

Industry Clusters in the Fox River Valley

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Regional Industry Clusters

In healthy regions, competitiveness and innovation are concentrated in **clusters**, or interrelated industries, in which a region specializes. The nation's ability to produce **high-value products and services that support high wage jobs** depends on the creation and strengthening of these regional hubs of competitiveness and innovation.

Clusters of Innovation: Regional Foundations of US Competitiveness, 2001, p. ix

Industry Cluster Strategies

- Clusters based on unique strengths and assets will be more likely to be competitive and have long-term success
- Overlapping clusters offer potential synergies in skill, technology, and partnerships
- Mega-growth at the expense of natural resources and infrastructure results in decreased quality of life and are not sustainable

Successful Industry Clusters

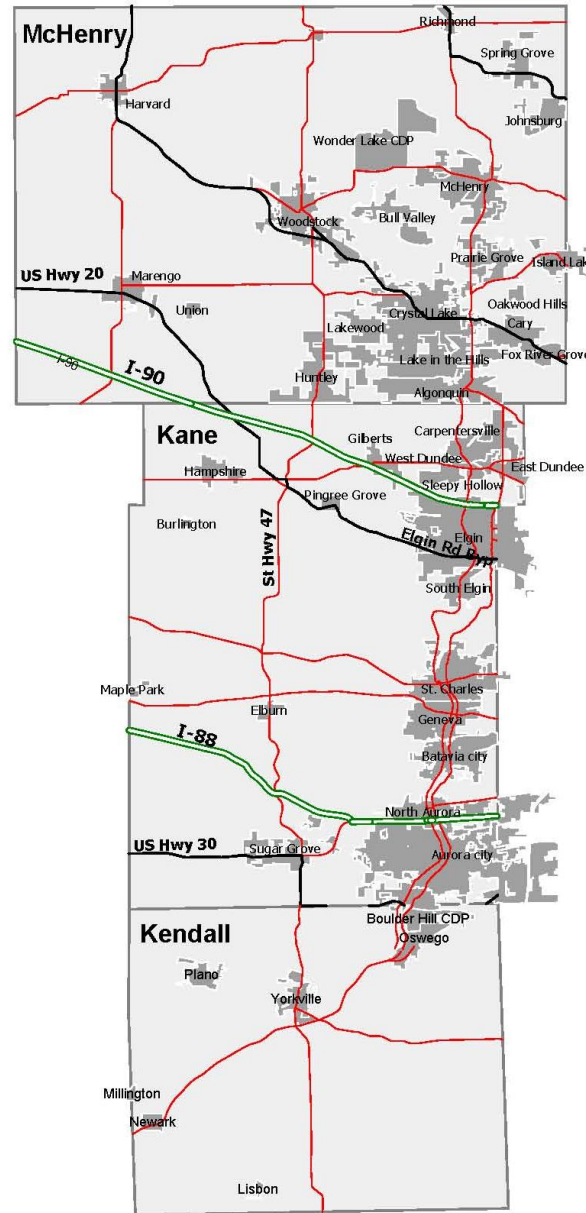
- Collaborative relationships among research, capital, business, education, and public policy
- Ability to develop global markets
- Region's science and technology capacity
- Lifelong learning and training for employers and employees

Analysis of Economic Infrastructure

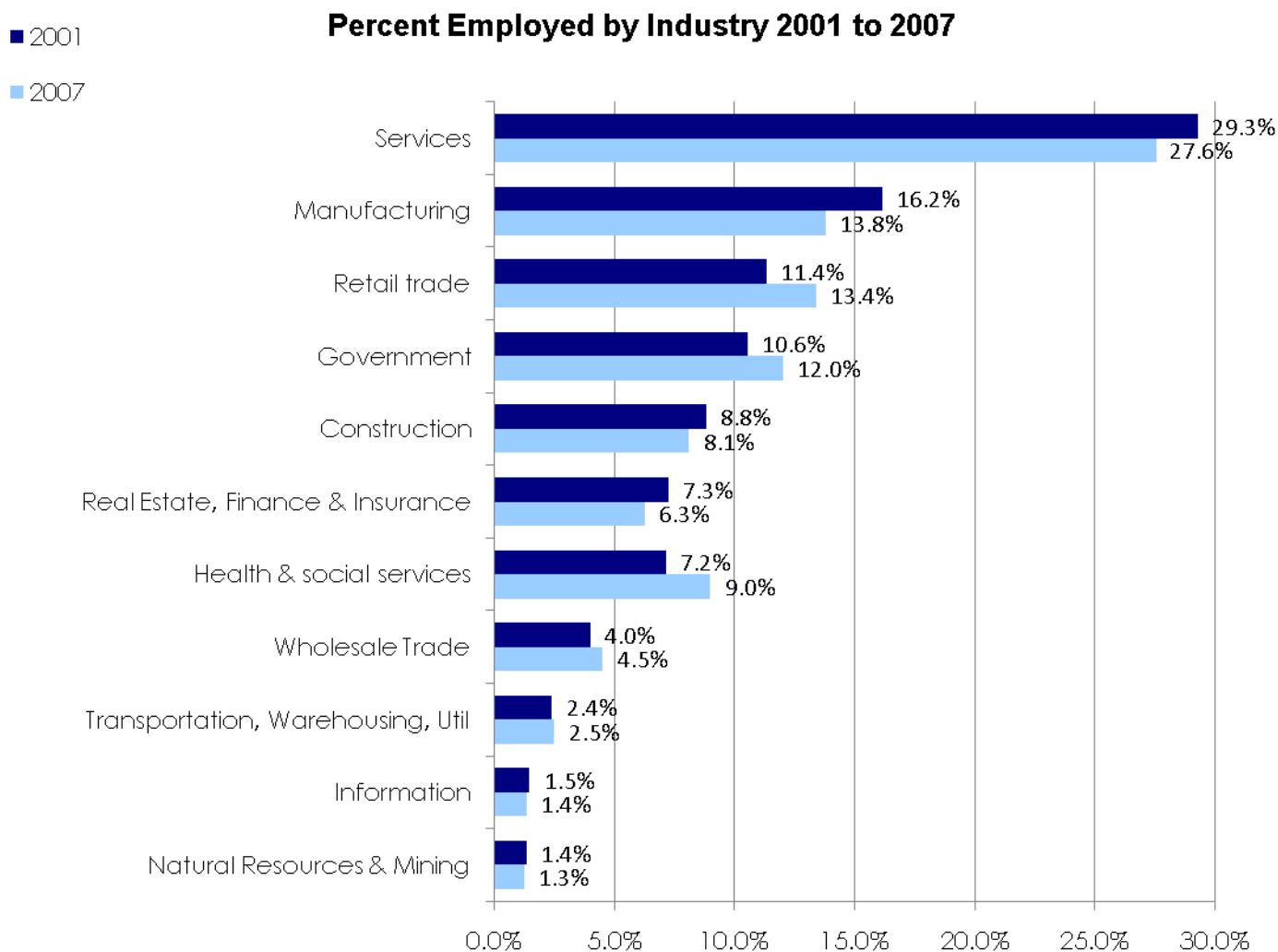
- Macro-analysis
 - Historical trends
 - Projected general trends
- Micro-analysis
 - Industries with more than 50% of employment
 - Strongest industries
 - Strongest areas of manufacturing

Counties Included in Study Region:

