Regional Competitiveness in the Pioneer Valley

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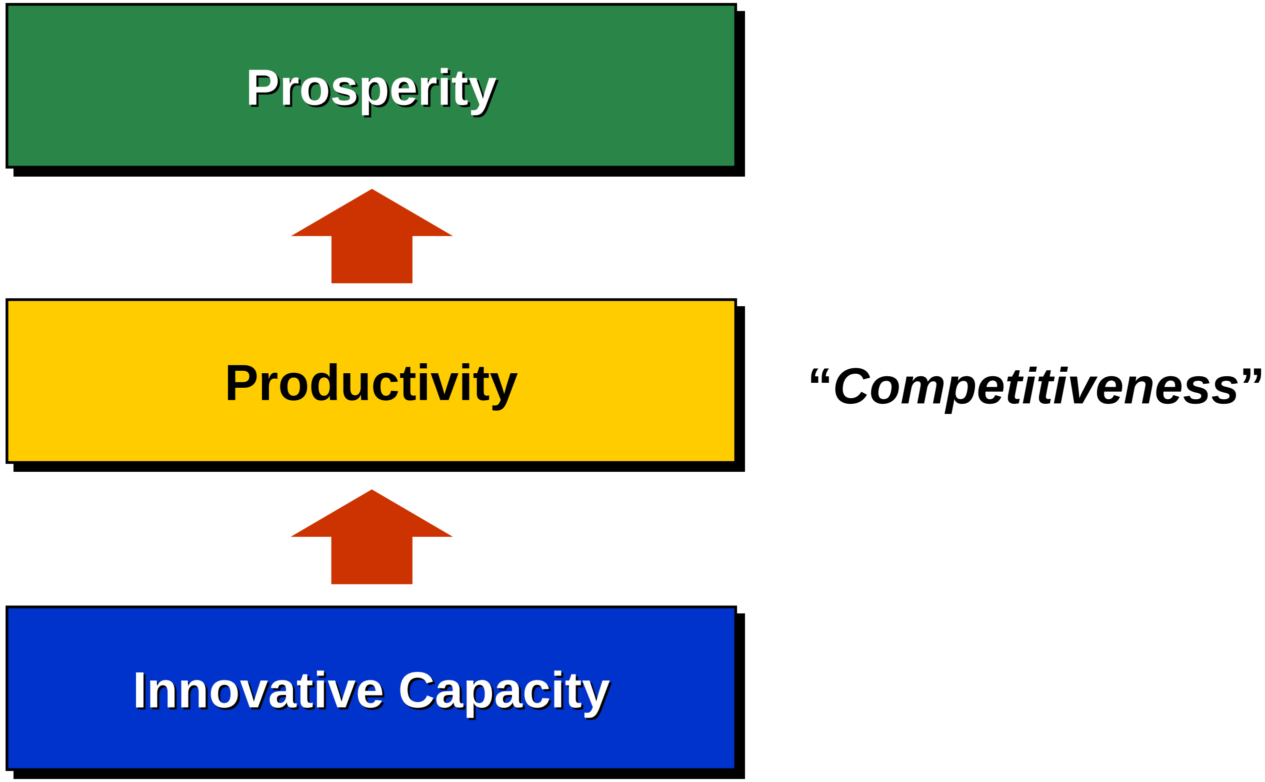
Sources of Prosperity



- The most important sources of prosperity are **created** not inherited
- Productivity does not depend on **what** industries a region competes in, but on **how** it competes
- The prosperity of a region depends on the productivity of **all** its industries
- Innovation is vital for long-term increases in productivity

Productivity, Innovation, and the Business Environment

Context for Firm Strategy and Rivalry

- A local context and rules that encourage **investment** and **sustained upgrading**
  - –e.g., Intellectual property protection
- **Meritocratic** incentive systems across all major institutions
- Open and vigorous competition among **locally based rivals**

Factor (Input) Conditions

- **Presence of high quality, specialized inputs** available to firms
  - –Human resources
  - –Capital resources
  - –Physical infrastructure
  - –Administrative infrastructure
  - –Information infrastructure
  - –Scientific and technological infrastructure
  - –Natural resources

Demand Conditions

- **Sophisticated and demanding** local customer(s)
- Local customer needs that **anticipate** those elsewhere
- Unusual local demand in **specialized segments** that can be served nationally and globally

Related and Supporting Industries

- Access to capable, locally based **suppliers** and firms in **related fields**
- Presence of **clusters** instead of isolated industries

- Successful economic development is a process of **successive economic upgrading**, in which the business environment in a nation or region evolves to support and encourage increasingly sophisticated ways of competing

Composition of Regional Economies

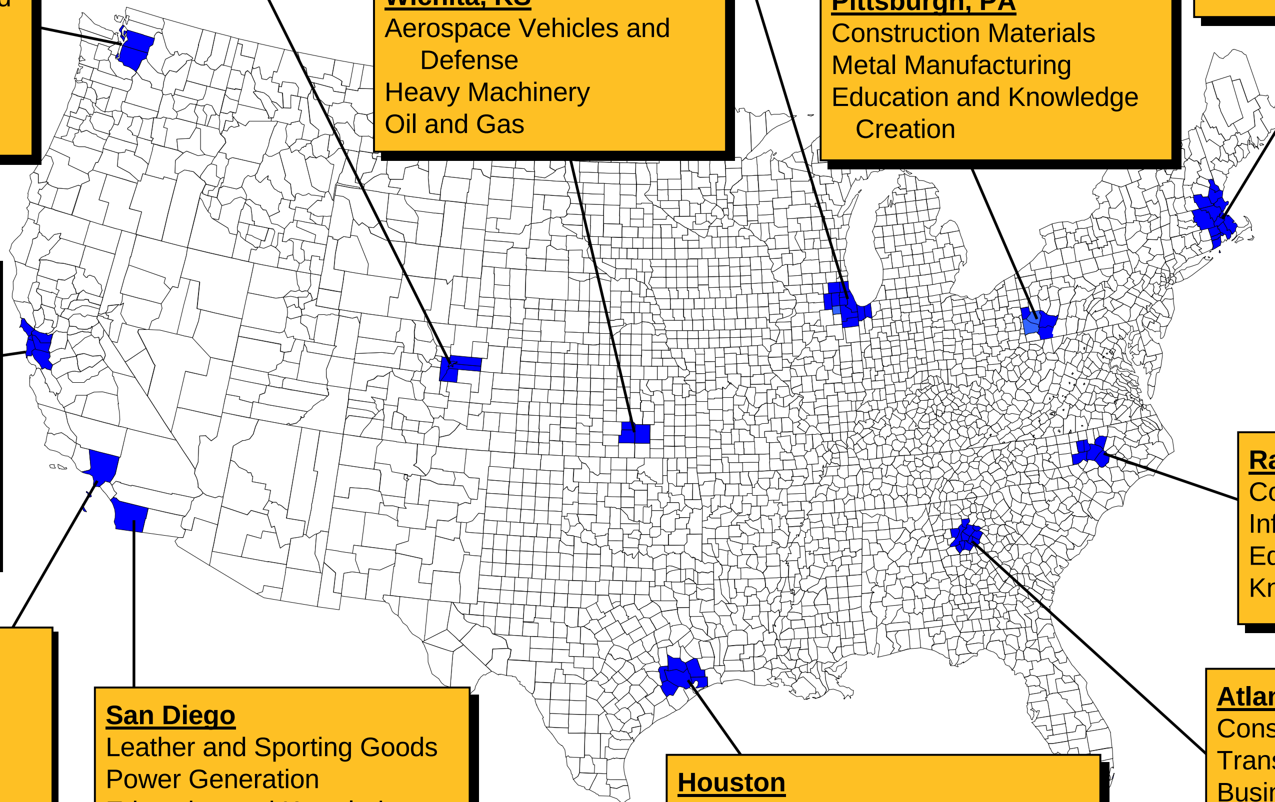
United States

	Traded Clusters	Local Clusters	Natural Resource-Driven Industries
Share of Employment	31.6%	67.6%	0.8%
Employment Growth, 1990 to 2001	1.7%	2.8%	-1.0%
Average Wage	$46,596	$28,288	$33,245
Relative Wage	133.8	84.2	99.0
Wage Growth	5.0%	3.6%	1.9%
Relative Productivity	144.1	79.3	140.1
Patents per 10,000 Employees	21.3	1.3	7.0
Number of SIC Industries	590	241	48

Note: 2001 data, except relative productivity which is 1997 data.
Source: Cluster Mapping Project, Institute for Strategy and Competitiveness, Harvard Business School

