

Strengthening the Providence Knowledge Economy

Report 1C: Case Studies

Prepared for:
**The Greater Providence Chamber of Commerce
and The Providence Foundation**

**Confidential Draft Report
January 2008**

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Table of Contents

Overview	2
Case Study 1	4
Case Study 2	7
Case Study 3	13
Case Study 4	18
Case Study 5	21

Overview

As described in our project proposal and as discussed in our recent visit to Providence, we are preparing several case studies as one element of the Providence Knowledge Economy project. The primary goals of these case studies are to highlight best practices on shared challenges and to inform our strategic recommendations. Focus areas of the case studies are described in more detail below, and include relevant regional initiatives, intellectual property commercialization, support for a biomedical cluster, the role of universities in economic development and best approaches to the governance of a regional innovation intermediary. We will be looking to communities across the United States and, in some instances, around the world to inform these case studies.

Case studies include:

The Role of Universities in the Larger Economic Development Agenda of the Region

This is a central question for Greater Providence to address. The city and state boast a large number of universities and colleges that contribute in terms of talent, spending and research. These efforts, however, have not always been coordinated with larger regional efforts. In particular, we will be looking at the efforts of the University of Pennsylvania to both boost its own research profile and enhance the community of Philadelphia.

Formation of Regional Knowledge/ Technology Initiatives

It has been our experience that initiatives that look to leverage innovation, knowledge and creative assets often call for a new approach to traditional governance structures. We want to address a few fundamental questions relating to community mobilization and governance: How did the communities come together? How did they organize themselves? What was accomplished? While we have reviewed many of the reports of regional efforts in Providence and New England, we want to especially highlight what has been accomplished in Philadelphia and Detroit. Specific topics include: best practices in internships and student retention, support for target industries, and support for the creative economy.

Synergies with other New England Urban Knowledge Economies

In this case study we will be looking at how Providence relates to other regions and cities in New England. Particular attention will be paid to the relationship between Providence and Boston and, by comparison, the relationship that Boston has with Worcester, MA and Manchester/Nashua, NH. We will also examine how Providence can relate to other regions around specific target industries, such as the life sciences in Boston, or financial services in Connecticut and Massachusetts. Where relevant, we will look to highlight lessons from other “networked regions,” such as Baltimore-Washington and San Francisco-San Jose.

Regions that are Working to Attract Jobs and Investment despite High Taxes, High Cost

The tax structure of Providence and Rhode Island has been repeatedly identified as contributing factor to a challenging business environment. This is a challenge that is shared with many other mature economies, both across the US and around the world. Regions that are successfully working to grow despite high taxes and high business costs generally do so around increased value for local firms often with highly skilled workers. In this case study we will also look to address related issues such as entrepreneurship, linkages to start-ups and access to capital. In this case study, we will be examining selected New England states and a region in Southwest Connecticut and Southeast New York, which includes the counties of Fairfield, Westchester, and Putnam.

The Successful Integration of a Hospital Complex into a Larger Biomedical Cluster

There are a lot of transformative initiatives underway in the development of Providence’s healthcare and life sciences infrastructure. Moving I-195 allows for expanded biomedical facilities in the area; Brown has expanded its life sciences research agenda; and the merger of Lifespan and Care New England will have consequences for both research and the provision of medical care. In this case study, we will highlight relevant initiatives in other regions where discrete healthcare and life science assets have been integrated into an overall regional strategy. San Francisco will be examined with respect to areas such as research commercialization, real estate strategies and the role of non-profit institutions.

Case Study 1:

The Role of Universities in the Larger Economic Development Agenda of the Region

Introduction

Over the last several years there has been a renewed recognition of the profound role that colleges and universities play in the economic vitality of their host regions. Their impact ranges from their role as a major source of job creation and job training as well as their main function as “knowledge creators.” Knowledge creation on a given college or university campus occurs through a variety of means including basic and applied research, the education of undergraduate and graduate students and the dissemination of knowledge through their online presence, digital libraries and online training.

Universities and colleges also have a profound impact on local economies through the purchase of local products and services and as employers. Universities routinely number among the largest employers in many cities, and, given their long-standing physical and cultural links to their host region, universities help local economies avoid recessions with their constant employment and student base and their low risk of geographic dislocation (though many universities now boast multiple locations, including those abroad).

Universities can also play a strong role in the revitalization of struggling communities. This can happen through the pro-active redevelopment of adjacent neighborhoods and the support of regional growth initiatives, which is often done through the creation of an office for community and economic development. Increasingly, universities have also become more active in their support of student and faculty entrepreneurship and for-profit ventures through small business centers and incubators, as well as creating new business programs for the broader community.

