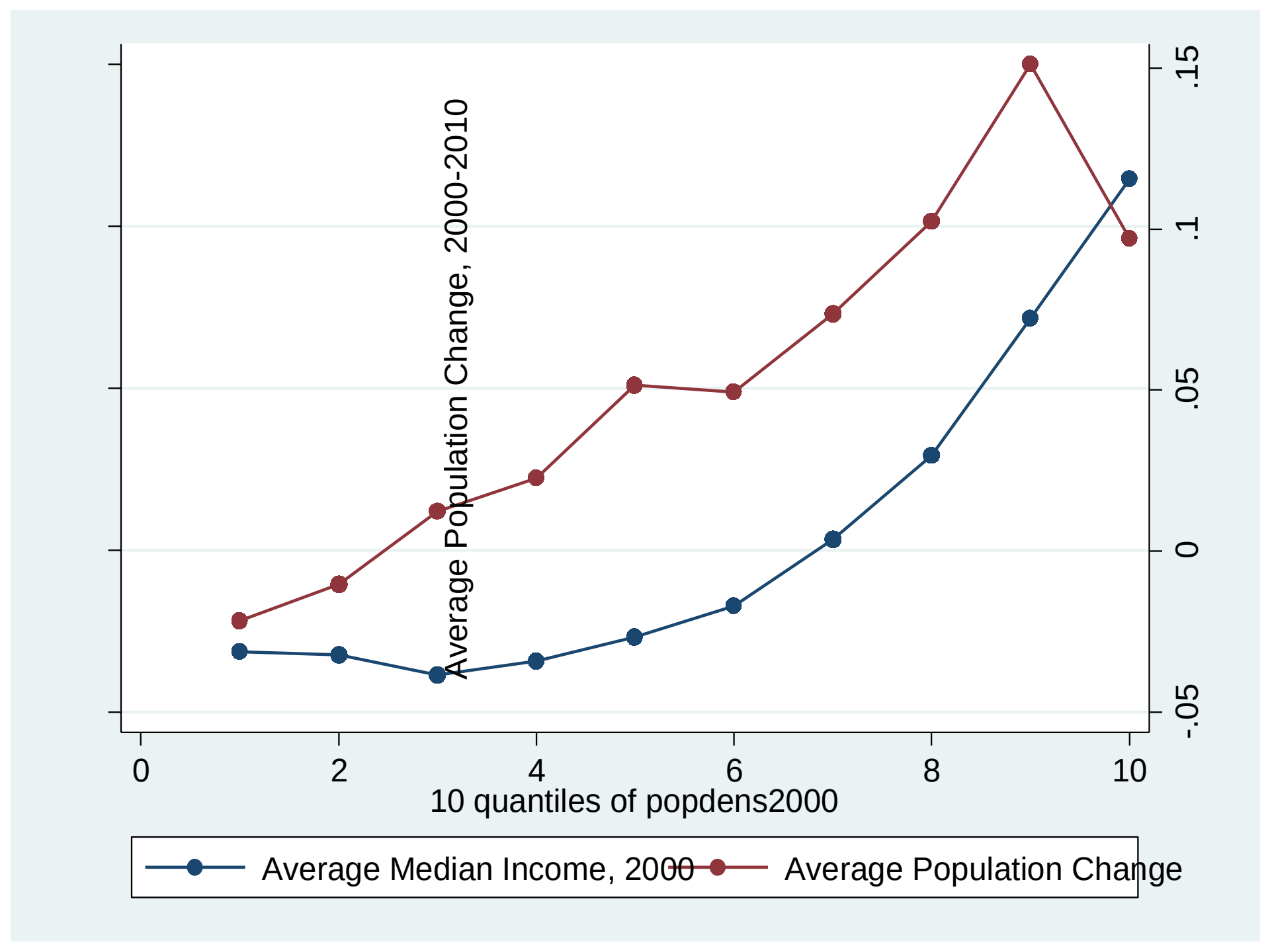
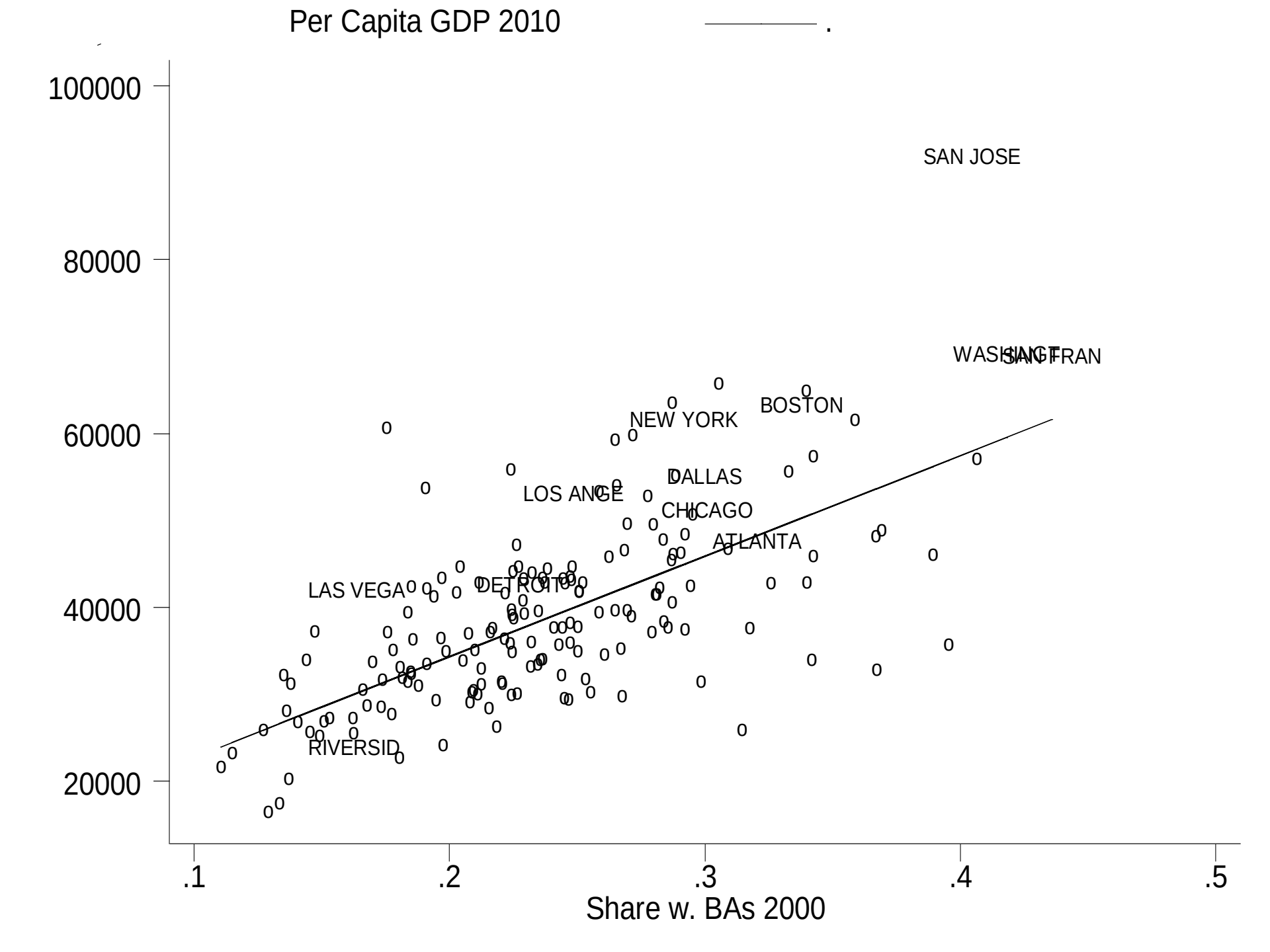
