A Look at Strategic Sectors in Spokane County
Two paths of economic development – Responsive & Strategic

• Responsive
  – Helping to land leads that come a county’s way
  – Sometimes a new firm is the product of generally “selling” the county
  – Sometimes an opportunity that walks in the door & needs accommodating

• Strategic
  – Based on a discussion (& some analysis) of what kind of companies a county would like to see join the local economy
  – Example: aerospace
  – Our research falls into this category, but is limited to only those sectors that already have a major presence in Spokane County
  – I.e., not “aspirational”; rather, suggestive of “economic gardening”
Perennial question of ED – how to develop a strategy of recruitment & retention

- Build on input strengths
  - Labor – quantity & quality
  - Power
  - Location
  - Taxes
  - Broadband

- Tout quality of life - Natural amenities, culture & schools

- More formal – “cluster analysis”
Clusters – once over lightly

- Definition – the relative share of one industry in a local economy to the relative of the same industry in the U.S.

\[ LQ = \frac{\text{# of workers in industry } z \text{ in Spokane County}}{\text{all workers in Spokane County}} \times \frac{\text{all workers in Spokane County}}{\text{# of workers in industry } z \text{ in the U.S.}} \times \frac{\text{all workers in the U.S.}}{\text{# of workers in the U.S.}} \]

- If \( LQ > 1.0 \), a cluster exists

- Usual takeaway – if a local economy has a concentration in one or several industries, it should be exploited (built upon).

- Primary metal product manufacturing
- Leather & allied product manufacturing
- Sports, hobby, musical instrument & book stores
- Broadcasting except internet
- Nonmetallic mineral product manufacturing
- Furniture & related product manufacturing
- Ambulatory health services
- Insurance carriers & related activities
- Nursing & residential care facilities
- Motor vehicles & parts dealers
- Building & garden supply stores
- Support activities for transportation
- General merchandise stores
- Merchant wholesalers, durable goods
- Electronics & appliance stores
- Miscellaneous store retailers
- Fabricated metal product manufacturing
- Hospitals
- Merchant wholesalers, nondurable goods
- Construction of buildings
- Couriers & messengers
- Furniture & home furnishing stores
- Textile product mills
- Specialty trade contractors
- Management of companies & enterprises
- Banks & credit unions
Comments to Spokane County Clusters

• 25 out of 92 sectors examined
  – Fairly diversified
  – But...many in retail & services

• Notable about Spokane County— the values of the LQs are small
  – Only 3 > 2.0
  – Contrast to surrounding rural counties, where values of top 2-3 > 10!
  – Also, many of the 25 sectors don’t typically bring in “new dollars” to the County
Edited list of 2012 Spokane Clusters – no retail & only a few service sectors

- Primary metal product manufacturing
- Leather & allied product manufacturing
- Broadcasting except internet
- Nonmetallic mineral product manufacturing
- Furniture & related product manufacturing
- Insurance carriers & related activities
- Support activities for transportation
- Fabricated metal product manufacturing
- Hospitals
- Construction of buildings
- Textile product mills
- Specialty trade contractors
- Management of companies & enterprises
- Banks & credit unions
Problems with Cluster approach

• The procedure rests only on the number of workers

• Other dimensions to a local economy
  – Other inputs
    • Capital (finance)
    • Land
  – Other output measures of an economy
    • Income going to labor
    • “Gross Product” (metro, state or national)

• Importantly, does not allow for linkages between local sectors
Our project – exploit the features of input-output models

• Typically, I/O models used to answer the question of “economic impact,” or generally how big a given sector is

• Its advantage – a detailed description of the interactions in an economy between:
  – All sectors
  – Consumers and businesses

• Available at the county level, so can examine the “ripple” effects of an increase of, say $1M, in sales in one particular sector throughout the local economy.
Input-output – the essentials

- Essentially, a matrix that allows the output of one industry to be the input of another industry, & allows households to be buyers of all industries as well as sellers (of their labor) to all industries.

- The I/O model allows us to measure how much larger the final result will be from the initial one.