In this case study, we outline several initiatives relevant to Providence, giving particular attention to government-university coordination and real estate development.

Philadelphia and the University of Pennsylvania

Since the mid-1990s there have been a large number of initiatives in Philadelphia that illustrate the positive economic impact of successful coordination between municipal authorities and research universities. Initial

coordination efforts have grown, resulting in a number of robust programs and initiatives that boost both the profile of the city and university.

In 2000, the administration of former mayor John Street campaigned on an economic platform that focused on technology and innovation. Philadelphia, once a manufacturing and business center, had long been in decline. The resulting policy implementation committee included the former president of Penn, Judith Rodin, who had been working towards the redevelopment of West Philadelphia.

The outcome of this initiative was the launch of *Innovation Philadelphia (IP)*, a business and university-led economic development agency supported by the city and its lead economic development arm, the Department of Commerce. The President of Penn has served on IP's board, along with representatives of the other universities such as Drexel and Temple and local business leaders. This coordinating body was able to facilitate communication and trust between these different groups and achieve significant results. The following section provides an overview of some of the most important initiatives.

Successful initiatives

Several of *Innovation Philadelphia's* most successful initiatives are particularly relevant to Providence, another urban region that boasts a prevalence of educational institutions. The Knowledge Industry Partnership (KIP) was launched to attract, engage, and retain the 350,000+ current college students in the region. KIP includes representatives from the City's Departments of Commerce and Tourism, along with local businesses and universities. Elements include networking events, internships, career fairs and skill workshops. The program covers students from a variety of backgrounds- from Liberal Arts students to graduate students from the Wharton School. Often universities sponsor related initiatives such as those offered by Wharton Entrepreneurial Programs, which hosts a business plan competition and provides access to capital.

Recently this initiative was taken over by Campus Philly, one of KIP's original constituent organizations. Campus Philly and their partners Career Philly have continued to maintain and establish robust programs and metrics to study the attraction and retention of college students. Based on information from Campus Philly, they have seen increased application and attendance of students in Delaware Valley colleges. The region retains 60% of all college students but has had more success in retaining local students (82%) than those attracted from outside of the region (25%). Efforts are being currently being focused on non-native students. However, while the retention percentage of students from outside the region has not changed, the fact that

more are being attracted to the region as students means that, in nominal terms, there are more locally educated college graduates in the workforce. This too should be the primary goal for Greater Providence.

Another example relates to the redevelopment of underutilized space near the University. This fall, Penn, in conjunction with a private developer and the City, announced plans for land formerly used by a postal facility near 30th St. Station to be developed into 500,000 square feet of mixed-use space that will include retail, residential, business and academic space. The master plan also proposes expanded green space that links the university with Philadelphia's central business district.

This development has a total value of over \$300 million and it has had a significant impact on the City of Philadelphia. Its successful launch depended upon strong community relationships established through previous coordination between the city, state, university and private interests. This effort shows the important role that a local university can have on the economic environment of its host region, and it is clearly relevant to the efforts in Providence and Brown to develop a biomedical complex in the Jewelry District. The initiative also illustrates the fact that when development can meet the shared objectives of academia, private industry, and government there can be wins all around. As a result of this collaborative effort, Penn ended up with an expanded campus and increased green space, the developers ended up with additional leaseable space and the city, given the mixed-use nature of the development, will benefit from increased tax revenue. Key requirements in this outcome were shared vision, coordination and trust.

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Case Study 2: Formation of Regional Knowledge/ Technology Initiatives

Introduction

Since the mid-1970s the economic and technical superiority of the United States has been challenged by emerging economies and a resurgent Europe. Furthermore, within the United States, there has been a significant shift from a manufacturing-based economy to a knowledge- and service-based economy. Accompanying that shift has been the migration of many businesses from the Northeast and Midwest to the South and West of the country.

In response, many state and local governments have launched technology- and knowledge-based economic development initiatives, often focused around specific industries, assets and competencies. In this case study, we outline some relevant examples of Knowledge Initiatives in Detroit and Philadelphia, two regions where NES participated in regional transformation. In addition, we provide guidance on a new term in the Knowledge Economy – *innovation intermediaries* – the non-profit groups that facilitate and drive these initiatives. It has been our experience that initiatives that look to leverage innovation, knowledge and creative assets often require a new approach to traditional governance structures.

