Regional Competitiveness in Southeastern Massachusetts

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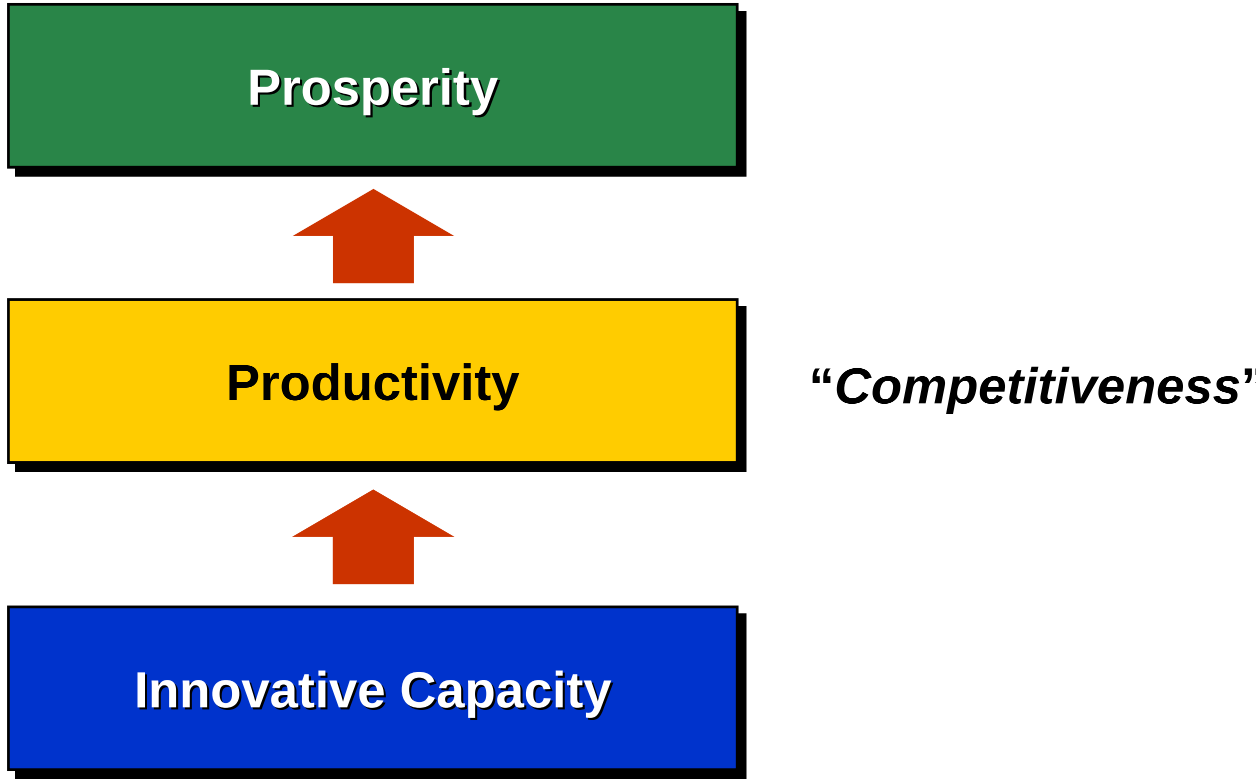
Southeast Regional Competitiveness Council
Plymouth Public Library, Plymouth
September 30, 2003

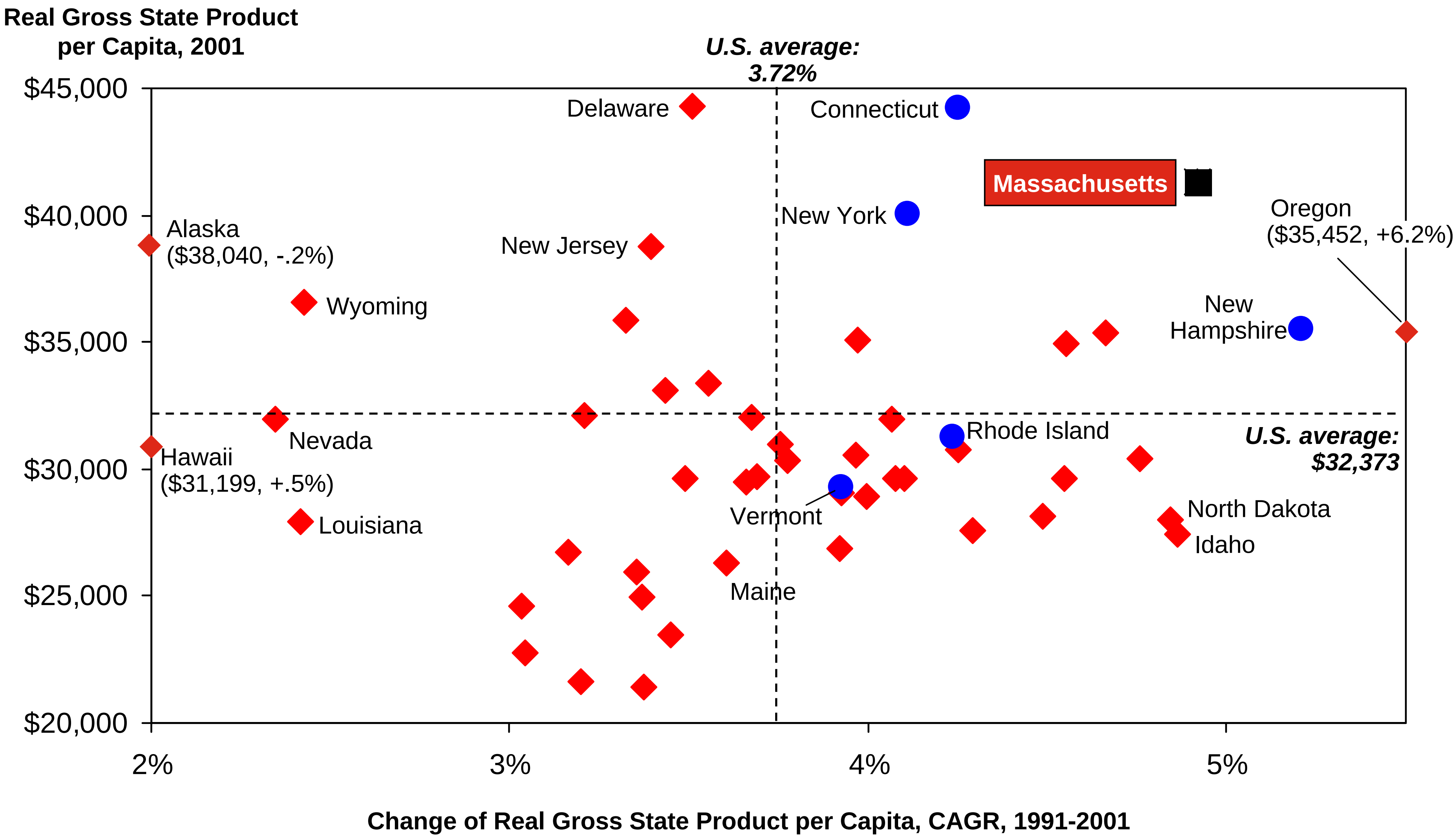
Sources of Prosperity



- 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

Economic Performance of U.S. States

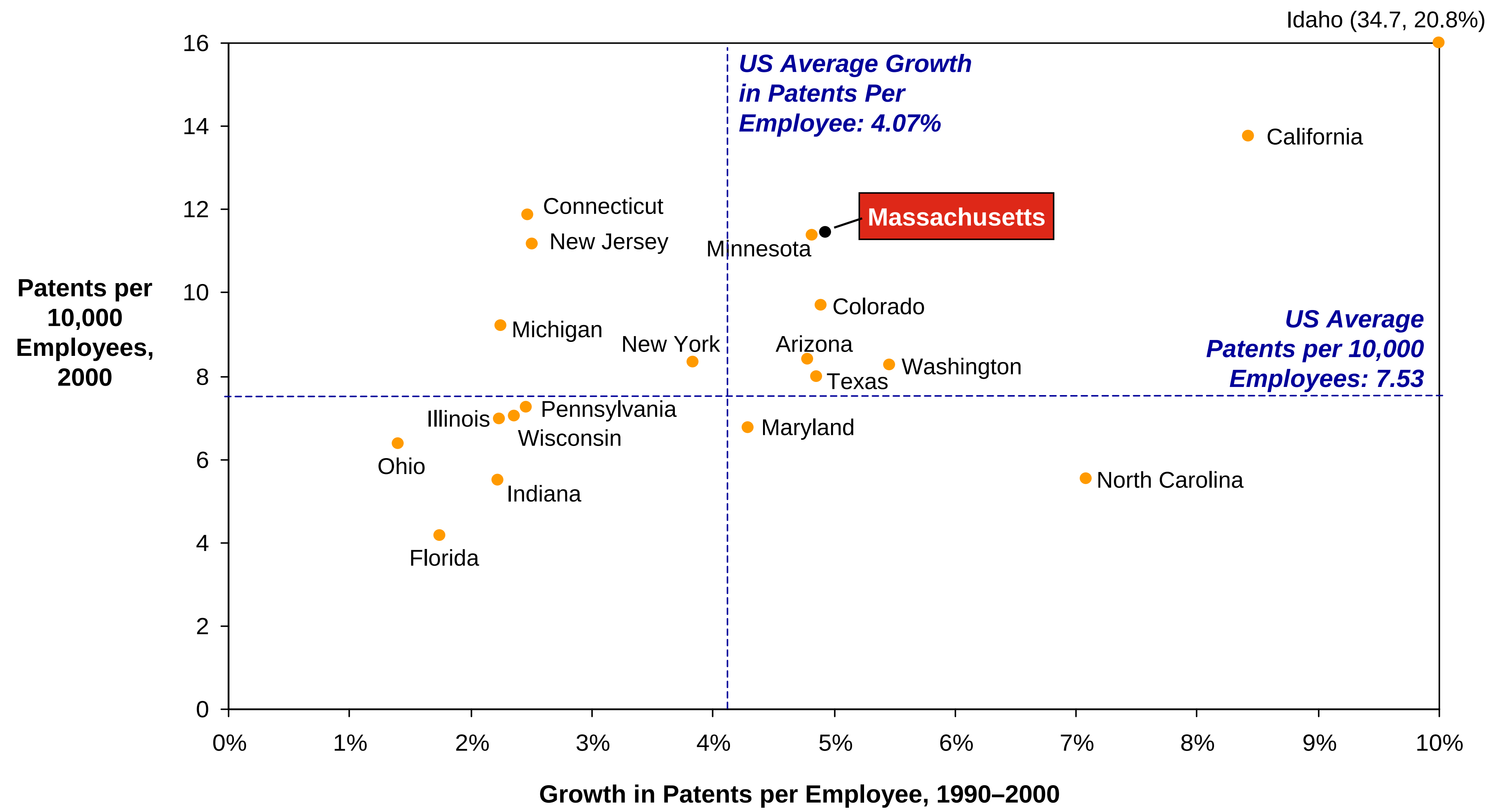
GDP per Capita



Source: BEA, 2003

Innovation Performance of Leading States

Patents per Employee and Growth in Patents per Employee



Leading states are the top 20 states by total patent output in 2000. Note: (patents, growth)

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

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

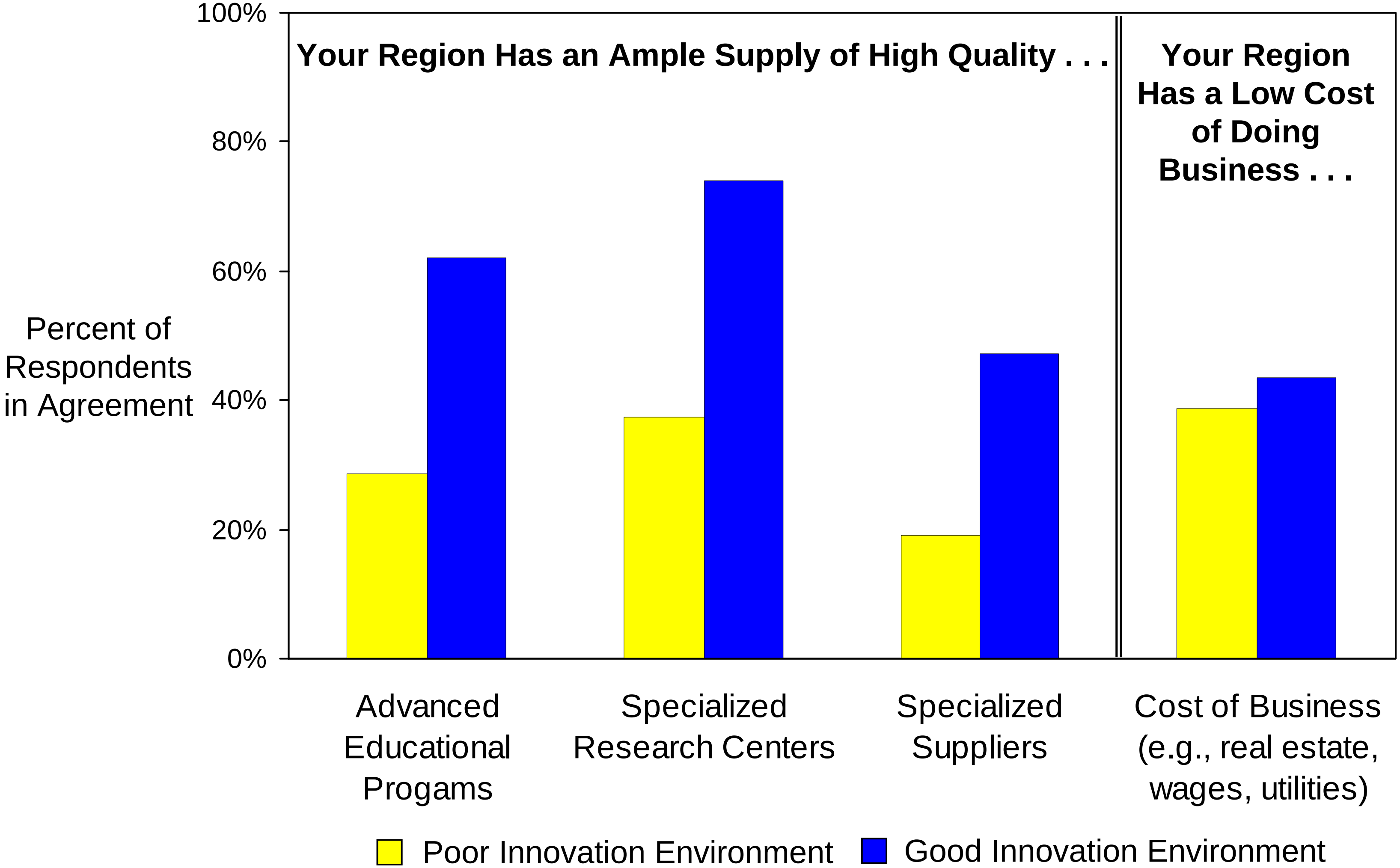
Related and Supporting Industries

- 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

Sources of Innovation

Good vs. Poor Innovation Environments



Source: Clusters of Innovation Initiative, Regional Survey (all regions)

