

# **Oregon**

## **Profile of the State Economy**

**Prepared for**

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**By**

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## Introduction

This document includes data on the performance and composition of the Oregon economy. It is intended as an initial overview to motivate further discussions based on the full richness of the data. The data is based on the Cluster Mapping project, a multi-year effort to statistically define clusters and analyze regional economies in the United States. The Institute for Strategy and Competitiveness at Harvard Business School would be happy to support further work in this area in your state.

The work of the Council on Competitiveness, Monitor Company, and the Institute for Strategy and Competitiveness in the Clusters of Innovation project has indicated the importance of regional economies for prosperity. While some important elements of companies' business environments are set at the national level (e.g., federal taxes, rules and regulations governing international trade and investment, antitrust rules), many others are set at the regional state or local level (e.g., state universities, physical infrastructure). These regional differences matter, as the huge differences in economic performance across U.S. regions attest. The aim of our project, and of this short document, is to increase awareness of the specific regional conditions to inform political action at the state level.

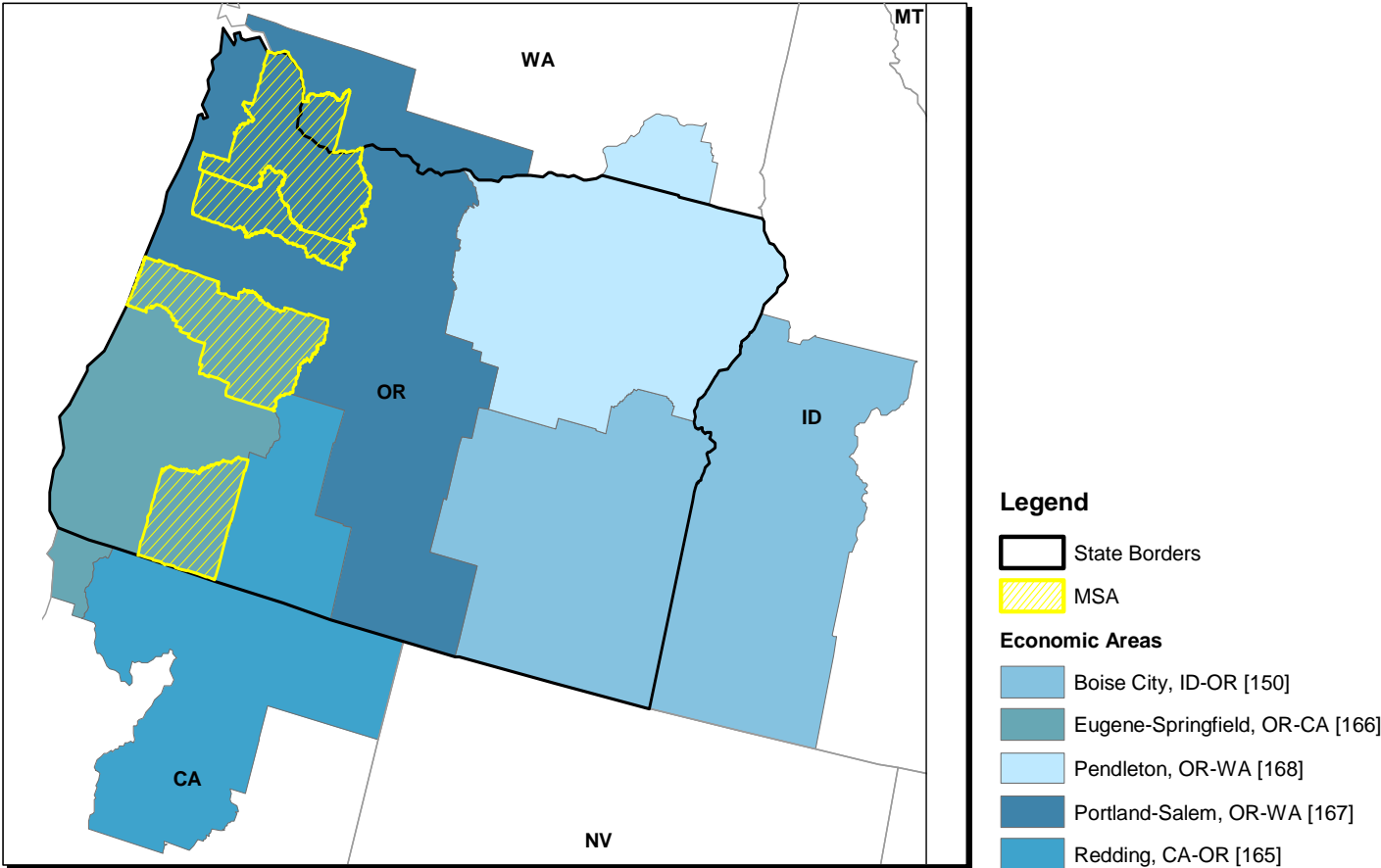
In many states, the relevant economic areas for companies are smaller than the state's boundaries. In others, relevant economic areas include parts of other states. We therefore list the economic areas and the metropolitan economic areas, both defined by the Bureau of Economic Analysis, on the opposite page. Economic performance data on these geographical units can be found at <http://data.isc.hbs.edu/isc/index.jsp>.

This document was prepared under the guidance of Professor Michael E. Porter by Elisabeth de Fontenay, Andrew Funderburk, Christian Ketels, Daniel Vasquez, and Weifeng Weng, all of the Institute for Strategy and Competitiveness.

### Helpful links:

<a href="http://www.isc.hbs.edu">www.isc.hbs.edu</a>	Institute for Strategy and Competitiveness
<a href="http://www.compete.org">www.compete.org</a>	Council on Competitiveness
<a href="http://www.monitor.com">www.monitor.com</a>	Monitor Group

# Oregon



# Profile of the Oregon State Economy

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## **1. Economic Performance and Innovation Output**

### **Description:**

This chart presents aggregate measures of the state's economic performance and innovative output. The state is compared to the average of the United States, and its rank among all states is indicated.

Establishment growth refers to growth in traded cluster establishments, which are in fields that compete with other states and countries. Growth in local cluster establishments (e.g. retail stores) is not included.

### **Interpretation:**

These aggregate measures allow an overview of the state's performance relative to the U.S. average. The economic performance measures address current results, while the innovative output measures provide indicators of how prosperity might change in the future.

Economic performance. Comparison of employment growth and wages reveals the extent to which growth translates to higher prosperity. Gross state product per employee gives an indicator of the state's productivity. Export growth reveals the extent to which the state can meet the test of international markets.

Innovation output. Patenting measures the vitality of invention, while the other measures capture various aspects of commercialization. Mismatch of these indicators can signal flaws in the institutions linking those two stages of the innovation process.

# State of Oregon

## State Economic Performance and Innovation Output

Economic Performance	Innovation Output
<p><b>Employment growth per year, 1990 to 1999</b></p> <ul style="list-style-type: none"> <li>▪ in Oregon: 3.04% (rank 10)</li> <li>▪ in the US: 1.90%</li> </ul> <p><b>Average wages in 1999</b></p> <ul style="list-style-type: none"> <li>▪ in Oregon: \$29,801 (rank 21)</li> <li>▪ in the US: \$32,109</li> </ul> <p><b>Wage growth per year, 1990 to 1999</b></p> <ul style="list-style-type: none"> <li>▪ in Oregon: 4.31% (rank 12)</li> <li>▪ in the US: 4.03%</li> </ul> <p><b>Gross state product per employee in 1999</b></p> <ul style="list-style-type: none"> <li>▪ in Oregon: \$52,776 (rank 27)</li> <li>▪ in the US: \$56,882</li> </ul> <p><b>Annual growth in exports, 1995-1999</b></p> <ul style="list-style-type: none"> <li>▪ in Oregon: 3.04% (rank 30)</li> <li>▪ in the US: 4.41%</li> </ul>	<p><b>Patents per 10,000 employees</b></p> <ul style="list-style-type: none"> <li>▪ in Oregon: 9.0 (rank 11)</li> <li>▪ in the US: 6.3</li> </ul> <p><b>Patents growth per year, 1990 to 1998</b></p> <ul style="list-style-type: none"> <li>▪ in Oregon: 7.05% (rank 10)</li> <li>▪ in the US: 3.19%</li> </ul> <p><b>New establishment formation*, 1990 to 1999</b></p> <ul style="list-style-type: none"> <li>▪ in Oregon: 5.92% (rank 14)</li> <li>▪ in the US: 4.60%</li> </ul> <p><b>Fast growth firms (Inc 500), 1991 to 2000</b></p> <ul style="list-style-type: none"> <li>▪ in Oregon: 59 (rank 25)</li> </ul> <p><b>Venture capital investments, \$ per worker</b></p> <ul style="list-style-type: none"> <li>▪ in Oregon: \$217 (rank 2)</li> </ul> <p><b>Initial public offering proceeds per 1,000 firms, 1999</b></p> <ul style="list-style-type: none"> <li>▪ in Oregon: \$4677 (rank 2)</li> </ul>

