COMPREHENSIVE REPORT

The Impact *of* INNOVATION

Charlotte Entrepreneur Growth Report

PUBLISHED OCTOBER, 2015

For the CRFE and City of Charlotte

STUDY NO. 1

City of Charlotte High Growth Strategy

The City of Charlotte recognized the importance of high growth ventures to the community's long-term economic strength through collaborative work with the entrepreneurial community in 2011-2012. The City's High Growth Entrepreneurship Strategy was adopted in November 2012 to define the appropriate role for the City in support of high growth companies.

The policy objectives were to (1) attract and keep high growth enterprises and entrepreneurs in Charlotte; (2) attract more venture capital investment into Charlotte-based enterprises; and, (3) increase the amount of federal research dollars to local universities. The strategy defined multiple actions including the 2013 creation of the Charlotte Regional Fund for Entrepreneurship in collaboration with Foundation for the Carolinas.

Charlotte Regional Fund for Entrepreneurship

The Charlotte Regional Fund for Entrepreneurship has been established as a public-private partnership to support the development of Charlotte's innovation and entrepreneurship ecosystem. The Fund is administered by Foundation For The Carolinas and is guided by a stakeholder board that includes experienced entrepreneurs. The City of Charlotte has committed an initial $500,000 to the Fund accessible as private matching funds are raised.

Inquiries

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For inquiries concerning report content or use, contact Ventureprise at info@ventureprise.org or 704 687-0900.

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Foreword

Welcome to the first edition of the Charlotte Entrepreneur Growth Report (CEGR).

The CEGR is funded by the Charlotte Regional Fund for Entrepreneurship (CRFE) a public-private, entrepreneurial initiative spearheaded by the City of Charlotte and administered by Foundation For The Carolinas. The report has been researched and created through the collaborative efforts of Ventureprise, the Business Innovation & Growth Council, and UNC Charlotte's Urban Institute.

We are grateful to hundreds of entrepreneurial leaders who participated in an in-depth survey of innovation-driven, young ventures. Their responses provided excellent, comprehensive data that demonstrates the impact and high revenue and employment growth of this sector.

The report also includes responses from hundreds of Mecklenburg County residents whose survey participation demonstrate that citizens understand the importance of startups and entrepreneurial action.

An extensive assessment of statistical data relevant to innovation and entrepreneurship has been undertaken for the first time for this report. The resulting analysis provides a broad and deep understanding of new business formation, innovation sector impact, high growth company dynamics, funding, and a host of innovation indicators including patents and research and development expenditures. The conclusions identify regional strengths and weaknesses as well as areas of continued need for improvement.

The report features stories of seven very different ventures that illustrate the breadth of Charlotte metro entrepreneurial success and the creativity needed to overcome challenges.

We expect that the Charlotte Entrepreneur Growth Report will serve as a call to action for the community to address ecosystem gaps and expand proven initiatives. The Charlotte Regional Fund for Entrepreneurship structure has been defined and fund-raising efforts are underway. We expect that the Fund will become active in 2016 in supporting needed action.

The report provides baseline metrics that will be used to measure progress as the community undertakes initiatives to support our entrepreneurial ecosystem.

My company, founded in Charlotte a little over 15 years ago, continues to operate and grow with an entrepreneurial mindset. I am pleased to see this initiative and effort and to have the opportunity to help strengthen the collaborative effort in the Charlotte metropolitan region to support emerging entrepreneurs.

I invite you to examine the data and the observations found in this comprehensive report. Join us in building upon Charlotte's entrepreneurial success while forthrightly addressing our needed improvements.

David Jones
Peak 10, Inc., Founder & CEO
Chairperson, Charlotte Regional Fund for Entrepreneurship

2015 Innovation and Entrepreneurship Highlights

The 2015 **Charlotte Entrepreneur Growth Report** is the region's first systematic evaluation of its diverse and rapidly growing innovation-driven entrepreneurship community. The report consists of primary and secondary research in four parts:

1. Survey of 248 young, innovative ventures in metro Charlotte;
2. Survey of community residents assessing entrepreneurial support;
3. Analysis of innovation and entrepreneur metrics for Charlotte, seven national benchmark metros, and four Carolinas metros;
4. Profiles of seven successful Charlotte area entrepreneurial companies.

The survey of companies revealed substantial revenue and employment growth among ventures that compete effectively in national and global markets. Strong support for the importance of entrepreneurs to Charlotte's economic vitality was identified in the survey of the general population. Analysis of data sources highlighted Charlotte metro strengths and favorable national rankings while uncovering significant shortcomings for action.

Key messages are summarized below.

- New venture formation and job creation has declined since 1980 throughout the U.S. and Charlotte's rate per 100K population has declined similar to benchmark metros.
- Charlotte per capita overall startup activity is better than Kansas City and Nashville but worse than other benchmark metros (Atlanta, Austin, San Francisco, and Tampa).
- Charlotte's innovation industries include 11% of total business establishments, pay compensation of $71,707 which is 48% above metro average and deliver 2013 employment growth of 7.5% which is over twice the overall growth.
- Companies founded in 2000-2015 ("young") in innovation industries report rapid growth:
  - 23% revenue growth in 2014, and expected 44% growth for 2015
  - 18% employment growth in 2014 and expected 23% growth for 2015.
- The 248 young innovative company survey respondents include many small firms but collectively are estimated to produce $1.3 billion 2015 revenue, similar to Piedmont Natural Gas or Coca Cola Bottling Consolidated.
- Charlotte's innovation capacity substantially lags benchmark metros
  - Academic R&D funding of $40 million (FY2013) is a fraction of benchmark cities; at $17 per capital, it is about one-tenth of the *lowest* benchmark, Kansas City.
  - If Charlotte matched Kansas City per capita results, Charlotte would have an additional $280 million of R&D spending.
  - When Austin's Dell School of Medicine begins classes in 2016, Charlotte will be the only one of the seven national benchmark metros without a medical school.
- Charlotte rates average as the home of fast-growing Inc. 5000 firms: better than Kansas City, Research Triangle, and Tampa, but only 58% of the Austin rate.
- Investors are not attracted to Charlotte early stage ventures.
  - Charlotte angels generally invest elsewhere due to lack of local quality deals.
  - Charlotte venture capital investment is shockingly low; on a per capita basis it is 1% of Austin results and less than 3% of Research Triangle investment.

- Charlotte's visible angel investing is smaller scale than comparable activities in several nearby metros.
- If Charlotte companies obtained venture capital at a rate similar to Atlanta, Charlotte metro companies would receive an additional $158 million of annual investment.
- 82% of Mecklenburg adults consider startup companies important to a strong economy and 59% agree that the business climate is good for entrepreneurial companies.
- The region's non-profit entrepreneurial support organizations are small-scale and fragmented; 8 core organizations average 1.5 employees.

Report Methodology and Benchmarks

The **Charlotte Entrepreneur Growth Report…Tracking Regional Innovation** ("CEGR") project supports the region's innovation and entrepreneurship sector by collecting, creating, and reporting information that measures progress and identifies needs. The information will be used to assess how the region performs over the coming years. This will enable the Charlotte Regional Fund for Entrepreneurship to assess the success of investments in the entrepreneurial ecosystem.

The Tracking Innovation, North Carolina Innovation Index 2013 report published by the North Carolina Board of Science and Technology is a valuable additional resource that includes some Charlotte metro data among its 38 innovation measures. Many of its measures, however, are only available at the state level and it offers fewer entrepreneurship-specific measures.

The CEGR comprehensive report and a companion web site are intended for limited use by organizations developing and implementing the Charlotte region's entrepreneurial strategy. A separate summary report that highlights key observations will be released for broad use.

Target Company Survey Data

A web-based survey of entrepreneurial businesses was conducted by the UNC Charlotte Urban Institute in April-June 2015 to collect data on revenue, employment, compensation, and capital formation. The survey focused on high growth potential and innovation-driven industry sectors. Responses were selected for young companies defined as in business for 15 years or less. The survey is not a census of all qualified businesses but is intended to provide indications of target company size, growth, and impact.

Statistical Data

Regional statistical data includes innovation metrics, funding metrics, company data, and community data. Charlotte is compared to benchmark metropolitan areas when possible. Charlotte data is examined over multiple years when available to identify trends.

Community Survey

A sample of Mecklenburg Country residents was asked about entrepreneur-related topics as part of a broader survey conducted by the UNC Charlotte Urban Institute in April-May 2015. The results provide an indication of community attitudes toward entrepreneurship.

Company Stories

The report includes stories about entrepreneurial companies selected by the report authors to illustrate themes identified in the data. The specific companies are intended to be representative and were identified from public sources, personal contacts, and survey participation.

Report Structure

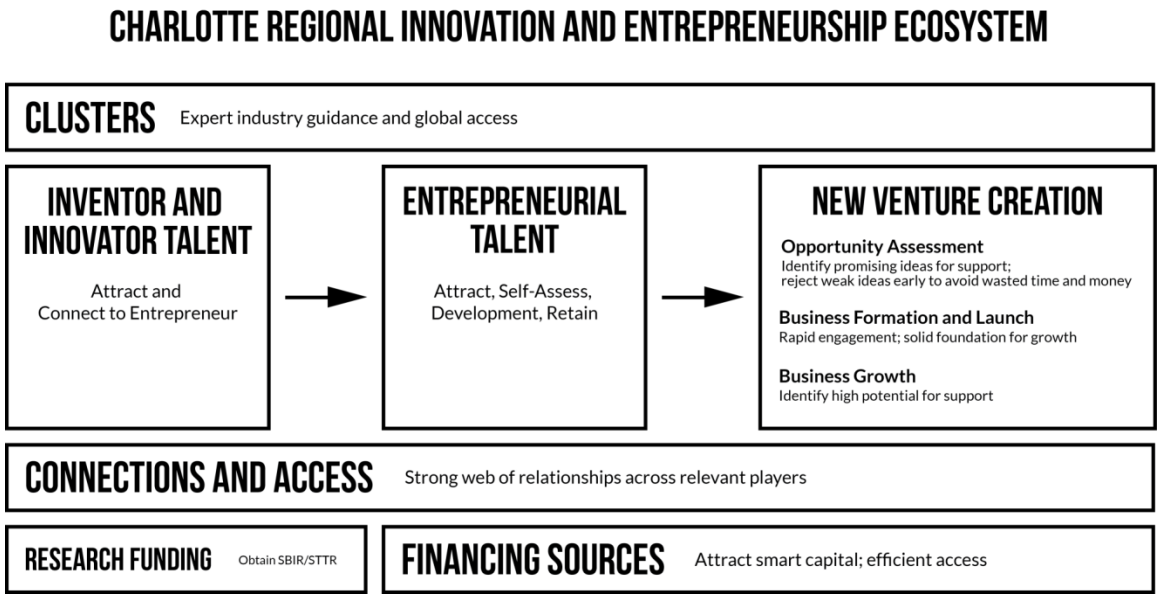
The Charlotte Entrepreneur Growth Report (CEGR) offers an integrated look at the Charlotte metro area innovation-driven entrepreneurs (IDEs). The report is especially interested in high growth entrepreneurs due to their substantial impact on the community's employment and wealth creation.

Successful outcomes are companies that grow rapidly and sustainably by competing effectively in national and global markets. These high-growth companies create good-paying jobs and wealth that, in turn, contribute to a strong Charlotte community. Unlike local small businesses, these innovation-driven enterprises bring cash into Charlotte by selling to global customers.

Importantly, research by Enrico Moretti (*The New Geography of Jobs*) demonstrates that innovation-driven entrepreneurs, often high tech, yield the highest employment multiples. Specifically, his research demonstrates that each new high tech job results in five additional jobs in local services. Communities that succeed at innovation-driven entrepreneurship create expanded business opportunities for established businesses and newly formed local small businesses.

The formation, launch, and growth of these innovation-driven enterprises depends upon: 1) ideas, 2) talent, and 3) risk-taking funding. A simplified view is that success depends on **talent** since **ideas** originate from skilled innovators and **funding** finds its way to people who optimize its use.

This report has identified indicators that provide some insight into Charlotte's ideas, talent, and funding. A simplified model of how the innovation-driven entrepreneurial ecosystem functions is shown below. The real world is, of course, messy and marked by experimentation, pivots, and multiple iterations. It is critical to address both innovator talent and entrepreneurial talent since both are necessary for high potential outcomes. Effective ecosystems enable deep and broad connections through robust cluster and network opportunities.



With this structure in mind, the report now turns to Charlotte's performance. This report begins by assessing the current health of young Charlotte metro entrepreneurial ventures in targeted industries and community attitudes toward entrepreneurs. The report then examines Charlotte's innovation and entrepreneurial capabilities and outcomes compared to national and regional benchmark metros.

This includes a review of relevant funding sources. Finally, the report summarize key aspects of the Charlotte area entrepreneurial ecosystem.

Growth Entrepreneur Survey

The Charlotte Entrepreneur Growth Report commissioned a survey of growth entrepreneurs that was administered by the UNC Charlotte Urban Institute in April-June 2015. The survey is intended to assess business dynamics for targeted entrepreneurial ventures. The methodology and data can be found in the companion document, Charlotte Entrepreneur Growth Report 2015 Surveys.

Previously similar surveys were conducted by the Business & Innovation Growth Council (BIG) in 2013 and 2014. Because of differences in sample and survey methodology, the 2015 results are not comparable to the prior surveys.

The 2015 survey received 438 responses resulting in a 10% response rate. The UNC Charlotte Urban Institute reviewed the responses to ensure that they were located in Charlotte metro, operated in a target industry, and were not more than 15 years old (defined as "young companies"). The survey analysis is based on the 248 usable responses. Responses were received from most counties in Charlotte USA with 76.6% located in Mecklenburg County.

Peak 10, founded in 2000, is one of the largest and most successful firms in the survey. As a 15-year old business, it is now moving beyond the definition of "young" used in the Growth Survey.

The sectors targeted by this survey are shown in the following table summarizing responses by industry along with 2014 actual revenue and employment. About two-thirds of the responses were from business services, information technology, and other technology.

Table 1. Growth Survey Responses by Industry

Survey Responses by Industry	%	Rev ($000s)	Employ
Business Services	30.2	$246	4
Information Technology	21.0	210	9
Technology (not Info Tech)	13.3	255	5
Marketing Services	8.9	260	5
E-commerce	4.8	36	4
Energy	4.4	743	14
Healthcare	4.0	700	15
Advanced Manufacturing	3.2	-	8
Financial Technology	3.2	1,228	4
Biotechnology (incl. Medical Devices)	2.8	NR	NR
Entertainment and Arts	2.0	NR	NR
Data services, internet, and telecomm	2.0	NR	NR

Note: Revenue is 2014 actual median; Employ is 2014 median total FTE headcount including contractors. NR—not reported due to less than 4 companies participating.

The survey includes companies that range in size due to the mix of industries, company maturity, and individual company success. The information which follows shows both the mean (average) and the median (midpoint) for relevant data. Data was collected based on each company's definition of their fiscal year.

Company Impact

The 248 young, innovation industry companies that completed the survey are a fraction of all eligible companies. It is important to recognize this was a survey, not a census. The respondent companies anticipate 2015 revenue of $1.3 billion and full-time employment of 2,350. The collective importance is illustrated by the fact that the $1.3 billion revenue ranks between publicly-traded Piedmont Natural Gas and Coca-Cola Bottling Consolidated.

The jobs created by the companies are well-paid and compensation increases as the companies become more mature. Average employee compensation of $61,293 is well above the Charlotte metro average ($48,554, Census County Business Patterns 2013). Average compensation for companies launched in 2010-2015 is $50,872 while the more mature companies formed in 2000-2009 provide average compensation of $74,177.

The majority (88%) of the surveyed companies serve markets beyond the Charlotte metro which means that their revenue brings economic impact to Charlotte. Many of these companies also serve local customers as the survey found that 48% of the companies serve the Charlotte market.

Innovation-driven enterprises serve national and global markets. Passport, founded in 2010, operates across North America ranging from Tucson to Toronto.

Table 2. Growth Survey Customer Location

Customer Location	
Charlotte metro only	12.4%
Southeast	11.2
United States	41.2
International	35.3
Total	100.0%

Company Growth

The surveyed companies reported rapid growth in recent years and were optimistic about 2015 plans. The growth in average revenue was a robust 23% in 2014 versus prior year. Respondents project a bullish 44% growth for 2015. Survey respondents vary widely in size as evident from the large difference between revenue mean (average) and median (half above, half below).

Table 3. Growth Survey Revenue

Revenue	2012	2013	2014	2015 proj.
Revenue ($000s)				
Mean	$4,713	$5,013	$6,172	$8,904
Median	$135	$174	$250	$500
Revenue Growth				
Mean		6%	23%	44%
Revenue Mix				
$0 (pre-revenue)	27.8%	19.0%	14.2%	5.8%
$1 to $1 million	47.2	51.7	52.0	48.9
$1+ million	25.0	29.3	33.9	45.3

Employment growth of 18% in 2014 is also significant, although many of the respondents are growing from a base of a few employees. The 248 companies expect 23% growth in 2015 which could result in over 600 new jobs.

Table 4. Growth Survey Employment

Employment	2012	2013	2014	2015 proj.
Full-time Equivalent				
Average per company	7.4	8.9	10.4	12.9
Employee Growth		20%	18%	23%

Company Funding

20.5% of the surveyed companies reported raising capital in their most recent fiscal year. The youngest companies were most likely to report a recent capital raise. The capital profile below is based on 24 companies that provide specific information about their capital raise.

Table 5. Growth Survey Capital Raised

Total Capital Raised	
Total all sources	
Mean	$35,100,000
Median	$925,000
Mix (millions)	
< $0.5	45.8%
$0.5 - $1.0	8.3
$1.0 - $5.0	33.3
$5.0+	12.5
Total	100.0%

The survey result for average capital raised is significantly increased due to a large private equity transaction completed by one company. The roughly $34 million gap between the mean and the median capital raised shown above illustrates the impact of the transaction.

In general, responding companies raised equity capital alone or in combination with debt as shown in Table 6.

Table 6. Growth Survey Capital Raised Category

Type of Capital	% of Deals
Equity only	48%
Debt only	9
Mix	43
Total	100%

As previously mentioned, the survey reported one mega deal involving private equity investment. Excluding that deal, capital sources totaling $42 million were reported for 23 deals. Respondents reported that 20% of that capital was raised in Charlotte metro, 17% elsewhere in the Carolinas, and the remaining 63% nationally.

Table 7. Growth Survey Capital Sources

Source of capital	Sole Source	# of deals	Avg $ per deal
Owner	1	14	$237,000
Family and friends	1	10	239,000
Angel investors	3	14	1,417,000
Venture capital, private equity	2	7	1,977,000
Commercial banks	-	2	63,000
Other	-	3	957,000
Total deals	7	23	1,842,000

Source of capital responses suggest several observations:

- Capital raises typically include multiple sources—only 7 of 23 were fully raised from one investor category;
- 14 companies reported angel investments averaging $1.4 million—more deals than reported publicly by angel groups, possibly due to investment by solo or invisible angel groups or by angels outside of the Carolinas;
- 7 venture capital (VC) deals averaging $2 million—slightly higher than total reported VC 2014 deals, possibly due to companies defining "VC" more broadly than standard reporting.
- Commercial banks were almost totally irrelevant to the capital needs of the survey respondents.

With a modest number of companies reporting a capital raise, it is not possible to draw definitive conclusions about which industries were most likely to raise funds. Table 8 categorizes industries where at least four companies responded to the capital raise question based on the percentage of respondents indicating a capital raise.

Table 8. Growth Survey Capital Raise Industry Liklihood

Likely (40%+)	Moderate (11-39%)	Unlikely (0-10%)
Advanced Manufacturing	Energy	Biotech incl. Medical Dev.
E-commerce	Information Technology	Business Services
Financial Technology	Technology, not IT	Healthcare
	Marketing Services	

Community Survey

In addition to data about entrepreneurial performance, the report also sought to measure broad community perceptions about entrepreneurship.

Mecklenburg County adult residents were surveyed by UNC Charlotte Urban Institute in April 2015 resulting in 400 completed telephone interviews evenly split between cell phones and landlines. The sample was 52.6% female and was diverse in terms of race, age, length of Mecklenburg residency, income, education level, and geographic location. 66% were currently working. The sample is more fully described in the companion document, Charlotte Entrepreneur Growth Report 2015 Surveys.

The survey included four questions on behalf of Charlotte Entrepreneur Growth Report. The objective was to assess community awareness and attitudes related to entrepreneurship. The overall conclusion is that residents recognize the importance of entrepreneurship. It is important to note

that residents are likely to perceive "entrepreneurship" as synonymous with "small business" rather than the more focused "innovation-driven entrepreneurship" that is the focus of most of this report.

Highlights are summarized in Table 9 for individuals who provided an answer, excluding the 3% to 6% that responded "don't know." Complete details are available in the companion document.

Table 9. Community Survey Question Ratings

Questions	Not Important	Neutral	Important	Total
How important are startup companies to a strong Charlotte economy?	8.0%	10.2%	81.8%	100.0%
	Disagree	**Neutral**	**Agree**	**Total**
How much you agree with the following statement: The Charlotte business climate is good for entrepreneurial companies?	14.0%	27.4%	58.6%	100.0%
	Unlikely	**Neutral**	**Likely**	**Total**
How likely is it that you would recommend to a young person that he or she pursue a career as an entrepreneur or small business owner?	15.5%	21.5%	63.0%	100.0%

Respondents were also asked an open-ended question: If someone asked you to connect them to local resources that could help start a business, where would you tell them to go?

Table 10. Community Survey Startup Connections

Chamber of Commerce	26.5%
Internet/Google	17.2
Local government office (City Hall, etc.)	11.7
Small Business Administration / Association	6.0
Library	5.6
Better Business Bureau	5.2
A bank / financial institution	4.0
Other (30 different responses)	23.8
Total	100.0%

In addition to the Internet, it is clear that the average resident perceives many different sources of entrepreneurial support, but overwhelmingly recommends the Chamber and, to a lesser degree, local government.

Benchmark Communities

When possible, statistical data is compared to a set of benchmark communities that are profiled in Table 11. These communities were selected by the report authors in consultation with the Charlotte Regional Fund for Entrepreneurs board. The selection process considered benchmark communities identified by economic developers.

