Section 1: Introduction

1.1 – Purpose of Industry Cluster Analysis

The South Central Illinois Industry Cluster Analysis was commisioned by the South Central Illinois Regional Planning & Development Commission (SCIRPDC) to provide local stakeholders in the five-county area of Clay, Effingham, Fayette, Jasper and Marion counties with the following:

- An asssessment of regional economic strengths and assets
- A strengthened capacity to lead collaborative discussions about current and future needs for essential infrastructure and human capital with the region
- Assistance with developing plans and strategies for expanding the regional economy to its full potential

SCIRPDC, founded in 1972, is an Illinois Regional Planning Agency with responsibilities for the five-county jurisdiction of Clay, Effingham, Fayette, Jasper and Marion counties. Together, these five counties form a designated Economic Development District (EDD) of the U.S. Economic Development Administration (EDA), a unit of the U.S. Department of Commerce. The designation as both an Illinois Regional Planning Agency and EDD allows SCIRPDC, and each local governmental entity within, to apply for and be awarded numerous types of planning and development grants from both State and Federal agencies.

1.2 – Industry Cluster Analysis & Regional Economic Development

While definitions of an industry cluster abound, early and modern scholarship all define an industry cluster in a similar way. To summarize, an industry cluster can be described as a cluster or group of geographcially bounded inter-related industrial firms that together drive wealth creation in a region through the production and exportation of goods and services (Czamanski and Ablas, 1979; Rosenfeld 1995; SANDAG, 1998). Industry clusters are utilized as a descriptive regional economic tool to provide a more meaningful representation of local industry drivers and regional dynamics than traditional methods.

Before further defining the application of an industy cluster analysis, it is important to make clear one common misconception. Simply stated, an industry cluster is not the same as an industry sector. While some literature will interchange these two terms, an industry sector describes only one particular segment of what we are calling an 'industry cluster'. An industry cluster represents the entire value chain of a broadly defined industry from suppliers to end products, including also supporting services and specialized infrastructure (SANDAG,1998).

Figure 1-1, located on the following page, provides a simplified illustration of how best to conceptualize the operation and functionality of an industry cluster. In order to ensure absolute clarity, while an industry sector may, for example, be composed of the specific production of an abrasive product, an industry cluster includes, (1) the manufacturing of the abrasive product, (2) the supply and purchase of specialized equipment necessary for that production to occur, (3) other industry sectors that would plausibly purchase

that product for their own manufacturing operations, and (4) the final customer that purchases, recieves, or consumes the end product.

Figure 1-1: Conceptualization of an Industry Cluster
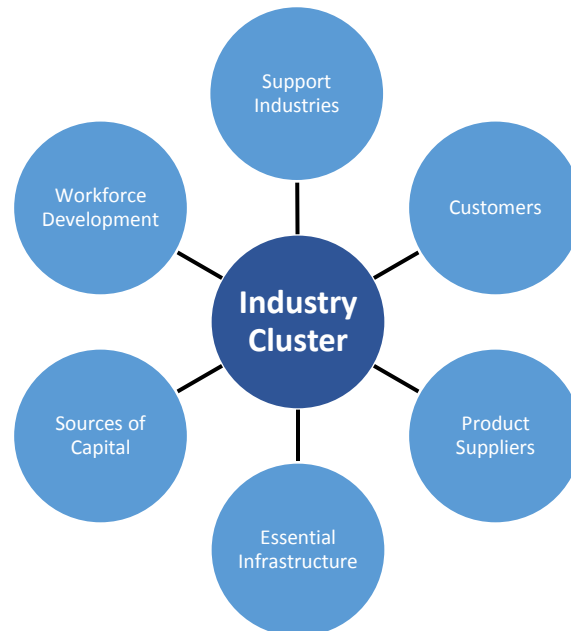
With the aforementioned industry cluster concept and framework in mind, we now move into a deeper examination of the significance of an industry cluster analysis and the types of valuable information that it can provide. Cluster-type analyses and cluster strategies have become a important component to regional economic development over the past few decades. These analyses, and the data within, have come to drive regional economic development plans by illustrating particular regional clusters of industries that currently have, or will have in the future, a competitive advantage in the national and global economies.

The industry cluster approach to regional economic development undertakes a sequence of steps that are designed to achieve the following:

- Identify and locate the industry clusters that are present in the relevant regional economy
- Analyze the cluster's strengths and weaknesses relative to national trends
- Create a framework for regional collaboration with the goal of:
    o Maintaining or increasing the competitive strength of the industry clusters present in the region by the specific and purposeful targeting of resources
    o Building new industry cluster strengths in the region through the identification and support of those clusters that are considered to be "emerging"

As noted previously, the industry cluster approach differs widely from traditional economic development methods that normally focus on one industry firm at a time, with the sole attention being on that firm's

individual wants and needs. The cluster approach offers a comprehensive information platform and framework for regional collaboration in order to:

- Solve the problems and issues commonly associated with larger groups of industries
- Locate and reveal groups of industries that may have similar workforce needs
- Create and sustain business-to-business connections to improve regional economic impact
- Provide local support and encouragement for regional innovation
- Invest through the targeting of resources and assist through stakeholder-business dialogue
- Enable more effective planning built on known regional strengths
- Create and develop a regional identity and furthermore improve marketing effectiveness

This analysis and accompanying narrative intends to focus on the dynamic relationships between industry and supply chains. The resultant formation of indentifiable regional industry clusters will provide the data and information foundation necessary to ultimately achieve regional industry cluster growth through resource targeting such as, human capital, financial capital, workforce development, stakeholder collaboration, among others

The industry clustering method employed in this analysis is based on a set of seventeen industry cluster definitions developed by the Purdue University Center for Regional Development (PCRD), and further built upon during the course of research funded by the U.S. Economic Development Administration (EDA). The seventeen cluster defintions were developed to be equally useful for both urban and rural region's of the United States. One specific cluster, the manfuacturing "supercluster", was further subdivided into six manfuacturing sub-clusters to provide additional detail to the expansive manufacturing portion of the U.S. economy.

