



Donahue Institute

The Massachusetts Regional Benchmarking Project:

Central Regional Report

Prepared by the

**University of Massachusetts Donahue Institute
Economic and Public Policy Research Unit**
In collaboration with the UMass Lowell Center for Industrial Competitiveness

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Introduction

The Massachusetts Regional Benchmarking Project is designed to provide regional economic development stakeholders in Massachusetts with a set of indicators tailored to reveal regional progress toward the achievement of locally-established economic development goals. The Regional Benchmarking Project, funded in part through a grant by the U.S. Economic Development Administration, is the result of collaboration between the UMass Donahue Institute, the Center for Industrial Competitiveness at the University of Massachusetts at Lowell, and the input of UMass faculty located on campuses throughout the state.

The regional benchmarking indicators should prove useful to municipal officials, planners and regional stakeholders as they seek to evaluate their progress implementing priority projects in economic development districts. The indicators include measures of economic growth, industrial diversification, regional economic development, and regional factors that affect quality of life and opportunity, such as housing costs, personal income, education, and income inequality. The Regional Benchmarking Project supplements its analysis with Technology Audits that document the regional presence of knowledge intensive enterprises. Each project report focuses on one of the seven principal economic regions of the state as defined by *MassBenchmarks*, the journal of the Massachusetts economy published by the University of Massachusetts in collaboration with the Federal Reserve Bank of Boston (See the appendix entitled “Benchmarks Regions” for detailed regional definitions).

The Commonwealth of Massachusetts has developed an impressive body of literature¹ that defines the competitive advantages and challenges of the state’s regions. The UMass Donahue Institute, in partnership with the Massachusetts Executive Office of Economic Development has repeatedly documented both the state’s transition to a knowledge economy, as well as, the uneven distribution of economic growth across the state’s regions. The Commonwealth of Massachusetts and the U.S. E.D.A. support the state’s regions in the process of planning for economic growth and prosperity. This project is an additional tool with which to track regional progress toward reaching those goals.

Report Structure

The Regional Benchmarking Project defines regional prosperity in terms of income and competitiveness. These dimensions of prosperity are measured as the product of three broad categories: economic conditions, real estate conditions and demographic and labor market conditions. A series of indicators are presented to assess regional status and to provide a tool for evaluating progress towards achieving economic prosperity.

¹ The UMass Donahue Institute has researched differential development between regions in the Massachusetts economy in many different reports. Those most relevant ones to this project are the 1992 report *Choosing to Compete: A Statewide Strategy for Job Creation and Economic Growth* (a collaboration between the University of Massachusetts and the Executive Office of Economic Affairs), the follow-up 2002 report *Massachusetts: Toward a New Prosperity: Building Regional Competitiveness Across the Commonwealth* (a collaboration between the University of Massachusetts and the Department of Economic Development) and the 2001 report *Knowledge Sector Powerhouse: Reshaping Massachusetts Industries and Employment During the 1980’s and 1990’s* (another collaboration between the University of Massachusetts and the Department of Economic Development).

Economic Conditions

Sustained regional economic health requires growing employment opportunities, a strong and diversified export base, and innovation. Accordingly, the seven indicators presented in this section are designed to measure regional job growth, export job growth, job diversification and innovative capacity. These four “regional benchmarks” are intended as summaries of regional status and are based on the following specific indicators:

- Job Growth (2 indicators)
 - Regional unemployment rate
 - Growth in total employment
- Export Job growth (2 indicators)
 - Growth in regional employment in major export sectors
 - Regional location quotients in major export sectors (vs. MA and US)
- Job Diversification (1 indicator)
 - Distribution of employment by major export sector
- Innovative Capacity (2 indicators)
 - Regional patents granted
 - Regional venture capital funds received

Real Estate Conditions

Land use and residential housing markets have significant economic implications for regional growth and prosperity. The seven indicators examined in this section are designed to measure housing supply, housing affordability, residential land values and commercial and industrial land values. These four “regional benchmarks” are intended as summaries of regional status and are based on the following specific indicators:

- Housing Supply (3 indicators)
 - Change in residential parcels by type of building
 - Number of permits for new construction
 - Supply of Chapter 40B units by municipality
- Housing Affordability (1 indicator)
 - Housing cost burden by income and type of household
- Residential Land Values (1 indicator)
 - Average assessed value of single-family homes
- Commercial and Industrial Land Values (2 indicators)
 - Average assessed value of industrial land parcels
 - Average assessed value of commercial land parcels

Demographic and Labor Market Conditions

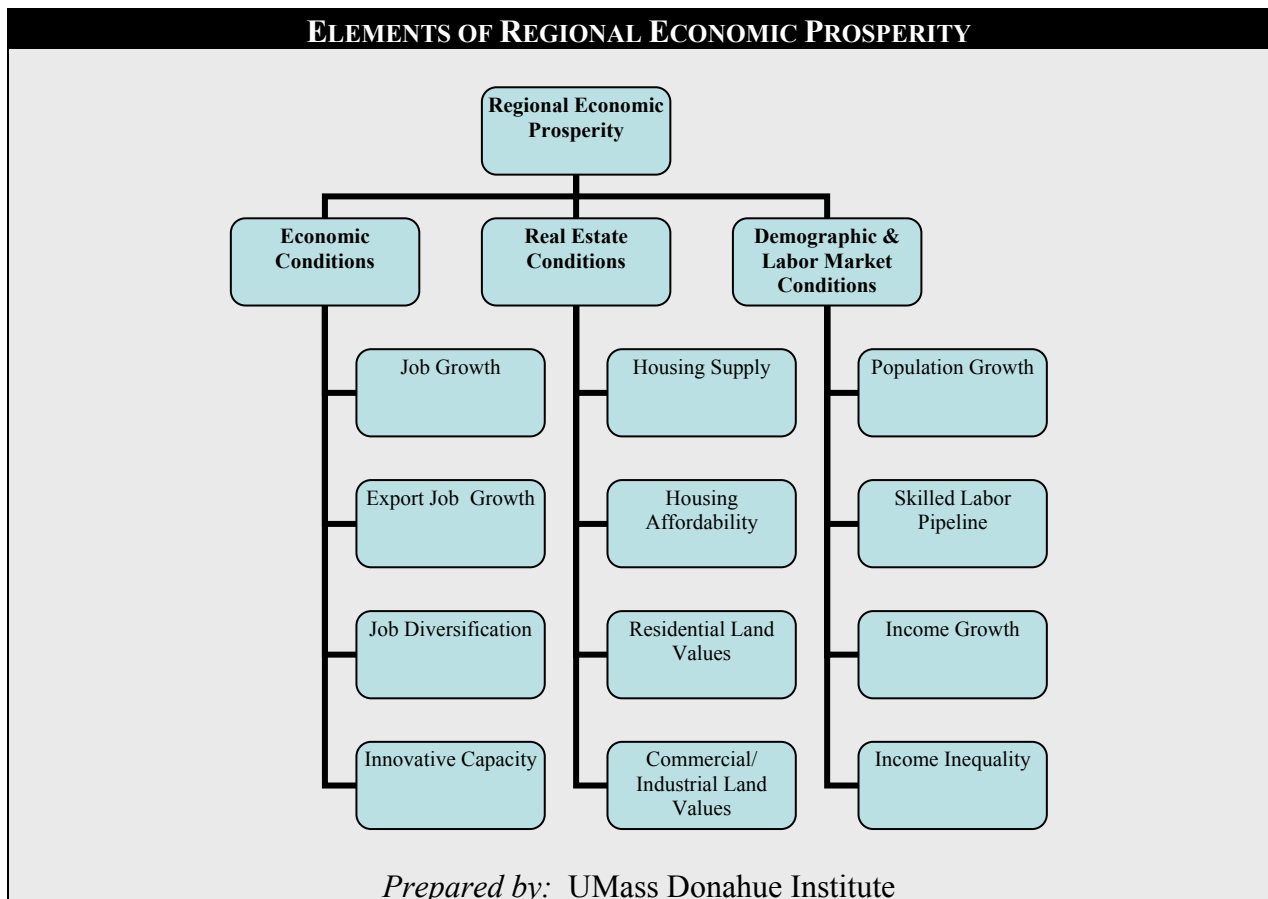
A skilled workforce is a prerequisite for regional income and competitiveness. Regional prosperity requires both rising household incomes and a balanced income distribution. The seven indicators presented in this section are designed to measure population growth, the pipeline of skilled labor and income growth and inequality. These four “regional benchmarks” are intended as summaries of regional status and are based on the following specific indicators:

- Population growth (2 indicators)
 - Change in total population
 - Net domestic migration

- Skilled Labor Pipeline (2 indicators)
 - Dropout rate
 - Plans of high school seniors

- Income Growth (1 indicator)
 - Household income growth

- Income Inequality (2 indicators)
 - Number of persons in poverty
 - Share of students eligible for the free and reduced school lunch program

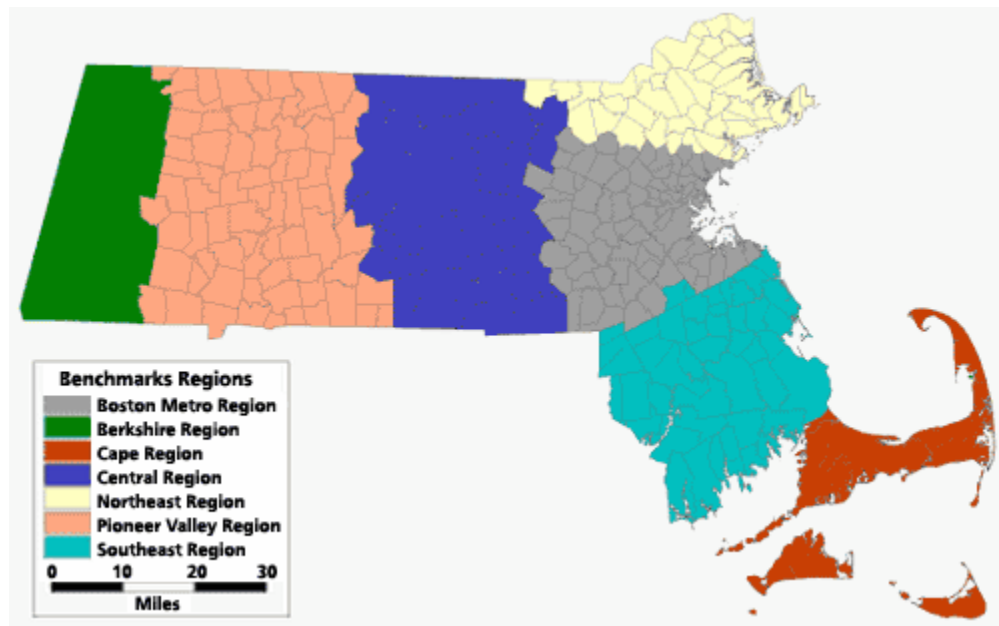


About the Indicators

In preparing this report, the UMass Donahue Institute reviewed existing state and federal databases and consulted analysts at the University of Massachusetts and government agencies to seek the most comprehensive and relevant data to construct indicators for this project. The Regional Benchmarking Project emphasizes those indicators that can be updated on an annual basis and most closely conform to the regional boundaries used in *MassBenchmarks*.




The indicators are introduced with an explanation of the relevance of the data for regional analysis, guidance about data interpretation and use, and a note on sources or calculations, as necessary. The appendices contain a full explanation of the methodologies and sources used in preparing the report, as well as a full list of cities and towns in each benchmark region.

The Benchmark Regions



SUMMARY OF REGIONAL CONDITIONS

	Berkshire	Pioneer Valley	Central	Northeast	Boston Metro	Southeast	Cape & Islands
Economic Conditions							
- Job Growth	Mixed	Negative	Negative	Negative	Negative	Mixed	Positive
- Export Job Growth	Negative	Negative	Negative	Negative	Negative	Negative	Mixed
- Job Diversification	Negative	Mixed	Positive	Positive	Positive	Negative	Negative
- Innovative Capacity	Negative	Negative	Positive	Positive	Positive	Negative	Negative
Real Estate Conditions							
- Housing Supply	Mixed	Mixed	Mixed	Negative	Negative	Positive	Negative
- Housing Affordability	Positive	Positive	Mixed	Negative	Negative	Negative	Negative
- Residential Land Values	Negative	Negative	Mixed	Positive	Positive	Positive	Positive
-Commercial/ Industrial Land Values	Negative	Negative	Negative	Positive	Positive	Mixed	Negative
Demographic & Labor Market Conditions							
- Population Growth	Negative	Mixed	Mixed	Mixed	Negative	Positive	Positive
- Skilled Labor Pipeline	Negative	Mixed	Mixed	Positive	Positive	Negative	Mixed
- Income Growth	Negative	Negative	Positive	Positive	Mixed	Negative	Negative
- Income Inequality	Mixed	Negative	Positive	Positive	Negative	Negative	Positive

-  - Generally positive regional conditions
-  - Mixed regional conditions
-  - Generally negative regional conditions

Prepared by: The UMass Donahue Institute

Economic Conditions

In order to benchmark regional progress towards the creation of broad economic prosperity, one must begin with an analysis of employment, industrial composition, innovation and overall competitiveness. Employment and labor force trends provide a baseline for measuring economic performance that is readily understood and comparable across regions. The growth of regional income requires a strong and diverse export base. This analysis pays particular attention to the innovation intensive export clusters known as the “knowledge sectors”².

Industrial competitiveness is composed of a set of factors that define a sector or firm’s ability to adapt to changes in the marketplace, create new products or processes, incorporate new technologies, and attract financial capital. Much insight regarding competitiveness may be gleaned from a comparative analysis of sector employment. However, additional indicators are necessary to obtain a full understanding of a region’s fundamental ability to grow and support high technology jobs in export-oriented clusters over time. To assess industrial competitiveness, the UMass Donahue Institute has chosen three measures of industrial innovation and competitiveness. The first two indicators measure regional performance in the competition for financial capital and product or process innovation. The most recent regional data on venture capital funding by industry is used as a proxy for access to financial capital. Data from the U.S. Patents Office is presented to indicate the level of regional innovation.

The third indicator of industrial competitiveness is derived from a technology audit conducted by with the Center for Industrial Competitiveness at the University of Massachusetts at Lowell. This indicator is based on information obtained from Corp Tech, a reliable industry database that includes establishment-level data for high technology companies in 18 export-oriented sectors. This data supplements the employment and industry data provided by the MA Division of Unemployment Assistance by presenting detailed information of the number of high technology firms at the regional level.

The Massachusetts economy

In the contemporary Massachusetts economy, net state income is primarily generated by the state’s knowledge-intensive export industries: advanced technology manufacturing, higher education, healthcare, biomedical research and technologies, and professional and financial services. These industries compete in national and international markets over skilled labor, investment capital, product innovation and the price of intermediate goods and services. Massachusetts has the traditional advantages of high quality of life, world-class colleges and universities, and a sophisticated financial services industry. The state is located close to major east coast cities, with excellent access via highways, airports and seaports to markets throughout the eastern United States and Europe. The state suffers from one of the highest costs of living in the United States and, as a center of technological innovation, is particularly susceptible to

² The definitions of each “knowledge sector” were created for the 2001 report *Knowledge Sector Powerhouse: Reshaping Massachusetts Industries and Employment During the 1980’s and 1990’s* (a collaboration between the University of Massachusetts and the Department of Economic Development). For this report, these definitions were updated to the current North American Industrial Classification System (NAICS) from the outdated Standard Industry Classification (SIC).

market booms and busts. Thus, the state is challenged to attract and keep workers due to the cost of living and periodically experiences relatively large job losses in key high technology industries.

At the regional level, the economic story of late-twentieth and early twenty first century Massachusetts is one of adjustment to an era that relies less on low-skilled manufacturing and more on innovation-driven products and services. Despite its relatively compact size, Massachusetts is a state with highly diverse regions. The state's employment is concentrated in the benchmark regions of Boston Metro and Northeast. These regions enjoy a heavy concentration of employment in advanced technology manufacturing, healthcare, financial services and higher education. The state's other regions enjoy local advantages of strong tourism, arts and culture, higher education and traditional manufacturing and marine industries. These regional benchmarking reports provide a detailed portrait of regions that have had differential success in gaining a competitive footing in the state's new knowledge-oriented export industries.

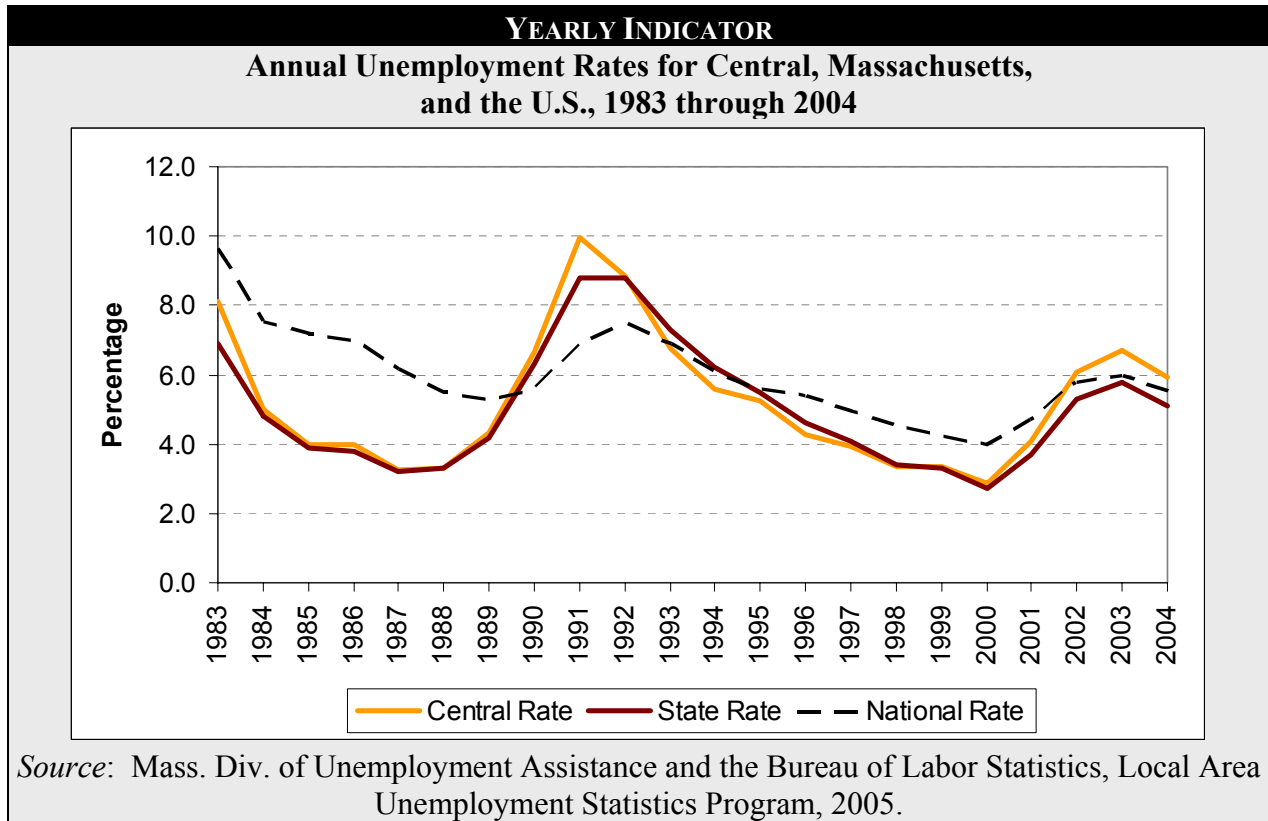
Economic Conditions: Job Growth

Regional Unemployment Rate

Why It's Important

This time-series of the unemployment rate and labor force size offers a straightforward measure of economic performance at the regional level. These data provide a comparative perspective on regional economic performance during the peaks and valleys of recent business cycles. It also highlights the extent to which the regional economy is able to provide jobs for its residents seeking employment. The charts were prepared from data provided by the U.S. Bureau of Labor Statistics and the Massachusetts Division of Unemployment Assistance.