Note: Excludes government and agricultural employment. \* This refers to the formation of establishments in traded industries, which trade with other regions and internationally.  
 Data Source: Cluster Mapping Project, Institute for Strategy and Competitiveness, Harvard Business School ([www.isc.hbs.edu](http://www.isc.hbs.edu)) ; Bureau of Labor Statistics; Bureau of Economic Analysis; International Trade Administration; U.S. Patent and Trademark Office; CHI Research, Price Waterhouse Cooper Money Tree; Hoover's IPO Central; Inc. Magazine; Fast Forward, Inc., Baker Thompson Associates

## **2. Patents by Organization, 1995-1998**

### Description:

This table lists the top 50 patentors in the state by organization name and type (corporation, government, university, or institute). Patents are assigned to regions according to the inventor's address of residence. In the case of multiple inventors from different locations, the patent is assigned fractionally to the various regions.

### Interpretation:

Regions with a healthy level of innovation should have patents originating from a wide variety of corporations in a wide variety of fields. Healthy regions also tend to have significant patenting from universities and institutes. Concerns about innovative capacity arise when patents originate principally from a government agency, for instance, or when the vast majority of patents are generated by very few entities.

## Top 50 Patent Holders in Oregon Total of 1995-1998

Rank	Organization Title	Patentor Type	Total Patents, 1995-1998	Rank	Organization Title	Patentor Type	Total Patents, 1995-1998
1	INTEL CORPORATION	Corporation	826	26	THRUSTMASTER, INC.	Corporation	11
2	HEWLETT-PACKARD COMPANY	Corporation	250	27	MAXIM INTEGRATED PRODUCTS, INC.	Corporation	10
3	TEKTRONIX INC.	Corporation	206	28	NECA MERICA, INC.	Corporation	10
4	OREGON HEALTH SCIENCES UNIVERSITY	University	38	29	MICRON TECHNOLOGY, INC.	Corporation	10
5	MOLECULAR PROBES, INC.	Corporation	32	30	SIMCO-RAMIC CORP.	Corporation	10
6	NIKE, INC.	Corporation	29	31	STATE OF OREGON	State Government	9
7	IN FOCUS SYSTEMS, INC.	Corporation	23	32	INTERNATIONAL BUSINESS MACHINES CORPORATION	Corporation	9
8	OREGON STATE UNIVERSITY	University	20	33	THE UNIVERSITY OF OREGON	University	9
9	SPECTRA-PHYSICS SCANNING SYSTEMS, INC.	Corporation	20	34	EPITOPE, INC.	Corporation	9
10	FREIGHTLINER CORPORATION	Corporation	19	35	CASCADE MICROTECH, INC.	Corporation	9
11	SEIKO COMMUNICATIONS HOLDING NV	Corporation	18	36	CARRUTHERS EQUIPMENT CO.	Corporation	8
12	BEND RESEARCH INC.	Corporation	16	37	SYNEKTRON CORPORATION	Corporation	8
13	ANALOG DEVICES, INC.	Corporation	15	38	UNITED STATES OF AMERICA, DEPARTMENT OF THE INTERIOR	U.S. Government	8
14	A-DEC, INC.	Corporation	14	39	QUICKTURN DESIGN SYSTEMS, INC.	Corporation	8
15	VERSA CORPORATION	Corporation	14	40	AG-BAG INTERNATIONAL LIMITED	Corporation	8
16	G & G INTELLECTUAL PROPERTIES, INC.	Corporation	13	41	LATTICE SEMICONDUCTOR CORPORATION	Corporation	8
17	ELECTRO SCIENTIFIC INDUSTRIES, INC.	Corporation	13	42	GUNDERSON, INC.	Corporation	8
18	ENDOVASCULAR INSTRUMENTS, INC.	Corporation	13	43	SENTROL, INC.	Corporation	7
19	WHTAKER CORPORATION	Corporation	13	44	BLOUNT, INC.	Corporation	7
20	PLANAR SYSTEMS, INC.	Corporation	12	45	MENTOR GRAPHICS CORPORATION	Corporation	7
21	BELLOIT TECHNOLOGIES, INC.	Corporation	12	46	SUPRA PRODUCTS, INC.	Corporation	7
22	SEIKO COMMUNICATION SYSTEMS, INC.	Corporation	11	47	SEQUENT COMPUTER SYSTEMS, INC.	Corporation	7
23	DIGIMARC CORPORATION	Corporation	11	48	ACRES GAMING, INC.	Corporation	7
24	WARN INDUSTRIES, INC.	Corporation	11	49	ZIBA DESIGN, INC.	Corporation	7
25	TELEDYNE INDUSTRIES, INC.	Corporation	11	50	ETEC SYSTEMS, INC.	Corporation	7

Data Source: CHI Research, USPTO

Source: Cluster Mapping Project, Institute for Strategy and Competitiveness, Harvard Business School ([www.isc.hbs.edu](http://www.isc.hbs.edu)).

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### **3. Overall Composition of Employment and Wages**

#### **Description:**

A state's economy can be divided into traded clusters, local clusters, and natural resource industries. This table gives employment share and average wages for each of the three groups compared to national benchmarks.

#### **Interpretation:**

*Traded clusters* include those industries that compete across regions, and which tend to concentrate in a small number of locations. Traded clusters tend to be the engines of regional economic competitiveness, accounting for only about a third of employment but achieving much higher wages and productivity levels.

*Local clusters* involve activities serving almost exclusively local markets. These industries are present in every region in roughly the same proportions. Local clusters employ the majority of people in any regional economy, so their efficiency is critical for competitiveness in traded clusters to turn into regional prosperity. However, they cannot prosper over the long run without success in the traded clusters.

*Natural-resource industries* concentrate at natural resource sites. They account for a very small share of national employment.

Overall state economic performance can be decomposed into the contributions of the three different types of activities. Traded clusters provide particular insight. Underperformance in traded clusters or lower traded cluster wages may be signs of competitiveness difficulties.

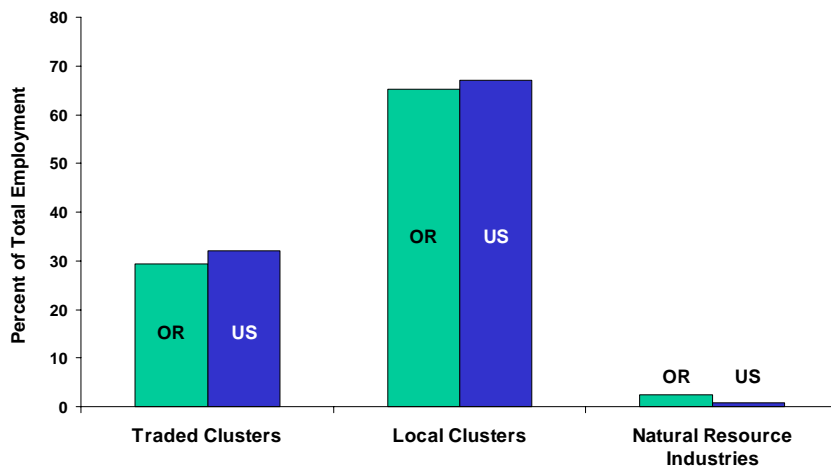
**Oregon**  
**Broad Composition of the Economy by Average Wage, 1999**



Source: Cluster Mapping Project, Institute for Strategy and Competitiveness, Harvard Business School ([www.isc.hbs.edu](http://www.isc.hbs.edu)).