- Size of the final effect depends on the amount of purchases from outside the economy over all the rounds of spending.
An input-output model uses or calculates:

- **Direct effect** = economic activity either given or implied by the 1\textsuperscript{st} round spending ($1M in new sales)

- **Indirect effect** = how the first round spending by aerospace firms is augmented by purchases from other businesses

- **Induced effect** = how the income initially earned by labor in the aerospace firms is spent & re-spent in the local economy

- **Total** = Direct + Indirect + Induced effects

- **Multiplier =** \( \frac{\text{Total}}{\text{Direct}} \)
In contrast to Cluster analysis, input-output approach gives 5 measures of a sector’s effect:

- **Employment** = jobs, full, part time, self-employed, or contract
- **Income** = wages, salaries, benefits
- **Output** = value of production, or sales, summed over all stages of production
- **Taxes**
- **Value-added** = the “delta” between sales & the costs of all inputs, summed over all stages of production
Method of study – imagine GSI can set “industrial policy”

• Question: which sectors of County give the biggest “bang for the buck” of a $1M ↑ in sales. I.e., look at all sectors

• Two (of the 5) outcome measures chosen:
  – Jobs
  – Value Added (VA)
    • Highly correlated with labor income & output
    • The measure used to compute “gross product,” whether national, state or metro

• Use their multipliers to rank top 50 industries ⇔ doesn’t penalize small sectors
Our application of Input-output model to look at all sectors – first some culling

• I/O model description of Spokane County
  – 277 sectors with some activity, out of a possible 426
  – Of those, 239 had at least 10 in the total workforce

• Another rule – consider only sectors with positive net exports
  – IMPLAN estimates the share of sales due to imports & exports
  – Goal of this analysis is to consider those sectors that bring in new dollars, overall
  – Result: 130 sectors
  – Still too many => created a ranked list of top 50 by Value Added multipliers, or contribution to County GDP
  – Not the same as total Value Added, b/c didn’t want to penalize small sectors
Takeaway ---

- If you want to boost the size of Spokane’s economy, practice economic gardening with the County’s small manufacturers

- Exceptions that make the top 50 list:
  - Tourism
  - Special ag
  - Software
Value Added results of an additional $1M in sales by top 25 sectors

1. Greenhouse & nursery production
2. Other accommodations
3. Hotels & motels, including casino hotels
4. Office furniture mfg
5. Electricity & signal testing instruments mfg
6. Cutting tool & machine tool accessory mfg
7. Custom architectural woodwork & millwork mfg
8. Special tool, die, jig & fixture mfg
9. Software publishers
10. Machine shops
11. Ground or treated mineral & earth mfg
12. Search, detection & navigation instruments mfg
13. Watch, clock, and other measuring & controlling device mfg
14. Gasket, packing & sealing device mfg
15. Nonupholstered wood household furniture mfg
16. Rolling mill & other metalworking machinery mfg
17. Analytical laboratory instrument mfg
18. Industrial process variable instruments mfg
19. Glass product mfg made of purchased glass
20. Textile bag & canvas mills
21. Showcase, partition, shelving & locker mfg
22. Other electronic component mfg
23. Brick, tile & other structural clay product mfg
24. Packaging machinery mfg
25. Other aircraft parts & auxiliary equipment mfg
<table>
<thead>
<tr>
<th>Sector</th>
<th>Value Added</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plastics &amp; rubber industry machinery mfg</td>
<td>0.59</td>
</tr>
<tr>
<td>Fabricated pipe &amp; pipe fitting mfg</td>
<td>0.49</td>
</tr>
<tr>
<td>Surgical appliance &amp; supplies mfg</td>
<td>0.48</td>
</tr>
<tr>
<td>Oilseed farming</td>
<td>0.48</td>
</tr>
<tr>
<td>Turned product and screw, nut &amp; bolt mfg</td>
<td>0.48</td>
</tr>
<tr>
<td>Institutional furniture manufacturing</td>
<td>0.48</td>
</tr>
<tr>
<td>Office supplies (except paper) mfg</td>
<td>0.48</td>
</tr>
<tr>
<td>All other miscellaneous electrical equipment &amp; component mfg</td>
<td>0.48</td>
</tr>
<tr>
<td>Automatic environmental control mfg</td>
<td>0.48</td>
</tr>
<tr>
<td>Sporting &amp; athletic goods mfg</td>
<td>0.48</td>
</tr>
<tr>
<td>Other general purpose machinery mfg</td>
<td>0.48</td>
</tr>
<tr>
<td>Other industrial machinery mfg</td>
<td>0.48</td>
</tr>
<tr>
<td>Nonferrous metal foundries</td>
<td>0.48</td>
</tr>
<tr>
<td>Handtool mfg</td>
<td>0.48</td>
</tr>
<tr>
<td>Mattress mfg</td>
<td>0.48</td>
</tr>
<tr>
<td>Other communications equipment mfg</td>
<td>0.48</td>
</tr>
<tr>
<td>All other crop farming</td>
<td>0.48</td>
</tr>
<tr>
<td>Footwear mfg</td>
<td>0.48</td>
</tr>
<tr>
<td>Coating, engraving, heat treating&amp; allied activities</td>
<td>0.48</td>
</tr>
<tr>
<td>Power-driven handtool mfg</td>
<td>0.48</td>
</tr>
<tr>
<td>Telephone apparatus mfg</td>
<td>0.48</td>
</tr>
<tr>
<td>Jewelry &amp; silverware mfg</td>
<td>0.48</td>
</tr>
<tr>
<td>Farm machinery &amp; equipment mfg</td>
<td>0.48</td>
</tr>
<tr>
<td>Dairy cattle &amp; milk production</td>
<td>0.48</td>
</tr>
<tr>
<td>Aircraft mfg</td>
<td>0.48</td>
</tr>
</tbody>
</table>

