Industry Clusters in New York’s Economy: 
A Statewide and Regional Analysis

Introduction
Industry clusters are an important analytical tool for understanding New York’s statewide and regional economies. They are particularly useful in a variety of workforce and economic development applications. The clusters framework is increasingly used by the State of New York to study important industry linkages in the state and regional economies.

According to one definition from the University of Minnesota: industry clusters are “geographic concentrations of competing, complementary, or interdependent firms and industries that do business with each other and/or have common needs for talent, technology, and infrastructure.”

Another definition from Harvard University states that: “Clusters are geographic concentrations of interconnected companies, specialized suppliers, service providers, and associated institutions in a particular field that are present in a nation or region. Clusters arise because they increase the productivity with which companies can compete...Cluster development initiatives are an important new direction in economic policy...”

The key aspect of cluster industries is they are export-oriented. Thus, industry clusters sell their services and products to customers outside their home market. These exports, in turn, generate income and employment in the local economy.

The Empire State Development Corporation (ESDC) has identified and defined 16 industry clusters in the state. Most clusters are further divided into sub-clusters. The 16 main clusters and their sub-clusters are listed in the table on the next page.

Some of ESDC’s industry clusters contain more than 100 industries (at the 6-digit NAICS level). In some clusters, data for certain industries are pro-rated because not all jobs in that industry are associated with that cluster. For example, only 20% of jobs in restaurants are counted as part of the travel and tourism cluster.

Background on Clusters
This report looks at 2010 statewide and regional data highlights for the 16 ESDC industry clusters. Data come from the Quarterly Census of Employment and Wages program. For the state as a whole and its 10 labor market regions, clusters are ranked using four different criteria:

- Total employment
- Total wages
- Annual average wage
- Location quotient (measure of employment concentration)
New York State Clusters and Sub-Clusters

Back Office & Outsourcing
- No Sub-Clusters

Biomedical
- Drug & Chemical Manufacturing
- Laboratories & Research
- Medical Equipment & Supplies

Communications, Software & Media Services
- Broadcasting & Telecommunications
- Motion Picture & Sound Recording Industries
- Printing
- Publishing

Distribution
- Air Freight
- Logistics Management
- Multimodal Freight
- Trucking
- Warehousing
- Water and Rail Freight
- Wholesale (Non-Industry Specific)
- Wholesale Durables
- Wholesale Non-Durables

Electronics & Imaging
- Electronics
- Imaging

Fashion, Apparel & Textiles
- Apparel Manufacturing
- Apparel Wholesale
- Jewelry & Miscellaneous Manufacturing
- Leather Goods & Footwear Manufacturing
- Textile Mills

Financial Services
- Bank Holding Companies
- Banking & Credit
- Funds & Trusts
- Insurance
- Securities, Commodities & Investments

Food Processing
- Beverage Manufacturing
- Crop Production & Dairy
- Food Manufacturing

Forest Products
- Forest Product Manufacturing
- Forestry & Logging
- Furniture Manufacturing
- Paper Manufacturing

Front Office & Producer Services
- Business Services
- Environmental Services
- Headquarters
- Organizations

Industrial Machinery & Services
- Electrical Equipment Manufacturing
- Fabricated Metal Instruments
- Machinery Manufacturing

Information Technology Services
- No Sub-Clusters

Materials Processing
- Chemicals
- Petroleum Products
- Plastics & Rubber
- Primary Metals
- Stone, Clay, Glass and Concrete

Miscellaneous Manufacturing
- No Sub-Clusters

Transportation Equipment
- Aerospace
- Motor Vehicles
- Railroads & Other

Travel & Tourism
- Accommodations
- Culture, Recreation and Amusements
- Food Service
- Passenger Transportation
- Travel Retail

Source: Empire State Development Corporation
While the first three economic criteria listed above are well understood, location quotients (LQs) are more technical in nature. LQs measure employment concentration in a regional economy. More specifically, they compare the concentration of industry employment in the local economy, relative to some base area—usually the U.S. as a whole.

The formula for calculating a location quotient for local industry X is as follows:

\[
LQ = \frac{\text{Industry X's \% Share of Jobs in the Local Economy}}{\text{Industry X's \% Share of Jobs in the U.S. Economy}}
\]

The table below provides interpretations for different LQ values. Industries with an LQ greater (less) than 1.0 produce more (less) than the local market needs. If an industry has an LQ greater (less) than 1.0, it is export (import) oriented.