In this case study we want to address a few fundamental questions that address community mobilization and governance including: How did the communities come together? How did they organize themselves? What was accomplished?

Knowledge Economy Initiative: Detroit

For much of the 20th Century, Detroit's economy grew in conjunction with the development of the automotive industry. Over the last twenty years, however, Detroit has faced the twin challenges of the decline of US automotive manufacturers and a severely weakened downtown.

Recognizing that Detroit needed to reinvent itself to effectively re-deploy the enormous engineering and design talent in the region, several organizations launched an initiative called *Road to Renaissance*, which was led by Detroit Renaissance. Over the course of this initiative, begun in 2005, a conversation was initiated that has helped strengthen ties and coordination between business, academic, and government partners.

After a history of racial conflict, management-labor distrust, and city-suburb competition, this was a difficult task. It depended upon the active participation of all relevant parties, a trusted intermediary, sustainable sources of programmatic financing, and an initiative director that could drive the agenda.

Alignment was developed around action plans in six core goals: Become the Center for Global Mobility; Become a Global Logistics Hub; Grow Greater Detroit's Creative Community; Expand the Region's Entrepreneurial Capacity; Secure a Strong Future Talent Base; and Promote the Message of Detroit's Revival (both globally and locally). With the action plans completed, the *Road to Renaissance* initiative is now focused on the implementation of these plans. One of the most unique aspects of *Road to Renaissance* is that it does not rely on the financial support of local government. Rather, foundations and private companies have been tapped for tens of millions of dollars of commitment to fund the forthcoming programs. Detroit's ability to marshal support from the private sector has enabled this initiative to circumvent the ongoing political and budget battles between cities in the region.

Technology Initiative: Pennsylvania and Philadelphia

Pennsylvania's economy was long dependent on its manufacturing industries. As employment declined and other competitors emerged, the state realized that a response was required to move the economy in a new direction. In 1982 Governor Richard Thornburgh established the Ben Franklin Technology Partnership (BFTP) to foster entrepreneurship and innovation in the Commonwealth of Pennsylvania. Goals of BFTP included providing financing and incentives for applied research and commercialization. Additionally, the Partnership provides business and technical assistance for established and new businesses through several regional centers. It has become a model for other state-supported initiatives.

Each regional BFTP Center is governed by a local board comprised of business and academic leaders. The boards' members have experience in technology commercialization, finance and marketing. While each Center is an independent nonprofit economic development organization, it is part of a state-wide network, and receives support from the Pennsylvania Department of Community and Economic Development. The Ben Franklin Technology Development Authority coordinates the efforts of the Centers. Over a twelve year period from 1989-2001, the state estimates that BFTP programs resulted in the generation of over 90,000 jobs, \$400 million in additional tax revenue, and a total economic impact of over \$8 billion.

Another example of a development initiative can be found in the City of Philadelphia. As discussed in the first case study, leaders in Greater Philadelphia saw the need for an innovation intermediary focused purely on the

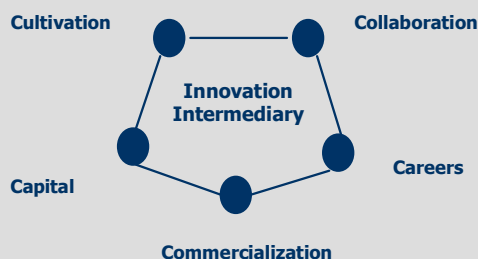
city when they created Innovation Philadelphia in 2001. Philadelphia had several organizations involved in technology-based economic development, including the Science Center, Ben Franklin Technology Partners of Southeast Pennsylvania, and BioAdvance. Primary advocates of the intermediary concept were Dr. Judith Rodin, President of the University of Pennsylvania, and Philadelphia Mayor John Street, who understood that efforts needed to be focused and aligned around common goals for the effective implementation of the regional strategy.

The founder and CEO of *Innovation Philadelphia*, Richard Bendis, focused efforts on connectivity and the programs or the tools needed to catalyze innovation. Bendis saw this best implemented through the creation of technology-based intermediaries, organizations designed to enable the alignment of key technologies, assets, and resources to foster innovation and growth (more information on intermediaries can be found at the end of this section). In the *Innovation Philadelphia* initiative, several technology-based intermediaries were established, each with related pre-seed investment capital and entrepreneurial support services. As a result of the successful integration of these intermediaries in the local economy, the Greater Philadelphia Region was promoted as The World's Best Technology Network in supporting entrepreneurial innovation and commercialization. NES has yet to identify any other region in the country, or world, that has four technology-based ED intermediaries that all have high-risk, pre-seed capital to invest in companies.