Economic Modeling, LLC (EMSI) data is utilized for the cluster analysis portion of this study. EMSI combines covered employment data from the Quarterly Census of Employment and Wages (QCEW) produced by the U.S. Department of Labor with total employment data from the Regional Economic Information System (REIS) published by the Bureau of Economic Analysis (BEA), and augmented with County Business Patterns (CBP) and Nonemployer Statistics (NES) published by the U.S. Census Bureau.

This data was provided utilizing the North American Industry Classification (NAICS) as the foundation for data collection. This system of classification is used to define business establishments based on the types of activities in which they are primarily engaged. Using this data as the top-level source of information, SCIRPDC staff further divided this data into each individual industry cluster and conducted several types of economic analyses including most notably cluster analysis, location quotient analysis and shift share analysis. These analyses were utilized to further describe the relative importance of each industry cluster in the regional economy and determine how competitive those industry clusters have been in recent years relative to the nation as a whole.

1.3 – Executive Summary of Findings

- The SCIRPDC region is located in south-central Illinois and consists of the counties of Clay, Effingham, Fayette, Jasper and Marion. Both Effingham and Marion counties are classified as micropolitan statistical areas.

- In ths study, the region was examined for evidence of cluster industry concentration, competitive cluster advantage, and cluster change in seventeen clusters and six manfacturing sub-clusters over the ten year period of 2007-2016.

- The five largest clusters in terms of employment in 2016 were energy (fossil & renewable); agribusiness, food processing & technology; biomedical/biotechnical (life sciences); followed by the manufacturing supercluster and business and financial services respectively.

- The overall change in total cluster employment from 2007-2016 was a net increase of 2,073 jobs. The largest cluster employment increase came from the energy (fossil & renewable) cluster with an increase of 2,833 jobs, followed by the agribusiness, food processing & technology cluster which had an increase of 953 jobs over the ten year study period. The largest decrease in jobs over the same time frame was in the chemicals and chemical based products cluster which illustrated a total loss of 771 cluster jobs.

- SCIRPDC regional clusters defined as "stars" with both a high and increasing location quotient in 2016 include:

  - Agribusiness, food processing & technology (LQ: 4.06)
  - Energy (fossil & renewable) (LQ: 1.81)
  - Forest & wood products (LQ: 1.67)
  - Manufacturing supercluster (LQ: 1.67)
  - Transportation equipment manufacturing (sub-cluster) (LQ: 3.92)
  - Machinery manufacturing (sub-cluster) (LQ: 1.29)

- The region's 2016 "emerging" clusters, those with an increasing location quotient that is currently less than 1.2, include:

  - Primary Metal Manufacturing (sub-cluster)
  - Fabricated Metal Manufacturing (sub-cluster)
  - Business & Financial Services
  - Advanced Materials
  - Apparel & Textiles

- In terms of the regional clusters with the largest economic output in 2016, they include the following:

  - Energy (fossil & renewable) ($457,764,555.03)
  - Agribusiness, food processing and technology ($222,287,261.13)
  - Manufacturing Supercluster ($216,417,179.03)
  - Biomedical/biotechnical ($184,964,703.57)
  - Transporation and logistics ($171,884,454.24)

- While the transportation and logistics cluster came in ranked fifth in overall economic output, this industry cluster had the highest earnings per worker average ($62,731.00). The transportation and logistics cluster is followed by the manufacturing sub-cluster, namely, machinery, with an average earnings per worker of $62,403.00. To round out the top five, these two aforementioned clusters were followed by energy (fossil & renewable) with an average of $62,220.41, then the manufacturing sub-cluster fabricated metal products coming in at $55,053.00, and lastly the advanced materials cluster with an average of $54,631.69 earnings per worker.

- Shift share analysis was then conducted to evaluate which industry clusters has a positive competitive effect in the regional economy. The following five regional industry clusters and one manufacturing sub-cluster illustrated a competitive advantage when compared against national averages. They include, in order from largest positive competitive effect to smallest:

  - Energy (Fossil & Renewable) (Competitive Effect: 2,394)
  - Agribusiness, Food Processing & Technology (Competitive Effect: 758)
  - Manufacturing Supercluster (Competitive Effect: 481)
  - Advanced Materiels (Competitve Effect: 311)
  - Fabricated Metal Manufaturing (sub-cluster) (Competitive Effect: 271)
  - Business & Financial Services (Competitive Effect: 88)

- Then, after analyzing and comparing multiple industry cluster indicators, the study determined that four industy clusters and two sub-clusters can be defined as the region's top performing and priority clusters. They include, in no meaningful order:

  - Energy (Fossil & Renewable)
  - Agribusiness
  - Advanced Materials
  - Fabricated Metal Manufacturing (sub-cluster)
  - Primary Metal Manufacturing (sub-cluster)
  - Manufacturing Supercluster