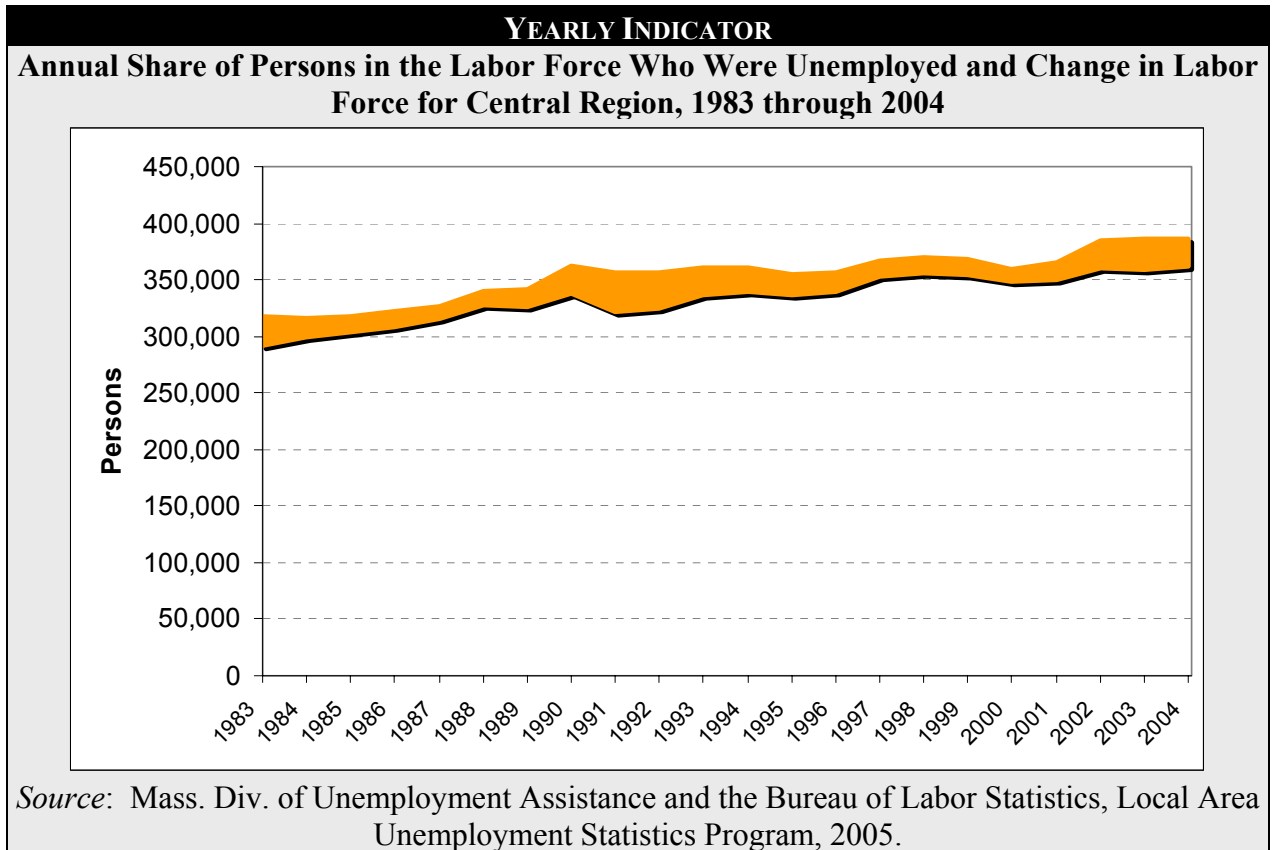
Regional Status



Since 1983, the Central region's unemployment rate has generally mirrored the state unemployment rate. Since 2000, the region's unemployment rate has diverged from the state, with an unemployment rate higher than the state and the nation from 2002 to 2004.

In the following indicator, the colored band represents the number of unemployed persons in the labor force, with the upper line showing the total number of people in the labor force.

Since 1983, the Central region's labor force has expanded steadily. Given that the regional unemployment until 2001 was well below the national unemployment rate, the steady expansion of the Central region's labor pool suggests healthy job growth during the past two decades.



Growth in Employment by Industry

Why It's Important

The comparison of employment by industry between 2001 and 2004 presents a contemporary snapshot of the changing composition of industry at the regional level. Growing and declining sectors can be identified along with the relative strength of regional industry compared to the state and the nation. The following chart contains a series of indicators of job growth, export job growth and industrial diversity. The table shows location quotients for each industrial sector in 2004 as compared to the state and the nation. Location quotients (LQs) are used to measure the relative concentration of industries in a region. A LQ is a ratio of ratios, which means that the share of employment in an industry sector in a region is compared to the share of that sector's employment in the comparison geography (typically the state or nation). Industries with an LQ greater than 1.0 are more highly concentrated than the state and/or nation and are traditionally considered to be export industries. Industries with an LQ equal to or less than 1.0 are traditionally presumed to be serving the local market for goods and services within the region.

Regional Status

YEARLY INDICATOR								
Location Quotient & Employment by Industry for the Central Region, MA & U.S., 2001 to 2004								
Sector/Description	LQ (US Base)	LQ (MA Base)		Change 2001 to 2004		Percent Change	Share of Total Employment	
		2001	2004	2001	2004			
Total, all industries	108,505,334	3,107,023	308,654	303,374	-5,280	-1.7%	100%	
Advanced Technology Manufacturing	1.32	0.92	10,046	8,098	-1,948	-19.4%	3%	
All Other Sectors	0.88	1.01	113,747	115,210	1,463	1.3%	38%	
Arts, Tourism & Recreation	0.77	0.93	24,283	26,914	2,631	10.8%	9%	
Financial Services	0.81	0.79	12,845	13,150	305	2.4%	4%	
Healthcare	1.14	1.03	44,799	44,456	-343	-0.8%	15%	
Knowledge Creation	1.47	0.88	61,162	61,543	381	0.6%	20%	
Traditional Manufacturing	1.01	1.57	41,772	34,003	-7,769	-18.6%	11%	

Source: Mass. Div. of Unemployment Assistance; calculations by UMass Donahue Institute, 2005.

Compared to the nation, the Central region has a strong competitive presence in the *knowledge creation*, *advanced technology manufacturing*, and *healthcare* sectors. Advanced technology manufacturing remains an important regional export cluster, despite the loss of over 19 percent of the sector's employment from 2001 to 2004. Traditional manufacturing is heavily concentrated in the Central region when compared to the state. This declining sector shed 18.6 percent of employment from 2001 to 2004. Notably, employment declined at a slower rate in the Central region than the state as a whole from 2001 to 2004, with a 1.7 percent loss of jobs in the Central region compared to a 4 percent loss for the state.

Economic Conditions: Export Job Growth and Job Diversification

Analysis of Export Clusters

Why It's Important

Export-oriented industries are the drivers of wealth creation and job growth within state and regional economies. Exports can be traditional goods produced locally and sold in other states and countries or can involve the sale of nonmaterial goods such as education, healthcare, tourism or cultural experiences. Exports are essential to regional economic prosperity as the production and sale of goods outside of the region produces income that can sustain well-paying jobs and provide for local investments.

In the late twentieth century, Massachusetts experienced a steep decline in its share of national employment in traditional manufacturing. The state's relatively competitive position in highly-skilled, highly-educated fields such as basic research, healthcare and education, has led to an appreciation of the importance of fostering high value-added, export oriented employment based on the state's knowledge industries. The Commonwealth of Massachusetts has refined its definition of the state's export clusters through a series of studies, beginning with *Choosing to Compete* in 1993 to the UMass Donahue Institute's analysis in *Toward a New Prosperity* in 2002. This report updates those definitions using the new North American Industrial Classification System (NAICS) definitions of industries (see appendix for more information on how industries have been defined).

Regional Status

Advanced Technology Manufacturing

The *Advanced Technology Manufacturing* cluster is a leading export industry in the Central region, with a share of total regional employment equal to that of the state. As with the rest of the state, the region has suffered a high rate of job loss in the sector during the past three years.

Arts, Tourism & Recreation

Arts and tourism is an important export sector in the Central region, with nine percent of the region's employment and 10.8 percent job growth in the sector from 2001 to 2004.

Financial Services

The *Financial Services* sector is not a significant export presence in the Central region, though it has enjoyed modest employment growth in recent years.

Healthcare

The *healthcare* cluster is a significant and important export-oriented sector in the Central region. The Central region has a concentration of employment in the *healthcare* cluster greater than the nation. Though the Central region has a concentration of employment in *healthcare* that is only slightly higher than the state, it should be remembered that Massachusetts is one of the leading healthcare employers in the nation. The UMass Medical School in Worcester and the Tufts

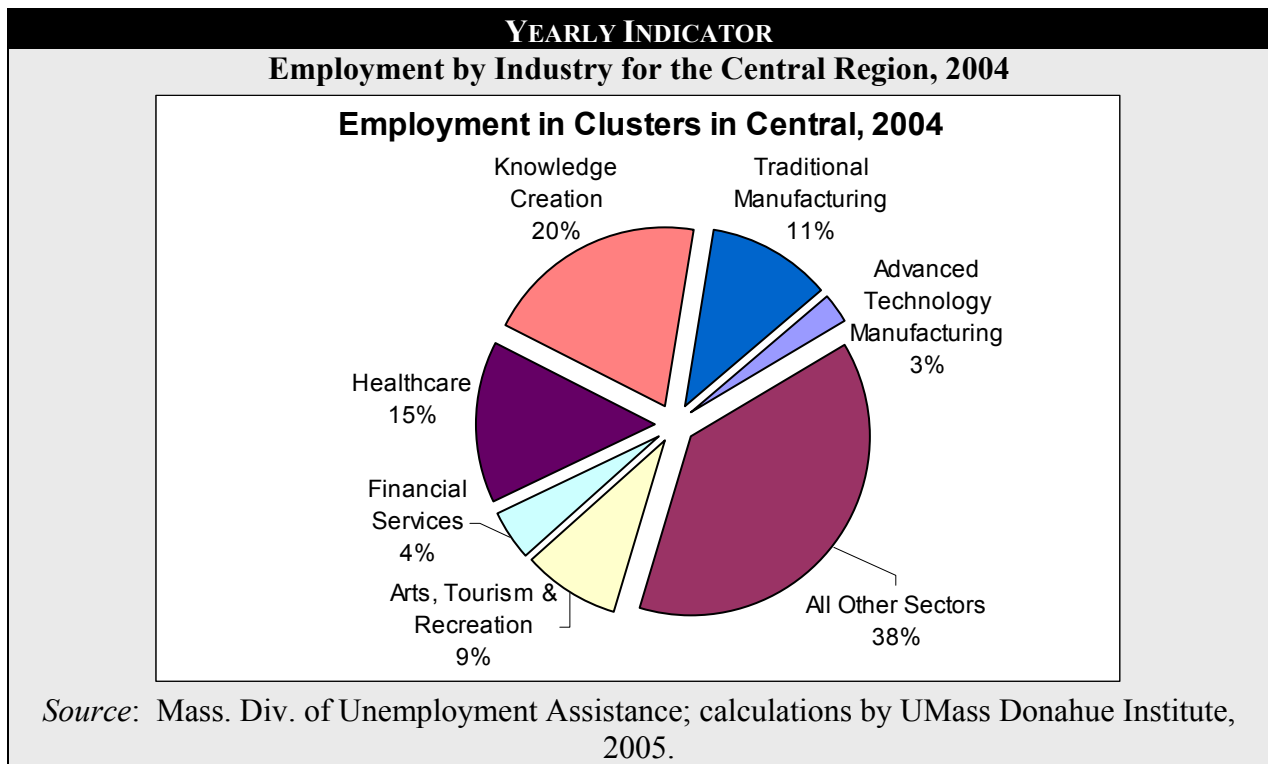
Cummings School of Veterinary Medicine in Grafton anchor an industry that is important to region's economic future.

Knowledge Creation

The Central region is home to more than a dozen colleges and universities. *Knowledge creation* employment is concentrated in educational services; however, the region boasts a significant number of jobs in professional and technical services and the management of companies and enterprises.

Traditional Manufacturing

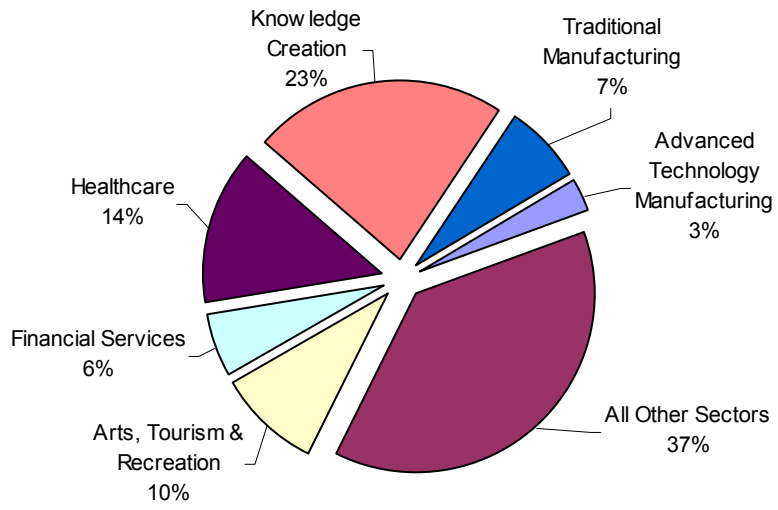
The economic history of the Central region is intertwined with the story of the growth and decline of traditional manufacturing in the northeastern United States. Employment in this sector continues to be more highly concentrated in the Central region than the state as a whole. This presents an economic challenge to the region, as the industry continues to shed employment.



YEARLY INDICATOR

Employment by Industry for the Massachusetts, 2004

Employment in Clusters in MA, 2004



Source: Mass. Div. of Unemployment Assistance; calculations by UMass Donahue Institute, 2005.

Technology Audit

A firm is thought of as high tech if it uses advanced technological knowledge to develop innovative products, processes or utilizes the latest technology in production. The growth or expansion of high technology firms in regional economies is associated with rapid and sustained employment growth, expanding markets, dense networks of linkages between firms and high rates of new business formation. High technology workforces tend to have a larger percentage of high-skilled, high-paying jobs. In short, the establishment of a cluster of high technology firms is one of the most highly-prized achievements in regional economic development.

The following analysis presents a technology audit of high technology clusters in the Central region. The analysis, conducted by the UMass-Lowell Center for Industrial Competitiveness, utilizes the Corp Tech database and its technology classification system. The data is at the establishment-level and classifies firms according to technology fields corresponding to eighteen Primary Industries: factory automation, biotechnology, chemicals, computer hardware, defense, energy, environmental, manufacturing equipment, advanced materials, medical, pharmaceuticals, photonics, computer software, subassemblies and components, test and measurement, telecommunications and internet, transportation, and holding companies.

While each firm is identified by a single primary industry, most firms manufacture a range of products that are classified in more than one major specialization code. As a result, firms can and do appear in more than one category in the tables contained in this section. This analysis is designed to illustrate the range and scale of technological activity by sector in the region. These data should not be used to summarize total employment or industry in the region.

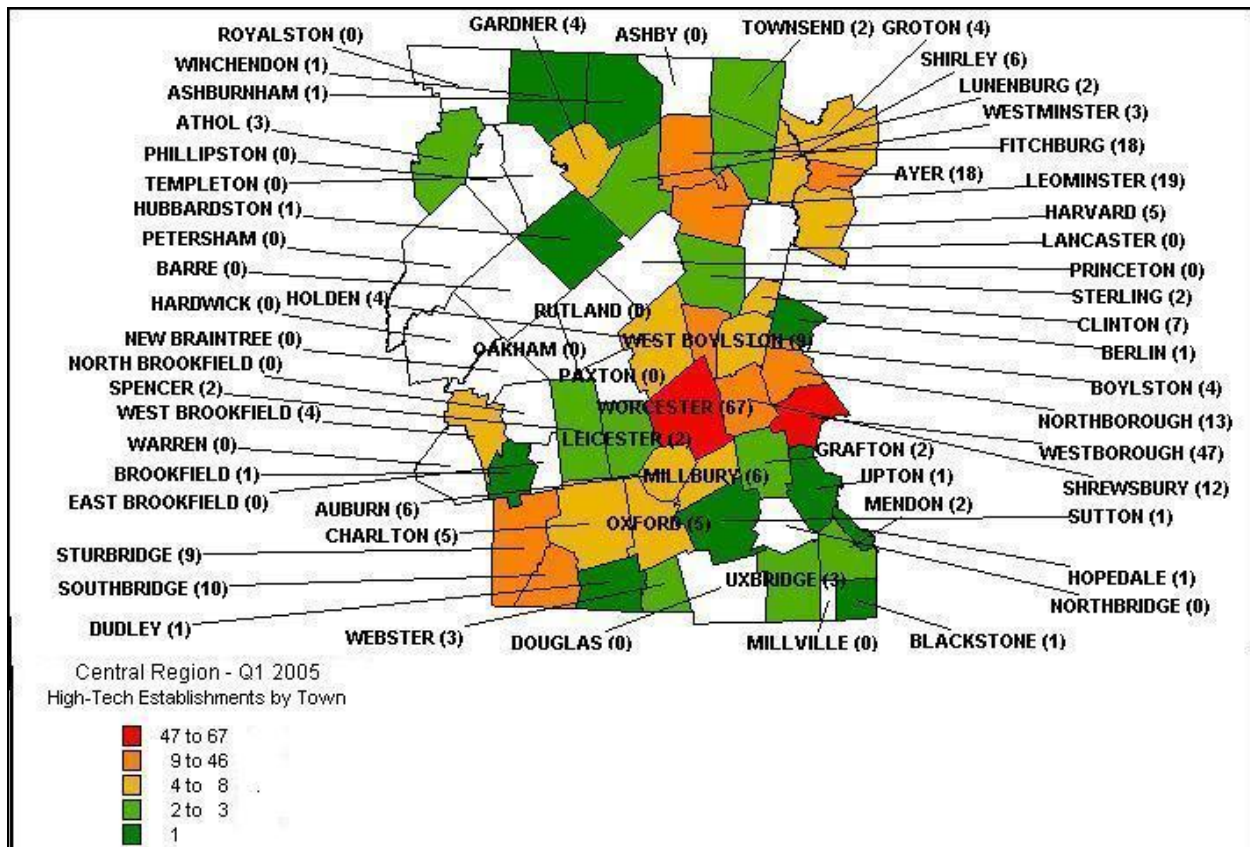
The technology audit complements the data presented in the preceding section. The NAICS-based data presented in that section should be viewed as authoritative in terms of employment and firms, as that section relies on official data from the Commonwealth of Massachusetts' Division of Unemployment Assistance. The Corp Tech database is a proprietary database composed of an estimated 99 percent of high tech companies employing more than 1,000 workers, 75 percent of companies with 250-1,000 employees, and 65 percent of companies with fewer than 250 employees. The Technology audit is most useful as a means of supplementing the growth in employment by industry indicator.

