# 2016 THE KAUFFMAN INDEX

# growth entrepreneurship

## METROPOLITAN AREA AND CITY TRENDS

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Ewing Marion KAUFFMAN Foundation

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# Foreword

By Steve Case
Chairman and CEO, Revolution LLC
Co-Founder, America Online

We are entering a new chapter in the history of the economy. Growth entrepreneurship, which is the subject of this report and has always been important for jobs, innovation, and wealth creation, is about to revolutionize real-world sectors as entrepreneurs leverage new internet technologies.

In my new book, the *Third Wave*, I predict that entrepreneurs are on the cusp of rapidly transforming healthcare, education, food, and transportation—even the very nature of work itself. Of all the factors contributing to this looming entrepreneurial renaissance (one that will require corporate leaders to develop a perpetual sense of paranoia and curiosity, and policymakers to rethink how they approach economic issues), there are two I want to highlight: 1) why the Third Wave will be dramatically different and more consequential, and 2) why we have to take note of the emergence of the Rise of the Rest.

**The Third Wave**

The First Wave took place from 1985 to around 1999. It was about building the infrastructure for an online world. Companies like AOL, Cisco, IBM, Apple, Sprint, and Sun Microsystems built the hardware, software, and networks that would make it possible to connect people to the internet. We were constructing the on-ramps to the information superhighway. (Remember that term?) It wasn't easy: When AOL launched, 3 percent of people were online, and for one hour per week! But we grinded away, and by the turn of the century, when AOL and Time Warner merged, we had literally gotten America Online.

The Second Wave, from 2000 through 2015, was about building on top of the internet. Search engines like Google made it easier to explore the sheer volume of information; Amazon and eBay created one-stop shopping; social networks like Facebook let us organize ourselves—and attracted a billion users. Apple and Google helped usher in the mobile revolution leading to millions of mobile apps. The Second Wave was defined by software as a service—social apps like Twitter, Snapchat, and Instagram make sharing ideas and photos easier, or traffic apps like Waze, which weren't practical without ubiquitous mobile connectivity, help us get around.

At this moment the Second Wave is giving way to something more consequential: the Third Wave. The Third Wave is the era when the internet stops belonging to internet companies. It is the era when the term "internet-enabled" will start to sound as ludicrous as the term "electricity-enabled." The biggest industries in the world that most affect our daily lives will finally be disrupted (and improved) as entrepreneurs are finally able to leverage the *internet-of-everything*: Healthcare, Education, Food, Transportation, and Energy.

Much will change: work as we know it—what it means to get a job—will be redefined. Policymakers will have no choice but to

modernize laws and regulatory regimes to support innovation, and protect a new class of workers, or be at risk of falling behind to competitor nations. Iconic corporations will face existential crises faster than they realize. The Third Wave is when the vast potential of the internet will finally be realized—especially for growth entrepreneurship.

**The Rise of the Rest**

Over the last few years I've traveled 4,000 miles by bus on Revolutions' "Rise of the Rest" road trips where we met with talented innovators in cities and towns across the country. I'm convinced that the coming of the Third Wave will be closely linked to what I refer to as "the rise of the rest." In the following decades we will see cities that were previously in the margins of growth entrepreneurship rise up and become entrepreneurial powerhouses.

It's worth remembering that 75 years ago Silicon Valley was little more than an apple orchard, while Detroit was one of the most innovative and prosperous places in the country. Cities rise, and they fall.

In recent years, if an entrepreneur wanted to start a software company, he or she would probably be better off by moving to Silicon Valley or Boston. That's changing. In the Third Wave, entrepreneurs will benefit from being close to the industry ecosystems they want to revolutionize. A startup wanting to revolutionize agriculture may find fertile ground in the Midwest. A company looking to disrupt healthcare may want to settle in Nashville. And, indeed, this is what the inaugural Kauffman Index of Growth Entrepreneurship shows, with the "expected" hubs of Boston, San Francisco, and San Jose doing well, but with the rise of the rest bringing about a new wave of growth entrepreneurship throughout all regions of the United States.

Barriers to entry have fallen significantly, especially for technology companies, making it less costly to start and scale a company. Public policy reforms, including the JOBS Act, which legalized equity crowdfunding, is increasing access to capital. There's a consensus, finally, among local leaders that creating the conditions for startups to scale is critical. In the Third Wave, I expect this trend to accelerate.

**Growth Entrepreneurship**

Growth entrepreneurship affects all of us. Nonetheless, certain groups should be paying special attention to the Growth Entrepreneurship Index. First, policymakers, who can leverage the data here to better understand what is happening in their cities, states, and the country. Second, entrepreneurial supporters—no matter if they are an accelerator in the Midwest, a venture capitalist in Silicon Valley, or an economic development agency in the East Coast. The data here give new benchmarks of growth outcomes you've not had access to previously. The third, and most important group, is entrepreneurs looking to start Third Wave companies. The data in this report should assure you that growth entrepreneurship is possible anywhere in the United States and in any industry. Third Wave entrepreneurs will be farmers, factory workers, chefs, and artists; and they often will bring innovation to the industries and cities they are already in.

The Kauffman Foundation brings a powerful suite of data and research tools to help us understand growth entrepreneurship. Together, these three groups of entrepreneurs, entrepreneurship supporters, and policymakers can use these tools to help bring about the next generation of entrepreneurship ecosystems in the United States.

## About the Kauffman Index of Entrepreneurship Series

The Kauffman Index of Entrepreneurship series is an umbrella of annual reports that measures U.S. entrepreneurship across national, state, and metro levels. Rather than focusing on inputs, the Kauffman Index focuses primarily on entrepreneurial outputs—the actual results of entrepreneurial activity, such as new companies, business density, and growth rates. The Kauffman Index series consists of three in-depth studies—Startup Activity, Main Street Entrepreneurship, and Growth Entrepreneurship.

The Kauffman Index of Startup Activity is an early indicator of the beginnings of entrepreneurship in the United States, focusing on new business creation, market opportunity, and startup density. The Kauffman Index of Main Street Entrepreneurship, introduced in 2015, measures business ownership and density of established, local small businesses.

In 2016, the series debuts another study—the Growth Entrepreneurship Index, which takes a dual approach to understanding growth business activity, relying on three indicators to look both at business revenue and job growth:

- Rate of Startup Growth
- Share of Scaleups
- High-Growth Company Density

The Kauffman Index of Entrepreneurship series represents extensive research and attempts to present a balanced perspective on how to measure entrepreneurship. However, because we recognize that entrepreneurship is a complex phenomenon, we expect to further revise and enhance the Index in the coming years.

The specific indicators from each report help tell America's entrepreneurship story. National, state, and local leaders can access all the reports, along with the data relevant to their locations, at www.kauffmanindex.org.

# Metro Growth Entrepreneurship Executive Summary

Growth entrepreneurship helps drive job creation, innovation, and vibrancy in the U.S. economy. Growth can and should be tracked both for its immediate economic benefits in terms of job creation and also in terms of the harder-to-quantify spreading of best practices and productivity that often are associated with growing and new firms (Sarada and Miranda 2016). High growth, particularly of young firms, has been identified in other research as a particularly important contributor to job, output, and productivity growth.[1]

The Kauffman Index of Growth Entrepreneurship is an indicator of business growth in the United States, integrating several high-quality sources of timely information into one composite indicator of entrepreneurial business growth. The Index captures growth entrepreneurship in all industries, and is based on data covering the universe of all employer businesses in the United States and a privately collected benchmark of growth businesses. This allows us to measure business growth from both revenue and job creation perspectives.

Much of the attention and discussion around growth entrepreneurship focuses on growth inputs—things like patents, venture capital raised, valuations—with "unicorns," for instance, taking up a large share of the discussion lately. While inputs are very important, our focus here is different. We measure and provide data on growth entrepreneurship through indicators that point to its direct contribution to the economy through job creation and revenue growth.

This report presents trends in growth entrepreneurship for the forty largest metropolitan areas in the United States. Data on each metropolitan area is benchmarked against the national average, with further detail available for states in the *Kauffman Index of Growth Entrepreneurship | State Trends* and detailed time series and industry breakouts at the national level in the *Kauffman Index of Growth Entrepreneurship | National Trends.*

Nationwide the Growth Entrepreneurship Index—an indicator of how much entrepreneurial businesses are growing—rose in the last year for the third year in a row, indicating that business growth has largely recovered from its Great Recession slump. A principle driver of this year's uptick in growth is an increase in business

1. http://www.nber.org/chapters/c13492.

employment growth indicators: startups are growing faster in their first five years than they were in recent years, and more companies are reaching the scale of medium-sized or larger. We show the nationwide trend in the Growth Entrepreneurship Index in Figure 1 and cover detailed trends across various growth indicators and high-growth industries in the *Kauffman Index of Growth Entrepreneurship | National Trends.*

Looking at state-level indicators, growth entrepreneurship activity was higher in the Index for 2016 than in the previous year, with thirty-nine states showing higher growth entrepreneurship measures in the 2016 Index than in the 2015 Index. Among the twenty-five largest states by population, the states that saw the highest Growth Entrepreneurship activity were Virginia, Maryland, Arizona, Massachusetts, and Texas. Among the twenty-five smallest U.S. states by population, the states that saw the highest Growth Entrepreneurship activity were Utah, New Hampshire, Delaware, North Dakota, and Oklahoma. An analysis of state-level growth business activity can be found in the *Kauffman Index of Growth Entrepreneurship | State Trends report.*

## A Snapshot of Metropolitan-Area Trends in Growth Entrepreneurship

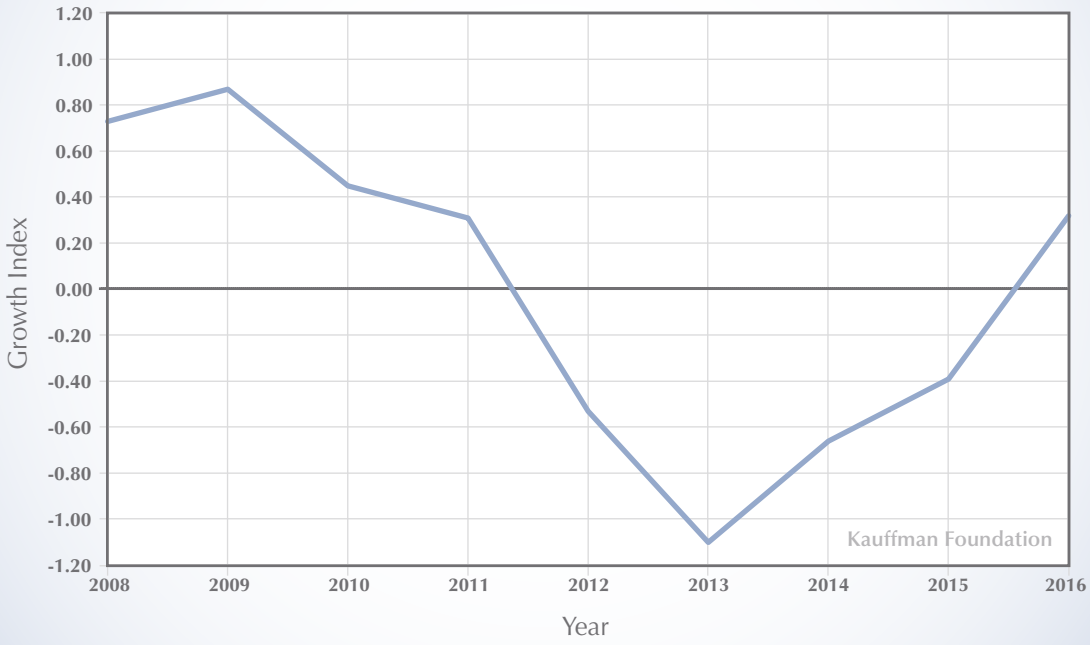
### Growth Entrepreneurship Index

- The Growth Entrepreneurship Index rose in 2016 in thirty-four of the forty largest metropolitan areas in the United States, indicating a continued return of broad-based business growth. This trend in urban areas fueled the largest year-over-year increase in the last decade at the national level.
- The top ten metros with the highest Growth Entrepreneurship activity in the 2016 Index were: 1) Washington, D.C.; 2) Austin, TX; 3) San Jose, CA; 4) Columbus, OH; 5) Nashville, TN; 6) Boston, MA; 7) San Diego, CA; 8) San Francisco, CA; 9) San Antonio, TX; and 10) Dallas, TX.

## Growth Entrepreneurship was high leading up to the Great Recession and fell for some time after the business cycle began to recover.

Figure 1

Kauffman Index of Growth Entrepreneurship (2008–2016)




SOURCE: Authors' calculations using the BDS and Inc. 500|5000 data. *For an interactive version, please see: www.kauffmanindex.org.*

## The geography of growth was very diverse, touching cities on both coasts, the South, and Midwest.

- The geography of growth was very diverse, touching cities on both coasts, the South, and Midwest.
- Cincinnati, OH, and San Antonio, TX, both experienced large year-over-year increases in the Growth Index, moving from thirty-fifth to sixteenth and thirtieth to ninth, respectively. Baltimore, MD, Pittsburgh, PA, and Milwaukee, WI, each fell ten spots or more to eighteenth, twenty-seventh, and thirty-first, respectively.

**Rate of Startup Growth**

- The first component of the Growth Entrepreneurship Index, the Rate of Startup Growth, varied widely across metropolitan areas, from 35.3 percent in Indianapolis at the low end to 128.1 percent in San Jose at the top.

**Share of Scaleups**

- The Share of Scaleups—the second component of the Growth Entrepreneurship Index—ranged from 0.8 percent in Detroit, MI, and Miami, FL, to 2.7 percent in Columbus, OH, and San Antonio, TX.
- Thirty-six of the forty metros studied had a higher scaleup share than the U.S. national average of 1.1 percent.

**High-Growth Company Density**

- High-Growth Company Density—the third component of the 2016 Index—plateaued nationally and ranged from 40.4 high-growth companies for every 100,000 employer businesses in the Sacramento metro to 271.5 high-growth companies per 100,000 employer businesses in the Washington, D.C., metro.

**Emerging Growth Initial Public Offerings**

- The top three metropolitan areas for density of emerging growth IPOs in 2015 were: 1) San Jose, 2) San Francisco, and 3) Boston.

### Select Industry Trends for Metros on Growth Entrepreneurship

Nationwide, when we look more deeply at the industry distribution of companies in the High-Growth Company Density component of the Growth Entrepreneurship Index, we see that tech continues to play a dominant role among high-growth firms in 2015—with tech-associated industries like IT Services, Software, Computer Hardware, and Health among leading high-growth industries. Nonetheless, that growth comes from a huge swath of industries, such as Food & Beverage, Retail, and Government Services. *While important, high tech is not a prerequisite for high growth.*

The top five industries of high-growth firms in 2015 were, in this order: 1) IT Services, 2) Advertising & Marketing, 3) Business Products & Services, 4) Health, and 5) Software.

Below, we present the top geographies in High-Growth Company Density for each of these five industries with the largest shares of high-growth companies.

**IT Services**

- The five metros with the highest density of high-growth companies in the IT Services industry were: 1) Washington, D.C., 2) Atlanta, 3) Minneapolis, 4) Columbus, and 5) Boston.

**Advertising & Marketing**

- The five metros with the highest density of high-growth companies in the Advertising & Marketing industry were: 1) Columbus, 2) San Francisco, 3) Austin, 4) San Diego, and 4) Boston—with a tie for fourth place between San Diego and Boston.

**Business Products & Services**

- The five metros with the highest density of high-growth companies in the Business Products & Services industry were: 1) Nashville, 2) Atlanta, 3) Boston, 4) Austin, and 5) Washington, D.C.

**Health**

- The five metros with the highest density of high-growth companies in the Health industry were: 1) Nashville, 2) Austin, 3) Atlanta, 4) Orlando, and 5) Dallas.

**Software**

- The five metros with the highest density of high-growth companies in the Software industry were: 1) San Jose, 2) San Francisco, 3) Austin, 4) Portland, and 5) Washington, D.C.

# Understanding Growth Entrepreneurship—A Look at the Indicators

Growth Entrepreneurship can take many forms. Here we define and measure it based on job and revenue growth.

Businesses grow in different ways. Some grow rapidly and very publicly—think Uber or any of the prominent tech unicorns. Others are born and grow for longer periods below the public radar, perhaps in industries or regions that are less visible to the general public and media. Here think Chobani, which has become a household brand with its Greek yogurt with over $1B in revenue and more than a thousand employees—but is not a stereotypical growth company. It was founded in 2005, in rural New York State, and originally funded with an SBA loan with no external investors at all (Ulukaya 2013). Even as a billion-dollar company, Chobani's founder was its sole owner until very recently. Beyond these are the numerous companies that achieve high growth and millions of dollars of revenue and, together, power hundreds of thousands of jobs—even though most people have never heard of them. Entrepreneur and investor Brad Feld calls these the "silent killers," companies that cause little fanfare, do not spend time in the media, and are often not based in the Bay Area—and yet grow to multi-million dollar revenues (Feld 2011).

The Kauffman Index of Growth Entrepreneurship presents a novel gauge that attempts to bring together potential measures of business growth in the United States—across national, state, and metropolitan-area levels. The Index captures entrepreneurial growth along three indicators. First, it captures the **Rate of Startup Growth**—how much, on average, startups in the United States grew in their first five years after founding as a cohort. Second, it captures the **Share of Scaleups**—the number of businesses starting small and growing to medium-sized or larger (employing fifty or more people) by their tenth year of operation as a percentage of all employer firms. Third, it captures **High-Growth Company Density**—the prevalence of fast-growing, private companies in a region with at least 20 percent annualized growth over three years and $2 million dollars in annual revenue. The combination of these three distinct and important growth indicators provides a broad view of Growth Entrepreneurship across national, state, and metropolitan-area levels, complementing the two existing Kauffman Index annual releases: Startup Activity and Main Street Entrepreneurship.

Capturing growth entrepreneurship across three indicators, the Growth Entrepreneurship Index provides balanced and extensive documentation of the business growth of both young companies and more-established private firms in the United States. The Growth Entrepreneurship Index captures all industries. It is based on administrative tax data covering all U.S. employer business entities (approximately 5 million companies)

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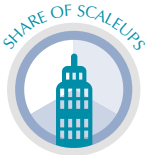
Rate of Startup Growth




Share of Scaleups


High-Growth Company Density

and on a privately compiled dataset covering the fastest-growing private companies in America, as measured by their revenue growth. The Growth Entrepreneurship Index improves over other possible measures of growth entrepreneurship in its timeliness, dual approach of capturing both employee and revenue growth, and inclusion of all types of business activity, regardless of industry.

The numerous paths that growth companies can take underlie why we need to use many indicators to understand and measure the phenomenon. The Growth Entrepreneurship Index presents various measures of growth, but also aggregates each measure into one unified statistic that local and national entrepreneurs, entrepreneurship supporters, and policymakers can use to understand growth in their geographies.

## The Components of the Kauffman Index of Growth Entrepreneurship

The Kauffman Index of Growth Entrepreneurship is an equally weighted index of three normalized measures of growth:[2]

1. The **Rate of Startup Growth**, calculated as how much startups have grown, on average, after five years of founding, as measured by change in employment.
2. The **Share of Scaleups**, calculated as the number of firms that started small but grew to employ fifty people or more by their tenth year of operation as a percentage of all employer firms ten years and younger.
3. The **High-Growth Company Density** of a region, measured as the number of private businesses with at least $2 million in annual revenue reaching three years of 20 percent annualized revenue growth, normalized by total employer business population.

Before presenting trends in the Growth Entrepreneurship Index, we briefly discuss each component measure (see Methodology and Framework for more details).

First, the Rate of Startup Growth captures the average growth of all young employer businesses in the economy. The Rate of Startup Growth captures employer businesses regardless of industry, and calculates their average growth as a cohort of businesses during their first five years of operation—from the founding year to year five. Startup businesses here are defined as employer firms less than one year old employing at least one person besides the owner. The Rate of Startup Growth is calculated based on data from U.S. Census Bureau's Business Dynamics Statistics (BDS) and is taken from the universe of businesses with payroll tax records in the United States,

### Rate of Startup Growth

- Proxy measure of business growth and startup traction across young businesses.
- Measures the average growth of cohorts of new employer firms from the year they were founded through their fifth year of operation.
- Calculates growth by comparing the average size of all startups from a given year to the average size of surviving, young companies in year five of operation. All industries are included in this measure.
- Data based on author calculations from the U.S. Census Bureau's Business Dynamics Statistics.
- What the number means:
  - For example, the Rate of Startup Growth was 70.3 percent for Colorado in the 2016 Index. That means that, on average, Colorado companies turning five years old have grown 70.3 percent since their founding, from 4.7 average employees at the time of founding to 8.0 average employees by year five.

2. We normalize each of three measures by subtracting the mean and dividing by the standard deviation for that measure (i.e., create a z-score for each variable). This creates a comparable scale for including the three measures in the Growth Entrepreneurship Index. We use annual estimates from 2007 to the latest year available (2013 or 2015) to calculate the mean and standard deviations for each component measure (see Methodology and Framework for more details).

## Share of Scaleups

- Proxy measure of how many startups become scaleups.
- Measures the percentage of surviving companies that become medium-sized businesses or larger in their first ten years of operation, but did not start in that size category. All industries are included on this measure.
- Medium-sized or larger companies are defined as firms having fifty employees or more.
- Data based on author calculations from the U.S. Census Bureau's Business Dynamics Statistics.
- What the number means:
  - For example, the United States Share of Scaleups was 1.1 percent in the 2016 Index. That means approximately 1,100 out of every hundred thousand companies ten years and younger started small and became medium-sized businesses with fifty employees or more.

as recorded by the Internal Revenue Service. This dataset covers approximately 5 million companies.

The second component measure of the Growth Entrepreneurship Index is the Share of Scaleups, calculated as the number of firms—as a percentage of all surviving firms ten years and younger—that started out small, with fewer than fifty employees, but reached the scale of having fifty employees or more by their tenth year of operation. Whereas the Rate of Startup Growth looks at the estimated average growth of each cohort of employer firms, the Share of Scaleups focuses exclusively on firms reaching fifty employees or more. Like the Rate of Startup Growth component, the Share of Scaleups index component is based on the U.S. Census Bureau's Business Dynamics Statistics, which covers all employer firms in the United States with payroll tax records as tracked by the Internal Revenue Service.

The third component of the Growth Entrepreneurship Index is the High-Growth Company Density—a measure of the prevalence of private, high-growth companies with at

## High-Growth Company Density

- Proxy measure of number of high-growth companies by total business population.
- High-growth companies are defined as private businesses with at least $2 million dollars in annual revenue with 20 percent annualized revenue growth over a three-year period. There is no age requirement on this indicator. The age of firms spans a wide range, although they skew young.
- Companies in this dataset have up to multi-billion-dollar revenues and growth rates as high as tens of thousands percent. High-growth companies on this dataset have included prominent businesses like Facebook, Go Pro, Microsoft, Oracle, and Zappos, as well as numerous high-growth businesses under the public radar.
- Data based on author calculations from the Inc. 500|5000 private dataset of fastest-growing companies in the United States and on business population data from the U.S. Census Bureau's Business Dynamics Statistics.
- What the number means:
  - For example, the 2016 Index High-Growth Company Density for the New York metropolitan area was 84.7. That means that, for every 100,000 employer business in the New York metro area, there were 84.7 high-growth firms.

**Entrepreneurship is not a monolithic phenomenon, and it includes many moving parts. Creating new businesses is a different economic activity from running small businesses, which in turn is different from growing businesses.**

least $2 million dollars in annual revenue by the final year observed and 20 percent annualized growth over a three-year period, which compounds to 72.8 percent after the three years. While the other two components of the Index use number of employees to measure growth, revenue is an important factor to consider when analyzing growing firms, because the relationship between employment growth and revenue growth is complex, and is not always directly linked across different industries.

The number of high-growth firms is based on the perennial Inc. 500|5000 list of the fastest-growing private companies in America. At the top end of the distribution, Inc. high-growth companies have up to multi-billion dollar revenues and growth rates of many orders of magnitude after three years. At the lower end of the distribution, the data has been filtered by the authors to only include firms with at least 20 percent annualized growth over three years and $2 million dollars in revenue by the third year of growth. This filtering excludes between 20 and 40 percent of the 5,000 firms on the Inc. list in a given year. Applying a consistent growth threshold to the list allows us to track trends in the population of Inc. 500|5000 companies over time. *Inc.* magazine has compiled the Inc. 500 list every year since 1982, and some firms included on the lists have grown further to become Fortune 500 companies and become publicly traded or acquired. These firms come from a wide range of industries, from high-tech to everyday retailers. The dataset is one of the few that allows us historically and reliably to track trends of revenue-focused high-growth in the country at the national, state, and metro levels.

In this report, we first present national estimates of the Growth Entrepreneurship Index, followed by trends in each of the three component measures of the Index.

## A Big Tent Approach to Entrepreneurship

The Kauffman Index of Entrepreneurship—the umbrella under which all Kauffman Index reports reside—attempts to view the complex phenomenon of entrepreneurship from many angles, each adding insight into the people and businesses that contribute to America's overall entrepreneurial dynamism.

Entrepreneurship is not a monolithic phenomenon, and it includes many moving parts. Creating new businesses is a different economic activity from running small businesses, which in turn is different from growing businesses. The Kauffman Index attempts to measure concretely these different kinds of entrepreneurship—Startup Activity, Main Street Entrepreneurship, and Growth Entrepreneurship. The Kauffman Index of Startup Activity focuses on the beginnings of entrepreneurship, specifically new business creation, market opportunity, and startup density. The Kauffman Index of Main Street Entrepreneurship focuses on the prevalence of local small business and local business ownership. The newest report in the Kauffman Index series, the 2016 Kauffman Index of Growth Entrepreneurship, focuses on growing companies. Together, these three indices present a more holistic view of entrepreneurship in America.

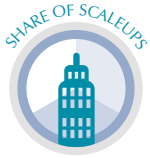
Each of the indices that make up the Kauffman Index is constructed to give a spectrum of entrepreneurship measures from an industry-agnostic perspective. Table 1 summarizes the approach we use across the reports.

The first component of the Kauffman Index of Growth Entrepreneurship—the Rate of Startup Growth—captures how the average employment at the overall cohort of new firms changes from birth to age five. While many new businesses will discontinue their operations,[3] those that remain often will grow, on average. The Rate

3. Approximately half of startups remain in operation five years later, according to our calculations for U.S. Census Bureau's Business Dynamics Statistics data.

Table 1

## Summary of Components Used Across Reports

| Startup Activity | Main Street Entrepreneurship | Growth Entrepreneurship |
|---|---|---|
|  **Rate of New Entrepreneurs** The percentage of adults transitioning into entrepreneurship at a given point in time |  **Rate of Business Owners** The total number of business owners in a location at a given point in time |  **Rate of Startup Growth** The average growth of a cohort of new startups in their first five years |
|  **Opportunity Share of New Entrepreneurs** The percentage of new entrepreneurs driven primarily by "opportunity" vs. "necessity" | |  **Share of Scaleups** The number of businesses that started small and grew to employ at least fifty people by their tenth year of operation as a percentage of all businesses ten years and younger |
|  **Startup Density** The number of new employer businesses normalized by population |  **Established Small Business Density** The number of businesses older than five years with less than fifty employees normalized by population |  **High-Growth Company Density** The number of fast-growing companies with at least $2 million dollars in annual revenue normalized by business population |

of Startup Growth looks at the average growth trajectory of these birth cohorts to see their aggregate role on a given economy through changes in employment.

The second component of the Kauffman Index of Growth Entrepreneurship—the Share of Scaleups—captures the number of businesses starting small and becoming medium-sized or larger by their tenth years of operation as a percentage of all employer firms ten years and younger. This component shares similarities with the Startup Activity Index's Opportunity Share of New Entrepreneurs. Both of these measures attempt to narrow in on a specific population of more growth-oriented companies. With the Share of Scaleups, we look directly at the number of businesses that grow to more than fifty employees but did not start out that way, while with the Opportunity Share of New Entrepreneurs we examine new entrepreneurs likely beginning their journey out of opportunity rather than necessity and which, by inference, could be more likely to also grow.

The last component of the Kauffman Index of Growth Entrepreneurship—the High-Growth Company Density—benchmarks the density of fast-growing private companies with at least $2 million in annual revenue. Fast growth in this case is defined as an annualized revenue growth of 20 percent over a three-year period—which compounds to 72.8 percent after the three years. In this measure, growth is examined at any stage of the business. Note that we are no longer limiting our population to companies in their early years of operations. As with the other measures, this indicator is industry agnostic. This measure uses the annual Inc. 500|5000 lists of the fastest-growing private businesses in America as a starting point before applying a minimum growth threshold and requirement of at least $2 million dollars in revenues. This growth threshold usually excludes between 20 and 40 percent of the 5,000 firms on the Inc. list in a given year. This indicator has some similarities to the Startup Density and Established Small Business Density measures in that it is attempting to describe a specific type of business in a population-normalized manner. The High-Growth Company Density has no upper-bound restriction on firm age, though it does require firms to be at least three years old. As such, the age of high-growth firms spans a wide range, although these firms skew young. A plurality of high-growth companies (31.5 percent) are aged between five and seven years old, and 59.1 percent are ten years old and younger.

While at first pass one might expect the Startup Density component of the Startup Activity Index to relate with future years of the Growth Entrepreneurship's Rate of Startup Growth and Share of Scaleups measures, we have taken steps to minimize the overlap on these measures. The Startup Activity indicators focus only on new firm formation measures, while the Growth Entrepreneurship Index captures only growth outcomes, and imposes no penalty to a location for having relatively fewer startups. In other words, a location may have many startups that do not grow much at all later on—and this place would have higher rates of Startup Activity but lower rates of Growth Entrepreneurship. Similarly, a location could have relatively few startups, but the startups this place does have could grow at high rates. This latter place would have low rates of Startup Activity but higher rates of Growth Entrepreneurship.

## A Look at Startup Growth Potential

The conversation around entrepreneurship measurement has increased in the last year with Guzman and Stern's recent research attempting to use predictive techniques to connect aspects of a new firm's business registration to later growth outcomes, specifically reaching a meaningful exit (IPO or M&A) within six years of founding (Guzman and Stern 2016). This research holds much promise for the future of entrepreneurship research, as it may hold the possibility of even finer-grain geographic analysis and better predictive techniques beyond just counting business registrations. However, while compelling—and, indeed, Kauffman Foundation activities have supported, financially and otherwise, this work in many ways—the data measuring startup growth potential has not reached national coverage, although it may spread to other geographies in the near future. With that, the Growth Entrepreneurship Index focuses on actual observed growth outcomes rather than ex ante growth potential of startups.

# METROPOLITAN AREA AND CITY TRENDS IN GROWTH ENTREPRENEURSHIP

Table 2

## Metropolitan Area Rankings for the Kauffman Index of Growth Entrepreneurship

| Rank 2016 | Index 2016 | City (Main) | Metropolitan Area | Rank 2015 | Change in Rank | Rate of Startup Growth | Share of Scaleups | High-Growth Company Density |
|---|---|---|---|---|---|---|---|---|
| 1 | 14.38 | Washington | Washington-Arlington-Alexandria, DC-VA-MD-WV | 1 | 0 | 116.9% | 2.34% | 271.5 |
| 2 | 10.90 | Austin | Austin-Round Rock-San Marcos, TX | 2 | 0 | 81.2% | 2.25% | 234.7 |
| 3 | 8.04 | San Jose | San Jose-Sunnyvale-Santa Clara, CA | 4 | 1 | 128.1% | 2.15% | 109.6 |
| 4 | 7.05 | Columbus | Columbus, OH | 5 | 1 | 51.9% | 2.68% | 143.8 |
| 5 | 6.75 | Nashville | Nashville-Davidson-Murfreesboro-Franklin, TN | 9 | 4 | 71.5% | 2.09% | 153.3 |
| 6 | 6.20 | Boston | Boston-Cambridge-Quincy, MA-NH | 3 | -3 | 74.3% | 2.05% | 138.7 |
| 7 | 5.77 | San Diego | San Diego-Carlsbad-San Marcos, CA | 7 | 0 | 73.0% | 1.59% | 162.1 |
| 8 | 5.70 | San Francisco | San Francisco-Oakland-Fremont, CA | 6 | -2 | 71.5% | 1.79% | 147.9 |
| 9 | 5.37 | San Antonio | San Antonio-New Braunfels, TX | 20 | 11 | 85.8% | 2.67% | 58.8 |
| 10 | 5.03 | Dallas | Dallas-Fort Worth-Arlington, TX | 10 | 0 | 56.3% | 1.98% | 137.4 |
| 11 | 5.02 | Charlotte | Charlotte-Gastonia-Rock Hill, NC-SC | 13 | 2 | 45.5% | 2.17% | 137.0 |
| 12 | 4.76 | Phoenix | Phoenix-Mesa-Glendale, AZ | 16 | 4 | 63.9% | 1.74% | 137.8 |
| 13 | 4.65 | Denver | Denver-Aurora-Broomfield, CO | 14 | 1 | 70.5% | 1.61% | 135.7 |
| 14 | 4.17 | Houston | Houston-Sugar Land-Baytown, TX | 17 | 3 | 56.4% | 2.02% | 112.4 |
| 15 | 3.89 | Atlanta | Atlanta-Sandy Springs-Marietta, GA | 15 | 0 | 43.8% | 1.29% | 173.5 |
| 16 | 3.88 | Cincinnati | Cincinnati-Middletown, OH-KY-IN | 35 | 19 | 74.4% | 1.51% | 118.3 |
| 17 | 3.68 | Minneapolis | Minneapolis-St. Paul-Bloomington, MN-WI | 19 | 2 | 54.7% | 1.78% | 119.0 |
| 18 | 3.50 | Baltimore | Baltimore-Towson, MD | 8 | -10 | 77.9% | 1.90% | 76.4 |
| 19 | 3.32 | Cleveland | Cleveland-Elyria-Mentor, OH | 26 | 7 | 71.7% | 1.71% | 93.4 |
| 20 | 3.30 | Indianapolis | Indianapolis-Carmel, IN | 11 | -9 | 35.3% | 2.26% | 99.7 |
| 21 | 3.15 | Philadelphia | Philadelphia-Camden-Wilmington, PA-NJ-DE-MD | 26 | 5 | 66.7% | 1.52% | 108.6 |
| 22 | 2.87 | Seattle | Seattle-Tacoma-Bellevue, WA | 18 | -4 | 67.0% | 1.52% | 101.2 |
| 23 | 2.82 | Jacksonville | Jacksonville, FL | 23 | 0 | 93.0% | 1.35% | 79.0 |
| 24 | 2.50 | Kansas City | Kansas City, MO-KS | 24 | 0 | 54.4% | 1.81% | 87.4 |
| 25 | 2.41 | Virginia Beach | Virginia Beach-Norfolk-Newport News, VA-NC | 22 | -3 | 62.7% | 1.86% | 71.0 |
| 26 | 2.28 | Tampa | Tampa-St. Petersburg-Clearwater, FL | 30 | 4 | 56.8% | 1.16% | 125.1 |
| 27 | 2.23 | Pittsburgh | Pittsburgh, PA | 12 | -15 | 54.4% | 2.05% | 62.9 |
| 28 | 1.48 | Portland | Portland-Vancouver-Hillsboro, OR-WA | 28 | 0 | 63.8% | 1.21% | 92.7 |
| 29 | 1.35 | St. Louis | St. Louis, MO-IL | 31 | 2 | 67.0% | 1.44% | 68.6 |
| 30 | 1.27 | Chicago | Chicago-Joliet-Naperville, IL-IN-WI | 25 | -5 | 47.8% | 1.28% | 102.5 |
| 31 | 1.16 | Milwaukee | Milwaukee-Waukesha-West Allis, WI | 21 | -10 | 52.7% | 1.91% | 48.0 |
| 32 | 0.91 | Las Vegas | Las Vegas-Paradise, NV | 29 | -3 | 55.4% | 1.59% | 61.7 |
| 33 | 0.86 | Los Angeles | Los Angeles-Long Beach-Santa Ana, CA | 33 | 0 | 51.5% | 1.20% | 93.1 |
| 34 | 0.63 | Orlando | Orlando-Kissimmee-Sanford, FL | 36 | 2 | 37.3% | 1.03% | 117.2 |
| 35 | 0.25 | New York | New York-Northern New Jersey-Long Island, NY-NJ-PA | 32 | -3 | 54.8% | 1.04% | 84.7 |
| 36 | 0.09 | Providence | Providence-New Bedford-Fall River, RI-MA | 37 | 1 | 56.2% | 1.39% | 53.8 |
| 37 | -0.13 | Sacramento | Sacramento-Arden-Arcade-Roseville, CA | 34 | -3 | 57.7% | 1.47% | 40.4 |
| 38 | -0.68 | Riverside | Riverside-San Bernardino-Ontario, CA | 40 | 2 | 48.2% | 1.41% | 42.9 |
| 39 | -1.03 | Miami | Miami-Fort Lauderdale-Pompano Beach, FL | 39 | 0 | 39.5% | 0.81% | 88.4 |
| 40 | -1.34 | Detroit | Detroit-Warren-Livonia, MI | 38 | -2 | 52.7% | 0.79% | 64.9 |

*For an interactive version of the rankings, please see: www.kauffmanindex.org.*

# Metro Trends in Growth Entrepreneurship

This first-ever Kauffman Index of Growth Entrepreneurship calculates an index measure of growth and high-growth business activity across the top forty largest metropolitan areas in the United States by population.[4]

Nationally, the 2016 Growth Entrepreneurship Index rose for the third year in a row, indicating that business growth largely has recovered from its Great Recession slump—as shown in Figure 1 on page 7. A principle driver of this year's uptick in growth is an increase in business employment growth indicators: startups are growing faster in their first five years and more companies are reaching the scale of medium-sized or larger.

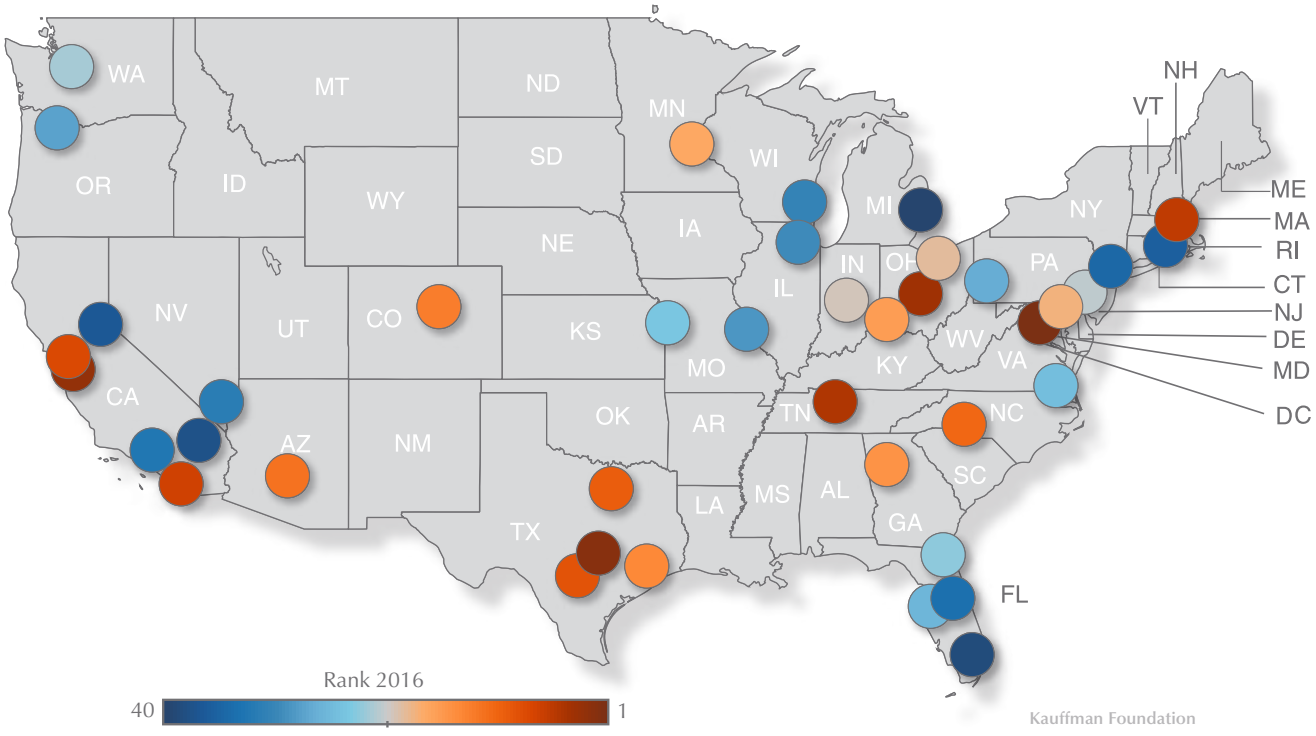
Growth Entrepreneurship rates have high variability across metropolitan areas. Moreover, as you can see on the map in Figure 2, cities with the most growth entrepreneurship activity in 2016 spread widely across the United States—with certain pockets of growth entrepreneurship happening in virtually every region: the Midwest, the South, and both the East and West Coasts.

Most of the metros considered "usual suspects" for growth activity perform very well: Austin, Boston, San Diego, San Francisco, and San Jose are all on the top of the distribution. Nonetheless, we also see some metros not typically noted, such as Washington, D.C., Nashville, TN, and Columbus, OH.

Largely following trends at the national level, most of the metros benchmarked in this report followed a similar positive trajectory in the 2016 Index, with thirty-four of them experiencing an increase in growth entrepreneurship activity over the last year. Only six of the metros covered experienced declines, and most of these had only modest drops in growth entrepreneurship activity.

Figure 2

## 2016 Metropolitan Area Rankings for the Kauffman Index of Growth Entrepreneurship




*For an interactive version of the map, please see: www.kauffmanindex.org.*

4. Based on population data from the Bureau of Economic Analysis.

While most metros experienced an increase in the Growth Entrepreneurship Index, changes in metropolitan-area rankings—which measure relative yearly performance across metros, as opposed to performance relative to a metro's own growth entrepreneurship activity in the previous year—were different. Seventeen metro areas ranked higher than they did in the last year, ten experienced no changes in rankings, and thirteen metros ranked lower.

The five metros that experienced the biggest positive shifts in rank in 2016 compared to 2015, with a three-way tie for fifth place, are shown in Table 3. The five metro areas that experienced the biggest downward shifts in rank in 2016 compared to 2015 are shown in Table 4.

Although there was some movement within the top ten metros with the most growth entrepreneurship activity, virtually all of the top ten metros in 2015 continued in the top 10 in 2016. The exception was Baltimore, which fell out of the top ten, being replaced by San Antonio.

In the following sections, we discuss metro-level trends for each component of the Growth Entrepreneurship Index: 1) Rate of Startup Growth, 2) Share of Scaleups, and 3) High-Growth Company Density.

Table 3:
Metros with the Biggest Positive Shifts in Rank—Kauffman Index of Growth Entrepreneurship

| City (Main) | Metropolitan Area | Rank 2016 | Rank 2015 | Change in Rank |
|---|---|---|---|---|
| Cincinnati | Cincinnati-Middletown, OH-KY-IN | 16 | 35 | 19 |
| San Antonio | San Antonio-New Braunfels, TX | 9 | 20 | 11 |
| Cleveland | Cleveland-Elyria-Mentor, OH | 19 | 26 | 7 |
| Philadelphia | Philadelphia-Camden-Wilmington, PA-NJ-DE-MD | 21 | 26 | 5 |
| Nashville | Nashville-Davidson-Murfreesboro-Franklin, TN | 5 | 9 | 4 |
| Phoenix | Phoenix-Mesa-Glendale, AZ | 12 | 16 | 4 |
| Tampa | Tampa-St. Petersburg-Clearwater, FL | 26 | 30 | 4 |

Table 4:
Metros with the Biggest Negative Shifts in Rank—Kauffman Index Growth Entrepreneurship

| City (Main) | Metropolitan Area | Rank 2016 | Rank 2015 | Change in Rank |
|---|---|---|---|---|
| Pittsburgh | Pittsburgh, PA | 27 | 12 | -15 |
| Baltimore | Baltimore-Towson, MD | 18 | 8 | -10 |
| Milwaukee | Milwaukee-Waukesha-West Allis, WI | 31 | 21 | -10 |
| Indianapolis | Indianapolis-Carmel, IN | 20 | 11 | -9 |
| Chicago | Chicago-Joliet-Naperville, IL-IN-WI | 30 | 25 | -5 |

# Metro Trends in Rate of Startup Growth

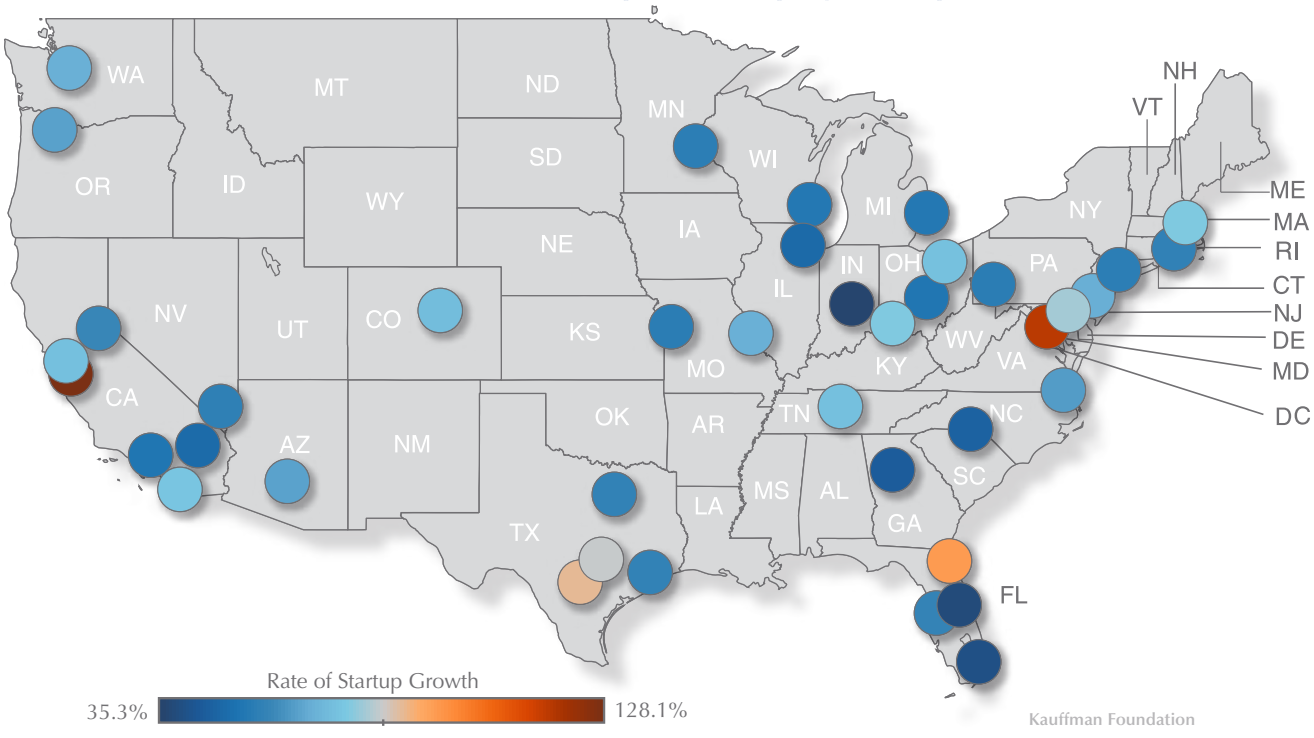
This first component of the Growth Entrepreneurship Index, the Rate of Startup Growth, captures how much, on average, the cohort of startup businesses grow in employment in their first five years of operation. We present this indicator going back from 1982 to 2013, the latest year for which the data are available. This is a yearly measure calculated from the U.S. Census Bureau's Business Dynamics Statistics.

Business dynamics around the time of new business entry are messy, with approximately 400,000 new employer businesses being created in the United States each year, recently.[5] We know that around 45 percent of new businesses survive their first five years of operation, with the rest of the new businesses ceasing operations or being absorbed into other businesses. Others have described this as a process of experimentation, as entrepreneurs seek to find their markets and the successful businesses continue operating and expanding.[6] The Rate of Startup Growth attempts to capture growth during this tumultuous time from firm birth through age five.

The Rate of Startup Growth varies widely across metropolitan areas, from 35.3 percent in Indianapolis to 128.1 percent in San Jose—the latter being the highest Rate of Startup Growth in the country. San Jose's rate means that the startup cohort born five years ago went from 5.2 employees on average at the year of birth to 11.8 employees on average for surviving firms at their fifth year of operation—changing in size by 128.1 percent.

Figure 3

## 2016 Rate of Startup Growth Component of the Kauffman Index of Growth Entrepreneurship by Metropolitan Area




*For an interactive version of the map, please see: www.kauffmanindex.org.*

5. Authors' calculations from U.S. Census Bureau's Business Dynamics Statistics data.

6. Nanda, Ramana, and Matthew Rhodes-Kropf. *Financing Entrepreneurial Experimentation.* No. w21278. National Bureau of Economic Research, 2015.

# Metro Trends in Share of Scaleups

The second component of the Growth Entrepreneurship Index, the Share of Scaleups, looks at the percentage of companies that grow to employ at least fifty people (what we call scaleups) in the first ten years after creation. So, while the Rate of Startup Growth looks at the average growth of all firms, the Share of Scaleups focuses only on tracking the firms that reach a certain scale, as measured by employment size. This is a yearly measure calculated from the U.S. Census Bureau's Business Dynamics Statistics. We present this indicator from 1982 to 2013, the latest year for which the data are available.

