

# MASSACHUSETTS BENCHMARKS

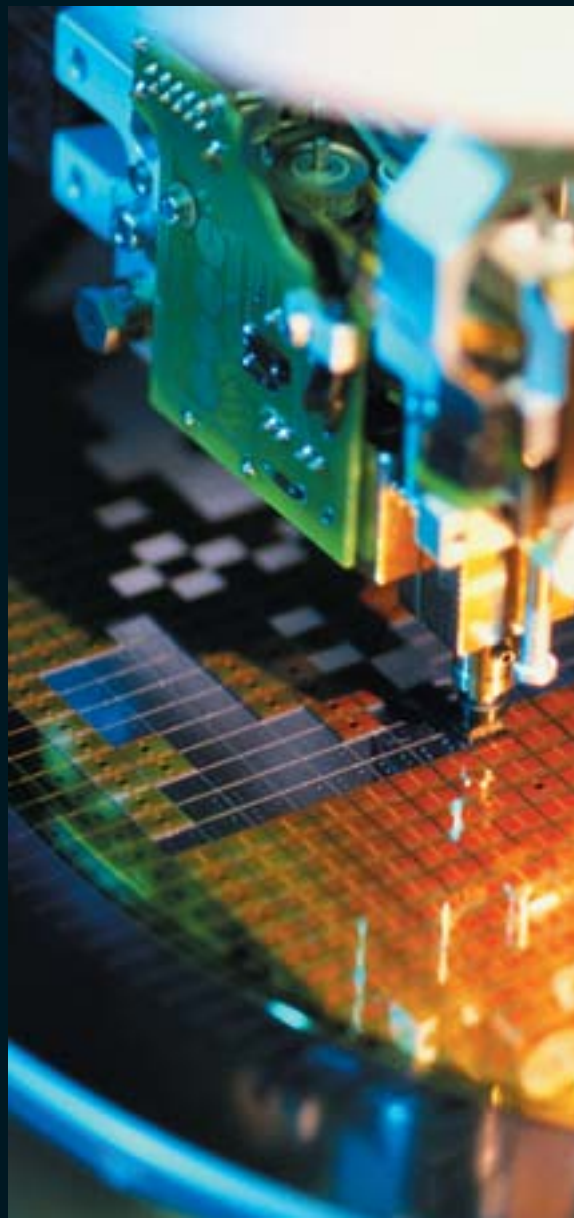
The quarterly  
review of  
economic  
news &  
insight

summer 2001 • volume four issue 3

- Economic Currents
- Massachusetts Current and Leading Indices
- Winners and Losers  
High-Tech Employment Deals  
an Uneven Hand
- Cape Cod & the Islands  
More than a Resort Economy
- Foreign Workers Keep the  
Massachusetts Economy Rolling

A PUBLICATION OF  
THE UNIVERSITY  
OF MASSACHUSETTS

IN COOPERATION WITH  
THE FEDERAL RESERVE  
BANK OF BOSTON





## Massachusetts Benchmarks Editorial Policy

*Massachusetts Benchmarks* is a quarterly journal published by the University of Massachusetts in cooperation with the Federal Reserve Bank of Boston. It presents timely information concerning the performance of the Massachusetts economy, including periodic economic analysis of major geographic regions within the Commonwealth and an array of key industries that make up the economic base of the state. The journal provides commentary and interpretation of economic data aimed at business leaders, public policymakers, educational organizations, and the general public.

The editors of *Massachusetts Benchmarks* invite articles on topics of current interest from researchers on various aspects of the state economy, regional economic development, and key growth industries. The editors also welcome queries from academic or professional economists for future issues of the journal. Please send queries to Carolyn Dash Mailler at [cmailler@donahue.umassp.edu](mailto:cmailler@donahue.umassp.edu) with a brief biography and topical outline. Authors considered for *Massachusetts Benchmarks* will be furnished with writers' guidelines.

All submissions are subject to rigorous review by the Editorial Board or other referees. Manuscripts of accepted articles are expected to adhere to the guidelines. Final publication decision rests exclusively with the editors.

