

Philadelphia Competitiveness Profile

Innovation Leadership Speaker Series Fox School of Business, Temple University

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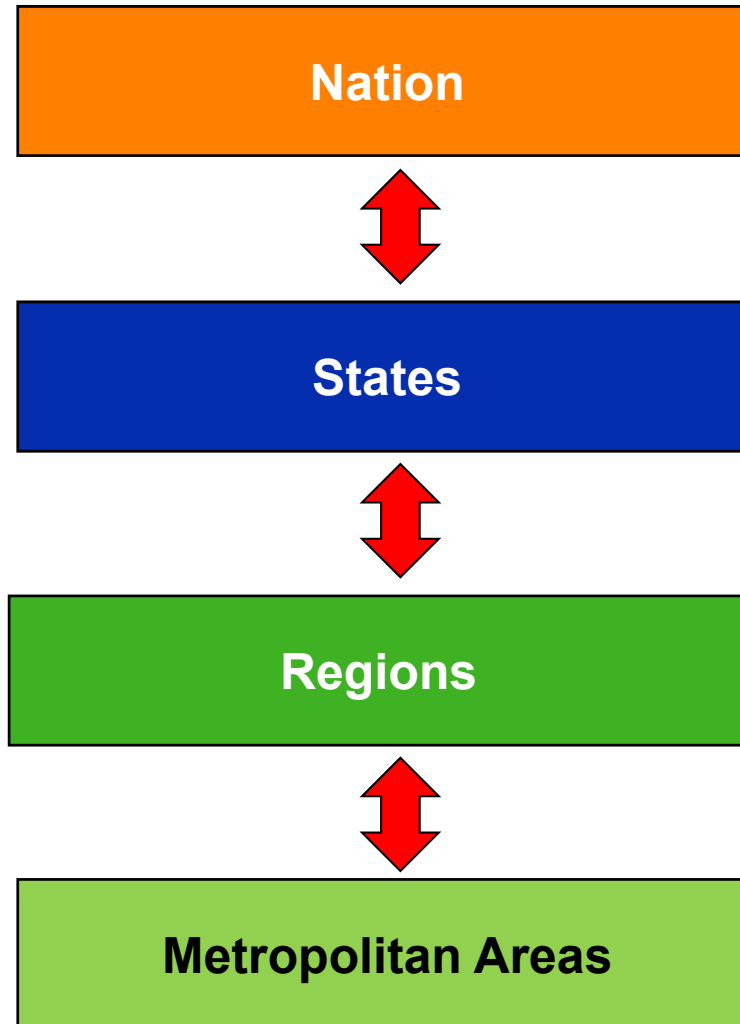
March 11, 2014

What is Competitiveness?

A nation or region is competitive to the extent that firms operating there are able to **compete successfully** in the regional and global economy while maintaining or improving **wages and living standards** for the average citizen

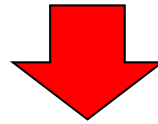
- Competitiveness depends on the **long-run productivity** and efficiency of a location as a place to do business
 - The productivity of existing firms and workers
 - The ability to achieve high participation of citizens in the workforce
- Competitiveness is **not**:
 - Low wages
 - A weak currency
 - Jobs per se

Geographic Influences on Competitiveness



Regions and Competitiveness

- Economic performance **varies significantly** across sub-national regions (e.g., provinces, states, metropolitan areas)
- Many essential levers of competitiveness reside at the **regional level**
- Regions **specialize** in different sets of clusters



- Regions are a **crucial unit** in competitiveness
- Each region needs its own distinctive **strategy and action agenda**
 - Business environment improvement
 - Cluster upgrading
 - Improving institutional effectiveness

Philadelphia Performance Scorecard

Start Position

Trend

Current Position

Prosperity

GDP per Capita, 2001-2012

20

13

16

+4

Wages

Average Private Wage, 2001-2011

15

31

13

+2

Labor Mobilization

Proportion of Working Age Population in the Workforce, 2008-2012

33

25

36

-3

Job Creation

Private Employment Growth, 1999-2001 and 2009-2011

30

21

24

+6

Labor Productivity

GDP per Labor Force Participant, 2001-2011

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New Business Formation

Traded Cluster Establishment Growth, 1999-2001 and 2009-2011

20

42

43

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Innovation

Patents per Employee, 2001-2011

15

40

17

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Cluster Strength

Employment in Strong Clusters, 2001-2011

21

19

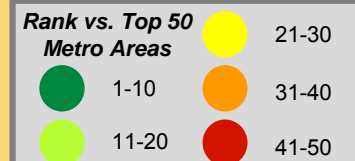
11

+10

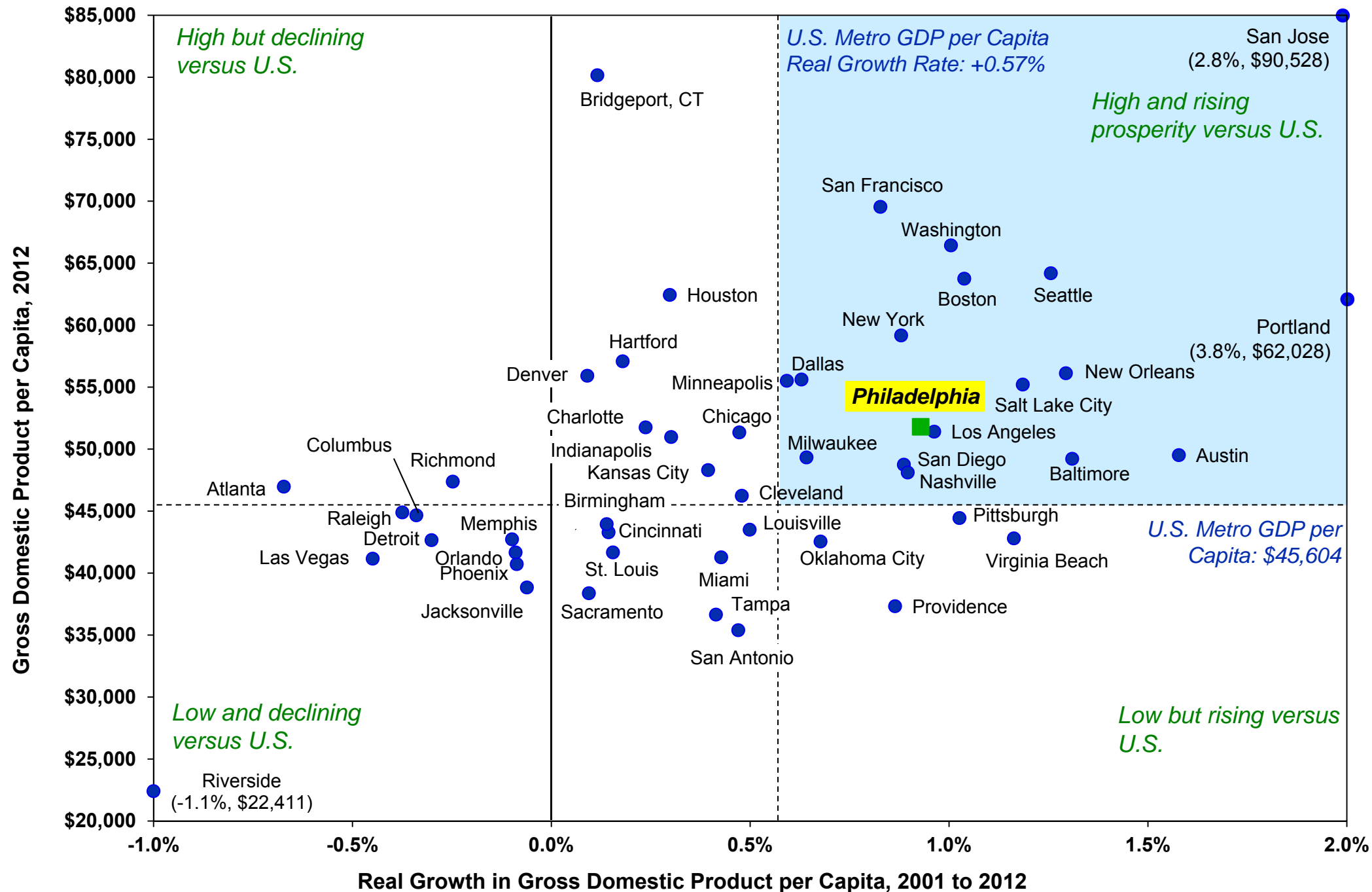
Leading Clusters

*by employment size, 2011
(national rank versus all metro areas)*

Distribution and Electronic Commerce (133,049, rank 6)
Education and Knowledge Creation (118,814, rank 6)
Financial Services (78,239, rank 6)
Insurance Services (42,971, rank 5)
Marketing, Design, and Publishing (28,093, rank 10)