Bendis and *Innovation Philadelphia* created further programs to fill the gaps that existed in the regional innovation economy. The Economic Stimulus Fund was created to make equity investments in companies. The Mid-Atlantic Angel Fund was formed among 89 investors in the Greater Philadelphia Region. Although *Innovation Philadelphia* today has shifted from its focus on pre-seed investment to address other regional concerns, all the programs created to sustain the innovation-based economy continue to operate in Greater Philadelphia. The management of the programs has merely been assumed by other entities, which demonstrates the true legacy of an innovation intermediary. Institutions and programs are assembled to address market demands, and when the institution achieves its mission then other regional entities will act to sustain the programs.

Excerpts from NES White Paper, "Innovation Intermediaries", 2007

Appropriate organizational mechanisms can enable greater collaboration between human and institutional players to work on new projects and initiatives, and assist in the leverage and alignment of regional resources to maximize economic growth. An innovation intermediary is this organization at the center of a region's efforts to align local technologies, assets, and resources to work together on innovation. Technology-based ED organization must identify ways to be structured more like innovation-based intermediaries. The innovation intermediary has two primary functions. The first function is that the innovation intermediary must provide operating mechanisms for regional connectivity. It accomplishes this by assuming the role of a neutral convener for regional growth and provides venues for information exchange and connectivity.

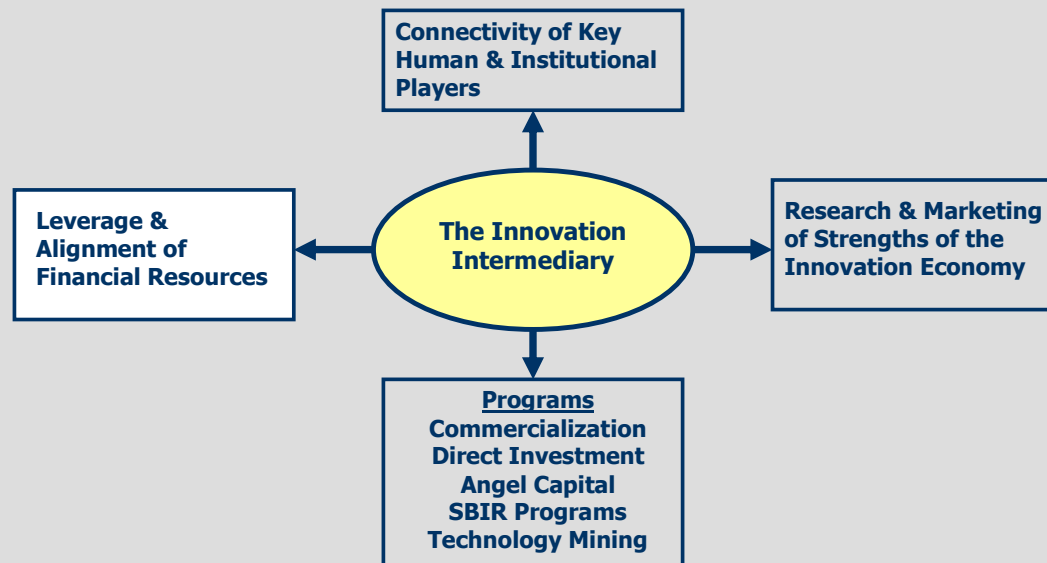


Outputs of Innovation Connectivity

One well-known example of such an innovation intermediary organization playing this first role is CONNECT, created in 1985: a non-profit formed in conjunction with the University of California-San Diego in response to a large downsizing of the defense industry. The CONNECT model features inter-institutional exchange of knowledge and technologies throughout San Diego's research community. It creates opportunities for entrepreneurs, researchers, scientists, business service providers, and industry through structural, informational, and educational activities that can lead to strong regional collaborations.

The second function of the intermediary is to serve as an accelerator that advances technologies into the marketplace for regional economic benefit. Once a regional connectivity mechanism is established it will produce outputs that stimulate innovation in the local economy. The most significant output is the conception and formation of new technology-based products, services and market opportunities. To accelerate innovation, the intermediary must combine scientific knowledge, market awareness, business know-how, and complementary investment programs under a single roof. Too many technology-based ED programs focus on too few steps, resulting in wasted efforts. Finally, the innovation intermediary must continue to research, identify, and market regional strengths to continue to refine and position comparative advantages.