## CONTENTS

### EDITORS

LYNN BROWNE  
Federal Reserve Bank of Boston

CRAIG MOORE  
University of Massachusetts Amherst

### EXECUTIVE EDITOR

ROBERT NAKOSTEEN  
University of Massachusetts Amherst

### FEATURES EDITOR

RALPH WHITEHEAD, JR.  
University of Massachusetts

### EDITORIAL BOARD

MICHAEL BEST  
University of Massachusetts Lowell

KATHARINE BRADBURY  
Federal Reserve Bank of Boston

KARL CASE  
Wellesley College

ALAN CLAYTON-MATTHEWS  
University of Massachusetts Boston

PETER DOERINGER  
Boston University

YOLANDA KODRZYCKI  
Federal Reserve Bank of Boston

FRANK LEVY  
Massachusetts Institute of Technology

CHRISTOPHER PROBYN  
State Street Bank

JIM STOCK  
Harvard University

ANDREW SUM  
Northeastern University

### 2 President's Letter

### 3 Excerpts from the Board

### 4 Economic Currents: The State of the State Economy

The current economic slowdown is hitting Massachusetts later—but harder—than it has the rest of the nation, according to Alan Clayton-Matthews. A drop in business demand for our high-tech equipment and services, along with increasing consumer belt-tightening, has the growth indices closing in on zero. But not all of the news is bad news.

### 5 Massachusetts Current and Leading Economic Indices

### 10 The Measure of Massachusetts

The University of Massachusetts Economic Indices; employment, labor force, and income data; confidence indices; and more.

### 12 Winners and Losers: High-Tech Employment Deals an Uneven Hand

The look of manufacturing in Massachusetts has evolved dramatically through the decades. Robert Farrant and Shawn Barry look at the changes and their impacts on the state's labor force.

### 17 Cape Cod and the Islands: More than a Resort Economy

Though many consider this region of the Commonwealth only for summer getaways, its impressive growth in population, labor force, new business establishments, and total employment suggests that other factors are at work. Clyde Barrow presents his findings.

### 24 Endnotes: Foreign Workers Keep the Massachusetts Economy Rolling

### 25 Map: Cape Cod and Islands Region

This and past issues of *Massachusetts Benchmarks*, along with information about the Benchmarks Project, can be found on the Web at [www.massbenchmarks.org](http://www.massbenchmarks.org).



# PRESIDENT'S LETTER

Over the past several issues, this journal's writers and editors have debated whether Massachusetts would be a relatively safe harbor during the nation's gathering economic storm. Now, the answer is becoming clear. Professor Alan Clayton-Matthews of the University of Massachusetts Boston, an expert in economic forecasting, reports that the current economic slowdown is hitting Massachusetts later, but in some ways harder, than the rest of the country.



Professor Clayton-Matthews notes that the Commonwealth's industry mix, while much more diverse than it was during the painful recession of the late 1980s and early 1990s, still isolates us from national economic trends. A drop in industry demands for high-tech equipment and services, combined with consumer belt-tightening, has driven the *Benchmarks* current and leading economic indices toward a zero growth mark. Still, Massachusetts does not appear headed into recession, and the professor presents evidence that the economy will begin growing again by early next year.

Even as we consider the overall state economy, this journal has been dedicated to identifying industry and regional trends that directly affect businesses and workers. This issue examines the current status of the manufacturing sector and the economy of Cape Cod.

The composition of manufacturing in Massachusetts has evolved dramatically in recent decades, and Professor Robert Forrant and graduate student Shawn Barry of the University of Massachusetts Lowell discuss how such changes have altered the state's labor force.

Though many consider Cape Cod only a summer retreat, its impressive growth in population, labor force, business establishments, and employment suggests that other attractions are becoming stronger. University of Massachusetts Dartmouth Professor Clyde Barrow presents his findings on this topic.

The phenomenon of foreign workers in the state's economy is the subject of our Endnotes section, written by David Borges, a senior research associate at the University of Massachusetts Dartmouth Center for Policy Analysis.

The economy of Massachusetts continues to shift beneath our feet. It is clearly in our interest to be vigilant, thoughtful, and proactive as we seek solid ground.

