

Healthy Families Healthy Businesses

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Associate Dean, College of Engineering
Director, Center for Industrial Research and Service
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**It was the best of times,
it was the worst of times ...**

- Charles Dickens



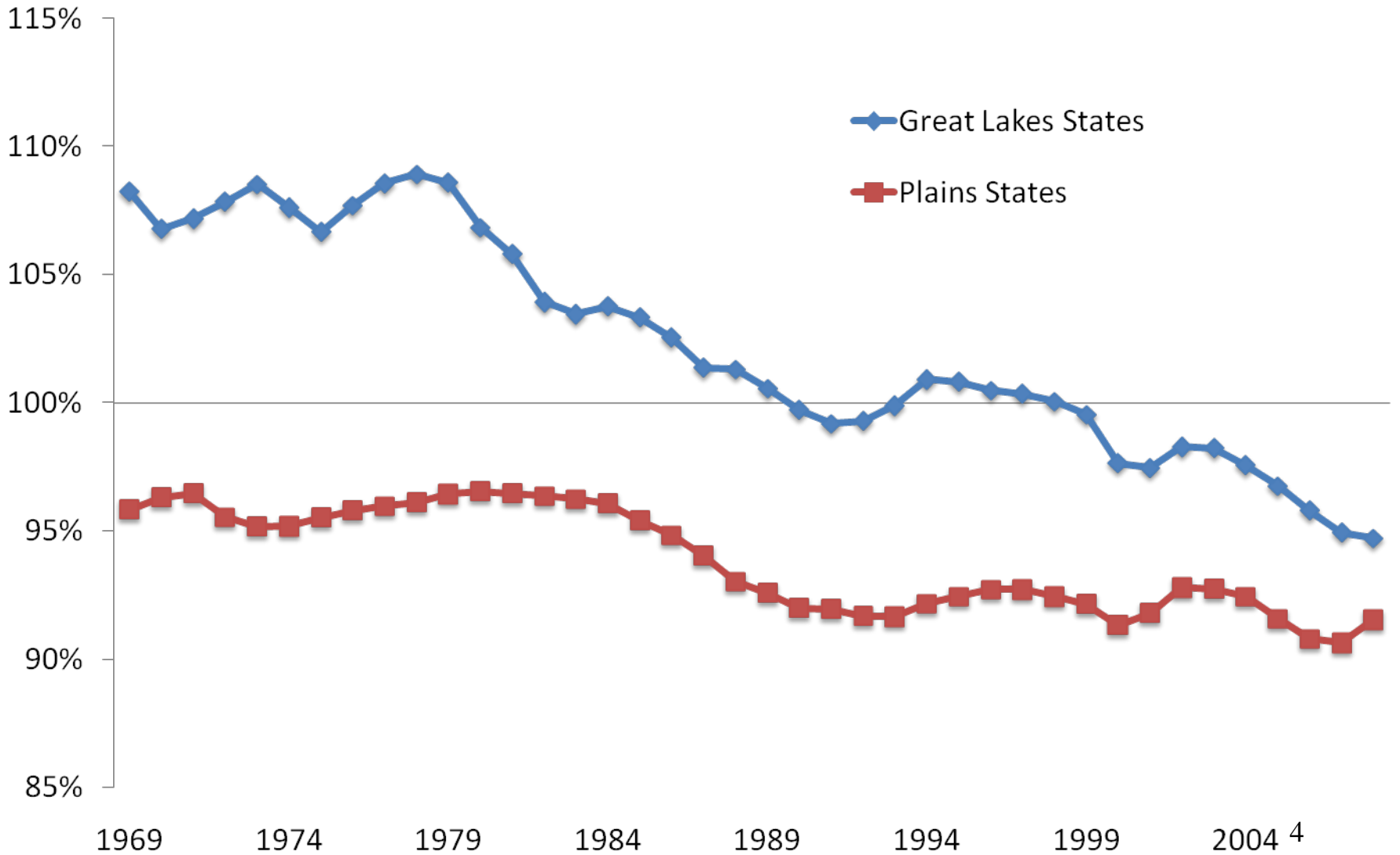
JPMorgan Says U.S. May Take Until 2013 to Recoup Job Losses

Source: www.bloomberg.com

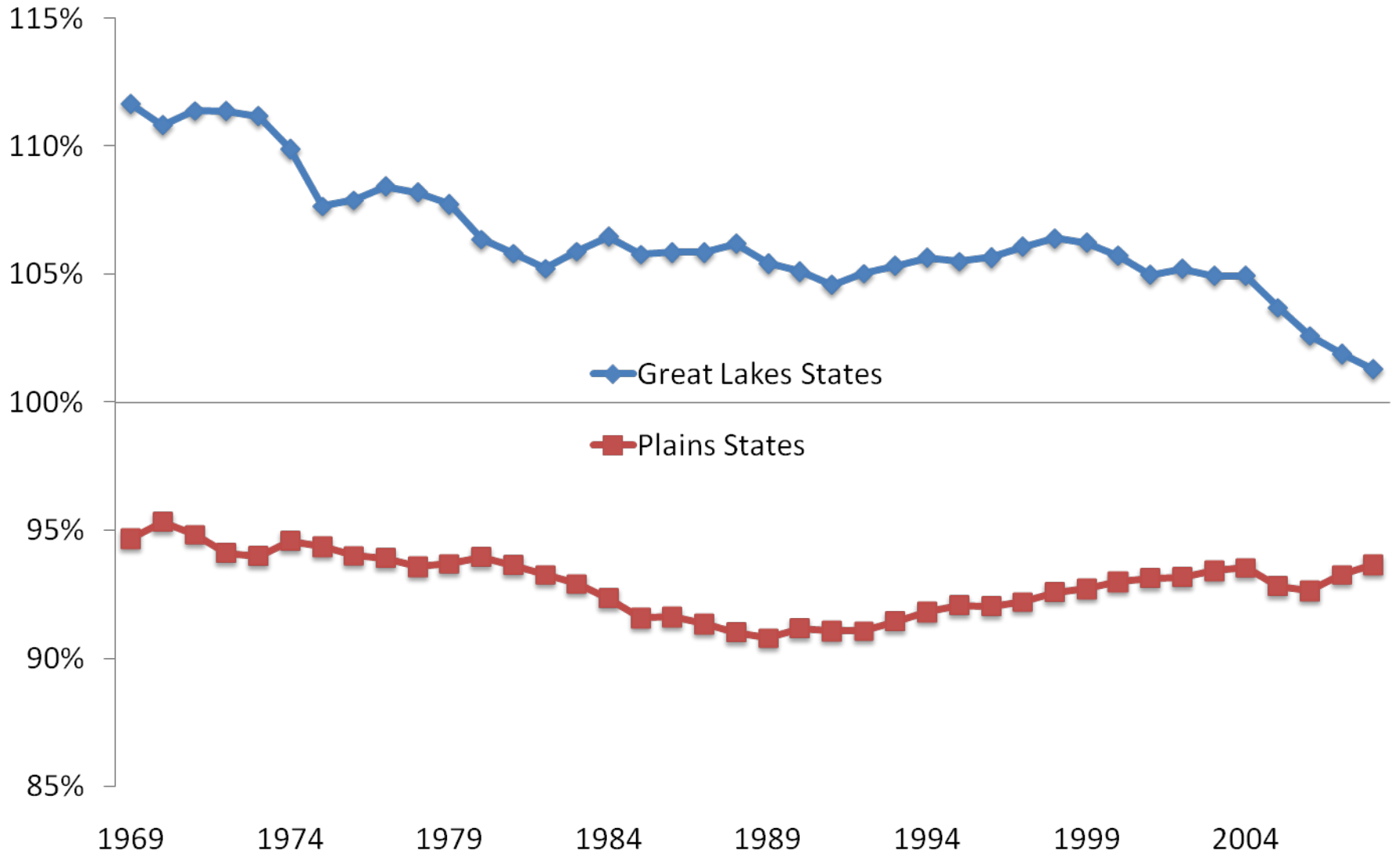
Chapter 1



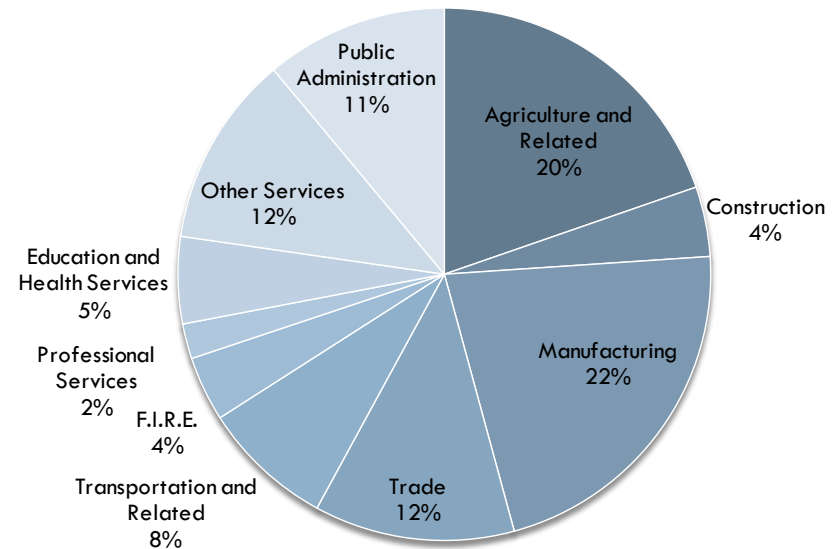
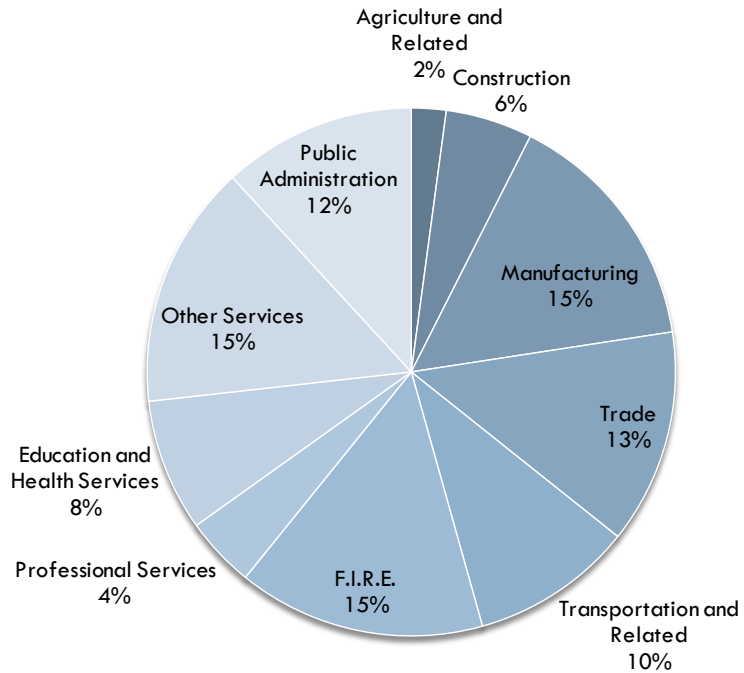
Average Metro Earnings per Wage & Salary Job (% of U.S. Metro Average)



