# New Jersey's Connected Economy

*How Business Competitiveness Impacts NJ's Industry Clusters, Supply Chains and Main Street*

May 2018

EXECUTIVE SUMMARY

REPORT SUBMITTED TO:

New Jersey Policy Research Organization
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## PURPOSE OF THIS REPORT

The New Jersey Policy Research Organization (NJPRO) Foundation commissioned Econsult Solutions, Inc. (ESI) to undertake an analysis of New Jersey's connected economy, with the goal of demonstrating that how an industry reacts to opportunities and challenges can positively or negatively impact other businesses in its supply chain, local Main Street businesses, and the state's long-term economic viability as an attractive venue for industry investment and talent. The report was commissioned to help policymakers as well as business and community leaders better understand the consequences of economic policy changes and how a change in one part of the state's economic ecosystem can have outsized effects and ripple through other parts of the economy.

**About The New Jersey Policy Research Organization Foundation (NJPRO)**

NJPRO is a non-profit, non-partisan organization that produces research reports to examine issues of importance to the business community. Whether it be independent research, raising facts for discussion, or examining how New Jersey ranks compared to other states, NJPRO aims to provide the business perspective in the policy dialogue.

**About Econsult Solutions, Inc.**

Econsult Solutions, Inc. provides businesses and public policy makers with economic consulting services in urban economics, real estate economics, transportation, public infrastructure, development, public policy and finance, community and neighborhood development, planning, as well as expert witness services for litigation.

## GLOSSARY OF KEY TERMS

Industry Clusters – As defined by Harvard Professor Michael Porter, clusters are geographic concentrations of interconnected companies and institutions in a particular field or industries.

Tradable industries or clusters – Tradable industries or clusters are those that concentrate in geographic regions but sell their products or services across regions or around the world.

Local industries or clusters – Local industries or clusters sell their goods or services primarily to local companies or consumers, and their presence in a region is proportional to the size of their local region.

Multiplier effect – The multiplier effect of any industry or company is the amount of additional economic activity (indirect impact plus induced impact) that occurs throughout the economy as a result of the initial spending by that company.

Direct impact – The total amount of initial spending by a company or an industry.`

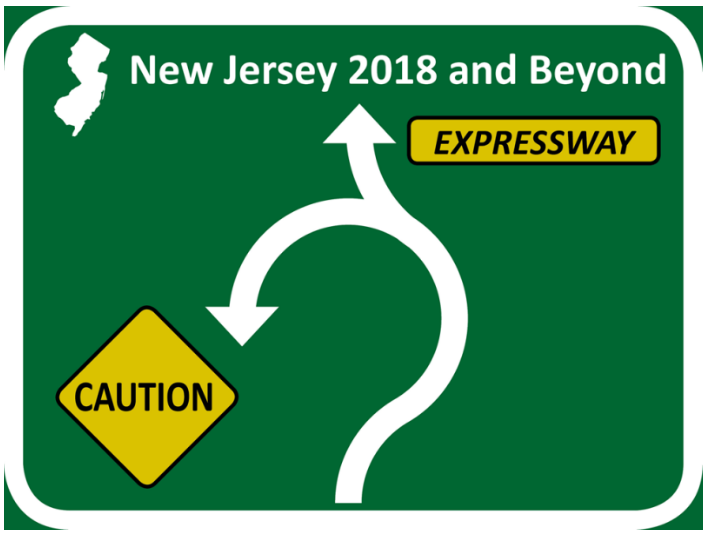
Indirect impact – The amount of spending by suppliers or service providers.

Induced impact – The amount of local spending in the community by employees of either the direct company or employees of companies within the supply chain.

## OVERVIEW

New Jersey has a large and diversified economy, with a state Gross Domestic Product of nearly $600 billion representing three percent of the US national economy. As of October 2017, the state had total employment of nearly 4.3 million jobs.