Composition of Regional Economies

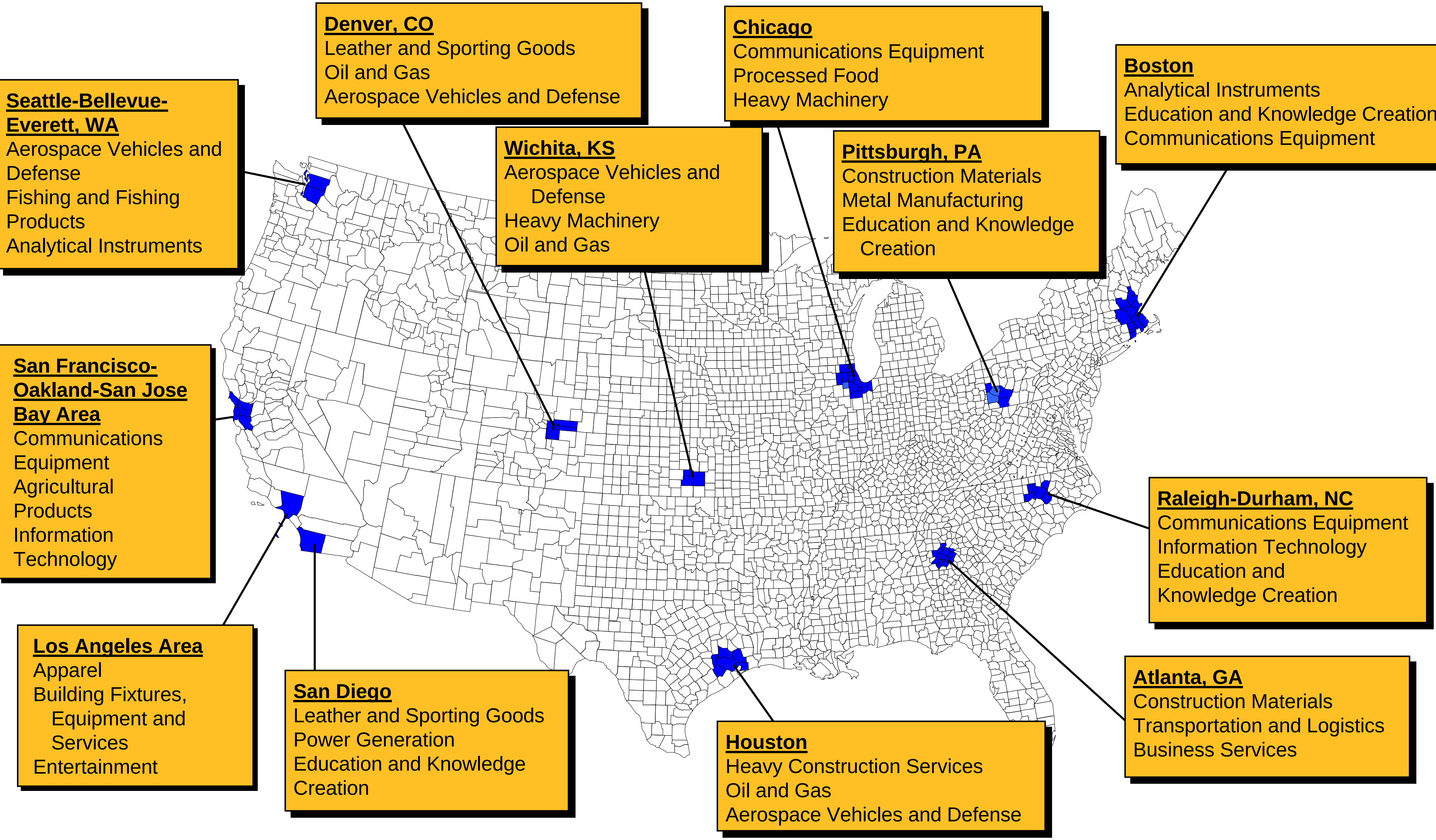
United States

	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

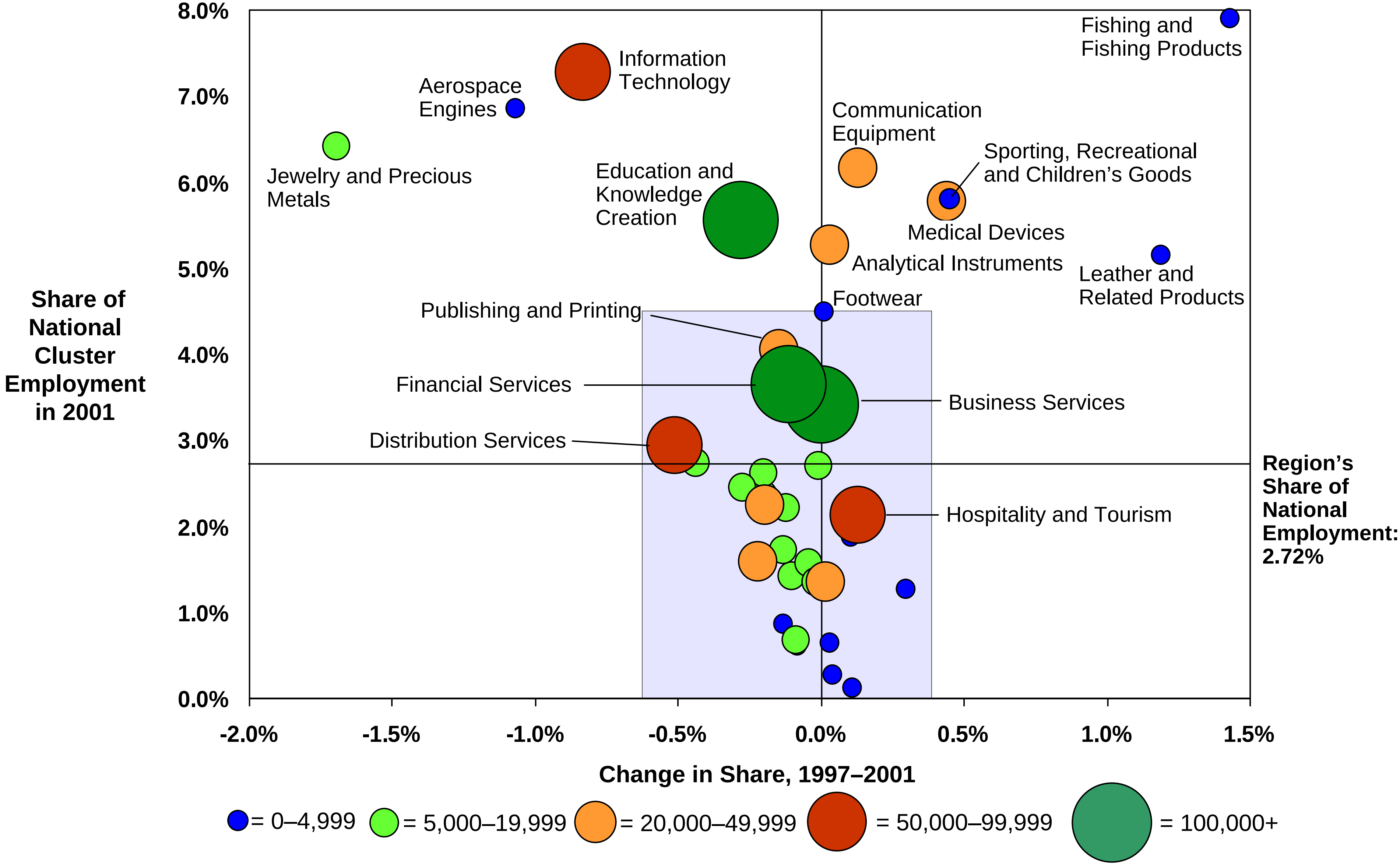
Select U.S. Geographic Areas



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

Specialization By Traded Cluster

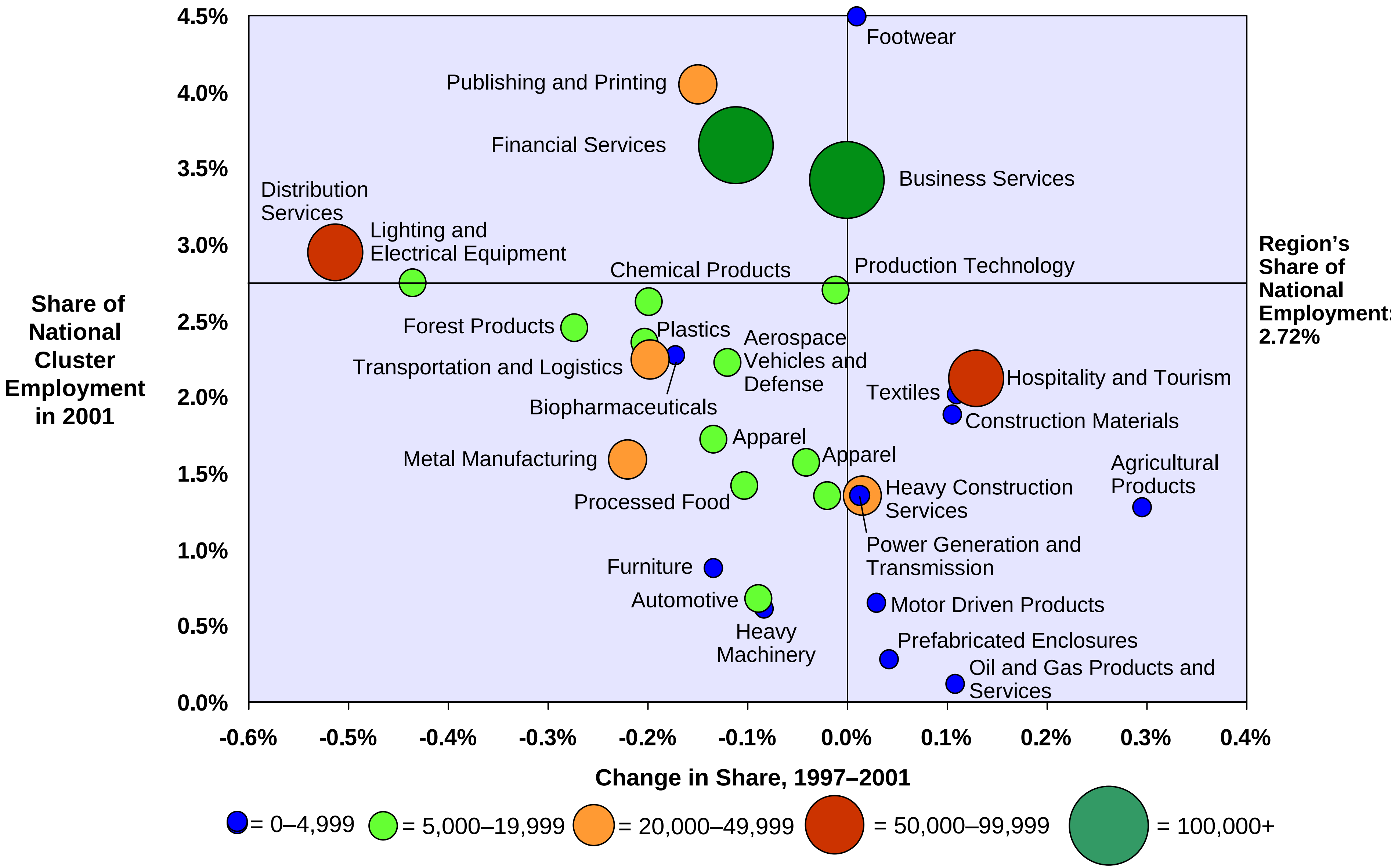
Massachusetts



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

Specialization By Traded Cluster

Massachusetts



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

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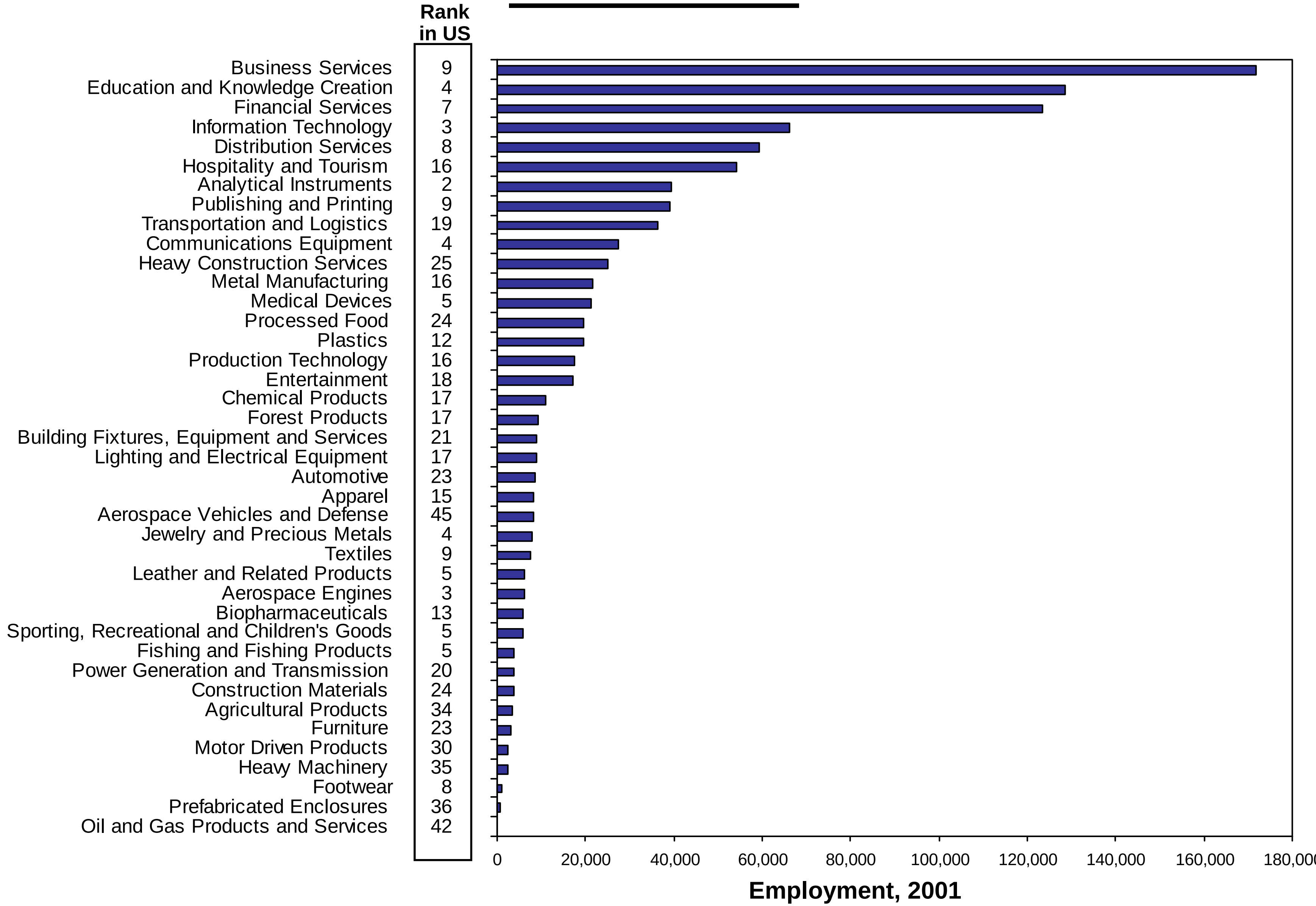
Employment By Traded Cluster

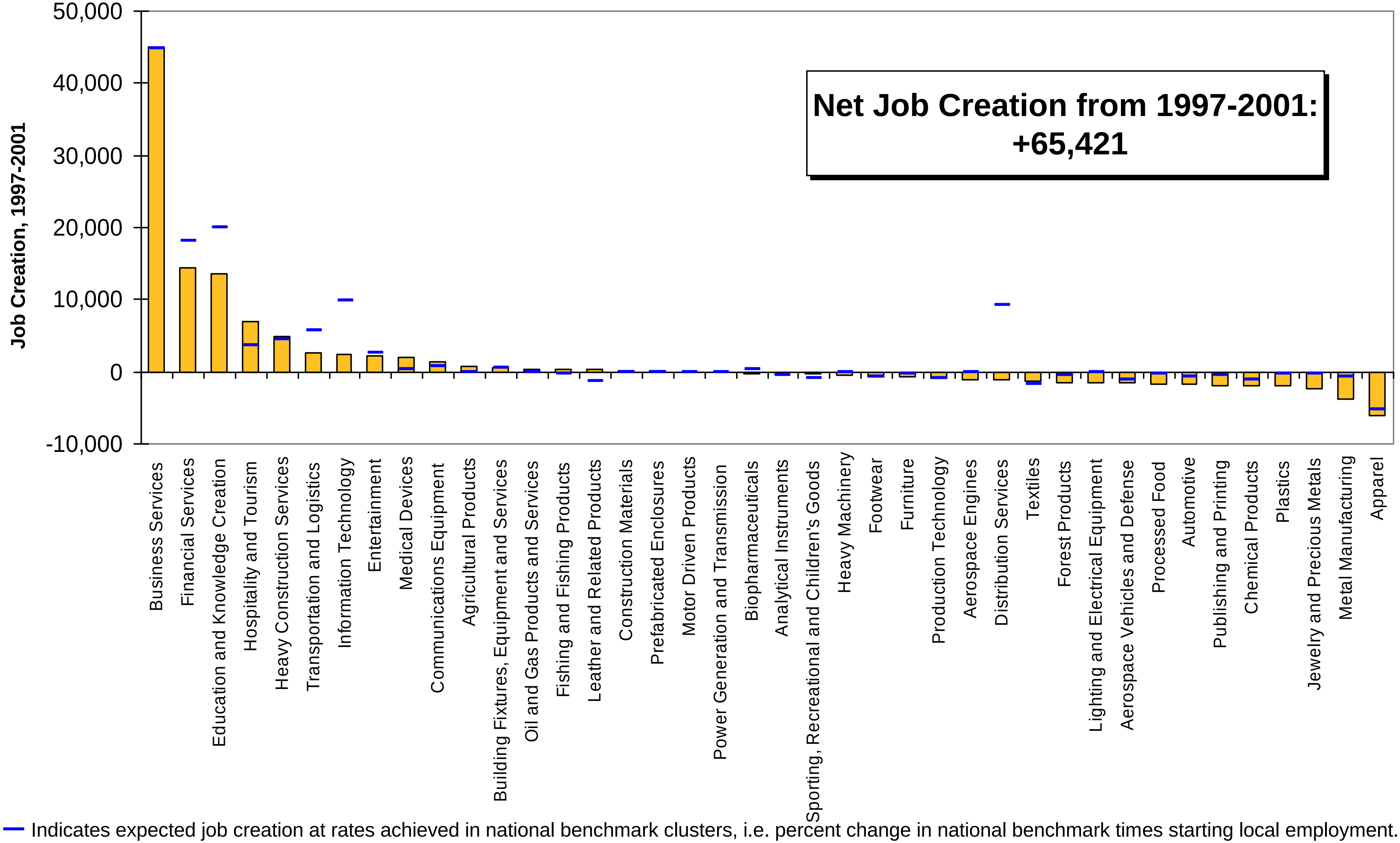
Massachusetts



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

Job Creation By Traded Cluster

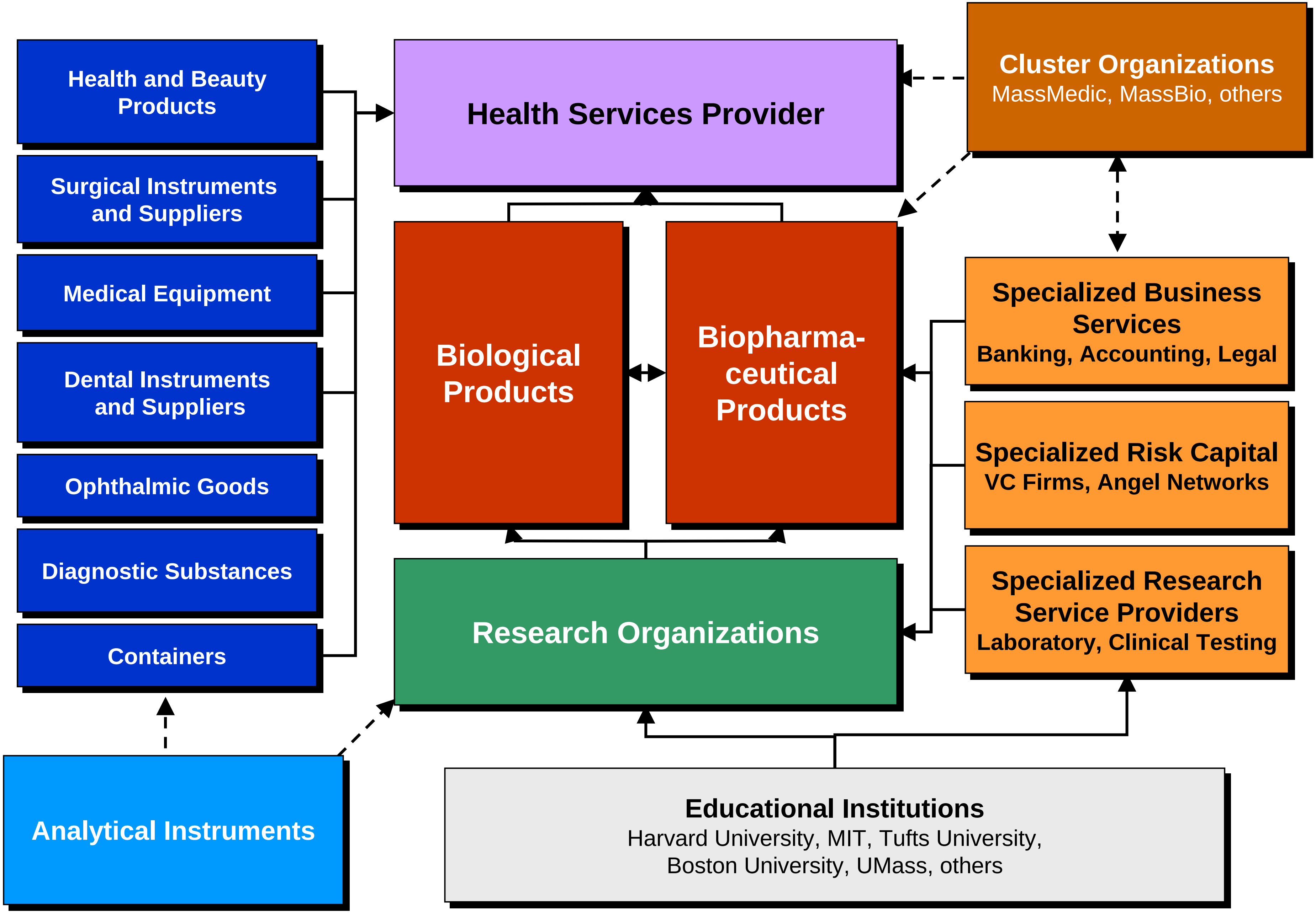
Massachusetts, 1997-2001



— Indicates expected job creation at rates achieved in national benchmark clusters, i.e. percent change in national benchmark times starting local employment.