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**Oregon**  
**Broad Composition of the Economy by Employment, 1999**



Source: Cluster Mapping Project, Institute for Strategy and Competitiveness, Harvard Business School ([www.isc.hbs.edu](http://www.isc.hbs.edu)).

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#### **4. Employment by Cluster**

##### Description:

Within the broad categories of traded and local clusters, a state's economy can be divided into the individual clusters. Clusters are geographically proximate groups of interconnected companies and associated institutions in a particular field, linked by commonalities and complementarities. 41 traded clusters and 19 local clusters in the US economy, listed in the appendix, were defined in the Cluster Mapping Project at the Institute for Strategy and Competitiveness at HBS.

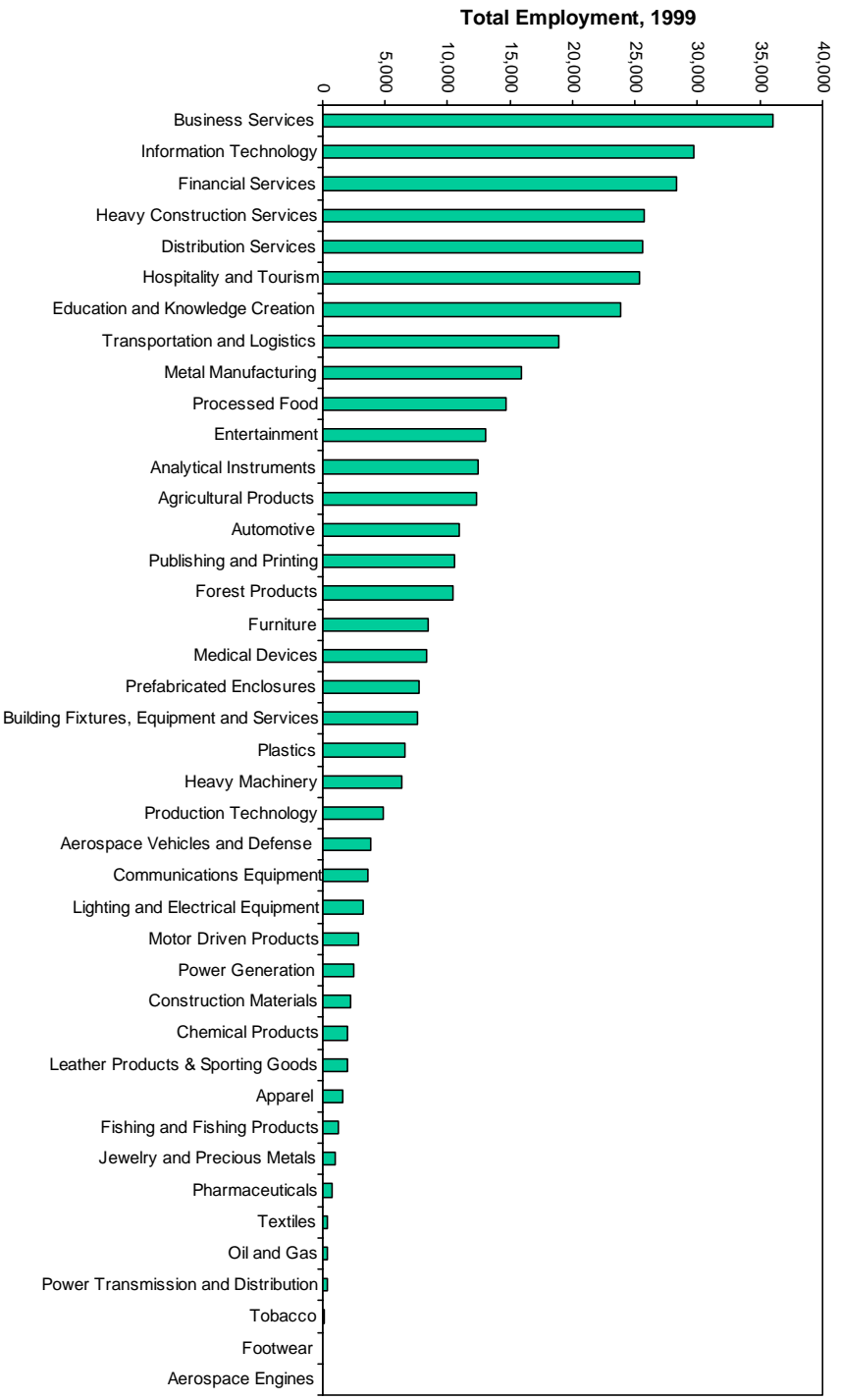
This table gives total employment in the state economy by each traded and local cluster.

##### Interpretation:

The employment by cluster gives a more detailed profile of the activities in the state economy contributing to overall prosperity. They can be used to test whether policies targeted at specific, for example so-called high tech, industries have a chance of creating a material impact on overall living conditions in the state.

# Oregon

## Employment By Traded Cluster, 1999



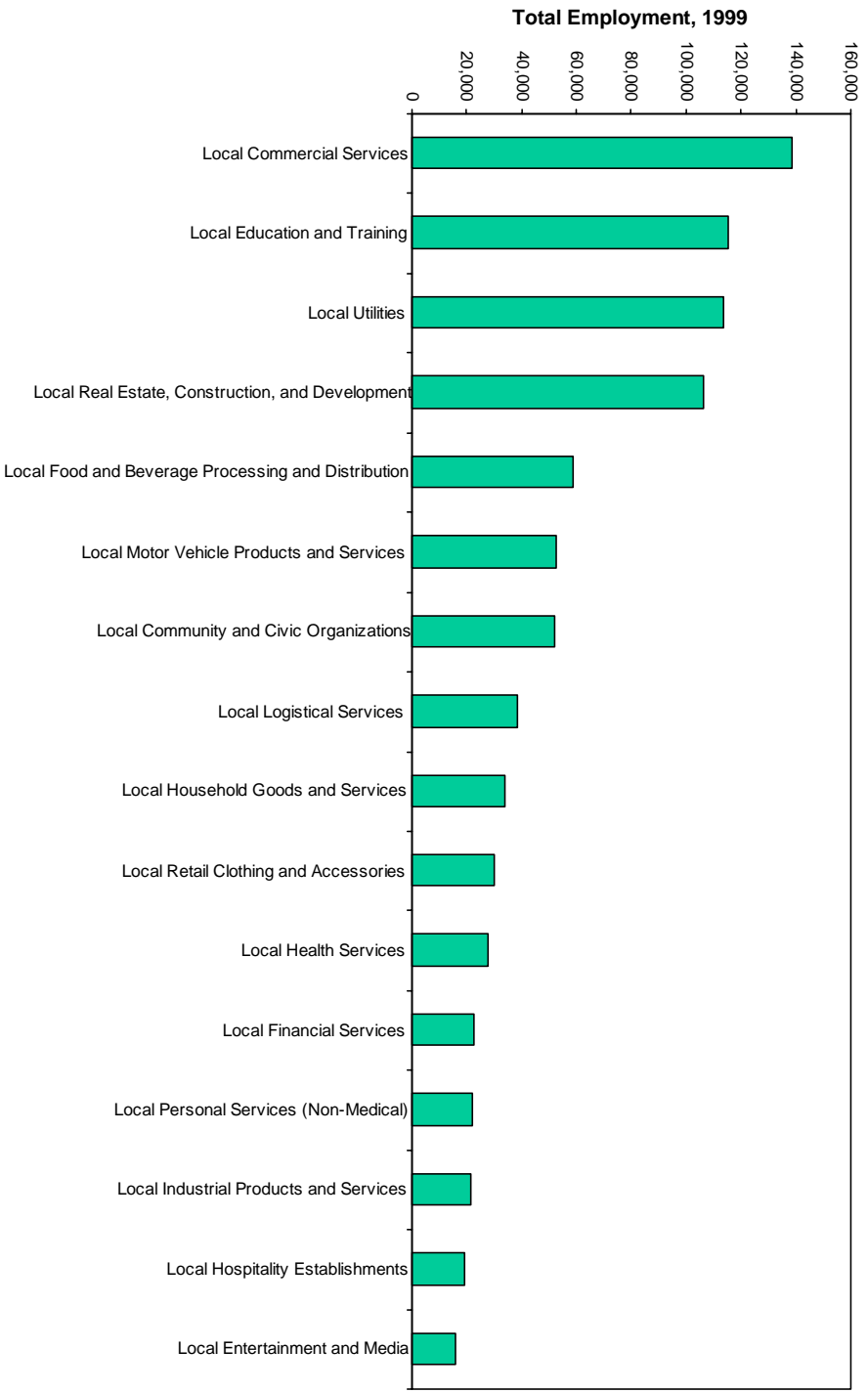
Note: Chart utilizes narrow cluster definitions to eliminate overlapping employment across clusters.  
 Source: Cluster Mapping Project, Institute for Strategy and Competitiveness, Harvard Business School ([www.isc.hbs.edu](http://www.isc.hbs.edu)).