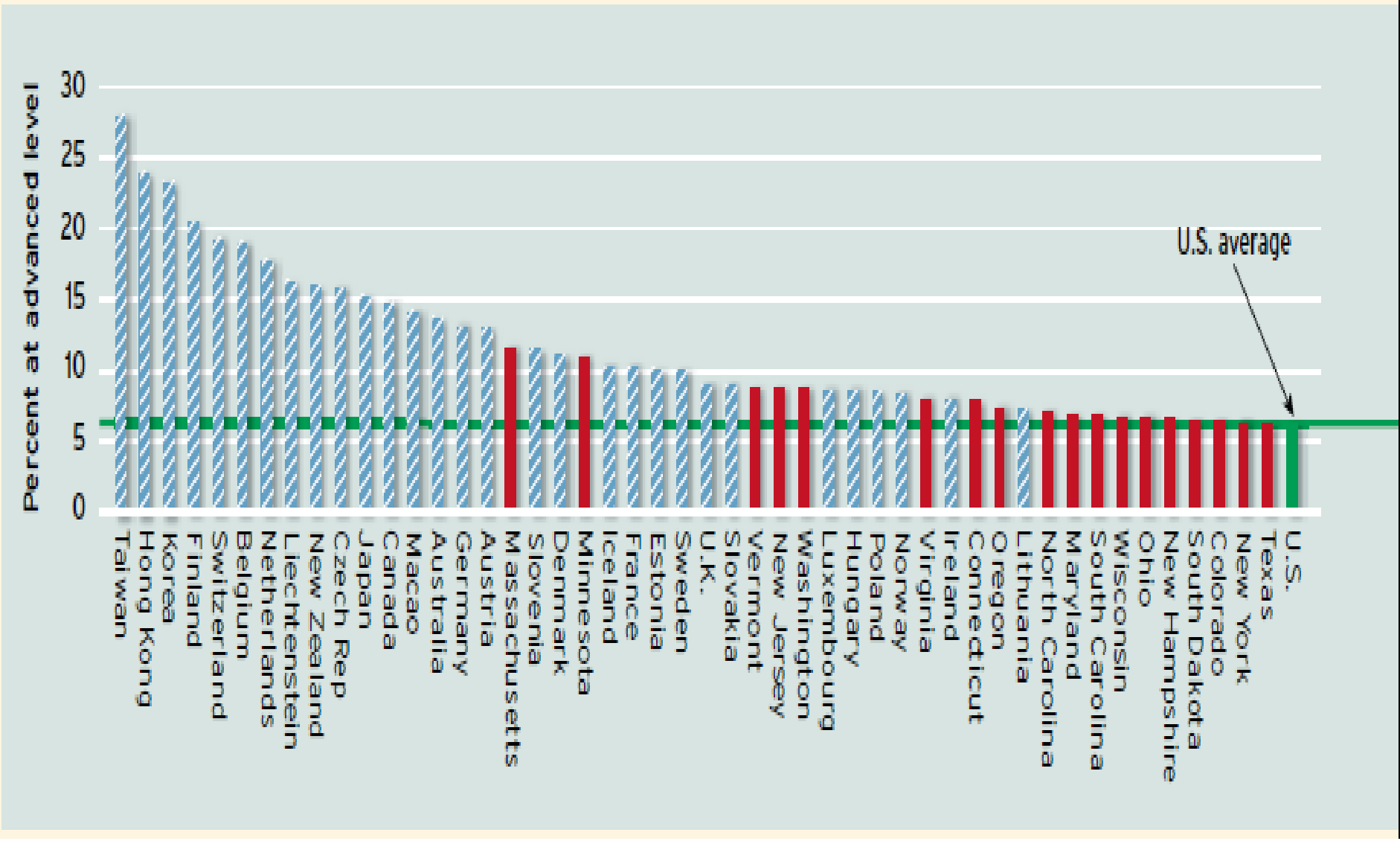
Greater Boston Today