William M. Bulger  
President  
University of Massachusetts

E X C E R P T S

---

F R O M T H E B O A R D

**T**he *Benchmarks* Editorial Board met recently to discuss the condition and the prospects of the state's economy. With no growth since December, Massachusetts is well into an economic slowdown. The Commonwealth has lagged behind the nation with the timing of the downturn, and it is likely that its recovery will lag behind the nation's as well.

Evidence of a state slowdown includes an increase in the unemployment rate from 2.3 percent in December to 3.5 percent in May. While the May figure is low by historical standards, the relative magnitude of the increase is indicative of a serious slowdown. The Massachusetts Current and Leading Economic Indices exhibit a pattern consistent with that of the unemployment rate. The current index has declined slightly since the first of the year, and the leading index is in negative territory.

The proximate cause of the state's slowdown is the nationwide decline in business investment spending, especially in the areas of information technology and telecommunications. While the foremost impact of declining investment spending is on the state's high-tech manufacturing sector, the impacts are considerably broader. Also affected are a broad range of business services that support the high-tech sector, as well as the manufacture of related products. Secondary effects include a softening of the office rental market in the metropolitan Boston area, along with an almost complete disappearance of pay bonuses.

A recovery in capital spending is unlikely to occur until sometime next year. During 1999 and 2000, investment expenditures in high-tech equipment were at historical highs, and it will take some time to work off the resulting excesses. Estimates of the recovery of business spending in the information technology and telecommunications sectors range from two quarters to six quarters out.

The seriousness of the economic situation in Massachusetts should not be overstated. A number of sectors are resisting the current slowdown—particularly the construction industry. Several large building projects are under way and in prospect. The medical technology sector remains strong, as does higher education in the state. And, unlike the recession that occurred at the beginning of the 1990s, there is no speculative overhang of housing and office space, which significantly lengthened the recovery. Even the decline in the state's high-tech sector differs dramatically from the earlier downturn, which resulted primarily from the obsolescence of the minicomputer industry. The current situation represents a cyclical downturn. We have every reason to believe it will be temporary. In addition, both monetary and fiscal policy are expansionary, which should have a significant impact on the national economy by year's end.

# Economic Currents



ILLUSTRATION: NAOMI SHEA

## ALAN CLAYTON-MATTHEWS

**P**ain and anxiety are accompanying the news of an economy that has not grown since December. The Massachusetts Current Economic Index, a proxy for real gross state product growth, was actually lower in April than it was at the end of last year, and it is only 1.5 percent greater than in April 2000.

Manufacturing has been hit particularly hard. During the first four months of the year, employment in this sector declined at an annual rate of nearly 5 percent. Over the summer months and into the fall, the state's economy can expect more of the same, with no growth in output and probably more employment declines.

The Massachusetts Leading Economic Index for April was negative 0.2 percent, forecasting a 0.2 percent decline in real gross state product from April to September. Seven of the ten indicators that comprise the index contributed

to below-trend rates of growth. The three positive components are reflective of the Fed's interest rate reductions, the rise in stock prices since the beginning of April, and the strength of construction employment. The negative components reflect stagnant aggregate employment, declining withholding and sales tax revenues, rising unemployment, and weak consumer confidence.

Although the risk of recession is greater than it has been for a decade, a full-fledged recession does not appear to be imminent. Events are consistent with a cycle in business investment that could represent a relatively short adjustment to an over-investment in communications, computers, and other technology equipment. Growth could resume late this year or early next. Still, there is a significant probability that the adjustment could result in employment declines deep enough to touch off a more pronounced recession, through a multiplier effect of reduced consumer spending.

# The Current and Leading Economic Indices for Massachusetts

The Massachusetts Current Economic Index for April was 129.5, down 1.3 percent from March (at annual rates), and up 1.5 percent from April of last year. The current index is normalized to 100 in July 1987 and is calibrated to grow at the same rate as the Massachusetts real gross state product over the 1978–1997 period.