Kane
Kendall
McHenry

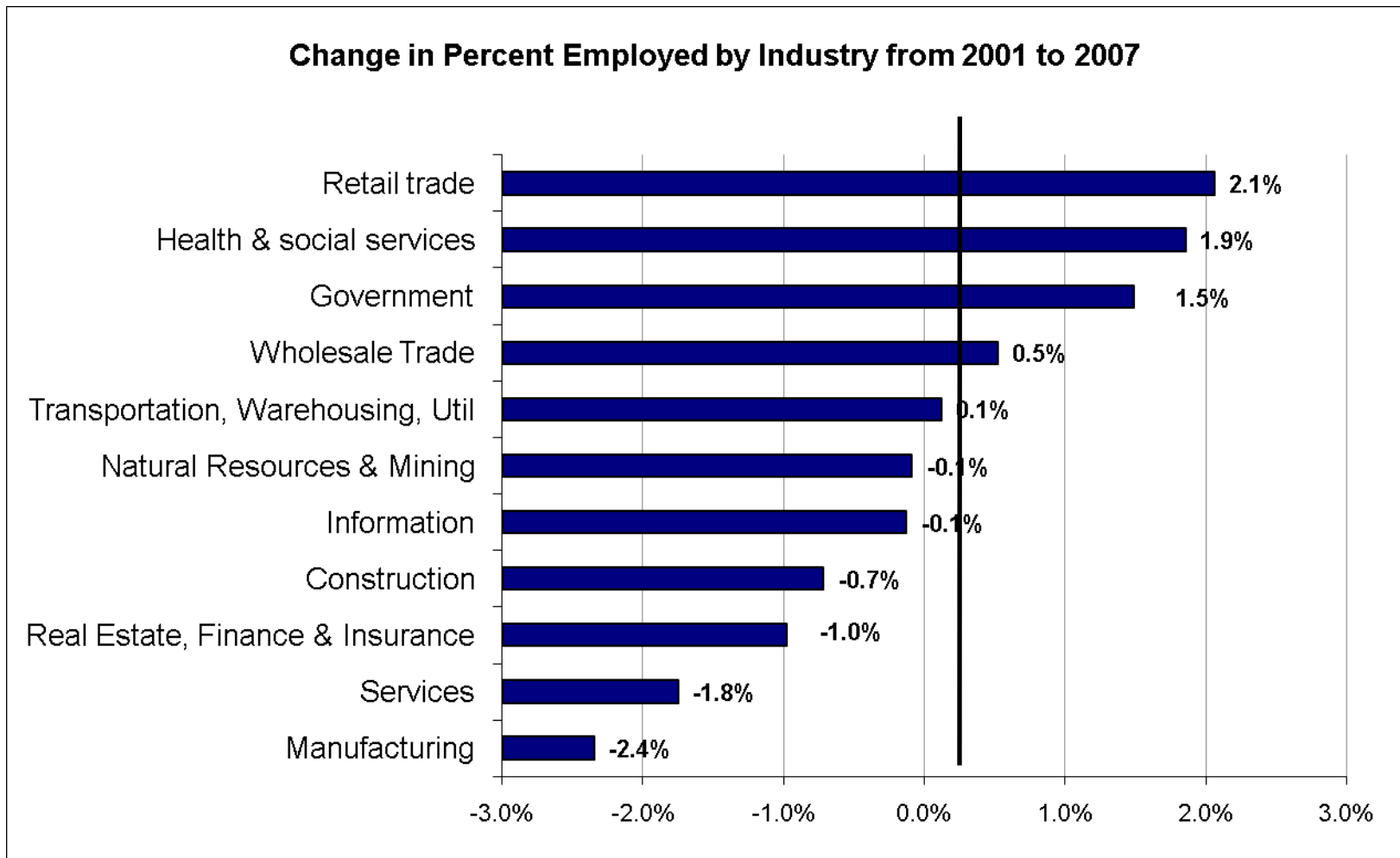


Employment by Industry 2001 - 2007

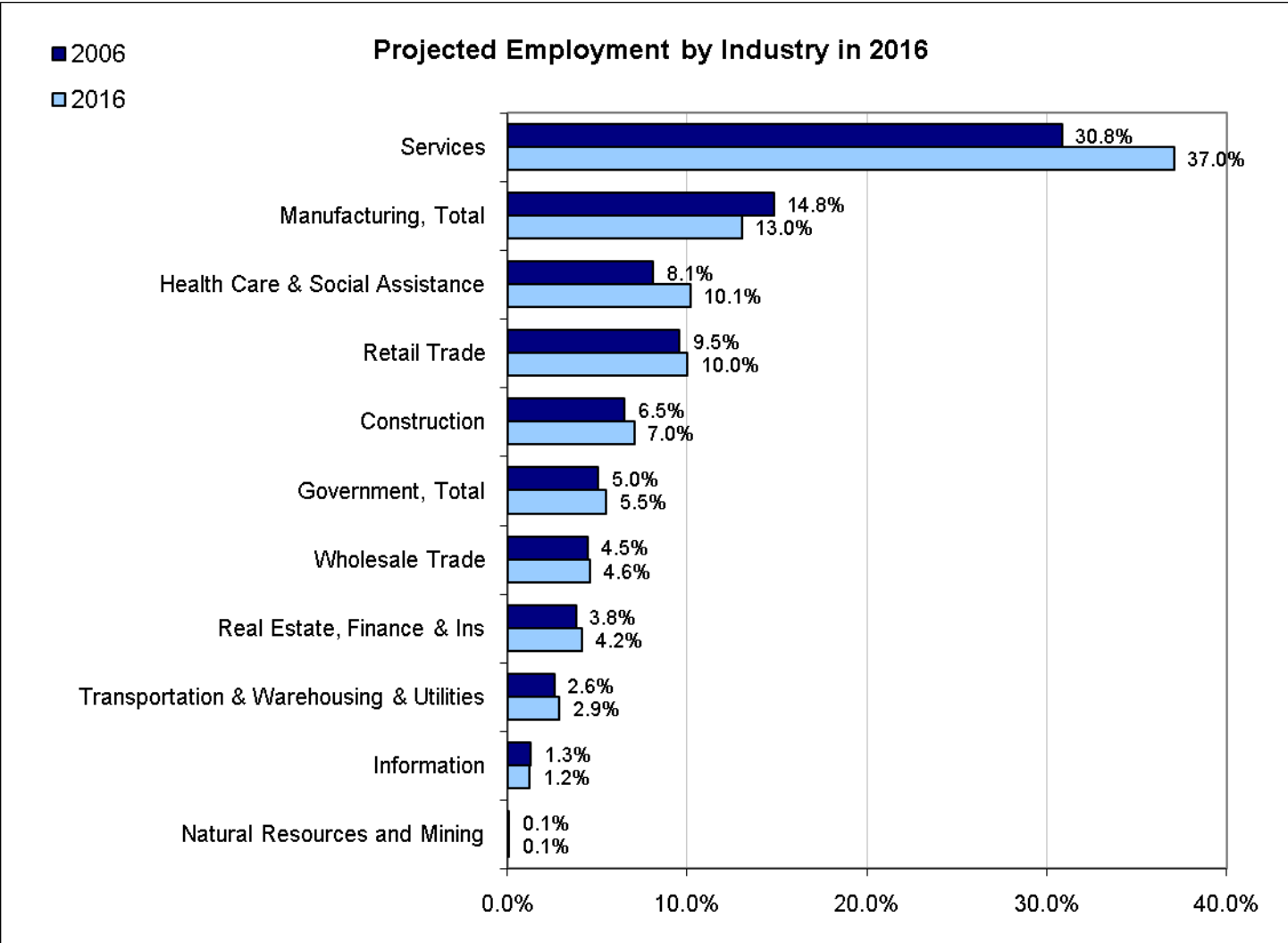


Source: Implan 2001 & 2007

% Employment Change 2001 -2007

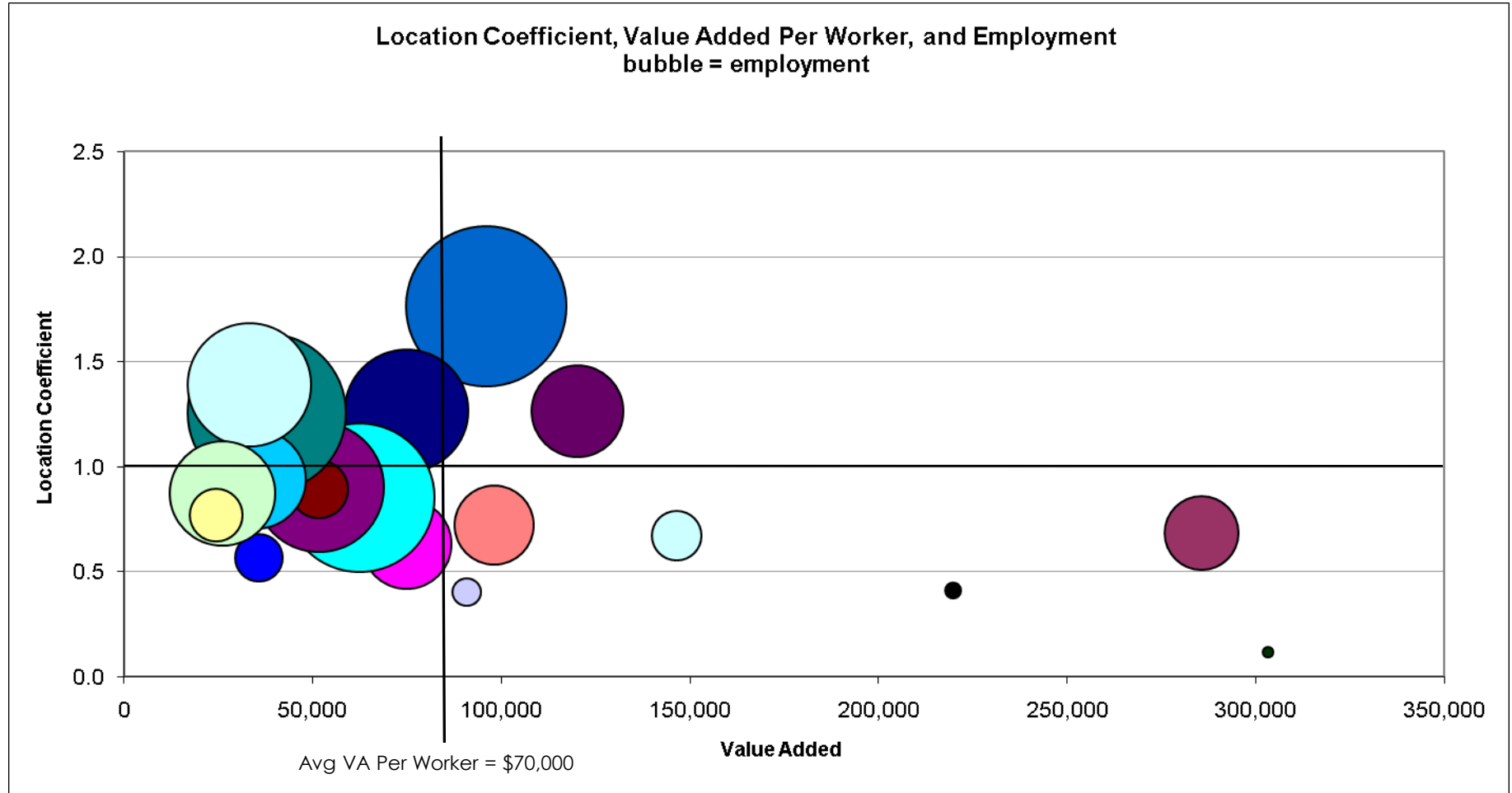


Employment by Industry 2006 - 2016

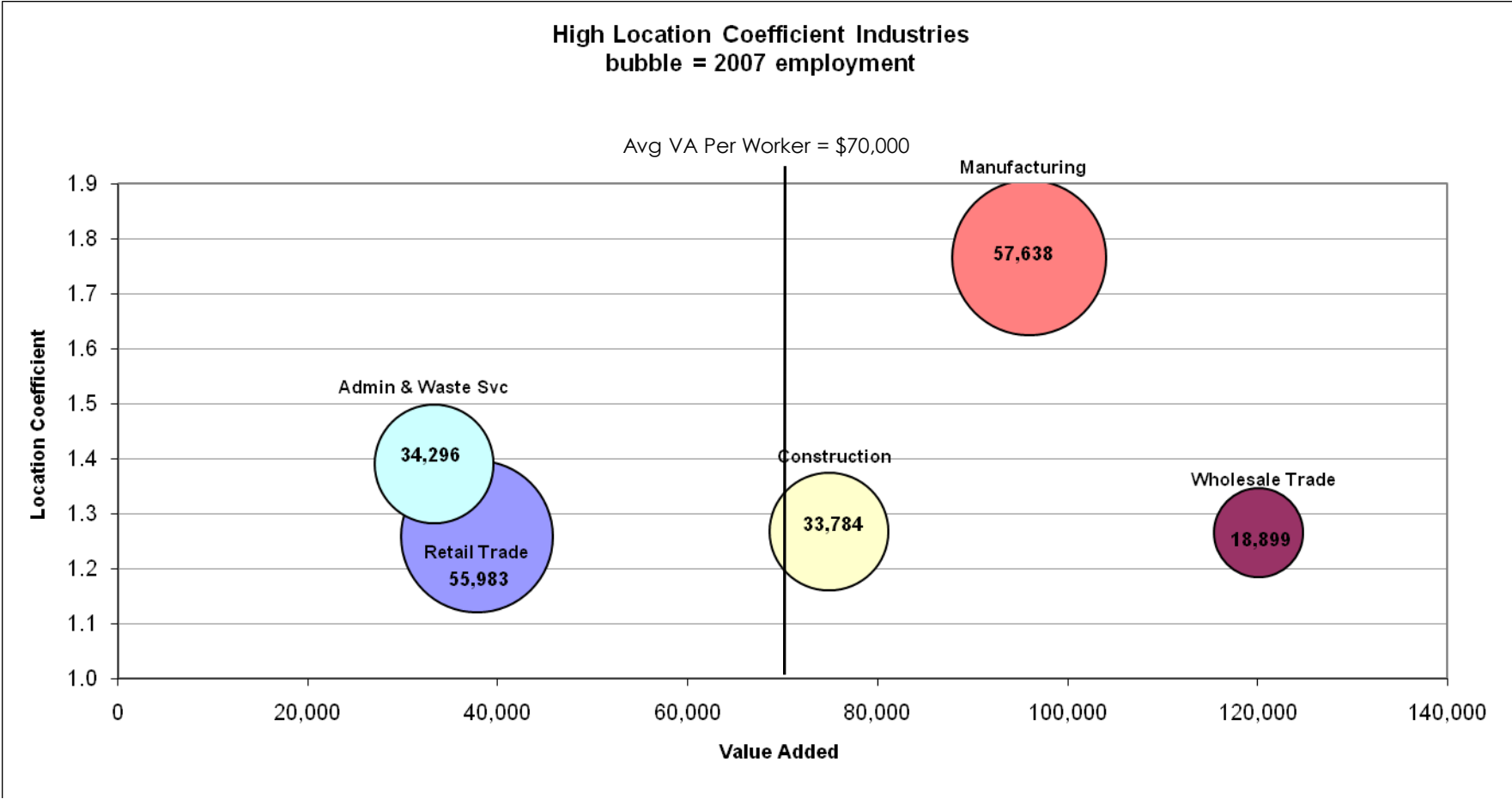


Source: IL Dept of Employment Security

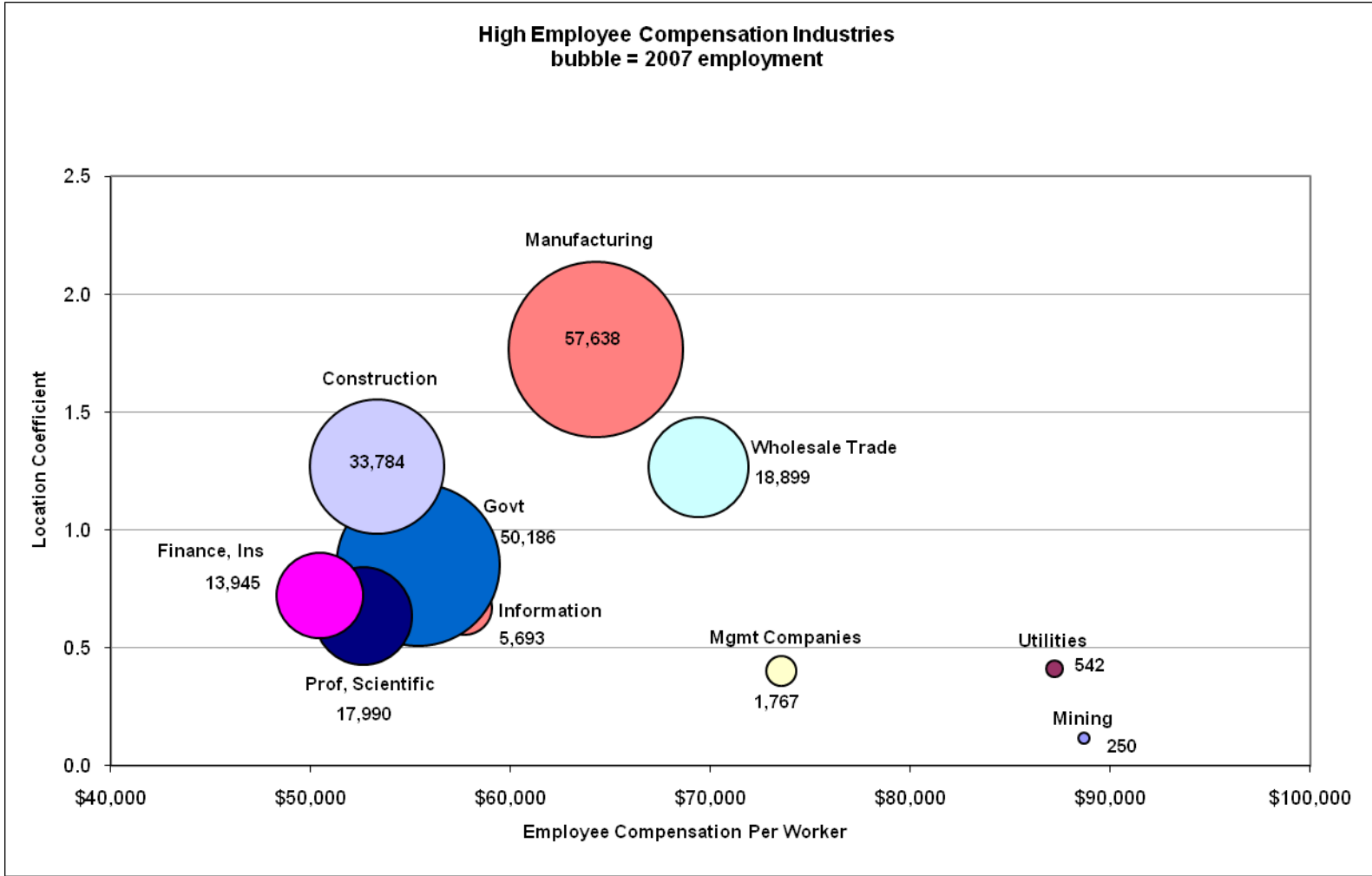
LQ, Value Added, and Empl – 2 Digit Ind



High LQ Industries (> 1.0)



High Employee Compensation Industries



2007 Employment, Value Added, and LQ

The Top 65% of Total Employment by Industry

Industry	2007 Empl	VA Per Worker	LQ
Manufacturing	57,638	95,919	1.8
Retail trade	55,983	37,813	1.3
Government & non NAICs	50,186	62,340	0.9
Health & social services	37,582	51,710	0.9
Administrative & waste services	34,296	33,249	1.4
Construction	33,784	74,853	1.3

Regional and National Growth Comparison

Top 10 Industries Nationally With Largest Wage Growth	Regional Growth 2006-2016	National Growth 2008-2018
Management, Scientific, Technical	17%	83%
Office of Physician Services	32%	34%
Computer Systems Design and related	55%	45%
Other General Merchandise Stores	60%	41%
Employment Services	43%	19%
Local Government	11%	8%
Home Health Care Services	42%	46%
Services for the Elderly and Disabilities*	37%	74%
Nursing Care Facilities	22%	24%
Full-Service Restaurants **	16%	8%