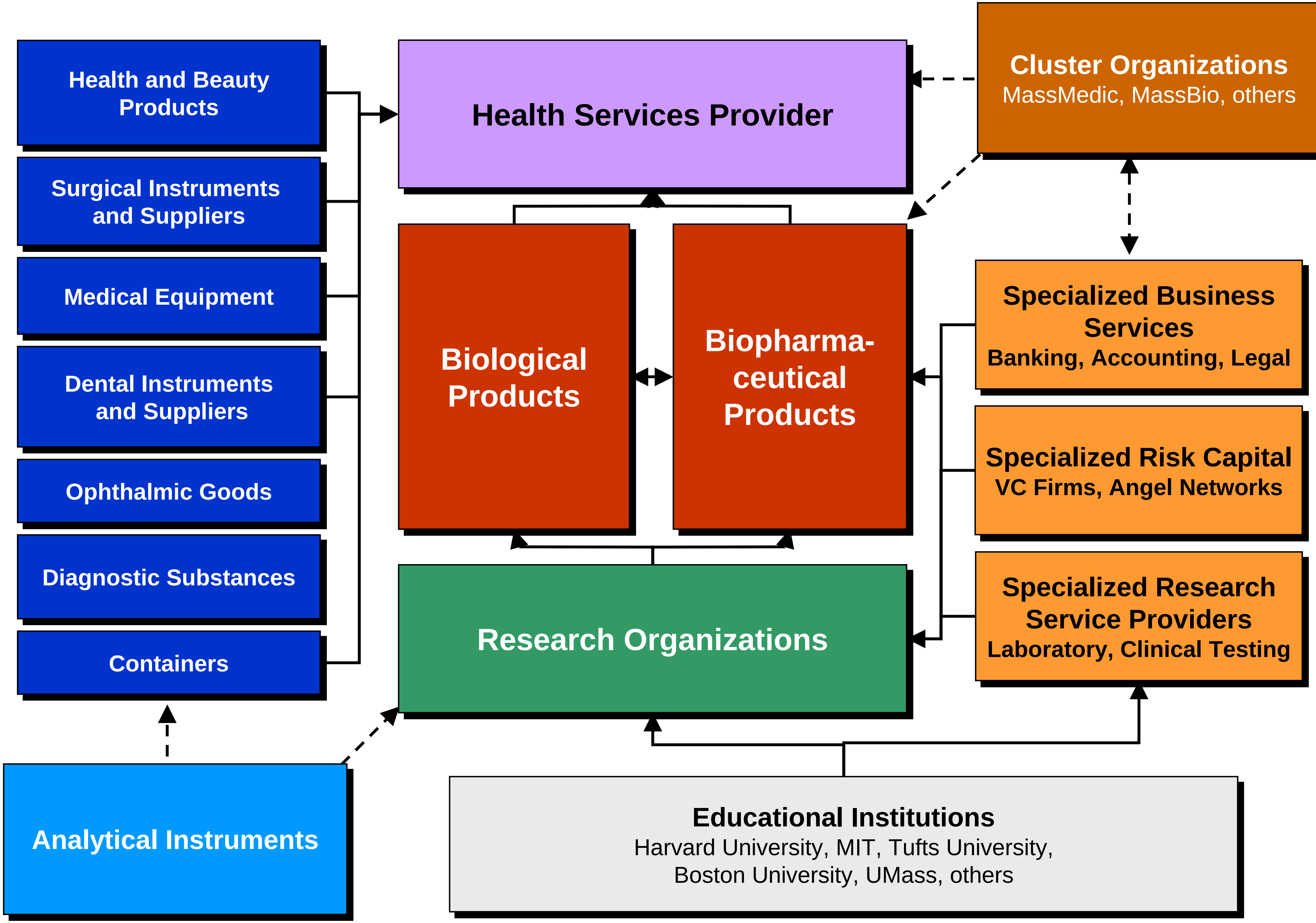
Specialization of Regional Economies

Select U.S. Geographic Areas



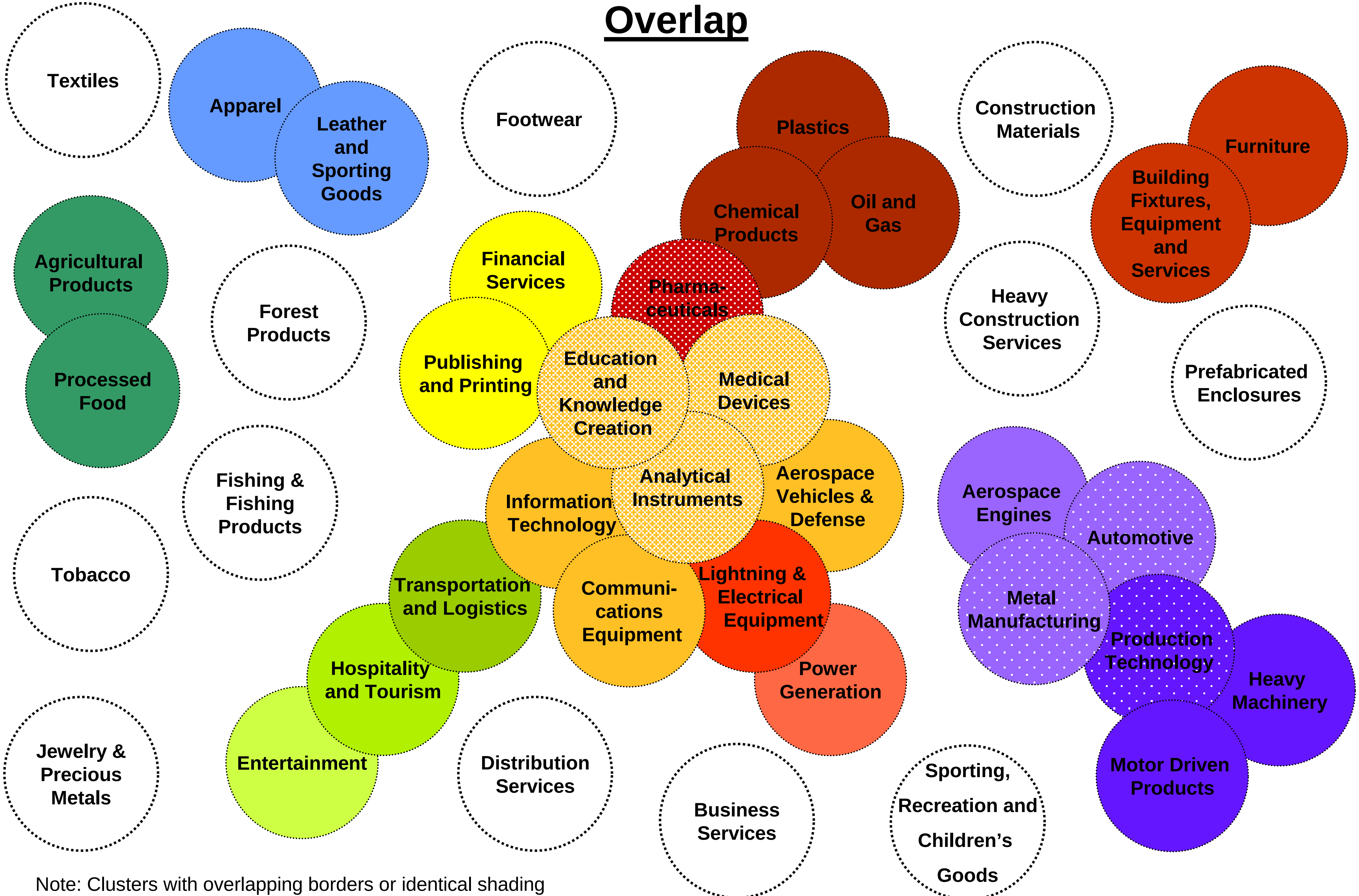
Note: Clusters listed are the three highest ranking clusters in terms of share of national employment
Source: Cluster Mapping Project, Institute for Strategy and Competitiveness, Harvard Business School

Massachusetts Life Sciences Cluster



Traded Clusters

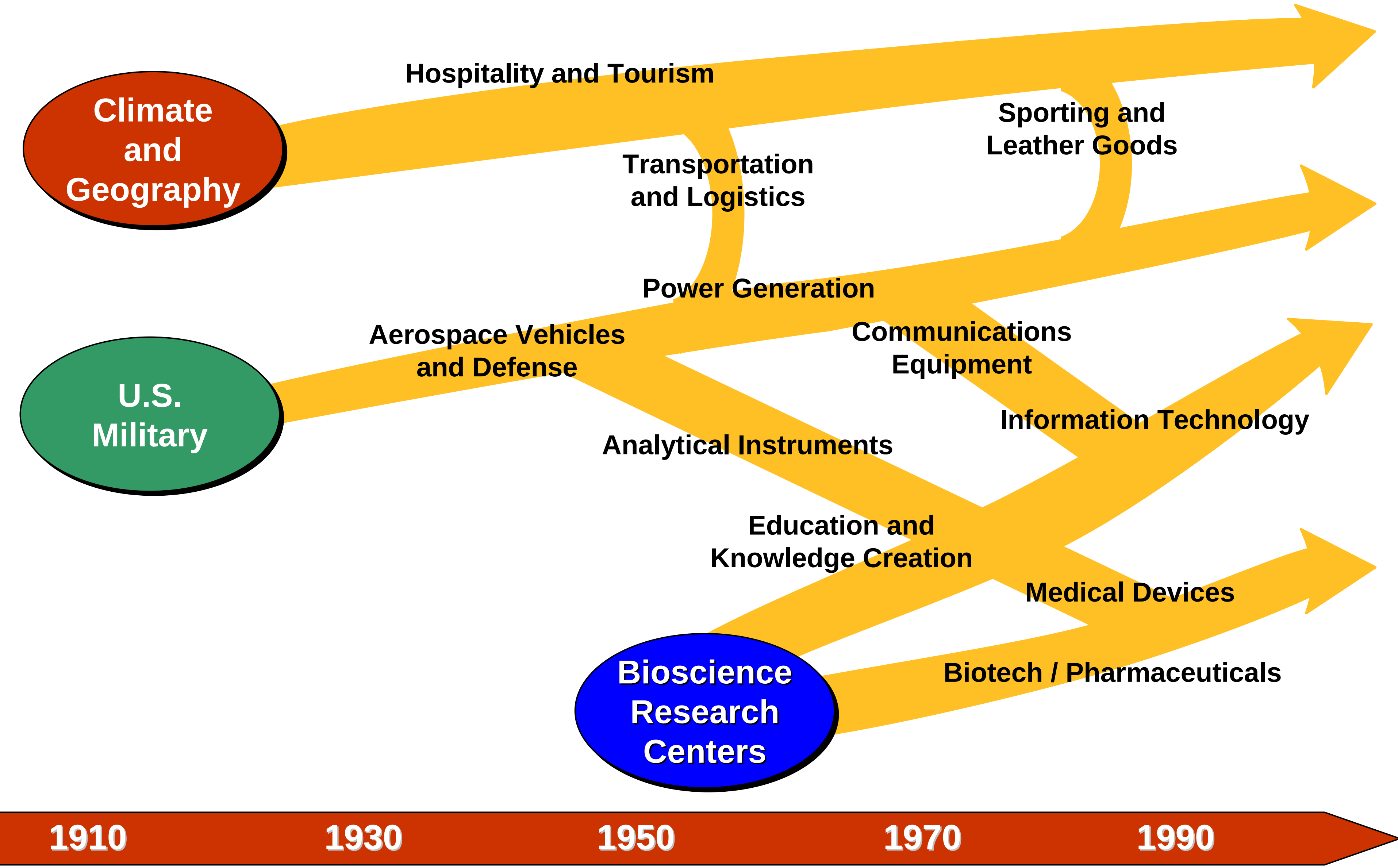
Overlap



Note: Clusters with overlapping borders or identical shading have at least 20% overlap (by number of industries) in both directions

The Evolution of Regional Economies

San Diego



Institutions for Collaboration

Selected Massachusetts Organizations. Life Sciences

Life Sciences Industry Associations

- Massachusetts Biotechnology Council
- Massachusetts Medical Device Industry Council
- Massachusetts Hospital Association

University Initiatives

- Harvard Biomedical Community
- MIT Enterprise Forum
- Biotech Club at Harvard Medical School
- Technology Transfer offices

General Industry Associations

- Associated Industries of Massachusetts
- Greater Boston Chamber of Commerce
- High Tech Council of Massachusetts

Informal networks

- Company alumni
- Venture Capital community
- University alumni

Economic Development Initiatives

- Massachusetts Technology Collaborative
- Mass Biomedical Initiatives
- Mass Development
- Massachusetts Alliance for Economic Development

Joint Research Initiatives

- New England Healthcare Institute
- Whitehead Institute For Biomedical Research
- Center for Integration of Medicine and Innovative Technology (CIMIT)