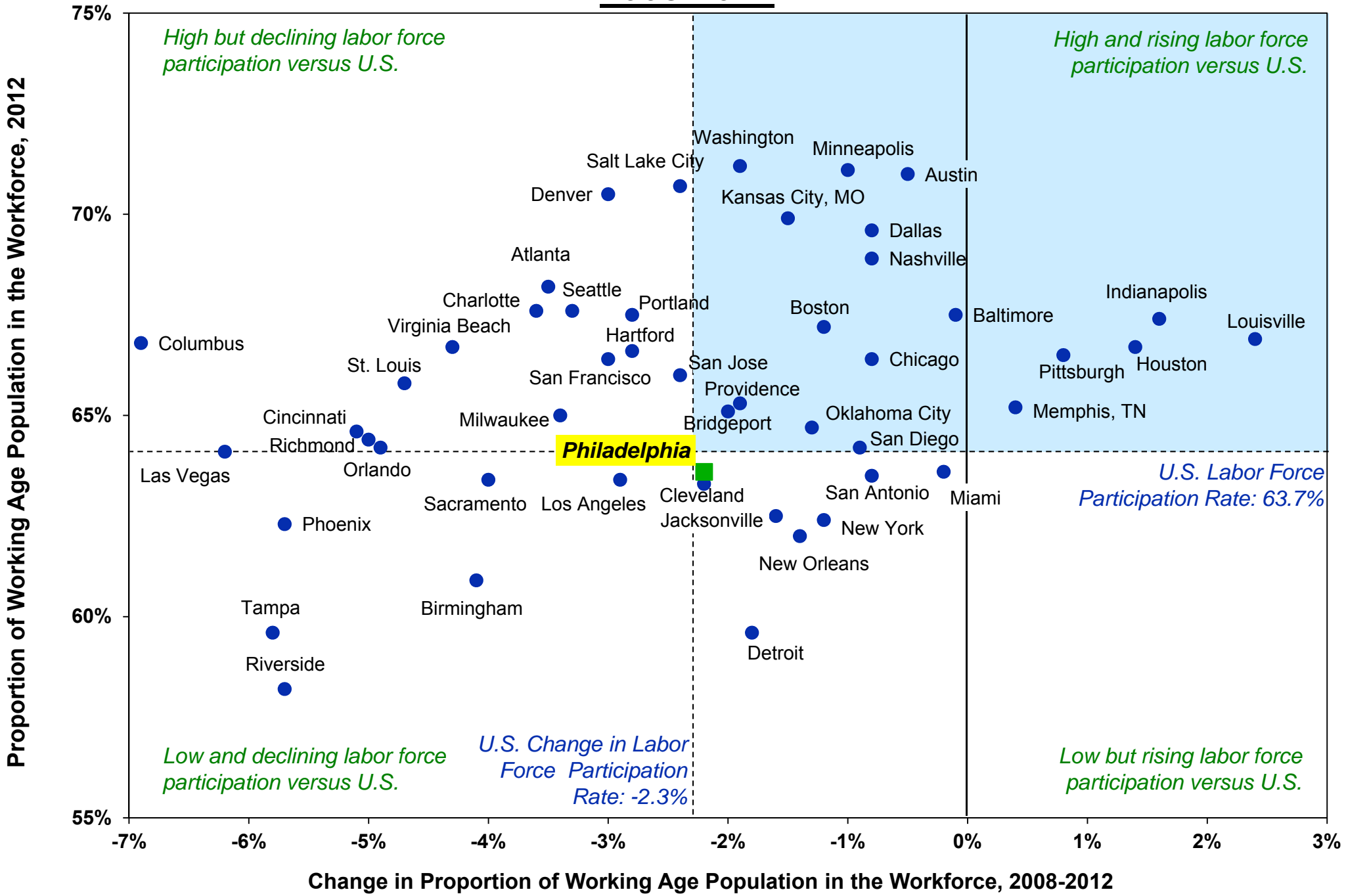
Comparative Metro Prosperity Performance 2001 - 2012



Notes: Source BEA. Data in 2005 constant dollars; compound annual growth rate on real values. 50 largest MSAs displayed.

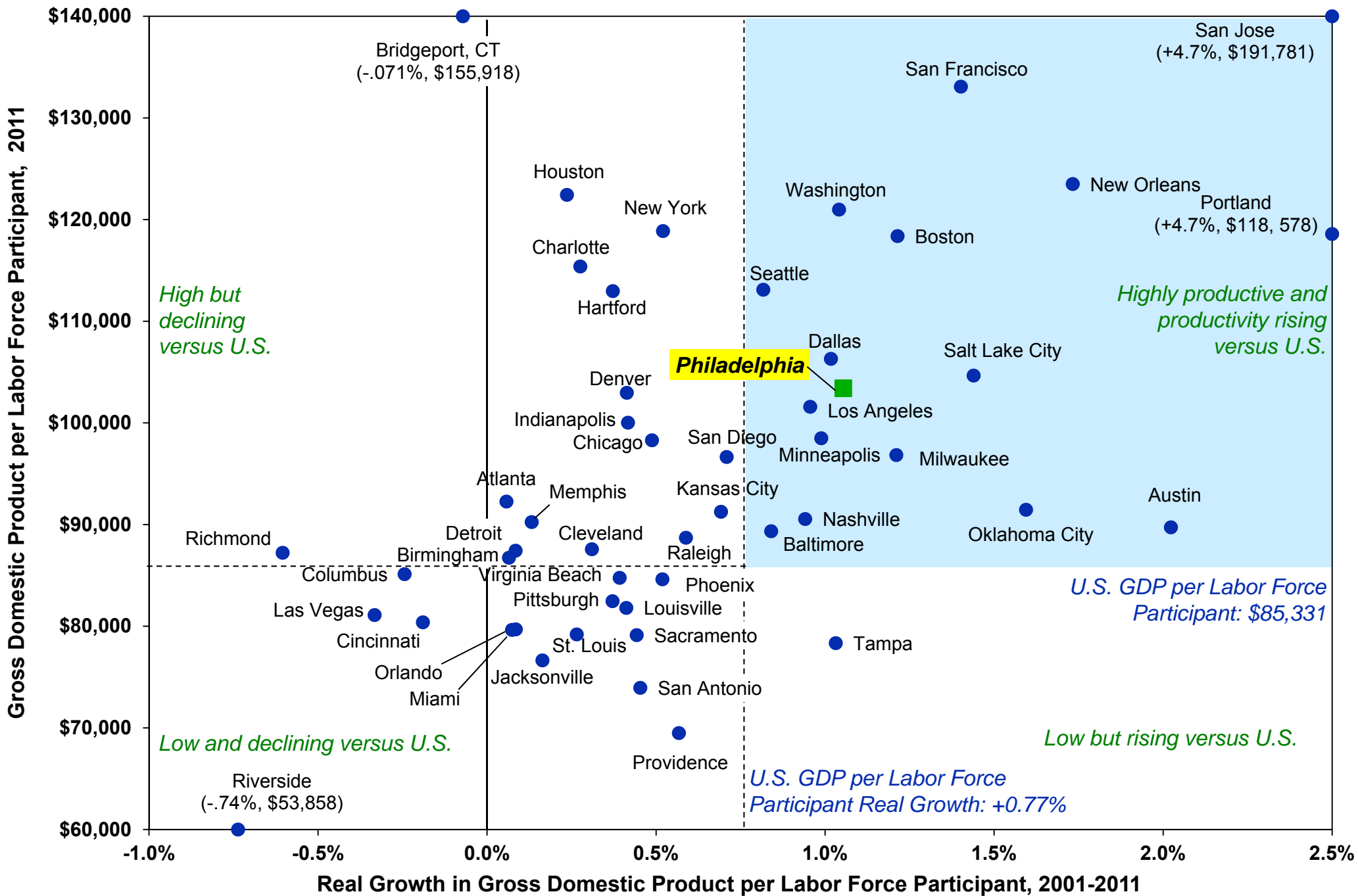
Comparative Metro Labor Mobilization Performance

2008-2012



Source: BLS. 50 largest MSAs displayed.

Comparative Metro Labor Productivity Performance 2001 - 2011



Sources: BEA, BLS. Notes: GDP in real 2005 dollars. Growth rate is calculated as compound annual growth rate. 50 largest MSAs displayed.

