Rural Urban Cluster Linkages

April 5, 2011
Overview

• Traded industry clusters in urban and rural areas drive Minnesota economy.

• Metro and Greater MN clusters are frequently linked but not always.

• Understanding dynamic linkages between urban and rural clusters may lead to more effective economic development, workforce development and education strategies for Minnesota.
Composition of the U.S. Economy by Type of Industry

<table>
<thead>
<tr>
<th></th>
<th>Traded Industries</th>
<th>Local Industries</th>
<th>Natural Endowment Dependent Industries</th>
</tr>
</thead>
<tbody>
<tr>
<td>Share of Employment</td>
<td>32%</td>
<td>67%</td>
<td>1%</td>
</tr>
<tr>
<td>Employment growth 1990-2000 (CAGR)</td>
<td>1.7%</td>
<td>2.8%</td>
<td>-1.0%</td>
</tr>
<tr>
<td>Average wage</td>
<td>$45,040</td>
<td>$27,169</td>
<td>$32,129</td>
</tr>
<tr>
<td>Relative Wage (average = 100)</td>
<td>$137.0</td>
<td>$82.6</td>
<td>$97.7</td>
</tr>
<tr>
<td>Wage growth 1990-2000 (CAGR)</td>
<td>5.0%</td>
<td>3.6%</td>
<td>1.9%</td>
</tr>
<tr>
<td>Relative productivity</td>
<td>144.1</td>
<td>79.3</td>
<td>140.1</td>
</tr>
<tr>
<td>Patents per 10,000 employees</td>
<td>21.1</td>
<td>1.3</td>
<td>7.0</td>
</tr>
<tr>
<td>Number of SIC Industries</td>
<td>590</td>
<td>241</td>
<td>48</td>
</tr>
</tbody>
</table>

## BACKGROUND: Humphrey Institute Studies

<table>
<thead>
<tr>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>Printing &amp; Publishing</td>
<td>Composites</td>
<td>Computer &amp; Electrical Components Manufacturing</td>
<td>Recreation &amp; Transportation Equipment Manufacturing</td>
<td>Forest Products</td>
</tr>
<tr>
<td>Computers &amp; Software</td>
<td>Food Processing</td>
<td>Value-Added Agricultural Cooperatives</td>
<td>Value-Added Agricultural Processing</td>
<td>Information Technology</td>
</tr>
<tr>
<td>Medical Devices</td>
<td>Printing, Publishing &amp; Software</td>
<td>Agricultural Equipment Manufacturing</td>
<td>Wood Products</td>
<td>Health Services</td>
</tr>
<tr>
<td>Machinery and Metalworking</td>
<td>Industrial Machinery &amp; Computer Manufacturing</td>
<td>Dairy Processing</td>
<td>Tourism</td>
<td>Tourism</td>
</tr>
<tr>
<td>Financial Services</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Additional Industries:**
- Financial Services
- Tourism
ECONOMIC COMPETITIVENESS FOCUS

- MOC Investment:
  - ’06/’07 – 110 Exec Dev (21 studies)
  - ’08 – 19 Capstone HHH (5 state studies)
  - ’10 – 20 Capstone RCM (3 Metro, 3 Rural)
  - ’10 – 11 Graduate Course (3 Metro studies)
Greater Minnesota – Emerging Green

- Ag Innovation Triangle cluster report leads to $5 million dollar WIRED grant from DOL (2006/2007) becomes

**MINNESOTA RENEWABLE ENERGY MARKETPLACE**
:: An Alliance for Talent Development ::

MNREM is leading the way in Minnesota’s renewable energy marketplace: building collaborations, training workers and business, encouraging job creation, providing grant management, supporting innovations in the industry, and informing public policy.

MNREM is a private-public sector coalition working together to drive economic development in Minnesota communities.

MNREM grew out of our inaugural initiative and invested more than $5 million in Minnesota from WIRED (Workforce Innovation in Regional Economic Development) program.