Influences on Competitiveness

Multiple Geographic Levels

World Economy

Groups of Neighboring Nations

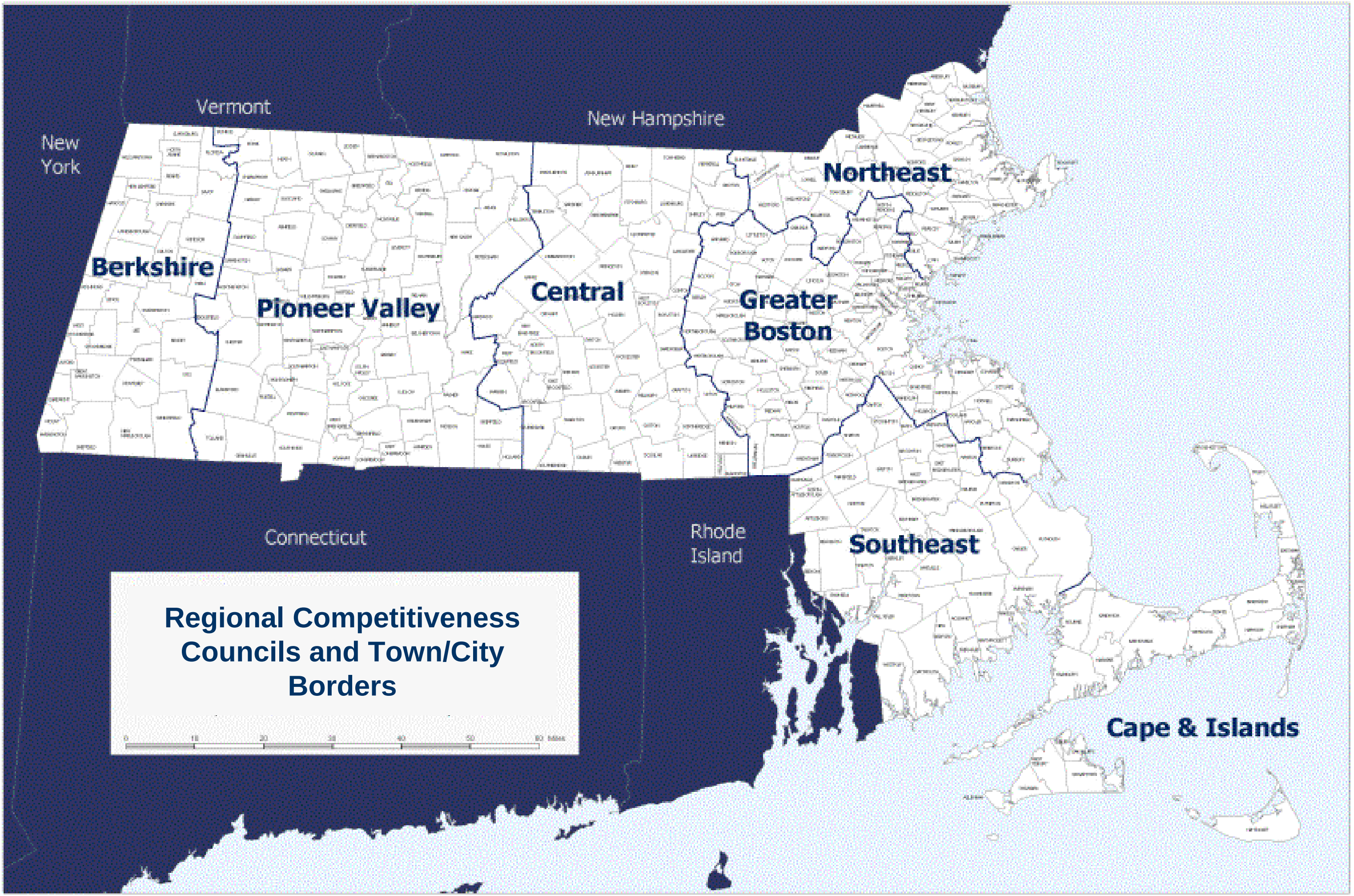
Nations

States, Provinces

Metropolitan Areas

Smaller Cities and Counties

Massachusetts Regional Competitiveness Council Regions



Regional Competitiveness

Pioneer Valley

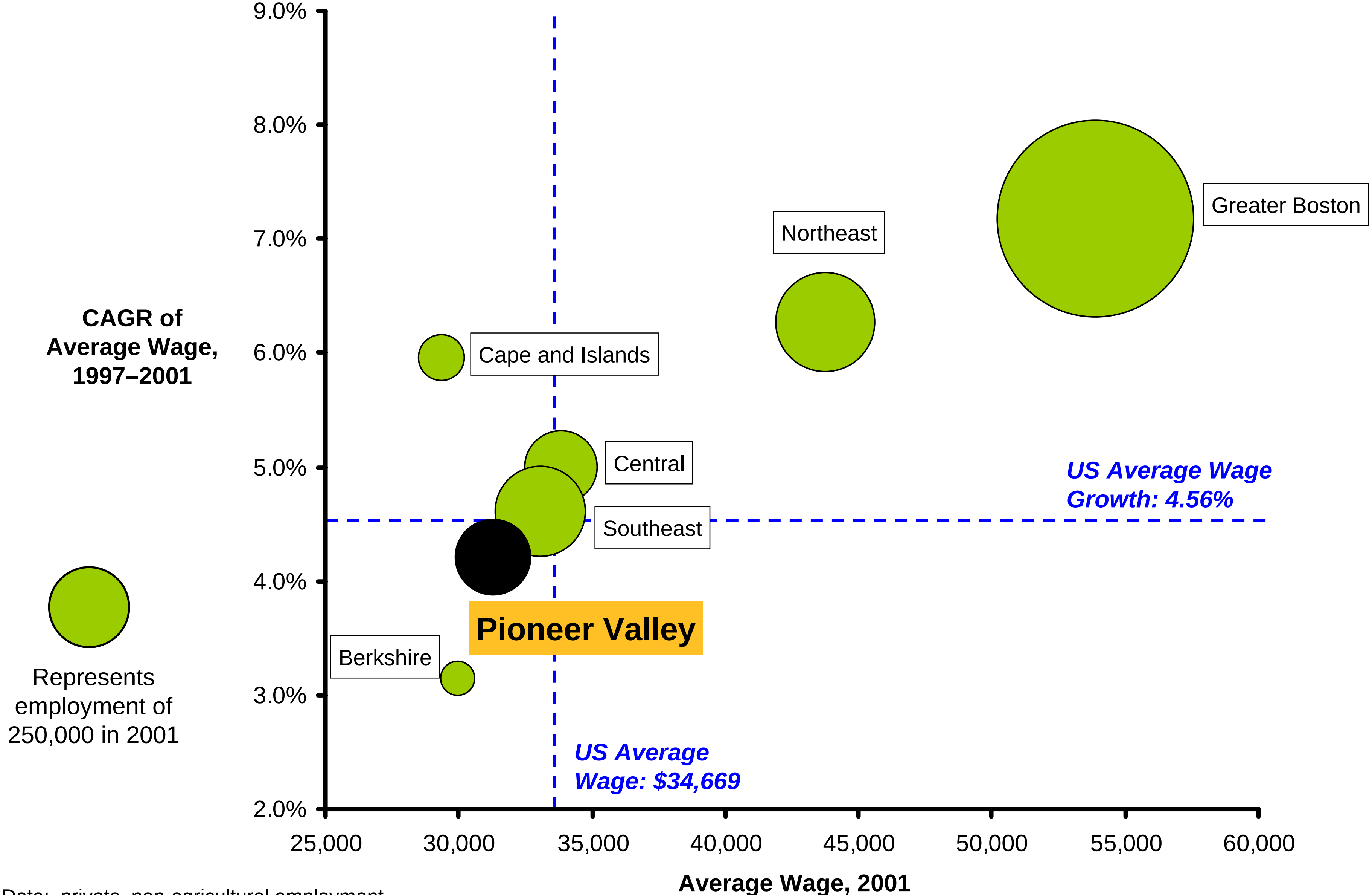
- Foundations of Regional Competitiveness
- **Assessing the Competitiveness of the Pioneer Valley**
- Action Agenda

Economic Performance
Pioneer Valley

- Wages are below the US average and most Massachusetts regions, and lag both in growth
- Employment has been growing at 1.3% annually over the last five years, far below the US and Massachusetts average
- Pioneer Valley registered by far the lowest rates of establishment growth of all Massachusetts regions
  - Establishment size is above average
- Patenting rates of 6.3 patents per 10,000 employees in 2001 put Pioneer Valley in the lower group of Massachusetts regions