This doesn't happen by accident. New Jersey has long been recognized for its strategic location in the center of the Mid-Atlantic region, a highly educated workforce, an integrated multi-modal transportation network, an outstanding education system and a high quality of life. With these advantages, New Jersey has also benefited greatly from a legacy of major industry clusters developed over the past 150 years. The state economy has flourished around these clusters, as suppliers flocked to New Jersey to be near their customers, and global headquarters were established. An ecosystem was thus created whereby companies depended on each other and strengthened one another, and also supported local businesses and community institutions.

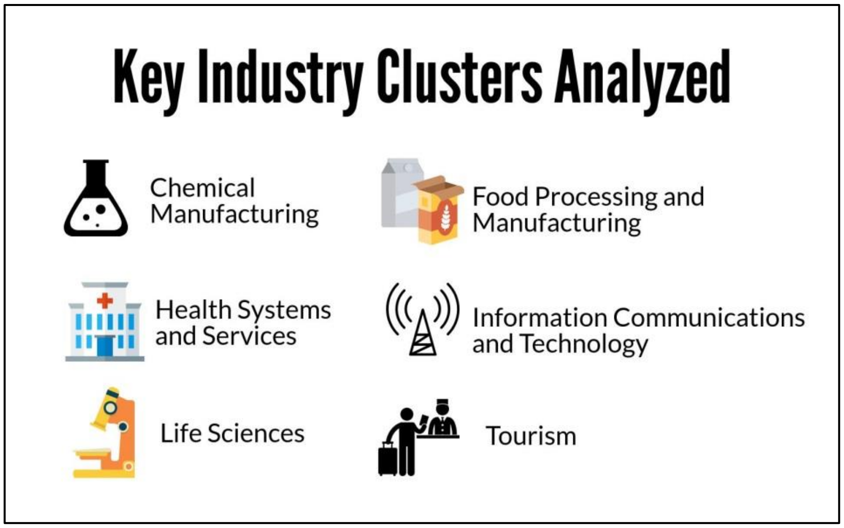



As a new administration and legislature consider how to grow the state's economy, they would do well to think about how to encourage these symbiotic relationships within industry clusters, for the state economy functions as an integrated ecosystem. Changes to the overall business climate, or to a specific industry, can have a ripple effect that can have an outsized impact on the entire state economy. A gain or loss in one sector has a downstream effect on the vendors that serve it, and also has implications for local communities where employees live and spend their money, and companies and their employees contribute their time and resources.

By using economic impact analysis to model the business to business (B2B) interactions in the state's economy, this report demonstrates the consequences of a competitive business climate, and the way that the resulting gains or losses in one industry have an impact on the companies in its supply chain and on local businesses in its community – and ultimately on the short-term vitality and long-term competitiveness of the New Jersey economy. Specifically, gains and losses in one industry immediately reverberate throughout the state economy and affect many other firms and jobs in other industries. Over the long term, whether clusters are cultivated or constrained has an effect on the state's ability to compete on the global stage.

## INDUSTRY CLUSTERS STUDIED FOR THIS REPORT

This report examines the outsized impact that six industries that are important to New Jersey – either through their historic significance, their prominence globally, or because they are a source of significant dollars coming into the state economy – would have on their local and state economies should they be impacted positively or negatively. These are also industry clusters that all states are competing to attract, which means that there is both great opportunity and great danger for the state to either grow these legacy industries or lose them to other parts of the world.