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# Oregon

## Employment By Local Cluster, 1999



Note: Chart utilizes narrow cluster definitions to eliminate overlapping employment across clusters.  
 Source: Cluster Mapping Project, Institute for Strategy and Competitiveness, Harvard Business School ([www.isc.hbs.edu](http://www.isc.hbs.edu)).

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## **5. Job Creation by Traded Cluster**

### Description:

This chart plots the net gain or loss in jobs by traded cluster from 1990 to 1999 using narrow, non-overlapping cluster definitions. The clusters are arranged in order of net jobs created. The chart also gives the overall net gain or loss in traded jobs (i.e. total for all 41 traded clusters). Data for the United States overall is given below.

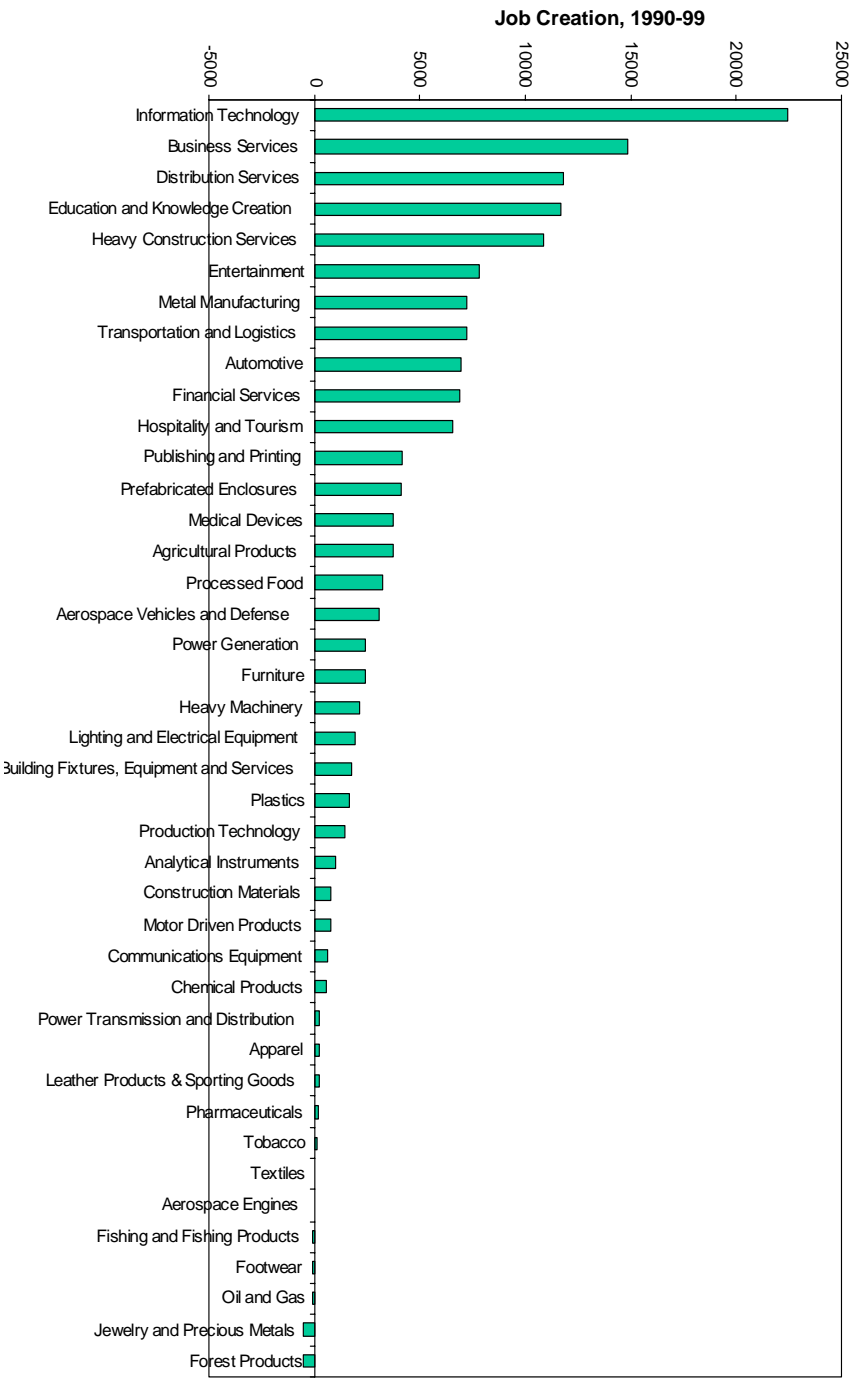
### Interpretation:

This chart allows a region to identify its biggest job generators as well as job losers among traded clusters over the last decade. A few clusters often account for a large majority of the overall employment gain. It is helpful to compare these clusters with the priorities a state has set in its policies.

Comparison of job growth by cluster in the state relative to the U.S. can give insights into strengths and weaknesses in the state's economy. A state might be participating in a cluster which is surging nation-wide, or it might be gaining market position.

# Oregon

## Job Creation By Traded Cluster, 1990 to 1999



Note: Chart utilizes narrow cluster definitions to eliminate overlapping Job Creation across clusters.