**MORE>**
Department of Labor’s TAA-CC&CT grant - March 2011

DEED Regional Administrator leads MnREM and multiple stakeholders in next DOL opportunity for talent development with MN businesses and post secondary institutions:

Target Industries:
✓ Advanced Biofuels/ Bioplastics
✓ Small Wind
✓ Related and Supporting Industries

Educational Strategies
✓ Innovative/Integrated Skills Development
✓ Increase Retention/Achievement Rates
✓ Develop Career Pathways
Central MN Region
Meat & Dairy Processors

Economic Development
Regions 5, 7W, 6E

Top livestock raised more chickens, turkeys, pheasants raised than 90% of US Counties

Top milk producer – Stearns County

Innovation – Biowaste through poultry processing supply chain by-products
Themes and Action

• Food as a Destination
  Expansion of Farm to School & Farm to Hospital programs

• New Focus on Human Capital
  Industry Targeted Education & Training
  Industry led English Language Learning Programs

• Innovation and Product Development
  Willmar Poultry, Life-Science Innovations (LSI), AURI
  MinnWest Technology Campus
VT Sustainable Food System Cluster

Suppliers
- Equipment
- Utilities
- Feed/seeds
- Fertilizers

Producers
- Farmers
- Orchards
- Sugaring
- Organic
- Nurseries

Processors
- Dairy processors
- Canneries
- Bottlers
- Meat processors
- Wineries/breweries
- Packaging

Storage & Distribution
- Cold storage
- Truckers
- Warehouses

Markets
- Wholesalers
- Exporters
- On-site
- Farmers markets
- Coops
- Mass retail
- Restaurants
- Local stores

Support infrastructure
Associations, services, research, educational institutions, banks
Convergence across clusters
Clusters Built on Regional Assets
Minnesota Medical Device Cluster

Chosen for:
• Employment concentration 3.75x national average
• High rate of innovation and entrepreneurship
• Minnesota is known as a national leader
Automation on the Prairie

Table 3: Regional Production Technology Industry, 2007 Estimate

<table>
<thead>
<tr>
<th>NAICS Code</th>
<th>Industry Description</th>
<th>LQ</th>
<th>Firms</th>
<th>Employees</th>
<th>Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>333993</td>
<td>Packaging Machinery</td>
<td>78.36</td>
<td>6</td>
<td>1,055</td>
<td>176</td>
</tr>
<tr>
<td>333922</td>
<td>Conveyor &amp; Conveying Equipment</td>
<td>32.21</td>
<td>3</td>
<td>625</td>
<td>208</td>
</tr>
<tr>
<td>333923</td>
<td>Overhead Traveling Crane, Hoist, &amp; Monorail</td>
<td>25.31</td>
<td>4</td>
<td>247</td>
<td>62</td>
</tr>
<tr>
<td>333994</td>
<td>Industrial Process Furnace &amp; Oven</td>
<td>5.10</td>
<td>1</td>
<td>35</td>
<td>35</td>
</tr>
<tr>
<td>335314</td>
<td>Relay &amp; Industrial Control</td>
<td>3.78</td>
<td>3</td>
<td>92</td>
<td>31</td>
</tr>
<tr>
<td>333515</td>
<td>Cutting Tool &amp; Machine Tool Accessory</td>
<td>1.60</td>
<td>1</td>
<td>35</td>
<td>35</td>
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<tr>
<td>333294</td>
<td>Food Product Machinery</td>
<td>1.44</td>
<td>1</td>
<td>15</td>
<td>15</td>
</tr>
<tr>
<td>333220</td>
<td>Plastics and Rubber Industry Machinery</td>
<td>0.74</td>
<td>1</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>333999</td>
<td>All Other Misc. General Purpose Machinery</td>
<td>0.58</td>
<td>2</td>
<td>18</td>
<td>9</td>
</tr>
<tr>
<td>333911</td>
<td>Pump and Pumping Equipment</td>
<td>0.31</td>
<td>2</td>
<td>6</td>
<td>3</td>
</tr>
<tr>
<td>333991</td>
<td>Gasket, Packing, and Sealing Device</td>
<td>0.28</td>
<td>2</td>
<td>6</td>
<td>3</td>
</tr>
<tr>
<td>333992</td>
<td>Welding and Soldering Equipment</td>
<td>0.27</td>
<td>1</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td>27</td>
<td>2,144</td>
<td>79</td>
</tr>
</tbody>
</table>

Source: US Census Bureau, County Business Patterns, 2007
Distribution of Automation Employment by County, 2007

Source: Minnesota Department of Transportation; US Census Bureau, County Business Patterns, 2007
Regional Automation Industry Diagram
Analysis of employment growth in Rochester MSA, by industry cluster (1998-2007)