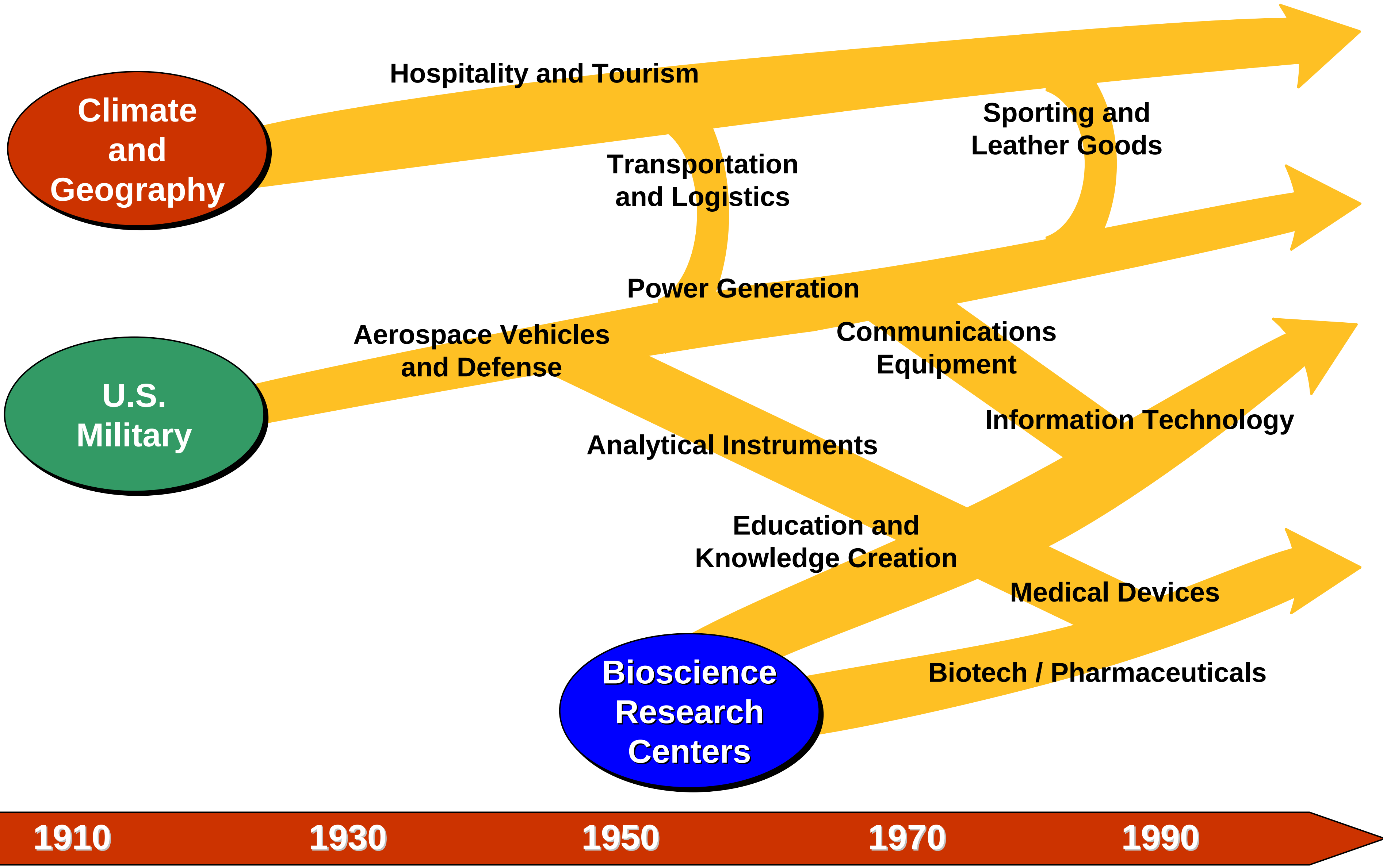
Source: Cluster Mapping Project, Institute for Strategy and Competitiveness, Harvard Business School

Massachusetts Life Sciences Cluster



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

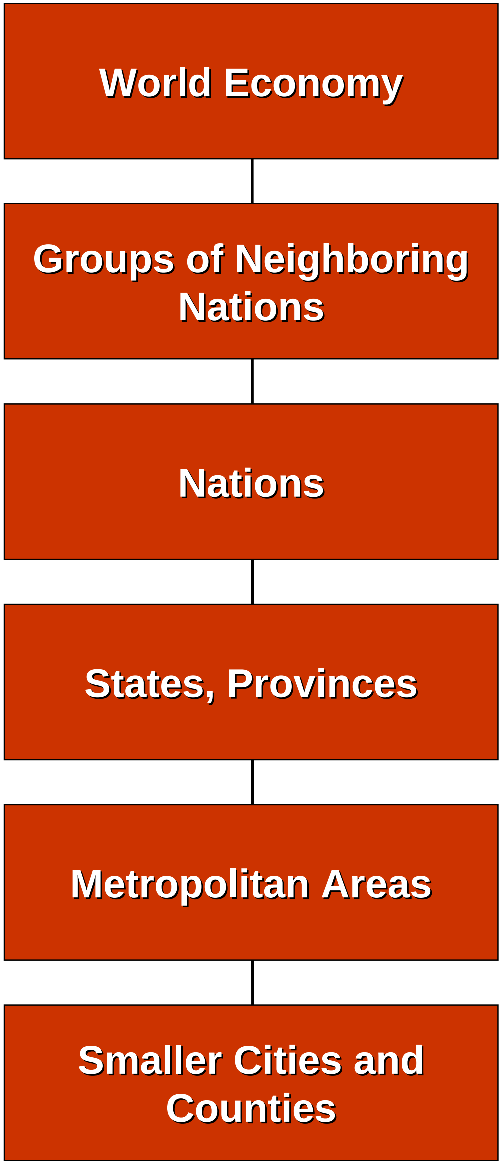
- Massachusetts Technology Collaborative
- Mass Biomedical Initiatives
- Mass Development
- Massachusetts Alliance for Economic Development

Joint Research Initiatives

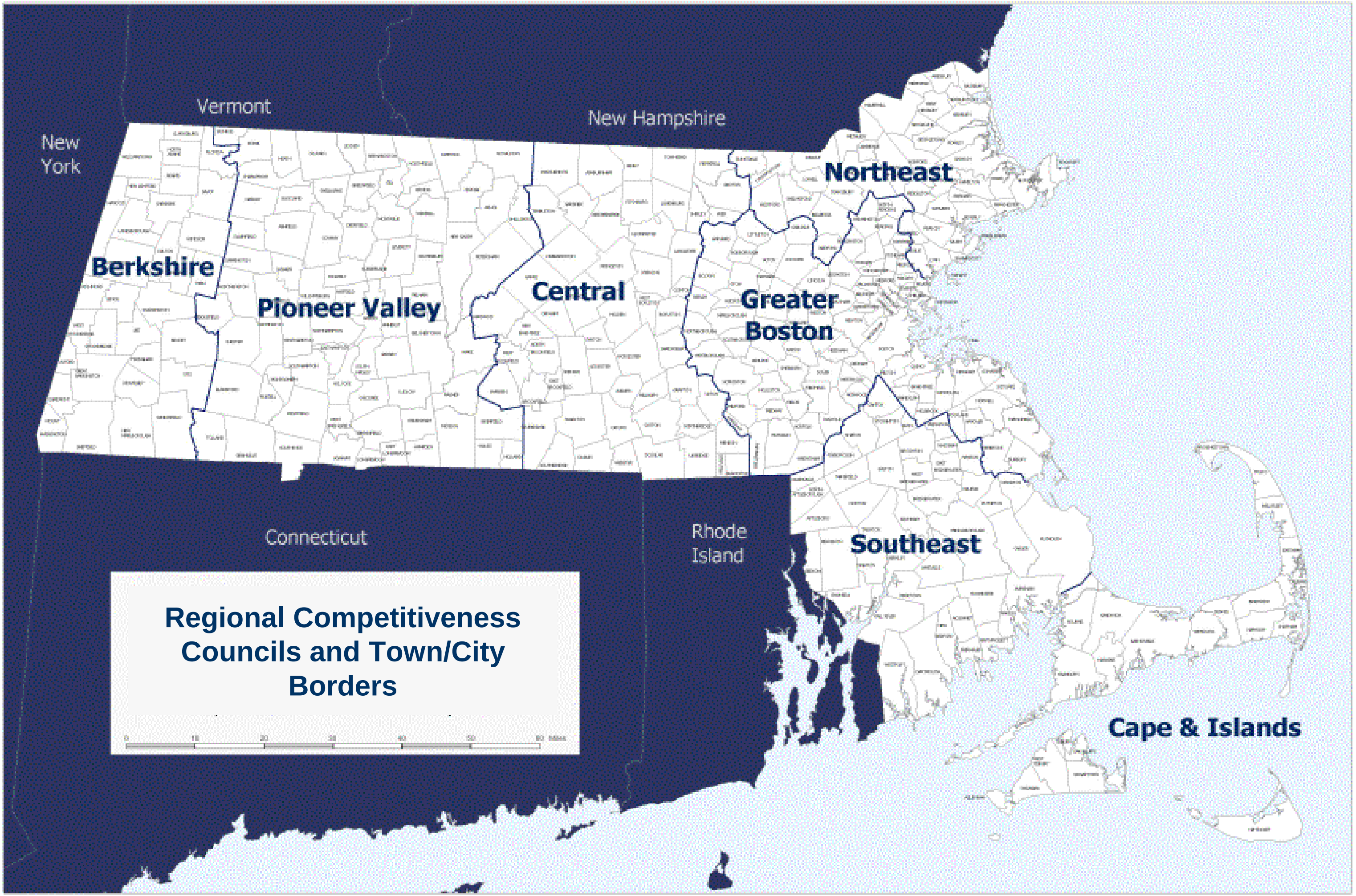
- New England Healthcare Institute
- Whitehead Institute For Biomedical Research
- Center for Integration of Medicine and Innovative Technology (CIMIT)

Influences on Competitiveness

Multiple Geographic Levels



Massachusetts Regional Competitiveness Council Regions



Regional Competitiveness

Southeastern Massachusetts

- Foundations of Regional Competitiveness
- **Assessing the Competitiveness of Southeastern Massachusetts**
- Action Agenda

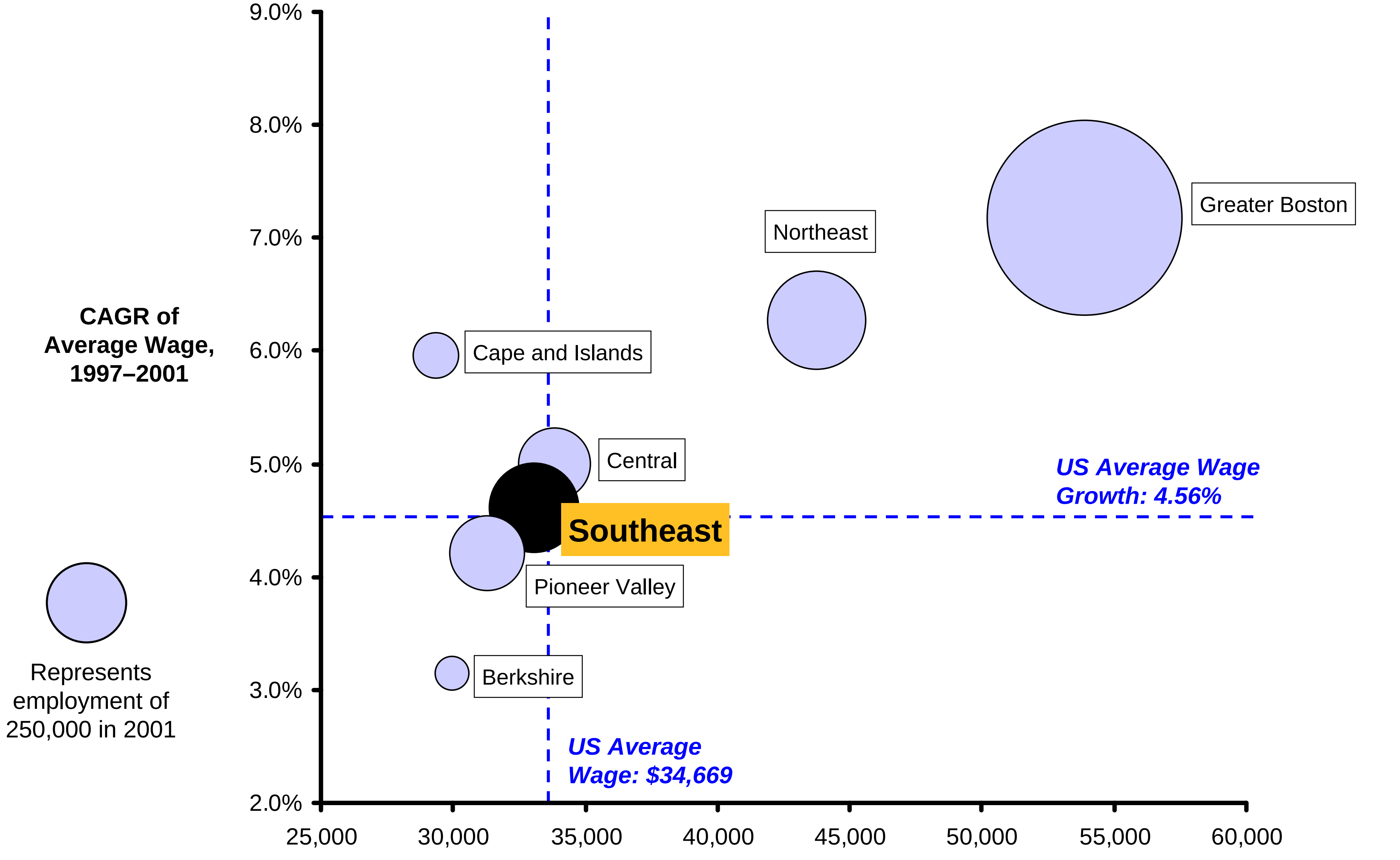
Economic Performance

Southeastern Massachusetts

- Wages and wage growth closely mirror the U.S. average but fall significantly behind the Massachusetts average
- Employment growth at only 1.3% annually over the last five years has been slow, lagging both the US and the Massachusetts average
  - 95% of the region's job growth occurred in local clusters, especially in real estate development
- The Southeast's growth of establishments was among the lowest of all Massachusetts regions
- Patenting rates of 7.7 patents per 10,000 employees in 2001 lag the U.S. average and the leading Massachusetts' regions