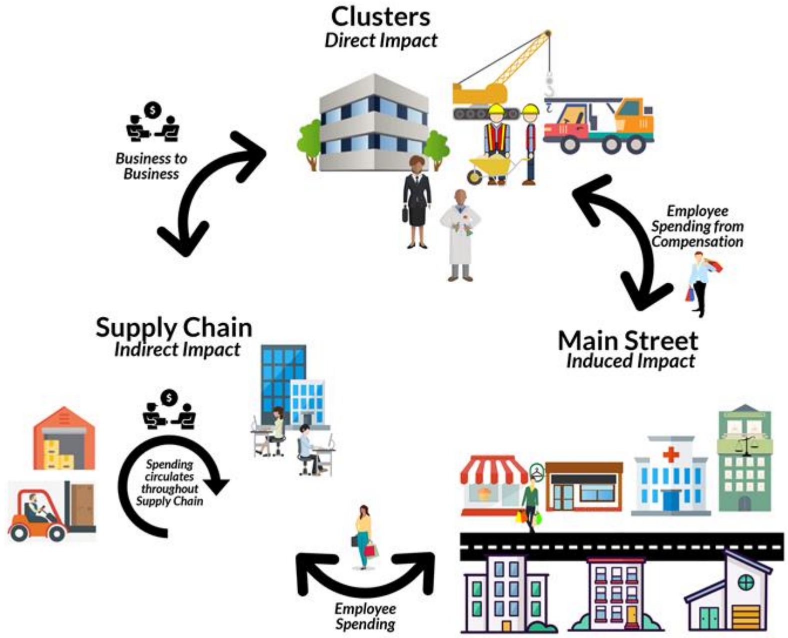

Each of the six industry clusters analyzed for this report is an important one for the state. Together, they represent a diversity of business activity, reflecting the strengths of different parts of the state and spanning the continuum of labor-intensive versus capital-intensive activities. If any one of these industries were to significantly shrink, it would be devastating to the state economy and the communities in which those businesses are based. On the other hand, if they were to grow significantly, there would be strong growth in the state economy both with their suppliers and with their neighborhood businesses. Hence, it is useful to look at the economic impact of gaining or losing jobs in these industry clusters.

## ECONOMIC IMPACT OF KEY CLUSTERS

To better understand the role that key industry clusters and firms play in the broader state economy, Econsult Solutions demonstrated the impact of business expansion/contraction by modeling the gain or loss of 500 jobs within each of six industry clusters. Specifically, an economic impact analysis was conducted utilizing the IMPLAN Input-Output Model[1] to demonstrate the broader economic impacts that the gain or loss of jobs in key industry clusters would have on the state economy, as well as the downstream impacts on other industries and regions of the state.

[1] IMPLAN represents an industry standard approach to assess the economic and job creation impacts of economic development projects, the creation of new businesses, and public policy changes. For more detail on the economic modeling, please see Appendix B of the full report.

## New Jersey's Economy is Interconnected: Gains and Losses in One Industry are Felt by Many Other Industries




We are able to better understand the role that business to business (B2B) economic activity has in the state by looking at the multiplier effect of those industries. The multiplier effect of any industry or company is the amount of additional economic activity that occurs as a result of the initial spending by that company. A company spends its dollars by purchasing goods and services from other companies and individuals (their "supply chain"), and the spending by those companies and individuals in the state and local economy are the indirect impacts. At the same time, the company employs people, and those employees take their wages and benefits and spend those dollars in the local economy – buying consumer goods and services at local businesses ("Main Street") which are calculated as the induced impacts. Taken together, the indirect plus induced impacts comprise the multiplier effect, which is large and has consequences for many other industries and communities.