<table>
<thead>
<tr>
<th>Value of Location Quotient</th>
<th>Interpretation</th>
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<tbody>
<tr>
<td>LQ &gt; 1.00</td>
<td>Industry is producing more than is consumed locally (i.e., exporting).</td>
</tr>
<tr>
<td>LQ = 1.00</td>
<td>Local production meets local demand.</td>
</tr>
<tr>
<td>LQ &lt; 1.00</td>
<td>Industry is producing less than is consumed locally (i.e., importing).</td>
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</tbody>
</table>

Here are two examples of LQs using data for industries in Manhattan (New York County):

- The securities and brokerage industry accounted for 8.61% of jobs (private sector) in Manhattan and 0.75% of jobs (private sector) in the U.S. in 2010.
  - The LQ for this industry is 8.81%/0.75%, or 11.43.
  - Since the LQ for this industry is much greater than 1.00, this industry is an export industry for Manhattan.

- The pharmaceutical manufacturing industry accounted for 0.02% of jobs (private sector) in Manhattan and 0.26% of jobs (private sector) in the U.S. in 2010.
  - The LQ for this industry is 0.02%/0.26%, or 0.07.
  - Since the LQ for this industry is much less than 1.00, this industry is an import industry for Manhattan.

It is often difficult to clearly identify an industry cluster in a regional economy, except when it is obvious. Some “obvious” examples from around the nation include: automobiles in Detroit; information technology in Silicon Valley; travel and tourism in Orlando; commercial aircraft production in Seattle; and the film industry in Los Angeles.

Some regional clusters in the Empire State are well known and long established. Examples of such regional clusters include: financial services in New York City; electronics manufacturing in the Southern Tier; transportation equipment in Western New York; and forest products in the North Country.
The idea behind clusters traces back to Michael Porter’s 1990 book, *The Competitive Advantage of Nations*. According to Porter, the following factors are critical in conferring a competitive advantage to a regional cluster:

- **Factor conditions.** *Factors of production, such as skilled labor or infrastructure, necessary for a region to compete in a given industry.*
- **Demand conditions.** *The nature of local market demand for the industry’s product or service.*
- **Related and supporting industries.** *The presence or absence in the region of supplier industries and other related industries.*
- **Firm strategy, structure, and rivalry.** *The conditions in the region governing how companies are created, organized, and managed, as well as the nature of domestic rivalry.*

**Analysis**

In 2010, statewide cluster industry employment (based on ESDC’s criteria) totaled more than 2.7 million, representing about one in three jobs in New York State. Total cluster wages topped $252 billion, or just over one-half of all wages paid in the state in 2010.

Another key aspect of cluster industries is they tend to pay well above-average wages. Cluster industries in New York State paid an average salary of $93,200 in 2010. This was more than 50% higher than the state’s overall average wage of $60,300 that year.

With almost 575,000 jobs, front office and producer services had the most cluster employment in New York State in 2010. Employment in this cluster is concentrated in two sub-clusters: business services and headquarters. The cluster also sports an above-average wage level ($102,000) because of the relatively high wages paid in the headquarters sub-cluster.

The cluster with the second highest job count in 2010 was financial services (549,400), reflecting New York City’s prominence as a global financial center. The securities, commodities, and investments and the banking and credit sub-clusters account for the most jobs in the financial services cluster. This cluster is also notable because it had, by far, the highest average wage, $175,000, of any cluster in New York. This was due largely to the high wages and bonuses paid in the securities and brokerage industry.

Travel and tourism ranked third in total employment (356,600) among New York State’s 16 clusters. Unlike front office and producer services and financial services, average wage levels in this cluster are relatively low ($38,100), ranking it in last place among the state’s 16 clusters. This reflects the part-time and seasonal nature of many jobs in the travel and tourism cluster.

**For Further Information**

More detailed statewide and regional employment and wage data regarding the clusters discussed above are available at: [http://www.labor.ny.gov/stats/nysindclusters.asp](http://www.labor.ny.gov/stats/nysindclusters.asp).

Questions regarding this report should be directed to Kevin Jack, Statewide Labor Market Analyst. He can be reached via email at Kevin.Jack@labor.ny.gov or by phone at (518) 457-2919.
New York State’s 16 clusters included 252,200 establishments with total employment of 2,705,100 and total wages of $252.2 billion in 2010. Annual cluster wages averaged $93,200.