Comparative Performance of Regions

Wage Growth and Wages

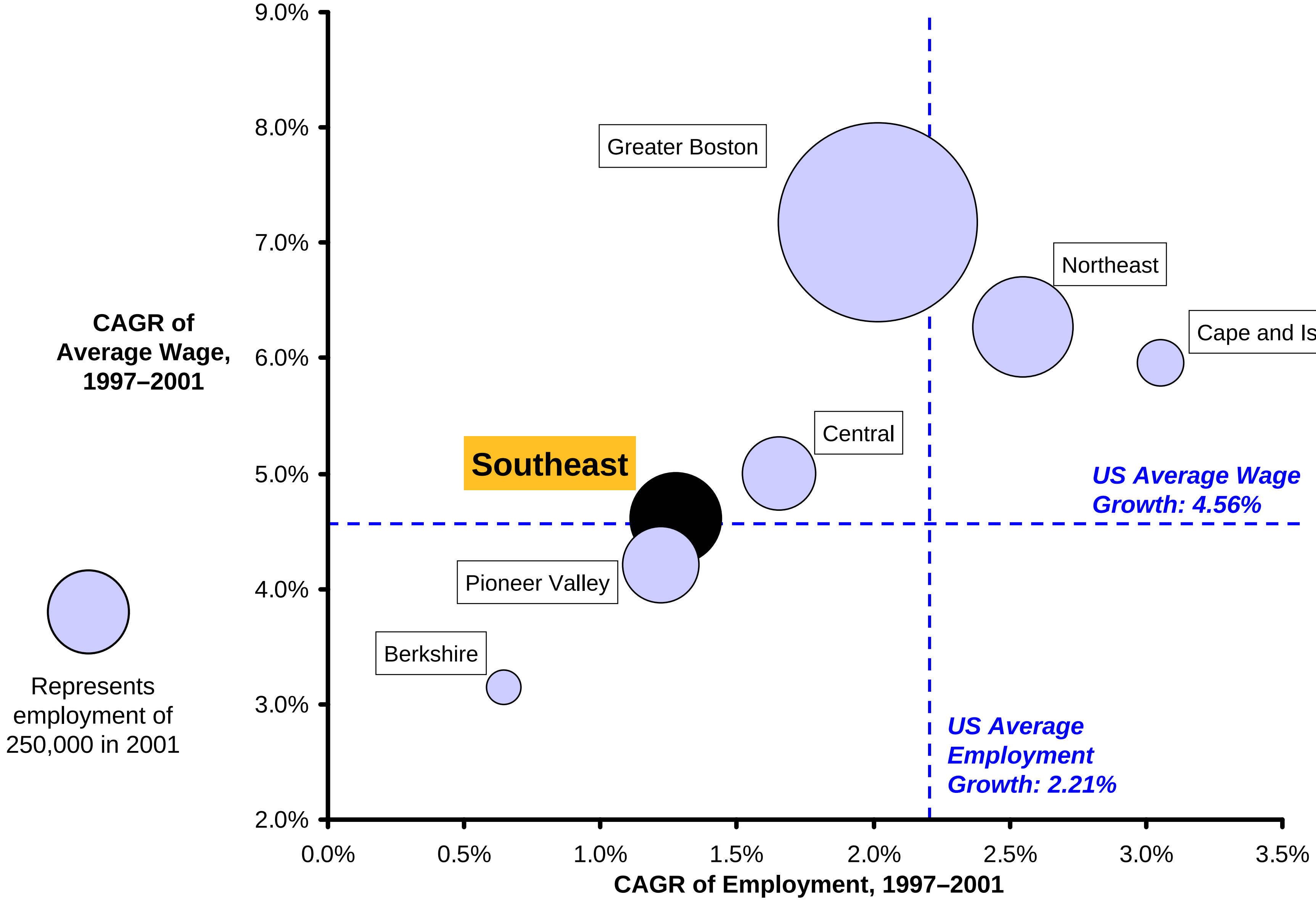


Data: private, non-agricultural employment

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

Comparative Performance of Regions

Wage Growth and Employment Growth



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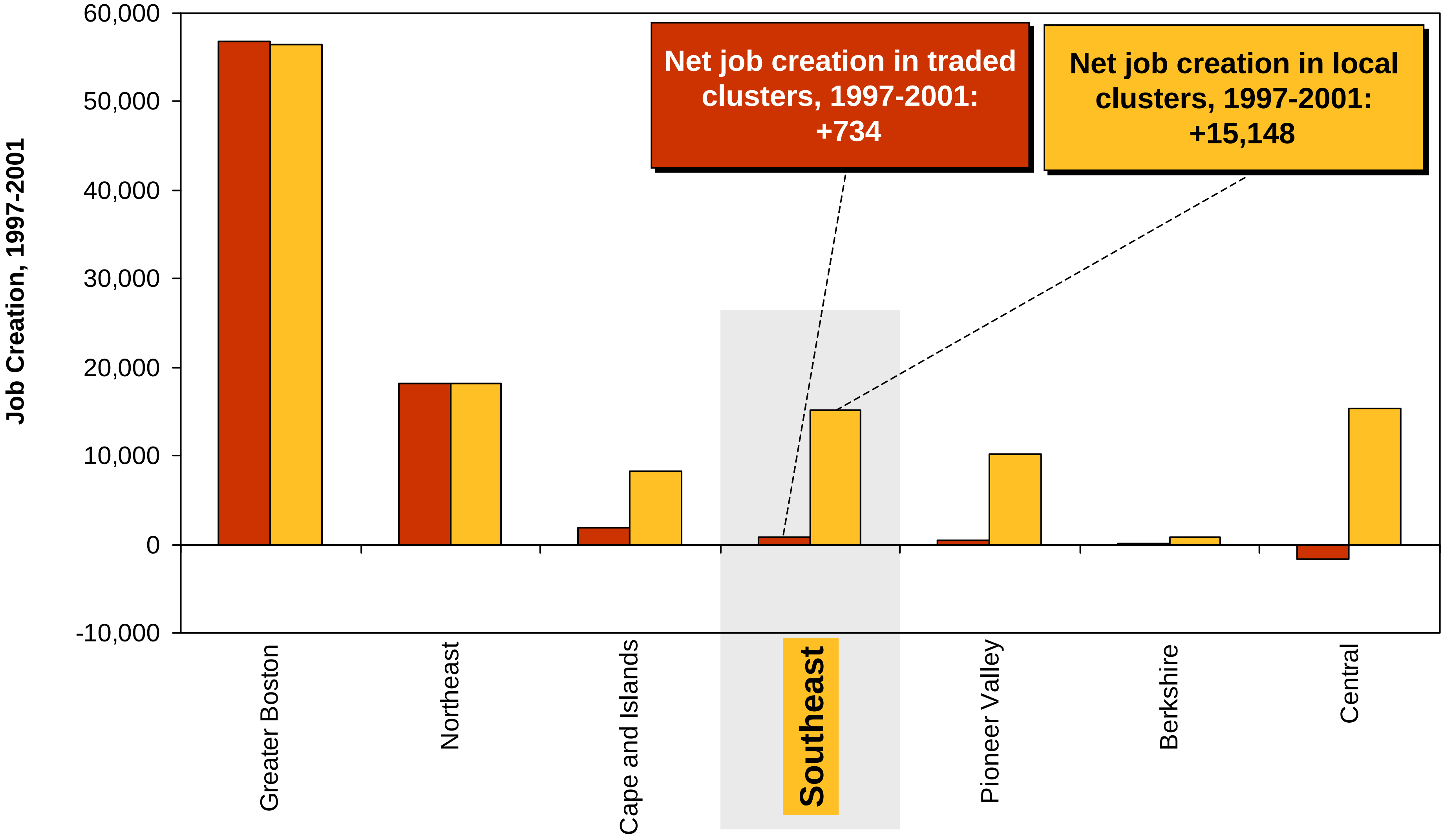
Job Creation

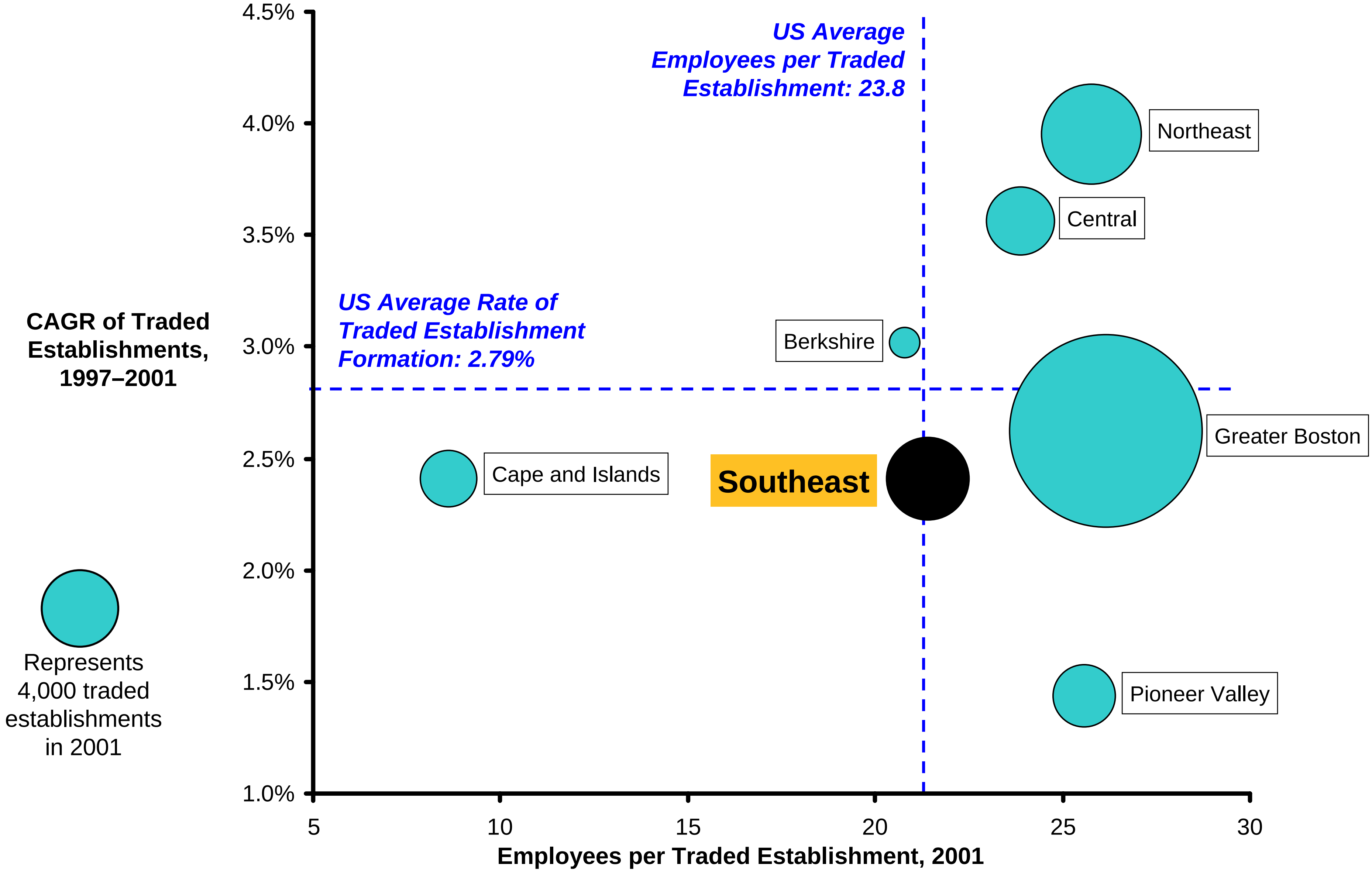
Massachusetts Regions



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

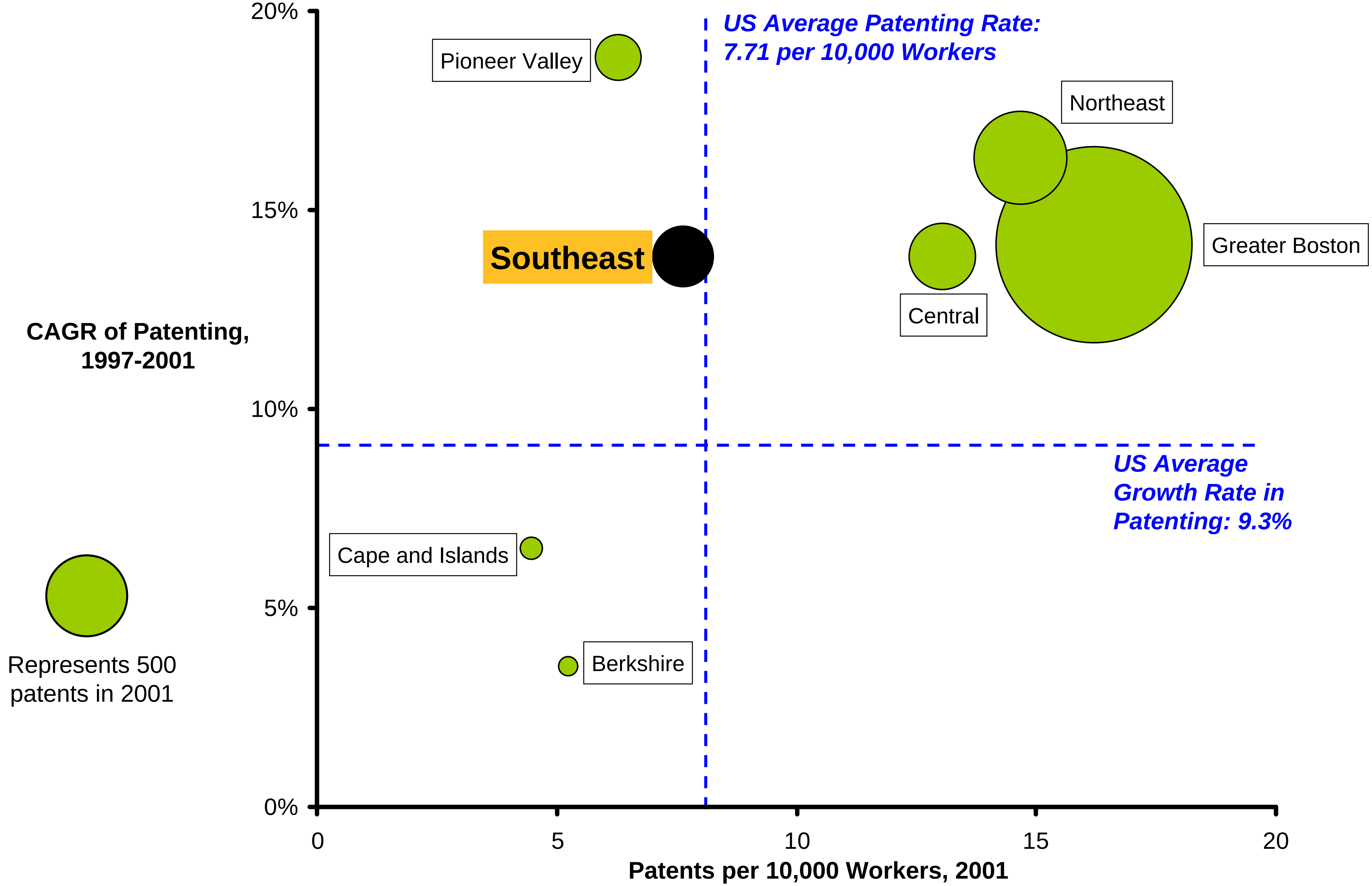
Establishment Formation in Traded Clusters



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

Comparative Performance of Regions

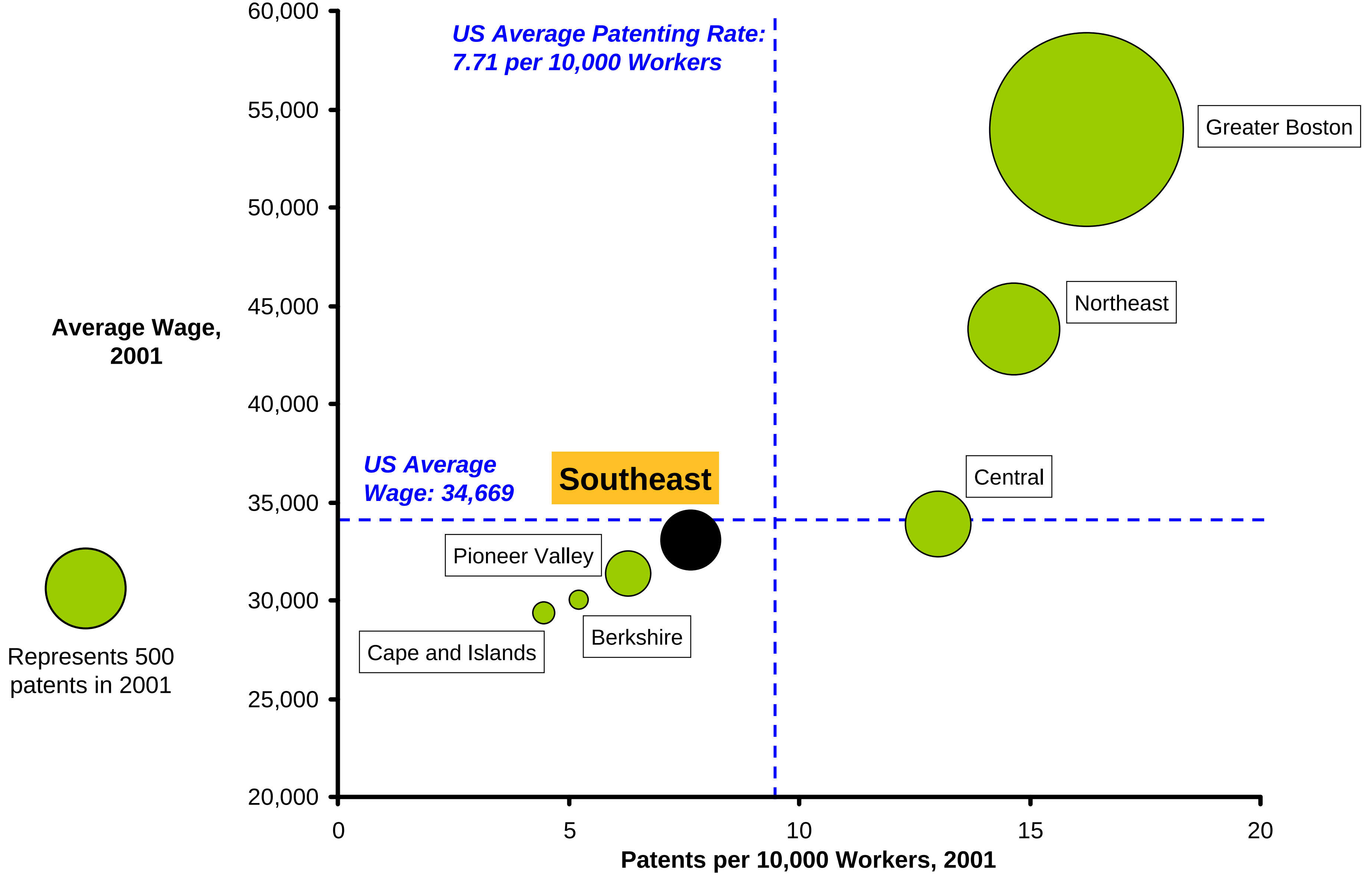
Patenting Rates



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

Southeast Region

	Organization	Patents Issued from 1997 to 2001
1	ACUSHNET COMPANY	115
2	JOHNSON & JOHNSON PROFESSIONAL INC.	61
3	TEXAS INSTRUMENTS, INCORPORATED	49
4	FOXBORO COMPANY	37
5	GILLETTE COMPANY	27
6	UNITED STATES OF AMERICA, NAVY	26
7	DEPUY ORTHOPAEDICS, INC.	18
8	MOTOROLA, INC.	17
9	KOPIN CORPORATION	16
10	AVERY DENNISON CORPORATION	15
11	EMC CORPORATION	14
12	BOSTON SCIENTIFIC CORPORATION	11
13	ETHICON ENDO-SURGERY	11
14	POLAROID CORPORATION	11
15	HOLIDAY HOUSEWARES, INC.	10
16	REEBOK INTERNATIONAL, LTD.	9
17	PLC MEDICAL SYSTEMS, INC.	9
18	DRESSER INDUSTRIES, INC.	9
19	WATERS INVESTMENTS LIMITED	9
20	SCI-MED LIFE SYSTEMS, INC.	9
21	SUN MICROSYSTEMS, INC.	8
22	DURACELL INC.	7
23	MEDICAL & SCIENTIFIC, INC.	7
24	CHIRON DIAGNOSTICS CORPORATION	7
25	THOMAS & BETTS INTERNATIONAL, INC.	7
26	TNCO, INC.	7