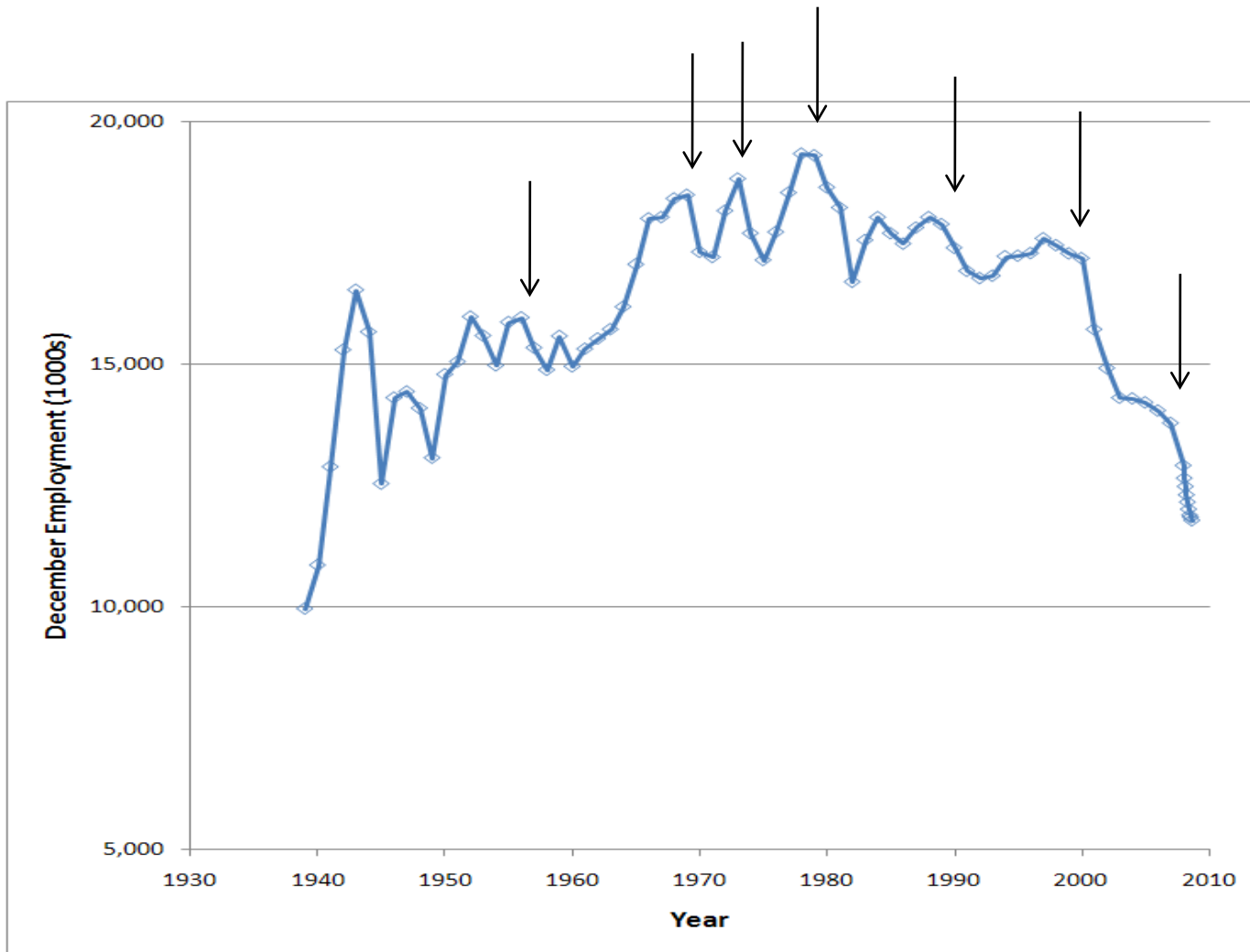
Average Nonmetro Earnings per Wage & Salary Job (% of U.S. Nonmetro Average)



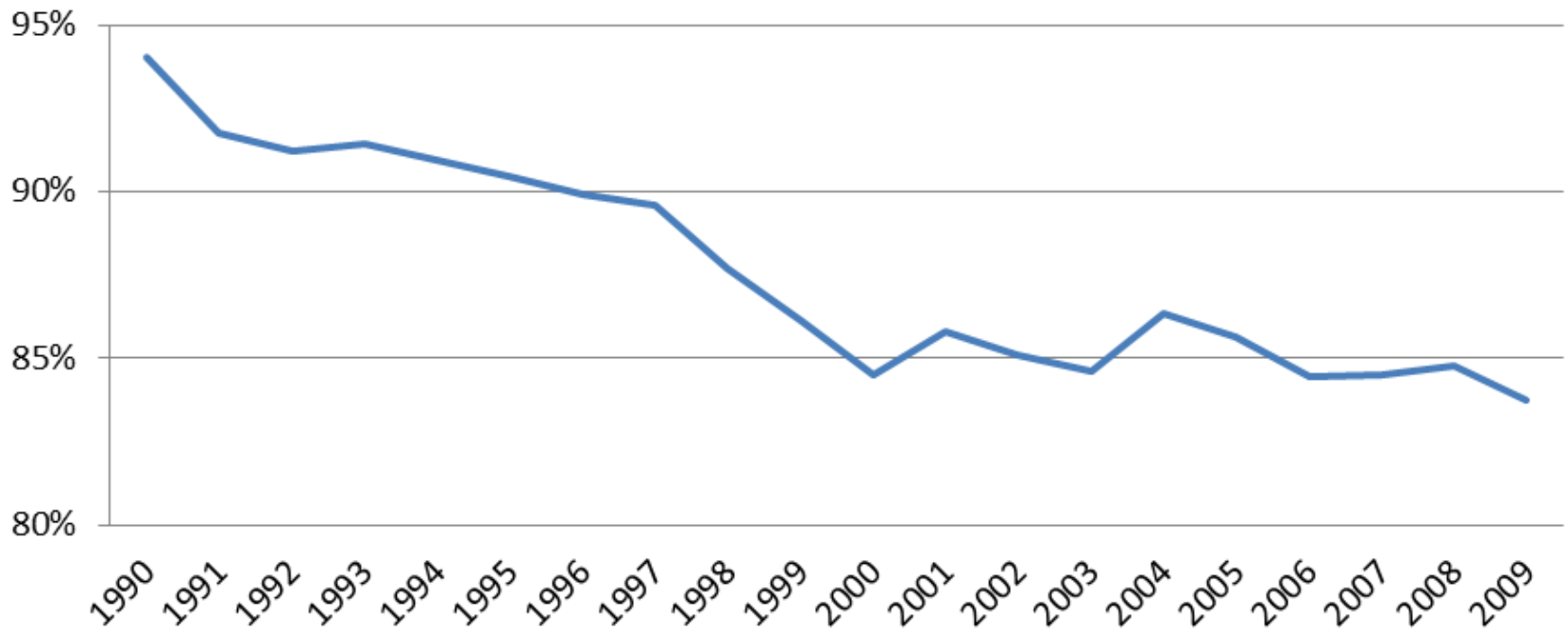
A Tale ...



U.S. Manufacturing Employment



Average Compensation per Manufacturing Job (Iowa as a Percentage of U.S. Average)



It's the end of the world
as we know it ...

- R.E.M.

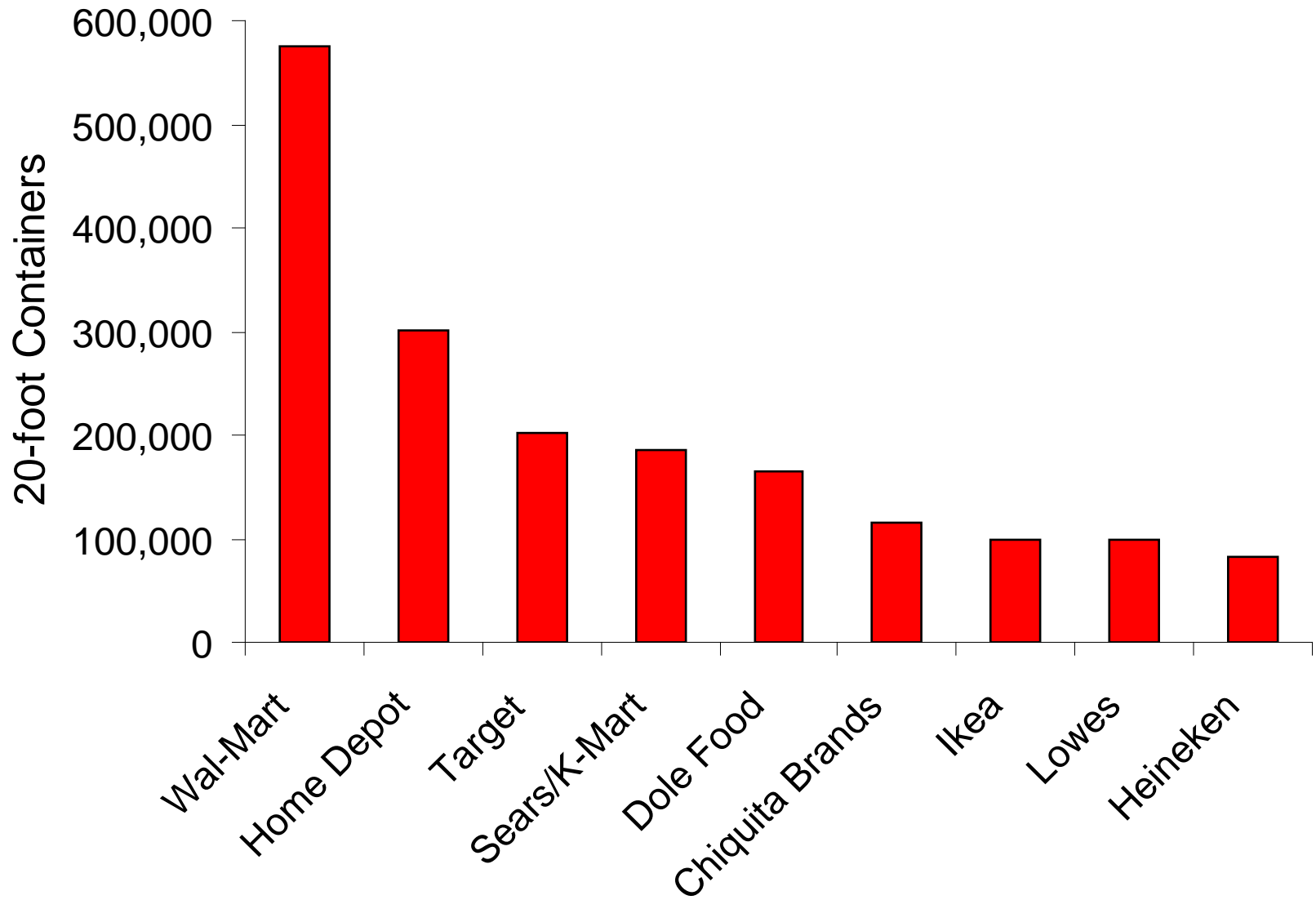
Imports of cotton trousers, shorts
and slacks have increased from
\$280 million in 2003 to
\$2.7 billion in 2009.