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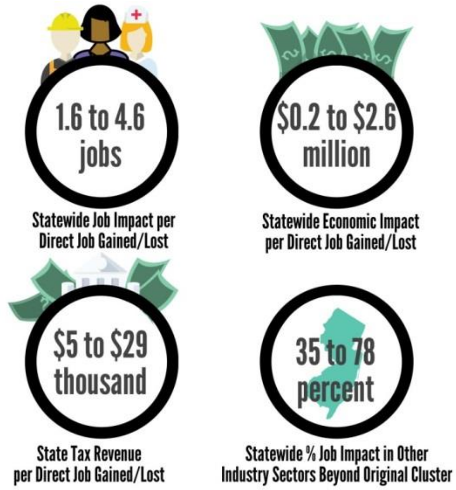
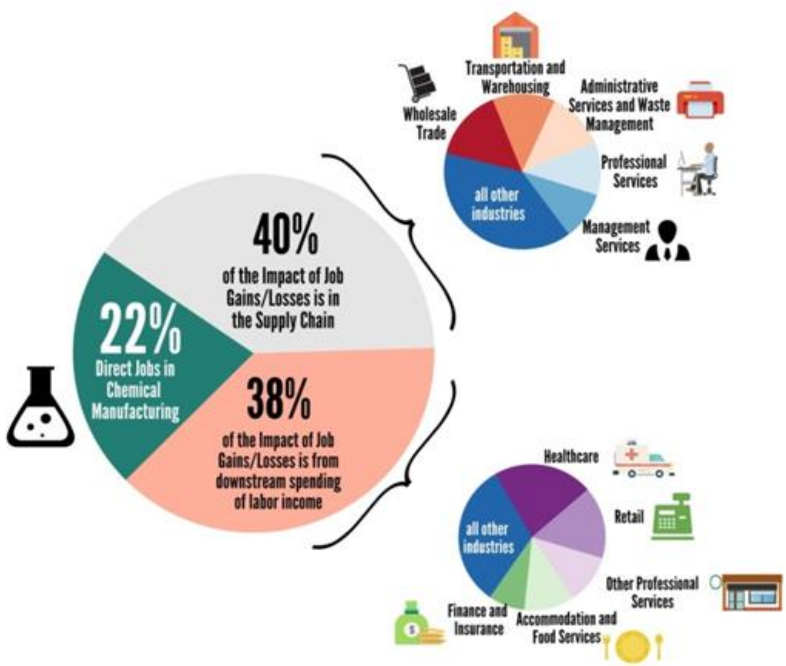
All six clusters studied for this report have outsized impacts on the state economy, in that gaining or losing 500 jobs worth of activity would actually mean a significant amount of economic activity gained or lost, with an attendant increase or decrease in state tax revenues. For example, depending on the cluster, each job gained or lost results in a gain or loss of between 1.6 and 4.6 jobs and $200,000 to $2.6 million in economic activity, as well as between $5,000 and $30,000 in state tax revenues.

## The Business to Business (B2B) Ecosystem: Far-Reaching Effects of Gains and Losses in One Industry




Because the economy is interconnected, the multiplier effects are large in each of the analyzed industries. They also affect a wide range of industries throughout the state beyond the cluster itself. For example, as shown in the figure below, gains or losses in the Chemical Manufacturing industry cluster will affect their supply chain and other supplier industries like wholesale trade, transportation/warehousing, and professional, management and administrative services companies of all sizes. Furthermore, gains or losses in any industry cluster will result in more or less disposable income and benefits for workers, translating into corresponding increases or decreases at the Main Street level in demand for health care, retail, personal services, restaurants, and finance and insurance.

## Economic Impact within the Chemical Manufacturing Cluster



## LONG TERM CONSEQUENCES OF CLUSTER GROWTH OR LOSS

Short-term economic impacts can turn into long-term fundamental changes in a state's economic ecosystem. Vibrant and resilient economies are complex ecosystems of industry clusters consisting of networks of large and small firms, firms that sell globally as well as firms that sell locally. These interconnected networks provide the vast majority of the jobs in the state, as well as the tax base for local and state government and volunteer time and financial contributions for local and state charities.

> Tradable industries and clusters are valuable to a state or regional economy because they bring in dollars from outside the region and those dollars are then recirculated through suppliers and local purchases.

In this analysis, we examined two types of clusters, tradable and local, and both are important to regional and state economies:

Tradable clusters are groupings of interconnected companies that develop specialized or high demand products or services and sell them outside their home region. These clusters develop over time, often building and growing on the success of a single company or concentration of companies and the companies that emerge to support or connect with that company. They are valuable to a state or regional economy because they bring in dollars from outside the region and those dollars are then recirculated through suppliers and local purchases.

Tradable clusters are not specifically tied to a region, unless there is a specific natural resource attached to that technology or industry, and will often locate where it is most advantageous to their business. Of the six clusters that are the focus of this analysis, five could be considered as primarily tradable – Chemicals, Food Processing and Manufacturing, Information Communications and Technology, Life Sciences and Tourism.

> Local cluster will grow and thrive as the population grows and thrives, and their size and strength will rise and fall with the growth of the local economy.