21st Century Innovation Intermediary: Operating Model for Regional Economies



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Case Study 3: Synergies with other New England Urban Knowledge Economies

Introduction

The beginning of the American Industrial Revolution is generally dated to the 1790's, with the establishment of a textile mill on the Blackstone River in Rhode Island by Samuel Slater, an English immigrant. Over the next several decades the rivers and streams of New England were harnessed to develop a robust textile industry and increase the technical capacity of the new Republic.

Since then, high technology has spread throughout the nation and globe. New England now has to compete with other states and countries for wealth, talent and resources. However, the region benefits from a tremendous number of technology- and knowledge-related assets and generations of investment in its infrastructure. Rhode Island has 14 colleges and universities, while the neighboring states of Connecticut and Massachusetts have 40 and 122, respectively. The three-state region is also home to 24 Fortune 500 companies with deep balance sheets and embedded knowledge. The fundamental question remains, however: *What can be done to leverage and coordinate multi-state technology assets so that both Providence and all of New England can compete in the global marketplace?*

In this case study we highlight relevant multi-state assets and look at how Providence relates to other regions and cities in New England. Particular attention will be paid to the relationship between Providence and Boston and, by comparison, the relationship that Boston has with Worcester, MA and Manchester/Nashua, NH. We will also examine how Providence can relate to other regions in specific target industries, such as the life sciences in Boston, or financial services in Connecticut and Massachusetts. Finally, we will highlight lessons from other "networked regions," such as Baltimore-Washington and San Francisco-San Jose.

Relationship with Boston

One of the key considerations in Providence is its relationship with Boston and its answer to the question of whether Providence is its own city or merely part of Greater Boston. The Boston Metropolitan Statistical Area (MSA) stretches from the Atlantic Ocean to Narragansett Bay to the Merrimack River and includes a total population of about 4.5 million. It includes the sub-regions of Boston proper, the 128 Corridor, and the I-

495/Metrowest submarket that stretches all the way to Worcester. Outside of Massachusetts, there are also the submarkets of the I-93 Corridor focused around Manchester, NH and the I-95 Corridor focused around Providence.

While a list of relevant assets is too large to list, they include powerful research universities, innovative firms and a tremendous student population, estimated to be over 300,000. One challenge, however, is that many of the supporting economic development authorities are focused on only their home states. These include LifeTech Boston, administered by the Boston Redevelopment Authority and the Mass Development Emerging Technology Fund. Additionally, initiatives such as the ten-year \$1 billion Massachusetts Life Science Initiative, launched by Gov. Deval Patrick in 2007, are only focused on one state but will have profound consequences for the entire region. Projected job growth will result in increased housing density and labor market and wage demands.

There is limited coordination and implementation on economic issues between the six New England states, especially given their competition for employers and jobs. The New England Governor's Conference has worked together primarily around environmental issues, especially air quality. Other organizations include the New England Council, the lobbying effort of the New England States in Washington, and New England Futures. While the NE Council has supported workforce and innovation efforts, including the expansion of the R&D tax credit, they have to work from a consensus point of view and cannot facilitate transformational initiatives.

In addition, an effort has been made around the Creative Economy, led by the New England Foundation for the Arts to coordinate efforts of business, government, cultural and educational leaders to strengthen the region's economy. Another project, New England Futures, engages in outreach activities to promote dialogue on six strategic issues in the New England states. However, this is primarily a civic effort, and like many of the previously mentioned initiatives, it can not drive implementation. Team New England is a multi-state initiative to attract outside companies to the states in the region, from Connecticut to Maine – primarily through their website and joint participations and booths at national tradeshow. While many of these projects and initiatives represent attempts to reach across state borders and facilitate dialogue and partnership, most have had a limited impact in New England, unable to drive action or coordinate implementation.

The challenge of blending assets across state lines is not unique to New England. It is amplified, however, by the number of independent towns, villages and counties, each with their own decision-making process (and

budgets). Two other regions that have made efforts at regional coordination are parts of Northern California and the Washington, DC metropolitan region.

Silicon Valley

Since 1995, an annual report has been published by *Joint Venture: Silicon Valley Network* that provides data on the economy, innovation capacity, educational infrastructure and social issues of the Silicon Valley region. It includes a number of indicators, both old and new, that are designed to give a snapshot of current conditions and also drive the discussion about future priorities. The study geography is a multi-county region that includes all or part of Santa Clara, Alameda, San Mateo and Santa Cruz Counties.

