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Alexis Wiseman April 13, 2021

Soul of the City: A Tech Cluster Plan for Atlanta

by

Alexis Wiseman

Dr. Peter Roberts
Adviser

Institute of the Liberal Arts

Dr. Peter Roberts

Adviser

Dr. Peter Wakefield

Committee Member

Dr. Charles Goetz

Committee Member

2021

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Alexis Wiseman

Dr. Peter Roberts

Adviser

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Abstract

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Cities are under pressure to compete in the rapidly changing knowledge economy. The standard economic development plans they have used in the past need a serious upgrade. Changes arising from an accelerating technology revolution have made it clear cities must prepare to be a fertile environment for attracting established technology companies and new startups. Yet, while Silicon Valley and other cities have experienced spectacular growth, their residents have paid a heavy price. Economic externalities such as homelessness, gentrification, and other imbalances have led to an atmosphere in which even those who have thrived are looking to leave. Clearly, growth that leaves behind and alienates many citizens, particularly the least advantaged, is ethically wrong. How can cities support the development of tech clusters to achieve economic growth with inclusive prosperity while minimizing externalities? This paper proposes an answer with a detailed model for how to create a tech cluster plan, and how it may be applied to the City of Atlanta. The proposed tech cluster plan relies on several modeling frameworks to explain the organizational structure and an execution model which will define an organization for action and method for enforcing behavioral rules. Altogether, this plan may serve as a template for how cities can develop tech clusters that support equitable growth for all residents.

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Table of Contents

Imagine a busy city street on a sunny day: people dressed in casual attire are whizzing by on scooters, and robotic containers carry food deliveries moving autonomously on the sidewalk. A trail of people in gray Patagonia vests wait in line outside the salad chain Sweetgreen. In the far distance, a billboard ad for corporate credit card startup Brex reads "A card can't close the round, but you can,"[1] - jargon targeted towards entrepreneurs seeking venture capital. This is the scene of the SoMa neighborhood of San Francisco: home to Silicon Valley, the predominant technology innovation hub of the world. Long before the area came to be known as Silicon Valley, the region was home to the mass migration of gold-diggers in the California Gold Rush of 1849. Today, the region is better known for the mass migration of entrepreneurs drawn by what many consider to be the most supportive business environment to incubate and grow their technology startups.

Silicon Valley is a world-renowned cluster, a concept defined by Harvard economist Michael E. Porter as a group of interrelated companies and institutions located in a specific geography that cooperate as well as compete.[2] More specifically, however, Silicon Valley is a tech cluster, which may be defined as "locations where new products (be they goods or services) and production processes are created that affect multiple parts of the economy."[3] Anchored by various academic institutions such as Stanford University, and the University of California at Berkeley, large tech companies like Google, Apple and Facebook have immediate access to highly skilled workers. Prestigious accelerator programs like Y-Combinator provide resources for entrepreneurs to explore their ideas and attract capital to launch their businesses. Angel investors and venture capitalists, many of whom are successful entrepreneurs themselves, are scattered throughout the

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[1] Melia Robinson, "A Hot Startup Has Covered San Francisco with Billboards. Here's Why the CEO Says the Ads Are Worth Every Penny," Business Insider, accessed March 20, 2020, https://www.businessinsider.com/brex-corporate-card-for-startups-covers-san-francisco-with-billboards-2018-8.

[2] Michael E. Porter, "Location, Competition, and Economic Development: Local Clusters in a Global Economy," *Economic Development Quarterly* 14, no. 1 (February 2000): 15–34, https://doi.org/10.1177/089124240001400105.

[3] William R. Kerr and Frederic Robert-Nicoud, "Tech Clusters," *Journal of Economic Perspectives* 34, no. 3 (August 1, 2020): 50–76, https://doi.org/10.1257/jep.34.3.50.

region ready to invest in the next big idea. The powerful mix of preeminent research universities, big tech companies, and the density of early-stage capital help to explain why in 2019, Silicon Valley startups received 44% of all US venture capital (VC) funding.[4]

This geographic clustering of resources and potential for economic gain has attracted the attention of many cities seeking Silicon Valley success. Yet, closer observation reveals dark byproducts of a winner and loser scenario. The region faces economic externalities including imbalances in housing and living affordability, and rampant homelessness.[5] As Silicon Valley began to grow as a tech cluster, the influx of high-income residents in search of housing led to the gentrification of various neighborhoods.[6] The once sparkling image of a life in Silicon Valley has lost its luster; recent data reveals 47% of Bay-Area residents are now contemplating moving from the region.[7] Many cities like Atlanta, in a quest to improve economic growth, are seeking to develop an environment where a tech cluster may thrive. What city stakeholders neglect to focus on, however, are externalities that can arise as a result.

Various scholars in the fields of economics and sociology have been exploring the economic impact of agglomeration of industries within a particular geographical area. In "What's New about the New Economic Geography?" Nobel-prize winning economist Paul Krugman explores the concentration of industries within particular regions.[8] Referencing ideas of a core and periphery of economic growth, Krugman defines specific forces that impact geographical

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[4] Crunchbase 2019 Annual Review: *A Look Back at 2019's Unicorns, Largest Funding Rounds & More.* San Francisco, Crunchbase 2019. Accessed February 28, 2020. https://about.crunchbase.com/crunchbase-annual-review-2019/

[5] Adam Nagourney and Conor Dougherty, "The Cost of a Hot Economy in California: A Severe Housing Crisis," *The New York Times*, July 17, 2017, sec. U.S., https://www.nytimes.com/2017/07/17/us/california-housing-crisis.html.

[6] Nagourney and Dougherty, 2017.

[7] *On Leaving the Bay Area*. FM3 Research (January 2020). https://www.mercurynews.com/2020/02/23/bay-area-dissatisfaction-rich-poor-young-and-old-unhappy-here/

[8] Paul Krugman, "What's New about the New Economic Geography?," *Oxford Review of Economic Policy* 14, no. 2 (June 1, 1998): 7–17, https://doi.org/10.1093/oxrep/14.2.7.

concentration of industry.[9] Similarly, Porter's "Location, Competition, and Economic Development: Local Clusters in a Global Economy," also seeks to explain motives for clustering by examining the particular elements that contribute to a successful cluster.[10] While these scholars present clusters as beneficial to economic growth in cities, their studies do not address the economic externalities that are often associated with cluster development. Furthermore, these works do not consider how tech clusters may be integrated into their surrounding communities to provide economic benefit and social impact. How can cities support the development of tech clusters to achieve economic growth with inclusive prosperity, while minimizing externalities? This paper proposes how cities should design a tech cluster plan managed by an execution model to accomplish this task.

Tech clusters have the potential to create inclusive prosperity for all residents of the surrounding community if cities are willing to proactively take control of how tech clusters are developed and supported. Inclusive prosperity means that all citizens have the resources necessary to both contribute to and share in economic benefits.[11] Most cities enable tech clusters by supporting real estate development projects that create facilities for some tech cluster stakeholders. The city enables these real estate developments with public incentive finance: tax incentives, tax abatement, direct grants, and zoning changes.[12] Yet the government has failed to adequately prescribe how the tech cluster should integrate with the community. The lack of a tech cluster plan, managed with an execution model, makes cities vulnerable to the economic externalities

[9] Krugman 1998, 8.

[10] Porter, 16.

[11] "What Is Inclusive Prosperity?," *Prosperity & Inclusion City Seal & Award* (PICSA Index), accessed March 1, 2021, https://www.picsaindex.com/what-is-inclusive-prosperity/.

[12] J Murphy McMillan III, William S Mendenhall, and James A Richardson, "Use of Public Incentive Finance in Commercial Real Estate Developments: A Developer's Perspective," *Real Estate Finance Journal*, 2007, 8.

witnessed in Silicon Valley, which exacerbate economic inequality and diminish quality of life for all residents.

Cities are missing the opportunity: tech clusters can have a positive social and economic impact if they use a well-designed plan. This paper intends to demonstrate how to create a tech cluster plan with an execution model for the City of Atlanta, a critical economic hub in the southern United States. Atlanta embodies many of the key stakeholders and assets for creating a vital tech cluster in America. Many well-recognized corporations such as Delta, Coca Cola and UPS maintain headquarters in Atlanta, with various other companies looking to relocate to the area. Additionally, Emory University, Georgia Tech and the HBCUs provide an important foundation for research and innovation. Nevertheless, Atlanta is still vulnerable to the issues experienced in Silicon Valley. The proposed tech cluster plan, Soul of the City, establishes an organization and a unifying mission in the form of a public-private partnership. The execution model for Soul of the City provides an organization for action, guided with the principles of economic incentives and disincentives. With this tech cluster plan in place, Atlanta, and many cities across the United States can achieve inclusive prosperity while minimizing externalities, and save the soul of the city.

2. Tech Clusters: Economic Drivers, Origins & Structure

2.1 Cities Seeking Economic Growth

Cities are continually under pressure to support the services and quality of life of their respective populations. While this may be achieved through raising taxes, such measures rarely help politicians get reelected. The alternative option is to grow the tax base with an economy supported by high growth companies, employing people in fields that pay high wages. The goal is

to stimulate a virtuous cycle of more profitable businesses paying employees higher incomes, which in turn spurs growth of existing businesses and new real estate development that attract more business to the city. Cities seeking economic growth are increasingly acting to attract and support technology companies, whether through tax benefits or development policies that allow for continuous growth. Chapter 3 will review cases studies of how tech clusters have worked in other cities. What follows next is a review of the origins of tech clusters, as well as a discussion covering the stakeholders and assets required in a functioning tech cluster.

2.2 Origins, Innovation, and the Knowledge Economy

The tech cluster is a complex development, requiring specific groups of people, collaboration among various public and private stakeholders, and the existence of local early-stage capital. While the concept of tech clusters may be relatively new, industry clusters have been prevalent throughout history, spurring competition and innovation among the firms involved. Some of the most well-known clusters can be found in cities like Detroit, Michigan, famous for its rapid innovation in the automobile industry.[13] As discussed by Porter and Porter in "Location, Clusters and the "New" Microeconomics of Competition," the development of clusters stems from economist Adam Smith's theory of specialization within industry.[14] As specialized firms gathered near each other, the regions in which the firms were located also became known for such specializations.[15] By locating near each other, firms could leverage a variety of benefits through

[13] Robert Z Lawrence and Lawrence Edwards, "US Employment Deindustrialization: Insights from History and the International Experience," *Peterson Institute for International Economics* (2013).

[14] Michael E. Porter and Michael P. Porter, "Location, Clusters, and the 'New' Microeconomics of Competition," *Business Economics* 33, no. 1 (1998): 7–13. 7.

[15] Porter and Porter, 11.

agglomeration.[16] Additional network effects and the collaboration of individuals, elements that also exist in tech clusters, further helped to bolster the success of clusters throughout history.[17]

Clusters like Detroit, while successful, were also prone to potential economic devastation. During the deindustrialization period beginning in the 1960s, the Detroit auto industry faced great economic loss. An increase in the demand for goods combined with more accessible options for international trade led to the outsourcing of manufacturing labor by U.S. companies seeking to reduce production costs.[18]

While those who once benefited from the Detroit automobile cluster may have initially struggled, in the end, many Americans were now able to benefit from purchasing goods at a cheaper price. Stanford economist Enrico Moretti discusses the outsourcing of manufacturing labor in *The New Geography of Jobs*, citing it as a foundational component to the growth of the current U.S. economy.[19] Moretti states, "Each country exports the product it is particularly good at making and in exchange imports other goods produced relatively more efficiently abroad. The net result is that we all end up a little richer."[20] By exporting manufacturing jobs, Moretti argues that in turn, new opportunities were presented in the innovation sector, leading to the modern-day innovation economy.[21]

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[16] Stuart S. Rosenthal and William C. Strange, "Small Establishments/Big Effects Agglomeration, Industrial Organization and Entrepreneurship" in *Agglomeration Economics*. eds. Edward L. Glaeser. University of Chicago Press, 2010. https://doi.org/10.7208/chicago/9780226297927.001.0001.

[17] Rosenthal and Strange, 285.

[18] Lawrence and Edwards, 2.

[19] Enrico Moretti. "American Rust" in *The New Geography of Jobs*, Reprint edition. Boston, Mass: Mariner Books, 2013. 34.

[20] Moretti, 34.

[21] Moretti, 35.

The concept of the innovation economy was first introduced by economist Joseph Schumpeter in his book "Capitalism, Socialism and Democracy," in 1942.[22] In particular, Schumpeter argues that in an economy focused on innovation, there must be a clear focus on developing new technology and processes for managing business.[23] Instead of workers being consumed with manual labor, knowledge labor would become the new standard, supporting efforts of research and development (R&D) that would ultimately contribute to new technology.[24] In order to sustain this economy, Schumpeter also proclaims the importance of collaboration among individuals, government agencies and educational institutions.[25] Much of what Schumpeter described some eighty years ago is now a critical foundation of both the modern day tech cluster and our economy. More commonly known today as the knowledge economy, the term mirrors much of Schumpeter's work. For the purposes of this work, I will refer to the concept as the knowledge economy, defined as: "the production and services based on knowledge-intensive activities that contribute to an accelerated pace of technological and scientific advance, as well as equally rapid obsolescence."[26] Many measures are responsible for accelerating this system; between the outsourcing of manufacturing, to government-funded subsidies for R&D, the U.S. economy has quickly become centered on innovation.[27] As we will later see, certain regions of the U.S. identified the shift early on, taking advantage of developing tech clusters that have shaped our world. In the following section, we will evaluate the origins of high-risk entrepreneurship and venture capital, and their effects on the development of the modern day tech cluster.

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[22] Joseph A Schumpeter. *Capitalism, Socialism, and Democracy: Third Edition*. New York: Harper Perennial Modern Classics, 2008.

[23] Schumpeter, 256.

[24] Schumpeter, 257.

[25] Schumpeter, 260.

[26] Walter W Powell and Kaisa Snellman. "The Knowledge Economy." *Annual Review of Sociology* 30, no. 1 (August 2004): 199–220. https://doi.org/10.1146/annurev.soc.29.010202.100037.

[27] Moretti, 40.

2.3 Startup Culture and the Entrepreneurship Revolution

The spirit of entrepreneurism has always been an important reflection of the American spirit of individualism. The culture of risking failure and expressing your passion through a dream is embraced and honored. Today more than ever, the entrepreneur is considered a hero. Technology and startup firms have dominated the headlines because they have changed the way we live while spawning new industries. Large corporations that were once startups, such as the infamous FAANG (Facebook, Amazon, Apple, Netflix, Google) companies are now household names and integrated into our daily lives. The modern evolution of the technological revolution has glamorized the life of an entrepreneur.

In the United States, entrepreneurial culture reflects a pillar of American values and work ethic. Some of these values, such as individualism, were among the founding principles of the country and are ingrained into many parts of culture.[28] Such values have also proven to attract immigrants from around the world, hoping to launch a startup and achieve the "American dream." Although the idea of the "American Dream" has changed over time, its association with achieving economic freedom is a commonly cited goal for many immigrants in the United States.[29] It represents a certain attitude of hope, optimism, and competition, many of the traits that represent the modern entrepreneur.

2.4 Origins of High-Risk Entrepreneurship

Today, the world considers the San Francisco Bay Area the latest epicenter of the American Dream; it is the home of high-tech development and startup firms, many of which have been either started or led by immigrants.[30] We can trace the origins of high-risk entrepreneurship

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[28] Robert L Kohls, *The Values Americans Live By*. Meridian House International, 1984.

[29] Samuel R. Lawrence, *The American Dream: A Cultural History* (Syracuse University Press, 2012).

[30] Kerr and Robert-Nicoud, 63.

in the United States to the mid-1800s in Boston, Massachusetts.[31] While many businesses and industries were emerging, the whaling industry was one of the most lucrative to be involved with at the time.[32] Whales were hunted for the purposes of extracting oil and powering lights, and automobiles among other activities.[33] Highly skilled captains were required to lead voyages and recruit an experienced team. The industry, while lucrative, was of high-risk; a good whaling season could not be repeatedly predicted. With no banks willing to fund these voyages, captains were forced to seek out unique sources of capital.[34] Wealthy individuals and families provided capital for investment, and to minimize risk, hired agents to manage the allocation of capital.[35] Agents conducted due diligence on potential voyages, and continually looked for ways to support existing investments. In addition, despite opportunities for whaling in other locations around the world, the industry was clustered in Boston, Massachusetts where it began, leading to increased economic success in the region.[36] Ultimately, the whaling industry was the start of high-risk entrepreneurship and venture capital in the U.S. As we will begin to see, the industry also contributed many of the foundational elements to the development of modern-day tech clusters in the U.S.

2.5 Tech Cluster Attributes

In the whaling "cluster" of Boston, Massachusetts in the late 1800s, it is evident that agglomeration of skilled and diverse talent, the collaboration of individuals, and capital were critical to its success. Many of the same factors also define the most successful tech clusters today.

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[31] Tom Nicholas, *VC: An American History*. Illustrated edition. Cambridge, Massachusetts: Harvard University Press, 2019.

[32] David Moment, "The Business of Whaling in America in the 1850's." *The Business History Review* 31, no. 3 (1957): 261–91.

[33] Moment, 267.

[34] Nicholas, 23.

[35] Nicholas, 27.

[36] Moment, 280.

For several decades, scholars have been working to define what specifically constitutes a tech cluster. Like Porter's classical definition of a cluster, the tech cluster features certain attributes that create a distinctly productive environment for innovation. Until recently, one of the most important elements of a tech cluster is the concentration of highly skilled and educated people who live there. Historically, it has been critically important for companies to be located where their talent lives, which in turn can lead to an agglomeration of companies in a particular region. Close proximity of both companies and people facilitate rapid increases for knowledge spillovers and serendipitous interactions between individuals.[37] The result of continuous conversation and shared ideas means new opportunities for rapid innovation and spin-offs of more established companies.[38] The necessity of co-location, however, has been recently challenged by the COVID-19 pandemic and the concept of remote work. With new technology, likeminded individuals are now able to meet online, iterate on a business idea, and launch a company without ever needing to leave their homes. Established companies are also able to continue to successfully run their businesses online, with some even choosing to implement a permanent remote work structure.[39] This raises critical questions for the development of tech clusters globally, as the comparative advantages of each cluster will now be in stark contrast. For example, more people may choose to move to a city like Atlanta for a lower cost of living. To keep up with demand, new real-estate developments would need to be built, which could lead to a cascade of negative externalities. Ultimately, cities must continue to invest resources in building a tech cluster that is inclusive of all residents, regardless of the current remote-work structures in place by large companies.

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[37] Rosenthal and Strange, 278.

[38] Kerr and Robert-Nicoud, 9-15.