* regional growth based on Individual & Family Services

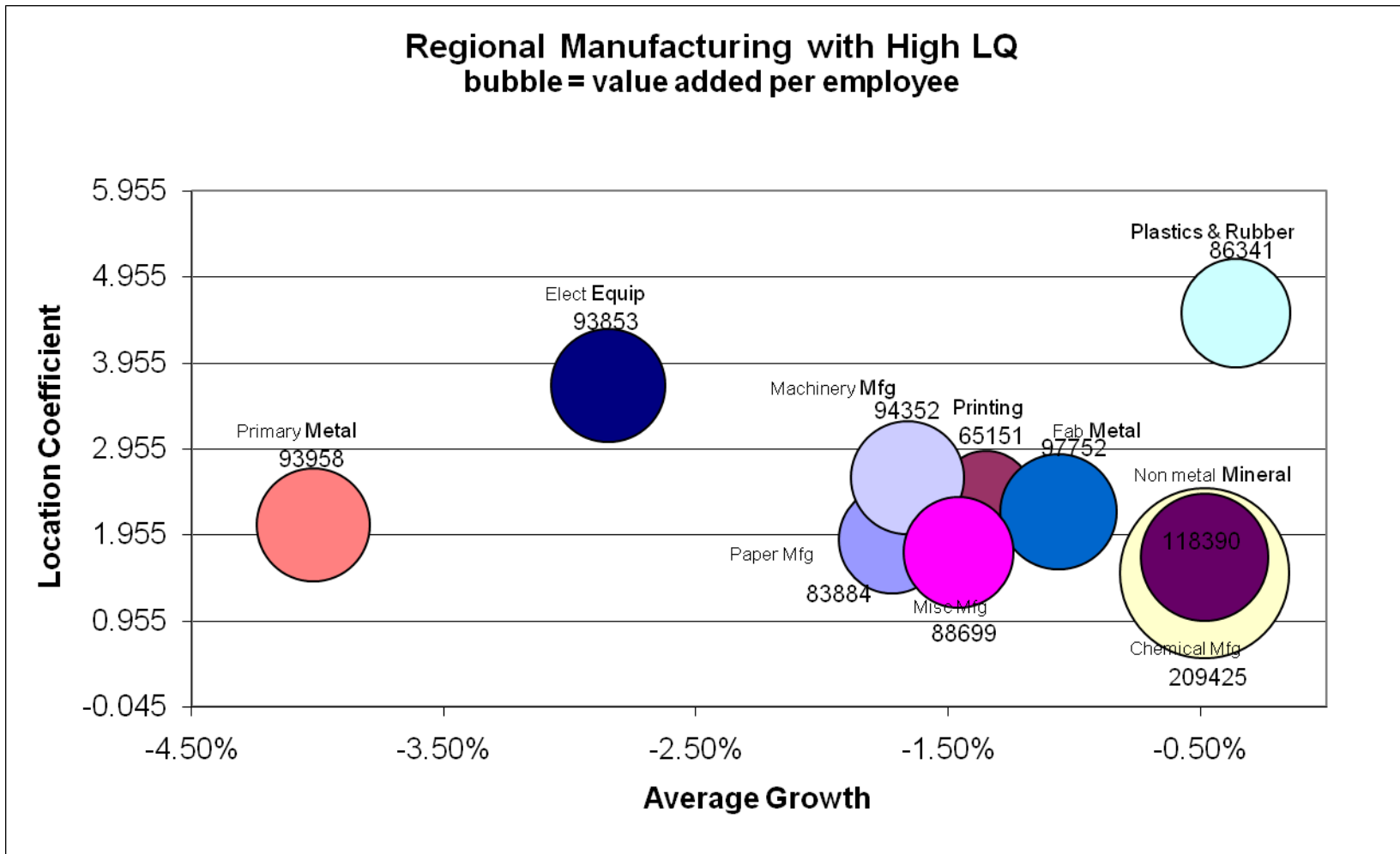
** regional growth based on food service and drinking est

