has reporting requirements, the terms of the deal are typically kept secret. Many acquisitions without disclosed valuations are essentially liquidations. Only two of Houston's incubated acquisitions have had their terms disclosed and each sold for less than \$16 million.

¹⁸ Six firms were excluded from the VC raise rate for JLABS @ TMC, as they had all secured their first round of investment—and became VC-backed—before they entered the incubator. It should be noted that two of these firms raised subsequent rounds of venture capital in 2016, which may have been secured after they incubated at JLABS @ TMC. One of these firms—Bellicum Pharmaceuticals Inc.—had also already experienced an IPO on the NASDAQ in 2014. It is not typical for venture-backed firms, let alone publicly traded firms, to attend incubators. Bellicum currently has a market capitalization of around \$420m, though it showed a net loss of around \$70m in fiscal year 2016.

¹⁹ The NVC program is highly regarded and somewhat prototypical of a university accelerator.

Building Networks

There is strong persistence to returns in venture capital—the best venture firms keep on making the best investments year after year—and venture capitalists invest in syndicates.²⁰ Accordingly, building relationships with top-tier venture capitalists is very important and two common measures of performance reflect this. The fraction of venture capitalists that have returned to invest in another startup, often called “repeat VC,” provides a measure of an institution’s network. Likewise, the number of deals done with top-100 VCs (or sometimes top-20 or top-50 VCs) measures an institution’s access to the best venture capitalists. Around 15% of TechStars’ investors are from top-100 venture capitalists and many of its investors return again and again.

*If Houston’s accelerators and incubators could increase their quality ... the city should be able to double its deal flow.
... Station could double the number of Houston’s new deals at its current scale.*

Houston does not do well on either measure but there are some early signs of progress. SURGE Ventures secured at least one top-100 investor—Founders Fund—and perhaps as many as three depending on the ranking used. It is equally telling that five outstanding venture capitalists—Sequoia, Venrock, Kleiner-Perkins, Lightspeed, and Bessemer—have invested in Houston-based firms over the last decade, but none of their portfolio companies went through a Houston-based accelerator or incubator. Repeat investment in Houston has been essentially limited to Mercury Fund, Essex Woodlands, Houston Ventures, and other local institutions.

Opening Houston’s Pipeline

With their current programs, Houston’s accelerators and incubators are capable of graduating around 70 companies per year. The TMCx and JLABS @ TMC account for almost half of this graduation volume. OwlSpark, RED Labs, and the HTC are also sizeable contributors. Except for the HTC, each of these programs takes startups from anywhere in the world. So, at present, just less than half of Houston’s accelerator and incubator graduates are Houston-based companies.

With their current raise rates and local intake proportions, Houston’s accelerators and incubators should be generating around three new Houston-based, venture capital-backed firms each year. Instead, out of the six local companies that received their first round of venture capital in 2016, just one had gone through a local accelerator or incubator program

²⁰ For persistence of returns, see Steve Kaplan and Antoinette Schoar, “Private equity performance: Returns, persistence, and capital flows,” *The Journal of Finance* 60, no. 4 (2005): 1791-1823. For a discussion of the implications of syndicated investment, see James A. Brander, Raphael Amit, and Werner Antweiler, “Venture-Capital Syndication: Improved Venture Selection vs. The Value-Added Hypothesis,” *Journal of Economics & Management Strategy* 11, no. 3 (2002): 423-452.

(JLABS @ TMC). If Houston's accelerators and incubators could increase their quality to that of top quartile programs, and get local success in proportion to their intake, the city should be able to double its deal flow; that is, Houston's accelerators and incubators could add six new deals each year to the city's startup ecosystem.

Station Houston currently supports over 100 client companies. It likely has a final capacity of around 500 startup firms. Station does take firms that have already received venture capital—just over 5% of Station's startups are currently backed by venture capital. Hubs want their startups to cover a broad range of development stages.²¹ This allows peer-based learning, and encourages the flow of ideas and talent to the best opportunities. Once mature, we might expect Station's raise rate to reach the 5% to 10% range. This would mean that Station could double the number of Houston's new deals at its current scale, and at full scale could be generating between four to eight times Houston's 2016 deal flow.

Conclusion

The quality of deal flow coming from its accelerators, incubators, and hubs will be crucial to Houston's future. Quality deals beget quality deals. There is a virtuous cycle as locals build networks with legendary venture capitalists, entrepreneurs compete toward creating unicorns (companies with billion-dollar valuations), and serial achievers stay to train new cohorts and produce new champions.

Absent an ill-advised intervention, the quality of Houston's for-profit entrepreneurship institutions should now depend on local market forces. However, the public sector may be able to provide catalysts to fast-track their growth. Both the City of Houston and the Greater Houston Partnership currently have initiatives examining potential catalysts for Houston. Outside of these initiatives, Houston's focus should be on its nonprofit accelerators and incubators, especially the Texas Medical Center Innovation Institute and the Houston Technology Center. These two nonprofit institutions have already played important roles in Houston's entrepreneurship ecosystem. Going forward, policymakers and industry leaders should be cognizant that each will have both a direct and an indirect effect on local markets.

²¹ Some hubs suggest that firms should move on to their own premises when they reach around 16 employees.