- Unemployment rate in November 2013
  - 5.9 percent in the Boston metro area (up from 5.6 last year)
  - 6.7 percent in the state of Massachusetts (up from 6.2)
  - 6.6 percent in the nation (down from 7.9)
- Change in housing prices since peak in May 2006
  - Up 15 percent from Feb 2012; down 7.5 percent from 2005
  - Case-Shiller 20 city index still down 20 percent.
- Boston per capita GDP is 63,745, which is 40 percent above the metropolitan average
- Per capita real income is $60,387 which lags SF, Brideport, D.C., Naples, Florida and Midland, Texas.


Average Population Change, 2000-2010
-.05
0
.05
.1
.15
0
2
4
6
8
10
10 quantiles of popdens2000
Average Median Income, 2000
Average Population Change


Per Capita GDP 2010
100000
80000
60000
40000
20000
SAN JOSE
WASHINGT
SAN FRAN
BOSTON
NEW YORK
DALLAS
LOS ANGE
CHICAGO
ATLANTA
LAS VEGA
DETROIT
RIVERSID
.1
.2
.3
.4
.5
Share w. BAs 2000

Class of 2009: Percentage of students at advanced level in math

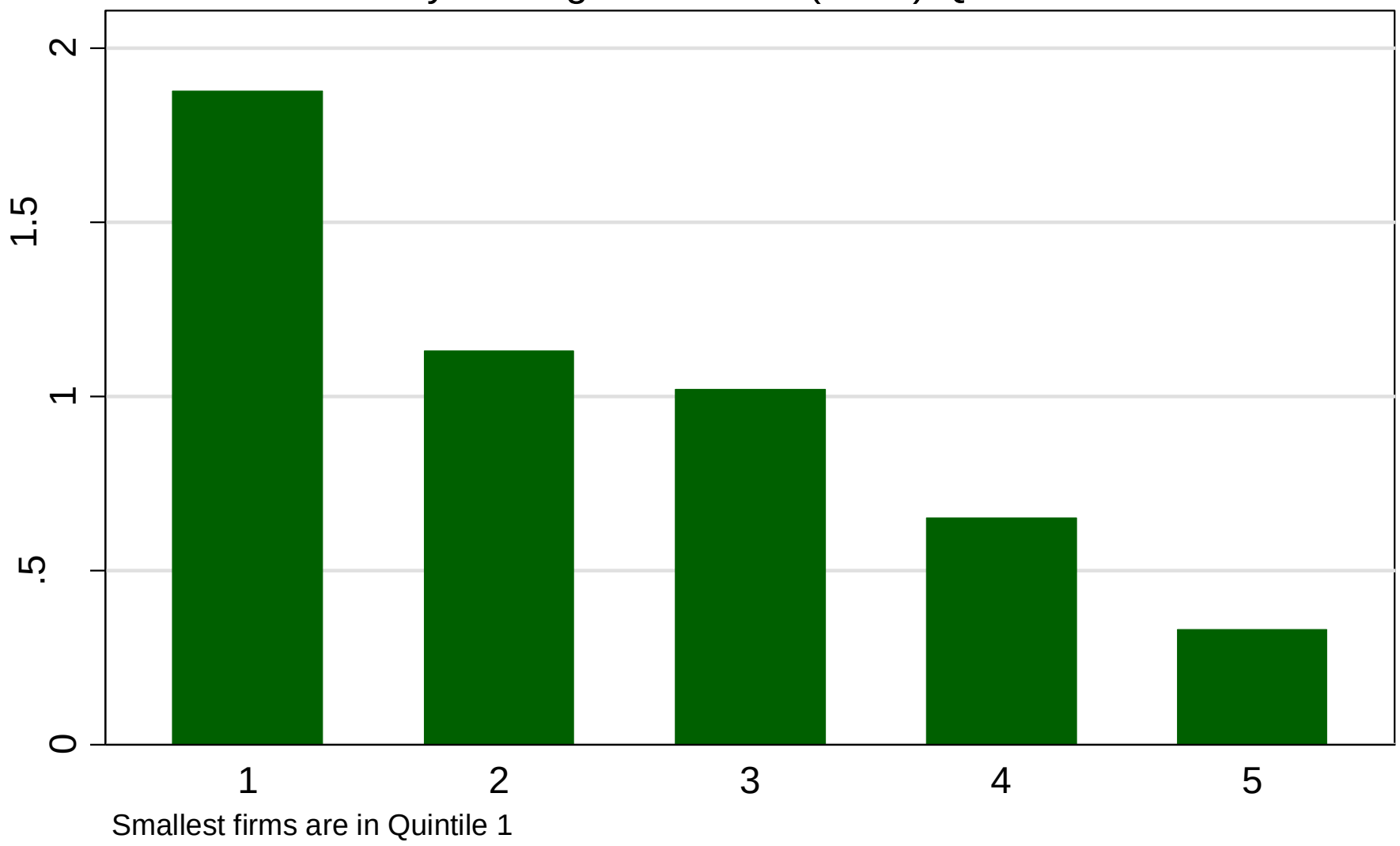


Source: Hanushek, Peterson and Woessman

Density and Infrastructure

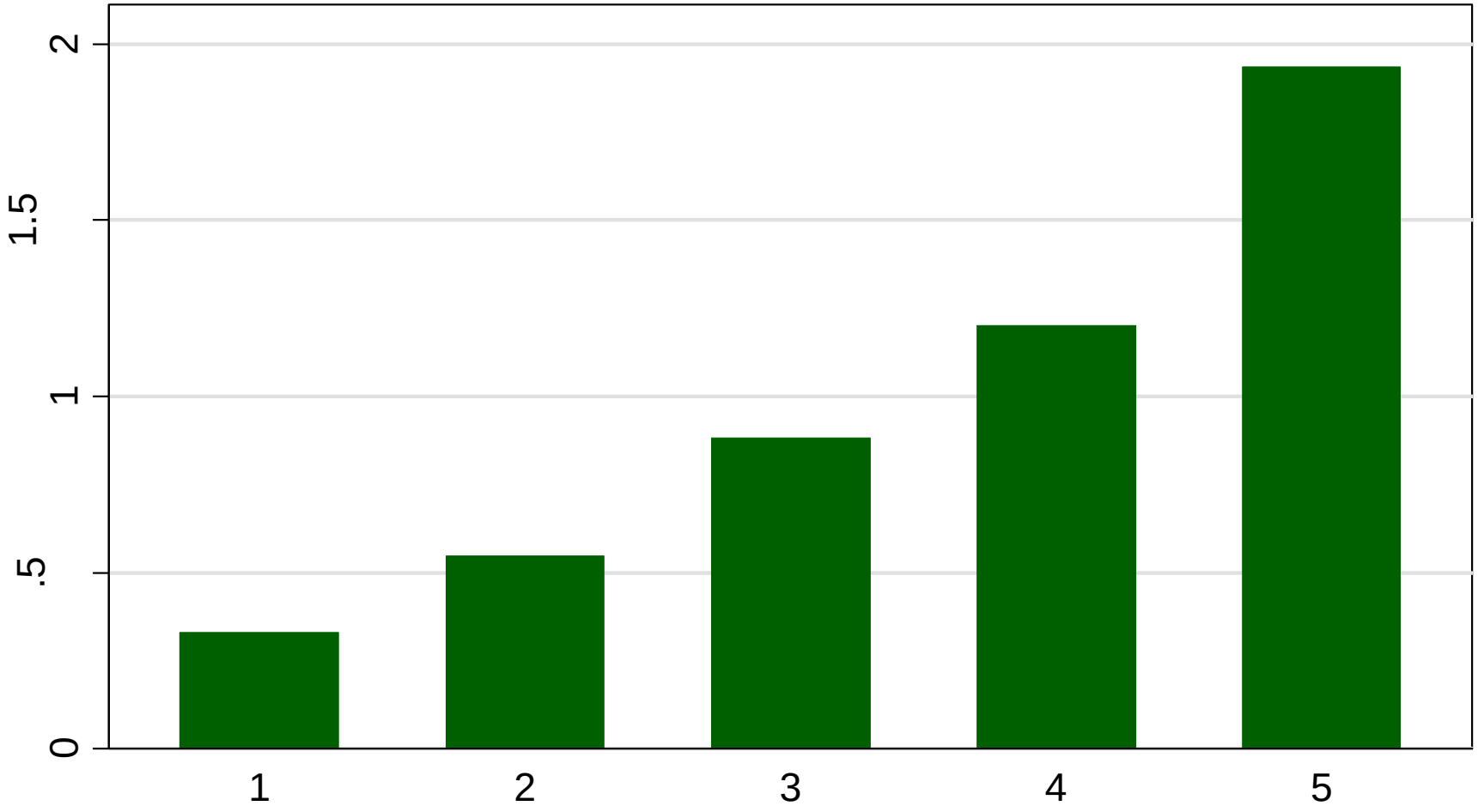
- Boston's 21st century edge involves connecting smart, creative people.
- One way to do that is to allow more compact development– both residential and commercial.
- Another way is to ease travel access.
- The core of the city is– thanks in part to ABC– much better connected than it once was, but challenges remain, especially in poorer neighborhoods.
- Transportation needs for small firms can be quite different than for big companies, and small firms need to play a larger role in our future.