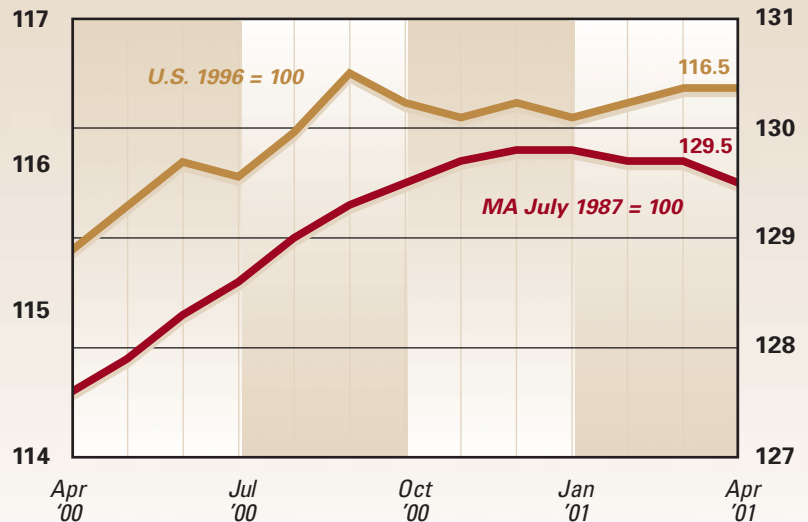
The Massachusetts Leading Economic Index for April was –0.2 percent (negative 0.2 percent), and the three-month average for February through April was –1.3 percent (negative 1.3 percent). The leading index is a forecast of the growth in the current index over the next six months, expressed at an annual rate. Thus, it indicates that the economy is expected to contract at an annual rate of 0.2 percent over the next six months. Because of monthly fluctuations on which the index is based, the three-month average of –1.3 percent, which indicates a mild contraction, may be a more reliable indicator of near-term growth.

The Massachusetts economy has slowed to a stop. The worldwide decline in investment spending for technology products is impacting the state. Many major producers of semiconductors, semiconductor equipment, and communications equipment, as well as suppliers of business investment and related services, have announced layoffs and cutbacks in planned expansions. Tax-based measures of real (inflation-adjusted) statewide labor earnings and consumer spending have actually declined in recent months. Countervailing these negatives are an apparent stabilizing of stock market prices and consumer confidence, robust real estate markets, continued growth in construction employment, and the Fed's expansionary policies.

Submitted June 4, 2001

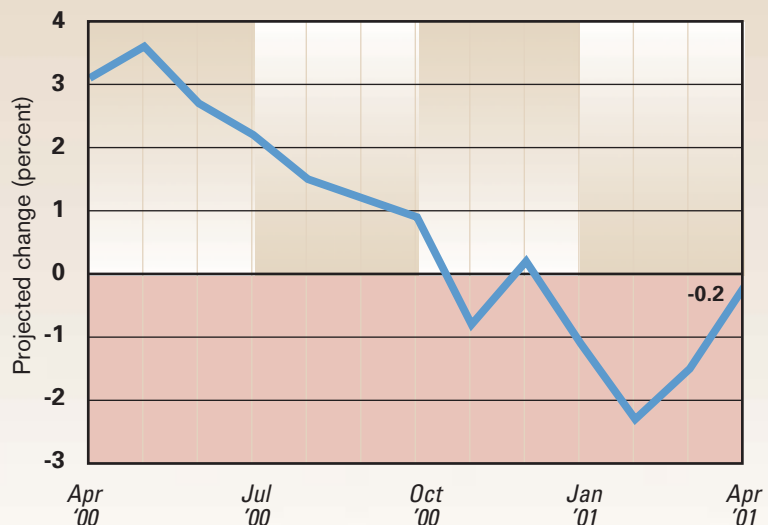
## Current Economic Index United States and Massachusetts

The U.S. Current Economic Index is measured on the left vertical axis; the Massachusetts Current Economic Index is measured on the right.



## Massachusetts Leading Economic Index

The leading index is the annualized, six-month projected change in the Massachusetts Current Economic Index.