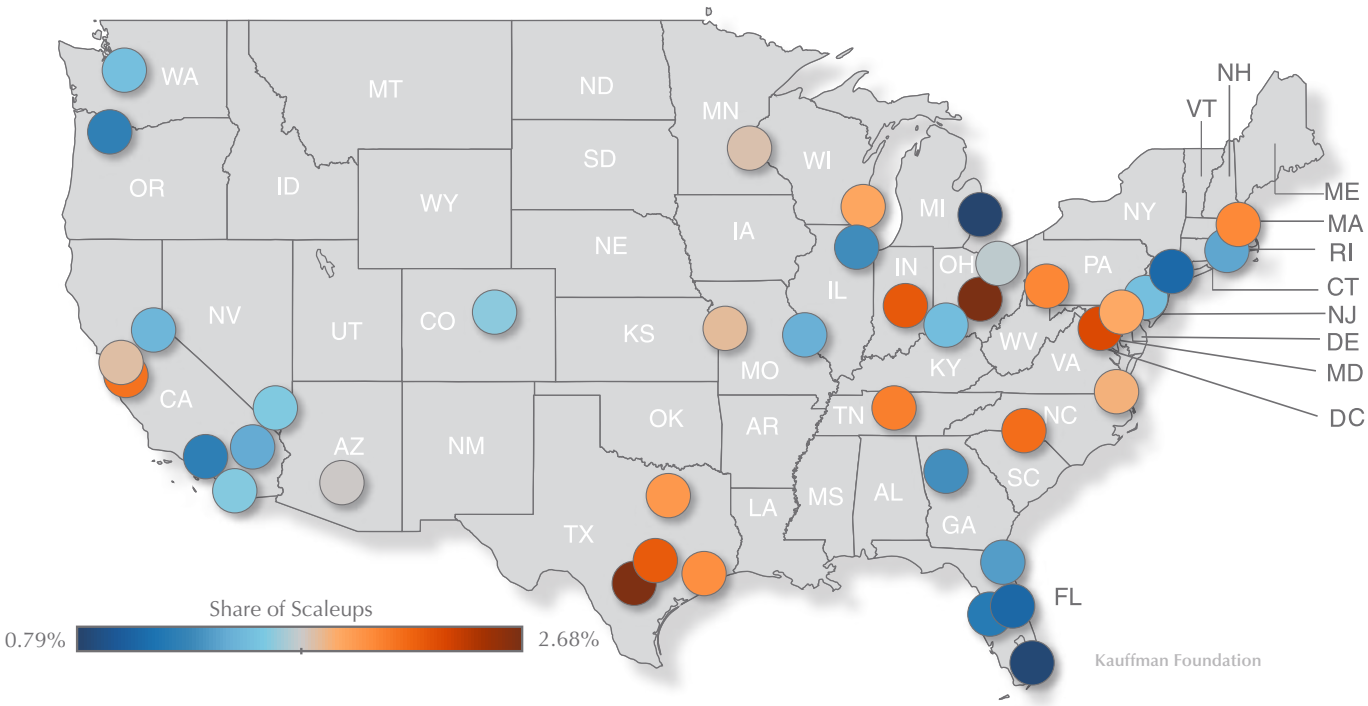
The importance of "scaleups"—in contrast to startups—has been highlighted by researchers such as Dan Isenberg[7] and practitioners such as Brad Feld.[8] While measuring scaleups is difficult and no consensus exists, "scaleups" as a concept appears to have coalesced around capturing growth after the startup process; and as a means of emphasizing the important role of growth within the broader concept of the entrepreneurial process.

As with other Growth Entrepreneurship indicators, there is variation in the Share of Scaleups across different areas of the country, going from 0.8 percent in Detroit and Miami to 2.7 percent in Columbus, OH, and San Antonio, TX. A Share of Scaleups of 2.7 percent means that approximately twenty-seven companies out of every 1,000 firms ten years and younger started small and reached a scale of more than fifty employees in their first ten years of operations.

Thirty-six of the forty metros studied had higher scaleup shares than the U.S. national average of 1.1 percent.

Figure 4

## 2016 Share of Scaleups Component of the Kauffman Index of Growth Entrepreneurship by Metropolitan Area




*For an interactive version of the map, please see: www.kauffmanindex.org.*

7. Isenberg, Daniel. "Focus Entrepreneurship Policy on Scale-Up, Not Start-Up." *Harvard Business Review*. November 30, 2012. https://hbr.org/2012/11/focus-entrepreneurship-policy.

8. Feld, Brad. "Shifting My Focus To Scaling Up—Feld Thoughts." Feld Thoughts. March 20, 2013. Accessed April 21, 2016. http://www.feld.com/archives/2013/03/scaling-up.html.

# Metro Trends in High-Growth Company Density

The third and last component of the Growth Entrepreneurship Index, the High-Growth Company Density, looks at the number of high-growth private companies in an area. So, while the Share of Scaleups measures the number of firms that reach more than fifty employees while they are young, the High-Growth Company Density looks at the number of private firms, regardless of a company's age, achieving at least 20 percent annualized growth over a three-year period with at least $2 million dollars in revenue. While the Rate of Startup Growth and the Share of Scaleups focuses on employment-based growth indicators, the High-Growth Company Density is a revenue-based indicator. This is a yearly measure based on the perennial Inc. 500|5000 list of the fastest-growing private companies in America for high-growth firm counts and on the U.S. Census Bureau's Business Dynamics Statistics for overall firm population data. We present this indicator from 2007 to 2015, the latest year for which the data are available.

The High-Growth Company Density has no upper-bound restriction on firm age, though it does require firms to be at least three years old. As such, the age of high-growth firms spans a wide range, although these firms skew young. A plurality of high-growth companies (31.5 percent) are aged between five and seven years old, and 59.1 percent of them are ten years old and younger.

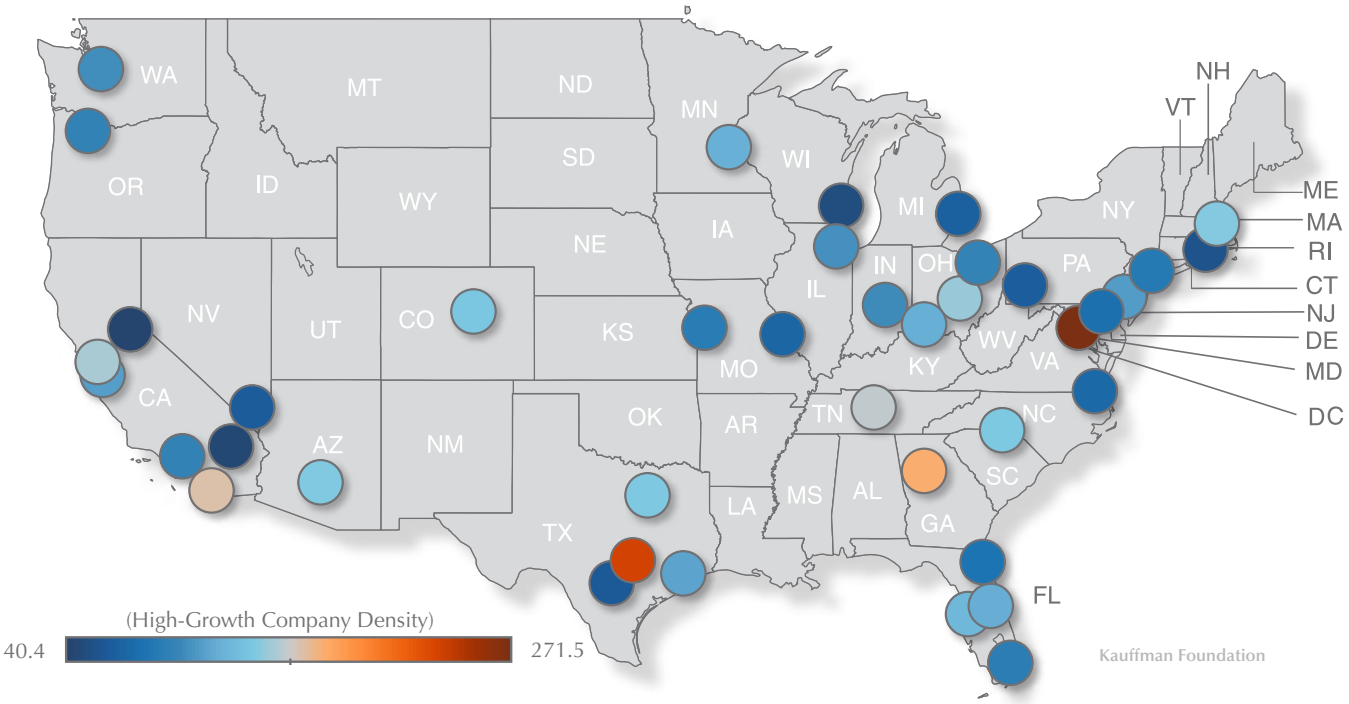
Both researchers and entrepreneurs have suggested density as a key indicator of vibrancy in entrepreneurial ecosystems, and there is high variation on this indicator across metropolitan areas in the United States.[9, 10]

High-Growth Company Density ranged in the latest year from 40.4 high-growth companies for every 100,000 employer businesses in the Sacramento metro to 271.5 high-growth companies per 100,000 employer businesses in the Washington, D.C., metro.

Compared to the U.S. High-Growth Company Density of 79.3 high-growth companies for every 100,000 employer businesses in the United States, twenty-eight of the forty metros studied had higher density rates.

Figure 5

## 2016 Rate of High-Growth Company Density Component of the Kauffman Index of Growth Entrepreneurship by Metropolitan Area




*For an interactive version of the map, please see: www.kauffmanindex.org.*

9. Stangler, Dane, and Jordan Bell-Masterson. "Measuring an Entrepreneurial Ecosystem." Kauffman Foundation. March 2015.
10. Feld, Brad. *Startup communities: Building an entrepreneurial ecosystem in your city.* John Wiley & Sons, 2012.

# The Geography of Initial Public Offerings in the United States

Little more captures "making it" in business than the day a company starts being publicly traded. Ringing the "bell," the making of millionaires (and often billionaires), and the transformation from being a privately held company into a publicly owned one. Initial public offerings are among the most visible indicators of growth companies; however, the small number of IPOs in any given year makes it a difficult metric to comprehensively integrate into the Growth Index. With that, we present statistics on Initial Public Offerings as a context measure to the Growth Entrepreneurship indicators.

Using preliminary 2015 data from the Kenney-Patton IPO Database, we present states and metros with the highest IPO density—calculated as the number of IPOs in a year per every 100,000 employer businesses in that location.[11,12] For our purposes, not all IPOs are created equal. We focus on IPOs that are related to emerging growth companies or *de novo* IPOs and not IPOs that are new legal entities of existing companies. Also, IPOs are a global phenomenon with many foreign offerings on U.S. markets and some U.S. offerings on foreign exchanges. The data presented here attempt to only count domestic-headquartered, emerging growth, and domestic-IPOed firms in a given year. Geographies are assigned based on the company's business address, not its state of incorporation.

The United States saw about 100 emerging growth IPOs in 2015. Narrowing in on the top states with headquarters for these de novo IPOs, the top three states with the highest density of emerging growth IPOs were: 1) Massachusetts, 2) California, and 3) Utah. The top three metros with the highest density of emerging growth IPOs were: 1) San Jose, 2) San Francisco, and 3) Boston.

Table 5: Top States by Emerging Growth IPO Density in 2015—Kauffman Index of Growth Entrepreneurship

| Rank | State | Number of IPOs | IPO Density | Size Category |
|---|---|---|---|---|
| 1 | Massachusetts | 14 | 11.4 | Large |
| 2 | California | 33 | 5.4 | Large |
| 3 | Utah | 2 | 4.0 | Small |
| 4 | New Hampshire | 1 | 3.7 | Small |
| 5 | Tennessee | 3 | 3.4 | Large |
| 6 | Maryland | 3 | 3.1 | Large |
| 7 | Colorado | 3 | 2.8 | Large |
| 8 | North Carolina | 4 | 2.7 | Large |
| 9 | Arizona | 2 | 2.3 | Large |
| 10 | New York | 8 | 2.0 | Large |

*Source: Authors' calculations from Kenney-Patton IPO Database and BDS.*

Table 6: Top Metros by Emerging Growth IPO Density in 2015—Kauffman Index of Growth Entrepreneurship

| Rank | City (Main) | Metropolitan Area | Number of IPOs | IPO Density |
|---|---|---|---|---|
| 1 | San Jose | San Jose-Sunnyvale-Santa Clara, CA | 7 | 19.7 |
| 2 | San Francisco | San Francisco-Oakland-Fremont, CA | 16 | 17.9 |
| 3 | Boston | Boston-Cambridge-Quincy, MA-NH | 15 | 16.6 |
| 4 | San Diego | San Diego-Carlsbad-San Marcos, CA | 5 | 8.9 |
| 5 | Nashville | Nashville-Davidson-Murfreesboro-Franklin, TN | 2 | 7.5 |
| 6 | Dallas | Dallas-Fort Worth-Arlington, TX | 4 | 4.0 |
| 7 | Washington | Washington-Arlington-Alexandria, DC-VA-MD-WV | 4 | 4.0 |
| 8 | Denver | Denver-Aurora-Broomfield, CO | 2 | 3.8 |
| 9 | Cincinnati | Cincinnati-Middletown, OH-KY-IN | 1 | 3.2 |
| 10 | Charlotte | Charlotte-Gastonia-Rock Hill, NC-SC | 1 | 3.2 |

*Source: Authors' calculations from Kenney-Patton IPO Database and BDS.*

11. The source for the number of employer firms is the U.S. Census Bureau's Business Dynamics Statistics (BDS), and we use the latest available BDS number (2013) to normalize the 2015 IPO activity.

12. We chose to use this database because of its use in the research community and the fact that it includes detailed location data on companies. The database covers emerging growth initial public offerings (IPOs) on U.S. stock exchanges filed with the Securities and Exchange Commission (SEC). According to the database guide, emerging growth firms are defined as "newly established firms, or firms that are not based on older firms by being a spinoff or subsidiary operation." This definition also excludes mutual funds, real estate investment trusts (REITs), asset acquisition or blank check companies, and foreign F-1 filers. For this 2015 preliminary data, all companies that were for a certainty not emerging growth were excluded—while firms with clear emerging growth status and possible but unclear emerging growth status were kept. For the full documentation for this data, please see http://hcd.ucdavis.edu/faculty/webpages/kenney/misc/Firm_IPO_Database_Guide.pdf.

# Industry Trends for High-Growth Companies at the Metro Level

The detailed industry data from Inc. allows us to explore certain industry trends for high-growth companies. In this section, we look at industries with the highest shares of high-growth companies and present tables and maps with the geographical distribution for these top industries.

## *Top Five Industries with Highest Share of High-Growth Companies at the National Level*

In 2015, the five industries with the highest number of high-growth companies were, in this order: 1) IT Services, 2) Advertising & Marketing, 3) Business Products & Services, 4) Health, and 5) Software (Table 7).

Table 7
### Top Industries with Highest Share of High-Growth Companies (2015)

| Rank | Industry | High-Growth Companies | Share (%) |
|---|---|---|---|
| 1 | IT Services | 521 | 13.0% |
| 2 | Advertising & Marketing | 397 | 9.9% |
| 3 | Business Products & Services | 367 | 9.2% |
| 4 | Health | 315 | 7.9% |
| 5 | Software | 289 | 7.2% |

*Source: Authors' calculations from Inc. 500 | 5000 data.*

While tech-associated industries play a large role among high-growth firms in 2015—with IT, Health, and Software all among the top five industries with the highest shares of high-growth companies—the industry distribution for growth businesses is wide. This industry distribution includes sectors not always associated with fast-growing businesses, such as Food & Beverage, Retail, and Government Services.

For a complete list of industries of high-growth companies in 2015, please see Table 8.

Table 8
### Industries by Share of High-Growth Companies (2015)

| Rank | Industry | High-Growth Companies | Share (%) |
|---|---|---|---|
| 1 | IT Services | 521 | 13.0% |
| 2 | Advertising & Marketing | 397 | 9.9% |
| 3 | Business Products & Services | 367 | 9.2% |
| 4 | Health | 315 | 7.9% |
| 5 | Software | 289 | 7.2% |
| 6 | Financial Services | 195 | 4.9% |
| 6 | Construction | 195 | 4.9% |
| 8 | Government Services | 193 | 4.8% |
| 9 | Consumer Products & Services | 188 | 4.7% |
| 10 | Human Resources | 147 | 3.7% |
| 11 | Real Estate | 134 | 3.3% |
| 12 | Retail | 131 | 3.3% |
| 13 | Food & Beverage | 123 | 3.1% |
| 14 | Logistics & Transportation | 113 | 2.8% |
| 15 | Manufacturing | 111 | 2.8% |
| 16 | Telecommunications | 89 | 2.2% |
| 17 | Energy | 88 | 2.2% |
| 18 | Security | 71 | 1.8% |
| 19 | Engineering | 63 | 1.6% |
| 20 | Education | 58 | 1.4% |
| 21 | Insurance | 55 | 1.4% |
| 22 | Travel & Hospitality | 52 | 1.3% |
| 23 | Media | 51 | 1.3% |
| 24 | Environmental Services | 39 | 1.0% |
| 25 | Computer Hardware | 23 | 0.6% |

*Source: Authors' calculations from Inc. 500 | 5000 data.*

## *Metro Trends for Industries with Largest Share of High-Growth Companies*

Below, we present the top locations with the highest density of high-growth companies for each of the top five industries with the biggest share of growth companies in the country.

High-growth companies are rare entities and, while certain metros in the country can have hundreds of them in a given year, some metros can have just about a dozen of them. This is true for certain metros even among the top forty largest ones we focus on in this report. When we look at these high-growth companies divided by industry, these numbers get even smaller. As such, the tables and maps presented here have to be interpreted with care—and these numbers can change quickly from year to year. Nonetheless, these tables and maps tell an important story about growth entrepreneurship—the trends in geographical distribution and industry concentration we see for high-growth companies.

Table 9: Top Five Metros with Highest Density of High-Growth Companies per Industry (2015)

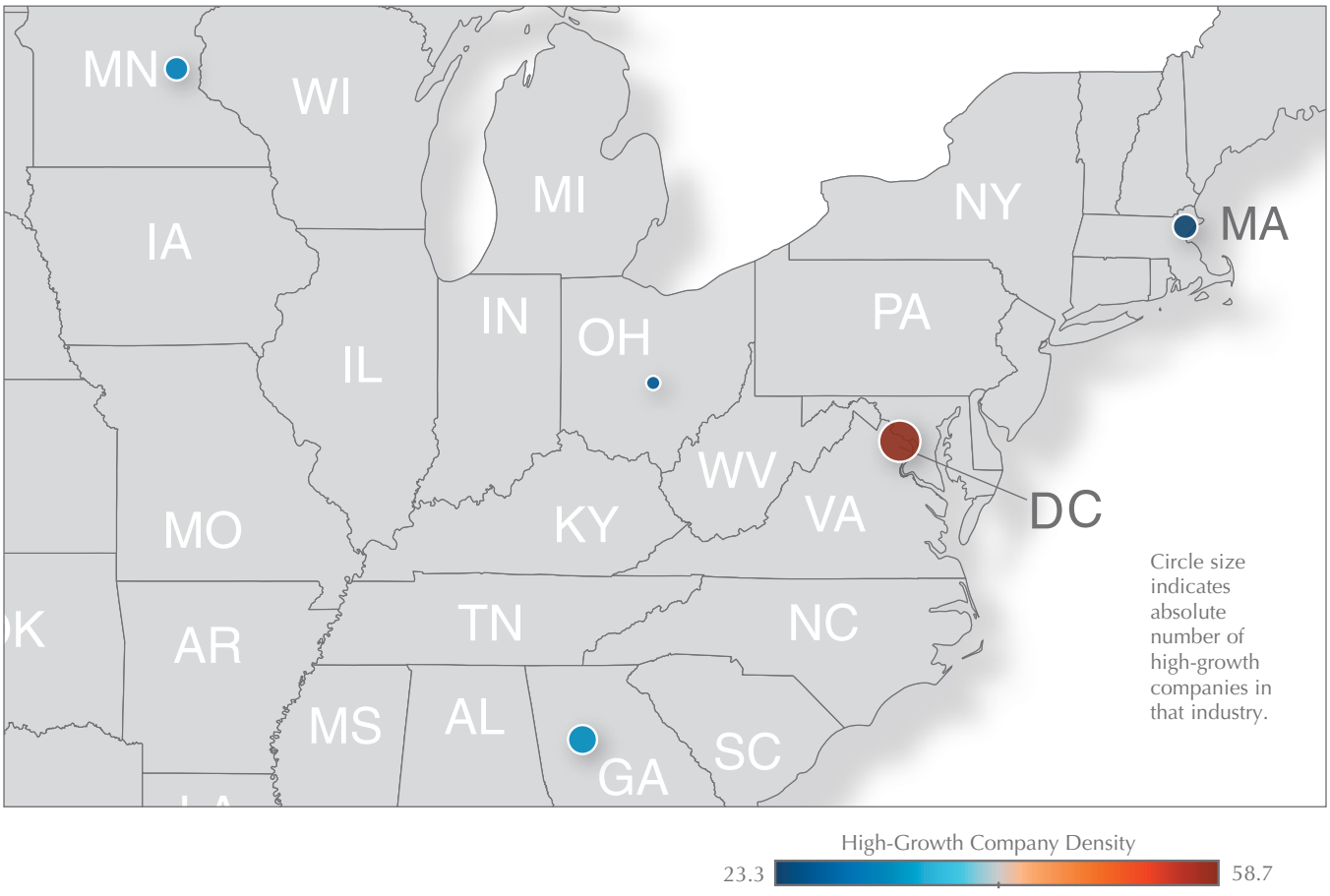
| | Rank | City (Main) | Metropolitan Area | High-Growth Company Density | Number of High-Growth Companies |
|---|---|---|---|---|---|
| IT Services | 1 | Washington | Washington-Arlington-Alexandria, DC-VA-MD-WV | 58.7 | 59 |
| | 2 | Atlanta | Atlanta-Sandy Springs-Marietta, GA | 32.2 | 29 |
| | 3 | Minneapolis | Minneapolis-St. Paul-Bloomington, MN-WI | 30.5 | 19 |
| | 4 | Columbus | Columbus, OH | 25.8 | 7 |
| | 5 | Boston | Boston-Cambridge-Quincy, MA-NH | 23.3 | 21 |
| Advertising & Marketing | 1 | Columbus | Columbus, OH | 25.8 | 7 |
| | 2 | San Francisco | San Francisco-Oakland-Fremont, CA | 20.2 | 18 |
| | 3 | Austin | Austin-Round Rock-San Marcos, TX | 18.8 | 6 |
| | 4 | San Diego | San Diego-Carlsbad-San Marcos, CA | 17.8 | 10 |
| | 4 | Boston | Boston-Cambridge-Quincy, MA-NH | 17.8 | 16 |
| Business Products & Services | 1 | Nashville | Nashville-Davidson-Murfreesboro-Franklin, TN | 22.4 | 6 |
| | 2 | Atlanta | Atlanta-Sandy Springs-Marietta, GA | 20.0 | 18 |
| | 3 | Boston | Boston-Cambridge-Quincy, MA-NH | 18.9 | 17 |
| | 4 | Austin | Austin-Round Rock-San Marcos, TX | 18.8 | 6 |
| | 5 | Washington | Washington-Arlington-Alexandria, DC-VA-MD-WV | 17.9 | 18 |
| Health | 1 | Nashville | Nashville-Davidson-Murfreesboro-Franklin, TN | 26.2 | 7 |
| | 2 | Austin | Austin-Round Rock-San Marcos, TX | 18.8 | 6 |
| | 3 | Atlanta | Atlanta-Sandy Springs-Marietta, GA | 17.8 | 16 |
| | 4 | Orlando | Orlando-Kissimmee-Sanford, FL | 17.5 | 7 |
| | 5 | Dallas | Dallas-Fort Worth-Arlington, TX | 16.0 | 16 |
| Software | 1 | San Jose | San Jose-Sunnyvale-Santa Clara, CA | 22.5 | 8 |
| | 2 | San Francisco | San Francisco-Oakland-Fremont, CA | 22.4 | 20 |
| | 3 | Austin | Austin-Round Rock-San Marcos, TX | 21.9 | 7 |
| | 4 | Portland | Portland-Vancouver-Hillsboro, OR-WA | 19.4 | 9 |
| | 5 | Washington | Washington-Arlington-Alexandria, DC-VA-MD-WV | 18.9 | 19 |

## Table 10 | Industry: IT Services

| Top Five Metros with Highest Density of High-Growth Companies per Industry (2015) | | | | |
|---|---|---|---|---|
| **Rank** | **City (Main)** | **Metropolitan Area** | **High-Growth Company Density** | **Number of High-Growth Companies** |
| 1 | Washington | Washington-Arlington-Alexandria, DC-VA-MD-WV | 58.7 | 59 |
| 2 | Atlanta | Atlanta-Sandy Springs-Marietta, GA | 32.2 | 29 |
| 3 | Minneapolis | Minneapolis-St. Paul-Bloomington, MN-WI | 30.5 | 19 |
| 4 | Columbus | Columbus, OH | 25.8 | 7 |
| 5 | Boston | Boston-Cambridge-Quincy, MA-NH | 23.3 | 21 |

Figure 6

Top Five Metros with Highest Density of High-Growth Companies (2015)
IT Services



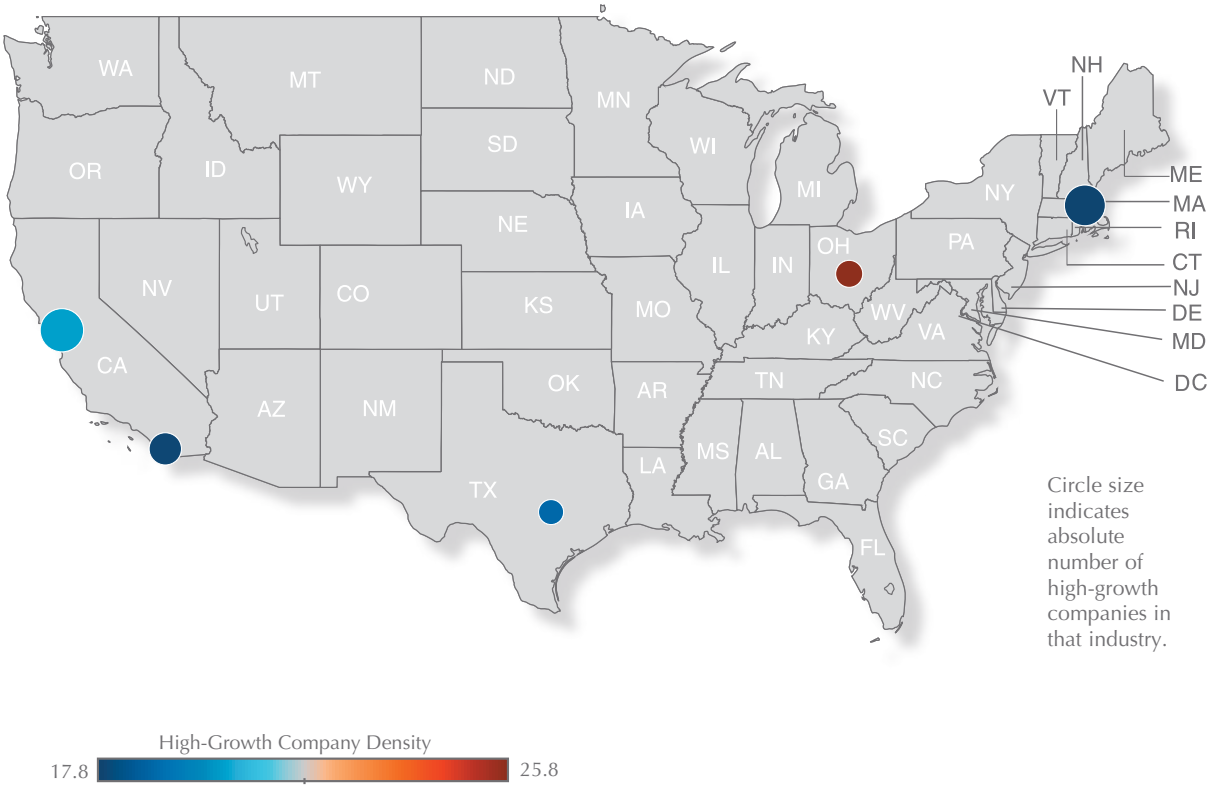

*For an interactive version of the map, please see: www.kauffmanindex.org.*

## Table 11 | Industry: Advertising & Marketing

| Top Five Metros with Highest Density of High-Growth Companies per Industry (2015) | | | | |
|---|---|---|---|---|
| **Rank** | **City (Main)** | **Metropolitan Area** | **High-Growth Company Density** | **Number of High-Growth Companies** |
| 1 | Columbus | Columbus, OH | 25.8 | 7 |
| 2 | San Francisco | San Francisco-Oakland-Fremont, CA | 20.2 | 18 |
| 3 | Austin | Austin-Round Rock-San Marcos, TX | 18.8 | 6 |
| 4 | San Diego | San Diego-Carlsbad-San Marcos, CA | 17.8 | 10 |
| 4 | Boston | Boston-Cambridge-Quincy, MA-NH | 17.8 | 16 |

Figure 7

Top Five Metros with Highest Density of High-Growth Companies (2015)
Advertising & Marketing



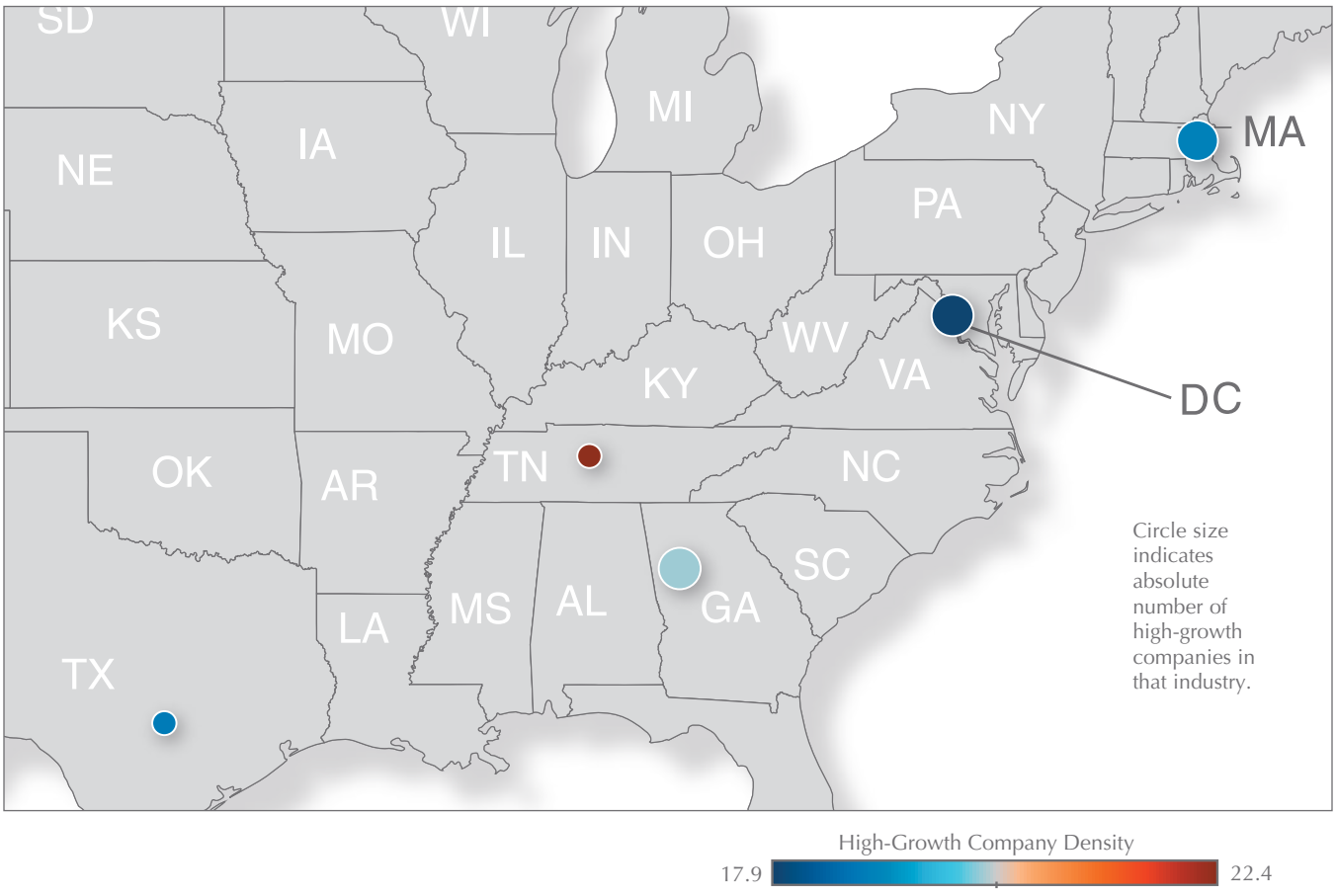

*For an interactive version of the map, please see: www.kauffmanindex.org.*

## Table 12 | Industry: Business Products & Services

| Top Five Metros with Highest Density of High-Growth Companies per Industry (2015) | | | | |
|---|---|---|---|---|
| **Rank** | **City (Main)** | **Metropolitan Area** | **High-Growth Company Density** | **Number of High-Growth Companies** |
| 1 | Nashville | Nashville-Davidson-Murfreesboro-Franklin, TN | 22.4 | 6 |
| 2 | Atlanta | Atlanta-Sandy Springs-Marietta, GA | 20.0 | 18 |
| 3 | Boston | Boston-Cambridge-Quincy, MA-NH | 18.9 | 17 |
| 4 | Austin | Austin-Round Rock-San Marcos, TX | 18.8 | 6 |
| 5 | Washington | Washington-Arlington-Alexandria, DC-VA-MD-WV | 17.9 | 18 |

Figure 8

Top Five Metros with Highest Density of High-Growth Companies (2015)
Business Products & Services



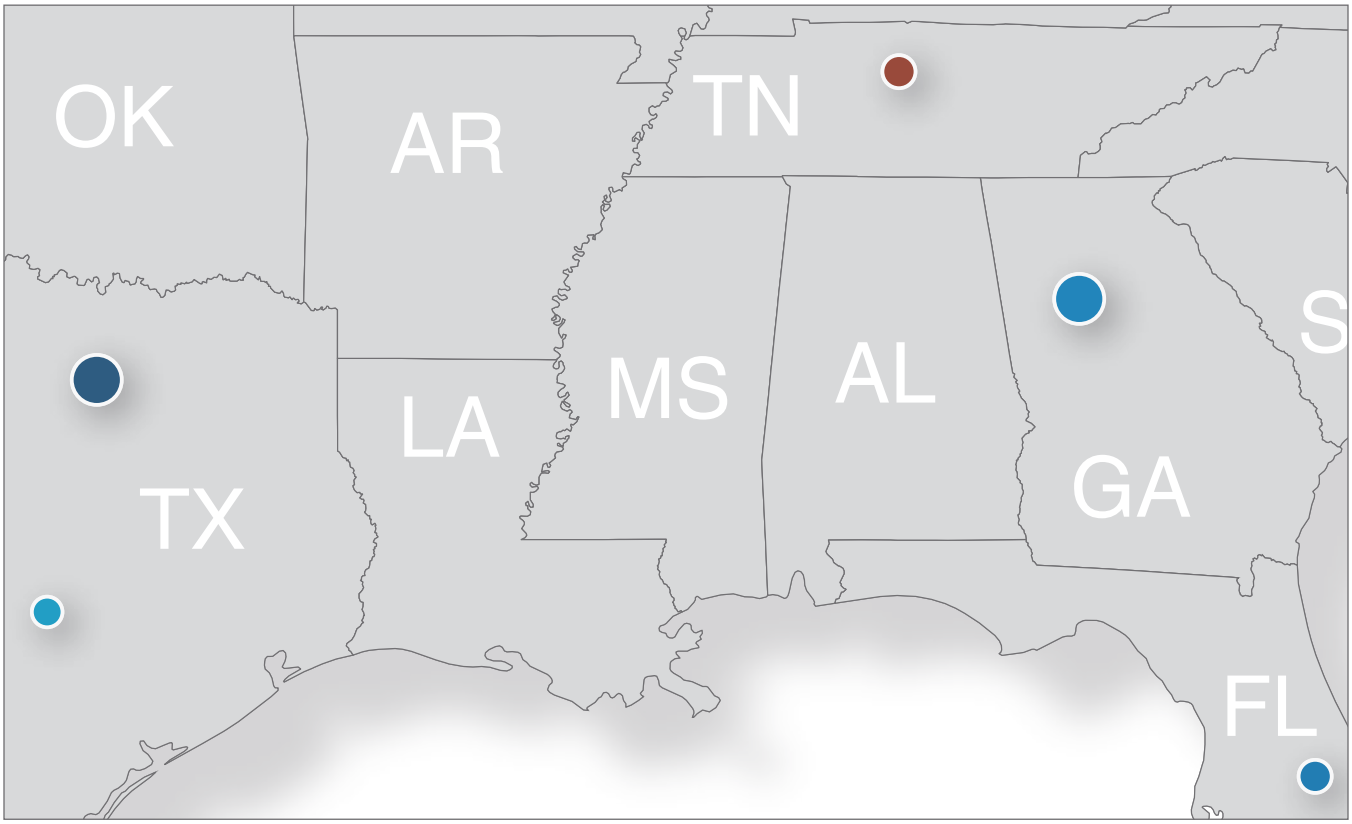

*For an interactive version of the map, please see: www.kauffmanindex.org.*

## Table 13 | Industry: Health

| Top Five Metros with Highest Density of High-Growth Companies per Industry (2015) | | | | |
|---|---|---|---|---|
| **Rank** | **City (Main)** | **Metropolitan Area** | **High-Growth Company Density** | **Number of High-Growth Companies** |
| 1 | Nashville | Nashville-Davidson-Murfreesboro-Franklin, TN | 26.2 | 7 |
| 2 | Austin | Austin-Round Rock-San Marcos, TX | 18.8 | 6 |
| 3 | Atlanta | Atlanta-Sandy Springs-Marietta, GA | 17.8 | 16 |
| 4 | Orlando | Orlando-Kissimmee-Sanford, FL | 17.5 | 7 |
| 5 | Dallas | Dallas-Fort Worth-Arlington, TX | 16.0 | 16 |

Figure 9

Top Five Metros with Highest Density of High-Growth Companies (2015)
Health




Circle size indicates absolute number of high-growth companies in that industry.

High-Growth Company Density
16.0 — 26.2

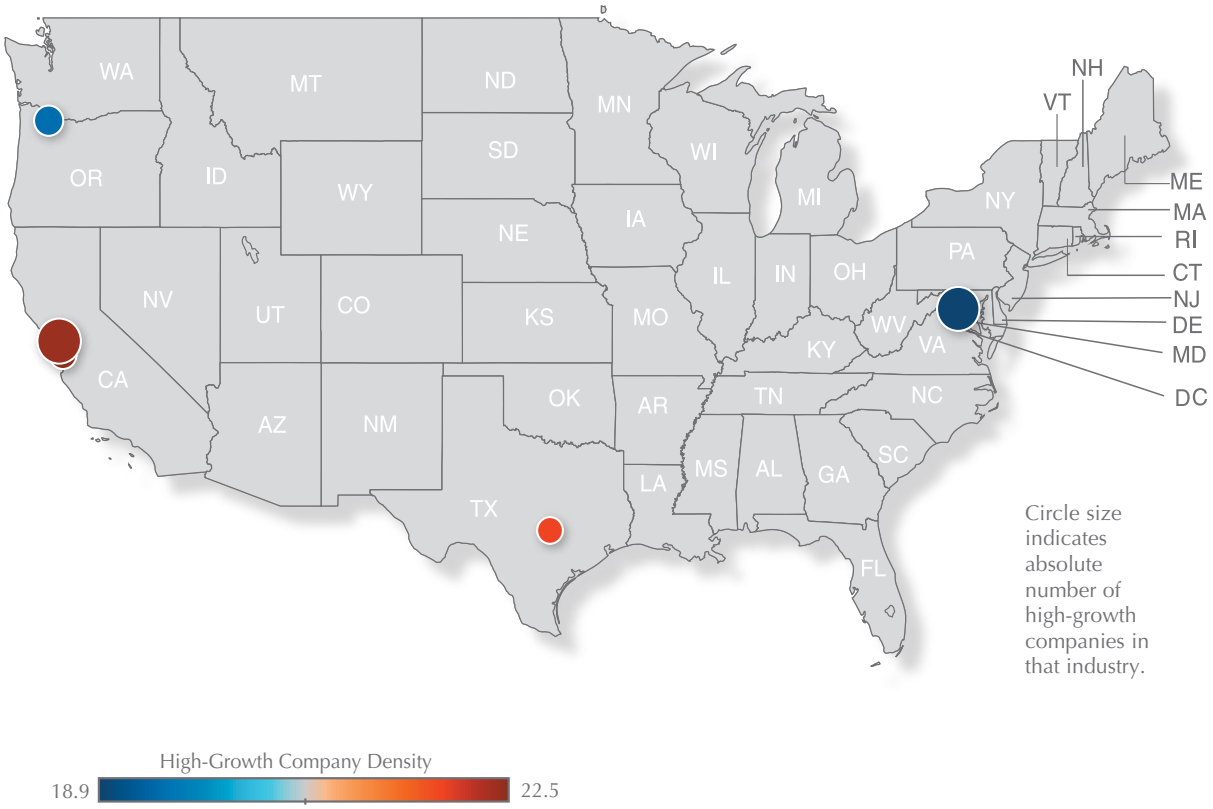
*For an interactive version of the map, please see: www.kauffmanindex.org.*

## Table 14 | Industry: Software

| Top Five Metros with Highest Density of High-Growth Companies per Industry (2015) | | | | |
|---|---|---|---|---|
| **Rank** | **City (Main)** | **Metropolitan Area** | **High-Growth Company Density** | **Number of High-Growth Companies** |
| 1 | San Jose | San Jose-Sunnyvale-Santa Clara, CA | 22.5 | 8 |
| 2 | San Francisco | San Francisco-Oakland-Fremont, CA | 22.4 | 20 |
| 3 | Austin | Austin-Round Rock-San Marcos, TX | 21.9 | 7 |
| 4 | Portland | Portland-Vancouver-Hillsboro, OR-WA | 19.4 | 9 |
| 5 | Washington | Washington-Arlington-Alexandria, DC-VA-MD-WV | 18.9 | 19 |

**Figure 10**

### Top Five Metros with Highest Density of High-Growth Companies (2015)
### Software




*For an interactive version of the map, please see: www.kauffmanindex.org.*

# METRO PROFILES ORDERED BY RANK

Table 2

## Metropolitan Area Rankings for the Kauffman Index of Growth Entrepreneurship

| Rank 2016 | Index 2016 | City (Main) | Metropolitan Area | Rank 2015 | Change in Rank | Rate of Startup Growth | Share of Scaleups | High-Growth Company Density |
|---|---|---|---|---|---|---|---|---|
| 1 | 14.38 | Washington | Washington-Arlington-Alexandria, DC-VA-MD-WV | 1 | 0 | 116.9% | 2.34% | 271.5 |
| 2 | 10.90 | Austin | Austin-Round Rock-San Marcos, TX | 2 | 0 | 81.2% | 2.25% | 234.7 |
| 3 | 8.04 | San Jose | San Jose-Sunnyvale-Santa Clara, CA | 4 | 1 | 128.1% | 2.15% | 109.6 |
| 4 | 7.05 | Columbus | Columbus, OH | 5 | 1 | 51.9% | 2.68% | 143.8 |
| 5 | 6.75 | Nashville | Nashville-Davidson-Murfreesboro-Franklin, TN | 9 | 4 | 71.5% | 2.09% | 153.3 |
| 6 | 6.20 | Boston | Boston-Cambridge-Quincy, MA-NH | 3 | -3 | 74.3% | 2.05% | 138.7 |
| 7 | 5.77 | San Diego | San Diego-Carlsbad-San Marcos, CA | 7 | 0 | 73.0% | 1.59% | 162.1 |
| 8 | 5.70 | San Francisco | San Francisco-Oakland-Fremont, CA | 6 | -2 | 71.5% | 1.79% | 147.9 |
| 9 | 5.37 | San Antonio | San Antonio-New Braunfels, TX | 20 | 11 | 85.8% | 2.67% | 58.8 |
| 10 | 5.03 | Dallas | Dallas-Fort Worth-Arlington, TX | 10 | 0 | 56.3% | 1.98% | 137.4 |
| 11 | 5.02 | Charlotte | Charlotte-Gastonia-Rock Hill, NC-SC | 13 | 2 | 45.5% | 2.17% | 137.0 |
| 12 | 4.76 | Phoenix | Phoenix-Mesa-Glendale, AZ | 16 | 4 | 63.9% | 1.74% | 137.8 |
| 13 | 4.65 | Denver | Denver-Aurora-Broomfield, CO | 14 | 1 | 70.5% | 1.61% | 135.7 |
| 14 | 4.17 | Houston | Houston-Sugar Land-Baytown, TX | 17 | 3 | 56.4% | 2.02% | 112.4 |
| 15 | 3.89 | Atlanta | Atlanta-Sandy Springs-Marietta, GA | 15 | 0 | 43.8% | 1.29% | 173.5 |
| 16 | 3.88 | Cincinnati | Cincinnati-Middletown, OH-KY-IN | 35 | 19 | 74.4% | 1.51% | 118.3 |
| 17 | 3.68 | Minneapolis | Minneapolis-St. Paul-Bloomington, MN-WI | 19 | 2 | 54.7% | 1.78% | 119.0 |
| 18 | 3.50 | Baltimore | Baltimore-Towson, MD | 8 | -10 | 77.9% | 1.90% | 76.4 |
| 19 | 3.32 | Cleveland | Cleveland-Elyria-Mentor, OH | 26 | 7 | 71.7% | 1.71% | 93.4 |
| 20 | 3.30 | Indianapolis | Indianapolis-Carmel, IN | 11 | -9 | 35.3% | 2.26% | 99.7 |
| 21 | 3.15 | Philadelphia | Philadelphia-Camden-Wilmington, PA-NJ-DE-MD | 26 | 5 | 66.7% | 1.52% | 108.6 |
| 22 | 2.87 | Seattle | Seattle-Tacoma-Bellevue, WA | 18 | -4 | 67.0% | 1.52% | 101.2 |
| 23 | 2.82 | Jacksonville | Jacksonville, FL | 23 | 0 | 93.0% | 1.35% | 79.0 |
| 24 | 2.50 | Kansas City | Kansas City, MO-KS | 24 | 0 | 54.4% | 1.81% | 87.4 |
| 25 | 2.41 | Virginia Beach | Virginia Beach-Norfolk-Newport News, VA-NC | 22 | -3 | 62.7% | 1.86% | 71.0 |
| 26 | 2.28 | Tampa | Tampa-St. Petersburg-Clearwater, FL | 30 | 4 | 56.8% | 1.16% | 125.1 |
| 27 | 2.23 | Pittsburgh | Pittsburgh, PA | 12 | -15 | 54.4% | 2.05% | 62.9 |
| 28 | 1.48 | Portland | Portland-Vancouver-Hillsboro, OR-WA | 28 | 0 | 63.8% | 1.21% | 92.7 |
| 29 | 1.35 | St. Louis | St. Louis, MO-IL | 31 | 2 | 67.0% | 1.44% | 68.6 |
| 30 | 1.27 | Chicago | Chicago-Joliet-Naperville, IL-IN-WI | 25 | -5 | 47.8% | 1.28% | 102.5 |
| 31 | 1.16 | Milwaukee | Milwaukee-Waukesha-West Allis, WI | 21 | -10 | 52.7% | 1.91% | 48.0 |
| 32 | 0.91 | Las Vegas | Las Vegas-Paradise, NV | 29 | -3 | 55.4% | 1.59% | 61.7 |
| 33 | 0.86 | Los Angeles | Los Angeles-Long Beach-Santa Ana, CA | 33 | 0 | 51.5% | 1.20% | 93.1 |
| 34 | 0.63 | Orlando | Orlando-Kissimmee-Sanford, FL | 36 | 2 | 37.3% | 1.03% | 117.2 |
| 35 | 0.25 | New York | New York-Northern New Jersey-Long Island, NY-NJ-PA | 32 | -3 | 54.8% | 1.04% | 84.7 |
| 36 | 0.09 | Providence | Providence-New Bedford-Fall River, RI-MA | 37 | 1 | 56.2% | 1.39% | 53.8 |
| 37 | -0.13 | Sacramento | Sacramento-Arden-Arcade-Roseville, CA | 34 | -3 | 57.7% | 1.47% | 40.4 |
| 38 | -0.68 | Riverside | Riverside-San Bernardino-Ontario, CA | 40 | 2 | 48.2% | 1.41% | 42.9 |
| 39 | -1.03 | Miami | Miami-Fort Lauderdale-Pompano Beach, FL | 39 | 0 | 39.5% | 0.81% | 88.4 |
| 40 | -1.34 | Detroit | Detroit-Warren-Livonia, MI | 38 | -2 | 52.7% | 0.79% | 64.9 |

*For an interactive version of the rankings, please see: www.kauffmanindex.org.*

# Washington, D.C.

Metro: Washington-Arlington-Alexandria | State: District of Columbia-Virginia-Maryland-West Virginia

Metro Profile

## Growth Entrepreneurship Rank

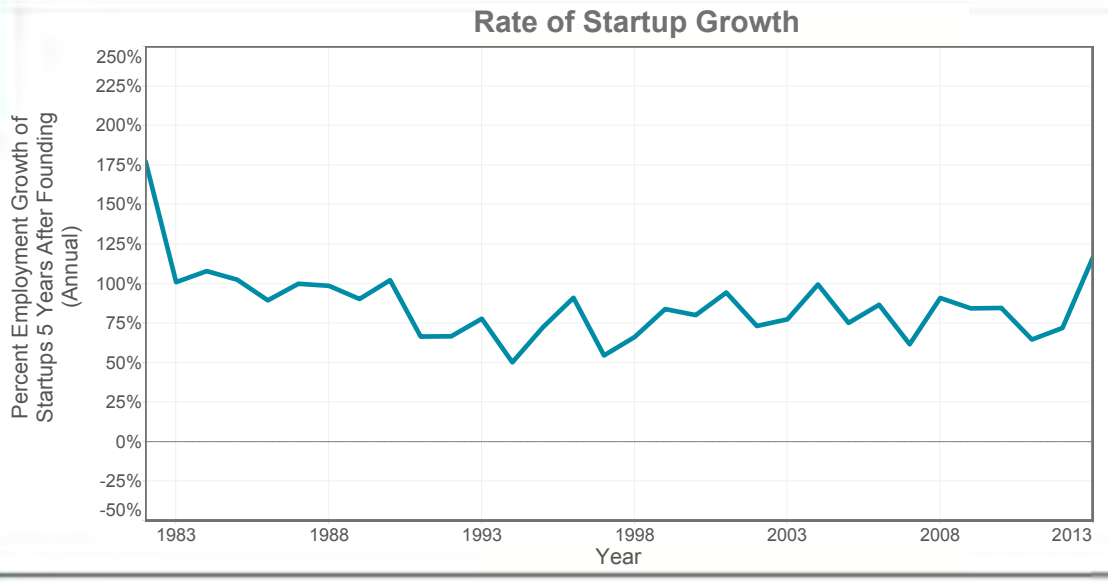
| 2016 | 2015 |
|---|---|
| 1 | 1 |

## Rate of Startup Growth

| 2016 Component | 2015 Component |
|---|---|
| 116.85% | 72.05% |

Measures how much startups have grown as a cohort, on average, five years after founding - measured by change in employment.

Source: Author calculations from BDS. Yearly measure.

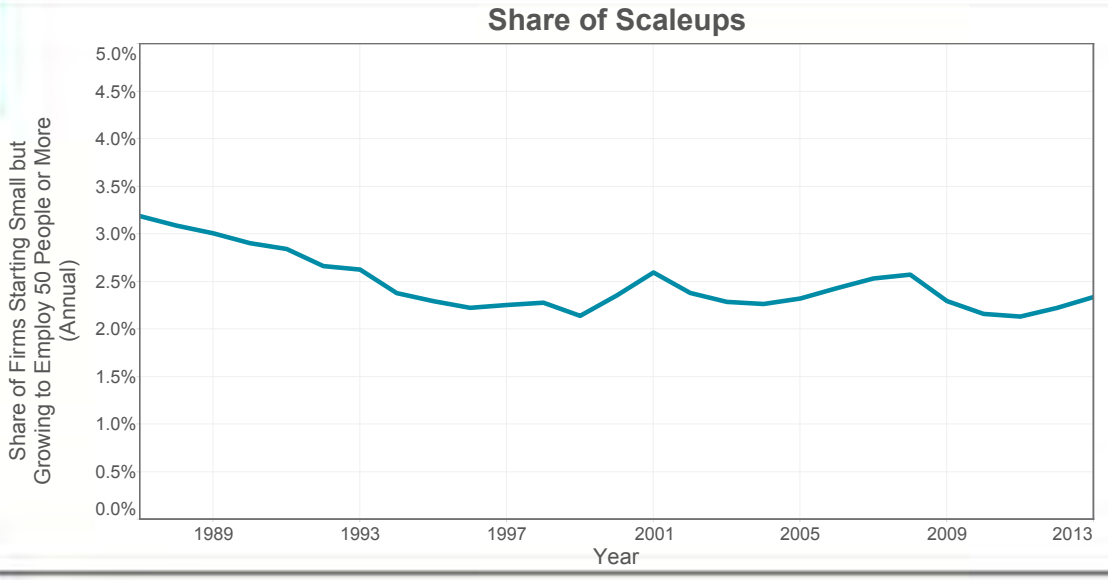



## Share of Scaleups

| 2016 Component | 2015 Component |
|---|---|
| 2.34% | 2.22% |

Measures the number of firms that started small but grew to employ fifty people or more by their tenth year of operation as a percentage of all employer firms ten years and younger.