Economic Growth and Firm Size



Growth and New Establishments

MSA Employment Growth (1977-2010)
by Quintiles of Share of Employment in New Establishments, 1977

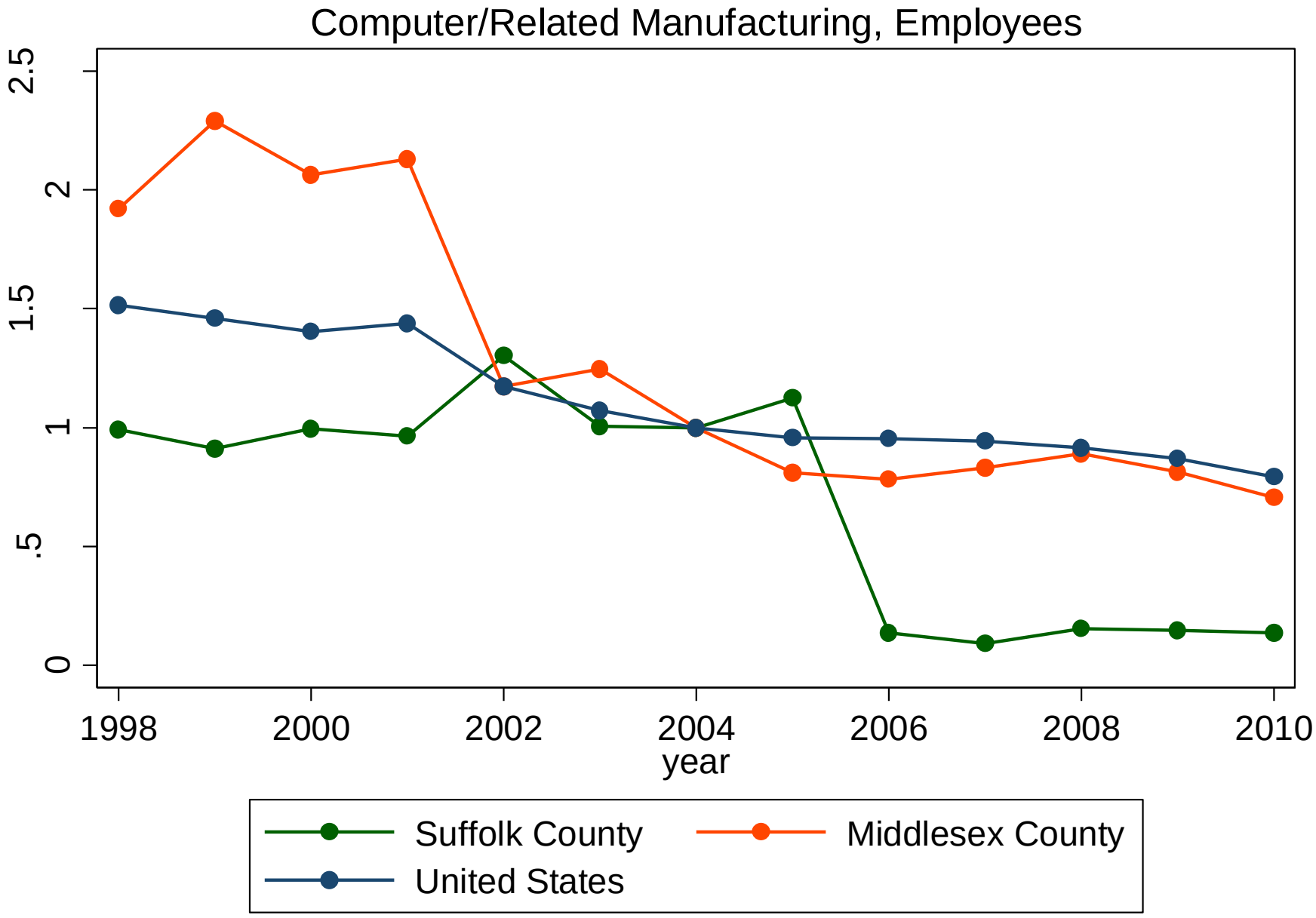


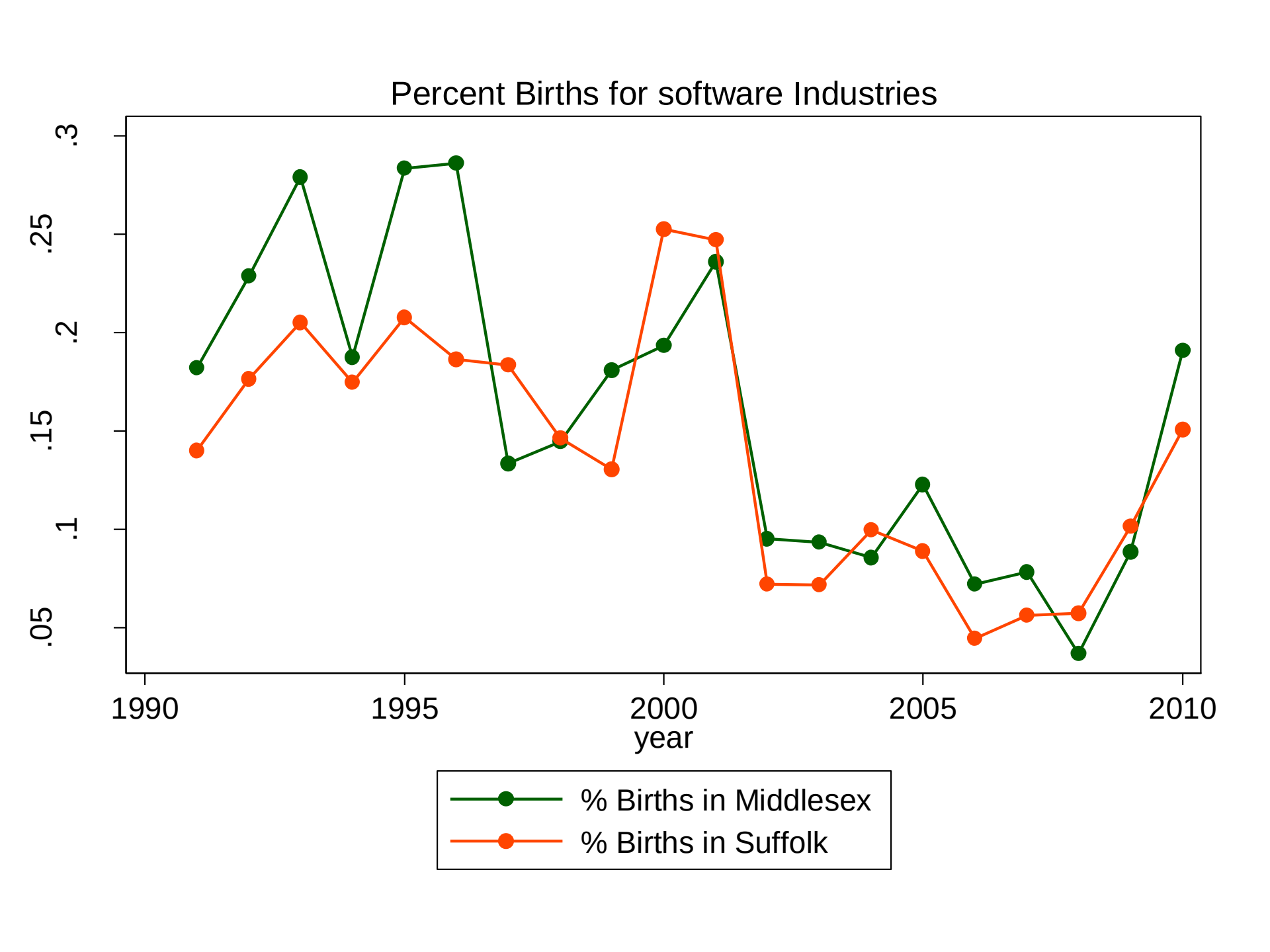
Smallest share of employment in new establishments are in Quintile 1
dropped outliners <1% and >99%