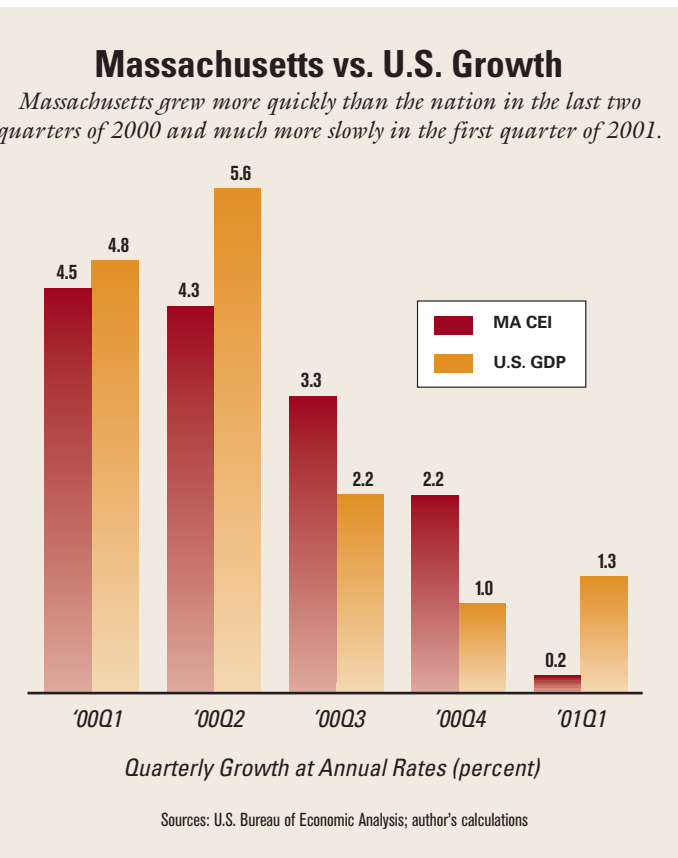
Sources: The Conference Board; University of Massachusetts; Federal Reserve Bank of Boston

## The Slowdown Hits Massachusetts Later— but Harder—than It Does the Nation

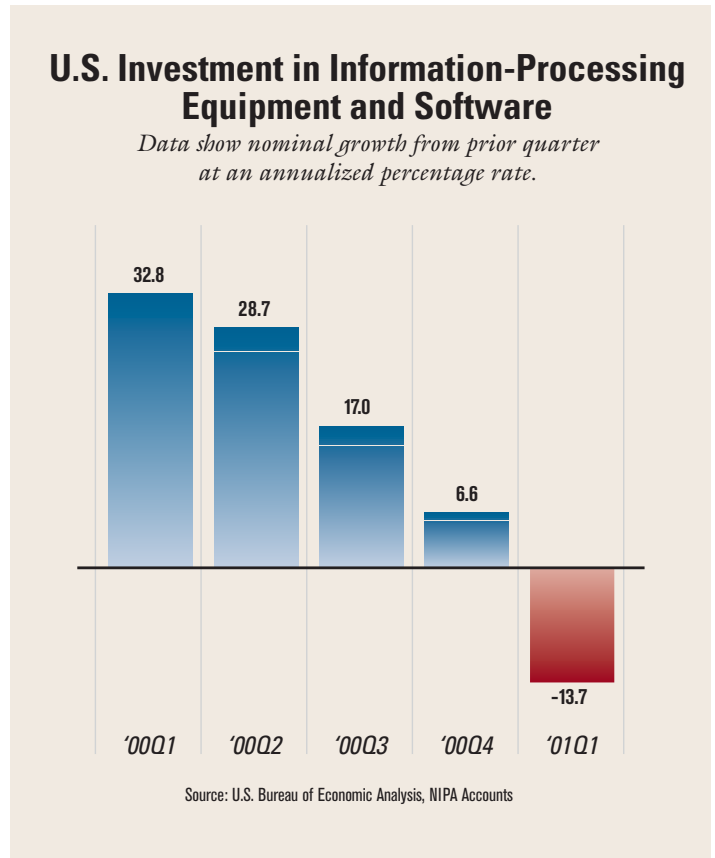
The slowdown began later here than in the Midwest and Southeast regions of the country. While the nation's other regions began to see sharp downturns in the last two quarters of 2000, the deceleration in Massachusetts was more gradual until the first quarter of this year.