The national benchmarks include comparable metros and others considered aspirational. The seven national benchmarks are: Atlanta, Austin, Kansas City, Nashville, San Francisco, Research Triangle, and Tampa. Additional regional benchmarks include four large Carolinas metro areas: Triad, Columbia, Charleston, and Greenville-Spartanburg.

Data comparisons by metro area are complicated due to various definitions of the metro areas. Charlotte metro may be defined in any of the four ways shown in Appendix A. The federal government establishes Metropolitan Statistical Areas (MSA) as the most typical metro definition. For larger metro areas, a Consolidated Statistical Area (CSA) is established. This report generally uses MSA data for comparison unless otherwise noted. To illustrate the metro definition complexity, consider Charlotte.

Charlotte MSA	10 counties	Federal OMB "Charlotte-Concord-Gastonia, NC-SC"
Charlotte CSA	12 counties	Federal OMB "Charlotte-Concord, NC-SC"
Charlotte USA	16 counties	Charlotte Regional Partnership scope

The Research Triangle is one exception since it is more meaningful to compare Charlotte to the Raleigh-Durham-Chapel Hill CSA that includes the MSAs of Raleigh-Cary and Durham-Chapel Hill. The Triad is a similar exception since the Greensboro-Winston-Salem-High Point CSA is more relevant than the component MSAs of Burlington, Greensboro-High Point, and Winston-Salem. The Greenville-Spartanburg-Anderson CSA and the Columbia-Orangeburg-Newberry CSA are also used rather than the component MSAs.

Table 11. Benchmark Metro Size Profile

CEGR Benchmark Metros	Metro Type	# of Counties	Square Miles	2014 Pop. (mil.)	Pop. Density
Charlotte	MSA	10	5,180	2.4	460
National Benchmarks					
Atlanta	MSA	29	8,376	5.6	670
Austin	MSA	5	4,279	1.9	454
Kansas City	MSA	14	7,952	2.1	260
Nashville	MSA	14	7,484	1.8	240
Research Triangle	CSA	11	5,627	2.1	369
San Francisco	MSA	5	2,474	4.6	1,857
Tampa	MSA	4	2,555	2.9	1,141
Carolinas Metros					
Triad	CSA	10	5,033	1.6	324
Charleston	MSA	3	3,163	0.7	230
Columbia	CSA	8	5,609	0.9	166
Greenville-Spartanburg	CSA	10	6,168	1.4	229

The Charlotte MSA 2014 population of 2,380,314 (2014 Census estimate) grew by 7.4% compared to 2010. Considering population, three of the national benchmarks are larger while four are smaller than Charlotte. Austin's growth of 13.2% since 2010 is substantially faster than all of the benchmark metros. Research Triangle's growth of 8.5% is somewhat faster than Charlotte's growth. Atlanta, Nashville, and San Francisco are all growing slower than Charlotte. Kansas City at 3.1% and Tampa at 4.7% are the "slow growth" metros in the benchmark group along with all of the Carolinas metros except Charleston (9.5% growth).

Charlotte is roughly in the middle of the benchmark group considering geographic measures of counties and metro square miles. San Francisco and Tampa are dramatically more dense (population per square mile) while Kansas City and Nashville are considerably less dense than Charlotte.

The Charlotte Entrepreneur Growth Report examines innovation and entrepreneurship indicators for Charlotte in comparison to the national benchmarks and the Carolinas metros.

Benchmark Metro Comparison

There are numerous metro rankings published by research organizations and media. Most are of limited value due to their annual volatility or the selection of a ranking criterion with minimal relevance. The Milken Best Performing Cities has been published for many years and measures nine outcomes, such as job growth, rather than inputs, such as educational attainment. Although it does not directly measure entrepreneurial success, it is the national ranking methodology that is most relevant to this report's focus on innovation and entrepreneurial growth.

The Milken Best Performing Cities study consistently ranks Charlotte in the top tier of 200 large U.S. metros as shown in the excerpt below. The overall rank is primarily weighted toward employment growth (5-year and 1-year) and wages & salaries growth (5-year and 1-year). The rank includes measures of participation in the knowledge economy including technology sector GDP growth, concentration, and technology diversity (considering 22 technology fields).

Table 12. Milken Best Performing Cities Charlotte Profile

Charlotte MSA	2012	2013	2014
Rank among top 200 metros			
Overall	**35**	**27**	**23**
Employment 5-year growth	40	61	51
Wages & salaries 5-year growth	79	88	70
Knowledge Economy Participation			
High-tech Location Quotient (LQ)	106	112	99
# of high-tech LQs > 1	131	91	83

The Milken Best Performing Cities 2014 report provides a context for how the benchmark metros perform compared to Charlotte.

The Table 13 comparisons use the rankings based on MSA data. The Milken rankings are not available for the broader CSA metro definition. Thus, the table shows Raleigh-Cary and Durham-Chapel Hill rather than the combined Research Triangle. A similar situation affects the Triad and Greenville-Spartanburg.

Table 13. Milken Best Performing Cities Benchmark Metro Rank

2014 Milken Best Performing Cities	Overall Rank	Employ Growth	Wages Growth	High-tech LQ	HT LQ > 1
Rank among top 200 metros					
Charlotte	**23**	**51**	**70**	**99**	**83**
National Benchmarks					
Atlanta	50	98	139	42	33
Austin	2	1	4	10	15
Kansas City	77	107	88	44	25
Nashville	15	7	27	129	105
Raleigh-Cary	5	25	37	11	10
Durham-Chapel Hill	47	65	47	5	25
San Francisco (MD)	1	11	1	8	12
Tampa	86	100	156	78	25
Carolinas Metros					
Greensboro-High Point	115	186	150	79	49
Winston-Salem	159	157	117	167	83
Charleston	39	26	33	70	67
Columbia	132	96	105	166	163
Greenville-Mauldin-Easley	48	82	77	81	83
Spartanburg	63	61	128	190	163

The Charlotte ranking of 23 among the top 200 metros resulted from solid performance on all nine measures, rather than top ten performances on a few measures. The national benchmark metros used in the CEGR are all in the upper half of the best performing cities. San Francisco and Austin are the top two performing metros in 2014. Employment growth (5-year) success is desirable and the benchmark group includes Austin, the nation's top metro. Wages and salaries growth (5-year) is attractive since it relates to job quality. San Francisco is, not surprisingly, the national leader as its tech companies bid up compensation as they compete for top talent.

Charlotte's average ranking (#99) on high-tech location quotient confirms that the region's strong overall performance results from an economy that is not principally driven by the technology sector. All of the national benchmark metros, except Nashville, are much more dependent on the knowledge sector. Additionally, Charlotte only exceeds national employment norms in 5 of 22 high tech fields (resulting in the #83 ranking for high tech location quotients exceeding 1). Nearly all of the benchmark cities have concentrated employment in more technology sectors.

The Milken Best Performing Cities study identifies very different outcomes for neighboring Carolinas metros. The Triad and Columbia are substantially below 2014 national averages, consistent with their performance since the recession. Charleston and Greenville, however, are in the top quarter nationally. Both communities are somewhat more high tech driven than Charlotte.

In summary, the seven national benchmark metros used in CEGR are top performing metros in terms of employment and wage growth. They include the top two performers in the Best Performing Cities and are worthy benchmarks for Charlotte.

Innovation Indicators

High growth entrepreneurial outcomes begin with innovation and innovative people. Although technology innovation may be most visible, substantial entrepreneurial success is often grounded in business process or business model innovation (Amazon, for instance).

Innovation indicators are imperfect. The Charlotte Entrepreneur Growth Report focuses on college and university student populations, higher education research funding, and university measures of inventiveness. Additionally, this report examines overall patent production which is one measure of technology innovation (and not a reliable measure of information technology advances). SBIR/STTR grants provide insight into the region's ability to generate promising technologies.

Higher Education Students

Higher education institutions are important contributors to the innovation ecosystem. Their impact on venture formation and growth results from research, facility access, and, most importantly, faculty and students. This report focuses on four-year degree institutions as differentiating factors in metro areas since the concentration and quality of these institutions varies widely by location (community colleges are more uniformly distributed).

Table 14. Higher Education Enrollment

Higher Education Forbes Top 650 Universities	Total Enrollment	Top 100 Enrollment	Enrollment per 100,000 Pop.
Charlotte	31,753	1,790	1334
National Benchmarks			
Atlanta	92,172	21,557	1642
Austin	58,863	52,186	3029
Kansas City	47,273	0	2282
Nashville	55,371	12,836	3089
Research Triangle	80,948	44,664	3901
San Francisco	90,876	36,137	1978
Tampa	48,679	0	1670
Carolinas Metros			
Triad	50,497	7,432	3097
Charleston	15,222	0	2092
Columbia	33,234	0	3580
Greenville-Spartanburg	31,092	4,534	2206

Note: Charleston does not include Medical University of SC; Atlanta total adjusted to include Emory although it was excluded from Forbes list as penalty for misleading data reporting.

The Charlotte region includes one institution, Davidson College, ranked in the top 100 of the Forbes list. It is joined by Queens University and UNC Charlotte in the Forbes ranking of the top 650 institutions nationally.

Charlotte is notable among the comparison metros for the lowest density of higher education students per 100,000 residents. The Research Triangle and Columbia feature the highest densities.

The table includes student populations only from the top 650 U.S. institutions as ranked by Forbes based on outcomes including post-graduate success (rather than inputs such as SAT scores and percent admitted). See Appendix B for a list of the institutions included in each metro area. The Forbes list is used here, rather than all higher education institutions, to identify institutions likely to

have greater impact on innovation-based entrepreneurship. It also enables metro comparability without addressing the nuances of a wide range of non-profit and for-profit higher education institutions.

An additional consideration is the strong relationship between attendance at top universities and subsequent venture capital investment (PitchBook Universities Report 2015-2016 Edition). PitchBook identifies the top 44 universities; 43 are on the Forbes 650 and 34 are in in the top 100 of the Forbes ranking.

The table above also includes the number of students enrolled in Forbes Top 100 institutions. This arbitrary cut-off illustrates which metro areas have higher education institutions most likely to include top student talent. Although superior student talent can be found at every higher education institution, this provides an indicator of which metro areas benefit from the greatest numbers of superior students. Consistent with their academic reputations, Austin and Research Triangle lead the benchmark metros.

SQL Sentry has delivered strong profitability and 35% annual revenue growth since 2010. A contributor to its success has been its use of internships to attract excellent computing talent from UNC Charlotte and other NC universities.

Research

Research and development activities by academic institutions, federal labs, non-profit organizations, and corporations contribute significantly to American economic competitiveness. Corporate research generally is commercialized by the corporation, although the human capital does, in some cases, find its way into new ventures. There are numerous examples of ventures that are the "children" of established corporations.

Charlotte corporations are not generally research-intensive; there are no nearby federal labs; and information on non-profit research (such as the Electric Power Research Institute in University Research Park) is limited. Thus, this report focuses on academic research.

Academic research is directly related to entrepreneurial action through commercialization by start-ups (Stanford research commercialized as Google, for instance). Academic research also has an indirect impact through the creation of subject matter experts and university-industry partnerships that lead to commercial activity. And, academic research employs people and local services creating direct impact in the metro area.

Academic R&D totals about $67 billion annually and is primarily funded by the federal government as shown in Figure 1 on the next page.

University research attracts innovative talent such as Dr. Michael Feldman, former UNC Charlotte engineering professor and founder of Digital Optics which was sold in 2006. With the founding of fast-growing T1V, he is now a great example of a serial entrepreneur.

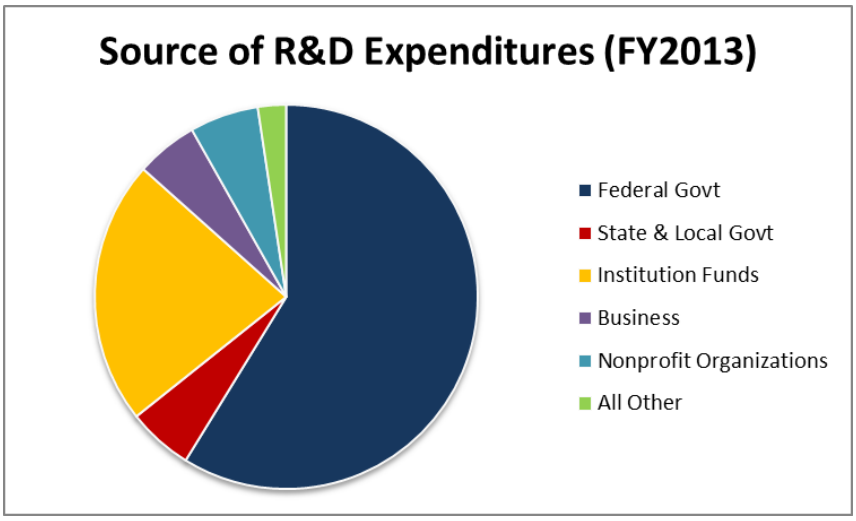


Figure 1. U.S. R&D Expenditures FY2013

Charlotte academic research and development spending occurs primarily at UNC Charlotte along with Winthrop and Davidson. Charlotte metro participation in academic R&D is compared to benchmark metros in the following table.

Table 15. Higher Education R&D FY2013

Higher Education R&D Expenditures FY2013	Reporting Institutions	R&D Total $000s	R&D $ per capita
Charlotte	3	$39,596	$17
National Benchmarks			
Atlanta	11	$1,484,430	$269
Austin	2	$642,172	$341
Kansas City (CSA)	2	$327,327	$137
Nashville	5	$632,453	$360
Research Triangle	4	$2,392,275	$1,174
San Francisco	6	$1,811,194	$400
Tampa	3	$467,511	$163
Carolinas Metros			
Triad	5	$236,189	$146
Charleston	2	$255,675	$359
Columbia	4	$221,849	$241
Greenville-Spartanburg	6	$154,643	$111

Note: Reporting Institutions count is the number that reported R&D expenditures over $150,000.

The significant impact of life sciences R&D funding is evident from the data in Table 16 below.

Table 16. Higher Education Life Sciences R&D FY2013

Higher Education R&D Expenditures FY2013	R&D Total $000s	R&D Life Sciences	Life Sc. % of Total	Medical School
Charlotte	$39,596	$3,795	10%	No
National Benchmarks				
Atlanta	$1,484,430	$551,540	37%	Yes: 2
Austin	$642,172	$72,403	11%	No*
Kansas City	$327,327	$216,503	66%	Yes: 3
Nashville	$632,453	$480,135	76%	Yes: 2
Research Triangle	$2,392,275	$1,710,566	72%	Yes: 3*
San Francisco	$1,811,194	$1,252,910	69%	Yes
Tampa	$467,511	$300,223	64%	Yes
Carolinas Metros				
Triad	$236,189	$202,751	86%	Yes
Charleston	$255,675	$247,843	97%	Yes
Columbia	$221,849	$113,479	51%	Yes
Greenville-Spartanburg	$154,643	$38,362	25%	**

*Austin will open Dell School of Medicine at UT-Austin with 2016 classes; Research Triangle will add third medical school at Campbell University in 2017.
**Univ. of South Carolina operates a branch medical school in Greenville; R&D spending reported in Columbia data.

Charlotte compares unfavorably to national benchmarks and the Carolinas metros:

- Academic R&D spending of under $40 million is far below every comparison metro and is only about one-quarter of the lowest spending which is found in Greenville-Spartanburg;
- Academic R&D per capita spending of $17 is about 10% of the weakest national benchmarks (Kansas City and Tampa);
- Charlotte is alone among the national benchmarks in its lack of a medical school and, therefore, does not participate in substantial life sciences research funding;
- If Charlotte were comparable to the weakest national benchmark, the metro area would benefit from nearly $300 million of additional spending with associated spillover benefits.

University Technology Commercialization

American universities have an obligation to commercialize the inventions that result from federally-funded research. Universities such as UNC Charlotte have established technology transfer offices to protect intellectual property and find commercial pathways through licensing to established companies or through start-ups. These offices at universities with substantial research funding report results annually through the Association of University Technology Managers (AUTM).

CEGR benchmark comparisons include the institutions noted below for each metro area. Unfortunately, two especially interesting benchmark cities, Austin and San Francisco, cannot be analyzed since their respective public university systems only report aggregate data for all campuses of each system. All data presented is shown as the annual average for 2011-2013 since annual data for each institution varies considerably.

Table 17. AUTM Participating Universities

AUTM Reporting	2011-2013 Avg R&D ($mil)	Institutions
Charlotte	$31	UNC Charlotte
National Benchmarks		
Atlanta	$1,274	Emory, Georgia Tech
Austin	n/a	Univ. of Texas system only; UT-Austin unavail.
Kansas City	$256	Univ. of Kansas
Nashville	$544	Vanderbilt
Raleigh	$2,009	Duke, NC State, UNC Chapel Hill
San Francisco	n/a	Univ. of California system only; Berkeley unavail
Tampa	$563	Moffitt Cancer Ctr & Res Inst, Univ of South Florida
Carolinas Metros		
Triad	$228	UNC Greensboro, Wake Forest; no data for NCAT
Charleston	$205	Medical Univ. of South Carolina
Columbia	$179	Univ. of South Carolina
Greenville-Spartanburg	$84	Clemson

Table 18 below includes four measures of commercialization: inventions, patents, startups, and licenses. Each invention represents intellectual property that could have commercial value. When appropriate and when commercial value is plausible, universities seek patent protection.

Atlanta and Research Triangle dominate the benchmark metros by creating about 600 inventions per metro annually. Similarly, these two metros overwhelming lead in patents issued.

The final two measures, startups and licenses, are the best measures for demonstrating commercial potential. A license may be granted to an established organization or to a startup company to enable commercial use of the intellectual property in exchange for financial consideration such as a royalty calculated as a percentage of revenue. Research Triangle is the clear leader with Atlanta in a strong second place.

Table 18. AUTM Commercialization Metrics by Metro

Commercialization AUTM 2011-2013 Avg.	Inventions	Patents	Startups	Licenses
Charlotte	42	12	3.3	15
National Benchmarks				
Atlanta	594	100	16.0	144
Austin				
Kansas City	82	17	2.7	10
Nashville	178	37	3.0	64
Research Triangle	601	123	22.0	258
San Francisco				
Tampa	227	94	11.7	76
Carolinas Metros				
Triad	104	6	5.3	29
Charleston	91	7	2.3	9
Columbia	61	20	3.0	8
Greenville-Spartanburg	113	17	3.0	10

The careful reader may note that licenses exceed patents in most metros. One patent may result in multiple licenses and each year's licenses reflect the cumulative patents from prior years. Thus, the two measures can differ substantially in any time period.

The previous table defines the absolute level of commercially interesting intellectual property created by institutions in each metro. As evident in the data, large research funding generally yields large amounts of commercial activity including startups. However, the data also demonstrates that the productivity of each research dollar varies widely. The following table is based on outcomes per $10 million in research spending.

Table 19. AUTM Commercialization Productivity by Metro

Commercialization AUTM 2011-2013 Avg. per $10 mil R&D	Inventions	Patents	Startups	Licenses
Charlotte	13.4	3.9	1.1	4.8
National Benchmarks				
Atlanta	4.7	0.8	0.1	1.1
Austin				
Kansas City	3.2	0.7	0.1	0.4
Nashville	3.3	0.7	0.1	1.2
Research Triangle	3.0	0.6	0.1	1.3
San Francisco				
Tampa	4.0	1.7	0.2	1.3
Carolinas Metros				
Triad	4.6	0.2	0.2	1.3
Charleston	4.4	0.3	0.1	0.5
Columbia	3.4	1.1	0.2	0.4
Greenville-Spartanburg	13.6	2.0	0.4	1.2

The 2011-2013 AUTM data demonstrates that Charlotte converts academic research funding into patents, licenses, and startups at rates considerably higher than other metros. This is a consistent outcome at UNC Charlotte over many years. The good news is that UNC Charlotte is highly productive; the bad news is that Charlotte research funding is considerably below all other benchmark metros. UNC Charlotte has established research funding growth as a major goal and a significant increase will likely be reported in future years.

InfoSense was founded by a UNC Charlotte engineering professor to commercialize his invention that solved a real industry problem at Charlotte Water. The new company leveraged assistance from the University's affiliated business incubator.

Invention and Patents

Patents are often used as a measure of inventiveness. However, they must be considered an incomplete measure since some inventions are protected in other ways (such as trade secrets) and some valuable innovations are not eligible for patent protection.

Although inventions are systematically analyzed by the U.S. Patent and Trademark Office, an issued patent only attests to novelty and usefulness. In fact, *Forbes* (June 18, 2014) reported that "Of today's 2.1 million active patents, 95 percent fail to be licensed or commercialized."

Those that are used commercially vary widely in value from fundamental, broad-based patents (xerography enabling the Xerox Corporation) to the many minor patents corporations seek to protect a competitive position (small improvements).

With those caveats, patents are reviewed here because they enable comparison of Charlotte's inventive capacity over time and in comparison to other communities.

Table 20. USPTO Issued Patents by Metro 2001-2013

Issued Patents	2001-10 Avg	2011	2012	2013	2011-13 Avg	Growth
Charlotte	218	283	398	484	388	78%
National Benchmarks						
Atlanta	1168	1680	1846	2232	1919	64%
Austin	1878	2460	2658	2683	2600	38%
Kansas City	351	636	912	916	821	134%
Nashville	146	212	210	239	220	51%
Research Triangle	1187	1719	1944	1946	1870	57%
San Francisco	4411	6468	7403	8721	7531	71%
Tampa	343	490	566	596	551	60%
Carolinas Metros						
Triad	191	253	266	289	269	41%
Charleston	57	62	82	96	80	39%
Columbia	61	87	100	112	100	63%
Greenville-Spartanburg	256	360	501	474	445	74%

In the decade that ended in 2010, the Charlotte metro area averaged 218 issued patents annually. The number has grown each year to an average of 388 in 2011-2013, a 78% increase over the 2001-2010 base period.

Charlotte produced fewer patents than any national benchmark except Nashville in the base period, but grew its patent production faster than any metro expect Kansas City. The low result for Nashville reflects its industry mix weighted toward healthcare and other low-patent fields.