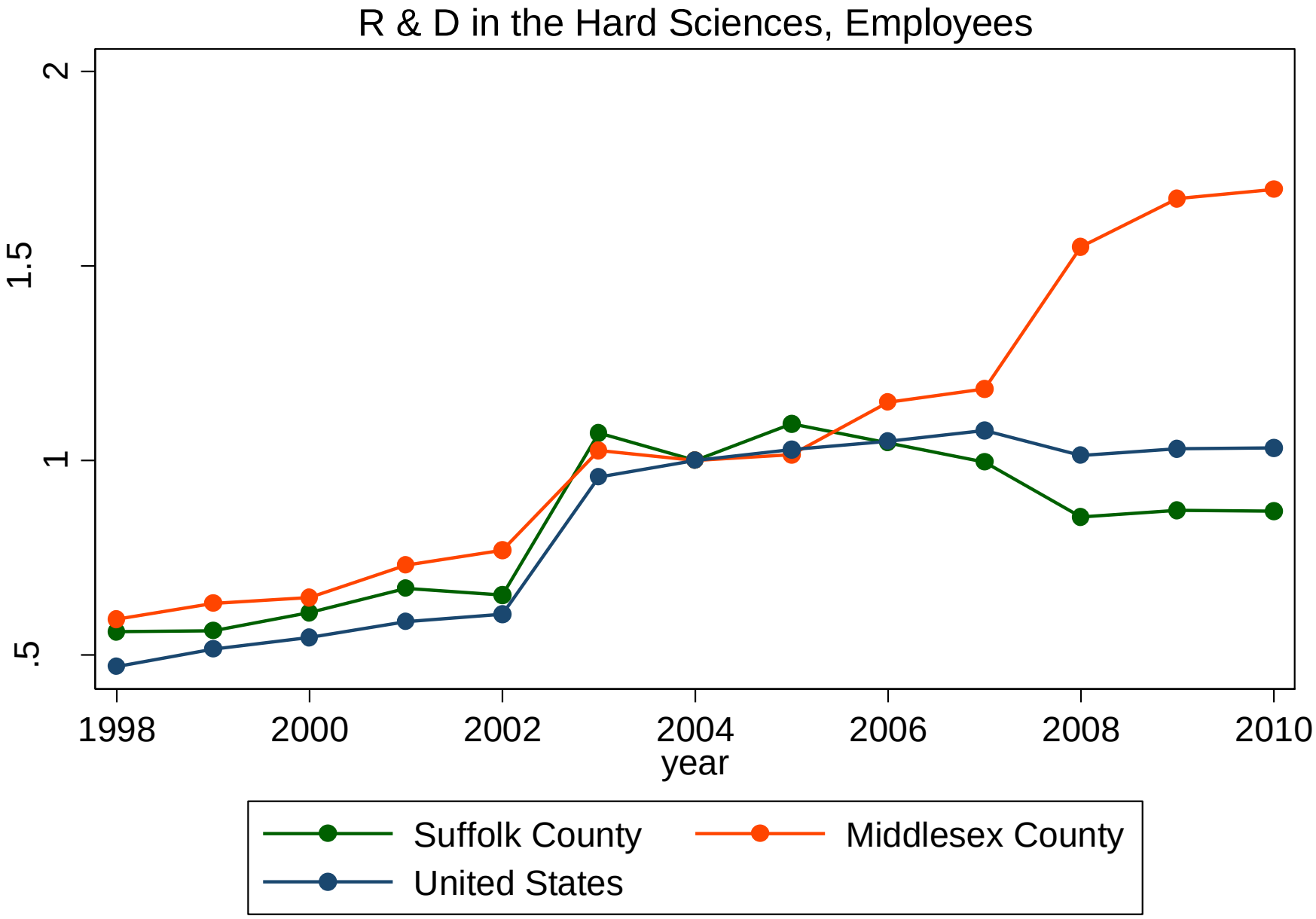
Lesson # 1

Small, new firms appear crucial for urban regeneration.

Warning: Suffolk County's average establishment has over 28 employees, more than 80 percent above the national average.


Computer/Related Manufacturing, Employees
2.5
2
1.5
1
.5
0
1998
2000
2002
2004
2006
2008
2010
year
Suffolk County
Middlesex County
United States


Percent Births for software Industries
.05
.1
.15
.2
.25
.3
1990
1995
2000
2005
2010
year
% Births in Middlesex
% Births in Suffolk


R & D in the Hard Sciences, Employees
2
1.5
1
.5
1998
2000
2002
2004
2006
2008
2010
year
Suffolk County
Middlesex County
United States

Lesson # 2

These technology industries are astounding volatile, with a constant process of birth, and exodus (or decline).

Cities are nurseries for new sectors, with little ability to sustain the old ones due to high costs.