The longevity of this annual report has facilitated the continued engagement of the civic, business, academic and governmental sectors around the challenges that the region faces. Over 20 cities support the Index, in addition to numerous companies. Their investment yields informative and actionable data that can then be coordinated on a regional basis. Some states in New England work to collect relevant data in a similar manner (and that gathered by Massachusetts' John Adams Innovation Institute is given especially high marks). However, given the close alignment of Rhode Island's economy with that of its neighboring states, a greater effort needs to be made to produce relevant economic information that tells the story and informs decision making in the entire region.

Washington DC

The Washington DC Metropolitan region benefits from several regional coordinating authorities. The region includes two states, Maryland and Virginia, and a city with a unique political structure that allows for autonomous "home rule" but still remains under tremendous federal influence. This context, along with the ongoing requirement of the federal government to ensure continuity with local government, has resulted in extensive regional planning and coordination.

One of the primary bodies that facilitates this coordination is the Metropolitan Washington Council of Governments. Formed in 1957, the MWCOG is comprised of six counties plus the District and several other smaller independent cities. The organization's mission is concise and relevant in time of complex challenges:

Enhance the quality of life and competitive advantages of the Washington metropolitan region in the global economy by providing a forum for consensus building and policy-making; implementing

intergovernmental policies, plans, and programs; and supporting the region as an expert information resource.

The MWCOG focuses on several core areas including transportation, housing and planning, the environment, and homeland security. Aside from sharing relevant information, coordinating funding and driving a regional agenda, the Council has developed several innovative programs and initiatives. One example is the creation of the Institute for Regional Excellence, a professional development program offered in conjunction with The George Washington University to develop talent and leadership in mid- to senior- level government managers. Aside from developing a specific skill set, participants also get a regional perspective and develop informal relationships with their counterparts in other jurisdictions- an invaluable element for future collaboration.

While the MWCOG coordinates the efforts of local governments in the capital region, the Great Washington Board of Trade represents the business community on a regional basis. Founded in 1889, this organization, has transformed in its role from a traditional chamber of commerce agenda to economic development entity addressing issues such as regional competitiveness, transportation and regional business attraction marketing.

One Board of Trade effort in which NES has been involved is the Potomac Conference. For several years, Board of Trade has convened an annual discussion about one particular challenge to the region. Yet, after ten years, evidence of greater collaboration and engaged leadership was still lacking while several critical issues continued to challenge the region. A series of three conferences planned for every six months was designed to identify priorities, foster new approaches, establish vital performance metrics, and otherwise change the mindset among public and private sector leaders. Convening over 150 CEOs, University Presidents, elected officials, and foundation directors, the Potomac Conference fostered a new level of trust, conversation and ultimately, action towards resolving weaknesses in areas such as transportation and infrastructure, workforce and skill development, capital formation, public policy, and the so-called digital divide. A first-ever Potomac Index, five new 'hot teams' for specific initiatives, and an on-going leadership engagement process have established the Potomac Conference as a tool for improving and enhancing regional collaboration.

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Case Study 4:

Regions that are working to attract jobs and investment despite high taxes, high cost

Introduction

Taxes, labor, and business costs such as power and rent have a profound influence on businesses' decisions to expand or move. Businesses have become increasingly mobile, with their expansion decisions strongly influenced by government incentives and brokered by site selection consultants. Rhode Island's business and government costs are routinely cited as among the highest in the country and have long been viewed as an impediment to long-term business growth.

While the cost of doing business may be high from a national perspective, when compared with other New England States, we see that Rhode Island ranks lower on an overall cost of business index than other states such as Massachusetts and Connecticut.

Rank	State	Wage Cost Index	Tax Burden Index	Electricity Cost Index	Industrial Rent Costs Index	Office Rent Costs Index	Cost of Doing Business Index
4	MA	51,163	65.7	13.9	6.3	33.1	130.6
5	CT	54,007	69.4	12.1	5.6	23.3	127.5
10	RI	39,630	68.7	12.9	3.6	23.8	108.0
12	NH	41,277	40.3	13.8	5.9	14.3	105.3

Source: Milken Institute 2007 Cost-of-Doing Business Index

Definitions:

Wage cost measures the annual wage per employee in all industries (receives 50% weight)

Tax Burden measures the annual state tax revenue as a share of person (receives 20% weight)

Measures the cost of commercial and industrial electricity costs in cents per kilowatt-hour (receives 15% weight)

Measures the cost of renting industrial (warehouse) space on a per square foot basis (receives 10% weight)

Measures the cost of renting office space on a per square foot basis (receives 5% weight)

Specifically, Rhode Island's wage costs are significantly below that of Massachusetts and Connecticut (although this is not necessarily a good thing because it can reflect lower productivity). Its rent costs, especially for industrial space, are also less expensive. Additionally, the only reason that New Hampshire's tax burden is significantly lower is due to the fact that there is no state income tax in the state.