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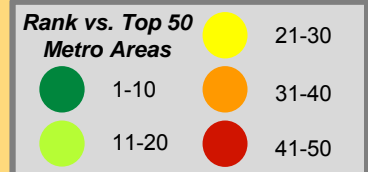
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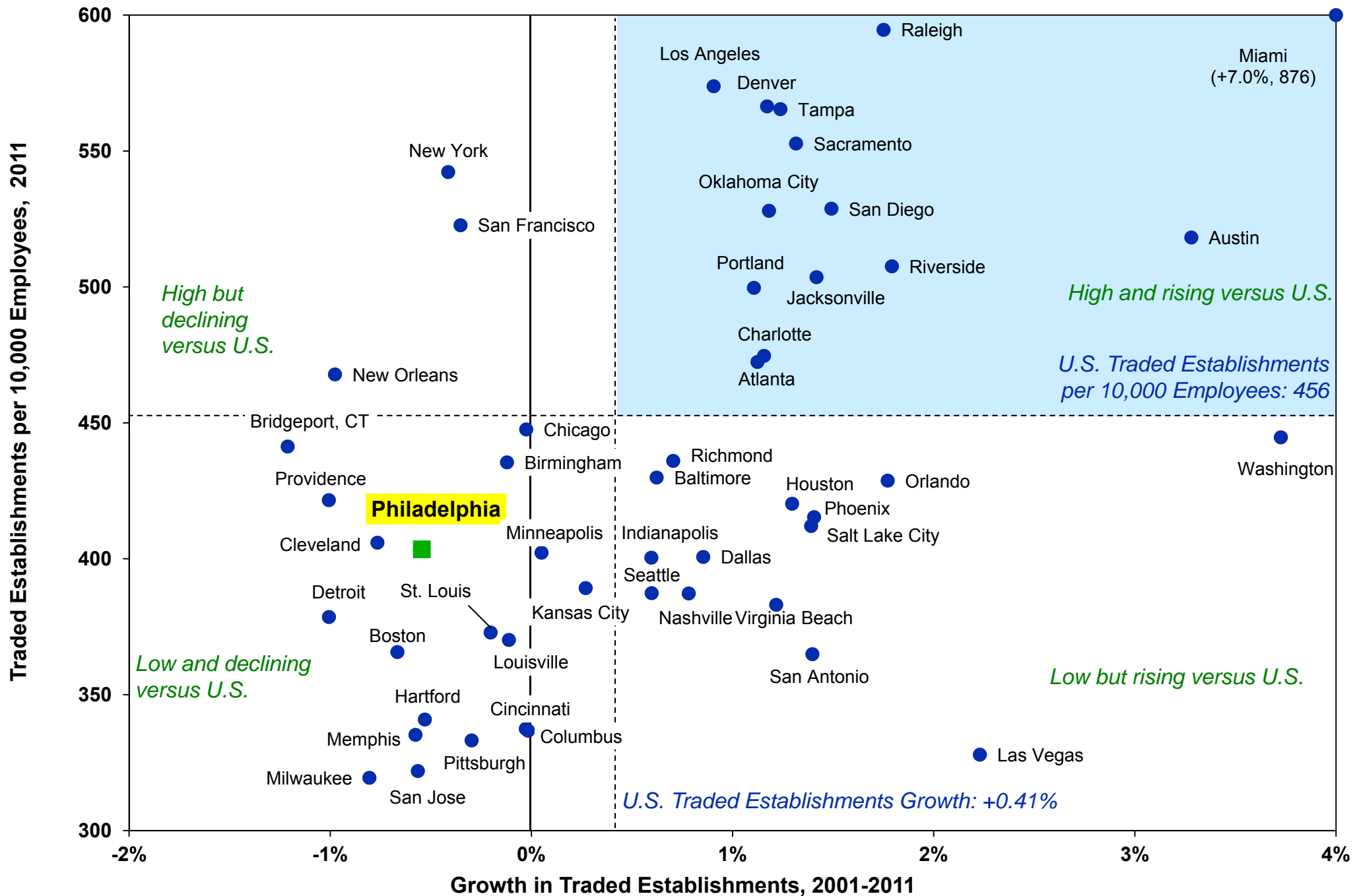
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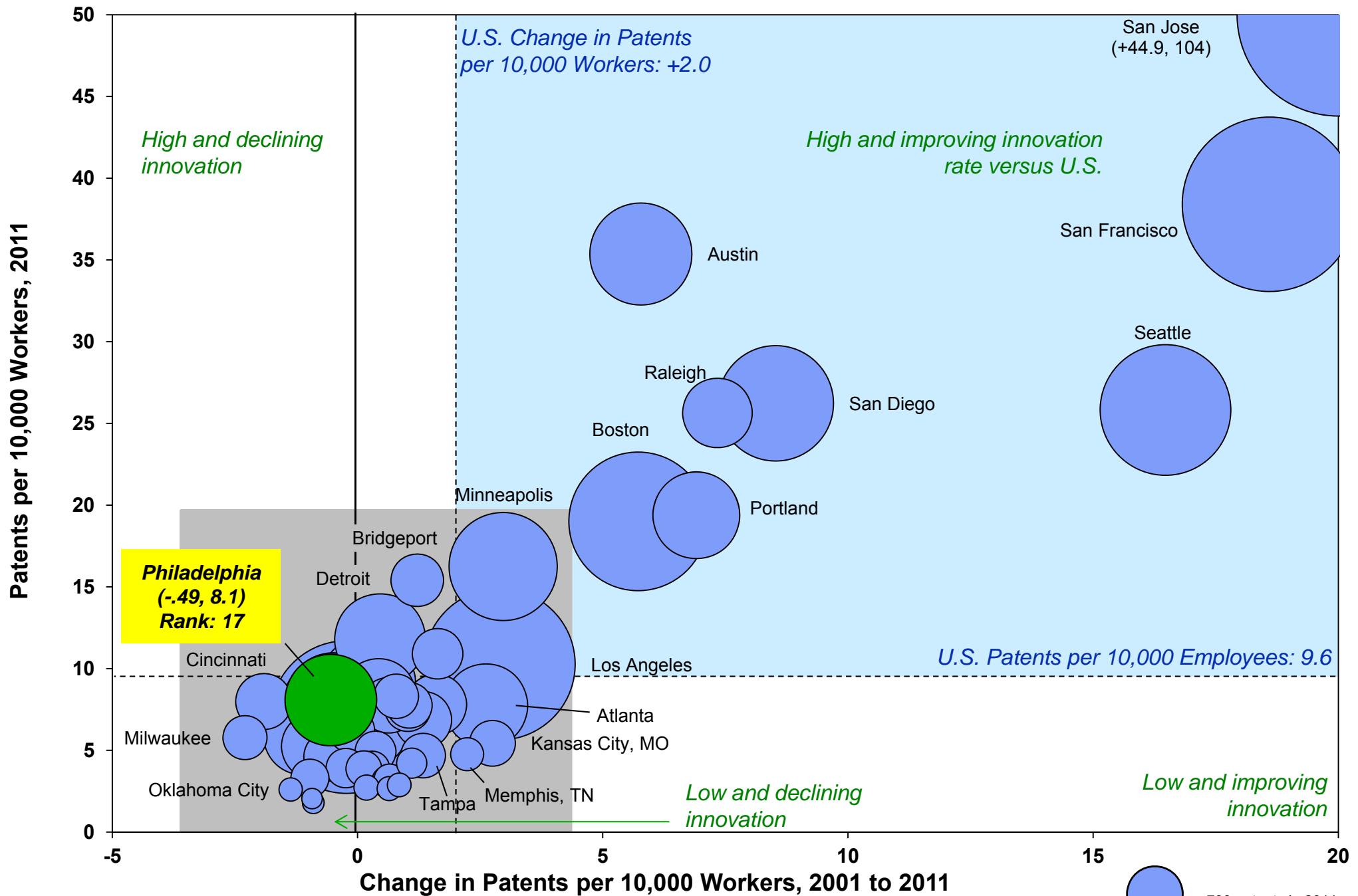


Comparative Metro Business Formation 2001 - 2011



Sources: Growth rate is calculated as compound annual growth rate. 50 largest MSAs displayed.

Comparative Metro Innovation Performance 2001 - 2011



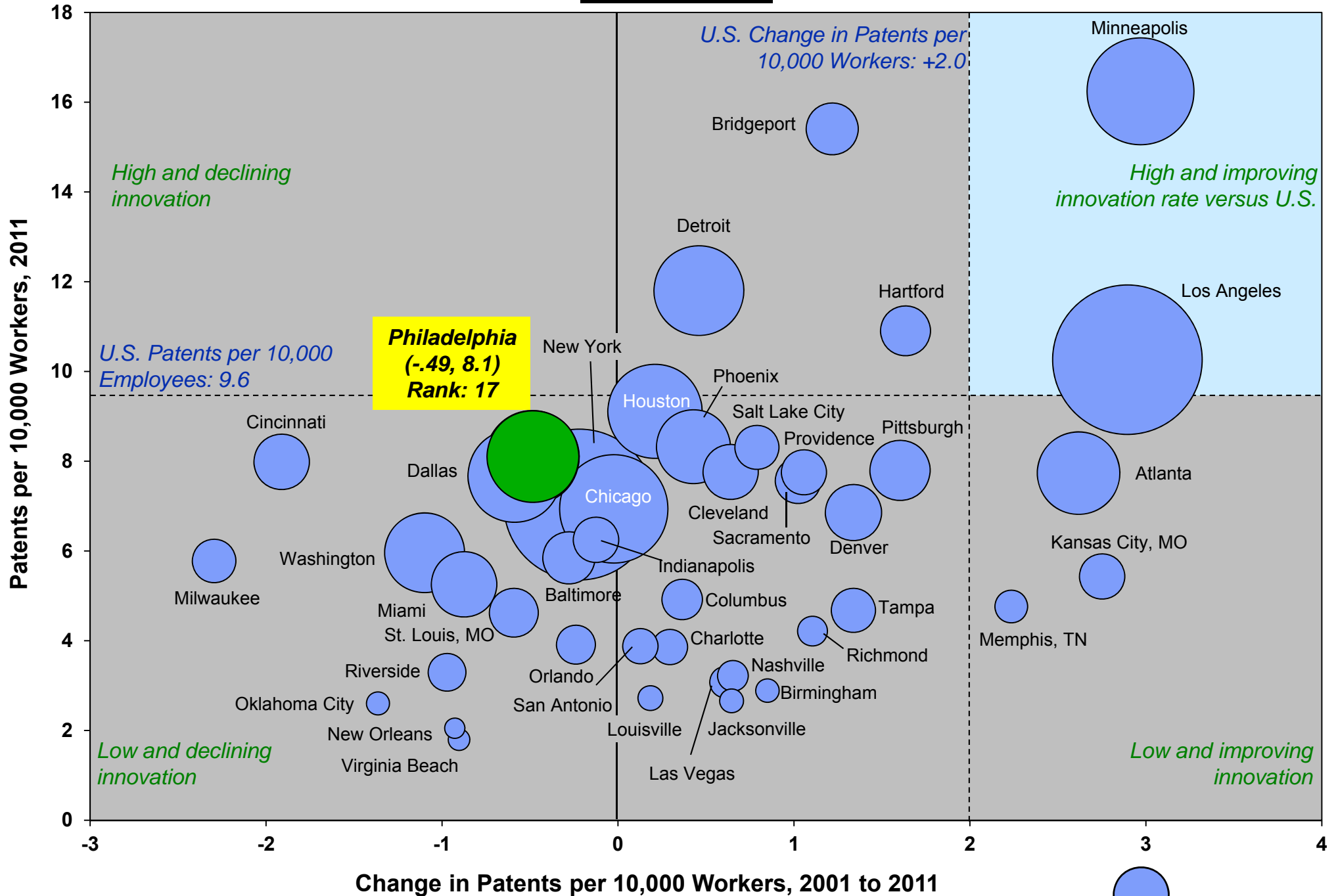
Notes: Median number of patents per 10,000 workers among top 50 Metro Areas in 2011 is 6.99.

Source: USPTO utility patents granted, Bureau of Labor Statistics.

20140311 - Fox School of Business, Philadelphia Competitiveness (Porter, Delgado, Bryden)