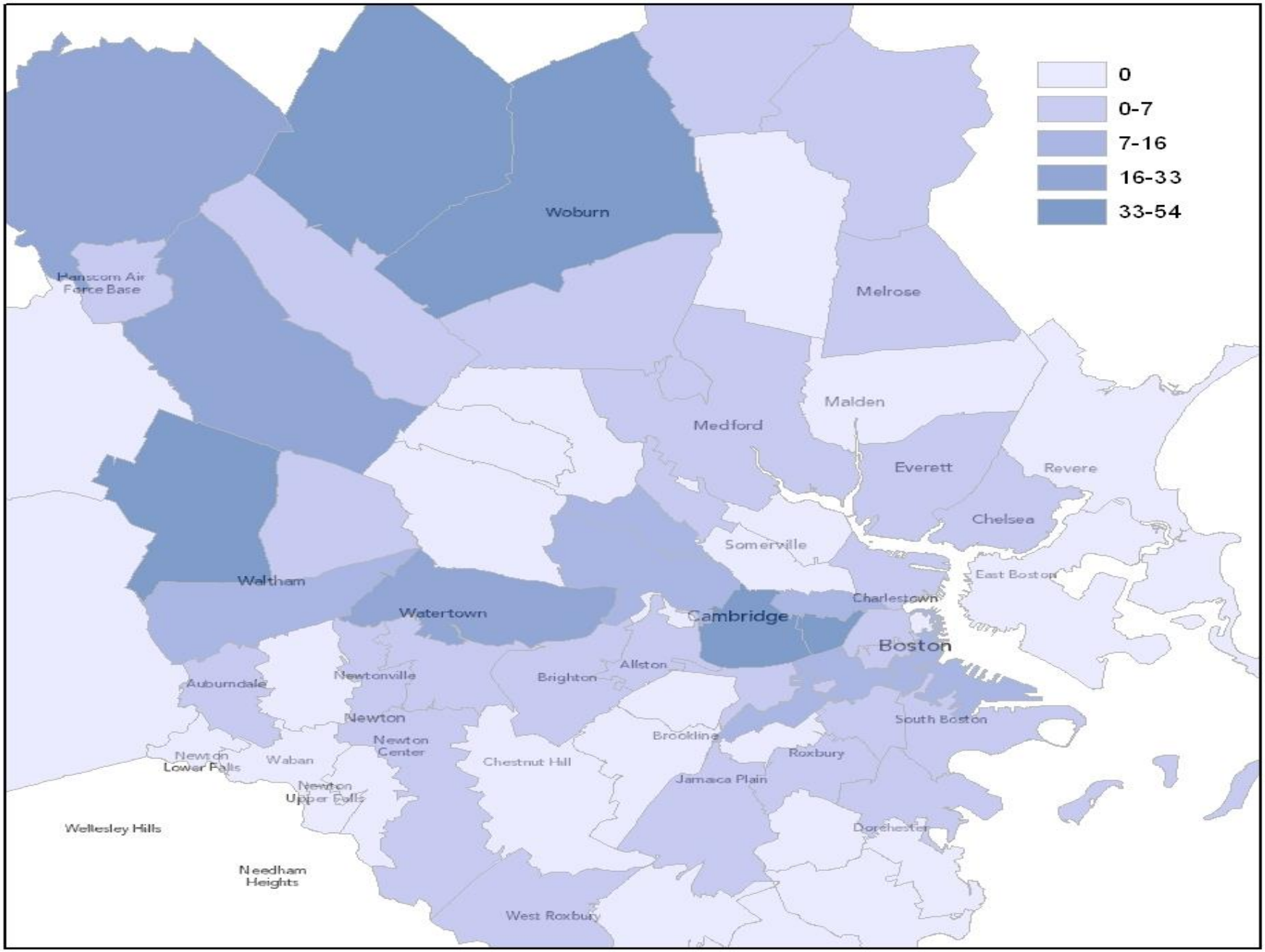
	Suffolk 1998	Suffolk 2011	Middlesex 1998	Middlesex 2011	US 1998	US 2011
All Tech						
Employment	8,247	11,083	111,874	111,021	3,329,537	3,698,813
Earnings/Total Earnings	1.98%	2.69%	23.47%	24.40%	5.62%	6.39%
Earnings / Employee (2012 $)	$83,572.66	$102,332.40	$96,008.04	$125,933.50	$78,852.27	$91,959.75
% Small Establishments		78.88%		75.03%		86.62%
Computer Related Manufacturing						
Employment	2,527	309	51,905	19,506	1,680,833	877,469
% Small Establishments		77.27%		56.23%		63.39%
Computer Related Services						
Employment	2,848	5,021	22,687	28,646	873,270	1,444,964
% Small Establishments		84.57%		86.41%		90.91%
Software Publishing						
Employment	1,397	1,851	20,585	18,288	283,182	362,410
R & D - Hard Sciences						
Employment	1,475	2,654	13,817	40,562	275,141	651025
Medical Manufacturing						
Employment	0	0	2,880	3,113	217,111	227,894
E-Shopping						
Employment	0	1,248	0	906	0	135,050

Lesson # 3

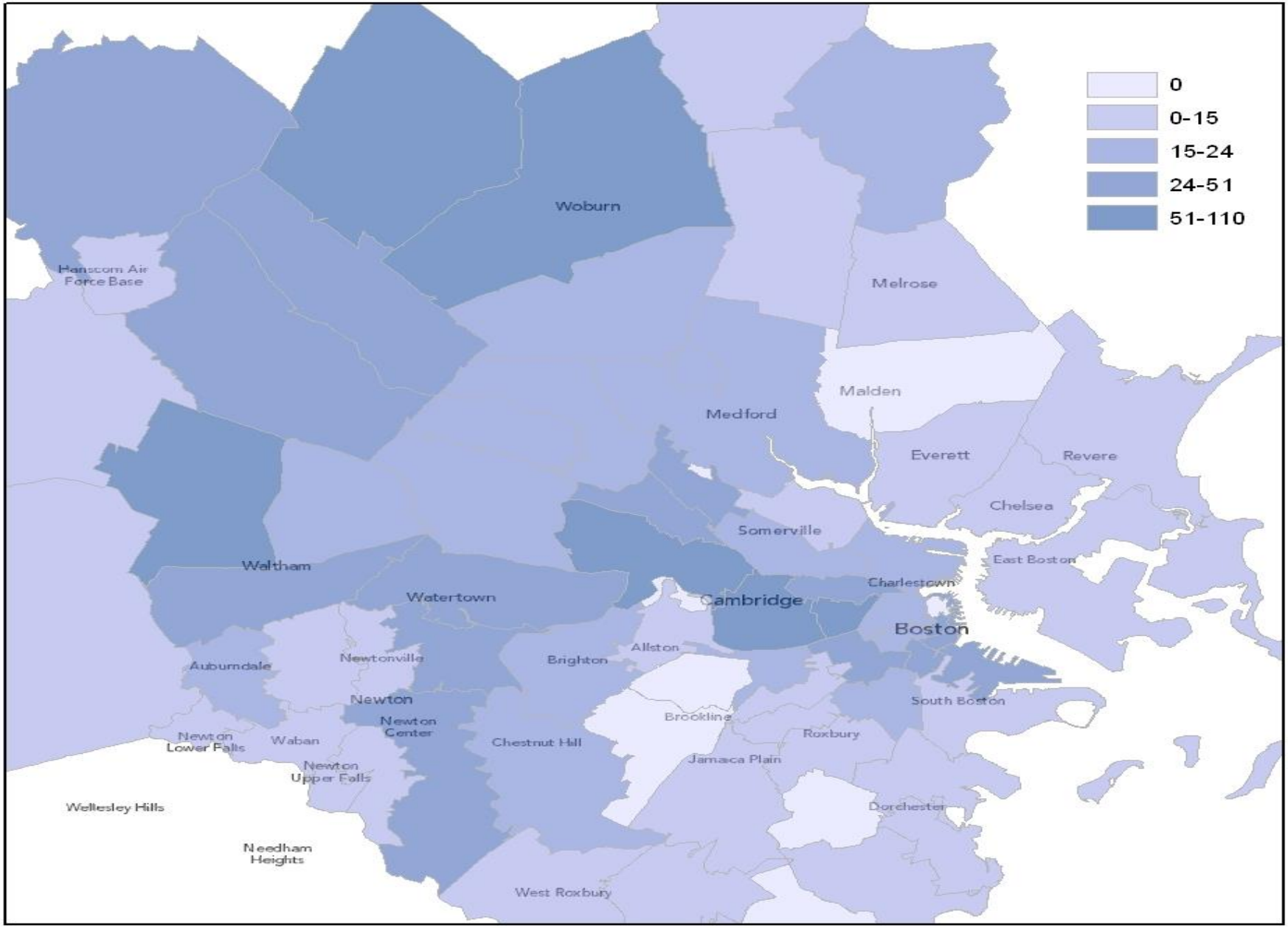
As of 2011, Suffolk County remains tiny in traditional technology relative to Middlesex County.