Source: Author calculations from BDS. Yearly measure.

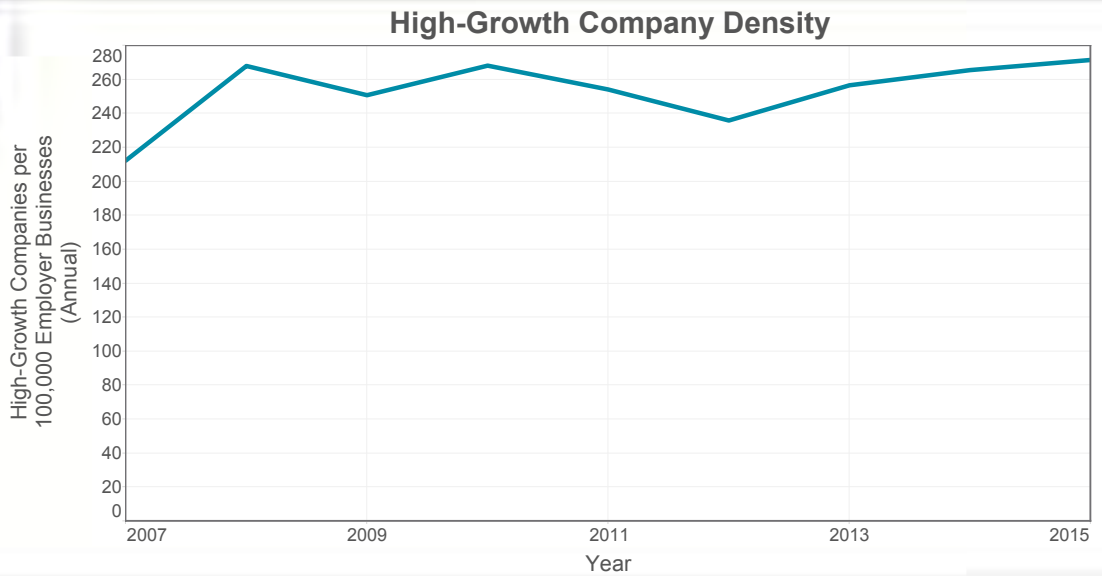



## High-Growth Company Density

| 2016 Component | 2015 Component |
|---|---|
| 271.5 | 265.6 |

Measures the number of private businesses with at least $2 million in annual revenue reaching three years of 20 percent annual revenue growth normalized by total business population.

Source: Author calculations from BDS and Inc. 500/5000.Yearly measure.



# Austin

Metro: Austin-Round Rock-San Marcos | State: Texas

Metro Profile

growth entrepreneurship

## Growth Entrepreneurship Rank

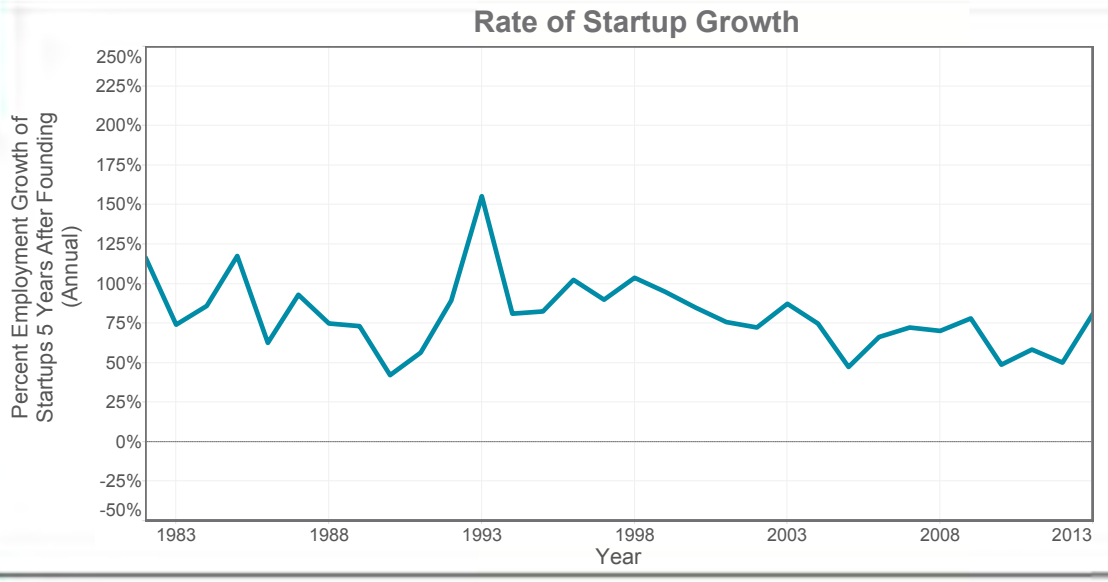
| 2016 | 2015 |
|---|---|
| 2 | 2 |

## Rate of Startup Growth

| 2016 Component | 2015 Component |
|---|---|
| 81.23% | 50.12% |

Measures how much startups have grown as a cohort, on average, five years after founding - measured by change in employment.

Source: Author calculations from BDS. Yearly measure.

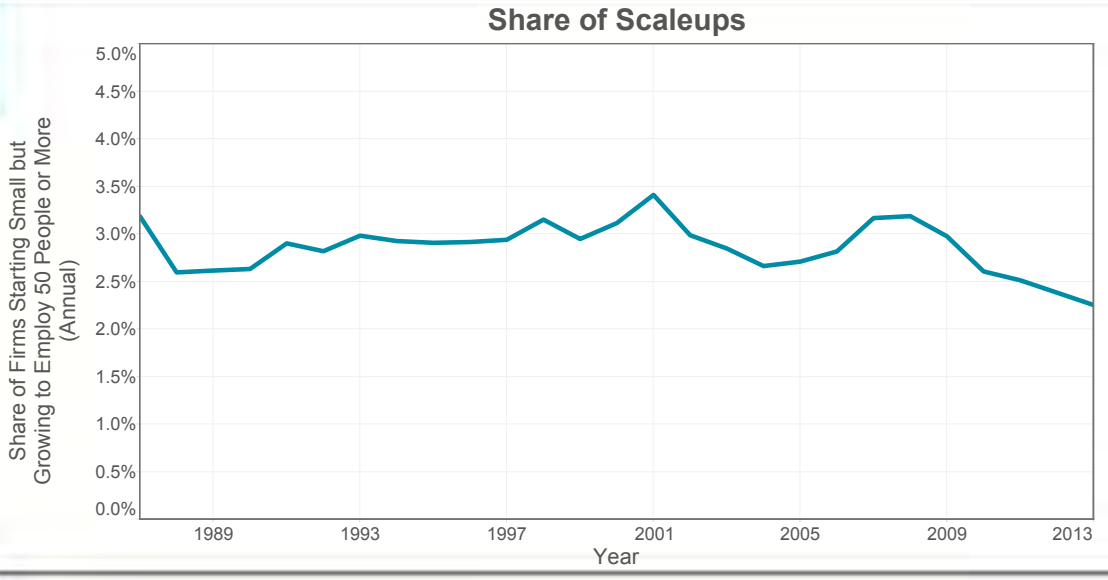



## Share of Scaleups

| 2016 Component | 2015 Component |
|---|---|
| 2.25% | 2.38% |

Measures the number of firms that started small but grew to employ fifty people or more by their tenth year of operation as a percentage of all employer firms ten years and younger.

Source: Author calculations from BDS. Yearly measure.

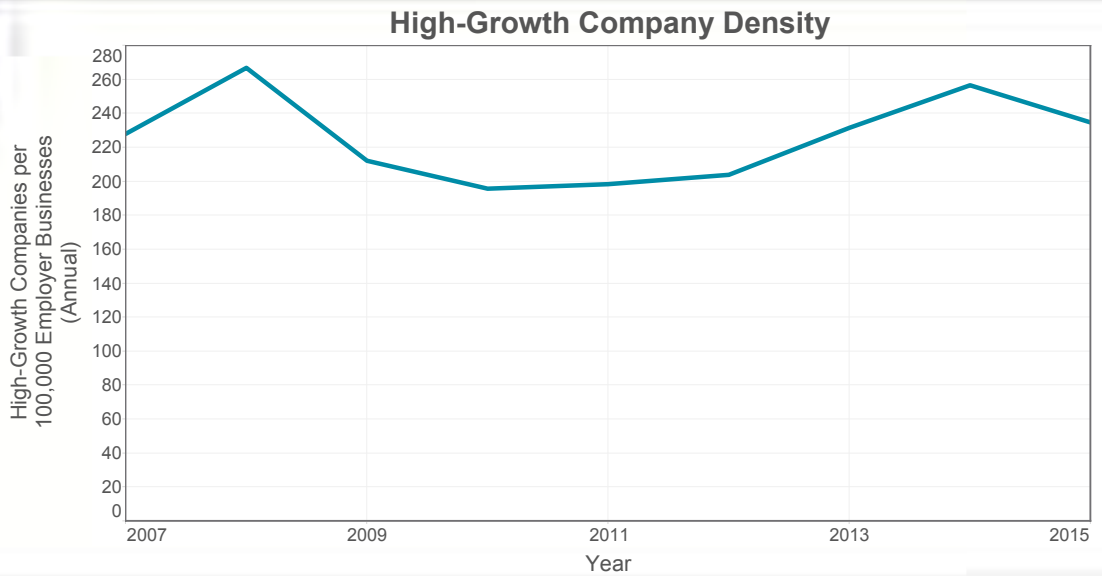



## High-Growth Company Density

| 2016 Component | 2015 Component |
|---|---|
| 234.7 | 256.6 |

Measures the number of private businesses with at least $2 million in annual revenue reaching three years of 20 percent annual revenue growth normalized by total business population.

Source: Author calculations from BDS and Inc. 500/5000.Yearly measure.



# San Jose

Metro: San Jose-Sunnyvale-Santa Clara | State: California

Metro Profile

growth entrepreneurship

## Growth Entrepreneurship Rank

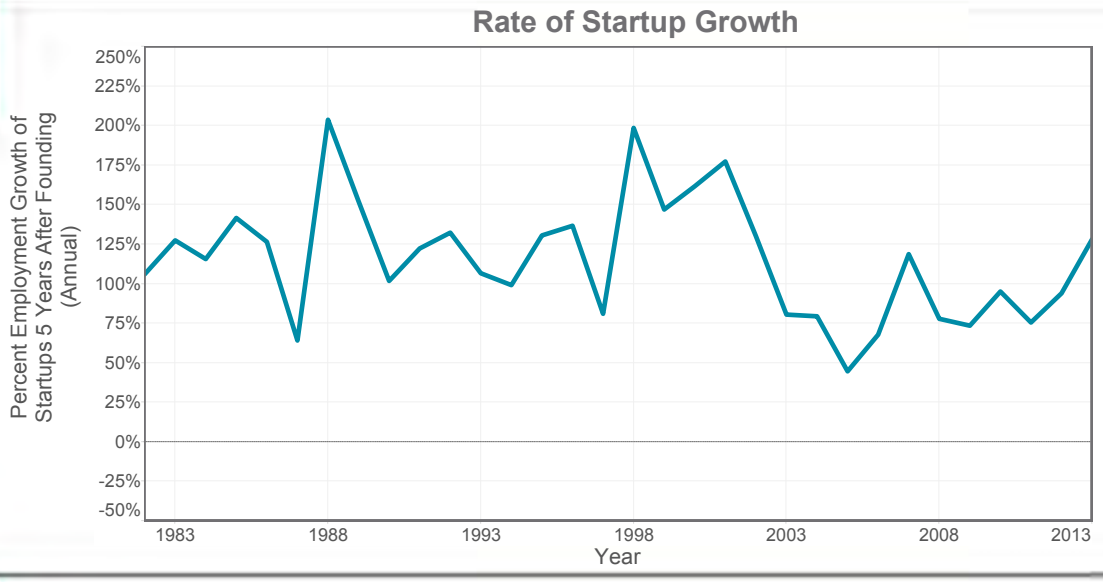
| 2016 | 2015 |
|---|---|
| 3 | 4 |

## Rate of Startup Growth

| 2016 Component | 2015 Component |
|---|---|
| 128.12% | 93.96% |

Measures how much startups have grown as a cohort, on average, five years after founding - measured by change in employment.

Source: Author calculations from BDS. Yearly measure.

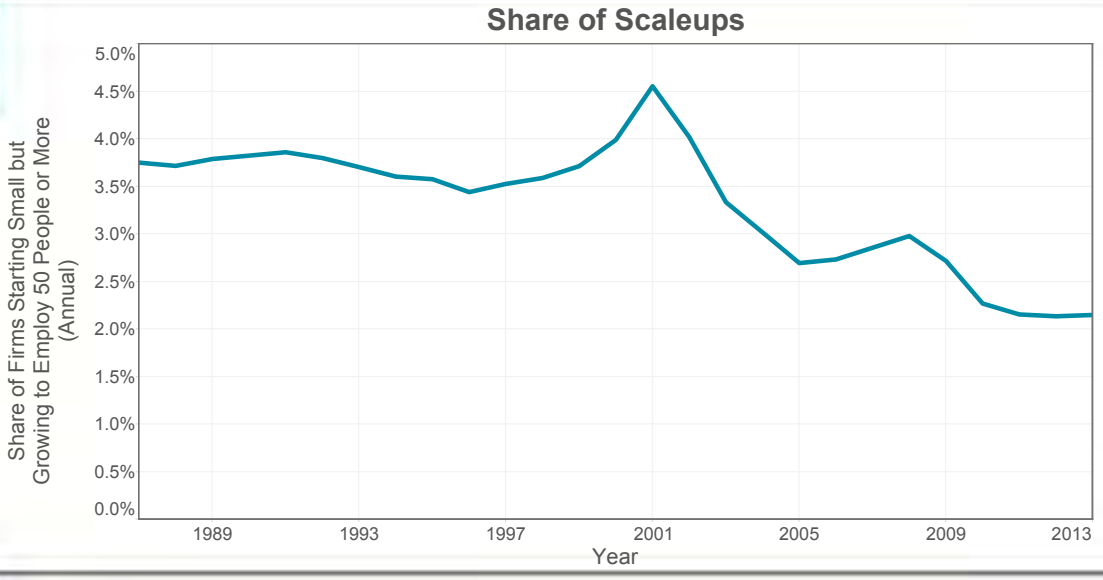



## Share of Scaleups

| 2016 Component | 2015 Component |
|---|---|
| 2.15% | 2.13% |

Measures the number of firms that started small but grew to employ fifty people or more by their tenth year of operation as a percentage of all employer firms ten years and younger.

Source: Author calculations from BDS. Yearly measure.

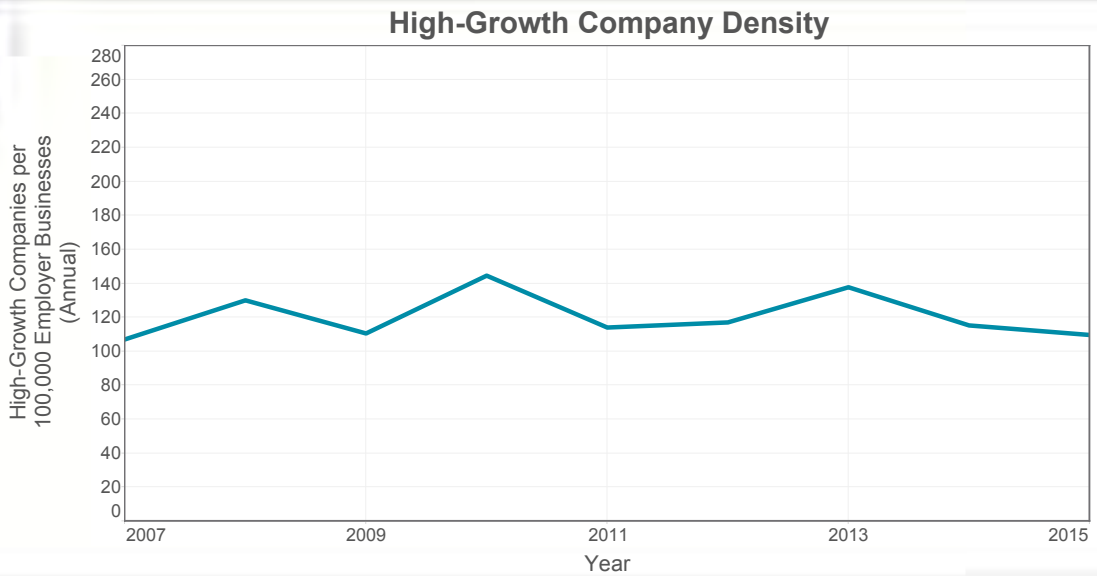



## High-Growth Company Density

| 2016 Component | 2015 Component |
|---|---|
| 109.6 | 115.2 |

Measures the number of private businesses with at least $2 million in annual revenue reaching three years of 20 percent annual revenue growth normalized by total business population.

Source: Author calculations from BDS and Inc. 500/5000.Yearly measure.



# Columbus

Metro: Columbus | State: Ohio

Metro Profile

growth entrepreneurship

## Growth Entrepreneurship Rank

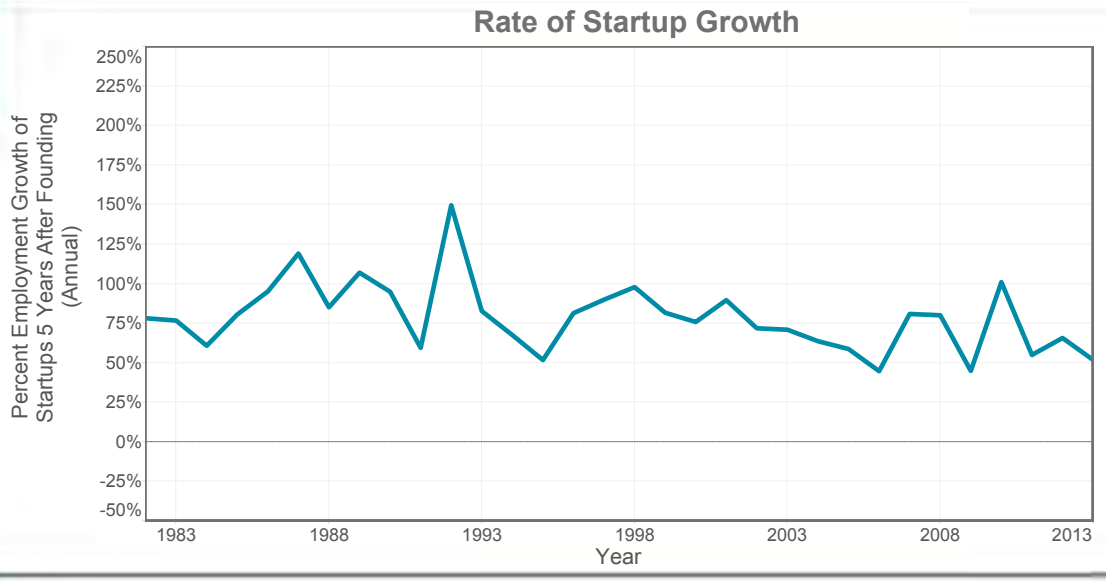
| 2016 | 2015 |
|---|---|
| 4 | 5 |

## Rate of Startup Growth

| 2016 Component | 2015 Component |
|---|---|
| 51.86% | 65.70% |

Measures how much startups have grown as a cohort, on average, five years after founding - measured by change in employment.

Source: Author calculations from BDS. Yearly measure.

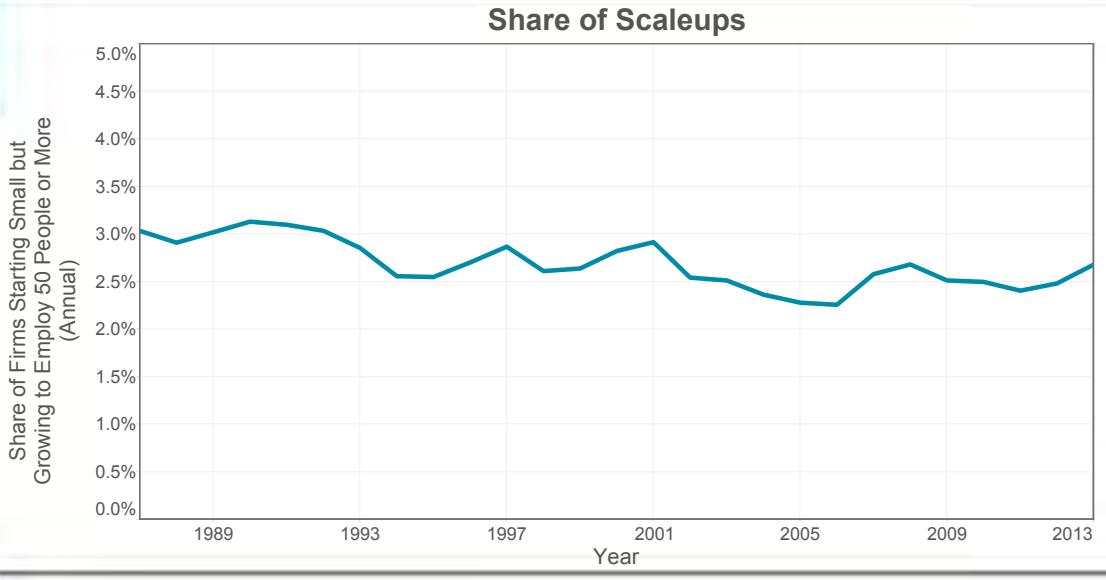



## Share of Scaleups

| 2016 Component | 2015 Component |
|---|---|
| 2.68% | 2.48% |

Measures the number of firms that started small but grew to employ fifty people or more by their tenth year of operation as a percentage of all employer firms ten years and younger.

Source: Author calculations from BDS. Yearly measure.

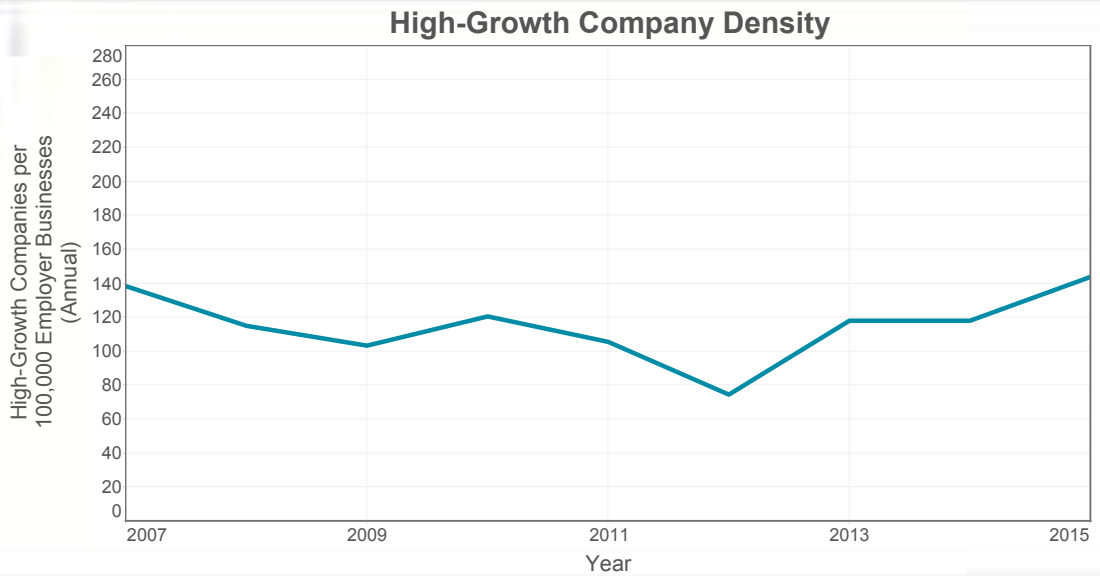



## High-Growth Company Density

| 2016 Component | 2015 Component |
|---|---|
| 143.8 | 118.0 |

Measures the number of private businesses with at least $2 million in annual revenue reaching three years of 20 percent annual revenue growth normalized by total business population.

Source: Author calculations from BDS and Inc. 500/5000.Yearly measure.



# Nashville

growth entrepreneurship

Metro: Nashville-Davidson-Murfreesboro-Franklin | State: Tennessee

Metro Profile

## Growth Entrepreneurship Rank

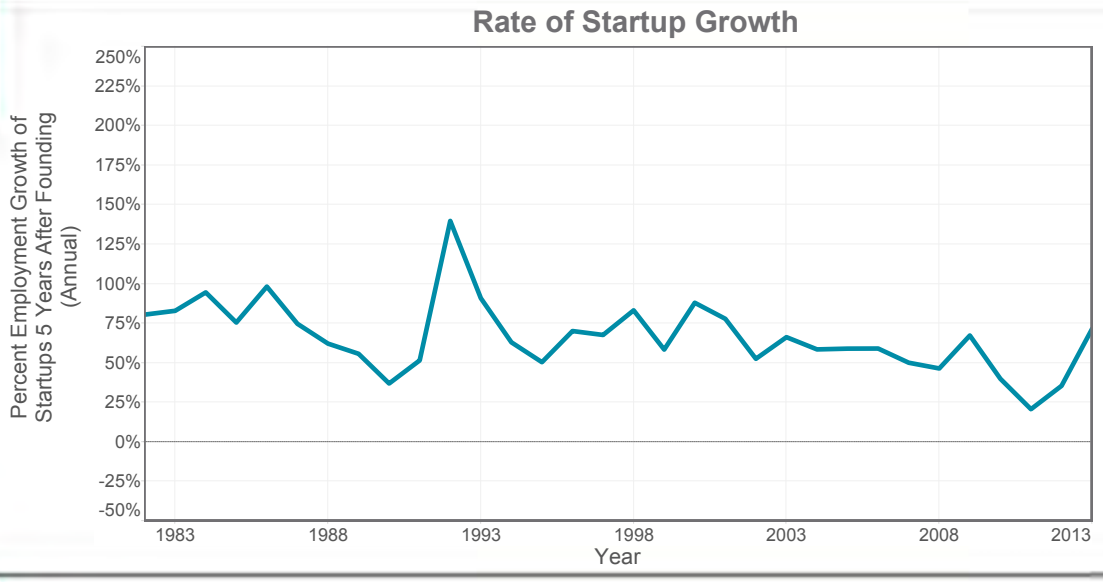
| 2016 | 2015 |
|---|---|
| 5 | 9 |

## Rate of Startup Growth

| 2016 Component | 2015 Component |
|---|---|
| 71.47% | 35.43% |

Measures how much startups have grown as a cohort, on average, five years after founding - measured by change in employment.

Source: Author calculations from BDS. Yearly measure.

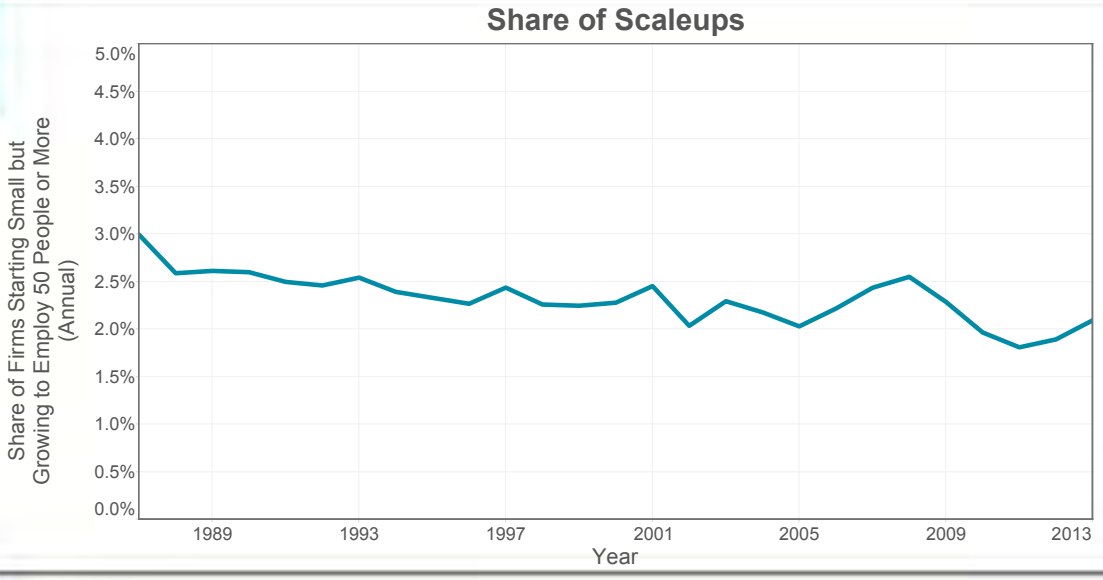



## Share of Scaleups

| 2016 Component | 2015 Component |
|---|---|
| 2.09% | 1.89% |

Measures the number of firms that started small but grew to employ fifty people or more by their tenth year of operation as a percentage of all employer firms ten years and younger.

Source: Author calculations from BDS. Yearly measure.

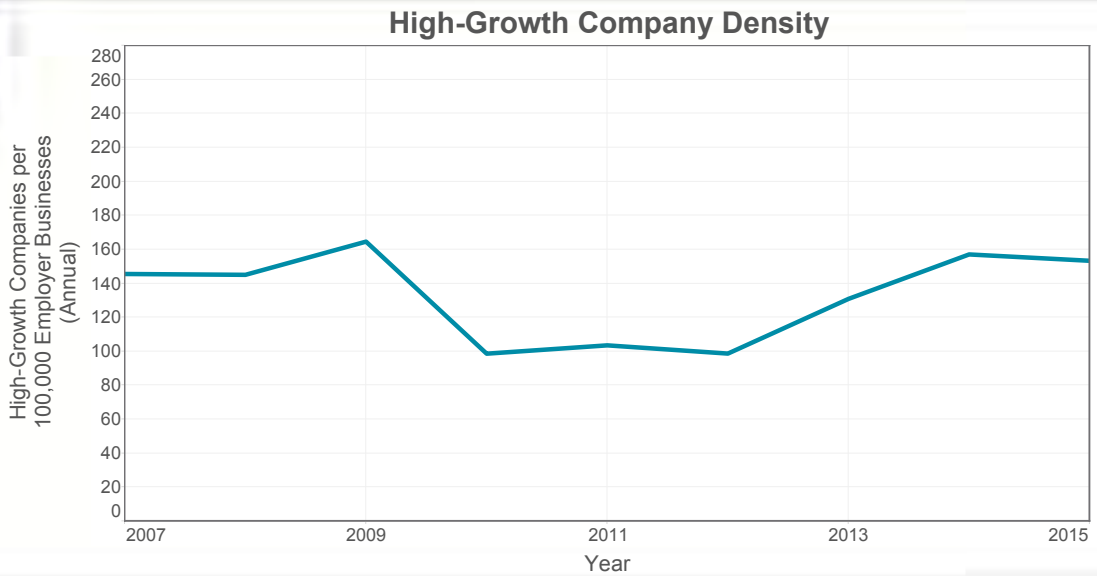



## High-Growth Company Density

| 2016 Component | 2015 Component |
|---|---|
| 153.3 | 157.0 |

Measures the number of private businesses with at least $2 million in annual revenue reaching three years of 20 percent annual revenue growth normalized by total business population.

Source: Author calculations from BDS and Inc. 500/5000.Yearly measure.



# Boston

growth entrepreneurship

Metro: Boston-Cambridge-Quincy | State: Massachusetts-New Hampshire

Metro Profile

## Growth Entrepreneurship Rank

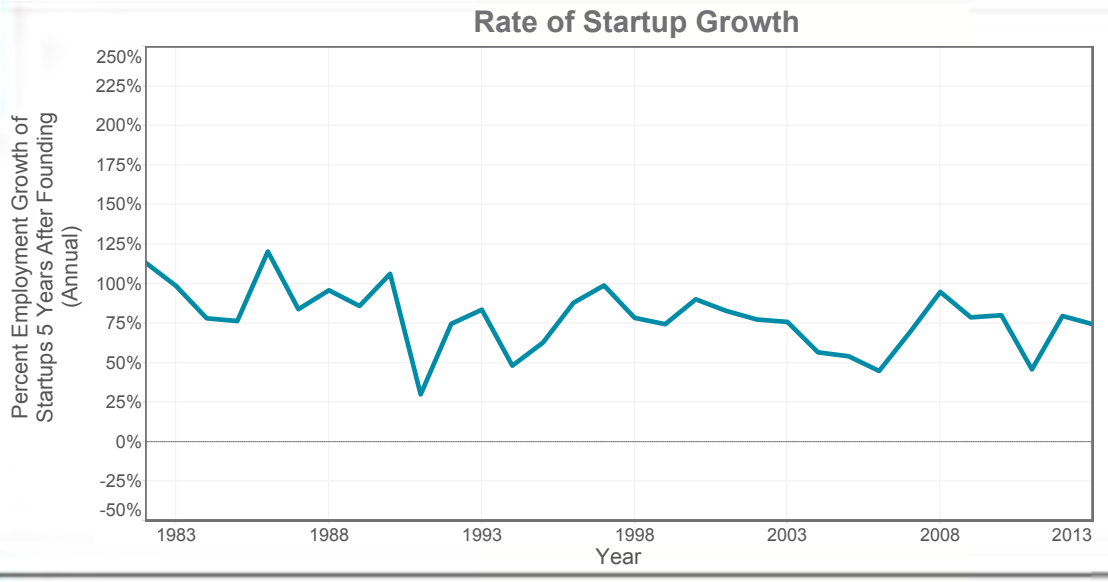
| 2016 | 2015 |
|---|---|
| 6 | 3 |

## Rate of Startup Growth

| 2016 Component | 2015 Component |
|---|---|
| 74.34% | 79.60% |

Measures how much startups have grown as a cohort, on average, five years after founding - measured by change in employment.

Source: Author calculations from BDS. Yearly measure.

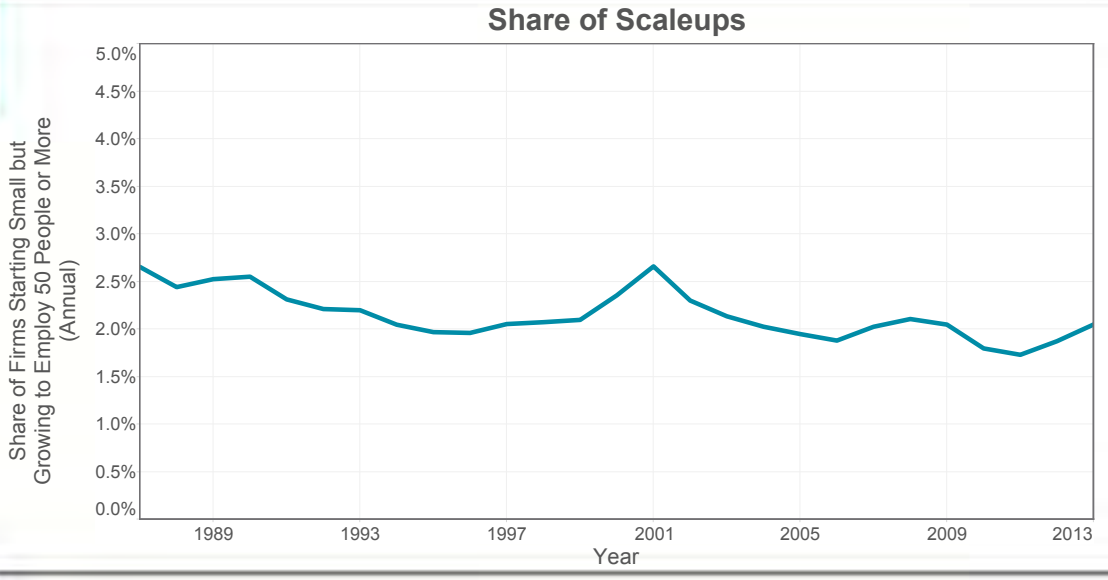



## Share of Scaleups

| 2016 Component | 2015 Component |
|---|---|
| 2.05% | 1.87% |

Measures the number of firms that started small but grew to employ fifty people or more by their tenth year of operation as a percentage of all employer firms ten years and younger.

Source: Author calculations from BDS. Yearly measure.

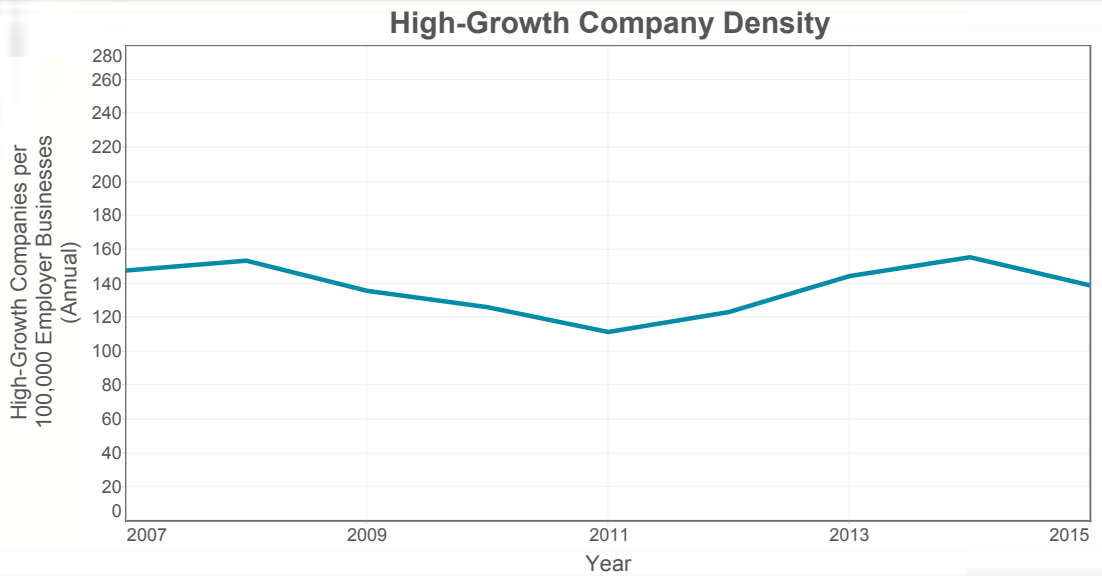



## High-Growth Company Density

| 2016 Component | 2015 Component |
|---|---|
| 138.7 | 155.4 |

Measures the number of private businesses with at least $2 million in annual revenue reaching three years of 20 percent annual revenue growth normalized by total business population.

Source: Author calculations from BDS and Inc. 500/5000.Yearly measure.



# San Diego

Metro: San Diego-Carlsbad-San Marcos | State: California

Metro Profile

growth entrepreneurship

## Growth Entrepreneurship Rank

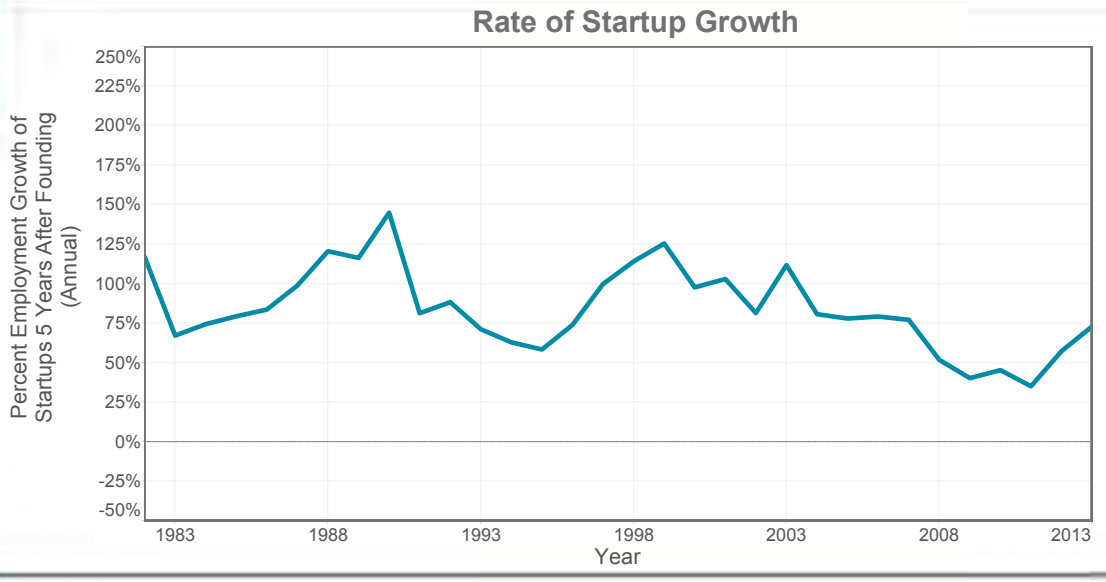
| 2016 | 2015 |
|---|---|
| 7 | 7 |

## Rate of Startup Growth

| 2016 Component | 2015 Component |
|---|---|
| 72.97% | 57.39% |

Measures how much startups have grown as a cohort, on average, five years after founding - measured by change in employment.

Source: Author calculations from BDS. Yearly measure.

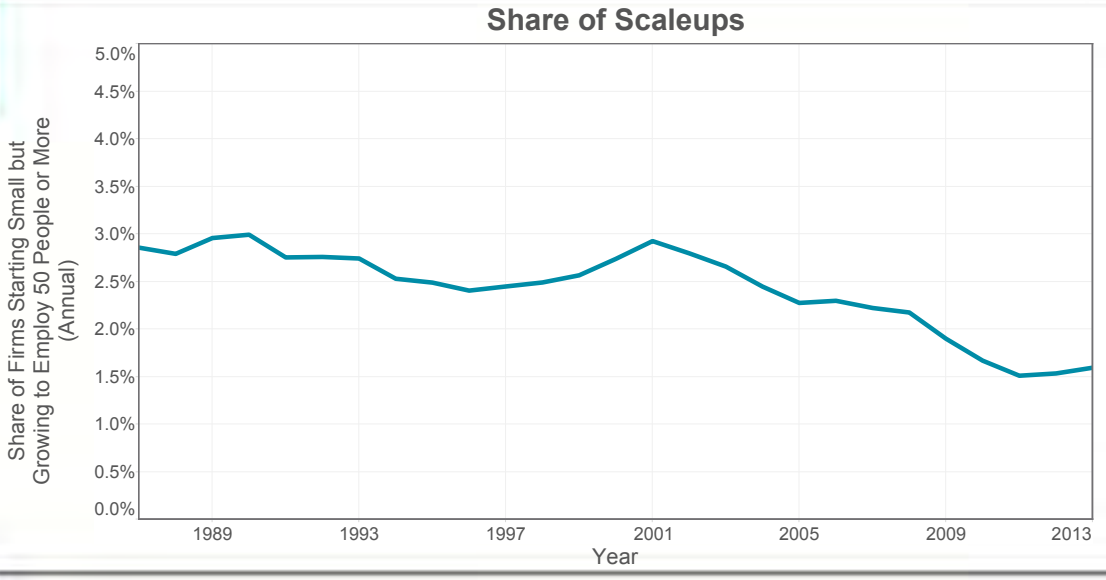



## Share of Scaleups

| 2016 Component | 2015 Component |
|---|---|
| 1.59% | 1.53% |

Measures the number of firms that started small but grew to employ fifty people or more by their tenth year of operation as a percentage of all employer firms ten years and younger.

Source: Author calculations from BDS. Yearly measure.

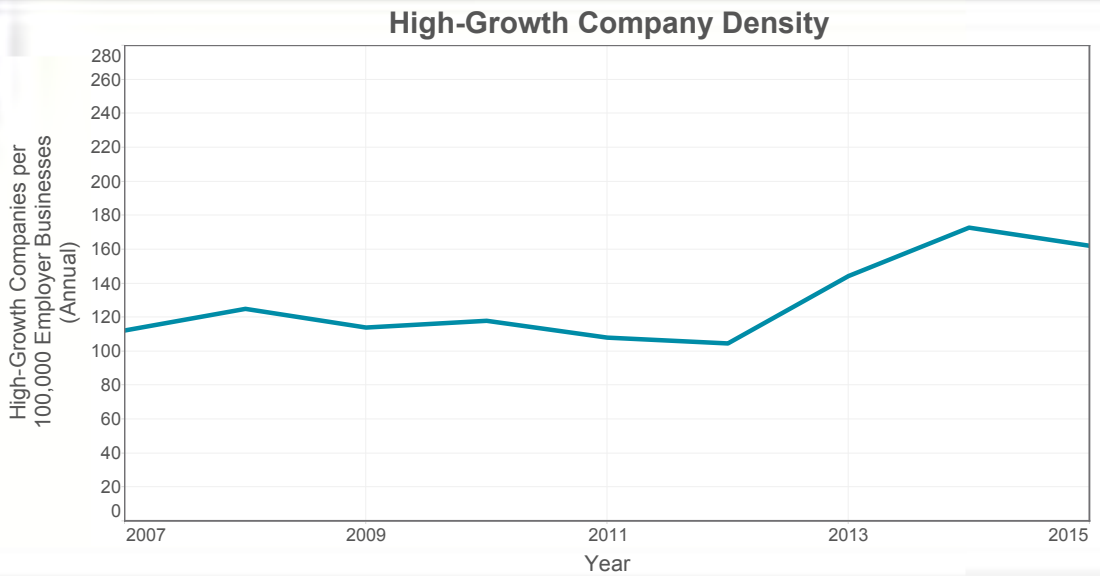



## High-Growth Company Density

| 2016 Component | 2015 Component |
|---|---|
| 162.1 | 172.8 |

Measures the number of private businesses with at least $2 million in annual revenue reaching three years of 20 percent annual revenue growth normalized by total business population.

Source: Author calculations from BDS and Inc. 500/5000.Yearly measure.



# San Francisco

Metro: San Francisco-Oakland-Fremont | State: California

Metro Profile

growth entrepreneurship

## Growth Entrepreneurship Rank

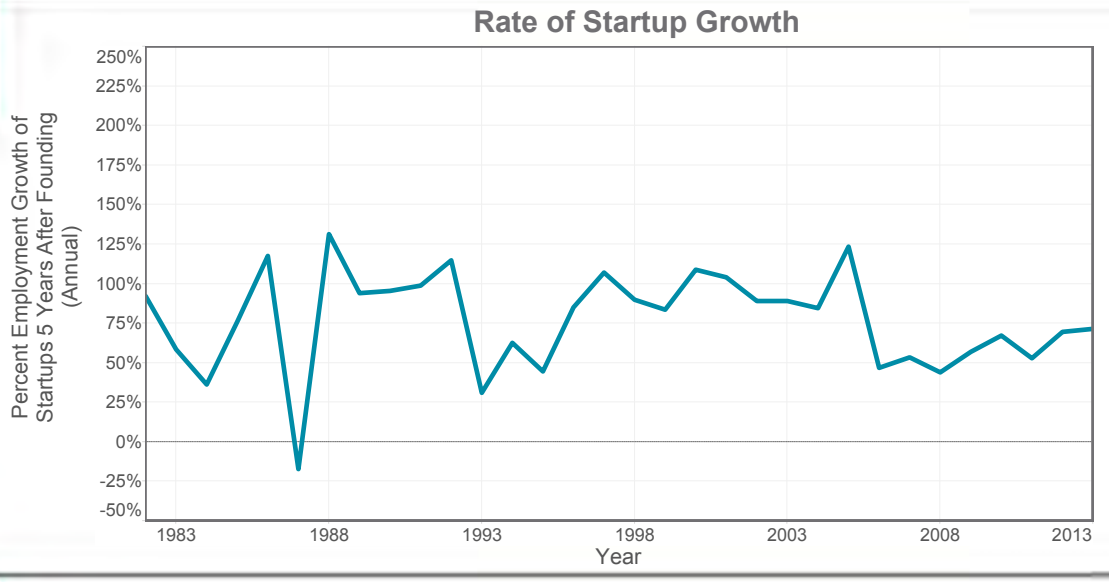
| 2016 | 2015 |
|---|---|
| 8 | 6 |

## Rate of Startup Growth

| 2016 Component | 2015 Component |
|---|---|
| 71.48% | 69.55% |

Measures how much startups have grown as a cohort, on average, five years after founding - measured by change in employment.

Source: Author calculations from BDS. Yearly measure.

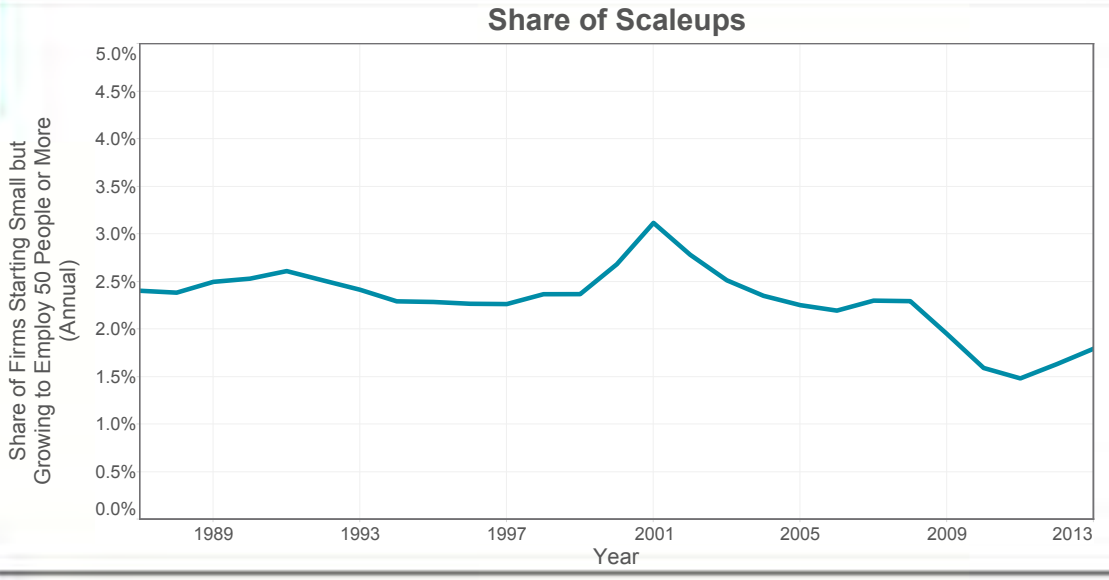



## Share of Scaleups

| 2016 Component | 2015 Component |
|---|---|
| 1.79% | 1.63% |

Measures the number of firms that started small but grew to employ fifty people or more by their tenth year of operation as a percentage of all employer firms ten years and younger.

Source: Author calculations from BDS. Yearly measure.