Despite rapid growth, Charlotte remains a modest patent producer reflecting a limited research and technical base. This point is more apparent when the metro areas are compared considering patents per 100,000 residents in Table 21 on the following page.

Table 21. USPTO Issued Patents by Metro per Capita 2011-2013

Patents & Population	2013 Metro Population	2011-13 Patents Avg	2011-13 Patents per 100K
Charlotte	2,337,339	388	17
National Benchmarks			
Atlanta	5,525,432	1919	35
Austin	1,885,803	2600	138
Kansas City	2,055,351	821	40
Nashville	1,758,577	220	13
Research Triangle*	2,036,913	1870	92
San Francisco	4,529,654	7531	166
Tampa	2,874,154	551	19
Carolinas Metros			
Triad*	1,620,581	269	17
Charleston	712,081	80	11
Columbia*	920,716	100	11
Greenville-Spartanburg*	1,394,559	445	32

*Data including population for the CSA; all others for the MSA.

With 17 patents per 100,000 residents Charlotte is slightly ahead of Nashville and similar to Tampa. The per capita data clearly demonstrates the technology inventiveness intensity of San Francisco, Austin, and the Research Triangle. Although most of these patents are likely to be owned by established corporations, the sheer volume demonstrates tremendous inventive capacity which spills over into the start-up scene in those communities.

Charlotte Patent Analysis

A comprehensive assessment of the Charlotte patent "portfolio" is beyond the scope of this report. Patent analysis is complex for many reasons including the seemingly straightforward topic of geographic location. However, the 3,617 patents attributed to the Charlotte MSA during 2000-2013 yield simple, noteworthy observations.

The USPTO reports patents by Class, such as *Apparel*, *Communications: Electrical,* and *Coating Processes*. The top classes are listed in the following table.

Table 22. USPTO Patents by Class Charlotte Metro 2000-2013

Class	Class Title	Total 2000-2013	2011-2013
705	DP: Financial, Business Practice, Management, or Cost/Price Determination (Data Processing)	204	167
340	Communications: Electrical	118	42
520	Synthetic Resins or Natural Rubbers	105	22
428	Stock Material or Miscellaneous Articles	88	15
210	Liquid Purification or Separation	78	13
235	Registers (e.g., cash registers, calculators, devices for counting movements of devices, etc.)	76	49
382	Image Analysis	59	15
52	Static Structures (e.g., Buildings)	56	24
219	Electric Heating	54	2
128	Surgery	51	13
707	DP: Database and File Management or Data Structures (Data Processing)	48	32

It is not surprising that financial data processing is the overwhelming leader and that 80% of the patents over 2000-2013 were issued during the last three years reported. It is no coincidence that this time period corresponds to a tremendous increase in Bank of America patent activity.

Changing patterns of the regional economy are visible in examples such as *synthetic resins or natural rubber*, the third largest patent class over 2000-2013 but much lower number in 2011-2013. Interestingly, the decline in *surgery* patents is likely the result of a 1996 patent law change that reduced the financial benefit of surgical procedure patents. In-depth patent data analysis may yield insights about regional economic opportunities.

Finally, consider the source of Charlotte's patent activity. The USPTO data includes the patent assignee, typically the employer of the inventor. The assignee profile illustrates a shift away from inventors and toward corporations while also demonstrating a shift in the region's business mix.

The most striking change is the dramatic increase in the share of the region's patents assigned to Bank of America. This is the result of an apparent recent strategy shift. From 2000 through 2008, the USPTO reports a total of 5 patents assigned to the Bank with a Charlotte metro address. Beginning with 7 patents in 2009, the Bank's numbers have steadily increased reaching 138 in 2013.

Table 23. USPTO Patents Charlotte Metro by Assignee 2001-2013

Charlotte Metro Patents Assignees >1.0% of total 2011-2013	2001-2010	2011-2013
Average annual issued patents	218	388
Assignee, rank by 2011-2013		
Individually owned	17.9%	12.0%
Bank of America	1.1%	23.4%
IBM Corporation	4.6%	2.6%
Checkpoint Systems, Inc.	1.1%	2.3%
Deere + Company	2.0%	2.2%
University of North Carolina	1.7%	2.2%
Hand-Held Products, Inc.	0.5%	1.7%
ATI Properties, Inc.	1.0%	1.5%
Digital Optics Corporation	2.5%	1.3%
Irwin Industrial Tool Company	1.8%	1.3%
CEM Corporation	2.6%	1.2%
Wells Fargo Bank, N.A.	0.3%	1.2%
Schaeffler Technologies AG	0.0%	1.2%
Invue Security Products, Inc.	0.5%	1.1%
Merit Medical Systems, Inc.	0.2%	1.1%

Finally, there has been a shift toward Mecklenburg County for patents within Charlotte USA as shown in Appendix G. Mecklenburg's share of the region's patents grew from 41.8% in 2001-2010 to 52.2% in 2011-2013. A key driver of this change was the Bank of American patent growth previously mentioned. Similarly, the ten counties in the Charlotte MSA increased their share of patents from 79.1% to 88.1%. The most dramatic decrease in share occurred in Catawba County, part of Charlotte USA. County shifts reflect changing industrial patterns in the region.

Overall, the geographic pattern of patents is consistent with other factors that demonstrate an increasing concentration of the region's intellectual property assets in the region's core.

SBIR/STTR Funding

Small businesses engaged in commercializing research often compete for funding through the federal Small Business Innovation Research (SBIR) program and the closely related Small Business Technology Transfer (STTR) program.

The eleven federal agencies with the largest R&D budgets allocate 2.8% of their R&D funding for competitive grants through the SBIR program and an additional 0.3% through the STTR program. These grants are attractive to entrepreneurs because they generate revenue with no repayment or equity obligations. The competitive process adds value because it helps establish technology validity for winning companies.

The programs provide significant financial resources. Companies compete for Phase I grants of up to $150,000 to establish the technical merit, feasibility, and commercial potential of the proposed R&D effort. Successful completion enables companies to seek a Phase II grant of up to $1,000,000, typically supporting a two-year work effort.

The tables below examine participation in the combined SBIR/STTR programs. The first table includes data for 2001-2014 to assess long-term engagement since technology development often has a lengthy gestation period. The second table focuses on the most recent data for 2011-2014 to examine current engagement.

During 2001-2014, Charlotte metro had 37 companies that received a total of 155 awards. This yielded 65 awards per million people, far below all national benchmark metros except Kansas City (Kansas City MSA rate was 44, but increases to 96 when measured at the CSA which includes the University of Kansas). This SBIR/STTR rate is less than one-tenth of the awards per million people in Austin, Research Triangle, and San Francisco.

Table 24. SBIR/STTR Participation by Metro 2001-2014

SBIR/STTR 2001-2014	Companies	Awards	Awards per Company	Awards per Million Pop.
Charlotte	37	155	4.2	65
National Benchmarks				
Atlanta	213	1099	5.2	196
Austin	160	1672	10.5	860
Kansas City*	34	92	2.7	44
Nashville	28	202	7.2	113
Research Triangle	295	1460	4.9	704
San Francisco	702	3679	5.2	801
Tampa	57	283	5.0	97
Carolinas Metros				
Triad	39	189	4.8	116
Charleston	28	108	3.9	148
Columbia	28	189	6.8	204
Greenville-Spartanburg	17	86	5.1	61
Kansas City CSA	58	232	4.0	96

*The University of Kansas is included in the Kansas City CSA counties, not in the MSA.

The next table includes data for 2011-2014 (four years). Charlotte companies received 53 awards totaling $21.4 million. Charlotte awards per million population remained ahead of Kansas City (MSA) and moved ahead of Nashville and Tampa.

Table 25. SBIR/STTR Awards and Funding by Metro

SBIR/STTR 2011-2014	Awards	$mil. Grants	Per Million Population Awards	$mil. Grants
Charlotte	53	$21.4	22	$9.0
National Benchmarks				
Atlanta	221	$101.9	39	$18.2
Austin	377	$130.4	194	$67.1
Kansas City*	32	$12.6	15	$6.1
Nashville	37	$20.7	21	$11.5
Research Triangle	345	$173.5	166	$83.6
San Francisco	795	$320.2	173	$69.7
Tampa	47	$14.0	16	$4.8
Carolinas Metros				
Triad	46	$20.6	28	$12.6
Charleston	27	$12.4	37	$17.0
Columbia	25	$11.4	27	$12.3
Greenville-Spartanburg	26	$11.7	18	$8.3
Kansas City CSA	64	$25.7	27	$10.7

Within Charlotte metro, the SBIR/STTR activity is concentrated geographically and by company. Of the 37 companies that received a 2001-2014 award, 27 are in Mecklenburg County. Four companies are located in York (SC), two in Cabarrus, and one each in Gaston and Iredell.

The Charlotte metro SBIR/STTR awards are concentrated by company as shown in the table below. Corvid Technologies is the dominant award recipient throughout the time period including over $14 million in grants from the Department of Defense in 2011-2014. Digital Optics, founded by a UNC Charlotte professor, generated many grants until its 2006 acquisition by Tessera.

SBIR grant funding fueled InfoSense development efforts enabling it to advance toward market readiness.

Table 26. SBIR/STTR Awards for Top Companies in Charlotte Metro

SBIR/STTR Award Recipient	City	Awards 2001-10	Awards 2011-14	Grant $000s 2011-14
Corvid Technologies	Mooresville	24	27	$14,366
Digital Optics Corp.*	Charlotte	18	-	-
Insitutec, Inc.	Concord	6	2	$375
Advanced Photonic Crystals	Fort Mill	6	2	$600
Dot Metrics Technologies	Charlotte	7	1	$149
Higher Power Engineers	Gastonia	5	1	$80
Flying Bridge Technologies	Charlotte	5	-	-

*Acquired by Tessera in 2006.

Entrepreneurial Company Dynamics

National Trends

The American obsession with innovation and entrepreneurship manifests itself in the celebration of the country's most successful company founders, television shows such as Shark Tank, and numerous business competitions, accelerators, and incubators. Yet, a clear-eyed look at the American economy reveals that the startup formation rate has slowed significantly since the mid-1980s.

Concern about the entrepreneurial health of the U.S. economy is expressed by experts such as Robert Litan, formerly of the Kauffman Foundation, in his work for the Brookings Institution. Litan and Ian Hathaway examined startup data for 1977 through 2012 using the U.S. Census Business Dynamics Statistics database. Their conclusions can be found in publications such as "Start-Up Slowdown", *Foreign Affairs*, January-February 2015 or "Declining Business Dynamism in the United States", Brookings Institution, May 2014.

They conclude that startups, companies less than one year old, have declined as a share of all firms. In 1978, startups were nearly 15% of all U.S. firms. By 2011, their share had declined to 8%. They found this decline to have occurred in every U.S. state, in all but one of 366 metro areas. Further, they found that high growth firms (defined as companies with three or more consecutive years of at least 20% employment growth) have also declined: dropping from about 3% of all firms in 1994-97 to only 1.5% in 2008-11.

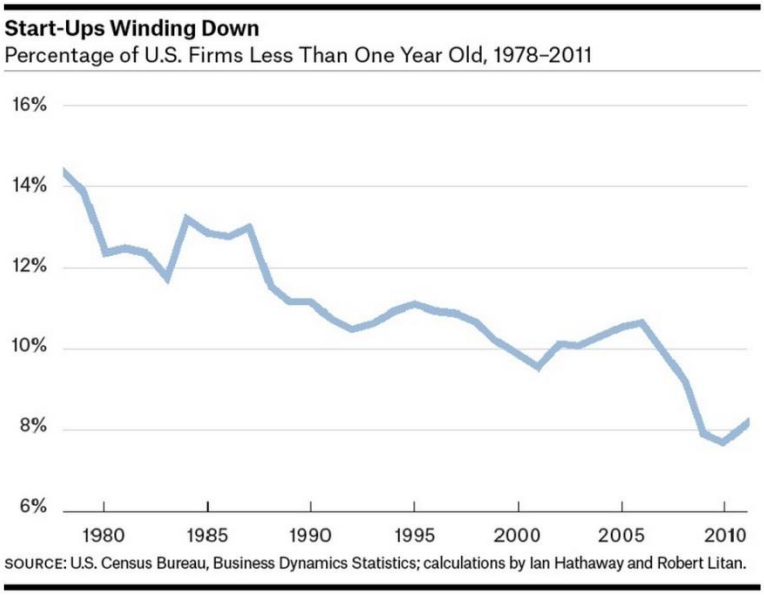


Figure 2. U.S. Start-Ups Decline 1978-2011

Source: "Start-Up Slowdown", *Foreign Affairs*, January-February 2015.

These national trends are directly relevant the Charlotte Entrepreneur Growth Report's focus on innovation-driven entrepreneurs and high-growth entrepreneurship. An assessment of the policy factors that are making the American economy less hospitable to new ventures is beyond the scope of this document. However, it is important to note that Charlotte is affected by these factors as will be seen in startup data reviewed in the Overall Start-up Activity section and shown in Figure 5.

The following view of the national scene will reinforce the impact of a weakened entrepreneurial sector. Figure 3 shows the number of new establishments with at least one employee that formed annually since 1994. The annual number was around 600,000 and spiked at about 650,000 immediately prior to the great recession. It declined sharply and has now returned to about 650,000.

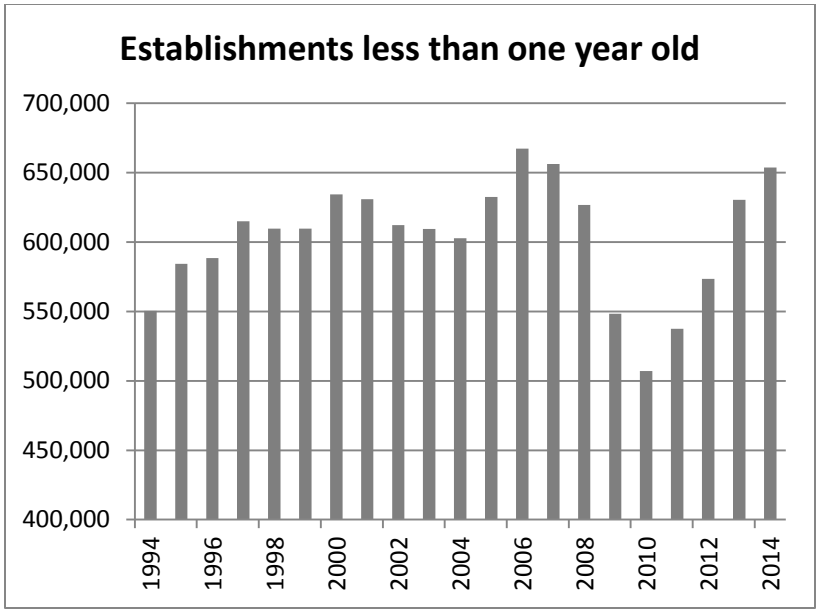


Figure 3. U.S. Start-Ups 1994-2014; Longitudinal Business Database

Although the number of establishments is not growing comparable to U.S. population and economic increases, it appears to have stabilized. However, the employment in these new firms has declined dramatically. From 1994 through the early 2000s, these brand new firms created 4.0-4.5 million jobs annually. Job creation declined from 2001 through 2010 with a minimal improvement to 2.5-3.0 million jobs annually in recent years.

The weakened entrepreneurial sector has resulted in an annual job creation gap of 1.5 million jobs compared to the 1990s.

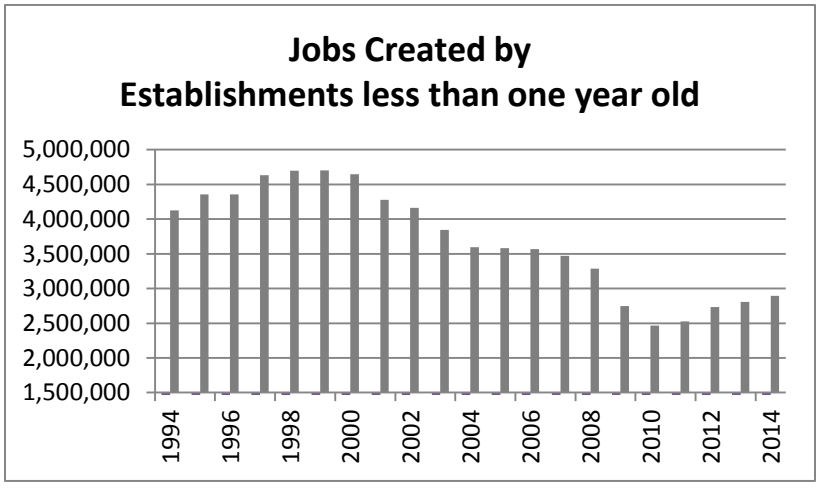


Figure 4. U.S. Start-Ups Job Created 1994-2014; Longitudinal Business Database

The negative impact of a weakened entrepreneurial sector on national job creation is evident. The effect on Charlotte will be examined in a later section.

Comparative Measures

The Charlotte metro area continues to grow rapidly as it attracts new residents and business relocations. This report examines the entrepreneurial components of Charlotte's boom by assessing business start-up activity, high growth company outcomes, and by surveying the community's growth entrepreneurs.

Charlotte Innovation Sector

The Charlotte Entrepreneur Growth Report examines the innovation-based, high growth entrepreneurial sector. There is no standard definition for the industries that compose this sector. Some studies emphasize tech industries while other studies consider creative class job categories. Regardless, it is difficult to measure this sector statistically.

The report authors in collaboration with the Charlotte Regional Fund for Entrepreneurs developed a Charlotte-specific definition by selecting relevant industries. Appendix C includes the specific industries including the NAICS codes used for government data collection. The broad industry sectors are listed below.

Advanced Manufacturing
Energy
Motorsports
Business Services
Financial Technology
Information Technology
e-commerce
Biotechnology
Healthcare (Medical and Med Devices)
Entertainment and Arts

The U.S. Census County Business Patterns provides detailed industry data annually for employment, payroll, and number of establishments. The Charlotte MSA data can be used to measure the target industry outcomes year-by-year. The most current information available is for 2013 so that data is compared to 2012 in this report.

As shown in the following table, total Charlotte MSA 2013 employment was 938,684 in 55,460 establishments. The CEGR target industries listed above employed 74,113 representing 7.9% of the metro workers. CEGR target industries included 10.7% of the metro establishments. The target industries pay per employee of $71,707 is **48% higher than the metro average pay**, and their employment grew at twice the rate of overall Charlotte employment.

Table 27. Charlotte Innovation Industries Profile; U.S. Census County Business Patterns

Charlotte MSA	Establishments	Employment	Pay per Empl.
2013			
All Industries	55,460	938,684	$48,554
Target Industries (CEGR)	5,942	74,113	$71,707
Target % of Total	10.7%	7.9%	148%
2013 Growth over 2012			
All Industries	1.5%	3.6%	2.1%
Target Industries (CEGR)	2.1%	7.5%	0.6%

The information in the table includes companies regardless of age so this is not a measure of the entrepreneurial sector. It does, however, demonstrate the tremendous economic leverage in these innovation-based industries.

A look at the component industry sectors provides insight into growth patterns and compensation variability by industry. Additional industry details are in Appendix D.

Table 28. Charlotte Innovation Industries Detail; U.S. Census County Business Patterns

Target Industries Charlotte MSA	2013 Establ.	2013 Employ.	Avg Pay	2013 H/(L) 2012 Establ.	2013 H/(L) 2012 Employ.
Advanced Manufacturing	118	5,051	$56,499	5	306
Biotechnology	11	1,271	$37,420	(3)	207
Business Services	3,423	31,245	$65,588	60	2,217
e-commerce	231	1,590	$38,363	15	63
Energy	113	NR	NR	23	NR
Entertainment and Arts	154	1,987	$33,335	11	589
Financial Technology	37	450	$47,002	2	153
Healthcare (Med & Devices)	175	2,898	$70,214	(6)	(144)
Information Technology	1,559	26,474	$86,805	20	1,565
Motorsports	121	3,147	$89,683	(5)	229
Total Target Industries	5,942	74,113	$71,707	122	5,185

Note: Energy sector data reporting is limited to avoid disclosure of specific companies (such as Duke Energy).

Business Services and Information Technology are the dominant industries in terms of establishments and employment. These industries also are the largest participants in the target company survey reported earlier in this report.

Compensation varies widely across the target industries with the highest levels in motorsports and information technology and lowest rates in entertainment and arts.

The change from 2012 to 2013 is especially interesting from a growth entrepreneur perspective. The overall result is an increase of 122 establishments primarily in business services, energy, information technology, and e-commerce. Conversely, the number of establishments declined in biotech, motorsports, and healthcare.

Overall Start-up Activity

The Charlotte Entrepreneur Growth Report focuses on the ventures that have the greatest impact on employment and wealth creation. It is well-documented that fast-growing young companies, often known as *gazelles*, are the most significant job creators in the U.S. economy. Fast growth is generally defined as 20-25% annual revenue growth for multiple years.

However, existing data sources do not measure these most desirable entrepreneurial companies. A newly published index by the Kauffman Foundation measures broad-based entrepreneurial activity. *The Kauffman Index Startup Activity* ranks forty large metros in 2015 based on three metrics:

- Rate of new entrepreneurs—percent of adult population that became entrepreneurs in a given month calculated as a 3-year moving average;
- Opportunity share of new entrepreneurs—percent of new entrepreneurs who were not unemployed before starting their business calculated as a 5-year moving average;
- Startup density—number of startup firms per 100,000 resident population defining a startup as firms less than one-year old employing at least one person besides the owner.

Future editions of the Kauffman Index of Entrepreneurship will be improved with additional variables such as venture growth, density of scale-ups, and survival rates.

The Kauffman Index includes Charlotte and all of the CEGR national benchmarks except Research Triangle. The Index uses data only for the forty largest MSAs which excludes Durham and Raleigh.

The Kauffman author confirmed that it is not possible for CEGR to independently create Research Triangle data that would be meaningful.

