What is the backbone of the American economy today? The answer policymakers and the private sector increasingly give to that question has affected the way we think about economic development, how we fund education, how we identify what’s important in infrastructure and more—the innovation economy. But defining this term is difficult, because, by its nature, it can consist of different things in different communities and regions. More than just STEM fields, the innovation economy depends on active entrepreneurship, creativity and fresh approaches to leverage the knowledge and skills in existing markets through new technologies. An innovation economy isn’t limited to digital assets—oftentimes advanced manufacturing is included, for example. One of the biggest features of an innovation economy is a highly skilled, energetic workforce and the appropriate economic climate. With many experts suggesting that the current and future economic success of states and communities may rely on the innovation economy, state and local policymakers must understand where their community stands as they create strategic plans and choose how best to spend limited resources.

The region that is most likely to come to mind when talking about the innovation economy is Silicon Valley. A hotbed of experimentation, collaboration and fierce competition, Silicon Valley attracts and embraces pioneers in private business. Other regions have an opportunity to capitalize on their own assets and hone in on their growth opportunities in pursuit of economies powered by the same sort of energy and expertise.

While indices, rankings, and analyses of cities and states from news agencies and non-profits abound, many of them do not focus specifically on the states or provide enough multistate comparative analysis for policymakers. Some states have taken it upon themselves to create their own innovation indices, which can indicate the health of the state’s innovation climate. Of the states that complete such an analysis, those featured here include Massachusetts, North Carolina and Oregon. All three states track innovation metrics, but have each taken unique approaches.

Why Measure Innovation?
Many state economic strategic plans include goals and objectives related to the innovation economy. Identifying indicators, inputs and outputs associated with those goals and measuring them regularly can help policymakers and the public understand the nature of their successes and challenges in pursuing those visions. These metrics can provide context for state policymakers as they prioritize policies, programs and initiatives. While these metrics can be time consuming to generate, one of the advantages is their state-centered approach.

An Overview of the Case Studies
In all of the states considered, an organization or agency funded by the state is generating metrics related to the innovation economy. Oregon’s Innovation Index, generated every two years or so for the last decade by Oregon InC, is a public-private partnership funded by the state associated with the
state’s economic development agency, Business Oregon. There are 20 measures total; an overall score (out of 100) is generated, focusing on Oregon’s ranking on the indicators and general trends. As Oregon InC describes it, the index was “created to measure the state’s innovation economy and identify opportunities for enhancing competitiveness. It is a key yardstick used by Business Oregon to track the state’s success in building an innovation-based economy.”

In North Carolina, the first report was published in 2000, and the North Carolina Department of Commerce Office of Science, Technology and Innovation updates the report every two years. The NC Innovation-Index is comprised of 39 metrics, which are tracked over time. Like Oregon, North Carolina also looks at multistate rankings and makes comparisons to other states and the nation as a whole. The state’s framework also breaks down indicators by geography, where possible, which can highlight disparities between rural and urban areas in North Carolina. Intended to be an actionable resource, the Innovation Index is “designed as a roadmap for elected officials, policymakers, economic development professionals, educators, and business leaders to navigate the challenges and opportunities of a highly competitive, innovation-driven global economy.”

The Massachusetts Innovation Economy Index was first published in 1997, and is revisited annually by the Massachusetts Technology Collaborative’s Innovations Institute. Their index report, which contains 22 measures, focuses less on a numerical score and more on trends relative to other states with comparably competitive technology sectors.

Results Washington
While not generating an innovation index or packaging data analysis under the banner of a particular economic development climate, some states are still incorporating similar elements into other data-driven tools to achieve state economic goals. Washington is one such state with its Results Washington initiative, which includes indicators that are comparable to the ones incorporated into the other states’ programs. Washington Gov. Jay Inslee has five overall goals for the state, two of which focus on education and the economy, that serve as umbrellas for more concrete, specific goals. Metrics for each goal are accessible from an online dashboard; the data is reviewed by the governor and administrators regularly to “discuss objectives, improvement strategies and metrics.”

For example, Washington tracks its GPI, or Genuine Progress Indicator, as a quality of life metric as part of its “Prosperous Economy” goal. The GPI includes both the positive and potentially negative effects of the pursuit of economic productivity, including income inequality, environmental impacts and social elements like the value of volunteer work. This measure is intended to paint a more accurate picture of the well-being of Washingtonians.