[39] Rosalie Chan, "Atlassian Just Told Employees They Can Work from Home Permanently, Following Twitter and Facebook," Business Insider, accessed March 26, 2021, https://www.businessinsider.com/atlassian-says-employees-they-can-work-from-home-permanently-2020-8.

In addition to the co-location of people, companies and other resources, most successful tech clusters also tend to staff many immigrants.[40] Such metrics illustrate the clear ties between the pursuit of entrepreneurship and the American Dream. William R. Kerr is a Professor of Business Administration at Harvard Business School and Frederic Robert-Nicoud is a Professor of Economics at the Geneva School of Economics and Management. Both scholars are at the forefront of research in defining and examining prominent global tech clusters. In a recent study, Kerr and Robert-Nicoud found, "More than 60% of Silicon Valley's entrepreneurs immigrated to America (Kerr and Kerr 2019), and the prominent CEOs of Alphabet, Microsoft, SpaceX/Tesla, and Uber are all foreign born."[41] The correlation between Silicon Valley entrepreneurs and immigrants further presents the critical importance of the role of diversity and its impact on the development of a tech cluster.

The agglomeration of diverse, skilled individuals and industry provide the foundation for the development of network effects, a sociological concept that has proven to have significant impact in tech clusters. AnaLee Saxenian, Dean of the University of California Berkeley School of Information, has contributed various works to the discussion of tech clusters. In "Regional Advantage: Culture and Competition in Silicon Valley and Route 128," Saxenian focuses on the importance of network effects in the development of Silicon Valley's tech cluster.[42] Saxenian highlights the importance of interaction between entrepreneurs and other individuals, and how it spurs the rapid development of new technology. In her work, she cites common meeting spots where new entrepreneurs and engineers would convene to socialize. Jeffery Kalb, an entrepreneur interviewed by Saxenian reflects on the network effects at play,

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[40] Kerr and Robert-Nicoud, 13.

[41] Kerr and Robert-Nicoud, 15.

[42] AnnaLee Saxenian, *Regional Advantage: Culture and Competition in Silicon Valley and Route 128, With a New Preface by the Author*, 145. 50525th edition. Cambridge, Mass.: Harvard University Press, 1996.

> In the early days of the semiconductor industry there were certain places that everybody frequented and the standing joke was that if you couldn't figure out your process problems, go down to the Wagon Wheel and ask somebody...There's a velocity of information here in the Valley that is very high, not as high as it used to be, but I can assure you that it is much higher than it is in most other areas of the country. This means that relationships are easier to develop here than in the East [coast]."[43]

Through citing the ease of building relationships and acquiring new information, Kalb shows the power of network effects in Silicon Valley, and how this can accelerate the development of new technology.

Brad Feld, a venture capitalist and scholar, has contributed various works on the development of startup communities in America. In his foundational book "Startup Communities: Building an Entrepreneurial Ecosystem in Your City," Feld contributes additional support for the importance of network effects in a tech cluster. Recognized by various scholars and professions in the community, Feld's "Boulder Thesis" identifies four core components necessary to sustain ongoing network effects and the emergence of new companies in a tech cluster. The thesis takes a micro-level view of the tech cluster through a particular reference to the startup community. Its four key components are as follows:

1. Entrepreneurs must lead the startup community.
2. The leaders must have a long-term commitment.
3. The startup community must be inclusive of anyone who wants to participate in it
4. The startup community must have continual activities that engage the entire entrepreneurial stack.[44]

[43] Saxenian, XI.

[44] Brad Feld, *Startup Communities: Building an Entrepreneurial Ecosystem in Your City*. 2nd edition. Hoboken: Wiley, 2020.

Feld emphasizes the role of entrepreneurs in leading an inclusive and engaging community because ultimately the individuals within the community must have the responsibility for creating a shared vision for the future.

2.6 Technopolis Wheel: Tech Cluster Stakeholders

The collaborative nature of a tech cluster raised by Feld is further explicated by Smilor, Gibson and Kozmetsy, professors of management and entrepreneurship from the University of Texas in Austin. Specifically, these scholars demonstrate that collaboration among public and private sectors are also required in the development of a tech cluster.[45] Smilor, Gibson and Kozmetsy define seven core stakeholders that support the development of a tech cluster: universities, large corporations, emerging companies, federal government, state government, local government and support groups.[46]

Figure 1. The Technopolis Wheel, a visual representation by Smilor, Gibson and Kozmetsy of the seven key sectors that support the establishment and development of a tech cluster.[47]

[45] Raymond W Smilor, David V. Gibson, and George Kozmetsky. "Creating the Technopolis: High-Technology Development in Austin, Texas." *Journal of Business Venturing* 4, no. 1 (January 1989): 49–67.

[46] Smilor, Gibson, and Kozmetsky, 51.

[47] Smilor, Gibson, and Kozmetsky, 51.

The stakeholders identified may appear similar in comparison to Porter's original cluster definition, however, Smilor, Gibson and Kozmetsky also identify key sectors within these sectors that are necessary for tech cluster development. Through identifying key stakeholders and sectors, Smilor, Gibson and Kozmetsy present a clear roadmap for building a strong tech cluster. Their work further illustrates the power of Saxenian's sociological theories at play through the involvement of multiple stakeholders.[48]

2.7 Technopolis Wheel: University and Higher Education

As can be observed in the Technopolis Wheel, the university is one of the largest and most critical components in the development of a tech cluster. In particular, the disciplines of engineering, business, material sciences and research centers are highlighted as key components of the role of the university in a tech cluster. These qualities of the university can overlap with other components of a tech cluster, such as research and development (R&D) found within large companies or contribute to emerging companies through the development of university spin offs. Jan Youtie and Philip Shapira are professors of management, innovation and policy at Georgia Institute of Technology. Youtie and Shapira build upon the work of Smilor, Gibson and Kozmetsy by illustrating the changing understanding of the role of the university throughout history, and how it has evolved into a critical component of the tech cluster model.[49] Specifically, Youtie and Shapira argue that in our modern knowledge-based economy, the university must be viewed as a central "knowledge hub" that integrates research and industry to fuel innovation.[50]

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[48] Saxenian, 145.

[49] Jan Youtie and Philip Shapira, "Building an Innovation Hub: A Case Study of the Transformation of University Roles in Regional Technological and Economic Development," *Research Policy*, Special Section on University-Industry Linkages: The Significance of Tacit Knowledge and the Role of Intermediaries, 37, no. 8 (September 1, 2008): 1188–1204, https://doi.org/10.1016/j.respol.2008.04.012.

[50] Youtie and Shapira, 1190.

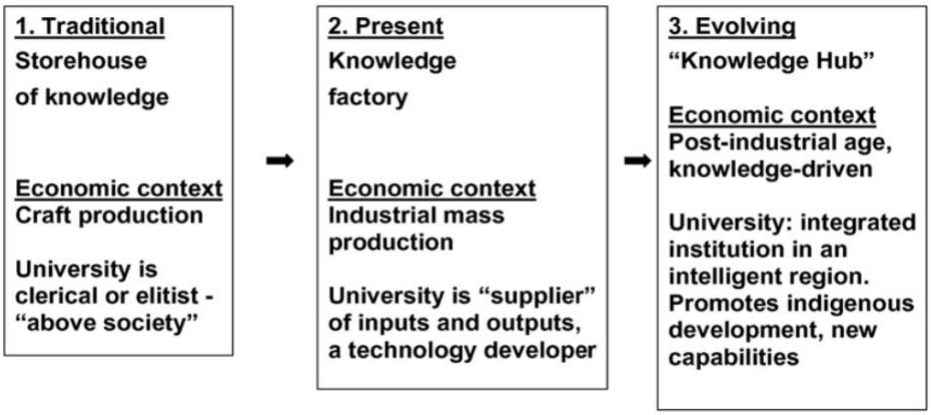

Figure 2. *Evolving University Contexts and Missions.*[51]

The importance of universities makes it evident that the strength of a tech cluster can only be as strong as its surrounding universities. This will be a critical component as we assess the development of a tech cluster plan for Atlanta.

2.8 Technopolis Wheel: Large Corporations and Emerging Companies

In addition to the university segment, the Wheel also features the presence of large corporations and emerging companies as critical to the development of a tech cluster. Large corporations and Fortune 500 companies engage in various activities, including R&D and hiring of new employees, activities which are likely to be in collaboration with the university sector. Industry research may be conducted with a university lab, and companies may hire new graduates. In turn, this co-dependence creates new opportunities for network effects and knowledge spillovers between each sector, spurring new startup spin-offs from both large companies and universities alike. Ultimately, new startups that emerge because of these collaborations contribute the highest levels of net-job growth, spurring continued economic growth in the tech cluster.[52]

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[51] Youtie and Shapira, 1190.

[52] Tim J. Kane, "The Importance of Startups in Job Creation and Job Destruction," in *Kaufman Foundation Research Series: Firm Formation and Economic Growth - SSRN Electronic Journal*, 2010, https://doi.org/10.2139/ssrn.1646934.

2.9 Technopolis Wheel: The Role of Government

In the framework of the Technopolis Wheel, its creators also define three sectors of government and how each sector works to support the tech cluster. At the federal level, defense spending has historically been a crucial element in the development of new technology. Federal defense spending may overlap with the large or emerging company sectors, which may act as contractors to develop new technology for government purposes. Often, this technology may be later commercialized, which can also lead to new startups. Government sponsored research, on the other hand, is most likely to be linked to the university sector of the Wheel. Universities may receive special grants or subsides for research, which results in strengthening the university and ultimately the greater tech cluster. As will later be discussed, defense spending and sponsored research were particularly important to the development of the Silicon Valley tech cluster and some of its most successful companies.

In addition to federal government, state government, including the programs and educational support offered, can also be instrumental to a successful tech cluster. In the U.S. there are over 1,600 public colleges, which as previously noted, are one of the most critical stakeholders of the Technopolis Wheel.[53] With a foundation of state support in place, local government works to ensure a high quality of life for all residents, developing competitive advantages through cost of living or unique culture.

2.10 Technopolis Wheel: Influencers

The central node of the wheel are influencers, defined by Smilor, Gibson and Kozmetsky as "key individuals who make things happen and who are able to network with other influencers in

[53] Josh Moody, "A Guide to the Changing Number of U.S. Universities," US News & World Report, accessed March 26, 2021, //www.usnews.com/education/best-colleges/articles/2019-02-15/how-many-universities-are-in-the-us-and-why-that-number-is-changing.

each of the other segments as well as within each segment."[54] Most importantly, influencers are understood as being able to effectively communicate with other stakeholders in the Wheel, primarily due to some sense of perceived credibility.[55] Thus, influencers are critical to the establishment of a successful tech cluster, as they help spur network effects and connections between each of the segments. For the purposes of this paper, the interpretation of influencers will also extend to high profile community leaders and celebrities who can effectively connect large or emerging companies with other community support groups and their constituents. The importance of influencers will be further explored in Chapter 4 as it relates to Atlanta.

2.11 Technopolis Wheel: Support Groups, Early-Stage Capital

Another critical component to the Technopolis Wheel involves accelerator and incubator programs, along with venture capital and angel investors. The purpose of the startup accelerator, a concept launched by Y-Combinator in 2005, is to help seed-stage startups reach new milestones in their development through targeted mentorship. Often, these programs will also invest in the companies they support.[56] Accelerators can have different focuses on companies at specific stages and industry verticals, or alternatively may be focused on certain types of companies like those seeking to create social impact.[57] Incubator programs also take a similar approach, however, are focused on working with entrepreneurs in the most nascent stages of development.

Venture capital (VC) firms and angel investors represent an additional element to the support group sector. The whaling industry, as discussed, prompted the start of the modern VC

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[54] Smilor, Gibson, and Kozmetsky, 63.

[55] Smilor, Gibson, and Kozmetsky, 64.

[56] Peter W. Roberts, Saurabh A. Lall, and Randall Kempner, *Observing Acceleration: Uncovering the Effects of Accelerators on Impact-Oriented Entrepreneurs*, 1st ed. 2019 edition (New York, NY: Palgrave Macmillan, 2019). 35.

[57] Roberts, Lall, Kempner, 36.

firm with a similar funder-agent structure that continues today. Wealthy individuals, families, pensions, and university endowments provide capital as Limited Partners (LP) to General Partners (GP) of a VC fund. General Partners serve as the primary "agents," though usually hire other partners and associates to source startup companies and conduct due diligence. Angel investors are another form of VC funding, usually consisting of high-net worth individuals who make investment decisions independent of any firm.[58] Angel investments typically occur at the earliest stages of a company, whereas a traditional VC firm may invest at a later stage.[59]

VC funding, deployed through a traditional firm or an angel investor, provides entrepreneurs a critical source of capital that is typically inaccessible through loans, given new ventures are viewed as high-risk.[60] Similar to agents in the whaling industry, providing aid and assistance beyond capital investment is a large part of what makes VC funding an attractive asset to a new entrepreneur. This role of support is also what makes VC firms and investors critical to the evolution of a tech cluster. In VC, an investor is expected to provide advice and access to a network of skilled people or services to help entrepreneurs execute on the promise of their idea.[61] Michel Ferrary, professor of management at the University of Geneva, and Mark Granovetter, professor of sociology at Stanford University, have studied the role of VC in developing the Silicon Valley tech cluster. Ferrary and Granovetter present the VC firm as central to the development of new companies in a tech cluster. In doing so, they highlight the various interactions a VC investor may have in a given day. Ferrary and Granovetter present the following example of how these interactions may play out,

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[58] Stephen G. Morrissette, "A Profile of Angel Investors," *The Journal of Private Equity* 10, no. 3 (May 31, 2007): 52–66, https://doi.org/10.3905/jpe.2007.686430.

[59] Morrissette, 54

[60] Ken Chenault and Taneja Hemant. "Building a Startup That Will Last." *Harvard Business Review*, July 8, 2019.

[61] Paul Gompers, William Gornall, Steven N. Kaplan, and Ilya A. Strebulaev. "How Do Venture Capitalists Make Decisions?" National Bureau of Economic Research, September 1, 2016.

> For example, a professor of computer science can recommend to a VC firm one of his students who wants to create a company, a VC firm can employ a professor of computer science to evaluate the technological aspect of a project, a CPA can deal with the start-up's lawyer to prepare a new round of funding, a journalist can interview a consultant who has worked for the start-up, and so on.[62]

The observations of Ferrary and Granovetter help to demonstrate that VC investors play a critical role not only in the development of new companies, but also in how they involve other stakeholders in a tech cluster. This example also highlights Saxenian's ideas of complex networks by presenting VC investors as the central node of the tech cluster network. Consequently, in presenting VC investors as the central node, it can be argued that VC investors may also be referred to as influencers in the model of the Technopolis Wheel, given their connections to various sectors of the tech cluster.

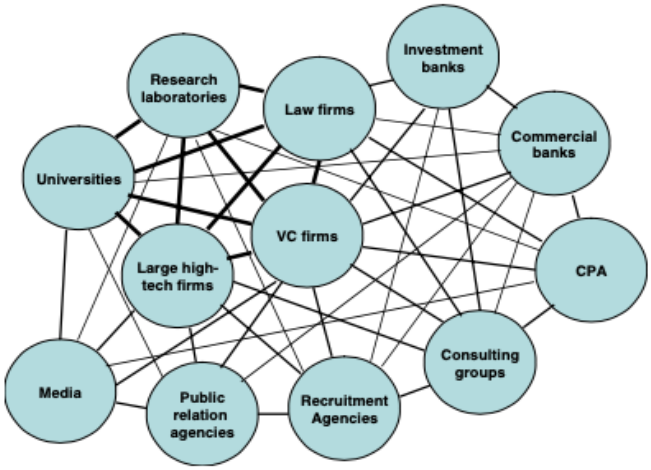

Figure 3. "The complex network of innovation in Silicon Valley" by Ferrary and Granovetter.[63]

While the interactions and network effects provided by VCs can provide tech clusters with significant benefits, the presence of VC and the common structure of a fund can also present challenges. When LPs contribute capital to a fund, it is generally expected that they will receive a

[62] Michel Ferrary and Mark Granovetter, "The Role of Venture Capital Firms in Silicon Valley's Complex Innovation Network," *Economy and Society* 38, no. 2 (May 2009): 335. https://doi.org/10.1080/03085140902786827.

[63] Ferrary and Granovetter, 336.

return on their investment within seven to ten years.[64] Thus, the primary goal for most VC investors is to invest in financially lean startups that align with the firm's investment thesis to yield rapid returns for the fund.[65] This expectation of rapid growth may make it possible for companies to quickly go from inception to initial public offering (IPO), but as we will soon see, this growth can also have serious consequences in the regional tech cluster.

3. Tech Cluster Case Studies

3.1 San Francisco/Silicon Valley: Modern American Startup Culture

Silicon Valley and the San Francisco-Bay Area represent the most prominent example of the proliferation of the knowledge economy in the U.S. As the leading tech cluster of the world, it has all of the features Smilor, Gibson and Kozmetsky identified to be part of a thriving Technopolis and more. Stanford University and the University of California at Berkeley, among others, provide an anchor for the university sector of the wheel. The presence of large Fortune 500 tech companies like FAANG further support the tech cluster, and often spur new spin-offs that create a cycle of innovation. A strong network of support groups like the Y-Combinator accelerator provide guidance to these spin-offs, invest in their companies, and connect them to additional capital to further their growth. Additionally, local, state and federal government serve as a foundation to the region, supporting innovative policy and R&D spending. Ultimately, these factors have resulted in thousands of startups being founded in the region.[66] With Stanford

[64] Brad Feld, Jason Mendelson, and Dick Costolo, *Venture Deals: Be Smarter Than Your Lawyer and Venture Capitalist*, 2nd edition (Hoboken, N.J: Wiley, 2012). 40.

[65] Nicholas, 146.

[66] "List of Top Silicon Valley Startups - Crunchbase Hub Profile," Crunchbase, accessed March 28, 2021, https://www.crunchbase.com/hub/silicon-valley-startups.

University as the central anchor, the region transformed to the modern tech mecca it is known for today.

3.2 Stanford University: Origins of the Modern Tech Cluster

The suburban landscape of Silicon Valley was forever changed in 1891 when Leland Stanford, founder of the Southern Pacific Railroad, started Stanford University.[67] Stanford declared a bold vision for the university: "to qualify its students for personal success, and direct usefulness in life."[68] This vision for the university was in stark contrast to that of more established universities on the East Coast, which idealized intellectualism and a focus on the liberal arts. In aligning with a focus on "direct usefulness," Stanford quickly became a place where students and faculty alike came to build and develop new products and ideas.