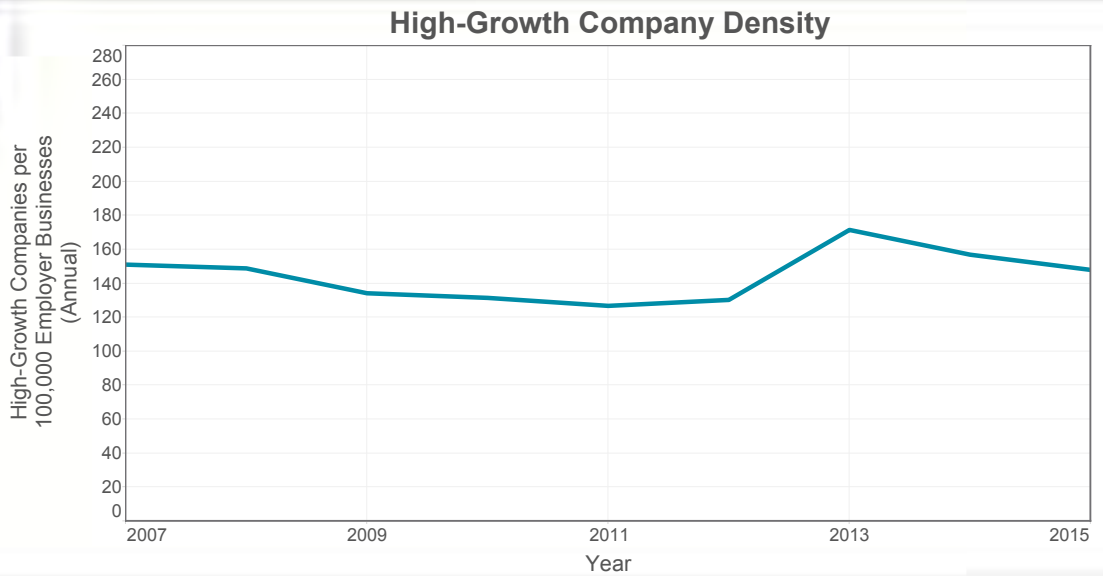



## High-Growth Company Density

| 2016 Component | 2015 Component |
|---|---|
| 147.9 | 156.9 |

Measures the number of private businesses with at least $2 million in annual revenue reaching three years of 20 percent annual revenue growth normalized by total business population.

Source: Author calculations from BDS and Inc. 500/5000.Yearly measure.



## Growth Entrepreneurship Rank

| 2016 | 2015 |
|---|---|
| 9 | 20 |

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# San Antonio

**Metro: San Antonio-New Braunfels | State: Texas**

Metro Profile

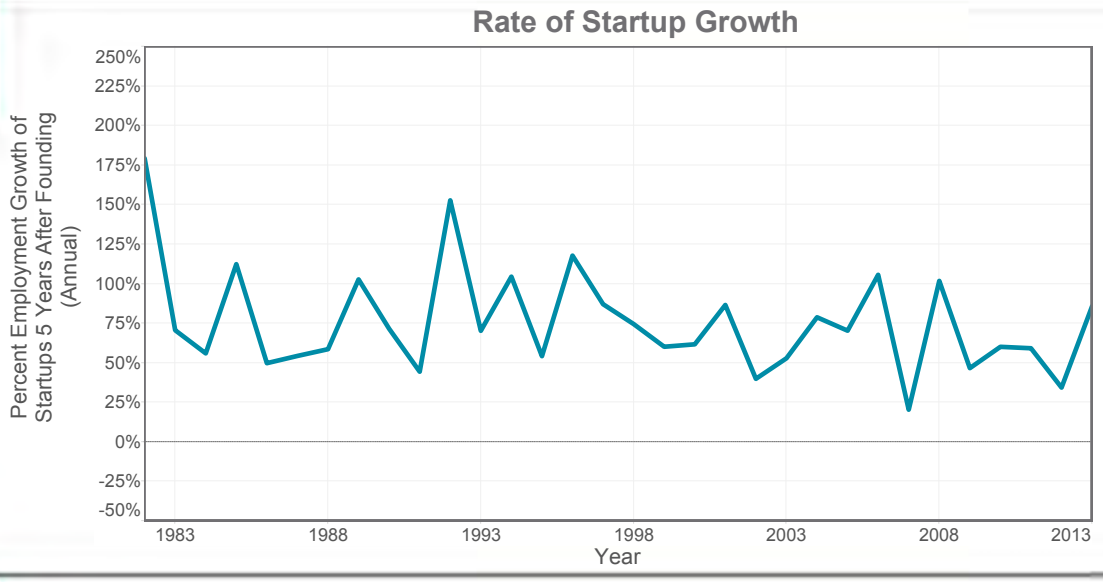
growth entrepreneurship

## Rate of Startup Growth

| 2016 Component | 2015 Component |
|---|---|
| 85.77% | 34.33% |

Measures how much startups have grown as a cohort, on average, five years after founding - measured by change in employment.

Source: Author calculations from BDS. Yearly measure.

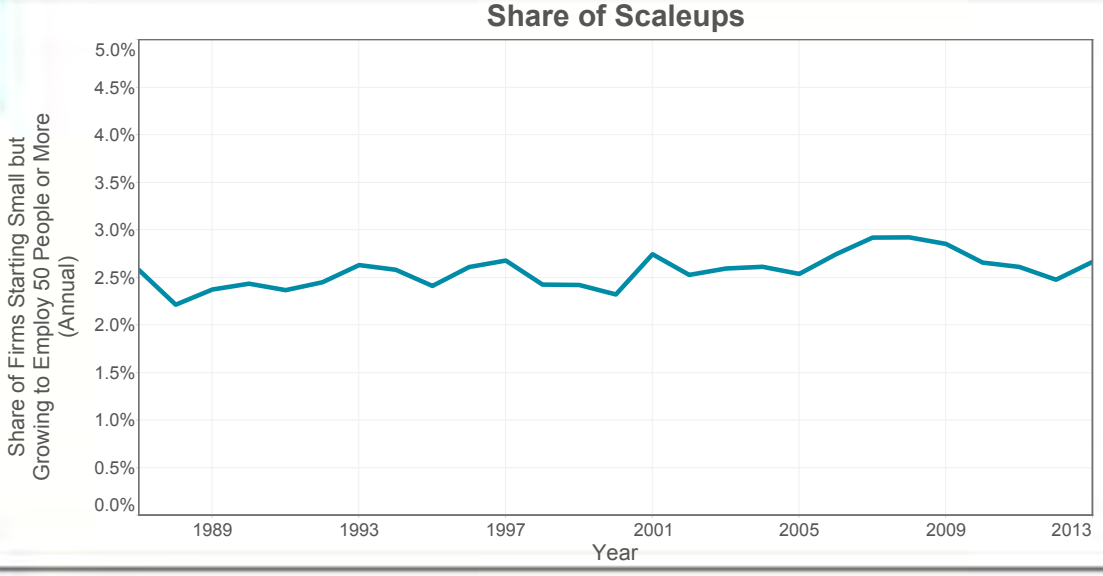



## Share of Scaleups

| 2016 Component | 2015 Component |
|---|---|
| 2.67% | 2.48% |

Measures the number of firms that started small but grew to employ fifty people or more by their tenth year of operation as a percentage of all employer firms ten years and younger.

Source: Author calculations from BDS. Yearly measure.

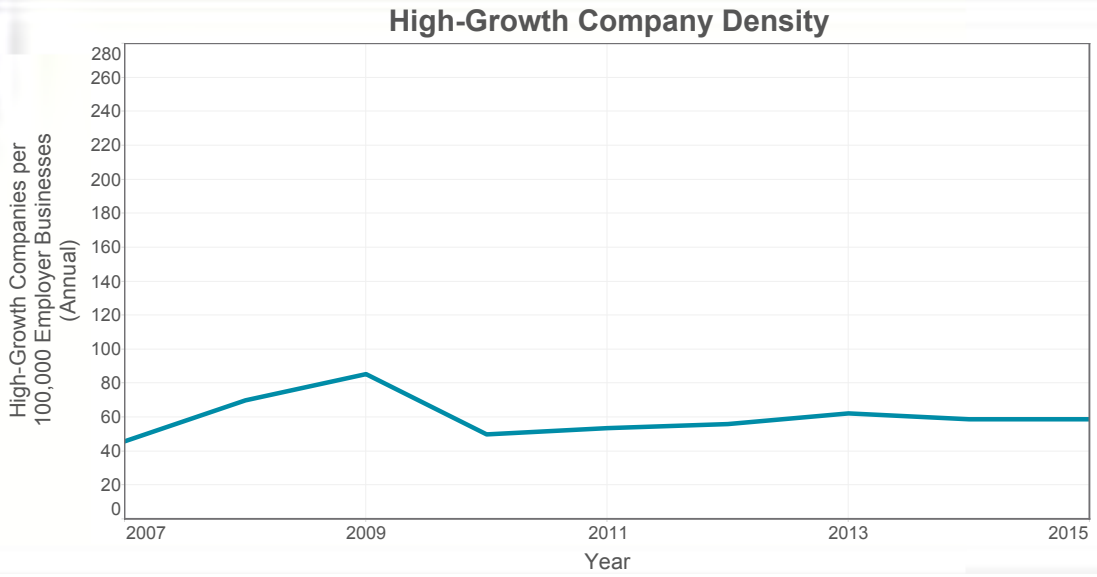



## High-Growth Company Density

| 2016 Component | 2015 Component |
|---|---|
| 58.8 | 58.8 |

Measures the number of private businesses with at least $2 million in annual revenue reaching three years of 20 percent annual revenue growth normalized by total business population.

Source: Author calculations from BDS and Inc. 500/5000.Yearly measure.



# Dallas

Metro: Dallas-Fort Worth-Arlington | State: Texas

Metro Profile

growth entrepreneurship

## Growth Entrepreneurship Rank

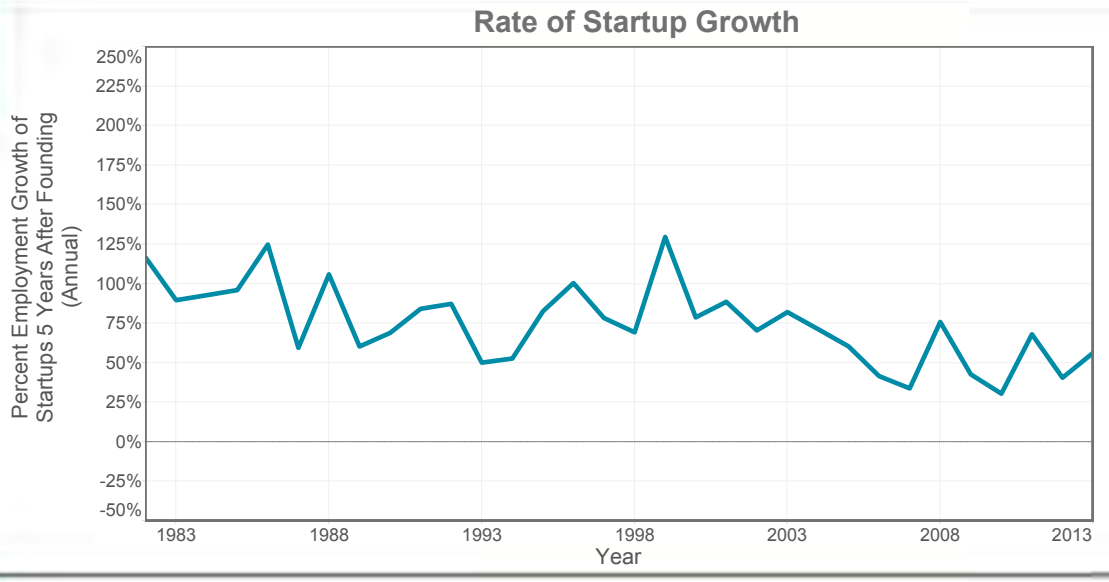
| 2016 | 2015 |
|---|---|
| 10 | 10 |

## Rate of Startup Growth

| 2016 Component | 2015 Component |
|---|---|
| 56.27% | 40.57% |

Measures how much startups have grown as a cohort, on average, five years after founding - measured by change in employment.

Source: Author calculations from BDS. Yearly measure.

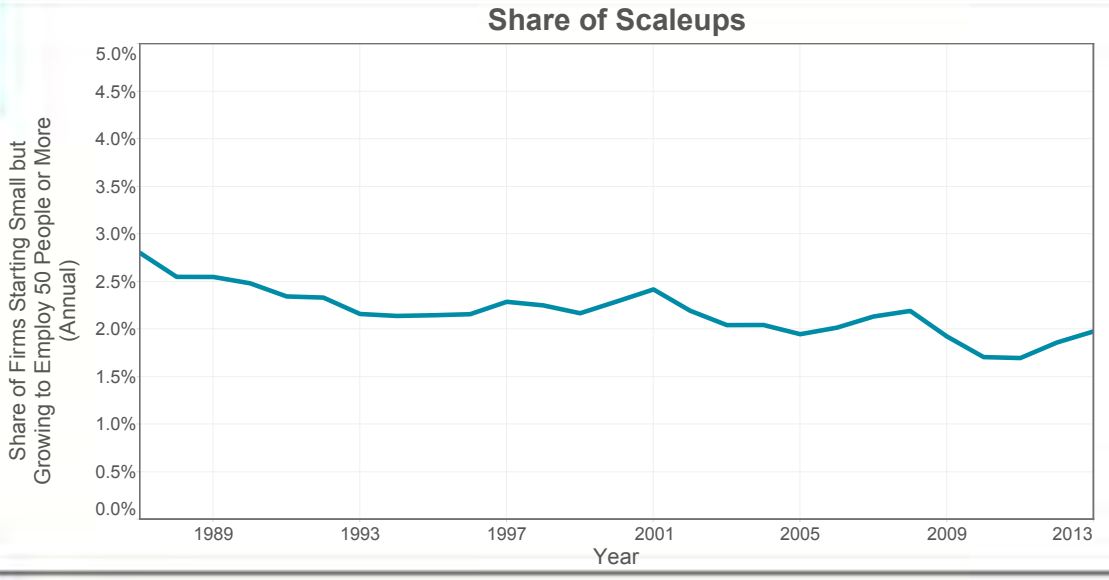



## Share of Scaleups

| 2016 Component | 2015 Component |
|---|---|
| 1.98% | 1.86% |

Measures the number of firms that started small but grew to employ fifty people or more by their tenth year of operation as a percentage of all employer firms ten years and younger.

Source: Author calculations from BDS. Yearly measure.

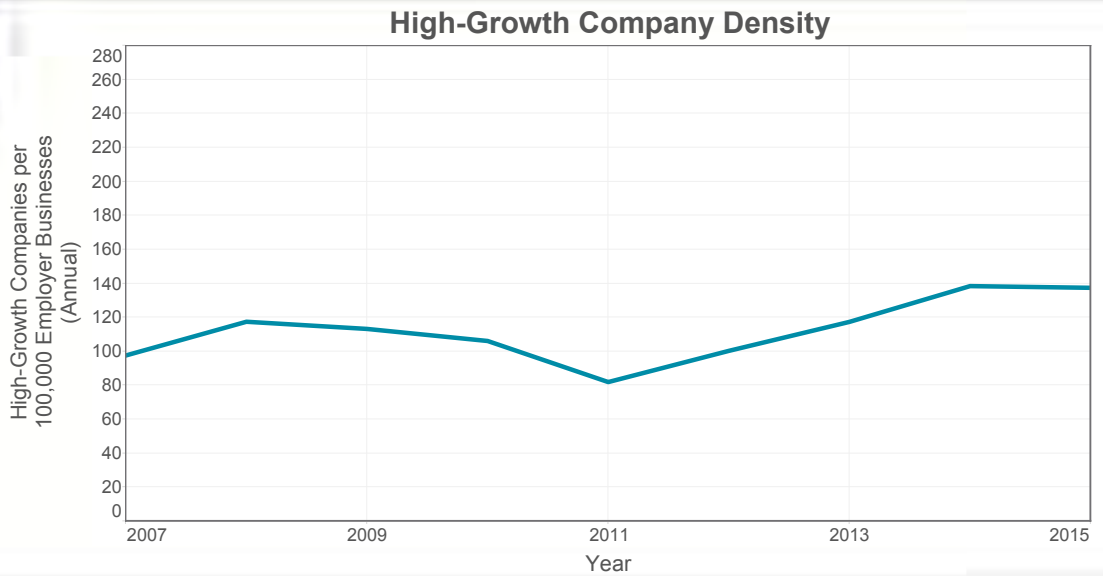



## High-Growth Company Density

| 2016 Component | 2015 Component |
|---|---|
| 137.4 | 138.4 |

Measures the number of private businesses with at least $2 million in annual revenue reaching three years of 20 percent annual revenue growth normalized by total business population.

Source: Author calculations from BDS and Inc. 500/5000.Yearly measure.



# Charlotte

growth entrepreneurship

**Metro: Charlotte-Gastonia-Rock Hill | State: North Carolina-South Carolina**

Metro Profile

## Growth Entrepreneurship Rank

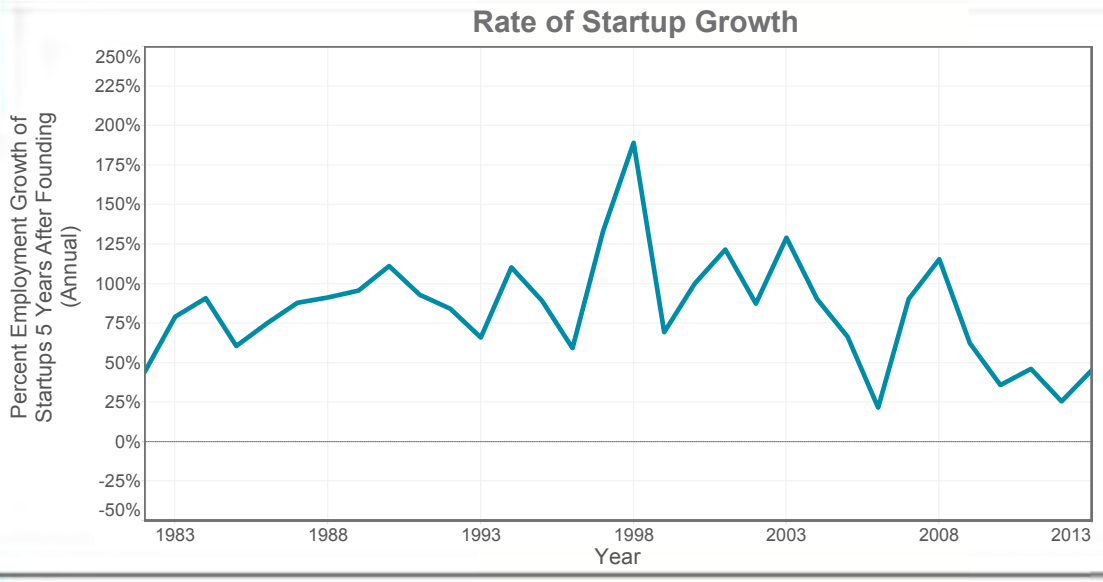
| 2016 | 2015 |
|---|---|
| 11 | 13 |

## Rate of Startup Growth

| 2016 Component | 2015 Component |
|---|---|
| 45.51% | 25.62% |

Measures how much startups have grown as a cohort, on average, five years after founding - measured by change in employment.

Source: Author calculations from BDS. Yearly measure.

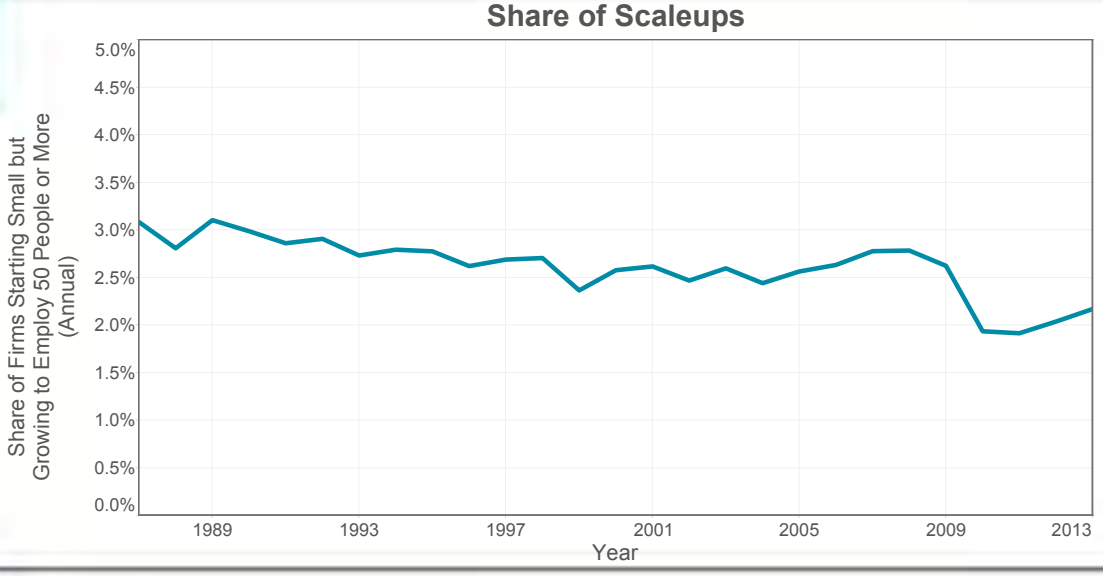



## Share of Scaleups

| 2016 Component | 2015 Component |
|---|---|
| 2.17% | 2.04% |

Measures the number of firms that started small but grew to employ fifty people or more by their tenth year of operation as a percentage of all employer firms ten years and younger.

Source: Author calculations from BDS. Yearly measure.

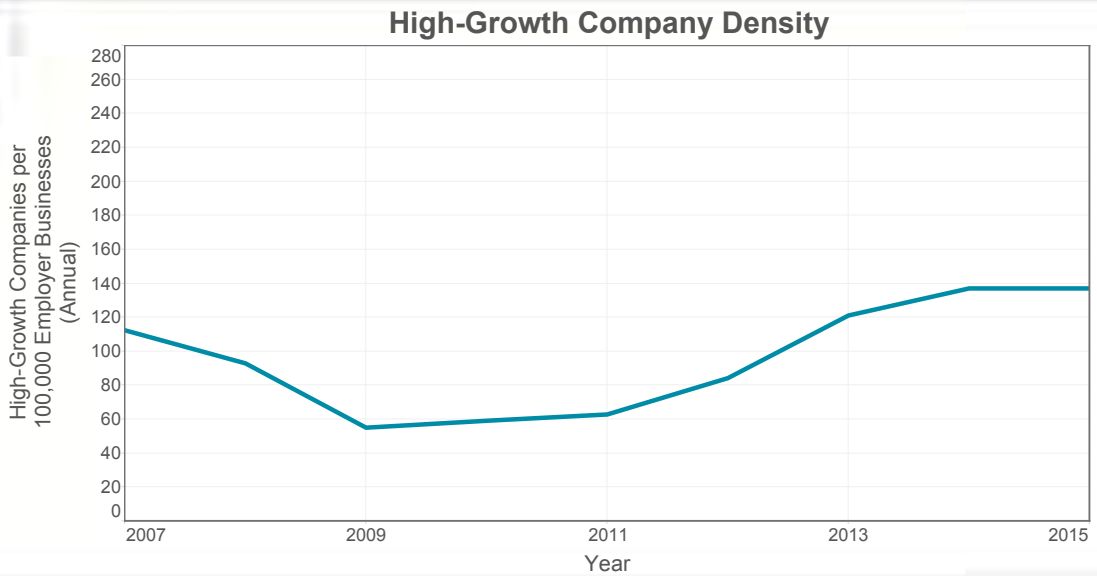



## High-Growth Company Density

| 2016 Component | 2015 Component |
|---|---|
| 137.0 | 137.0 |

Measures the number of private businesses with at least $2 million in annual revenue reaching three years of 20 percent annual revenue growth normalized by total business population.

Source: Author calculations from BDS and Inc. 500/5000.Yearly measure.



# Phoenix

**Metro: Phoenix-Mesa-Glendale | State: Arizona**

Metro Profile

growth entrepreneurship

## Growth Entrepreneurship Rank

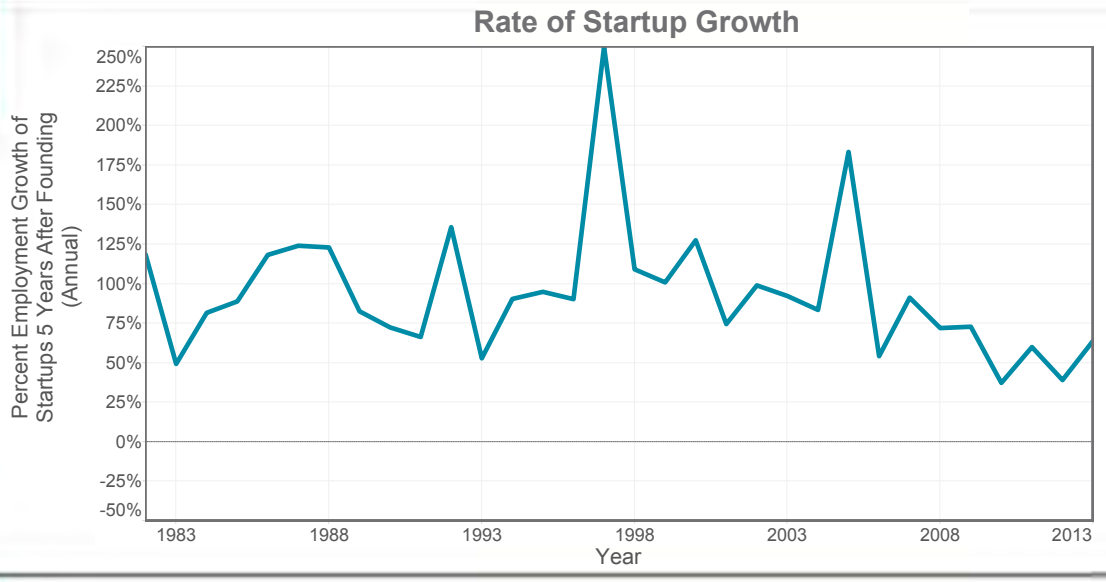
| 2016 | 2015 |
|---|---|
| 12 | 16 |

## Rate of Startup Growth

| 2016 Component | 2015 Component |
|---|---|
| 63.88% | 39.09% |

Measures how much startups have grown as a cohort, on average, five years after founding - measured by change in employment.

Source: Author calculations from BDS. Yearly measure.

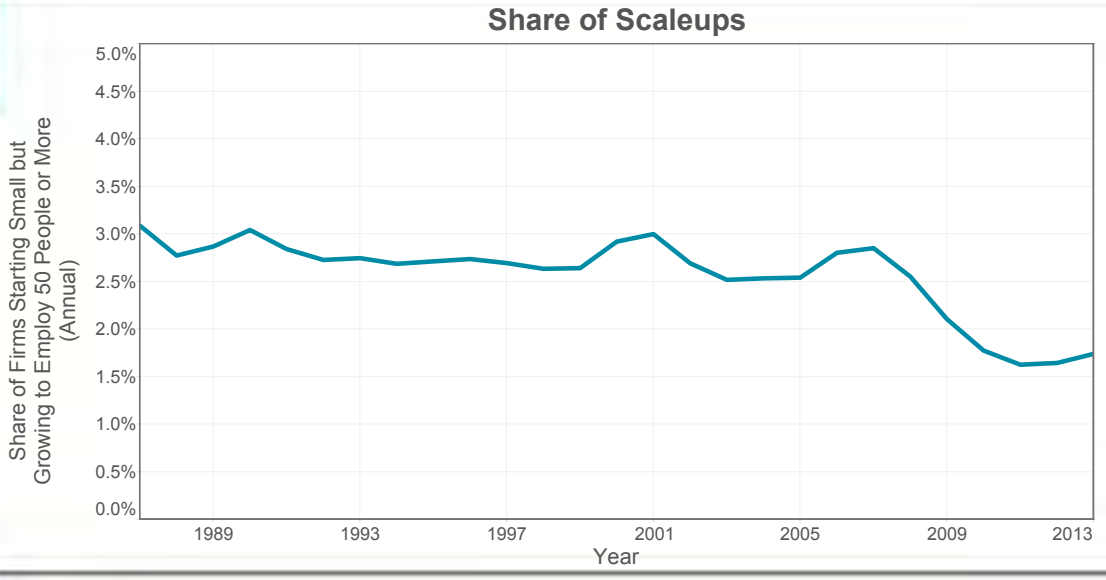



## Share of Scaleups

| 2016 Component | 2015 Component |
|---|---|
| 1.74% | 1.64% |

Measures the number of firms that started small but grew to employ fifty people or more by their tenth year of operation as a percentage of all employer firms ten years and younger.

Source: Author calculations from BDS. Yearly measure.

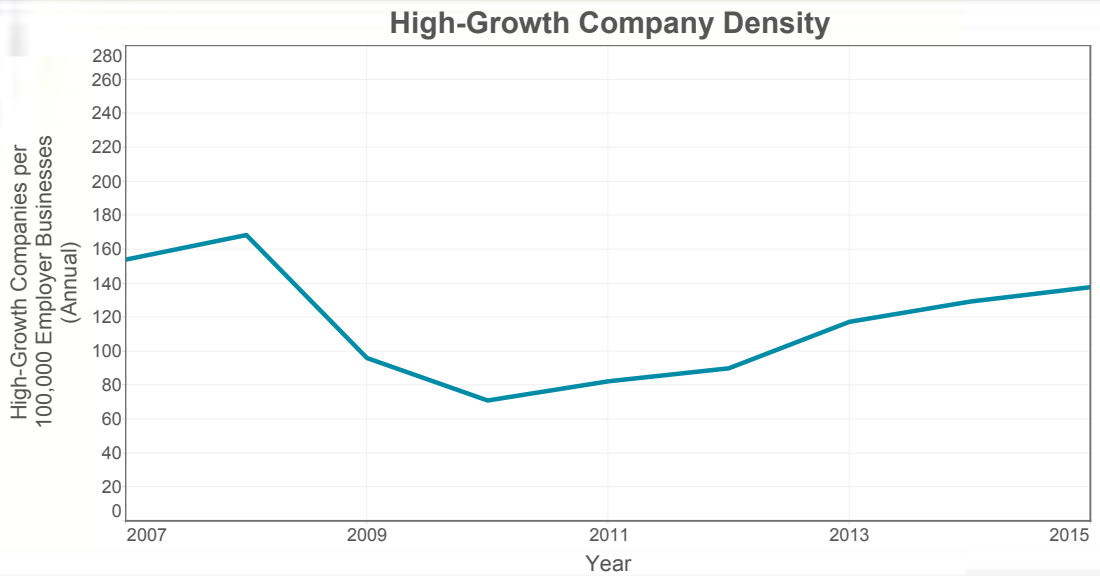



## High-Growth Company Density

| 2016 Component | 2015 Component |
|---|---|
| 137.8 | 129.3 |

Measures the number of private businesses with at least $2 million in annual revenue reaching three years of 20 percent annual revenue growth normalized by total business population.

Source: Author calculations from BDS and Inc. 500/5000.Yearly measure.



| Growth Entrepreneurship Rank | |
|---|---|
| 2016 | 2015 |
| 13 | 14 |

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# Denver

Metro: Denver-Aurora-Broomfield | State: Colorado

Metro Profile

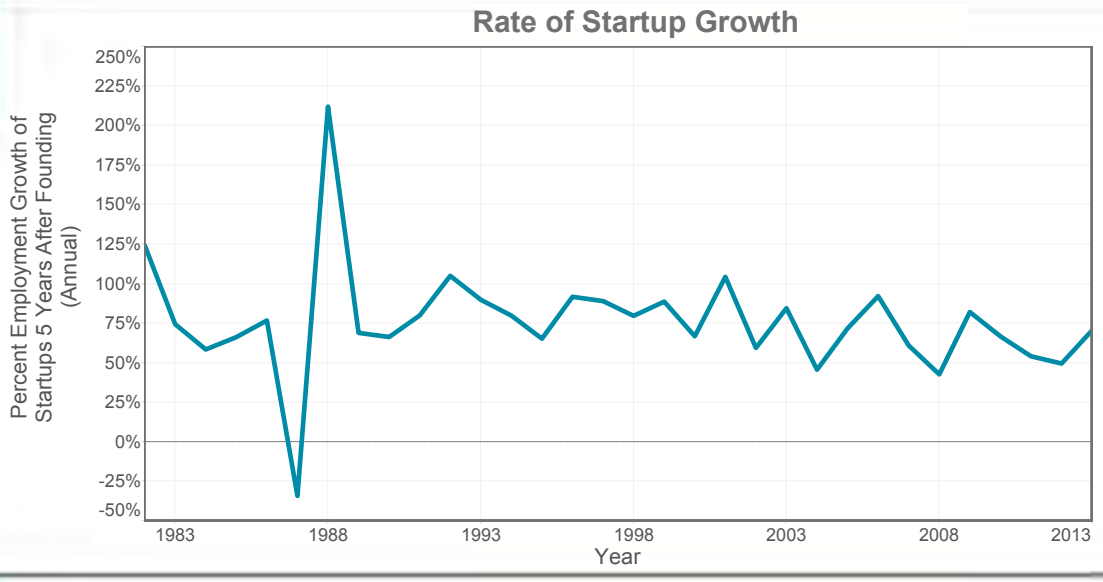
growth entrepreneurship

## Rate of Startup Growth

| 2016 Component | 2015 Component |
|---|---|
| 70.52% | 49.54% |

Measures how much startups have grown as a cohort, on average, five years after founding - measured by change in employment.

Source: Author calculations from BDS. Yearly measure.

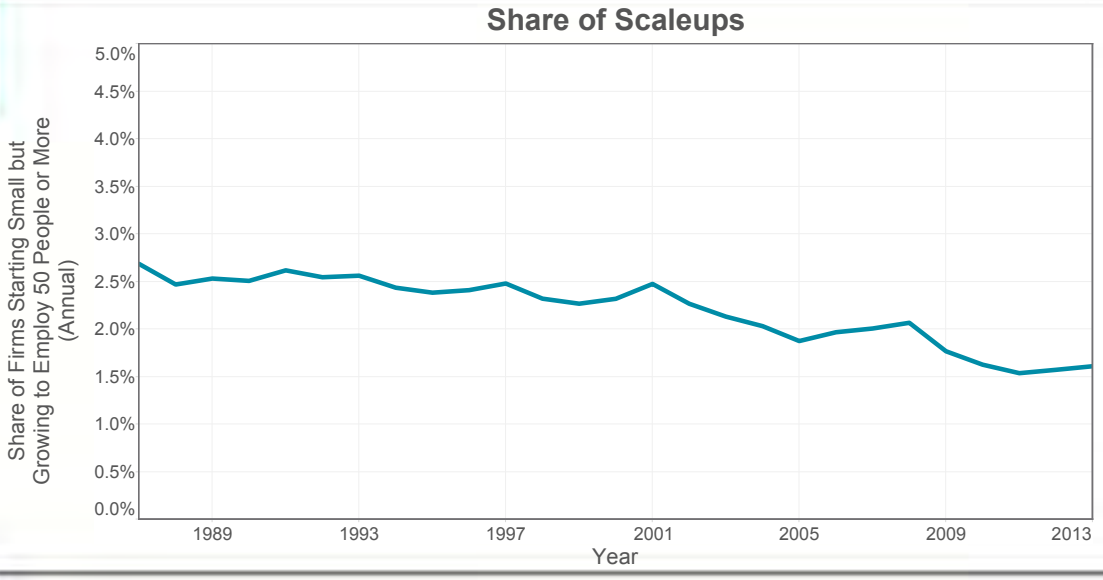



## Share of Scaleups

| 2016 Component | 2015 Component |
|---|---|
| 1.61% | 1.57% |

Measures the number of firms that started small but grew to employ fifty people or more by their tenth year of operation as a percentage of all employer firms ten years and younger.

Source: Author calculations from BDS. Yearly measure.

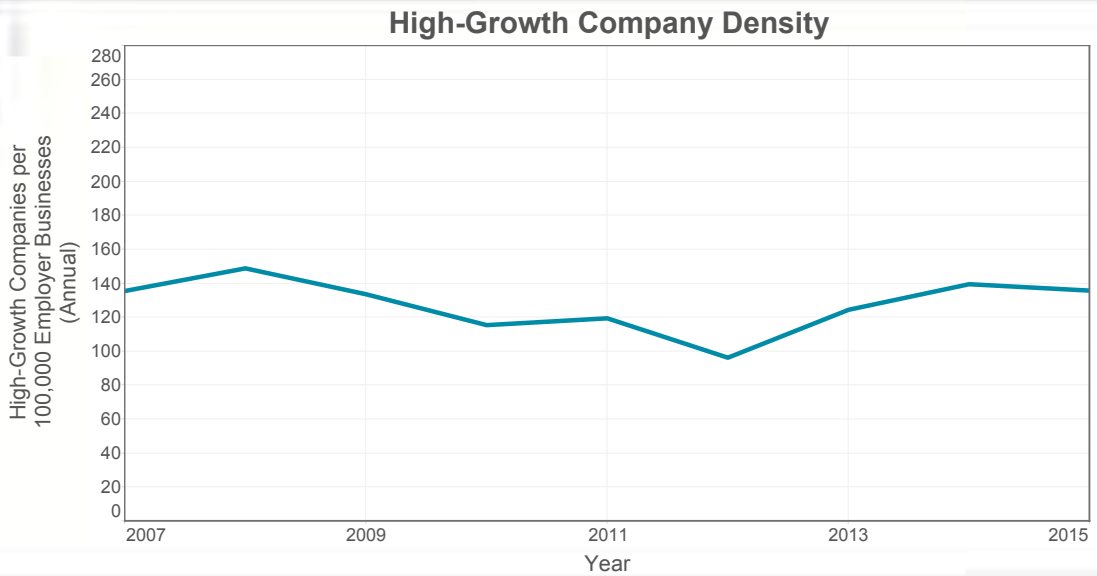



## High-Growth Company Density

| 2016 Component | 2015 Component |
|---|---|
| 135.7 | 139.5 |

Measures the number of private businesses with at least $2 million in annual revenue reaching three years of 20 percent annual revenue growth normalized by total business population.

Source: Author calculations from BDS and Inc. 500/5000.Yearly measure.



# Houston

Metro: Houston-Sugar Land-Baytown | State: Texas

Metro Profile

growth entrepreneurship

## Growth Entrepreneurship Rank

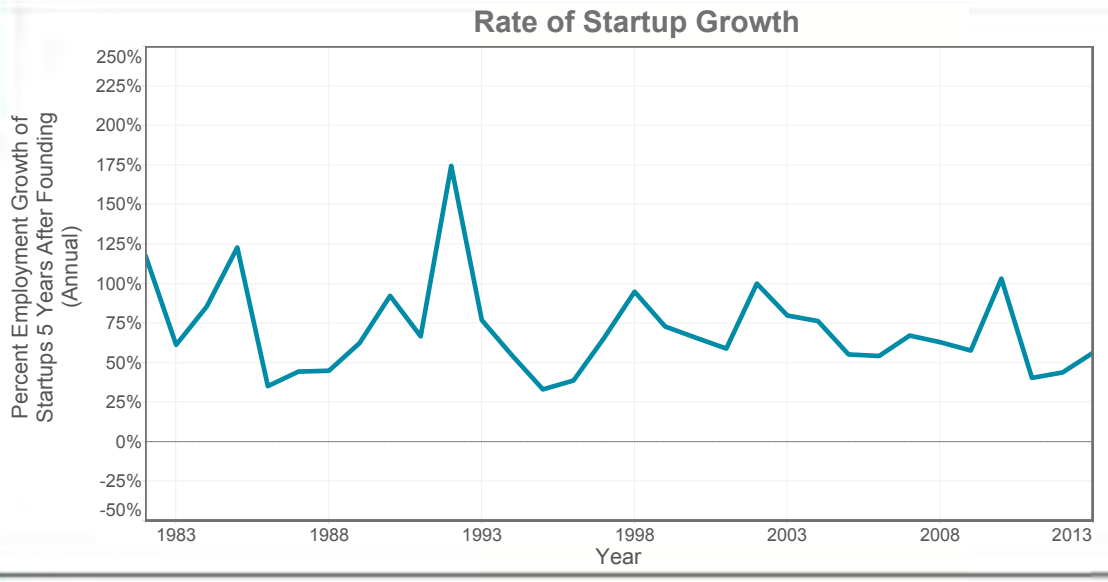
| 2016 | 2015 |
|---|---|
| 14 | 17 |

## Rate of Startup Growth

| 2016 Component | 2015 Component |
|---|---|
| 56.37% | 43.88% |

Measures how much startups have grown as a cohort, on average, five years after founding - measured by change in employment.

Source: Author calculations from BDS. Yearly measure.

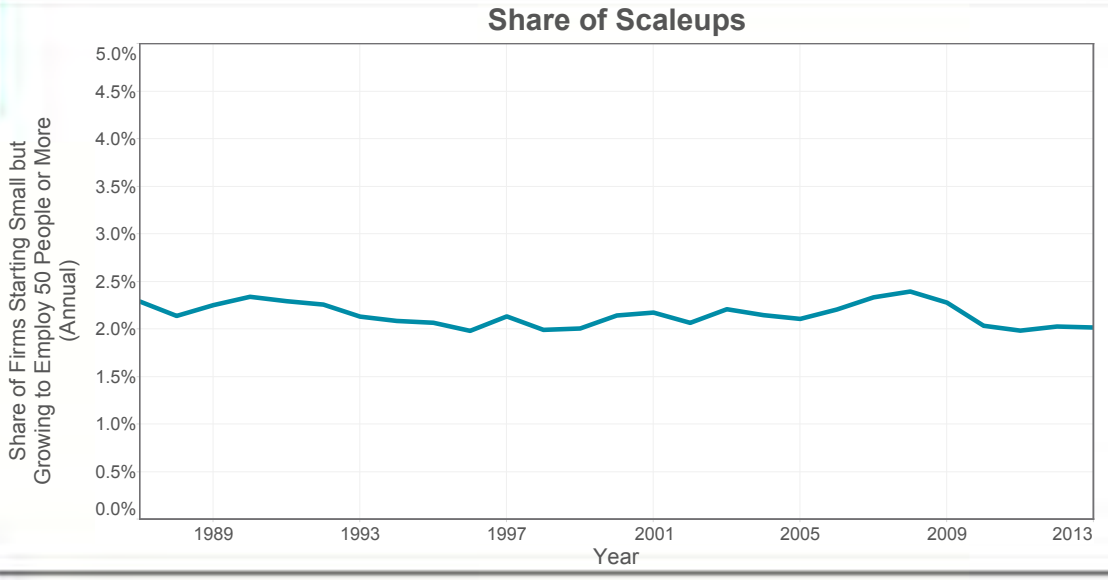



## Share of Scaleups

| 2016 Component | 2015 Component |
|---|---|
| 2.02% | 2.03% |

Measures the number of firms that started small but grew to employ fifty people or more by their tenth year of operation as a percentage of all employer firms ten years and younger.

Source: Author calculations from BDS. Yearly measure.

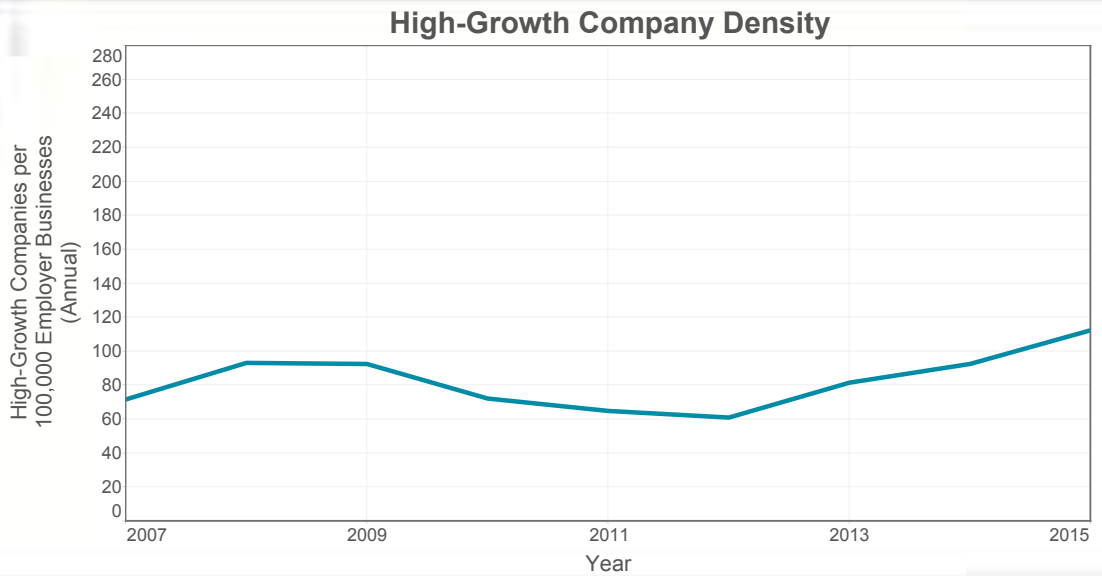



## High-Growth Company Density

| 2016 Component | 2015 Component |
|---|---|
| 112.4 | 92.6 |

Measures the number of private businesses with at least $2 million in annual revenue reaching three years of 20 percent annual revenue growth normalized by total business population.

Source: Author calculations from BDS and Inc. 500/5000.Yearly measure.



# Atlanta

growth entrepreneurship

**Metro: Atlanta-Sandy Springs-Marietta | State: Georgia**

Metro Profile

## Growth Entrepreneurship Rank

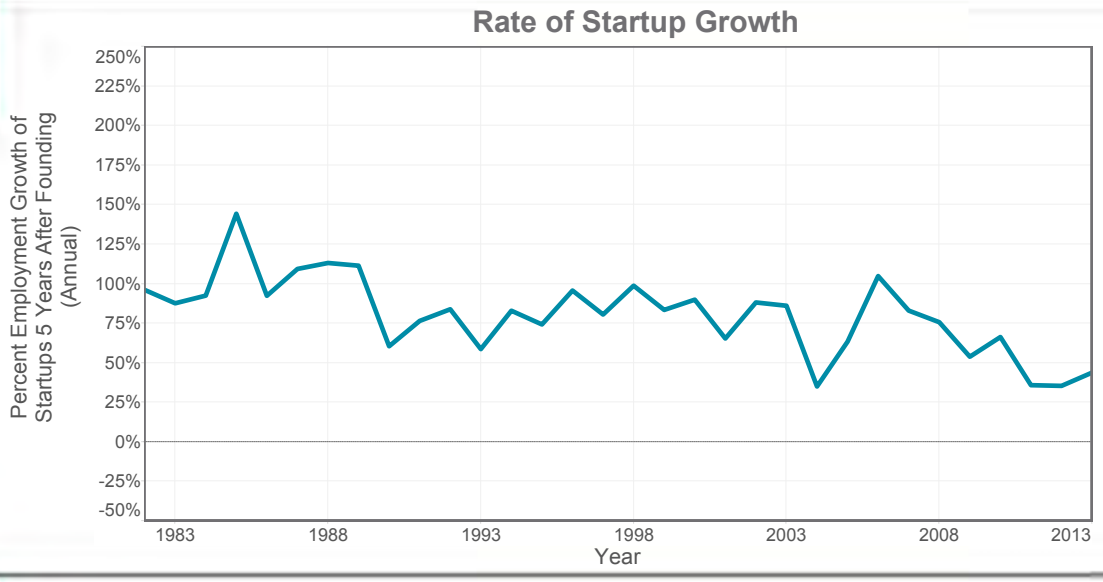
| 2016 | 2015 |
|---|---|
| 15 | 15 |

## Rate of Startup Growth

| 2016 Component | 2015 Component |
|---|---|
| 43.80% | 35.41% |

Measures how much startups have grown as a cohort, on average, five years after founding - measured by change in employment.

Source: Author calculations from BDS. Yearly measure.

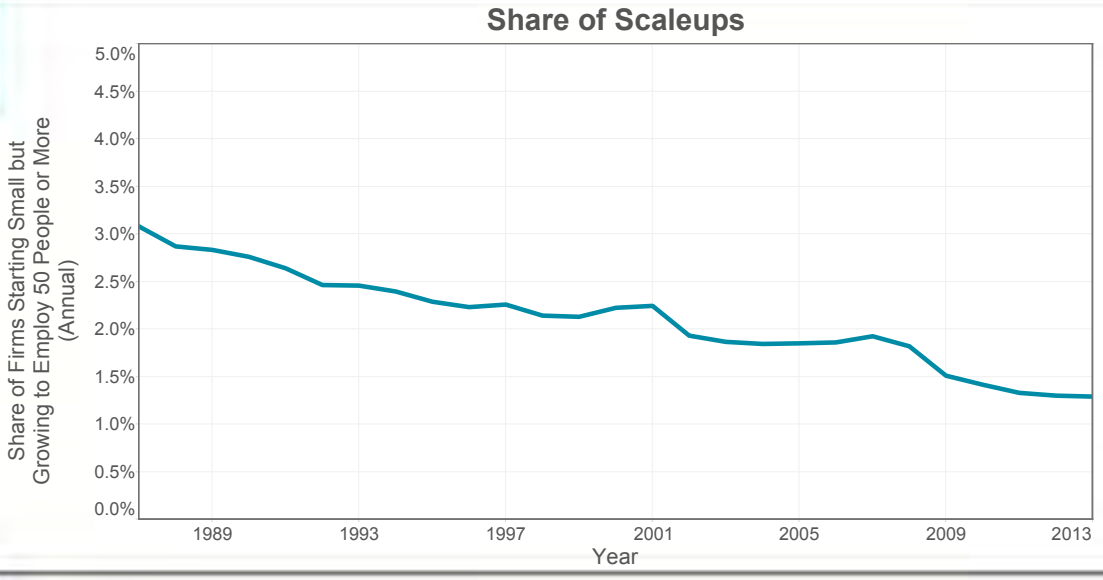



## Share of Scaleups

| 2016 Component | 2015 Component |
|---|---|
| 1.29% | 1.30% |

Measures the number of firms that started small but grew to employ fifty people or more by their tenth year of operation as a percentage of all employer firms ten years and younger.

Source: Author calculations from BDS. Yearly measure.