Table 29. Kauffman Index Startup Activity by Metro

Metro	Rank 2015	Rank 2014	2011-14 Average Rate of New Ent	2011-14 Average Opport Share	2011-14 Average Startup Density
Charlotte	25	28	0.0032	0.7115	147.8
National Benchmarks					
Atlanta	13	18	0.0043	0.6915	154.8
Austin	1	2	0.0049	0.8445	178.1
Kansas City	29	26	0.0028	0.7678	130.6
Nashville	24	20	0.0047	0.5385	130.5
San Francisco	6	5	0.0043	0.8198	159.9
Tampa	20	15	0.0033	0.7333	174.4
San Jose, CA	3	1	0.0042	0.8800	165.0

The Kauffman Index ranks Charlotte below average among the forty largest metro areas, although the ranking improved to 25 in 2015. Compared to this report's benchmark metros, Charlotte is similar to Kansas City. The benchmark metros include Austin which is the top-ranked in 2015 as well as highly ranked San Francisco and Atlanta. The table above also includes San Jose since it was top-ranked in 2014.

The table includes calculated average results for the three index components for 2011-2014. For each component, a higher value is better. Charlotte's *rate of new entrepreneurs* of 0.0032 indicates that this measure of broad entrepreneurial engagement is lower than any benchmark except Kansas City. Austin and Nashville lead in broad entrepreneurial action.

Charlotte's 0.7115 rate of *opportunity share of new entrepreneurs* is in the middle—better than Atlanta and Nashville, similar to Kansas City and Tampa, worse than Austin and San Francisco. In the opinion of the CEGR author, this measure is of questionable value. It attempts to measure opportunity entrepreneurship (higher potential) versus necessity entrepreneurship (low potential).

The *startup density* is most important from the CEGR perspective. It measures the number of new firms less than one year old and employing at least one person besides the owner. Charlotte's value of 147.8 means that for every 100,000 people living in the Charlotte MSA, there were 147.8 employer startups less than one year old per year. Charlotte performed better than Kansas City and Nashville, slightly below Atlanta and San Francisco, and considerably worse than Austin and Tampa.

Finally, consider startup density from two perspectives. The graph below uses 1991-2000 as the base period for Charlotte and the benchmark metros. The average metro startup densities for time periods through 2012 are compared to each metro's average during the base period. Charlotte and all benchmarks experienced a substantial decline in startups consistent with national trends previously described. For the most recent time period (2011-2012), Tampa has declined the least with startup density at 76% of its 1991-2000 results. Charlotte's decline to 68% of the base period is in the middle of the benchmark metros: worse than Austin and San Francisco; better than Atlanta, Kansas City, and Nashville. Startup business formation has declined in the long-term for the United States; Charlotte and its benchmarks exhibit the same negative trend.

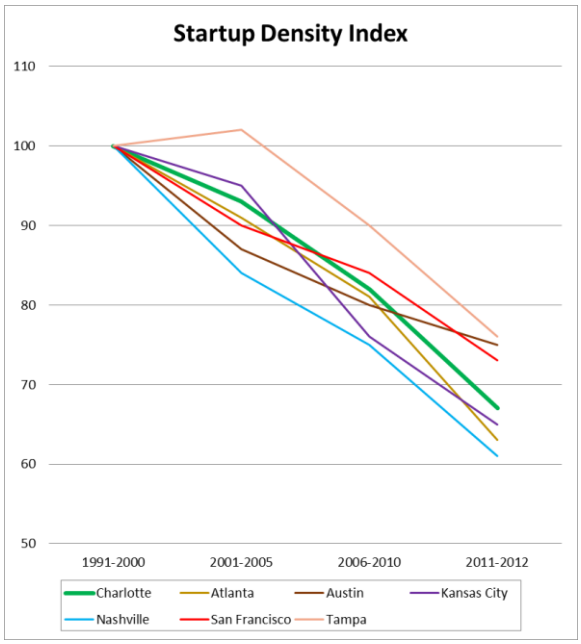


Figure 5. Kauffman Startup Density Index by Metro 1991-2012

The other perspective concerns the absolute level of startup density for Charlotte in comparison to the benchmark metros. Is Charlotte more or less entrepreneurial?

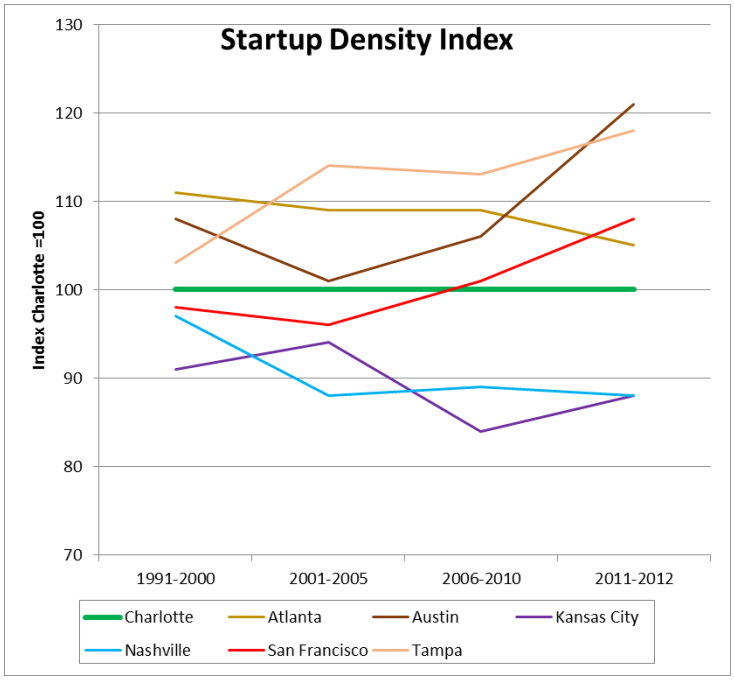


Figure 6. Kauffman Startup Density Benchmark Metros Index to Charlotte 1991-2012

The graph above compares startup density of the benchmark metros indexed to Charlotte in each of four time periods beginning with 1991-2000 and ending with 2011-2012. Atlanta, Austin, and Tampa have produced more startups per 100,000 population than Charlotte consistently since 1991. Kansas City and Nashville have consistently underperformed Charlotte.

Inc. 5000 Fastest Growing Private Companies

Inc. magazine has published a ranking of the fastest growing private companies, based on revenue growth, for many years. Originally the top 500 companies, the ranking expanded to the top 5000 beginning in 2007. Companies include early-stage and long-established firms.

Since participation is voluntary, the rankings do not include every fast-growing firm. However, it is reasonable to assume that participation is similar across the country allowing comparison among metro areas. With 318 million Americans in 2014, the national average is 1.6 "top 500" companies per million and 15.7 "top 5000" companies per million.

Table 30. Inc. 5000 2015 Metro Comparison

Inc. Top 5000 Companies 2015 Ranking	Companies		Companies per mil. Pop.	
	Top 500	Top 5000	Top 500	Top 5000
Charlotte	4	64	1.7	26.9
National Benchmarks				
Atlanta	28	188	5.0	33.5
Austin	11	90	5.7	46.3
Kansas City	4	40	1.9	19.3
Nashville	0	53	0.0	29.6
Research Triangle	6	48	2.9	23.1
San Francisco	32	148	7.0	32.2
Tampa	12	73	4.1	25.0
Carolinas Metros				
Triad	0	15	0.0	9.2
Charleston	4	23	5.5	31.6
Columbia	0	7	0.0	7.5
Greenville-Spartanburg	2	19	1.4	13.5
Total U.S.	500	5000	1.6	15.7

In the 2015 rankings, Charlotte's top 500 results of four companies yields 1.7 per million residents which is essentially on the national average of 1.6 top 500 companies per million. Among the seven national benchmark metros, San Francisco was the strongest performer (per capita) followed closely by Austin and Atlanta. Nashville with zero top 500 companies was the one benchmark metro below Charlotte.

The top 5000 data is a large enough sample to enable a more meaningful comparison of metro productivity measured by fast-growing private firms. These "gazelles" are often the companies that generate significant jobs and future wealth. Charlotte placed 64 companies yielding 26.9 per million residents, considerably better than the 15.7 national average.

Charlotte outpaced three (Kansas City, Research Triangle, and Tampa) of seven national benchmark metros as well as all Carolinas metros except Charleston. Austin's 46.3 top 5000 companies per million residents substantially exceeded Charlotte and all benchmark metro.

It is worth noting that Charleston performed strongly with higher per capita results than Charlotte or any of the Carolinas metros.

The Inc. 5000 rankings enable a deeper understanding of Charlotte metro high-growth dynamics in terms of industry, geography, and top performing companies. Since the 2007 inception, Charlotte metro has placed 189 unique companies on the list. This includes 107 companies that have multiple

appearances and 23 companies that were newly listed in 2015. An examination of these companies offers insight into the Charlotte high-growth scene.

It is noteworthy that not all high-growth firms are young (defined as 15 years old or less). In 2015, 69% of Charlotte companies on the 5000 list were founded since 2000 while 31% were older.

All ranked companies are categorized into one of 25 industries. This enables a comparison of hot industry sectors for Charlotte and benchmark cities. It also enables a comparison of industry mix shift over time. Nationally, five industries account for 47% of the 5000 fastest growing companies in 2015: IT Services, Business Products & Services, Advertising & Marketing, Health, and Software. An additional eight industries each contribute less than 2%.

How does Charlotte industry mix compare to the national average mix, excluding the eight smaller share industries?

Table 31. Inc. 5000 2015 Charlotte Industry Representation

Stronger (150%+)	Average (51%-150%)	Weaker (0-50%)
Human Resources	Real Estate	Retail
Manufacturing	Construction	Advertising & Marketing
Logistics & Transportation	Software	Consumer Products & Services*
Financial Services	IT Services	Government Services*
Food & Beverage	Business Products & Services	Telecommunications*
	Energy	
	Health	

*No Charlotte companies in 2015.

Among the smaller share industries, Charlotte is strong in Computer Hardware, Travel & Hospitality, and Insurance. Charlotte had no fast-growing companies in Education, Engineering, Environmental Services, Media, or Security. A complete listing comparing Charlotte industry mix to benchmarks and total U.S. is in Appendix E.

Key conclusions include:

- Charlotte strengths in Manufacturing, Logistics & Transportation, and Financial Services are consistent with the region's known industry clusters.
- The Human Resources strength may result from staffing firms prospering in proximity to Charlotte's large companies; Atlanta and Research Triangle are also strong in this sector.
- Although Energy is included in the average grouping, it is based on only one fast-growing company in 2015 and no energy companies from 2007-2014; clearly the Charlotte energy cluster is not leading to high-growth private companies.
- Charlotte's weak performance in Advertising & Marketing is difficult to explain in contrast to its ranking as a top industry in Research Triangle and an average industry in Atlanta and Nashville.
- Although Charlotte's Health industry barely made it to average concentration in 2015, it has been more strongly represented in previous years.

Charlotte industry mix was analyzed over time to identify emerging industry strengths among fast-growing private firms. The recent 2011-2015 Inc. 5000 companies were compared to the 2007-2010 companies.

Industry sectors that contributed a significantly changed percentage to Charlotte's fastest growing firms are summarized below.

AccruePartners, a woman-owned staffing firm headquartered in Charlotte, was recognized with its seventh Inc. 5000 ranking in 2015. It is a leading example of Charlotte's fast-growing Human Resources firms.

Table 32. Inc. 5000 Charlotte Industry Mix Shift 2007-10 vs. 2011-15

Increased Share			Decreased Share		
Industry	**2007-10**	**2011-15**	**Industry**	**2007-10**	**2011-15**
IT Services	5.8%	13.7%	Construction	15.7%	6.3%
Human Resources	6.8	12.1	Advertising & Mktg	13.6	5.5
Financial Services	1.0	7.0	Retail	3.1	0.8
Software	0.5	6.6	Consulting	2.1	0.0
Food & Beverage	1.6	3.5			
Insurance	0.5	2.3			
Travel & Hospitality	0.0	1.6			

The combined Charlotte sectors of IT Services and Software grew dramatically from 6.3% of the fastest-growing firms in 2007-10 to 20.3% in 2011-15. The rapid growth in Financial Services importance is noteworthy since it is consistent with the emerging focus on FinTech entrepreneurship in Charlotte.

The decline in Construction importance is likely a reflection of underlying economic cycles. It is less obvious why Advertising and Marketing success declined in Charlotte since it continues to be a major contributor to fast-growing firms nationally and in nearby benchmark metros.

Eight industry sectors have each had minimal (<2%) representation among Charlotte's fastest growing firms in throughout 2007-2015 as shown below.

Computer Hardware
Education
Energy
Engineering (no companies)
Environmental Services
Government Services
Telecommunications
Travel & Hospitality

The change in contribution among the larger industry sectors can be visualized in Figure 7.

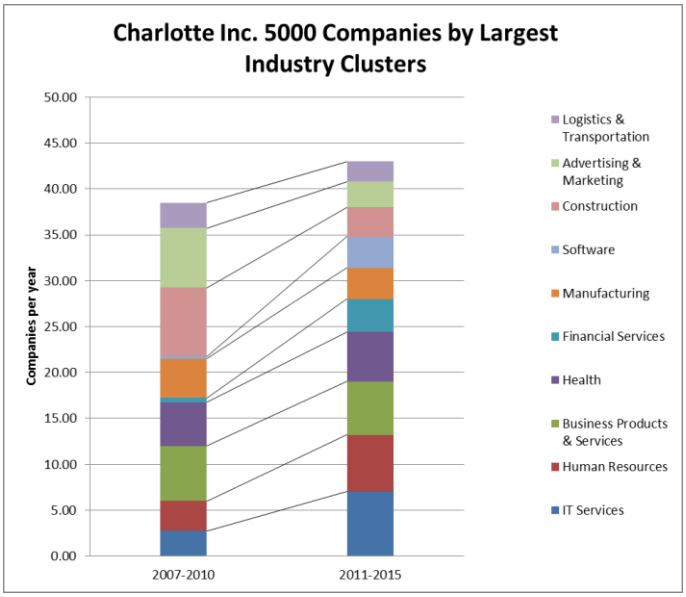


Figure 7. Inc. 5000 Charlotte Industry Mix Shift 2007-10 vs. 2011-15

The Inc. 5000 data offers a valuable insight into a change within the Charlotte metro area. The fastest growing companies are increasingly found in Mecklenburg County as shown in Appendix G.

These Charlotte USA counties have not produced a company on the Inc. 5000 ranking since its 2007 inception: Alexander, Anson, Lincoln, Stanly, Chester SC, Chesterfield SC. Additionally, Cleveland and Gaston have not been on the list since 2007-2010.

Finally, what can be learned about the 189 individual companies in Charlotte USA that have qualified for the Inc. 5000 list since its 2007 inception? 82 of the companies achieved the recognition in only one year. This "one and done" outcome was especially noticeable in Advertising & Marketing and in Manufacturing; possibly due to the volatile nature of each industry.

Only eight companies have made six or more appearances. These consistently fast-growing, diverse companies are highlighted below. Only three of these high performing companies are young (founded since 2000). Their business models vary widely: revenue per employee ranges from about $50K at Bojangles and Carolina Tree Care to $3.2 million at Transportation Insight. This report edition includes an in-depth profile of AccruePartners.

Table 33. Inc. 5000 Frequently Ranked Charlotte Companies

Company	County	Industry	Founded	# of lists	Rev. $mil (Final Yr)	Employ
Carolina Tree Care	Cabarrus	Construction	1987	8	$21 (2013)	388
AccruePartners	Mecklenburg	Human Resources	2002	7	$21 (2014)	47
Transportation Insight	Catawba	Logistics & Transportation	1999	6	$808 (2014)	250
AmWins Group	Mecklenburg	Insurance	1998	6	$725 (2014)	3380
Bojangles	Mecklenburg	Food & Beverage	1977	6	$430 (2014)	8381
SnapAV	Mecklenburg	Manufacturing	2005	6	$166 (2014)	185
MedExpress Pharmacy	Rowan	Health	1995	6	$33 (2013)	26
T2 International	Iredell	Business Products & Svcs	2000	6	$7 (2012)	25

An additional 22 companies have five appearances on the Inc. 5000 list in the nine years since it began in 2007. This consistent rapid growth is important for regional economic vitality and is worth additional research to understand what has made it possible for these exemplar companies.

One additional observation concerning Inc.'s ranking pertains to a newly published ranking of the fifty fastest-growing women-led firms. Charlotte Metro is represented by WDS of Lake Wylie, SC at #13 on the list (led by Jennifer Maier). The Carolinas have a strong showing with two additional South Carolina firms (Mercom, Quality Business Solutions) and a Wilmington, North Carolina company (Megacorp Logistics). Each of these four firms has been founded since 2000.

Fast 50 Companies

An additional perspective on growth entrepreneurs is available through analysis of the Fast 50 list created annually by the *Charlotte Business Journal*. It depends on voluntary participation by privately held companies with $1+ million revenue and headquartered in the Charlotte area. It may miss fast-growing companies that are unaware or choose not to participate. Companies on the Fast 50 list include many that fit the focus of CEGR. However, the FAST 50 list is based on revenue growth without regard to company age or industry sector.

The Fast 50 lists for 2011 through 2014 include 89 unique companies with 78% located in Mecklenburg County. Applying the CEGR target company survey criteria (innovation industries, founded 2000-2015, location Charlotte USA) list yields 35 Fast 50 companies that are comparable. The concentration in Mecklenburg County is high (86%) among this group. The mix by industry is shown in Figure 8 below.

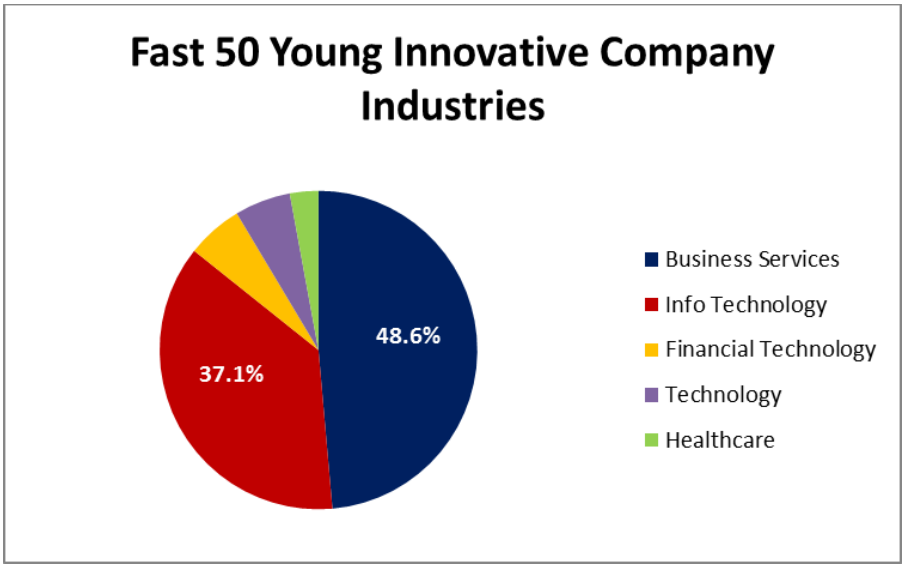


Figure 8. High Growth Charlotte Companies by Industry, CBJ Fast 50

The most recent 2014 Fast 50 list identifies 21 young companies (start 2000-2011) in CEGR industries. These companies report 3,611 employees in 2014. It is noteworthy that this employment number exceeds the estimated 2,350 employment of the 248 respondents to the CEGR target company survey. It confirms the substantial economic impact of these young, innovative firms. Additionally, the lack of a young healthcare company on the Fast 50 list is consistent with low healthcare representation among Charlotte firms on the Inc. 5000 list.

Table 34. High Growth Companies by Industry; CBJ Fast 50

CEGR Industries	Businesses	Employ	Emp/Company
Business Services	10	2994	299
Financial Technology	2	331	166
Healthcare	0	0	0
Info Technology	8	256	32
Technology	1	30	30
Total	21	3611	172

Deloitte Technology Fast 500

Deloitte annually publishes a list of the 500 fastest growing technology firms in North America. The ranking is based on revenue growth for technology, media, telecommunications, life sciences, and clean technology public and private companies. Eligible companies meet certain conditions including primary focus on products with intellectual property content.

AvidXchange, founded in 2000, serves over 5,000 clients with FinTech software. Employment exceeds 420 people including over 200 added in the last year. In addition to the Technology Fast 500 recognition, it has five consecutive appearances on the Inc. 5000.

Technology Fast 500 companies have included many innovation leaders and substantial value creation outcomes. Considering the metro Charlotte population compared to North America, Charlotte's fair share is 0.7% or 3.5 companies on the Fast 500 list.

In 2014, two Charlotte companies, 3D Systems and AvidXchange, qualified. The table below illustrates the overwhelming presence of San Francisco and the strong showings of Atlanta, Austin, and Research Triangle. The table includes the number of Fast 500 companies per capita which can be compared to the U.S. and Canada average of 1.4 companies per 100,000.

The conclusion is straightforward: Charlotte produces few significant technology firms.

Table 35. Deloitte Technology Fast 500 Companies by Metro, 2009-2014

Deloitte Technology Fast 500 by MSA	2009-2013	2014	Total 2009-2014	Annual per 100K pop.
Charlotte	**1**	**2**	**3**	**0.2**
National Benchmarks				
Atlanta	49	12	61	1.8
Austin	31	14	45	4.0
Kansas City	6	0	6	0.5
Nashville	9	0	9	0.9
Research Triangle*	22	7	29	2.4
San Francisco	259	61	320	11.8
Tampa	4	1	5	0.3
Carolinas Metros				
Triad*	4	0	4	0.4
Charleston	1	1	2	0.5
Columbia*	1	0	1	0.2
Greenville-Spartanburg*	0	0	0	0.0
Total U.S. & Canada	2500	500	3000	1.4

*Metro data for CSA

Funding

Innovation-driven entrepreneurs build their businesses either through "bootstrapping" or through equity capital investment from a combination of family and friends, angel investors, crowd funding, and venture capitalists. In general, bank borrowing is not a significant factor in funding early stage ventures. The Targeted Company Survey data confirms this for Charlotte as described in an earlier section. Access to debt financing and bank lending becomes relevant at the growth stage for many ventures. Ventures that demonstrate attractive financial characteristics may access private equity to fund rapid expansion.

It is difficult to access funding data for the young, growth companies addressed in this report. Private companies do not report their self-funding (bootstrapping) or investments received from individuals (family, friends, solo or small group angels).

In addition to private sector funding, this section also examines several quasi-public sources relevant to early-stage ventures.