Fred Terman, a Stanford graduate and later Provost of the university's engineering program internalized this vision. Terman had bold ambitions for the future of Stanford and was particularly instrumental in developing the university, which would ultimately impact the greater development of Silicon Valley. In a 1943 letter to a colleague, Terman stated,

> I believe that we will either consolidate our potential strength, and create a foundation for a position in the West somewhat analogous to that of Harvard in the East, or we will drop to a level somewhat similar to that of Dartmouth, a well thought of institution having about 2 per cent as much influence on national life as Harvard.[69]

This determination presented by Terman led him to innovate new ways to elevate Stanford's influence, specifically through a focus on technology. During World War II, engineering and technology were areas of critical R&D spending by the U.S. government. Prior to the war, government grants and funding for research were less common, and often related directly to a

[67] Margaret O'Mara, *The Code: Silicon Valley and the Remaking of America* (Penguin Books, 2019).
[68] O'Mara, 17.
[69] O'Mara, 28.

particular project. The need for rapid development of new technology to support the war, however, led to an extreme change in the way government and universities depended on each other. The federal government frequently allocated grants and subsides to universities for research and new technology development that would directly support war efforts. Terman recognized the opportunity for an inflow of capital to Stanford through government supported R&D. He effectively reorganized Stanford to focus on strengthening its science and engineering departments as well as lab spaces to attract government funding for research. Following the launch of the Stanford Electronics Laboratory, military funding became abundant with the lab achieving prominence as a critical location for reconnaissance and radar technology R&D.[70]

3.3 Stanford University: Industry Integrations

Terman's grand vision for the future of Stanford went beyond leveraging government contracts. After collaborations with the federal government during wartime, Terman sought new ways to develop relationships that would both further Stanford's impact and its endowment.[71] During his term as Provost, he instituted a plan to integrate industry into campus life and the curriculum. While professors at universities like MIT were often fired for taking on industry projects, Terman and Stanford championed this collaboration.[72] The first of many integrations between Stanford and industry started with the development of the Stanford Research Institute in 1946, created in nearby Menlo Park. It was intended as a place to develop "science for practical purposes" to help further local companies as an extension of the university.[73] The next phase of industry connections emerged in 1953 through the creation of The Stanford Industrial Park, which repurposed 350 acres of land owned by Stanford for technology companies to utilize for lab and

[70] O'Mara, 21-31.
[71] O'Mara, 31.
[72] Nicholas, 186.
[73] Nicholas, 185.

office space.[74] Over 25 companies, including companies such as General Electric, Xerox and Hewlett and Packard were operating with their combined eleven thousand employees in the region by 1961. Aside from easy access to talent, co-locating near Stanford also offered these companies other perks. The Industrial Affiliates program and the Honors Cooperative offered companies access to work with Stanford students and faculty, as well as opportunities to enroll in Stanford courses. Over 400 employees from 32 local companies were participating in the program by 1961.[75] These programs created a direct connection between Stanford and large companies, thus furthering the Silicon Valley Technopolis Wheel. The many opportunities for interactions between student researchers and industry professionals meant greater potential for university spin-offs, and rapid commercialization of new technology into industry. Through fostering a close relationship with industry, Stanford informally became one of the most critical startup incubators in the world and a foundational element of Silicon Valley.

3.4 Silicon Valley and Tech Cluster Development

The development of new companies in Silicon Valley, like Stanford, were highly dependent on federal defense spending. Semiconductor technology, in particular, was largely impacted by this allocation of funding, leading many historians to cite the federal government as the first VC investors in Silicon Valley.[76] Throughout the 1950s and 1960s, various new companies innovating in semiconductor technology were established in the region. Many of these companies which took advantage of government defense contracts co-located in Silicon Valley to access highly skilled engineers from local universities.[77] The clustering of these semiconductor

[74] O'Mara, 32.

[75] Nicholas, 185.

[76] Stuart W. Leslie, "The Biggest 'Angel of Them All: The Military and the Making of Silicon Valley" in Martin Kenney, ed., *Understanding Silicon Valley: The Anatomy of an Entrepreneurial Region*, 1st edition (Stanford, Calif: Stanford Business Books, 2000). 65.

[77] O'Mara, 36-39.

companies can be identified as the next step in the development of Silicon Valley's tech cluster, through establishing a central community where individuals could collaborate.

One of the most impactful semiconductor companies to be founded at the time was Shockley Semiconductors, founded in 1955 by Nobel Prize winner William Shockley. A native of Palo Alto, Shockley was working at Bell Labs in New Jersey when he decided to relocate back to his hometown to start his company. Though often critiqued for his eccentric tendencies and management style, Shockley recruited a team of young, local engineers from surrounding universities. In the end, however, many engineers quickly became disenchanted by his stubborn ways. A group of his engineers had suggested the use of silicon to replace a more expensive material to build their semiconductors, but Shockley was quick to dismiss their methods. These employees would later go on to be known as "the traitorous eight," leaving to start their own semiconductor company known as Fairchild Semiconductor. The company was a success and helped spur network effects; many of the Fairchild founders and employees went on to start companies together. Fairchild marked a critical turning point towards the future of the Silicon Valley tech cluster; beyond their development of revolutionary technology, the company illustrated the power of concentrated network effects in the region.[78]

3.5 Silicon Valley Tech Cluster: Venture Capital and Government Support

The VC industry, as previously noted, has a storied history in America that began on the east coast. Although the tech-focused VC firms prevalent today would not emerge until the early 1970s, early-stage, high-risk capital could still be found throughout New York and Boston. For companies like Fairchild searching for funding in the late 1950s, its founders had to look beyond Northern California. Ultimately, they connected with New York investment banker Arthur Rock,

[78] O'Mara, 39-42.

who was willing to take a bet on their company. Fairchild went on to become a multi-billion-dollar company, contributing various spin-offs in the Silicon Valley region, including prominent VC firm Kleiner Perkins Caufield and Byers.[79]

While the Fairchild founders struggled to find capital on the West Coast, new ways to support startup firms were being developed by the U.S. government. A year after its founding, the US Small Business Administration (SBA), an office of the federal government that supports entrepreneurs, launched the Small Business Investment Act of 1958. The act sought to increase access to funding for small businesses through supporting Small Business Investment Companies (SBIC), who would invest in new, potentially risky ventures.[80] SBIC's are privately owned, however, given the funds are licensed through the SBA, they are also prone to regulation.[81] Though privately licensed funds ultimately became the norm in the 1970s, SBICs helped spur the first wave of VC firms, many of whom looked to focus their investments in high-tech companies in Silicon Valley.[82] The development of the VC industry in Silicon Valley fulfilled the critical tech cluster component of early-stage capital, and also served to increase the already flourishing network effects in the region. With the concentration of highly skilled talent, collaboration of stakeholders, and the presence of VC, the region had all key components necessary to achieve rapid economic growth by the early 1970s. These components ultimately led to the development of incredible innovations, however, the rapid growth of the Silicon Valley tech cluster also led to simultaneous externalities in the region.

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[79] O'Mara, 41.

[80] US Federal Government, *Small Business Investment Act of 1958,* US Small Business Association, 1958. Online, https://www.sba.gov/sites/default/files/Small%20Business%20Investment%20Act%20of%201958_0.pdf (Feb 5th, 2020)

[81] "Apply to Be an SBIC," Apply to be an SBIC, accessed March 28, 2021, https://www.sba.gov/partners/sbics/apply-be-sbic.

[82] Nicholas, 137.

3.6 SF-Bay Area Economic Externalities

Many cities which aspire to achieve the levels of economic growth witnessed in Silicon Valley and the Bay Area tend to ignore the severe externalities that have resulted from the explosive growth arising from its economic boom. Among numerous serious issues facing the region, unaffordable housing, homelessness, and gentrification are at the top of the list as the local economy became dominated by successful technology companies.[83] According to Richard Florida, professor of cities at the University of Toronto Rotman School of Management, this issue may be defined as the New Urban Crisis. Florida defines this theory as "the decline of middle-class neighborhoods, the gentrification of the downtowns of certain cities, and the reshaping of America's metropolitan regions into islands of advantage surrounded by larger swaths of disadvantage."[84] The current state of the San Francisco-Bay Area is clearly representative of the New Urban Crisis.

In the San Francisco-Bay Area, the tech industry accounts for just 13 percent of all private sector jobs in the region.[85] Yet, technology workers earn some of the highest paid salaries in the area, earning an average salary of $155,000 in 2020.[86] At the same time, close to two thirds of families in San Francisco are considered low-income.[87] In turn, these factors provide the basis for the San Francisco metropolitan area to face some of the highest rates of income inequality in

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[83] Richard Florida, *The New Urban Crisis: How Our Cities Are Increasing Inequality, Deepening Segregation, and Failing the Middle Class-and What We Can Do About It*, 1st edition (New York: Basic Books, 2017).

[84] Richard Florida, "Tech Made Cities Too Expensive. Here's How to Fix It," *Wired*, April 26, 2017, https://www.wired.com/2017/04/how-to-save-the-middle-class/.

[85] Michael Mandel, "San Francisco and The Tech/Info Boom:" (Bloomberg Philanthropies, April 2014).

[86] "A Look at Tech Salaries and How They Could Change as More Employees Go Remote," *TechCrunch* (blog), accessed March 28, 2021, https://social.techcrunch.com/2020/06/23/a-look-at-tech-salaries-and-how-they-could-change-as-more-employees-go-remote/.

[87] "San Francisco: Where a Six-Figure Salary Is 'Low Income,'" *BBC News*, July 9, 2018, sec. US & Canada, https://www.bbc.com/news/world-us-canada-44725026.

the country.[88] Such high levels of inequality manifest in the housing market; housing prices are bid up by tech workers, leading to high housing costs. To afford access to opportunities for high-wage labor in the city, some people are forced to commute as many as 80 miles each day.[89] Others are homeless; according to the San Francisco City government, 9,808 homeless people were accounted for in 2019, a number that is only continuing to rise.[90] Issues of housing in Silicon Valley did not simply develop overnight; these problems correlate to the rapid growth of the semiconductor industry in the 1970s. Housing developers could not build enough supply to meet demand, thus leading to a housing gap.[91]

With the high rates of income inequality leading to exorbitant housing costs and homeless, gentrification of the region also began to take hold. In neighborhoods like the Mission district, gentrification patterns such as an increase of people with a bachelor's degree or more have been observed by researchers from the Urban Displacement Project.[92] For neighborhoods like the Mission, which were historically home to Latino populations, this influx of new residents led to changes in the character and culture of the neighborhood.[93] While gentrification and the revitalization of neighborhoods can provide improvements to quality of life, it also usually means uprooting indigenous residents of the area. Today, much of the SF-Bay Area is associated with a dominating tech-monoculture, dictating new development and ultimately the downfall of the

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[88] Alan Berube, "City and Metropolitan Income Inequality Data Reveal Ups and Downs through 2016," *Brookings* (blog), February 5, 2018, https://www.brookings.edu/research/city-and-metropolitan-income-inequality-data-reveal-ups-and-downs-through-2016/.

[89] Adam Nagourney and Conor Dougherty, "The Cost of a Hot Economy in California: A Severe Housing Crisis," *The New York Times*, July 17, 2017, sec. U.S., https://www.nytimes.com/2017/07/17/us/california-housing-crisis.html.

[90] "Homeless Population | City Performance Scorecards," accessed March 28, 2021, https://sfgov.org/scorecards/safety-net/homeless-population.

[91] AnnaLee Saxenian, "The Urban Contradictions of Silicon Valley: Regional Growth and the Restructuring of the Semiconductor Industry," *International Journal of Urban and Regional Research* 7, no. 2 (1983): 237–62, https://doi.org/10.1111/j.1468-2427.1983.tb00592.x.

[92] Miriam Zuk & Karen Chapple, "Mission: Community Organizing and Resistance in SF's Mission District." *Urban Displacement Project* (2015) https://www.urbandisplacement.org/publications (accessed February 21, 2020).

[93] Miriam Zuk & Karen Chapple, 2015.

region.[94] The lack of a clear tech cluster plan for the region demonstrates that minimizing these externalities was an afterthought. From the example of the SF-Bay model, it is imperative that we comprehend the following key lessons:

- Economic growth based on the foundation of high-tech startup development must be carefully and strategically planned
- There must be economic guardrails in place to protect the city's most disadvantaged populations
- We must protect the culture and soul of our cities

The SF-Bay Area, which aligns almost perfectly The Technopolis Wheel model, is an on-going tech cluster disaster in progress. The leadership of Atlanta must recognize the clear warning coming from the San Francisco and Silicon Valley experience. With these lessons in mind, we can begin to understand why Atlanta must take responsibility for building a tech cluster that actively seeks to mitigate such issues.

3.7 Tech Cluster Development in Austin, Texas

Aside from Silicon Valley, one of the most prominent tech clusters today is Austin, Texas. With unicorn exits including companies like PayPal, and a strong mix of early and late-stage startup companies in the region, the region sufficiently fulfills the large and emerging companies' sectors of the Technopolis Wheel. Additionally, give Austin is the capital of Texas, both local and state government act as critical collaborators in strengthening the city's tech cluster. Other support groups in the city like the Capital Factory Accelerator provide critical resources to local entrepreneurs, with a strong network of venture capital firms ready to fund early-stage

[94] Clive Thompson, "Why Software Needs to Escape from San Francisco," *Wired*, accessed March 28, 2021, https://www.wired.com/story/why-software-needs-to-escape-from-san-francisco/.

companies.[95] The rapid growth Austin has experienced in recent years may appear to be serendipitous to an extent, filled with people fleeing the expensive cities of the coasts and Silicon Valley. Austin's growth, however, has been earefully crafted over the course of decades, involving various practices and initiatives to promote the evolution of its tech cluster.

3.8 Origins of the Austin Tech Cluster

Much like other cities in Texas, Austin was known for its support of the oil and gas industry throughout much of the 20th century. Starting in the late 1950s, however, city officials began envisioning a new future, involving new pathways to achieve strong economic growth. Specifically, the Austin Area Economic Development Foundation created a "blueprint of the future," in 1957 to better define a clear economic structure for the city.[96] This plan laid out a vision for the city to make new technology development the foundation of its economic future.

With the university and government sectors of the Technopolis Wheel acting as the primary support for Austin's economy throughout its history, the city had a strong foundation to attract new technology companies. The arrival of IBM in 1963 marked a period of transformation for Austin's tech cluster. Texas Instruments followed in 1967, and Motorola moved in 1974.[97] With these large companies in place, Austin now had three key sectors of the Technopolis Wheel fulfilled: government support, the university system, and large companies.

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[95] Katie Canales, "Austin Has Attracted the Likes of Oracle, Palantir, and SpaceX, among Others. Here's What It's like inside Texas's Growing Tech Hub.," Business Insider, accessed February 1, 2021, https://www.businessinsider.com/austin-texas-silicon-hills-tech-capital-city-photos-2019-2.

[96] David C. Humphrey, *Austin: A History of the Capital City*, Illustrated edition (Austin: Texas State Historical Assn, 1997).

[97] Lisa Hartenberge, Zeynep Tufekci and Stuart Davis, "A History of High Tech and the Technopolis in Austin," in Joseph Straubhaar et al., eds., *Inequity in the Technopolis: Race, Class, Gender, and the Digital Divide in Austin*, First Edition (Austin: University of Texas Press, 2012).

3.9 Improvements to the Tech Cluster

While these features of the Technopolis Wheel were in place, both the public and private sectors worked to strengthen the offerings of Austin's tech cluster beginning in the 1970s. At The University of Texas at Austin (UT Austin), more funding was allocated towards research, and collaborations were fostered with the engineering-focused Texas A&M. Other programs were also developed to improve the emerging companies and support group sectors of the Technopolis Wheel. In 1977, the IC2 Institute was founded at UT Austin with the mission to "explore the broad economic, technological, and human factors that drive economic development in regions."[98] The IC2 institute also involved the development of the Austin Technology Incubator (ATI), a program which sought to provide resources to students interested in developing new technology focused companies.[99] ATI, one of the longest standing university-based incubator programs, has proven to be incredibly successful; alumni companies have generated over $1.4 billion in revenues and provided over 3,000 jobs.[100]

Other initiatives were launched by the Austin City Chamber of Commerce. In 1984, the chamber hired the Stanford Research Institute for Economic Policy Research (SIEPR) to expand upon the original "blueprint for the future."[101] SIEPR specifically suggested programs that appeared to have ties to the programs developed at Stanford, which ultimately furthered the greater tech cluster. The Target Partner Program, for example, which "paired business people and university professors with an average of fifteen contracts," appeared to be a smaller scale

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[98] "About," The IC^2 Institute, accessed January 22, 2021, https://ic2.utexas.edu/about/.

[99] Joel Wiggins and David V. Gibson, "Overview of US Incubators and the Case of the Austin Technology Incubator," *International Journal of Entrepreneurship and Innovation Management* 3, no. 1–2 (January 1, 2003): 56–66, https://doi.org/10.1504/IJEIM.2003.002218.

[100] Wiggins and Gibson, 56.

[101] Hartenberge, Tufekci and Davis, 70.

development of Stanford's Industrial Affiliates program. Other programs also called for Austin to market itself towards specific industries, and track visitors conducting business in the city.[102]

These improvements to the Technopolis Wheel helped to encourage more serendipitous interactions and knowledge overflow, ultimately leading to the development of new companies. One of the most notable companies founded at the time was Dell Computers, created in 1985 by Michael Dell, who was then a student at UT Austin.[103] While Dell did not participate in any particular programs, he sought the advice of the IC2 institute's leader, George Kometzky, who Dell later cited as being instrumental to his success.[104] Dell eventually filed for Initial Public Offering (IPO) in 1988, becoming one of Austin's most successful tech companies. Having programs in place like IC2 meant greater accessibility to resources for students and entrepreneurs, which thus helped to increase the speed of development of new startup companies in the city.[105]

3.10 Expanding the Tech Cluster

Improving these components of the Technopolis Wheel was instrumental in attracting larger companies and industry to Austin's tech cluster, leading to two critical events in the 1980s which further catapulted the city's growth. The first involved the relocation of the Microelectronics and Computer Technology Corporation (MCC), a consortium of US-based technology companies working to develop new technology to rival developments in other countries. The MCC opened the search for a new location as a bidding process, inviting various cities like Austin and Atlanta to pitch themselves. Recognizing the potential impact of the MCC in Austin, public-private partnerships were forged to continue allocating more resources to the

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[102] Hartenberge, Tufekci and Davis, 75.

[103] "Our Timeline | Dell Technologies," accessed March 28, 2021, https://corporate.delltechnologies.com/en-us/about-us/who-we-are/timeline.htm.

[104] "George Kozmetsky," The IC^2 Institute, accessed March 28, 2021, https://ic2.utexas.edu/george-kozmetsky/.