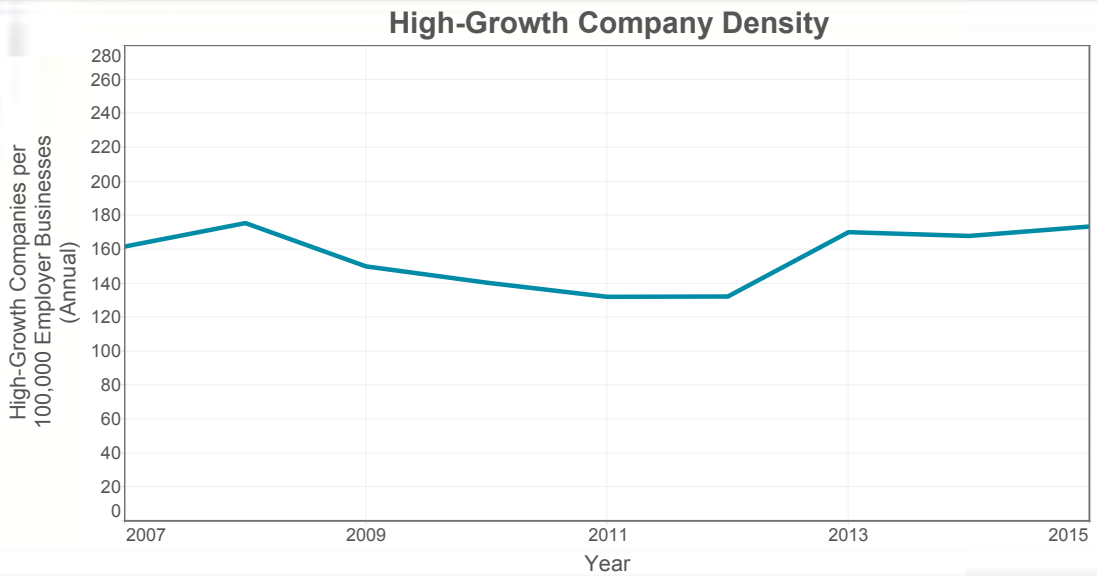



## High-Growth Company Density

| 2016 Component | 2015 Component |
|---|---|
| 173.5 | 167.9 |

Measures the number of private businesses with at least $2 million in annual revenue reaching three years of 20 percent annual revenue growth normalized by total business population.

Source: Author calculations from BDS and Inc. 500/5000.Yearly measure.



# Cincinnati

growth entrepreneurship

**Metro: Cincinnati-Middletown | State: Ohio-Kentucky-Indiana**

Metro Profile

## Growth Entrepreneurship Rank

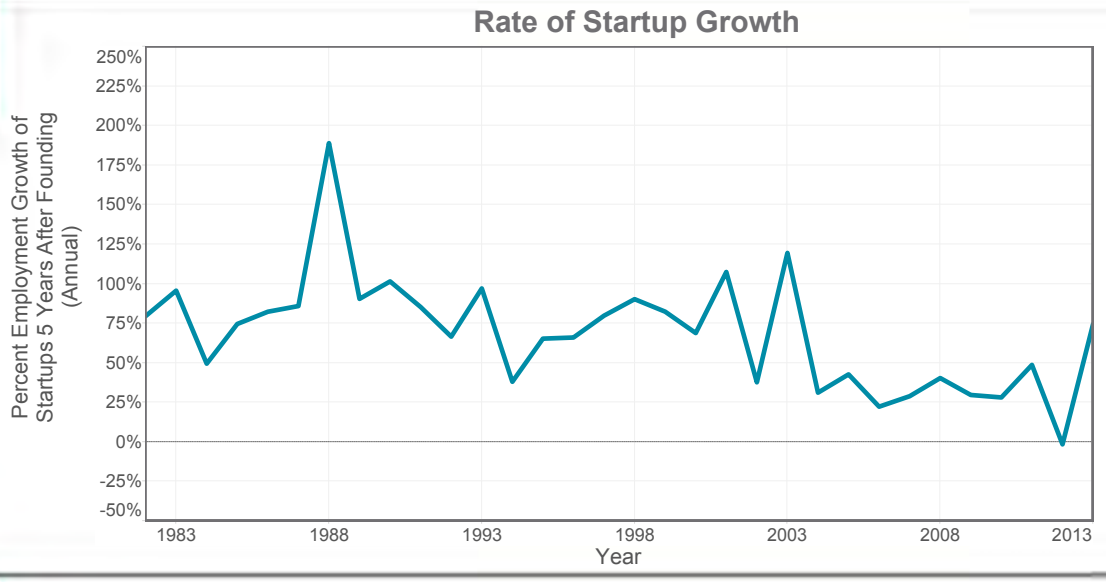
| 2016 | 2015 |
|---|---|
| 16 | 35 |

## Rate of Startup Growth

| 2016 Component | 2015 Component |
|---|---|
| 74.43% | -1.57% |

Measures how much startups have grown as a cohort, on average, five years after founding - measured by change in employment.

Source: Author calculations from BDS. Yearly measure.

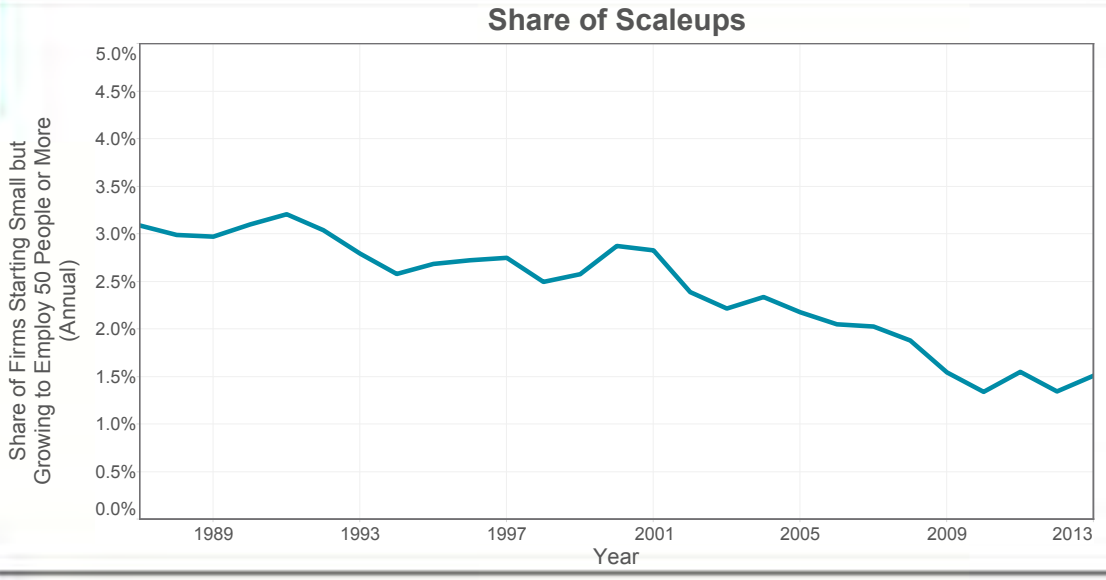



## Share of Scaleups

| 2016 Component | 2015 Component |
|---|---|
| 1.51% | 1.34% |

Measures the number of firms that started small but grew to employ fifty people or more by their tenth year of operation as a percentage of all employer firms ten years and younger.

Source: Author calculations from BDS. Yearly measure.

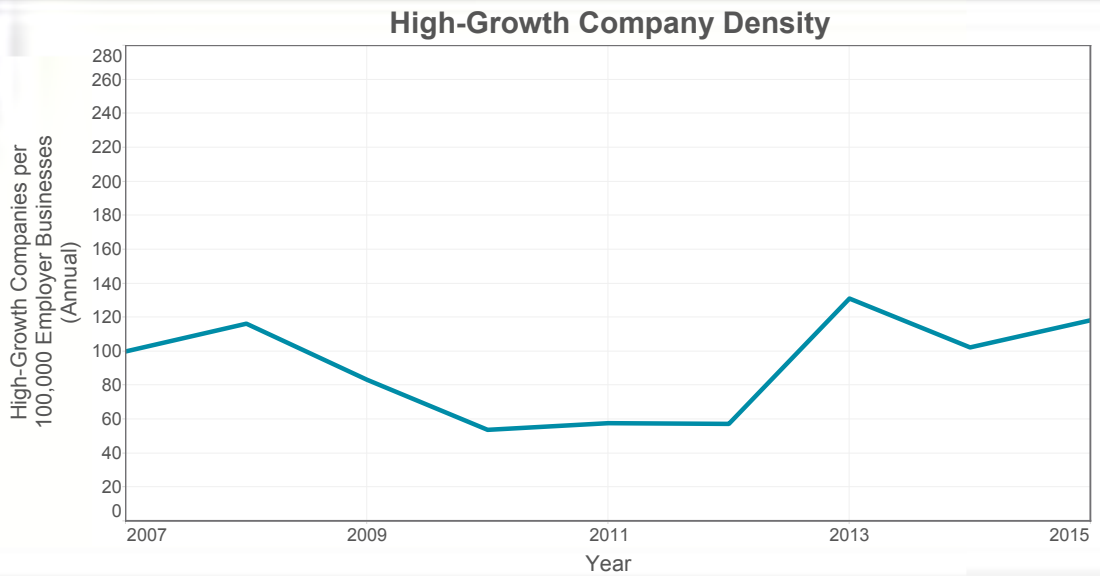



## High-Growth Company Density

| 2016 Component | 2015 Component |
|---|---|
| 118.3 | 102.3 |

Measures the number of private businesses with at least $2 million in annual revenue reaching three years of 20 percent annual revenue growth normalized by total business population.

Source: Author calculations from BDS and Inc. 500/5000.Yearly measure.



# Minneapolis

growth entrepreneurship

**Metro: Minneapolis-St. Paul-Bloomington | State: Minnesota-Wisconsin**

Metro Profile

## Growth Entrepreneurship Rank

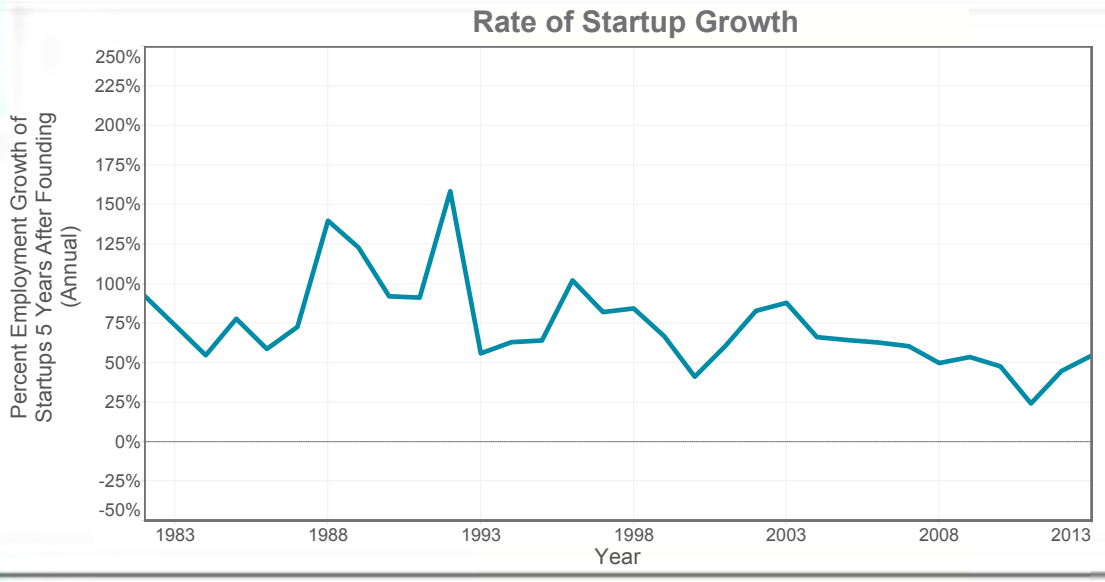
| 2016 | 2015 |
|---|---|
| 17 | 19 |

## Rate of Startup Growth

| 2016 Component | 2015 Component |
|---|---|
| 54.70% | 44.83% |

Measures how much startups have grown as a cohort, on average, five years after founding - measured by change in employment.

Source: Author calculations from BDS. Yearly measure.

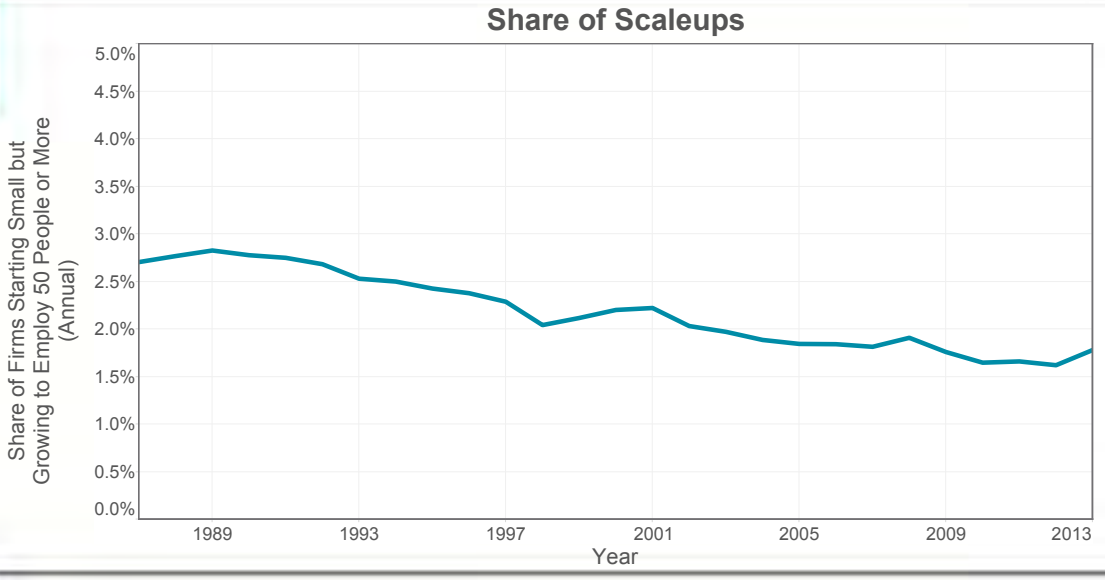



## Share of Scaleups

| 2016 Component | 2015 Component |
|---|---|
| 1.78% | 1.62% |

Measures the number of firms that started small but grew to employ fifty people or more by their tenth year of operation as a percentage of all employer firms ten years and younger.

Source: Author calculations from BDS. Yearly measure.

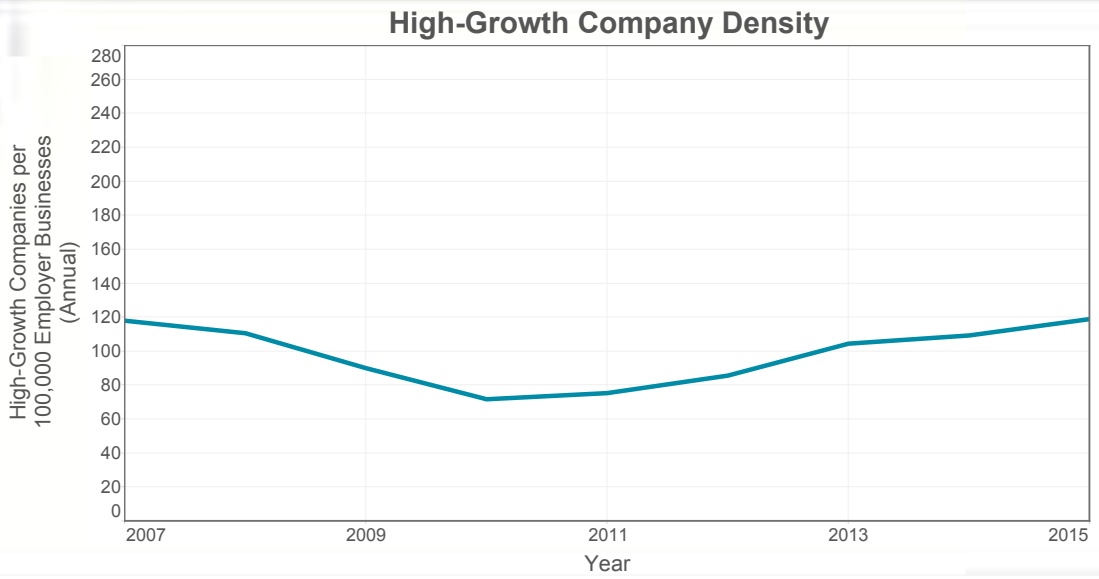



## High-Growth Company Density

| 2016 Component | 2015 Component |
|---|---|
| 119.0 | 109.3 |

Measures the number of private businesses with at least $2 million in annual revenue reaching three years of 20 percent annual revenue growth normalized by total business population.

Source: Author calculations from BDS and Inc. 500/5000.Yearly measure.



# Baltimore

Metro: Baltimore-Towson | State: Maryland

Metro Profile

growth entrepreneurship

## Growth Entrepreneurship Rank

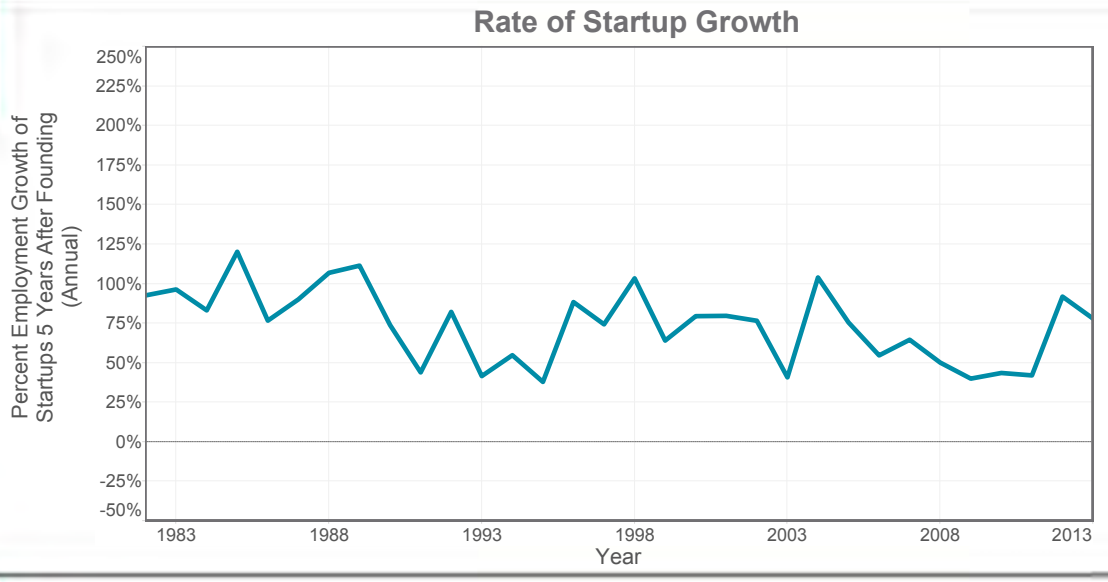
| 2016 | 2015 |
|---|---|
| 18 | 8 |

## Rate of Startup Growth

| 2016 Component | 2015 Component |
|---|---|
| 77.94% | 91.86% |

Measures how much startups have grown as a cohort, on average, five years after founding - measured by change in employment.

Source: Author calculations from BDS. Yearly measure.

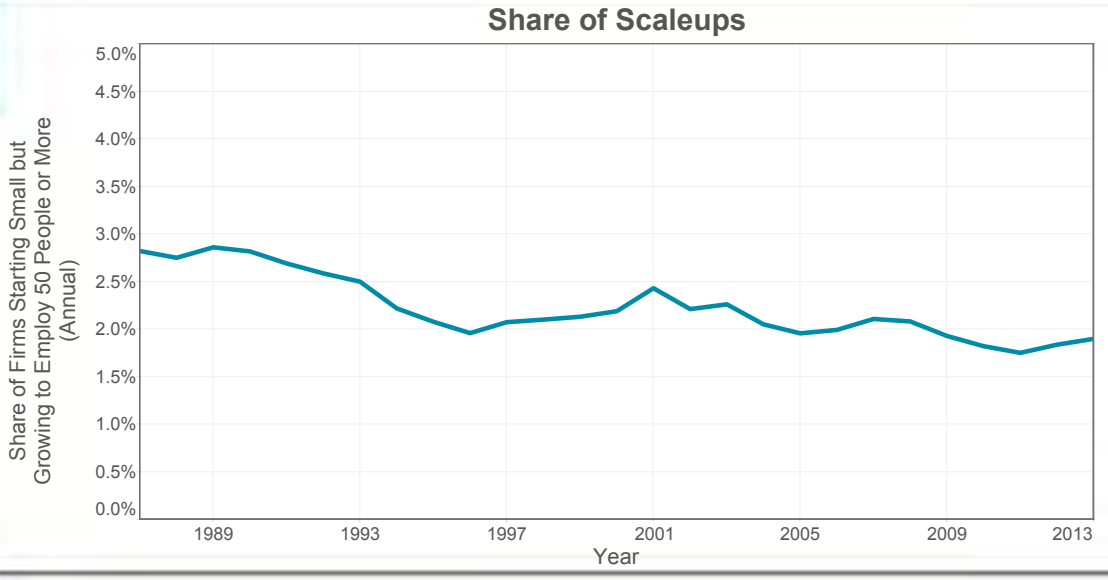



## Share of Scaleups

| 2016 Component | 2015 Component |
|---|---|
| 1.90% | 1.84% |

Measures the number of firms that started small but grew to employ fifty people or more by their tenth year of operation as a percentage of all employer firms ten years and younger.

Source: Author calculations from BDS. Yearly measure.

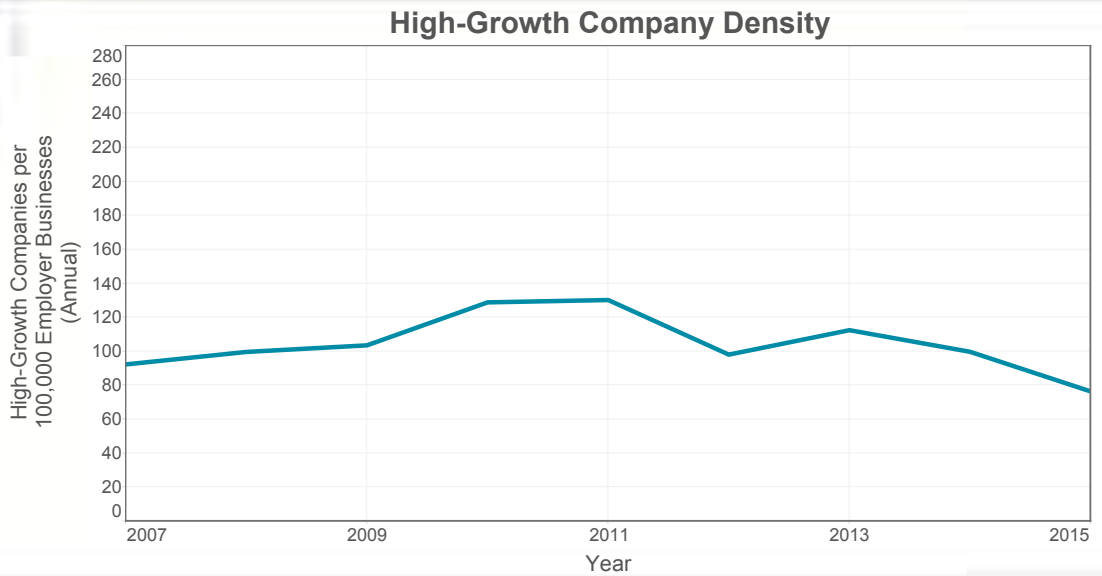



## High-Growth Company Density

| 2016 Component | 2015 Component |
|---|---|
| 76.4 | 99.7 |

Measures the number of private businesses with at least $2 million in annual revenue reaching three years of 20 percent annual revenue growth normalized by total business population.

Source: Author calculations from BDS and Inc. 500/5000.Yearly measure.



# Cleveland

Metro: Cleveland-Elyria-Mentor | State: Ohio

Metro Profile

growth entrepreneurship

## Growth Entrepreneurship Rank

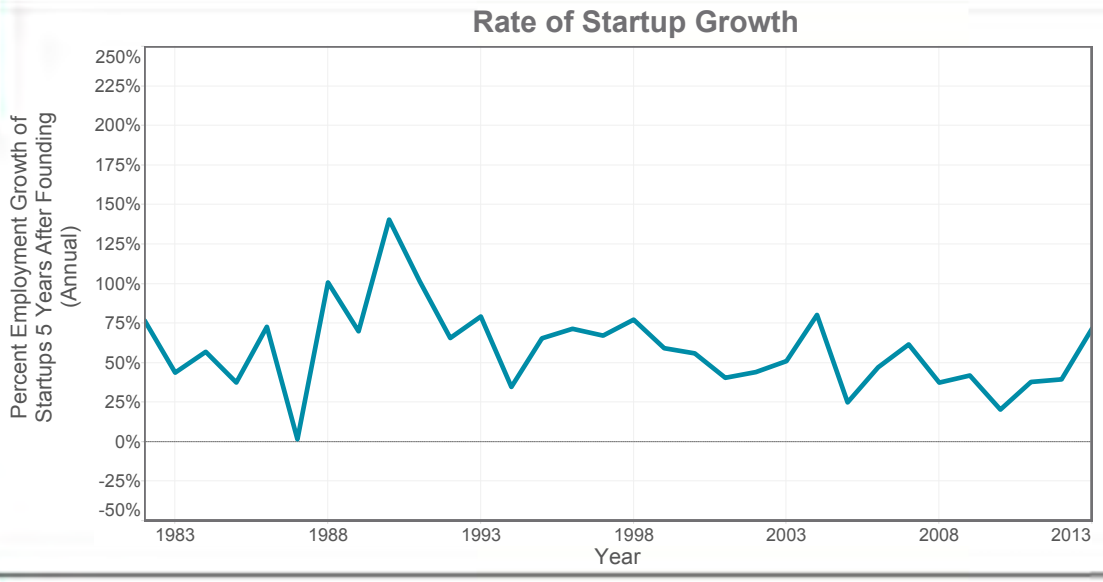
| 2016 | 2015 |
|---|---|
| 19 | 26 |

## Rate of Startup Growth

| 2016 Component | 2015 Component |
|---|---|
| 71.69% | 39.51% |

Measures how much startups have grown as a cohort, on average, five years after founding - measured by change in employment.

Source: Author calculations from BDS. Yearly measure.

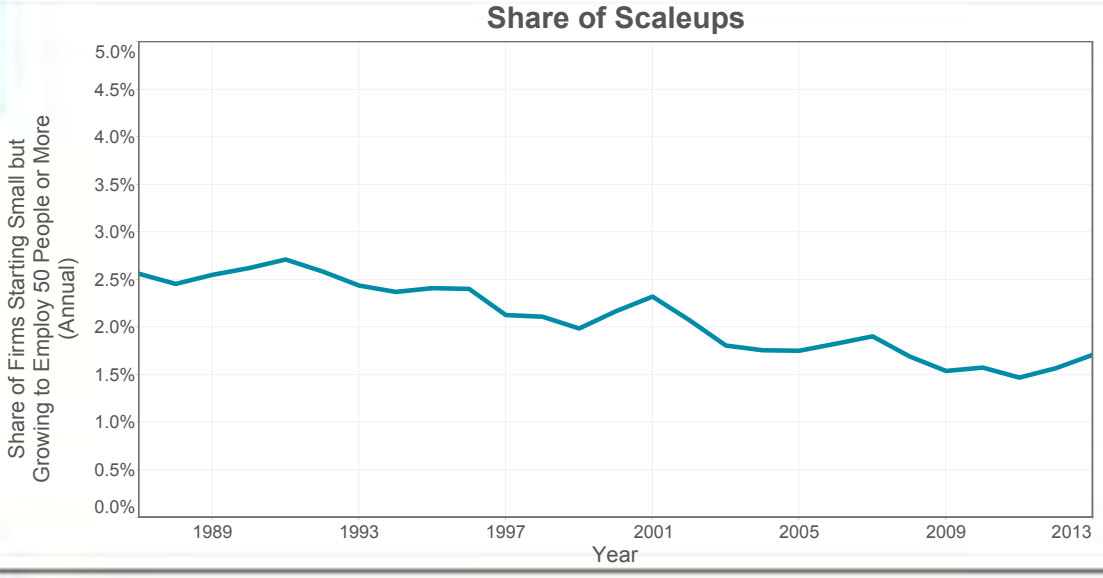



## Share of Scaleups

| 2016 Component | 2015 Component |
|---|---|
| 1.71% | 1.57% |

Measures the number of firms that started small but grew to employ fifty people or more by their tenth year of operation as a percentage of all employer firms ten years and younger.

Source: Author calculations from BDS. Yearly measure.

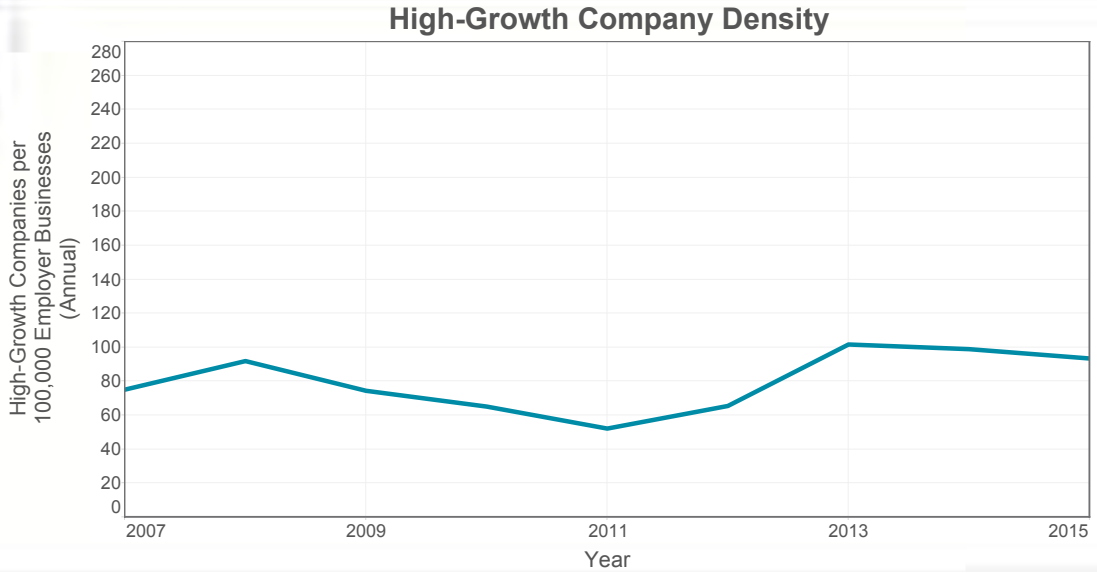



## High-Growth Company Density

| 2016 Component | 2015 Component |
|---|---|
| 93.4 | 98.9 |

Measures the number of private businesses with at least $2 million in annual revenue reaching three years of 20 percent annual revenue growth normalized by total business population.

Source: Author calculations from BDS and Inc. 500/5000.Yearly measure.



# Indianapolis

Metro: Indianapolis-Carmel | State: Indiana

Metro Profile

growth entrepreneurship

## Growth Entrepreneurship Rank

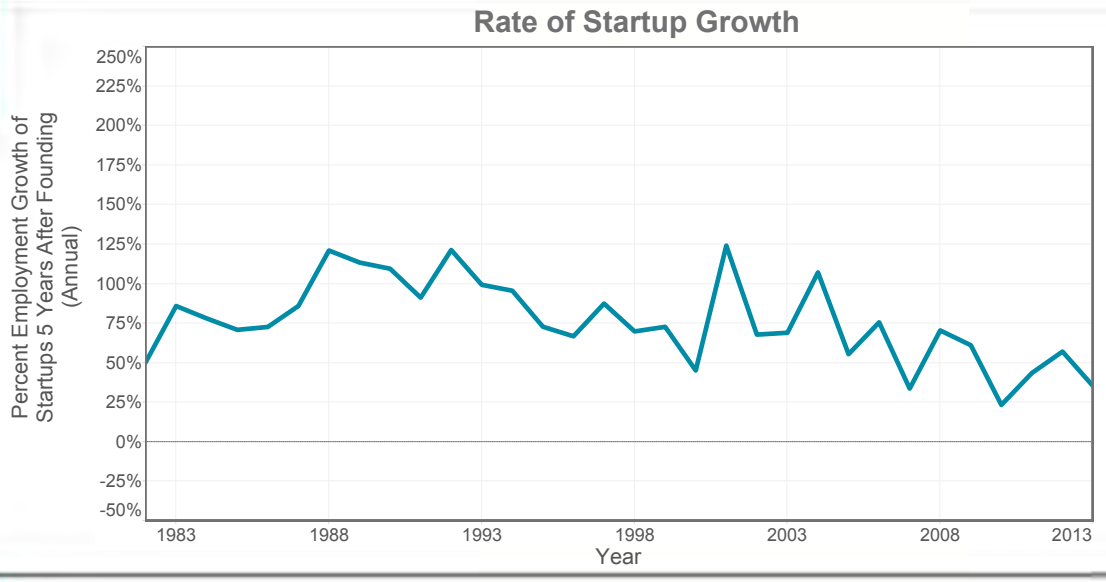
| 2016 | 2015 |
|---|---|
| 20 | 11 |

## Rate of Startup Growth

| 2016 Component | 2015 Component |
|---|---|
| 35.27% | 57.09% |

Measures how much startups have grown as a cohort, on average, five years after founding - measured by change in employment.

Source: Author calculations from BDS. Yearly measure.

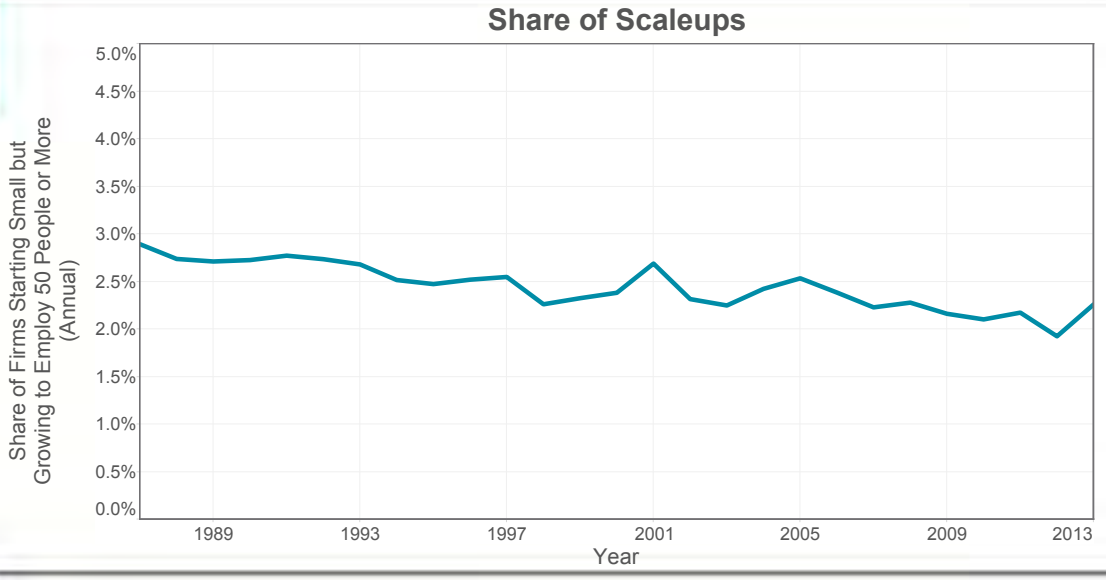



## Share of Scaleups

| 2016 Component | 2015 Component |
|---|---|
| 2.26% | 1.92% |

Measures the number of firms that started small but grew to employ fifty people or more by their tenth year of operation as a percentage of all employer firms ten years and younger.

Source: Author calculations from BDS. Yearly measure.

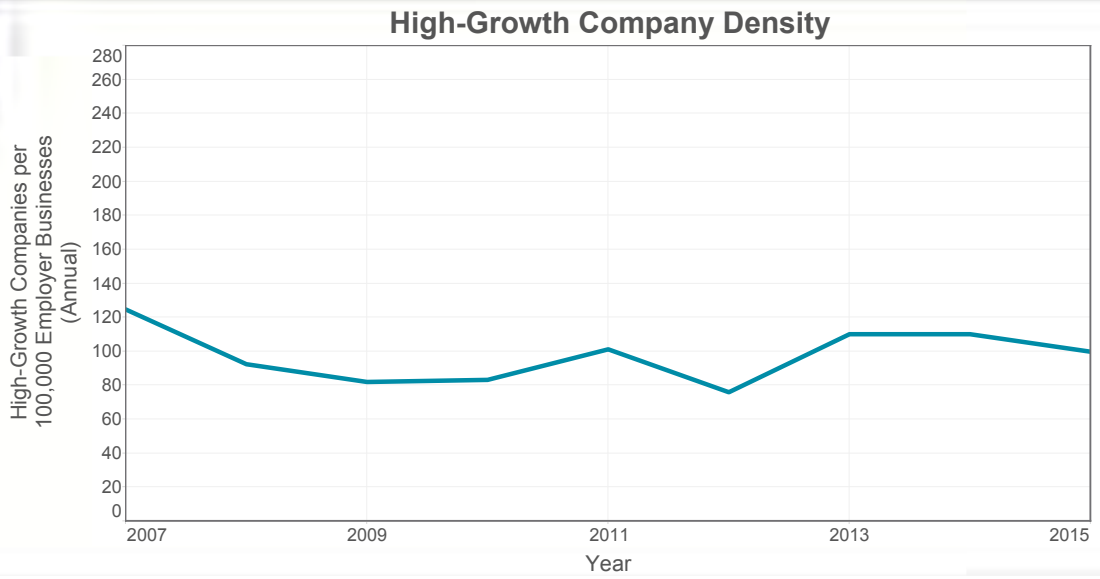



## High-Growth Company Density

| 2016 Component | 2015 Component |
|---|---|
| 99.7 | 110.1 |

Measures the number of private businesses with at least $2 million in annual revenue reaching three years of 20 percent annual revenue growth normalized by total business population.

Source: Author calculations from BDS and Inc. 500/5000.Yearly measure.



# Philadelphia

growth entrepreneurship

**Metro: Philadelphia-Camden-Wilmington | State: Pennsylvania-New Jersey-Delaware-Maryland**

Metro Profile

## Growth Entrepreneurship Rank

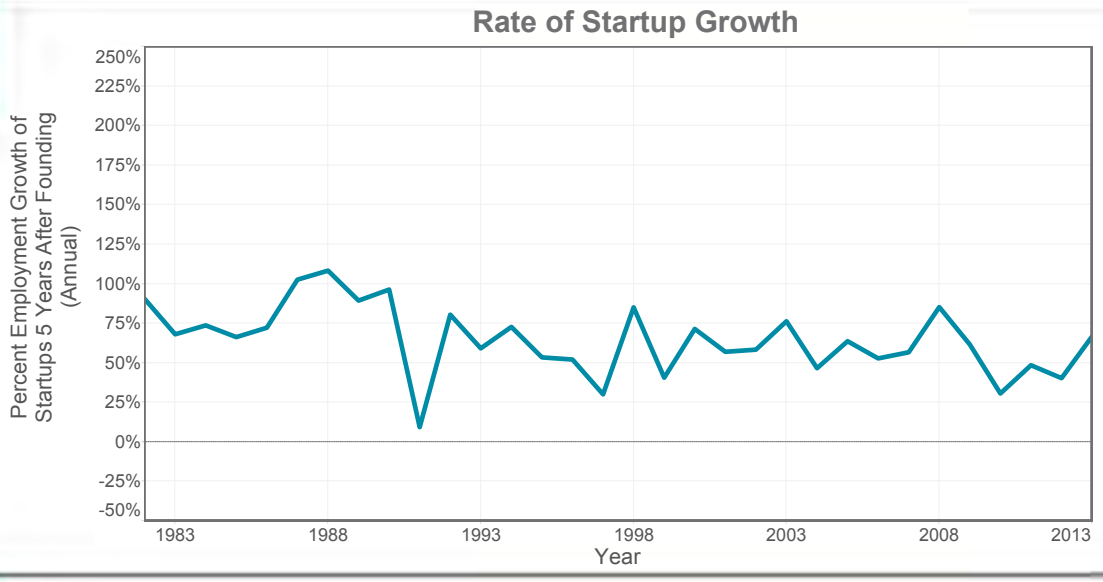
| 2016 | 2015 |
|---|---|
| 21 | 26 |

## Rate of Startup Growth

| 2016 Component | 2015 Component |
|---|---|
| 66.70% | 40.31% |

Measures how much startups have grown as a cohort, on average, five years after founding - measured by change in employment.

Source: Author calculations from BDS. Yearly measure.

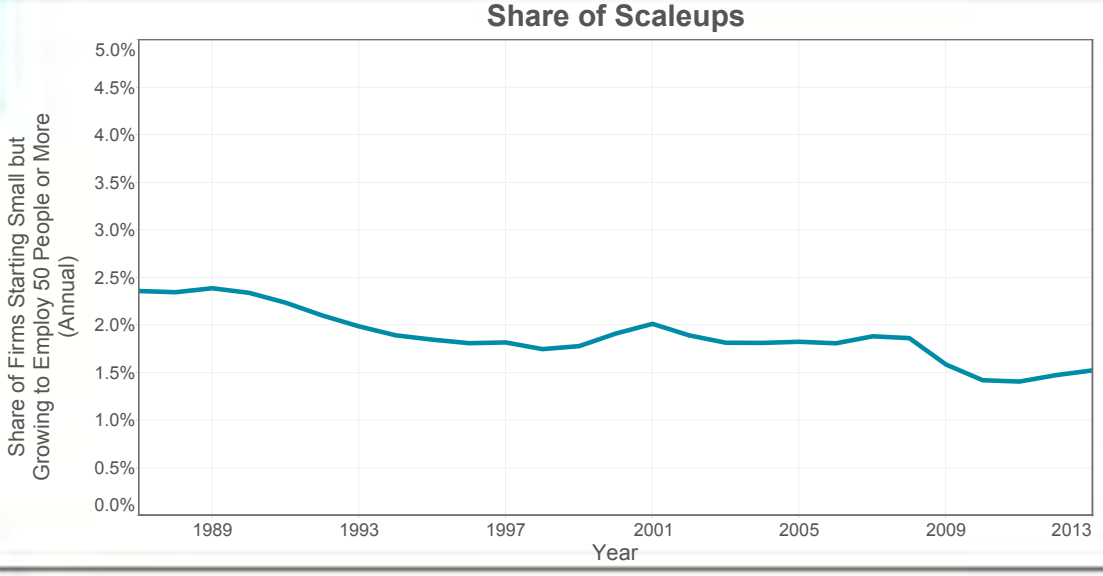



## Share of Scaleups

| 2016 Component | 2015 Component |
|---|---|
| 1.52% | 1.47% |

Measures the number of firms that started small but grew to employ fifty people or more by their tenth year of operation as a percentage of all employer firms ten years and younger.

Source: Author calculations from BDS. Yearly measure.

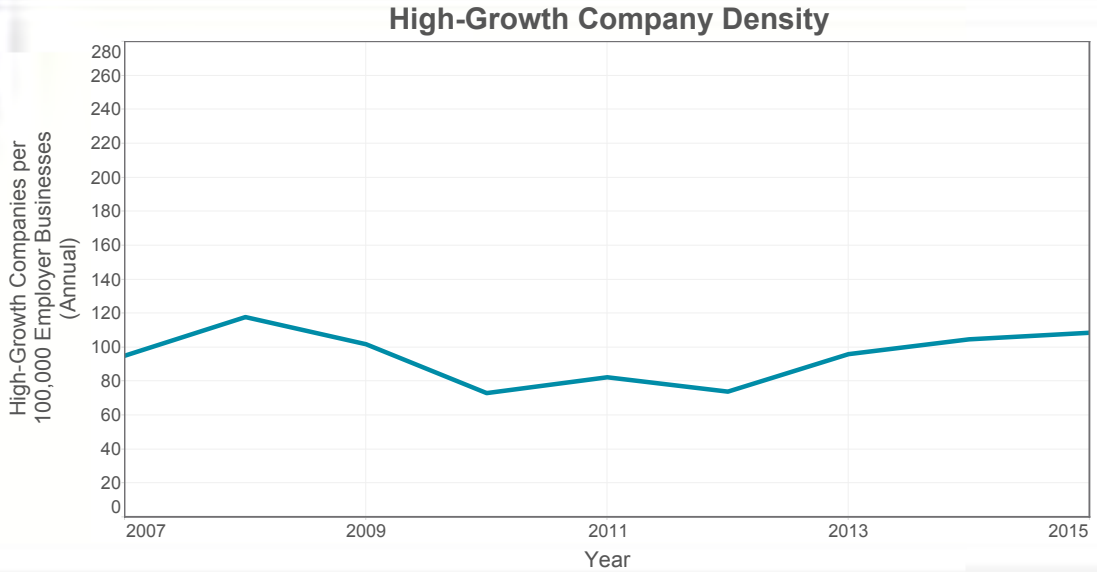



## High-Growth Company Density

| 2016 Component | 2015 Component |
|---|---|
| 108.6 | 104.7 |

Measures the number of private businesses with at least $2 million in annual revenue reaching three years of 20 percent annual revenue growth normalized by total business population.

Source: Author calculations from BDS and Inc. 500/5000.Yearly measure.



| Growth Entrepreneurship Rank | |
|---|---|
| 2016 | 2015 |
| 22 | 18 |

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# Seattle

Metro: Seattle-Tacoma-Bellevue | State: Washington

Metro Profile

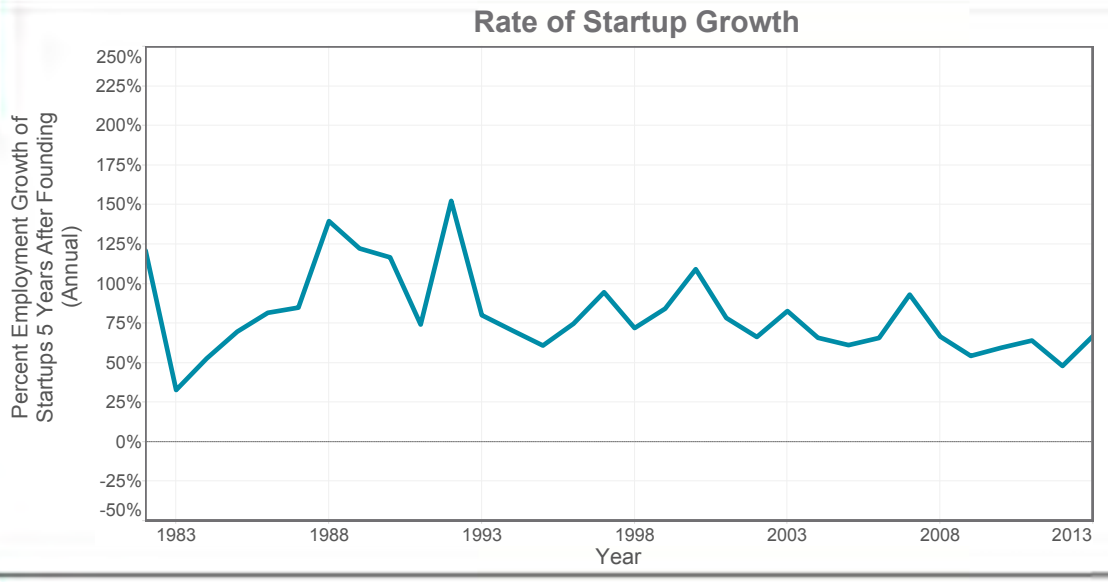
growth entrepreneurship

## Rate of Startup Growth

| 2016 Component | 2015 Component |
|---|---|
| 67.00% | 48.01% |

Measures how much startups have grown as a cohort, on average, five years after founding - measured by change in employment.

Source: Author calculations from BDS. Yearly measure.

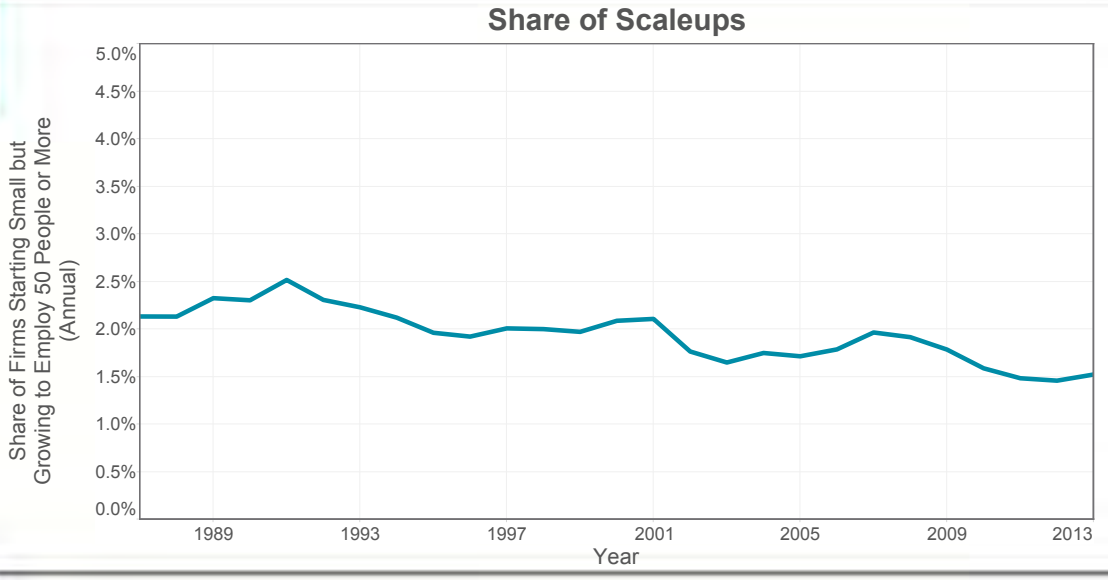



## Share of Scaleups

| 2016 Component | 2015 Component |
|---|---|
| 1.52% | 1.46% |

Measures the number of firms that started small but grew to employ fifty people or more by their tenth year of operation as a percentage of all employer firms ten years and younger.

Source: Author calculations from BDS. Yearly measure.

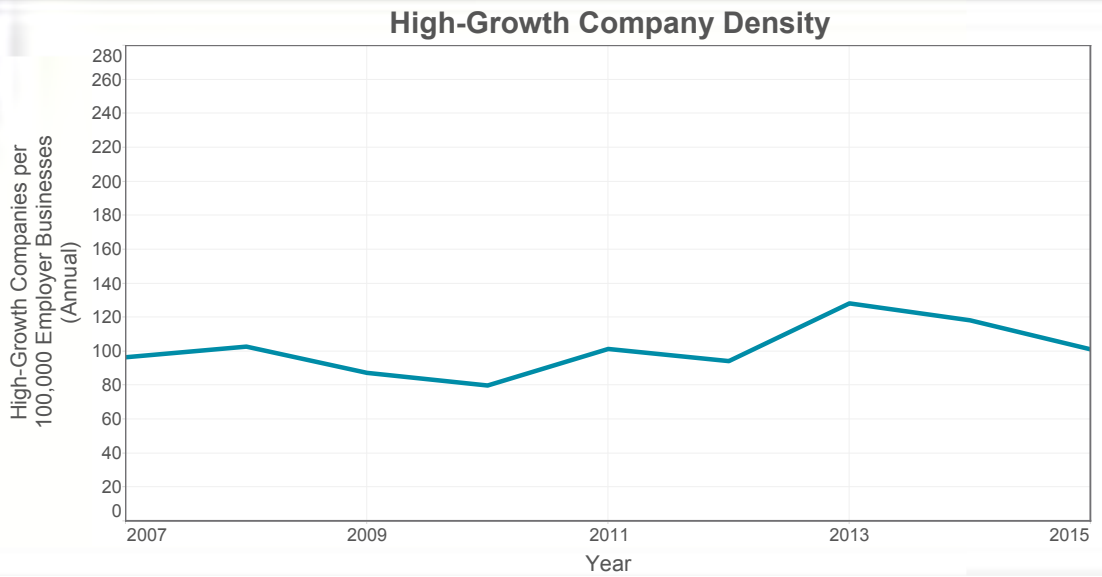



## High-Growth Company Density

| 2016 Component | 2015 Component |
|---|---|
| 101.2 | 118.2 |

Measures the number of private businesses with at least $2 million in annual revenue reaching three years of 20 percent annual revenue growth normalized by total business population.