Source: IL Dept of Employment Security
and BLS Employment Projections 08 - 18

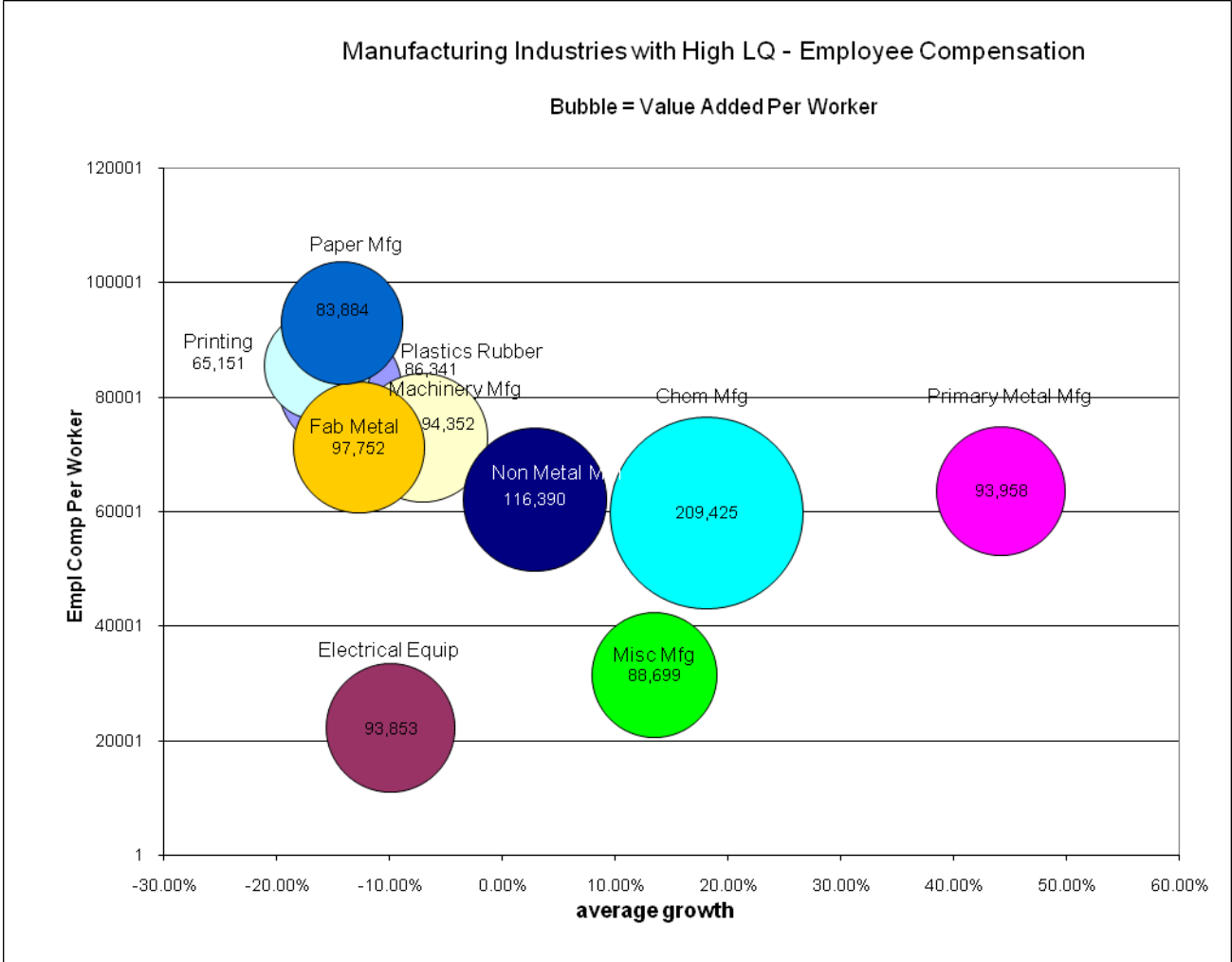
High Growth Industries



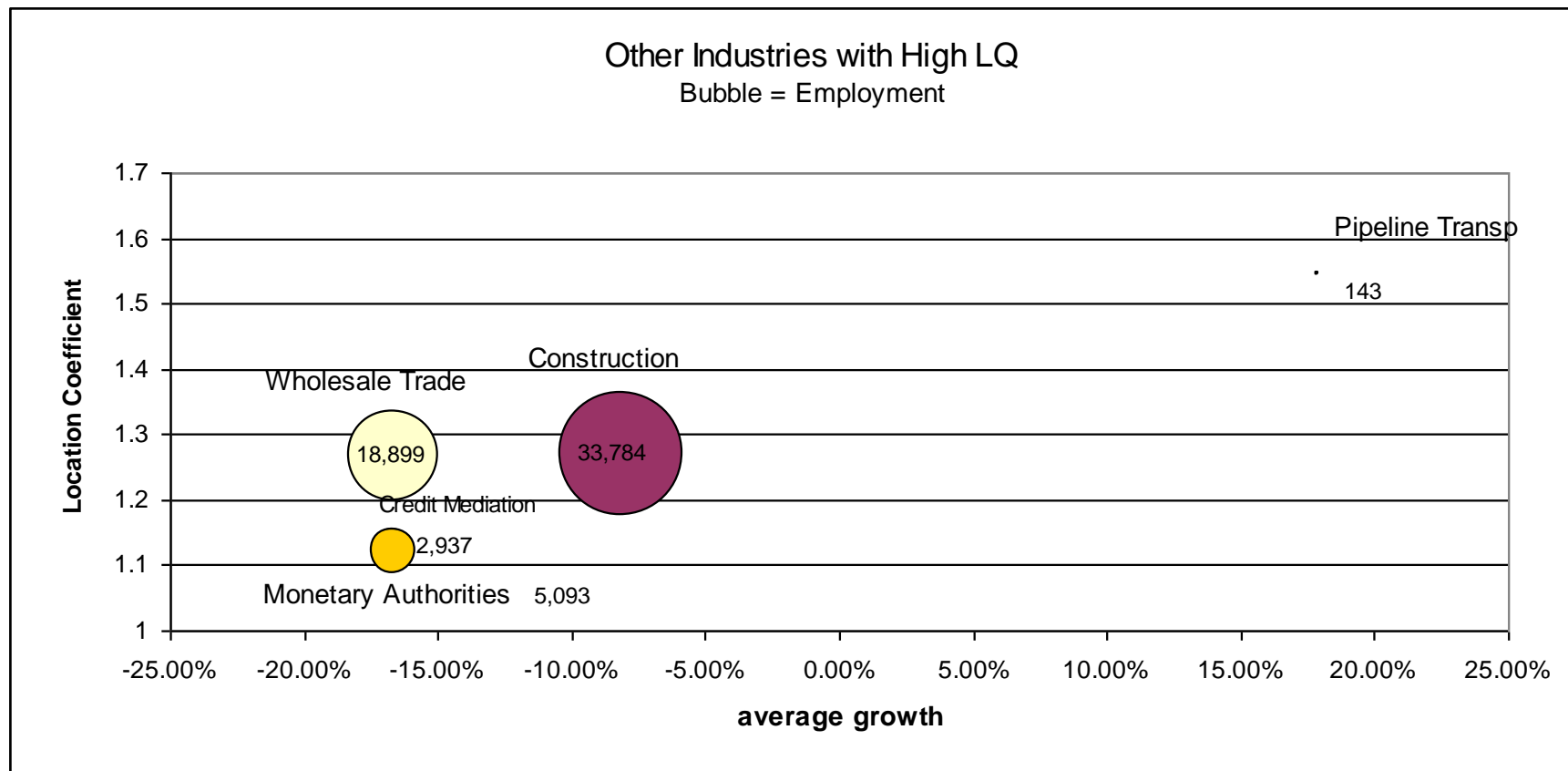
Regional Manufacturing with High LQ



Regional Mfg with High LQ – Empl Comp

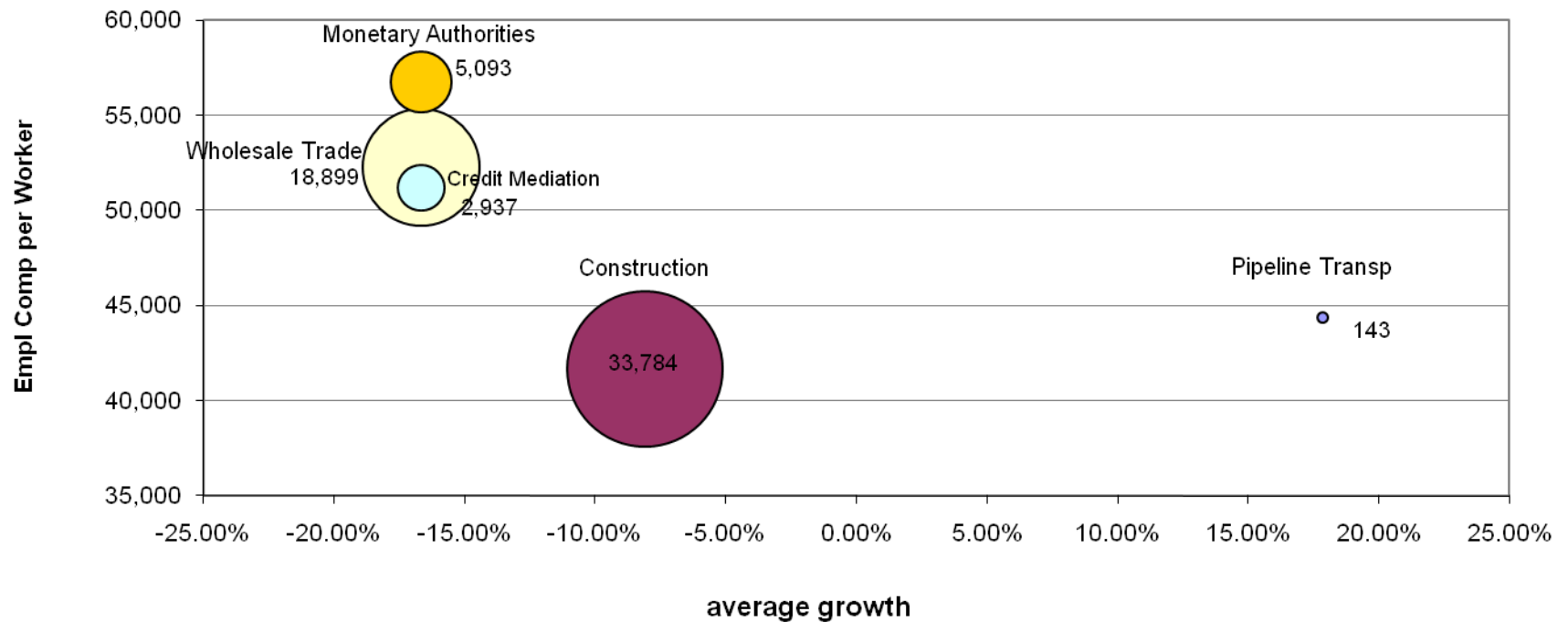


Other Industries with High LQ



Other High LQ Industries & Employee Comp

Other High LQ Industries - Employee Compensation
Bubble = Employment

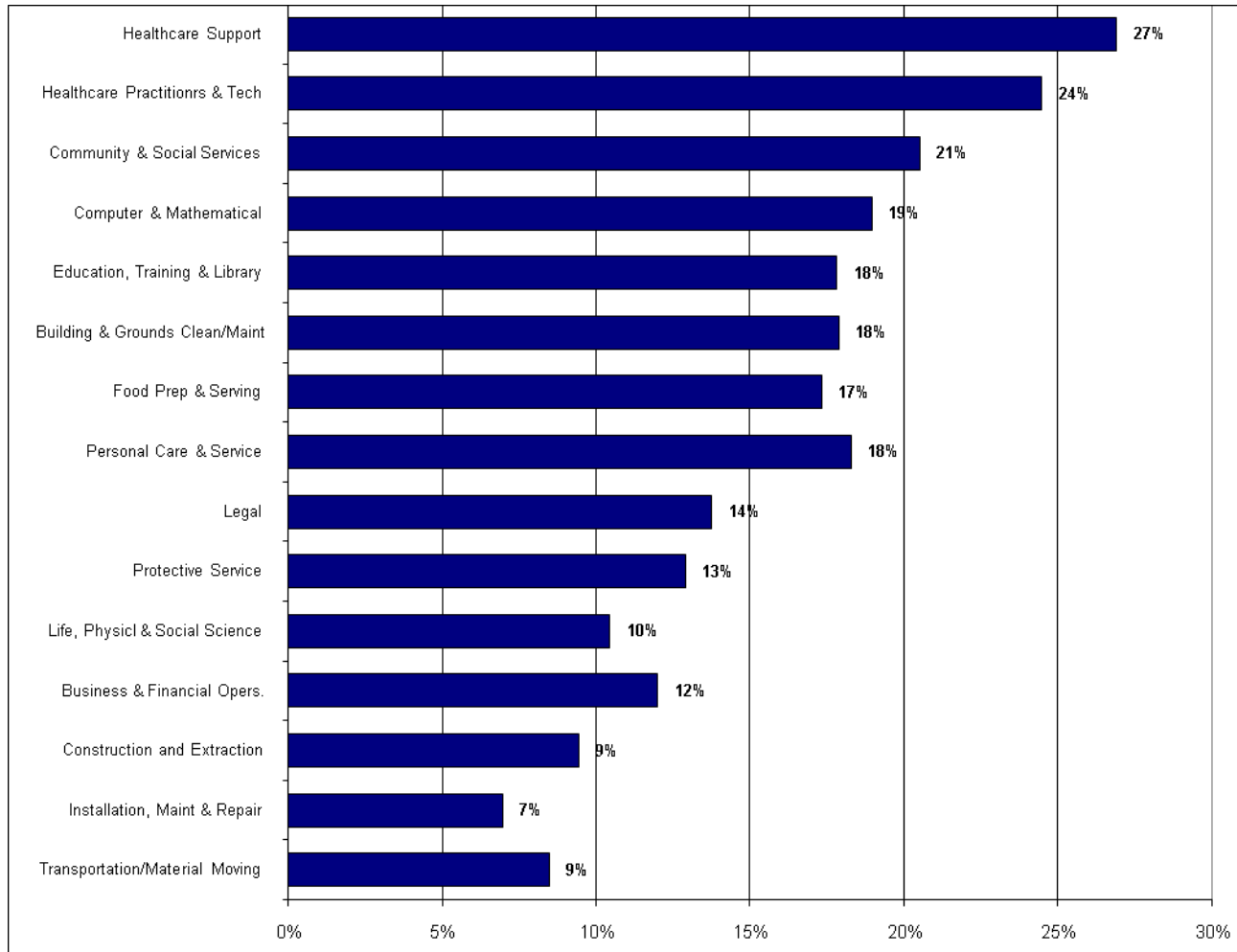


Employment by 2 Digit Occupation 2006 - 2016

Standard Occupational Classification (SOC)		Base Year	Projected
Code	Title	Employment 2006	Year Employment 2016
00-0000	Total, All Occupations	360,835	395,862
43-0000	Office & Administrative Support	54,626	58,021
51-0000	Production Occupations	43,998	42,930
41-0000	Sales and Related	36,839	38,983
53-0000	Transportation/Material Moving	30,580	33,180
35-0000	Food Prep & Serving	24,671	28,945
25-0000	Education, Training & Library	24,663	29,060
47-0000	Construction and Extraction	23,413	25,625
11-0000	Management	16,798	17,558
29-0000	Healthcare Practitioners & Tech	15,499	19,291
13-0000	Business & Financial Opers.	14,434	16,165
37-0000	Building & Grounds Clean/Main	13,629	16,065
49-0000	Installation, Maint & Repair	13,166	14,083
39-0000	Personal Care & Service	10,269	12,147