[105] Hartenberge, Tufekci and Davis, 76.

university system, the largest sector of the Technopolis Wheel. UT Austin allocated more funding towards science, technology and mathematics (STEM) departments, and offered the MCC a reduced cost lease on an advanced research center. Additionally, businesses in the private sector worked to provide the MCC with monetary incentives totaling $62 million. Ultimately, while other cities in the bid provided stronger financial incentives, Austin secured the MCC in 1983.[106] Smilor, Kozmetsky, and Gibson highlight the impact of these efforts in why the MCC chose Austin,

> Based on interviews with key participants on the MCC site selection team . . . one central issue stands above all others as the reason that MCC decided to locate in Austin: the segments of the Technopolis Wheel, especially statewide, were balanced and working.[107]

While Austin was still in the development phase of other sectors of the Wheel, the collaborative efforts of the public and private sectors demonstrated a cohesion of resources. Seven years later, these efforts also helped Austin land the bid for SEMATECH, a non-profit consortium of semiconductor manufacturing companies. The Austin location served as a hub for R&D, and was funded by the U.S. Department of Defense to increase competition among other countries for computer technology development. Similar to Silicon Valley, Austin's industry focus on semiconductor technology provided a greater flow of federal support to companies the area, thus improving its respective sector of the Technopolis Wheel. In turn, the clustering of these consortiums also attracted many large computer manufacturing plants for both U.S. and international companies seeking to leverage the benefits of co-location. [108]

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[106] Hartenberge, Tufekci and Davis, 68-71.

[107] David V. Gibson, George Kozmetsky, and Raymond W. Smilor, *The Technopolis Phenomenon* (Lanham, Md: Rowman & Littlefield Publishers, 1992). 174.

[108] Hartenberge, Tufekci and Davis, 71-72.

3.11 Austin Economic Externalities

The agglomeration of technology companies in combination with a lower cost of housing has made Austin an attractive place to relocate for many people and followed in line with the vision set for Austin's future in the 1950s. Yet, many economists and scholars also feared for the potential impact of externalities as Austin experienced rapid growth of new tech startups during the in the 1990s.[109] Bob Wilson, professor of Urban Policy at UT Austin, was among those concerned. In an article from the Austin Chronicle in 1995, Wilson provided insight into the future of Austin,

> Because we're growing so rapidly now, it's going to push prices up, land values up, salaries up, everything's going to go up and at some point Austin will no longer be a low-cost site… If you want to look 20 years down the road, Silicon Valley is where we'll be. [110]

Wilson's warning has proved to be incredibly accurate; while Austin is routinely touted as the next Silicon Valley, the city now has some of the highest housing costs in Texas. The area of East Austin, previously an area of high poverty and low-income residents, is now facing rapid gentrification with employees of big tech companies moving in. Additionally, the combination of large offices and technology manufacturing factories has led to higher rates of pollution. With more big tech companies moving into the city, quality of life is consistently decreasing while the divide between the wealthy and the poor is growing every day. [111] Smilor, Kozmetsky, and Gibson pondered the issue of whether the utopia of the Technopolis can truly be achieved, asking,

> Can such regions approach the utopian vision of Companella's Civitas Solis (1623)? Or are such cities of technology more likely to be paralyzed by elite Ph.D.s working in prestigious

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[109] Hartenberge, Tufekci and Davis, 74.

[110] Alex de Marban, "Let Them Eat Cake," *The Austin Chronicle*, May 5, 1995, https://www.austinchronicle.com/news/1995-05-05/533404/.

[111] Hartenberge, Tufekci and Davis, 78-81.

> research institutions and unskilled workers, employed in low value-added, repetitive jobs and services?[112]

Austin can now be defined in part by this description; economic growth is what city planners of the 1950s optimized for, and is exactly what Austin achieved. What planners neglected to account for, however, was the detrimental social impact tech could have on the city. Austin, like many other southern cities, already had a longstanding history of racism and wealth inequality.[113] By proactively planning for a tech cluster without considering measures to minimize potential externalities, Austin will continue to see increases in inequality.

The model of Austin demonstrates that with collaborative planning efforts, a city can achieve Silicon Valley levels of economic growth. Yet, the Austin tech cluster model also presents what happens when this plan is not inclusive of different populations, particularly those from economically disadvantaged backgrounds. The following key lessons must be assumed from the model of Austin:

- Planning for economic growth fueled by tech must be met by equal support for the inevitable social issues that will arise.

- A strong tech cluster plan must also account for developing new opportunities for residents with disadvantaged backgrounds.

These lessons will be critical as we analyze how Atlanta may strategically develop its own tech cluster, while still supporting longtime residents and people from a diversity of backgrounds.

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[112] Smilor, Kozmetsky, and Gibson 1988, 231.

[113] Eliot M. Tretter et al., *Shadows of a Sunbelt City: The Environment, Racism, and the Knowledge Economy in Austin* (Athens, GA, UNITED STATES: University of Georgia Press, 2015), http://ebookcentral.proquest.com/lib/emory/detail.action?docID=4454769.

4. Atlanta's Economic Evolution towards Tech Clusters

4.1 A Brief History of Inequality in Atlanta

It is easy to understand why Atlanta is pursuing economic growth by encouraging tech clusters and the expansion of tech industries. After all, who could ignore several decades of incredible economic growth experienced by San Francisco and Austin. Yet, the latest headlines from these cities are highlighting a new reality —the tragic pain of homelessness, gentrification, and increasing wage gaps.[114] While growth is a natural goal for any city, the history of inequality in Atlanta requires all stakeholders to be united in the pursuit of economic growth with a clear plan for inclusive prosperity. For Atlanta, already challenged with the highest rates of economic inequality in the United States, pursuing economic growth with greater equality must be an imperative.[115] If Atlanta is to optimize its economic path forward, we first need to understand how racism implemented through the act of segregation has shaped inequality in housing, education, employment, and economic development. Understanding the history of the economic impact of racism is fundamental towards structuring a framework for how Atlanta should shape its economic future, as it pursues initiatives to become a fertile environment for tech cluster development.

4.2 Housing and the Roots of Racial Division in Atlanta

Atlanta's rich African American heritage has been plagued by racism resulting in economic inequality that has dramatically impacted housing. Historic problems in the housing market illustrate the roots of racial division.[116]

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[114] Dougherty, 2017.

[115] Statista Infographics. "Infographic: Atlanta Has the Worst Income Inequality in the U.S." Accessed October 20, 2020. https://www.statista.com/chart/20097/worst-income-inequality-us/.

[116] Larry Keating, *Atlanta: Race, Class And Urban Expansion*. Temple University Press, 2001.

The emancipation of African Americans, while critically important, could not suddenly irradicate two hundred years of racist practices and norms borne out of slavery. Thus, much of the inequality in post-emancipation Atlanta can be traced back to the Civil War era.[117] The reformation of Atlanta in the Reconstruction era brought a new economic reality; many African Americans were largely integrated into white neighborhoods, as white neighbors often served as a source of employment. Yet, discrimination, expressed through the act of segregation, including Jim Crow laws, continued to be a prominent challenge throughout most of the early 20th century. White communities became concentrated around Peachtree Street, while African American communities congregated towards Auburn Avenue.[118] The Atlanta Massacre of 1906 served to further amplify segregation, as white mobs attacked black citizens, spurred by news of an alleged assault of a white woman by a black man. Despite the commercial business progress made by African Americans at the time, the riots were a setback for the community, and caused many people to live in continuous fear of attack.[119]

The city burned in the Great Fire of 1917, an accident that destroyed over 300 acres of land and resulted in over 10,000 people homeless. The fire was most prominent on the eastside of Atlanta, near Auburn Avenue, the city's most prominent African American community. Once a community of modest single-family homes, the eastside of Atlanta was rebuilt with larger buildings to accommodate more residents, permanently altering the housing landscape of Atlanta.[120] As more African Americans clustered in the city center, white residents who sought to maintain segregated neighborhoods fled north of the city, a pattern defined as white flight.[121] This

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[117] Keating, 44.

[118] Gary M. Pomerantz, *Where Peachtree Meets Sweet Auburn: A Saga of Race and Family*, Illustrated edition (New York: Penguin Books, 1997). 35-50.

[119] Pomerantz, 35-38.

[120] Pomerantz, 92-95.

[121] Kevin M. Kruse, *White Flight: Atlanta and the Making of Modern Conservatism* (Princeton University Press, 2007).

pattern escalated with the Civil Rights movement, and with Atlanta at the epicenter, the national movement resulted in the passing of the Civil Rights Act in 1964.[122] Although the act sought to remediate the impact of discrimination and segregation, it further exacerbated the problem as the white community perceived themselves encircled financially, politically, and spatially. The peaceful protest movement led by Dr. Martin Luther King Jr., a native resident of Atlanta, drove the city to become one of the most progressive in the nation by introducing policies to integrate neighborhoods.[123] As a result of implementing greater integration during the 1970s and 1980s, many black Americans viewed Atlanta as a hospitable environment to live and raise a family. Yet, the structural impact of racial segregation in Atlanta has continued with poverty rates today among the highest in the United States.[124]

4.3 Atlanta's Intersection of Racism, Housing, Education and Employment

Racism throughout Atlanta's post-Civil War history inflicted economic damage on African Americans and the city through a continuous downward cycle that intertwined housing issues with education and employment. In the 1960s, many white residents in Atlanta moved to surrounding areas like Sandy Springs where they could consolidate their economic and political power. Mayor Hartsfield, upon witnessing the early start of the white flight movement, encouraged the incorporation of Sandy Springs into Atlanta to ensure the city would continue to thrive economically despite maintaining segregation. Suburban whites refused the offer, citing that their tax dollars would simply go towards efforts to continue desegregation. Instead, whites worked toward developing an enclave that African Americans could not access — both spatially and economically. Atlanta's Metropolitan Planning Commission, which was "the first publicly-

[122] Kruse, 237.

[123] David Sjoquist. *Atlanta Paradox*. Russell Sage Foundation, 2000. http://www.jstor.org/stable/10.7758/9781610445061.

[124] Sjoquist, 82-84.

supported, multi-county planning agency in the United States," gave birth to the Atlanta Regional Commission (ARC), which impacted city planning for Atlanta.[125] The ARC created a regional development plan, which deliberately overestimated population growth in the suburbs to divert more spending in the area, resulting in the sprawl the Atlanta metropolitan area is known for today.[126]

The 1974 election of Maynard Jackson, Atlanta's first black mayor, marked yet another inflection point for segregation as white residents now felt greater alienation financially, politically, and spatially. Jackson sought to "integrate the money" in the city by withholding city funds for infrastructure until firms would commit to standards for fair treatment and hiring of minorities.[127] While the intent of these polices was to encourage equality for all Atlanta residents, the white business community viewed them as an impediment to economic growth. White flight further accelerated in Atlanta through Jackson's policies, along with the federal "freedom of choice" plan, which targeted school desegregation by allowing families to choose where to send their children to school.[128] Many white residents moved to northern suburbs and those who remained in Atlanta paid for private school to segregate their children. The Atlanta Public School system arguably witnessed the most severe impact of the flight; by 2002, almost all of Atlanta's public schools were predominantly African American.[129]

Following the tenure of Mayor Maynard Jackson, Mayor Andrew Young, responding to his predecessor's controversial integration policies, sought to mend the relationship between the

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[125] ARC. "ARC Planning Archives." Accessed December 1, 2020. https://atlantaregional.org/about-arc/guidelines-compliance/arc-planning-archives/.

[126] Basmajian, Carlton Wade. *Atlanta Unbound: Enabling Sprawl through Policy and Planning*. Philadelphia: Temple University Press, 2013. 102.

[127] Kruse, 241.

[128] Kruse, 238.

[129] Kruse, 238-48.

city government and white business owners. Young reduced property taxes, and made it easier for building permits to be approved in the greater metropolitan area. Job growth in metropolitan Atlanta was the highest in the country during this period, but it was mostly concentrated in the wealthy Perimeter area of the suburbs. Many African American residents, who historically had less opportunities for wealth building, could not afford to live in the suburbs. Instead, many of them were confined to affordable housing units or public housing projects in the inner city, far from high wage employment opportunities. Infrastructure funding often went towards highway development rather than mass transit, and suburban whites through the ARC effectively blocked the funding of Atlanta's transit system (MARTA) to resist integration.[130]

At the federal level, President Nixon's policies throughout the early 1970s and critical Supreme Court nominations ensured that suburban succession became permanent, neglecting to support struggling inner cities and their populations. Ultimately, the coordination of both federal and local policies provided whites the opportunity to effectively escape the threat of integration in the city, forever altering the economic development and growth of Atlanta.[131]

4.4 Brief History of Business and Economic Development in Atlanta

The history of racism and inequality in Atlanta had clear ramifications on the political, economic, and spatial development of the city. When considering the economic path forward and the support for technology cluster development in Atlanta, it is also important to understand the history of business in Atlanta. The city is home to a remarkable mix of consumer-driven brands like Coca Cola and Home Depot as well as transportation and logistics companies like Delta and UPS. New tech-based companies in financial technology (fintech), ecommerce and biotech have also become prevalent in the region. Altogether, Atlanta's powerful array of corporations offer a

[130] Kruse, 241-50.

[131] Kruse, 235-58.

strong foundation for the continual development of its tech cluster. Understanding the evolution of business in Atlanta helps to provide context to the important role these businesses will play in supporting the future economy of Atlanta.

While racism and the resulting inequality clearly impacted the economic path of Atlanta, both races found ways to cooperate to support the economic growth of the city. Atlanta, which had been known as a central business hub throughout most of its history, struggled to reinvent itself following the Civil War. Many who lived in the city and its surrounding regions still internalized the racist norms of Atlanta's past, leading to ongoing violence and the discouragement of new potential residents. In 1926, then president of the Atlanta Chamber of Commerce Ivan Allen Jr., seeking to change this image, launched the "Forward Atlanta" campaign to present Atlanta as the leader of the New South. The goal of the campaign was to attract new businesses, especially targeting businesses in the Northeast U.S. to relocate to Atlanta.[132] Mayor Hartsfield reconstituted this sentiment in the 1950's coining the phrase "The City too Busy to Hate," which promoted the image of a bustling metropolis devoid of racism. Subsequent campaigns such as "Atlanta: A New Kind of City" in the late 1960s further portrayed Atlanta's drive to be viewed as an international hub of culture and commerce. Atlanta also successfully marketed itself as the "World's Next Great City" to win the bid to host the 1996 Olympics. Each campaign highlighted the various amenities of Atlanta: a low cost of living, temperate climate, and accessibility — all features that are still relevant to business today.[133]

While marketing campaigns successfully attracted many more businesses to the metropolitan area, other historical developments also shaped Atlanta's transformation. Atlanta's

[132] Pomerantz, 97.

[133] "Forward Atlanta | Atlanta in 50 Objects | Exhibitions," Atlanta History Center, accessed March 11, 2021, https://www.atlantahistorycenter.com/exhibitions/atlanta-in-50-objects/forward-atlanta/.

economy and industrialization, like both Silicon Valley and Austin, was also impacted by war and defense spending. Yet, in the example that follows, we can see the clear negative impact that racist-driven white flight had on Atlanta's capacity to fully capitalize on the opportunity.

Atlanta, its suburbs, and the surrounding southeast region of the United States were known for textile manufacturing, which prompted retrofitting existing factories and the construction of new factories to support the war effort. [134] As noted in the case of Silicon Valley, most development of defense equipment and technology was licensed to private American-based technology companies. During World War II, many factories for these companies were based in the North near R&D labs in hubs like Boston and New York. To expand manufacturing efforts, various companies also built factories in southern states like Georgia. Bell Aircraft, which later evolved into the prominent aerospace company Lockheed Martin, was one of the many companies which expanded to the South. Headquartered in Buffalo, New York, Bell constructed a facility in Marietta, Georgia, a northern suburb of Atlanta. Many scholars agree that Bell sparked the development of regions in rural Georgia and Atlanta following the war. According to scholar Robert Lewis, companies sought the south for "access to cheap and docile labor, plentiful raw materials, and expanding markets." In what was formerly a state fueled by agriculture and textile industries, Georgia quickly transitioned to a state that mirrored the industrialization movements of the modern American economy.[135] Dr. Thomas Scott, retired professor of history at Kennesaw State further highlights the impact of Bell,

> Wartime factories not only put more dollars in southerners' pockets, they trained a skilled workforce. Thus, many top corporations built southern offices and plants in the postwar era to take advantage of the new markets and talented labor pools in metropolitan Atlanta and other urban centers. By cooperating with the federal government in building a Georgia

[134] Robert Lewis, "World War II Manufacturing and the Postwar Southern Economy," *The Journal of Southern History* 73, no. 4 (2007): 837–66, https://doi.org/10.2307/27649570.

[135] Lewis, 839.

> division, [Lawrence] Bell justly took satisfaction in helping to initiate the southern economic revival.[136]

As Scott notes, Bell had two substantial impacts on the resulting development of Atlanta and its suburbs. First, it provided new employment opportunities to mostly unskilled workers in Georgia. Next, it attracted more people into the city and surrounding areas resulting in expanded development. Yet, it is important to note that most of this development occurred in the suburbs, another effect of the white flight movement. Marietta, where the Bell Aircraft plant was built, received $53 million towards plant development while the City of Atlanta received just $5 million.[137] Uneven investment is a reason why many scholars like Lewis also cite that Atlanta did not economically benefit directly, but rather benefited only indirectly by the positive perception and image conveyed to fellow Americans. The Bell Aircraft plant in Marietta was responsible for creating the Bell Bomber, which generated notoriety as a critical asset helping the war effort. Unfortunately, Atlanta was not prepared to rapidly leverage the potential economic benefits of engaging and transitioning wartime-focused companies following the war. Lewis additionally argues, "The absence of self-generating economic development, well-established business linkages, and technological innovation in the South meant that the manufacturing base established during World War II had little positive impact on postwar industrial development."[138] Unlike Silicon Valley, which was able to rapidly integrate wartime-focused industries as an asset to the local economy, Atlanta lacked the organization and resources to leverage the impact of companies like Bell Aircraft. No partnerships were forged between the university systems to develop potential spin-offs, and there were no native companies to collaborate with Bell. In the end, the

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[136] Thomas A. Scott, "Winning World War II in an Atlanta Suburb," in *The Second Wave: Southern Industrialization from the 1940s to the 1970s*. ed. Philip Scranton. Athens: University of Georgia Press, 2001. 15.

[137] Lewis, 862.

[138] Lewis, 852

Bell Aircraft plant remained as an isolated relic and a lost opportunity for Atlanta's post-war economy. Atlanta, which lacked government funded research and development, remained dependent on its marketing campaigns to attract new business that could provide economic growth in the city.