Source: Author calculations from BDS and Inc. 500/5000.Yearly measure.



## Growth Entrepreneurship Rank

| 2016 | 2015 |
|---|---|
| 23 | 23 |

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# Jacksonville

**Metro: Jacksonville | State: Florida**

Metro Profile

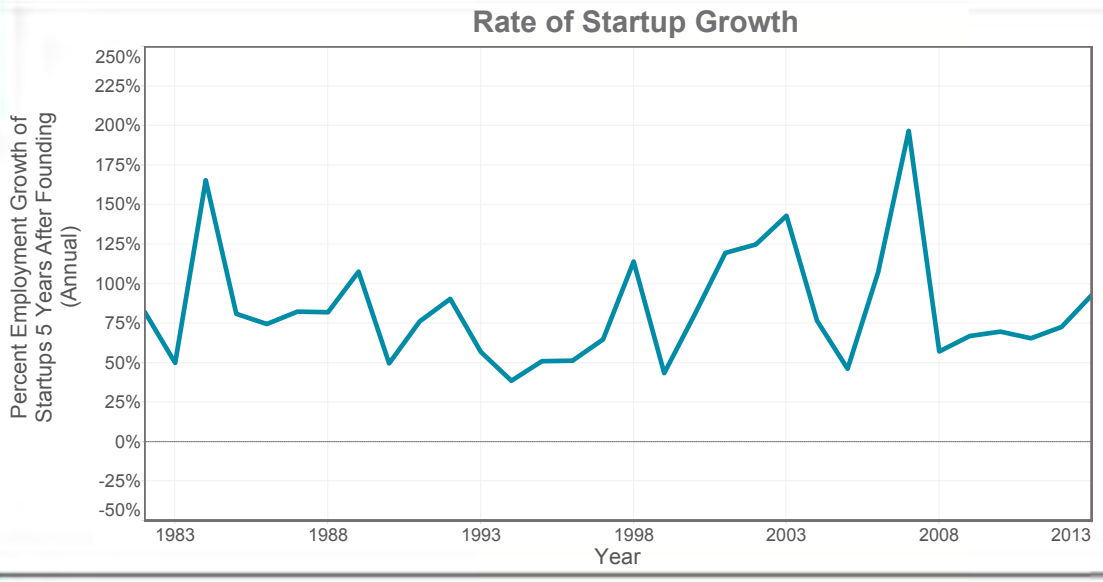
growth entrepreneurship

## Rate of Startup Growth

| 2016 Component | 2015 Component |
|---|---|
| 93.04% | 72.66% |

Measures how much startups have grown as a cohort, on average, five years after founding - measured by change in employment.

Source: Author calculations from BDS. Yearly measure.

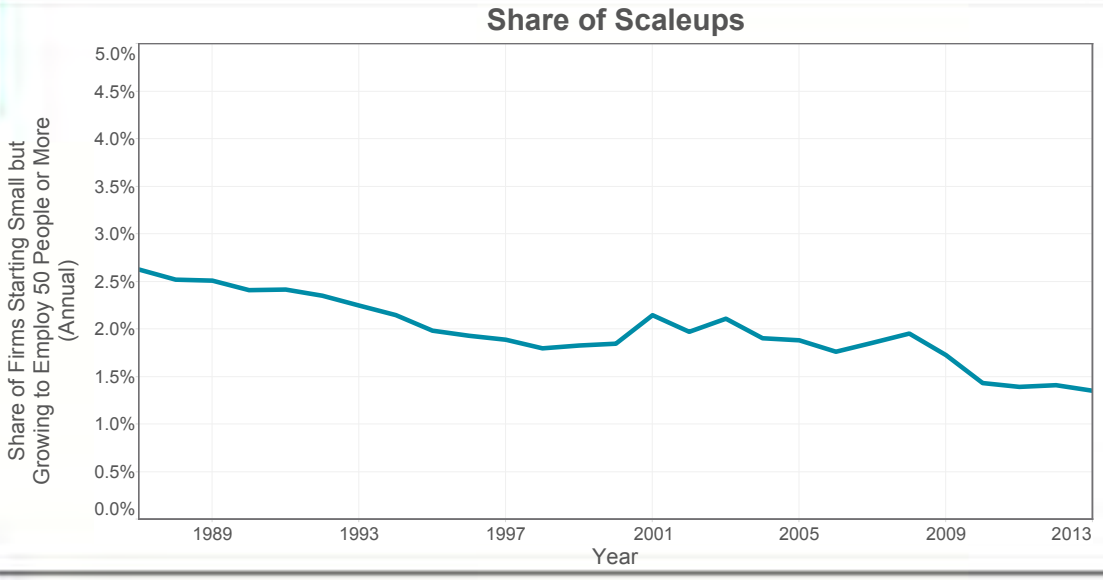



## Share of Scaleups

| 2016 Component | 2015 Component |
|---|---|
| 1.35% | 1.41% |

Measures the number of firms that started small but grew to employ fifty people or more by their tenth year of operation as a percentage of all employer firms ten years and younger.

Source: Author calculations from BDS. Yearly measure.

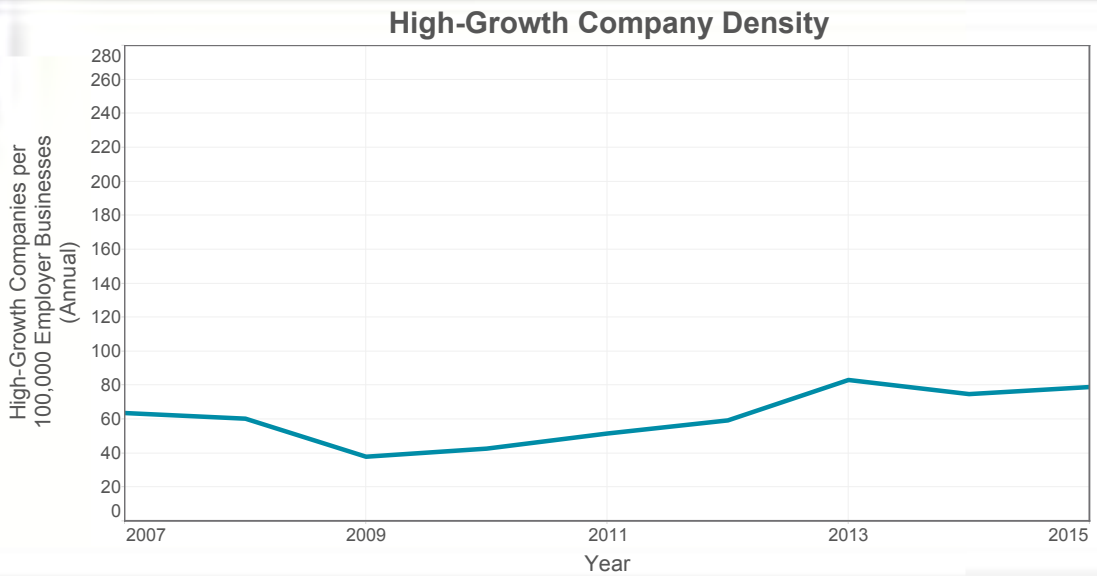



## High-Growth Company Density

| 2016 Component | 2015 Component |
|---|---|
| 79.0 | 74.8 |

Measures the number of private businesses with at least $2 million in annual revenue reaching three years of 20 percent annual revenue growth normalized by total business population.

Source: Author calculations from BDS and Inc. 500/5000.Yearly measure.



# Kansas City

Metro: Kansas City | State: Missouri-Kansas

Metro Profile

growth entrepreneurship

## Growth Entrepreneurship Rank

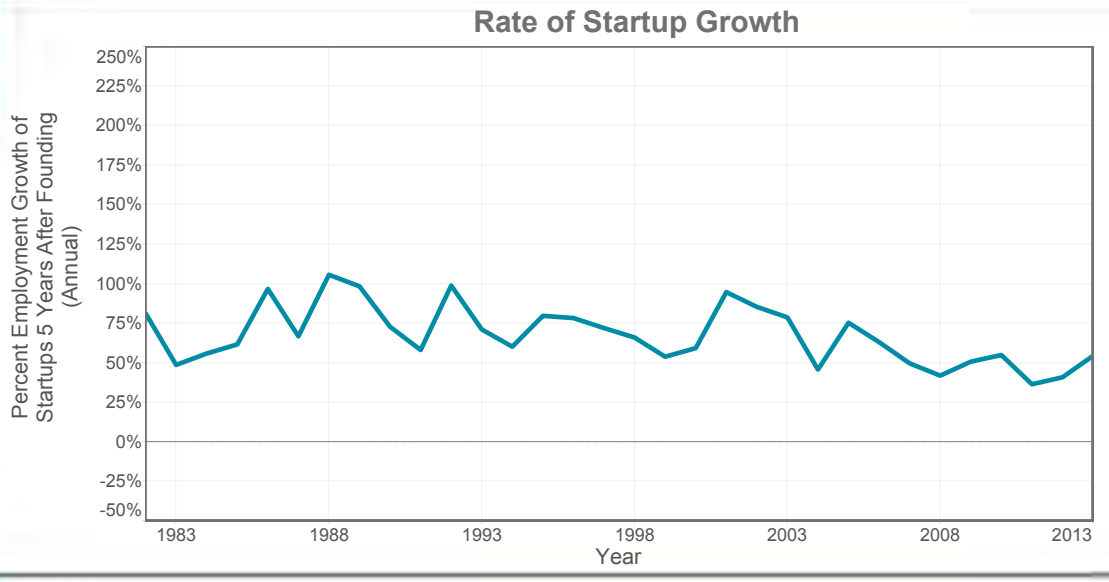
| 2016 | 2015 |
|---|---|
| 24 | 24 |

## Rate of Startup Growth

| 2016 Component | 2015 Component |
|---|---|
| 54.43% | 40.84% |

Measures how much startups have grown as a cohort, on average, five years after founding - measured by change in employment.

Source: Author calculations from BDS. Yearly measure.

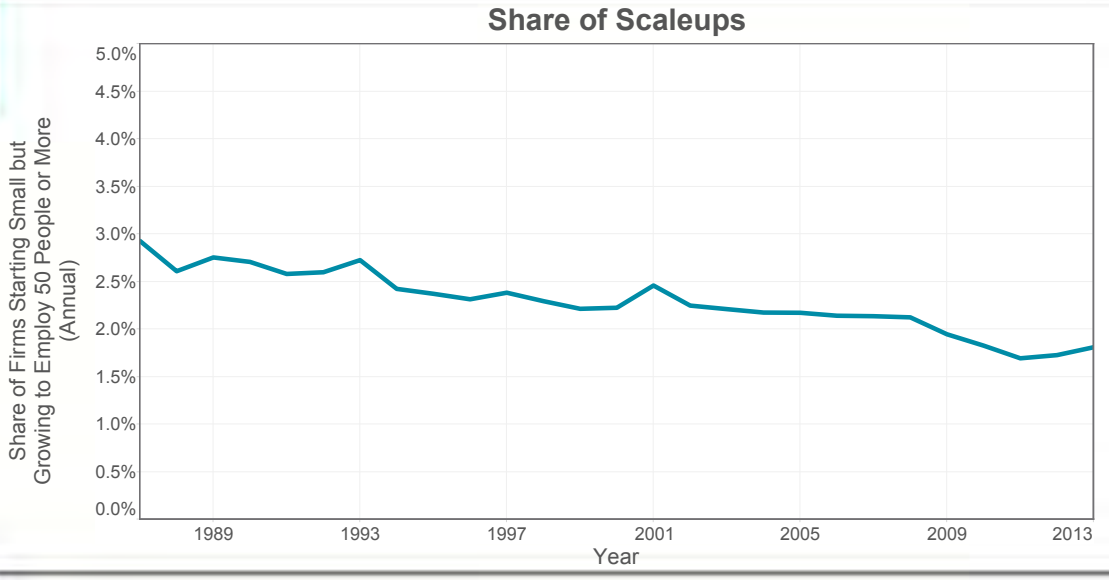



## Share of Scaleups

| 2016 Component | 2015 Component |
|---|---|
| 1.81% | 1.73% |

Measures the number of firms that started small but grew to employ fifty people or more by their tenth year of operation as a percentage of all employer firms ten years and younger.

Source: Author calculations from BDS. Yearly measure.

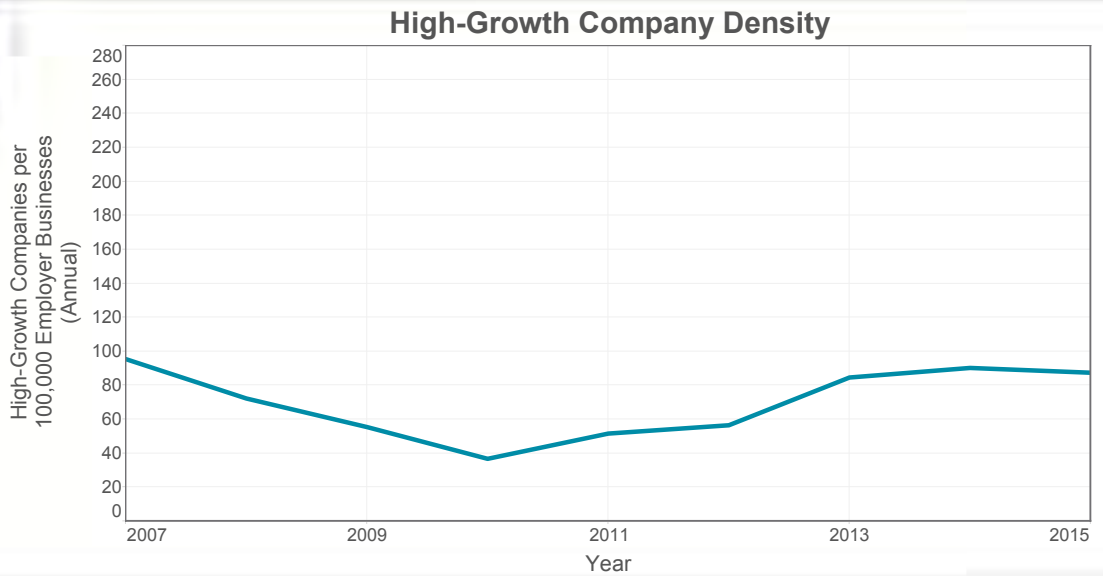



## High-Growth Company Density

| 2016 Component | 2015 Component |
|---|---|
| 87.4 | 90.2 |

Measures the number of private businesses with at least $2 million in annual revenue reaching three years of 20 percent annual revenue growth normalized by total business population.

Source: Author calculations from BDS and Inc. 500/5000.Yearly measure.



| Growth Entrepreneurship Rank | |
|---|---|
| 2016 | 2015 |
| 25 | 22 |

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# Virginia Beach

growth entrepreneurship

Metro: Virginia Beach-Norfolk-Newport News | State: Virginia-North Carolina

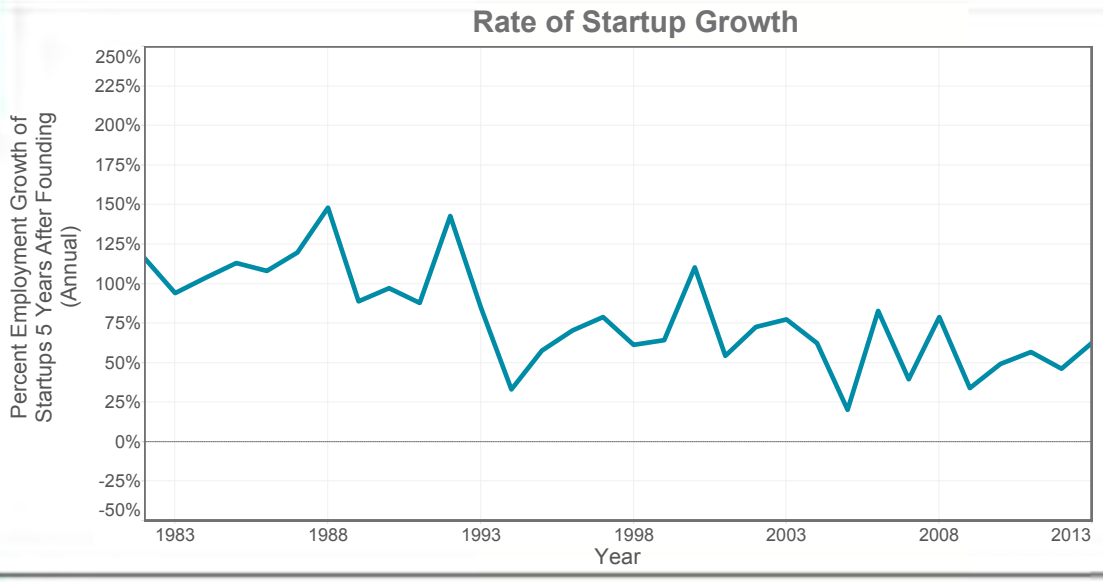
Metro Profile

## Rate of Startup Growth

| 2016 Component | 2015 Component |
|---|---|
| 62.68% | 46.26% |

Measures how much startups have grown as a cohort, on average, five years after founding - measured by change in employment.

Source: Author calculations from BDS. Yearly measure.

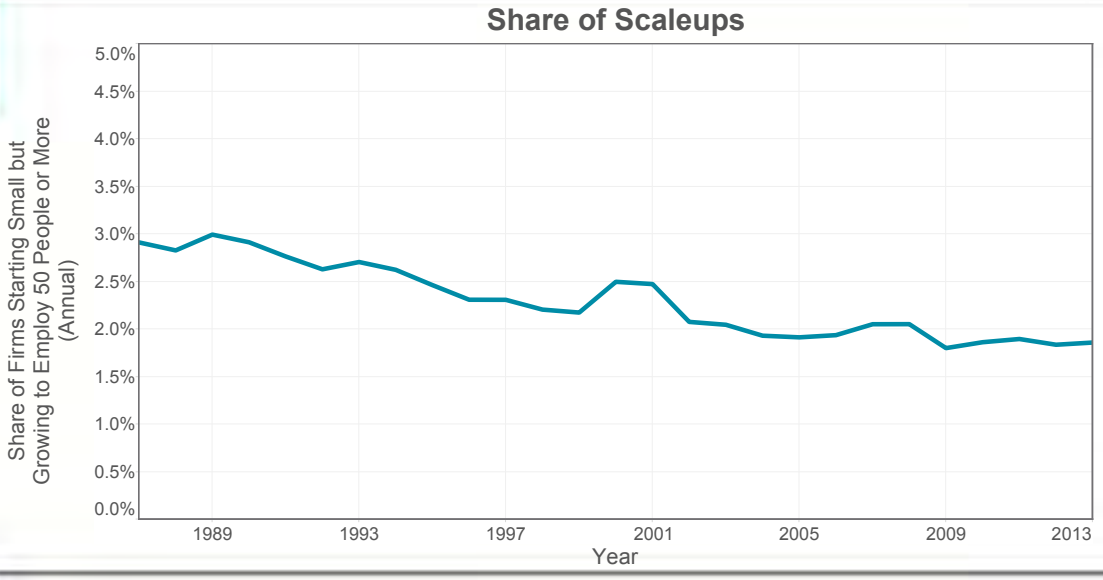



## Share of Scaleups

| 2016 Component | 2015 Component |
|---|---|
| 1.86% | 1.84% |

Measures the number of firms that started small but grew to employ fifty people or more by their tenth year of operation as a percentage of all employer firms ten years and younger.

Source: Author calculations from BDS. Yearly measure.

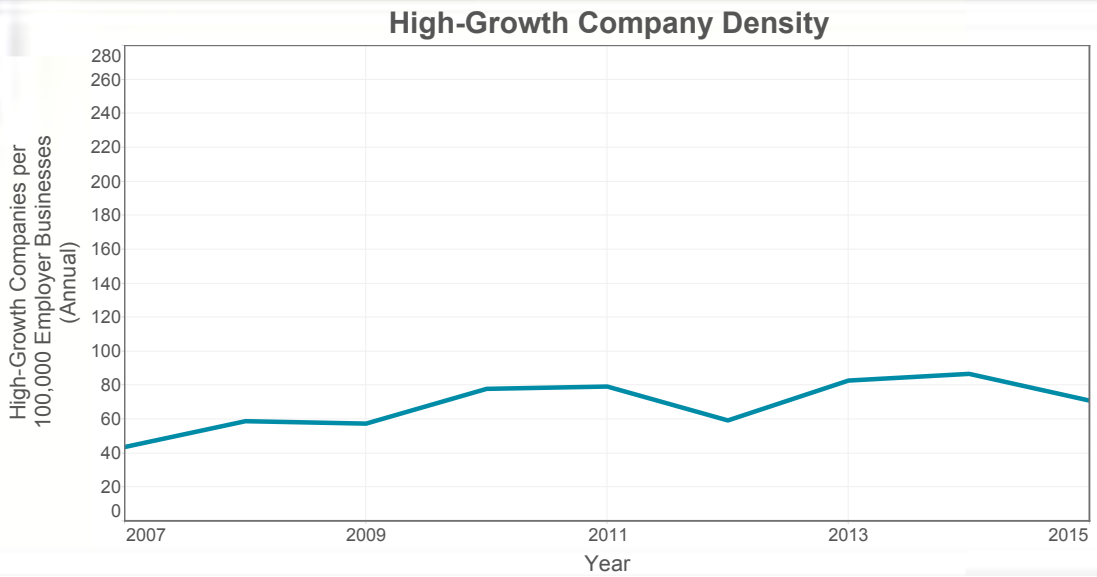



## High-Growth Company Density

| 2016 Component | 2015 Component |
|---|---|
| 71.0 | 86.7 |

Measures the number of private businesses with at least $2 million in annual revenue reaching three years of 20 percent annual revenue growth normalized by total business population.

Source: Author calculations from BDS and Inc. 500/5000.Yearly measure.



# Tampa

Metro: Tampa-St. Petersburg-Clearwater | State: Florida

Metro Profile

growth entrepreneurship

## Growth Entrepreneurship Rank

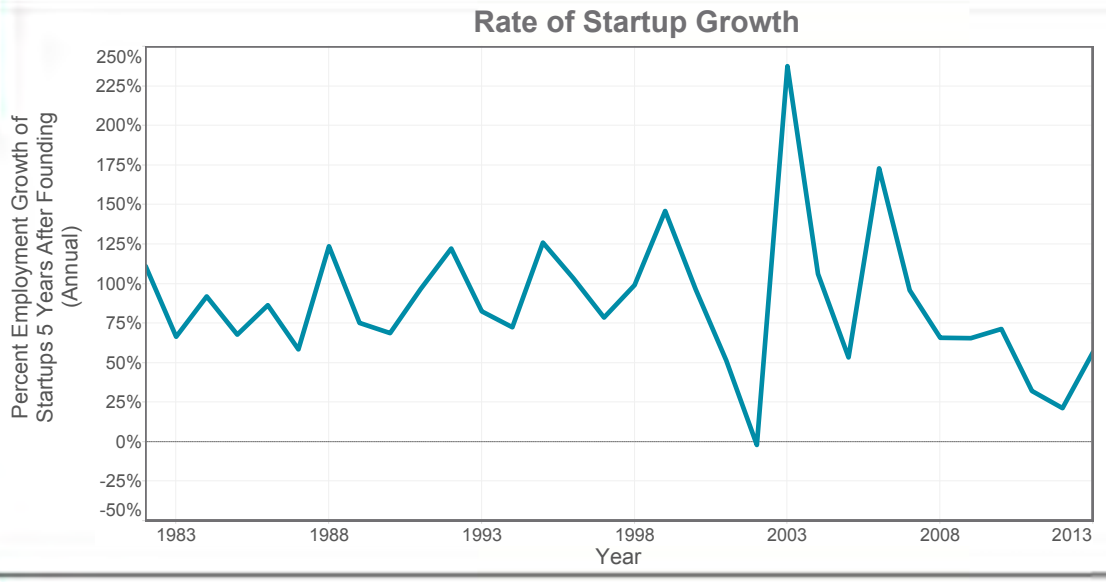
| 2016 | 2015 |
|---|---|
| 26 | 30 |

## Rate of Startup Growth

| 2016 Component | 2015 Component |
|---|---|
| 56.79% | 21.33% |

Measures how much startups have grown as a cohort, on average, five years after founding - measured by change in employment.

Source: Author calculations from BDS. Yearly measure.

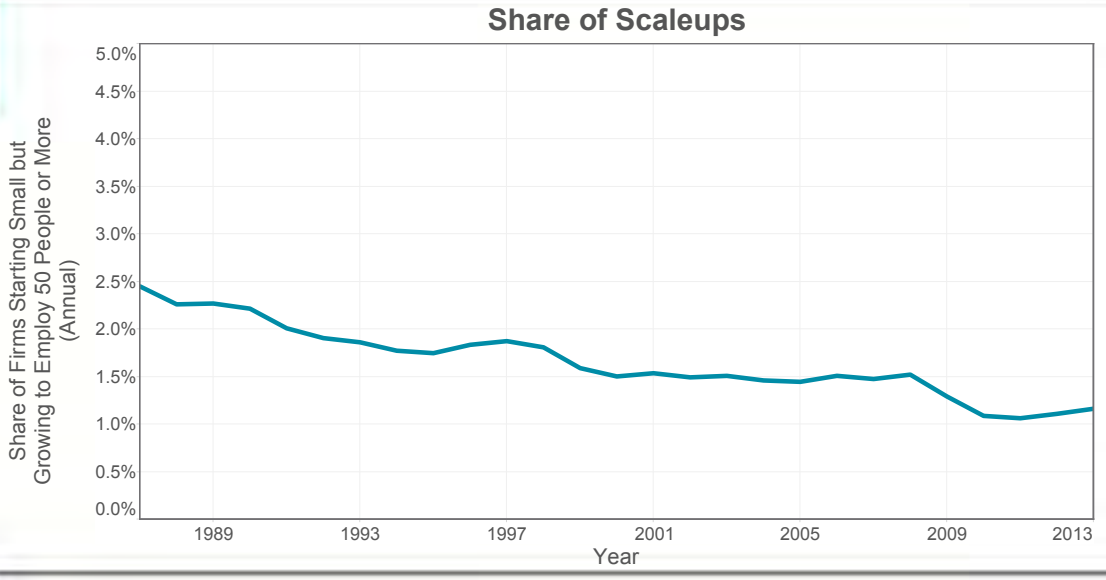



## Share of Scaleups

| 2016 Component | 2015 Component |
|---|---|
| 1.16% | 1.11% |

Measures the number of firms that started small but grew to employ fifty people or more by their tenth year of operation as a percentage of all employer firms ten years and younger.

Source: Author calculations from BDS. Yearly measure.

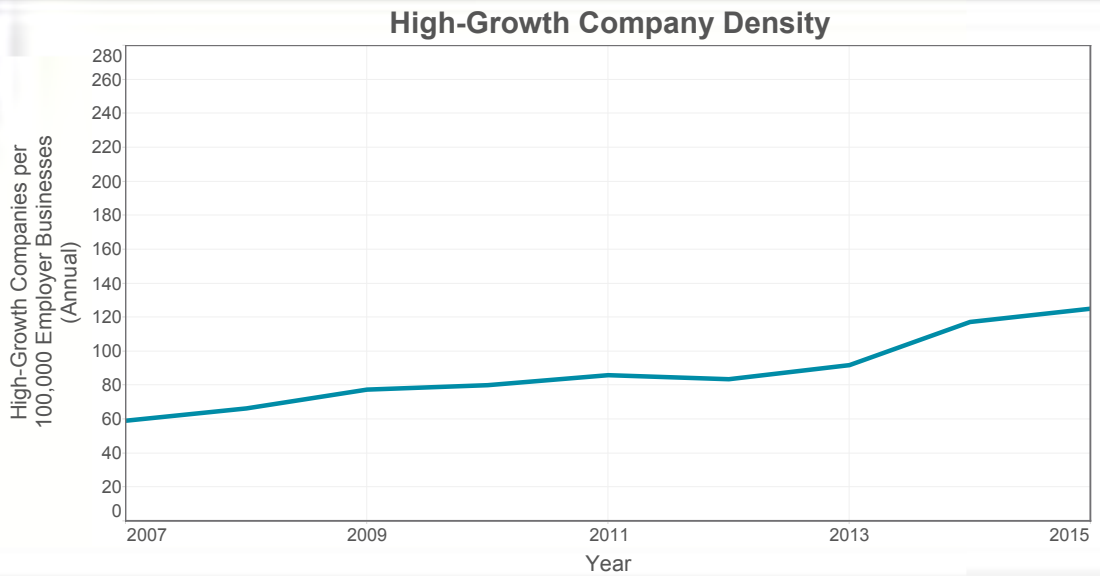



## High-Growth Company Density

| 2016 Component | 2015 Component |
|---|---|
| 125.1 | 117.3 |

Measures the number of private businesses with at least $2 million in annual revenue reaching three years of 20 percent annual revenue growth normalized by total business population.

Source: Author calculations from BDS and Inc. 500/5000.Yearly measure.



| Growth Entrepreneurship Rank | |
|---|---|
| 2016 | 2015 |
| 27 | 12 |

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# Pittsburgh

**Metro: Pittsburgh | State: Pennsylvania**

Metro Profile

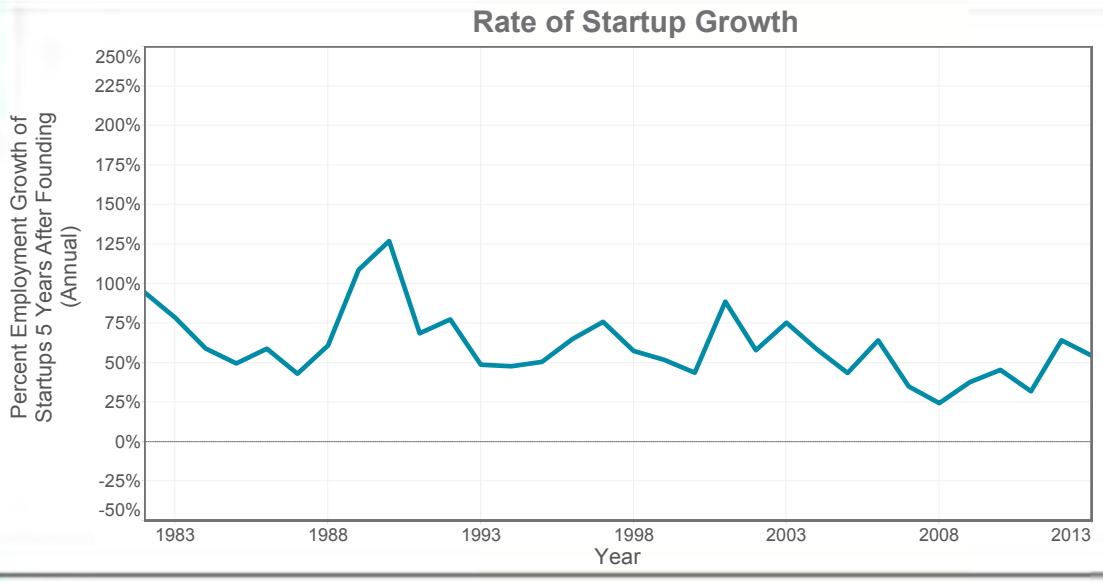
growth entrepreneurship

## Rate of Startup Growth

| 2016 Component | 2015 Component |
|---|---|
| 54.39% | 64.23% |

Measures how much startups have grown as a cohort, on average, five years after founding - measured by change in employment.

Source: Author calculations from BDS. Yearly measure.

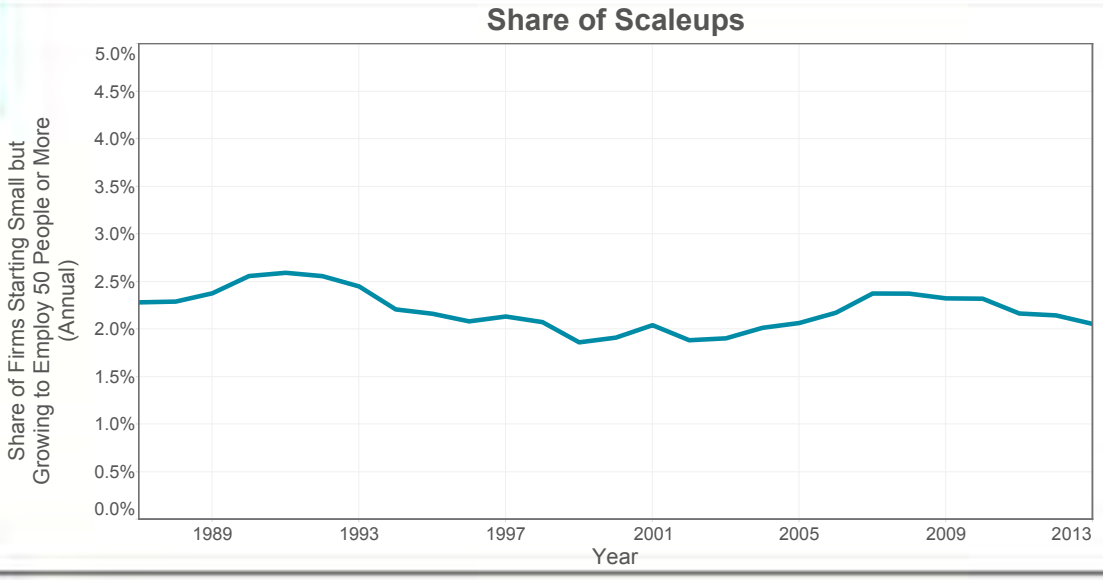



## Share of Scaleups

| 2016 Component | 2015 Component |
|---|---|
| 2.05% | 2.14% |

Measures the number of firms that started small but grew to employ fifty people or more by their tenth year of operation as a percentage of all employer firms ten years and younger.

Source: Author calculations from BDS. Yearly measure.

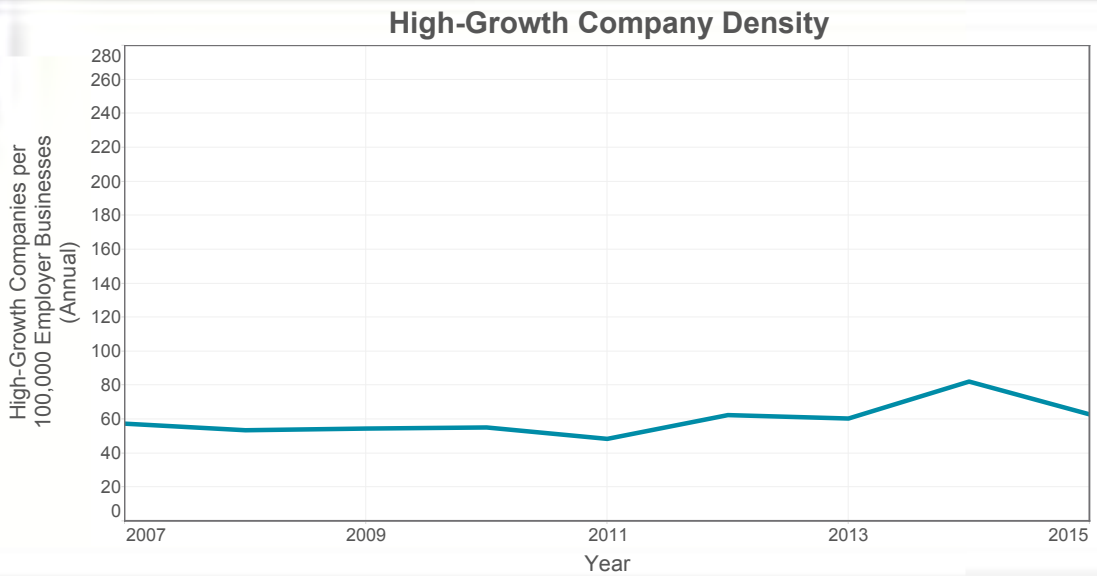



## High-Growth Company Density

| 2016 Component | 2015 Component |
|---|---|
| 62.9 | 82.2 |

Measures the number of private businesses with at least $2 million in annual revenue reaching three years of 20 percent annual revenue growth normalized by total business population.

Source: Author calculations from BDS and Inc. 500/5000.Yearly measure.



# Portland

Metro: Portland-Vancouver-Hillsboro | State: Oregon-Washington

Metro Profile

growth entrepreneurship

## Growth Entrepreneurship Rank

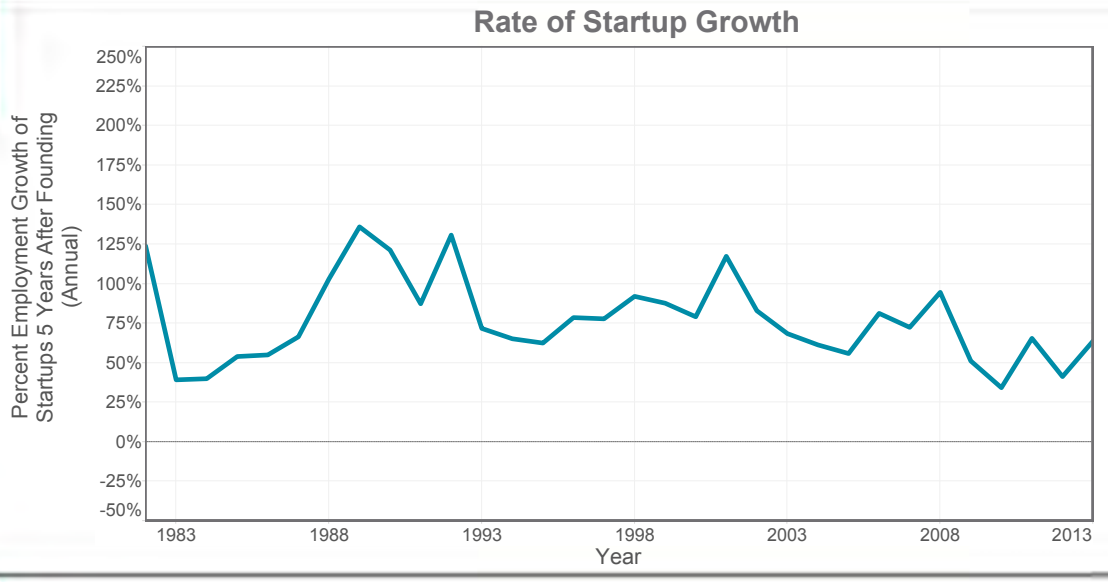
| 2016 | 2015 |
|---|---|
| 28 | 28 |

## Rate of Startup Growth

| 2016 Component | 2015 Component |
|---|---|
| 63.77% | 41.27% |

Measures how much startups have grown as a cohort, on average, five years after founding - measured by change in employment.

Source: Author calculations from BDS. Yearly measure.

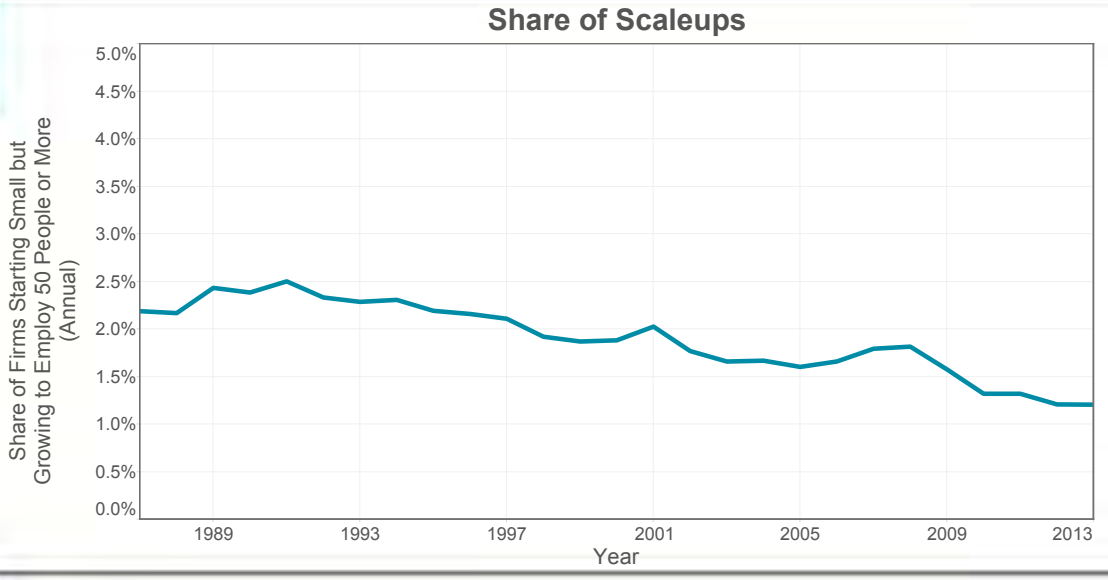



## Share of Scaleups

| 2016 Component | 2015 Component |
|---|---|
| 1.21% | 1.21% |

Measures the number of firms that started small but grew to employ fifty people or more by their tenth year of operation as a percentage of all employer firms ten years and younger.

Source: Author calculations from BDS. Yearly measure.

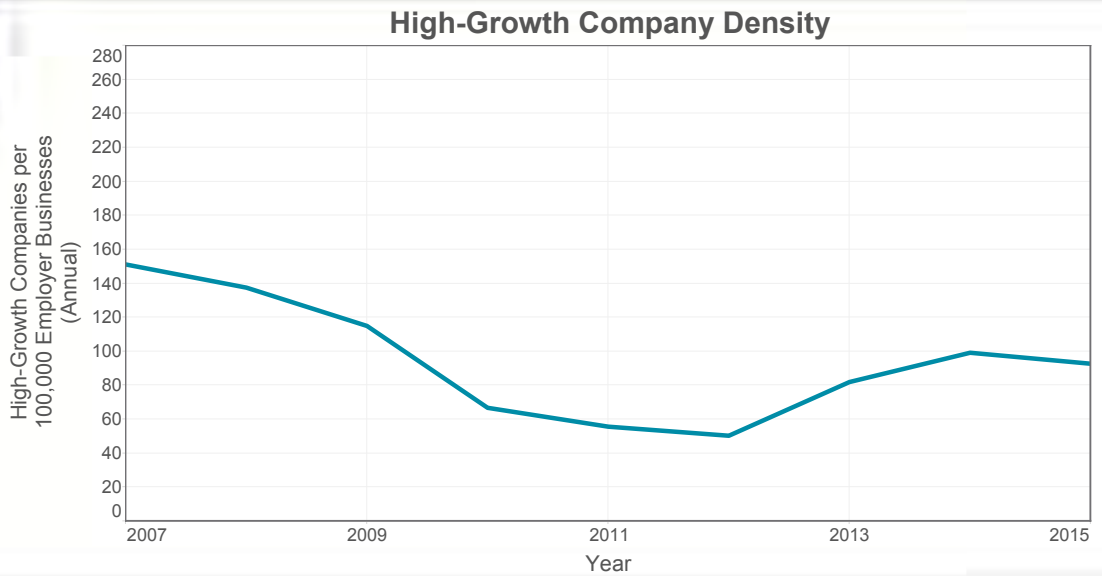



## High-Growth Company Density

| 2016 Component | 2015 Component |
|---|---|
| 92.7 | 99.2 |

Measures the number of private businesses with at least $2 million in annual revenue reaching three years of 20 percent annual revenue growth normalized by total business population.

Source: Author calculations from BDS and Inc. 500/5000.Yearly measure.



| Growth Entrepreneurship Rank | |
|---|---|
| 2016 | 2015 |
| 29 | 31 |

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# St. Louis

Metro: St. Louis | State: Missouri-Illinois

Metro Profile

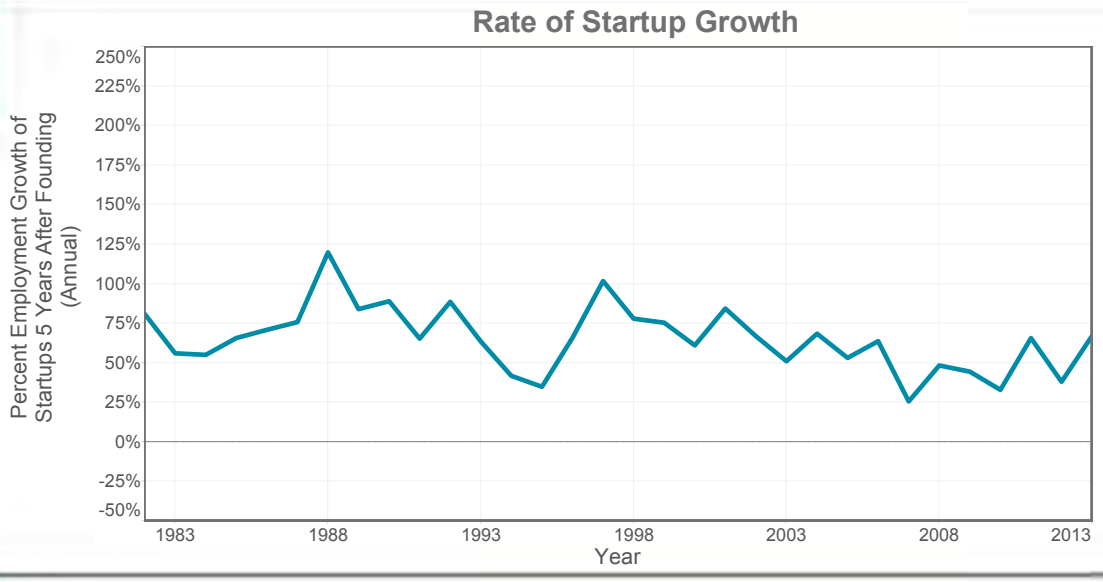
growth entrepreneurship

## Rate of Startup Growth

| 2016 Component | 2015 Component |
|---|---|
| 67.05% | 38.01% |

Measures how much startups have grown as a cohort, on average, five years after founding - measured by change in employment.

Source: Author calculations from BDS. Yearly measure.

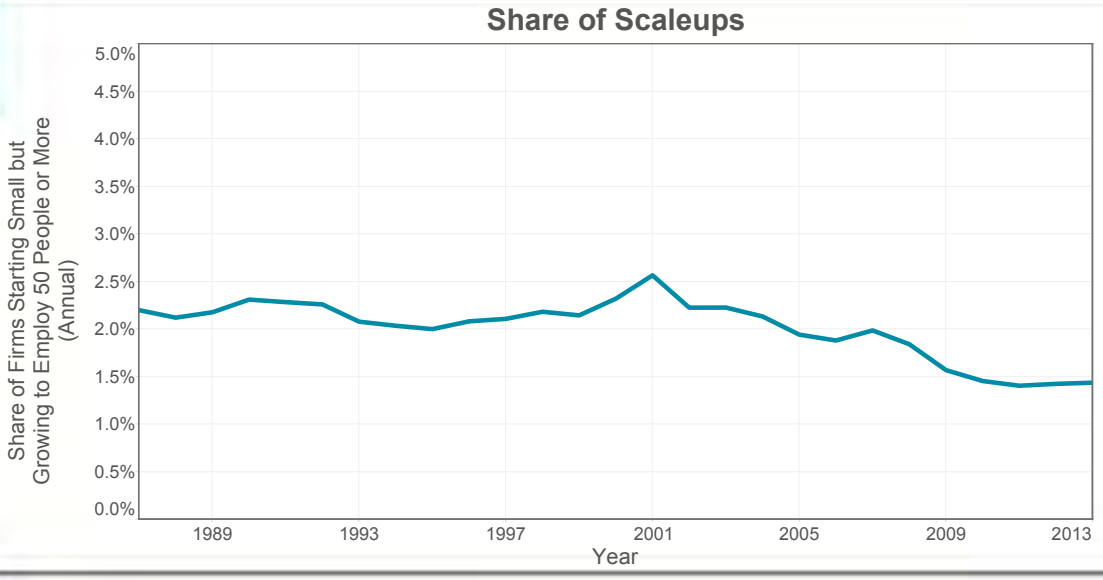



## Share of Scaleups

| 2016 Component | 2015 Component |
|---|---|
| 1.44% | 1.42% |

Measures the number of firms that started small but grew to employ fifty people or more by their tenth year of operation as a percentage of all employer firms ten years and younger.

Source: Author calculations from BDS. Yearly measure.

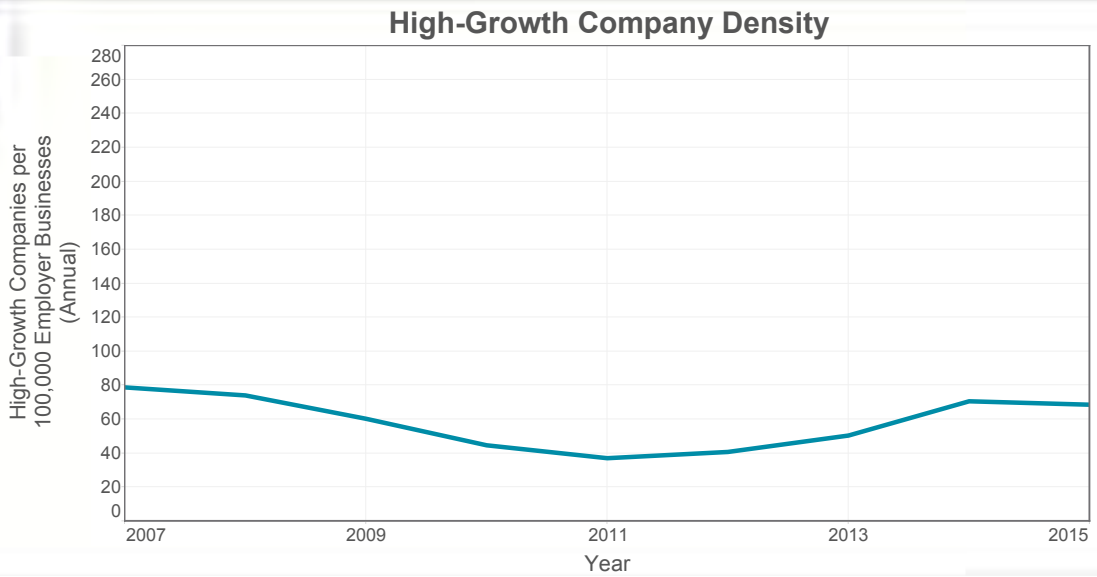



## High-Growth Company Density

| 2016 Component | 2015 Component |
|---|---|
| 68.6 | 70.6 |

Measures the number of private businesses with at least $2 million in annual revenue reaching three years of 20 percent annual revenue growth normalized by total business population.

Source: Author calculations from BDS and Inc. 500/5000.Yearly measure.