Comparative Performance of Regions

Wage Growth and Wages

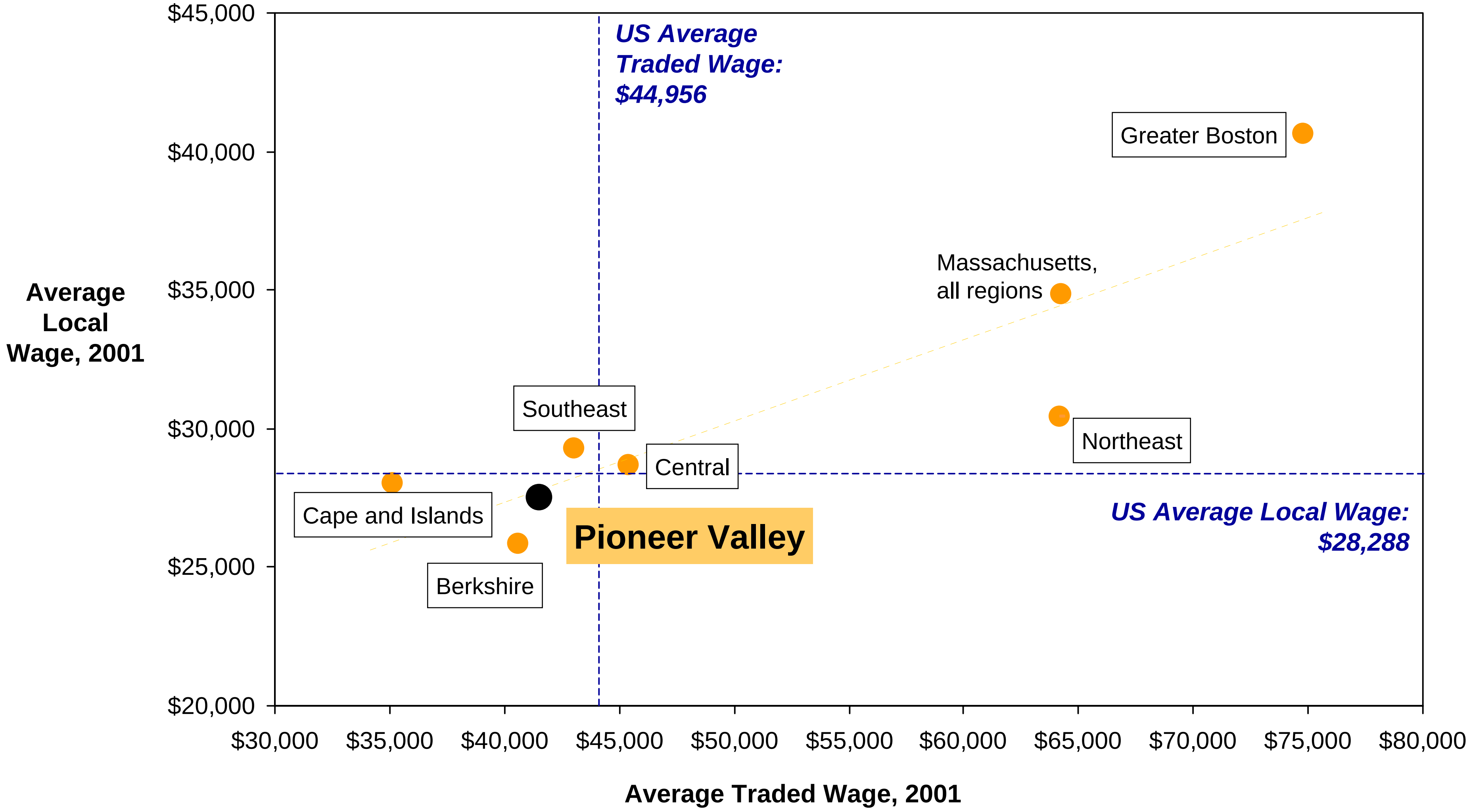


Data: private, non-agricultural employment

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

Wages in Traded and Local Industries

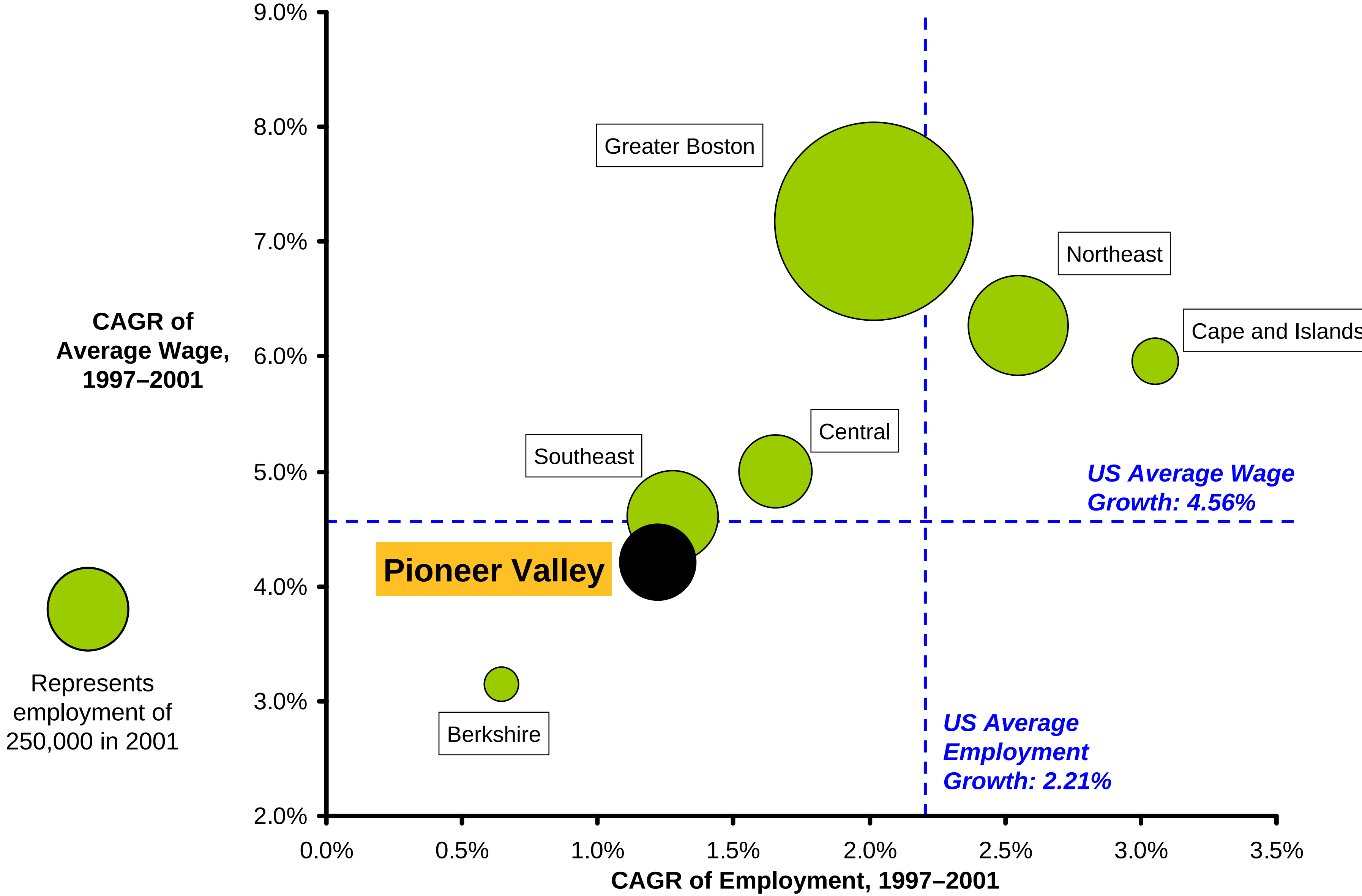
Massachusetts Regions



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

Comparative Performance of Regions

Wage Growth and Employment Growth

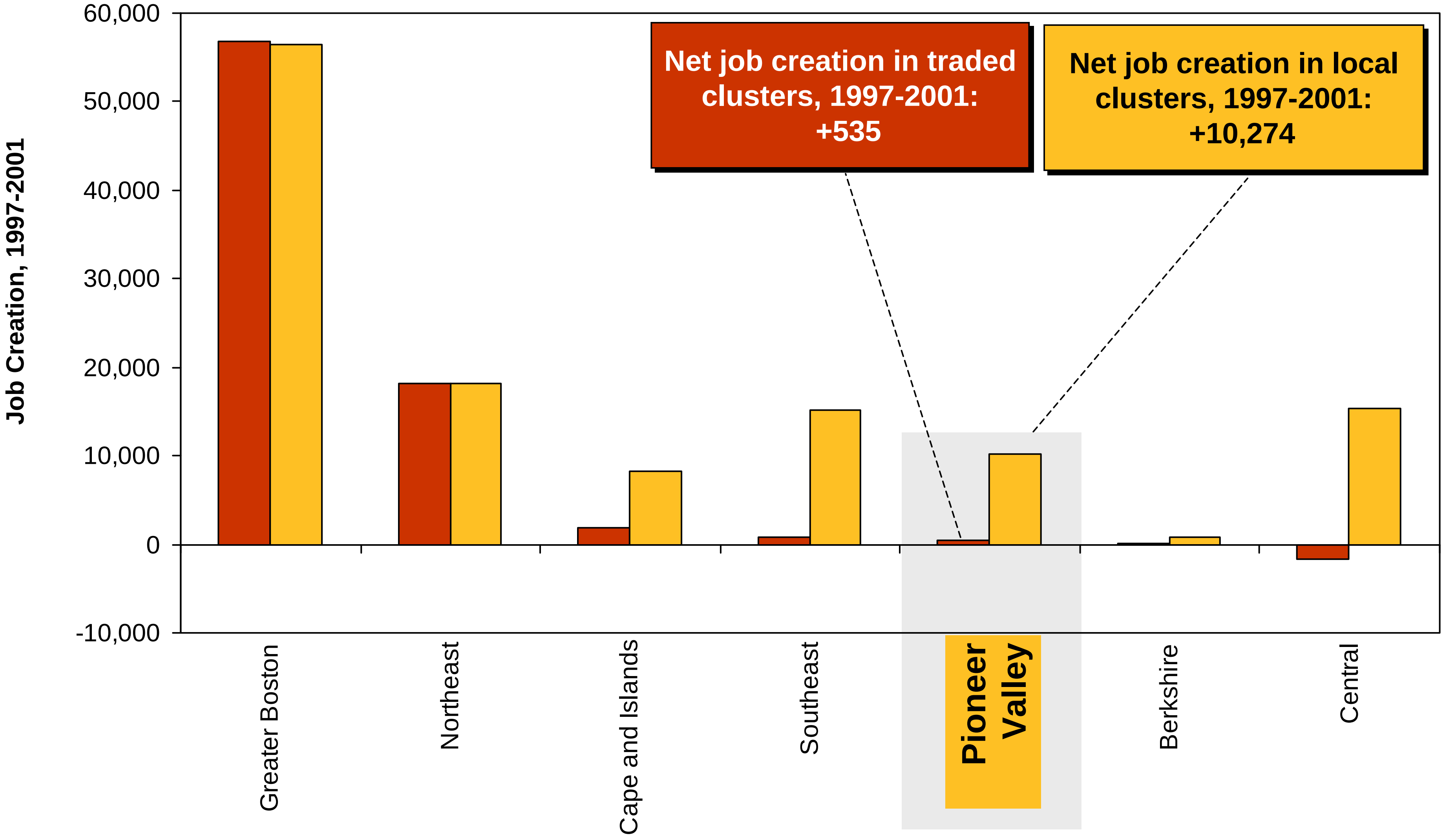


Data: private, non-agricultural employment

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

Job Creation

Massachusetts Regions

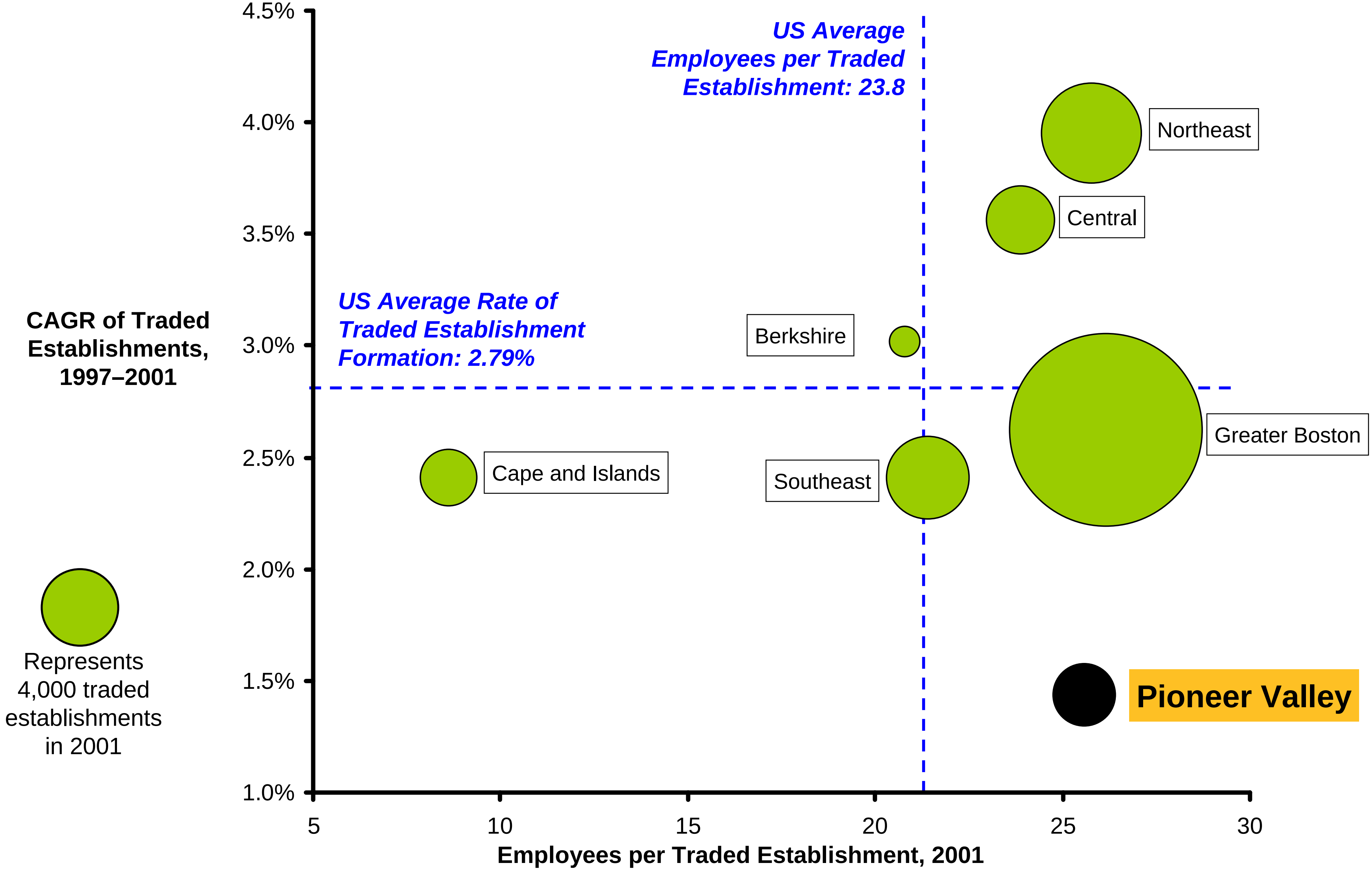


Data: private, non-agricultural employment. Note: Regional data does not total precisely to statewide data due to omissions for confidentiality in the regions.

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

Comparative Performance of Regions

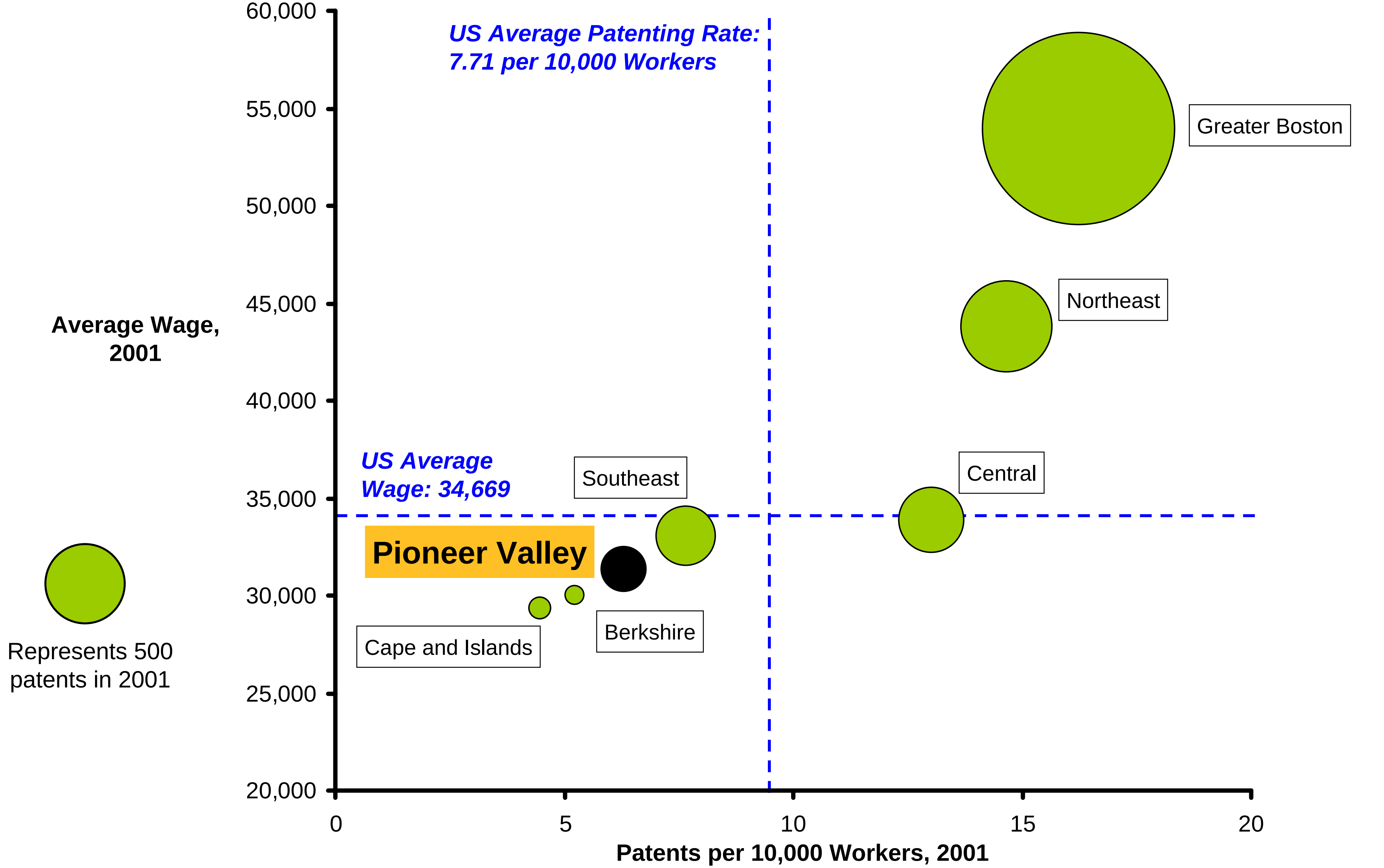
Establishment Formation in Traded Clusters



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

Comparative Performance of Regions

Wages and Patenting Rates



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

Patents by Organization

Pioneer Valley Region

	Organization	Patents Issued from 1997 to 2001
1	SPALDING SPORTS WORLDWIDE, INC.	83
2	LISCO, INC.	39
3	REXHAM GRAPHICS INC.	28
4	UNIVERSITY OF MASSACHUSETTS	26
5	SMITH & WESSON CORP.	14
6	UNITED TECHNOLOGIES CORPORATION	13
7	BAYER CORPORATION	12
8	COMBUSTION ENGINEERING INC.	11
9	MONSANTO COMPANY, INC.	9
10	RESEARCH CORPORATION TECHNOLOGIES, INC.	8
11	AVERY DENNISON CORPORATION	6
12	SOLUTIA INC.	6
13	SPECIALTY LOOSE LEAF, INC.	6
14	TAPESWITCH CORPORATION OF AMERICA	6
15	OTIS ELEVATOR COMPANY	5
16	DIESEL ENGINE RETARDERS, INC.	4
17	PRESSTEK, INC.	4
18	HARDIGG INDUSTRIES, INC.	4
19	THOMCAST COMMUNICATIONS, INC.	4
20	NEW ENGLAND SCIENCE & SPECIALTY PRODUCTS, INC.	4
21	MILLA COMPANY INC	4
22	KOLLMORGEN CORPORATION	4

Note: The USPTO assigns location based on the inventor's address rather than that of the institutional owner.
Source: Cluster Mapping Project, Institute for Strategy and Competitiveness, Harvard Business School

Composition

Pioneer Valley

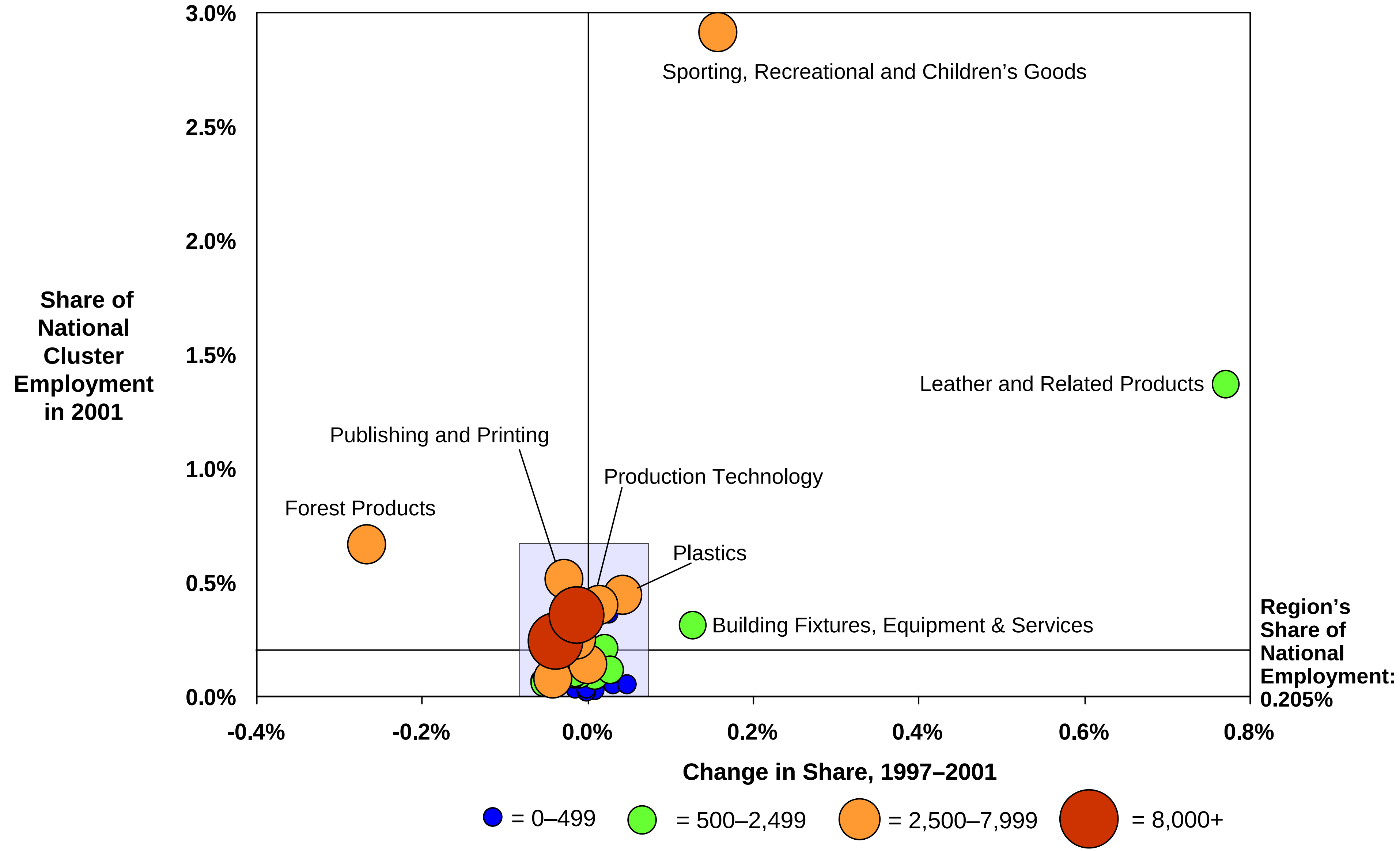
- Pioneer Valley has a very strong position in **sporting, recreational, and children's goods** and in **leather and related products**, with national employment shares up to ten times higher than expected given the region's size
  - Other significant clusters include publishing and printing, plastics, production technology, and education and knowledge creation