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

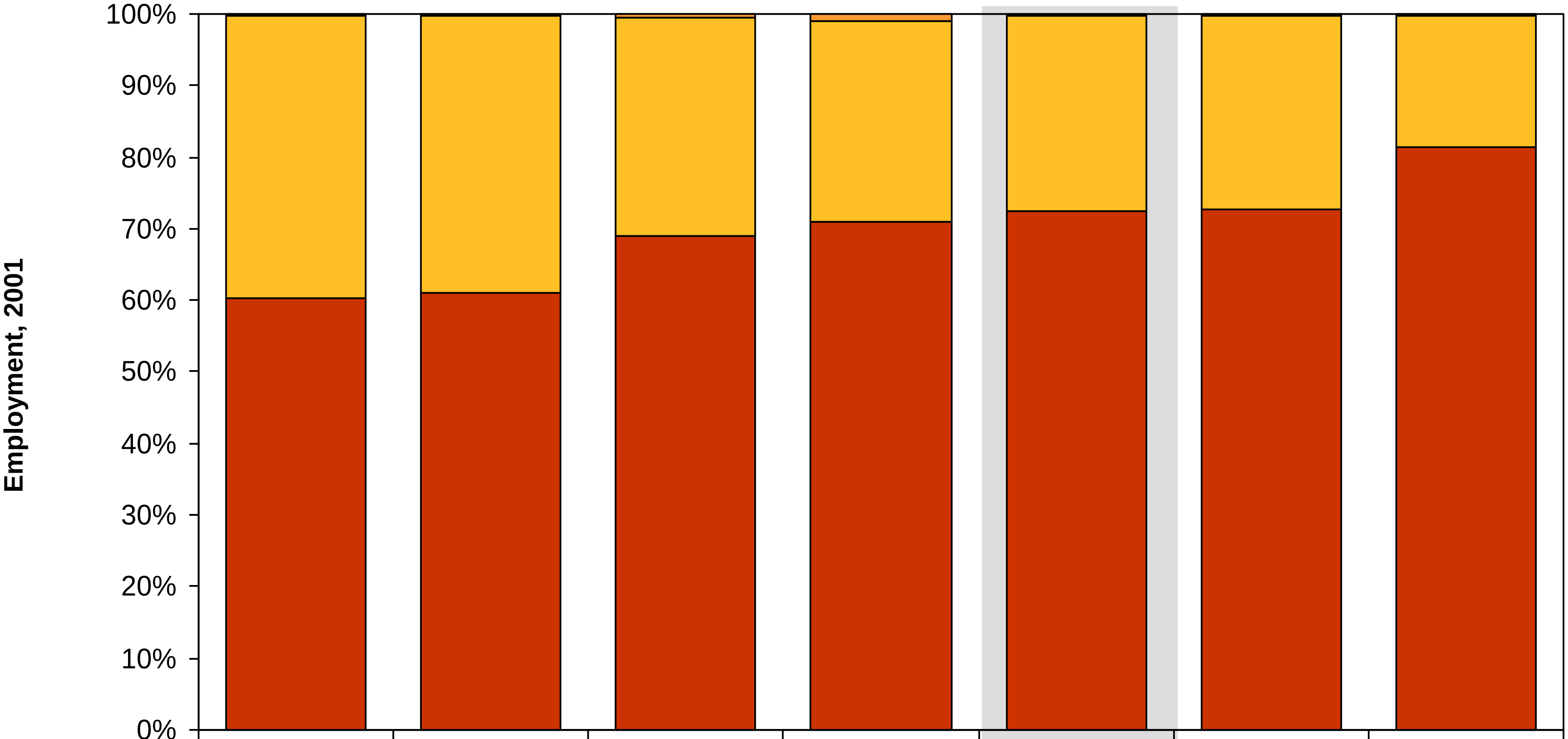
Composition

Southeastern Massachusetts

- The Southeast has with 27.4% a relatively low share of traded employment compared to other Massachusetts regions
- The Southeast has a strong position in different groups of traded clusters, many of them considered “traditional” but some technology-intensive
  - Distribution Services
  - Jewelry
  - Textiles, Apparel
  - Production Technology, Lightning and Electrical Equipment
  - Analytical Instruments, Medical Devices
- Wages in the Southeast are low even in the traded clusters in which the region has a strong position, e.g. Distribution Services
- The Southeast is strengthening its position in some traditionally strong clusters but is losing in others
  - Growing clusters include Production Technology and Medical Devices
    - Textiles has added employment in the Southeast while the cluster shrunk nationwide
  - Shrinking clusters include Apparel and Jewelry
    - Employment in Distribution Services has been flat in the Southeast while the cluster has grown significantly nationwide
- Within local clusters, real estate development has added the most significant amount of jobs between 1997 and 2001

Employment by Cluster Type

Massachusetts Regions

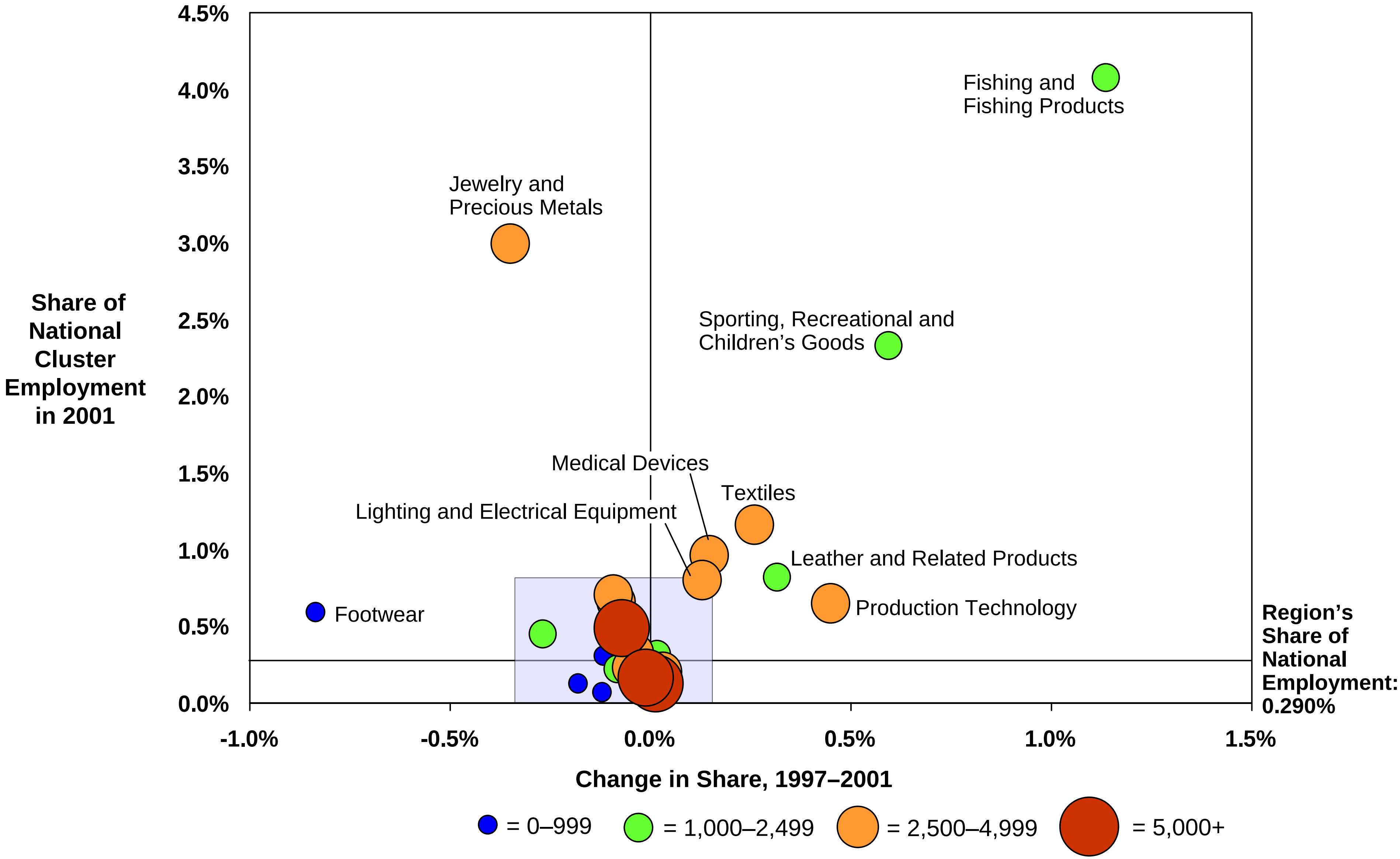


	Northeast	Greater Boston	Central	Berkshire	Southeast	Pioneer Valley	Cape and Islands
NED	0.20%	0.20%	0.40%	1.10%	0.20%	0.40%	0.30%
Traded	39.40%	38.80%	30.60%	28.00%	27.40%	27.00%	18.30%
Local	60.30%	61.00%	69.00%	70.90%	72.40%	72.70%	81.40%

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

Specialization By Traded Cluster

Southeast Region



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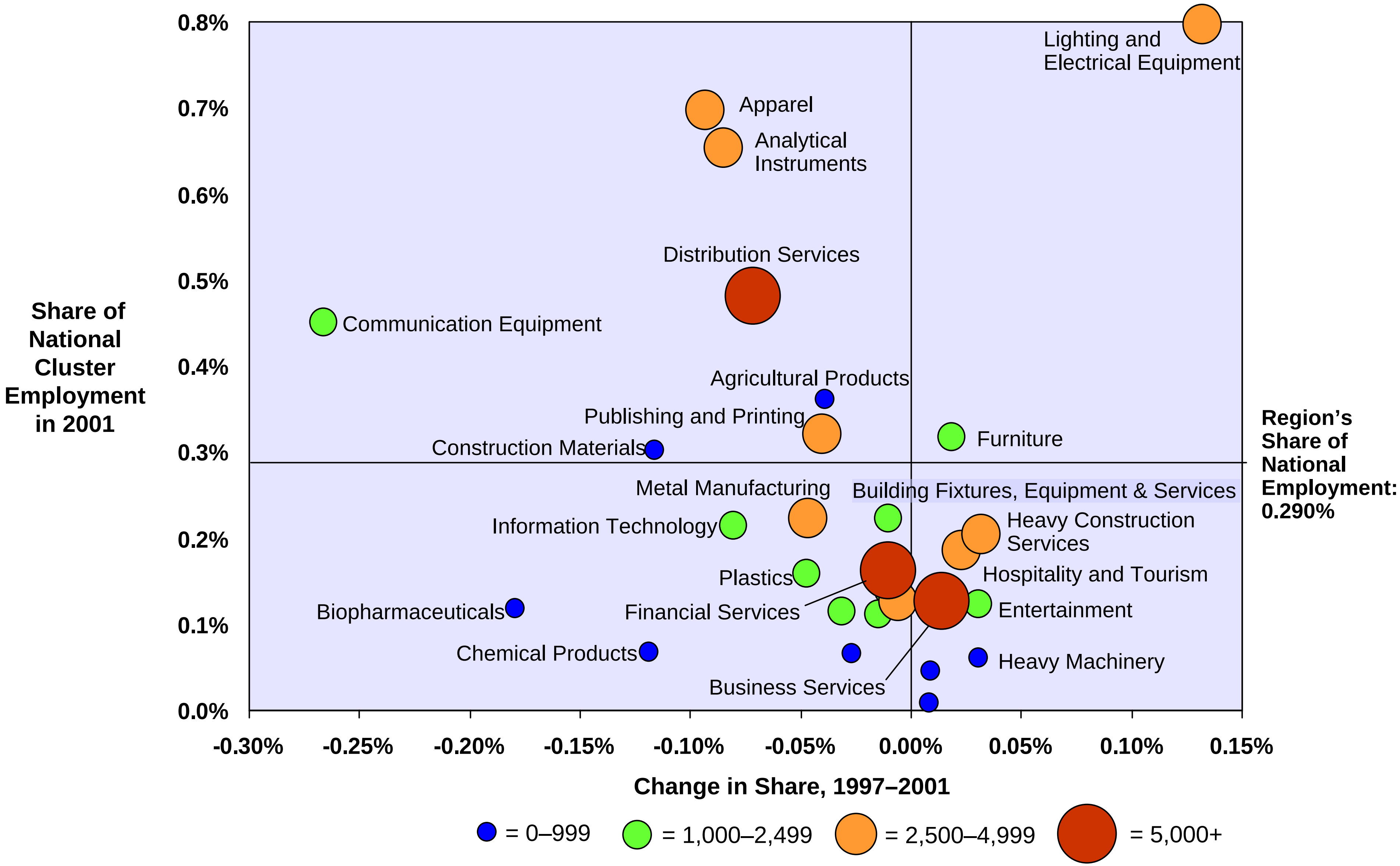
Specialization By Traded Cluster