Top 5 Clusters Ranked by Employment
1) Front Office & Producer Services (572,100)
2) Financial Services (549,400)
3) Travel & Tourism (356,600)
4) Communications, Software & Media Services (248,700)
5) Distribution (230,800)

Top 5 Clusters Ranked by Total Wages (millions of dollars)
1) Financial Services ($96,170.4)
2) Front Office & Producer Services ($58,375.7)
3) Communications, Software & Media Services ($21,027.2)
4) Distribution ($13,825.3)
5) Travel & Tourism ($13,578.8)

Top 5 Clusters Ranked by Annual Average Wage
1) Financial Services ($175,100)
2) Information Technology Services ($103,600)
3) Front Office & Producer Services ($102,000)
4) Electronics & Imaging ($89,300)
5) Communications, Software & Media Services ($84,600)

Top 5 Clusters Ranked by Location Quotient (private sector jobs only)
1) Fashion, Apparel & Textiles (1.77)
2) Financial Services (1.52)
3) Communications, Software & Media Services (1.48)
4) Front Office & Producer Services (1.23)
5) Electronics & Imaging (1.14)
The Capital Region’s 16 clusters included 12,400 establishments with total employment of 140,700 and total wages of $7.8 billion in 2010. Annual cluster wages averaged $55,200.

Top 5 Clusters Ranked by Employment
1) Front Office & Producer Services (29,400)
2) Financial Services (21,500)
3) Travel & Tourism (21,100)
4) Distribution (14,100)
5) Communications, Software & Media Services (9,800)

Top 5 Clusters Ranked by Total Wages (millions of dollars)
1) Front Office & Producer Services ($1,976.2)
2) Financial Services ($1,314.8)
3) Distribution ($719.2)
4) Industrial Machinery & Services ($528.5)
5) Communications, Software & Media Services ($519.6)

Top 5 Clusters Ranked by Annual Average Wage
1) Electronics & Imaging ($98,800)
2) Transportation Equipment ($77,700)
3) Information Technology Services ($77,100)
4) Industrial Machinery & Services ($73,200)
5) Materials Processing ($72,800)

Top 5 Clusters Ranked by Location Quotient (private sector jobs only)
1) Biomedical (2.13)
2) Miscellaneous Manufacturing (1.26)
3) Forest Products (1.18)
4) Front Office & Producer Services (1.17)
5) Financial Services (1.09)
Central New York’s 16 clusters included 8,200 establishments with total employment of 104,100 and total wages of $5.2 billion in 2010. Annual cluster wages averaged $49,800.

Top 5 Clusters Ranked by Employment
1) Front Office & Producer Services (15,400)
2) Financial Services (13,900)
3) Distribution (13,800)
4) Travel & Tourism (12,700)
5) Industrial Machinery & Services (12,400)

Top 5 Clusters Ranked by Total Wages (millions of dollars)
1) Front Office & Producer Services ($936.6)
2) Industrial Machinery & Services ($813.7)
3) Financial Services ($759.8)
4) Distribution ($673.5)
5) Materials Processing ($298.5)

Top 5 Clusters Ranked by Annual Average Wage
1) Transportation Equipment ($66,300)
2) Industrial Machinery & Services ($65,500)
3) Information Technology Services ($65,300)
4) Front Office & Producer Services ($60,900)
5) Biomedical ($60,800)

Top 5 Clusters Ranked by Location Quotient (private sector jobs only)
1) Industrial Machinery & Services (1.66)
2) Biomedical (1.47)
3) Forest Products (1.29)
4) Materials Processing (1.13)
5) Electronics & Imaging (1.06)
   Distribution (1.06)
The Finger Lakes’ 16 clusters included 12,400 establishments with total employment of 173,400 and total wages of $9.2 billion in 2010. Annual cluster wages averaged $53,100.

Top 5 Clusters Ranked by Employment
1) Front Office & Producer Services (28,700)
2) Electronics & Imaging (19,100)
3) Industrial Machinery & Services (18,000)
4) Travel & Tourism (17,800)
5) Financial Services (15,800)

Top 5 Clusters Ranked by Total Wages (millions of dollars)
1) Front Office & Producer Services ($1,954.4)
2) Electronics & Imaging ($1,490.8)
3) Industrial Machinery & Services ($982.2)
4) Financial Services ($915.8)
5) Distribution ($702.4)

Top 5 Clusters Ranked by Annual Average Wage
1) Electronics & Imaging ($77,900)
2) Information Technology Services ($74,900)
3) Biomedical ($71,700)
4) Front Office & Producer Services ($68,100)
5) Financial Services ($57,800)

Top 5 Clusters Ranked by Location Quotient (private sector jobs only)
1) Electronics & Imaging (6.42)
2) Industrial Machinery & Services (1.48)
3) Food Processing (1.45)
4) Communications, Software & Media Services (1.01)
5) Materials Processing (1.00)
The Hudson Valley’s 16 clusters included 28,700 establishments with total employment of 216,100 and total wages of $17.1 billion in 2010. Annual cluster wages averaged $79,000.