NC IDEA Funding

The NC IDEA program began in 2006 to identify and support promising North Carolina emerging companies with the potential to grow rapidly. The program provides grants (typically $50,000) on a competitive basis in two selection cycles annually. From inception through spring 2015, NC IDEA has made 98 awards.

The program does not generally fund biotech, pharma, and consulting businesses or any lifestyle business. It focuses primarily on info technology, medical devices/diagnostics, materials science, semiconductor, and cleantech. Winning proposals generally are capital efficient and have a relatively rapid path to revenue.

Although the $50,000 grant is meaningful to a young company, NC IDEA value may be found more in the feedback, coaching, and visibility that participating companies receive. The selection process engages a broad array of investors, entrepreneurs, and advisors. In early 2015, NC IDEA reported that 75% of recipients are in business and that recipients have raised over $68 million equity financing.

Thus, NC IDEA grants are an excellent early identifier of promising high-growth, innovation-driven ventures. As shown below, only eight Charlotte region companies have won NC IDEA grants since inception. In 2014 and spring 2015, there were no Charlotte winners.

Table 36. NC IDEA Awards by NC Metro, 2006-2015

NC IDEA Awards	Charlotte	Research Triangle	Triad	Other	Total NC
Geographic Mix:					
2006-2010	6%	86%	4%	4%	100%
2011-2013	17	80	3	0	100
2014-2015 (spring)	0	94	6	0	100
Total 2006-2015	8%	86%	4%	2%	100%
2006-2015 award count	8	84	4	2	98

The weak Charlotte performance raises the question: Is it lack of participation or are Charlotte entrepreneurs not competitive with Research Triangle entrants?

NC IDEA shared information for recent years with the CEGR authors. During 2012-2014, about 135 applications were submitted each cycle (some companies applied multiple times). Charlotte metro accounted for an average of 31 submissions each spring and each fall. On average Charlotte supplied 23% of the state's submissions. During the 2012-2014 period, Charlotte companies won 2 grants for a 1.1% success rate. The rest of the state won 29 grants for a 4.7% success rate.

The Charlotte problem, therefore, is not lack of applications. Why are Charlotte companies not winning? The CEGR authors examined how many applications made it through the initial screen to semi-finalist status. In the three most recent cycles (2014 and 2015 spring), NC IDEA averaged about 23 semi-finalists per cycle of which 4 (17%) were from Charlotte. None of these were selected as winners.

The overall conclusion: Charlotte must improve the quality of its NC IDEA applications. It is unclear if this is a fundamental issue of venture quality or, simply, presentation quality.

Innovation Fund North Carolina

The Kauffman Foundation piloted a fund through four community colleges nationally including Catawba Valley Community College in Hickory. The fund, launched in 2013, serves North Carolina with seed stage funding for technology companies. The fund reported 17 deals (grants and non-recourse loans) awarded in three cycles through January 2015. Charlotte companies participated as summarized below.

Table 37. Innovation Fund NC by NC Metro, 2013-2015

North Carolina Region	Deals	Funding ($000s)
Charlotte	4	$200
Research Triangle	4	$100
Triad	2	$50
Other NC	7	$225
Total NC	17	$575

Biotech Sector

The state of North Carolina has a long-standing commitment to develop the biotech sector. This includes a variety of grant and loan programs administered by the NC Biotechnology Center. These funds primarily benefit regions with early stage biotech ventures and academic programs, especially those associated with medical schools. The table below summarizes total reported NC Biotechnology Center spending by region.

Table 38. NC Biotechnology Center Funding by NC Metro, 2012-2015

Metro ($000s	2012	2013	2014	2015 (6 mo)	Cumul %
Charlotte	$285	$251	$103	$6	2.2%
Greensboro	$837	$472	$720	$429	8.5
Raleigh	$6,248	$6,081	$4,667	$3,406	70.7
All Other	$2,142	$1,815	$1,041	$378	18.6
Total NC	$9,512	$8,621	$6,531	$4,218	100.0%

The reported spending understates the Charlotte region by a modest, but unknown amount. NC Biotechnology Center grants to universities that conduct research at the North Carolina Research Center in Kannapolis are reported at the home location of the university.

The Charlotte region received only 2% of the statewide biotech funding since 2012 and its share declined from 2012 to 2015.

Angel Investors

The Angel Capital Association (www.angelcapitalassociation.org) defines an angel investor as "…a high net-worth individual who invests his or her own money in start-up companies in exchange for an equity share of the businesses." Angel investors act through angel funds, angel groups, and as individuals. The Angel Capital Association estimated that 298,000 angels invested $24.8 billion in 71,000 deals in 2013. Their review of research concludes that the three components include:

- Informal investors—1,000,000
- Active angels—300,000
- Investors in angel groups—20,000.

The Center for Venture Research at the University of New Hampshire provides an annual report on U.S. angel investing. For 2014, they report total angel investments of $24.1 billion and 316,000 active investors.

It is difficult to obtain reliable angel investment information by metro area. A promising source is PitchBook which proactively collects information on all types of investments. Unfortunately, the cost to access its data is beyond the resources of this report. For those interested in additional details, information on deal size and valuation is available through the Angel Resource Institute's Halo Report.

This report considers angel group investing in Charlotte and other cities within 250 miles. This does not include investments by solo angels and private angel groups. It does include the Charlotte Angel Fund, the North Carolina Inception Micro Angel Funds (IMAF), and regional funds identified through the Angel Capital Association directory (see Appendix F).

Inception Micro Angel Funds

The Inception Micro Angel Funds are an investment initiative sponsored by the North Carolina SBTDC. It began with a pilot program in the Triad around 2007 and resulted in seven funds located across the state. Some continue to invest in 2015 while others have spawned follow-on funds such as the Charlotte Angel Fund.

A review of IMAF public portfolio disclosures identified 36 companies that received an equity investment from one or more of the funds. Three companies attracted investments from three IMAF funds; four companies received investments from two IMAF funds. The remaining 29 companies are identified as receiving an investment from only one IMAF entity (although some received investments from other angel groups).

Overall Angel Fund Activity

Twelve angel funds were identified in the Carolinas, Atlanta, and Savannah that publicly reported investments. The report authors identified company locations but were not able to identify investment dates for all deals. Thus, the following observations are for angel investments within 250 miles of Charlotte during a time period beginning within the last five to ten years.

The research identified 225 investments in 178 unique companies as shown in Table 39. Only six companies are in the Charlotte metro area. 42 companies are in the Research Triangle. The six Charlotte companies account for only 9% of the North Carolina companies that received publicly reported angel investments. The Charlotte outcome was slightly below Charleston and substantially below Greenville-Spartanburg or the Triad.

Table 39. Angel Investing Analysis Carolinas Metros

Angel Investments	Companies Receiving Investments*			Deals
Metro	12 Funds	IMAF	Total	Total
Charlotte	3	5	6	9
Research Triangle	32	13	42	68
Triad	4	7	10	15
Other NC	3	6	8	12
Total NC	42	31	66	104
Charleston	6		6	6
Columbia	4		4	4
Greenville-Spartanburg	14	1	14	17
Total SC	24	1	24	27
Atlanta	34	1	35	38
All Other	49	4	53	56
Total	149	37	178	225

**12 Funds* refers to non-IMAF funds within 250 miles of Charlotte. Total is number of companies net of duplicates due to investments from both IMAF and 12 Funds.

Charlotte Angel Investing

Charlotte companies have not participated significantly in the publicly reported regional angel investments. The causal factors could include: 1) lack of qualified Charlotte ventures, 2) lack of organized Charlotte angel investors.

Since 2008, the publicly visible Charlotte angel scene has included IMAF Charlotte (investing through 2013) followed by the Charlotte Angel Fund beginning in 2014. Both funds have had modest capital to invest. In August 2015, the Charlotte Angel Fund (CAF) shared the information which follows.

CAF has raised $1,150,000 capital from 45 members since its 2014 inception. The fund has made four investments ($275,000 total plus $82,000 member add-ons) through September 2015. Three are located in Research Triangle and one is in Greensboro.

The magnitude of CAF is modest for a metro area of Charlotte's size and wealth. It is not known why Charlotte has not developed a larger public angel community. There are numerous private angels operating as individuals or in small, informal groups.

Although CAF is modest in size, it is actively making investments. None have been in Charlotte to-date. Is this because of lack of deal flow or lack of deals that match CAF investment criteria?

Table 40. Charlotte Angel Fund Deals and Presentations, 2014-2015

CAF Deal Dynamics	2014	Jan-Jun 2015	Total
Company presentations at member meetings	32	21	53
Investments	4	0	4
Investments % of presentations	13%	0%	9%
Presentations by Charlotte companies	12	3	15
Charlotte % of total presentations	38%	14%	28%
Charlotte investments	0	0	0

The Charlotte Angel Fund membership has heard 53 company presentations since the Fund's inception in 2014. 28% of the presentations have been made by Charlotte entrepreneurs. Clearly, CAF has Charlotte deal flow. None of the Charlotte presentations resulted in an investment to-date implying that Charlotte ventures are less attractive than those found elsewhere in North Carolina.

Venture Capital

While angels invest their personal funds, venture capitalists are a class of institutional investors that invest on behalf of endowments, pension funds, and other sources of risk capital. Although some individuals and some firms self-define as venture capitalists ("VCs"), this report only includes venture capital firms that report investments through the PricewaterhouseCoopers/National Venture Capital Association MoneyTree™ Report based on data from Thomson Reuters.

Venture capital investment is almost non-existent in Charlotte. As the following table illustrates, very few Charlotte firms attract venture capital investment. During the four years 2011-2014, there were 14 total VC deals for Charlotte metro firms totaling $30 million. The table uses annual averages to eliminate year-to-year variability. San Francisco is the well-documented center of the venture capital universe and is not comparable to any other metro.

Whether the comparison is number of deals or the total dollar value of the deals, Charlotte results are considerably below the weakest benchmark metros of Kansas City and Tampa. Based on dollars invested, Charlotte performs below all of the Carolinas metros except Columbia. The comparisons are even worse using investment per capita. Charlotte's $3 is 1% of Austin's per capita investment and less than 3% of Research Triangle's results.

Passport is a Charlotte venture capital success story closing a $6 million Series A in 2013 led by Grotech Ventures and Relevance Capital.

Among the national benchmarks, Atlanta represents the midpoint for venture capital investment per capita. Charlotte would have an **additional $158 million** of annual VC investment if it could perform at the same rate as Atlanta.

Table 41. Venture Capital by Metro, 2011-2014

Venture Capital 2011-2014 Annual Averages	Deals	Total Invested ($mil)	Invest $ % of U.S.	Invest $ per capita
Charlotte	4	$8	0.02%	$3
National Benchmarks				
Atlanta	55	$391	1.15%	$70
Austin	97	$607	1.79%	$312
Kansas City	18	$54	0.16%	$26
Nashville	54	$120	0.35%	$67
Research Triangle	41	$246	0.73%	$119
San Francisco	900	$10,320	30.42%	$2,246
Tampa	9	$52	0.15%	$18
Carolinas Metros				
Triad	2	$18	0.05%	$11
Charleston	3	$22	0.06%	$30
Columbia*	1	$0	0.00%	$0
Greenville-Spartanburg*	3	$34	0.10%	$24
Total U.S.	4042	$33,921	100.00%	$106

Source: PwC/NVCA MoneyTree™ Report, Data: Thomson Reuters.

The paucity of Charlotte venture capital activity leaves little reason for additional analysis. Deal stage and total results by year are included below to add understanding of venture capital dynamics.

Table 42. Venture Capital Charlotte vs. Carolinas and Total U.S., 2011-2014

Venture Capital 2011-2014	2011	2012	2013	2014
Total Deals				
Charlotte Metro	2	5	1	6
Total NC & SC	52	39	65	61
Total U.S.	3,937	3,858	3,995	4,378
Total Invested ($Mil.)				
Charlotte Metro	$4	$6	$2	$18
Total NC & SC	$364	$220	$345	$396
Total U.S.	$29,462	$27,323	$29,365	$49,532
Charlotte % of Carolinas				
Deals	3.8%	12.8%	1.5%	9.8%
$ Invested	1.0	2.9%	0.7	4.5

It is worth noting that the long-term trend in venture capital nationally has been toward later stages and larger deal sizes. The net impact of this decades-long shift has been to make angel investors the primary external source for seed stage funding of new ventures. To illustrate the current mix, consider the 2011-2014 annual deal averages for Charlotte and national benchmark metros. Excluding San Francisco, the best metros average only 2 to 3 seed stage venture capital deals per year. Therefore, other funding sources, such as angels, must be available if entrepreneurs are to establish ventures that have the possibility of attracting venture capital at the early stage and later. Charlotte's weak early stage deal results suggest that it lacks ventures that are demonstrating seed stage success, possibly due to insufficient angel activity in Charlotte.

Table 43. Venture Capital by State by Metro, 2011-2014

Venture Capital 2011-2014 Annual Deal Averages	Seed Stage	Early Stage	Expansion Stage	Later Stage
Charlotte Metro	0.5	1.0	1.3	0.8
National Benchmarks				
Atlanta	1.8	21.5	15.3	16.5
Austin	3.3	46.8	25.8	20.8
Kansas City	2.8	9.5	4.0	1.8
Nashville	2.8	26.8	14.8	10.0
Research Triangle	3.5	12.3	11.0	14.3
San Francisco	72.0	469.0	227.0	132.0
Tampa	-	2.0	3.3	3.5

In summary, Charlotte is the weakest metro area in terms of venture capital. Although entrepreneurs may disagree, it is likely that this is due to the limited number of ventures that meet VC criteria.

A final note concerns an investment announced in September 2015. Charlotte-based AvidXchange disclosed a $225 million investment led by Bain Capital Ventures. If this had occurred in 2014, it would have increased Charlotte's 2011-2014 annual average VC investment from $8 to $64 million. This would have moved Charlotte slightly

The AvidXchange investment validates the potential of this customer-focused, high growth venture. The strength of the company's leadership is evident in the quality of new board members including Brad Feld, co-founder of TechStars (Boulder, CO).

ahead of Kansas City and Tampa but still substantially below other national benchmark metros. Nonetheless, the AvidXchange investment is an encouraging demonstration of the entrepreneurial potential in Charlotte's FinTech sector.

Private Equity

Venture capital is a component of the broader investment class of private equity. However, "private equity" is generally used to refer to larger scale, later stage funding than investments generally considered "venture capital". Private equity funding has been vitally important to several larger growth companies that this report considers young (15 years old or less). For instance, Peak 10, Inc., a high growth company founded in 2000, was sold in 2014 in a private equity deal valued at $700 million.

Peak 10's double-digit annual growth and industry-leading financial results attracted successive private equity transactions that, in turn, fueled additional expansion.

This report does not address private equity due limited data availability and private equity deal complexity.

Emerging Funding Models

The JOBS Act and state legislation have enabled new funding sources for startup and early stage ventures. An early example is the 506c Public Crowd Fund associated with Queen City FinTech and RevTech Lab. It raised $160,000 in 2014 and $190,000 in 2015 for investment in accelerator participants. These new funding models may become substantial in future years and should be included in future editions of this report.

Exits

Liquidity events (mergers and acquisitions, initial public offerings) among the CEGR focus sector are a topic of interest for future reports.

Charlotte Innovation and Entrepreneurial Ecosystem

Mapping the Ecosystem

The City of Charlotte and Foundation For The Carolinas sponsored a 2013 in-depth analysis of the region's entrepreneurial ecosystem in support of the Charlotte Regional Fund for Entrepreneurship. The Charlotte innovation and entrepreneur ecosystem was thoroughly documented in the resulting *Mapping the Ecosystem* report.

The report identified ecosystem gaps and offered a summary of findings. Selected findings relate to topics addressed in this Charlotte Entrepreneur Growth Report. The specific findings are linked to CEGR information in the table on the next page.

Mapping the Ecosystem Finding	CEGR Relevant Information
There has been an acceleration of entrepreneurial activity since 2010 that is seen as very positive.	"Activity" may refer to programs rather than to venture formation. No evidence in the data of increased high potential venture creation. Some evidence of increased venture success measured by higher number of Inc. 5000 companies.
Although Charlotte has increased momentum, they still appear to be significantly behind second tier markets such as Nashville, Indianapolis, and Milwaukee.	Nashville was included as a CEGR benchmark. It is weaker on startup density per capita; stronger on VC investment; similar on Inc. 5000 participation.
Investors say that deal flow in Charlotte is weak.	Venture capital and angel investing results strongly confirm weak deal flow.
Entrepreneurs feel that funding options, especially through VCs are weak.	Chicken and egg problem: VC investment in Charlotte was trivial in 2011-14, probably due to lack of deals, but entrepreneurs see it as lack of VC interest.
Entrepreneurs want more visible and stronger Angels.	Charlotte Angel Fund considered 15 Charlotte deals in 18 months but made no investments. CEGR did not evaluate angel strength and visibility.
There is a need to measure the value, growth and development of the ecosystem.	CEGR is an initial response to this finding.
Charlotte lacks the robust funding of focused entrepreneurial programs in leading innovation cities.	CEGR did not measure funding. It did identify 8 primary programs that employed an average of 1.5 full-time staff which is evidence of small-scale efforts.
Charlotte lacks the concerted and collaborative focus to attract more research and development dollars to the region.	Charlotte per capita academic R&D was about 10% of the *lowest* benchmark metro.

Note: This is a partial list of findings and excludes topics outside the scope of this report.

Growth Entrepreneur Support Organizations & Participation

There are numerous groups offering networking, informational programs, and other services. Some, such as SCORE, SBTDC, Small Business Center, and Entrepreneur Organization are found in most large metros. These are not likely to be Charlotte differentiators and, in some cases, are primarily focused on local small businesses.

Co-working spaces, such as Industry, Level, and 809, are emerging in multiple Charlotte locations as they are in other communities. In many cases, these are real estate operations that offer fewer walls and more amenities than traditional "key man" offices. These are not tracked unless they offer substantive business assistance targeted at innovation and/or growth startups.

Worthy programs such as City Startup Labs directly address entrepreneurship but are excluded since the focus is not primarily on innovation and/or growth startups. Queen City Forward is a social entrepreneurship initiative that is included due to engagement with university teams. Both programs have successfully secured modest grant funding.

Two substantial components of the ecosystem are Packard Place and the Business & Innovation Growth Council (BIG). Packard Place was founded in 2010 and created an entrepreneurial campus, including community meeting space, class room space, and start up and growth office space. Packard Place has established itself as the community's entrepreneurial hub hosting over 300 meetings and educational programs annually. It offers entrepreneurial companies physical space options that include co-working and private suites and houses over 125 startups and 6 accelerator classes. Located in Uptown Charlotte, it is one of the largest tech and entrepreneurship centers in the country. Several of the programs described in the next section are housed at Packard Place.

BIG is a non-profit membership organization, founded in 2006, and comprised of high-growth entrepreneurial companies in this region who share similar challenges in growing their businesses. BIG provides education, content, and best practices for a growth oriented company as well as access to resources and capital. The value of BIG is the peer-to-peer exchange that develops from being in the group. BIG has approximately 75 members, ranging from early stage to later stage entrepreneurial companies, and has seen successful exits with several of their member companies each year. BIG also engages in initiatives that further develop the regional high growth ecosystem, such as Charlotte Hearts Gigabit, whose mission is to educate and advocate for ultra-high speed internet and digital transformation.

This initial Charlotte Entrepreneur Growth Report quantifies participation in accelerators and incubators plus a long-standing, large-scale business competition.

Charlotte Venture Challenge

The Charlotte Venture Challenge (CVC) business competition has engaged emerging ventures since it began in 2001 as the Five Ventures competition. In 2012, it expanded its geographic reach and re-branded as the Charlotte Venture Challenge. For most of its history, it has attracted both commercial ventures and student ventures from higher education institutions. The annual competition has strong Charlotte community volunteer support. The Hauser Family Fund at UNC Charlotte has provided major prize support since 2012.

Competition winners have successfully achieved commercial milestones including NC Idea grants, Innovation Fund NC grants, and angel investment. A notable success is Yap, Inc. which was acquired by Amazon in 2011.

InfoSense won the $10,000 New Energy & High Tech category in 2012.

CVC participants provide a view into emerging ventures in Charlotte, the Carolinas, and surrounding states. As shown below, the competition expanded in 2012. Since that time, about 46% of the entrants have come from beyond the Charlotte metro area.

Table 44. Charlotte Venture Challenge Entrants, 2007-2015

Charlotte Venture Challenge Companies	2007-11 Avg.	2012	2013	2014	2015
Commercial Entrants	n.a.	96	70	59	80
Student Entrants	n.a.	20	24	26	32
Total Companies	52	116	94	85	112

The commercial portion of the competition is organized into industry categories and is limited to emerging ventures (less than $350,000 revenue and $350,000 external investment). The industry mix shown below illustrates the categories of businesses formed by the commercial entrants in the

competition. The dominant category in 2012 and 2015 was consumer products and services or other general businesses. Information technology businesses led in 2013 and 2014.

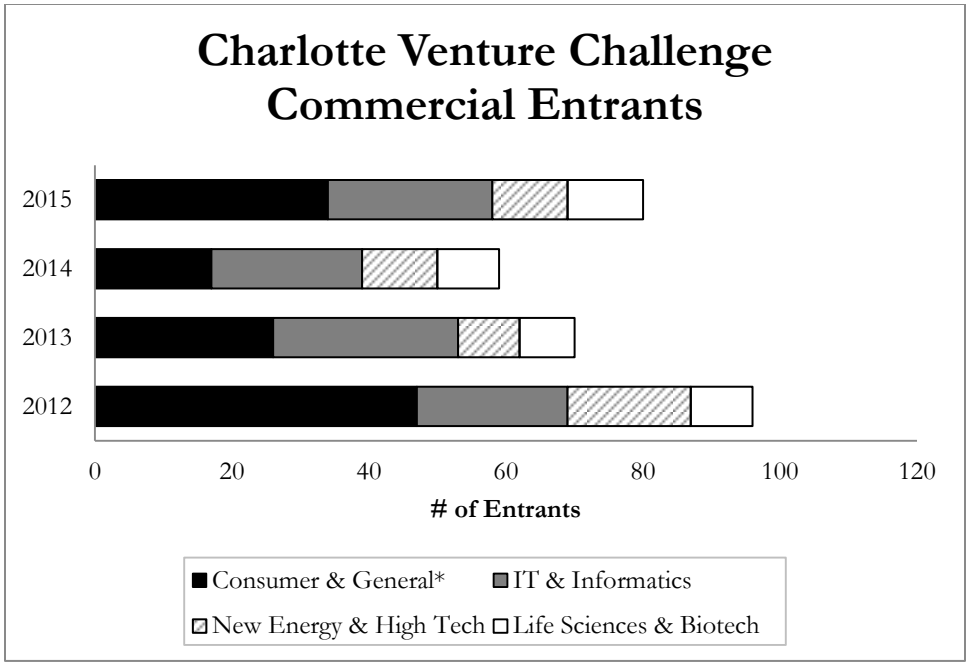


Figure 9. Charlotte Venture Challenge Commercial Entrants by Industry, 2012-2015

The student track of the competition varies substantially each year depending on specific campus promotion. The mix of student entrants for 2012-2015 shown below provides a gauge of regional four-year institutions that have an interest in competing in Charlotte.