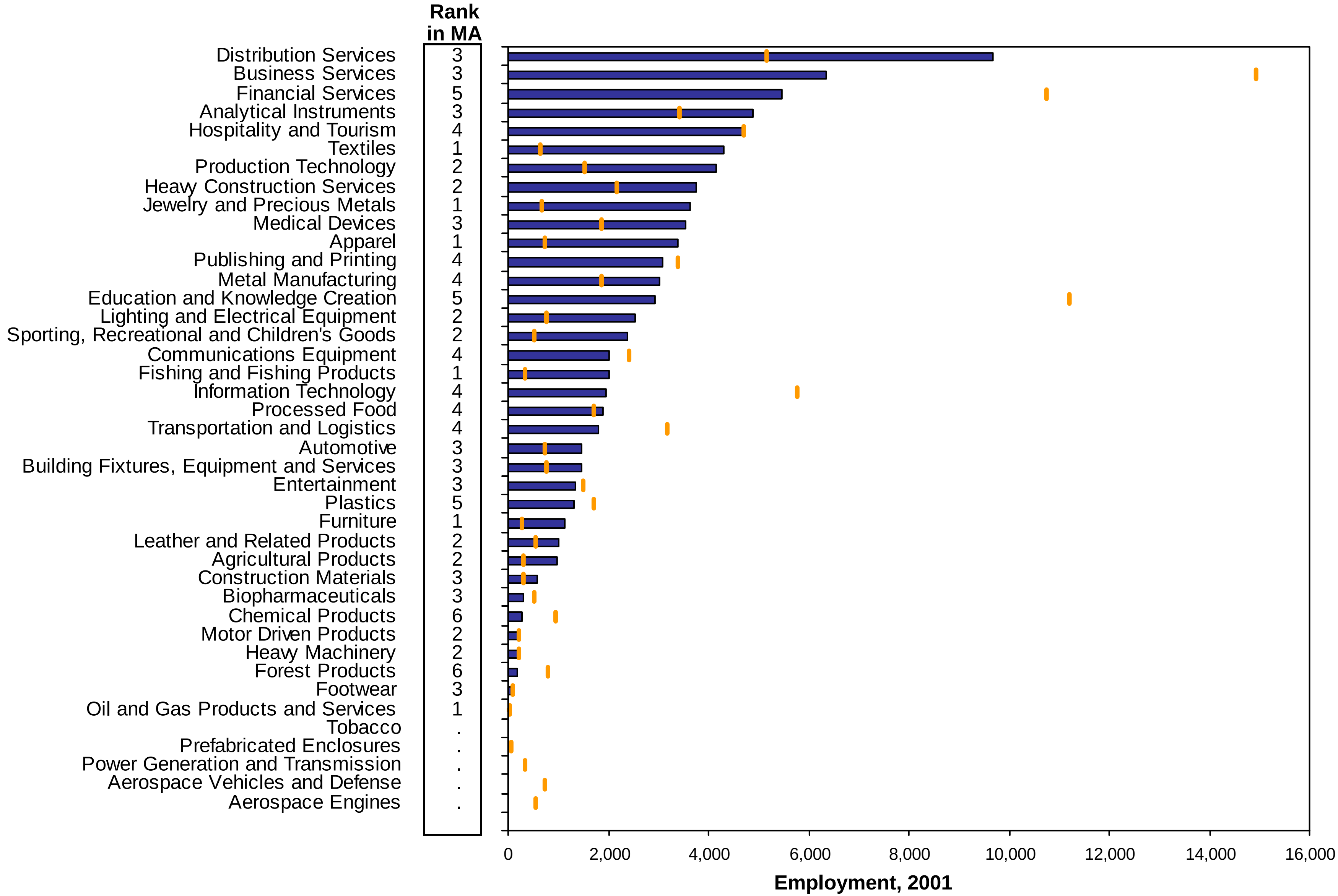
Southeast Region



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

Employment By Traded Cluster

Southeast 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

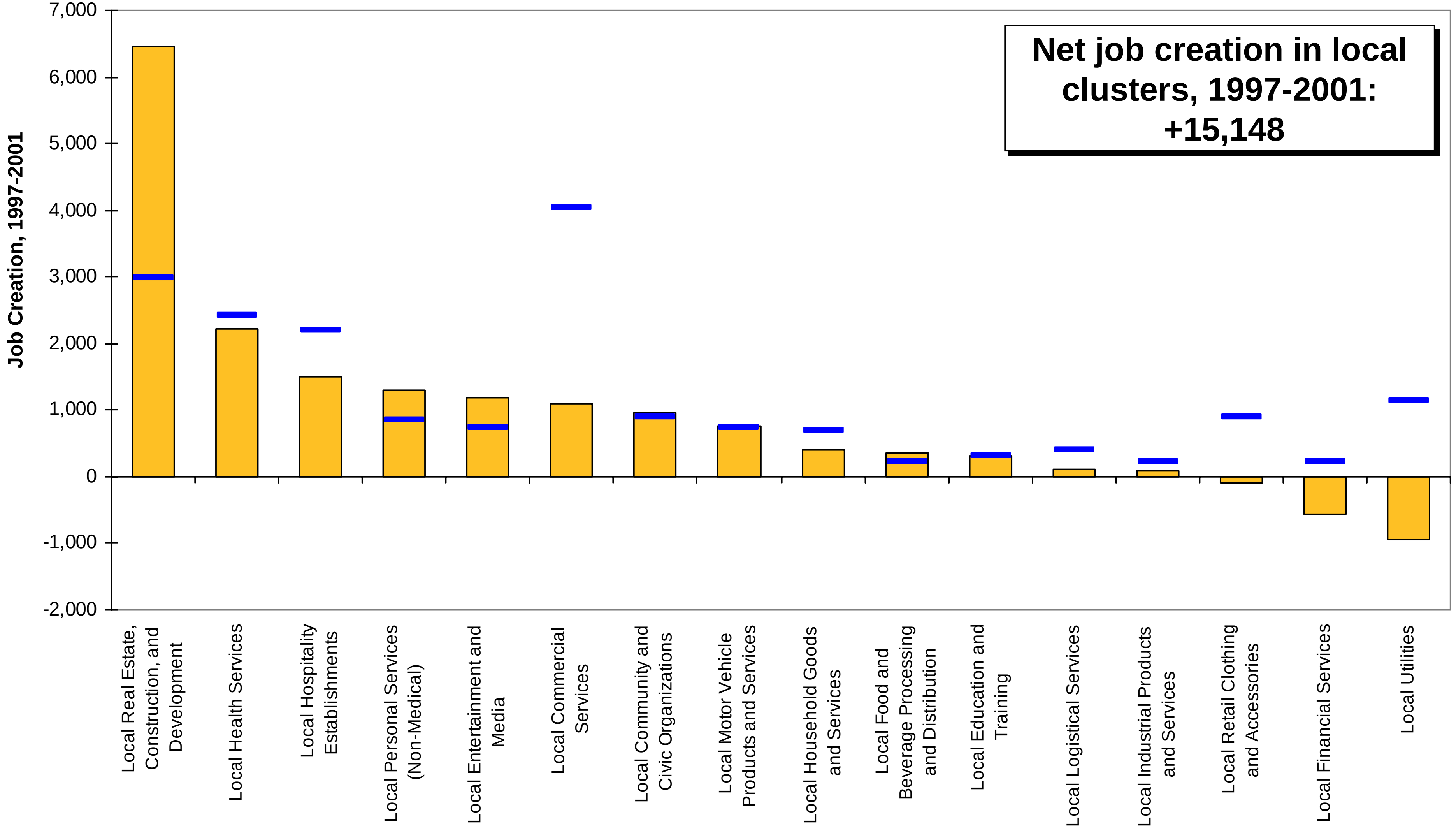
Southeast Region

— 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

Job Creation By Local Cluster

Southeast Region

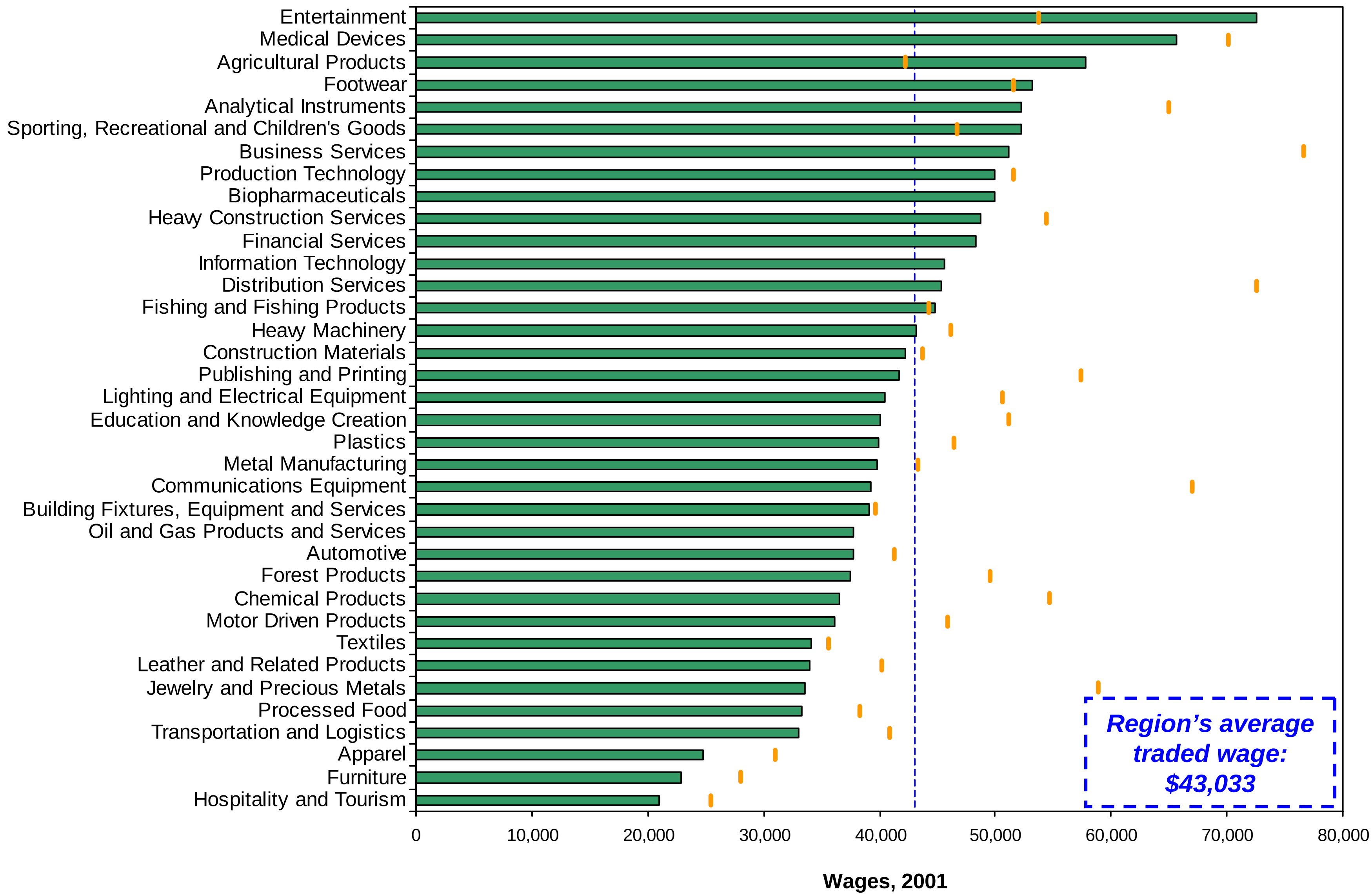


— Indicates expected job creation at rates achieved in **national benchmark** clusters, i.e. % change in national benchmark times initial employment

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

Wages By Traded Cluster

Southeast Region with State Benchmarks



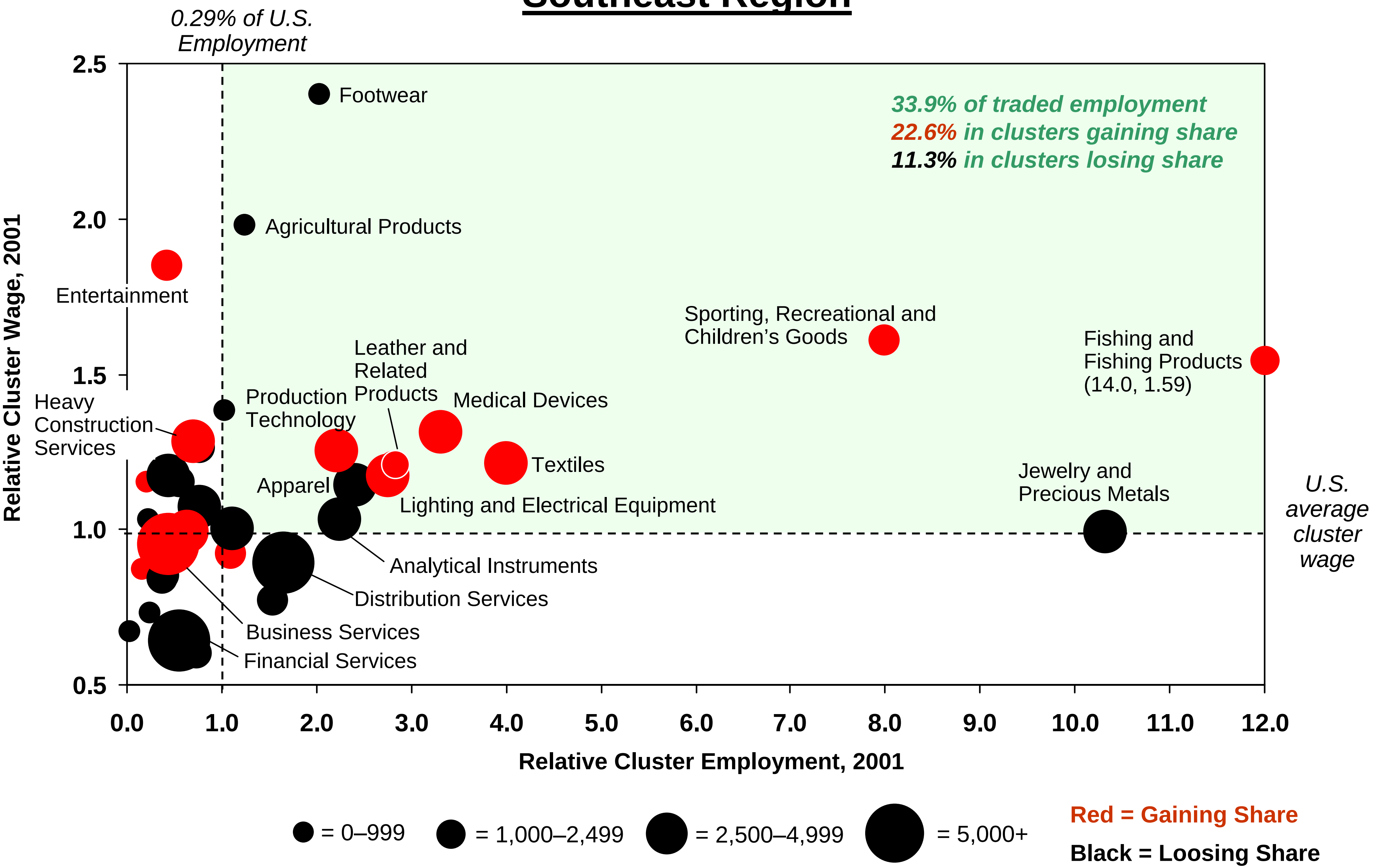
| - Indicates Massachusetts average wage in the cluster.

Note: Wages are not available in all clusters due to data suppression to protect confidentiality.

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

Relative Cluster Performance

Southeast Region



Note: 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

Leading Sub-Clusters by Location Quotient

Southeast Region, 2001

Cluster	Subcluster	Location Quotient	Share of National Employment	Rank among Massachusetts Regions	Employment
Distribution Services	Apparel and Accessories Wholesaling	4.94	1.43%	1	3,150
	Catalog and Mail-order	3.86	1.12%	1	2,557
	Food Products Wholesaling	2.69	0.78%	2	1,244
Analytical Instruments	Process Instruments	5.84	1.69%	3	3,201
Hospitality and Tourism	Ground Transportation	2.78	0.81%	2	779
Textiles	Specialty Apparel Components	12.08	3.50%	1	976
	Finishing Plants	9.69	2.81%	1	528
	Fabric Mills	8.82	2.56%	1	2,500
	Specialty Fabric Processing	3.62	1.05%	1	129
Production Technology	Process Equipment Sub-systems and Components	3.61	1.05%	1	3,374
Jewelry and Precious Metals	Jewelry and Precious Metal Products	11.69	3.39%	1	3,398
	Costume jewerly	8.85	2.57%	1	235
Medical Devices	Surgical Instruments and Supplies	5.77	1.67%	2	3,291
	Ophthalmic Goods	2.60	0.76%	2	202
Apparel	Knitting and Finishing Mills	3.52	1.02%	1	888
	Men's Clothing	3.44	1.00%	1	1,145
	Women's and Children's Clothing	2.57	0.75%	1	1,354
Publishing and Printing	Photographic Equipment and Supplies	4.14	1.20%	2	591
Lighting and Electrical Equipment	Lighting Fixtures	10.06	2.92%	1	1,113
Sporting, Recreational and Children's Goods	Sporting and Athletic Goods	11.59	3.36%	1	2,224
	Games, Toys, and Children's Vehicles	2.55	0.74%	2	161
Communications Equipment	Electrical and Electronic Components	3.92	1.14%	2	1,830
Fishing and Fishing Products	Fishing and Hunting	37.02	10.74%	1	1,069
	Fish Products	8.80	2.55%	2	896
	Processed Seafoods	3.41	0.99%	2	42
Automotive	Automotive Components	3.59	1.04%	1	817
Furniture	Furnishings	5.08	1.47%	1	970
Leather Products	Coated Fabrics	10.11	2.93%	3	257
	Accessories	8.55	2.48%	1	312
Agricultural Products	Agricultural Products	2.53	0.73%	1	771
Construction Materials	Rubber Products	4.06	1.18%	1	580
Chemical Products	Special Packaging	3.50	1.01%	2	109
Footwear	Footwear Parts	22.82	6.62%	1	124

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

Business Environment

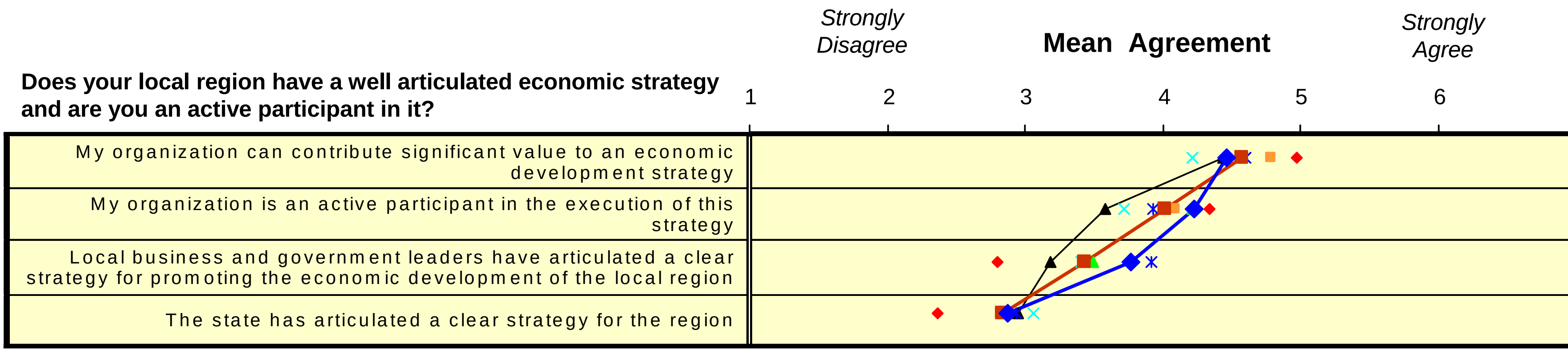
Southeastern Massachusetts

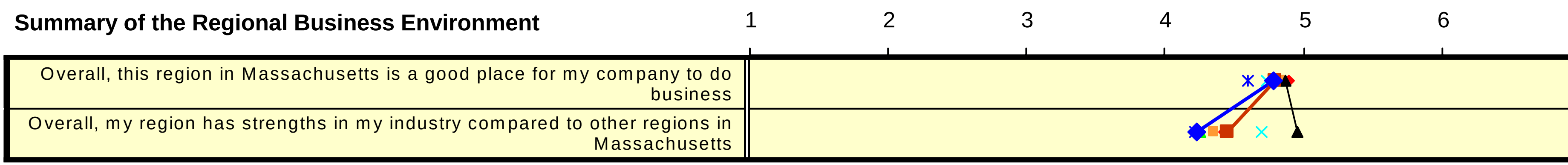
- Overall, the Southeast region is seen as a relatively attractive location but as lagging the leading regions in Massachusetts
  - Specific advantages are the quality of life and, compared to the rest of the state, moderate cost of living
  - Critical disadvantages are the **access to risk capital, transfer of knowledge from local research institutions**, and the **availability of scientists and researchers**

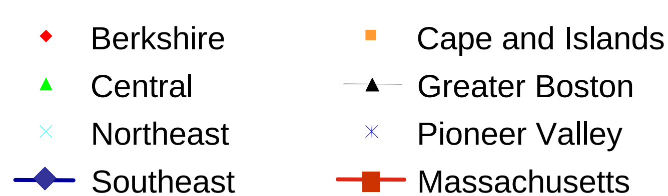
- The loss of the currently advantageous cost position is seen as a critical threat to the region
  - Overall level of threats seen as lower than in other Massachusetts regions