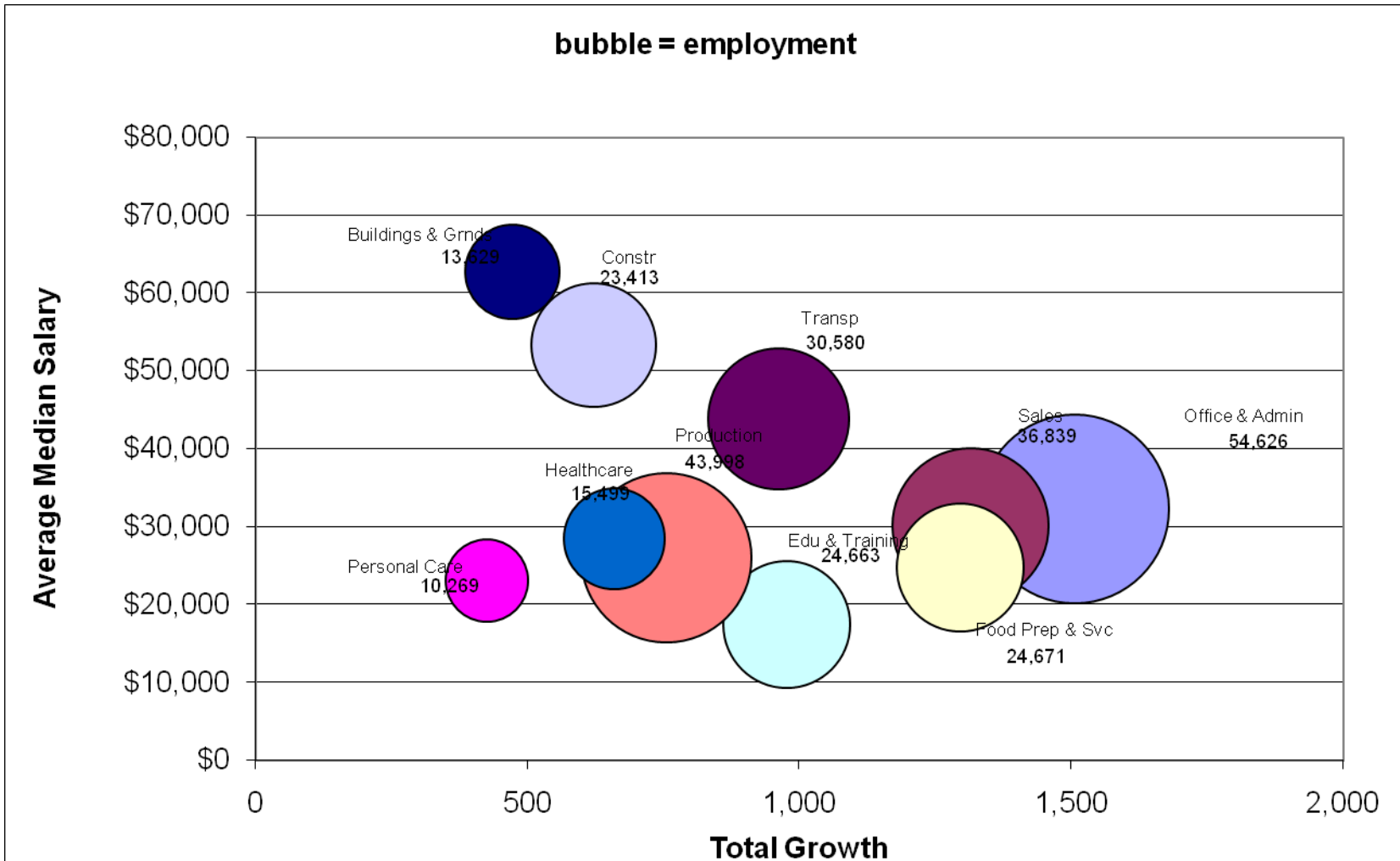
Source: IL Dept of Employment Security

Largest Percentages of Predicted Occupational Increases (2006 – 2016)