Comparative Metro Innovation Performance

2001 - 2011



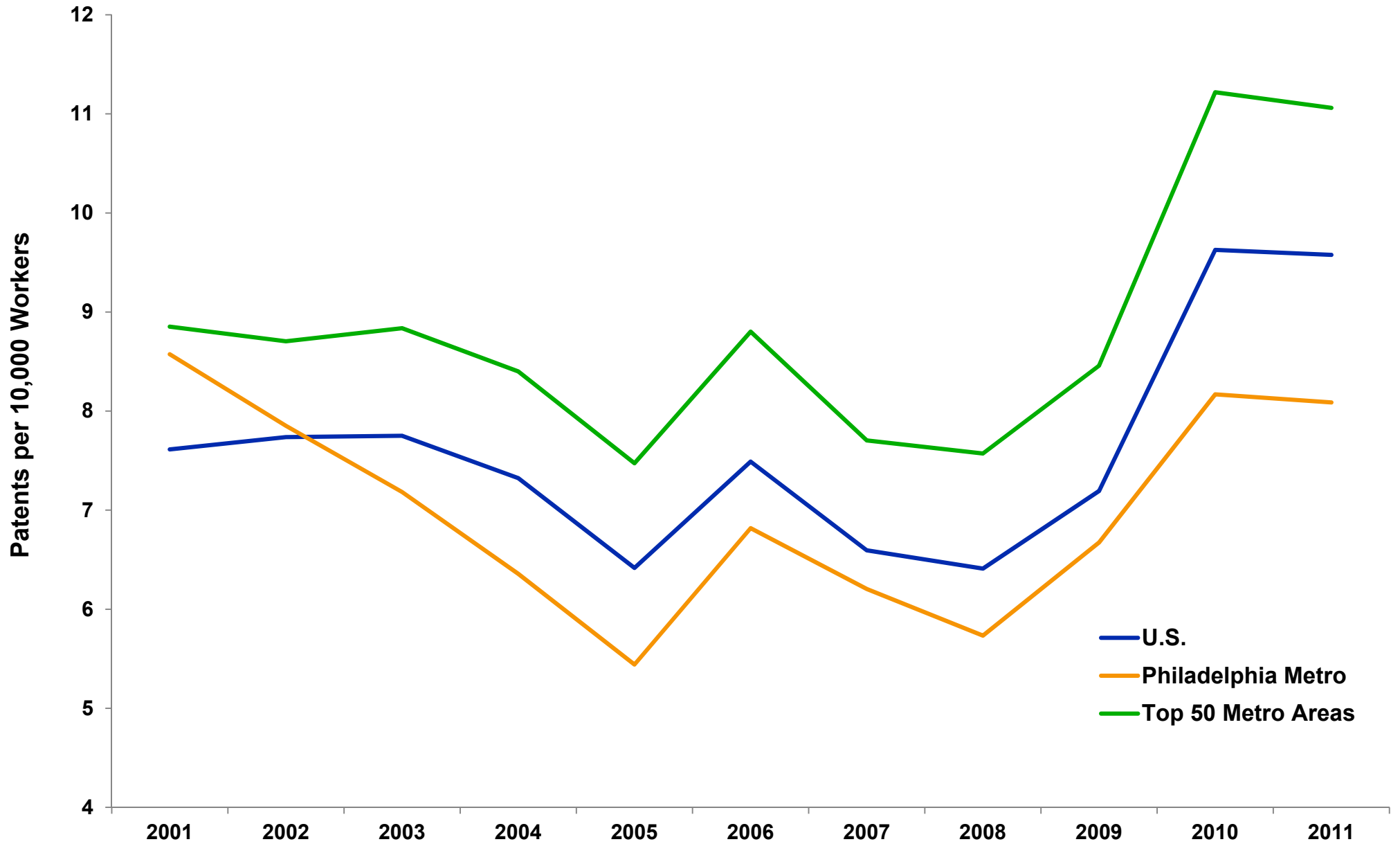
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Comparative Innovation Performance

2001 - 2011



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Patents by Organization

Philadelphia Metro

	Organization	Cluster	Patents Issued* 2007 - 2011
1	E. I. Du Pont De Nemours And Company	Chemical Products	985
2	Metrologic Instruments Inc.	Information Technology and Analytical Instruments	151
3	University Of Pennsylvania	Education and Knowledge Creation	149
4	Merck + Co., Inc.	Biopharmaceuticals	147
5	Rohm And Haas Company	Chemical Products	137
6	Wyeth LLC	Biopharmaceuticals	125
7	Lutron Electronics Company, Inc.	Lighting and Electrical Equipment	116
8	Interdigital Technology Corporation	Information Technology and Analytical Instruments	107
9	Siemens Medical Solutions USA, Inc.	Medical Devices	94
10	Bristol-Myers Squibb Company	Biopharmaceuticals	91
11	Lockheed Martin Corporation	Aerospace Vehicles and Defense	84
12	Janssen Pharmaceuticals, Inc.	Biopharmaceuticals	80
13	General Instrument Corporation	Communications Equipment and Services	66
14	JP Morgan Chase Bank, N.A.	Financial Services	65
14	Smithkline Beecham Corporation	Biopharmaceuticals	65
16	Lyondell Chemical Technology, L.P.	Chemical Products	62
17	Rohm And Haas Electronic Materials Cmp Holdings	Chemical Products	59
18	Synthes (U.S.A.)	Medical Devices	55
19	Unisys Corporation	Business Services	54
20	Gore Enterprise Holdings, Inc.	-	53
21	Alcatel-Lucent USA Inc.	Communications Equipment and Services	51
21	Zenith Products Corporation	Furniture	51
23	Medical Components, Inc.	Medical Devices	45
24	Lucent Technologies Inc.	Communications Equipment and Services	43
25	AT&T Corporation	Communications Equipment and Services	42

* Patents with inventors addresses in Philadelphia Metro Area.

Source: Prof. Michael E. Porter, Cluster Mapping Project, Institute for Strategy and Competitiveness, Harvard Business School; Richard Bryden, Project Director.

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Top Patenting Universities and Research Institutes

Rank	Organization	Patents Issued 2007 - 2011
1	University of California, The Regents of	1,469
2	Massachusetts Institute of Technology	735
3	Harvard College, President And Fellows	659
4	Stanford University	590
5	Wisconsin Alumni Research Foundation	571
6	California Institute of Technology	539
7	University of Texas	503
8	University of Illinois	329
9	Johns Hopkins University	323
10	University of Michigan	318
11	Columbia University	307
12	Cornell Research Foundation Inc.	281
13	Georgia Tech Research Corp.	268
14	University of South Florida	267
15	Battelle Memorial Institute	257
16	University of Central Florida	256
17	University of Pennsylvania	255
18	University of Washington	250
19	University of Florida Research Foundation, Incorporated	244
20	Research Foundation of State University of New York	233
77	Drexel University	58
126	Temple University	24
143	The Children's Hospital of Philadelphia	21

What is a Cluster?

A geographically concentrated group of interconnected companies and associated institutions in a particular field



Traded Clusters

- Compete to serve **national** and **international** markets
- 36% of employment



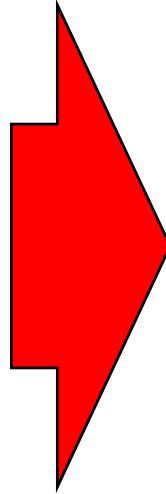
Local Clusters

- Serve almost exclusively the **local** market
- 64% of employment

Strong Clusters Drive Regional Performance

Research Findings

- Presence of **strong clusters** (based on employment and innovation)
- **Breadth** of industries within each cluster
- Strength in **related clusters**
- Presence of a region's clusters in **neighboring regions**



- **Job** growth
- Higher **wages**
- Higher **patenting** rates
- Greater **new business** formation, growth and survival
- **New regional industries**

- The initial **employment and patenting strength of a cluster each has a positive effect** on the employment and patenting growth of the constituent industries
- **Multiple types of externalities** arise among firms participating in clusters (knowledge, skills, input-output linkages, and others)
- Economic diversification usually occurs **within clusters** and **across related clusters**

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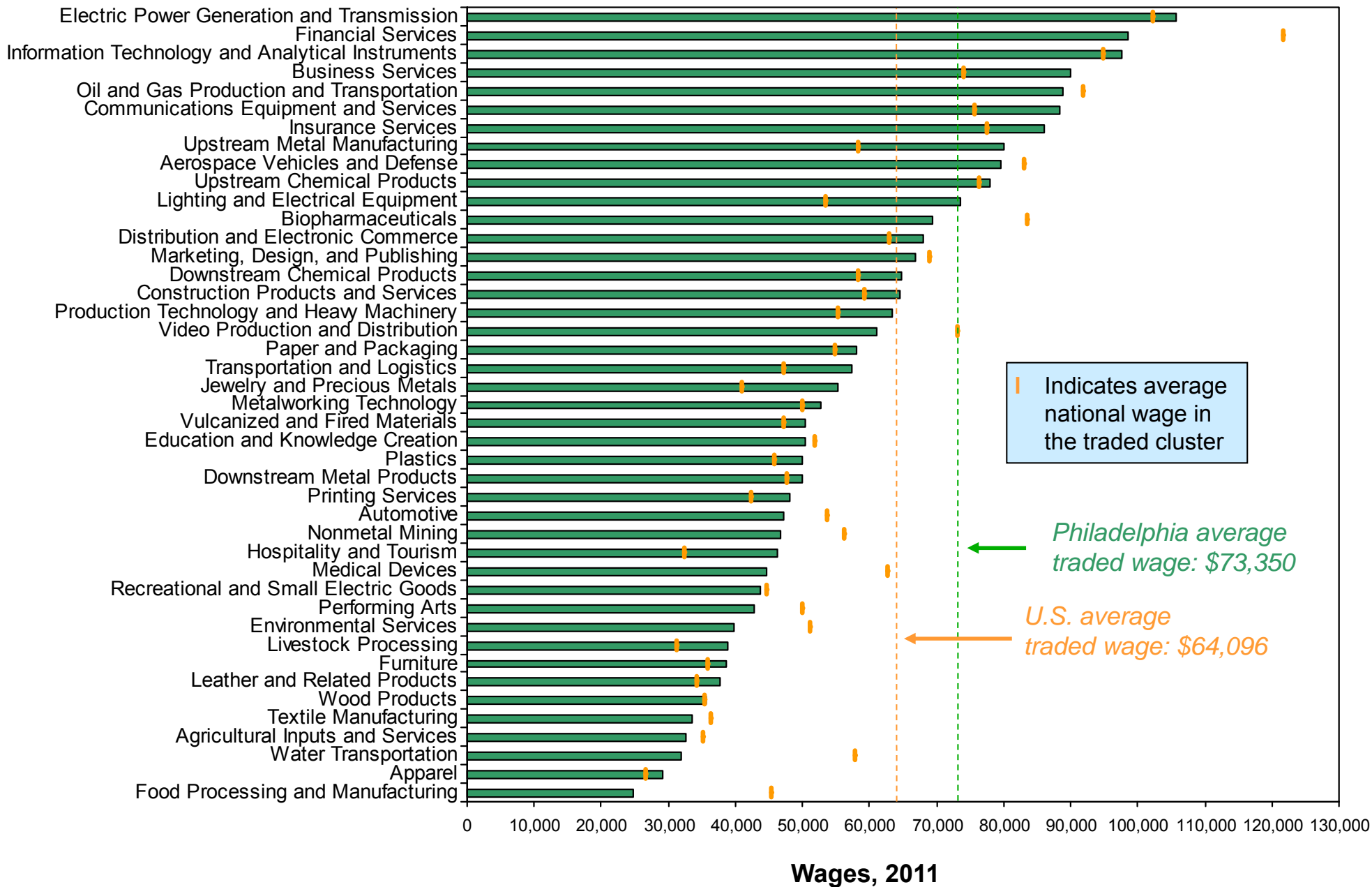
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Rank vs. Top 50 Metro Areas

	21-30
	1-10
	11-20
	31-40
	41-50

Philadelphia Metro Wages in Traded Clusters vs. National Benchmarks



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

Source: Prof. Michael E. Porter, Harvard Business School; U.S. Cluster Mapping 2014 Benchmark Definitions (Delgado-Porter-Stern 2013), Richard Bryden, Project Director.