4.5 The Corporate Foundations of Atlanta's Technopolis Wheel

For much of the early to mid-20th century private businesses also had a large influence on the spatial and economic development of Atlanta. While many of these companies produced non-durable goods and consumer products, such businesses provided fiscal stability and the opportunity for growth in the metro area. A strong component of the city's success can be tied to the Coca Cola Company, started by the wealthy Atlanta native Asa Griggs Candler in 1892. Candler, who later became mayor, sold the company in 1919 to a consortium led by Ernest Woodruff, another prominent figure in Atlanta's history.[139] Woodruff helped expand the company into an international sensation and an iconic American brand, resulting in the employment of thousands of people in Atlanta. The company also had a profound impact on the development of various Atlanta institutions including Emory University. In 1915 Candler contributed a land grant for Emory to build its campus in Atlanta and in 1979 it received an historic stock grant valued at $105 million from Robert and George Woodruff.[140] Other companies like Delta Airlines, which moved to the city in 1941, forged a pathway for Atlanta to become recognized as a global city by providing greater access to the region.[141] The United Parcel Service (UPS) further helped to establish Atlanta as a critical hub for distribution, and companies like Home Depot have helped

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[139] Gary Hauk, "From Coca-Cola to Ebola, Racial Riots to Civil Rights, Epic Ashes to Olympic Torch - The Transformation of Emory, Atlanta, and the South," *International Journal of Legal Information* 46, no. 1 (2018): 39–44.

[140] Hauk, 41-43.

[141] "Delta Air Lines | Atlanta in 50 Objects | Exhibitions," Atlanta History Center, accessed March 20, 2021, https://www.atlantahistorycenter.com/exhibitions/atlanta-in-50-objects/delta-air-lines/.

employ tens of thousands of Atlantans.[142] These corporate headquarters, many of which are Fortune 500 companies, lay a strong foundation for the industrial sector of the Technopolis Wheel in Atlanta. Noelle London is a member of the Atlanta startup community and leads the New Ventures program in the Southern U.S. for consulting firm Accenture. London specifically notes the role of many corporate headquarters being situated in Atlanta,

> ...some of the strengths, I think [are] the corporate presence and the diversity of industry here, so that you see more collaboration across corporate innovators. And I think that that's important when you're thinking about being an enterprise startup and kind of selling into enterprise that you have this connected community more so than I think that you find in a lot of other cities. So, I think that that corporate presence is really an untapped strength within Atlanta.[143]

The presence of these large companies provides the opportunity for firms to collaborate, compete, or develop spin-off, key components required of a tech cluster model. Yet, as London notes, Atlanta's current corporate presence could be better leveraged. While Atlanta is home to a diversity of corporate companies, many of these companies are in the financial technology (fintech) industry. The strength of companies like First Data, WorldPay and NCR have led Atlanta to develop a following for fintech. In turn, their presence has prompted the development of many Atlanta-based fintech startups like Kabbage and Greenlight.[144] Local stakeholders have also looked to support the industry, through launching Fintech Atlanta, a coalition of companies and industry leaders in Atlanta to strengthen and expand the local fintech community.[145] Building

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[142] Michael E. Kanell and The Atlanta Journal-Constitution, "Home Depot Adding 80,000 Workers for Spring," Atlanta Journal-Constitution, accessed March 20, 2021, https://www.ajc.com/business/home-depot-adding-000-workers-for-spring/d5spXRhASrr37Ya9TCQ80L/.

[143] Noelle London, interview by author, New York City, November 30, 2020.

[144] Tom Groenfeldt, "Atlanta Boldly Claims Global FinTech Lead Status," Forbes, accessed March 13, 2021, https://www.forbes.com/sites/tomgroenfeldt/2016/12/05/atlanta-boldly-claims-global-fintech-lead-status/.

[145] "We're Making Atlanta the FinTech Capital of the World. Join Us.," accessed March 2, 2021, https://www.fintechatlanta.org/.

upon this foundation of fintech activity could be a way to better leverage the corporate presence in Atlanta.

4.6 Atlanta Government-Led Initiatives to Attract New Technology Business

City officials and members of the local startup community are keenly aware of the importance of attracting and retaining technology companies to spur growth for Atlanta. Over the past decade, three key strategic initiatives have been launched by public-private coalitions to encourage and support the growth of startups in the city. The Metro Atlanta Chamber of Commerce launched the "Choose Atlanta" campaign; like the city's previous marketing efforts, it attempted to attract the young and creative to Atlanta.[146] Imagery of new greenspaces like The Beltline and video clips of cultural events like the annual music festival, Music Midtown, seek to lure millennials and Gen-Z to the city. Its primary slogan "Come for the hustle, stay for the culture," serves as another attempt to associate with the entrepreneurial minded members that represent the future of Atlanta.[147] In addition to the "Choose Atlanta" campaign, which also helps prospective residents find jobs at local startups, the city government launched Startup Atlanta. As a non-profit organization, Startup Atlanta serves to help new and prospective startup founders navigate Atlanta's business landscape, discover resources, and promote Atlanta's startup and venture capital community.[148] The third initiative launched includes Invest Atlanta, the city's economic development division, which seeks to connect startups and small businesses to government and private resources. As part of Atlanta city government, Invest Atlanta also promotes city-led initiatives such as tax incentives for new businesses. Most notably, the City of Atlanta demonstrated its commitment to attracting high growth technology companies through

[146] "Come for the Hustle. Stay for the Culture. ChooseATL.," accessed March 20, 2021, https://www.chooseatl.com/.
[147] ChooseATL, 2021.
[148] "Startup Atlanta," Startup Atlanta, accessed March 20, 2021, http://www.startupatlanta.com.

launching the "New and Emerging Technology Business Tax Waiver" in 2015.[149] The waiver, which is targeted towards industries like semiconductor manufacturing and pharmaceuticals, waives occupation taxes for up to three years for new and emerging technology businesses.[150]

The focus on these technology-driven industries, some of which helped lay the foundation for tech clusters like San Francisco and Austin, reveals the tech cluster vision city officials have for the future of Atlanta. Yet, as previously observed, these models are not a one-size fits all solution. The biotechnology industry is another vertical technology strength in Atlanta. Various higher educational institutions like Emory and Georgia Tech offer degrees in biomedical engineering, and government institutions like the Centers for Disease Control provide an anchor for collaboration between industry and university. Though tax incentives for new tech startups currently include pharmaceutical companies, broadening the scope of these incentives to include biotechnology companies may be another way to leverage Atlanta's strength in this area.

4.7 Early-Stage Companies and Accelerators in Atlanta

Government-led initiatives, while a critical component to attracting new technology companies, have also been bolstered by the support of private companies, angel investors, early-stage tech incubators/accelerator and early-stage venture capital in the Atlanta community. Tens of thousands of startups have launched in the metro area over the past decade, along with many other programs and initiatives to support their growth.[151] Techstars, a global accelerator program that helps mentor and make connections for startup companies, established a presence in Atlanta in

[149] "New and Emerging Technology Business Tax Waiver," accessed March 20, 2021, https://www.investatlanta.com/businesses/startups-creatives/new-and-emerging-technology-business-tax-waiver.

[150] Invest Atlanta, 2021.

[151] Tonya Layman, "Atlanta Has Evolved into a Top Tech Market," Atlanta Business Chronicle, June 28, 2019, https://www.bizjournals.com/atlanta/news/2019/06/28/atlanta-continues-evolution-to-top-5tech-market.html.

2016.[152] Other organizations, like Atlanta Tech Village (ATV), also aim to provide a community for Atlanta entrepreneurs and investors. ATV runs an incubator program to support new emerging startups and also hosts various events, which help create serendipitous connections, often a vital part of a thriving tech cluster.[153] Aly Merrit is Head of Community at the Atlanta-based software startup Salesloft. Merrit, who now organizes monthly events for ATV, describes how the community led to her role at Salesloft "...My CEO at Salesloft, Kyle Porter and I ran into each other at a lot of events. And at some point, he had an opening when they were still a really small team and kindly reached out to me and ended up hiring me in as [employee] number 11."[154] Merrit's experience is just one example of how such organizations have worked to strengthen and support those in the startup community. Atlanta now has over 20 startup accelerator and incubator programs to provide general and specific industry support to entrepreneurs.[155]

4.8 Influencers in Atlanta's Tech Cluster

Other mechanisms for support in Atlanta's tech cluster include influencers, who are connected to various sectors of the city's Technopolis Wheel. When asked about notable members of Atlanta's startup community in a survey of eight members of the community, the most commonly cited people included Joey Womack, Jewel Burks Solomon and David Cummings.[156] These members of Atlanta's startup community can be referred to as influencers, given their work bridges connections among various sectors of Atlanta's Technopolis Wheel. Womack's Goodie Nation, an impact-focused startup accelerator, works to support entrepreneurs from a diversity of

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[152] Karkaria Urvaksh, "National Accelerator Program TechStars Comes to Atlanta," Atlanta Business Chronicle, December 14, 2015, https://www.bizjournals.com/atlanta/blog/atlantech/2015/12/accelerator-program-techstars-comes-to-atlanta.html.

[153] "Atlanta's Startup Hub," Atlanta Tech Village, accessed March 20, 2021, http://atlantatechvillage.com/.

[154] Aly Merrit, interview by author, New York City, October 14, 2020.

[155] "Places (Accelerators and Incubators in ATL)," Startup Atlanta, accessed March 20, 2021, http://www.startupatlanta.com/places.

[156] Interviews by author, New York City, October 12 - November 30, 2020.

backgrounds and is sponsored by various large companies and private foundations in Atlanta.[157] Burks Solomon, who leads Google for Startups, similarly bridges sectors of the Wheel through providing support to emerging companies.[158] As the founder of Atlanta Tech Village and Atlanta Ventures, Cummings also supports emerging companies, and works to connect multiple parts of the Wheel at Atlanta Tech Village through programming.[159] Altogether, these influencers work to continually support, engage and promote Atlanta's tech cluster, furthering its success.

4.9 Early-Stage Venture Capital in Atlanta

In addition to influencers, those in the venture capital community also provide critical support for Atlanta's growth. While Atlanta based funds like Noro-Moseley Partners and TTV Capital have existed for decades, new seed-stage funds show clear optimism for the future of Atlanta by the venture capital community. These funds have identified a clear opportunity to fill the gap in early-stage capital in Atlanta, a concern cited by eight members of the local startup and venture capital community.[160] Michael Cohn is a former entrepreneur and founding Director of Techstars in Atlanta. Cohn and his partner Sean O'Brien co-founded the venture capital firm Overline in 2019 to focus on investments in the Atlanta area. Cohn commented on the current weaknesses of Atlanta's tech cluster,

> [entrepreneurs] really only had two options, it was go put together an angel round at 25 or 50k or leave town to look for a full-size seed investor. And I think both of those scenarios are just suboptimal for founders, but also suboptimal for the ecosystem. There's a place angels play, and there's certainly a place that...investors outside the region play, but there's been this gap for that million dollar, million and a half dollar check is focused on Atlanta

[157] "A Community of Good People Coming Together to Reduce Basic Need Disparities Through Entrepreneurship," Goodie Nation, accessed March 2, 2021, https://goodienation.org/.

[158] Catherine Clifford, "This Founder Sold Her Start-up to Amazon at 27 — Now as Head of Google for Startups US, She's Helping Give Back," CNBC, October 21, 2020, https://www.cnbc.com/2020/10/21/how-jewel-burks-solomon-sold-business-to-amazon-and-became-google-exec.html.

[159] "Our Team," Atlanta Tech Village, accessed March 29, 2021, https://atlantatechvillage.com/community/about-us/.

[160] Interviews by author, New York City, October 12 - November 30, 2020.

> founders.[161] And so that's...I think the challenge that we've heard over and over and over again, from founders, and that's exactly what Overline exists to try to solve.[162]

In addressing the issues of early-stage funding, Cohn demonstrates that there is clearly a market of entrepreneurs in Atlanta seeking this capital, but also seeking guidance on navigating the tech cluster. As previously noted, venture capital investors provide entrepreneurs with two critical resources: the capital to develop their business, as well as guidance and access to vital networks of people. Cohn further commented on Overline's competitive advantage, "...the reason why founders, I think, take our check versus other checks, is because we have a really deep local network that can help surround founders with advice and ultimately talent to build their business." By highlighting Overline's network as an asset, a benefit proven in a study by scholars Sorenson and Stuart, Cohn shows local venture capital funds can provide inherent value to Atlanta entrepreneurs.[163]

Despite Cohn's progress with Overline, however, access to early stage capital is still one of the most prevalent issues in Atlanta's current tech cluster. While there are currently over 30 funds, accelerators, and incubators that invest at the earliest seed or pre-seed stages, many have a particular industry focus.[164] In addition, only a small portion of those funds are willing to assume the crucial role of leading a financing round, whereby they set the terms of investment and usually invest the largest amount of capital.[165] Finding investors who lead rounds can be especially challenging in an emerging ecosystem like Atlanta, where there is less of a track record of

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[161] *Note:* A "seed investor" refers to someone who invests in an early-stage company.

[162] Michael Cohn, interview by author, New York City, October 28, 2020.

[163] Olav Sorenson and Toby E. Stuart, "Syndication Networks and the Spatial Distribution of Venture Capital Investments," *American Journal of Sociology*, 2001.

[164] "2020 Southeast Capital Landscape," Embarc Collective, 2020, https://reports.embarccollective.com/southeast-capital-landscape-2020.

[165] Bob Zider, "How Venture Capital Works," *Harvard Business Review*, November 1, 1998, https://hbr.org/1998/11/how-venture-capital-works.

successful company exits. If a startup founder is unable to find a lead investor, they may instead turn to raising capital from individual angel investors. Angel investors are usually independent of any organization, and each investor's motivation for investment may differ. Some angel investors may be motivated by assuming more of a mentorship role, whereas others may be solely interested in a monetary return.[166] This funding structure or the lack of variety of early-stage firms, however, may be unappealing to Atlanta-based founders. In turn, this may lead promising founders to seek funding outside of the city, or potentially relocate altogether. Sora Schools, an Atlanta-based education technology startup, is one of many companies that has sought early-stage investment from venture capital funds and investors in other cities. While their seed round was led by New York City-based Union Square Ventures, the company ultimately maintained their headquarters in Atlanta.[167] Finding investors in other cities like Sora Schools, however, may not be accessible to founders from disadvantaged backgrounds that lack the network or knowledge of different ways to finance their company. By attracting more early-stage capital to Atlanta, founders will have more immediate options and access to capital.

According to Crunchbase, venture capital funding in Atlanta reached its highest total over a period of 5 years in 2020 and expected to increase in the years to come.[168] The increase in VC funding thus far has occurred organically, which can be an effective way to continue to expand early-stage capital in the city. Further, as previously mentioned, leveraging the current strengths in

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[166] Cheryl Mitteness, Richard Sudek, and Melissa S. Cardon, "Angel Investor Characteristics That Determine Whether Perceived Passion Leads to Higher Evaluations of Funding Potential," *Journal of Business Venturing* 27, no. 5 (September 1, 2012): 592–606, https://doi.org/10.1016/j.jbusvent.2011.11.003.

[167] Natasha Mascarenhas, "With $2.7M in Fresh Funding, Sora Hopes to Bring Virtual High School to the Mainstream," *TechCrunch* (blog), accessed March 29, 2021, https://social.techcrunch.com/2020/10/02/with-2-7m-in-fresh-funding-sora-hopes-to-bring-virtual-high-school-to-the-mainstream/.

[168] Sophia Kunthara, "Funding To Atlanta Hit A 5-Year High In 2020 As The City Produces Unicorns," Crunchbase News, January 28, 2021, https://news.crunchbase.com/news/funding-to-atlanta-hit-a-5-year-high-in-2020-as-the-city-produces-unicorns/.

fintech and biotechnology may also inherently attract more investors to the region. Alternatively, the city may also look to adopt a more aggressive approach in soliciting venture capital funds. In Miami, for example, Mayor Francis Suarez used Twitter to begin engaging with the global startup and venture capital community with direct messages and live conversations. [169] Suarez, by publicly presenting what Miami has to offer to the startup and venture capital community, is getting results. Various brand name firms like Softbank have since committed $100 million in dedicated funds to investing in Miami startups, while other venture firms plan to open new offices in the city.[170] While Miami is certainly a compelling city, Atlanta is far more compelling on multiple fronts, yet no such commitments from major venture capital firms have been made to Atlanta. Highlighting the possibilities of the startup community, culture, and quality of life by directly engaging with potential residents has proven to drive a certain fervor. Employing these tactics may also prove useful in creating excitement for Atlanta's tech cluster.

4.10 Atlanta Universities Support Tech Cluster Development

Aside from venture capital, one of the most critical components of the Technopolis Wheel and tech cluster development is the education sector, another area in which Atlanta stakeholders have worked to strengthen over many years. Atlanta's education institutions include Emory University, Georgia Tech, University of Georgia, Georgia State, and the five Historically Black Colleges and Universities (HBCUs). Boasting strong national and international reputations, these institutions attract tens of thousands of students to Atlanta each year.[171] As observed in both case

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[169] Nellie Bowles, "Join Us in Miami! Love, Masters of the Universe," *The New York Times*, January 29, 2021, sec. Technology, https://www.nytimes.com/2021/01/29/technology/join-us-in-miami-love-masters-of-the-universe.html.

[170] Marcella McCarthy, "SoftBank Is Just the Latest Validation for Miami's Booming Startup Scene," *TechCrunch* (blog), accessed March 2, 2021, https://social.techcrunch.com/2021/02/02/softbank-is-just-the-latest-validation-for-miamis-booming-startup-scene/.

[171] "Fast Facts About Higher Education in the Atlanta Region," accessed March 20, 2021, http://www.atlantahighered.biz/Reports/FastFactsAboutHigherEducation/tabid/732/Default.aspx.

studies of Silicon Valley and Austin, the existing university system is critical to the sustained development of a tech cluster.

In the case of Georgia Tech, administrators and the Georgia state government worked to develop specific programs and partnerships to further the university's reach into the community. Beginning in 1979, the Advanced Technology Development Center (ATDC) was established to incubate companies based in the state of Georgia. The organization later joined Georgia Tech's Enterprise Innovation Institute (EI^2), established in 2005 "to increase the competitiveness of enterprises in Georgia through the application of science, technology, and innovation."[172] While ATDC has remained an important source of growth for Atlanta's tech cluster, launching over 150 new startups, Georgia Tech continued to pursue a path towards advancing Atlanta to become recognized as a tech cluster.[173] Starting with the tenure of President John Crecine in 1987, Georgia Tech began restructuring the university, broadening its reach to public policy and establishing a new campus in central Europe. In the same year, Georgia Tech and Emory University launched the joint Biomedical Technology Research Center, supporting research among the universities. This research center would later become the catalyst for the development of a joint biomedical engineering degree between the schools, granting both undergraduate and PhD degrees. [174] Georgia Tech continued its cluster-focused development with the launch of Technology Square in 2003, a geographical area to house industry offices, classrooms, and restaurants with the goal of spurring serendipitous connections.[175] The region has continued to develop, with new additions

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[172] "About Us | Enterprise Innovation Institute at Georgia Tech." Accessed February 23, 2021. https://innovate.gatech.edu/about-us/.