The difference in timing reflects differences in industry mix. Demand for automobiles by consumers and transportation equipment by businesses declined in the third and fourth quarters of last year, forcing manufacturers in the Midwest and Southeast to lay off thousands of workers. The proximate cause of the slowdown in Massachusetts was the sudden fall in business demand for telecommunications and information-processing equipment, services, and related products that began in the last quarter of 2000. This resulted in declines in both output and employment in high-tech manufacturing and related sectors in the first quarter of this year, and the effects continued to accumulate in the second quarter.

Real U.S. GDP growth slowed from an annualized rate of 5.6 percent in the second quarter of 2000 to 1.0 percent in the fourth quarter. At the same time, real growth in Massachusetts, as measured by the Massachusetts Current Economic Index, slowed at a more gradual pace, from 4.3 percent in the second quarter to 2.2 percent in the fourth quarter of last year. But while U.S. growth in the first quarter of 2001 stabilized at 1.3 percent, it dropped to 0.2 percent in Massachusetts.



There was a dramatic fall in capital expenditures by U.S. businesses for technology-related products. As recently as the third quarter of 2000, nominal investment in information-processing equipment and software grew at a 17.0 percent annualized rate over the prior quarter. In the fourth quarter, growth fell to 6.6 percent, and then became negative by the first quarter of 2001, when it fell by 13.7 percent on an annualized basis.



Nationwide, shipments and new orders for computers, communications equipment, and electronic components fell in each month of the first quarter, with the greatest decline for communications equipment and semiconductors and related equipment. Shipments of communications equipment in March were down 23.3 percent from the prior year, while new orders were down 37.5 percent over the same period.

The collapse of the semiconductor market is even more pronounced. Shipments of semiconductor equipment from North American producers fell from \$2.6 billion last October to \$1.7 billion by April. New orders fell even faster, from \$3.0 billion in October to \$700 million in April. The book-to-bill ratio fell to a 10-year low of .42, indicating further declines in output over the summer. Worldwide semiconductor sales have been declining rapidly since November. During the first three months of the year, sales declined at an annualized rate of over 50 percent per month.

## Job Losses Are Mounting

Manufacturing losses have been widespread in Massachusetts, especially among durable goods producers. Through April, high-tech manufacturing employment in Massachusetts had declined more slowly than nationally. This may be because several large employers, including Cisco, EMC, Intel, and Sun Microsystems, have been implementing large expansions in Massachusetts. However, these companies have recently announced layoffs and/or cutbacks in expansion plans, so further reductions in employment can be expected.

Employment losses spread to business services in March and April. Most likely, these losses reflect continued cutbacks by Internet-related dot-com firms, other software firms, and temporary employment contractors. Until recently, laid-off workers with computer-related skills were quickly snatched up by other employers who had unfilled vacancies. Anecdotal evidence suggests that the number of job vacancies is quickly diminishing, as they are filled by recently unemployed workers, put on hold by employers, or simply disappearing as dot-com companies fail.

These trends are evident in rising unemployment rates and initial unemployment claims. From a record low in December of 2.3 percent, the state unemployment rate rose by nearly a full percentage point to 3.2 percent in April. Initial unemployment claims have also risen sharply, from a low of 25,000 last October to over 36,000<sup>1</sup> in April, the most recent month available. Relative to the historical record, the unemployment rate is still low. It is the rapidity of the change, consistent with the sharp rise in initial unemployment claims, that is of concern.