Productivity Depends on How a Metro Competes, Not What Industries It Competes In

Metro Area	Metro Traded Wage versus National Average	Cluster Mix Effect	Relative Cluster Wage Effect
Bridgeport	+68,598	10,066	58,532
San Jose	+66,434	5,693	60,741
New York	+38,651	5,079	33,572
San Francisco	+36,126	3,870	32,256
Boston	+26,924	5,327	21,597
Houston	+24,602	4,548	20,054
Washington	+24,449	4,475	19,974
Hartford	+14,949	3,292	11,658
Austin	+11,678	5,412	6,266
Denver	+10,917	3,548	7,369
Chicago	+10,636	942	9,694
Minneapolis	+10,490	2,024	8,466
Seattle	+8,377	4,350	4,026
Philadelphia	+7,671	3,991	3,681
San Diego	+5,500	150	5,350
Atlanta	+5,350	1,471	3,879
Dallas	+4,702	4,517	185
Los Angeles	+3,847	112	3,735
Detroit	+3,005	-406	3,411
Baltimore	+2,332	2,321	11
Charlotte	+1,404	228	1,176
Raleigh	+1,308	3,340	-2,032
Richmond	+626	4,132	-3,507
New Orleans	-262	-1,410	1,148
Memphis	-351	-2,437	2,086

Metro Area	Metro Traded Wage versus National Average	Cluster Mix Effect	Relative Cluster Wage Effect
Milwaukee	-626	303	-929
Pittsburgh	-810	1,436	-2,246
Kansas City	-961	917	-1,879
Indianapolis	-1,664	-463	-1,201
Nashville	-1,981	-694	-1,287
Portland	-1,988	984	-2,972
St. Louis	-2,880	128	-3,007
Cincinnati	-3,999	-372	-3,627
Birmingham	-4,731	208	-4,939
Oklahoma City	-6,527	3,011	-9,538
Cleveland	-6,710	503	-7,213
Columbus	-6,808	1,275	-8,083
Miami	-7,253	-1,031	-6,223
Sacramento	-8,101	-555	-7,546
Jacksonville	-8,604	5,193	-13,797
Salt Lake City	-10,298	749	-11,046
Phoenix	-10,388	1,187	-11,575
San Antonio	-10,789	2,978	-13,766
Providence	-11,578	-2,945	-8,633
Tampa	-12,226	3,491	-15,718
Louisville	-12,286	-3,607	-8,679
Virginia Beach	-13,307	-2,700	-10,607
Orlando	-18,052	-6,178	-11,874
Riverside	-20,720	-5,679	-15,041
Las Vegas	-21,758	-16,500	-5,258

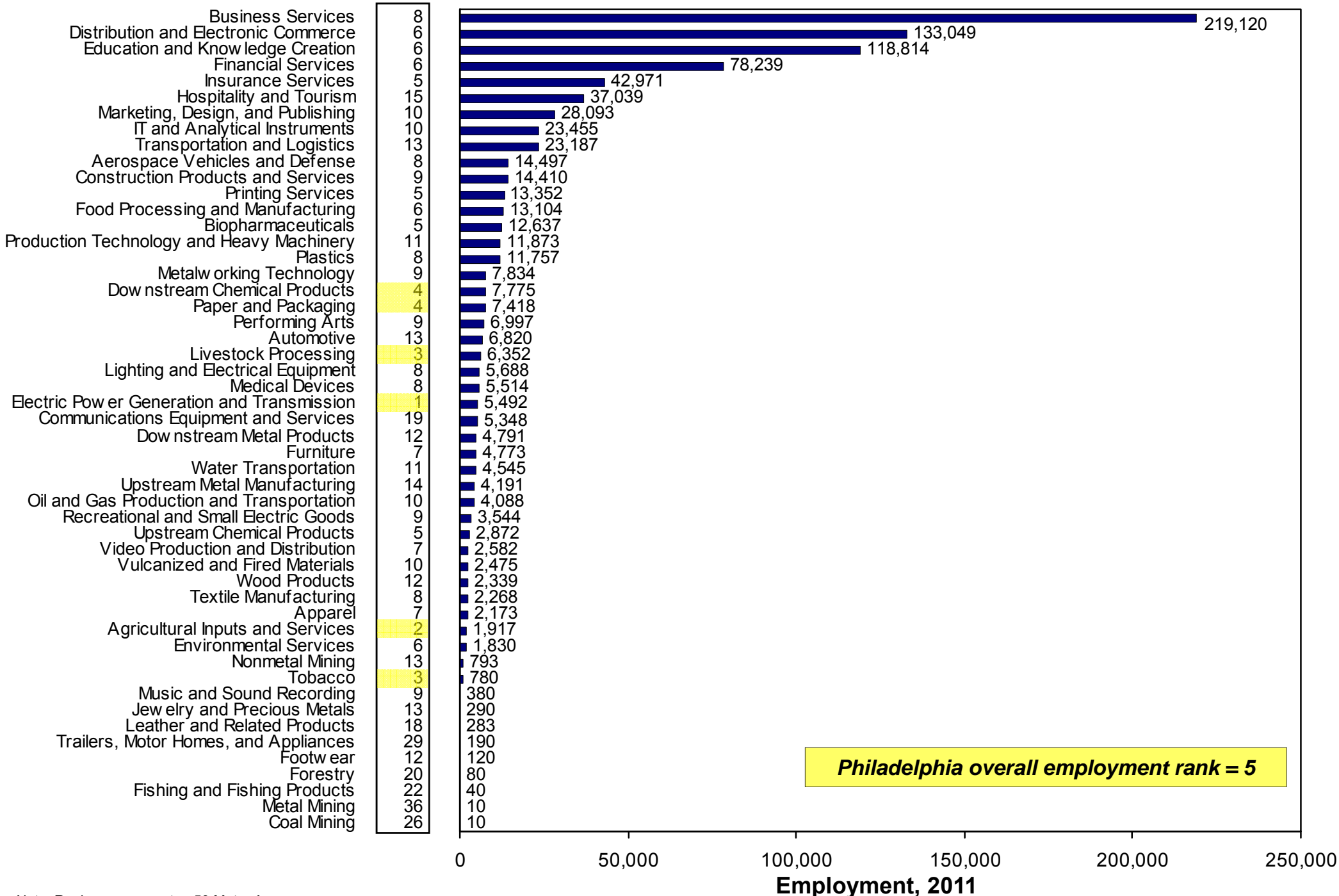
On average, cluster strength is much more important (77.8%) than cluster mix (22.2%) in driving performance in the 50 largest metro areas

Note: All data are Census CBP 2011; author's analysis.

Source: Prof. Michael E. Porter, Harvard Business School; U.S. Cluster Mapping 2014 Benchmark Definitions (Delgado-Porter-Stern 2013), Richard Bryden, Project Director.

Philadelphia Metro Employment by Traded Cluster, 2011

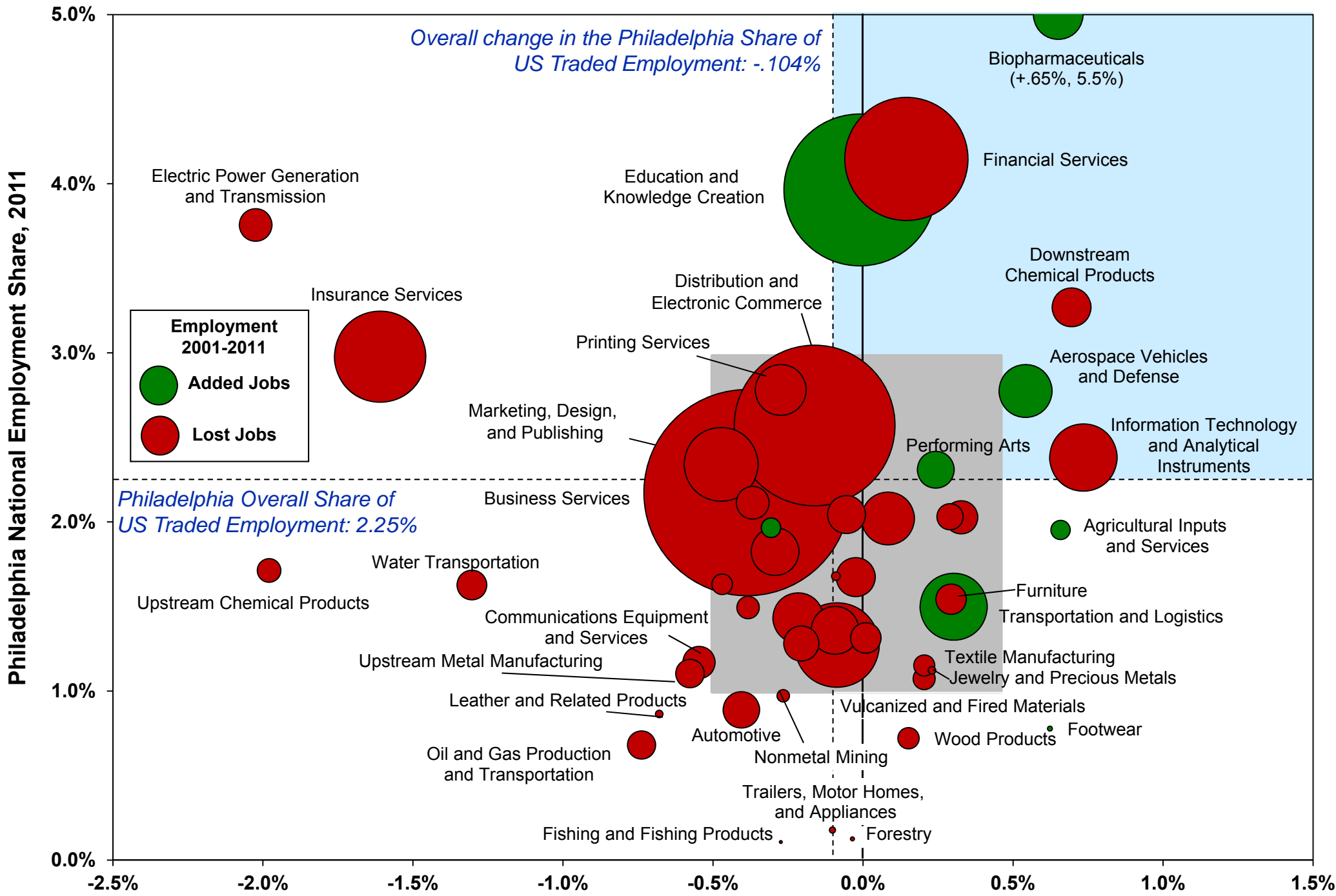
Rank in U.S.