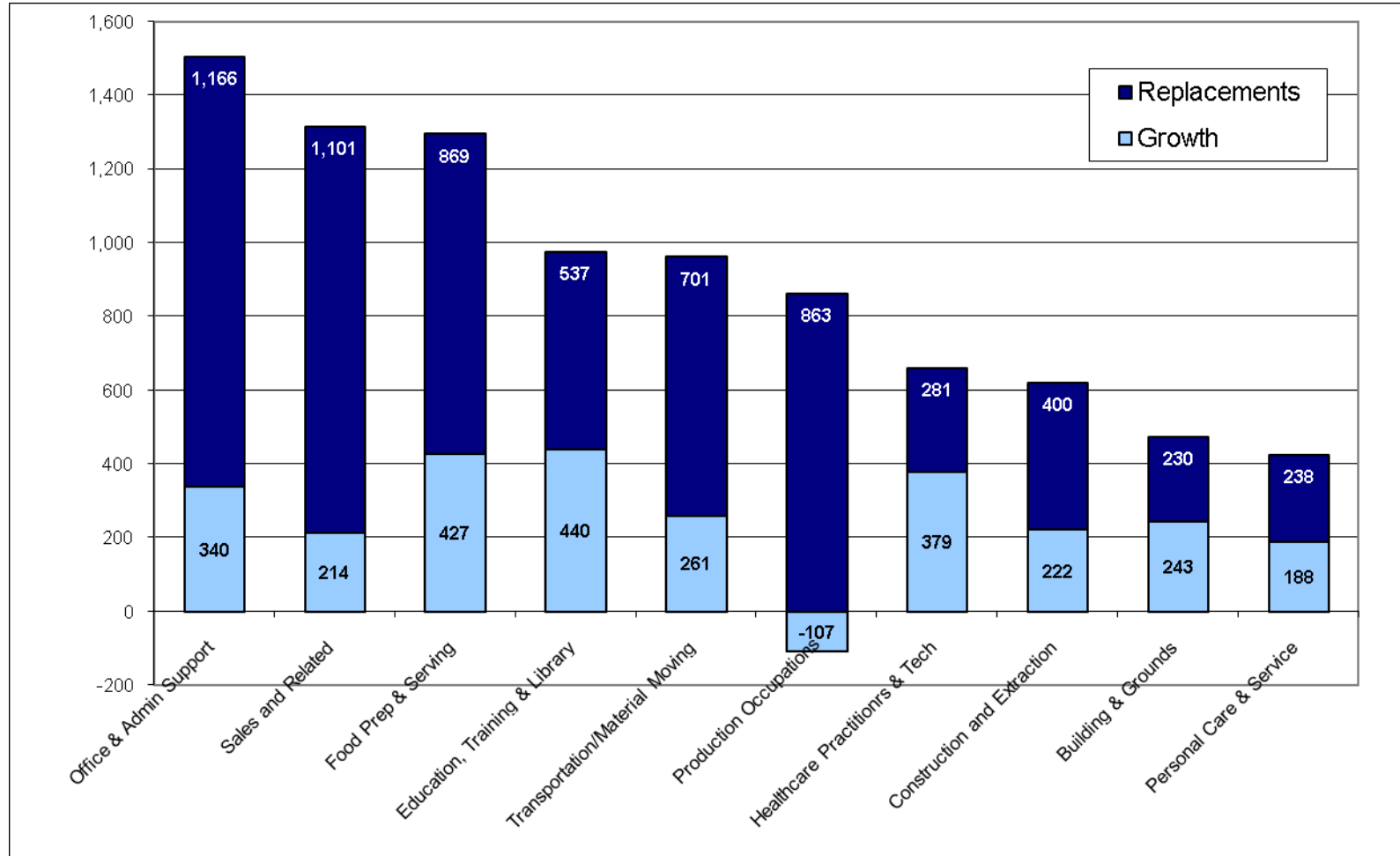


Source: IL Dept of Employment Security

Top Growth Occupations - 2 Digit



Annual Openings

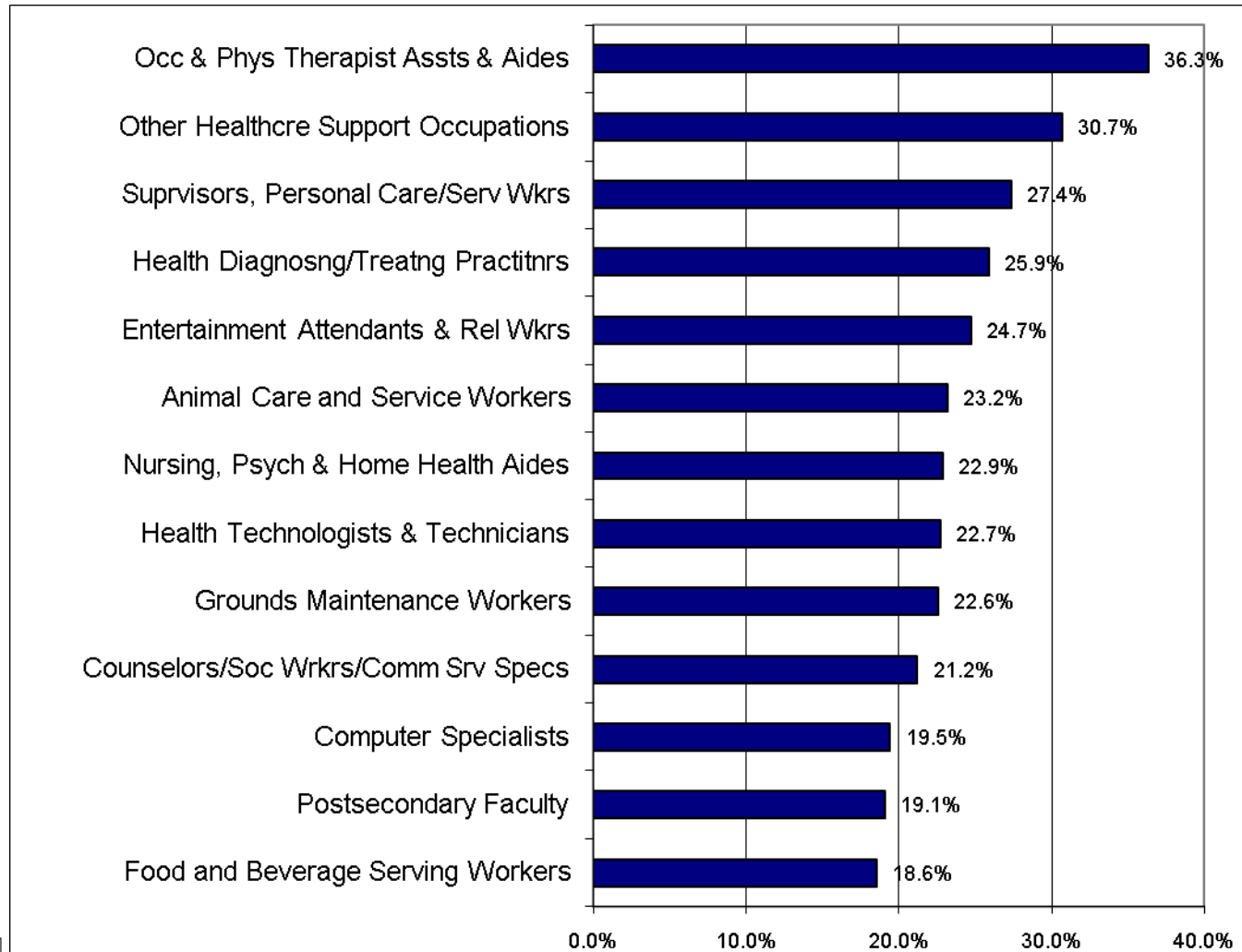


Employment by 3 Digit Occupation 2006 - 2016

Standard Occupational Classification (SOC)			Base Year Employment	Projected Year Employment
Code	3 digit occupations	2 digit occupations	2006	2016
00-0000	Total, All Occupations		360835	395862
41-2000	Retail Sales Workers	Sales and Related Occupations	20891	22414
47-1000	Supervrs, Constructn/Extractn Wkrs	Construction and Extraction Occs	19635	21545
53-6000	Other Transportation Workers	Transportation/Material Moving Occs	18565	19660
25-2000	Primary/Sec./Special Ed Sch Teachrs	Education, Training & Library Occs	16230	19214
51-8000	Plant and System Operators	Production Occupations	13031	12775
43-4000	Information and Record Clerks	Office & Administrative Support Occs	12466	13857
51-3000	Food Processing Workers	Production Occupations	11988	10915
35-3000	Food and Beverage Serving Workers	Food Prep & Serving Occupations	11757	13938
43-5000	Material Recrd/Sched/Disp/Dist Wkrs	Office & Administrative Support Occs	10630	10163
43-9000	Other Office/Admin Support Workers	Office & Administrative Support Occs	10075	10773
53-2000	Air Transportation Workers	Transportation/Material Moving Occs	9846	11132
51-1000	Supervisors, Production Workers	Production Occupations	9761	10242
29-1000	Health Diagnosng/Treatng Practitnrs	Healthcare Practitionrs & Tech Occs	9333	11753

Source: IL Dept of Employment Security

Largest Percentages of Predicted Occupational Increases (2006 – 2016)



Source: IL Dept of Employment Security

Regional and National Growth Comparison

Employment by Select Major Occupational Groups	Regional Growth	National Growth
	2006-2016	2008-2018
Office & Administrative Support	6%	8%
Production Occupations	-2%	-4%
Sales and Related	6%	6%
Transportation/Material Moving	9%	4%
Construction and Extraction	9%	13%
Installation, Maint & Repair	7%	8%

Source: IL Dept of Employment Security and BLS Employment Projections 08 - 18

Industry and Occupation Summary

- Manufacturing is 2nd in employment in the region and the highest value added at 5529, yet continues historical and projected declines in employment.
- Healthcare is 3rd in employment and is projected to continue growth through 2016. Healthcare ranks #7 in value added at 1943.

Positioning for the Future

Economists and social theorists predict that economies of the future will be based more on technology and innovation.

Strong New Economy Clusters

- *High Growth and High Dominance*
- *High Growth and Medium Dominance*
- *Moderate Growth and Medium Dominance*

Need to Bolster Manufacturing

- Even with the proportion of manufacturing employment declining, since it is a strategic industry in the region care needs to be taken to minimize the decline in employment in the manufacturing.

Unique Strengths

- Plastics and rubber products manufacturing
- Chemical manufacturing
- Primary metal manufacturing
- Electrical Equipment
- Misc manufacturing

Electronics Cluster

Optics

Electronic Components

Electronic Equipment

Advanced Manufacturing Cluster

Paper, Printing, & Packaging

Primary & Fabricated Metals

Machinery

Advanced Materials Cluster

Plastics and Rubber Manufacturing

Chemical Manufacturing

Advanced Materials Cluster

Plastics and Rubber Manufacturing

- Plastics material and resin manufacturing
- Synthetic rubber manufacturing
- Artificial and synthetic fibers and filaments

Chemical Manufacturing

- Petrochemical manufacturing
- Industrial gas manufacturing
- Synthetic dye and pigment manufacturing
- Alkalies and chlorine manufacturing
- Carbon black manufacturing
- All other basic inorganic chemical manufacturing
- Other basic organic chemical manufacturing

Advanced Materials Cluster

Standard Occupational Classification (SOC)		Percent of Employment by Occupation - National Averages		Regional Average Annual Job Openings due to		
		Plastics & Rubber	Chemical Mfg	Growth	Replacements	Total
Code	Title					
00-0000	Total, All Occupations			3502	7957	11459
19-2000	Physical Scientists		2.7%	3	10	13
19-4000	Life/Physical/Social Science Techs		4.1%	5	17	22
49-9000	Other Install, Maint & Repair Occs	2.4%	6.5%	37	75	112
51-1000	Supervisors, Production Workers	4.6%	4.7%	-14	44	30
51-2000	Assemblers and Fabricators	6.6%		49	196	245
51-4000	Metal Workers and Plastic Workers	16.4%		-107	222	115
51-8000	Plant and System Operators		11.9%	-4	13	9
51-9000	Other Production Occupations	6.0%	14.1%	-25	262	237
53-3000	Motor Vehicle Operators		2.7%	128	164	292
53-7000	Material Moving Workers	10.0%	2.6%	109	487	596
Cluster Totals				181	1490	1671

Advanced Manufacturing Cluster

Primary Metal Manufacturing

- Iron and steel mills and ferroalloy manufactu
- Steel product manufacturing from purchased st
- Alumina refining and primary aluminum product
- Secondary smelting and alloying of aluminum
- Aluminum product manufacturing from purchased
- Primary smelting and refining of copper
- Primary smelting and refining of nonferrous m
- Copper rolling- drawing- extruding and alloyi
- Nonferrous metal (except copper and aluminum)
- Ferrous metal foundries
- Nonferrous metal foundries
- All other forging- stamping- and sintering

Machinery Manufacturing

- Farm machinery and equipment manufacturing
- Lawn and garden equipment manufacturing
- Construction machinery manufacturing
- Mining and oil and gas field machinery manufa
- Other industrial machinery manufacturing

Fabricated Metal

- Custom roll forming
- Crown and closure manufacturing and metal stamping
- Cutlery- utensil- pot- and pan manufacturing
- Handtool manufacturing
- Plate work and fabricated structural product
- Ornamental and architectural metal products m
- Power boiler and heat exchanger manufacturing
- Metal tank (heavy gauge) manufacturing
- Metal can- box- and other metal container (li
- Ammunition manufacturing
- Arms- ordnance- and accessories manufacturing
- Hardware manufacturing
- Spring and wire product manufacturing
- Machine shops
- Turned product and screw- nut- and bolt manufacturing
- Coating- engraving- heat treating and allied
- Valve and fittings other than plumbing manufacturing
- Plumbing fixture fitting and trim manufacturing
- Ball and roller bearing manufacturing
- Fabricated pipe and pipe fitting manufacturing
- Other fabricated metal manufacturing