Source: Manufacturing and Technology News

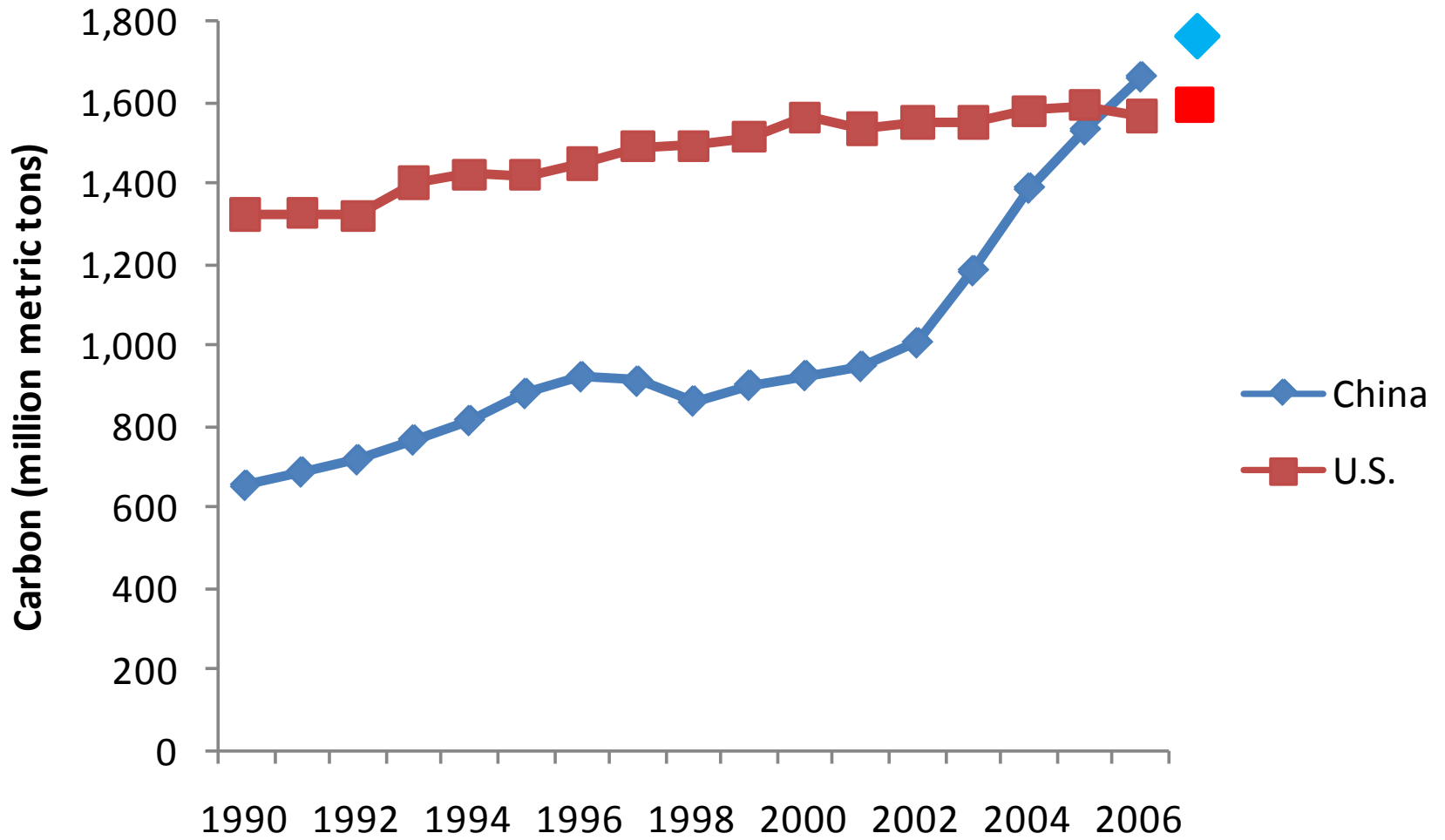
Chapter 2



Source: GAO

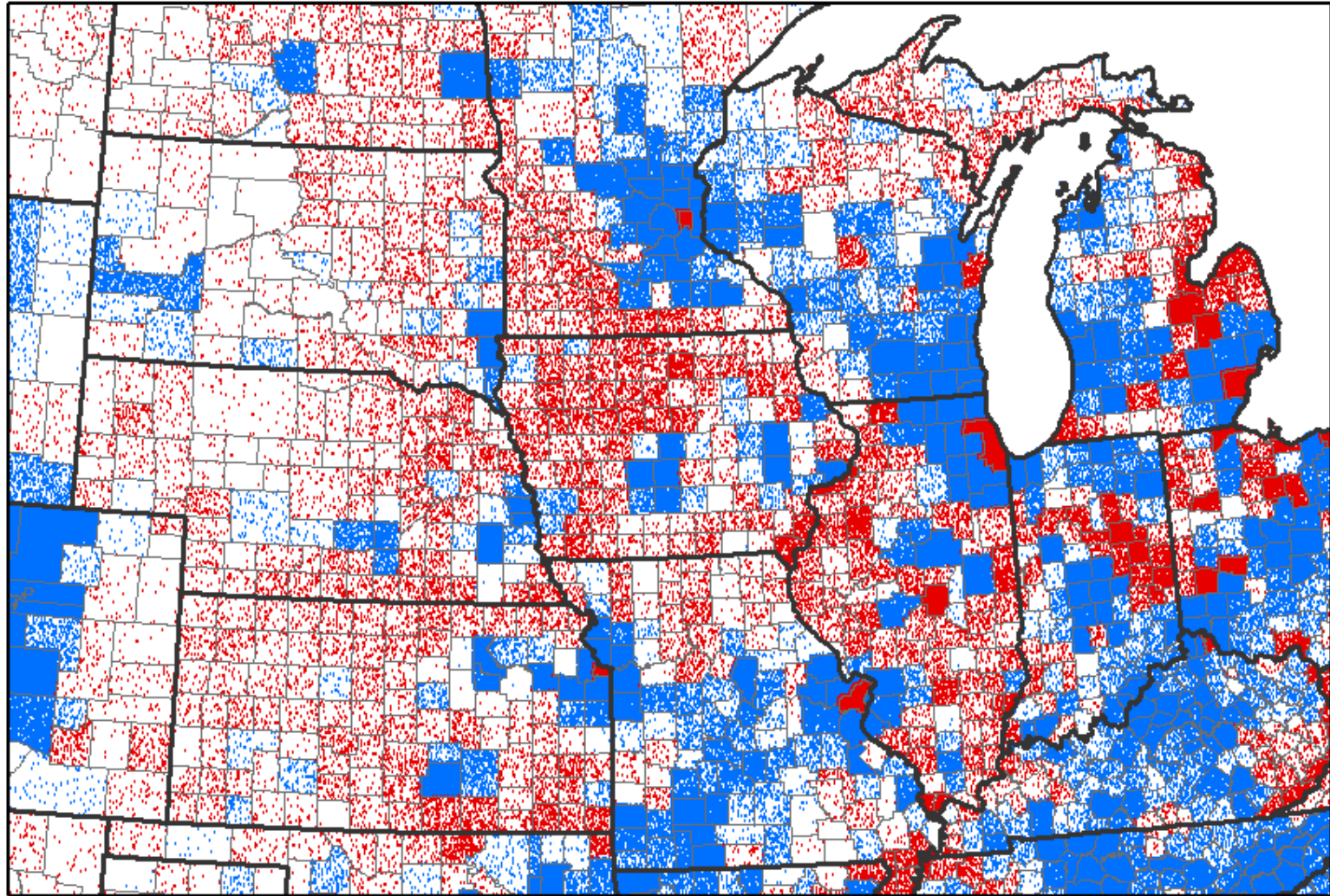


Source: Manufacturing and Technology News



Source: Carbon Dioxide Information Analysis Center, ORNL

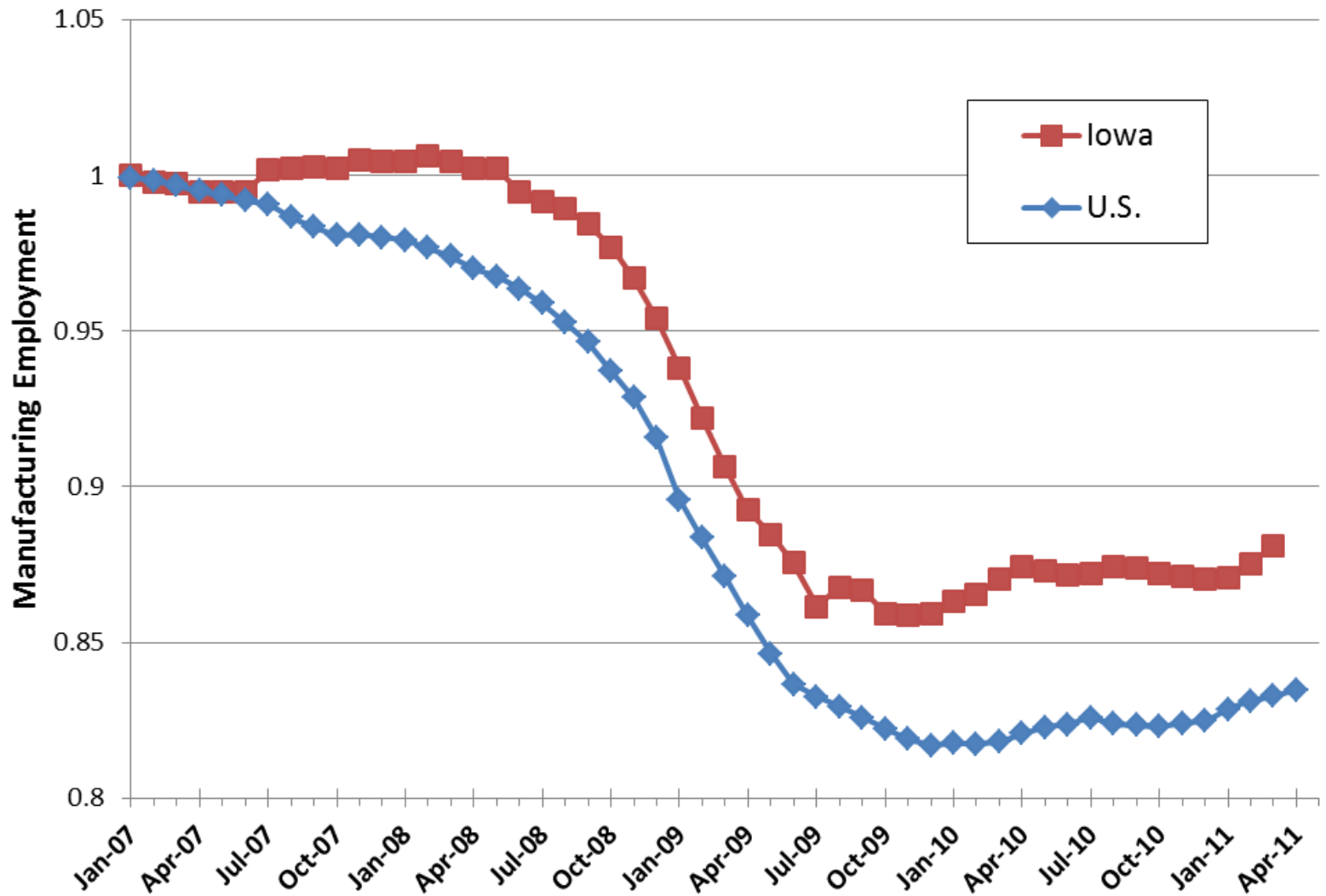
Cumulative Population Change, 2000-2008



1 Dot = 10 1 Dot = 10
Red = Decline Blue = Gain

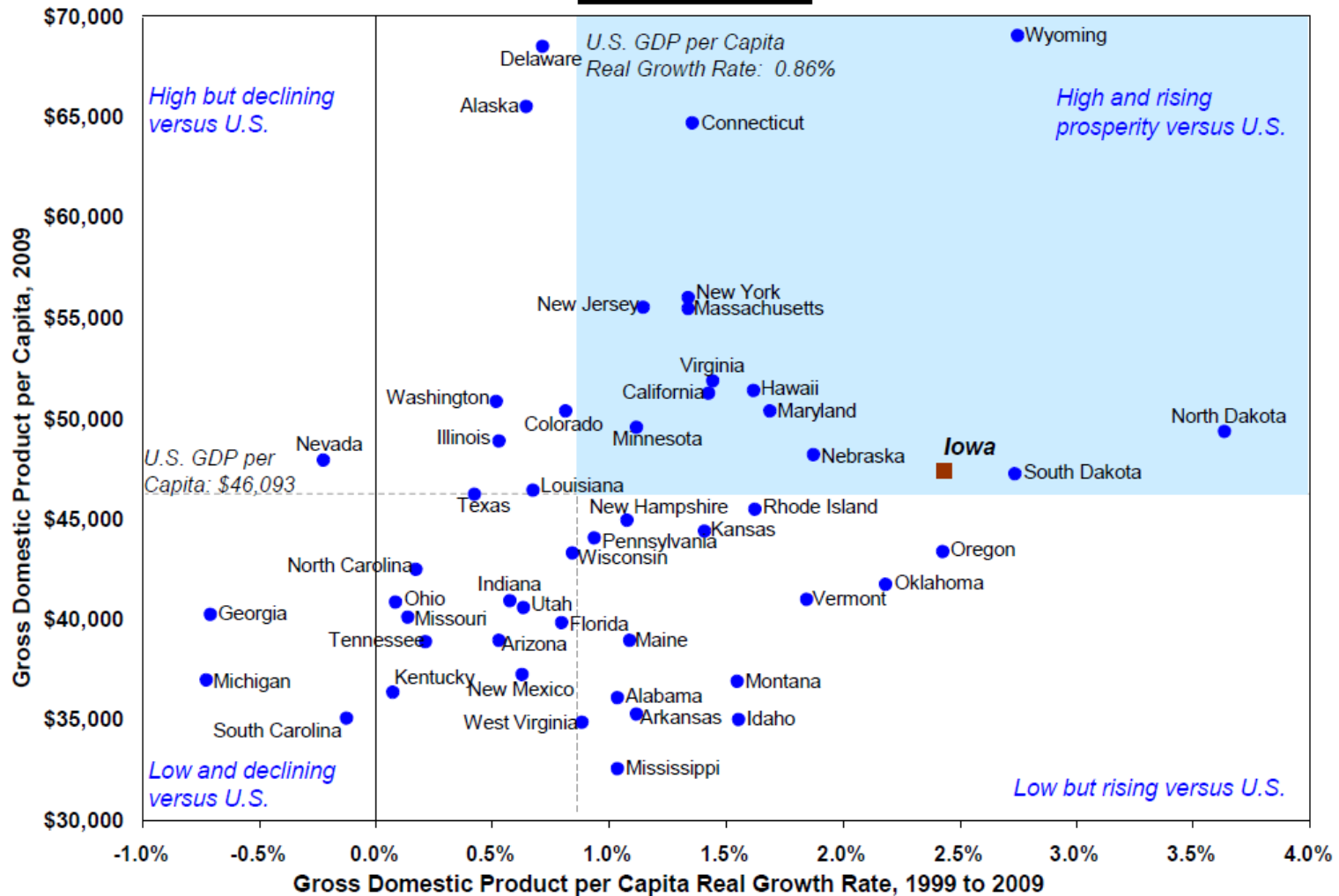
Prepared by Liesl Eathington, RECAP
Iowa State University
Source Data: Population Estimates Program, U.S. Census Bureau, March 2009





Long Term State Prosperity Performance

1999 to 2009



Notes: Real GDP figures in 2005 chained US dollars from the Bureau of Economic Analysis. Growth rate is calculated as compound annual growth rate. D.C. excluded

It's the end of the world
as we know it ...
and I feel fine.

- R.E.M.



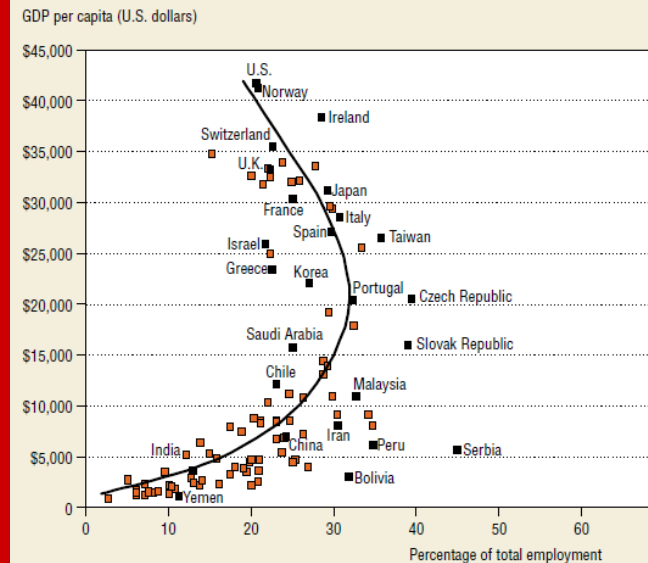
Chapter 3



The news of my death has been greatly exaggerated.