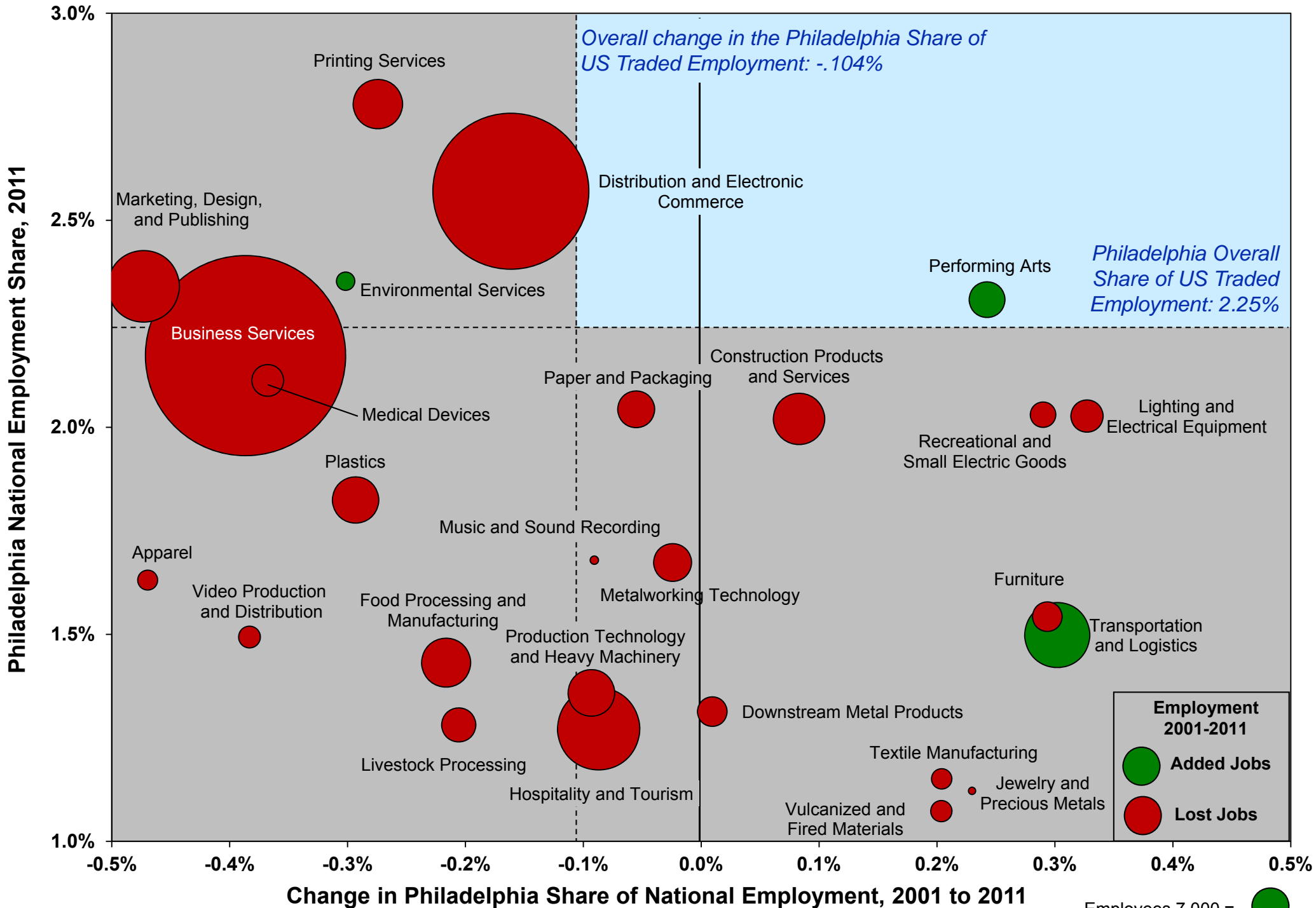
Note: Ranks are across top 50 Metro Areas.

Source: Prof. Michael E. Porter, Harvard Business School; U.S. Cluster Mapping 2014 Benchmark Definitions (Delgado-Porter-Stern 2013), Richard Bryden, Project Director.