CENTRAL REGION

High Technology Establishments and Employment

Regional Status

As the map below indicates, the concentration of high tech establishments in the Central region is most clearly located around the Worcester/Westborough and the Fitchburg/Leominster areas. This region is the fourth most populous Benchmark region, with approximately 12% of the state's population and 9.4 % of the state's high tech establishments in 2005.



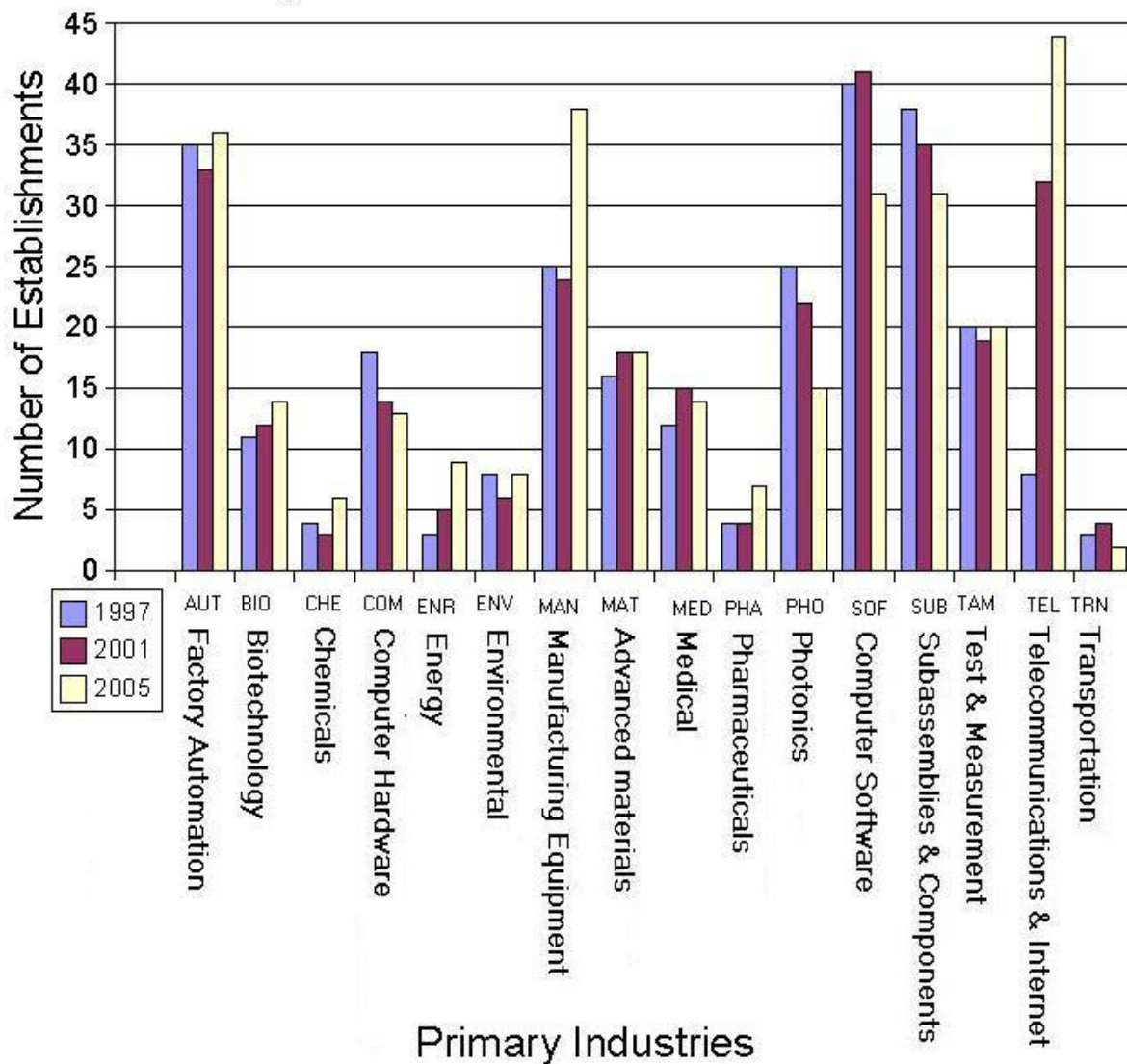
The LQ in this region fell from 2.8 in 1997 to 2.5 in 2005, though the region continued to perform well from a national perspective (2.5 times the national average). This LQ level is midway between the two most high tech intensive regions of Boston Metro and Northeast (4.5 and 3.9 respectively) and the remaining four less high tech intensive Benchmark regions (ranging from 1.1. to 1.5).

High Tech Firms, Central & MA 2005 (First Quarter of Year)

Year	2005				2001			1997		
	Population (%)	Establishments	Establishments (%)	Location Quotient	Establishments	Establishments (%)	Location Quotient	Establishments	Establishments (%)	Location Quotient
Benchmark Region										
Central	11.8%	321	9.4%	2.5	288	7.8%	2.4	276	8.9%	2.8
MA Totals	100.0%	3405	100.0%	3.1	3674	100.0%	3.5	3111	100.0%	3.7

The chart below indicates the number of establishments in the region by their primary sectors.

Central Region Q1 1997-2001-2005



Among the sectors with a larger number of establishments, the most significant changes were the decrease in the number of establishments in *Computer Hardware*, *Software*, and *Subassembly & Components*. At the same time, the number of establishments increased in *Manufacturing Equipment* and *Telecommunications & Internet*. The LQ in *Photonics* decreased the most significantly during this period as the number of establishments in the region has diminished even more than the declining number of firms nationally. The increases in establishments in *Manufacturing Equipment* and *Telecommunications & Internet* were at a relatively greater rate than the national pattern as reflected in rising LQs.

**High Tech Firms, Location Quotients for Primary Sectors, Central
(First Quarter of Year)**

Year	Transportation	Telecommunications & Internet	Test & Measurement	Subassemblies & Components	Computer Software	Photonics	Pharmaceuticals	Medical	Advanced Materials	Manufacturing Equipment	Environmental	Energy	Defense	Computer Hardware	Chemicals	Biotechnology	Factory Automation
2005	1.0	1.8	3.2	2.6	1.5	5.7	3.2	2.8	3.3	4.1	1.5	2.5	0.0	2.0	2.1	4.4	4.9
2001	2.1	1.3	3.0	2.9	1.9	4.7	2.3	2.9	3.7	3.2	1.1	1.7	0.0	1.9	1.2	4.4	4.2
1997	1.5	1.5	3.4	3.2	2.0	8.3	2.9	2.4	3.3	3.5	1.5	1.2	0.0	2.2	1.5	4.9	4.5

The preceding table above identifies the wide variation in relative industrial concentration in 2005. The Corp Tech database did not include a single Defense firm, while documenting a high concentration of establishments in *Environmental*, *Telecommunications & Internet*, *Computer Hardware*, *Chemical*, *Energy*, *Subassemblies & Components*, *Pharmaceuticals*, *Test and Measurement*, and *Advanced Materials* sectors. The Central region contains concentrations of establishments in *Manufacturing Equipment*, *Biotechnology* and *Factory Automation* at four to five times the national level. The *Photonics* sector boasts the highest LQ of any sector in the region.

A more detailed examination of the specialized industries with a notably higher LQ compared to the average for the primary sector, or a relatively significant number of establishments, is provided in the table below. Among the 23 Major industry specializations identified for the Central region there are some notable regional concentrations of activity such as *Cell Culture Technologies*, *Advanced Materials Services*, *Fiber Optics and Related Equipment*, *Electrical Connectors*, *Communications Interfaces*, and *Other Data Communications Equipment*. Some of these Major industry specializations consist of only a few firms, but the LQs are high due to the small number of firms in the nation as a whole. For instance, the 2 Turbine firms in the Central region generate an LQ of 18.6 because there are only 41 such establishments in the U.S.

Central, Selected Major Specialized Industries, 2005, Q1

Major Segment	Establishments	Location Quotient
BIO: Biotechnology	15	3.7
BIO-CC: Cell Culture Technologies	3	8.4
CHE: Chemical	6	2.1
CHE-SV: Chemical Services	9	4.1
ENR: Energy	9	2.5
ENR-TB: Turbines	2	18.6
MAT: Advanced Materials	18	3.3
MAT-CE: Ceramics/Related Materials	3	5
MAT-PO: Polymers	7	5.1
MAT-SV: Advanced Materials Services	9	5.8
PHO: Photonics	15	5.7
PHO-FO: Fiberoptics and Related Equipment	10	10.2
SOF: Computer Software	31	1.5
SOF-CS: Communications Systems Sof	14	3.4
SUB: Subassembly & Components	31	2.6
SUB-CE: Electronic Connectors	5	4.6
SUB-CL: Electrical Connectors	16	6
TAM: Test & Measurement	20	3.2
TAM-AN: Analyzers	5	3.8
TAM-SC: Scientific/Laboratory Equip	11	3.5
TEL: Telecomm & Internet	44	1.8
TEL-CI: Communications Interfaces	3	4.7
TEL-ZD: Other Data Communications Equip	4	4

Economic Conditions: Innovative Capacity

Venture Capital Funding

Why It's Important

The ability to attract competitive sources of funds, such as private investment or government grants, is a measure of a region's innovative capacity and of its potential to develop new high-growth firms. Venture capital funding is one of the primary means of facilitating the development of products and services from conception to marketing and production. The absence of venture capital funding in a region represents a lack of competitiveness of regional firms and industries or the absence of favorable conditions for developing new firms.

Regional Status

YEARLY INDICATOR			
Venture Capital by Industry for the Central Region, Massachusetts, and the United States, Q1-Q3 2005			
Industry	Central	Massachusetts	US
Biotechnology	-	\$342,558,900	\$2,754,074,600
Business Products and Services	-	\$31,370,000	\$377,268,900
Computers and Peripherals	-	\$28,659,000	\$340,725,300
Consumer Products and Services	-	\$12,063,200	\$284,204,500
Electronics/Instrumentation	-	\$26,964,500	\$254,721,000
Financial Services	-	\$5,200,000	\$598,210,400
Healthcare Services	-	\$4,575,000	\$338,652,100
Industrial/Energy	\$40,000,000	\$73,377,000	\$519,344,800
IT Services	\$5,000,000	\$58,560,100	\$714,984,900
Media and Entertainment	-	\$66,477,000	\$763,334,800
Medical Devices and Equipment	\$8,822,200	\$104,612,600	\$1,456,008,800
Networking and Equipment	-	\$106,185,000	\$1,179,400,300
Retailing/Distribution	-	\$900,000	\$212,537,800
Semiconductors	\$1,000,000	\$163,025,100	\$1,333,973,200
Software	\$13,662,000	\$455,506,700	\$3,535,257,600
Telecommunications	-	\$168,535,200	\$1,647,160,100
Total Venture Capital Investment	\$68,484,200	\$1,648,569,300	\$16,309,859,100

Source: PriceWaterhouseCoopers MoneyTree Survey; calculations by the UMass Donahue Institute, 2005.

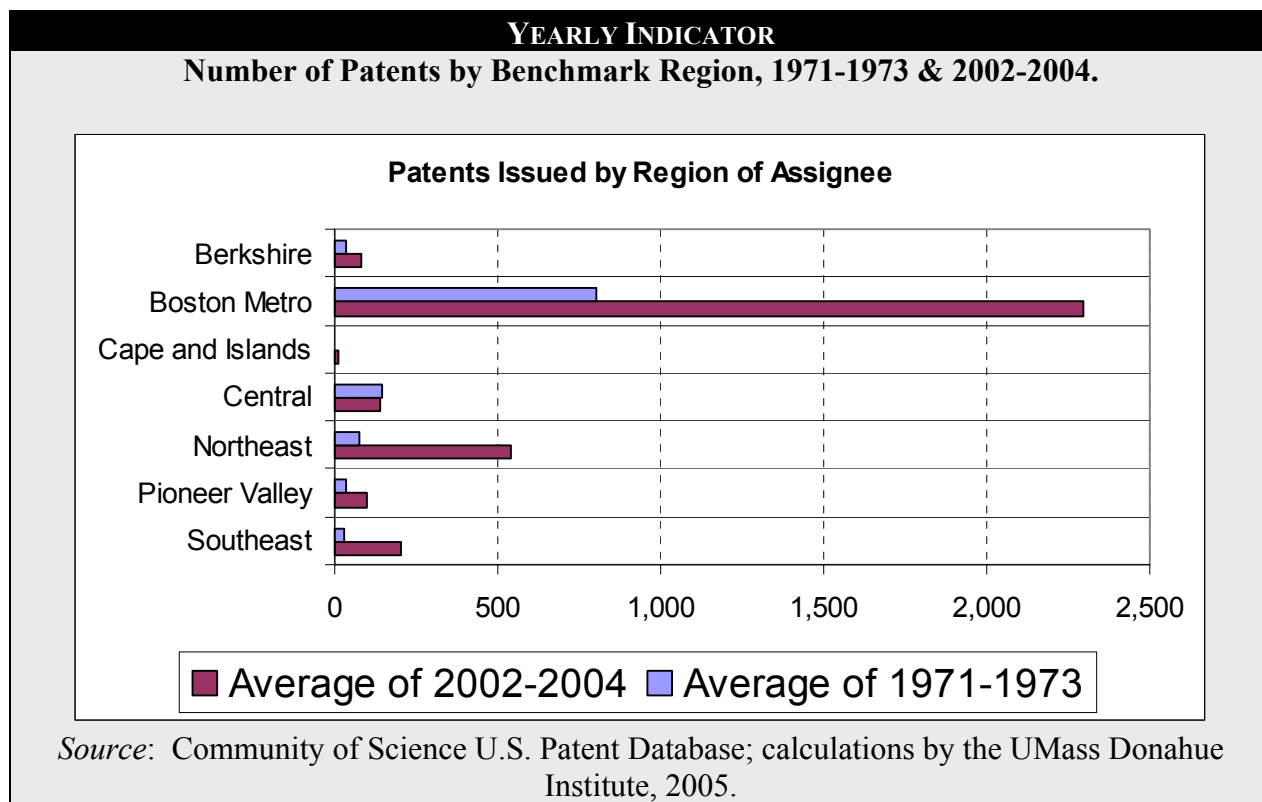
The Central region is the third-largest recipient of venture capital funding in Massachusetts, and receives investment in several different industries. In the first three quarters of 2005, the region received 4.2 percent of all venture capital funding in the state, while the Northeast region received 14 percent and the Boston Metro received the lion's share of 81.5 percent. The Central region attracts a proportional amount of venture capital funding, based on its size. Overall, 0.42 percent of all 2005 venture capital funding in the U.S. was invested in the Central region, which is slightly more than its population share of one-quarter of one percent of population in the nation.

Patents

Why It's Important

The grant of a patent represents official recognition of the development of a unique process, machine or product by the United States government. As such, the aggregate number of patents granted to inventors in a region is an excellent indicator of the level of innovation. A large number of patents is a direct measure of strong innovative performance. Patent diversity is the concentration of patents by company, an important indicator of the dispersion of knowledge workers and financial resources at the level of the firm in a region. In principle, a region with only one or two large firms receiving numerous patents is in a less competitive or dynamic position than a region with many patent-holders. Diverse regions have many innovative companies competing to bring products to market and attract the most talented employees. A less diverse region is reliant on the success of a relatively few actors in the marketplace for employment and investment.

Regional Status



The Central region is the only region in the Commonwealth to receive fewer patents in 2002-04 than it received in 1971-73. While the number of patents issued to Massachusetts organizations or individuals has more than tripled from the early 1970's to today, the Central region saw a decline from an average of 147 patents per year to an average of 140 patents per year. Even so, the region received more patents than three other regions in the state.

YEARLY INDICATOR

Concentration of Patents by Largest Recipient, 1971-1973 & 2002-2004.

Benchmark Region	Average in 1971-1973		Average in 2002-2004	
	Percent of Patents held by largest patent receiver	Largest Receiver	Percent of Patents held by largest patent receiver	Largest Receiver
Berkshire	81%	Sprague Electric Company	86%	General Electric Company
Boston Metro	14%	Polaroid Corporation	7%	Raytheon Company
Cape and Islands	72%	Packaging Industries Incorporated	21%	Excel Switching Corporation
Central	37%	American Optical Corporation	16%	American Superconductor Corporation
Northeast	14%	GTE Sylvania Incorporated	9%	Osram Sylvania Inc
Pioneer Valley	11%	AMBAC Industries Incorporated	33%	Spalding Sports Worldwide Inc
Southeast	13%	Alden Research Foundation	43%	Acushnet Company
State Total	10%	Polaroid Corporation	5%	Raytheon Company

Source: Community of Science U.S. Patent Database; calculations by the UMass Donahue Institute, 2005.

While the number of patents has not increased over time, the concentration of patents in one company has sharply decreased. This is an important indicator of the dispersion of technical innovation within the region. The largest receiver of patents in 1971-73 was the American Optical Corporation, which received 37 percent of all patents in the region. By 2002-04, the largest assignee had become the American Superconductor Corporation, which received only 16 percent of all patents issued in the region.

YEARLY INDICATOR

Top Ten Patent Receiving Companies in MA, 1971-1973 & 2002-2004.

Rank	1971-1973		2002-2004	
	Company	Benchmark region	Company	Benchmark region
1	Polaroid Corporation	Boston Metro	Raytheon Company	Boston Metro
2	Raytheon Company	Boston Metro	M.I.T.	Boston Metro
3	American Optical Corporation	Central	EMC Corporation	Boston Metro
4	Itek Corporation	Boston Metro	Analog Devices Inc.	Boston Metro
5	Honeywell	Boston Metro	Acushnet Company	Southeast
6	Sprague Electric Company	Berkshire	Millennium Pharmaceuticals	Boston Metro
7	The Gillette Company	Boston Metro	General Electric Company	Berkshire
8	USM Corporation	Boston Metro	General Hospital Corporation	Boston Metro
9	M.I.T.	Boston Metro	Gillette Company	Boston Metro
10	The Kendall Company	Boston Metro	Shiple Company LLC	Boston Metro

Source: Community of Science U.S. Patent Database; calculations by the UMass Donahue Institute, 2005.

Real Estate Conditions

Regional economic development is geographically situated at the intersection of markets for commercial, industrial and residential real estate. As a factor of production, the value, cost and accessibility of commercial, industrial and residential real estate affects the competitiveness of firms seeking suitable land for expansion and the recruitment of qualified labor. Employers in the state tend to cluster close to the core of metropolitan Boston and along major highway routes in eastern Massachusetts. Real estate valuations for Northeast and Boston Metro generally reflect the strong demand for all types of land in those markets. The demand for real estate in regions far from Boston varies significantly.

Residents of Massachusetts confront one of the most expensive housing markets in the United States. Renters, particularly in eastern Massachusetts, face high housing costs and significant barriers of entry to homeownership. The cost of housing, while high, is not evenly distributed throughout the state. Housing costs are generally driven by demand from workers in eastern Massachusetts, with housing demand also strongly affected by the markets for retirement and second homes, particularly in the Berkshires and the Cape and Islands. The cost of housing or office space is typically viewed as a burden to be borne as a consumer good or business cost. However, land development is also an important economic activity in its own right and a major source of wealth creation, employment, and investment in Massachusetts.