- Mark Twain

Chapter 4



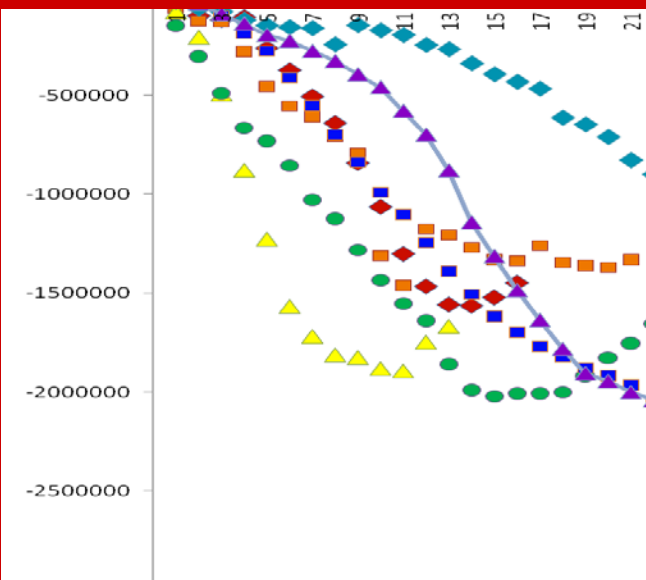
Source: Dallas Federal Reserve

Rank	State	Mfg %
1	Indiana	25.1%
2	Louisiana	20.1%
3	Oregon	19.1%
4	North Carolina	18.3%
5	Wisconsin	17.7%
6	Iowa	17.4%
7	Mississippi	17.2%
8	Kentucky	16.2%
9	Alabama	15.9%
10	Ohio	15.7%
11	South Carolina	15.3%
12	Arkansas	14.4%
13	Tennessee	14.4%
14	Michigan	14.3%
15	Kansas	13.7%
16	Texas	12.9%
17	Pennsylvania	12.5%
18	Minnesota	12.4%
19	California	11.9%
20	Connecticut	11.9%

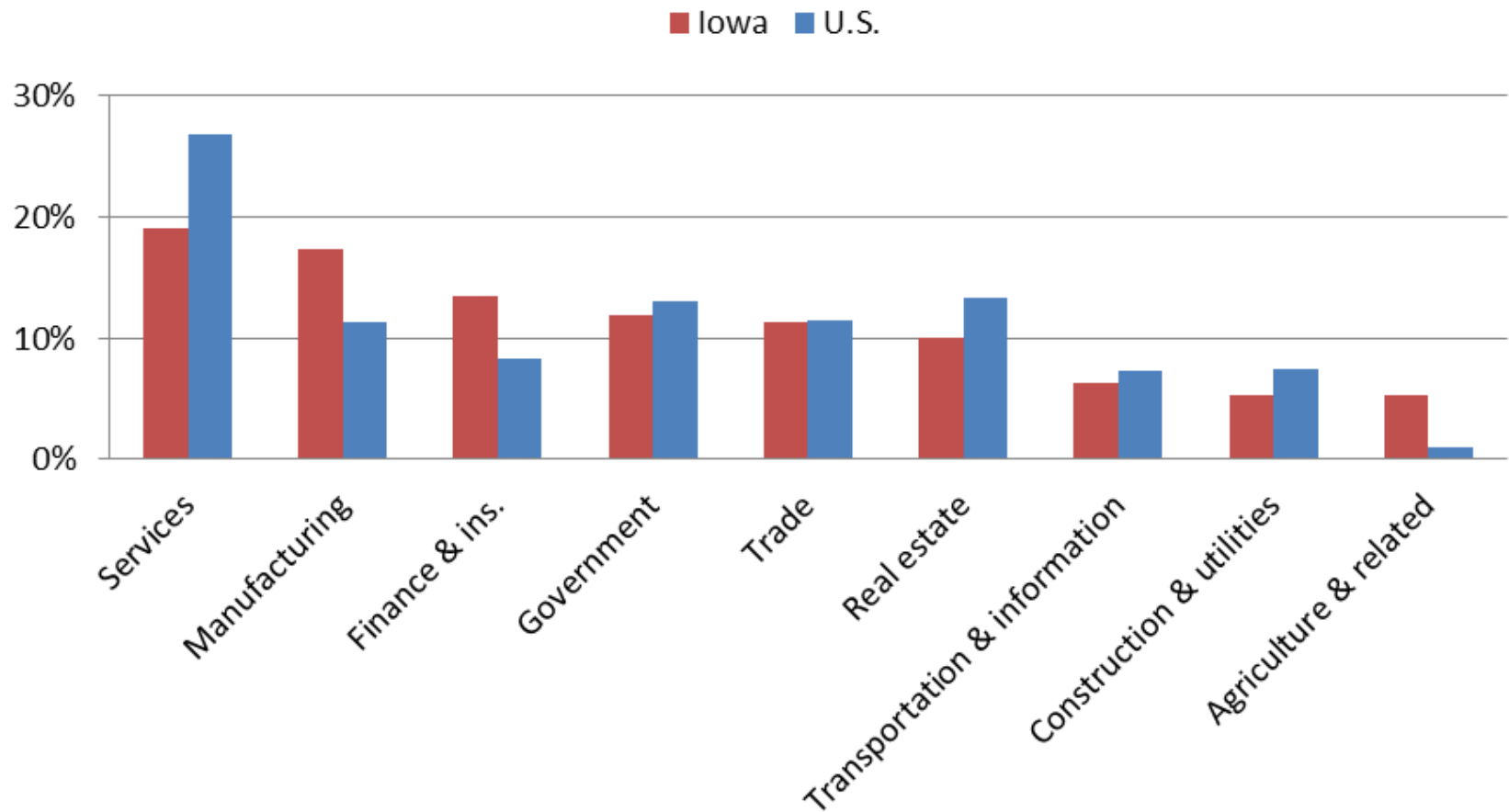
Scotty...I need more _____!