Note: The values represent the Value Added criterion for each sector.
Summary of top 50 sectors from Value Added analysis

- Information
- Tourism
- Aerospace
- Non-durable manufacturing
- Agriculture
- Manufacturing - all other
Nearly all of top 25 sectors show annual compensation > than County private sector average ($36,556), often much higher
Jobs creation ranking of an additional $1M in sales by top 25 sectors

- Oilseed farming
- Other accommodations
- Hotels & motels, including casino hotels
- Nonupholstered wood household furniture mfg
- Custom architectural woodwork & millwork mfg
- Special tool, die, jig & fixture mfg
- Greenhouse, nursery & floriculture production
- Machine shops
- All other crop farming
- Footwear mfg
- Cutting tool & machine tool accessory mfg
- Textile bag & canvas mills
- Dairy cattle & milk production
- Gasket, packing & sealing device mfg
- Office supplies (except paper) mfg
- Handtool manufg
- Brick, tile & other structural clay product mfg
- Packaging machinery mfg
- Turned product and screw, nut & bolt mfg
- Other electronic component mfg
- Surgical appliance & supplies mfg
- Rolling mill & other metalworking machinery mfg
- Coating, engraving, heat treating & allied activities
- Sporting and athletic goods mfg
- Showcase, partition, shelving & locker mfg

Jobs
2nd half of ranking of sectors by Job creation criterion

Glass product mfg made of purchased glass
Other aircraft parts & auxiliary equipment mfg
Nonferrous metal foundries
Other general purpose machinery mfg
Office Furniture
All other miscellaneous electrical equipment & component mfg
Plastics & rubber industry machinery mfg
Watch, clock, and other measuring & controlling device mfg
Fabricated pipe & pipe fitting mfg
Industrial process variable instruments mfg
Automatic environmental control mfg
Other industrial machinery mfg
Search, detection & navigation instruments mfg
Institutional furniture mfg
Electricity & signal testing instruments mfg
Jewelry & silverware mfg
Software publishers
Mattress mfg
Other communications equipment mfg
Analytical laboratory instrument mfg
Ground or treated mineral & earth mfg
Power-driven handtool mfg
Telephone apparatus mfg
Farm machinery & equipment mfg
Aircraft mfg

Jobs
These are small sectors – Jobs multiplier ranking vs. total employment for top 25 sectors

- Oilseed farming
- Other accommodations
- Motels, including casino hotels...
- Nonupholstered wood household...
- Special tool, die, jig & fixture...
- Greenhouse, nursery & floriculture...
- Cutting tool & machine shop...
- Cutting tool & machine tool accessory...
- Large household equipment & lighting...
- Office supplies (except paper) mfg...
- Brick, tile & other structural clay product...
- Packaging machinery mfg...
- Surgical appliance & supplies mfg...
- Millwork, door & cabinet...
Do “sweet spots” exist?