High housing costs most deeply impact households with low and moderate incomes. The Commonwealth of Massachusetts, through state programs and state Chapter 40B, has set a high priority on the creation of affordable housing opportunities in communities throughout the state. However, new housing starts are typically a function of the economy as mediated through local planning and state and federal incentives. Regions with favorable real estate investment climates are most likely to be able to leverage private resources to create new housing opportunities.

The indicators in this section offer multiple perspectives on the interaction between economic growth, real estate development and housing markets in Massachusetts. The time-series analysis of the average assessed value of industrial and commercial properties serves as a proxy for market demand for these property-types. Numerous state and federal agencies produce data profiling housing costs and residential real estate development. This section includes data from the U.S. Bureau of the Census, U.S. Department of Housing and Urban Development and the Massachusetts Department of Housing and Community Development. Taken whole, the indicators provide benchmarks for regional performance as a location for investment, growth and homes for Massachusetts residents at all ranges of incomes and life stages.

Real Estate Conditions: Housing Supply

Change in Residential Parcels by Type of Building, 1995 to 2005

Why It's Important

Changes in residential parcel counts – typically through new construction or reclassification of property usage (condominium conversion) – provide a snapshot of the state's progress meeting the housing needs of its residents. Massachusetts has experienced steady growth in the availability of new single-family homes, the primary dwelling of homeowners in the state. Renters typically live in multi-unit buildings and apartment buildings; first-time homeowners often live in condominiums and duplexes. Policymakers are challenged to provide housing opportunities in all Massachusetts regions, given the conversion of apartments to condominiums and barriers to production of new affordable housing units. This indicator provides one measure of regional progress in meeting the state's diverse housing needs.

Regional Status

From 1995 to 2005, the Central region experienced the third highest net increase in residential parcels of any region in the state. The increase in housing units was concentrated entirely in single-family homes and condominiums. The region experienced a net loss of 460 multi-family parcels and 7 apartment parcels, most likely apartment buildings with multiple housing units. The increased number of single-family homes and condominiums is unlikely to surprise residents of the Central region. However, the net loss of multi-family units and apartments is an important indicator of stress on the region's rental housing stock.

YEARLY INDICATOR						
Change in Residential Parcel Counts by Region and Type of Building, 1995 to 2005						
Region	Single-Family	Multi-Family	Condos	Apts.	Misc. Residential	Total
Berkshire	2,270	-240	214	-105	140	2,279
Boston Metro	21,001	-2,065	24,106	-217	129	42,954
Cape & Islands	13,546	312	1,983	111	2,202	18,154
Central	24,535	-460	3,363	-7	-97	27,334
Northeast	16,851	-292	5,627	-180	-33	21,973
Pioneer Valley	9,736	-151	1,024	57	76	10,742
Southeast	27,275	639	3,355	121	-233	31,157
Massachusetts	115,214	-2,257	39,672	-220	2,184	154,593

Source: Division of Local Services, Mass. Dept. of Revenue, 2005.

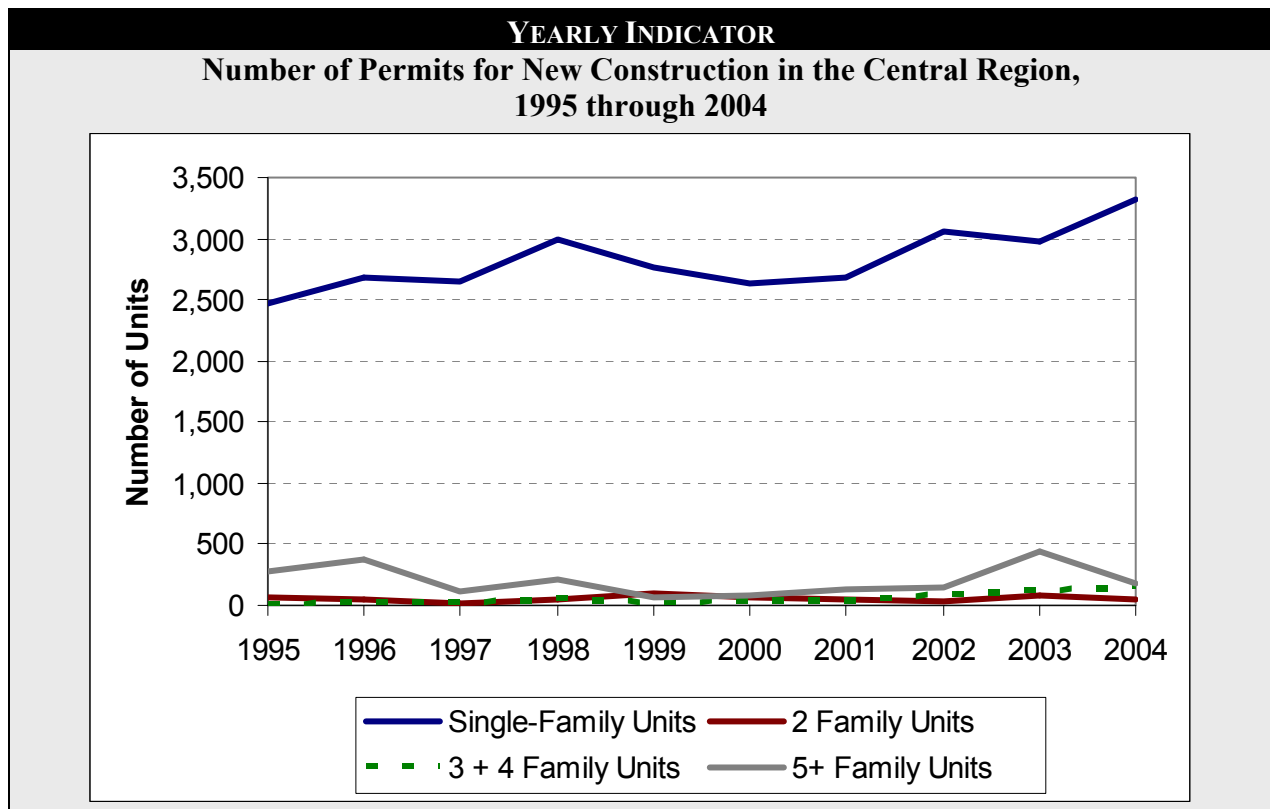
Number of Permits for New Construction

Why It's Important

A time-series of the number of permits for new construction is the best measure of the actual production of new housing units. Housing construction is also a significant source of employment and economic activity. These data allow for the analysis of regional residential development patterns. Outside of the Interstate 495 beltway, some of the new construction of single-family homes is the result of increased demand for second homes. In Boston Metro, construction of multi-unit buildings includes luxury apartments as well as affordable housing units.

Regional Status

Since 1995, the Central region has experienced steady growth in construction of new single-family homes. The region has experienced modest growth in the construction of multi-family housing units. Given that the previous indicator showed a net loss in apartment buildings since 1995, it is most likely that the majority of the region's new multi-family housing units were in condominiums.



Source: U.S. Bureau of the Census, Building Permit Estimate Program, 2005.

Supply of Chapter 40B Units by municipality

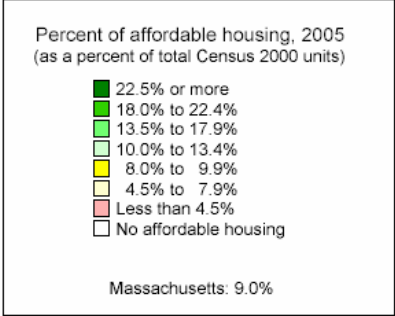
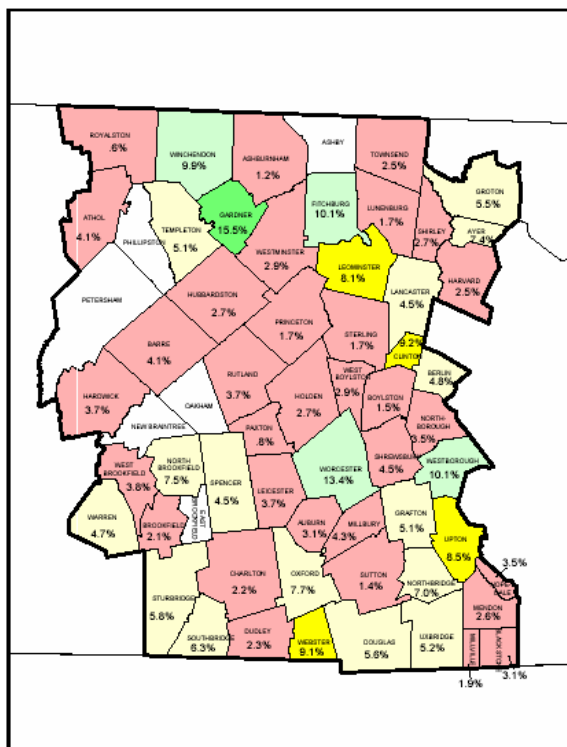
Why It's Important

Massachusetts state law Chapter 40B requires that a minimum of 10 percent of all housing units in a community must be permanently affordable. Under federal guidelines, affordable housing is priced at a level that is accessible to households earning 80 percent or less of an area's median income (AMI). An adequate supply of affordable housing ensures that households at all income levels can reside in their community, regardless of whether the households include low-income workers, young families or senior citizens. The availability of adequate affordable housing to low-income families affects both the individual family and the economy alike. A lack of affordable housing limits the ability of low-income workers to live in region in which they work, which can increase the cost of labor and create negative externalities such as traffic congestion or reduced utilization of healthcare.

Regional Status

As with many predominantly rural regions in the state, a considerable majority of the towns in the Central region failed to meet the state requirement of 10 percent affordable housing units. In 2005, 7.6 percent of the region's housing stock was certified as affordable by the state. The majority of the region's affordable housing is concentrated in the region's cities.

YEARLY INDICATOR



Source: D.H.C.D., 2005. Prepared by the Massachusetts State Data Center, UMass Donahue Institute

Real Estate Conditions: Housing Affordability

Housing Affordability Problems by Income and Household

Why It's Important

Housing affordability has complex implications for regional growth and prosperity, which vary based on whom the housing is intended to shelter. For elderly residents, whether renter or homeowner, high housing costs can significantly drain resources from other basic needs. Low and moderate income households may experience a barrier to homeownership or find other life opportunities diminished. Households at higher incomes may find that high housing costs reduce the desirability of living in the state. The U.S. Department of Housing and Urban Development publishes town-level data of households with high housing costs by income and type of household in 1999. Though the data are relatively old, they provide a reliable baseline for understanding housing affordability challenges at the regional level.

Regional Status

HISTORICAL INDICATOR				
Percentage of Households with High Housing Costs (> 30% of income) in the Central Region, 1999				
Very Low Income	Central		Massachusetts	
	Renters	Owners	Renters	Owners
Elderly Households	56.8%	77.7%	54.1%	80.7%
Family Households	74.9%	84.5%	72.3%	82.6%
All Other Households	69.6%	75.5%	66.2%	76.6%
Total	66.4%	78.9%	63.9%	80.5%

Low Income	Central		Massachusetts	
	Renters	Owners	Renters	Owners
Elderly Households	47.8%	39.3%	48.9%	43.8%
Family Households	46.0%	63.9%	51.0%	65.5%
All Other Households	49.9%	65.0%	57.7%	65.5%
Total	47.7%	51.3%	53.9%	54.4%

Middle and Above	Central		Massachusetts	
	Renters	Owners	Renters	Owners
Elderly Households	8.3%	6.9%	11.9%	8.6%
Family Households	0.7%	8.5%	3.0%	10.9%
All Other Households	1.6%	16.9%	6.7%	18.4%
Total	1.7%	9.3%	5.4%	11.5%

Very Low Income: With income < 30% of the area's median income
 Low Income: With income > 30% but < 80% of the area's median income
 Middle and Above: With income > 80% of the area's median income

Source: CHAS Data, State of the Cities Database, U.S. Dept. of Housing and Urban Development; calculations by UMass Donahue Institute, 2005.

As would be expected, many of the Central region's very low income and low income households faced significant housing affordability challenges in 1999. However, when viewed in comparison to the state, the region faced a less significant housing affordability crisis than the state. The region is significantly more affordable to those households earning 80 percent of the median household income or above. As more data becomes available, it will be important to understand how the recent real estate boom (2000 to 2005) has affected affordability in the region.

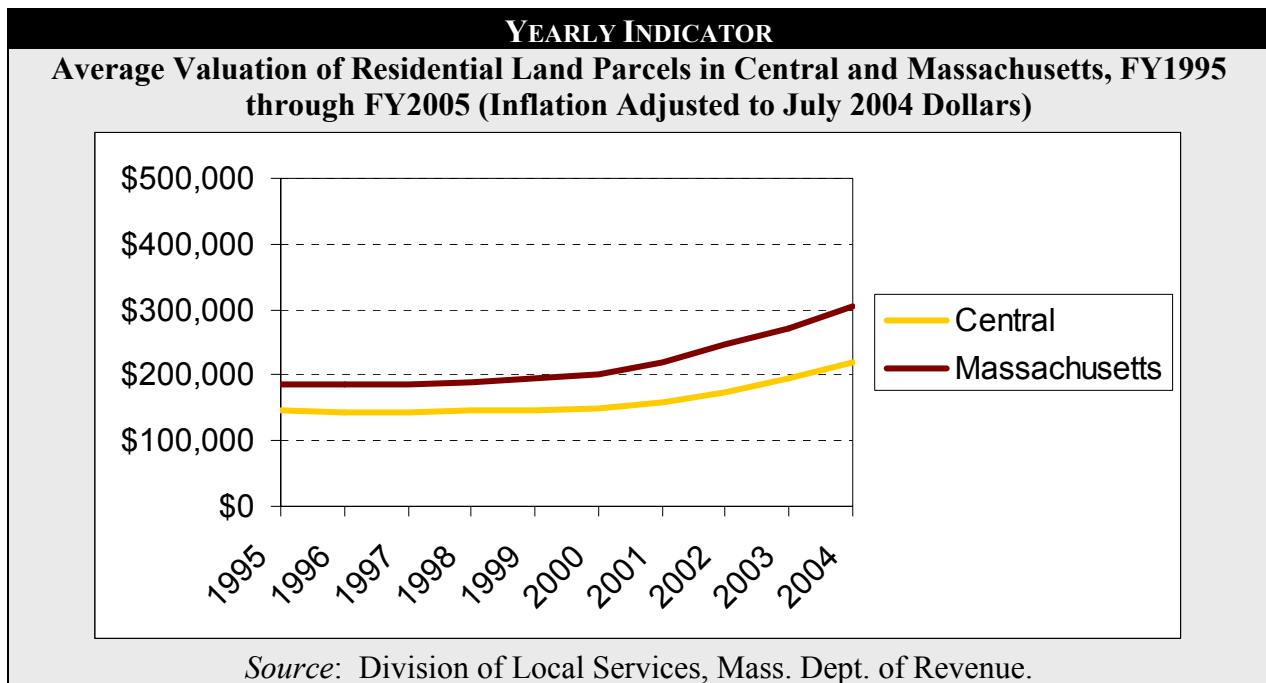
Real Estate Conditions: Residential Land Values

Average Assessed Value of Single Family Homes

Why It's Important

A time-series of the average assessed value of real residential property, adjusted for inflation, provides an indicator of economic growth and wealth creation at the regional level. In Massachusetts, property is assessed at the town level at the full-market value each year. Housing has a dual economic function in the state's economy: it is primarily a form of shelter for workers and families who contribute to the prosperity and quality of life of their communities. Home ownership is also the most significant means of wealth creation and intergenerational transfer in the United States. Regions with higher assessed home values are, by definition, wealthier regions than those with lower average values.

Regional Status



The Central region experienced relatively little growth in assessed property values from 1995 to 2000. Since 2000, the assessed value of properties has increased at a rate slightly slower than the state. After adjusting for inflation, the average assessed value of homes in the Central region increased by 49 percent from 2000 to 2004. In FY2004, the region contained 12.6 percent of all single-family housing units in the Commonwealth; the housing units had 9.1 percent of the total value of single-family properties in the state.

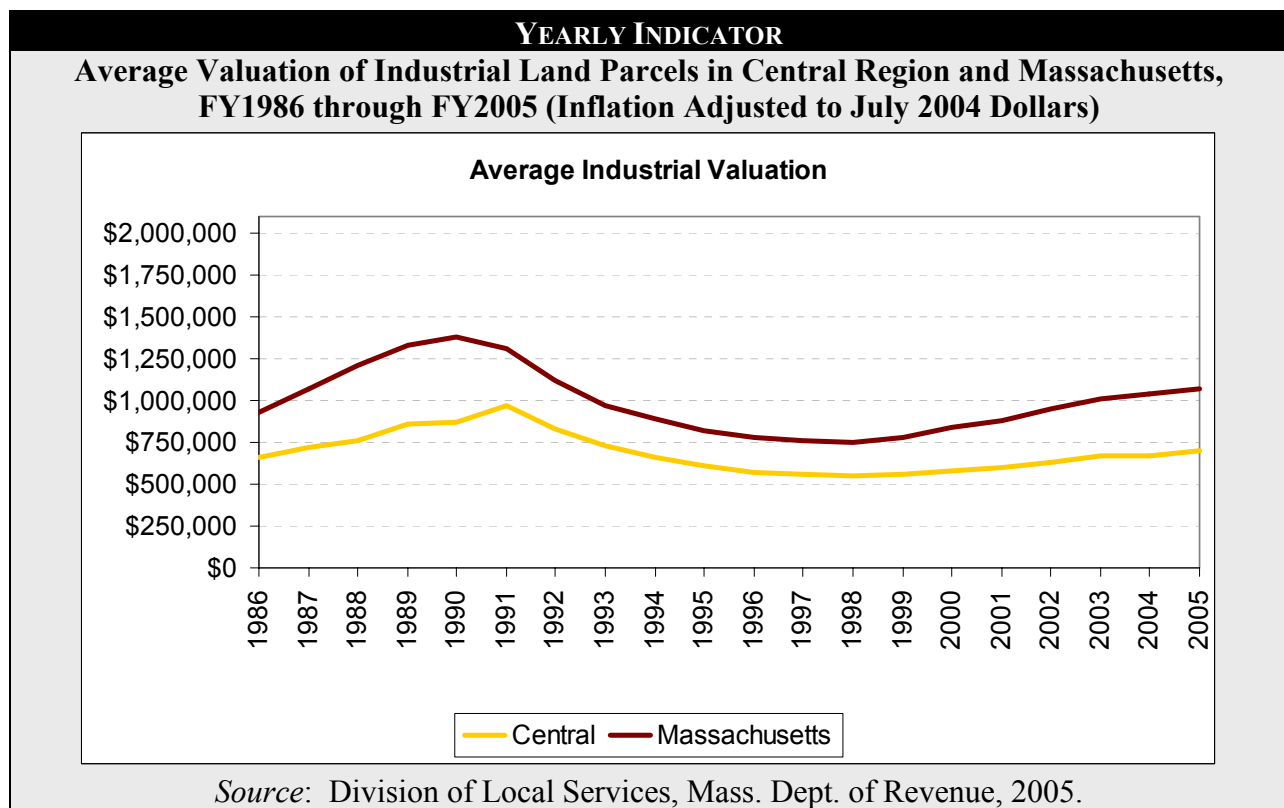
Real Estate Conditions: Commercial and Industrial Land Values

Average Assessed Value of Industrial and Commercial Land Parcels

Why It's Important

This time-series of the average assessed value of real industrial and commercial property, adjusted for inflation, provides an indicator of economic growth through changes in the demand for types of non-residential property at the regional level. In Massachusetts, property is assessed at the town level at the full-market value each year. Fluctuations in average assessed values indirectly reflect changes in the fortunes of the regional economy (through demand for space), while also providing direct insight into the performance of the regional real estate market. As with residential real estate, commercial and industrial properties are both usable goods and sources of investment income and wealth.