[173] "ATDC | Enterprise Innovation Institute at Georgia Tech." Accessed February 23, 2021. https://innovate.gatech.edu/programs-old/advanced-technology-development-center-atdc/.

[174] Youtie and Shapira, 1190-96.

[175] Ellie Hensley, "Decade of Growth: How Tech Square Is Conquering Midtown," *Atlanta Business Chronicle*, March 27, 2020, https://www.bizjournals.com/atlanta/news/2020/03/27/how-tech-square-is-conquering-midtown.html.

like incubator and venture fund Tech Square Labs seeking to capitalize on innovation in the area.[176]

In addition to the measures taken by Georgia Tech to develop the school as a center of innovative activity in the city, other measures were also taken in tandem with the Georgia state government. Whereas other tech clusters like Austin took an approach of collaborating with public and private actors to develop resources in the city, the Georgia approach was focused on leveraging its university system. The first initiative, the Georgia Research Alliance (GRA), was established in 1990, primarily as a response to the activity Austin was beginning to receive as a promising tech cluster.[177] As previously noted, a critical part of Austin's success can be tied to the various consortium bids it won during the 1980s, with the MCC bid being of particular importance. Atlanta, which had also been in the running for the MCC bid, still viewed technology development as a critical part of economic growth, leading to the development of new programs like the GRA throughout the 1990s.[178] The GRA served to encourage the product development of scientific research emanating from universities across the state, and also worked to recruit top scientists to Georgia universities.[179] A public-private venture fund for the GRA was later established in 2009 to provide financial support to the startups it helped incubate.[180] Other programs, like the Traditional Industries Program, served to leverage Georgia's historic industry strength in areas such as textiles and paper.[181] In the late 1990s, Governor Roy Barnes continued the focus on programming that would highlight technology as a primary component of Georgia's

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[176] Urvaksh Karkaria, "TechSquare Labs Launch $25 Million Fund," *Atlanta Business Chronicle*, accessed February 24, 2021, https://www.bizjournals.com/atlanta/blog/atlantech/2015/10/techsquare-labs-launch-25m-fund-targeting-data-and.html.

[177] "Georgia Research Alliance." Accessed February 24, 2021. https://gra.org/page/1002/about_gra.html.

[178] Hartenberge, Tufekci and Davis, 68-71.

[179] Georgia Research Alliance, 2021.

[180] "GRA Venture Fund, LLC." Accessed February 24, 2021. https://graventurefund.org/page/1065/About_GRA_Venture_Fund.html.

[181] Youtie and Shapira, 1190-96.

modern economy. Barnes launched a five year plan called the Yamacraw initiative, describing it as "a strategic initiative and a process designed to take [Georgia] into the next century."[182] The initiative focused on three core components: (1) develop a cluster of technology companies, (2) strengthen existing university programs, and (3) establish a physical design center located within Georgia Tech to support the commercialization of research.[183] Furthermore, the initiative included funding for a seed-stage fund to invest in startups focused on designing computer chips.[184] Ultimately, several microchip companies from Silicon Valley joined the Yamacraw Design Center, although the resulting impact of these companies in the Georgia economy remains unclear.[185] Nevertheless, Georgia Tech remains an important stakeholder of Atlanta's Technopolis Wheel, graduating the most women and African American engineers from any school in the U.S.[186] Recent program developments like the Create X accelerator have also gone on to support various new student-led startups.[187] Continuing such initiatives will become ever more critical as Atlanta continues to develop into a stronger tech cluster.

4.11 New Tech Cluster Development in Atlanta

Over time, the compounded impact of programs like the Yamacraw initiative and the continued development of Georgia Tech has provided a boost to the city's education sector, strengthening all sectors of the Technopolis Wheel. In addition, more tech-focused firms have settled in Atlanta, such as the recent "unicorn" Kabbage, acquired by American Express. Others,

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[182] Victor Rogers, "Barnes Unveils Yamacraw Initiative as Blueprint for State's Economy." *The Whistle (Faculty/Staff Newspaper)*. January 18, 1999, Vol 23, No 3. edition.

[183] Rogers, 1999.

[184] Youtie and Shapira, 1190-96.

[185] "Yamacraw Attracts California Tech Firm to Georgia," *Atlanta Business Chronicle*, August 28, 2000, https://www.bizjournals.com/atlanta/stories/2000/08/28/daily3.html.

[186] Joseph Roy, "Engineering by the Numbers" (American Society for Engineering Education, July 2019), https://ira.asee.org/wp-content/uploads/2019/07/2018-Engineering-by-Numbers-Engineering-Statistics-UPDATED-15-July-2019.pdf.

[187] "Create-X" accessed March 2, 2021, https://create-x.gatech.edu/.

such as AirBnB and Microsoft, are planning for new office spaces in the coming years.[188] Still, these companies are choosing locations with clear geographic advantages in Atlanta, which reflects a development trend that signals the potential beginning of externalities. Merritt, for example, highlights the spatial evolution of her company Salesloft, which is now located in the Midtown neighborhood of Atlanta. On why Salesloft selected the neighborhood for their headquarters, Merrit states,

> It's accessible via Marta. And it's in a really wonderful growing area of Midtown in Atlanta. It's accessible from the highway, and it has a lot of walkability. [There are] restaurants, there's a lot of places for people to live apartment wise right across the bridge from Georgia Tech. It's accessible to a lot of different things. And I think there's something like a third to a quarter of our [employees] actually take public transit or bike. And so for us having that accessibility and walkability factor was really big. And as stuff has gone in, in the Tech Square Labs area, they've been building North and we've been building South. I think that the tech lineup is sort of starting to come together down Peachtree in Midtown...[189]

The Midtown Atlanta neighborhood as Merrit notes has two key amenities: its proximity near Georgia Tech and its central accessibility. Many young and emerging startup companies like Salesloft rely on early-career talent to accelerate and strengthen their business. Co-locating near an urban campus like Georgia Tech allows for startups to recruit new employees and can also serve to fuel the potential for serendipitous interaction and knowledge overflow, spurring a thriving hub of innovation.

Accessibility is another critical factor both new and established companies are continually considering when selecting office space. According to a 2017 survey conducted by the US Realtor's Association, while 62 percent of millennials cite their preference to in a walkable area.

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[188] "Airbnb Announces Plans to Open Atlanta Technical Hub," *Airbnb Newsroom* (blog), February 18, 2021, https://news.airbnb.com/airbnb-announces-plans-to-open-atlanta-technical-hub/.

[189] Aly Merrit, interview by author, New York City, October 14, 2020.

[190] With millennials and Gen-Z representing the future of the workforce, such generations are also increasingly concerned with climate change, prompting changes in transportation habits.[191] Being in an accessible neighborhood like Midtown, as Merrit notes, means that more employees can use public transportation or simply walk to the office.

Other accessible areas have also seen an increase in attracting new companies. Most notably, The Beltline, a multi-use park and trail loop around inner-Atlanta, has seen an influx of companies moving into the area over the past decade. Many companies can be found within or near Ponce City Market, a central location along the route. Ponce City Market, a former mixed used building last owned by the City of Atlanta, was redeveloped by Jamestown, a private developer, coinciding with the development of the Beltline.[192] Following completion of both projects in 2014, Ponce City Market and The Beltline have quickly become a growing tech hub within Atlanta. The hub is now home to the Techstars Atlanta accelerator and Atlanta-founded startup Mailchimp among other large and emerging companies. Yet, such growth, as proven in the models of Silicon Valley and Austin, introduce the risk of accelerating an economic inequality gap. The Beltline Project is an example of well-intentioned economic development that has gone awry. It provides a good case study which highlights how Atlanta's pursuit of modern development can lose control over balancing the interests of new growth initiatives with the economic security of disadvantaged residents.

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[190] Aditi Shrikant, "Why Walkable Cities Are Good for the Economy, According to a City Planner," *Vox*, October 26, 2018, https://www.vox.com/the-goods/2018/10/26/18025000/walkable-city-walk-score-economy.

[191] Kim Parker, Nikki Graf, and Ruth Igielnik, "Generation Z Looks a Lot Like Millennials on Key Social and Political Issues," Pew Research, *Pew Research Center's Social & Demographic Trends Project* (blog), January 17, 2019, https://www.pewresearch.org/social-trends/2019/01/17/generation-z-looks-a-lot-like-millennials-on-key-social-and-political-issues/.

[192] *Note: Jamestown is the same developer of New York City's famed Highline development.*

4.12 Emerging Tech Clusters and Gentrification in Atlanta

One of the most ambitious projects in recent years to arise in Atlanta has been the Beltline, a park and walkable transportation network that circles most of the inner city. The Beltline was originally conceived by Georgia Tech student Ryan Gravel, who completed his master's thesis on developing a new walkable path around the city.[193] Given Atlanta's history of racism and segregation, the city is notoriously disconnected. In creating the Beltline, one of the primary goals was to connect the disparate neighborhoods in one continuous loop, uniting all residents of the city.[194] When city officials and planners first set out to develop the path, the estimated cost was approximately $4.5 billion.[195] Despite such a significant cost of development, planners agreed on the ultimate value that the project could provide by amplifying the social and economic growth in the city. On the other hand, the potential externalities the project could develop were of lesser concern, a commonly cited issue evident among various sustainable development projects.[196] In order to move forward, planners decided that the primary source for funding for the Beltline would be dependent on the surrounding communities being established as a tax allocation district (TAD). According to The City of Atlanta, the TAD works by directing "increases in property tax revenues, which are generated primarily from new investment in the district, are allocated to pay infrastructure costs or certain private development costs within the TAD."[197] In essence, any

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[193] Stacy Braukman. "The Man With a Plan." Georgia Tech News Center, December 12, 2019. https://www.news.gatech.edu/features/man-plan.

[194] Mark Pendergrast, *City on the Verge: Atlanta and the Fight for America's Urban Future*, Illustrated edition (New York: Basic Books, 2017).

[195] Dan Immergluck and Tharunya Balan. "Sustainable for Whom? Green Urban Development, Environmental Gentrification, and the Atlanta Beltline." *Urban Geography* 39, no. 4 (April 21, 2018): 546–62. https://doi.org/10.1080/02723638.2017.1360041.

[196] Ann Dale and Lenore Newman, "Sustainable Development for Some: Green Urban Development and Affordability," *Local Environment* 14 (August 1, 2009): 670. https://doi.org/10.1080/13549830903089283.

[197] "Tax Allocation District (TAD) | Atlanta, GA," accessed February 13, 2021, https://www.atlantaga.gov/government/departments/city-planning/office-of-zoning-development/plans-and-studies/tax-allocation-district-tad.

existing properties in the TAD, including public schools and government-owned properties, would have their property taxes directed toward the development of a new project like the Beltline. In the case of the Beltline, this meant that many of the underprivileged, primarily African American communities in the TAD would be funding the project through their tax dollars, a project with a poorly understood impact on their future.

The Beltline, which began its formation in 2005, was allocated a TAD in its surrounding communities until the proposed completion date of 2030. The once amicable goals of The Beltline, however, have since become preoccupied with mounting issues of inequality, homelessness, and gentrification. Sarah Dooling, Assistant Professor of Urbanization at University of Texas, Austin, forewarned of the potential externalities for such a project well before most of the development was complete. Dooling highlighted the potential for "ecological gentrification," defined as "a provocative term that highlights the contradictions that emerge between an ecological rationality and its associated environmental ethics, and the production of injustices for politically and economically vulnerable people."[198]

[198] Sarah Dooling, "Ecological Gentrification: A Research Agenda Exploring Justice in the City," *International Journal of Urban and Regional Research* 33 (September 1, 2009): 621–39, https://doi.org/10.1111/j.1468-2427.2009.00860.x.

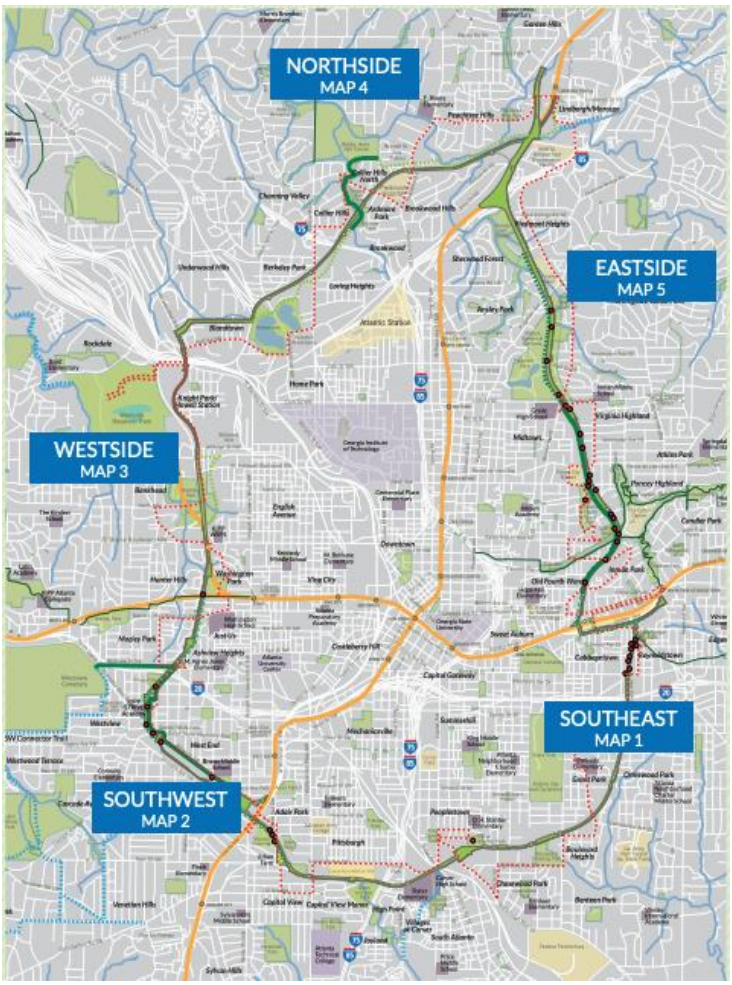

Figure 4. The Beltline path creates a loop around various neighborhoods in Atlanta.[199]

The development of urban green spaces, as Dooling argues, presents issues for increasing inequality, producing the opposite of the desired outcome for a project like The Beltline.[200] Gibbs and Kruguer present similar concerns, citing evidence of the correlation between urban sustainable development projects and high capital growth, as well as high rates of gentrification.[201] In particular, Gibbs and Kruguer note that these issues as most likely to occur in cities that function

[199] "Atlanta BeltLine // Where Atlanta Comes Together." Accessed February 16, 2021. https://beltline.org/.

[200] Dooling, 621-22.

[201] Rob J. Kruguer and David Gibbs, *The Sustainable Development Paradox: Urban Political Economy in the United States and Europe*. Illustrated edition. New York, N.Y: The Guilford Press, 2007.

on the foundation of the "knowledge economy," an emerging construct of the modern U.S. economy as presented in Chapter 1.[202]

The potential impacts of gentrification and rising housing costs, while not at the forefront of planning, were acknowledged by The Beltline's developers. In particular, planners proposed that a subset of new real estate developments built along the path would be reserved as affordable housing units. Ultimately, a convergence of factors including the 2008 financial crisis impacted the funds set aside for the development of affordable housing units. As of 2016, ABI estimated that less than 1,000 units were developed, far below the quota of 5,600 to be developed by 2030. At the same time, luxury housing units continued to expand exponentially around the Beltline, effectively displacing longtime residents in the area.[203] Disgusted with the disregard for ensuring affordable housing, Beltline founder Ryan Gravel resigned from the Advisory Board.[204] In response to Gravel's leaving, ABI committed to improving their practices regarding affordable housing by committing more funds to development.[205] Ironically, the white flight to the suburbs has now reversed toward the inner city, as new developments like The Beltline make once neglected neighborhoods in Atlanta more attractive to a young, wealthy demographic. Tent cities occupied by the homeless can already be found under The Beltline, clear evidence of the lack of foresight for potential externalities.[206] While both new and established firms are seeking relocation

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[202] Gibbs and Kruguer, 95-115.

[203] Immergluck and Balan, 552.

[204] Maria Saporta. "Beltline Founder Ryan Gravel Resigns from Board - Atlanta Business Chronicle." Atlanta Business Chronicle, September 27, 2016. https://www.bizjournals.com/atlanta/news/2016/09/27/beltline-founder-gravel-resigns-from-board.html.

[205] "Atlanta BeltLine Closes $155 Million 2016 Bond Issue to Advance Affordable Housing, Capital Construction and Economic Development // Atlanta Beltline." Accessed February 13, 2021. https://beltline.org/2017/01/22/atlanta-beltline-closes-155-million-2016-bond-issue-to-advance-affordable-housing-capital-construction-and-economic-development/.

[206] Pendergrast, 107-110.

to these areas, it is critical that the Atlanta city government work to mitigate the externalities already occurring in the city.

4.13 The Effort to Mitigate Externalities: Public-led Initiatives

Throughout Atlanta's history, it is evident that local and federal governments have continually struggled to execute solutions that effectively mitigate the externalities associated with economic growth and development. While both public and private organizations have been previously challenged with developing programs to combat issues of homeless, gentrification and education inequality, city stakeholders are now actively working to address these issues. Before analyzing the actions stakeholders are taking to help support the most disadvantaged populations, it is first important to understand exactly who comprises the most disadvantaged populations. According to the U.S. Census, 20.8% of Atlanta's residents live in poverty.[207] Of those who live in poverty, 73% are African American.[208] Additionally, African American residents have the highest unemployment rate of 22%.[209] And, just 57% of African Americans in Atlanta graduate high school.[210] Developing a tech cluster in the city without working to improve the lives of these people should be unacceptable to any stakeholder in the city.

Public stakeholders in Atlanta are aware of many issues of externalities; city government initiatives provide a foundation by which other stakeholders and private organizations can collaborate to stimulate more equitable growth and shared prosperity among city residents. Under

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[207] "U.S. Census Bureau QuickFacts: Atlanta City, Georgia," accessed February 12, 2021, https://www.census.gov/quickfacts/atlantacitygeorgia.

[208] "U.S. Census Bureau American Community Survey 2019," accessed February 12, 2021, https://data.census.gov/cedsci/map?g=310M500US12060&d=ACS%20Supplemental%20Estimates%20Detailed%20Tables&tid=ACSSE2019.K200101&vintage=2019&layer=VT_2019_310_M5_PY_D1&mode=selection.

[209] U.S. Census Bureau American Community Survey 2019.