# Chicago

Metro: Chicago-Joliet-Naperville | State: Illinois-Indiana-Wisconsin

Metro Profile

growth entrepreneurship

## Growth Entrepreneurship Rank

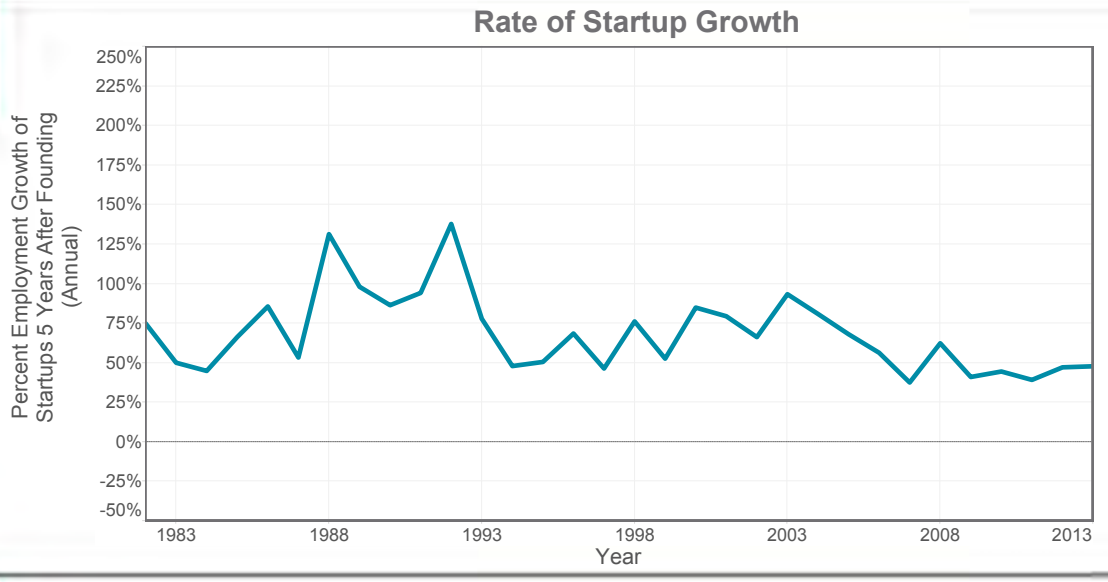
| 2016 | 2015 |
|---|---|
| 30 | 25 |

## Rate of Startup Growth

| 2016 Component | 2015 Component |
|---|---|
| 47.80% | 47.13% |

Measures how much startups have grown as a cohort, on average, five years after founding - measured by change in employment.

Source: Author calculations from BDS. Yearly measure.

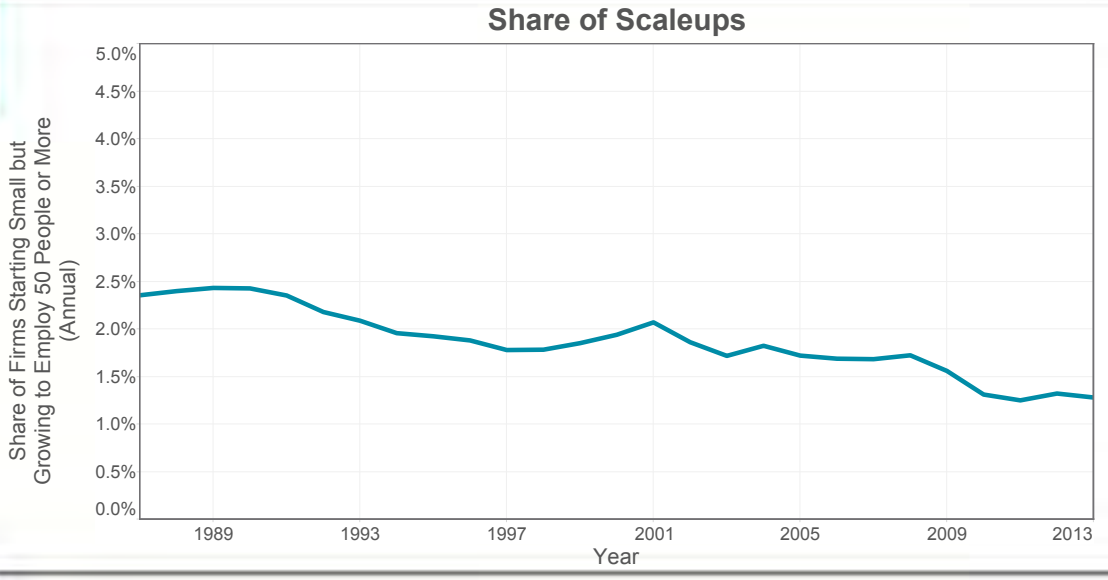



## Share of Scaleups

| 2016 Component | 2015 Component |
|---|---|
| 1.28% | 1.32% |

Measures the number of firms that started small but grew to employ fifty people or more by their tenth year of operation as a percentage of all employer firms ten years and younger.

Source: Author calculations from BDS. Yearly measure.

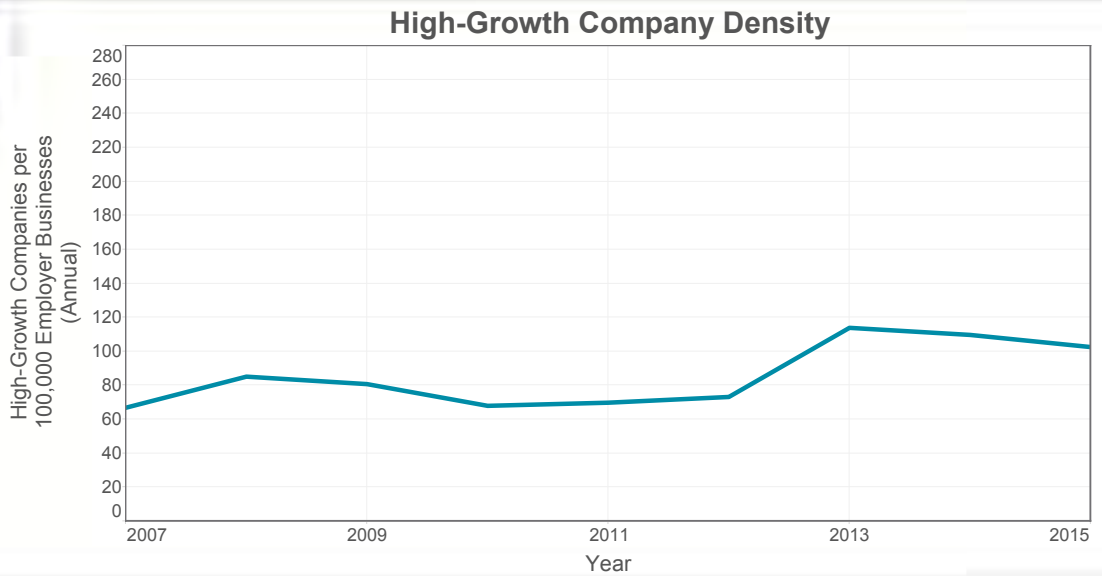



## High-Growth Company Density

| 2016 Component | 2015 Component |
|---|---|
| 102.5 | 109.6 |

Measures the number of private businesses with at least $2 million in annual revenue reaching three years of 20 percent annual revenue growth normalized by total business population.

Source: Author calculations from BDS and Inc. 500/5000.Yearly measure.



| Growth Entrepreneurship Rank | |
|---|---|
| 2016 | 2015 |
| 31 | 21 |

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# Milwaukee

growth entrepreneurship

**Metro: Milwaukee-Waukesha-West Allis | State: Wisconsin**

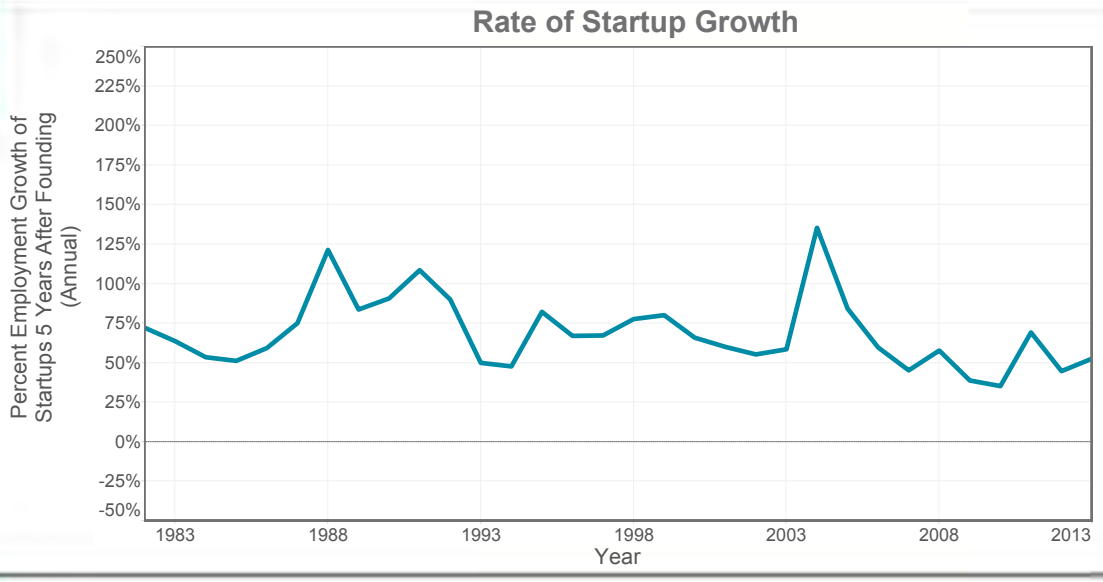
Metro Profile

## Rate of Startup Growth

| 2016 Component | 2015 Component |
|---|---|
| 52.65% | 44.74% |

Measures how much startups have grown as a cohort, on average, five years after founding - measured by change in employment.

Source: Author calculations from BDS. Yearly measure.

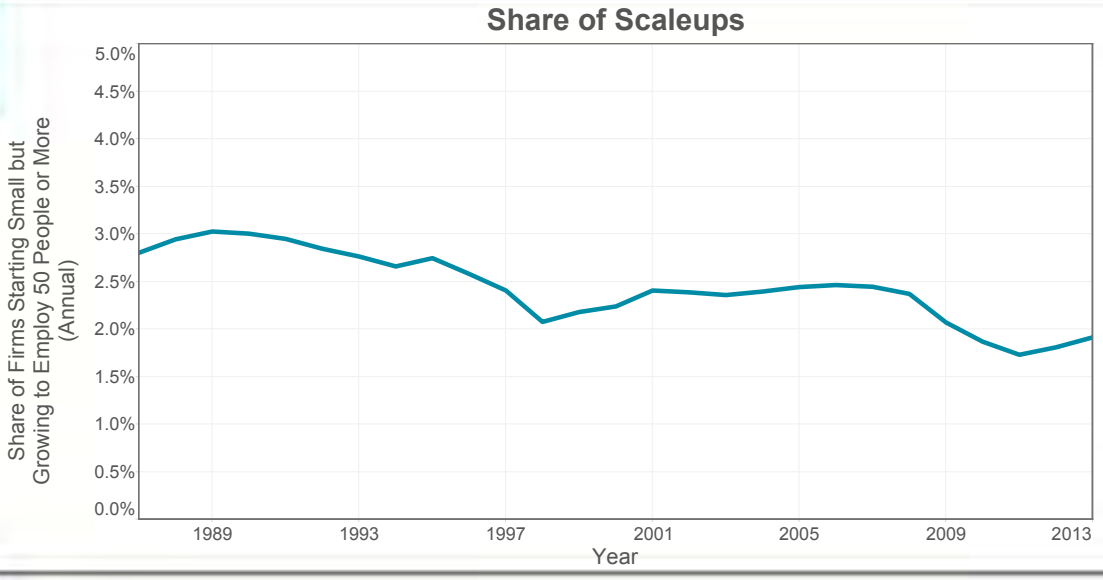



## Share of Scaleups

| 2016 Component | 2015 Component |
|---|---|
| 1.91% | 1.81% |

Measures the number of firms that started small but grew to employ fifty people or more by their tenth year of operation as a percentage of all employer firms ten years and younger.

Source: Author calculations from BDS. Yearly measure.

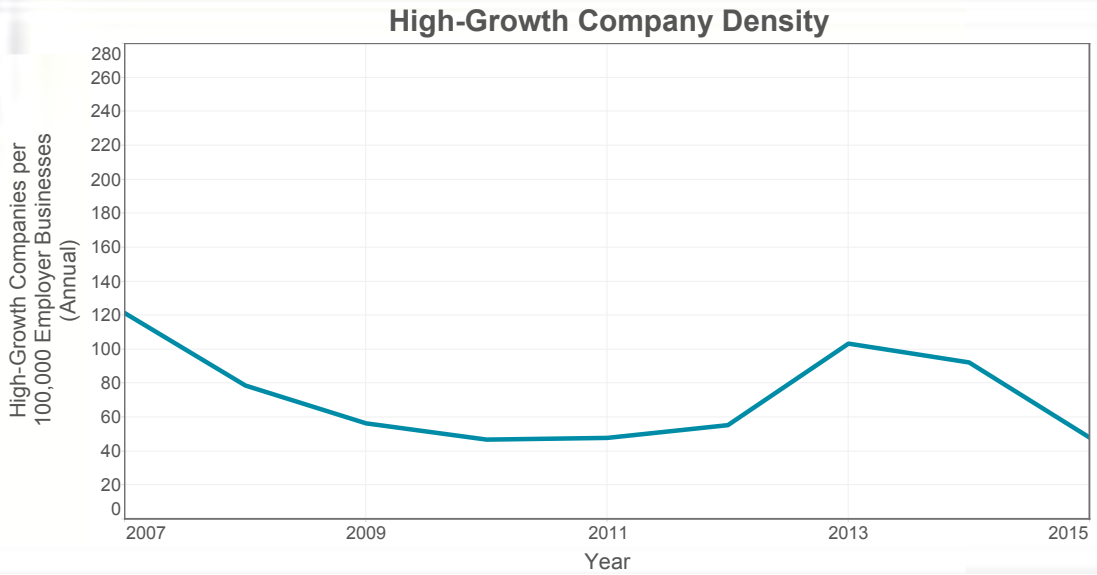



## High-Growth Company Density

| 2016 Component | 2015 Component |
|---|---|
| 48.0 | 92.3 |

Measures the number of private businesses with at least $2 million in annual revenue reaching three years of 20 percent annual revenue growth normalized by total business population.

Source: Author calculations from BDS and Inc. 500/5000.Yearly measure.



# Las Vegas

Metro: Las Vegas-Paradise | State: Nevada

Metro Profile

growth entrepreneurship

## Growth Entrepreneurship Rank

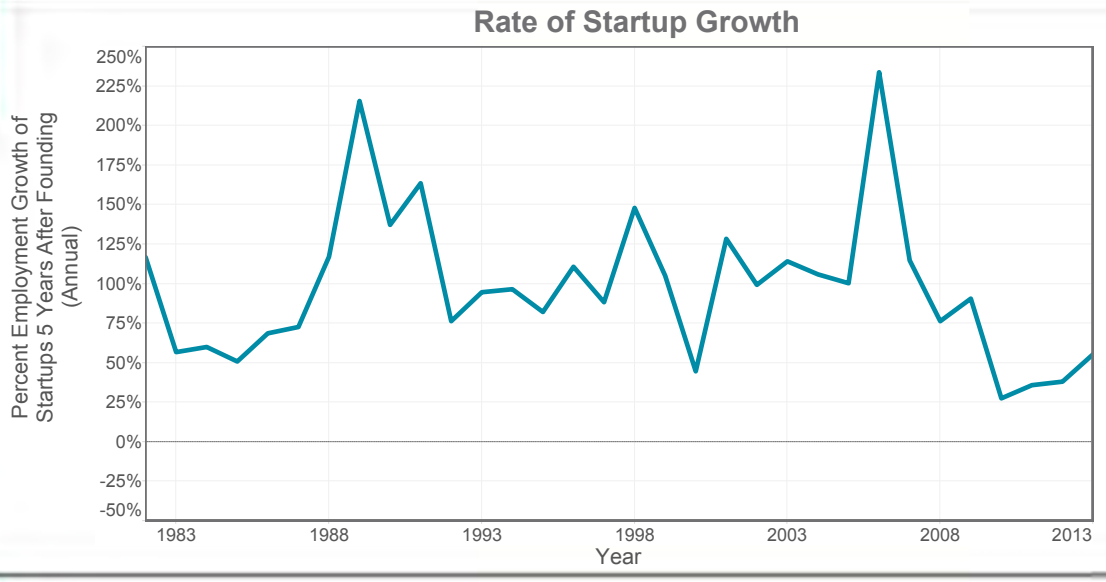
| 2016 | 2015 |
|---|---|
| 32 | 29 |

## Rate of Startup Growth

| 2016 Component | 2015 Component |
|---|---|
| 55.40% | 38.08% |

Measures how much startups have grown as a cohort, on average, five years after founding - measured by change in employment.

Source: Author calculations from BDS. Yearly measure.

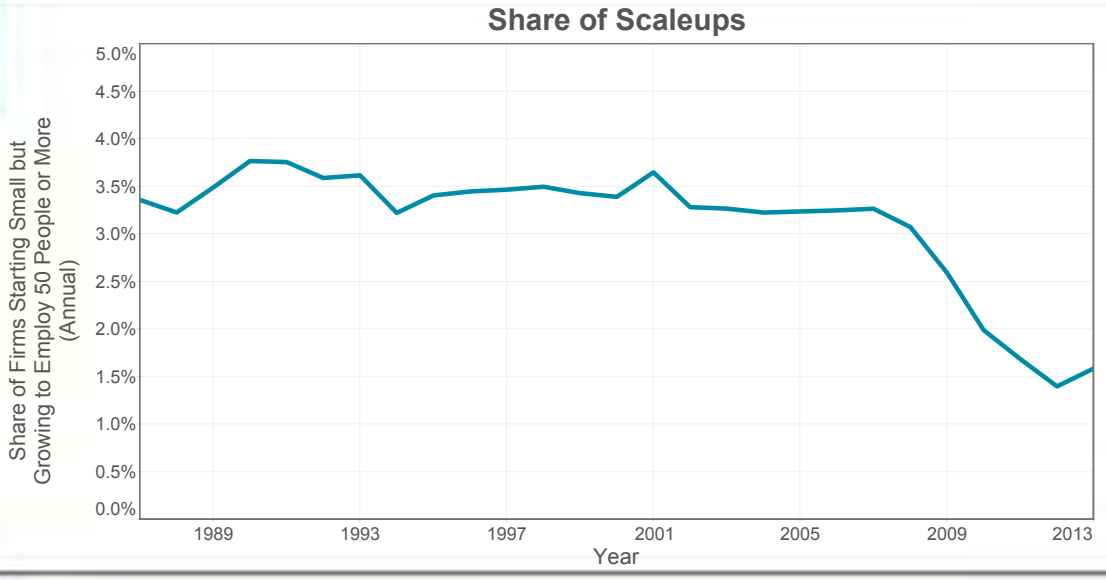



## Share of Scaleups

| 2016 Component | 2015 Component |
|---|---|
| 1.59% | 1.40% |

Measures the number of firms that started small but grew to employ fifty people or more by their tenth year of operation as a percentage of all employer firms ten years and younger.

Source: Author calculations from BDS. Yearly measure.

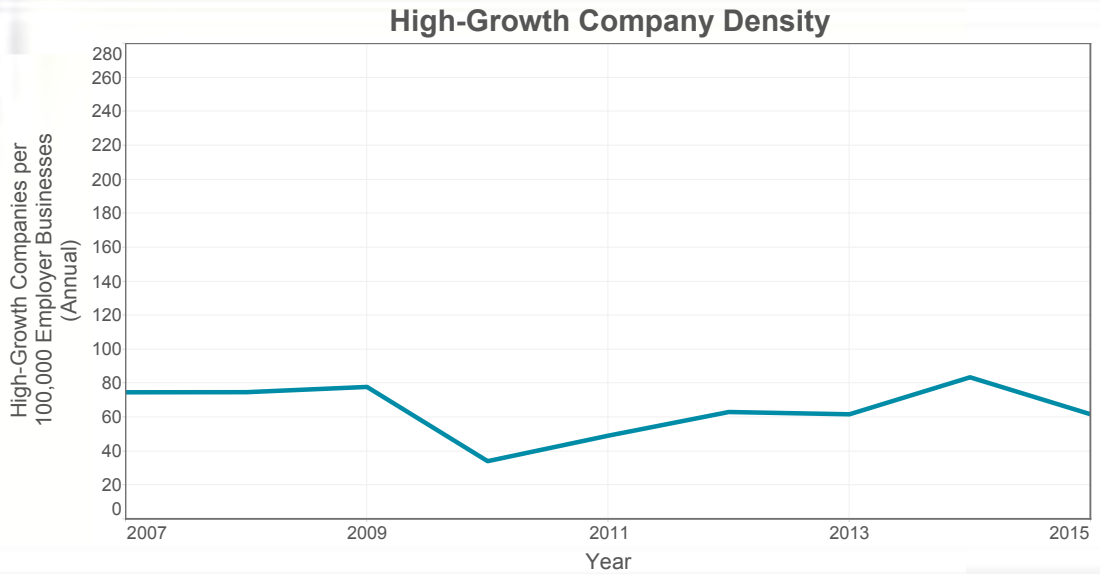



## High-Growth Company Density

| 2016 Component | 2015 Component |
|---|---|
| 61.7 | 83.5 |

Measures the number of private businesses with at least $2 million in annual revenue reaching three years of 20 percent annual revenue growth normalized by total business population.

Source: Author calculations from BDS and Inc. 500/5000.Yearly measure.



# Los Angeles

Metro: Los Angeles-Long Beach-Santa Ana | State: California

Metro Profile

## Growth Entrepreneurship Rank

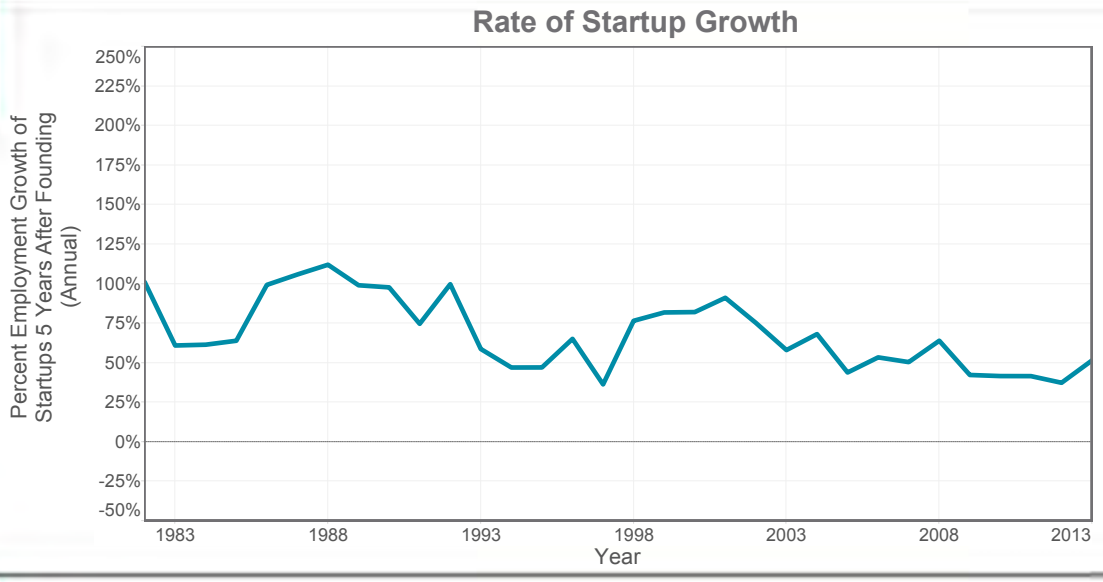
| 2016 | 2015 |
|---|---|
| 33 | 33 |

## Rate of Startup Growth

| 2016 Component | 2015 Component |
|---|---|
| 51.55% | 37.37% |

Measures how much startups have grown as a cohort, on average, five years after founding - measured by change in employment.

Source: Author calculations from BDS. Yearly measure.

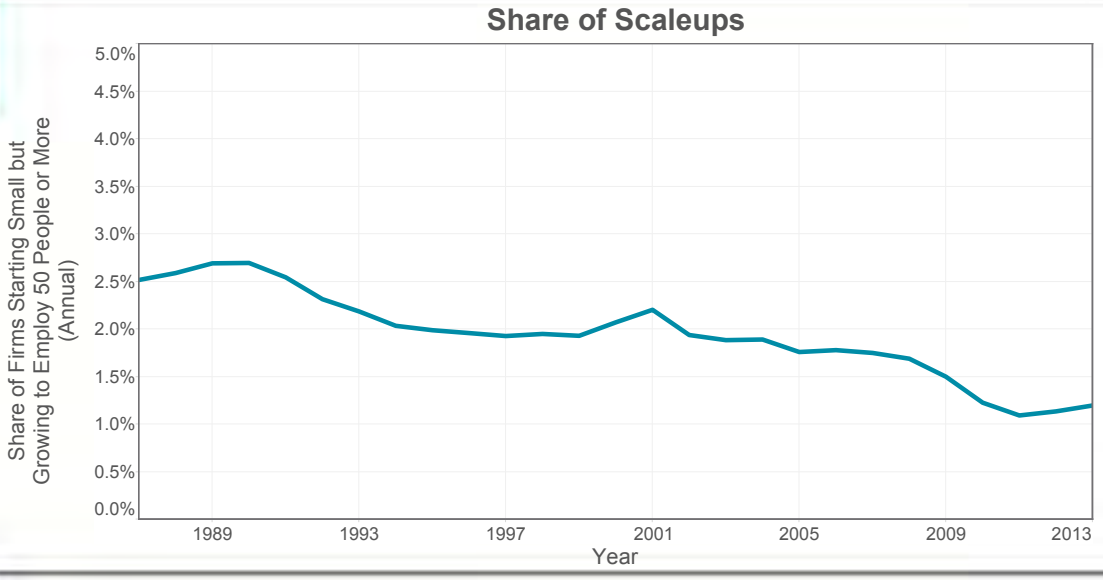



## Share of Scaleups

| 2016 Component | 2015 Component |
|---|---|
| 1.20% | 1.14% |

Measures the number of firms that started small but grew to employ fifty people or more by their tenth year of operation as a percentage of all employer firms ten years and younger.

Source: Author calculations from BDS. Yearly measure.

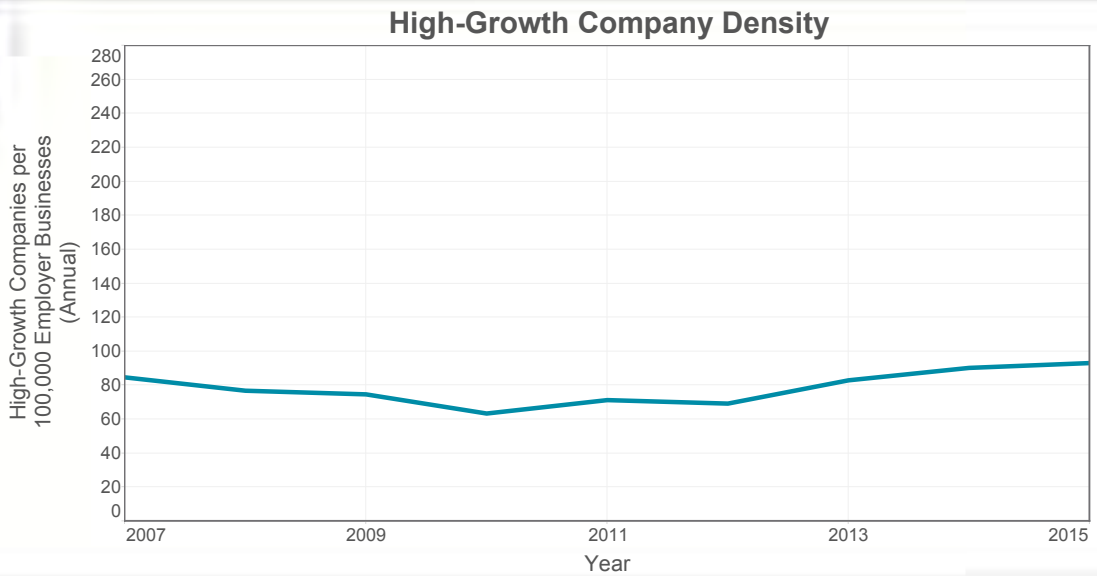



## High-Growth Company Density

| 2016 Component | 2015 Component |
|---|---|
| 93.1 | 90.2 |

Measures the number of private businesses with at least $2 million in annual revenue reaching three years of 20 percent annual revenue growth normalized by total business population.

Source: Author calculations from BDS and Inc. 500/5000.Yearly measure.



# Orlando

Metro: Orlando-Kissimmee-Sanford | State: Florida

Metro Profile

growth entrepreneurship

## Growth Entrepreneurship Rank

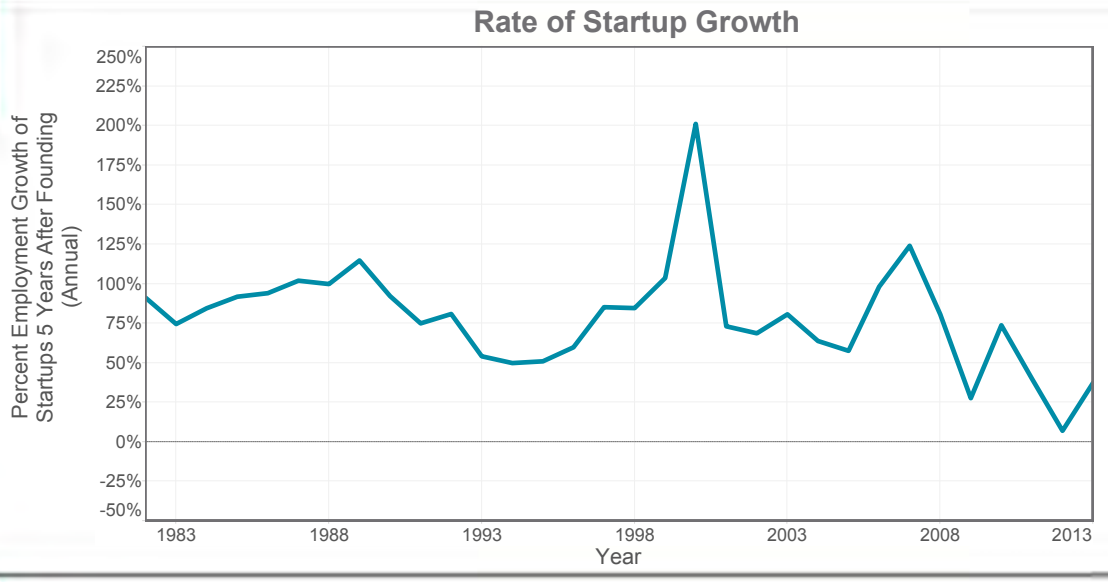
| 2016 | 2015 |
|---|---|
| 34 | 36 |

## Rate of Startup Growth

| 2016 Component | 2015 Component |
|---|---|
| 37.32% | 7.01% |

Measures how much startups have grown as a cohort, on average, five years after founding - measured by change in employment.

Source: Author calculations from BDS. Yearly measure.

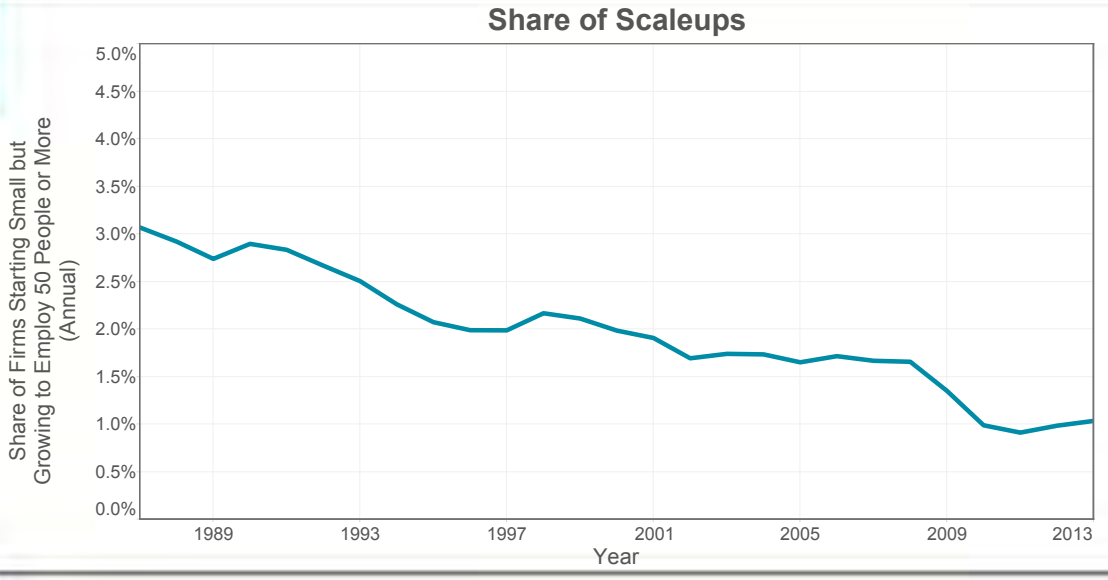



## Share of Scaleups

| 2016 Component | 2015 Component |
|---|---|
| 1.03% | 0.98% |

Measures the number of firms that started small but grew to employ fifty people or more by their tenth year of operation as a percentage of all employer firms ten years and younger.

Source: Author calculations from BDS. Yearly measure.

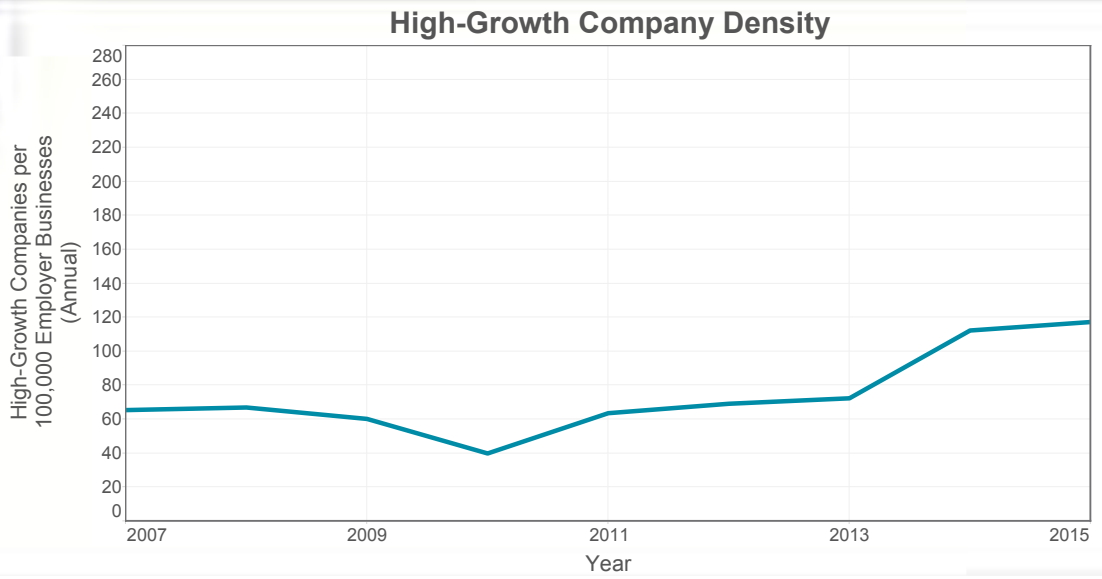



## High-Growth Company Density

| 2016 Component | 2015 Component |
|---|---|
| 117.2 | 112.3 |

Measures the number of private businesses with at least $2 million in annual revenue reaching three years of 20 percent annual revenue growth normalized by total business population.

Source: Author calculations from BDS and Inc. 500/5000.Yearly measure.



# New York

growth entrepreneurship

**Metro: New York-Northern New Jersey-Long Island | State: New York-New Jersey-Pennsylvania**

Metro Profile

## Growth Entrepreneurship Rank

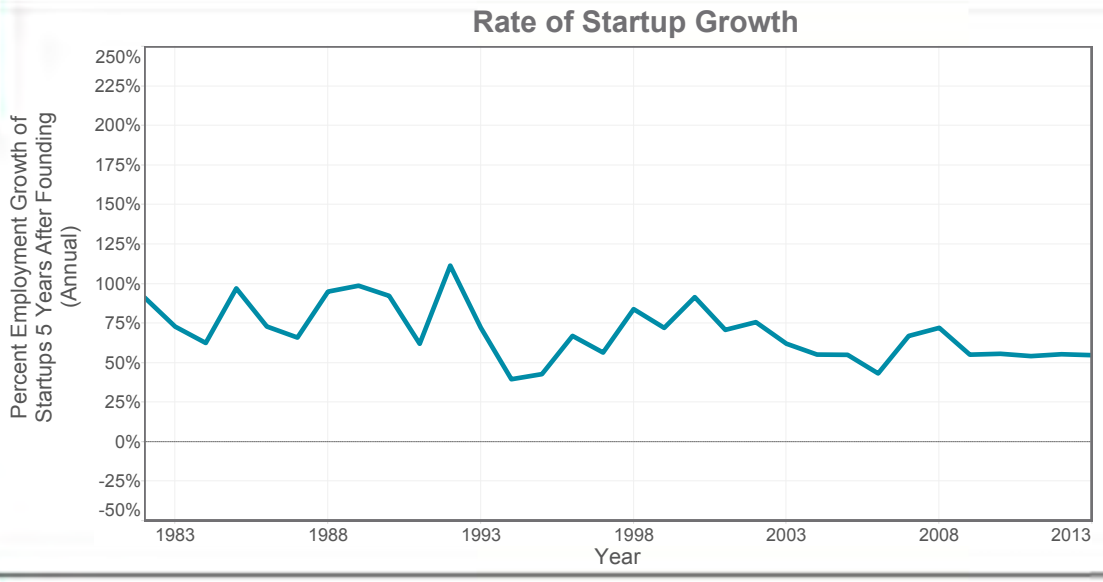
| 2016 | 2015 |
|---|---|
| 35 | 32 |

## Rate of Startup Growth

| 2016 Component | 2015 Component |
|---|---|
| 54.82% | 55.42% |

Measures how much startups have grown as a cohort, on average, five years after founding - measured by change in employment.

Source: Author calculations from BDS. Yearly measure.

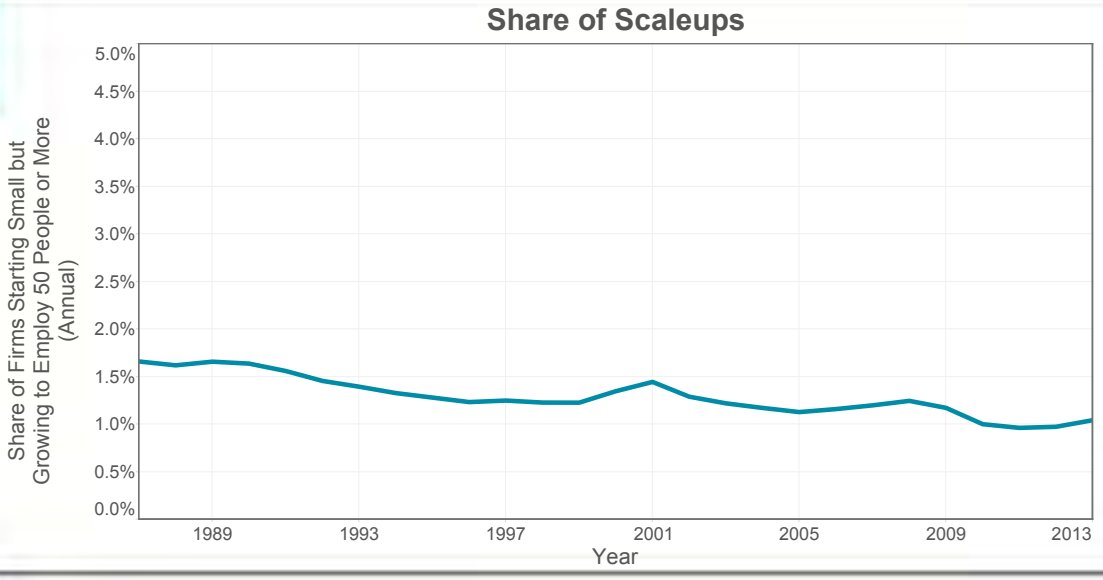



## Share of Scaleups

| 2016 Component | 2015 Component |
|---|---|
| 1.04% | 0.97% |

Measures the number of firms that started small but grew to employ fifty people or more by their tenth year of operation as a percentage of all employer firms ten years and younger.

Source: Author calculations from BDS. Yearly measure.

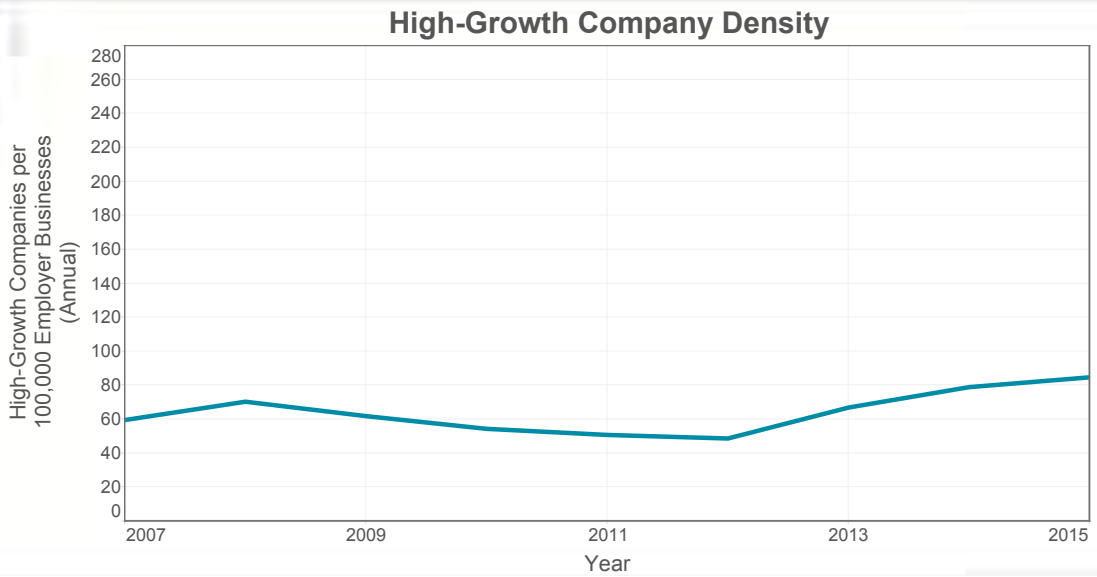



## High-Growth Company Density

| 2016 Component | 2015 Component |
|---|---|
| 84.7 | 78.9 |

Measures the number of private businesses with at least $2 million in annual revenue reaching three years of 20 percent annual revenue growth normalized by total business population.

Source: Author calculations from BDS and Inc. 500/5000.Yearly measure.



# Providence

growth entrepreneurship

**Metro: Providence-New Bedford-Fall River | State: Rhode Island-Massachusetts**

Metro Profile

## Growth Entrepreneurship Rank

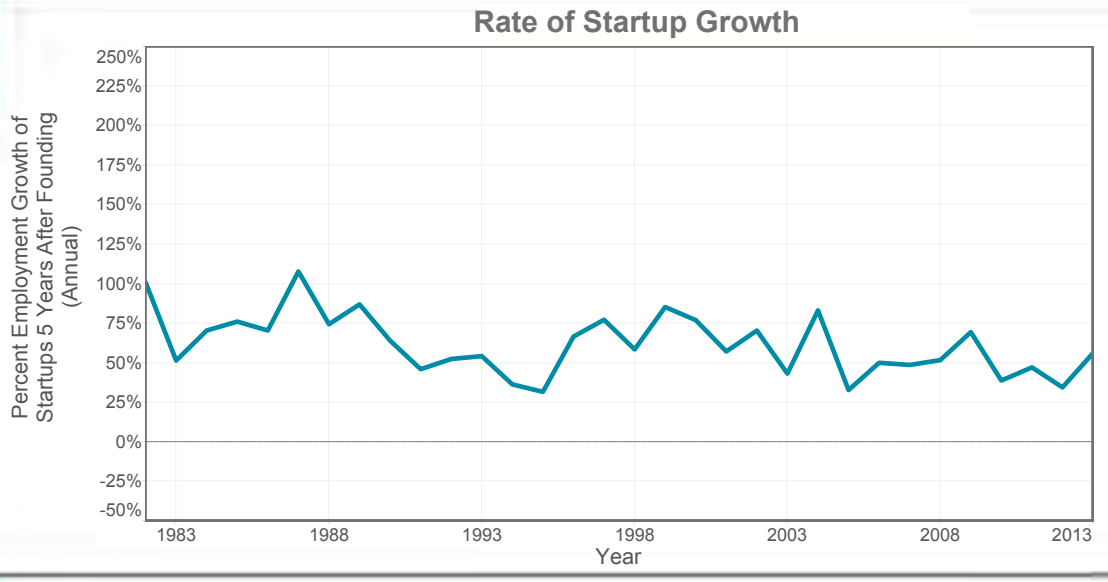
| 2016 | 2015 |
|---|---|
| 36 | 37 |

## Rate of Startup Growth

| 2016 Component | 2015 Component |
|---|---|
| 56.16% | 34.47% |

Measures how much startups have grown as a cohort, on average, five years after founding - measured by change in employment.

Source: Author calculations from BDS. Yearly measure.

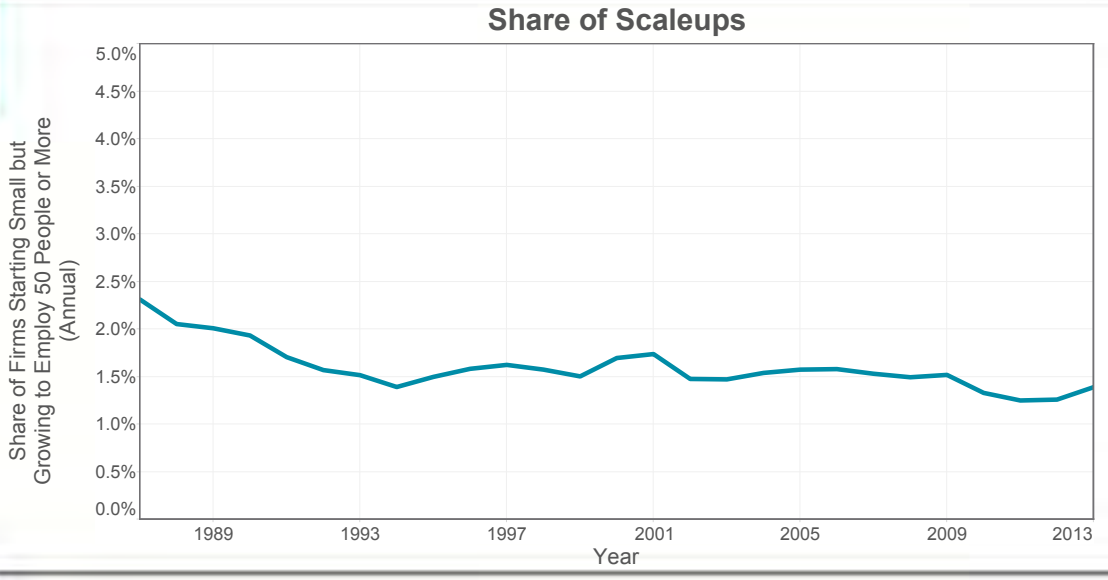



## Share of Scaleups

| 2016 Component | 2015 Component |
|---|---|
| 1.39% | 1.26% |

Measures the number of firms that started small but grew to employ fifty people or more by their tenth year of operation as a percentage of all employer firms ten years and younger.

Source: Author calculations from BDS. Yearly measure.

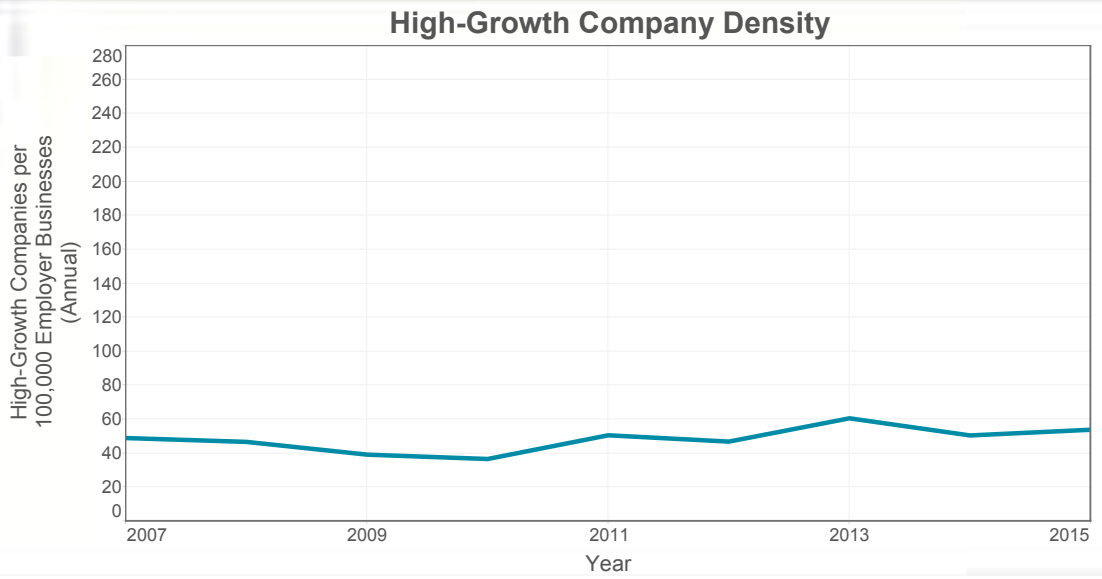



## High-Growth Company Density

| 2016 Component | 2015 Component |
|---|---|
| 53.8 | 50.5 |

Measures the number of private businesses with at least $2 million in annual revenue reaching three years of 20 percent annual revenue growth normalized by total business population.

Source: Author calculations from BDS and Inc. 500/5000.Yearly measure.



# Sacramento

growth entrepreneurship

**Metro: Sacramento-Arden-Arcade-Roseville | State: California**

Metro Profile

## Growth Entrepreneurship Rank

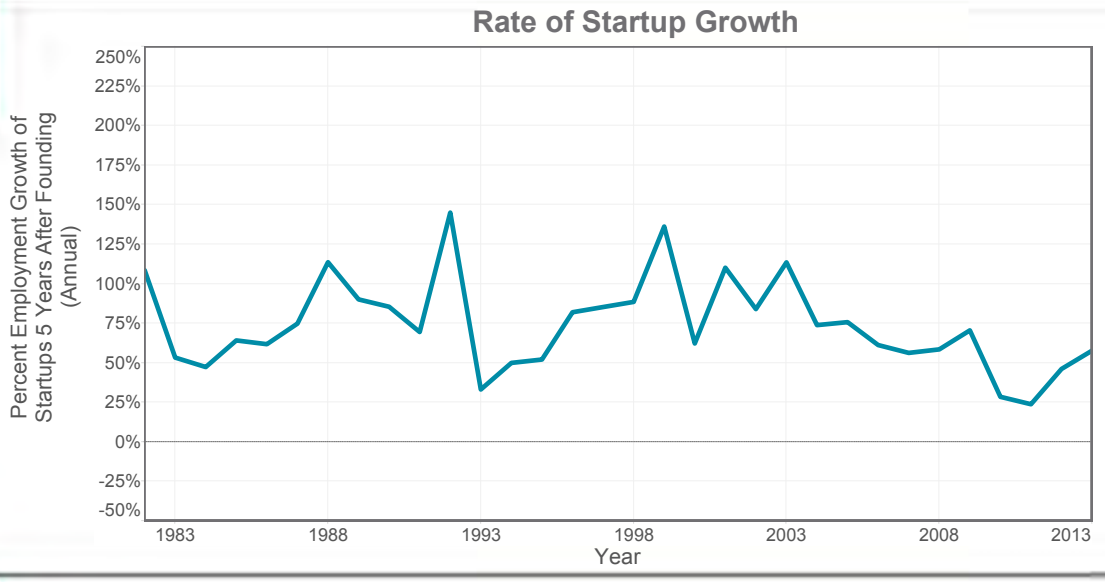
| 2016 | 2015 |
|---|---|
| 37 | 34 |

## Rate of Startup Growth

| 2016 Component | 2015 Component |
|---|---|
| 57.72% | 46.12% |

Measures how much startups have grown as a cohort, on average, five years after founding - measured by change in employment.