Rhode Island cannot, however, compete on the basis of its lower cost structure alone. More important is what neighboring states such as Connecticut and Massachusetts, along with California and other countries such as the UK and Israel, are doing to add value to their companies. *These regions may be high cost but are also high value – providing significant, high quality resources in labor, education, and research.* In this case study we outline both the challenge that Rhode Island faces in building a high wage economy, along with examples from several regions that continue to offer a value proposition to companies that locate in the state.

Context

Demonstrating the value of a high-cost region involves several related requirements. Foremost is evidence of continued investment in a highly skilled workforce. This includes support for both state and private universities, private sector training programs and initiatives to attract and retain workers at all levels of the employment spectrum. Rhode Island has historically been known for its semi-skilled labor and has not been able to make the complete transition to a high-skill/ high-wage economy, despite its large concentration of academic assets. Other approaches toward regional value creation include developing niche focus areas (in industry?) where Providence and Rhode Island can compete, and working to coordinate regional economic development and workforce strategies.

Clearly, successful efforts are going to be made on the margins and the focus will be on how Rhode Island can use its competitive advantage in wage and business cost, especially vis-à-vis Massachusetts, to entice companies to locate to the state. This has happened in the American South and the West in recent decades, with Orlando, and Austin as a primary examples. Rhode Island needs to recognize the promise in its particular set of assets and justify its value as a high-cost environment.

Southwest Connecticut

Southwest Connecticut was selected as one of the 39 regions to participate in the Department of Labor's WIRED initiative, based on its plan to coordinate its workforce and economic development initiatives. This

region, located close to New York City and centered around Fairfield County, is one of the wealthiest communities in the US and has a corresponding high business cost environment. It has particular strength in the Financial Services sector, especially asset management, along with some strength in advanced manufacturing and biosciences. In order to create value and retain high-wage jobs the region wanted to address what it needed to do to remain competitive.

One strategy the region examined was to build a relationship with the neighboring county of Westchester, New York. The two counties face similar business and demographic challenges. Westchester also has particular strength in IT and professional services, given its location as the headquarters of IBM, among other firms. The combination of IT and Financial Services creates regional strengths in asset management, financial product development and other sub sectors. Many of the jobs in these sectors are very high paying. Additionally, the concentration of knowledge in the space means that companies “have to be here to win.”

Local investment and coordination can also have an impact on the academic assets in the region. The WIRED agenda looks to increase the role of community colleges in moving people along an education-workforce continuum. Community colleges are no longer a dumping ground for mediocre students but a means for educational and social mobility, as well as ongoing retraining of existing skilled workers. In Southwest Connecticut, this meant developing curricula and partnerships that can lead students of modest means into jobs in finance and IT with specific in-demand skills. This talent creation means that firms do not have to either look elsewhere for a workforce, or re-locate people to the state, which would further aggravate problems with density and housing costs. Furthermore, community colleges have an important role in “upskilling” the immigrant populations in many Northeastern regions that are often the only source of population growth. Given that Providence faces many of the same challenges as Southwest Connecticut and other mature regions, it should also look to their, and others, approaches to understanding and mitigating its demographic, economic and workforce challenges. Talent development and regional coordination are clearly two elements that play a central role.

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Case Study 5: The Successful Integration of a Hospital Complex into a Larger Biomedical Cluster

Introduction

There are several transformative initiatives underway in Greater Providence that have the potential to reshape the life sciences and healthcare cluster in the region. Efforts include the expansion of Brown University's medical school and the university's continued investment in the Jewelry District. There are also discussions underway to realign the hospital and healthcare systems in the region, most notably the merger of Lifespan and Care New England. Additionally, a major public works program is focused on relocating I-195, allowing for the Jewelry District to be linked with Downtown Providence.

Taken together, these efforts have the potential to dramatically boost employment, attract additional research dollars, impact the provision of healthcare and increase the profile of Providence's life sciences economy. *What is needed is disciplined coordination to integrate individual assets and investments into the larger regional knowledge economy initiative.* In this case study, we will highlight relevant initiatives in other regions where discrete healthcare and life science assets have been integrated into an overall regional strategy. San Francisco will be examined with respect to areas such as research commercialization, real estate strategies and the role of non-profit institutions.