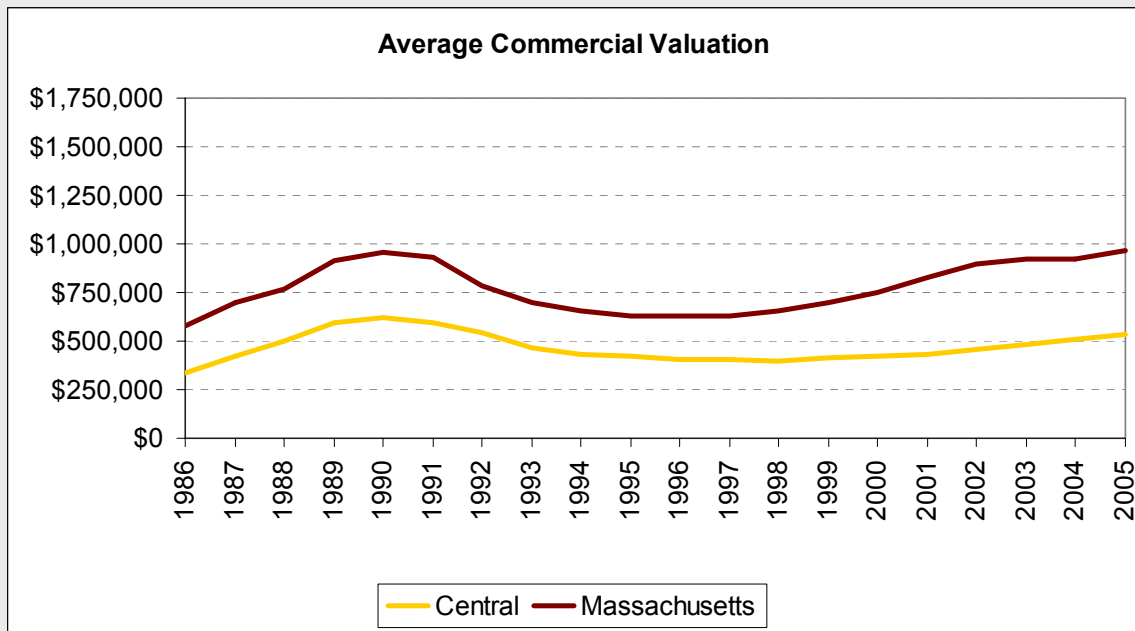
Regional Status



The assessed value of the Central region's industrial parcels reflects the impact of state business cycles on the value of land; however, since 1999 the region's industrial parcels have grown in value at a slightly slower rate than the state. The Central region is home to 15.4 percent of the state's industrial parcels, but has only 10 percent of the total value of industrial parcels in the state.

YEARLY INDICATOR

Average Valuation of Commercial Land Parcels in Central Region and Massachusetts, FY1986 through FY2005 (Inflation Adjusted to July 2004 Dollars)



Source: Division of Local Services, Mass. Dept. of Revenue, 2005.

The assessed values of commercial properties in the Central region closely mirror the state, though the overall value of properties in the Central region is significantly lower. The region has 11 percent of the state's commercial parcels but only 6 percent of the total assessed value. Adjusted for inflation, the value of commercial property in the Central region only returned to 1992 levels in FY 2004.

Demographic and Labor Market Conditions

The people who live in Massachusetts' seven benchmark regions are the primary sources and beneficiaries of regional development and prosperity. The regions' population, whether longtime residents or recent immigrants, contribute to economic growth through their creativity, hard work, and entrepreneurial spirit. The economic potential of a region is indicated in part by the size of the working-age population and its education level. New labor market entrants, principally in the form of immigrants and young adults, are necessary to replace recent retirees and working-age residents who move outside the region.

More adult residents in Massachusetts and the nation have bachelor's degrees than in any previous era. Currently, Massachusetts can boast the highest percentage of adults age 25 and over with bachelor's degrees of any state in the country. However, educational attainment is not evenly distributed across regions of the state. Recent reports, including the UMass Donahue Institute/MassINC report *Mass: migration* (2003) and the *MassBenchmarks* article "Migrants and the Massachusetts Economy: New Challenges and Questions" (Volume 6: Issue 4, 2004) document the challenge that Massachusetts faces maintaining a sufficient base of skilled labor in the state. Traditional social indicators such as drop-out rates, college plans or educational attainment, have a clear economic dimension in an era in which all children are not only valued but, in fact, may be needed to contribute to the state's prosperity.

The indicators in this section are intended to provide a portrait of current regional conditions and economic potential as understood through the prism of the residents who live there. U.S. Census data is used to show changes in population, age, and educational attainment. Calculations, based on information from the Internal Revenue Service, are used to track domestic in-and-out migration trends in each region of the state. Particular attention is paid to the future pipeline of skilled labor as reflected in drop-out rates and the future plans of high school seniors (using data provided by the Massachusetts Department of Education). Income trends are also examined. Median household incomes are a standard and readily understood means of comparing regional prosperity. The percentage of persons in poverty and the share of students eligible for the free and reduced school lunch program both provide insight into the extent to which prosperity is shared within each region and across the Commonwealth.

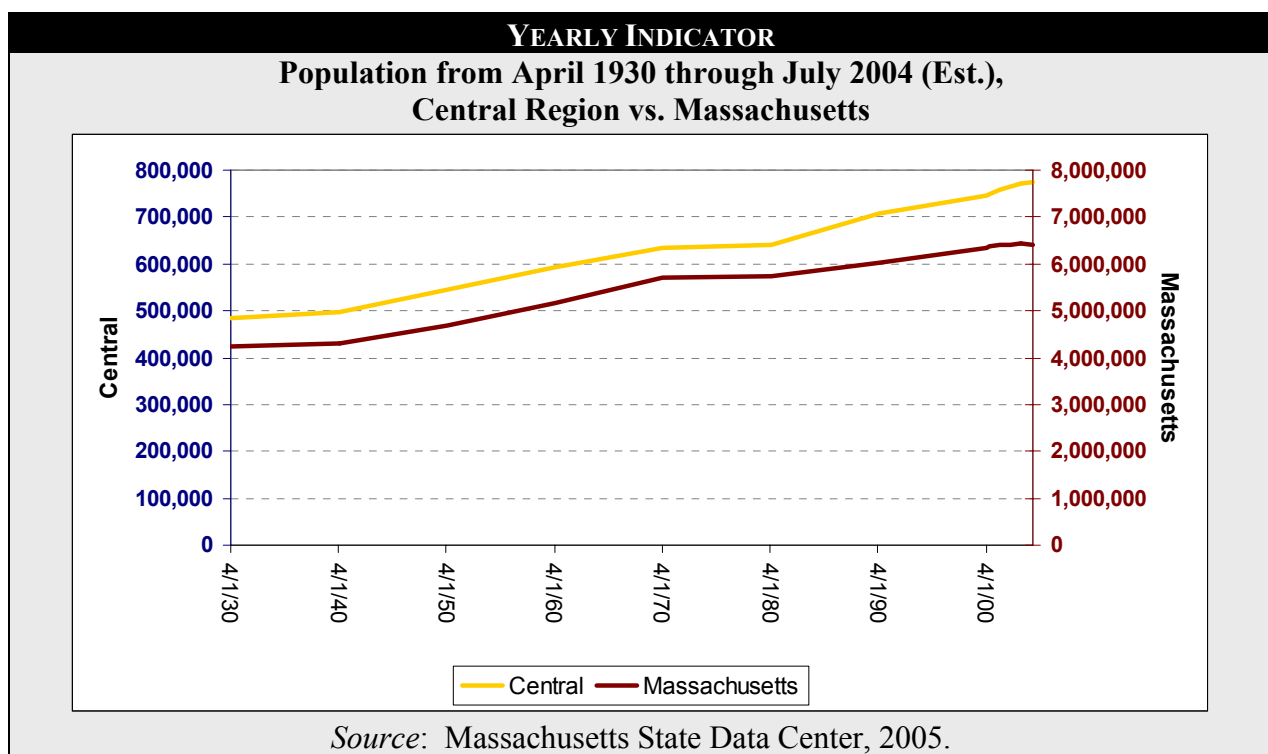
Demographic and Labor Market Conditions: Population Growth

Change in Total Population

Why It's Important

Population trends provide a window into the potential future workforce, the attractiveness of the region to outsiders, and the ability of the region to hold onto its population. Population can be tracked annually through estimates provided by the U.S. Bureau of the Census; the distribution of population by age is available through analysis of the decennial U.S. Census.

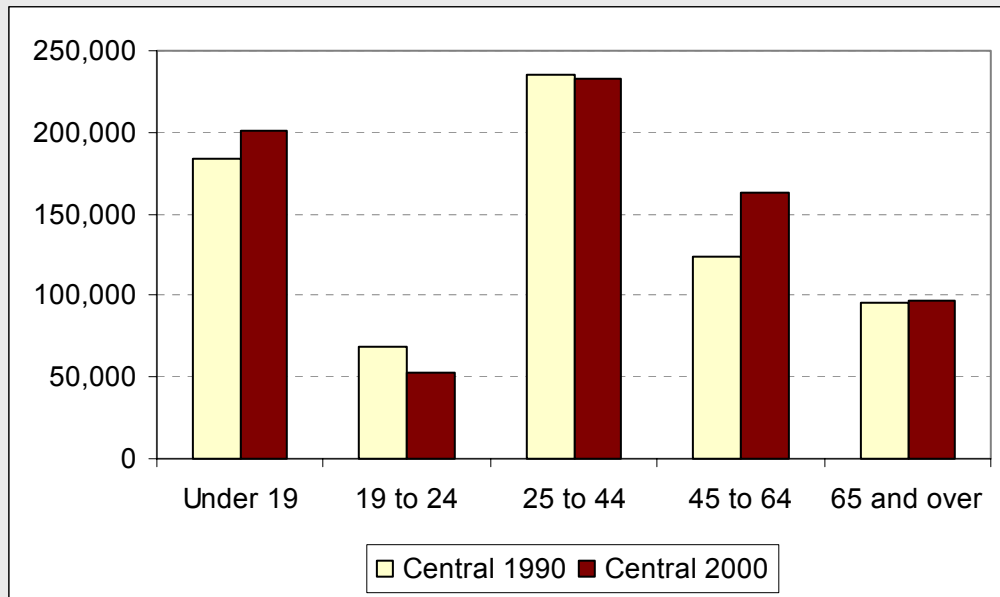
Regional Status



From 1980 to 2000, the Central region experienced steady population growth. That growth leveled-off from 2000 to 2004. Following the aging of the baby boom population, the fastest growing age cohort in the Central region from 1990 to 2000 was between the ages of 45 and 64 years old. However, the region's loss of population in the 25-44 year old age cohort, presents an economic challenge to the region.

HISTORICAL INDICATOR

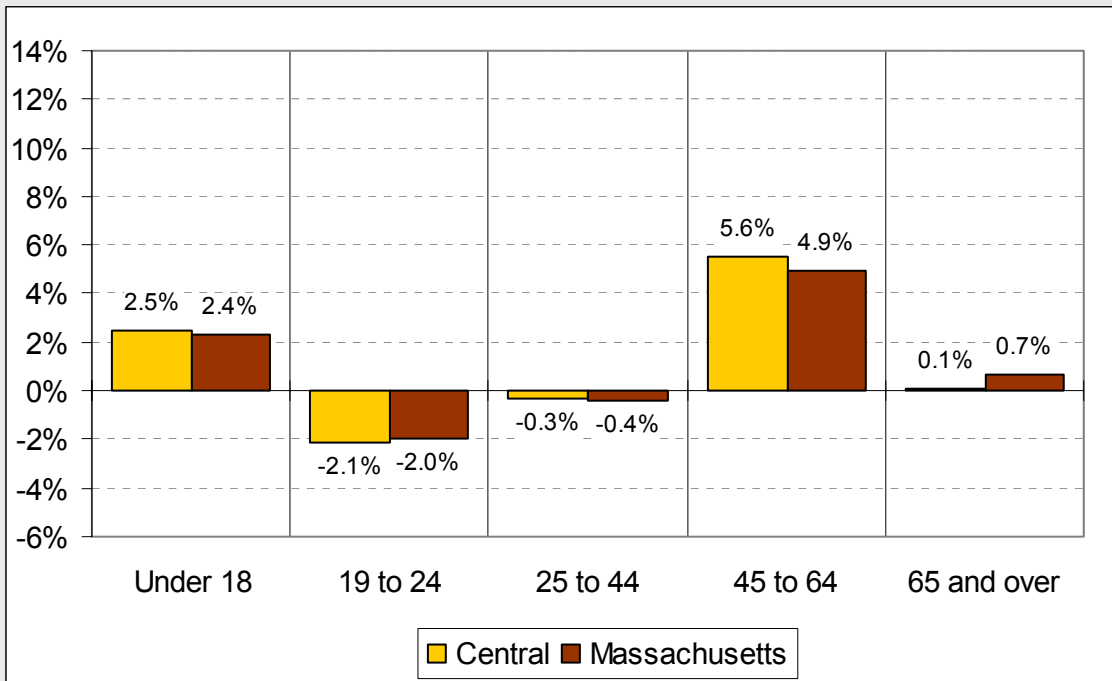
Central Region Population by Age, 1990 and 2000



Source: Decennial Census, U.S. Census, 1990 and 2000.

HISTORICAL INDICATOR

Change in Population by Age in Central Region and MA, 1990 to 2000



Source: Decennial Census, U.S. Census, 1990 and 2000.

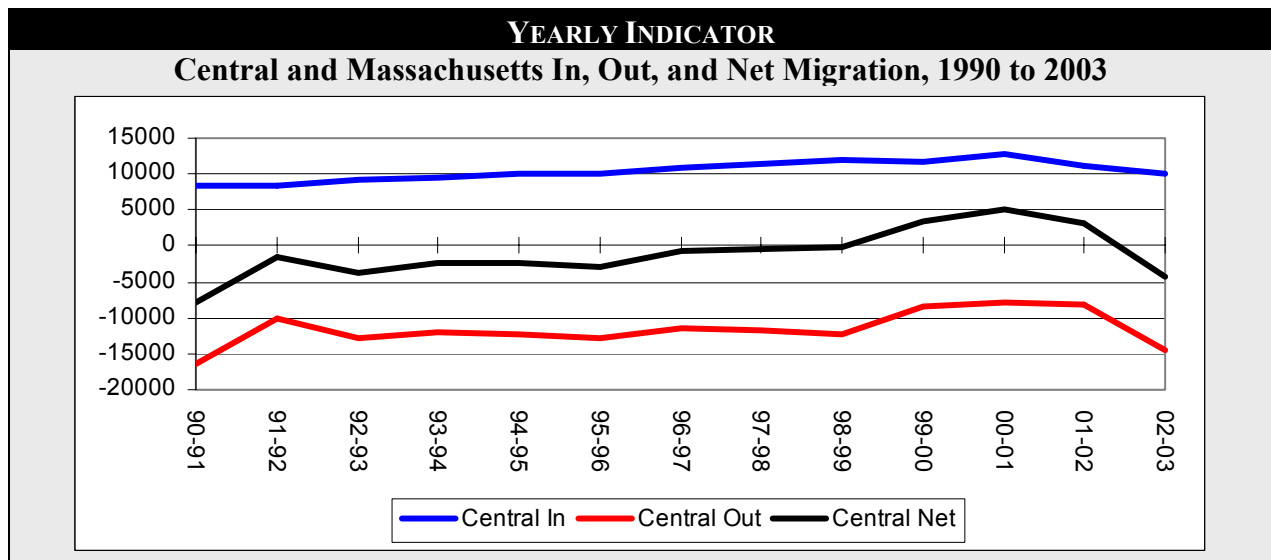
Net Domestic Migration

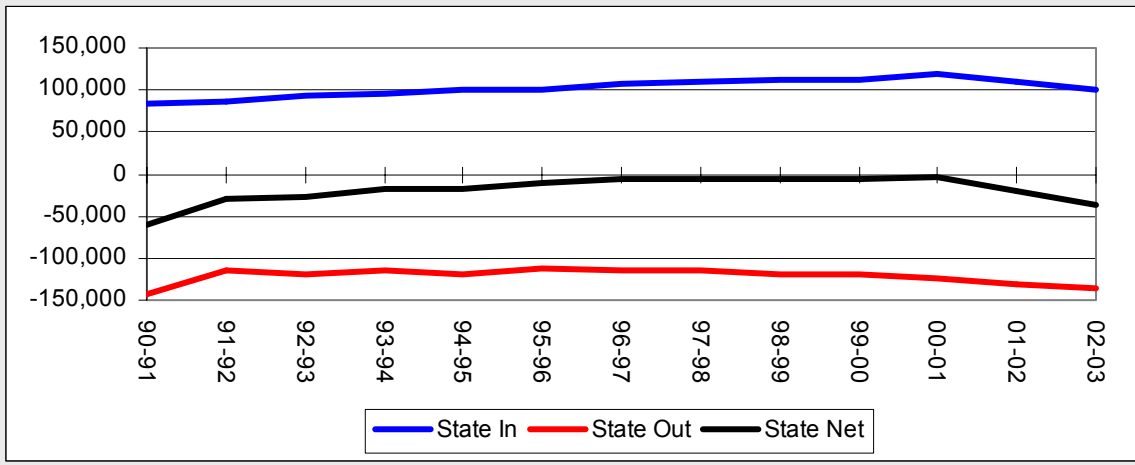
Why It's Important

Tracking migration patterns over time on a regional basis offers insight into whether a region is maintaining a sufficient base of skilled labor. As an economic principle, a region with strong in-migration will have a more sizable labor pool from which to draw qualified workers and entrepreneurial talent. A region with out-migration or a stable population may have difficulty supporting the need of companies for skilled employees. Net migration patterns also reflect the extent to which the region is successful in providing the quality of life and amenities necessary to attract and retain residents.

Regional Status

The Central region is one of the few regions in the state that experienced net positive domestic migration from 1996 to 2002. This suggests that the region's employers and relatively inexpensive housing stock served as a magnet during the recent economic boom. The region experienced an out-migration of residents from 1990 to 1996. The net out-migration of residents has returned since 2002.





Source: Internal Revenue Service, County to County Migration Statistics, 2005.