Table 45. Charlotte Venture Challenge Entrants by Institution, 2012-2015

Institution	2012-15 Entrants	Years Entering
Charlotte Metro		
UNC Charlotte	25	4
Pfeiffer	5	2
Davidson	3	2
Belmont Abbey	3	1
Wingate	2	2
Queens	1	1
Other Locations		
NC State	11	4
UNC Chapel Hill	6	2
Lenoir-Rhyne	5	2
Tennessee	3	3
NC A&T	3	2
Wake Forest	3	2
Appalachian State	2	2
Clemson	2	2
Duke	1	1
High Point	1	1
All other	26	4

These Charlotte Metro institutions did not participate during 2012-2015, possibly due to lack of active entrepreneurial initiatives: Catawba College, Livingstone College, Johnson C. Smith University, and Winthrop University. Although Johnson & Wales University did not have any entrants, it now has a robust entrepreneurial program likely to result in future entrants. Two Charlotte institutions, Belmont Abbey and Queens, have not participated since 2012, coincident with the departure of entrepreneur faculty leaders.

Accelerators and Incubators

Charlotte established its first business incubator, the Ben Craig Center, in 1987 and it continues to operate under the Ventureprise brand. Additional incubators opened beginning in 2009 and accelerators first appeared in 2011. The current profile is shown in the tables that follow.

Table 46. Charlotte Metro Accelerators and Incubators

Program	Location	Description
49er Foundry	Charlotte University City	UNC Charlotte student business incubator
CLT Joules	Charlotte University City	Energy accelerator
PiES	Davidson	Sustainability incubator
Queen City Forward	Charlotte Center City	Social enterprise
QC FinTech	Charlotte Center City	Financial tech accelerator
RevTech Labs	Charlotte Center City	General accelerator
Technology Incubator @ Knowledge Park	Rock Hill	Technology incubator
Ventureprise	Charlotte University City	Innovation-driven incubator
Ventureprise Charlotte Launch	Charlotte University City	Customer discovery accelerator

Company participation in these programs is summarized in the following table.

Table 47. Charlotte Metro Accelerators and Incubators Companies Active, 2014-2015

Program	Total Companies Active in 2014	Companies Active Jun 2015	
		Total	Charlotte Metro Location
49er Foundry	10	12	12
CLT Joules	7	7	3
PiES	5	6	5
Queen City Forward	15	11	8
RevTech Labs & QC FinTech	9	10	2
Technology Incubator @ KP	9	8	8
Ventureprise	25	22	21
Ventureprise Charlotte Launch	12	9	9
Total companies	92	85	68
Total excl. duplicates	91	84	67

Note: Queen City Forward includes Impact 3 and Impact U programs.

Although it does not fit within the incubator/accelerator definition, the entrepreneurship program at Johnson & Wales University is noteworthy for its support of real-world ventures formed by its students. This is likely to yield innovative companies in the hospitality and food sectors.

Southeast Venture Conference

Charlotte hosted one event of substantial significance to the growth entrepreneur community in 2015. The Southeast Venture Conference brought 700 people to Charlotte for two days through the leadership of the BIG Council, the Charlotte Regional Fund for Entrepreneurship, and other significant sponsors including UNC Charlotte.

Social Entrepreneurship

Social enterprise efforts are primarily led in Charlotte by Queen City Forward which offers multiple programs. The Social Venture Partners SEED20 competition supports non-profit social enterprise which is outside the scope of this report. Some social enterprise efforts qualify as growth ventures; most fit better as local small businesses. This report includes Queen City Forward accelerator programs that may yield high growth outcomes.

City Startup Labs has piloted an accelerator-style experience for young African-American men. As the mature program is launched in 2016, it will likely produce innovation-driven ventures that are relevant to this report.

Ecosystem Federal Funding

Charlotte organizations have secured modest federal funding to support the entrepreneurial ecosystem. City Startup Labs and RevTech/FinTech have received $50K accelerator awards from the Small Business Administration. UNC Charlotte/Ventureprise received a 2015 award of $300K through the National Science Foundation I-Corps program. It is currently the only university in the Carolinas designated as part of the National Innovation Network of 36 universities.

T1V and SQL Sentry stories illustrate, in their own experiences, the positive impact of "customer discovery" and "pivots"—key aspects of the NSF I-Corps program now offered to emerging innovators.

Charlotte Metro Counties

This report focuses on Charlotte metro generally defined as the 10 counties in the metropolitan statistical area (MSA). Although much of the data is available only for MSA, county level data is available for several items and can be found in Appendix F.

The overall observation is that innovation-driven entrepreneurship and associated resources are predominantly located in Mecklenburg County. This concentration appears to be increasing. In 2001-2010, Mecklenburg accounted for 41.8% of all patents issued in Charlotte USA (16 counties). By 2011-2013, the Mecklenburg share grew to 52.2%. In 2007-2010, 62.8% of the total Inc. 5000 listings in Charlotte USA were located in Mecklenburg. In 2011-2015, that percentage grew to 83.6%.

The Fast 50 company list from the *Charlotte Business Journal* included 89 unique companies of all ages and industries during 2011-2014. Mecklenburg is home to 78% of the total list. Analyzing the list to find the young, innovation-industry companies comparable to those surveyed for CEGR identifies 35 Fast 50 companies. These are more concentrated with 86% in Mecklenburg.

The creation of the North Carolina Research Campus in Kannapolis might be expected to increase the Cabarrus share of patents and other measures. That has not been observed to-date. Academic research funding at NCRC and related patents will generally appear in standard reporting at the home institution location which may obscure NCRC impact.

Small Business Innovation Research (SBIR) is one notable exception to Mecklenburg concentration. Iredell County accounts for about half of all Charlotte USA 2011-2014 SBIR/STTR awards and about two-thirds of dollars. This is explained by the expertise of Corvid Technologies of Mooresville which generates all of the SBIR/STTR awards in Iredell County.

Conclusion

This initial Charlotte Entrepreneur Growth Report integrates benchmark data analysis, company and community surveys, and successful venture stories to offer a comprehensive assessment of the community's innovation and entrepreneurship performance. The benchmark metros provide challenging comparisons and, in some cases, offer aspirational standards.

The North Carolina Innovation Index 2013 report is a useful companion document. Its extensive analysis of innovation inputs and economic outcomes include some metro measures as well as statewide data.

The company survey confirms that Charlotte has many successful young, innovation-driven enterprises characterized by rapid revenue and employment growth and above-average compensation. The 248 survey respondents' collective importance is illustrated by the fact that their calculated $1.3 billion revenue ranks between publicly-traded Piedmont Natural Gas and Coca-Cola Bottling Consolidated.

However, overall results are generally below benchmark results. This is true for overall startup activity where Charlotte is slightly below the middle of the benchmark metros. Among fast-growing private firms, Charlotte performs at the midpoint of the benchmarks.

The region is not a strong performer in technology (all categories including info tech) as measured by companies selected for the Technology Fast 500 or by patent production or by SBIR/STTR funding awards.

This is due, in part, to limited regional innovation capacity. Charlotte metro has good higher education institutions, but fewer students than benchmark metros. Its colleges and universities either do not engage in significant R&D or are relatively new to R&D. Academic R&D expenditures are far below any benchmark metro leading to invention and patent creation far below other metros. A positive is the excellent productivity of UNC Charlotte in converting research dollars into patents and startups.

Charlotte's innovation-driven entrepreneurship weakness is evident from low participation in the statewide NC IDEA funding competition, modest angel investment, and the lack of Charlotte deals that meet the standards of the hometown Charlotte Angel Fund. Professional venture capital investment in Charlotte metro companies is shockingly low compared to all benchmark metros—another indication of a lack of high quality, high growth potential ventures.

The survey of community residents confirms they understand the importance of startups and generally perceive Charlotte as a good entrepreneurial environment. This suggests that the community will support initiatives that strengthen entrepreneurial capacity.

The report provides extensive data to guide understanding of the current situation and to measure future progress. The existing non-profit innovation entrepreneur support structure is fragmented and small-scale, thus offering limited capacity to address deficiencies. The community must now decide the appropriate strategic direction and support the resulting actions financially.

Although strategies are outside the scope of this report, it is likely that future actions will address short-term and long-term outcomes. In the short-term, Charlotte needs more startups and higher potential innovation-based startups. These efforts will need to leverage proven industry sectors and innovative business models and processes.

In the long-term, the community must strengthen its innovation capacity through much larger R&D activities through its research university and other organizations. The community must work to attract, develop, and retain high potential innovator *and* entrepreneur talent.

Charlotte is a highly successful metro that is growing rapidly as companies and people seek to move to a community with numerous advantages including excellent location, airport, and quality of life. All of these factor are necessary, but not sufficient, to support a strong innovation-based entrepreneurial sector.

Featured Growth Companies

Metro Charlotte includes many innovation-driven entrepreneurs building successful businesses. The Charlotte Entrepreneur Growth Report includes brief snapshots of these ventures throughout the report narrative.

Seven companies founded beginning in 2000 are featured on the following pages. Each company is distinctive and accomplished in its own way. Their stories inspire emerging entrepreneurs and those who work to support the region's entrepreneurs.

Company	Industry	Founded
AccruePartners	Human Resources	2002
AvidXchange	Software	2000
InfoSense	Environmental Services	2007
Passport	Software	2010
Peak 10	IT Services	2000
SQL Sentry	Software	2004
T1V	Business Products & Services	2008

AccruePartners Achieves Seven *Inc.* 5000 Rankings

AccruePartners joined a rarified group of consistent, high-growth companies when it was named to the *Inc.* 5000 fastest growing private companies list in 2015. The ranking included 65 Charlotte metro companies, but AccruePartners stands alone this year with seven appearances since the *Inc.* 5000 began in 2007.

The foundation for this extraordinary record of growth was established beginning in 2002 by founders Patty Comer and Amy Pack. Their initial concept was to build an industry-leading staffing and executive search firm that would provide a high-touch experience and strong delivery on candidate quality. Charlotte proved to be an excellent headquarters with its diversity of corporations, exceptional talent, and a business community receptive to entrepreneurs.

The company's growth record has been remarkable although not without challenges. The deep recession was an eye-opener to these two entrepreneurs but Charlotte's industry sector diversification cushioned the impact.

AccruePartners expanded its reach in 2013 as it built a National Recruiting Center to serve a growing number of clients seeking nationwide placements. This enables the company to grow with its clients while reducing the risk of entering new markets. AccruePartners now offers its services in 33 states. As a WBENC-certified organization with a strong management team and over 50 best-in-class recruiters, the company works to surpass the expectations of its clients and candidates on a daily basis.

The AccruePartners approach has delivered outstanding organic growth while achieving industry recognition such as Inavero's Best of Staffing award for client and talent satisfaction.

Highlights

- Woman-owned business reports 170% 3-year revenue growth for 2014.
- AccruePartners is the only 2015 Charlotte *Inc.* 5000 company to have achieved Inc. 5000 ranking seven times.
- AccruePartners illustrates Charlotte's growing strength in fast-growing human resources companies.

accruepartners

BUILDING PEOPLE, COMPANIES AND CAREERS

AccruePartners
Charlotte, NC
www.accruepartners.com

Industry—Human Resources | Founded—2002

AvidXchange Astounding Growth from Voice of Customer

Entrepreneurial success rarely follows a straight line. AvidXchange, which attracted substantial investment in 2015, demonstrates that the most brilliant entrepreneurs listen and respond to customers.

Co-founders Mike Praeger and David Miller met for coffee in 2000 to share business war stories. Their conversation soon led to formation of a team to pursue the "big opportunity" providing marketplace services to the real estate industry.

By mid-2002, the founders realized that the big opportunity was not being realized for lack of customer interest. An Atlanta prospect responded to a sales call by politely informing the team that he had no interest in AvidXchange's product. What he said next, however, led to today's success story. He loved their invoice presentment module and would buy it if sold independently.

The voice of the customer resonates loudly at AvidXchange. On the drive home to Charlotte, it was agreed that an independent module was the way to go. AvidInvoice, an accounts payable automation solution, was launched to enthusiastic customer response. The momentum grew making AvidXchange a leading provider of midmarket invoice management solutions.

The company's products created customer operational efficiencies which, combined with excellent support, led to a 98% customer retention rate. This loyal base produced a predictable revenue model that grew exponentially.

From 2009 through 2015, AvidXchange acquired three companies (EnergySolve, Piracle, and StrongRoom) to broaden capabilities, better serve customers, and accelerate company growth. Collectively, the acquisitions enable a comprehensive automated bill payment solution including the ability to facilitate electronic payments for clients and vendors.

Today, AvidXchange has more than 5,000 clients and over 200,000 vendors in its payment network. Employment exceeds 420 people including over 200 added within the last year.

The company closed a $225 million financing led by Bain Capital Ventures in 2015. Rapid growth will not slow anytime soon as AvidXchange puts the funding to work hiring staff to support client growth, making strategic acquisitions, and developing new products.

Highlights

- Consistent, high growth has resulted in five consecutive years on the Inc. 5000 list.
- Customer-oriented FinTech business strategy pivot enabled marketplace success.
- High growth, large market, and strong financial performance led to large national investor.

AvidXchange, Inc.
Charlotte, NC
www.avidxchange.com

Industry—Software | Founded—2000

InfoSense from Faculty Research to International Markets

When electrical engineering professor Dr. Ivan Howitt considered a career move, UNC Charlotte's respect for industry-oriented research and the faculty's inter-disciplinary teamwork impressed him. His academic research accomplishments had most often come from addressing a well-defined problem from industry. Charlotte Water brought him a tough problem, sewer pipe blockages and breakages, and the result is InfoSense.

InfoSense uses acoustic technology to assess the condition of sewer pipes enabling preventive maintenance that eliminates environmental problems while saving money for utilities. This novel solution was invented as the Charlotte Water problem experts interacted with a university researcher who had the domain knowledge for a potential novel solution.

Technical development was accelerated in 2009 when the company was awarded an initial National Science Foundation Small Business Innovation Research (SBIR) grant. The SBIR grant requirements led the company to involvement with the Ben Craig Center business incubator (now Ventureprise).

As InfoSense progressed, it gained recognition and funding from NC IDEA, the Charlotte Venture Challenge, and the Chamber PowerUp competition. In addition to funding, these programs led InfoSense to build a management team (George Selembo and Alex Churchill) that has proven financial, business development, and entrepreneurial growth expertise.

Today, the company is cash flow positive and sells its products throughout the U.S. and through formal distribution arrangements in 11 countries. The company has been self-financed and the principals have made substantial sweat equity commitments. Rapid revenue growth qualifies InfoSense for *Charlotte Business Journal* 2015 Fast 50 recognition.

The InfoSense story illustrates the power of leveraging the inventive talent of university researchers, particularly when they collaborate with industrial partners. The core technology was developed over five years and the engagement of a local organization, Charlotte Water, as the initial customer proved invaluable. The flexibility of UNC Charlotte and the community's engagement through multiple programs facilitated the company's development. Most importantly, InfoSense demonstrates the power of the team—successful technology business ventures require complimentary skills and connections.

Highlights

- Company success built upon the interaction of UNC Charlotte, a large-scale local customer, and multiple entrepreneur ecosystem programs.
- An inventive, technical founder finds business success when he attracts a management team with complimentary business and entrepreneurial expertise.
- Business mentors were invaluable in developing the initial value proposition.

InfoSense, Inc
Innovating Acoustic Inspection Technology™

InfoSense, Inc.
Charlotte, NC
www.infosenseinc.com

Industry—Environmental Services | Founded—2007

Passport Booms by Simplifying Transportation Payments

Cousins Bob and Charlie Youakim could see an entrepreneurial opportunity in an everyday activity that most people only perceived as annoying. Their shared vision to transform parking through software led to founding Passport Parking in 2010 in Charlotte.

With solid business and financing knowledge, they began by proving their initial business model on privately managed parking facilities in 2012. This was followed by launching a SaaS mobile parking payment application in the small municipal markets of Asheville, NC and Ocala, FL.

In 2013, Passport pioneered private label mobile applications with the launch of ParkOmaha. This landmark strategy helped Passport win contracts in Chicago and Toronto, the two largest mobile payment installations in North America. Remarkable wins for a very young company continued as Passport secured municipal contracts with Boston, Detroit, Louisville, Cincinnati, and Salt Lake City. Customer satisfaction is evident in the company's 100% client retention rate.

More recently, Passport has broadened its market potential by providing mobile ticketing for public transportation and, most recently, launching GoTucson, the first multimodal mobile payment application in the world.

Passport's market traction made it possible in 2013 to raise $6 million in Series A funding, led by Grotech Ventures and Relevance Capital. The funding, in turn, has enabled expansion of the team and has accelerated growth.

The founders have built a visionary management team (including Khristian Gutierrez and Brad Powers) that leads a group of over 60 diversely talented employees in Charlotte and three continents.

Passport is now the largest and highest-rated provider of mobile payment software for the parking and transit industries with installations in 1,000 locations. By partnering with cities to reduce the complexity of urban mobility and increase the use of public transit, Passport expects to achieve rapid, long-term growth.

Highlights

- Although only five years old, Passport operates internationally and is the largest provider of mobile payment software for parking and transit.
- Rapid growth and substantial market size attracted a $6 million series A venture capital round.
- Tremendous opportunity is realized by applying new technologies to old industries.

Passport Parking
Charlotte, NC
www.gopassport.com

Industry—Software | Founded—2010

Peak 10 Delivers Investor Results with 15 Years of Growth

Peak 10 is arguably the most successful technology company started in Charlotte since 2000. Its dramatic growth and substantial financial valuation are the direct result of addressing a large-scale, rapidly growing opportunity with a management team that demonstrates powerful execution capabilities.

David Jones, entrepreneur and visionary, and a small group of hand-picked leaders started Peak 10 in 2002 to address the emerging opportunities from cloud computing. The management team is known for deep industry knowledge and a reputation for business integrity. Together, they have built a culture focused on exceptional customer engagement, customer support and continuous improvement of its services. Today, Peak 10 is a leading national provider of hybrid IT infrastructure, cloud solutions and managed services to SMEs.

Exponential growth over an extended period is remarkable. To accomplish that growth while surviving the "dot com bubble," September 11, and the Great Recession is extraordinary.

Peak 10's double-digit annual revenue growth has been matched by industry-leading balance sheet and income statement results. Performance was rewarded with a 12.5 EBITDA multiple yielding a $410 million sale to private equity firm, Welsh Carson, in 2010. Continued excellent performance led to a second exit two and a half years later resulting in a $700 million sale to another PE firm, GI Partners.

From its start in Charlotte, Peak 10 has grown to nearly 400 employees and data center facilities in Atlanta, Charlotte, Cincinnati, Ft. Lauderdale, Jacksonville, Louisville, Nashville, Raleigh, Richmond and Tampa. The company's markets are characterized by large and growing populations, a strong and growing base of SME customers, high GDP growth and limited IT infrastructure provider competition. With an addressable market for its cloud and data center infrastructure services of over 100,000 SME customers, Peak 10 has substantial growth ahead. With more than half of new sales since 2008 from existing customers, the company enjoys the benefits of a well-diversified, highly satisfied, and stable customer base.

Highlights

- Peak 10 demonstrates that strong financial results attract large-scale private equity investment.
- Peak 10 performance results from high growth industry focus combined with strong execution capability.
- Peak 10's outstanding results have led Charlotte's high-growth entrepreneur sector throughout its 15 year history.

Peak 10, Inc.
Charlotte, NC
www.peak10.com

Industry—IT Services | Founded—2000

SQL Sentry Attracts San Francisco Equity Investment

SQL Sentry, LLC demonstrates the success that is possible when entrepreneurs combine technical depth and customer responsiveness.

Company founders Greg Gonzalez and Ken Teeter started InterCerve in 1997 and developed it into a leading Microsoft hosting services provider. By 2004, they responded to customer needs by establishing SQL Sentry as a business unit. Within two years, the original hosting business was sold (to Charlotte-based Peak 10) and the SQL Sentry team was all-in building a company that would ultimately attract international attention.

The company delivers software solutions for monitoring and optimizing data performance in world-class Microsoft SQL Server and Windows environments. SQL Sentry's first product, Event Manager, offered database administrators an innovative visual interface and robust notification system for quickly resolving schedule-related performance problems.

The product line added Performance Advisor, Fragmentation Manager, and Plan Explorer to provide greater visibility into performance bottlenecks and proprietary deep-dive capabilities for efficient resolution. The result is that database administrators are more effective in managing increasingly complex environments.

Strong acceptance in North America and international markets propelled SQL Sentry to annual revenue growth of 35% over the last five years. Rapid, sustained growth combined with 40% EBITDA margins caught investor attention in early 2015.

During an accelerated 5-week process led by a Charlotte-area financial advisor, SQL Sentry management met with more than 30 potential investors and, remarkably, received 15 investment offers. San Francisco-based investor, Mainsail Partners, was impressed by the management team, proven ability to consistently create exceptional software, and the market potential associated with serving data professionals seeking to manage increasingly complex database environments. Mainsail Partners, which focuses on bootstrapped companies that demonstrate high growth and profitability, added SQL Sentry to its portfolio in 2015 with a $25 million investment.