Advanced Manufacturing Cluster

Standard Occupational Classification (SOC)						Regional Average Annual Job Openings due to		
Code	Title	Steel Product	Turned Product	Nonferrous Metal	Fabricated Metal	Growth	Replacements	Total
00-0000	Total, All Occupations					3502	7957	11459
43-5000	Material Recrd/Sched/Disp/Dist Wkrs		3.0%			-47	255	208
49-9000	Other Install, Maint & Repair Occs	2.9%		5.9%		37	75	112
51-1000	Supervisors, Production Workers	4.3%	4.4%	4.8%	3.7%	-14	44	30
51-2000	Assemblers and Fabricators		2.5%		9.2%	49	196	245
51-4000	Metal Workers and Plastic Workers	23.8%	35.8%	14.0%	18.1%	-107	222	115
51-9000	Other Production Occupations	9.2%	4.7%	6.0%	3.0%	-25	262	237
53-7000	Material Moving Workers	2.9%		6.0%		109	487	596
Total						2	1541	1543

Electronics Cluster

Computers and other Electronic Components

- Electronic computer manufacturing
- Computer storage device manufacturing
- Computer terminals and other computer periphe
- Telephone apparatus manufacturing
- Broadcast and wireless communications equip
- Other communications equipment manufacturing
- Audio and video equipment manufacturing
- Electron tube manufacturing
- Bare printed circuit board manufacturing
- Semiconductor and related device mfg
- Electronic capacitor- resistor- coil- transform
- Electronic connector manufacturing
- Printed circuit assembly (electronic assembly
- Other electronic component manufacturing

Electronic equipment & appliances

- Electromedical and electrotherapeutic apparat
- Search- detection- and navigation instruments
- Automatic environmental control manufacturing
- Industrial process variable instruments manuf
- Totalizing fluid meters and counting devices
- Electricity and signal testing instruments ma
- Analytical laboratory instrument manufacturin
- Irradiation apparatus manufacturing
- Watch- clock- and other measuring and control
- Software- audio- and video media for reproduc
- Magnetic and optical recording media manufact
- Electric lamp bulb and part manufacturing
- Lighting fixture manufacturing
- Small electrical appliance manufacturing
- Household cooking appliance manufacturing
- Household refrigerator and home freezer manuf
- Household laundry equipment manufacturing
- Other major household appliance manufacturing
- Power- distribution- and specialty transforme
- Motor and generator manufacturing
- Switchgear and switchboard apparatus manufact
- Relay and industrial control manufacturing
- Storage battery manufacturing
- Primary battery manufacturing
- Communication and energy wire and cable manuf
- Wiring device manufacturing
- Carbon and graphite product manufacturing
- All other miscellaneous electrical equipment

Electronics Cluster

Standard Occupational Classification (SOC)		Regional Average Annual Job Openings due to					
		Computer & Peripheral	Communications	Semiconductor	Growth	Replacements	Total
Code	Title						
00-0000	Total, All Occupations				3502	7957	11459
11-9000	Other Management Occupations	2.0%	2.4%	2.1%	61	148	209
15-1000	Computer Specialists	34.1%	8.3%		100	112	212
17-2000	Engineers	2.0%	6.1%	9.0%	13	73	86
41-4000	Sales Reps, Wholesale/Mfg	2.4%			16	128	144
51-1000	Supervisors, Production Workers		2.3%	2.8%	-14	44	30
51-2000	Assemblers and Fabricators	5.3%	12.3%	18.4%	49	196	245
51-9000	Other Production Occupations		5.8%	14.9%	-25	262	237
Total					200	963	1163

Clusters Based on Share and Growth

↑
Share

Primary Metals (93,958) Electrical Equipment (93,853)	Plastics & Rubber (86,341)
	Machinery Mfg (94,352) Chemical Mfg (209,425) Non Metal Mineral (118,390) Fabricated Metal ((97,752) Printing (65,151) Misc Mfg (88,699) Paper Mfg (83,884)

Growth →

Cluster Comparison

Fox Valley Region

- Advanced materials manufacturing
- Advanced manufacturing
- Electronics manufacturing

CMAP

- Advanced materials manufacturing
- Business & financial
- Transportation, logistics
- Biomedical & biotechnical
- Printing & publishing
- Education, arts, entertainment

Nurture and Build

- Telecommunications, digital tech, IT
- Financial and business services
- Healthcare
- Professional services
- Transportation wholesale trade

Innovation

How can educational institutions help create a regional culture of innovation?

What technical assistance and R&D is needed to sustain innovation?

What innovative initiatives can educational institutions, businesses, and communities implement to create and maintain the pool of talent needed for the future?

Role of Clusters in Entrepreneurship

- Strong industry clusters surrounding a region – industry accelerates the growth of startup activities both in number of firms and startup employment
- Strong industry cluster environments increase pool of competitive resources and reduces barriers to entry.
- Strong industry clusters enhance the range and diversity of entrepreneurship startup opportunities while also reducing costs of starting a new business.

Incubating Entrepreneurship

- **Investment parties** mainly include the banks or financial organization, government fund, enterprises investment, venture capital firms, private capital etc., which mainly provide the capital or financing resources.
- **The R&D parties** mainly refer to the universities and research institutes, and also include the R&D department of the large leading firms, which provide the technological resources and HR for entrepreneurial activities.
- **The industrial parties** include the leading industries, supportive industries,
- suppliers and demand markets, which provide the product information, market information and industrial

Cluster Incubation System

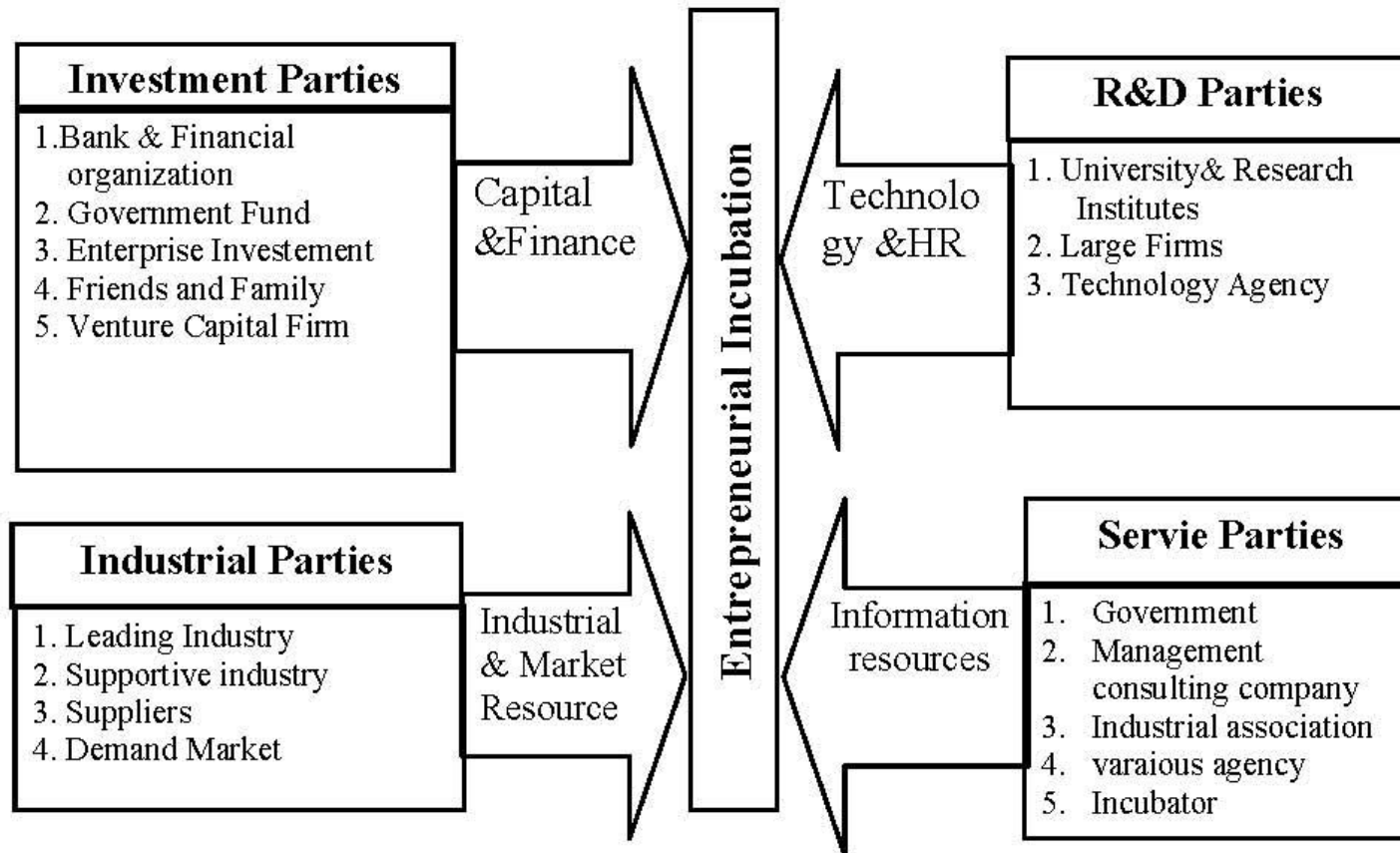


Figure 1. Model of the industrial cluster incubation system

Source: Rongzhi, Liu and Bei, Hu. Research on the Industrial Cluster Incubation System for Entrepreneurial Activities.

Industry Clusters and Workforce Development

What can higher education institutions do to help identify which industry clusters should be pursued and developed at the regional level?

How can we work with the other entities within the region addressing these issues?

What skills and training will the workforce need?

NIU Outreach

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