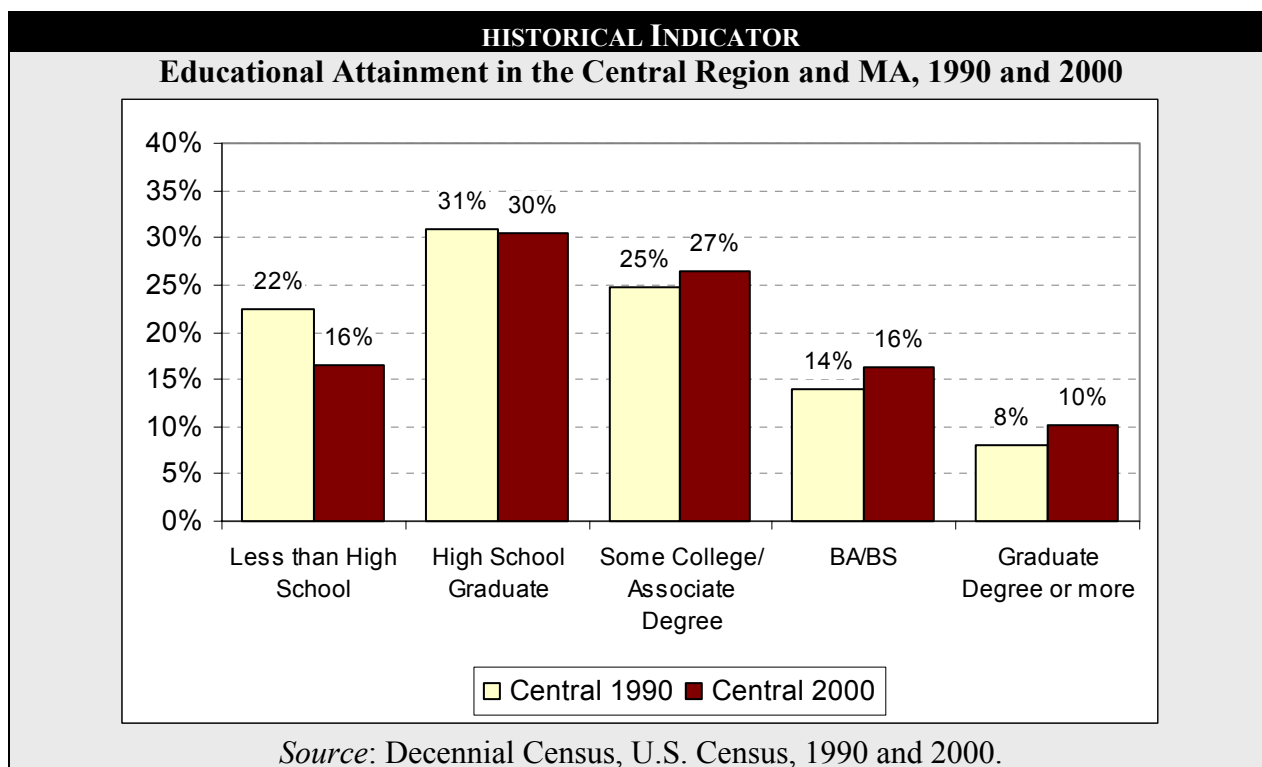
Demographic and Labor Market Conditions: Skilled Labor Pipeline

Educational Attainment

Why It's Important

Well-paying work in Massachusetts' contemporary economy typically requires a minimum of an associate degree: most good jobs require a B.A. or graduate-level education. Given the importance of education to individual career prospects, it should be no surprise that regional education levels are an important indicator of a region's baseline ability to absorb or support high-value added, export-oriented economic growth. Low education levels (relative to other regions or states) represent a lost opportunity to the region as well as the individuals precluded from gaining entry into occupations with good pay and career ladders.

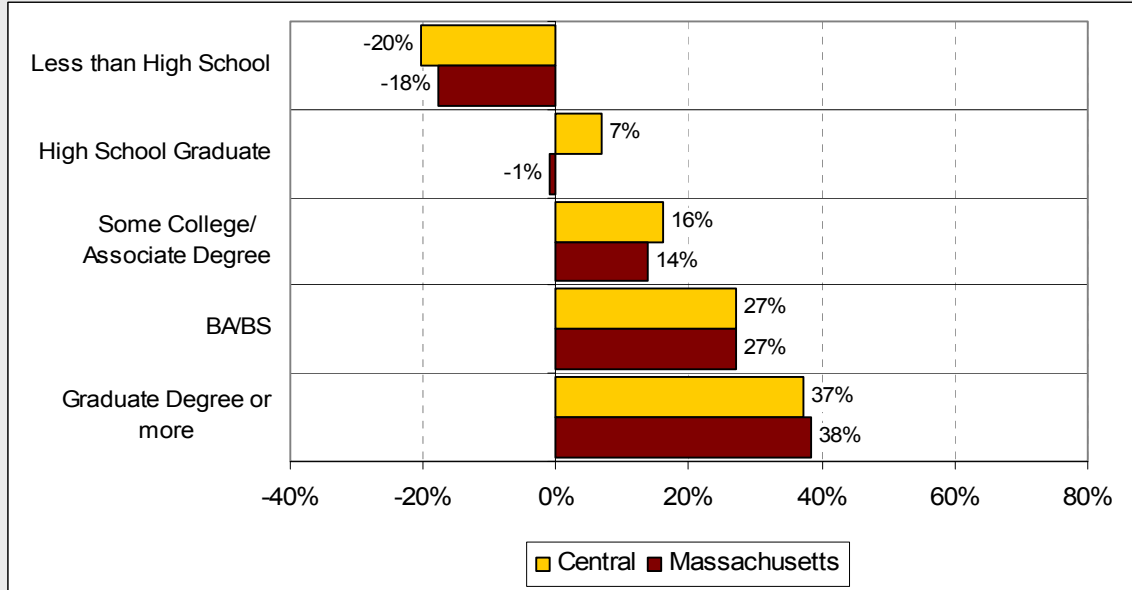
Regional Status



In 2000, a smaller percentage of the Central region's adults aged 25 years and above had at least some college than in the state. In 2000, fifty-three percent of the region's residents over the age of 25 had some postsecondary education compared to 58 percent in the state. The number of college graduates in the region grew between 1990 and 2000; however, the rate of change in the region is not high enough to close the region's overall gap when compared to the state.

HISTORICAL INDICATOR

Change in Educational Attainment in the Central Region and MA, 1990 and 2000



Source: Decennial Census, U.S. Census, 1990 and 2000.

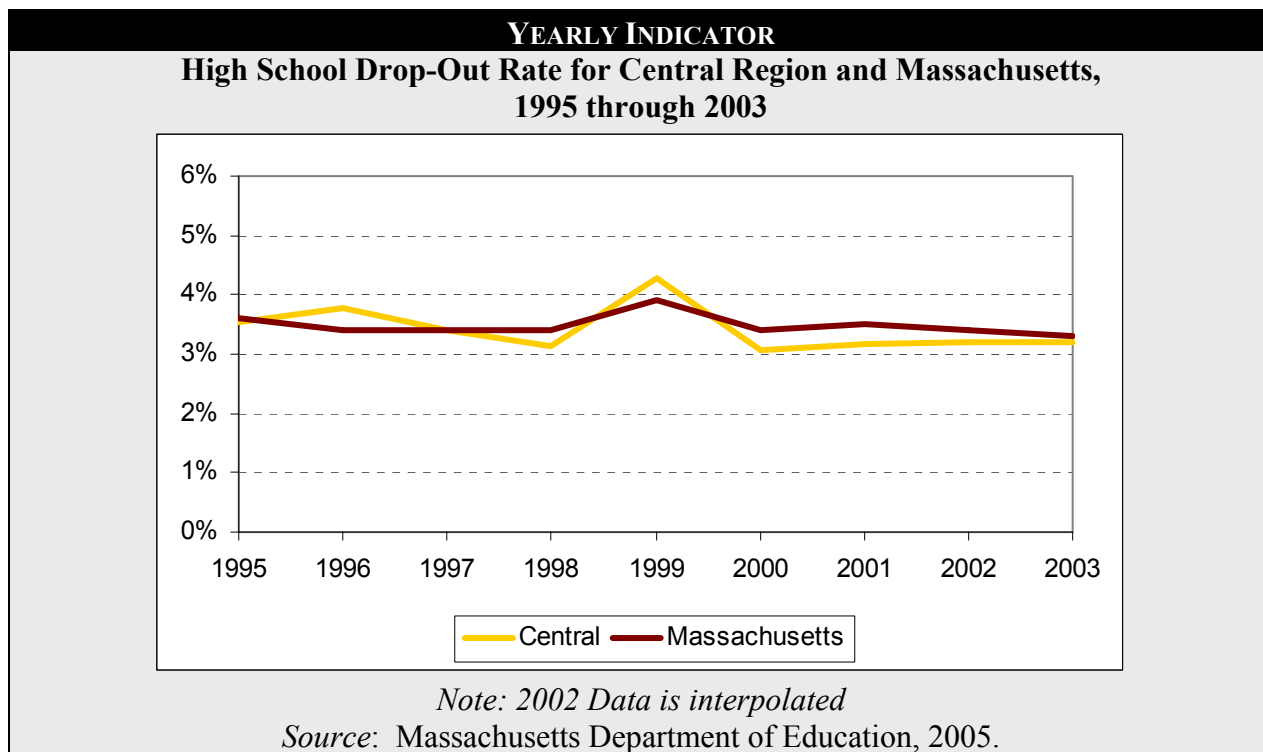
Dropout Rate

Why It's Important

High school drop-out rates and college plans of graduating seniors (reported below) are sound indicators of how well regions are able to prepare all of its youth for college and post-graduate career opportunities. A region that suffers from high dropout rates is reducing the pool of well-educated workers and growing the number of residents who will likely need remedial education and job counseling services.

Regional Status

The drop-out rate in the Central region is generally comparable to the state average. The drop-out rate peaked at 4.2 percent in 1999 and has since fallen to a rate of 3.2 percent.



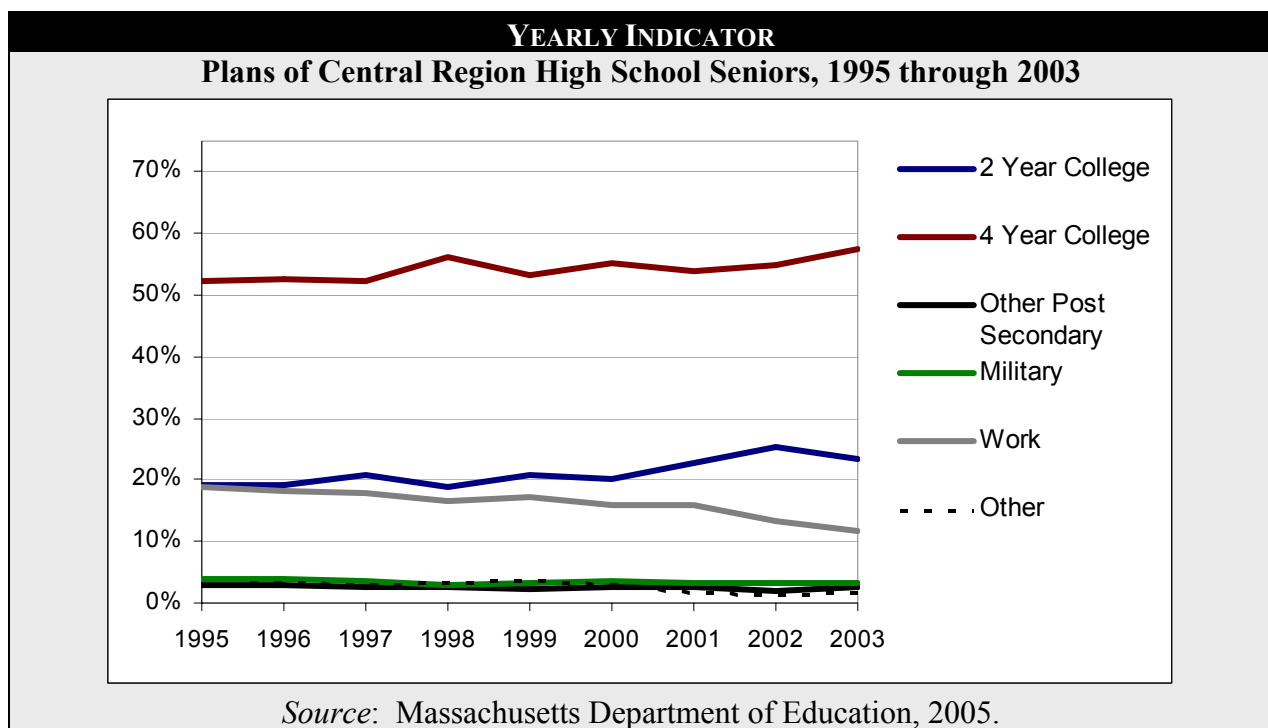
Plans of High School Seniors

Why It's Important

School districts report the results of surveys of graduating high seniors to the Massachusetts Department of Education. The aspirations of young adults in the region provide insight into the near-term availability and future skill level of the workforce. It also indicates how well a region prepares its youth for career choices.

Regional Status

In 2003 in the Central region, 57 percent of graduating seniors reported that they will attend a public or private four-year college or university upon graduation from high school. This is a slightly lower rate than the state's rate, which was 59 percent. If two-year college and other post-secondary schools are included, the total percentage of high-school seniors choosing to further their educations was 81 percent in 2003 compared to 83 percent of seniors in the state.



Demographic and Labor Market Conditions: Income Growth

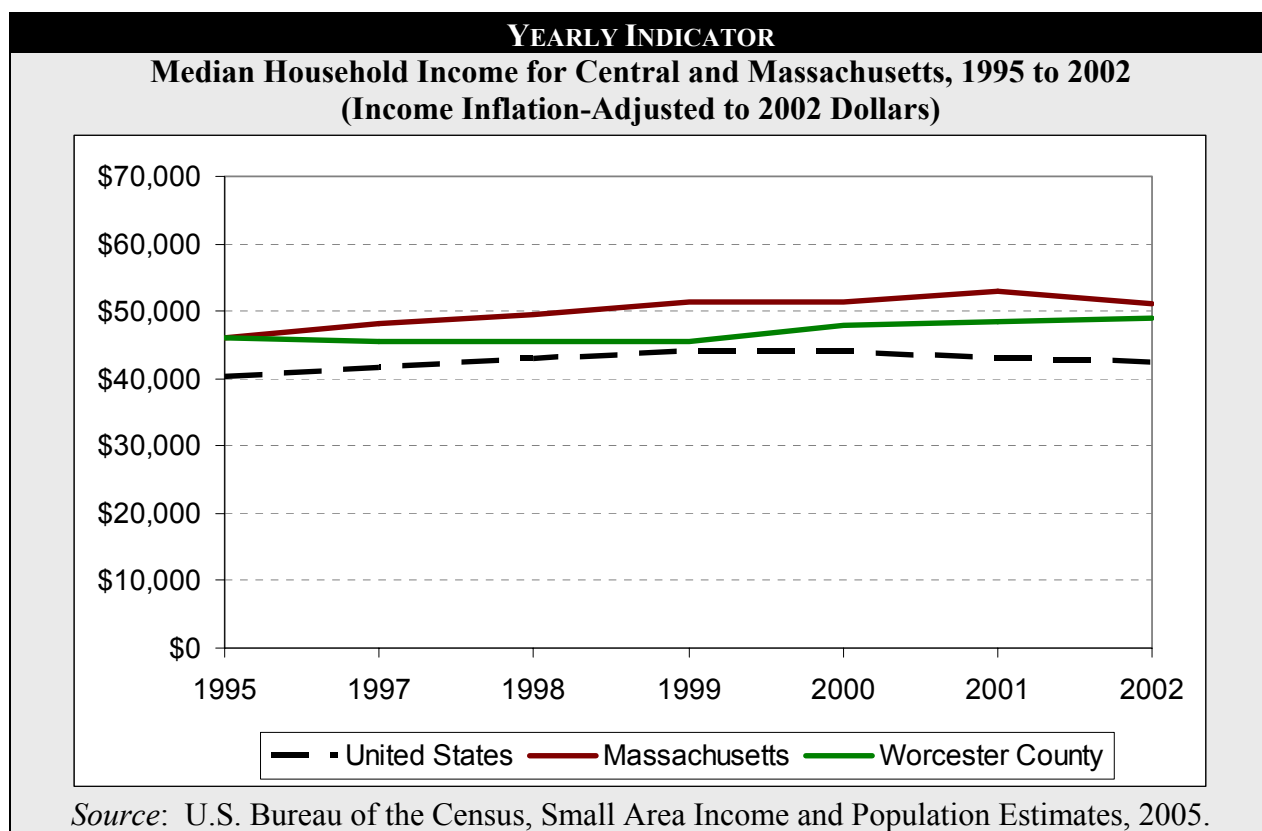
Household Income Growth

Why It's Important

A time-series of median household income, adjusted to reflect 2002 dollars, is a solid indicator of the level of household prosperity in the region. Household income is not adjusted or weighted to reflect the differential cost of living in counties in Massachusetts or between Massachusetts and the nation. In principle, a dollar of income in a high-cost region (such as Massachusetts) is worth less, adjusted for the higher cost of basic goods, than a dollar in a low-cost region. However, beyond a certain basic level of necessary goods or services, a region with high median incomes is in an absolute sense more prosperous than a region with lower median incomes.

Regional Status

Adjusted for inflation, the median household income of residents in Worcester County diverged from the state after 1995, falling close to the national median household income in 1999. Since 1999, the median household income in Worcester County has increased steadily. As of 2002, the median household income in Worcester County was slightly less than that of the state and was significantly higher than the national median household income. This is an undeniably positive trend for the Central region, even though median household incomes for the state have fallen slightly since 2001.



Demographic and Labor Market Conditions: Income Inequality

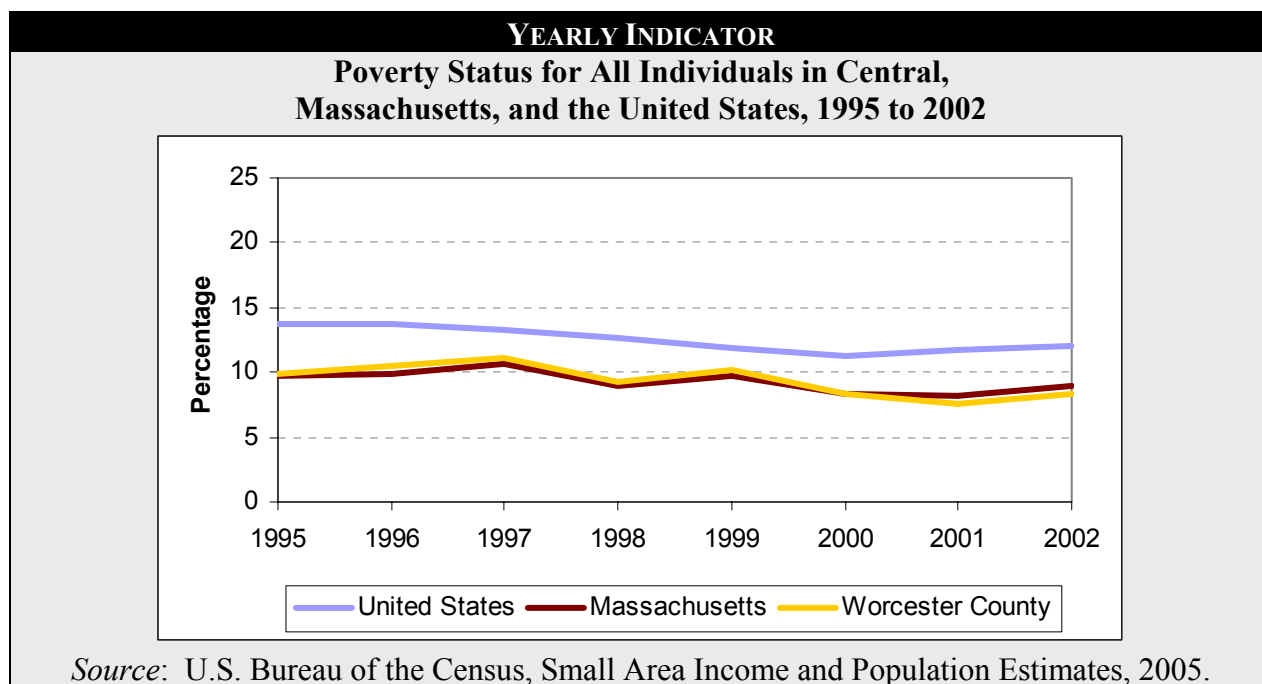
Number of Persons in Poverty

Why It's Important

In 2004, the U.S. Bureau of the Census defined the poverty threshold for a family of four as a total household income of \$19,157. In Massachusetts in 2004, a family of four at the poverty line would have an income that is 28 percent of the estimated median family income of \$68,563. A time-series of the poverty rate provides a fundamental indicator of income inequality within a region. The number of children below the poverty level is an especially important measure, as these children are more likely to lack basic services and miss essential life opportunities that lead to career opportunities, personal fulfillment and contributions to the local economy.