[210] "Changing the Odds: Progress and Promise in Atlanta" (The Annie E. Casey Foundation, 2019).

the administration of Mayor Keisha Lance Bottoms, the city established the Atlanta Office of Resilience, which was developed with the following four visions for the city:

1. Preserve and enhance Metro Atlanta's culture, shared identity, and history.
2. Reduce the barriers preventing Atlanta's from achieving economic stability and security to increase access and reduce income inequality.
3. Facilitate the development of an equitable and inclusive city while preserving and expanding the natural environment.
4. Adapt Atlanta civic systems to become a leader in equity, sustainability, and resilience.[211]

In addition, the city also joined the 100 Resilient Cities Network, a group started by the Rockefeller Foundation with the goal of working towards building and supporting more resilient cities globally.[212] These goals, though ambitious, have proven thus far to be largely centered around sustainable development projects to reduce Atlanta's carbon footprint. While these programs may be a way to attract new companies to the city, as discussed in the development of The Beltline, such projects without structural guardrails can accelerate gentrification and further exacerbate the economic dislocation of disadvantaged citizens. Those citizens are predominantly African American, and while overt racism is not the intention, the result is the same.

Other city-led initiatives and collaborative efforts, like programs managed by Invest Atlanta, also seek to help create equal opportunities for residents. Invest Atlanta initiatives target a variety of Atlanta residents with programs for small business owners, startup founders, creative industry workers, students, and women. The organization provides various loans to small business owners, while startup founders can access incentives through committing to creating new jobs or

[211] "About the Office of Resilience | Atlanta, GA," accessed February 13, 2021, https://www.atlantaga.gov/government/mayor-s-office/executive-offices/office-of-resilience/about-the-office-of-sustainability.

[212] "Atlanta," *Resilient Cities Network* (blog), accessed March 1, 2021, https://resilientcitiesnetwork.org/networks/atlanta/.

participating in designated incubator or accelerator programs.[213] These programs are designed with stipulations, such as operating in specific areas of the city, or starting a company focused on specific technology sectors like semiconductors. For creative professionals in the music and entertainment industry, partnerships with companies like Spotify support artists, a way to maintain the strong influence of hip hop culture in Atlanta. Other programs like "Students2Startups," funded by the City of Atlanta, match Atlanta area college students to intern with local startups.[214]

Such programming initiatives can be critical to providing the financial support necessary to small business owners and entrepreneurs. Harvard Business School economist Josh Lerner, however, warns rigid programs can hurt the tech cluster. In particular, limits such as stipulations on loans and grants regarding operating location and size of the initiatives seeking support are restrictions that undermine the intended effect.[215] Joey Womack, founder of the Atlanta-based incubator program Goodie Nation, which supports diverse entrepreneurs in the city, also raises similar concerns. Specifically, Womack warned about the potential consequences of over-programming the entrepreneurial process as he noted in the proliferation of new incubator and accelerator programs for diverse entrepreneurs in Atlanta. He states,

> …when we started our pre-accelerator back in 2016, there may not have been any others. But since then, like, I'd say, maybe six to eight or 10, programmers sprung up, and it created this culture…and that that many entrepreneurs returned into professional students, meaning they were bouncing from program to program to program. And these again, these are in many cases, black founders, right? They are bouncing from program to program to program without really making substantial progress as a business. And they were more proud to get into a program and they were about bringing money through the door.[216]

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[213] "Helping Businesses Every Step of the Way.," accessed March 20, 2021, https://www.investatlanta.com/businesses/get-started.

[214] Invest Atlanta, 2021.

[215] Josh Lerner, "Chapter 9: Lessons and Pitfalls" in *Boulevard of Broken Dreams: Why Public Efforts to Boost Entrepreneurship and Venture Capital Have Failed--and What to Do about It*, (Princeton: Princeton University Press, 2009), 160.

[216] Joey Womack, interview by author, New York City, November 15, 2020.

Though creating new programming and opportunities for entrepreneurs of all backgrounds is critical to supporting the growth of a more equitable entrepreneurial community in Atlanta, the consequences of such programming must also be considered.

Many federal government initiatives have also been implemented to achieve shared prosperity and equality across American cities. In the state of Georgia, the Workforce Innovation and Opportunity Act was signed in 2014 to help support the retraining of unskilled and low-income residents through state-funded technical education programs.[217] With a workforce increasingly dependent on knowledge-workers, such training programs can become an asset to the economy. Qualified Opportunity Zones (QOZ), geographical areas of cities that help spur economic growth and revitalization of disadvantaged communities, are another program established in 2017 through the Tax Cuts and Jobs Act. At its core, Opportunity Zones are an incentivized tax break for those who make investments in designated communities. There are limited stipulations on the metrics the investment must achieve, or the type of investment being made, other than it being an equity-based investment instead of debt.[218] In a 2019 prospectus of Opportunity Zones developed in collaboration with The City of Atlanta, Invest Atlanta and The Arthur M. Blank Family Foundation, various neighborhoods for investment are outlined. Many of the areas with plans for redevelopment include the surrounding neighborhoods of Downtown Atlanta, along with other zones in the southwest perimeter of the city.[219] Such areas have been historically low-income, African American neighborhoods, a result of white-flight patterns discussed earlier. Bringing new investment to these areas could be critical to the growth of Atlanta

[217] "About the Office | Georgia Department of Economic Development," accessed March 10, 2021, https://www.georgia.org/about-office.

[218] "Tax Reform Creates Opportunity Zone Tax Incentive | Internal Revenue Service," accessed March 8, 2021, https://www.irs.gov/newsroom/tax-reform-creates-opportunity-zone-tax-incentive.

[219] "City of Atlanta Opportunity Zone Prospectus" (City of Atlanta, Atlanta Downtown, Invest Atlanta, The Arthur M. Blank Family Foundation, April 2019).

and provide new economic opportunity to low-income residents. Yet, it is also important to note that the investments could spur more gentrification by forcing out longtime residents, a trend underway in cities like Houston, Texas and Washington, D.C.[220]

4.14 Externality Mitigation Targeting Disadvantaged Entrepreneurs

Public efforts have clearly developed a platform for progress in Atlanta, providing new opportunity for privately led efforts to continue to elevate and redefine the city's mission. The Atlanta Wealth Building Initiative (AWBI) is a non-profit that has worked towards addressing externalities and was established in 2017 by three philanthropy funds with ties to Atlanta. AWBI's three core pillars, "lead, build and invest," guide the initiative and their actions in working to combat issues of racially fueled wealth inequality.[221] According to research conducted by the organization, African American workers in Atlanta are five times more likely to be unemployed than white workers.[222] To support the discovery of new solutions and strategies to help diverse entrepreneurs, the AWBI and its supporting philanthropies have commissioned various reports in collaboration with other stakeholders in the community. AWBI additionally has built relationships with organizations like the Metro Atlanta Chamber and Invest Atlanta, involving them in a "Community of Practice" conversation series on strategies to support African American entrepreneurs. Investing in local community run initiatives, including accelerator programs like Joey Womack's Goodie Nation, is another core tenet of AWBI's mission.[223] Similar to AWBI, the Georgia Social Impact Collaborative (GSIC) also seeks to support entrepreneurs in the Atlanta

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[220] Jesse Drucker and Eric Lipton, "How a Trump Tax Break to Help Poor Communities Became a Windfall for the Rich," *The New York Times*, August 31, 2019, sec. Business, https://www.nytimes.com/2019/08/31/business/tax-opportunity-zones.html.

[221] "Atlanta Wealth Building Initiative," Atlanta Wealth Building Initiative, accessed March 10, 2021, https://www.atlantawealthbuilding.org.

[222] Solana Rice, Dominique Derbigny, and Lebaron Sims, "Advancing Collective Prosperity Through Entrepreneurship in Atlanta" (Prosperity Now, 2017). 24.

[223] Atlanta Wealth Building Initiative, 2021.

metro area working on developing social impact startups. In supporting entrepreneurs seeking to address social issues in Atlanta, GSIC indirectly contributes to minimizing issues of economic externalities.[224]

Other notable private efforts to support community wealth building in Atlanta includes the Russell Center for Innovation and Entrepreneurship (RCIE), a center committed to supporting black entrepreneurs and providing industry connections. The center, founded in 2019 by the Russel family in Atlanta, aims to provide additional incubator and accelerator programs to new entrepreneurs in the city.[225] While the physical center is still in development, it appears to be a promising node of Atlanta's rapidly growing technology and entrepreneurship community. The Village Microfund, another local incubator program funded in part by RCIE, works to achieve similar goals to the center by supporting first time entrepreneurs.[226] These programs are all critical to furthering issues of wealth inequality in Atlanta, particularly among black residents who have statistically been undervalued in business. Nevertheless, it is interesting to note that many of these initiatives are focused on providing business education and mentorship through accelerator and incubator programs. Addressing gaps in education and resources earlier in the lives of African American students in Atlanta is an issue private companies like Apple are now targeting with their commitment to developing a new campus at the Atlanta University Center for HBCUs. The program also seeks to provide students with new learning opportunities focused in areas of design and technology, which could potentially help support the next generation of black entrepreneurs in Atlanta.[227]

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[224] "The Ecosystem – Georgia Social Impact Collaborative," accessed January 20, 2021, https://gasocialimpact.com/investing-for-impact/the-ecosystem/.

[225] "Introducing The Russell Center for Innovation and Entrepreneurship - Atlanta," Russell Center for Innovation & Entrepreneurship, accessed March 10, 2021, https://rcie.org/.

[226] "About Us," Village Micro Fund, accessed March 10, 2021, http://www.villagemicrofund.com/aboutus.

[227] "Apple Launches Major New Racial Equity and Justice Initiative Projects to Challenge Systemic Racism, Advance Racial Equity Nationwide," Apple Newsroom, accessed March 10, 2021,

The public and privately organized measures discussed, while well-intentioned, are not enough to truly foster inclusive prosperity in Atlanta. Questions of educational support for younger students, restrictive policies and programming for new entrepreneurs, along with a lack of early-stage capital highlight existing weaknesses. These issues present critical challenges for tech cluster stakeholders in Atlanta and must be addressed if Atlanta is to prosper as a strong and equitable economic hub of the South.

5. Tech Cluster Plan for Atlanta

The success of the San Francisco and Austin tech clusters has been compelling; most politicians would be thrilled to see headlines featuring billion-dollar success stories in their city. Yet, the success of these tech clusters has been tainted by rapid increases in the cost of living, homelessness, and out-of-control gentrification. When reviewing externalities in San Francisco and Austin, there is one underlying theme, each city is losing its character: the people, small community businesses, and the classic architecture of older buildings — the soul of the city. This scrutiny is not about denouncing economic progress, but rather proposing that success resulting from a tech cluster should be measured by the breadth of economic growth and its social cost.

Atlanta, like many cities, is focused on developing strategies to continually support economic growth. Since the year 2000, Atlanta's political leadership have been attempting to tap into technology trends to transition to a knowledge-based economy. In efforts to replicate Silicon Valley economic success, however, cities like Atlanta are sadly beginning to replicate Silicon Valley economic externalities.

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https://www.apple.com/newsroom/2021/01/apple-launches-major-new-racial-equity-and-justice-initiative-projects-to-challenge-systemic-racism-advance-racial-equity-nationwide/.

The externalities now arising in Atlanta are disturbing, but not unexpected, given that Atlanta does not have a formal tech cluster plan (TCP), but rather a poorly coordinated batch of economic development programs. Pursuing economic growth is an important goal, but given Atlanta's notorious history of economic inequality, achieving economic growth without inclusive prosperity should be unthinkable. Should a city uproot its indigenous population and succumb to a new wave of economic "winners" to achieve economic growth? The strategy for economic growth should include all the residents of the city, particularly the disadvantaged. Atlanta can do better, but a formal tech cluster plan is required.

5.1 The Ingredients for a Tech Cluster Plan

Describing how to create a tech cluster plan (TCP) requires an exercise that can get tangled in semantics. This should not detract from the main goal: to create a plan that achieves inclusive prosperity while minimizing economic externalities. A tech cluster plan should contain two components:

1. **Organization Structure:** Stakeholders and assets
2. **Execution Model:** Organization for Action, Behavioral Rules

The process of creating a tech cluster plan is informed by the experiences of Silicon Valley and Austin. In the case of Silicon Valley, there was no city plan; the actions of Stanford University, a single stakeholder, launched the first tech cluster. The imbalance of results arising from one stakeholder's strategy are understandable. But, what about Austin? In this case, government and private stakeholders collaborated to create a TCP, but it was a faulty plan. Austin's TCP mission for economic growth was too narrow, failing to recognize a need for inclusive prosperity and minimizing externalities. Further analysis reveals the heart of the problem, the execution model (EM) in Austin failed, as it had no behavioral rules to guide stakeholders. This highlights the

importance of an execution model, otherwise known as "activities needed to produce results."[228] The function of the EM is to define 1) the organization for action, which explains the cross-functional relationships between stakeholders and assets; mission and values, and 2) the behavioral rules for stakeholders, guided by economic incentives and disincentives. The EM assures all goals set within the TCP can be accomplished.

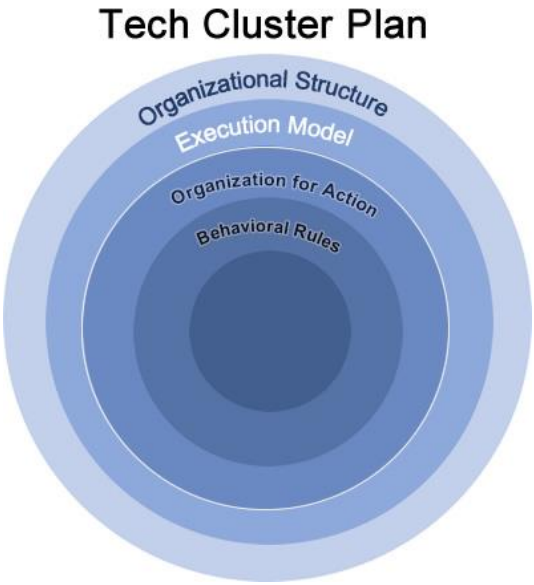

Figure 5. The elements of a tech cluster plan.

5.2 Customizing a Complete Tech Cluster Plan for Atlanta

Soul of the City, the proposed TCP for Atlanta, is a public-private partnership defined with an organization structure and execution model (EM). In Chapter 2, the Technopolis Wheel was introduced as a tool to describe the shape of a TCP as defined by its stakeholders and assets. In Chapter 4, an analysis of Atlanta's economic evolution presented why Atlanta must acknowledge

[228] Ken Favaro, "Defining Strategy, Implementation, and Execution," *Harvard Business Review*, March 31, 2015, https://hbr.org/2015/03/defining-strategy-implementation-and-execution.

its history of racism as it builds its tech cluster. To customize the TCP for Atlanta, two more tools are helpful: 1) the public-private partnership businesses model canvas and 2) economic incentives. Altogether, the recipe providing the ingredients of a TCP is derived from three tools:

1. **The Technopolis Wheel:** defines the organization structure of stakeholders and assets.
2. **Public-private business model canvas:** helps to define the cross-functional relationships of the stakeholders, assets, mission, and values.
3. **Economic incentives:** explain how the use of incentives and disincentives can be used to regulate the behavior of the stakeholders to assure that assets are deployed consistent with the mission and values of the organization.

The plan for Soul of the City will be explained by using each of these tools to create a fully functioning TCP that should satisfy Atlanta's goal to achieve economic growth that features inclusive prosperity while minimizing externalities.

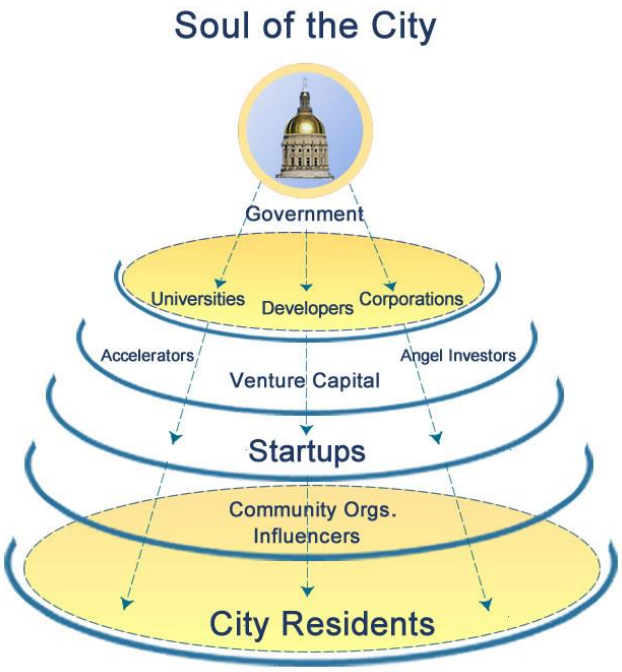

Figure 6. The structure of the Soul of the City tech cluster plan for Atlanta.

Before Atlanta embarks on the creation of Soul of the City, however, the plan should incorporate the following two understandings:

1) **Tech clusters are not a one-size fits all solution.** Although the Technopolis Wheel provides a useful model for defining stakeholders and assets, tech cluster success for each city is the result of the unique chemistry of stakeholders and assets of the city. The Technopolis Wheel components that contribute to success for Silicon Valley, Austin, and Atlanta are unique to each location.

2) **Success should be measured by increasing inclusive prosperity while minimizing externalities.** A tech cluster that only produces prosperity for one segment of the population will ultimately have long-term ramifications for the entire city.

What follows is an examination of the development of Atlanta's TCP, Soul of the City. First, the Technopolis Wheel will be used to describe and assess the quality of Atlanta's stakeholders and assets, including recommendations for how to strengthen areas of weakness. The next step covers the process for creating the Execution Model, providing a model for an organization for action and behavioral rules that will enable success for Soul of the City.

5.3 Soul of the City: Review of Stakeholders and Assets

The first step for creating a TCP is to assess the organization structure by analyzing the stakeholders and assets with the Atlanta Technopolis Wheel and propose recommendations for strengthening areas of weakness. If the organization structure is inadequate, an EM will not function effectively. Atlanta clearly has a strong contingent of stakeholders and assets in place for a successful tech cluster plan. Multiple weaknesses, however, as discussed in Chapter 4, are still prevalent. A summary of that review is helpful to isolate areas of weakness:

- **Early-stage capital community**: 30+ early-stage investors and accelerators that invest including Noro-Mosley Partners, Overline, Panorama Ventures, Tech Square Ventures. Many firms are restricted towards certain industry verticals, and few lead rounds. This has led many Atlanta-based founders to seek capital in other regions and could eventually lead founders to relocate altogether.

    → Recommendation(s):

        - Leverage the strength of existing industries (fintech, biotechnology) to organically attract new investors.
        - Promotional engagement campaign led by the Mayor to present the assets of Atlanta and its tech cluster; engage with members of the national and global startup and VC community.