Regional Comparisons

Regional Strategy & Summary of the Regional Business Environment



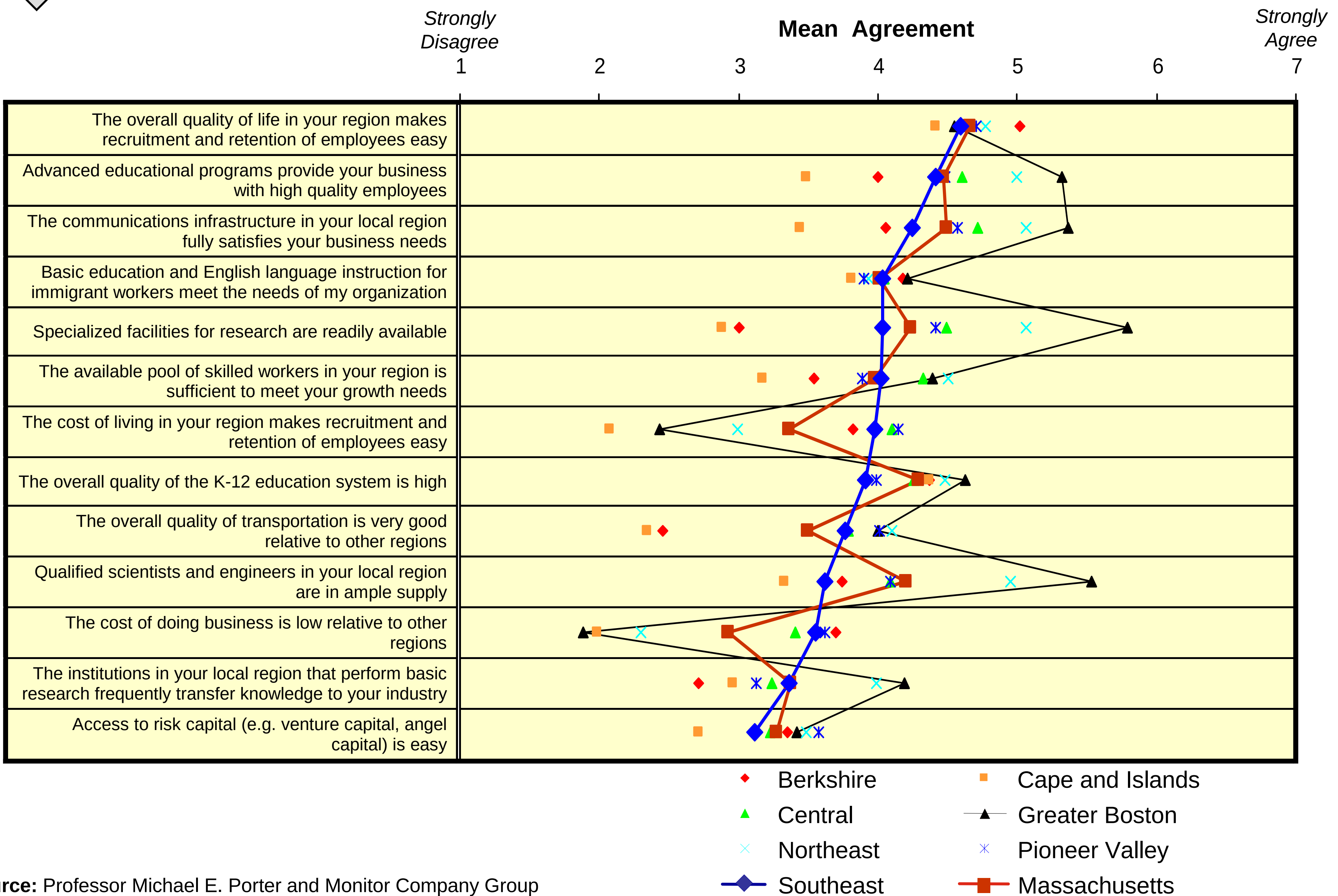




Source: Professor Michael E. Porter and Monitor Company Group

Regional Comparisons

Availability of Inputs



Source: Professor Michael E. Porter and Monitor Company Group

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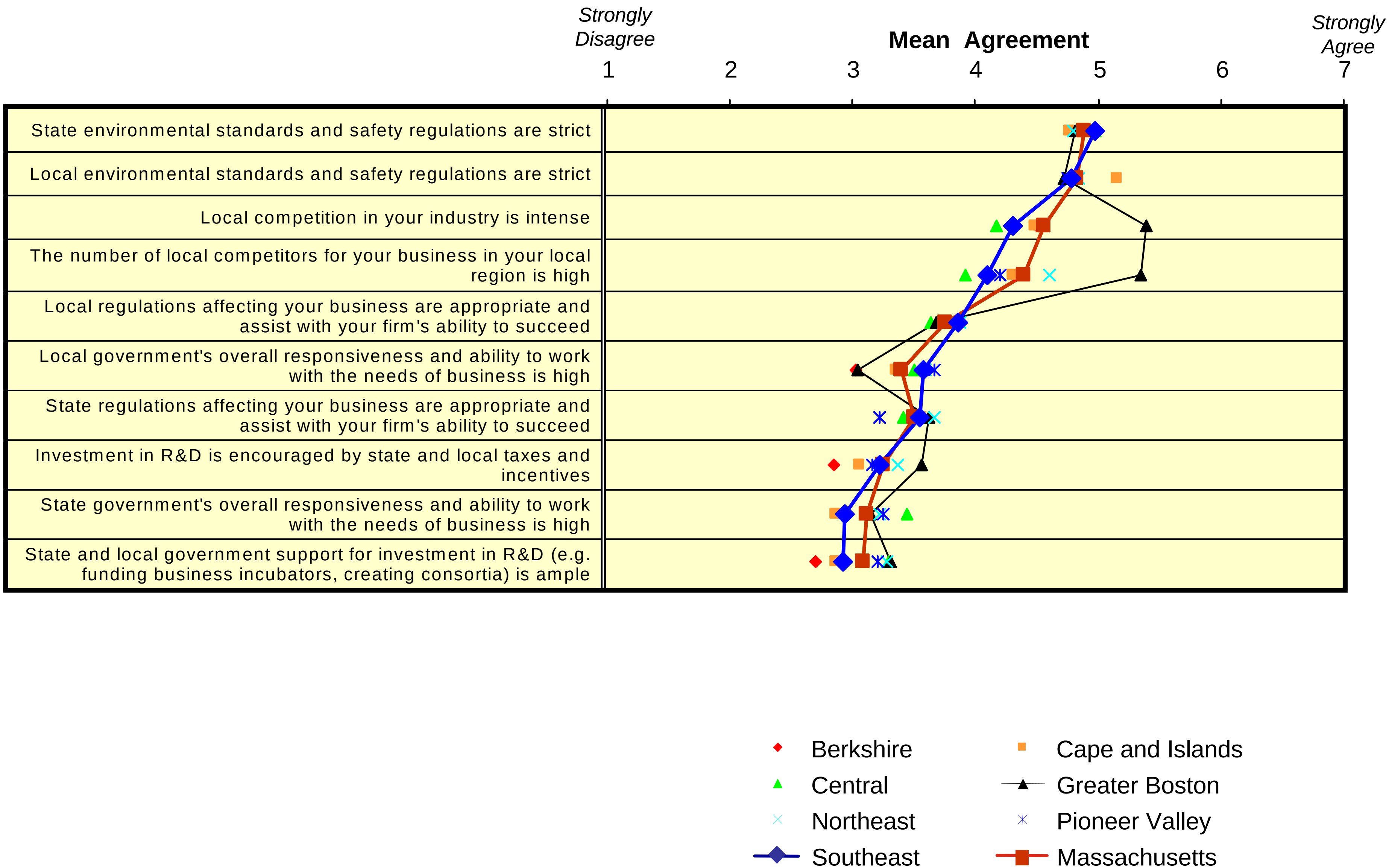
Regional Comparisons

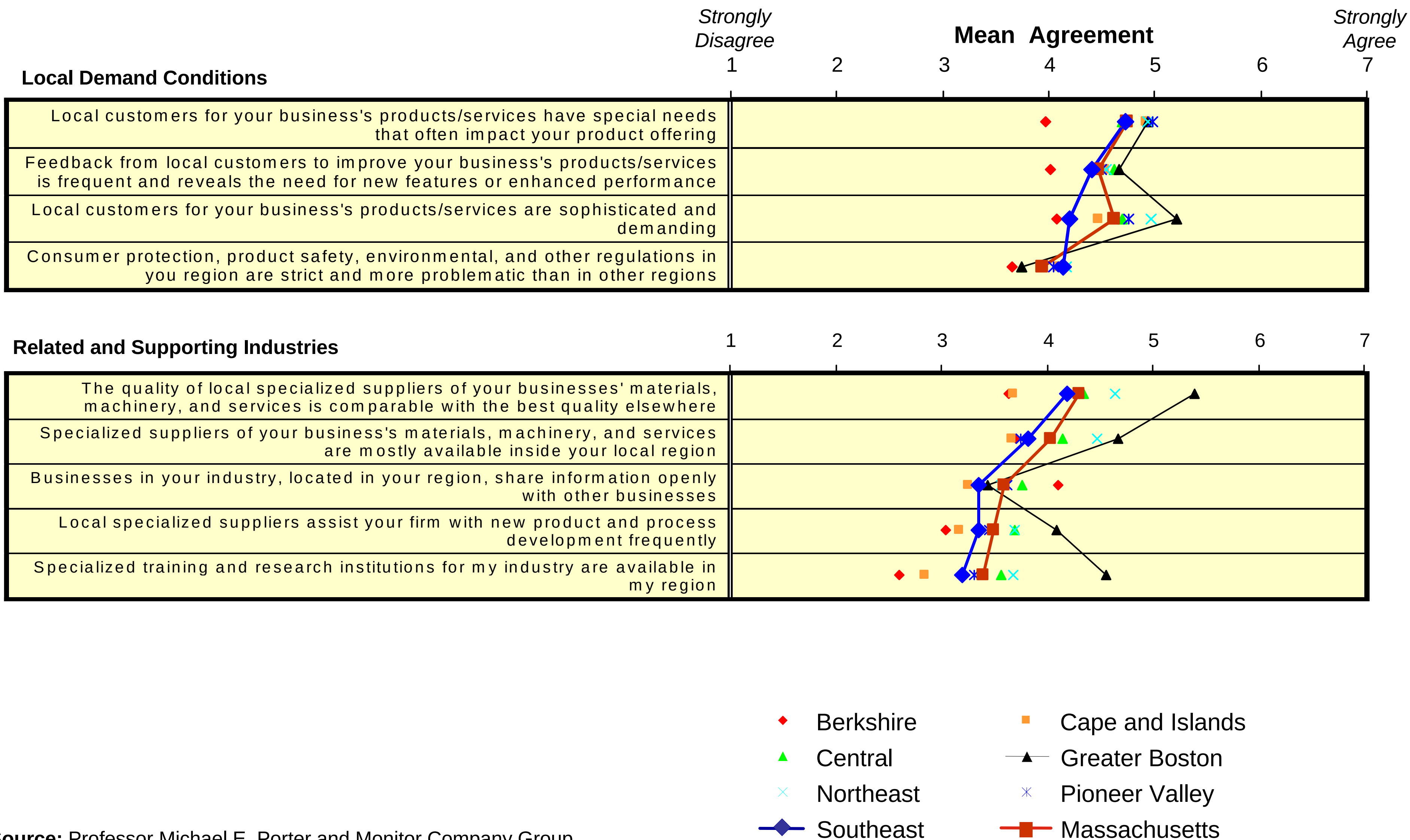
Rules and Incentives Governing Investment and Competition



Source: Professor Michael E. Porter and Monitor Company Group

Regional Comparisons

Local Demand Conditions & Related and Supporting Industries



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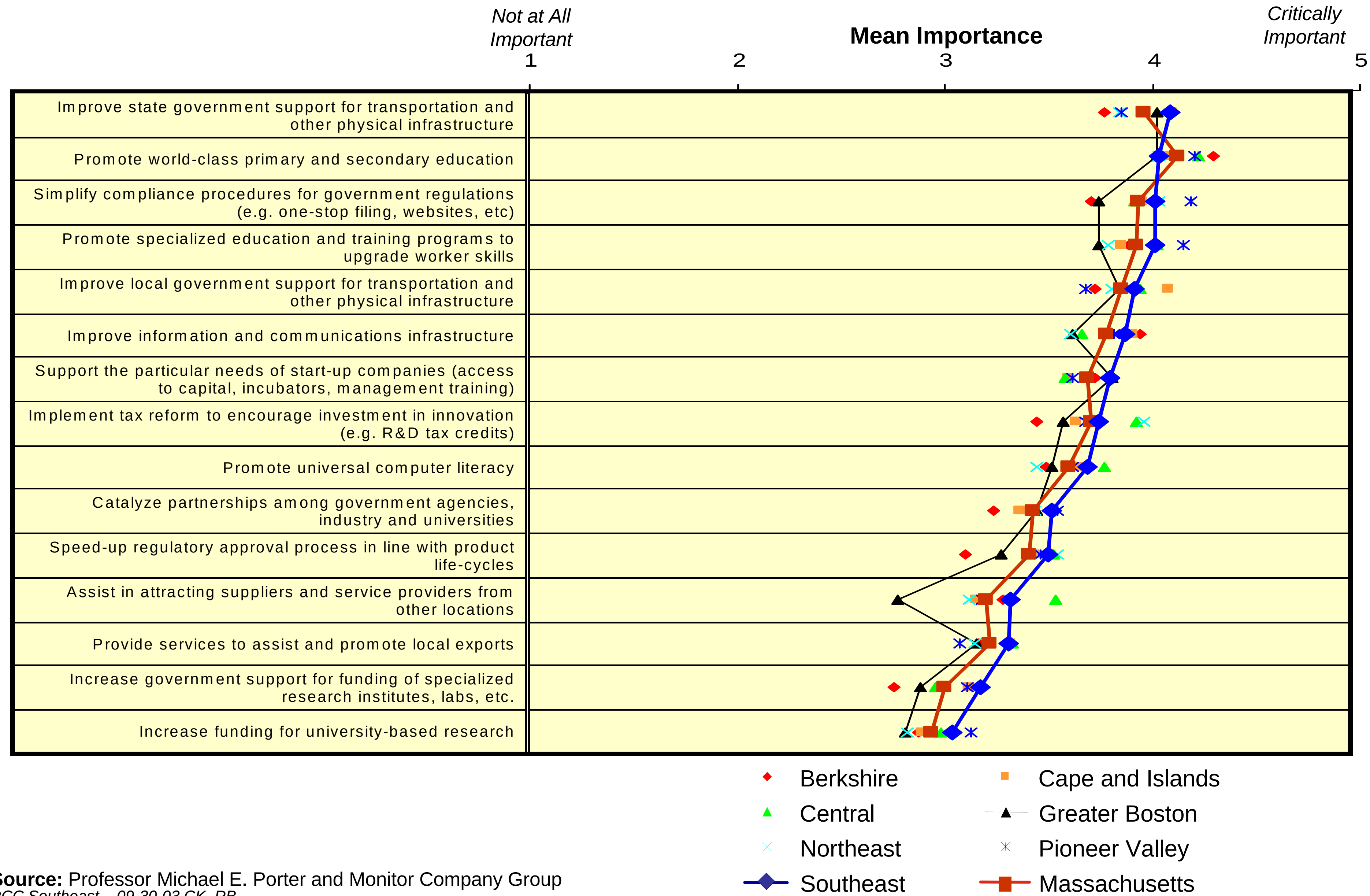
Regional Comparisons

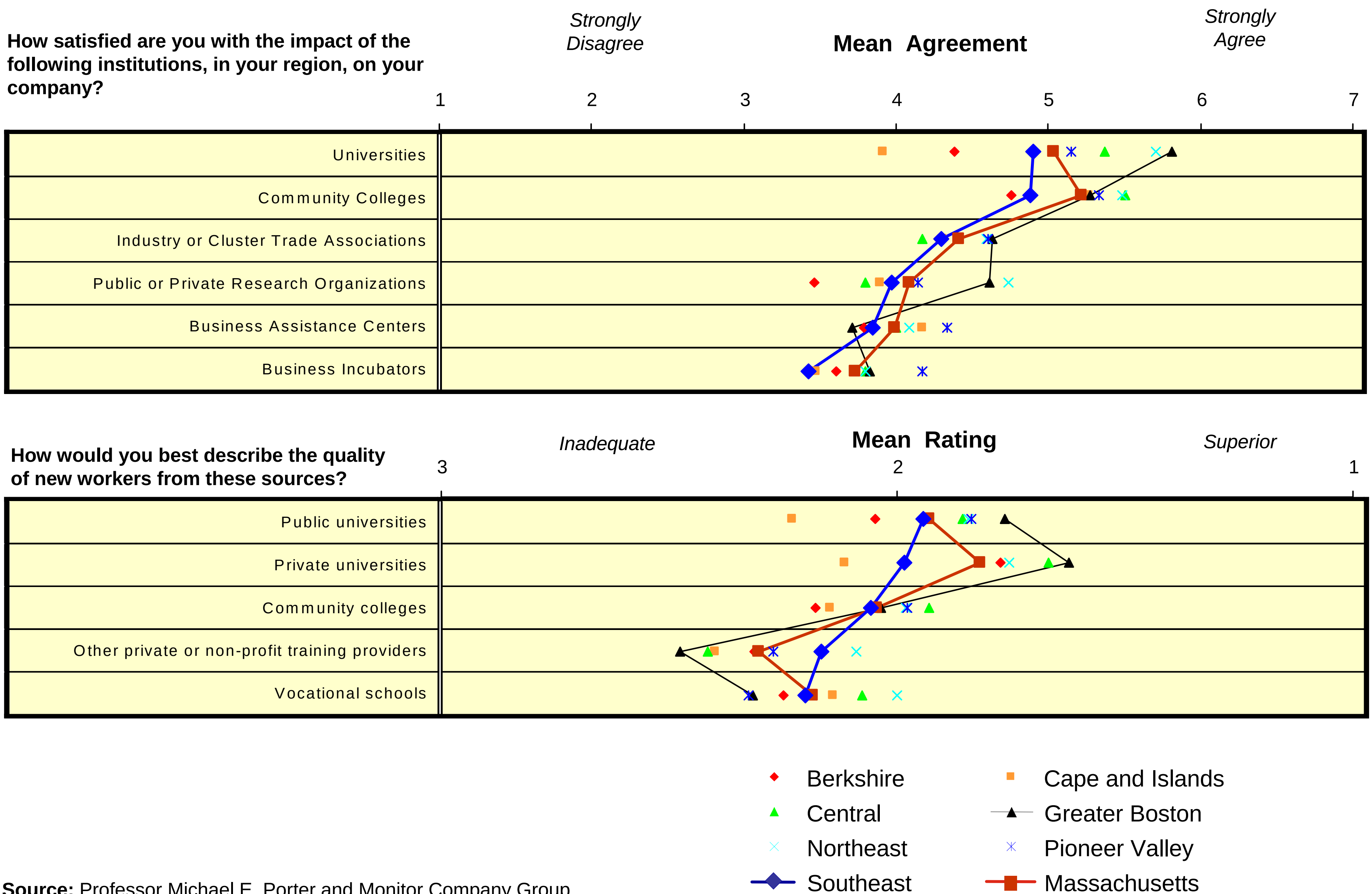
Priorities for Government



Source: Professor Michael E. Porter and Monitor Company Group

Regional Comparisons

Institutions & Education



Source: Professor Michael E. Porter and Monitor Company Group

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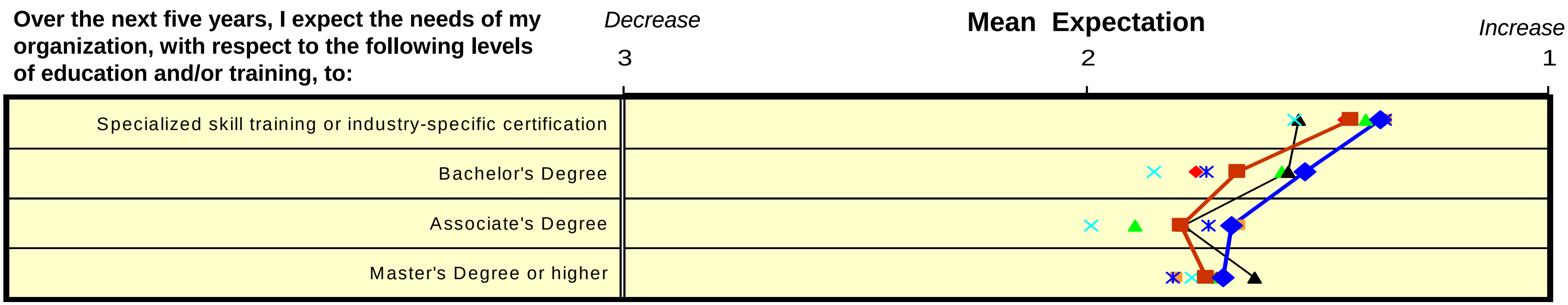
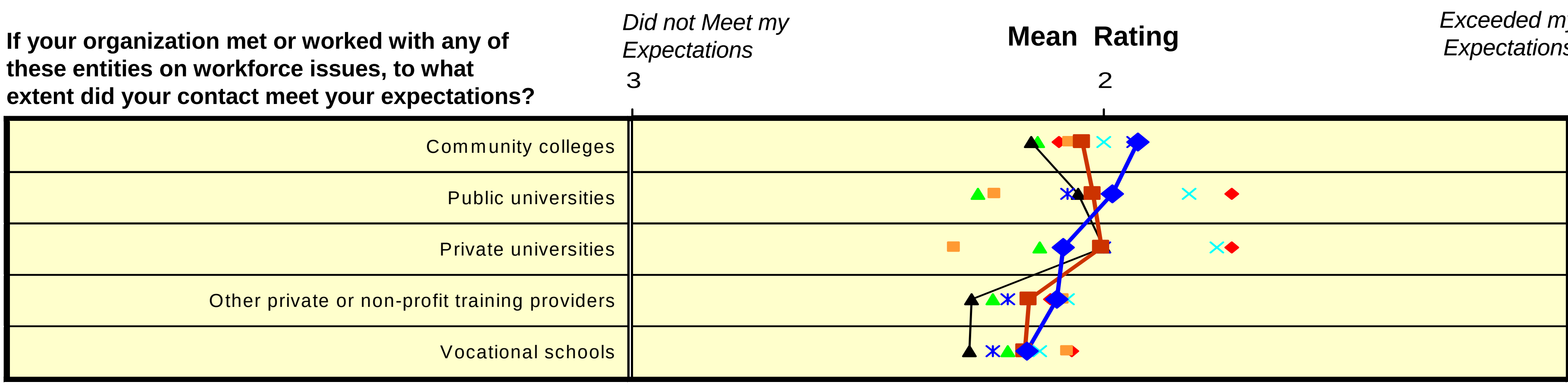
Regional Comparisons

Institutions & Education (Cont.)