SQL Sentry employed 50 high quality people at the time of investment and expects to triple the workforce over the next three years. The company's established university intern program is likely to expand to support the hiring of technical talent.

Highlights

- 35% revenue growth and sustained high margins attracts national investors.
- Business strategy pivot enables competitive advantage.
- UNC Charlotte academic computing excellence provides high potential interns.

SQL Sentry, LLC
Huntersville, NC
www.sqlsentry.com

Industry—Software | Founded—2004

T1V Success Driven by Serial Entrepreneur

New restaurant concepts and electrical engineering are not fields that usually intersect, but Dr. Mike Feldman is not your typical engineer. He is a mixture of technologist, futurist, and foodie…all wrapped together in a serial entrepreneur.

As an electrical engineering professor at UNC Charlotte, he co-founded Digital Optics Corporation in 1991. The company, originally located in Charlotte's first business incubator, the Ben Craig Center, explored various technologies until achieving dramatic growth with its cell phone camera components. Digital Optics was acquired by Tessera in 2006 for $60 million.

By 2008, Mike Feldman was ready to start his second venture, T1Visions, now known simply as T1V.

The company started a restaurant concept (T1 Tapas) to test his theory that large-format interactive surfaces can bring people together for shared experiences in public settings. The original concept led to the business that T1V is today.

Perhaps one of T1V's most successful customers to-date, the Cowfish Sushi Burger Bar, started in Charlotte. T1V worked with Cowfish to create a one-of-a-kind digital dining experience that would attract patrons of all ages leading to multi-city expansion.

Retail is one of T1V's fastest growing markets. The company works with brands such as Neiman Marcus and Lowe's to create omnichannel shopping environments at the crossroads of physical and digital, powered by T1V's signature software application, OneShop™.

A growth driver is T1V's collaboration application, ThinkHub™, in use at enterprises such as SAP and Reebok, where interactive environments engage and empower teams to collaborate. T1V interactive technology can be found in education applications such as collaboration tables and interactive donor walls at UNC Charlotte and UNC Chapel Hill.

T1V's multi-market approach to interactive solutions yielded rapid revenue growth recognized by ranking #456 and #861 on the Inc. 5000 in 2014 and 2015. The company has raised $6.7 million since inception with the most recent round a $3.8 million Series B in April 2014 led by Fidelis Capital.

Highlights

- Serial entrepreneur brings technical insight to everyday human interaction.
- Customer-focused product testing drives growth by identifying new market segments.
- Proven market acceptance leads to nationally-recognized revenue growth and venture capital investment.

T1V
EXPERIENCE INTERACTIVE

T1V, Inc.
Charlotte, NC
www.t1v.com

Industry— Business Products & Services | Founded—2008

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Charlotte Entrepreneur Growth Report Appendices

October 2015

Appendix A: Region Definition

County	Charlotte MSA*	Charlotte USA	NC Commerce**	Population 7/1/14 est.
Alexander		X		37,392
Anson		X	X	25,765
Cabarrus	X	X	X	192,103
Catawba		X		154,534
Cleveland	CSA	X	X	97,076
Gaston	X	X	X	211,127
Iredell	X	X	X	166,675
Lincoln	X	X	X	79,829
Mecklenburg	X	X	X	1,012,539
Rowan	X	X	X	138,630
Stanly	CSA	X	X	60,600
Union	X	X	X	218,568
Chester SC	X	X		32,337
Chesterfield SC		X		46,125
Lancaster SC	X	X		83,160
York SC	X	X		245,346
Total Population	2,380,314	2,801,806	2,202,912	
Total incl CSA	2,537,990			

*Charlotte-Concord-Gastonia MSA, defined by OMB 2013. Charlotte-Concord Combined Statistical Area (CSA) adds Albemarle and Shelby Micropolitan Statistical Areas.
**Prosperity Zone known as the Southwest Region.

Appendix B: Forbes Higher Education by Metro

Metro	Institution	Students	2014 Rank	2013 Rank
Charlotte		**31,753**		
	Catawba College	1,337	599	590
	Davidson College	1,790	22	32
	Queens University	2,394	543	NR
	University of North Carolina, Charlotte	26,232	524	488
National Benchmarks				
Atlanta		**92,172**		
	Agnes Scott College	885	254	314
	Georgia Institute of Technology	21,557	90	83
	Georgia State University	32,087	453	427
	Kennesaw State University	24,604	621	623
	Morehouse College	2,374	385	285
	Oglethorpe University	1,079	495	541
	Spelman College	2,145	314	254
	Emory*	7,441	NR	NR
Austin		**52,186**		
	Saint Edward's University	5,330	473	414
	Southwestern University	1,347	197	132
	University of Texas, Austin	52,186	76	66
Kansas City		**47,273**		
	Rockhurst University	2,801	259	331
	University of Kansas	27,939	297	246
	University of Missouri, Kansas City	15,473	635	560
	William Jewell College	1,060	375	346
Nashville		**55,371**		
	Belmont University	6,395	470	404
	Fisk University	533	256	188
	Middle Tennessee State University	26,442	612	607
	Tennessee State University	9,165	643	615
	Vanderbilt University	12,836	54	37
Research Triangle		**106,275**		
	Duke University	15,386	23	15
	Meredith College	1,944	562	507
	North Carolina State University, Raleigh	34,340	167	160
	University of North Carolina, Chapel Hill	29,278	50	38
San Francisco		**90,876**		
	California State University, East Bay	13,851	537	NR
	Mills College	1,548	291	175
	San Francisco State University	29,541	464	462
	University of California, Berkeley	36,137	37	22
	University of San Francisco	9,799	214	194
Tampa		**48,679**		
	Eckerd College	2,346	352	356
	University of South Florida	39,596	435	446
	University of Tampa	6,737	611	571
Carolinas Metros				
Triad		**50,497**		
	Elon University	6,029	182	234
	Guilford College	2,462	519	434
	High Point University	4,257	558	559

Metro	Institution	Students	2014 Rank	2013 Rank
	North Carolina A&T State University	10,636	589	497
	Salem College	1,165	457	442
	University of North Carolina, Greensboro	18,516	544	530
	Wake Forest University	7,432	61	60
Charleston		**15,222**		
	College of Charleston	11,723	421	429
	The Citadel	3,499	252	244
Columbia		**33,234**		
	Claflin University	1,946	584	647
	University of South Carolina, Columbia	31,288	186	190
Greenville-Spartanburg		**31,092**		
	Clemson University	20,768	163	153
	Converse College	1,216	439	440
	Erskine College	751	334	433
	Furman University	2,915	100	144
	North Greenville University	2,420	448	485
	Presbyterian College	1,403	142	253
	Wofford College	1,619	85	119

*Not ranked by Forbes (penalized), but included in CEGR analysis.

Source: www.forbes.com

12 factors are used to calculate the Forbes 650 rankings, each of which falls into one of the five categories listed below with the factors' weighting:

Post-Graduate Success (37.5%)
Student Satisfaction (22.5%)
Student Debt (17.5%)
Graduation Rate (11.25%)
Nationally Competitive Awards (11.25%)

Appendix C: Industries

Survey Category	NAICS	NAICS Description
Advanced Manufacturing	334	Computer and Electronic Product Manufacturing
Advanced Manufacturing	335	Electrical Equipment, Appliance, and Component Manufacturing
Advanced Manufacturing	3364	Aerospace Product and Parts Manufacturing
Biotechnology	3254	Pharmaceutical and Medicine Manufacturing
Business Services	5413	Architectural, Engineering, and Related Services
Business Services	5414	Specialized Design Services
Business Services	5416	Management & Technical Consulting Services
Business Services	5417	Scientific Research & Development Services
Business Services	5418	Advertising & Related Services
Business Services	5419	Other Professional, Scientific, and Technical Services
Business Services	6114	Business, Computer & Management Training
e-commerce	4541	Electronic Shopping and Mail-Order Houses
Energy	2211	Power Generation and Supply [Electric power generation, transmission, and distribution]
Energy	3336	Engine, turbine, and power transmission equipment manufacturing
Entertainment and Arts	512	Motion Picture and Sound Recording Industries
Financial Technology (FinTech)	52232	Financial Transactions Processing, Reserve, and Clearinghouse Activities
Healthcare (Medical and Med Devices)	3391	Medical Equipment and Supplies Manufacturing
Healthcare (Medical and Med Devices)	6215	Medical and Diagnostic Laboratories
Information Technology	517	Telecommunications
Information Technology	518	Data Processing, Hosting, and Related Services [Internet Service Providers and Web Search Portals]
Information Technology	5112	Software Publishers
Information Technology	5191	Other Information Services [Internet Publishing & Broadcasting & Search Portals]
Information Technology	5415	Computer Systems Design & Related Services
Motorsports	711219	Other Spectator Sports. Note: Likely to include various manufacturing NAICS also.
Technology, not Info Tech	Various	
Other	Various	

Appendix D: Target Industry Data

Charlotte MSA	2012				2013				2013 H/(L) than 2012			
Industry	**Employ**	**Payroll**	**Pay/emp**	**Estab**	**Employ**	**Payroll**	**Pay/emp**	**Estab**	**Employ**	**Payroll**	**Pay/emp**	**Estab**
All Industries	906,182	$43,107,931	$47,571	54,647	938,684	$45,576,622	$48,554	55,460	32,502	$2,468,691	$983	813
Total Target Industries	68,928	$4,911,805	$71,260	5,820	74,113	$5,314,389	$71,707	5,942	5,185	$402,584	$447	122
Target % of Total	7.6%	11.4%	149.8%	10.7%	7.9%	11.7%	147.7%	10.7%				
2013 % Higher/(Lower) 2012												
All Industries									3.6%	5.7%	2.1%	1.5%
Total Target Industries									7.5%	8.2%	0.6%	2.1%
Target Industry Summary												
Advanced Manufacturing	4,745	$265,360	$55,924	113	5,051	$285,375	$56,499	118	306	$20,015	$575	5
Energy	NR	NR	NR	90	NR	NR	NR	113				23
Motorsports	2,918	$273,201	$93,626	126	3,147	$282,231	$89,683	121	229	$9,030	($3,944)	(5)
Business Services	29,028	$1,941,448	$66,882	3,363	31,245	$2,049,292	$65,588	3,423	2,217	$107,844	($1,294)	60
Financial Technology	297	NR	NR	35	450	$21,151	$47,002	37	153			2
Information Technology	24,909	$2,083,851	$83,659	1,539	26,474	$2,298,066	$86,805	1,559	1,565	$214,215	$3,146	20
e-commerce	1,527	$53,764	$35,209	216	1,590	$60,997	$38,363	231	63	$7,233	$3,154	15
Biotechnology	1,064	$56,694	$53,284	14	1,271	$47,561	$37,420	11	207	($9,133)	($15,864)	(3)
Healthcare (Medical & Med Devices)	3,042	$193,382	$63,571	181	2,898	$203,480	$70,214	175	(144)	$10,098	$6,643	(6)
Entertainment and Arts	1,398	$44,105	$31,549	143	1,987	$66,236	$33,335	154	589	$22,131	$1,786	11
Total Target Industries	68,928	$4,911,805	$71,260	5,820	74,113	$5,314,389	$71,707	5,942	5,185	$402,584	$447	122
2013 % Higher/(Lower) 2012												
Advanced Manufacturing									6.4%	7.5%	1.0%	4.4%
Energy												
Motorsports									7.8%	3.3%	-4.2%	-4.0%
Business Services									7.6%	5.6%	-1.9%	1.8%
Financial Technology									51.5%			5.7%
Information Technology									6.3%	10.3%	3.8%	1.3%
e-commerce									4.1%	13.5%	9.0%	6.9%
Biotechnology									19.5%	-16.1%	-29.8%	-21.4%
Healthcare (Medical & Med Devices)									-4.7%	5.2%	10.5%	-3.3%
Entertainment and Arts									42.1%	50.2%	5.7%	7.7%
Total Target Industries									7.5%	8.2%	0.6%	2.1%

Source: Census.gov, County Business Patterns by MSA

Charlotte MSA		2012				2013				2013 H/(L) than 2012			
Industry	**NAICS**	**Employ**	**Payroll**	**Pay/emp**	**Estab**	**Employ**	**Payroll**	**Pay/emp**	**Estab**	**Employ**	**Payroll**	**Pay/emp**	**Estab**
Target Industry Details													
Advanced Manufacturing	334	2,523	$137,965	$54,683	58	2,689	$156,290	$58,122	59	166	$18,325	$3,439	1
Advanced Manufacturing	335	2,102	$120,881	$57,508	47	2,125	$115,814	$54,501	51	23	($5,067)	($3,007)	4
Advanced Manufacturing	3364	120	$6,514	$54,283	8	237	$13,271	$55,996	8	117	$6,757	$1,712	0
Biotechnology	3254	1,064	$56,694	$53,284	14	1,271	$47,561	$37,420	11	207	($9,133)	($15,864)	(3)
Business Services	5414	1,338	$79,161	$59,164	256	928	$36,289	$39,105	248	(410)	($42,872)	($20,059)	(8)
Business Services	6114	408	$24,238	$59,407	64	310	$23,913	$77,139	63	(98)	($325)	$17,732	(1)
Business Services	5413	9,903	$737,829	$74,506	891	9,540	$734,751	$77,018	886	(363)	($3,078)	$2,512	(5)
Business Services	5416	10,309	$745,932	$72,357	1,335	11,966	$810,619	$67,744	1,374	1,657	$64,687	($4,614)	39
Business Services	5417	1,126	$116,901	$103,820	78	1,271	$137,705	$108,344	82	145	$20,804	$4,524	4
Business Services	5418	2,187	$92,156	$42,138	280	3,435	$156,806	$45,649	287	1,248	$64,650	$3,511	7
Business Services	5419	3,757	$145,231	$38,656	459	3,795	$149,209	$39,317	483	38	$3,978	$661	24
e-commerce	4541	1,527	$53,764	$35,209	216	1,590	$60,997	$38,363	231	63	$7,233	$3,154	15
Energy	2211	NR	NR	NR	77	NR	NR	NR	99				22
Energy	3336	NR	NR	NR	13	NR	NR	NR	14				1
Entertainment and Arts	512	1,398	$44,105	$31,549	143	1,987	$66,236	$33,335	154	589	$22,131	$1,786	11
Financial Technology (FinTech)	52232	297	NR	NR	35	450	$21,151	$47,002	37	153			2
Healthcare (Medical & Med Devices)	3391	1,770	$95,990	$54,232	70	1,712	$105,571	$61,665	65	(58)	$9,581	$7,434	(5)
Healthcare (Medical & Med Devices)	6215	1,272	$97,392	$76,566	111	1,186	$97,909	$82,554	110	(86)	$517	$5,988	(1)
Information Technology	517	11,842	$813,797	$68,721	398	11,784	$876,769	$74,403	353	(58)	$62,972	$5,682	(45)
Information Technology	518	1,886	$139,812	$74,131	109	2,090	$165,544	$79,208	128	204	$25,732	$5,076	19
Information Technology	5112	2,811	$389,050	$138,403	63	2,763	$382,816	$138,551	66	(48)	($6,234)	$148	3
Information Technology	5191	254	$14,998	$59,047	43	320	$18,570	$58,031	43	66	$3,572	($1,016)	0
Information Technology	5415	8,116	$726,194	$89,477	926	9,517	$854,367	$89,773	969	1,401	$128,173	$296	43
Motorsports	711219	2,918	$273,201	$93,626	126	3,147	$282,231	$89,683	121	229	$9,030	($3,944)	(5)

Source: Census.gov, County Business Patterns by MSA

Appendix E: Inc. 5000 Industry Mix 2015

2015 Inc. 5000	Total US	Charlotte	Atlanta	Austin	Kansas City	Nashville	RTP	San Francisco	Tampa
IT Services	13.6%	15.4%	19.2%	8.9%	7.5%	13.2%	8.3%	12.8%	8.2%
Business Products & Services	9.7%	10.8%	10.3%	8.9%	10.0%	13.2%	6.3%	8.8%	12.3%
Advertising & Marketing	9.4%	3.1%	9.9%	6.7%	7.5%	9.4%	18.8%	13.5%	5.5%
Health	7.6%	4.6%	9.4%	7.8%	10.0%	13.2%	14.6%	2.7%	11.0%
Software	6.7%	7.7%	6.9%	7.8%	2.5%	9.4%	14.6%	14.2%	6.8%
Financial Services	4.9%	7.7%	4.4%	4.4%	0.0%	3.8%	2.1%	7.4%	4.1%
Construction	4.6%	6.2%	3.4%	4.4%	0.0%	5.7%	6.3%	1.4%	4.1%
Consumer Products & Svcs	4.5%	0.0%	3.4%	7.8%	2.5%	1.9%	2.1%	6.8%	4.1%
Government Services	4.5%	0.0%	2.0%	2.2%	2.5%	1.9%	2.1%	0.7%	4.1%
Human Resources	4.1%	10.8%	6.9%	3.3%	0.0%	5.7%	6.3%	4.7%	2.7%
Manufacturing	3.5%	7.7%	4.4%	2.2%	5.0%	3.8%	0.0%	2.7%	2.7%
Real Estate	3.2%	4.6%	2.5%	6.7%	15.0%	3.8%	0.0%	1.4%	6.8%
Retail	3.1%	1.5%	0.5%	3.3%	2.5%	1.9%	2.1%	3.4%	5.5%
Logistics & Transportation	3.1%	6.2%	4.4%	3.3%	12.5%	1.9%	2.1%	0.7%	0.0%
Food & Beverage	3.0%	4.6%	3.0%	4.4%	7.5%	5.7%	6.3%	5.4%	1.4%
Telecommunications	2.3%	0.0%	3.4%	1.1%	0.0%	0.0%	0.0%	3.4%	2.7%
Energy	2.0%	1.5%	0.5%	3.3%	0.0%	0.0%	0.0%	3.4%	0.0%
Security	1.6%	0.0%	0.0%	4.4%	7.5%	0.0%	0.0%	0.0%	1.4%
Engineering	1.6%	0.0%	1.0%	0.0%	5.0%	0.0%	2.1%	0.7%	0.0%
Education	1.5%	0.0%	1.0%	1.1%	0.0%	0.0%	2.1%	2.7%	4.1%
Insurance	1.3%	3.1%	1.0%	0.0%	0.0%	1.9%	2.1%	2.0%	5.5%
Travel & Hospitality	1.3%	3.1%	0.5%	2.2%	0.0%	1.9%	0.0%	0.0%	1.4%
Media	1.2%	0.0%	0.5%	3.3%	2.5%	1.9%	2.1%	0.7%	1.4%
Environmental Services	1.0%	0.0%	0.5%	1.1%	0.0%	0.0%	0.0%	0.7%	0.0%
Computer Hardware	0.6%	1.5%	1.0%	1.1%	0.0%	0.0%	0.0%	0.0%	4.1%
Total Industries	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Appendix F: Angel Capital Groups in Carolinas and Georgia

Ariel Southeast Angel Partners	Savannah, GA
Asheville Angels	Asheville, NC
Atlanta Technology Angels	Atlanta, GA
Bio/Med Investor Network*	Atlanta, GA
Capital Angels*	Columbia, SC
Charlotte Angel Fund	Charlotte, NC
Charleston Angel Partners	Charleston, SC
Duke Angel Network	Durham, NC
Excelerate Health Ventures	Research Triangle Park, NC
Piedmont Angel Network	Winston-Salem, NC
RTP Capital Associates	Research Triangle Park, NC
Triangle Angel Partners	Research Triangle Park, NC
Upstate Carolina Angel Network	Greenville, SC
Wilmington Investor Network	Wilmington, NC
IMAF Cape Fear	Wilmington, NC
IMAF Charlotte	Charlotte, NC
IMAF East	Greenville, NC
IMAF RTP	Research Triangle Park, NC
IMAF Sandhills	Fayetteville, NC
IMAF Triad II	Winston-Salem, NC
IMAF Western	Fletcher, NC

*No investment activity has been identified for these groups.

Appendix G: Charlotte Metro County Data

Charlotte Metro Patents

Charlotte Metro Patents	Annual Avg by County		% of Charlotte USA	
	2001-2010	2011-2013	2001-2010	2011-2013
Charlotte MSA Counties				
Cabarrus	17	20	5.1%	4.1%
Gaston	21	18	6.3%	3.6%
Iredell	21	23	6.6%	4.7%
Lincoln	7	10	2.1%	2.0%
Mecklenburg	136	261	41.8%	52.2%
Rowan	5	5	1.6%	0.9%
Union	22	52	6.7%	10.3%
Chester SC	1	2	0.2%	0.3%
Lancaster SC	6	13	1.7%	2.5%
York SC	23	38	7.0%	7.5%
Charlotte MSA Total	259	442	79.1%	88.2%
Additional Charlotte USA Counties				
Alexander	2	3	0.6%	0.5%
Anson	1	0	0.2%	0.0%
Catawba	56	46	17.2%	9.2%
Cleveland	6	6	1.9%	1.3%
Stanly	2	3	0.6%	0.6%
Chesterfield SC	1	1	0.3%	0.2%
Charlotte USA Total	327	501	100.0%	100.0%

SBIR/STTR Awards

Charlotte Metro Counties	2001-2014		2011-2014	
	Companies Receiving Awards	Total Awards	Awards	Grants ($mil.)
Cabarrus	2	9	3	$0.5
Gaston	1	6	1	$0.1
Iredell	1	51	27	$14.4
Mecklenburg	27	72	20	$5.8
Union	1	2	0	$0.0
York SC	4	12	2	$0.6
Charlotte MSA Total	36	152	53	$21.4
Stanly	1	3	1	$0.1
Charlotte USA Total	37	155	54	$21.5

No SBIR/STTR awards reported in other Charlotte metro counties.