- James T. Kirk

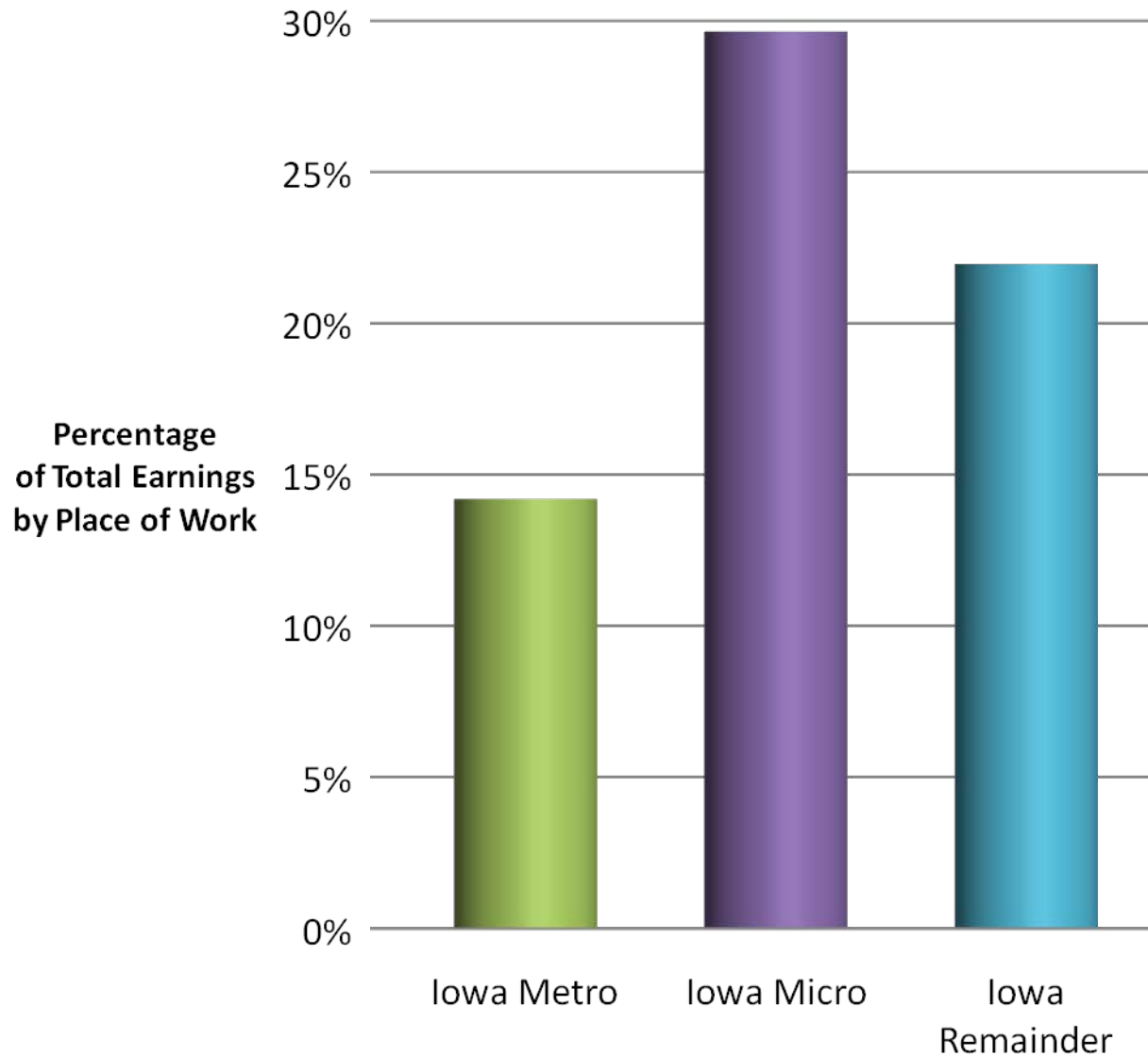
Chapter 5

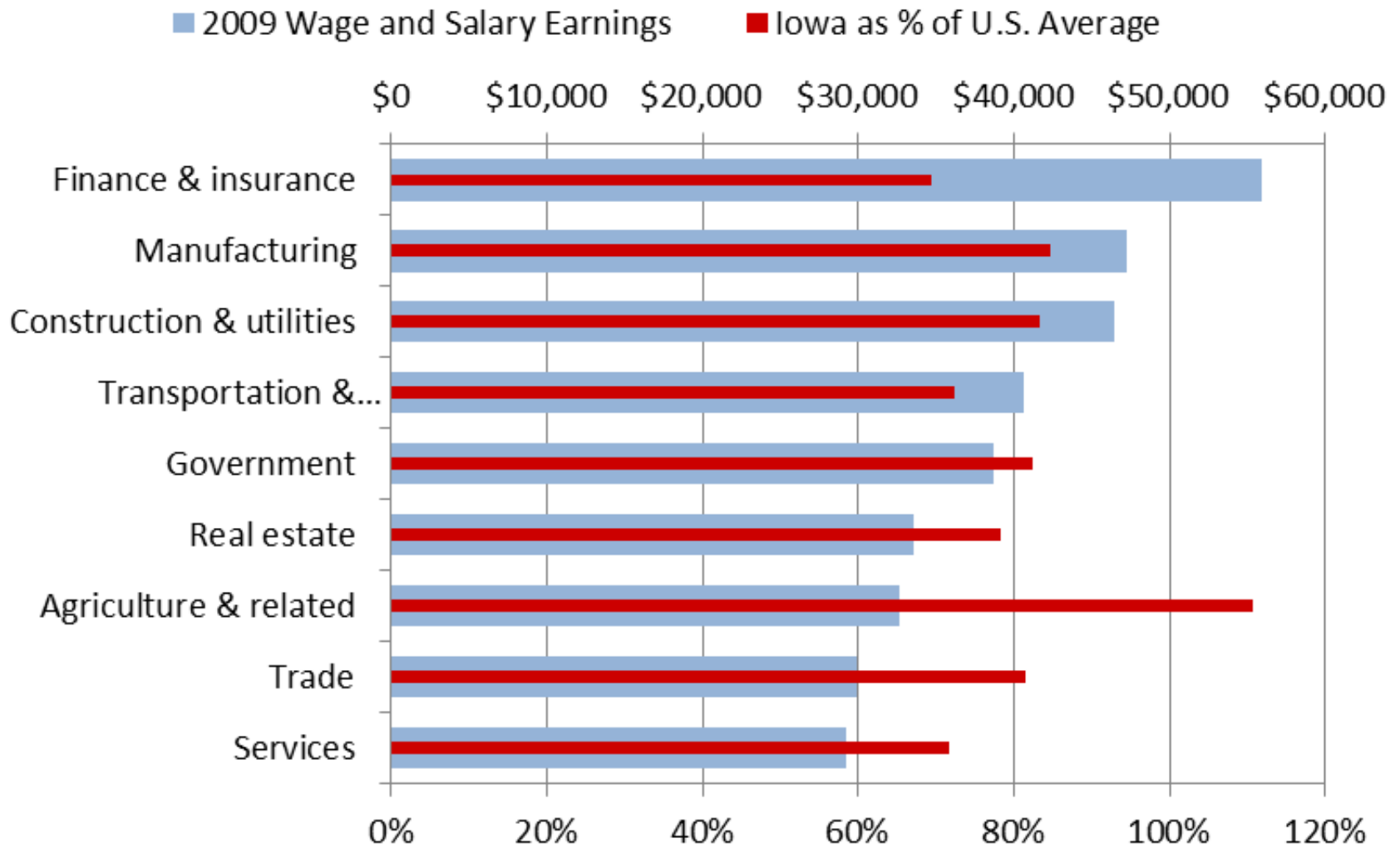


Contributions to GDP by Sector, 2009

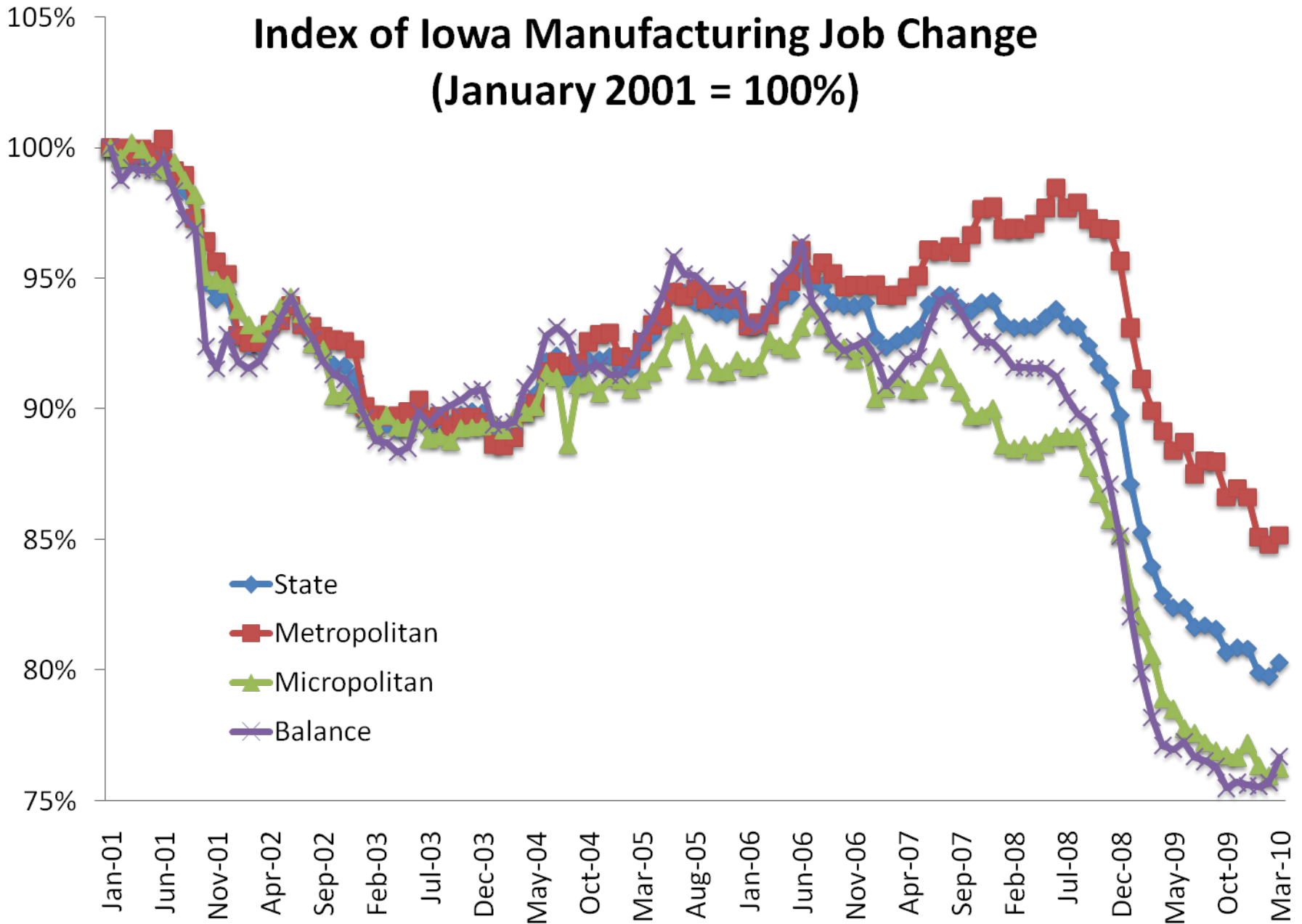


Dependence on Manufacturing Earnings, 2007



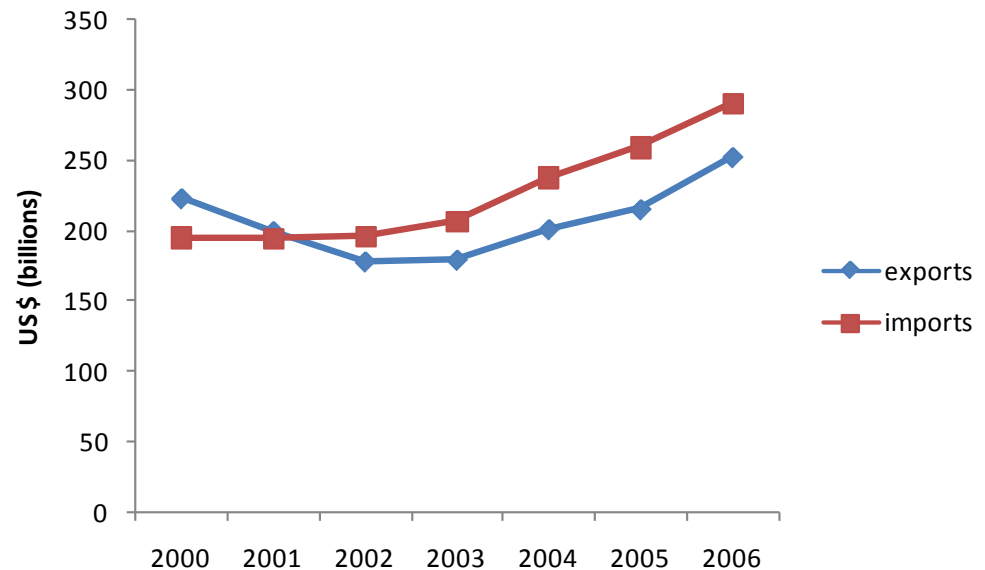


Index of Iowa Manufacturing Job Change (January 2001 = 100%)



Advanced Technology Products

- *Biotechnology*
- *Life science technologies*
- *Optoelectronics*
- *Information and communications*
- *Electronics*
- *Flexible manufacturing*
- *Advanced materials*
- *Aerospace*
- *Weapons*
- *Nuclear technology*



Source: National Science Foundation

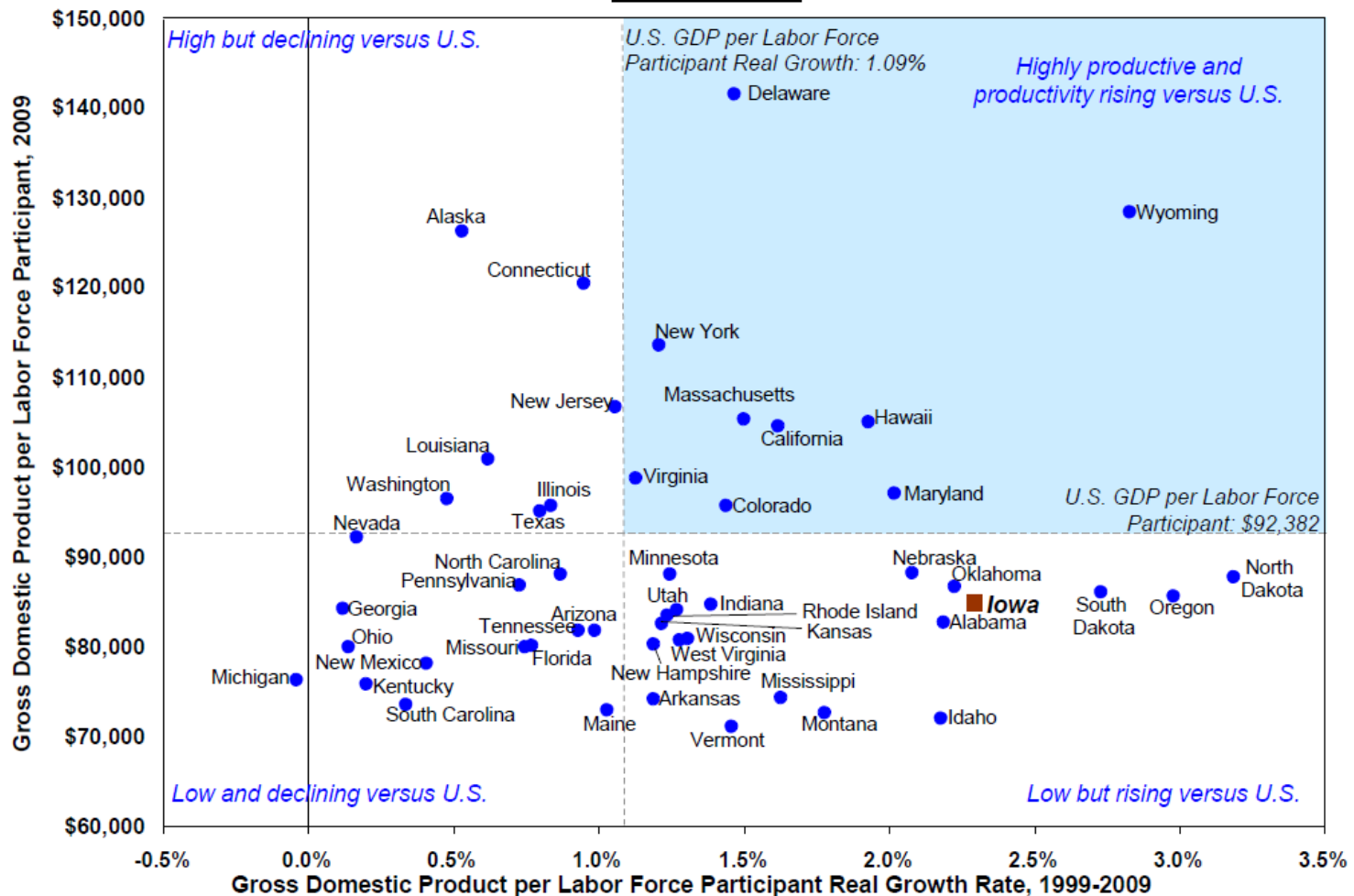
College Debt

1	District of Columbia	\$29,793
2	Iowa	\$28,174
3	Connecticut	\$26,138
4	New York	\$25,950
5	New Hampshire	\$25,785
6	Minnesota	\$25,558
7	Pennsylvania	\$25,219
8	Vermont	\$25,047
9	Rhode Island	\$24,973
10	Maine	\$24,916
17	South Dakota	\$22,486
19	Wisconsin	\$21,386
20	Missouri	\$21,342
23	Nebraska	\$20,920
24	North Dakota	\$20,625
25	Kansas	\$20,585
30	Illinois	\$20,102

- Class of 2008
All public and private nonprofit, 4-year or above
<http://projectonstudentdebt.org>

Long Term State Labor Productivity Performance

1999-2009



Source: Bureau of Economic Analysis. Notes: Growth rate calculated as compound annual growth rate (CAGR).