Over the next five years, I expect the needs of my organization, with respect to the following levels of education and/or training, to:



If your organization met or worked with any of these entities on workforce issues, to what extent did your contact meet your expectations?



Berkshire
Central
Northeast
Southeast
Cape and Islands
Greater Boston
Pioneer Valley
Massachusetts

Source: Professor Michael E. Porter and Monitor Company Group

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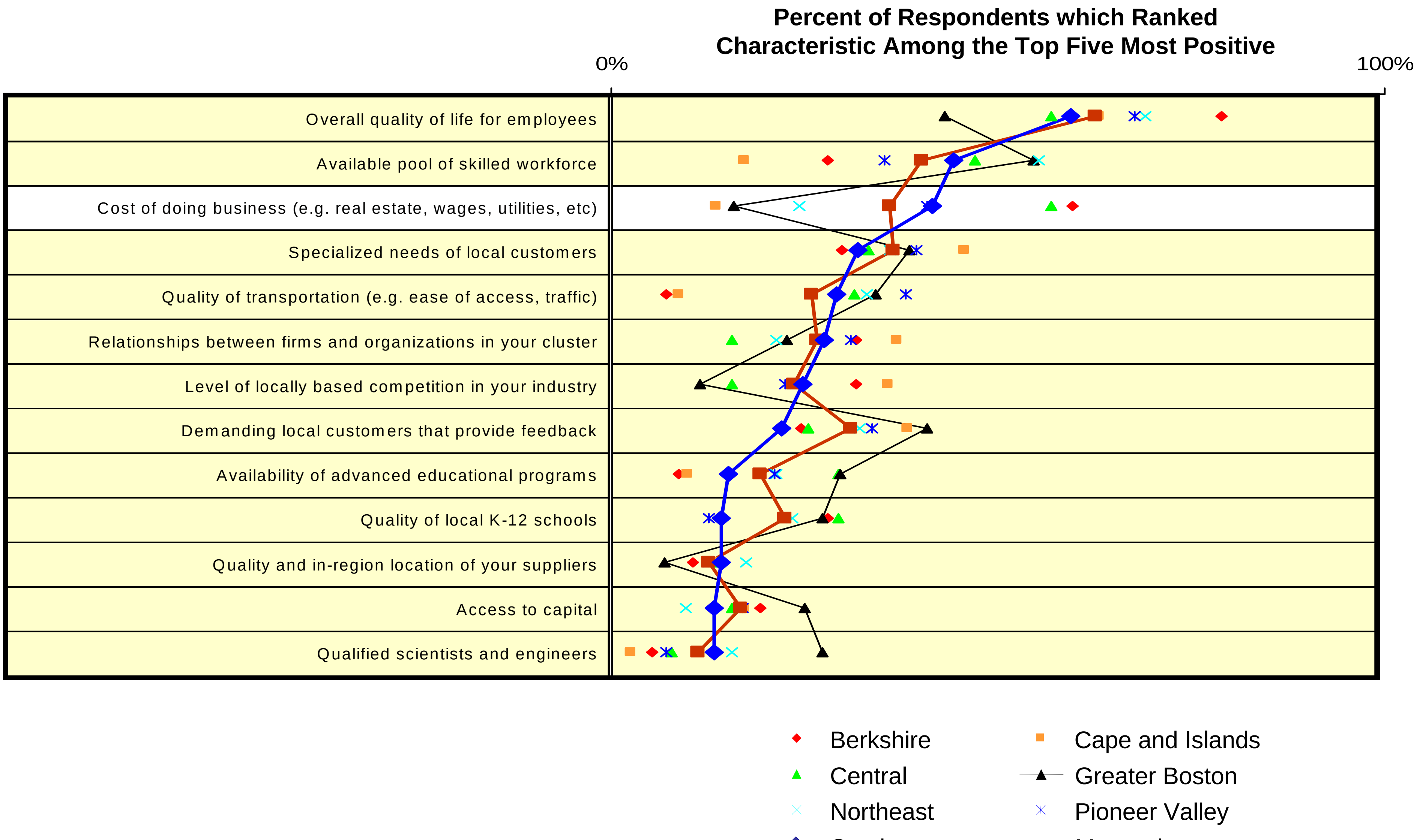
Regional Comparisons

Positive Impact on the Local Business Environment



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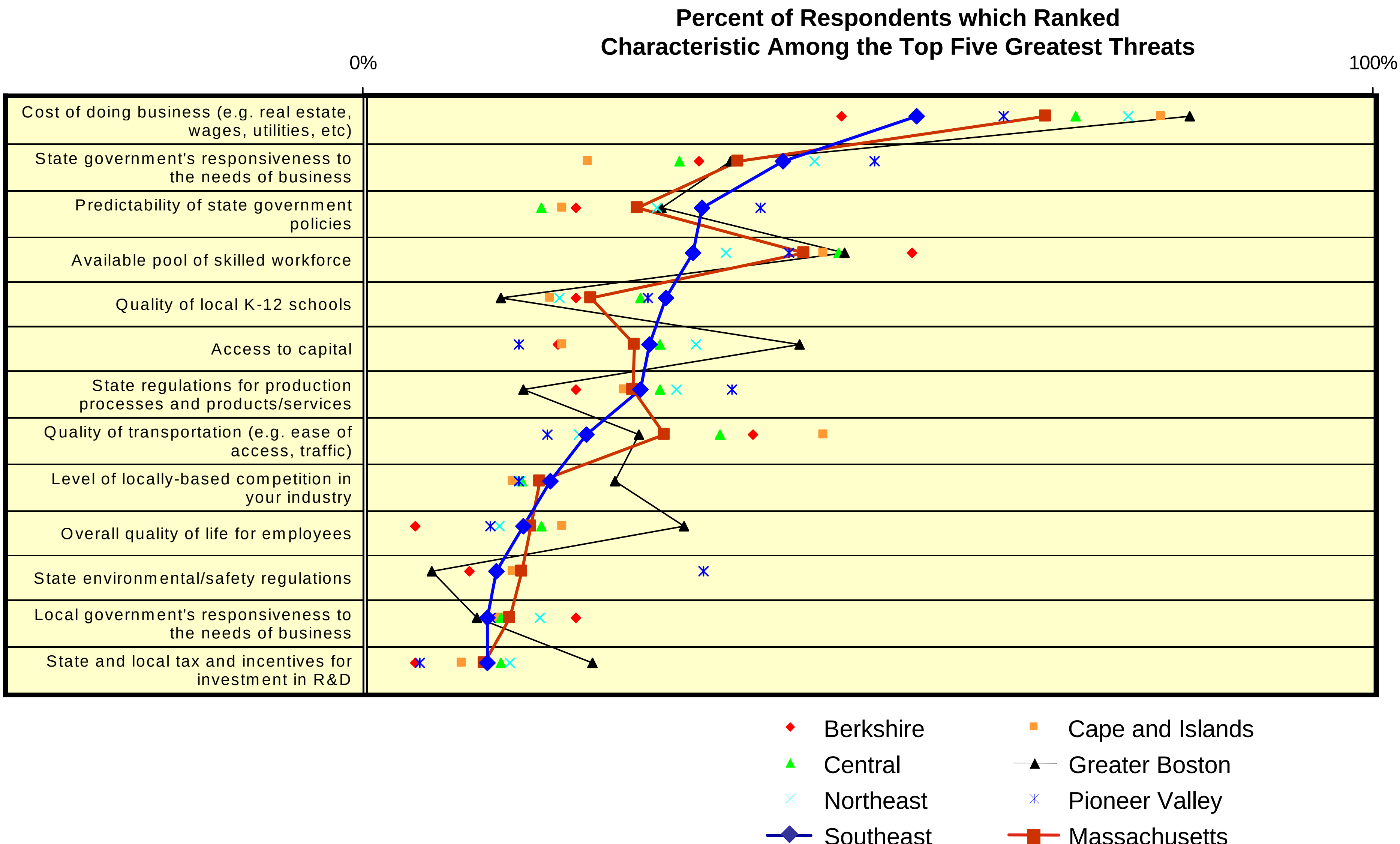
Regional Comparisons

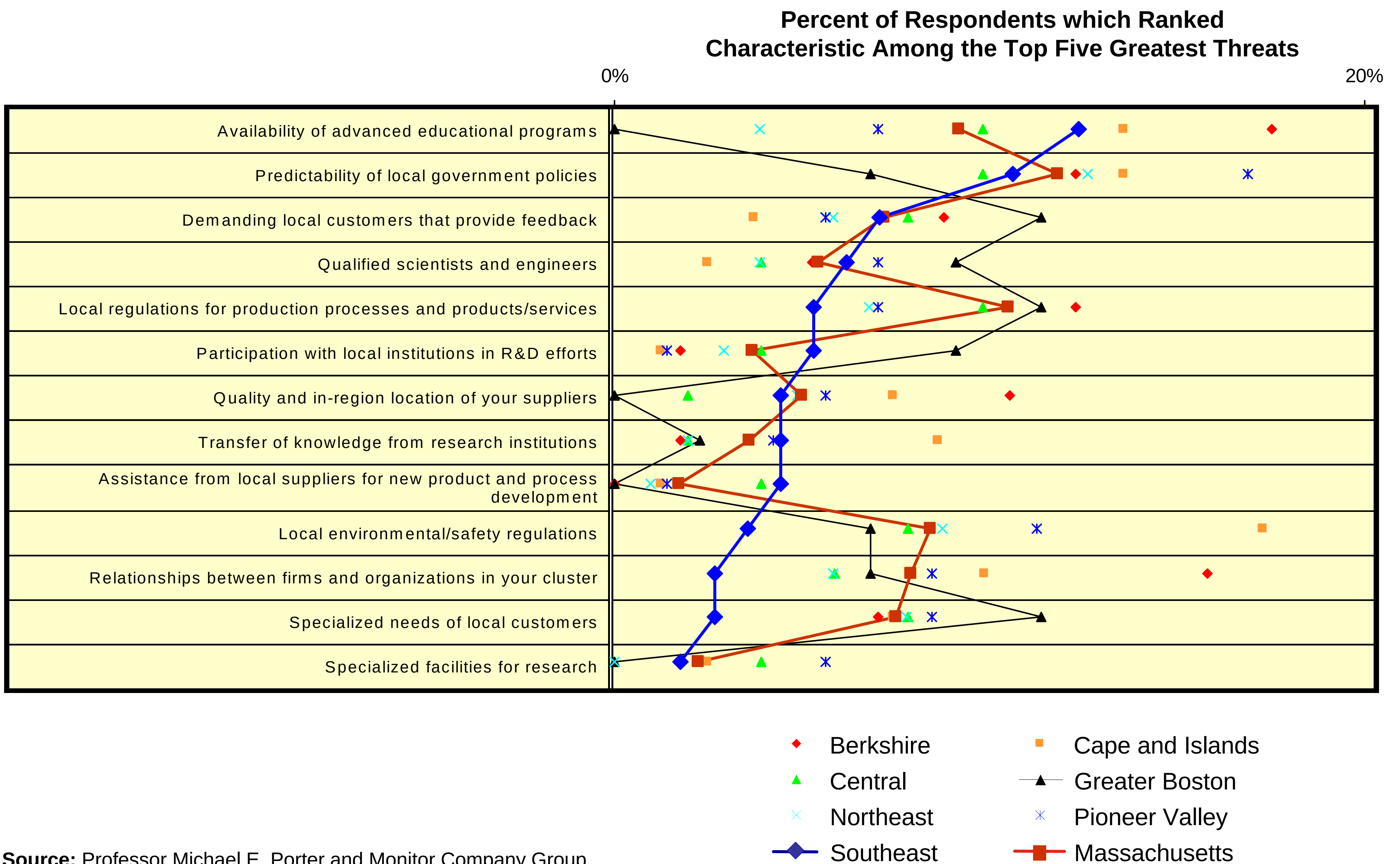
Future Threats in the Local Business Environment



Source: Professor Michael E. Porter and Monitor Company Group

Regional Comparisons

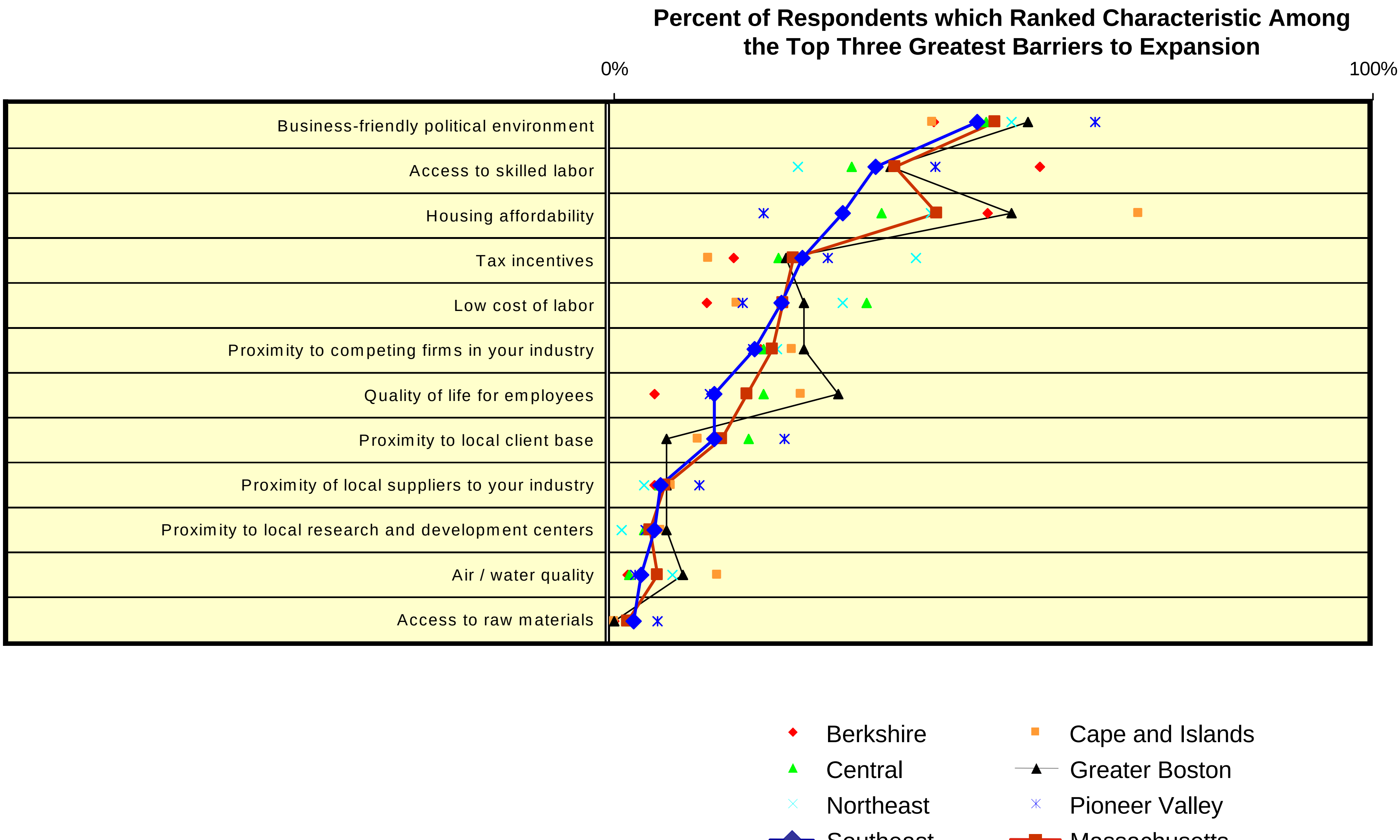
Future Threats in the Local Business Environment (Cont.)



Source: Professor Michael E. Porter and Monitor Company Group

Regional Comparisons

Barriers to Expansion in the Next Five Years



Source: Professor Michael E. Porter and Monitor Company Group

Regional Competitiveness

Southeastern Massachusetts

- Foundations of Regional Competitiveness
- Assessing the Competitiveness of Southeastern Massachusetts
- **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 Southeast Region

- Strengthen business environment to move beyond competing as a relatively low cost region within Massachusetts
  - E.g., increase capacity for innovation and knowledge transfer

- Mount cluster development efforts for strong traded clusters, especially those that are under pressure such as Distribution Services

- Leverage linkages to clusters present in the Greater Boston region, such as Medical Devices and Analytical Instruments

Visit the home page of the Institute, www.isc.hbs.edu, for copies of all materials presented today plus further supporting data on the regions.

See the section for "Competitiveness of States and Region" or to go directly to today's material at: www.isc.hbs.edu/MA_RCC.htm.