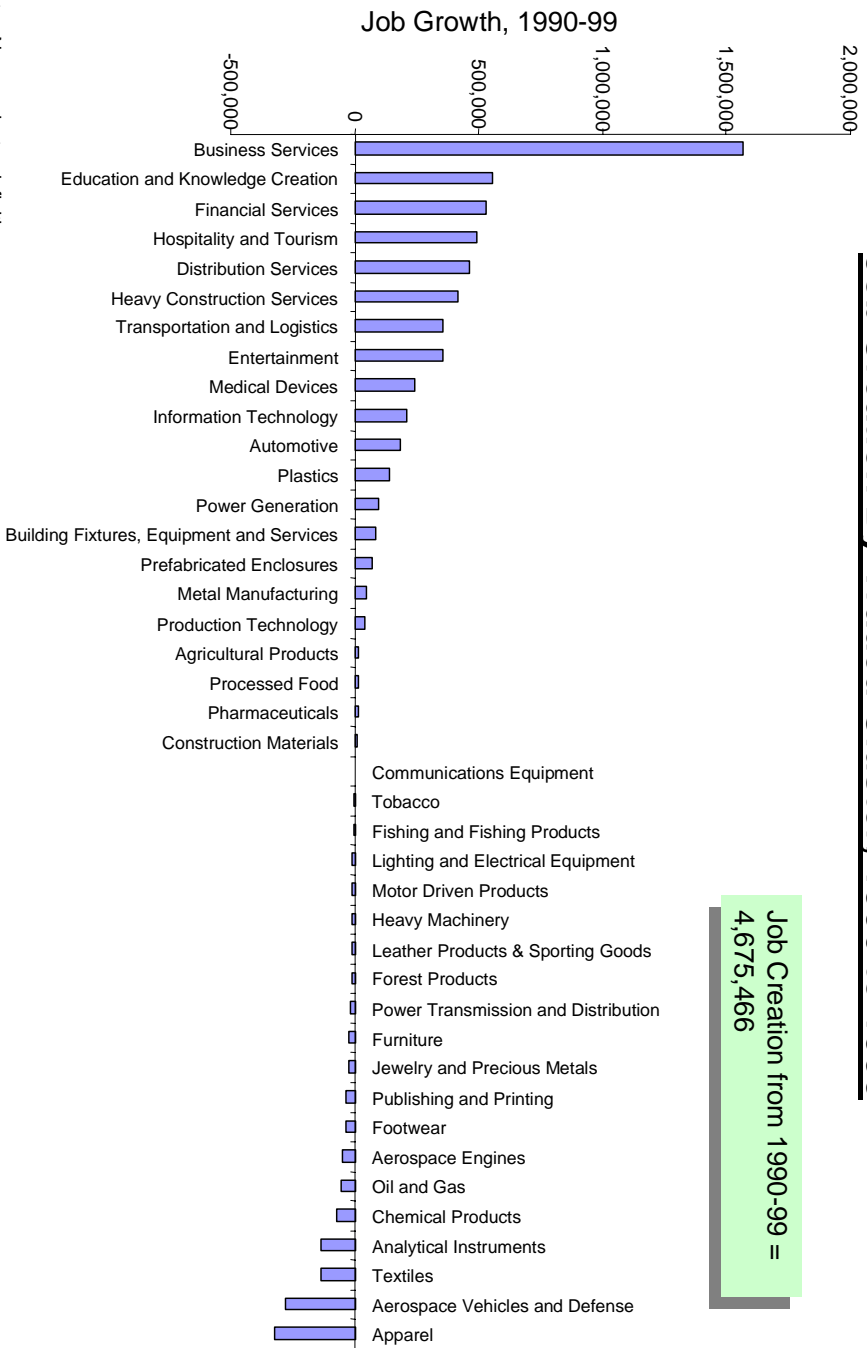
Source: Cluster Mapping Project, Institute for Strategy and Competitiveness, Harvard Business School ([www.isc.hbs.edu](http://www.isc.hbs.edu)).

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# United States

## Job Creation By Traded Cluster, 1990 to 1999



Note: Narrow cluster definitions  
 Source: Institute for Strategy and Competitiveness, Harvard Business School

## **6. Top 10 Highest Wage Traded Clusters, 1999**

### **Description:**

The ten highest wage traded clusters in the state are shown in decreasing order, with the width of the columns proportional to the number of workers in each cluster. The area of each cluster is thus equivalent to the overall wage sum the cluster generated in the state.

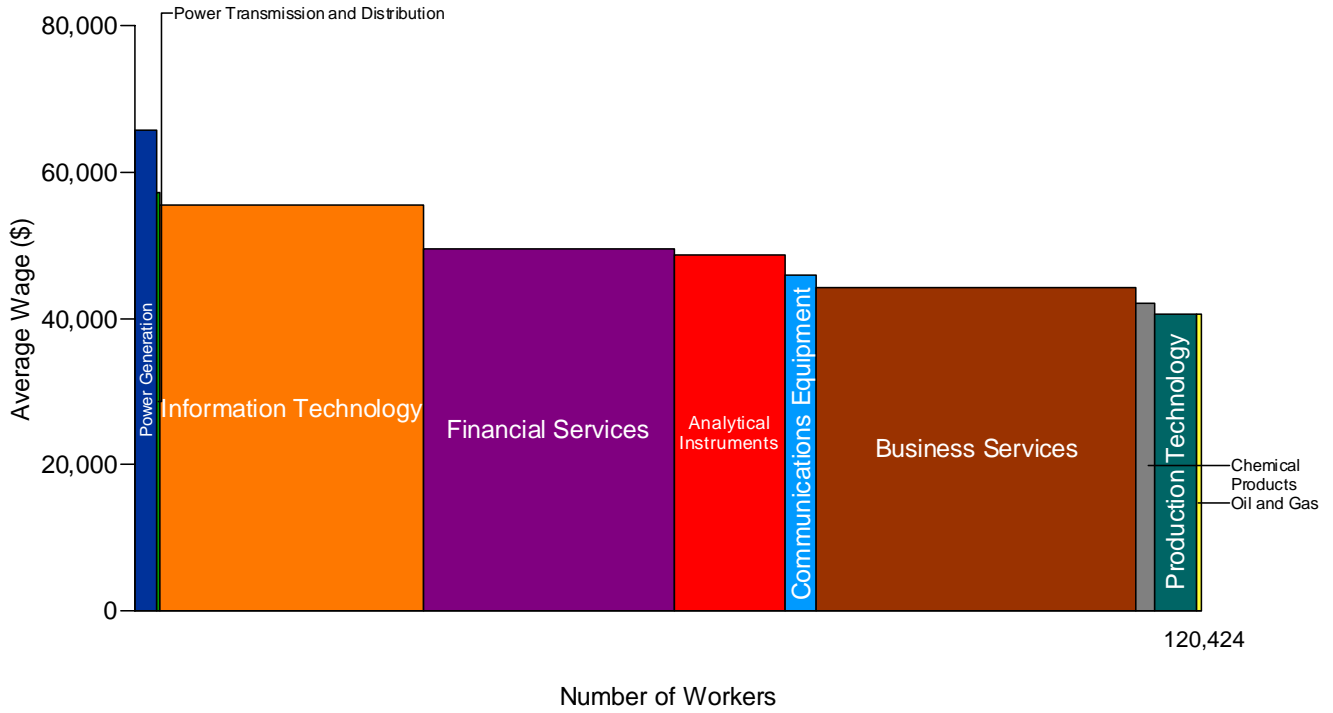
### **Interpretation:**

The chart displays how the average wage in the state's traded clusters is built up by highest wage clusters. Some high wage clusters may have a small impact on overall wage levels because of their small size, the case in some high wage clusters. Some large, high wage clusters are often those in services.

The comparison to the U.S. average wages by cluster gives an initial benchmark to evaluate the composition of average wages in the state economy. States can increase wages in two different ways: (1) increase the employment in high wage clusters relative to low wage clusters and/or (2) increase the state's relative wages in given clusters. In practice, the second effect dominates as the explanation for why state wages differ.