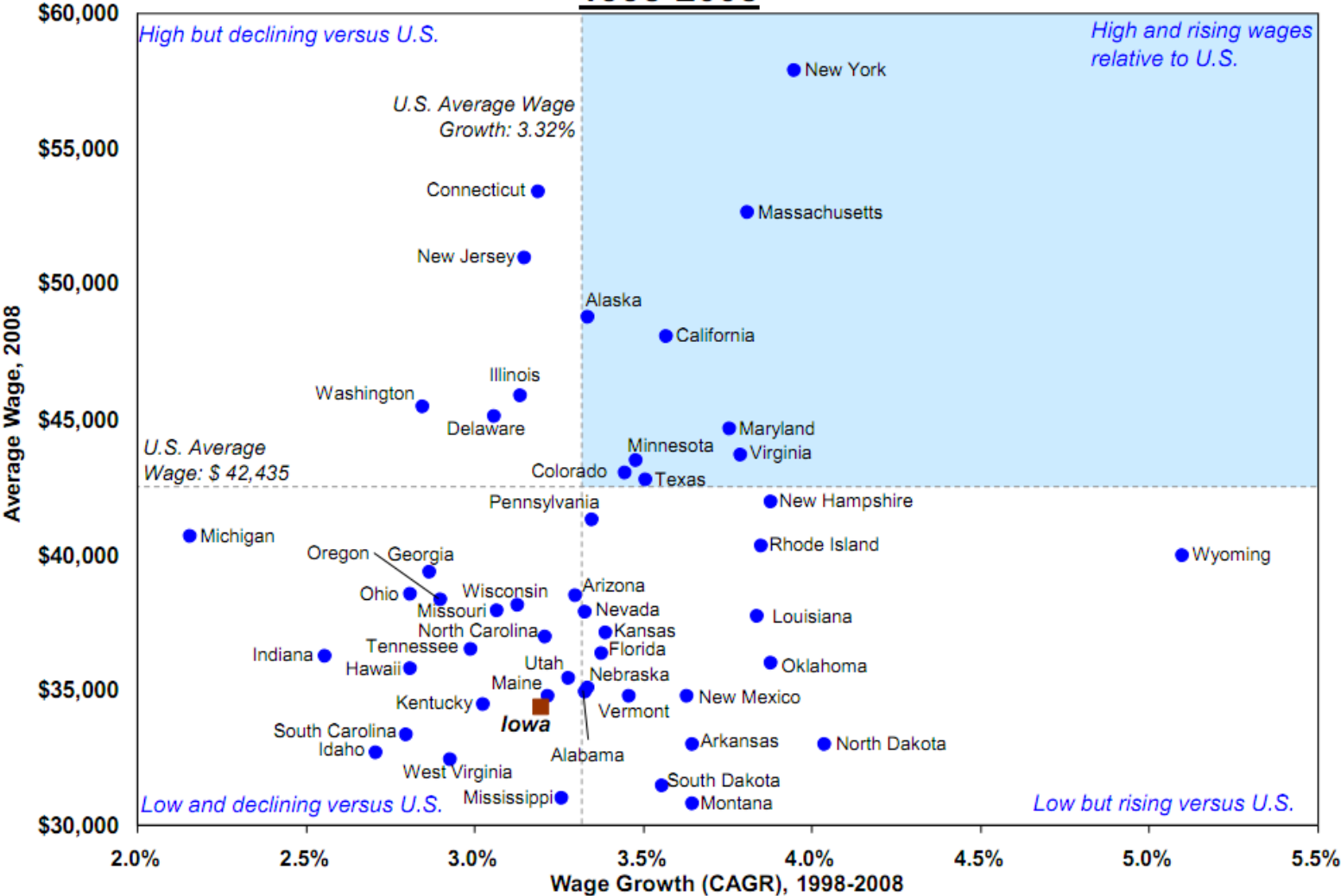
NGA 2011 - Iowa

8

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State Private Sector Wage Performance

1998-2008

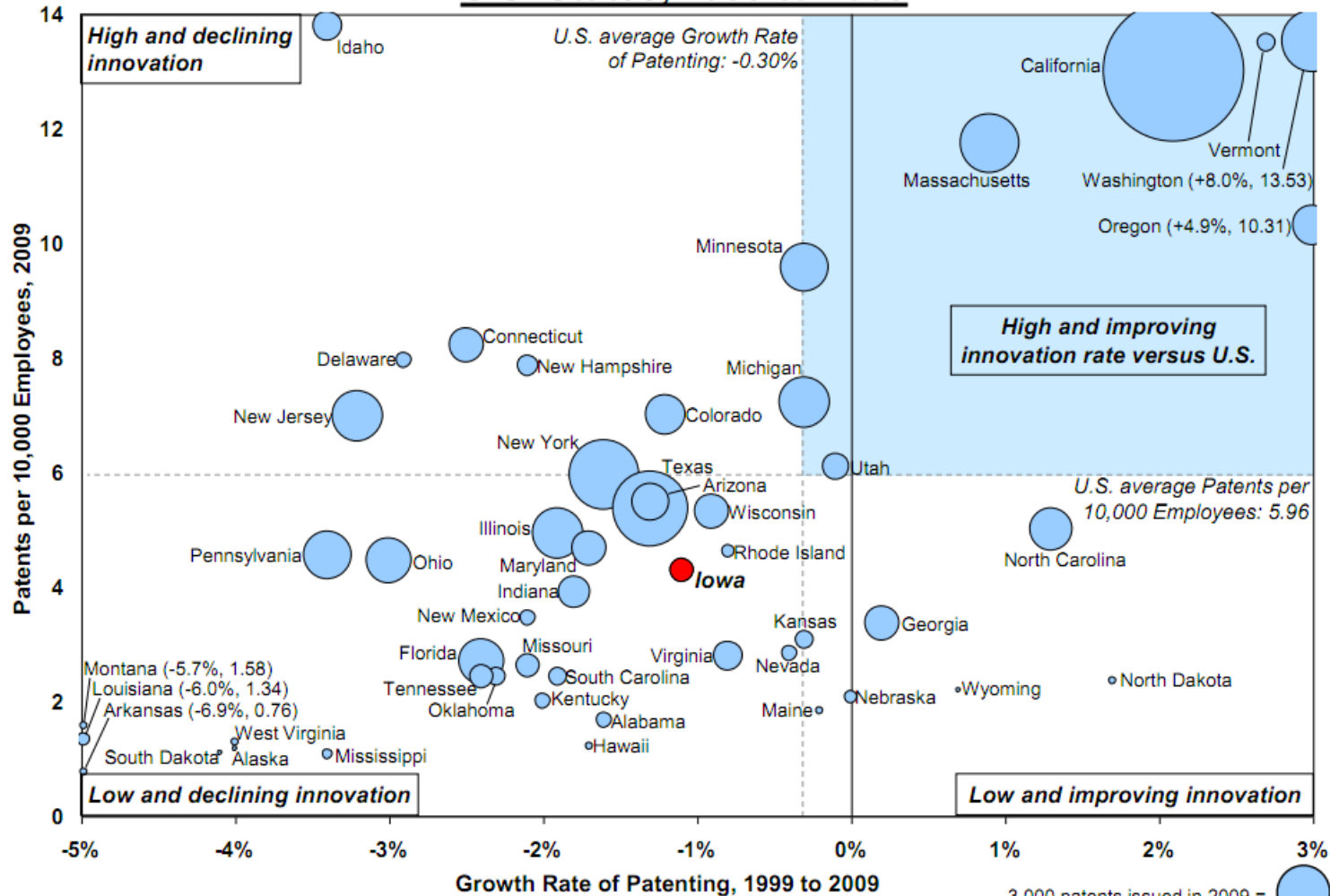


Source: Census CBP report; private, non-agricultural employment. Growth is calculated on nominal wage levels.

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Long Term State Patenting Performance

U.S. States, 1999 to 2009

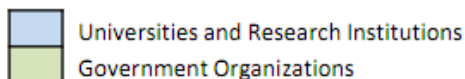


Source: USPTO, Bureau of Labor Statistics. Note: Growth rate calculated as compound annual growth rate (CAGR). Copyright © 2011 Professor Michael E. Porter

Iowa Patents by Organization

Rank	Organization	Patents 2005-2009
1	Deere + Company	210
2	Pioneer Hi-Bred International, Inc.	184
3	Stine Seed Farm, Inc.	175
4	Rockwell Collins, Inc.	155
5	University Of Iowa Research Foundation	79
6	Monsanto Technology, Llc	78
7	Iowa State University Research Foundation Inc.	63
7	Maytag Corporation	63
9	Fisher Controls International, Inc.	58
10	Vermeer Manufacturing Company, Inc.	47
11	Gateway 2000, Inc.	43
12	Cnh America Llc	36
13	Putco, Inc.	35
14	Intermec Ip Corp.	29
15	Musco Corporation	27
16	Xilinx, Inc.	26
16	Sauer-Danfoss Inc.	26
18	Whirlpool Corporation	25
19	Waterloo Industries, Inc.	24
19	Broadcom Corporation	24
21	Lisle Corporation	21
21	Hni Technologies Inc.	21
23	Tri/Mark Corporation	20
24	Skyworks Solutions, Inc.	17
25	Square D Company	16

Rank	Organization	Patents 2005-2009
25	Rite-Hite Holding Corporation	16
25	Syngenta Participations Ag	16
25	Stork Townsend Inc.	16
29	Grain Processing Corporation	14
30	Innovative Lighting, Inc.	11
30	Wyeth	11
32	E. I. Du Pont De Nemours And Company	9
32	Micrel Incorporated	9
32	Townsend Engineering Company	9
32	Westendorf Manufacturing Company, Inc.	9
32	Garst Seed Company	9
37	Cargill, Inc.	8
37	Woodlink, Ltd.	8
37	Lightwaves Systems, Inc.	8
37	Carleton Life Support Systems, Inc.	8
41	Pella Corporation	7
41	Sirf Technology, Inc.	7
41	Tripletail Ventures, Inc.	7
44	Custom-Pak, Incorporated	6
44	Polaris Industries, Inc.	6
44	Sukup Manufacturing Company	6
44	First Data Corporation	6
44	Bioforce Nanosciences, Inc.	6
44	Mci, Llc	6
44	Verizon Business Global Llc	6