**Top 5 Clusters Ranked by Employment**
1. Front Office & Producer Services (42,700)
2. Travel & Tourism (32,900)
3. Financial Services (30,800)
4. Distribution (21,100)
5. Communications, Software & Media Services (17,500)

**Top 5 Clusters Ranked by Total Wages (millions of dollars)**
1. Front Office & Producer Services ($4,592.0)
2. Financial Services ($3,155.2)
3. Electronics & Imaging ($1,734.9)
4. Distribution ($1,359.0)
5. Communications, Software & Media Services ($1,166.6)

**Top 5 Clusters Ranked by Annual Average Wage**
1. Electronics & Imaging ($145,500)
2. Front Office & Producer Services ($107,600)
3. Biomedical ($104,000)
4. Financial Services ($102,500)
5. Information Technology Services ($99,900)

**Top 5 Clusters Ranked by Location Quotient (private sector jobs only)**
1. Electronics & Imaging (2.54)
2. Biomedical (1.38)
3. Communications, Software & Media Services (1.00)
4. Miscellaneous Manufacturing (0.93)
5. Front Office & Producer Services (0.91)
2010 REGIONAL ECONOMIC CLUSTERS
Long Island Labor Market Region

- Long Island’s 16 clusters included 40,800 establishments with total employment of 327,500 and total wages of $22.3 billion in 2010. Annual cluster wages averaged $68,000.

Top 5 Clusters Ranked by Employment
1) Front Office & Producer Services (70,700)
2) Financial Services (49,300)
3) Distribution (40,600)
4) Travel & Tourism (37,100)
5) Communications, Software & Media Services (29,200)

Top 5 Clusters Ranked by Total Wages (millions of dollars)
1) Front Office & Producer Services ($5,128.6)
2) Financial Services ($4,920.3)
3) Distribution ($2,641.9)
4) Communications, Software & Media Services ($2,017.0)
5) Industrial Machinery & Services ($1,383.7)

Top 5 Clusters Ranked by Annual Average Wage
1) Financial Services ($99,900)
2) Information Technology Services ($87,300)
3) Transportation Equipment ($82,100)
4) Electronics & Imaging ($80,700)
5) Front Office & Producer Services ($72,500)

Top 5 Clusters Ranked by Location Quotient (private sector jobs only)
1) Biomedical (1.73)
2) Electronics & Imaging (1.32)
3) Miscellaneous Manufacturing (1.22)
4) Front Office & Producer Services (1.06)
5) Communications, Software & Media Services (1.04)
The Mohawk Valley’s 16 clusters included 4,500 establishments with total employment of 55,600 and total wages of $2.2 billion in 2010. Annual cluster wages averaged $39,200.

Top 5 Clusters Ranked by Employment
1) Travel & Tourism (10,800)
2) Financial Services (8,100)
3) Distribution (7,900)
4) Front Office & Producer Services (5,000)
5) Industrial Machinery & Services (4,400)

Top 5 Clusters Ranked by Total Wages (millions of dollars)
1) Financial Services ($390.4)
2) Distribution ($320.5)
3) Travel & Tourism ($239.1)
4) Front Office & Producer Services ($238.0)
5) Industrial Machinery & Services ($193.5)

Top 5 Clusters Ranked by Annual Average Wage
1) Information Technology Services ($49,100)
2) Materials Processing ($48,700)
3) Financial Services ($48,400)
4) Front Office & Producer Services ($47,700)
5) Biomedical ($44,800)

Top 5 Clusters Ranked by Location Quotient (private sector jobs only)
1) Fashion, Apparel & Textiles (2.31)
2) Materials Processing (1.26)
3) Forest Products (1.14)
4) Distribution (1.13)
5) Industrial Machinery & Services (1.11)
New York City’s 16 clusters included 108,800 establishments with total employment of 1,309,900 and total wages of $167.7 billion in 2010. Annual cluster wages averaged $128,000.