- **Universities**: Georgia Tech, Emory University, Georgia State University, 5 HBCUs including Morehouse College, Spellman College.
- **Large corporations**: Coca Cola, Delta, UPS, NCR, Home Depot
- **Emerging startups**: Mailchimp, Calendly, Salesloft
- **Local, state, and federal government**: The Mayor's Office of Keisha Lance Bottoms, Invest Georgia, related federal research grants. Current local government programs targeting support for entrepreneurs are restrictive towards certain industries (semiconductors, pharmaceuticals), or locating in certain geographies like opportunity zones in the city.

    → Recommendation(s):

        - Support the expansion of entrepreneurial incentives to include areas of strength (fintech, biotechnology)

- **Community support groups**: 20+ incubator and accelerator programs including Atlanta Tech Village, Techstars, Start:ME, Russel Center for Innovation and Entrepreneurship. There are 20+ accelerator and incubator programs spanning various verticals and stages, with many that invest in companies.

    → Recommendation(s):

        - Support the expansion and development of impact-focused programs to help those in underserved communities launch new businesses.

- **Influencers:** Business leaders, celebrities, and high-profile role models who bridge connections across sectors of Atlanta's Technopolis Wheel and other industries. Influential leaders and celebrities may include Joey Womack (Goodie Nation), Jewel Burks Solomon (Google for Startups), David Cummings (Atlanta Tech Village), Tyler Perry (Film Actor, Director and Producer).

5.4 Soul of the City: Execution Model

Earlier, it was asserted that a successful TCP for Atlanta requires defining stakeholders and assets as well as an Execution Model. The EM creates an Organization for action and Behavioral Rules for assuring inclusive prosperity while minimizing externalities. The following tools can help form the layout of the Execution Model:

- Public-Private Partnership (P3) Canvas and the Organization for Action

    1. Vision and Mission
    2. Collaboration Goals
    3. Public and Private Sector Partners
    4. Value Proposition
    5. Structure and Timeline
    6. Risks
    7. Resources
    8. Impact

- Economic Incentives and Behavioral Rules

Public-Private Partnership (P3) Canvas and the Organization for Action

Soul of the City EM uses a P3 version of the Lean Business Model Canvas to illustrate the Organization for Action by describing the interactions of each stakeholder and asset with how they may collaborate. The following section delineates eight (8) categories of the P3 Canvas:

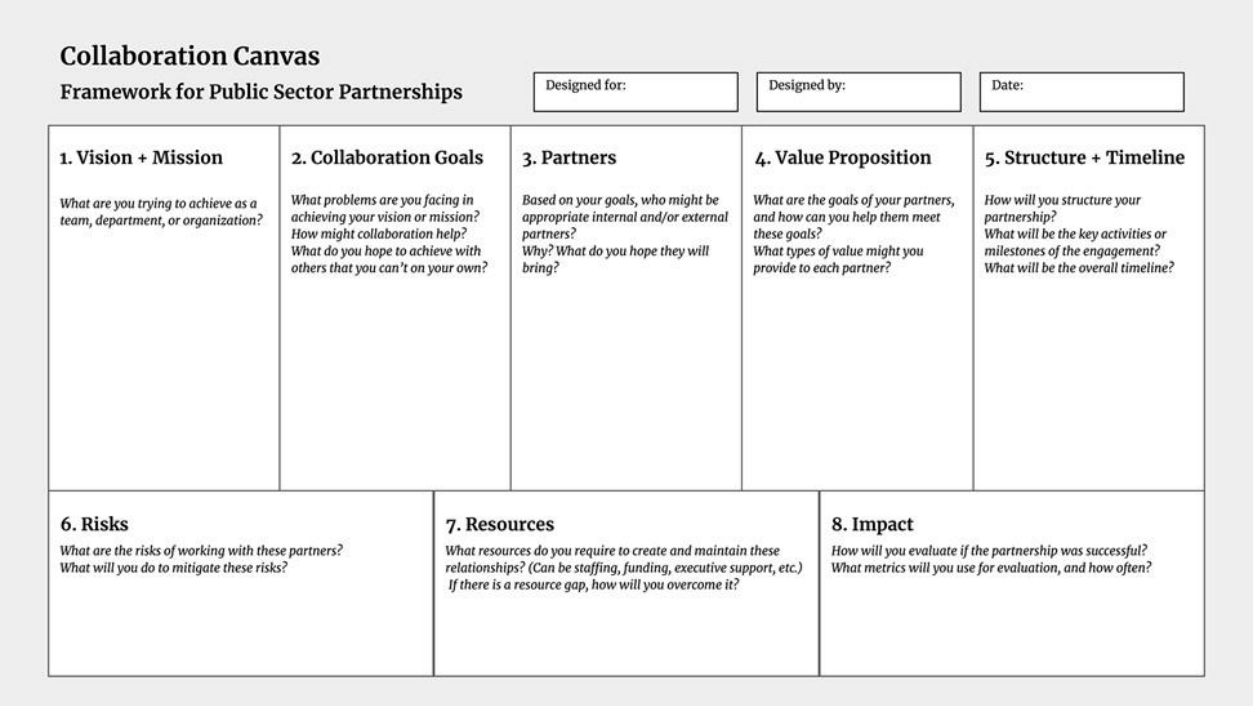

Figure 7. The Collaboration Canvas, an iteration of the lean business model canvas.[229]

1. **Vision and Mission**

The vision for Soul of The City is to ensure that Atlanta can achieve inclusive prosperity for its residents alongside the development of its tech cluster. The mission is to establish a public private partnership between private firms and local city government to support the equitable

[229] Mariel Reed, "A Collaboration Canvas for Government Innovators | Apolitical," March 13, 2018, https://apolitical.co/en/solution_article/a-collaboration-canvas-for-government-innovators.

growth of Atlanta's tech cluster, engaging with the community through a focus on education and entrepreneurship.

As discussed in Chapter 4, Atlanta's history of racism and white flight had a significant impact on the development of Atlanta's public schools. The Atlanta Public School system has historically struggled with funding, facing exploitation of funds from private real estate interests among various other issues.[230] Additionally, most schools are in neighborhoods that have been impoverished for decades, which often correlates with lower high school graduation rates.[231] If residents are not well-educated, a tech cluster cannot truly flourish. The education component of the program may implement two goals: a) to incentivize students from disadvantaged backgrounds to enroll in college and b) support the development of a computer science curriculum. Further support from technology companies involved in the Soul of the City partnership could help to advance computer science curriculum in collaboration with leading computer science educators from local universities like Georgia Tech. These goals have already been identified through the Georgia Tech's Constellations Center for Equity in Computing, which works to implement computer science curriculums in public schools. Leveraging the partnerships of Soul of the City may serve to strengthen such pre-existing programs.[232]

Aside from education, supporting local entrepreneurs and small businesses will be critical to ensuring that the city maintains its character and identity, while promoting inclusive prosperity. The entrepreneurship and small business component may support existing small businesses and

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[230] Shani Robinson and Anna Simonton, *None of the Above: The Untold Story of the Atlanta Public Schools Cheating Scandal, Corporate Greed , and the Criminalization of Educators* (Beacon Press, 2019).

[231] Eric Mandel, "Atlanta Schools like Thomasville Heights Will Never Catch up without Community Support (Video)," Atlanta Business Chronicle, accessed March 29, 2021, https://www.bizjournals.com/atlanta/news/2020/06/26/a-walk-together-education-atlanta-public-schools.html.

[232] "Constellations Provides Significant Access to Computer Science Education In Atlanta Public Schools," College of Computing, May 24, 2019, https://www.cc.gatech.edu/news/621987/constellations-provides-significant-access-computer-science-education-atlanta-public.

the development of new small businesses. Both goals will be supported through ongoing financial and educational support.

For existing small business owners and entrepreneurs, Soul of the City may work to ensure continued economic success. Corporate partners participating may be obligated to commit a certain percentage of expenditures towards procurement of goods and services from local businesses. This could involve encouraging or incentivizing employees to shop at these local businesses, which ideally will work to create a stronger sense of community. Additional services offered by corporate partners may include helping existing businesses develop an online presence or providing opt-in training and mentoring programs.

To support the development of new small businesses, a partnership may be fostered with Start:ME, a free small business training program run by Emory's Goizueta Business School.[233] Funds and resources provided through Soul of the City's corporate partners could help to expand the reach of Start:ME to support more entrepreneurs from underserved areas across Atlanta.

2. Collaboration Goals

Achieving a stronger, more equitable tech cluster in which residents in Atlanta from all backgrounds can build wealth is a process that cannot be completed by any individual organization. Current solutions, as evidenced in the prior discussion on mitigations, are primarily siloed. In the private sector, organizations, and individuals in Atlanta work towards strengthening the resources of the tech cluster through the development of new accelerator programs or deployment of capital. Other private nonprofits, like the AWBI, also work to outline and remediate the potential externalities that may result in improving Atlanta's tech cluster. The case

[233] "Start:ME Atlanta - Grow Your Small Business," Start:ME Atlanta, accessed March 29, 2021, https://www.startmeatl.org.

of the public sector is similar: divisions of government like Invest Atlanta work to improve access to resources for the city's entrepreneurs, while other divisions work to mitigate the externalities. In both cases, there is a lack of collaboration, which effectively stagnates the development of new, innovative solutions. The primary goal of collaboration is to increase the capacity by which Atlanta city government can deploy more resources to critical services like education. The second goal of collaboration is to foster stronger connections and integrations between corporations and local businesses to achieve inclusive prosperity in Atlanta.

3. Public and Private Sector Partners

To attain these collaboration goals, both government partners and private sector partners will be required. Public sector partners may include members from the Mayor's Office of Resilience, who are actively engaged in developing solutions to further inclusive prosperity and goals of sustainability within the city. Members of the board of Invest Atlanta will also be critical to the partnership given their work in providing new opportunities and incentives for both small business owners and entrepreneurs. In addition, leaders from the Atlanta Public School system and local universities will be crucial collaborators for developing the education component of the program.

From the private sector, for-profit corporations with significant influence and history in Atlanta, like Coca Cola and Delta, will be an important foundation given their prior efforts in building connection with the community. Other large companies, particularly those in the technology industry, should also be involved, as these companies can foster critical relationships with the community through the education and entrepreneurship initiatives. Further involvement from large, private non-profit groups, like the Atlanta Wealth Building Initiative, will provide additional guidance given their ongoing research and work in the community.

4. Value Proposition

Soul of the City will be of value to both public and private partners, as the partnership aims to help both sectors in rapidly achieving goals demanded by constituents and consumers. Public sector partners seek to yield accelerated progress on many of the goals set by the Mayor's office, resulting in improved quality of life standards for residents and a stronger economy.

Private sector partners, such as large companies will have a tangible way to demonstrate corporate citizenship. With the socially conscious generation-Z entering the workforce, new employees are actively seeking to join companies that demonstrate a commitment to social issues.[234] In fact, Brieger and colleagues have proven that employees working at companies with environmental social governance standards report higher levels of engagement and productivity.[235] Thus, engagement in the program will give corporate partners the ability to attract and retain employees. External partners may also receive special tax incentives and recognition for their commitment and ongoing engagement in the program.

5. Structure and Timeline

Elements of the structure and timeline of Soul of the City will largely be dependent on the level of commitment by all stakeholders within the Soul of the City organization. Given the goals of the organization to support inclusive prosperity through education and entrepreneurship, however, it may make sense to structure the program into such categories. A series of phases for each component of the program may further help to ensure that the goals set by Soul of the City are achieved in a timely manner.

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[234] Parker, Graf, Igielnik, 2019.

[235] Steven A. Brieger et al., "Too Much of a Good Thing? On the Relationship Between CSR and Employee Work Addiction," *Journal of Business Ethics* 166, no. 2 (2020): 311–29, https://doi.org/10.1007/s10551-019-04141-8.

6. Risks

The development of a P3 such as Soul of the City is accompanied by a variety of risks, most of which stem from maintaining the partnership. Given that most public sector and private sector partners in the organization have not previously collaborated, there may be issues of trust, accountability, and general team conflicts. Written contracts may mitigate some of these issues, however, the most successful P3 programs look beyond contracts, and foster ongoing and open dialogue by all partners involved.[236] While all stakeholders joining with Soul of the City are signatories to the mission of the organization, the chemistry of individuals will occasionally pose challenges. The large scope of the organization may present an additional risk, however, continuous communication among stakeholders should serve to build relationships and anticipate potential issues.

7. Resources

To run successfully, the Soul of the City organization will require a dedicated staff and budget to cover expenditures including commitments by all stakeholders to procure goods and services from local community businesses. Identifying the resources necessary will allow for more effortless collaboration to achieve the goals of the organization.

8. Impact

Since the Soul of the City partnership aims to create both social and economic impact through its initiatives, it must be measured in a way that accounts for both types of impact. Coincidentally, the discipline of impact investing is also concerned with generating both social and economic impact, administrators can borrow from the methods used by impact investors to

[236] Elyse Maltin, "What Successful Public-Private Partnerships Do," *Harvard Business Review*, January 8, 2019, https://hbr.org/2019/01/what-successful-public-private-partnerships-do.

calculate impact metrics. The TPG RISE Fund is widely recognized in the industry for their "Impact Multiple of Money" (IMM) metric, which accounts for both the social and economic impact of investments through a six-step process.[237] This may be an option for Soul of the City stakeholders. Other metrics like new company incorporations, patent filings, and high school graduation rates may also be measured against the objectives of the organization. While there are various ways stakeholders measure impact, implementing a system to track metrics will keep all partners accountable for maintaining continued progress, consistent with the mission.

Economic Incentives and Behavioral Rules

With the P3 Canvas defining the organization for action for Soul of the City, the EM begins to take form, by providing a greater sense of how stakeholders and assets can organize around a unifying mission. Yet, without providing stakeholders clear incentives for cooperation, there is still no guarantee that this model will be effective. Soul of the City already offers intrinsic incentives to stakeholders, particularly corporate stakeholders, who may view their involvement as an opportunity to demonstrate their values to the public and potential employees. Extrinsic incentives such as tax benefits (i.e., abatements) loan support and grants, however, are also crucial to ensuring ongoing involvement in the organization.[238] While tax benefits represent an expenditure on behalf of the city government, the idea is that the economic and social returns will far exceed the initial investment. As mentioned in the case of The Beltline, tax allocation districts, an example of a tax benefit, were implemented to support the development of the project. Despite the progress that was made, externalities still occurred due to mismanagement of the partnership.

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[237] Vikram S Gandhi, Caitlin Reimers Brumme, and Sarah Mehta, "The Rise Fund: TPG Bets Big on Impact," 2021, 30.

[238] Paul Krugman, "Two Fundamental Principles of Economics," MasterClass, accessed January 29, 2021, https://www.masterclass.com/classes/paul-krugman-teaches-economics-and-society/chapters/two-fundamental-principles-of-economics.

To prevent similar situations from occurring, Soul of the City can require the government to use funding covenants that stipulate behaviors by withholding access to public incentive finance like tax benefits, loan support and grants. The stakeholders, including real estate developers are responsible for maintaining the values of Soul of the City by ensuring that externalities are mitigated in any plan of action. In the case of the Beltline development in Ponce City Market, such disincentives could have required a proactive solution before high rents, tent cities and gentrification resulted. The government has significant power with both incentives and disincentives, influencing stakeholder behavior, guiding the organization to sustain its mission to achieve inclusive prosperity while minimizing externalities.

5.5 Example of a P3 in Support of Inclusive Prosperity

In the past decade, various public-private partnerships have been formed primarily for the development of infrastructure or urban revitalization projects like The Beltline. While there are fewer examples of partnerships that specifically aim to achieve the goals of Soul of the City, other programs provide insights to the potential for what Soul of the City can accomplish. Union Market in Washington, D.C., a development like the Ponce City Market in Atlanta, is an example of a public-private partnership that has helped to support inclusive prosperity. The real estate developer of the space, EDENS, made it a priority to engage the local community and policymakers to ensure that the development would have a net-positive effect to support local residents.[239] This meant creating new opportunities for job growth spurred by entrepreneurship. Richard Florida, professor of cities at University of Toronto's Rotman School of Management studied the results of the project. Of the impact, Florida notes,

> The results of Union Market's efforts to curate and encourage a diverse group of entrepreneurs have been promising. Of Union Market's 37 businesses, over 40% are owned by women, and 32% owned by people of color, including 24% owned by women of

[239] Richard Florida and Jodie W. McLean, "What Inclusive Urban Development Can Look Like," *Harvard Business Review*, July 11, 2017, https://hbr.org/2017/07/what-inclusive-urban-development-can-look-like.

> color. The ripple effects of these bottom-up efforts have important benefits for cities. Seventeen businesses that began at Union Market have gone on to open second and third locations around DC. This outcome would have been difficult to achieve had they not initially experimented in a shared entrepreneurial environment.[240]

The partnership, though informal, was ultimately successful as local city policymakers and EDENS agreed upon a shared vision for the development and executed accordingly. Though the project was of a noticeably smaller scale compared to the goals identified for Soul of the City, Union Market is an example of what can be achieved through similar partnerships in Atlanta.

5.6 Future Research Topics for Tech Cluster Plans

Tech Cluster Plan Flexibility

Like all incentive-based regulation the administration of Soul of the City must continually be prepared to adjust and change as progress is measured. Complacency can lead to unintended consequences, and plan reviews are necessary to adjust the TCP over time. The flexibility of incentives and disincentives must be considered as part of the model. All measures of inclusive prosperity must be reviewed to determine what is working and what is not.

Identifying key Metrics to Analyze Results

While most economic development projects have set standard metrics for analyzing results, there is a specific need for a tech cluster plan to create a unique model for analyzing levels of prosperity and how well it is distributed. The same must be assessed for measuring economic externalities. As previously mentioned, the methods used by impact investors can provide a good framework. Specifically, the challenge is to identify accounting methods that are unique to the needs of each city.

[240] Florida and McLean, 2017.

5.7 Conclusions: Ramifications for No Tech Cluster Plan

While cities are clearly moving toward attracting tech cluster development, many are doing so because of a real-estate driven economic development plan. Sociologist Harvey Molotch explains this concept through the growth machine theory, which examines how city stakeholders are often complicit in manipulating economic growth through new development.[241] Whether through urban revitalization or other projects that seek to create a new social good, without a comprehensive tech cluster plan, these projects can ultimately lead to economic externalities. We witnessed this in the case of The Beltline; as an attractive new amenity to the city, both large and emerging companies as well as support groups flocked to the area. What was initially intended as a project to support all residents of Atlanta, has spawned a burgeoning tech hub within the city, accompanied by new housing developments and rising costs of living. Without a tech cluster plan that includes an execution model, new developments that can lead to other tech hubs throughout Atlanta risk perpetuating a cycle of inequality that can only lead to negative consequences for all residents of the city.

[241] Harvey Molotch, "The City as a Growth Machine: Toward a Political Economy of Place," *American Journal of Sociology* 82, no. 2 (1976): 309–32.

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