Greater Providence's Healthcare and Life Sciences Assets

A detailed inventory of many of Providence's Healthcare and Life Sciences Assets is outlined in the Knowledge Asset Inventory document. However, this case study will highlight several key organizations that are critical to identifying Providence's competencies in Healthcare and Public Health. One of the largest healthcare of these assets is the Lifespan Hospital System, which includes the Rhode Island, Miriam and Hasbro Children's Hospitals. Lifespan has over 11,140 employees and received \$65 million in research funding in 2006 Care New England is the other primary healthcare system in the region. It includes Butler, Kent and Women and Infants hospitals, along with care New England Home Health. It has total employment of nearly 7,000 and has particular strength in psychiatry and obstetrics.

Brown University and its medical school have made large strides over the last several years. Just over 30 years old, the Alpert Medical School currently has around 350 medical students, 800 residents and fellows and over 2,000 faculty (including hospital employees). Brown is an affiliate of many of the hospitals in the Lifespan- Care New England system. Despite the small number of students, the medical school plays an important role in the community as an education institution and a driver of research in public health. It is the only medical school in Rhode Island and is responsible for educating 15% of the physicians in the state. In 2006-2007, the Brown University attracted \$133 million in research funding from government and private sources, including \$70 million in Life Sciences (with a primary focus on Public Health at the Medical School) and \$40 million in Physical Sciences .

Brown's expansion into the Jewelry District promises to transform the university yet further. The Medical School was the recent recipient of a \$100 million gift which will create a new "front-door" for the campus in the Jewelry district, along with new programs and increased staff and students. This will add to the investment already taking place in the area. Other related infrastructure includes a 105,000-gross-square-foot building, the Laboratories for Molecular Medicine. Researchers located at this facility include 27 faculty from four departments at Brown as well as two prominent research centers, the Center of Computational Molecular Biology and the Center for Genomics and Proteomics

San Francisco

The San Francisco Bay Area has long been a leader in the life sciences industry. The region is home to many biosciences firms such as Chiron, Genentech, and many spin-offs. It also has great institutional strength in its universities including Stanford, UC-Berkley and the University of California, San Francisco. UCSF is a graduate-only medical and life sciences campus of the University of California system and is widely regarded as one of the most important centers of academic medicine.

Given San Francisco's density, UCSF was faced with a challenge when it wanted to expand its biomedical research space. Rather than trying to build out at UCSF's fully developed main campus, over the last several years the university has invested in developing a health science campus at Mission Bay, a former industrial area. This project, covering a 57-acre campus, out of the larger 300 tract, has required the coordination of government, business and academic, and offers several relevant lessons for the development of Providence's Jewelry District and the expansion of Brown's medical school.

It is difficult to overestimate the scale of the project at Mission Bay. Ground was broken in 1999 for Phase One of UCSF's campus, which was only completed this year. It includes three research buildings, student housing, selective retail development, several parking structures and a community center. This mixed-use approach to development means that not all of the development will be zoned as academic, and therefore, it will be able to generate property taxes in addition to wage taxes. Furthermore, there has been coordinated private sector development at Mission Bay. Alexandria Real Estate Equities, a REIT focused on the life sciences industry, is involved in private sector development in the area. Additional development is planned by Shorenstein Company. These buildings are developed for private sector tenants and will, over time, provide substantial revenue to the city of San Francisco.

The City of San Francisco, through its Redevelopment Authority, along with the master developer Catellus, has worked to implement a development strategy that will achieve both social and economic goals. In addition to the UCSF campus and related biotechnology industry space, extensive public infrastructure has been planned. This includes a 500-student school, community center, fire and police stations, and 49 acres of open space. There is also extensive residential development planned in addition to that for UCSF graduate students. Nearly thirty percent of the maximum 6,000 housing units are to be set aside for low-income residents, and they will be built by both for-profit and non-profit developers. Finally, the project is expected to create over 31,000 new permanent jobs by the time Mission Bay is fully developed in 2020.

As Providence sets out to transform the Jewelry District and increase the life sciences strength of the region, it should pay attention to the success of Mission Bay. Having a university as an anchor does not necessarily mean that all of the developed space will be non-taxable. The knowledge economy can have a clear economic impact for the city and region if development is coordinated between the city, academic and medical institutions and private development partners. Providence should also look at how development can be coordinated to include large tracts, rather than just piecemeal building-by-building development. In addition, the movement of I-195 presents a further opportunity for Brownfields to be converted into mixed-use development.

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