## Wages and Salaries Are Declining

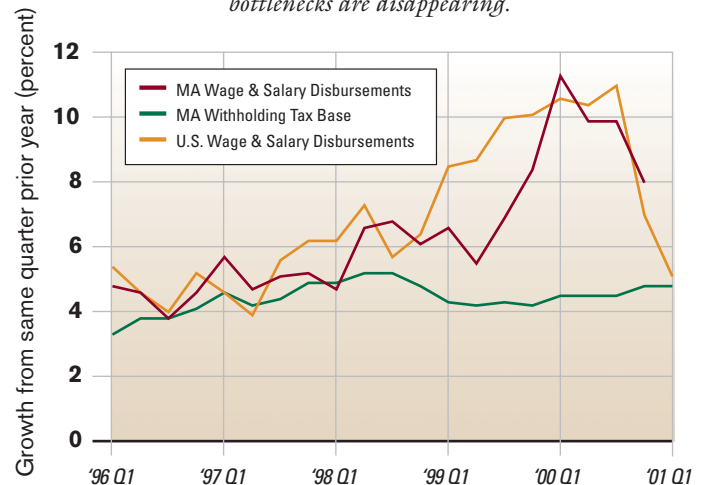
Aggregate wage and salary payments to those working in Massachusetts, estimated from withholding taxes, declined between March and May. This reflects a combination of nearly stagnant employment, job losses concentrated in better-than-average-paying jobs, and declines in lump-sum payments such as bonuses, commissions, and realized stock options. On a per-worker basis, year-over-year wages rose by 2.8 percent in May, well below the 10 percent rate that prevailed for most of last year. These annual rates of wage gain are now comparable to national rates, and for recent months are below U.S. wage rate growth. This rapid retrenchment in wages is another indication of how quickly labor supply bottlenecks are disappearing. It is also consistent with the particularly sharp rate of slowdown in Massachusetts relative to the nation in the first quarter of this year.

## Consumption Is Key to Avoiding a Recession

Since personal consumer expenditures form the major portion of economic output, economists pay close attention to trends in consumer spending. If this slowdown escalates into a recession, it will most likely be because consumers have lost

## Growth in Nominal Wages Per Worker

*A rapid drop in wages is an indication of how labor supply bottlenecks are disappearing.*



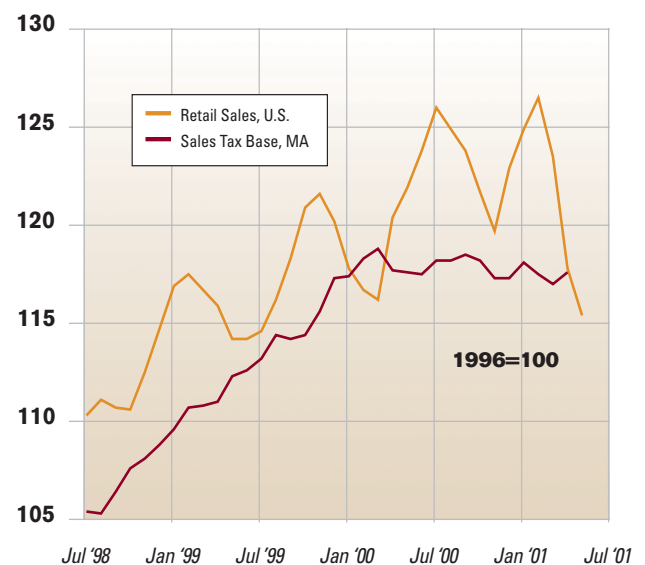
Sources: U.S. Bureau of Economic Analysis; U.S. Bureau of Labor Statistics; Mass. Department of Revenue; author's calculations

confidence in the prospects of maintaining employment and income, and have cut back on consumer spending. This concern over consumer spending is nationwide.

State-level data based on sales tax revenues are noisy, so it is difficult to determine short-run trends. Given that, the data suggest that consumer spending in Massachusetts is slowing as much as it is nationally, and may even be declining. As of May, the sales tax base had fallen sharply for three consecutive months. This in itself is not unusual, given past patterns in tax receipts. But the magnitude of the declines stands out. On a year-over-year basis, the nominal sales tax base in May was down 3.1 percent from the prior

## Real Consumer Spending

*Consumer spending in Massachusetts has been declining rapidly, while it seems to be holding steady nationally.*



Sources: U.S. Census Bureau; Mass. Department of Revenue; author's calculations

year. U.S. retail sales, in contrast, were up 3.1 percent from the prior year (in April, the most recent month available).

Massachusetts sales taxes exclude most food and clothing, and so are weighted toward consumer durable purchases, which tend to be more cyclically volatile than overall consumer spending. Also, a significant portion of receipts, perhaps one-quarter, derives from purchases made by businesses that are not directly tied to production (e.g., purchases of computers for non-production workers). This means that some portion of the decline in sales tax receipts may reflect the retrenchment in business capital expenditures. Nevertheless, Massachusetts sales tax receipts have historically tracked state retail spending quite well (until 1997, the U.S. Census Bureau published figures for Massachusetts), and so recent trends are a cause for concern.