- The Pioneer Valley is strengthening its position in a number of its strong clusters, especially in **building fixtures** and in **leather and related products**
  - More than 60% of employees in clusters with a higher than expected presence in the region and above national average wages are in clusters growing share

- Wages in the region **lag** the state average across all clusters with significant employment

Specialization By Traded Cluster

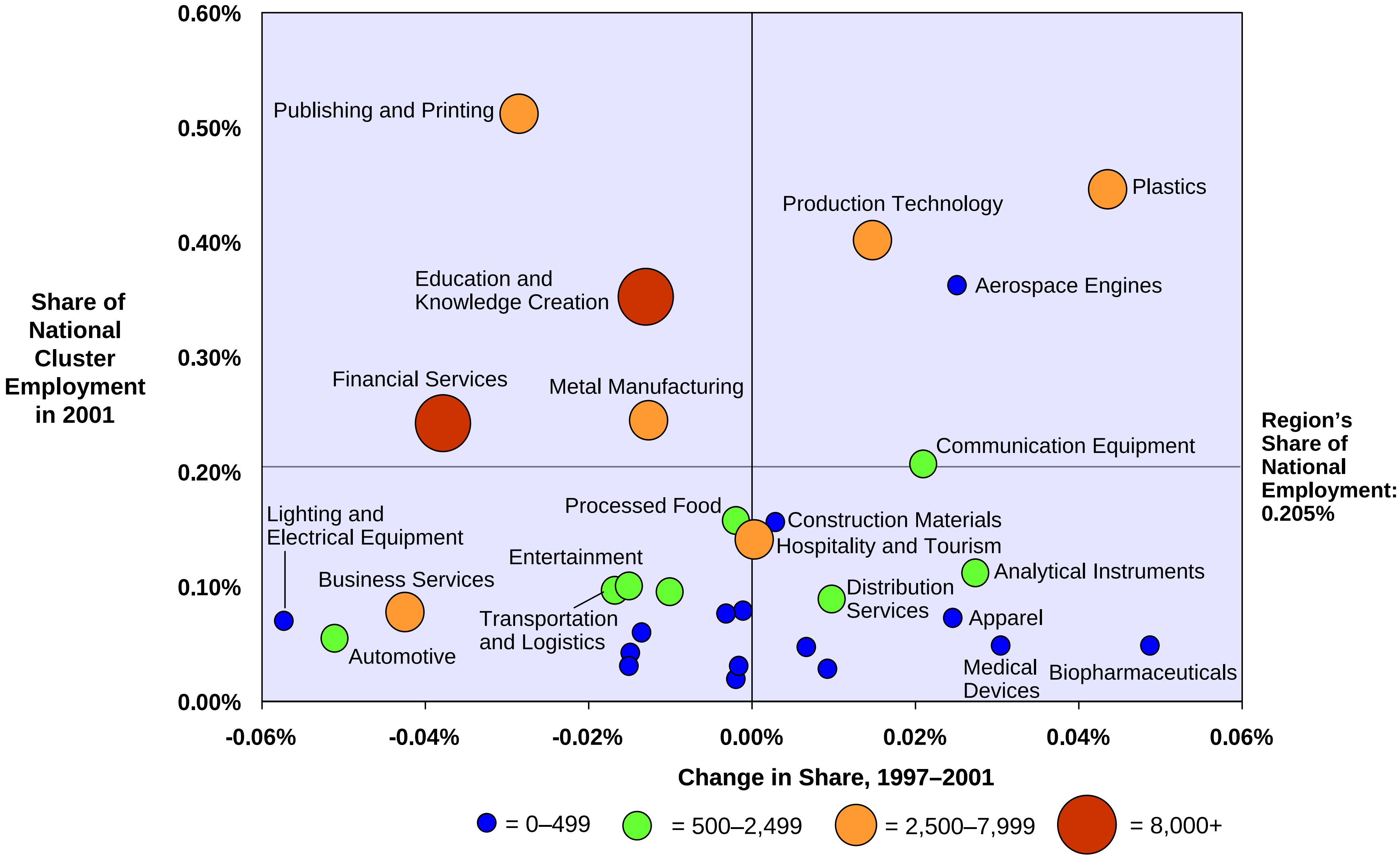
Pioneer Valley Region



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

Specialization By Traded Cluster

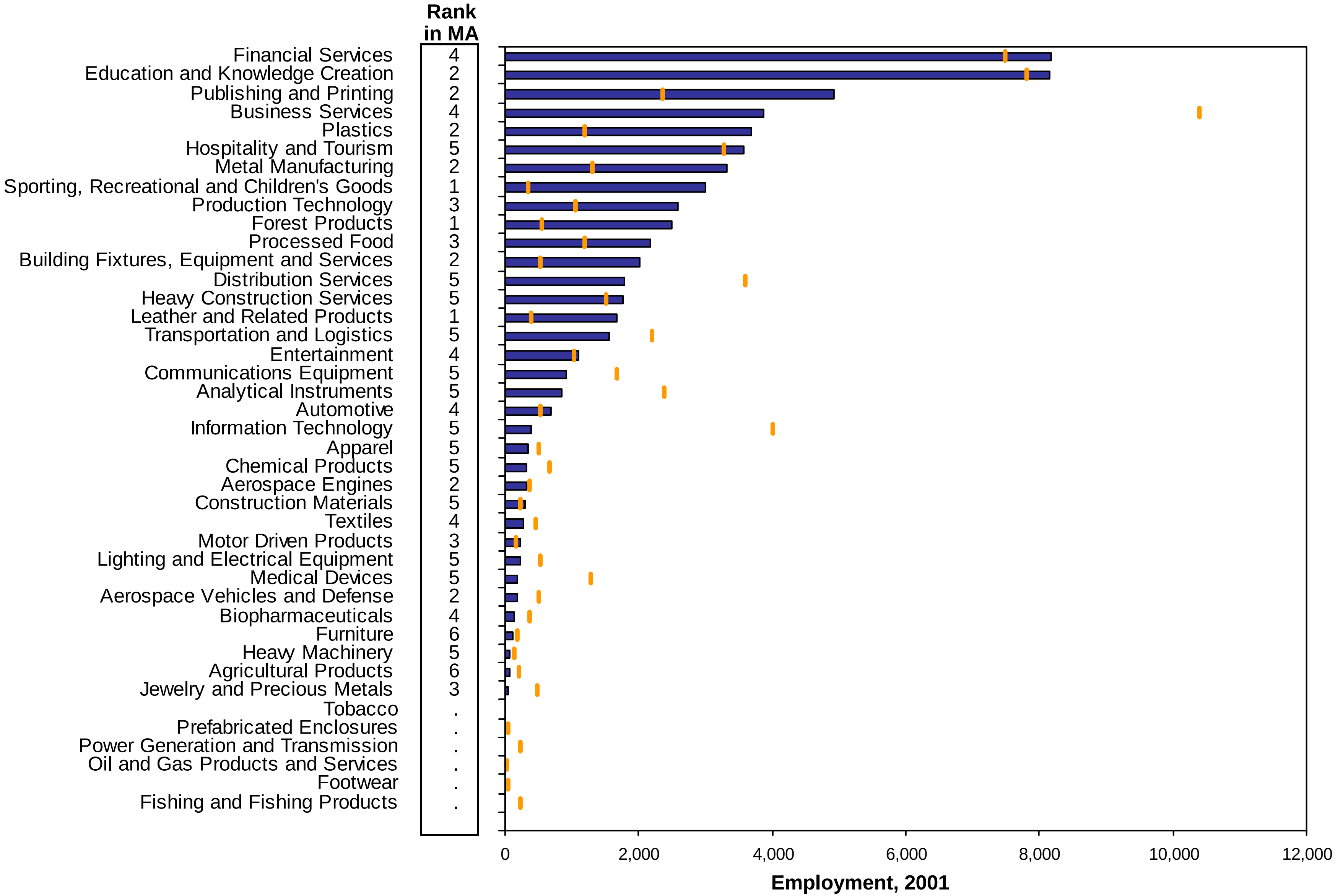
Pioneer Valley Region



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

Employment By Traded Cluster

Pioneer Valley Region

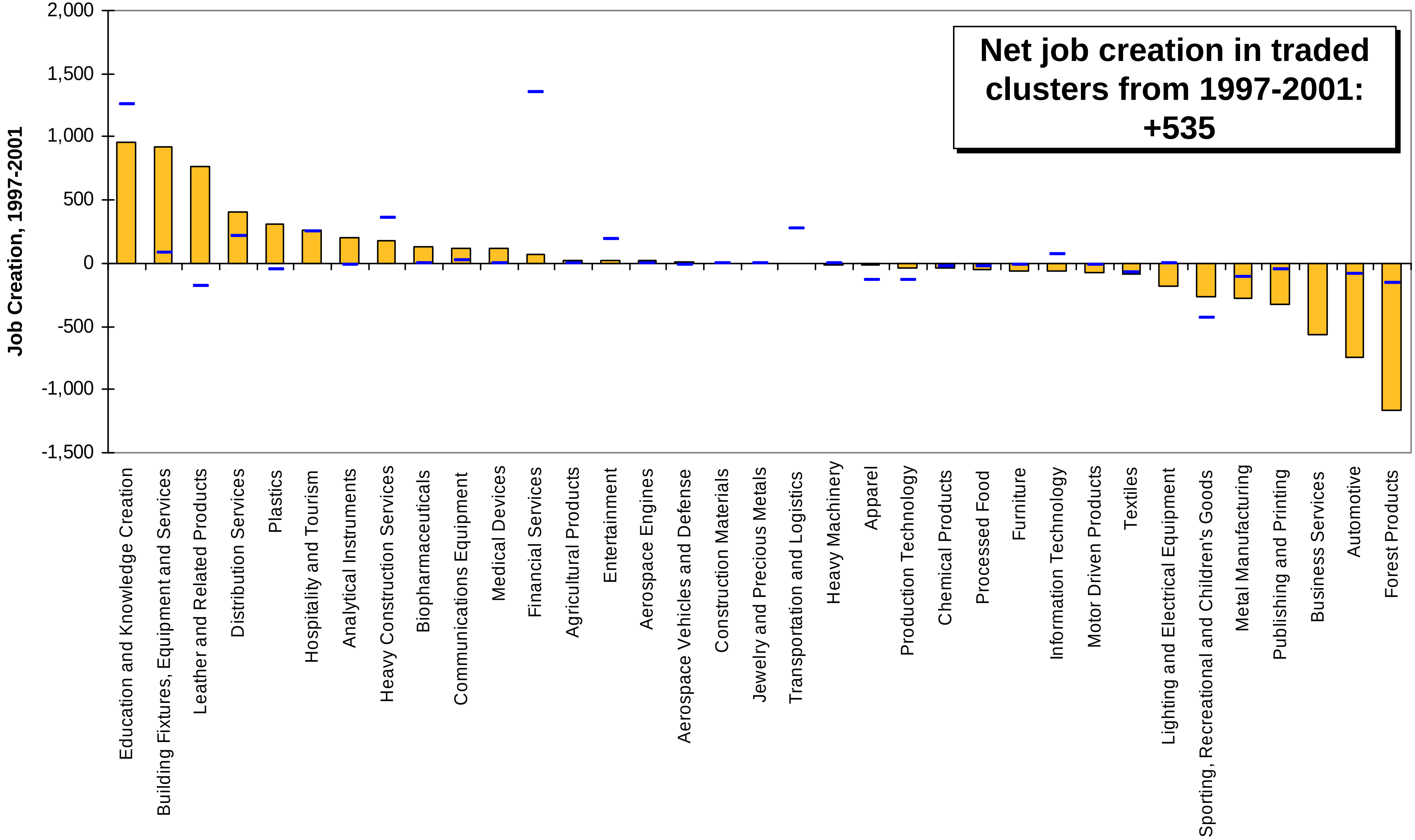


- Indicates expected employment at rates in the **state benchmark for traded clusters**. Rank is across 7 state regions.