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

**Prediction is very difficult,
especially about the future.**

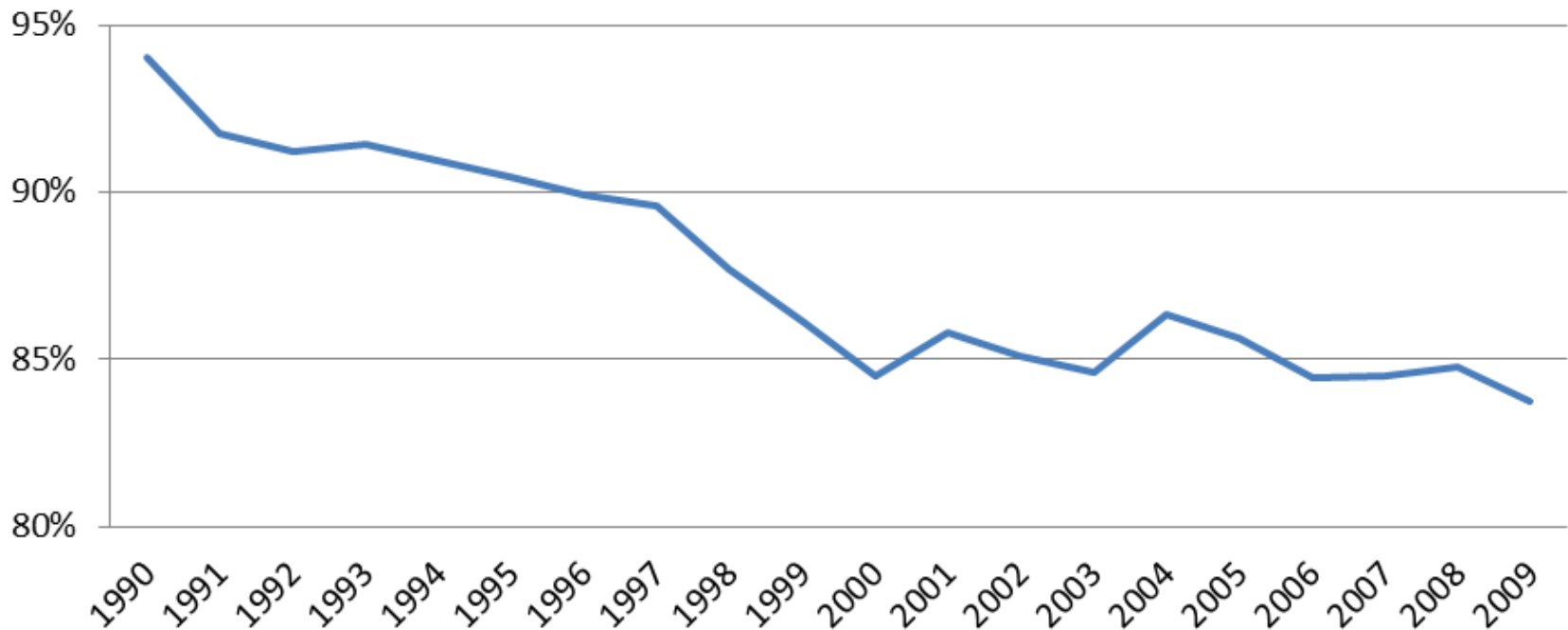
- Neils Bohr

Chapter 6

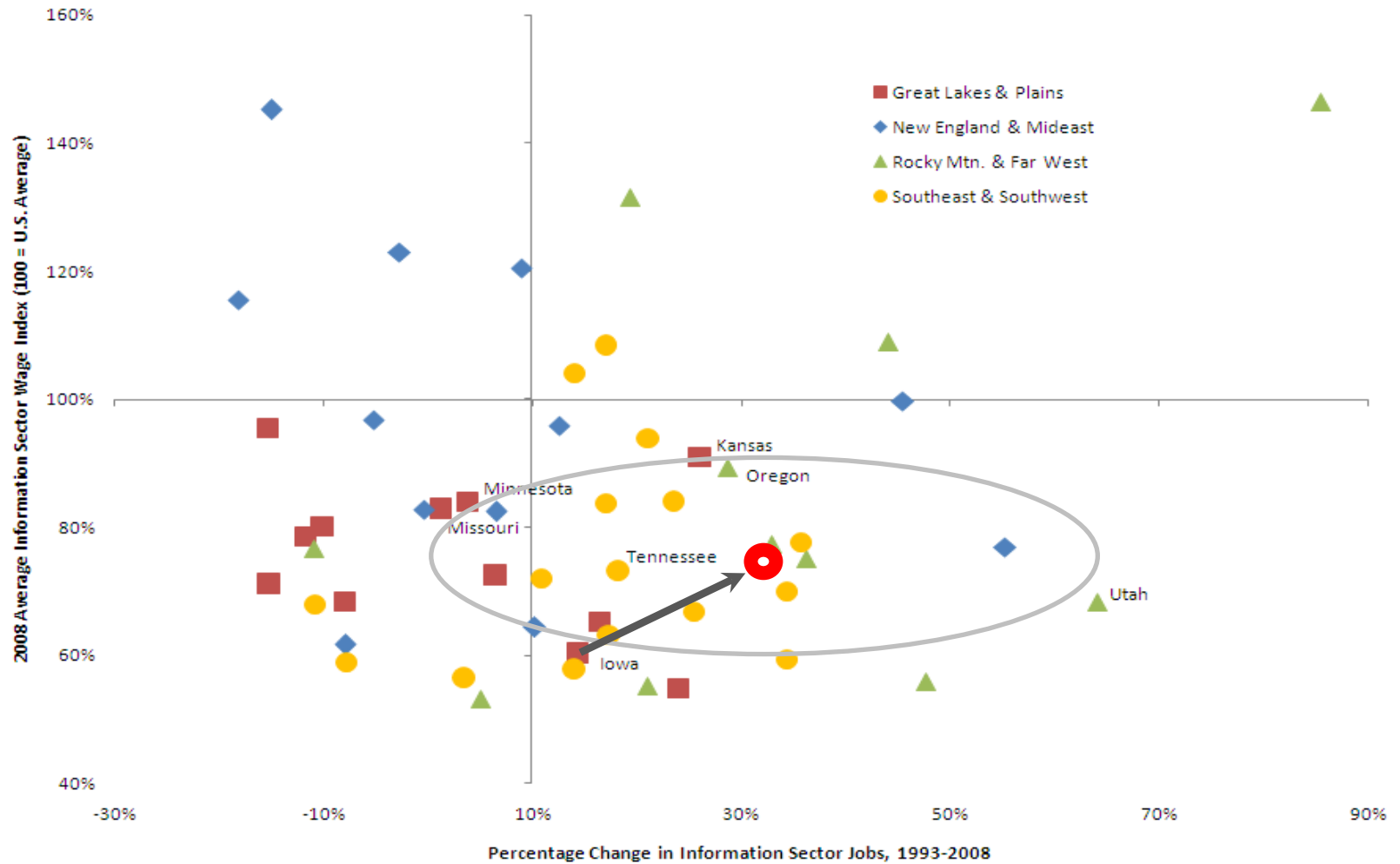


1. ... we need to agree on core values.

**Average Compensation per Manufacturing Job
(Iowa as a Percentage of U.S. Average)**



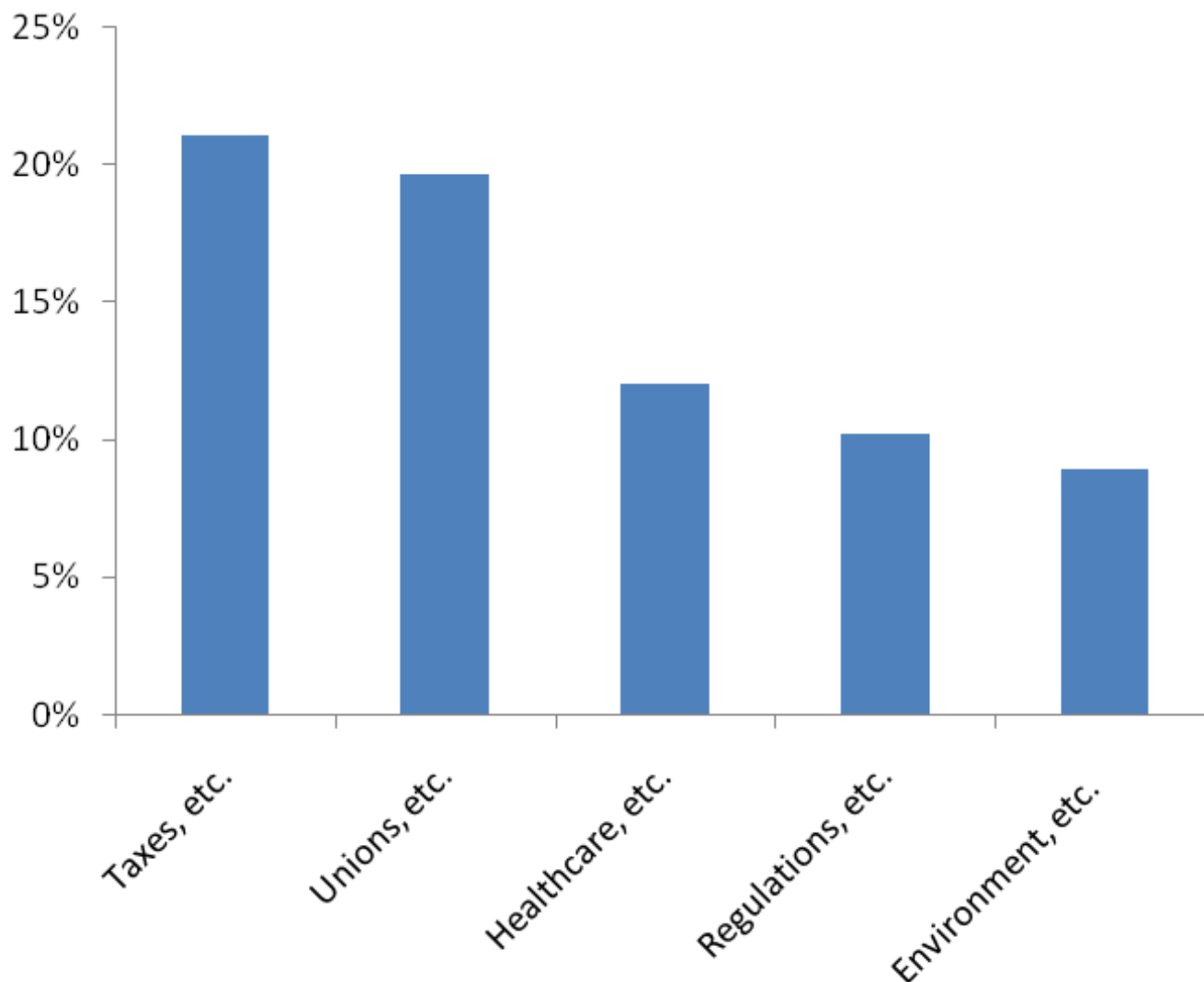
2. ... we need a vision.



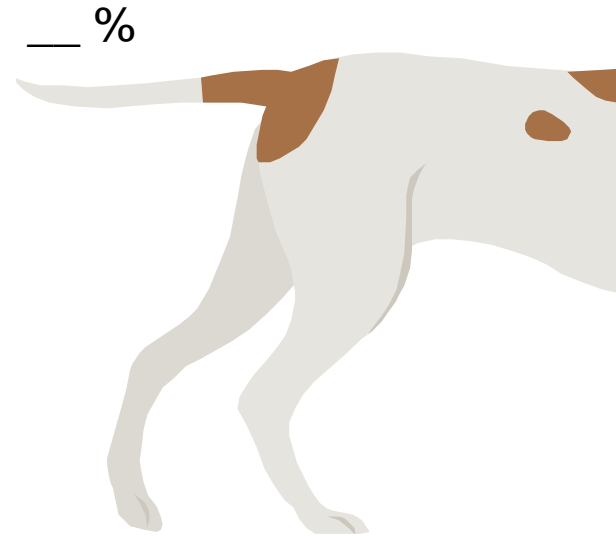
3. ... we may need to rock the boat.



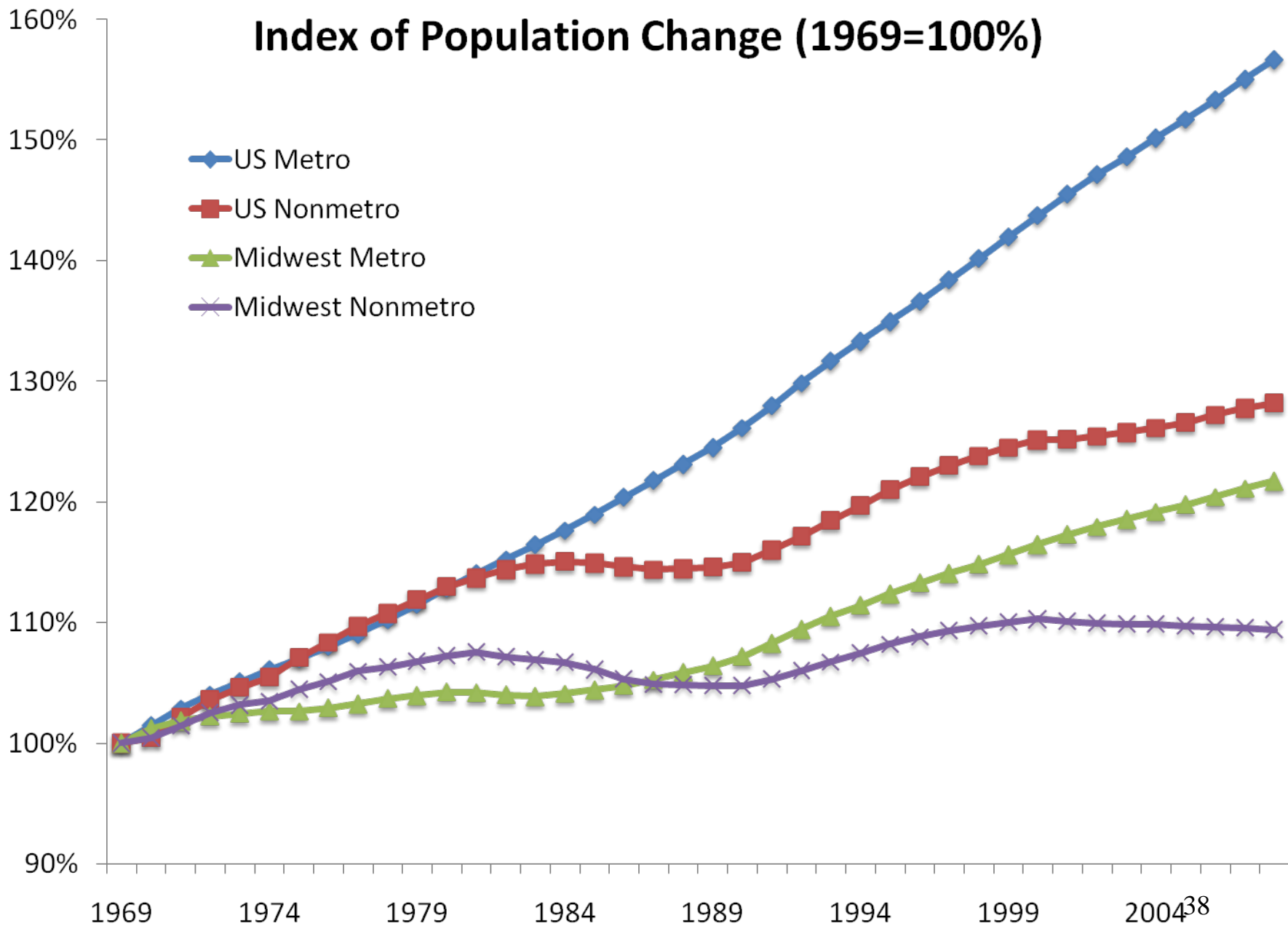
3. ... there is no simple solution.



4. ... you can't go it alone.



Index of Population Change (1969=100%)



5. ... fundamental principles must be agreed upon.