But its rate of growth is far higher, especially in newer industries.

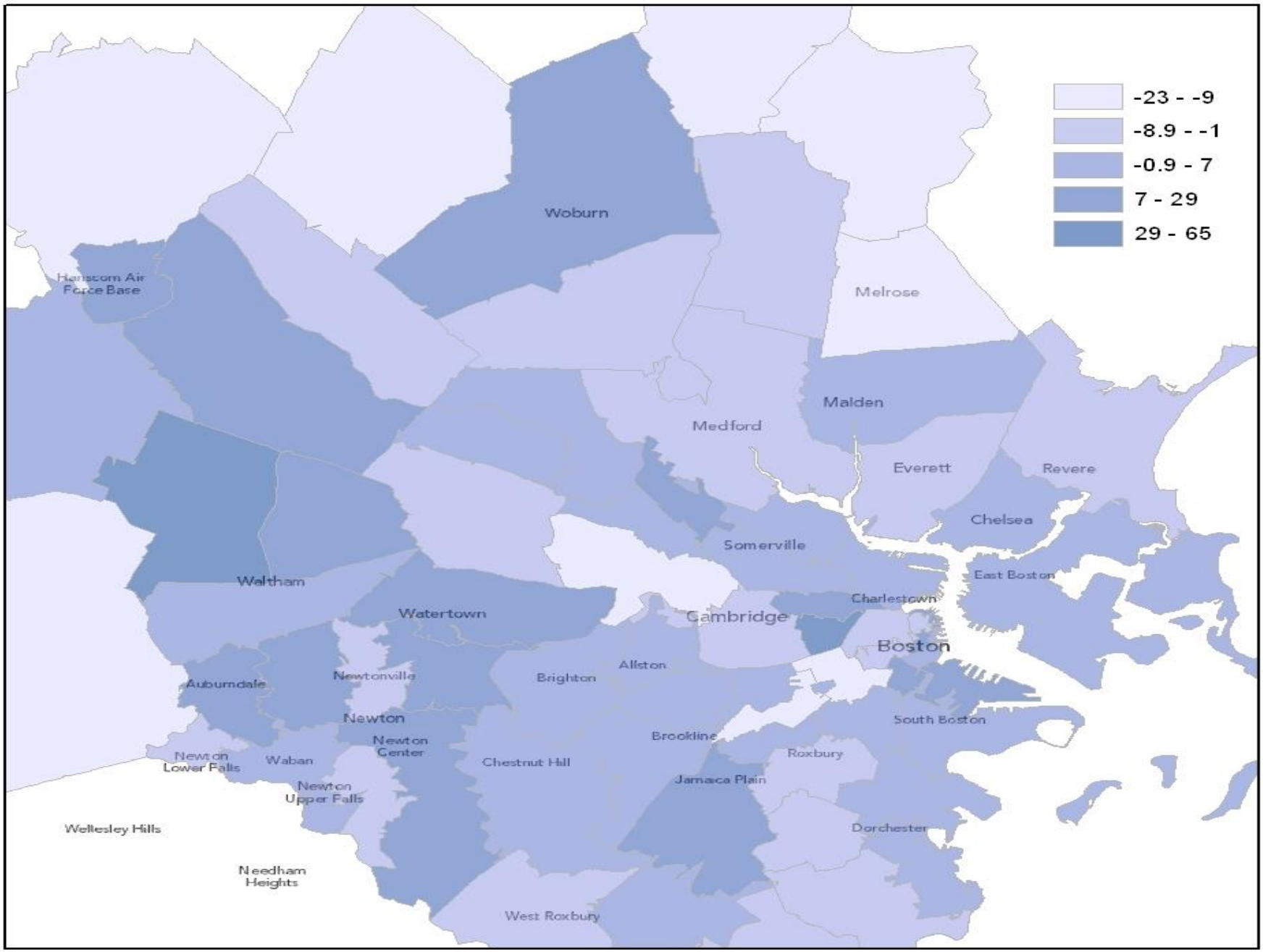
Count of Large Establishments - All Tech, 2010



Count of Small Establishments - All Tech, 2010



Growth in the Count of Establishments - All Tech, 1998-2010



Degree of Clustering

Consider 5 zip codes on Rte 128 (Waltham-Woburn) and 3 zip codes in East Cambridge

Forty percent of all technology establishments; one-third of computer manufacturing and services and data hosting.

More than half of software and research and development.

A greater share of big firms than small firms.

Cluster share is far less in e-commerce and online publishing and software.

	Route 128 Corridor (Five Zip Codes)	Kendall Square Area (Three Zip Codes)
Average Number of Big Establishments 2010	35	33
Average Number of Small Establishments 2010	70	72
Percent Small Establishments	70%	70%
Average Number of Big Establishments 1998	28	30
Average Number of Small Establishments 1998	65	53
Growth in Big Establishments 1998-2010 (Number)	7	2
Growth in Big Establishments 1998-2010 (Percent)	24%	10%
Growth in Small Estab'ts 1998-2010 (Number)	9	18
Growth in Small Estab'ts 1998-2010 (Percent)	8%	36%

Lesson # 4

Greater Boston technology is centered in two clusters – Rte 128 and Kendall Square.