Local clusters are businesses that are dependent on the spending of the local population in order to succeed. They will grow and thrive as the population grows and thrives, and their size and strength will rise and fall with the growth of the local economy. Local clusters are comprised of those businesses and establishments that are designed to provide goods and services to local residents. They include restaurants and food establishments, local merchants and retail establishments and most health care activities. They also can include construction, home and business services (maintenance, plumbing and cleaning, for example), as well as personal services like barbers, mechanics, and tax preparers. A local economic cluster can consist of both local-only establishments and franchises or branches of national or even global companies – but for that national or local firm, their presence in a community depends on the economic viability of that location. Local clusters often provide the bulk of employment in a community, and serve a broad set of companies and individuals. Health Systems and Services are a good example of this, although many of the health care institutions in New Jersey not only serve a local population, but also provide advanced secondary and tertiary care and thus draw in patients from a much wider footprint (in some cases national or global).

Tradable and local clusters intersect in the regional economy. Tradable companies, while making and selling goods and services to a global marketplace, have a physical location in a community where it builds, outfits and maintains its factory or offices. It purchases professional services, supplies and supports an array of small vendors. At the same time its employees live in and interact with the local economy, spending their salaries and using their benefits with local restaurants, businesses and service providers. Those local firms depend on that tradable cluster of businesses for its commerce, and use those revenues to pay employees, buy supplies and materials, and grow their business. Local businesses thus rely on tradable clusters to draw in economic activity from the outside, some of which takes the form of salaries and wages which can then be spent locally, allowing local businesses to pay employees, buy goods and services, and grow their ventures. Tradable clusters thus simultaneously produce and in turn rely on a vibrant mix of local businesses offering a wide range of products and services. Hence, both types of businesses are needed to create a vibrant economic ecosystem in a state.

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These industries and others are not static. In a fast-moving and globally-interconnected economy, tomorrow's growth – in economic activity and in the investment of human and financial capital needed to produce it – can happen in many different places. Perceptions can shift surprisingly quickly, such that a region once seen as strong, can, if it is thought to be no longer growing or no longer hospitable, begin to lose the competition for investment of human and financial capital to other regions.

The gradual erosion of companies can cause those clusters and networks to virtually disappear. Sometimes, the intellectual skills or networks can be transferred to another local industry. But in too many cases, the talent, knowledge and financial capital moves to the new cluster location and takes the assets away from the original region.

When that happens, not only the cluster shrinks, but the entire ecosystem is impacted. Suppliers with long standing relationships must find new clients to replace the lost revenues, and the local merchants and organizations once supported by the company and its employees also suffer. Rebuilding a damaged ecosystem once it has reached a certain stage of decay is very expensive and difficult to do, especially when compared to supporting and nurturing an existing cluster and ensuring that it has what it needs – competitive cost and regulatory environment, access to talent (or training resources), appropriate infrastructure -- to compete within its industry and as a part of the global economy.

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Over the long term, there are four dimensions of risk when a cluster falls into a cycle of decline:

1. **The state loses export opportunities and revenues.** Tradable clusters are crucial to long-term economic success of a state, as they bring new revenues and resources into the state, supporting both the growth of the cluster and local clusters and businesses. Relying only upon local economic activity will result in long-term decline for clusters and local economies.

2. **The state can lose the benefits of clusters.** Clusters serve as magnets for similar and related companies and activities. If there is enough activity and scale to a cluster, talent, expertise and resources are drawn to and around the cluster, helping to fuel additional economic activity and growth. But when that cluster weakens, that talent, expertise and resources will be dispersed among other regions with similar clusters, reducing New Jersey's competitive advantage. We've seen this story elsewhere, whether it is manufacturing shifting from the Rust Belt to the South, or the elimination of textiles in the US to overseas competition.

3. **Companies have difficulty attracting talent.** One of the key challenges for any company is attracting and retaining a talented workforce. One of the benefits of economic clustering is that the cluster itself can work together to develop a local pool of talent, identifying needed skills and working with local workforce and higher education institutions to train a qualified pool of applicants – in essence sharing the cost of training across an industry. If a cluster begins to shrink, attracting and retaining talent becomes more difficult, as they worry about whether the community has enough opportunities. And as that talent pool diminishes, a company can choose to reduce its size at that location through attrition, and add jobs where there is a more abundant talent base.

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4. Communities lose their innovation advantage.