# Oregon

## Top 10 Highest Wage Traded Clusters, 1999

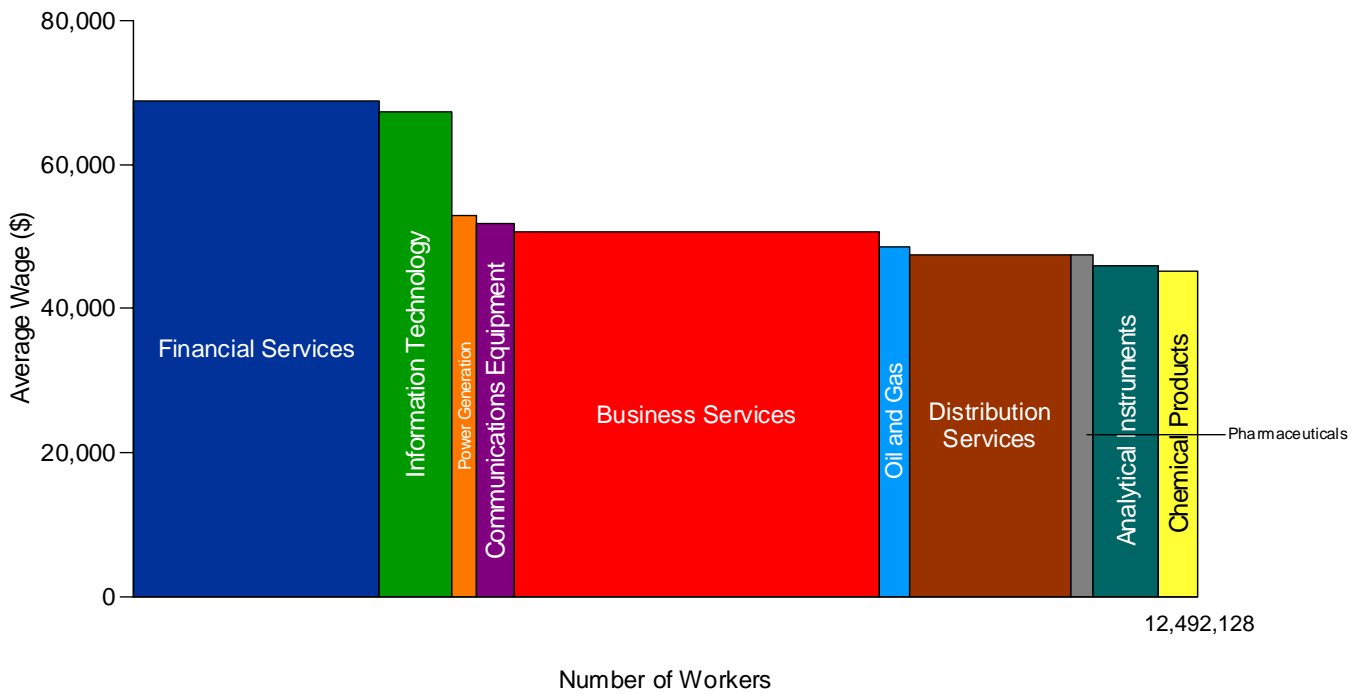


Note: Graph utilizes narrow cluster definitions to eliminate overlapping employment across clusters

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## United States Top 10 Highest Wage Traded Clusters, 1999



Note: Graph utilizes narrow cluster definitions to eliminate overlapping employment across clusters

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## **7. Specialization of the State Economy by Traded Clusters**

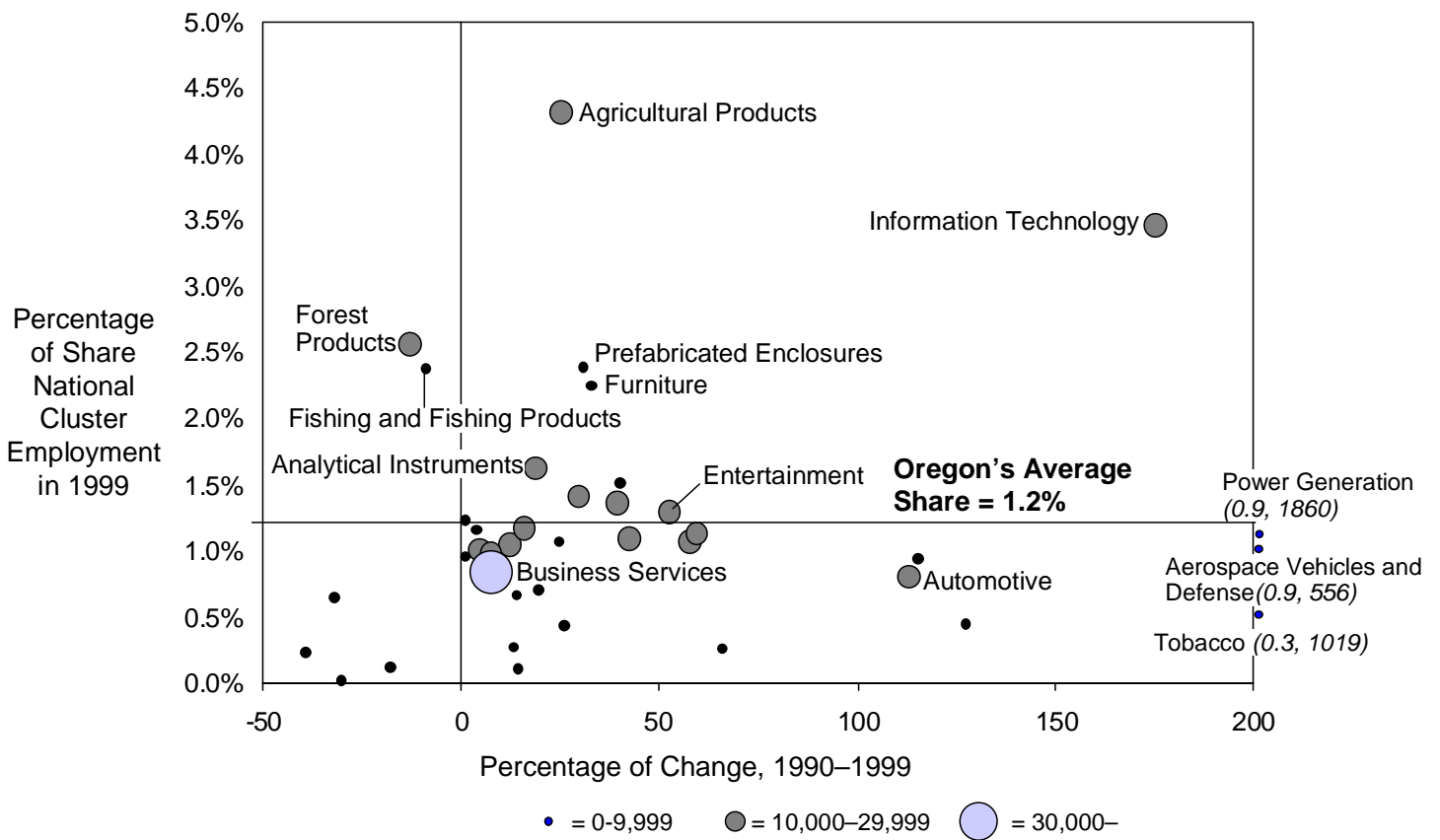
### Description:

The slide plots all traded clusters in a state by regional employment share and change in share between 1990 and 1999. Narrow cluster definitions are utilized which eliminates cluster overlaps. The chart is divided into four quadrants, based on state's average share of traded employment, and whether the cluster is growing or losing share.

### Interpretation:

This chart gives a snapshot of a region's competitive position by cluster. All 41 clusters are positioned according to current share and change in share over the last decade. The upper right-hand quadrant contains the region's strongest, most dynamic clusters, where the state has both a stronger than proportional share of national cluster employment and is adding share. Ideally, a number of significant clusters will appear in that quadrant. The lower right-hand quadrant contains clusters where the state is gaining employment share but which do not yet have a strong position. These clusters might present opportunities for the future. The upper-left hand quadrant indicates clusters that are strong but are losing relative position. These clusters might be traditionally important pillars of the state economy that are in need of revitalization. Finally, the lower-left hand quadrant indicated clusters with apparently limited competitiveness in the state.

## Oregon Specialization By Traded Cluster



Note: Graph utilizes narrow cluster definitions to eliminate overlapping employment across clusters.

Data points too large to fit on the graph are placed on the borders and the values are given as: (y-axis, x-axis).

Source: Cluster Mapping Project, Institute for Strategy and Competitiveness, Harvard Business School

## **8. State Ranking by Leading Sub-Clusters**

### Description:

The slide gives the state's top 50 sub-clusters, or subunits within overall clusters, by national rank. Each cluster is divided into a number of subclusters which represent different subunits in which a region can be stronger or weaker.

### Interpretation:

The slide provides additional information on areas of unique competitiveness in a state. Top ranking subclusters may signal the potential for a cluster to grow over time. Also, the pattern of subcluster strength may reveal opportunities at the intersection of clusters.