Regional Status

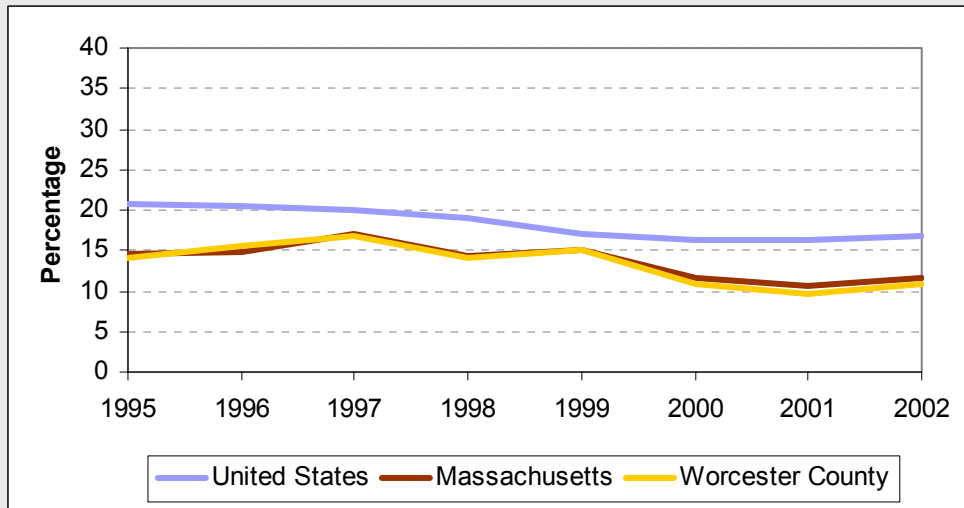
The poverty rate in the Central region was almost identical to the state rate from 1995 to 2002. The region has a significantly lower poverty rate than the nation.



The statistics on children in poverty in the region also follow the state trend very closely. There was a marked decrease in the number of children in poverty in the region from 1999 through 2002, but even with that decrease, about one in 10 children in the region lived in poverty.

YEARLY INDICATOR

**Poverty Status for Children Aged 0-17 in Central,
Massachusetts, and the United States, 1995 to 2002**



Source: U.S. Bureau of the Census, Small Area Income and Population Estimates, 2005.

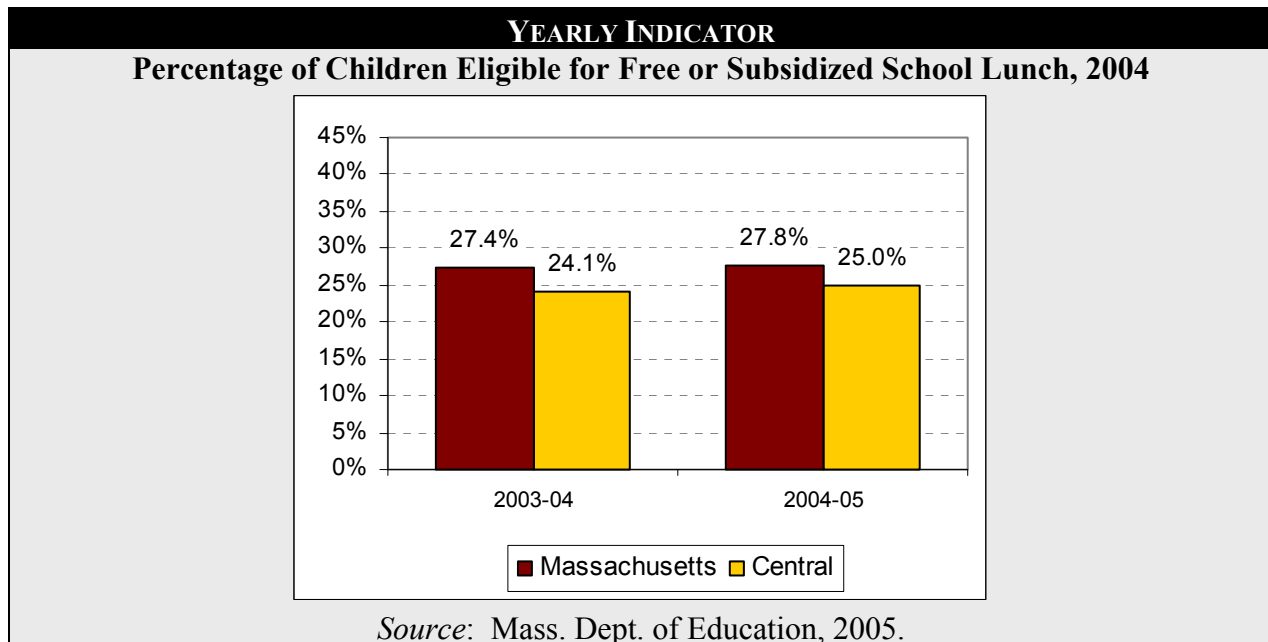
Share of Students Eligible for the Free and Reduced School Lunch Program

Why It's Important

Measures of free and subsidized school lunch eligibility are an excellent indicator of the concentration of low-income youth in a region. The federal poverty level is too low to properly assess the number or proportion of children from low-income families. Federal school lunch subsidies cover children from families with incomes up to 185 percent of the poverty level. In addition, school lunch eligibility rates are most likely to underreport the actual need that exists in communities. Families must apply each year to receive the benefit and some eligible families decline to apply for the program due to the perceived stigma attached to program participation. A review of data from the Massachusetts Department of Education shows that low-income families are concentrated in the state's cities, with a high proportion of low-income students in many rural communities. However, significant variation exists between regions in the state.

Regional Status

Overall, there are a smaller proportion of children eligible for subsidized school lunches in the Central region than in the state as a whole. Most of these children are located in the Worcester public school system, which is home to 44 percent of all program participants in the region and whose district rate of students eligible for assistance was 61 percent in 2005. Except for two charter schools in the region, no other school district in the region has a student population with more than 60 percent low income students.



Appendices

Methodology

Estimated Employment and Unemployment Counts

Method: The percentage and number of persons unemployed regionally is presented by year, with comparable data for the state and the nation.

Data Source: Local Area Unemployment Statistics (LAUS), as provided by the Massachusetts Division of Unemployment Assistance.

Employment by Industry

Method: The economic sector definitions used in this project are based on the work of Farrant, Moss and Tilly in the UMass Donahue Institute report, *Knowledge Sector Powerhouse* report (2001). Massachusetts industries were organized by export cluster, with a residual category for all other establishments, as follows: Advanced Technology Manufacturing; Arts, Tourism & Recreation; Financial Services; Healthcare; Knowledge Creation; Traditional Manufacturing; and, All Other Sectors. The *Knowledge Sector Powerhouse* sectors were organized according to the Standard Industrial Classification (SIC) definitions. This work reorganizes the sectors according to the North American Industrial Classification System (NAICS). Due to data suppression, the NAICS-based export clusters are organized and presented at the ‘three-digit’ level. The NAICS sector definitions appear on the next page.

Data Source: Quarterly Census of Employment and Wages (ES-202), as provided by the Massachusetts Division of Unemployment Assistance.

Location Quotients by Industry

Method: A location quotient is a ratio of ratios, which means that the share of employment in an industry sector in a region is compared to the share of that sector’s employment in the comparison geography (typically the state or nation). The industry sectors defined above were used for these calculations.

Data Source: Quarterly Census of Employment and Wages (ES-202), as provided by the Massachusetts Division of Unemployment Assistance.

Analysis of Export Clusters

Method: The export cluster analysis presents each sector’s share of total employment in the region. The export cluster definitions are defined in the entry “Employment by Industry.”

Data Source: Quarterly Census of Employment and Wages (ES-202), as provided by the Massachusetts Division of Unemployment Assistance.

Venture Capital Funding

Method: Venture capital funding received by companies in each region was measured and compared using information provided by the PriceWaterhouseCooper MoneyTree survey. Data is updated quarterly; no time-series data is available.

Data Source: PriceWaterhouseCooper MoneyTree survey.

EDA Regional Benchmarking Export Cluster Definitions

Export Cluster**Advanced Technology Manufacturing**

NAICS 325 Chemical manufacturing
NAICS 334 Computer and electronic product manufacturing

Arts, Tourism & Recreation

NAICS 487 Scenic and sightseeing transportation
NAICS 711 Performing arts and spectator sports
NAICS 712 Museums, historical sites, zoos, and parks
NAICS 713 Amusements, gambling, and recreation
NAICS 721 Accommodation
NAICS 722 Food services and drinking places

Financial Services

NAICS 521 Monetary authorities - central bank
NAICS 522 Credit intermediation and related activities
NAICS 523 Securities, commodity contracts, investments
NAICS 524 Insurance carriers and related activities
NAICS 525 Funds, trusts, and other financial vehicles

Healthcare

NAICS 621 Ambulatory health care services
NAICS 622 Hospitals
NAICS 623 Nursing and residential care facilities
NAICS 624 Social assistance

Knowledge Creation

NAICS 511 Publishing industries, except Internet
NAICS 512 Motion picture and sound recording industries
NAICS 515 Broadcasting, except Internet
NAICS 516 Internet publishing and broadcasting
NAICS 517 Telecommunications
NAICS 518 ISPs, search portals, and data processing
NAICS 519 Other information services
NAICS 541 Professional and technical services
NAICS 551 Management of companies and enterprises
NAICS 611 Educational services
NAICS 813 Membership associations and organizations

Traditional Manufacturing

NAICS 311 Food manufacturing
NAICS 312 Beverage and tobacco product manufacturing
NAICS 313 Textile mills
NAICS 314 Textile product mills
NAICS 315 Apparel manufacturing
NAICS 316 Leather and allied product manufacturing
NAICS 321 Wood product manufacturing
NAICS 322 Paper manufacturing
NAICS 323 Printing and related support activities
NAICS 324 Petroleum and coal products manufacturing
NAICS 326 Plastics and rubber products manufacturing
NAICS 327 Nonmetallic mineral product manufacturing
NAICS 331 Primary metal manufacturing
NAICS 332 Fabricated metal product manufacturing
NAICS 333 Machinery manufacturing
NAICS 335 Electrical equipment and appliance mfg.
NAICS 336 Transportation equipment manufacturing
NAICS 337 Furniture and related product manufacturing
NAICS 339 Miscellaneous manufacturing

All Other Sectors

NAICS 111 Crop production
NAICS 112 Animal production
NAICS 113 Forestry and logging
NAICS 114 Fishing, hunting and trapping
NAICS 115 Agriculture and forestry support activities
NAICS 211 Oil and gas extraction
NAICS 212 Mining, except oil and gas
NAICS 213 Support activities for mining
NAICS 221 Utilities
NAICS 236 Construction of buildings
NAICS 237 Heavy and civil engineering construction
NAICS 238 Specialty trade contractors
NAICS 423 Merchant wholesalers, durable goods
NAICS 424 Merchant wholesalers, nondurable goods
NAICS 425 Electronic markets and agents and brokers
NAICS 441 Motor vehicle and parts dealers
NAICS 442 Furniture and home furnishings stores
NAICS 443 Electronics and appliance stores
NAICS 444 Building material and garden supply stores
NAICS 445 Food and beverage stores
NAICS 446 Health and personal care stores
NAICS 447 Gasoline stations
NAICS 448 Clothing and clothing accessories stores
NAICS 451 Sporting goods, hobby, book and music stores
NAICS 452 General merchandise stores
NAICS 453 Miscellaneous store retailers
NAICS 454 Nonstore retailers
NAICS 481 Air transportation
NAICS 482 Rail transportation
NAICS 483 Water transportation
NAICS 484 Truck transportation
NAICS 485 Transit and ground passenger transportation
NAICS 486 Pipeline transportation
NAICS 488 Support activities for transportation
NAICS 491 Postal service
NAICS 492 Couriers and messengers
NAICS 493 Warehousing and storage
NAICS 531 Real estate
NAICS 532 Rental and leasing services
NAICS 533 Lessors of nonfinancial intangible assets
NAICS 561 Administrative and support services
NAICS 562 Waste management and remediation services
NAICS 811 Repair and maintenance
NAICS 812 Personal and laundry services
NAICS 814 Private households
NAICS 999 Unclassified

Patents

Method: The number of patents issued to individuals or organizations in each region were compared over time. To remove yearly variations, three-year periods are used and averaged to create a yearly average number of patents. Two time periods were chosen, 1971 through 1973 (the earliest time period in the database) and 2002 through 2004. Unique individuals or organizations receiving patents (assignees) were identified through name and location. For patents with multiple assignees, the first assignee from Massachusetts was chosen as the primary recipient.

Data Source: Community of Science U.S. Patents Database.

Residential Parcels by Building Type

Method: Annual data are aggregated from town-level information for parcels of different building types: single-family homes, multi-unit buildings (2-4 units), apartments (5 or more units), condominiums, and residual “other” category.

Data Source: Decennial Census; U.S. Bureau of the Census.

Number of Permits for New Construction

Method: Data on building permits is collected and aggregated to the regional level by type of unit.

Data Source: U.S. Bureau of the Census; Division of Local Services, Massachusetts Department of Revenue.

Supply of Chapter 40B-Defined Affordable Housing

Method: The map graphically displays (via ArcView, and ESRI product) town-level data provided by the Massachusetts Department of Housing and Community Development. Chapter 40B housing units are those affordable housing units in municipalities that are certified as conforming to state guidelines for affordability (available at the Mass.gov website). The municipal affordable housing percentages are based on the number of housing units reported in the 2000 Decennial Census of the U.S. Bureau of the Census.

Data source: Massachusetts Department of Housing and Community Development.

Housing Affordability Problems by Income and Household

Method: Municipal-level data from the Comprehensive Housing Affordability Strategy (CHAS) database was summarized at the regional level, with in-house calculations of the regional percentage of households with high housing cost burdens (in excess of 30 percent of income). The CHAS data is based on information from the 2000 Census.

Data Source: Comprehensive Housing Affordability Strategy (CHAS) database, State of the Cities Database website, U.S. Department of Housing and Urban Development.

Average Assessed Value of Single-Family Homes

Method: The average assessed valuation for all single-family home residential property parcels is calculated for each region. As the dataset was incomplete for some years in certain municipalities, the missing data was interpolated from the available data.

Data source: Division of Local Services, Massachusetts Department of Revenue.

Average Assessed Value of Industrial and Commercial Properties

Method: The average assessed valuation for all industrial and commercial property parcels was calculated for each region for each fiscal year, starting in FY1986. As the data was incomplete for certain municipalities in certain years, missing data was imputed using the average yearly change of previous and subsequent years.

Data source: Division of Local Services, Massachusetts Department of Revenue.

Population Change

Method: The Massachusetts State Data Center prepared charts comparing population by region to the state and the nation. The Center used population data from the Decennial Census from 1930 to 2000, as well as recent population estimates from the Bureau's Population Estimates Program.

Data Source: The Decennial Census and the Population Estimates Program.; U.S. Bureau of the Census.

In- and Out-Migration

Method: The IRS collects yearly data on domestic migration, which can be used to track the yearly in- and out-flows of U.S. residents and to discover if the net flow is positive or negative. Because the data is available on the county level, Benchmarks regions that conform to county boundaries can be readily summarized; regions with overlapping counties cannot be exactly represented by the data. Specifically, the Greater Boston and Northeast regions must be measured together as large parts of Middlesex County are claimed by both regions.

Data Source: County to County Migration Data; Internal Revenue Service.

Educational Attainment

Method: Data from the 1990 and 2000 Decennial Census on educational attainment for persons over 25 years old was combined into the education categories of "less than high school," high school," "less than bachelor's degree," bachelor's degree," and "master's degree or higher." The change in numbers and percentages of each category is compared from 1990 to 2000.

Data Source: 1990 and 2000 Decennial Census; U.S. Bureau of the Census.

School Dropout Numbers and Rates

Method: Data published by the Mass. Dept. of Education on high school dropout rates ("grade retention reports") is aggregated to the regional level and tracked yearly.

Data Source: Grade Retention Reports; Massachusetts Department of Education.

Plans of Graduating Seniors

Method: Survey data of graduating high school students is aggregated to the regional level and tracked yearly in five categories for future plans: college, other post-secondary education, military, work, and other/no data.

Data Source: Plans of High School Graduates Survey; Massachusetts Department of Education.

Median Household Income Growth by County

Method: The estimated median income for each county from 1995 through 2002 was adjusted for inflation to 2002 levels, using the Boston Area Consumer Price Index for All Urban Consumers (U.S. Bureau of Labor Statistics). This adjusted-data was compared to the state and

national median income. As this data is reported on the county level, some minor geographic differences exist between the standard Benchmarks regions and county lines, and the Greater Boston and Northeast regions must be measured together as large parts of Middlesex County are claimed by both regions.

Data Source: Census Small Area Income and Poverty Estimates (SAIPE), U.S. Bureau of the Census.

Individuals in Poverty

Method: The percentage and number of persons living under the poverty level from 1995 through 2002 was aggregated to the regional level and compared to state and national trends. Two categories of persons were measured: children under 18, and all persons.

Data Source: Census Small Area Income and Poverty Estimates (SAIPE), U.S. Bureau of the Census.

Free and Subsidized School Lunch

Method: The number of public school children eligible for the free and subsidized school lunch program was aggregated to the regional level for the years 2003-2004 and 2004-2005. Eligible students as a percentage of all students are reported for the year 2004-2005.

Data Source: Free and Subsidized School Lunch Program, Massachusetts Department of Education.