Inc. 5000 Companies

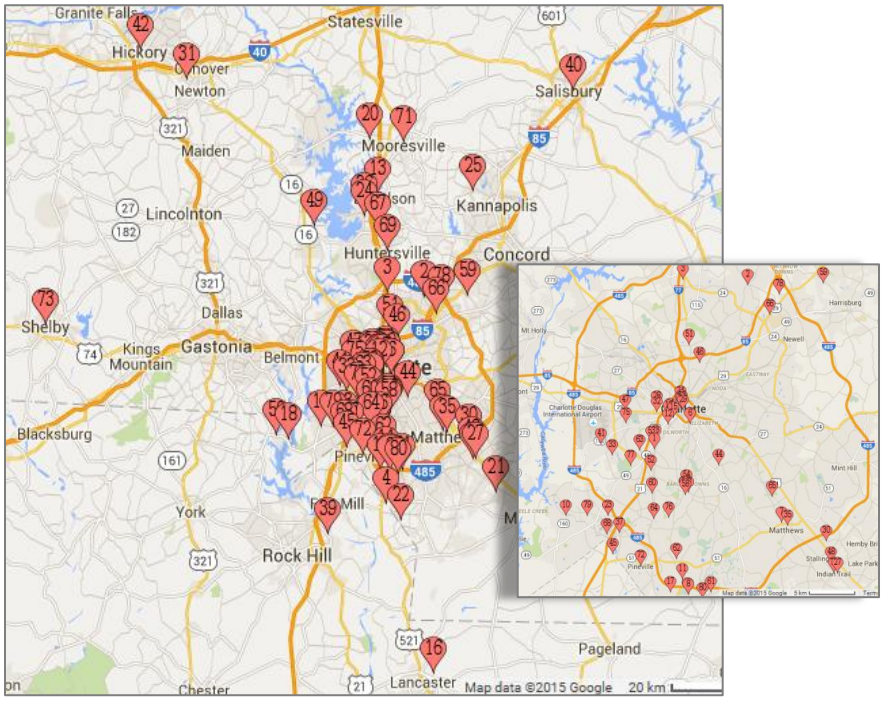
Inc. 5000 Charlotte Metro Counties	Company Count 2007-2010	Company Count 2011-2015	% of Charlotte USA 2007-2010	% of Charlotte USA 2011-2015
Cabarrus	12	8	6.3%	3.1%
Gaston	3	0	1.6%	0.0%
Iredell	21	13	11.0%	5.1%
Mecklenburg	120	214	62.8%	83.6%
Rowan	4	2	2.1%	0.8%
Union	9	8	4.7%	3.1%
Lancaster SC	1	2	0.5%	0.8%
York SC	12	6	6.3%	2.3%
Charlotte MSA Total	182	253	95.3%	98.8%
Cleveland	3	0	1.6%	0.0%
Charlotte CSA Total	185	253	96.9%	98.8%
Catawba	6	3	3.1%	1.2%
Charlotte USA Total	191	256	100.0%	100.0%

Note: Count of all appearances by companies; same company in 2 years counts as 2.

Counties with no Inc. 5000 companies: Alexander, Anson, Lincoln, Stanly, Chester SC, Chesterfield SC

High Growth Companies Location, CBJ Fast 50

The Fast 50 rankings for 2011 through 2014 include 89 unique companies located throughout the region as shown below. As the inset illustrates, Fast 50 companies in Mecklenburg are concentrated in Center City through the south of the city and county.



Appendix H: Charlotte Metrics Compared to Benchmark Metros

		Best Benchmark		#2 Benchmark		Worst Benchmark		Top Carolinas Metro	
Metric	**Charlotte**	**Metro**	**Value**	**Metro**	**Value**	**Metro**	**Value**	**Metro**	**Value**
Milken 2014 Best Performing Cities (200)									
Overall Rank [1=best, 200=worst]	23	San Francisco	1	Austin	2	Tampa	86	Charleston	39
Employment Growth	51	Austin	1	Nashville	7	Kansas City	107	Charleston	26
Wages Growth	70	San Francisco	1	Austin	4	Tampa	156	Charleston	33
High-tech Location Quotient	99	Durham-Chapel	5	San Francisco	8	Nashville	129	Charleston	70
High-tech LQ > 1	83	Raleigh-Cary	10	San Francisco	12	Nashville	105	Greensboro	49
Kauffman Index Startup Activity 2014 (40)									
Overall Rank [1=best, 40=worst]	25	Austin	1	San Francisco	6	Kansas City	29	n.a.	
Startup Density, 2011-14 Average	147.8	Austin	178.1	Tampa	174.4	Nashville	130.5	n.a.	
Inc. 5000 Fastest Growing Companies 2015									
Total Companies	64	Atlanta	188	San Francisco	148	Kansas City	40	Charleston	23
Per Million Population:									
Top 500 Companies	1.7	San Francisco	7.0	Austin	5.7	Nashville	0.0	Charleston	5.5
Top 5000 Companies	26.9	Austin	46.3	Atlanta	33.5	Kansas City	19.3	Charleston	31.6
Deloitte Technology Fast 500 Companies									
Total Companies 2009-2014	3	San Francisco	320	Atlanta	61	Tampa	5	Triad	4
Per 100K Population:									
Annual Average Companies 2009-2014	0.2	San Francisco	11.8	Austin	4.0	Tampa	0.3	Charleston	0.5
Higher Education, Forbes Top 650 Univ.									
Total Enrollment, 2014	31,753	Atlanta	92,172	San Francisco	90,876	Kansas City (CSA)	47,273	Triad	50,497
Enrollment in Top 100 Universities	1,790	Austin	52,186	Research Triangle	44,664	KC & Tampa	0	Triad	7,432
Per 100K Population:									
Total Enrollment, 2014	1334	Research Triangle	3901	Nashville	3089	Atlanta	1642	Columbia	3580
Higher Education, R&D Expend FY 2013									
Total R&D ($millions)	$40	Research Triangle	$2,392	San Francisco	$1,811	Kansas City (CSA)	$327	Charleston	$256
Per Capita (using metro population):									
Total R&D $	$17	Research Triangle	$1,174	San Francisco	$400	Kansas City (CSA)	$137	Charleston	$359
Commercialization AUTM 2011-13 Avg									
Inventions	42	Research Triangle	601	Atlanta	594	Kansas City (CSA)	82	Greenville-Spart	113
Patents	12	Research Triangle	123	Atlanta	100	Kansas City (CSA)	17	Columbia	20
Startups	3.3	Research Triangle	22.0	Atlanta	16.0	Kansas City (CSA)	2.7	Triad	5.3
Productivity per $10 mil R&D:									
Inventions	13.4	Atlanta	4.7	Tampa	4.0	Research Triangle	3.0	Greenville-Spart	13.6
Venture Capital 2011-2014 Avg									
Deals	4	San Francisco	900	Austin	97	Tampa	9	Charles, Gr-Spa	3
Total Invested ($mil)	$8	San Francisco	$10,320	Austin	$607	Tampa	$52	Greenville-Spart	$34
Per Capita:									
Total Invested	$3	San Francisco	$2,246	Austin	$312	Tampa	$18	Charleston	$30
Total Metro Patents 2011-2013									
Issued 2011-2013 Average	388	San Francisco	7531	Austin	2600	Nashville	220	Greenville-Spart	445
Per 100K Population:									
Issued 2011-2013 Average	17	San Francisco	166	Austin	138	Nashville	13	Greenville-Spart	32
SBIR/STTR 2011-2014									
Total Awards	53	San Francisco	795	Austin	377	Nashville	37	Triad	46
Grant Funding ($mil)	$21	San Francisco	$320	Research Triangle	$174	Tampa	$14	Triad	$21
Per Million Population:									
Grant Funding ($mil)	$9	Research Triangle	$84	San Francisco	$70	Tampa	$5	Charleston	$17

Per Capita

		#1 Benchmark		#2 Benchmark		Worst Benchmark		Top Carolinas Metro	
Metric	**Charlotte**	**Metro**	**Value**	**Metro**	**Value**	**Metro**	**Value**	**Metro**	**Value**
Milken 2014 Best Performing Cities (200)									
Overall Rank	23	San Francisco	1	Austin	2	Tampa	86	Charleston	39
Employment Growth	51	Austin	1	Nashville	7	Kansas City	107	Charleston	26
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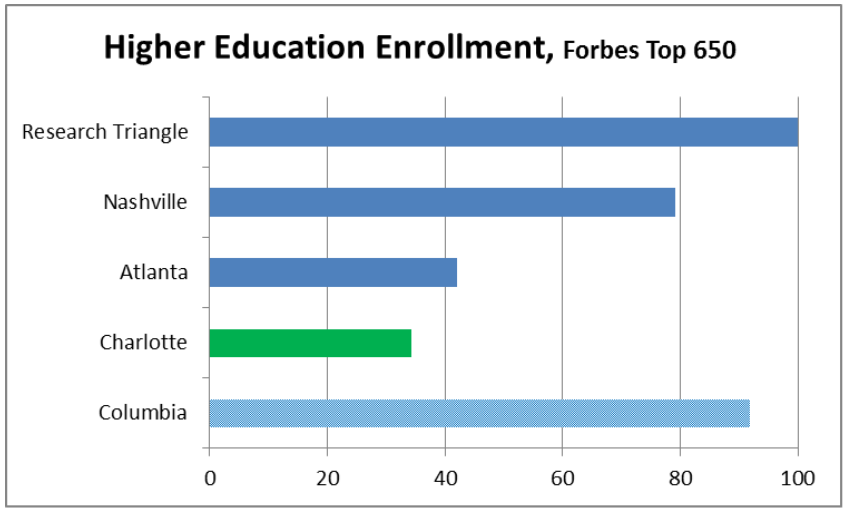
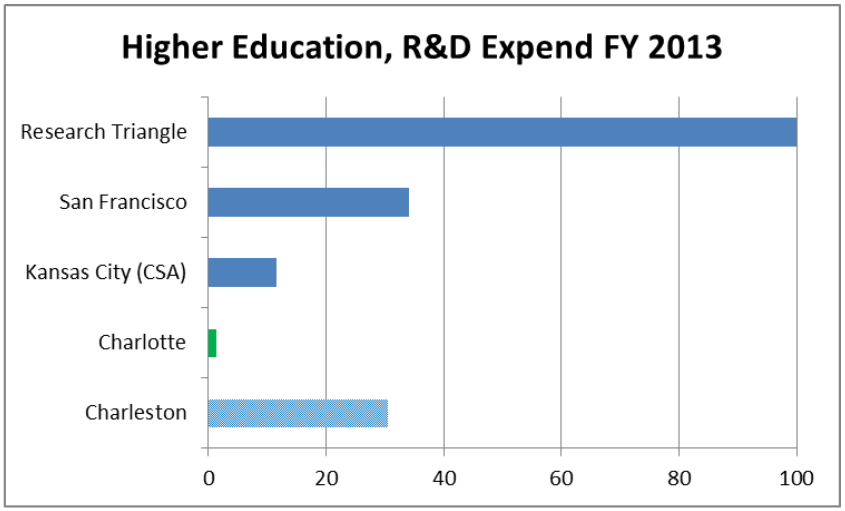
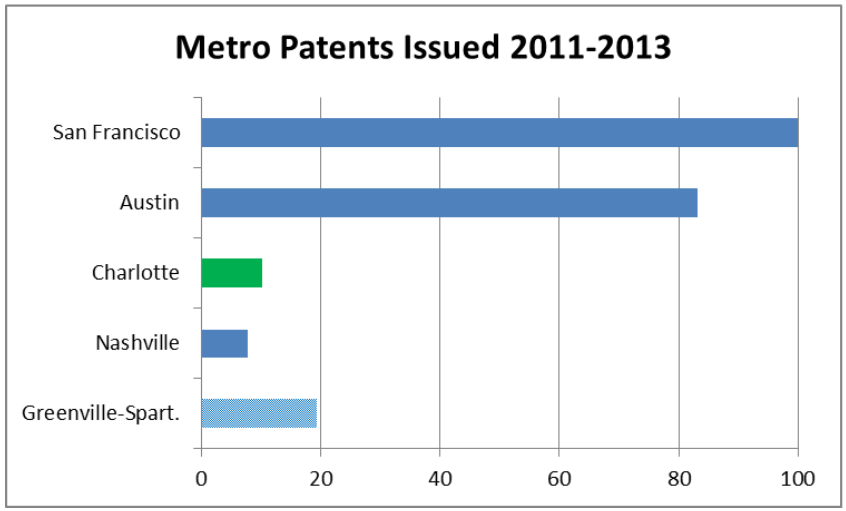
Kauffman Index Startup Activity 2014 (40)									
Startup Density, 2011-14 Average	147.8	Austin	178.1	Tampa	174.4	Nashville	130.5	n.a.	
Inc. 5000 Fastest Growing Companies 2015									
Per 100K Population:									
Top 500 Companies	0.17	San Francisco	0.70	Austin	0.57	Nashville	0.0	Charleston	0.55
Top 5000 Companies	2.69	Austin	4.63	Atlanta	3.35	Kansas City	1.93	Charleston	3.16
Deloitte Technology Fast 500 Companies									
Per 100K Population:									
Annual Average Companies 2009-2014	0.2	San Francisco	11.8	Austin	4.0	Tampa	0.3	Charleston	0.5
Higher Education, Forbes Top 650 Univ.									
Per 100K Population:									
Total Enrollment, 2014	1334	Research Triangle	3901	Nashville	3089	Atlanta	1642	Columbia	3580
Higher Education, R&D Expend FY 2013									
Per 100K Population:									
Total R&D $mil	$1.7	Research Triangle	$117	San Francisco	$40.0	Kansas City (CSA)	$13.7	Charleston	$35.9
Commercialization AUTM 2011-13 Avg									
Productivity per $10 mil R&D:									
Inventions	13.4	Atlanta	4.7	Tampa	4.0	Research Triangle	3.0	Greenville-Spart	13.6
Venture Capital 2011-2014 Avg									
Per 100K Population:									
Total Invested ($mil)	$0.30	San Francisco	$224.6	Austin	$31.2	Tampa	$1.8	Charleston	$3.0
Total Metro Patents 2011-2013									
Per 100K Population:									
Issued 2011-2013 Average	17	San Francisco	166	Austin	138	Nashville	13	Greenville-Spart	32
SBIR/STTR 2011-2014 average									
Per 100K Population:									
Grant Funding ($mil)	$0.22	Research Triangle	$2.09	San Francisco	$1.74	Tampa	$0.12	Charleston	$0.43

Per Capita Index to Top Performing Benchmark Metro

Charts include Charlotte (green), top two benchmark metros, worst benchmark metro, and best Carolinas metro

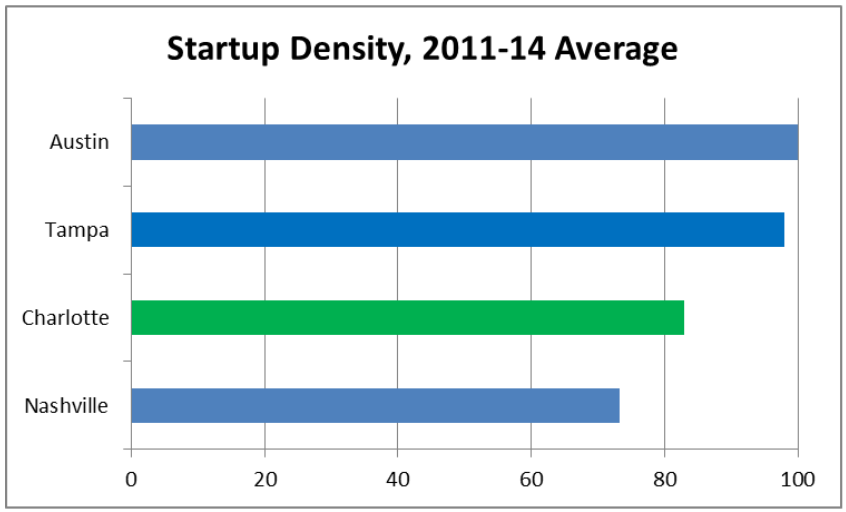


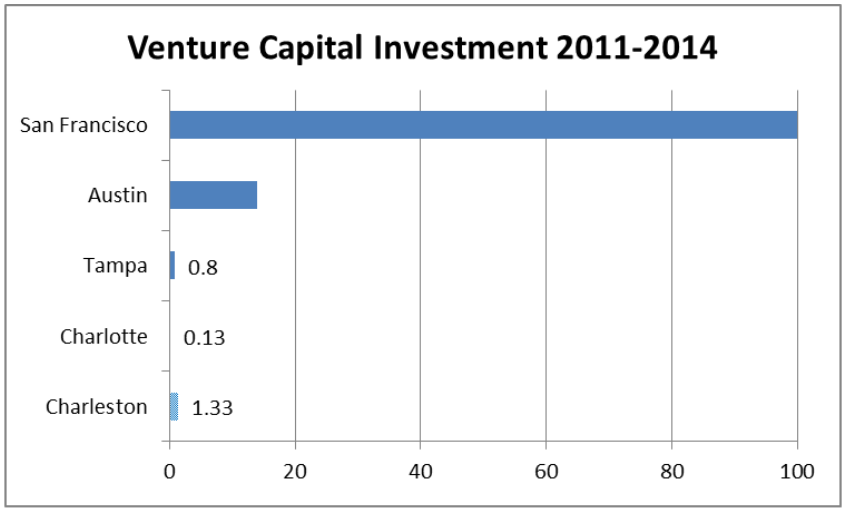


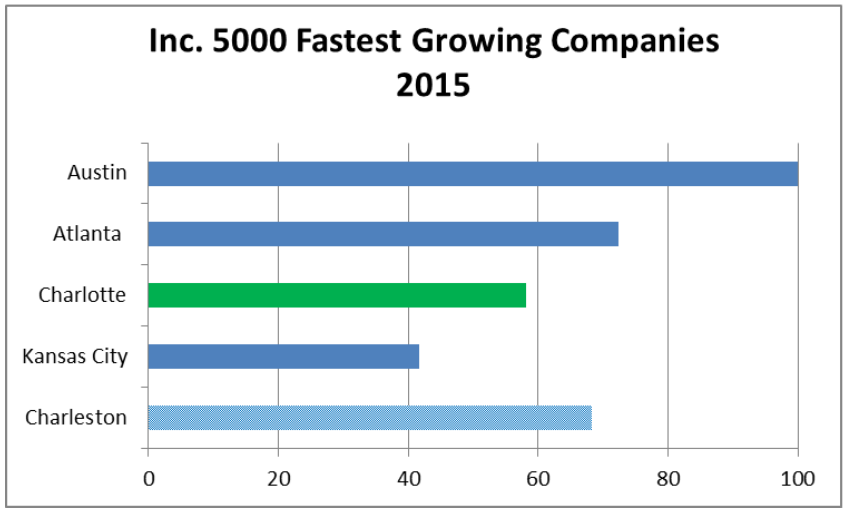


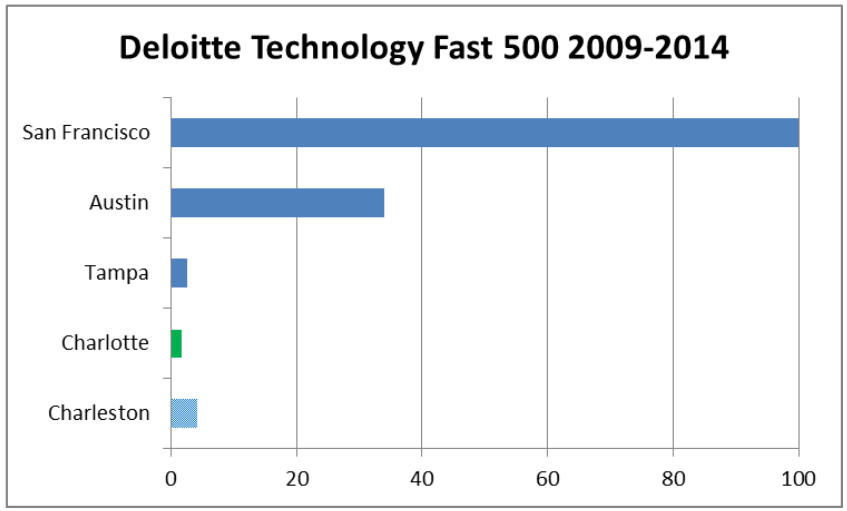
Per Capita Index to Top Performing Benchmark Metro

Charts include Charlotte (green), top two benchmark metros, worst benchmark metro, and best Carolinas metro









Appendix I: Data Sources

Topic	Source
Growth Entrepreneur Survey	Original survey, see UNC Charlotte Urban Institute CEGR Survey document.
Community Survey	Original survey, see UNC Charlotte Urban Institute CEGR Survey document.
Benchmark Metro Comparison	Milken Best Performing Cities, www.best-cities.org
Higher Education Students	*Forbes* Top 650 Universities, www.forbes.com
Higher Education R&D Expenditures	National Science Foundation, National Center for Science and Engineering Statistics, Higher Education Research and Development Survey. Data from survey cycle FY 2013, as of 31 July 2014.
University Technology Commercialization	Data extract from Association of University Technology Managers (AUTM) annual data report.
Patents	www.uspto.gov Multiple specific URLs.
SBIR/STTR Funding	www.sbir.gov/sbirsearch/award/all
Entrepreneurial Company Dynamics National Trends	Robert Litan and Ian Hathaway research, quoted in "Start-up Slowdown," *Foreign Affairs, Jan-Feb 2015*, and "Declining Business Dynamism in the United States," Brookings Institution, May 2014. U.S. Bureau of Labor Statistics, Business Employment Dynamics;www.bls.gov/bdm
Overall Start-up Activity	The Kauffman Index: Startup Activity, www.kauffmanindex.org
Inc. 5000 Fastest Growing Private Companies	www.inc.com/inc5000
Fast 50 Companies	*Charlotte Business Journal* Book of Lists
Deloitte Technology Fast 500	www2.deloitte.com/us/fast500.html
NC IDEA Funding	www.ncidea.org/content/grant+recipients/
Innovation Fund North Carolina	Catawba Valley Community College, T. Mifsud
Biotech Sector	NC Biotechnology Center, www.ncbiotech.org/past-awards
Angel Investors	Multiple angel group web portfolio listings.
Venture Capital	PricewaterhouseCoopers/National Venture Capital Association MoneyTree™ Report based on data from Thomson Reuters. August 2015 MSA extract.
Charlotte Venture Challenge	Ventureprise files
Accelerators and Incubators	Information supplied by each organization.

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Charlotte Regional Fund for Entrepreneurship	City of Charlotte	Foundation For The Carolinas	NC IDEA Foundation
charlotteentrepreneur.org	charmeck.org	fftc.org	ncidea.org

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