# Oregon

## Top 50 Sub-Clusters By National Rank

Cluster	Sub-Cluster	National Rank	State Share of National Sub-Cluster Employment	Cluster	Sub-Cluster	National Rank	State Share of National Sub-Cluster Employment
Agricultural Products	Packaged Foods	2	8.3	Building Fixtures, Equipment and	Professional Services	24	1.5
	Wine	4	3.3		Wood Products	19	1.8
	Farm Management and Services	10	2.2		Fabricated Materials	21	1.6
	Specialized Services	20	1.6		Gum and Wood Chemicals	6.5	6.4
Processed Food	Malt Beverages	14	2.6	Construction Materials	Wood Products	23	1.8
	Food Products Machinery	18	2.0	Entertainment	Entertainment Venues	18	1.7
	Flour	19.5	1.8	Recorded Products	15	1.5	
	Packaged Foods	23	1.6	Fishing and Fishing Products	Fishing	9	2.8
Automotive	Transportation Equipment	9	4.0	Fish Products	12	2.4	
	Motor Vehicles	14	1.8	Heavy Machinery	Mining Machinery	7.5	4.5
	Flat Glass	17	1.5	Railroad Equipment and Rental	6	4.4	
Distribution Services	Apparel and Accessories Distribution	8	3.0	Motor Driven Products	Specialized Machinery	1	13.3
	Food Products Wholesaling	11	2.6	Motorized Vehicles	9	2.0	
	Farm Material and Supplies Wholesal	22	1.9	Prefabricated Enclosures	Recreational Vehicles and Parts	4	5.7
Forest Products	Paper Mills and Machinery	14	3.1	Mobile Homes	7	4.3	
	Sanitary paper products	17	2.1	Transportation and Logistics	Handling and Storage	15	2.3
	Wood Products	20	1.7	Bus Terminals	21	1.7	
Heavy Construction Services	Other Materials	5	4.8	Analytical Instruments	Instruments	5	4.6
	Construction Materials	19	2.1	Furniture	Wood Materials and Products	2	7.3
	Equipment Distribution	24	1.8	Jewelry and Precious Metals	Cutlery	14	1.5
Information Technology	Peripherals	3	8.0	Lighting and Electrical Equipme	Metal Parts	17	1.8
	Electronic Components and Assembli	5	4.3	Medical Devices	Related Services	22	1.6
	Software	14	2.0	Metal Manufacturing	Iron and Steel Mills and Foundries	11	2.0
Publishing and Printing	Office Equipment	7	5.0	Oil and Gas	Related Services	12	2.2
	Specialized Inputs	24	1.6	Production Technology	Transportation Equipment	19	1.9

Note: Using narrow cluster definitions to eliminate overlapping employment across clusters.

Source: Cluster Mapping Project, Institute for Strategy and Competitiveness, Harvard Business School ([www.isc.hbs.edu](http://www.isc.hbs.edu)).

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**Appendix a.**

**Clusters of Traded Industries**

Upstream Sectors	Industrial and Supporting Functions	Final Consumption Goods and Services
<p><i>Materials and Metals</i></p> <ul style="list-style-type: none"> <li>• Construction Materials</li> <li>• Metal Manufacturing</li> </ul> <p><i>Forest Products</i></p> <ul style="list-style-type: none"> <li>• Forest Products</li> </ul> <p><i>Petroleum/Chemicals</i></p> <ul style="list-style-type: none"> <li>• Oil and Gas</li> <li>• Chemical Products</li> <li>• Plastics</li> </ul> <p><i>Semiconductors/Computers</i></p> <ul style="list-style-type: none"> <li>• Information Technology</li> </ul>	<p><i>Transportation and Logistics</i></p> <ul style="list-style-type: none"> <li>• Automotive</li> <li>• Motor Driven Products</li> <li>• Transportation and Logistics</li> </ul> <p><i>Power</i></p> <ul style="list-style-type: none"> <li>• Power Generation</li> <li>• Power Transmission and Distribution</li> </ul> <p><i>Office</i></p> <ul style="list-style-type: none"> <li>• Publishing and Printing</li> </ul> <p><i>Telecommunications</i></p> <ul style="list-style-type: none"> <li>• Communications</li> </ul> <p><i>Defense</i></p> <ul style="list-style-type: none"> <li>• Aerospace Engines</li> <li>• Aerospace Vehicles and Defense</li> </ul> <p><i>Multiple Businesses</i></p> <ul style="list-style-type: none"> <li>• Education and Knowledge Creation</li> <li>• Business Services</li> <li>• Distribution Services</li> <li>• Heavy Machinery</li> <li>• Financial Services</li> <li>• Prefabricated Enclosures</li> <li>• Production Technology</li> <li>• Analytical Instruments</li> <li>• Heavy Construction Services</li> </ul>	<p><i>Food/Beverages</i></p> <ul style="list-style-type: none"> <li>• Agricultural Products</li> <li>• Processed Foods</li> <li>• Fishing and Fishing Products</li> </ul> <p><i>Housing/Household</i></p> <ul style="list-style-type: none"> <li>• Building Fixtures, Equipment and Services</li> <li>• Lighting and Electrical Equipment</li> <li>• Furniture</li> </ul> <p><i>Textiles/Apparel</i></p> <ul style="list-style-type: none"> <li>• Textiles</li> <li>• Apparel</li> <li>• Sporting and Leather Goods</li> <li>• Footwear</li> </ul> <p><i>Health Care</i></p> <ul style="list-style-type: none"> <li>• Medical Devices</li> <li>• Pharmaceuticals / Biotech</li> </ul> <p><i>Personal</i></p> <ul style="list-style-type: none"> <li>• Tobacco</li> <li>• Jewelry and Precious Metals</li> </ul> <p><i>Entertainment/Leisure</i></p> <ul style="list-style-type: none"> <li>• Entertainment</li> <li>• Hospitality and Tourism</li> </ul>

Source: Institute for Strategy and Competitiveness, Harvard Business School

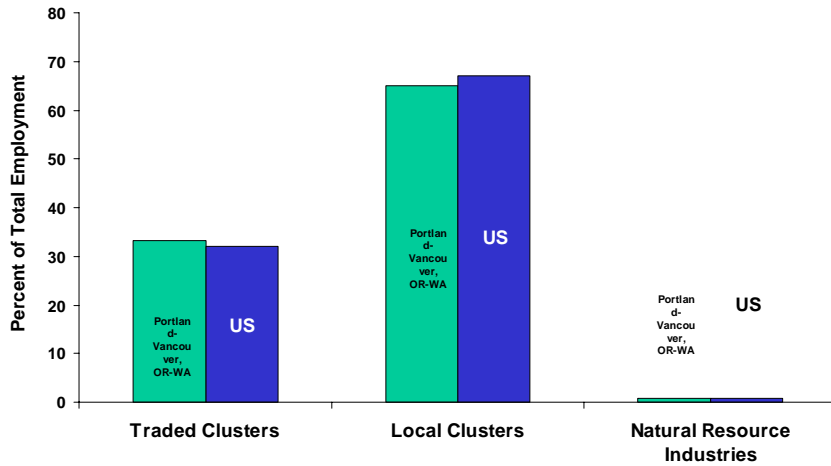
**Clusters of Local Industries**

Industrial and Supporting Functions	Final Consumption Goods and Services
<p><i>Multiple Businesses</i></p> <ul style="list-style-type: none"> <li>• Local Industrial Products and Services</li> <li>• Local Commercial Services</li> <li>• Local Construction and Development</li> <li>• Local Financial Services</li> <li>• Local Insurance</li> <li>• Local Packaging Materials</li> <li>• Local Community and Civic Organizations</li> <li>• Local Education and Training</li> </ul> <p><i>Transportation and Logistics</i></p> <ul style="list-style-type: none"> <li>• Local Logistical Services</li> <li>• Local Personal Transportation</li> </ul> <p><i>Power</i></p> <ul style="list-style-type: none"> <li>• Local Utilities</li> </ul>	<p><i>Food/Beverages</i></p> <ul style="list-style-type: none"> <li>• Local Agriculture</li> <li>• Local Food and Beverage Processing</li> </ul> <p><i>Housing/Household</i></p> <ul style="list-style-type: none"> <li>• Local Housing and Household Goods and Services</li> </ul> <p><i>Textiles/Apparel</i></p> <ul style="list-style-type: none"> <li>• Local Retail Clothing and Accessories</li> </ul> <p><i>Health Care</i></p> <ul style="list-style-type: none"> <li>• Local Health Services</li> </ul> <p><i>Personal</i></p> <ul style="list-style-type: none"> <li>• Local Personal Services (Non-medical)</li> </ul> <p><i>Entertainment/Leisure</i></p> <ul style="list-style-type: none"> <li>• Local Entertainment and Media</li> <li>• Local Hospitality and Establishments</li> </ul>