<table>
<thead>
<tr>
<th>Industry Cluster</th>
<th>Changes in total employment due to</th>
<th>Total Employment Growth or Loss</th>
<th>Percent Change in Total Employment</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>National economic trends</td>
<td>National Industry trends</td>
<td>Local Industry trends</td>
</tr>
<tr>
<td>Total employment</td>
<td>11,614</td>
<td>0</td>
<td>9,153</td>
</tr>
<tr>
<td><strong>Primary Traded Clusters</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Information Technology</td>
<td>1,072</td>
<td>-1,076</td>
<td>-4,366</td>
</tr>
<tr>
<td>Hospitality &amp; Tourism</td>
<td>323</td>
<td>-86</td>
<td>-750</td>
</tr>
<tr>
<td>Automotive</td>
<td>122</td>
<td>-338</td>
<td>1,141</td>
</tr>
<tr>
<td>Processed Food</td>
<td>146</td>
<td>-227</td>
<td>806</td>
</tr>
<tr>
<td>Business Services</td>
<td>218</td>
<td>436</td>
<td>-1,138</td>
</tr>
<tr>
<td>Distribution Services</td>
<td>63</td>
<td>23</td>
<td>579</td>
</tr>
<tr>
<td><strong>Primary Local Clusters</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Health Services</td>
<td>3,891</td>
<td>1,748</td>
<td>16,042</td>
</tr>
<tr>
<td>Hospitality Establishments</td>
<td>744</td>
<td>685</td>
<td>-27</td>
</tr>
<tr>
<td>Real Estate, Construction, and Development</td>
<td>693</td>
<td>869</td>
<td>-1,213</td>
</tr>
<tr>
<td>Commercial Services</td>
<td>523</td>
<td>231</td>
<td>-154</td>
</tr>
<tr>
<td>Retail Clothing and Accessories</td>
<td>436</td>
<td>288</td>
<td>447</td>
</tr>
</tbody>
</table>

Rochester Health Services Cluster Map

Supporting Networks & Affiliations

Core Activities
- Research: Genomics/Bioinformatics, Cancer, Chronic Disease
- Clinical trials
- Physician and health professional education
- Publications: Scholarly reports, public health information
- Medical procedures
- Local Mayo Health System administration
- International/destination health services
- Pharmacy services
- Health Policy: Medical education, health care reform

Industry Cluster Outgrowths
- Elk Run Bioscience Park
- IBM-Blue Gene Project
- Minnesota BioBusiness Center
- Southern MN Initiative Fund—Bioscience Entrepreneur Prog Destination Medical Community initiative

Service Providers
- Local Retail, Restaurants and Hotels
- Specialized business services: Insurance, legal, translation
- Local and International Transportation
- Banks/financial institutions
- PR and market research services
- Specialized medical services: Billing, sterilization, waste disposal, etc.

Supplier
- Medical devices and equipment
- Health professionals: Doctors, nurses, technicians, researchers, etc.
- Information technology & advanced computing
- Food & housekeeping suppliers
- Construction and building materials
- Pharmaceuticals
- Health Insurance

Industry/Professional Accreditation Groups:
- American Medical Association, Minnesota Nursing Association

Government Agencies:
- Department of Health, MN
- Board of Medical Practice, Medicare/Medicaid Services

Educational Institutions:
- University of Minnesota, Rochester CTC, Riverland Community College, Rochester Public Schools

Medical Research Affiliations:
- National Institutes of Health, National Cancer Institute
Competitiveness and Composition of MSP Metro Area
Linkages Across Traded Clusters, Location Quotients, 2008

Location Quotient = MSP Industry Job Share / US Industry Job Share

Note: Clusters with overlapping borders or identical shading have at least 20% overlap (by number of industries) in both directions.
Competitiveness and Composition of Central MN Linkages Across Traded Clusters, Location Quotients, 2008

Location Quotient = Central MN Industry Job Share / US Industry Job Share

Note: Clusters with overlapping borders have at least 20% overlap (by number of industries) in both directions.
Competitiveness and Composition of Southwest MN Linkages Across Traded Clusters, Location Quotients, 2008

Location Quotient = SW MN Industry Job Share / US Industry Job Share

Note: Clusters with overlapping borders have at least 20% overlap (by number of industries) in both directions.
MSP Industry Clusters, 1998 - 2008

Industry Clusters in the MSP Region: A Dynamic Ecosystem

Current strengths, emergence and change, and key selected clusters (1998-2008)

- RCM targeted clusters
- Emerging clusters of interest
- Other clusters


Location Quotient: MSP Industry employment share over 1 (US Share) indicates regional specialization.

Rural/Urban Interdependencies

• What is the opportunity?

• What do you see as your role in seizing the opportunities?

• What will be required to be successful?