One car-oriented; one pedestrian.

One more computer oriented; one tied to research and development.

Small establishment growth is far higher in Kendall Square.

Somewhat surprising, small firms are more concentrated than big firms.

Regression Results Holding other factors fixed	Route 128 Corridor	Kendall Square
Sectors that tend to locate near the cluster	Computer-related manufacturing (all) Computer-related services (all) Software (all) Research and development in the hard sciences (all) Medical manufacturing (all) Data hosting and processing (all)	Research and development in the hard sciences (all) Medical manufacturing (small)
Sectors that don't tend to locate near the cluster	Online publishing and software (all) Internet shopping (all)	Computer-related manufacturing (all) Computer-related services (all) Software (all) Medical manufacturing (big) Online publishing and software (all) Internet shopping (all) Data hosting and processing (all)

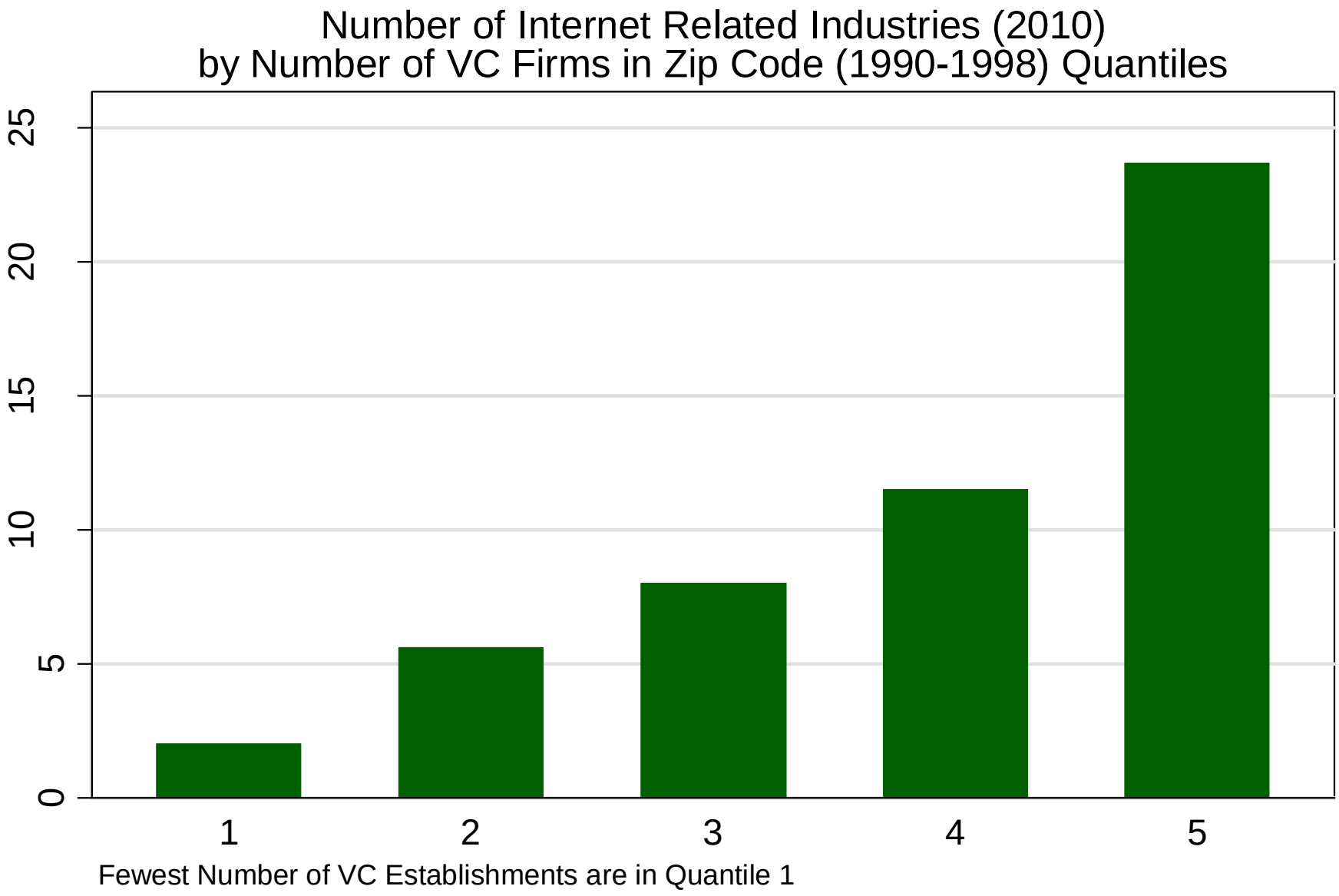
Lesson # 5

Outside of the two clusters, most non-manufacturing technology firms are attracted by areas where high skilled people tend to live.

The effect is strongest in computer-related services and research and development.

The effect is stronger for small firms than for big firms.

Venture Capital (1990-1998) and New Industries (2010)



Lesson # 6

The presence of venture capital seems extremely powerful in predicting the growth of new industries.

Most VC experts argue that this has as much to do with information exchange than with actual financing.

Impact of Finance Subsidies

- The state has a number of programs that provide funding for promising start-ups.
- Economists are typically quite skeptical of the public ability to play venture capitalist.
- These voices were loud after Evergreen Solar and Solyndra.
- Beeson and Weinstein (1996) show that in Japan MITI picked losers.

Effect of Government Financing on Sales and Job Growth

Initial Matching Variables

	Difference in Matched Pairs of Treated and Untreated Means	Standard Error	95% Confidence Interval	
Initial Sales	0	0	0	0
Initial Employees	0	0	0	0

Post-Difference Variables

Log Sales Growth in the First Year	0.02	0.06	-0.10	0.14
Log Sales Growth in the Second Year	0.00	0.06	-0.13	0.13
Log Sales Growth in the Third Year	-0.04	0.04	-0.12	0.03
Log Job Growth in the First Year	0.02	0.05	-0.09	0.13
Log Job Growth in the Second Year	0.00	0.06	-0.12	0.13
Log Job Growth in the Third Year	-0.05	0.04	-0.12	0.03

Infrastructure

- Traditionally infrastructure has been a major source of economic development– the Erie Canal, railroads, and even highways (Rte 128)
- It is less clear that much infrastructure is crucial for technology start-ups (see India).
- Routes into work surely matter.
- But does broadband/fiber/etc.
- Most of Greater Boston is well connected with broadband. Fiber is rarer.


Downtown
Logan
Airport
South Boston
Waterfront
Innovation District

Can there be an innovation district in Dudley Square?

Photo by TWP