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

Job Creation By Traded Cluster

Pioneer Valley Region

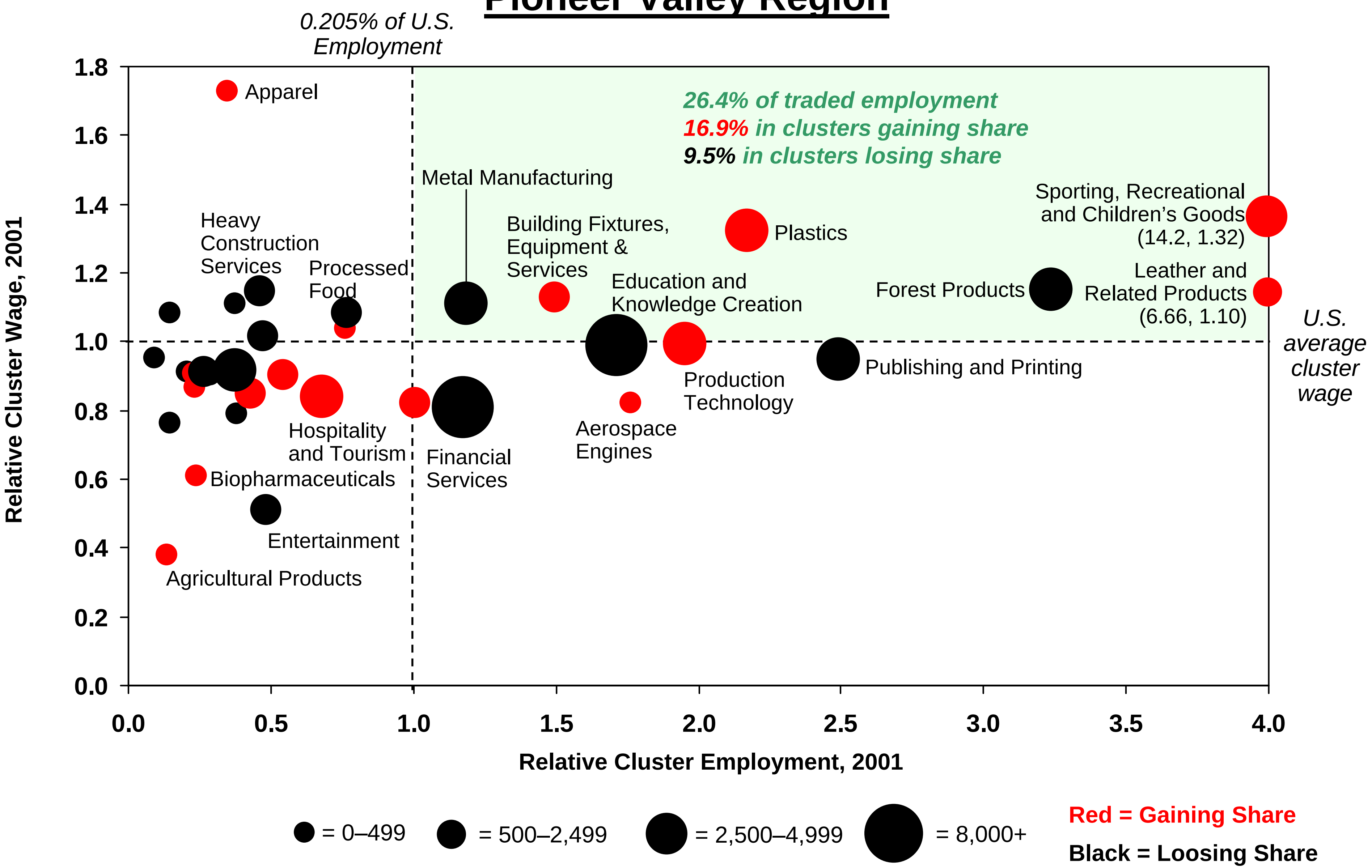


— Indicates expected job creation at rates achieved in **national benchmark** clusters, i.e. % change in national benchmark times initial employment

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

Relative Cluster Performance

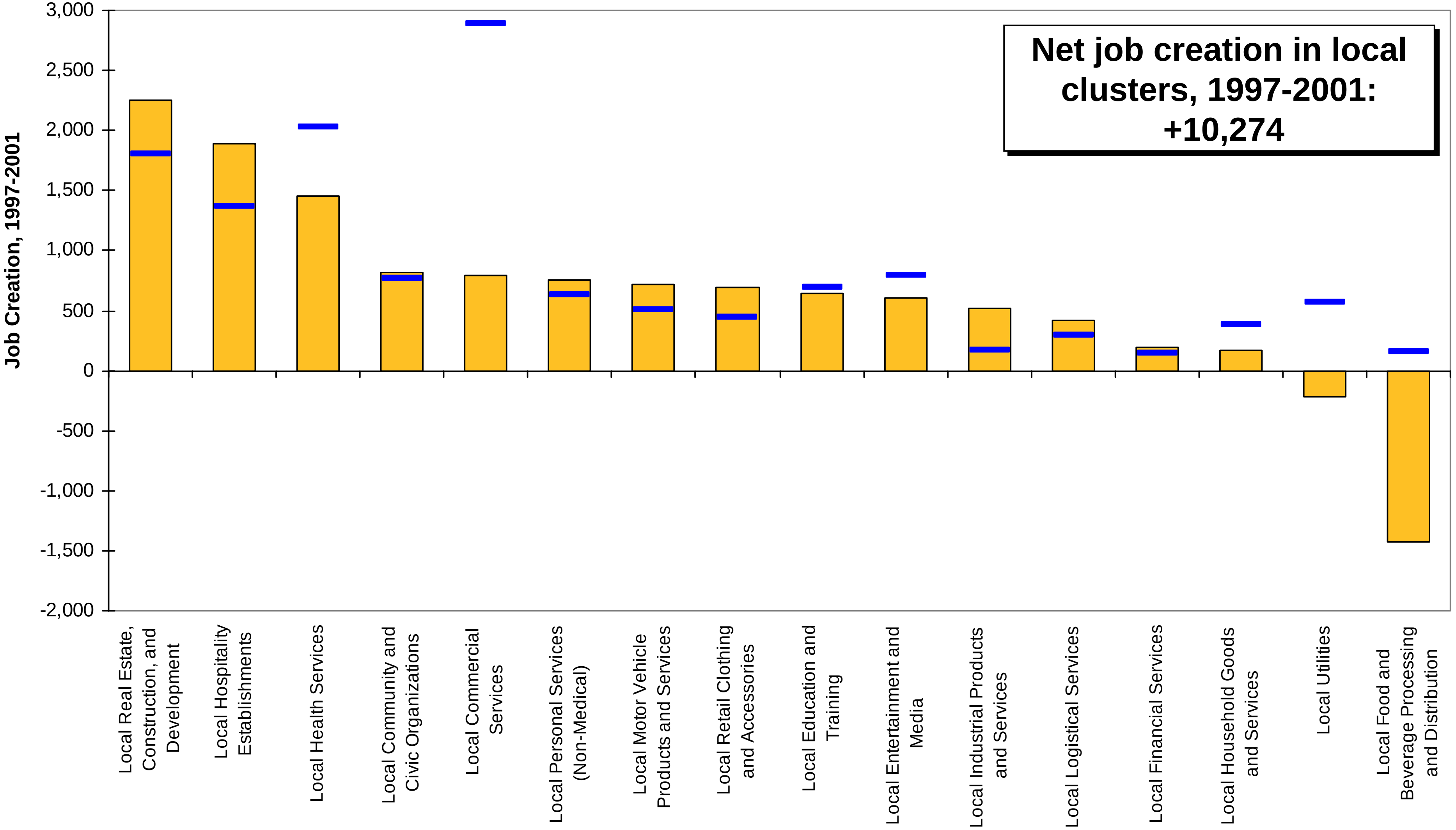
Pioneer Valley Region



Note: US wage and employment benchmarks
Data points that fall outside the graph are placed on the borders with their values given in parentheses (Employment, Wage)
Source: Cluster Mapping Project, Institute for Strategy and Competitiveness, Harvard Business School

Job Creation By Local Cluster

Pioneer Valley Region

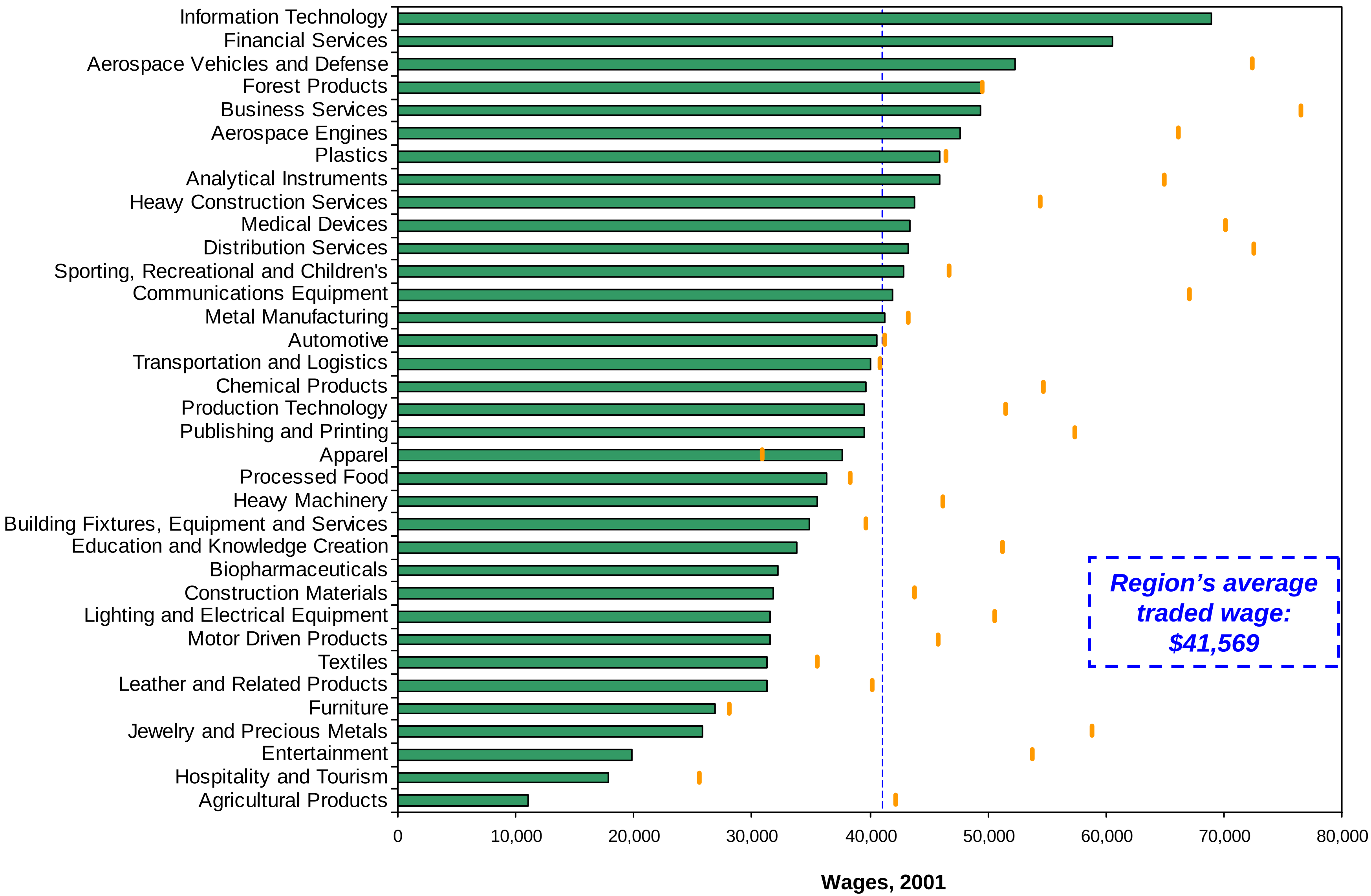


— Indicates expected job creation at rates achieved in **national benchmark** clusters, i.e. % change in national benchmark times initial employment

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

Wages By Traded Cluster

Pioneer Valley Region with State Benchmarks



- Indicates Massachusetts average wage in the cluster.