Traded Cluster Composition of the Philadelphia Metro, 2001-2011

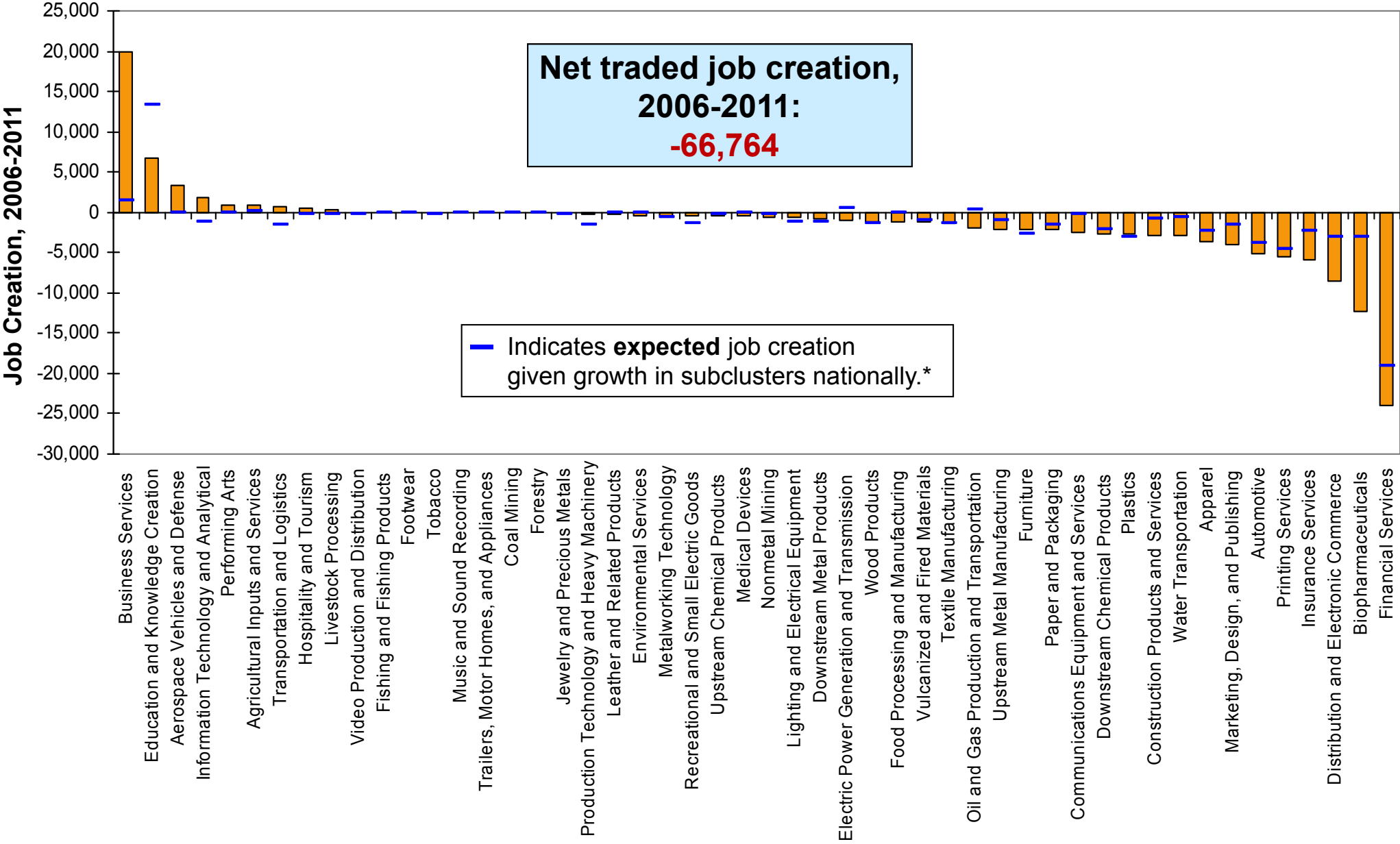


Traded Cluster Composition of the Philadelphia Metro, 2001-2011



Philadelphia Metro Job Creation in Traded Clusters

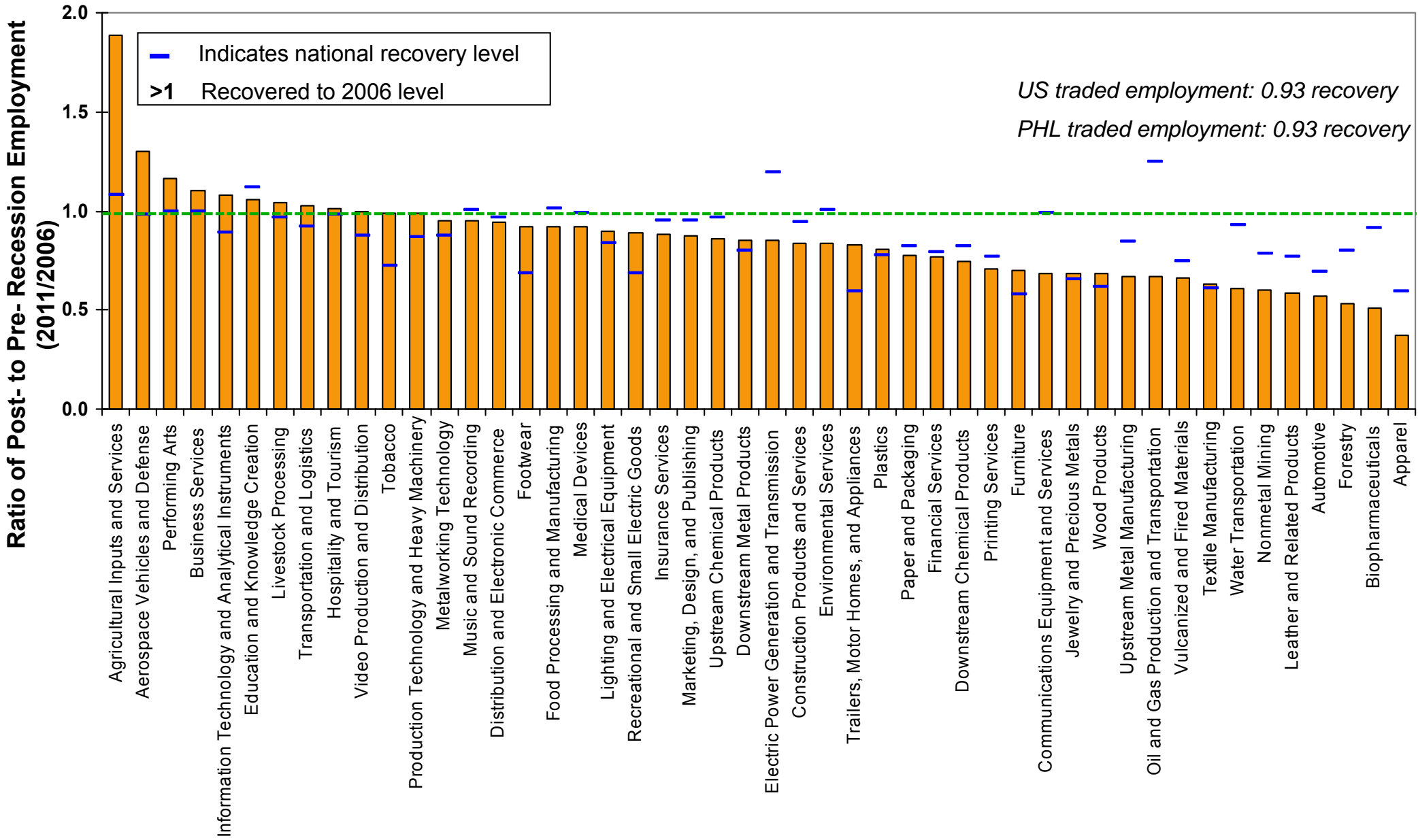
2006 - 2011



* Percent change in national benchmark times starting regional employment. Overall traded job creation in this region, if it matched national benchmarks, would be -51,158.

Philadelphia Recovery in Traded Cluster Employment

Post-Recession vs. Pre-Recession (2011 vs. 2006)

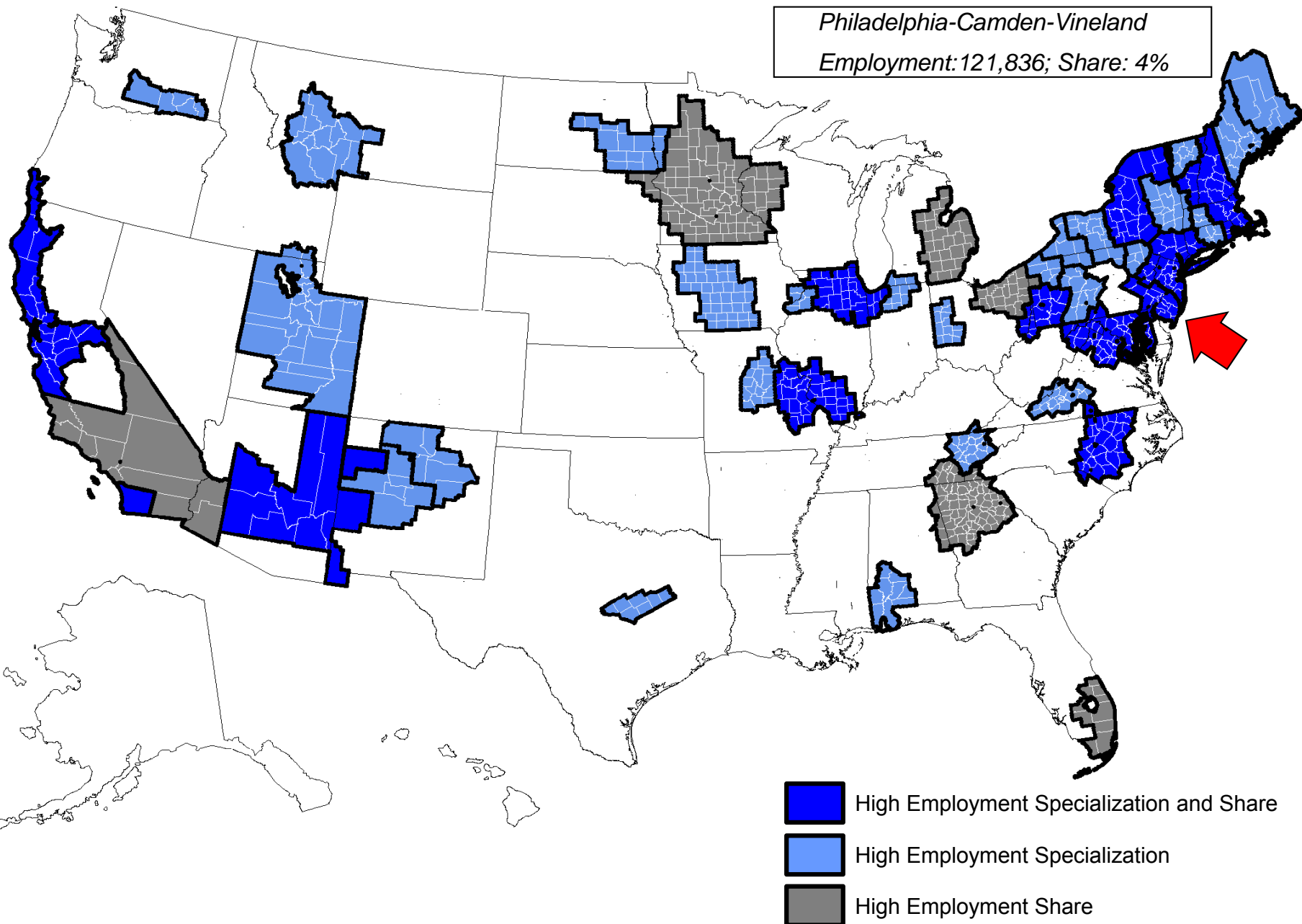


Note: Includes clusters with more than 100 employees

Source: Prof. Michael E. Porter, Harvard Business School; U.S. Cluster Mapping 2014 Benchmark Definitions (Delgado-Porter-Stern 2013), Richard Bryden, Project Director.

Cluster Specialization by Economic Area, 2011

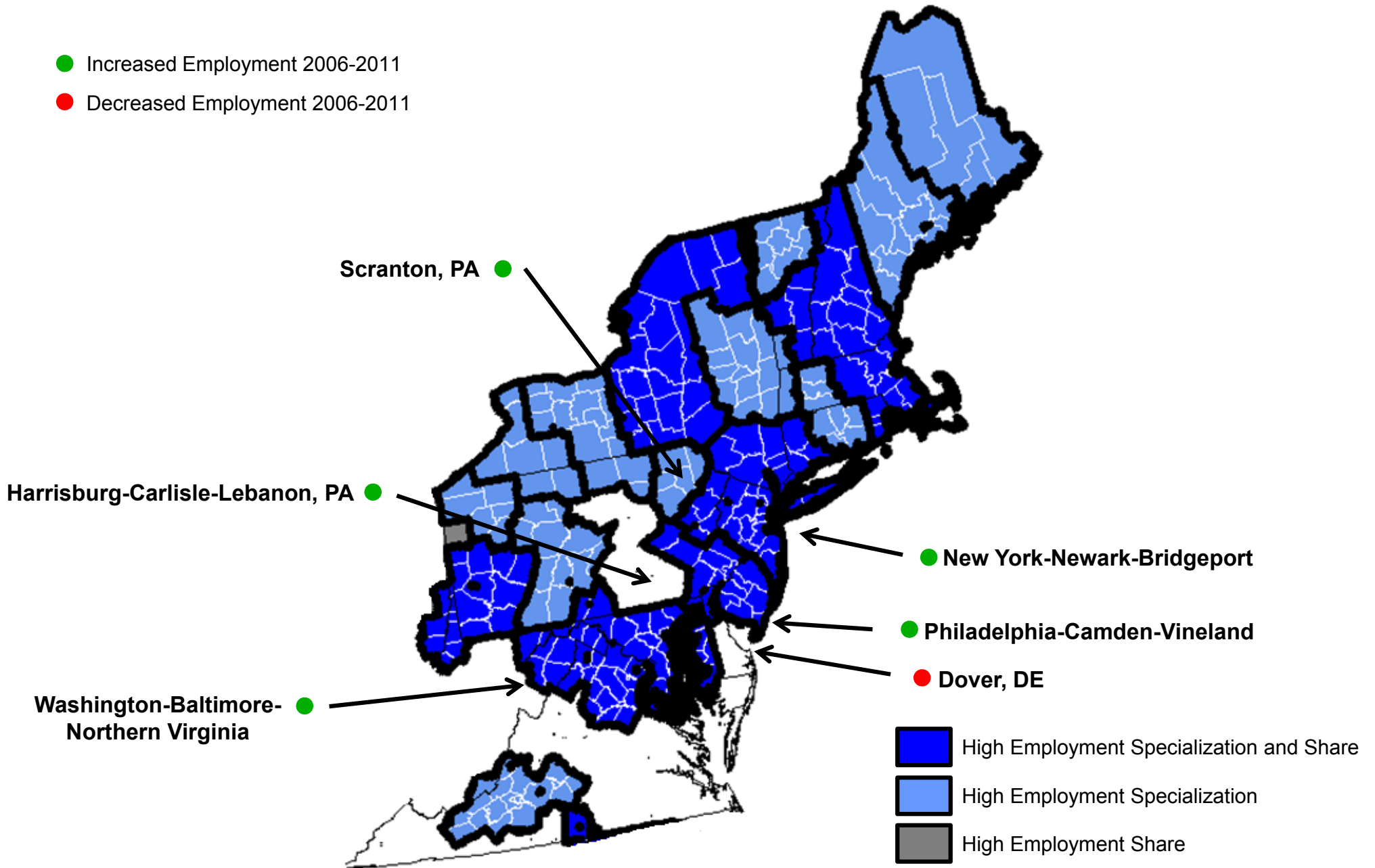
Education and Knowledge Creation



Note: Economic Areas with High Employment Specialization must have a Location Quotient of Cluster Employment greater than the 75th percentile; High Employment Share must have a Share of National Cluster Employment greater than the 90th percentile; High Employment Specialization and Share meet both criteria