Standard of living

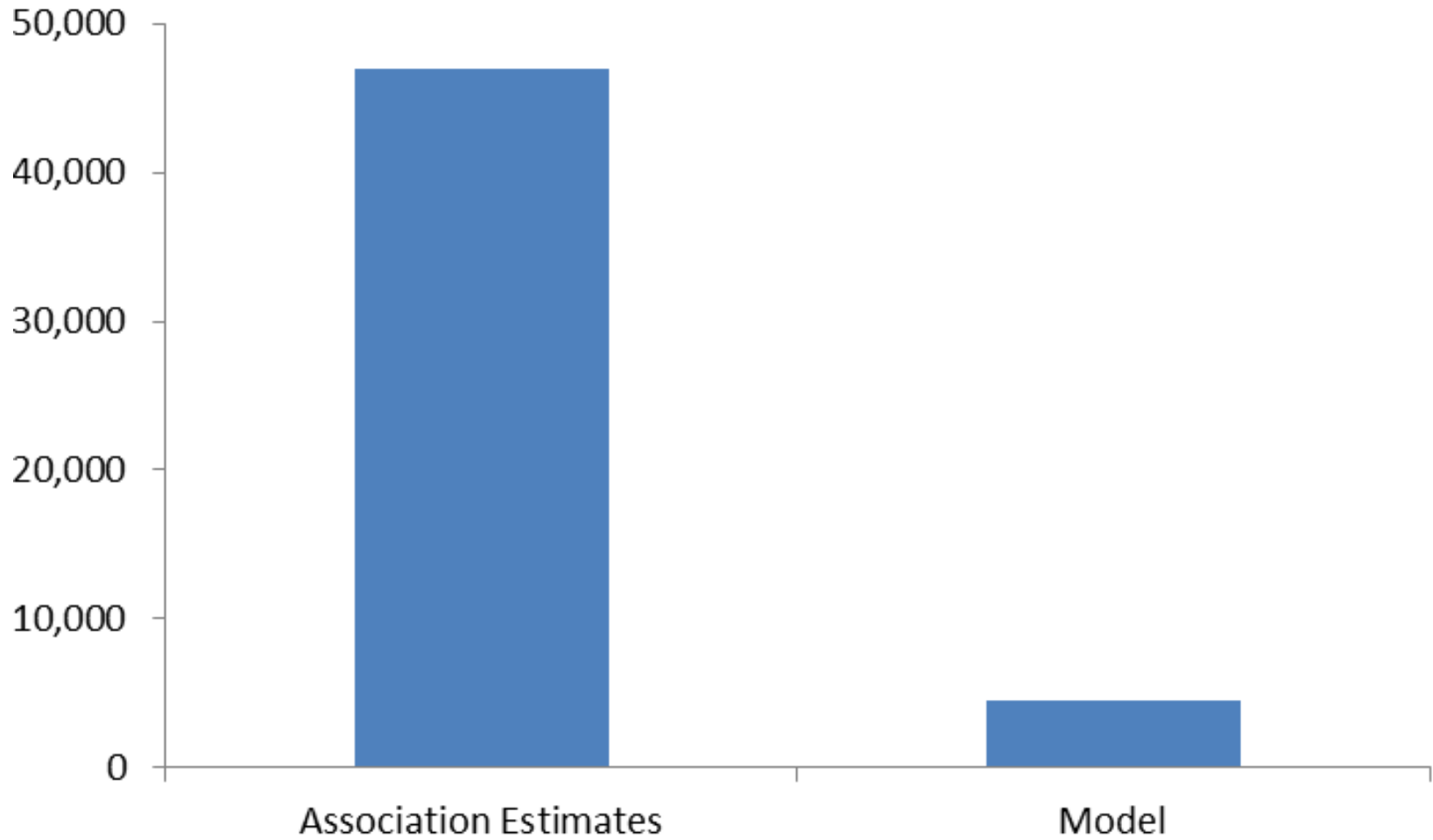
3. Wage growth

2. GDP per job

1. Technological advancements

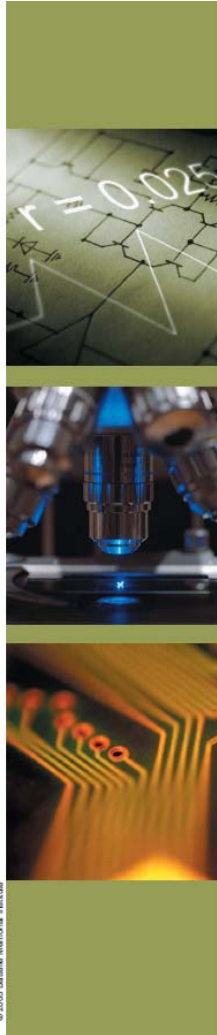
- Products
- Processes
- Practices

6. ... there is more to know.



Source: Swenson, ISU

7. ... we need a plan.



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FINAL REPORT

IOWA'S ADVANCED MANUFACTURING STRATEGIC ROADMAP

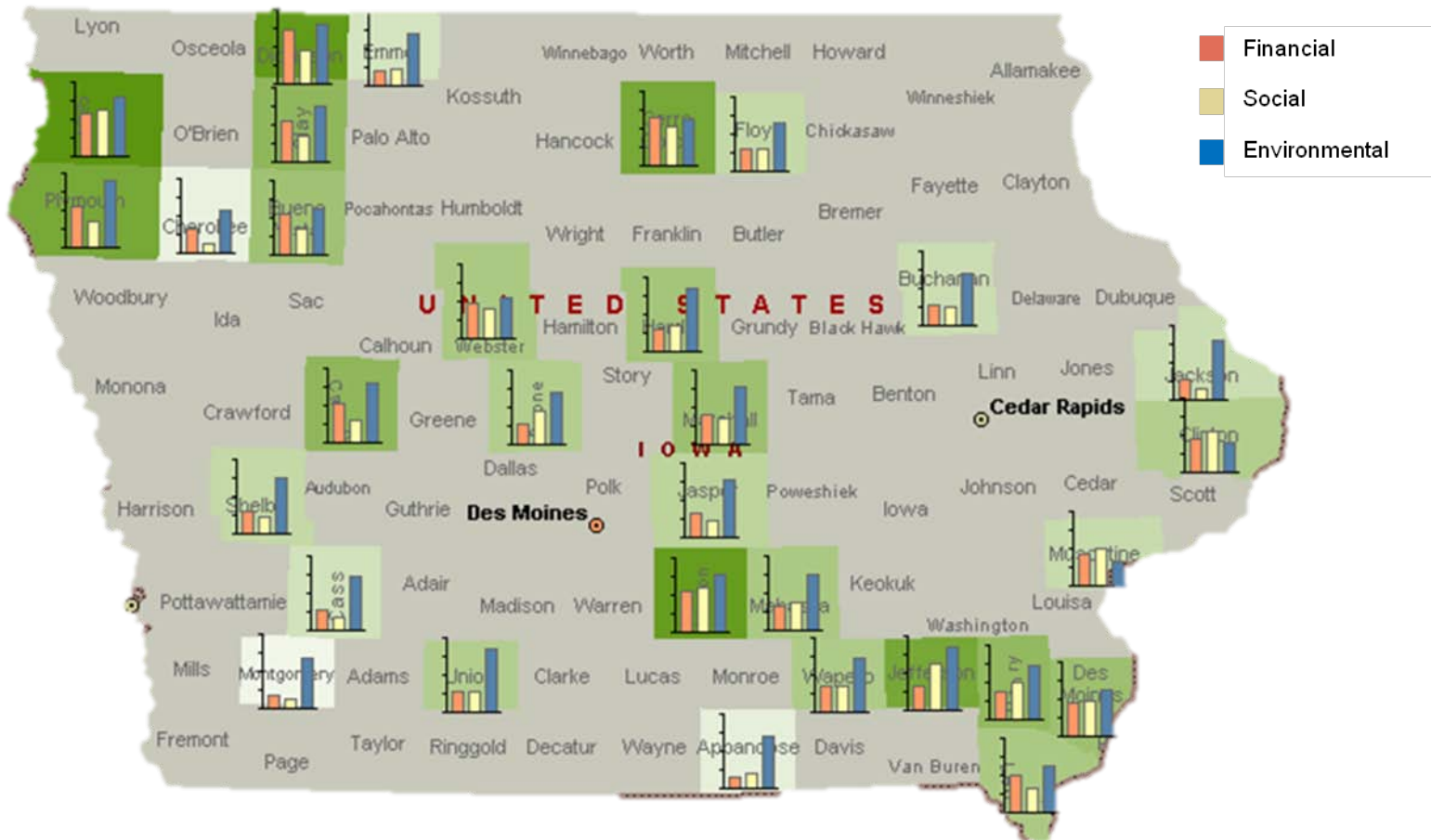
PREPARED FOR:
Iowa Department of Economic Development

PREPARED BY:
Battelle's Technology Partnership Practice

September 2005

Battelle
The Business of Innovation

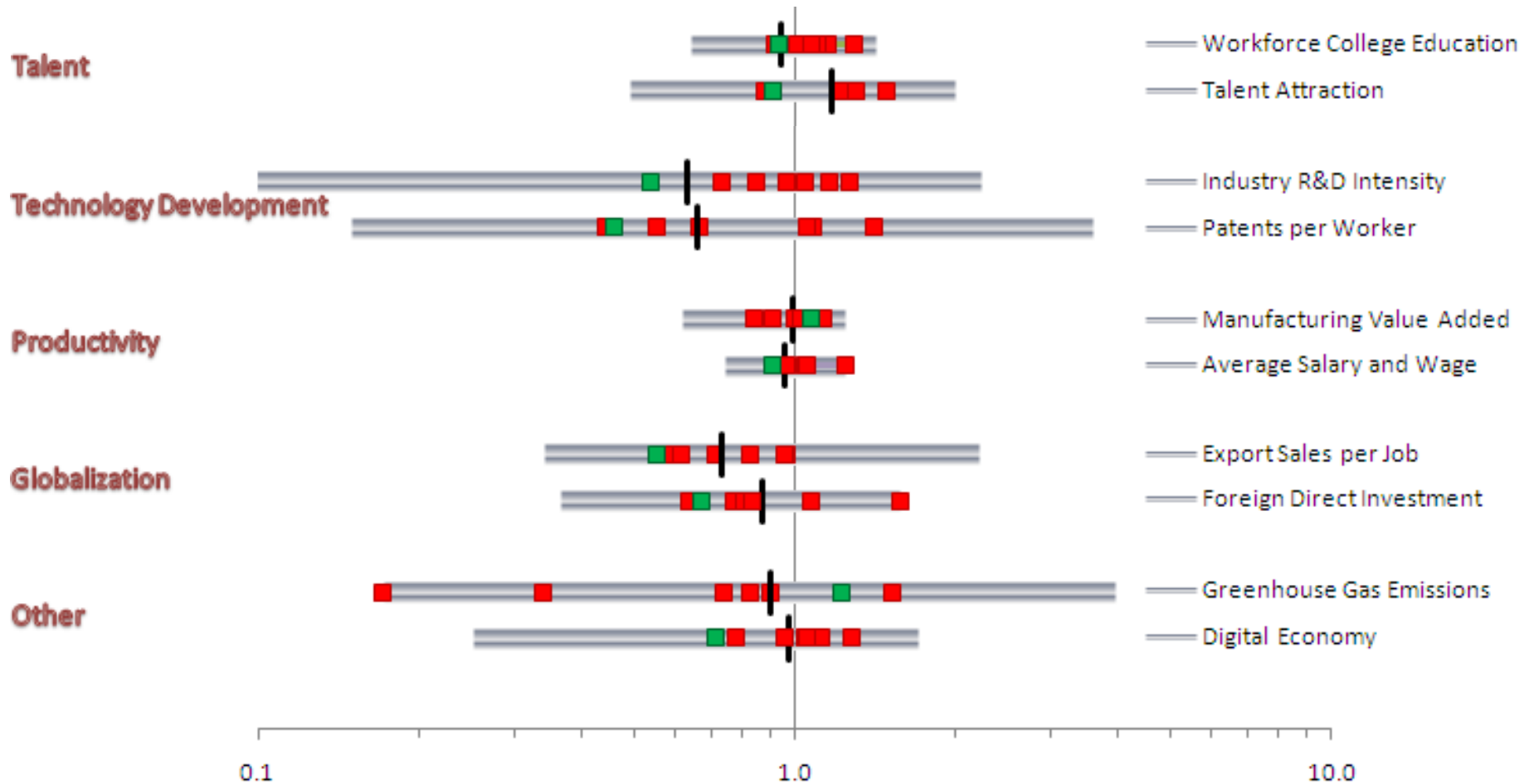
www.iowalifechanging.com



***A problem well stated is
a problem half solved.***

- John Dewey

8. ... KPIs are critical.



A composer is a guy who goes
around forcing his will on
unsuspecting air molecules,
often with the assistance of
unsuspecting musicians.

- Frank Zappa

Chapter 7



The End

rcox@iastate.edu

515-294-0099

The logo for CIRAS, featuring the word "CIRAS" in a bold, red, sans-serif font. The letters are stylized with a modern, geometric feel.

What is Manufacturing?

- The Manufacturing sector comprises establishments engaged in the mechanical, physical, or chemical transformation of materials, substances, or components into new products.
- The assembling of component parts of manufactured products is considered manufacturing, except in cases where the activity is classified as Construction.