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

Leading Sub-Clusters by Location Quotient

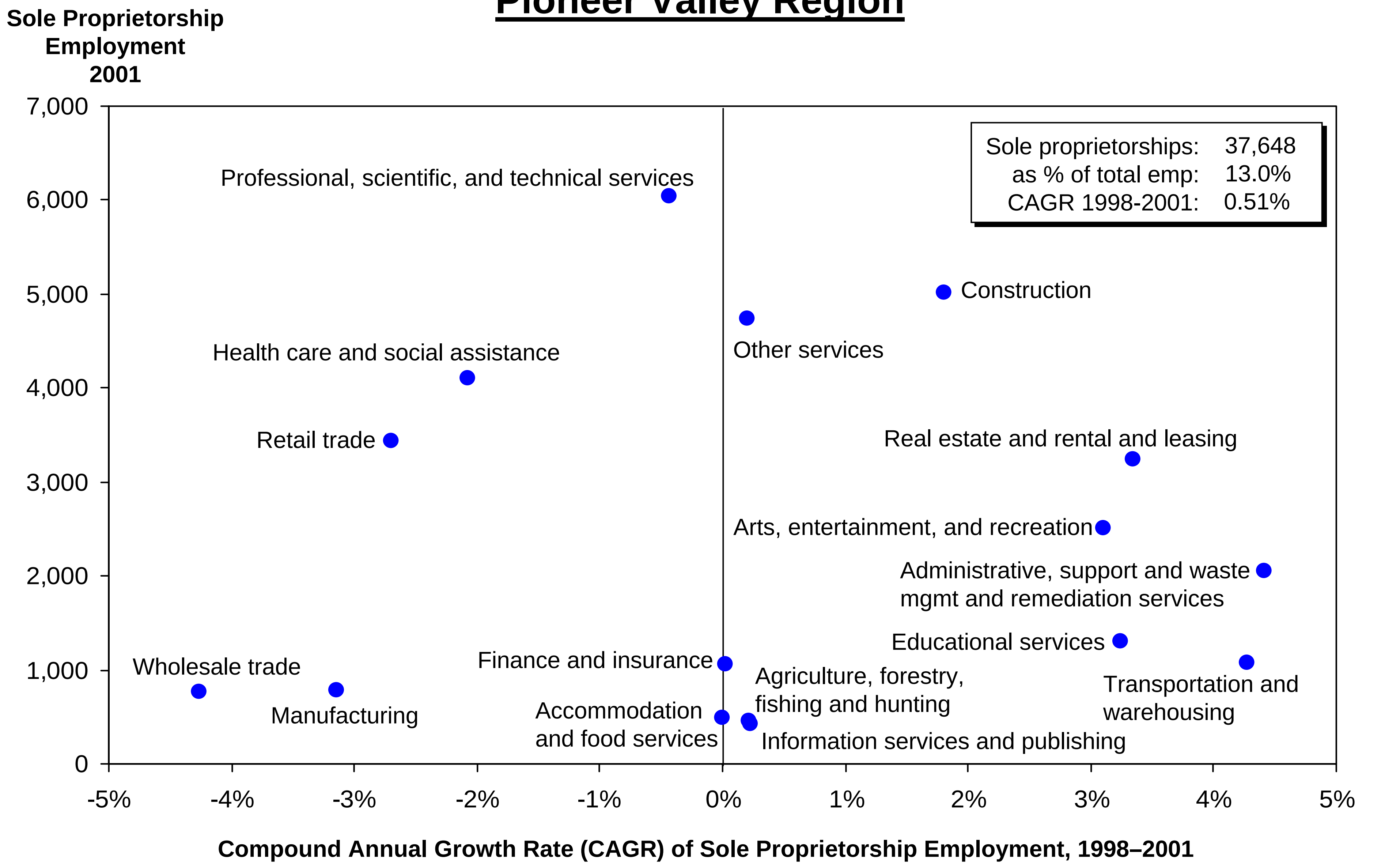
Pioneer Valley Region, 2001

Cluster	Subcluster	Location Quotient	Share of National Employment	Rank among Massachusetts Regions	Employment
Financial Services	Insurance Products	1.95	0.40%	3	4,791
Education and Knowledge Creation	Educational Institutions	2.26	0.46%	2	7,597
Publishing and Printing	Paper Products	14.74	3.02%	1	2,642
	Specialty Paper Products	2.91	0.60%	1	356
	Photographic Equipment and Supplies	2.52	0.52%	4	255
Plastics	Plastic Materials and Resins	4.64	0.95%	1	1,491
	Plastic Products	1.76	0.36%	2	2,202
Hospitality and Tourism	Tourism Attractions	1.99	0.41%	2	1,135
Metal Manufacturing	Saw Blades and Handsaws	54.48	11.17%	1	941
	Precision Metal Products	2.76	0.57%	2	641
	Metal Processing	1.78	0.36%	3	983
Sporting, Recreational and Children's Goods	Games, Toys, and Children's Vehicles	44.00	9.02%	1	1,967
	Sporting and Athletic Goods	7.54	1.55%	2	1,023
Production Technology	Machine Tools and Accessories	8.30	1.70%	1	1,456
	Process Machinery	1.64	0.34%	4	271
Forest Products	Paper Products	7.95	1.63%	1	1,683
	Paper Industries Machinery	7.18	1.47%	2	194
Processed Food	Paper Containers and Boxes	2.38	0.49%	1	1,009
	Milk and Frozen Desserts	1.97	0.40%	3	310
Building Fixtures, Equipment and Services	Fabricated Materials	7.96	1.63%	1	911
	Heating and Lighting	3.22	0.66%	2	272
Leather Products	Related Products	10.57	2.17%	1	1,678
Transportation and Logistics	Bus Transportation	4.64	0.95%	1	235
Communications Equipment	Electrical and Electronic Components	2.10	0.43%	5	694
Analytical Instruments	Optical Instruments	7.40	1.52%	4	346
Automotive	Production Equipment	2.01	0.41%	2	560
Apparel	Knitting and Finishing Mills	1.53	0.31%	4	273
Chemical Products	Special Packaging	7.94	1.63%	1	175
Aerospace Engines	Aircraft Engines	1.97	0.41%	2	325
Construction Materials	Wood Products	2.18	0.45%	1	255
Textiles	Specialty Apparel Components	4.66	0.95%	3	266
Motor Driven Products	Appliances	2.00	0.41%	1	232
Biopharmaceuticals	Containers	1.75	0.36%	2	128

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

Sole Proprietorship Employment and Growth

Pioneer Valley Region



Note: Data available on county basis only; the allocation to Massachusetts regions is only approximate.
Source: U.S. Census Bureau, Nonemployer Statistics

Business Environment

Pioneer Valley

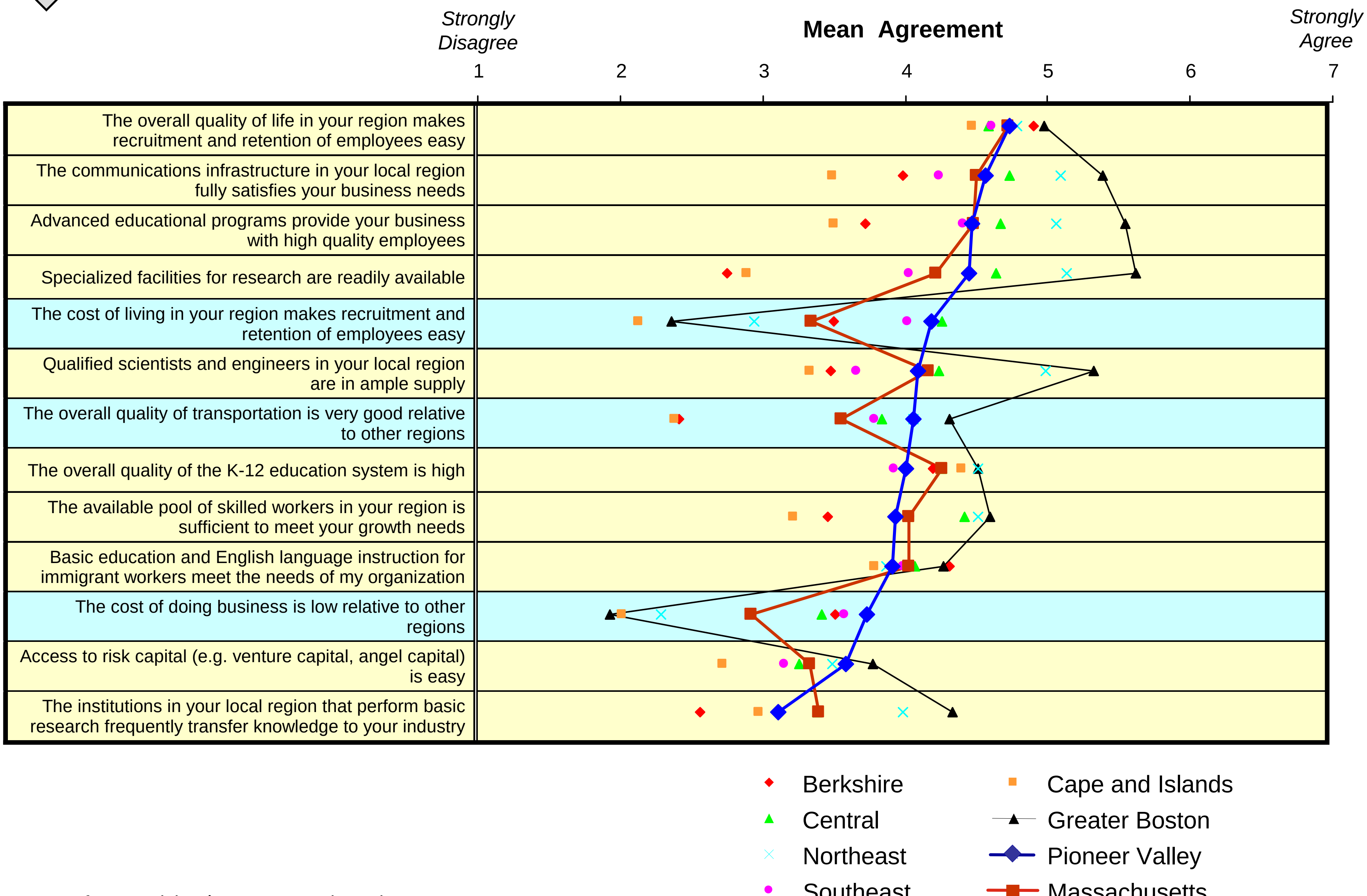
- Pioneer Valley compares **favorably** to the Massachusetts state average on most dimensions of the business environment
  - Particular strengths include the **low cost** of living and doing business, and the quality of the **transportation infrastructure**
  - Skill availability gets average grades, with room for improvement especially in **vocational schools**

- Despite their satisfaction with most elements of the business environment, business leaders in the Pioneer Valley are **critical** towards the overall attractiveness of their region

- A key concern is the responsiveness and overall **role of the state** in economic development
  - Pioneer Valley executives see the lack of business-friendly policies as key barrier to growth, and report regulations and the lack of policy predictability as a key concern