Source: "Defining Clusters of Related Industries," Delgado, Porter, Stern, 2013

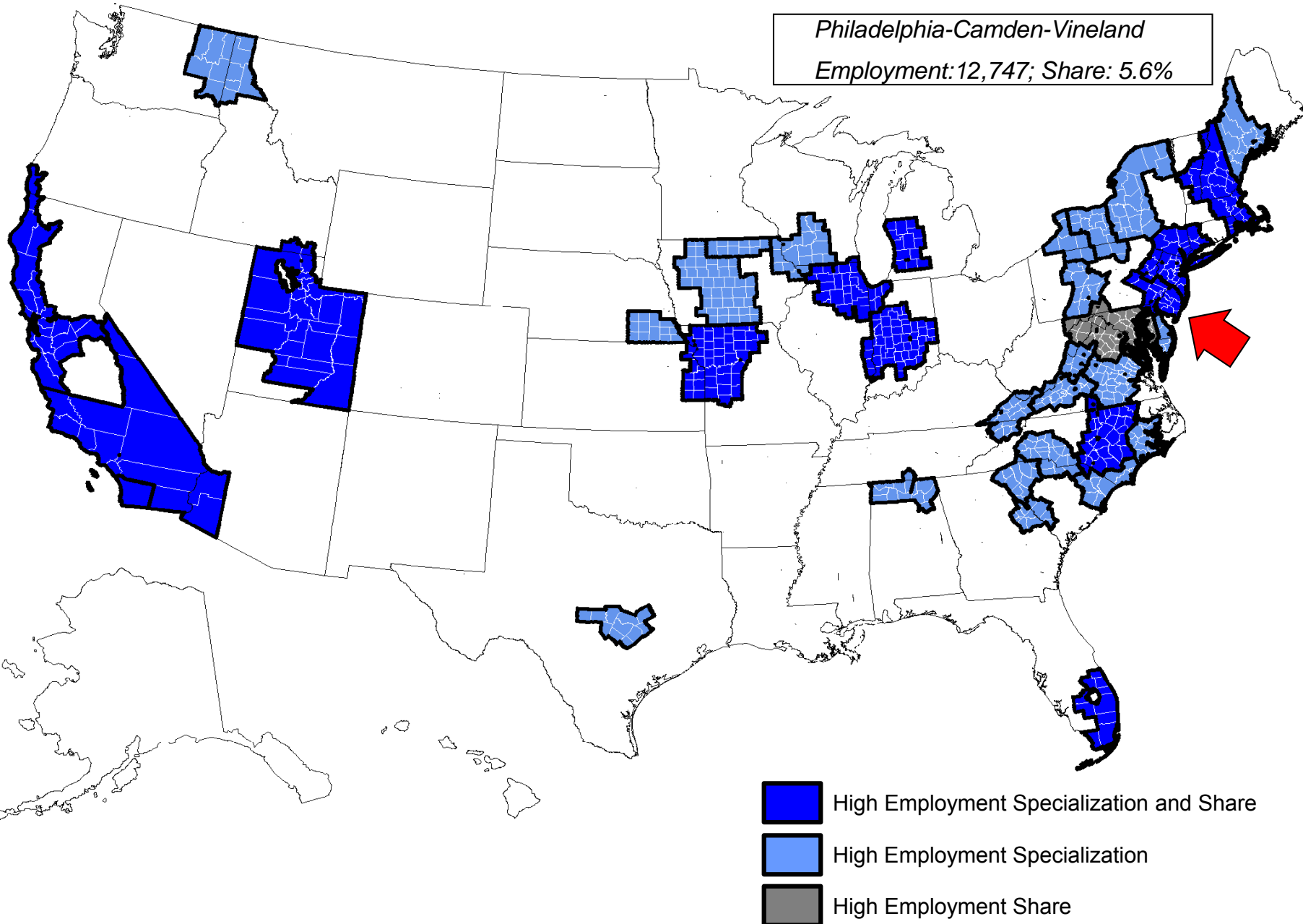
Potential Inter-Regional Spillovers: Education and Knowledge Creation



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Cluster Specialization by Economic Area, 2011

Biopharmaceuticals



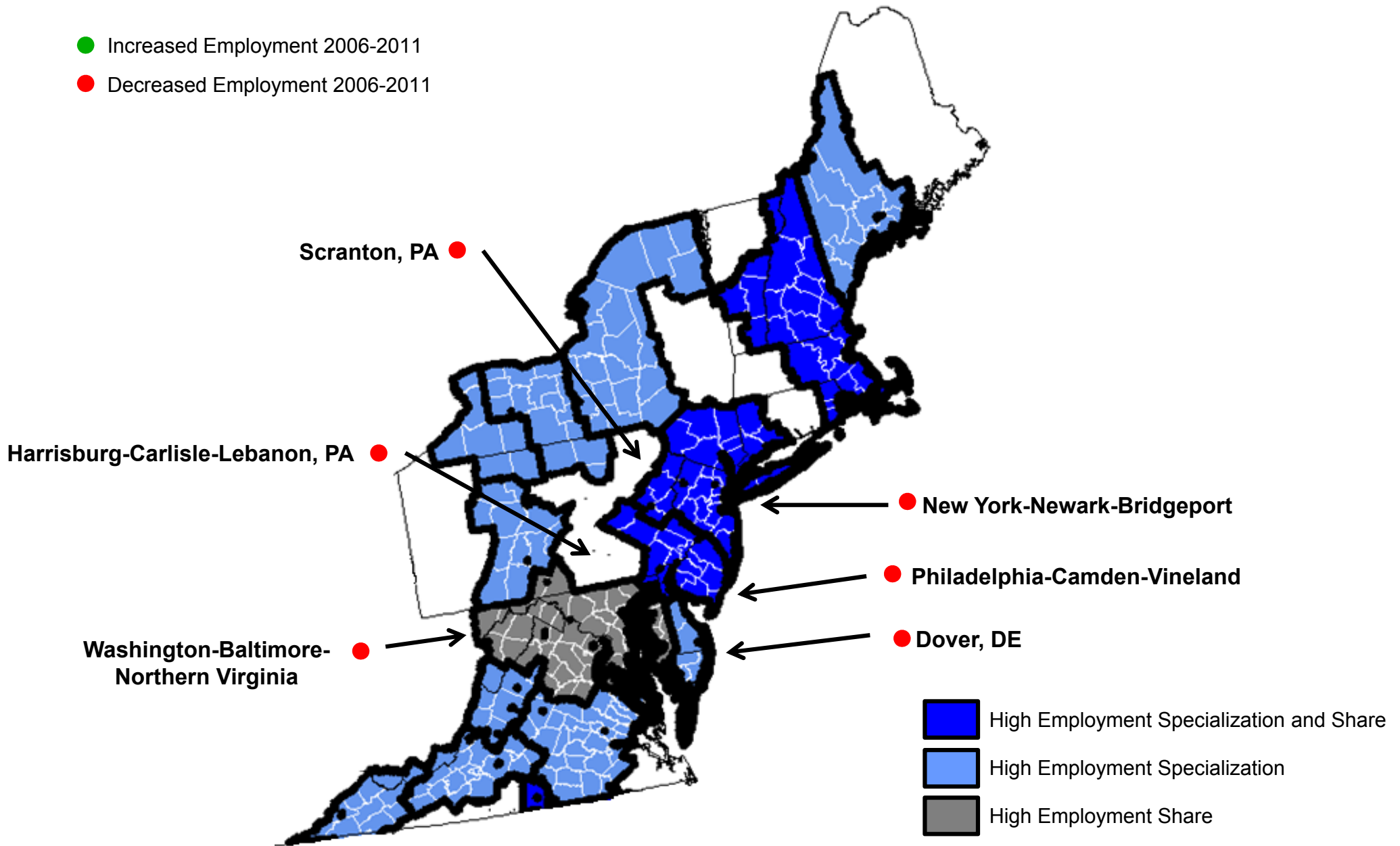
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Potential Inter-Regional Spillovers

Biopharmaceuticals

- Increased Employment 2006-2011
- Decreased Employment 2006-2011



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Summary: Philadelphia Cluster Employment Performance

- Following a pattern seen in many regions of the U.S., **Philadelphia's traded employment in 2011 has declined to 93% of the level in 2006**
- Strong clusters that have **lost jobs and underperformed the U.S.** over the period 2006-2011:
 - Biopharmaceuticals, Financial Services, Insurance Services, and Distribution and Electronic Commerce
- Clusters that have **created many jobs** over the period 2006-2011:
 - Business Services, Education and Knowledge Creation, Aerospace Vehicles and Defense, and IT and Analytical Instruments



U.S. Cluster Mapping Project

Data and Tools



Powerful tools for economic development

- The U.S. Cluster Mapping Project is a joint initiative between the U.S. Department of Commerce, Economic Development Administration and Harvard's Institute for Strategy and Competitiveness
- The goal of the project is to improve U.S. competitiveness based on a bottom-up, regional perspective on economic development, and to support evidence-based decision making and thought leadership on cluster-driven economic policies
- US Cluster Mapping Project website will launch in late May/early June 2014. This highly optimized, modern website will provide access to:
 - Actionable cluster and regional data reflecting the state of today's economy
 - User contributed repository of cluster initiatives, studies, and news
 - Community platform and registry for organizations
- The research is driven primarily by Harvard, MIT and Temple. Key research updates include improved cluster definitions:
 - Cluster categories are groups of related industries based on co-location patterns across regions, input-output links and skill links
 - *Clustering methodology: Delgado, Porter and Stern (2013), Porter (2003)*