A Comparison of Metrics
While each of these states is unique in its region, culture and history, many of the metrics used to assess their innovation climate parallel each other. Oregon organizes its metrics by five categories—invention, translation, commercialization, economic prosperity and innovative environment; North Carolina has identified six categories—economic well-being, research and development, commercialization, innovative organizations, education and workforce, and environment and infrastructure; Massachusetts has also identified six categories—economic impact, research, technology development, business development, capital and talent. These three state innovation indices use many of the same data sources, including:

- Association of University Technology Managers,
- U.S. Patent and Trademark Office,
- U.S. Census Bureau,
National Science Foundation,
U.S. Small Business Administration,
U.S. Bureau of Labor Statistics,
U.S. Bureau of Economic Analysis, and
U.S. Department of Education National Center for Education Statistics.

Because these indices are not simply historical reports that reflect on past performance, but rather include policymakers who are looking at the future, all three states seemingly have measures of both inputs and outputs of the innovation economy. Put another way, these indices include measures both of the ingredients for an innovative economic climate, as well as how productive those sectors are today.

These states’ metric frameworks share a lot of similarities in spirit, even as the details may differ. For example, all three examine education, income, industry mix, patents and licensing, capital investments, business creation, research and development, and access to broadband internet. However, there is variation on the way those items are evaluated. In North Carolina, there are seven measures used to evaluate employment and industry mix, which is the largest share of the three states, and the largest thematic grouping for their index, as well. All three states innovation indices:

- Track Small Business Innovation Research and Small Business Technology Transfer, or SBIR/STTR awards, given by the U.S. Small Business Administration, among other measures of capital investments and funding streams in their indices;
- Recognize the role of universities in the innovation economy, capturing R&D, inventions, patents and new businesses sprouting from these institutions;
- Include measures of STEM graduates in their workforces; and
- Analyze migration and flow of workers contributing to the innovation economy.

However, there are a couple of unique measures. For instance, there are measures for housing affordability in Massachusetts and cost of living in North Carolina.

**What Does It All Mean? Examples from North Carolina**

The creation of tools like these reflects a desire by states to understand available data to make better decisions based on that information and analysis. As Dr. John Hardin, executive director of the North Carolina Department of Commerce Office of Science, Technology and Innovation, describes it, the North Carolina Innovation Index report isn’t meant to be prescriptive; it doesn’t include any policy recommendations, and that’s on purpose. While descriptive in nature, the North Carolina Innovation Index has generated further conversations that have influenced policy. For example, Hardin’s office, which generates the report, began including data from Small Business-ness Innovation Research, or SBIR, grants in 2003. As policymakers dove into the data, it became clear that there were opportunities for growth in that area, and the One NC Small Business Program, which reimburses the costs associated with applying for the SBIR/STTR grants, was born.

While all three states are in many ways different, they have similar measures in these indices. While we may have sneaking suspicions that some of these inputs cause increased economic output and prosperity, is that really the case? Hardin’s office and the Institute for Emerging Issues partnered with SAS Analytics, a software company, to answer this question. They found that three variables can predict “per capita GDP, average annual pay, and per capita personal income:

- Post-secondary educational attainment
- Proportion of workers in high-tech industries
- Proportion of workers in science and engineer-engineering occupations across the economy.”

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**The Next Frontier**
All of these tools organize and provide context for large data sets, supporting public leaders as they pursue policies meant to promote economic prosperity in their states. While all three tools have been around for more than a decade and have evolved overtime, there are still new challenges to tackle.

- **The urban/rural divide.** The performance in urban areas in a state can mask challenges in rural ones in the development of an innovation-based economy. How do you not only capture that, but address any such disparity through policy?

- **Capturing soft data points.** How do you capture freelance employment or extremely new, informal enterprises? What about community engagement, like the value of mentor relationships?

- **Benchmarking state spending.** How much are states spending on economic development in the innovation economy across agencies? What is the return on investment? Who is getting the most for their dollar?

The innovation economy isn’t just in Silicon Valley. Ultimately all states, regardless of whether or not they use analytics tools like an innovation index, have opportunities for growth in this new economy. As states push forward toward their goals for a more prosperous future, it can be worthwhile to consider the story data can tell. Massachusetts, North Carolina and Oregon provide noteworthy case studies in how innovation economy initiatives can include comparative, long-term data analysis.

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1. Examples include: Kauffman’s State Rankings, the Milken Institute’s Best Performing Cities, and the “Innovation that Matters” report produced by a partner-ship between 1776, Free Enterprise and the U.S. Chamber of Commerce Foundation.


4. Results Washington. Results Reviews.

5. Author’s phone conversation with Dr. Hardin, June 24.


7. Discussed with Dr. John Hardin, June 24.

8. Examples provided by Heather Stafford, Assistant Director for Business Oregon, June 22.


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