Regional Comparisons

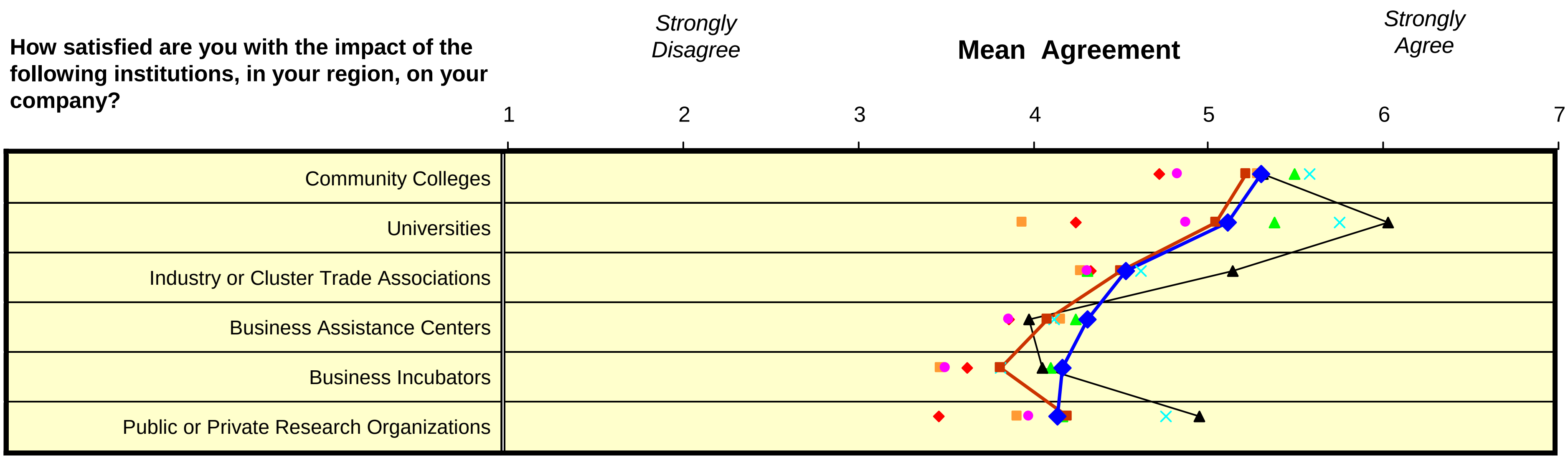
Availability of Inputs

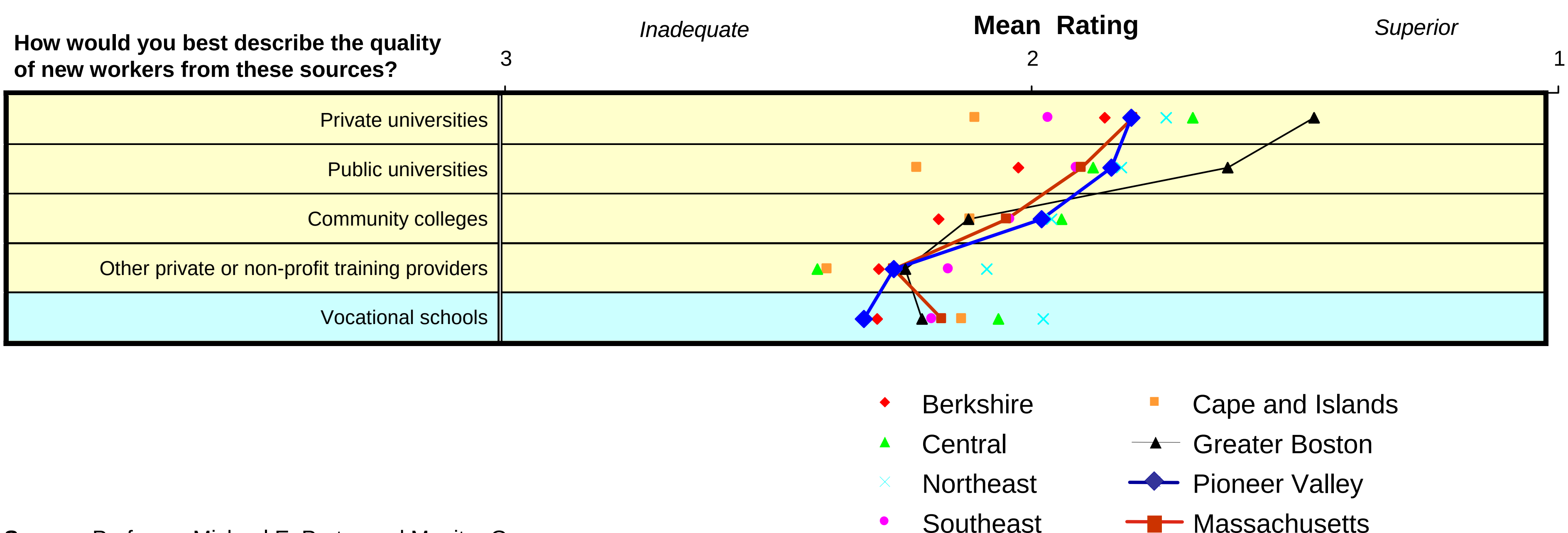


Source: Professor Michael E. Porter and Monitor Group

Regional Comparisons

Institutions & Education

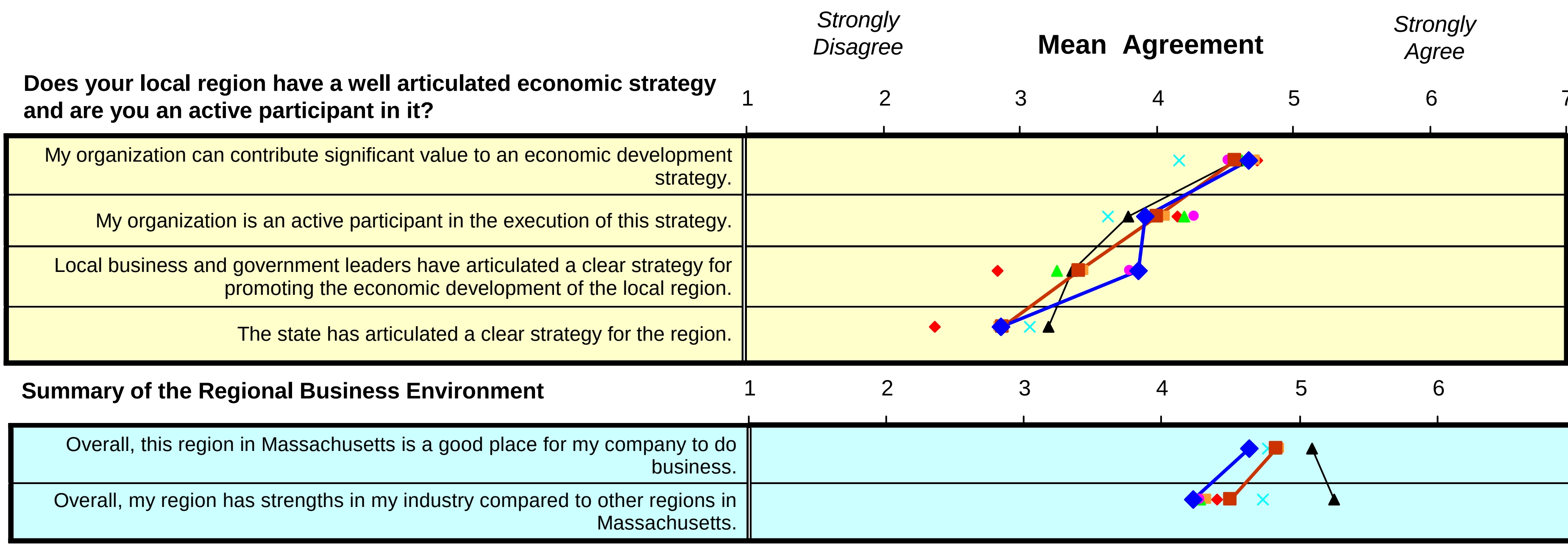


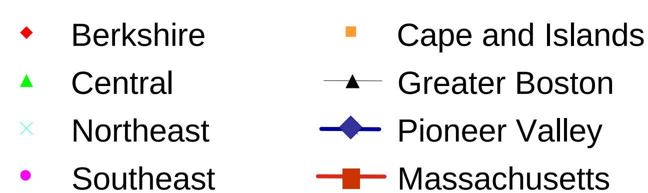


Source: Professor Michael E. Porter and Monitor Group

Regional Comparisons

Regional Strategy & Summary of the Regional Business Environment

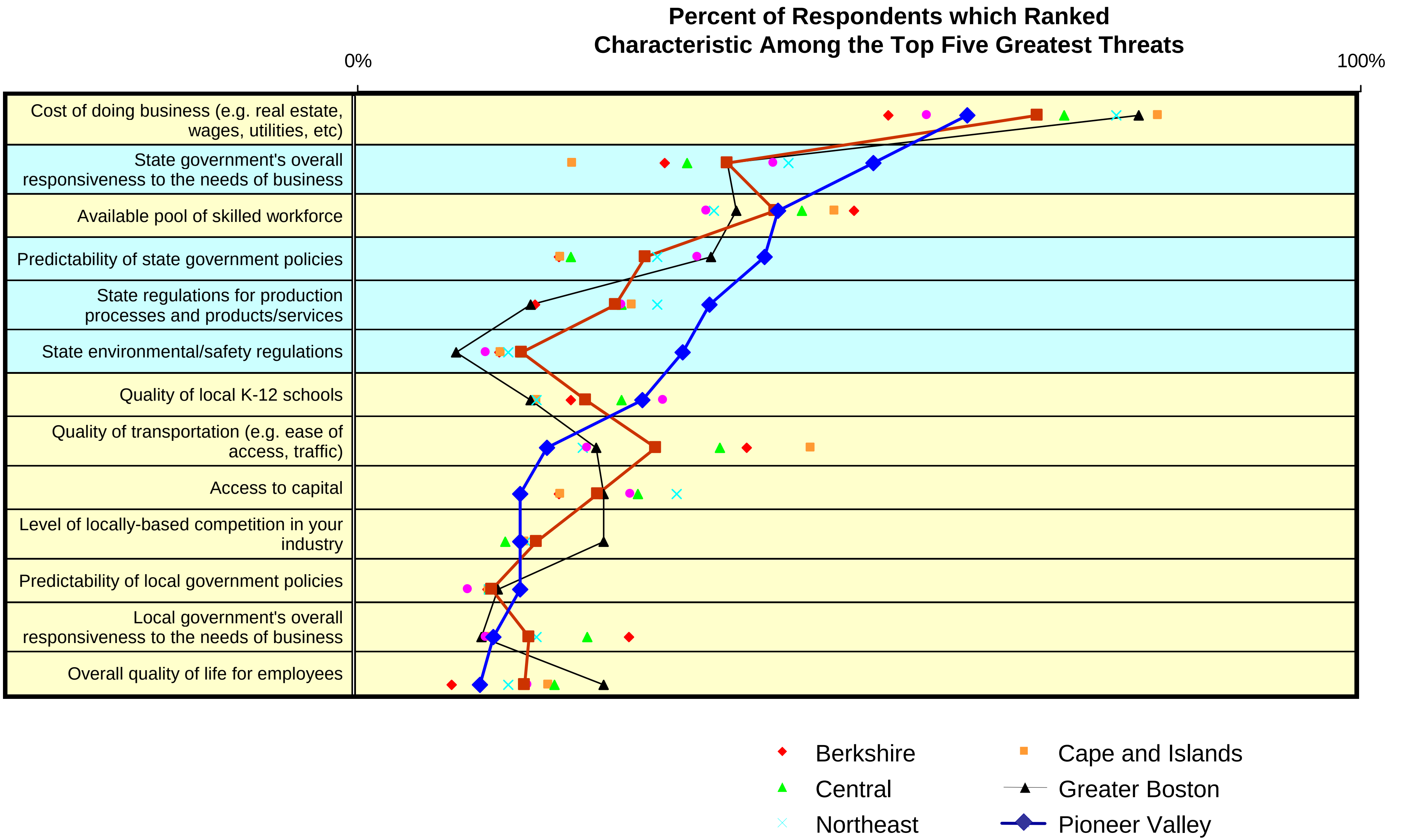




Source: Professor Michael E. Porter and Monitor Group

Regional Comparisons

Future Threats in the Local Business Environment



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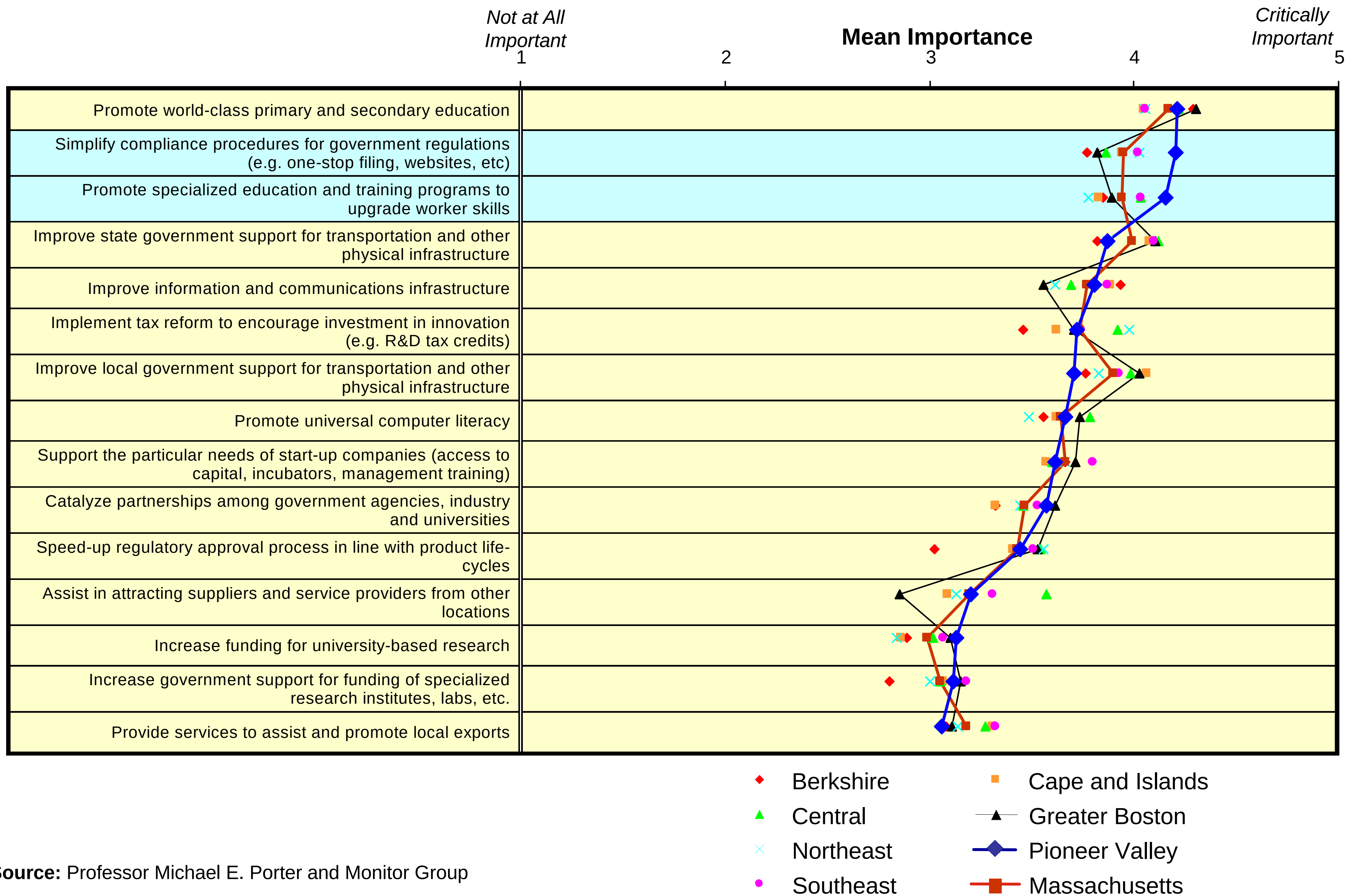
Regional Comparisons

Priorities for Government



Source: Professor Michael E. Porter and Monitor Group

Regional Competitiveness

Pioneer Valley

- Foundations of Regional Competitiveness
- Assessing the Competitiveness of the Pioneer Valley
- **Action Agenda**

Shifting Responsibilities for Economic Development

Old Model

- **Government** drives economic development through policy decisions and incentives

New Model

- Economic development is a **collaborative process** involving government at multiple levels, companies, teaching and research institutions, and institutions for collaboration

Role of the Private Sector in Economic Development

- A company's competitive advantage is partly the result of the **local environment**
- Company membership in a cluster offers **collective benefits**
- Private investment in **"public goods"** is justified

- Take an **active role** in upgrading the local infrastructure
- Nurture **local suppliers** and attract new supplier investments
- Work closely with local **educational and research institutions** to upgrade **quality and create specialized programs addressing cluster needs**
- Provide government with **information** and **substantive input** on regulatory issues and constraints bearing on cluster development
- Focus **corporate philanthropy** on enhancing the local business environment

- An important role for **trade associations**
  - Greater influence
  - Cost sharing

Public / Private Cooperation in Cluster Upgrading

Minnesota's Medical Device Cluster

Context for Firm Strategy and Rivalry

- Aggressive **trade associations** (Medical Alley Association, High Tech Council)
- Effective **global marketing** of the cluster and of Minnesota as the "The Great State of Health"
- Full-time **"Health Care Industry Specialist"** in the department of Trade and Economic Development

Factor (Input) Conditions

- Joint development of **vocational-technical college curricula** with the medical device industry
- Minnesota **Project Outreach** exposes businesses to resources available at university and state government agencies
- Active medical technology licensing through **University of Minnesota**
- State-formed Greater Minnesota Corp. to **finance applied research**, invest in new products, and assist in technology transfer

Demand Conditions

- State sanctioned **reimbursement policies** to enable easier adoption and reimbursement for innovative products

Related and Supporting Industries

Towards an Action Agenda for the Pioneer Valley

- Mount **cluster development** efforts, especially around the region's strong traded clusters

- Improve the **communication between business and government** in setting economic policy