Top 5 Clusters Ranked by Employment
1) Financial Services (368,400)
2) Front Office & Producer Services (324,700)
3) Travel & Tourism (180,700)
4) Communications, Software & Media Services (140,300)
5) Distribution (80,600)

Top 5 Clusters Ranked by Total Wages (millions of dollars)
1) Financial Services ($82,026.3)
2) Front Office & Producer Services ($39,787.0)
3) Communications, Software & Media Services ($14,601.0)
4) Travel & Tourism ($8,880.2)
5) Information Technology Services ($7,078.5)

Top 5 Clusters Ranked by Annual Average Wage
1) Financial Services ($222,700)
2) Information Technology Services ($122,500)
   Front Office & Producer Services ($122,500)
4) Communications, Software & Media Services ($104,100)
5) Fashion, Apparel & Textiles ($78,700)

Top 5 Clusters Ranked by Location Quotient (private sector jobs only)
1) Fashion, Apparel & Textiles (3.11)
2) Financial Services (2.30)
3) Communications, Software & Media Services (1.96)
4) Front Office & Producer Services (1.59)
5) Travel & Tourism (1.02)
The North Country’s 16 clusters included 4,100 establishments with total employment of 33,600 and total wages of $1.3 billion in 2010. Annual cluster wages averaged $38,700.

Top 5 Clusters Ranked by Employment
1) Travel & Tourism (7,500)
2) Distribution (3,300)
   Front Office & Producer Services (3,300)
3) Forest Products (2,900)
4) Materials Processing (2,800)

Top 5 Clusters Ranked by Total Wages (millions of dollars)
1) Travel & Tourism ($153.7)
2) Front Office & Producer Services ($151.7)
3) Materials Processing ($148.5)
4) Forest Products ($146.4)
5) Distribution ($128.9)

Top 5 Clusters Ranked by Annual Average Wage
1) Biomedical ($85,800)
2) Information Technology Services ($56,700)
3) Transportation Equipment ($55,700)
4) Materials Processing ($52,100)
5) Forest Products ($50,400)

Top 5 Clusters Ranked by Location Quotient (private sector jobs only)
1) Forest Products (2.89)
2) Materials Processing (1.47)
3) Biomedical (1.46)
4) Food Processing (1.37)
5) Travel & Tourism (1.12)
The Southern Tier’s 16 clusters included 6,000 establishments with total employment of 76,900 and total wages of $4.0 billion in 2010. Annual cluster wages averaged $52,600.

Top 5 Clusters Ranked by Employment
1) Industrial Machinery & Services (12,600)
2) Travel & Tourism (8,600)
3) Front Office & Producer Services (8,500)
4) Financial Services (7,600)
5) Electronics & Imaging (6,200)

Top 5 Clusters Ranked by Total Wages (millions of dollars)
1) Industrial Machinery & Services ($817.0)
2) Front Office & Producer Services ($660.1)
3) Financial Services ($400.5)
4) Electronics & Imaging ($387.4)
5) Transportation Equipment ($272.0)

Top 5 Clusters Ranked by Annual Average Wage
1) Front Office & Producer Services ($77,900)
2) Biomedical ($68,600)
3) Industrial Machinery & Services ($64,600)
4) Information Technology Services ($63,200)
5) Electronics & Imaging ($62,000)

Top 5 Clusters Ranked by Location Quotient (private sector jobs only)
1) Electronics & Imaging (4.45)
2) Industrial Machinery & Services (2.21)
3) Biomedical (1.90)
4) Transportation Equipment (1.72)
5) Forest Products (1.04)
Western New York’s 16 clusters included 14,100 establishments with total employment of 198,600 and total wages of $9.6 billion in 2010. Annual cluster wages averaged $48,400.

Top 5 Clusters Ranked by Employment
1) Front Office & Producer Services (32,100)
2) Financial Services (25,200)
3) Travel & Tourism (25,100)
4) Industrial Machinery & Services (22,800)
5) Distribution (19,300)

Top 5 Clusters Ranked by Total Wages (millions of dollars)
1) Front Office & Producer Services ($1,892.4)
2) Financial Services ($1,344.5)
3) Industrial Machinery & Services ($1,265.8)
4) Distribution ($917.9)
5) Materials Processing ($791.8)

Top 5 Clusters Ranked by Annual Average Wage
1) Transportation Equipment ($69,900)
2) Information Technology Services ($65,700)
3) Materials Processing ($60,500)
4) Front Office & Producer Services ($59,000)
5) Industrial Machinery & Services ($55,600)

Top 5 Clusters Ranked by Location Quotient (private sector jobs only)
1) Industrial Machinery & Services (1.66)
2) Materials Processing (1.43)
3) Biomedical (1.29)
4) Miscellaneous Manufacturing (1.18)
5) Food Processing (1.14)