Source: Author calculations from BDS. Yearly measure.

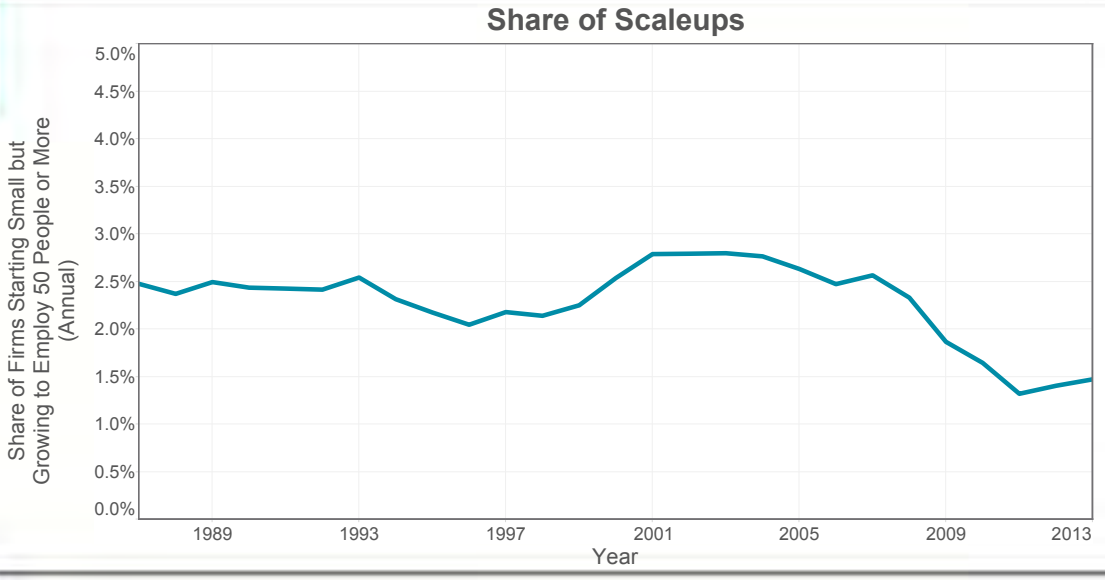



## Share of Scaleups

| 2016 Component | 2015 Component |
|---|---|
| 1.47% | 1.40% |

Measures the number of firms that started small but grew to employ fifty people or more by their tenth year of operation as a percentage of all employer firms ten years and younger.

Source: Author calculations from BDS. Yearly measure.

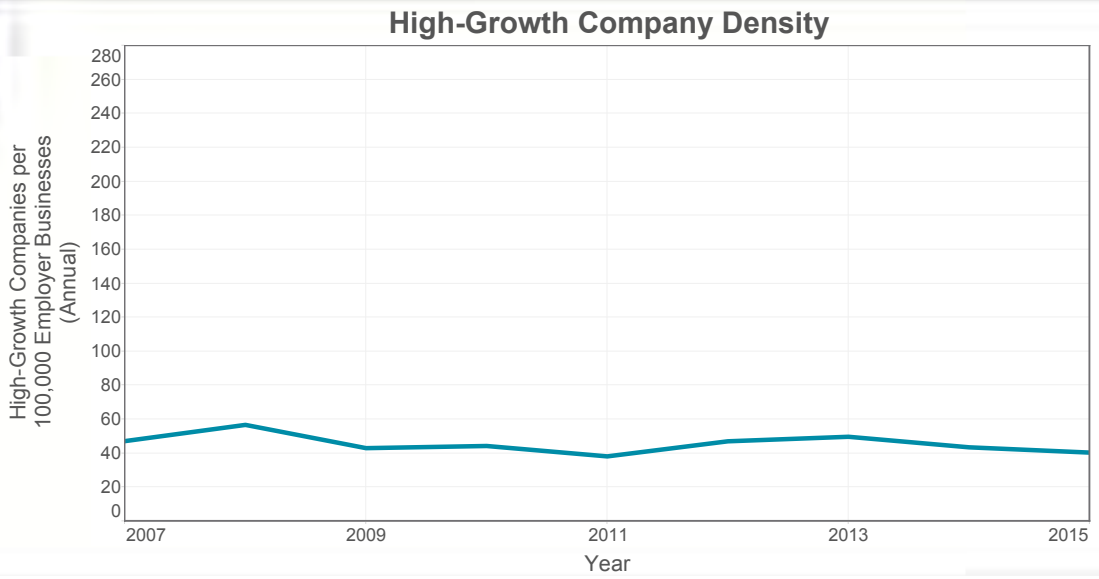



## High-Growth Company Density

| 2016 Component | 2015 Component |
|---|---|
| 40.4 | 43.5 |

Measures the number of private businesses with at least $2 million in annual revenue reaching three years of 20 percent annual revenue growth normalized by total business population.

Source: Author calculations from BDS and Inc. 500/5000.Yearly measure.



# Riverside

Metro: Riverside-San Bernardino-Ontario | State: California

Metro Profile

growth entrepreneurship

## Growth Entrepreneurship Rank

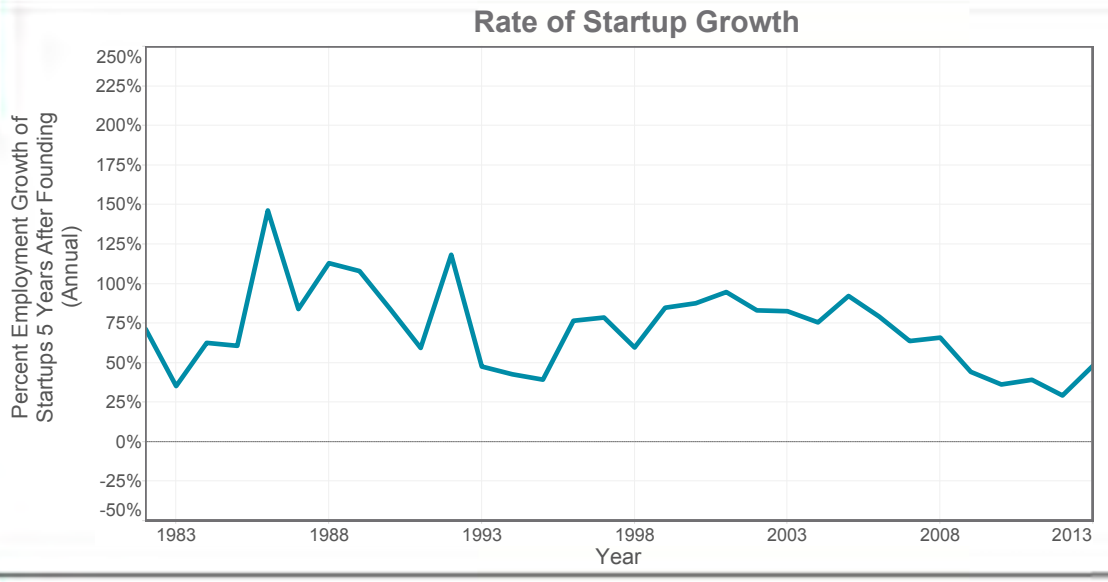
| 2016 | 2015 |
|---|---|
| 38 | 40 |

## Rate of Startup Growth

| 2016 Component | 2015 Component |
|---|---|
| 48.21% | 29.33% |

Measures how much startups have grown as a cohort, on average, five years after founding - measured by change in employment.

Source: Author calculations from BDS. Yearly measure.

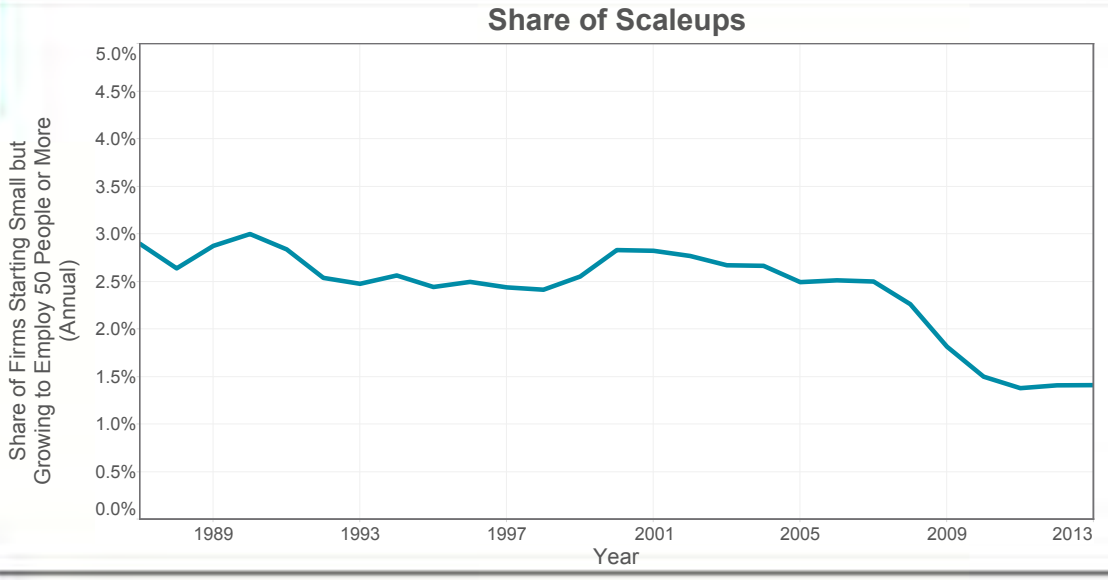



## Share of Scaleups

| 2016 Component | 2015 Component |
|---|---|
| 1.41% | 1.41% |

Measures the number of firms that started small but grew to employ fifty people or more by their tenth year of operation as a percentage of all employer firms ten years and younger.

Source: Author calculations from BDS. Yearly measure.

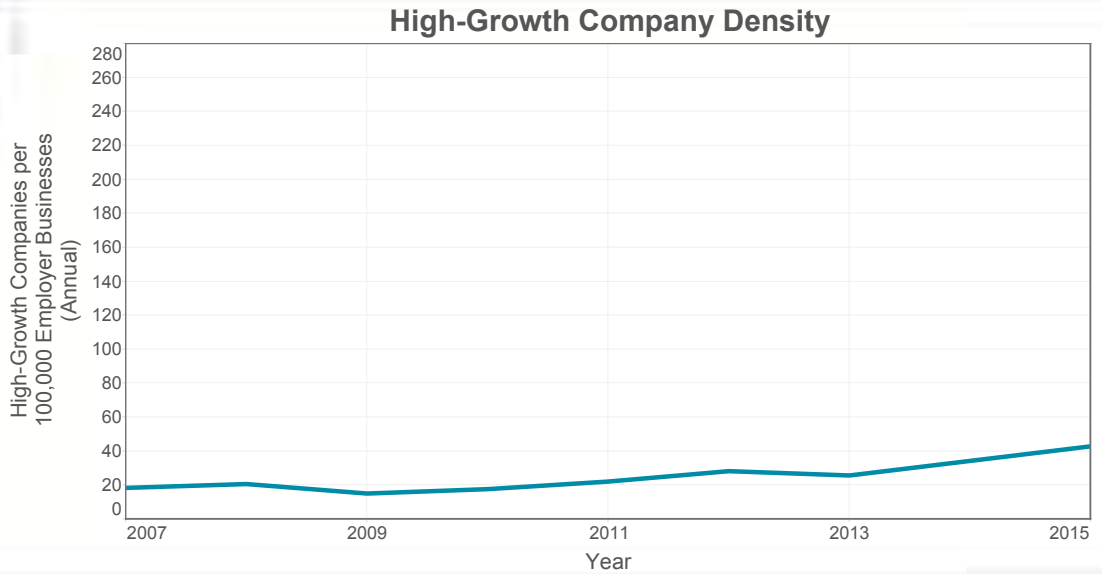



## High-Growth Company Density

| 2016 Component | 2015 Component |
|---|---|
| 42.9 | 34.3 |

Measures the number of private businesses with at least $2 million in annual revenue reaching three years of 20 percent annual revenue growth normalized by total business population.

Source: Author calculations from BDS and Inc. 500/5000.Yearly measure.



| Growth Entrepreneurship Rank | |
|---|---|
| 2016 | 2015 |
| 39 | 39 |

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# Miami

growth entrepreneurship

**Metro: Miami-Fort Lauderdale-Pompano Beach | State: Florida**

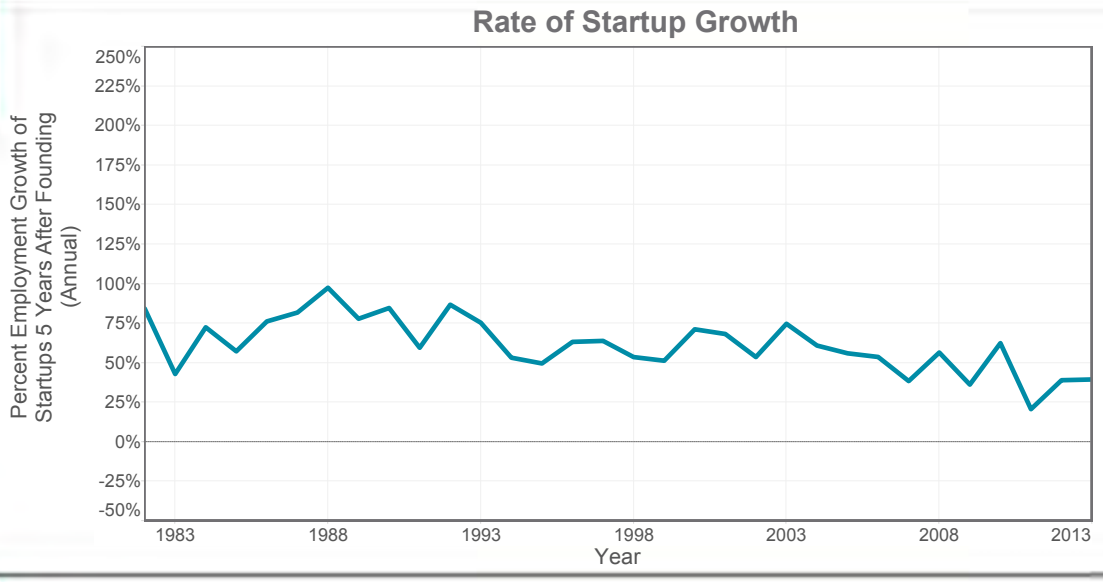
Metro Profile

## Rate of Startup Growth

| 2016 Component | 2015 Component |
|---|---|
| 39.46% | 38.99% |

Measures how much startups have grown as a cohort, on average, five years after founding - measured by change in employment.

Source: Author calculations from BDS. Yearly measure.

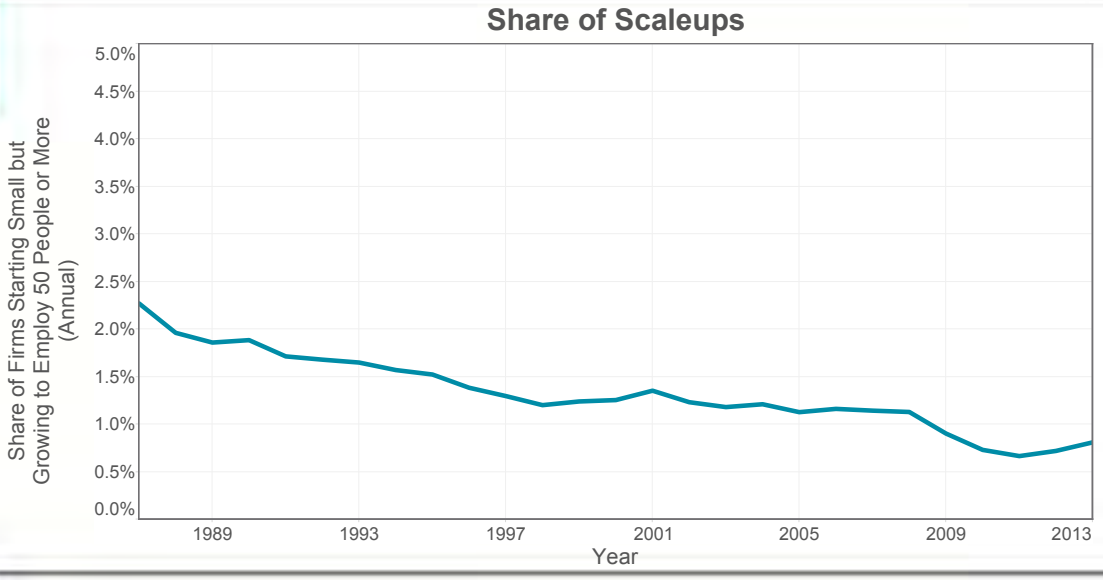



## Share of Scaleups

| 2016 Component | 2015 Component |
|---|---|
| 0.81% | 0.72% |

Measures the number of firms that started small but grew to employ fifty people or more by their tenth year of operation as a percentage of all employer firms ten years and younger.

Source: Author calculations from BDS. Yearly measure.

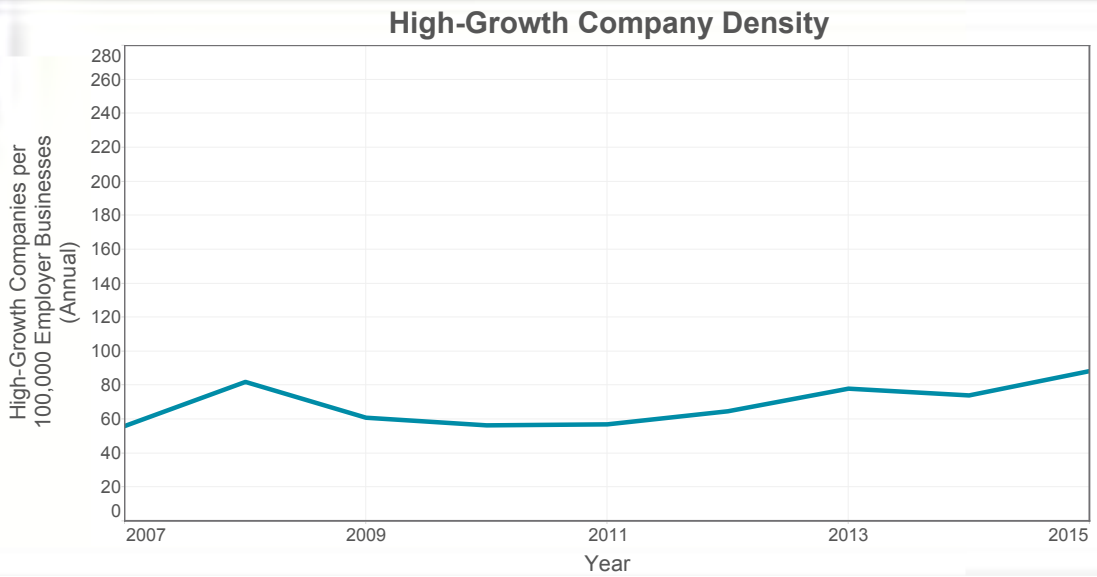



## High-Growth Company Density

| 2016 Component | 2015 Component |
|---|---|
| 88.4 | 74.0 |

Measures the number of private businesses with at least $2 million in annual revenue reaching three years of 20 percent annual revenue growth normalized by total business population.

Source: Author calculations from BDS and Inc. 500/5000.Yearly measure.



# Detroit

Metro: Detroit-Warren-Livonia | State: Michigan

Metro Profile

growth entrepreneurship

## Growth Entrepreneurship Rank

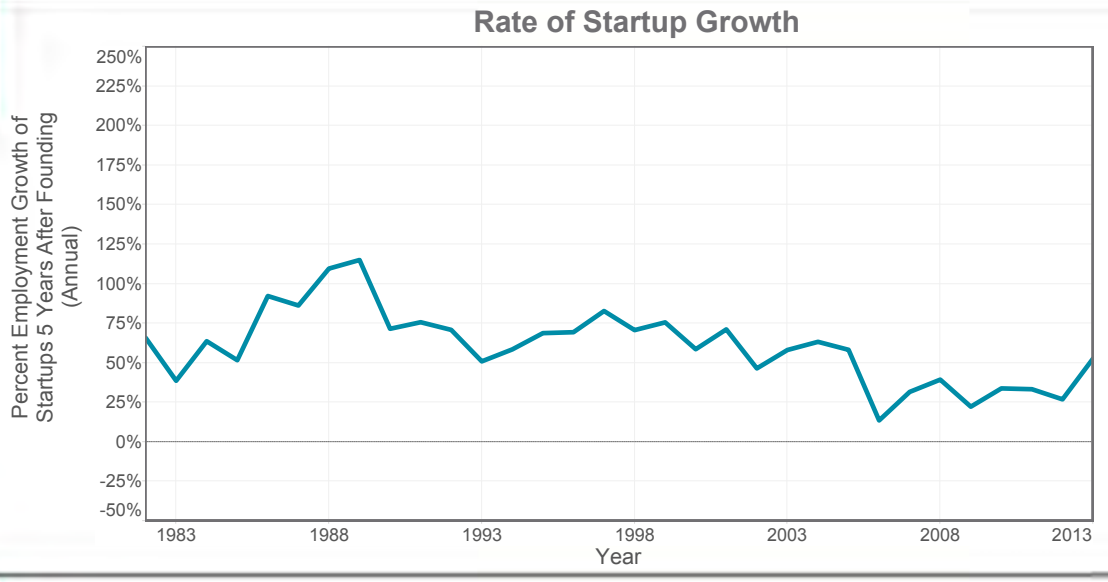
| 2016 | 2015 |
|---|---|
| 40 | 38 |

## Rate of Startup Growth

| 2016 Component | 2015 Component |
|---|---|
| 52.68% | 26.89% |

Measures how much startups have grown as a cohort, on average, five years after founding - measured by change in employment.

Source: Author calculations from BDS. Yearly measure.

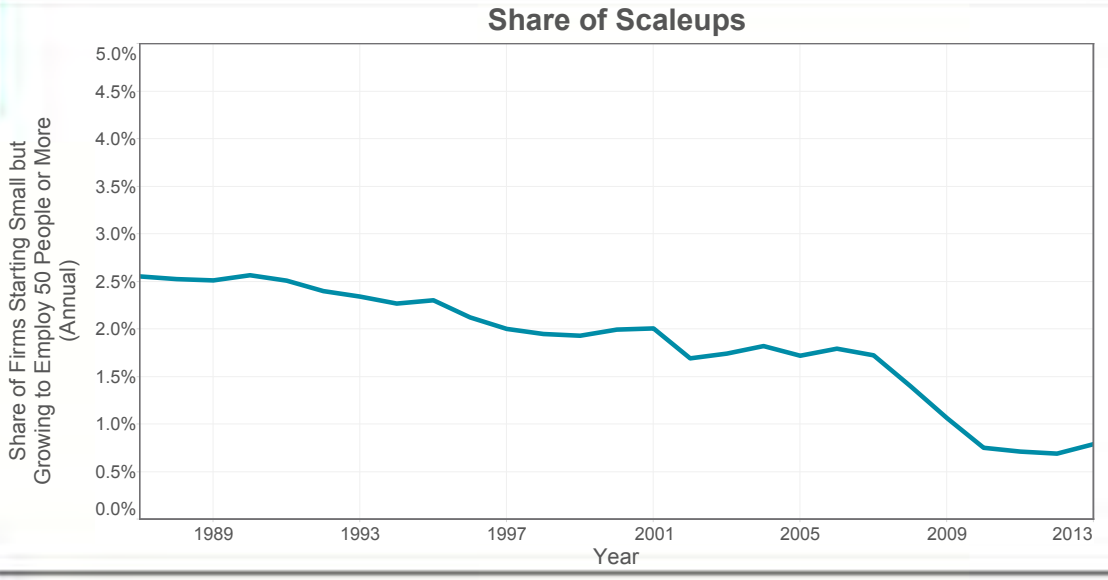



## Share of Scaleups

| 2016 Component | 2015 Component |
|---|---|
| 0.79% | 0.69% |

Measures the number of firms that started small but grew to employ fifty people or more by their tenth year of operation as a percentage of all employer firms ten years and younger.

Source: Author calculations from BDS. Yearly measure.

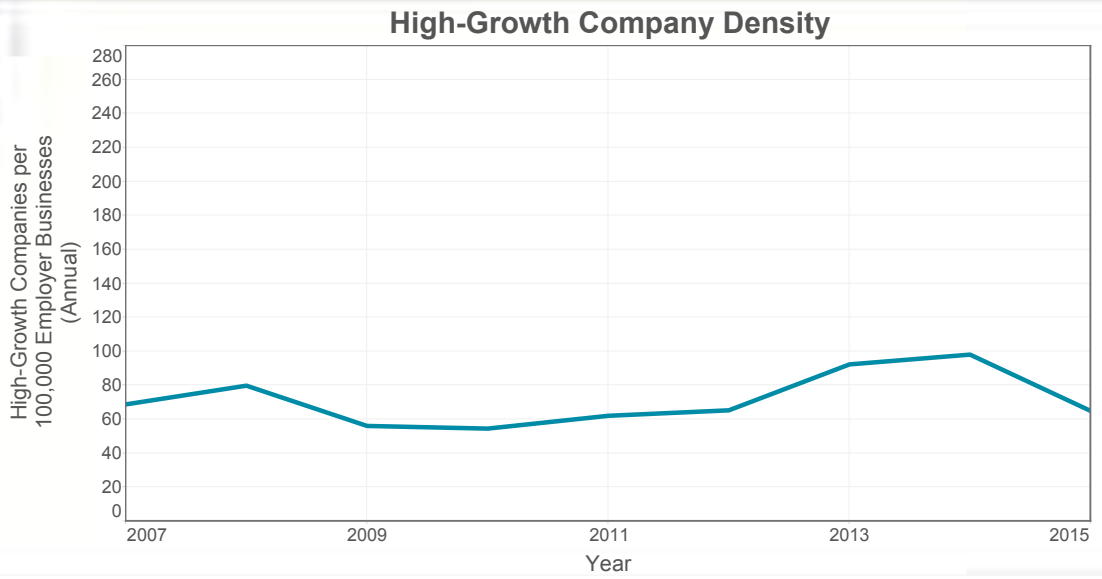



## High-Growth Company Density

| 2016 Component | 2015 Component |
|---|---|
| 64.9 | 98.1 |

Measures the number of private businesses with at least $2 million in annual revenue reaching three years of 20 percent annual revenue growth normalized by total business population.

Source: Author calculations from BDS and Inc. 500/5000.Yearly measure.



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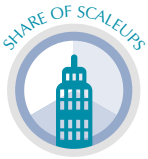
# growth entrepreneurship


Rate of Startup Growth




Share of Scaleups


High-Growth Company Density

## Methodology and Framework

In this part of the report, we discuss the methodology and framework for the Growth Entrepreneurship Index across all geographic levels: national, state, and metropolitan area. While growth entrepreneurship is a new topic for the Kauffman Index, it's an area the Kauffman Foundation has spent decades exploring and considering.

Growth entrepreneurship is associated with terms like gazelles, tech innovation, and unicorns, as well as entrepreneurship "inputs" such as venture capital, angel investors, accelerators, and a host of other topics. Yet, growth entrepreneurship happens in non-tech industries and in companies that did not access these typically thought-of inputs (Motoyama et. al 2013; Ritter 2016; Motoyama and Danley 2012; Moreira 2015). This distinction of inputs vs. outputs is an important one, because, in the current Growth Entrepreneurship Index, we only attempt to capture outputs associated with growth entrepreneurship, not input resources. While tracking inputs is absolutely critical and can become a part of future Kauffman Indices, at the current time the data available for inputs remains somewhat fragmented and not readily available across all geographies covered in the Kauffman Index. Many promising areas of research and expansion are under way, such as the Seed Accelerator Ranking Project, the Halo Report, CB Insights, Crunchbase, and many more.

### *Definitions of Growth Entrepreneurship Index Components*

The Growth Entrepreneurship Index is calculated based on three components: the Rate of Startup Growth, the Share of Scaleups, and the High-Growth Company Density. In this section, we provide detailed definitions of each one of these components.

### *Component A: Rate of Startup Growth*

The Rate of Startup Growth component of the Kauffman Index of Growth Entrepreneurship uses U.S. Census Bureau data from the Business Dynamics Statistics to measure the average change in employment size of all startups—defined here as new employer firms—from the year of founding to their fifth year of operation. It captures all new U.S. employer firms, regardless of industry. This is a yearly estimate where startups are new employer firms that are younger than one year old in a given year. Data for this measure are available from 1982 to 2013, the latest year for which information on five-year-old companies is published.

This proxy measure examines cohorts of new businesses, a common practice among researchers examining business demography. Much like cohorts of people born around the same time—think Baby Boomers or Millennials—exhibit similar traits, businesses are imprinted by the economic environment they enter into

(Moreira 2015). Utilizing standard measures about a cohort as it ages is meant to help track the broad health of startups as they age, much like we track the weight and height of children as they grow. This measure is based on previous work by the Kauffman Foundation examining average company size by cohort over time to gauge U.S. job creation and the growth trajectories of new firms (Reedy and Litan 2011).

Because of data limitations, the Rate of Startup Growth looks at the change in size of the broad new firm cohort—*all* startups on one end and *only surviving firms* at the other end. Thus, this indicator has survivor bias. While we would like to look at average growth within each firm, we are only able to look across the whole cohort. This leads to a bias because all new firms are included in the calculation of average size during their years of birth, but only surviving firms are included on the calculation of average size by year five. We know that employment and growth, while presented here as an average, are more typically highly skewed amongst individual firms.

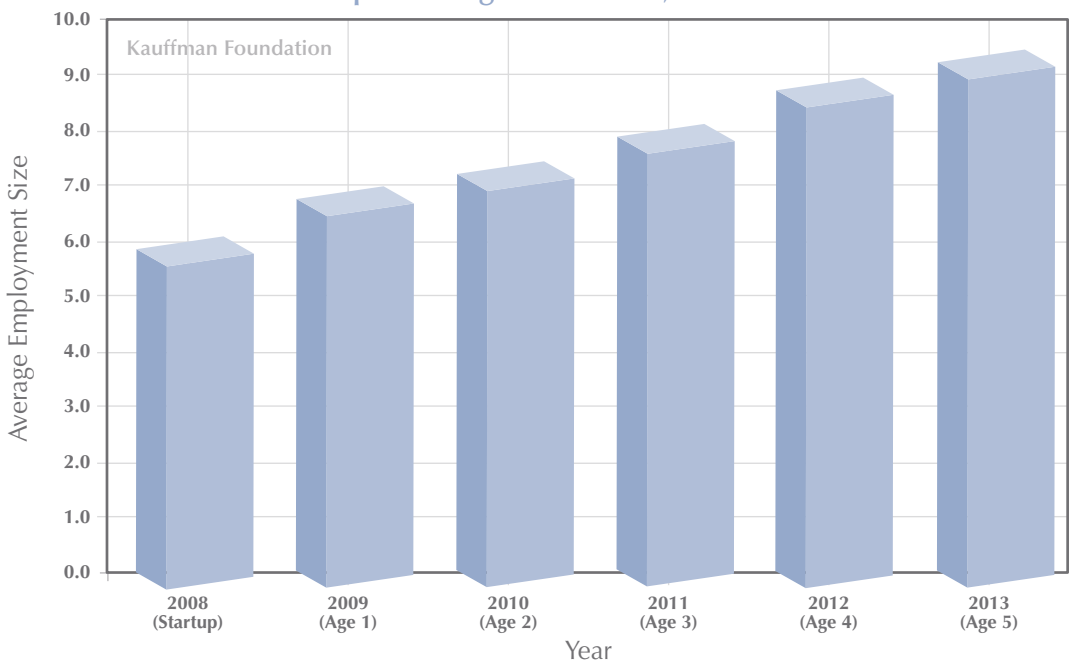
To exemplify this calculation by cohort, please see Figure 1B below. The Rate of Startup Growth for the most recent year with data available (2013), was 58.5 percent. This indicates that the average U.S. startup from 2008 (which is now five years old in 2013, the latest year for which data are available) grew from 5.8 employees when founded to 9.2 employees after five years of operation.

## Rate of Startup Growth

- Proxy measure of business growth and startup traction across young businesses.
- Measures the average growth of cohorts of new employer firms from the year they were founded through their fifth year of operation.
- Calculates growth by comparing the average size of all startups from a given year to the average size of surviving, young companies in year five of operation. All industries are included in this measure.
- Data based on author calculations from the U.S. Census Bureau's Business Dynamics Statistics.
- What the number means:
  - For example, the Rate of Startup Growth was 70.3 percent for Colorado in the 2016 Index. That means that, on average, Colorado companies turning five years old have grown 70.3 percent since their founding, from 4.7 average employees at the time of founding to 8.0 average employees by year five.

Figure 1B

Average Size of Surviving Business by Number of Employees for Startups Turning Five in 2013, born in 2008




SOURCE: Authors' calculations using the BDS. *For an interactive version, please see: www.kauffmanindex.org.*

## Share of Scaleups

- Proxy measure of how many startups become scaleups.
- Measures the percentage of surviving companies that become medium-sized businesses or larger in their first ten years of operation, but did not start in that size category. All industries are included on this measure.
- Medium-sized or larger companies are defined as firms having fifty employees or more.
- Data based on author calculations from the U.S. Census Bureau's Business Dynamics Statistics.
- What the number means:
  - For example, the United States Share of Scaleups was 1.1 percent in the 2016 Index. That means approximately 1,100 out of every hundred thousand companies ten years and younger started small and became medium-sized businesses with fifty employees or more.

The downward trend apparent in this measure is consistent with other research also based on Census Bureau data, which has found falling levels of economic dynamism in the United States (Decker et al. 2015). The Census Bureau data remains the most comprehensive time series on firms available on the U.S. economy; however, in an effort to balance perspectives on growth entrepreneurship, a secondary source—Inc. 500|5000 data—was utilized in the creation of component C—High-Growth Company Density.

### *Component B: Share of Scaleups*

The importance of "scaleups"—in addition to startups—has been highlighted by researchers such as Dan Isenberg (2012) and practitioners such as Brad Feld (2013). While measuring scaleups is difficult and no consensus exists, "scaleups" as a concept appears to have coalesced around capturing growth after the startup process; and as a means of emphasizing the important role of growth within the broader concept of the entrepreneurial process.

The second component of the Growth Index attempts to measure scaleups. The Share of Scaleups is a yearly proxy measure calculated from the U.S. Census Bureau's Business Dynamics Statistics firm data, and it calculates the number of scaleups as a percentage of all firms ten years and younger. We define scaleups as businesses that were born small but grew to employ fifty or more people in their first ten years of operation. We calculate this proxy number of scaleups by looking at all firms younger than ten years old and at least one year old (i.e., not startups) with fifty employees or more, and controlling it for all new firms founded in the past ten years that started out with fifty or more employees. We then calculate the Share of Scaleups as the number of scaleups divided by the total number of firms ten years and younger. Our size cutoffs for medium and large firms come from the European Commission's definition.[13]

### *Component C: High-Growth Company Density*

Each of the first two components for the Growth Entrepreneurship Index is based on U.S. Census Bureau data and has different elements of firm age incorporated into its construction. Our third and final component for the Growth Entrepreneurship Index—High-Growth Company Density—attempts to provide data from an alternative source—the Inc. 500|5000 annual list of high-growth companies—and to look at *private* firms more broadly, not just those companies that are young or small.

*Inc.* magazine has been compiling the Inc. 500 list every year since 1982, and some of the firms included on the lists have grown further to become Fortune 500 companies and experience initial public offerings and/or acquisitions. *Inc.* magazine added the Inc. 5000 list in 2007. To achieve wide geographic coverage of companies from year-to-year for the Kauffman Index, we limit our analysis to the years after the implementation of the Inc. 5000 list.

At the higher section of the distribution, Inc. high-growth companies have up to multi-billion-dollar revenues

13. European Union (2003): Commission Recommendation of 6 May 2003 concerning the definition of micro, small, and medium-sized enterprises (Text with EEA relevance) (notified under document number C(2003) 1422). http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32003H0361.

## High-Growth Company Density

- Proxy measure of number of high-growth companies by total business population.
- High-growth companies are defined as private businesses with at least $2 million dollars in annual revenue with 20 percent annualized revenue growth over a three-year period. There is no age requirement on this indicator. The age of firms spans a wide range, although they skew young.
- Companies in this dataset have up to multi-billion-dollar revenues and growth rates as high as tens of thousands percent. High-growth companies on this dataset have included prominent businesses like Facebook, Go Pro, Microsoft, Oracle, and Zappos, as well as numerous high-growth businesses under the public radar.
- Data based on author calculations from the Inc. 500|5000 private dataset of fastest-growing companies in the United States and on business population data from the U.S. Census Bureau's Business Dynamics Statistics.
- What the number means:
  - For example, the 2016 Index High-Growth Company Density for the New York metropolitan area was 84.7. That means that, for every 100,000 employer business in the New York metro area, there were 84.7 high-growth firms.

and growth rates of many orders of magnitude after three years. At the lower section, the data have been filtered by the authors to only include firms with at least 20 percent annualized growth over three years and $2 million dollars in annual revenue by the third year of growth. Applying a consistent growth threshold to the list allows us to track trends in the population of Inc. 500|5000 companies over time. These firms come from a wide range of industries, from high-tech to everyday retailers. Examples of companies on the Inc. 500|5000 list have included "stereotypical" high-growth tech firms, such as Facebook, Microsoft, Oracle, Go Pro, and Zappos, as well as firms in less "top-of-mind" industries, such as Domino's Pizza, Planet Fitness, and Jamba Juice (Motoyama and Danley 2012). While Inc. firms are arguably not fully representative of all U.S. high-growth companies, it is one of the few datasets that allows us to historically and reliably track trends of revenue-focused high-growth in the country at the national, state, and metro levels.

For calculating the High-Growth Company Density, we started with the 5000-company list of high-growing private companies curated by *Inc.* magazine based on the applications received through its selection process. We cut the list down to include only firms with at least 20 percent annualized growth over a three-year period—which compounds to 72.8 percent after the three years—and at least $2 million dollars in annual revenue. This growth cutoff is based on the recommended levels put forward by the OECD's Entrepreneurship Indicators project. After imposing this growth threshold—which excludes usually between 20 and 40 percent of the 5,000 firms on the Inc. list in a given year—we are able to look at how the number of U.S. high-growth firms fluctuates over time and by geography. The last step in the creation of the High-Growth Company Density measure is to normalize the number of companies from the narrowed-down Inc. 5000 list by the population of total employer firms in a given geography as measured by the U.S. Census Bureau's Business Dynamics Statistics (BDS). While the Inc. list goes up to 2015, the latest data available on the BDS goes up to 2013. As such, we normalize Inc. numbers from 2015 and 2014 against the total firm population from BDS for 2013.

The High-Growth Company Density has no upper-bound restriction on firm age, though it does require firms to be at least three years-old. As such, the age of high-growth firms spans a wide range, although these firms skew young. A plurality of high-growth companies (31.5 percent) are aged between five and seven years old, and 59.1 percent are ten years old and younger.

This measure is based on previous research by the Kauffman Foundation examining the geography of Inc. 500 companies' over time (Motoyama and Danley 2012). It also is based on the entrepreneurship fluidity measure suggested by our Kauffman Foundation colleagues Stangler and Bell-Masterson (2015).

### *Calculating the Kauffman Index of Growth Entrepreneurship*

The Kauffman Index of Growth Entrepreneurship presents a novel index bringing together different measures of business growth in the United States—across national, state, and metropolitan area levels. It is an equally weighted index of three normalized measures of growth: i) the Rate of Startup Growth, calculated as how much startups have grown as a cohort, on average, after five years of founding—measured by change in employment; ii) the Share of Scaleups, which is the number of firms that started small but grew to become

ventures employing fifty people or more by their tenth year of operation as a percentage of all firms ten years and younger; and iii) the High-Growth Company Density of a region, measured as the number of private businesses with at least $2 million in annual revenue reaching three years of 20 percent annualized revenue growth normalized by total business population.

Each of these measures is normalized by subtracting the mean and dividing by the standard deviation for that measure (i.e., creating a z-score for each variable).[14] This creates a comparable scale for including the three measures in the Growth Entrepreneurship Index. We use national annual estimates from 2007 to the latest year available (2015) to calculate the mean and standard deviations for the component based on the Inc. 500|5000 data. Similarly, we use national annual numbers from 2005 to the latest year available (2013) to calculate the mean and standard deviation for the BDS-based components of the Index. The same normalization method is used for all three geographical levels—national, state, and metropolitan area—for comparability and consistency over time.

The components we use for the Growth Entrepreneurship Index are all annual numbers across national, state, and metro-level indicators (e.g., there were no moving averages calculations).

We recognize "growth entrepreneurship" can be defined and measured in multiple different ways. For instance, see Siegel, R. et al. (1993); Birch and Medoff (1994); Kirchhoff (1994); Stangler (2010); Kedrosky (2013); and Guzman and Stern (2016). We also understand there are other approaches to the concept, and welcome conversations on the topic as we further explore indicators of Growth Entrepreneurship.

# Data Sources and Component Measures

In this section, we discuss the underlying data sources used to calculate each of the components of the Growth Entrepreneurship Index.

## *Rate of Startup Growth and Share of Scaleups*

To calculate the Rate of Startup Growth and Share of Scaleups we use one firm-level dataset, the U.S. Census Bureau's Business Dynamics Statistics (BDS). The BDS is constructed using administrative payroll tax records from the Internal Revenue Service (IRS), and covers all employer businesses in the United States (approximately 5 million). The BDS data present, among other things, numbers of firms tabulated by employment size, by firm age, and by geography (national, state, and metropolitan area). We use that data to calculate the measures used for both Rate of Startup Growth and Share of Scaleups.

The BDS has national, state, and metro-level data breakdowns. The metro data geographical coverage is based on the Office of Management and Budget (OMB) definitions for metropolitan areas from December 2009.

Because the BDS is based on administrative data covering the universe of employer businesses, sampling concerns like standard errors and confidence intervals are not applicable. Nonetheless, nonsampling errors still could occur. These could be caused, for example, by data entry issues with the IRS payroll tax records or by businesses submitting incorrect employment data to the IRS. However, these are probably randomly distributed and are unlikely to cause significant biases in the data. Please see Jarmin and Miranda (2002) for a complete discussion of potential complications on the dataset caused by changes in the administrative data on which the BDS is based.

## *High-Growth Company Density*

To calculate High-Growth Company Density, we use two datasets: one to track high-growth companies (as measured by revenue) and one to track the population of employer firms in the United States.

To track the population of employer firms in the United States, we use the U.S. Census Bureau's Business Dynamics Statistics (BDS). The BDS is constructed using administrative payroll tax records from the Internal Revenue Service (IRS), and covers all employer businesses in the United States (approximately 5 million).

To track high-growth companies, we use data from an alternative source—the Inc. 500|5000 annual list of high-growth companies—to look at private firms regardless of age, not just those companies which are young or small. The data comes from *Inc.* magazine and is presented here in aggregate format as a derivative report and product.

*Inc.* magazine has been compiling the Inc. 500 list every year since 1982, and some of the firms included on the lists have grown further to become Fortune 500

14. This is one of the normalization methods recommended by the OECD and the Joint Research Centre from the European Commission in the *Handbook on Construction Composite Indicators* (2008).

companies and experience initial public offerings and/or acquisitions. *Inc.* magazine added the Inc. 5000 list in 2007. To achieve wide geographic coverage of companies from year-to-year for the Kauffman Index, we limit our analysis to the years after the implementation of the Inc. 5000 list.

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For calculating the High-Growth Company Density, we started with the 5000-company list of high-growing private companies curated by *Inc.* magazine based on the applications received through its selection process. We cut the list down to include only firms with at least 20 percent annualized growth over a three-year period—which compounds to 72.8 percent after the three years—and at least $2 million dollars in annual revenue. This growth cutoff is based on the recommended levels put forward by the OECD's Entrepreneurship Indicators project. After imposing this growth threshold—which excludes usually between 20 and 40 percent of the 5,000 firms on the Inc. list in a given year—we are able to look at how the number of U.S. high-growth firms fluctuates over time and by geography. The last step in the creation of the High-Growth Company Density measure is to normalize the number of companies from the narrowed-down Inc. 5000 list by the population of total employer firms in a given geography as measured by the U.S. Census Bureau's Business Dynamics Statistics (BDS). While the Inc. list goes up to 2015, the latest data available on the BDS goes up to 2013. As such, we normalize Inc. numbers from 2015 and 2014 against the total firm population from BDS for 2013.

The High-Growth Company Density has no upper-bound restriction on firm age, though it does require firms to be at least three years-old. As such, the age of high-growth firms spans a wide range, although these firms skew young. A plurality of high-growth companies (31.5 percent) are aged between five and seven years old, and 59.1 percent are ten years old and younger.

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The Inc. 500|5000 lists have biases introduced as the result of any undocumented changing criteria for judging over time and also the fact that businesses must seek out the designation. While Inc. firms arguably are not representative of all U.S. high-growth companies by revenue, the dataset is one of the few that allows us historically and reliably to track trends of revenue-focused high-growth in the country at the national, state, and metro levels. Moreover, the Inc. 500|5000 lists have been utilized in entrepreneurship research for decades (Bhide 2000).

Matching BDS state and national numbers to Inc. data is a non-issue because the definitions of the geographical areas are the same. However, this is slightly different for metropolitan areas. Because metropolitan-area definitions may vary across datasets, we used the Office of Management and Budget (OMB) definitions for metropolitan areas from December 2009 to calculate High-Growth Company Density. This is the definition of metros used on the BDS dataset, and it means that, to calculate the number of high-growth companies using the Inc. 500|5000 data, we aggregated population data from the ZIP and street level up to the metropolitan level.

The Inc. 500|5000 data has state, ZIP, and street level address information on the companies, and we used that data to match high-growth companies to metros. This is a multi-step process. First, we created a crosswalk file connecting ZIP codes to counties, which makes it possible to then match ZIP codes to metros according to the Office of Management and Budget (OMB) 2009 definitions. To create the ZIP to county crosswalk, we started with the Department of Housing (HUD) ZIP-to-County file.[15] When a ZIP code crossed county boundaries, we matched it to the county with the highest ratio of addresses for that ZIP

15. HUD USPS ZIP Code Crosswalk Files https://www.huduser.gov/portal/datasets/usps_crosswalk.html.

code. In the case when there was a tie, we used the ratio of business addresses, residential addresses, and other addresses, in that order, to untie. When there was still a tie (only five ZIP codes in the country), we picked one county for a match. The HUD crosswalk is extensive but not comprehensive, so we complemented it by merging it with the with University of Missouri ZIP-to-County data geocoder for ZIPs not included in the HUD file.[16] Similarly, when a ZIP code crossed county boundaries, we matched it to the county with the highest population for that ZIP code in 2010. Second, we matched Inc. 500|5000 entries that contained ZIP code location to the ZIP-to-County combined crosswalk file we created. Most of the companies in the data (approximately 94.4 percent of the 45,000 companies in the dataset) had ZIP location information that matched to a county. Third, for the approximately 2,500 unmatched companies, we did two rounds of geocoding using the HERE API to identify ZIP codes for these firms. The first round used the structured street level address and state for matching. Almost all 2,500 businesses were matched in that way, with only forty-nine businesses remaining unmatched. The second round of geocoding with the HERE API did a free text search on the location data available of these companies, and identified the location of thirty-two of the forty-nine.[17] Fourth, for the remaining seventeen companies, we manually searched for their ZIP codes on their websites and through internet searches.

# Advantages over Other Possible Measures of Entrepreneurship

The Kauffman Index of Growth Entrepreneurship has several advantages over other possible measures of growth entrepreneurship activity based on household or business-level data. We chose to use two main distinct datasets: one based on all employer businesses (BDS) and the other based on the fastest-growing private companies in America (Inc. 500|5000 lists). This allows us to study private growth companies in their earliest years, when only the government is likely to be aware of them, and also at later stages. Importantly, the goal of this report is to focus on "outputs" of growth entrepreneurship (e.g., change in employment size, revenue growth) instead "inputs" (e.g., investment, patents)—thus capturing realized rather than predicted or expected growth. These datasets have complementary strengths that make this Index a robust measure of growth entrepreneurship.

There are other available strong measures of growth and growth potential for startups that were not referenced here because of certain tradeoffs. Guzman and Stern (2016), for instance, while very helpful, has indicators that are not yet available for the geographical coverage we were looking for here (i.e., all states and the country's forty largest metros).

## *Rate of Startup Growth and Share of Scaleups*

The first two components of the Growth Index—Rate of Startup Growth and Share of Scaleups—both use the U.S. Census Bureau's Business Dynamics Statistics, which presents several benchmarking advantages. First, the BDS is based on administrative data covering the overall employer business population. As such, it has no potential sampling issues. Second, it has detailed coverage across all levels of geography, including metropolitan areas. Third, it provides firm-level data, rather than just establishment-level data. Fourth, it provides detailed employment level and age breakdown of firms, allowing us to clearly identify firms by age and size.

Similar to the BDS data is the Business Employment Dynamics (BED) dataset from the Bureau of Labor Statistics. We chose not to use it for this report because of two distinct advantages we see the BDS having over the BED. First, the BDS tracks firm-level data, as opposed to the establishment-level data tracked by the BED. Second, BED does not have metropolitan-level data available, while BDS data are available at our three geographic levels. Because the BED tracks establishments rather than firms, the BDS numbers are different than the BED numbers. Nonetheless, the trends on the two datasets move largely in tandem and usually point in the same direction.

## *High-Growth Company Density*

The last measure in the Growth Index—the High-Growth Company Density—is based off of one of the oldest, continuous rankings of growth companies in the United States—the Inc. 500|5000 lists.

16. University of Missouri Census Data Center. MABLE/Geocorr12: Geographic Correspondence Engine. http://mcdc.missouri.edu/websas/geocorr12.html. Accessed in April 13, 2016.

17. For full documentation on the differences in free text versus structured geocoding on the HERE API, please see full documentation of HERE Geocoder API https://developer.here.com/rest-apis/documentation/geocoder/topics/overview.html.

While the U.S. government has produced a time series documenting growth companies at the national level through the Organisation for Economic Cooperation and Development's Entrepreneurship Indicator Project, this time series is relatively short, covering only a few years, and currently not available at the subnational level. As such, we needed to look for an alternative source of data. Some potential alternatives, such as the National Establishment Time-series dataset or other Dun & Bradstreet-based alternatives, potentially could have been utilized but are not as timely as the Inc. list and also are not publicly available. The Inc. 500|5000 lists have biases introduced as the result of any undocumented changing criteria for judging over time and also the fact that businesses must seek out the designation. While Inc. firms arguably are not representative of all U.S. high-growth companies by revenue, the dataset is one of the few that allows us historically and reliably to track trends of revenue-focused high-growth in the country at the national, state, and metro levels. Despite its limitations, the Inc. 500|5000 lists have been utilized in entrepreneurship research for decades because of their strengths compared to the alternatives (Bhide 2000).

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