Source: Institute for Strategy and Competitiveness, Harvard Business School

**Appendix b:**

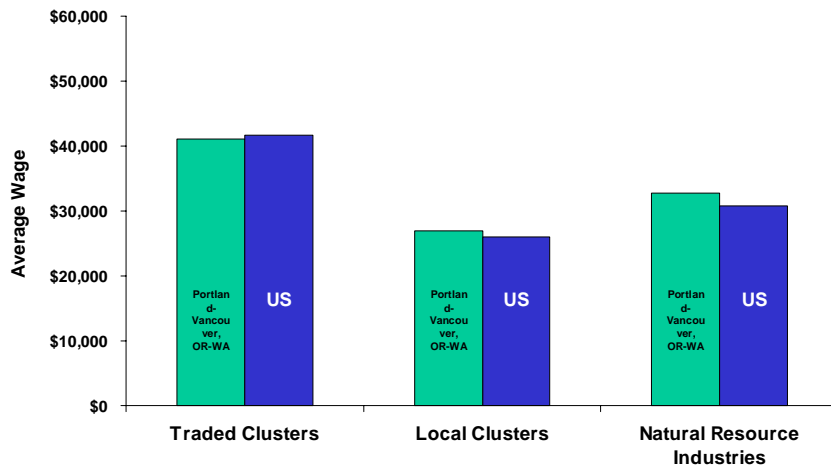
**Portland-Vancouver, OR-WA  
Broad Composition of the Economy by Employment, 1999**



Source: Cluster Mapping Project, Institute for Strategy and Competitiveness, Harvard Business School ([www.isc.hbs.edu](http://www.isc.hbs.edu)).

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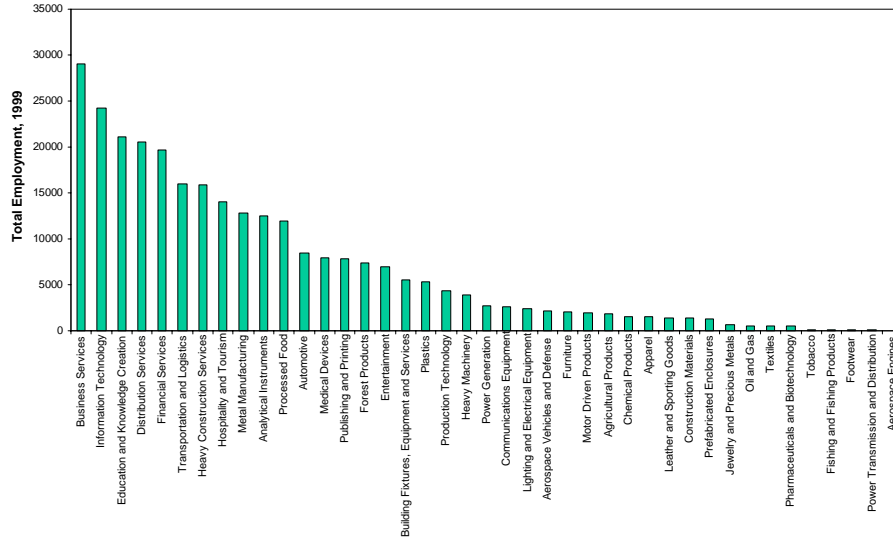
**Portland-Vancouver, OR-WA  
Broad Composition of the Economy by Average Wage, 1999**



Source: Cluster Mapping Project, Institute for Strategy and Competitiveness, Harvard Business School ([www.isc.hbs.edu](http://www.isc.hbs.edu)).

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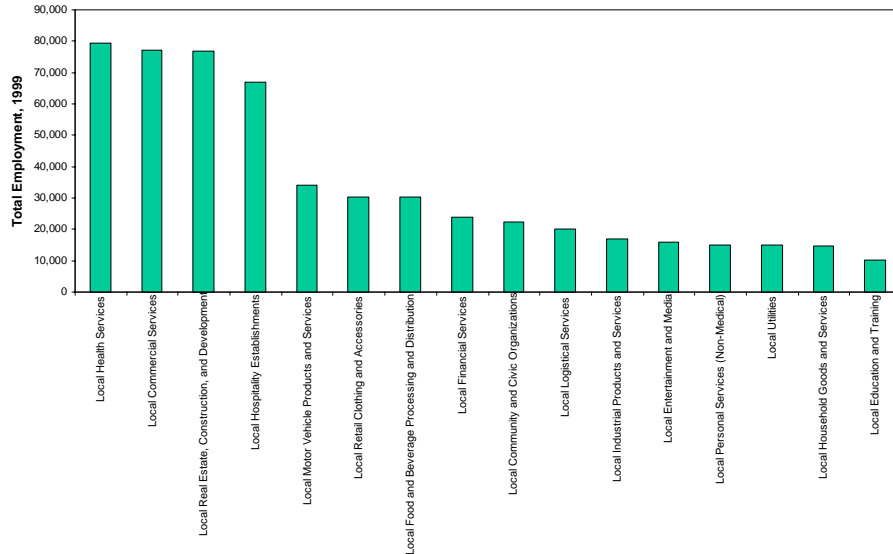
## Portland-Vancouver, OR-WA Employment By Traded Cluster, 1999



Note: Chart utilizes narrow cluster definitions to eliminate overlapping employment across clusters.  
Source: Cluster Mapping Project, Institute for Strategy and Competitiveness, Harvard Business School ([www.isc.hbs.edu](http://www.isc.hbs.edu)).

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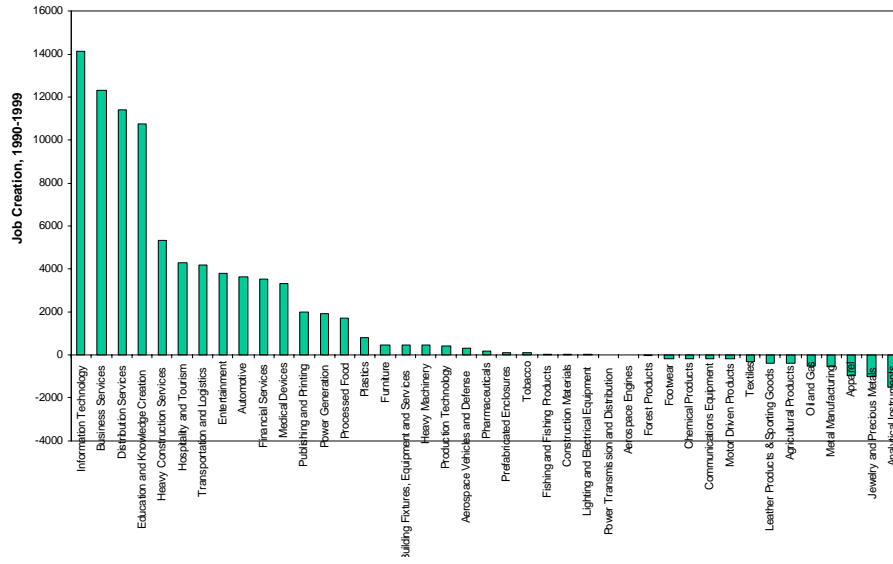
## Portland-Vancouver, OR-WA Employment By Local Cluster, 1999



Note: Chart utilizes narrow cluster definitions to eliminate overlapping employment across clusters.  
Source: Cluster Mapping Project, Institute for Strategy and Competitiveness, Harvard Business School ([www.isc.hbs.edu](http://www.isc.hbs.edu)).

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## Portland-Vancouver, OR-WA Job Creation By Traded Cluster, 1990 to 1999



Note: Chart utilizes narrow cluster definitions to eliminate overlapping employment across clusters.  
Source: Cluster Mapping Project, Institute for Strategy and Competitiveness, Harvard Business School ([www.isc.hbs.edu](http://www.isc.hbs.edu)).

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