4. **Communities lose their innovation advantage.** If it wants to lead in innovation, the state must continue to create a favorable business climate to enable the mixing of inter-disciplinary human capital (researchers, entrepreneurs) and to facilitate the inflow of financial capital (research grants, venture capital funds). In all such cases, the State of New Jersey is competing against the rest of the world, and perceptions of business climate go a long way towards where skilled workers and innovation funding will land, with attendant short-term and long-term effects on the state economy. A region that ceases to innovate and therefore to draw in outside human and financial capital begins to stagnate and decline, resulting in a vicious cycle of disinvestment, shrinking disposable income bases, and growing public sector costs. Conversely, local clusters thrive when high-end innovation activity is high, for that activity means there is more disposable income for local restaurants, retail, and entertainment.

## CONSIDERATIONS FOR POLICYMAKERS

The purpose of this report is to explore the magnitude and reach of the impact of a more favorable climate that grows the business ecosystem, as opposed to a more unfavorable business climate that shrinks the existing clusters. As such, it does not comment directly on what policies the state should implement to create a more favorable business climate in New Jersey. However, there are five conclusions that can be drawn from the analyses contained in this report.

1. **Evaluate and consider the downstream impacts of changes in approaches to an industry cluster**. It is easy to think that a targeted tax or regulatory change will only impact that industry. But as we demonstrate in this report, gains or losses will be felt downstream. A favorable climate for the Food Processing industry, for example, will also result in more business for the farmers, wholesalers and truckers that support the industry. If companies within the cluster add more employees, the local Main Street will benefit from purchases at stores, home purchases or repairs, and local restaurant traffic. Also, as a cluster develops, specialized expertise will surround it, particularly in the business services sectors like management consulting, legal services, accounting and finance. That expertise can be leveraged to attract other industries with similar or related issues, and help to keep companies close to tap into that local knowledge base.

2. **Objectively evaluate the consequences of policy decisions**. All policy decisions inevitably require tradeoffs – and policies that impact business competitiveness are no different. Sometimes, a policy that is designed to directly improve the business climate for one sector could negatively impact another part of the economy, or another priority of state policymakers. By utilizing sound economic analysis to understand the consequences of a policy choice, that decision can be better informed and the tradeoffs fully understood.

3. **Innovation is enhanced by diversity.** The way to encourage innovation is to create a climate that is welcoming to a diversity of individuals, businesses and industries. New Jersey has a long history of openness to new people and new ideas, and creating a climate that supports a diverse set of industry clusters will benefit not just those clusters, but the entire state economy.

4. **Changes to the cost structure of the supplier network or local businesses can result in reduced spending locally**. In our global economy, companies have many choices on where they will source their business or grow their operations. Broad changes affecting the cost of doing business in the state generally can impact decisions on where a company purchases goods or services and/or where it chooses to grow. Depending on the industry, different changes can make a big difference. For example, in energy intensive manufacturing industries, increased utility fees that are passed on to the customer may mean they seek to reduce their workforce costs, or find other, lower cost-suppliers in another location. For labor intensive services that are typically employing lower skilled workers, increased labor costs may be passed on to their customers, forcing the customer to ultimately decide whether to grow or shrink their footprints in New Jersey due to the increased labor cost of the contracted service.

5. **State investments in talent and infrastructure make a difference**. For important, long-standing industry clusters, state investments in talent development and infrastructure can help to reduce costs of doing business for crucial industries, making them more likely to grow and expand in New Jersey. For example, supporting a workforce initiative to train new lab technicians and scientists for New Jersey biotech

companies can allow them to reduce the costs of replacing or finding new workers, and allow them to direct more to employee wages or growth of new products or markets. In a similar way, investments in new port, airport or ground transportation infrastructure can support New Jersey's tradable industries looking to bring revenues back to the state through trade relationships both domestically and internationally.

If New Jersey is to grow its economy, it is important to maintain a focus on the relationship between its tradable and local clusters. The two go hand-in-hand. A smart economic development strategy that recognizes and builds on the business ecosystems that have developed in the state will support a growing and thriving state economy.