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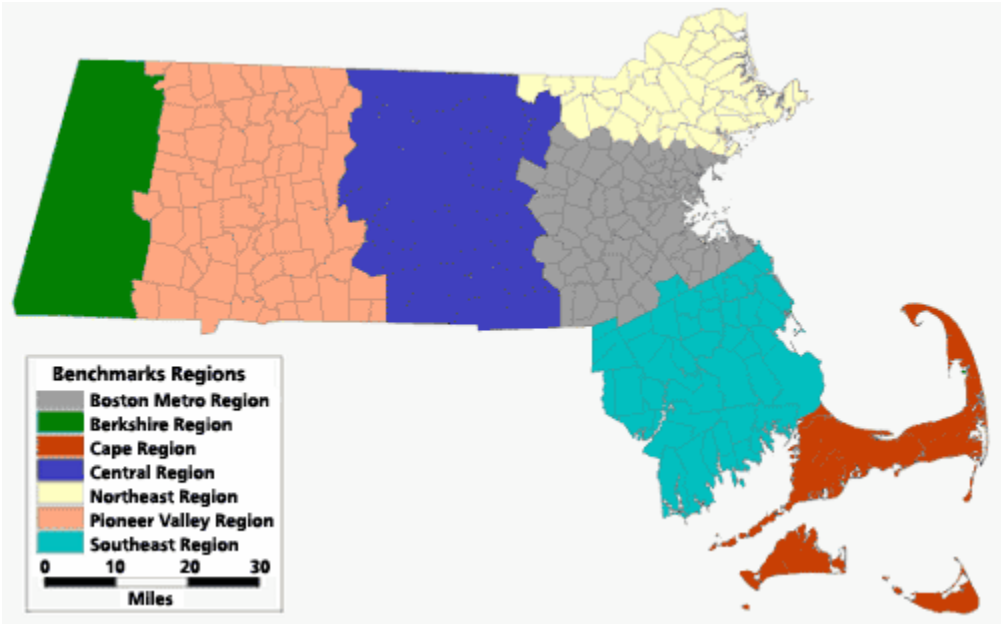
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The Benchmark Regions³



The benchmark regions used in this report were first announced in the second issue of *Massachusetts Benchmarks*, the quarterly economic journal that is published by the University of Massachusetts in cooperation with the Federal Reserve Bank of Boston (Volume 1, Issue 2: 1998). The effort to create coherent regional definitions followed widespread interest in regional analysis generated by the Commonwealth of Massachusetts report, *Choosing to Compete* (1992). The UMass Donahue Institute defined the seven benchmark regions through careful analysis of the geographies used by the Massachusetts Office of Business Development (MOBD) and the state’s Regional Planning Agencies, with modifications based on reviews by regional experts and entities. The seven benchmark regions are: Berkshire, Boston Metro, Cape and Islands, Central, Northeast, Pioneer Valley and Southeast.

In drawing the lines of the benchmark regions, the UMass Donahue Institute sought to form regions that simultaneously 1) make economic sense 2) are easily recognizable 3) have a rich and current set of economic and social data available. The seven regions met those requirements.

The regions are a compromise between economic function and data availability. Each region is constructed using cities and towns as building blocks. In building the definitions, the UMass Donahue Institute considered the numerous federally-designated metropolitan statistical areas (MSA) and surrounding, non-metropolitan labor market areas (LMA). MSAs are established by the U.S. Bureau of the Census following each decennial census. The geographies utilized in the benchmarks analysis were issued by the U.S. Bureau of the Census in 1993.

³ The language and information in this section are adapted from the *Massachusetts Benchmarks* Endnotes article, “Lines on the Map,” featured in *Massachusetts Benchmarks*, Volume 1, Issue 2 (1998).

In 1998, Massachusetts had seven primary metropolitan statistical areas (PMSAs), four MSAs, and ten LMAs representing non-metropolitan areas. These divisions encompassed key cities and adjacent communities with a high degree of economic and social integration. Data, including employment and labor force information, is collected regularly for these statistical areas.

The U.S. Census and Massachusetts Division of Unemployment Assistance (DUA) derived data reported by labor market area or MSA offer important but limited perspectives on regional conditions. A comprehensive regional analysis should also provide insight into land use, demographic and social conditions, educational indicators and transportation conditions. To sift through the multitude of potential indicators requires reviewing the complex web of statistical, political and planning jurisdictions in the state and piecing together the accompanying data.

Three particular political jurisdictions offer rich insight into regional conditions and trends. The primary source of data for the benchmark regions is the state's 351 cities and towns. Cities and towns comprise the basic geographic unit for collecting employment and labor force data. Information on local government expenditures and revenues is also collected and recorded by cities and towns. The second major jurisdiction is the 14 counties of the Massachusetts. Though there are no county governments in Massachusetts, state and federal data of all types is often reported at the county-level.

The final significant political jurisdiction that helps to define the benchmark regions is the thirteen Regional Planning Agencies (RPAs). The RPAs are legally defined as "special state districts" and conform to various regional dynamics including economic networks, employment and commuting patterns, transportation systems, newspaper circulation and natural boundaries. Many of the RPAs collect and maintain unique sets of data for their specific regions.

We are continually discovering new sources of valuable information and searching for ways to make data useful. The lines we've drawn allow us to report this information on a regular basis.

Municipalities by Benchmark Regions

The Berkshire Region:

Town	County	Regional Planning Agency
Adams	Berkshire	Berkshire Regional Planning Commission (BRPC)
Alford	Berkshire	BRPC
Becket	Berkshire	BRPC
Cheshire	Berkshire	BRPC
Clarksburg	Berkshire	BRPC
Dalton	Berkshire	BRPC
Egremont	Berkshire	BRPC
Florida	Berkshire	BRPC
Great Barrington	Berkshire	BRPC
Hancock	Berkshire	BRPC
Hinsdale	Berkshire	BRPC
Lanesborough	Berkshire	BRPC
Lee	Berkshire	BRPC
Lenox	Berkshire	BRPC
Monterey	Berkshire	BRPC
Mt. Washington	Berkshire	BRPC
New Ashford	Berkshire	BRPC
New Marlborough	Berkshire	BRPC
North Adams	Berkshire	BRPC
Otis	Berkshire	BRPC
Peru	Berkshire	BRPC
Pittsfield	Berkshire	BRPC
Richmond	Berkshire	BRPC
Sandisfield	Berkshire	BRPC
Savoy	Berkshire	BRPC
Sheffield	Berkshire	BRPC
Stockbridge	Berkshire	BRPC
Tyringham	Berkshire	BRPC
Washington	Berkshire	BRPC
West Stockbridge	Berkshire	BRPC
Williamstown	Berkshire	BRPC
Windsor	Berkshire	BRPC

The Boston Metro Region:

Town	County	Regional Planning Agency
Acton	Middlesex	Metropolitan Area Planning Council (MAPC)
Arlington	Middlesex	MAPC
Ashland	Middlesex	MAPC
Bedford	Middlesex	MAPC
Bellingham	Norfolk	MAPC
Belmont	Middlesex	MAPC
Bolton	Worcester	MAPC
Boston	Suffolk	MAPC
Boxborough	Middlesex	MAPC

The Boston Metro Region (cont.):

Town	County	Regional Planning Agency
Braintree	Norfolk	MAPC
Brookline	Norfolk	MAPC
Burlington	Middlesex	MAPC
Cambridge	Middlesex	MAPC
Canton	Norfolk	MAPC
Carlisle	Middlesex	MAPC
Chelsea	Suffolk	MAPC
Cohasset	Norfolk	MAPC
Concord	Middlesex	MAPC
Dedham	Norfolk	MAPC
Dover	Norfolk	MAPC
Everett	Middlesex	MAPC
Foxborough	Norfolk	MAPC
Framingham	Middlesex	MAPC
Franklin	Norfolk	MAPC
Hingham	Plymouth	MAPC
Holbrook	Norfolk	MAPC
Holliston	Middlesex	MAPC
Hopkinton	Middlesex	MAPC
Hudson	Middlesex	MAPC
Hull	Plymouth	MAPC
Lexington	Middlesex	MAPC
Lincoln	Middlesex	MAPC
Littleton	Middlesex	MAPC
Lynn	Essex	MAPC
Malden	Middlesex	MAPC
Marlborough	Middlesex	MAPC
Maynard	Middlesex	MAPC
Medfield	Norfolk	MAPC
Medford	Middlesex	MAPC
Medway	Norfolk	MAPC
Melrose	Middlesex	MAPC
Milford	Worcester	MAPC
Millis	Norfolk	MAPC
Milton	Norfolk	MAPC
Nahant	Essex	MAPC
Natick	Middlesex	MAPC
Needham	Norfolk	MAPC
Newton	Middlesex	MAPC
Norfolk	Norfolk	MAPC
Norwood	Norfolk	MAPC
Quincy	Norfolk	MAPC
Randolph	Norfolk	MAPC
Revere	Suffolk	MAPC
Saugus	Essex	MAPC
Sharon	Norfolk	MAPC

The Boston Metro Region (cont.):

Town	County	Regional Planning Agency
Sherborn	Middlesex	MAPC
Somerville	Middlesex	MAPC
Southborough	Worcester	MAPC
Stoneham	Middlesex	MAPC
Stow	Middlesex	MAPC
Sudbury	Middlesex	MAPC
Swampscott	Essex	MAPC
Wakefield	Middlesex	MAPC
Walpole	Norfolk	MAPC
Waltham	Middlesex	MAPC
Watertown	Middlesex	MAPC
Wayland	Middlesex	MAPC
Wellesley	Norfolk	MAPC
Weston	Middlesex	MAPC
Westwood	Norfolk	MAPC
Weymouth	Norfolk	MAPC
Winchester	Middlesex	MAPC
Winthrop	Suffolk	MAPC
Woburn	Middlesex	MAPC
Wrentham	Norfolk	MAPC

The Cape and Islands Region:

Town	County	Regional Planning Agency
Barnstable	Barnstable	Cape Cod Commission (CCC)
Bourne	Barnstable	CCC
Brewster	Barnstable	CCC
Chatham	Barnstable	CCC
Dennis	Barnstable	CCC
Eastham	Barnstable	CCC
Falmouth	Barnstable	CCC
Harwich	Barnstable	CCC
Mashpee	Barnstable	CCC
Orleans	Barnstable	CCC
Provincetown	Barnstable	CCC
Sandwich	Barnstable	CCC
Truro	Barnstable	CCC
Wellfleet	Barnstable	CCC
Yarmouth	Barnstable	CCC
Chilmark	Dukes	Martha's Vineyard Commission (MVC)
Edgartown	Dukes	MVC
Gay Head	Dukes	MVC
Gosnold	Dukes	MVC
Oak Bluffs	Dukes	MVC
Tisbury	Dukes	MVC

The Cape and Islands Region (cont.):

Town	County	Regional Planning Agency
West Tisbury	Dukes	MVC
Nantucket	Nantucket	Nantucket Planning & Economic Development Commission

The Central Region:

Town	County	Regional Planning Agency
Ashburnham	Worcester	Montachusett Regional Planning Commission (MRPC)
Ashby	Middlesex	MRPC
Athol	Worcester	MRPC
Ayer	Middlesex	MRPC
Clinton	Worcester	MRPC
Fitchburg	Worcester	MRPC
Gardner	Worcester	MRPC
Groton	Middlesex	MRPC
Harvard	Worcester	MRPC
Hubbardston	Worcester	MRPC
Lancaster	Worcester	MRPC
Leominster	Worcester	MRPC
Lunenburg	Worcester	MRPC
Petersham	Worcester	MRPC
Phillipston	Worcester	MRPC
Royalston	Worcester	MRPC
Shirley	Middlesex	MRPC
Sterling	Worcester	MRPC
Templeton	Worcester	MRPC
Townsend	Middlesex	MRPC
Westminster	Worcester	MRPC
Winchendon	Worcester	MRPC
Auburn	Worcester	Central Massachusetts Regional Planning Commission (CMRPC)
Barre	Worcester	CMRPC
Berlin	Worcester	CMRPC
Blackstone	Worcester	CMRPC
Boylston	Worcester	CMRPC
Brookfield	Worcester	CMRPC
Charlton	Worcester	CMRPC
Douglas	Worcester	CMRPC
Dudley	Worcester	CMRPC
East Brookfield	Worcester	CMRPC
Grafton	Worcester	CMRPC
Hardwick	Worcester	CMRPC
Holden	Worcester	CMRPC

The Central Region (cont.):

Town	County	Regional Planning Agency
Hopedale	Worcester	CMRPC
Leicester	Worcester	CMRPC
Mendon	Worcester	CMRPC
Millbury	Worcester	CMRPC
Millville	Worcester	CMRPC
New Braintree	Worcester	CMRPC
North Brookfield	Worcester	CMRPC
Northborough	Worcester	CMRPC
Northbridge	Worcester	CMRPC
Oakham	Worcester	CMRPC
Oxford	Worcester	CMRPC
Paxton	Worcester	CMRPC
Princeton	Worcester	CMRPC
Rutland	Worcester	CMRPC
Shrewsbury	Worcester	CMRPC
Southbridge	Worcester	CMRPC
Spencer	Worcester	CMRPC
Sturbridge	Worcester	CMRPC
Sutton	Worcester	CMRPC
Upton	Worcester	CMRPC
Uxbridge	Worcester	CMRPC
Warren	Worcester	CMRPC
Webster	Worcester	CMRPC
West Boylston	Worcester	CMRPC
West Brookfield	Worcester	CMRPC
Westborough	Worcester	CMRPC
Worcester	Worcester	CMRPC

The Northeast Region:

Town	County	Regional Planning Agency
Billerica	Middlesex	Northern Middlesex Council Of Governments (NMCOG)
Chelmsford	Middlesex	NMCOG
Dracut	Middlesex	NMCOG
Dunstable	Middlesex	NMCOG
Lowell	Middlesex	NMCOG
Pepperell	Middlesex	NMCOG
Tewksbury	Middlesex	NMCOG
Tyngsborough	Middlesex	NMCOG
Westford	Middlesex	NMCOG
Amesbury	Essex	Merrimack Valley Planning Commission (MVPC)
Andover	Essex	MVPC
Boxford	Essex	MVPC

The Northeast Region (cont.):

Town	County	Regional Planning Agency
Georgetown	Essex	MVPC
Groveland	Essex	MVPC
Haverhill	Essex	MVPC
Lawrence	Essex	MVPC
Merrimack	Essex	MVPC
Methuen	Essex	MVPC
Newbury	Essex	MVPC
Newburyport	Essex	MVPC
North Andover	Essex	MVPC
Rowley	Essex	MVPC
Salisbury	Essex	MVPC
West Newbury	Essex	MVPC
Beverly	Essex	Metropolitan Area Planning Council (MAPC)
Danvers	Essex	MAPC
Essex	Essex	MAPC
Gloucester	Essex	MAPC
Hamilton	Essex	MAPC
Ipswich	Essex	MAPC
Lynnfield	Essex	MAPC
Manchester	Essex	MAPC
Marblehead	Essex	MAPC
Middleton	Essex	MAPC
North Reading	Middlesex	MAPC
Peabody	Essex	MAPC
Reading	Middlesex	MAPC
Rockport	Essex	MAPC
Salem	Essex	MAPC
Topsfield	Essex	MAPC
Wenham	Essex	MAPC
Wilmington	Middlesex	MAPC

The Pioneer Valley Region:

Town	County	Regional Planning Agency
Ashfield	Franklin	Franklin Council Of Governments (FRCOG)
Bernardston	Franklin	FRCOG
Buckland	Franklin	FRCOG
Charlemont	Franklin	FRCOG
Colrain	Franklin	FRCOG
Conway	Franklin	FRCOG
Deerfield	Franklin	FRCOG
Erving	Franklin	FRCOG
Gill	Franklin	FRCOG
Greenfield	Franklin	FRCOG
Hawley	Franklin	FRCOG

The Pioneer Valley Region (cont.):

Town	County	Regional Planning Agency
Heath	Franklin	FRCOG
Leverett	Franklin	FRCOG
Leyden	Franklin	FRCOG
Monroe	Franklin	FRCOG
Montague	Franklin	FRCOG
New Salem	Franklin	FRCOG
Northfield	Franklin	FRCOG
Orange	Franklin	FRCOG
Rowe	Franklin	FRCOG
Shelburne	Franklin	FRCOG
Shutesbury	Franklin	FRCOG
Sunderland	Franklin	FRCOG
Warwick	Franklin	FRCOG
Wendell	Franklin	FRCOG
Whately	Franklin	FRCOG
Agawam	Hampden	Pioneer Valley Planning Commission (PVPC)
Amherst	Hampshire	PVPC
Belchertown	Hampshire	PVPC
Blandford	Hampden	PVPC
Brimfield	Hampden	PVPC
Chester	Hampden	PVPC
Chesterfield	Hampshire	PVPC
Chicopee	Hampden	PVPC
Cummington	Hampshire	PVPC
East Longmeadow	Hampden	PVPC
Easthampton	Hampshire	PVPC
Goshen	Hampshire	PVPC
Granby	Hampshire	PVPC
Granville	Hampden	PVPC
Hadley	Hampshire	PVPC
Hampden	Hampden	PVPC
Hatfield	Hampshire	PVPC
Holland	Hampden	PVPC
Holyoke	Hampden	PVPC
Huntington	Hampshire	PVPC
Longmeadow	Hampden	PVPC
Ludlow	Hampden	PVPC
Middlefield	Hampshire	PVPC
Monson	Hampden	PVPC
Montgomery	Hampden	PVPC
Northampton	Hampshire	PVPC
Palmer	Hampden	PVPC
Pelham	Hampshire	PVPC
Plainfield	Hampshire	PVPC

The Pioneer Valley Region (cont.):

Town	County	Regional Planning Agency
Russell	Hampden	PVPC
South Hadley	Hampshire	PVPC
Southampton	Hampshire	PVPC
Southwick	Hampden	PVPC
Springfield	Hampden	PVPC
Tolland	Hampden	PVPC
Wales	Hampden	PVPC
Ware	Hampshire	PVPC
West Springfield	Hampden	PVPC
Westfield	Hampden	PVPC
Westhampton	Hampshire	PVPC
Wilbraham	Hampden	PVPC
Williamsburg	Hampshire	PVPC
Worthington	Hampshire	PVPC

The Southeast Region:

Town	County	Regional Planning Agency
Duxbury	Plymouth	Metropolitan Area Planning Council (MAPC)
Hanover	Plymouth	MAPC
Marshfield	Plymouth	MAPC
Norwell	Plymouth	MAPC
Rockland	Plymouth	MAPC
Scituate	Plymouth	MAPC
Abington	Plymouth	Old Colony Planning Council (OCPC)
Avon	Norfolk	OCPC
Bridgewater	Plymouth	OCPC
Brockton	Plymouth	OCPC
East Bridgewater	Plymouth	OCPC
Easton	Bristol	OCPC
Halifax	Plymouth	OCPC
Hanson	Plymouth	OCPC
Kingston	Plymouth	OCPC
Plymouth	Plymouth	OCPC
Plympton	Plymouth	OCPC
West Bridgewater	Plymouth	OCPC
Whitman	Plymouth	OCPC
		Southeast Regional Planning & Economic Development
Acushnet	Bristol	District (SRPEDD)
Attleborough	Bristol	SRPEDD
Berkley	Bristol	SRPEDD
Carver	Plymouth	SRPEDD
Dartmouth	Bristol	SRPEDD
Dighton	Bristol	SRPEDD

The Southeast Region:

Town	County	Regional Planning Agency
Fairhaven	Bristol	SRPEDD
Fall River	Bristol	SRPEDD
Freetown	Bristol	SRPEDD
Lakeville	Plymouth	SRPEDD
Mansfield	Bristol	SRPEDD
Marion	Plymouth	SRPEDD
Mattapoissett	Plymouth	SRPEDD
Middleborough	Plymouth	SRPEDD
New Bedford	Bristol	SRPEDD
North Attleborough	Bristol	SRPEDD
Norton	Bristol	SRPEDD
Plainville	Norfolk	SRPEDD
Raynham	Bristol	SRPEDD
Rehoboth	Bristol	SRPEDD
Rochester	Plymouth	SRPEDD
Seekonk	Bristol	SRPEDD
Somerset	Bristol	SRPEDD
Swansea	Bristol	SRPEDD
Taunton	Bristol	SRPEDD
Wareham	Plymouth	SRPEDD
Westport	Bristol	SRPEDD
Pembroke	Plymouth	Belongs Both To MAPC & OCPC
Stoughton	Norfolk	Belongs Both To MAPC & OCPC