- Jobs
- Value Added
- Both
Yes...

- Correlation coefficient of the multipliers – Value Added & Jobs – of top 50 sectors is $\sim 0.33$
  - Not the case in some rural counties, where the correlation is negative
  - In other words, can pursue a strategy of maximizing Value Added and actually do well by the Jobs criterion

- Examples:
  - Two accommodations sectors are near the top of both rankings
  - Two tool-making sectors in the top 10 of both criteria; machine shops also
  - Exceptions: Electrical & signal testing instrument manufacturing & software publishing rank high only in VA list
Compare to cluster results – 6 sectors are shared with I/O analysis

- Primary metal product manufacturing
- Leather & allied product manufacturing
- Broadcasting except internet
- Nonmetallic mineral product manufacturing
- Furniture & related product manufacturing
- Insurance carriers & related activities
- Support activities for transportation
- Fabricated metal product manufacturing
- Hospitals
- Construction of buildings
- Textile product mills
- Specialty trade contractors
- Management of companies & enterprises
- Banks & credit unions

LQs
### Significant omissions from rankings

<table>
<thead>
<tr>
<th>Sector</th>
<th>Employment</th>
<th>Average Compensation</th>
<th>Exports/Output</th>
<th>Rank</th>
<th>VA/Total Output</th>
<th>VA/Out Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biological product manufacturing</td>
<td>541</td>
<td>67,667</td>
<td>0.933</td>
<td>94</td>
<td>0.208</td>
<td>243</td>
</tr>
<tr>
<td>Aluminum product mfg from purchased aluminum</td>
<td>597</td>
<td>86,853</td>
<td>0.933</td>
<td>93</td>
<td>0.210</td>
<td>241</td>
</tr>
<tr>
<td>Ornamental &amp; architectural metal products mfg</td>
<td>783</td>
<td>44,878</td>
<td>0.887</td>
<td>124</td>
<td>0.298</td>
<td>202</td>
</tr>
<tr>
<td>Banks &amp; credit unions</td>
<td>3,688</td>
<td>54,434</td>
<td>0.256</td>
<td>182</td>
<td>0.727</td>
<td>19</td>
</tr>
<tr>
<td>Insurance carriers</td>
<td>4,170</td>
<td>54,576</td>
<td>0.371</td>
<td>174</td>
<td>0.611</td>
<td>55</td>
</tr>
<tr>
<td>Architectural, engineering &amp; related services</td>
<td>3,538</td>
<td>37,167</td>
<td>0.044</td>
<td>216</td>
<td>0.515</td>
<td>98</td>
</tr>
<tr>
<td>Management of companies</td>
<td>3,106</td>
<td>87,664</td>
<td>0.348</td>
<td>175</td>
<td>0.575</td>
<td>77</td>
</tr>
<tr>
<td>Private colleges, universities &amp; professional schools</td>
<td>4,560</td>
<td>29,111</td>
<td>0.209</td>
<td>187</td>
<td>0.492</td>
<td>112</td>
</tr>
<tr>
<td>Medical &amp; diagnostic labs</td>
<td>4,540</td>
<td>59,474</td>
<td>0.475</td>
<td>163</td>
<td>0.753</td>
<td>14</td>
</tr>
<tr>
<td>Private hospitals</td>
<td>8,738</td>
<td>67,771</td>
<td>0.112</td>
<td>204</td>
<td>0.567</td>
<td>80</td>
</tr>
</tbody>
</table>
Caveats

• Surprise entrants, not necessarily based on existing industries, could appear; ex. Minapsys

• Assumes that every sector can easily expand output by $1M
  – Easy for some sectors; not so perhaps for the very smallest

• Does not look at the demand for these products – simply assumes that every sector on the final list of 50 could experience an increase

• Some of the top sectors are largely inputs to others => would not develop a strategy around them
On balance......

- Scenario analysis; not a forecast

- I/O approach offers a comprehensive look at Spokane County economy & is based on “what is”

- Results differ from and preferred to cluster analysis

- There are actually few trade-offs between a strategy based on jobs & one based on enlarging the size of the county economy

- Perhaps some surprises about particular industries?
Thank You!

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