Today’s presentation

• Close examination of leading sectors in Okanogan County
  – Can the insights from the most detailed model available on the county lead to actionable economic developments steps?
  – Analysis funded by a grant from Congress (appropriation) that has several parts

• Prelude: a look at key demographic & economic trends for the county, based on the Institute’s “indicators” projects
County population – a decade of slow growth
Net in-migration: recently small & highly variable
Median age: recently has grown 3x as fast as WA
County Per Capita Personal Income has recently recovered

- Okanogan: $37,674
- U.S.: $43,735

Graph shows the comparison of Okanogan and U.S. personal income over time from 1969 to 2011.
County Per Capita Personal Income relative to US

![Graph showing the percentage of personal income relative to US income from 1969 to 2011. The graph indicates a trend of decreasing income relative to the US average, with peaks in 1971 and 1987.](image_url)
A decade’s look at County’s sources of Personal Income: Path of the 3 types

- Investment Income share
- Transfer Payments Share
- Wages & Salaries Share
County’s economic structure: shares of income generated in the 5 largest sectors

- Government: 39.6% (2001) to 30.9% (2012)
- Farm Earnings: 9.8% (2001) to 18.8% (2012)
- Retail trade: 10.0% (2001) to 5.0% (2012)
- Health care: 15.0% (2001) to 10.0% (2012)
- Forestry: 20.0% (2001) to 5.0% (2012)
Two paths of economic development – Responsive & Strategic

• Responsive
  – Answering 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 grow the local economy
  – Sometimes based on aspiration
  – Our research falls into this category, but is limited to only those sectors that already have a presence in Okanogan County
  – I.e., not “aspirational”
Perennial question of ED – how to develop a strategy of recruitment & retention

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

• Tout quality of life
  – Natural amenities
  – Culture
  – Schools

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

- Definition of a *location quotient*—the relative share of one industry in a local economy to the relative of the same industry in the U.S.

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

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

- A usual consequence – if a local economy has a concentration in one or several industries, it/they should be exploited (built upon)
U.S. Bureau of Labor Statistics results for Okanogan County in 2012: 13 clusters

- Crop production
- Ag & forestry support activities
- Forestry & logging
- Mining, except oil & gas
- Animal production
- Gasoline stations
- Building material & garden supply stores
- Accommodations
- Food & beverage stores
- General merchandise stores
- Food manufacturing
- Social assistance
- Construction of buildings
Comments to Okanogan County Clusters

• Not too many – 13 out of 92 sectors examined
  – Spokane – 27 out of 92 sectors
  – But typical of smaller counties

• Striking about Okanogan County – the size of the location quotients (LQs)
  – 6 of 13 > 2.0
    • Two above 30!
  – In contrast, Spokane shows only 11% > 2.0
  – In other words, a high degree of specialization – here, mostly in agriculture, mining & logging
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)

• Does not allow for linkages between local sectors, or the strength of local supply chains
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 (via “multipliers”).

- 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 1st round spending ($1M in new sales)
- **Indirect effect** = how the first round spending by tree fruit growers is augmented by purchases from other businesses
- **Induced effect** = how the income initially earned by labor in the tree fruit industry is spent and re-spent in the economy
- **Total** = Direct + Indirect + Induced effects
- **Multiplier** = Total / 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** = sales over all stages of the production process
- **Taxes**
- **Value-added** = incremental gain in value of production at each stage, summed over all stages of the production process
Method of study – imagine the Alliance has a magic wand

- Question: which sectors of Okanogan 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 to evaluate:
  - Jobs
  - Value Added (VA)
    - Highly correlated with labor income & output
    - The measure used to compute “gross product,” whether national, state or metro

- Use multipliers to rank top 20 industries ⇔ doesn’t penalize small sectors
Our application of Input-output model to look at all sectors – first some sorting

- I/O model description of Okanogan County: 140 sectors with some activity, out of a possible 426

- Two sorting rules lead to 23 sectors
  1) Considered only sectors with > 9 employees => 108 sectors
  2) Then eliminated all those sectors that were totally “domestic” (within county) oriented or had net negative exports
     - Result: 23 sectors
     - Some judgment involved
     - Examples of sectors excluded: general retail, most service companies

- Finally, sort this list by two multipliers – labor & value-added, & rank “top 20” results
Value Added results of an additional $1M in sales

Boat building
Sawmills & wood preservation
Animal (except poultry) slaughtering & processing
All other miscellaneous wood product manufacturing
Machine shops
Grain farming
All other crop farming
Cattle ranching & farming
Other accommodations
Hotels & motels, including casino hotels
Custom computer programming services
Mining & quarrying stone
Animal production, except cattle & poultry & eggs
Commercial logging
Fruit farming
Vegetable farming
Mining gold, silver & other metal ore
Other amusement & recreation industries
Support activities for agriculture & forestry
Greenhouse & nursery production
Summarizing results from Value Added criterion

• Breakdown by super-sectors
  – Agriculture: 9
  – Natural resources: 3
  – Manufacturing: 4
  – Computer services: 1
  – Tourism: 3

• Most sectors employ few workers, with 2 notable exceptions
  – Average of all sectors = 128
  – 14 sectors < Okanogan County average

• 13 of 20 sectors pay more than County average
<table>
<thead>
<tr>
<th>Industry</th>
<th>Jobs Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grain farming</td>
<td>70.0</td>
</tr>
<tr>
<td>Support activities for agriculture &amp; forestry</td>
<td>67.0</td>
</tr>
<tr>
<td>Cattle ranching &amp; farming</td>
<td>56.0</td>
</tr>
<tr>
<td>Animal production, except cattle &amp; poultry &amp; eggs</td>
<td>48.0</td>
</tr>
<tr>
<td>Commercial logging</td>
<td>42.0</td>
</tr>
<tr>
<td>Boat building</td>
<td>38.0</td>
</tr>
<tr>
<td>Mining &amp; quarrying stone</td>
<td>34.0</td>
</tr>
<tr>
<td>Bread &amp; bakery product manufacturing</td>
<td>29.0</td>
</tr>
<tr>
<td>Machine shops</td>
<td>16.0</td>
</tr>
<tr>
<td>Sawmills &amp; wood preservation</td>
<td>14.0</td>
</tr>
<tr>
<td>All other miscellaneous wood product manufacturing</td>
<td>11.0</td>
</tr>
<tr>
<td>Hotels &amp; motels, including casino hotels</td>
<td>8.0</td>
</tr>
<tr>
<td>Custom computer programming services</td>
<td>8.0</td>
</tr>
<tr>
<td>Other accommodations</td>
<td>8.0</td>
</tr>
<tr>
<td>All other crop farming</td>
<td>6.0</td>
</tr>
<tr>
<td>Fruit farming</td>
<td>6.0</td>
</tr>
<tr>
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<td>5.0</td>
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</table>
Summarizing results for Jobs criterion

- Breakdown by super-sectors
  - Agriculture: 8
  - Natural Resources: 2
  - Manufacturing: 6
  - Services: 1
  - Tourism: 3

- Caveat about ag jobs – lots of part-time

- Same small size of most sectors

- 13 sectors pay > County average
Compare to cluster results – 7 of 13 sectors are shared

- Crop production
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Discussion

• Results make sense?

• Surprises?

• Do you see them changing in the next 5 years?
Caveats

• Surprise entrants, not necessarily based on existing industries, could happen – carbon fiber plant in Grant County

• 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 20 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 Okanogan County economy & is based on “what is”

• Tribal government enterprises not included

• There are actually few trade-offs between a strategy based on jobs & one based on enlarging the size of the county economy
D. Patrick Jones, Ph.D.
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