Consumer confidence is down—but not gone. Two different regional measures, one from the Conference Board for New England and the other from Mass Insight/NEEP for Massachusetts, are indicating qualitatively similar trends. Confidence dropped sharply in the fourth quarter of 2000 and from January through May has fluctuated around this lower level. Households are comfortable with current economic conditions, but they are concerned about the future. The levels of the future expectations components in both indices are in the range experienced in the last recession. If unemployment rates rise, consumer confidence about current conditions could deteriorate rapidly.

Massachusetts and New England consumer confidence have trended very closely to national consumer confidence (also from the Conference Board) over the last several years. This reflects partly the widespread participation of households in the stock market and attention to daily financial and business news; it also reflects how closely connected the state, regional, and national economies are. Mergers, acquisitions, and investment in new offices and production facilities over the past decade of expansion have integrated states' economies with one another to a greater extent than ever before.

## Housing Markets Still Strong

The housing market is still firm, with signs of some moderation in what has been a hot market for several years. Single-family housing permits in the first quarter were running at a little more than 1,000 per month on a seasonally adjusted basis, a rate about 13 percent below the same quarter a year ago. This is a continuation of a slowly softening trend of new home construction in the past couple of years, and has contributed to maintaining appreciation rates of housing.

As of the fourth quarter of 2000, the Fannie Mae/Freddie Mac housing price indices that control for quality were registering year-over-year appreciation rates of 15.4 percent in Massachusetts, well above the overall U.S. figure of 8.4 percent. The increase in home values contributes to increased household wealth, offsetting the loss due to falling stock prices. Sales volume of existing Massachusetts

homes is down slightly from a year ago, but is still near historically high levels. Markets in the western part of the state appear to be weaker. In Springfield, house prices appreciated at only 4.6 percent in the year ending the fourth quarter.

## Other Positives Could Prevent a Severe Recession

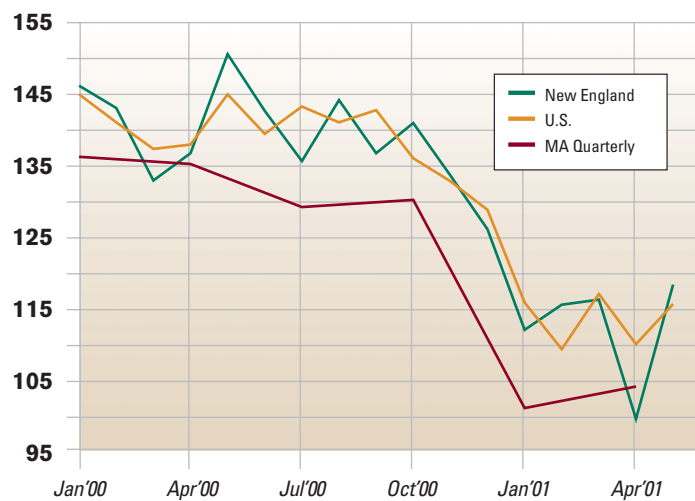
In addition to housing markets, there are other short-run indications and longer-run strengths that suggest that the slowdown might not deteriorate into a recession. If it does, the recession may be shallow and brief.

First, stock markets appear to have stabilized and to have capitalized the poor short-term outlook for business profits and output growth. As of June 1, the Bloomberg stock index had gained 26 percent since the low of April 4. The damage to the economy via the "wealth effect" on consumer spending may therefore be nearing an end. For businesses, having reached bottom in equity markets will mean easing credit conditions, allowing the Fed's several interest rate deductions to become effective.

Second, the stabilization in stock markets is partly due to the quick downsizing of businesses. This means that although we can expect unemployment to rise over the com-

## Consumer Confidence

*Confidence dropped sharply in the fourth quarter of 2000 and has not recovered.*



Sources: The Conference Board; Mass Insight/New England Economic Project

ing months as firms' announced layoffs become effective, this round of pain may soon be over. The extent of layoffs may be great enough, however, to cause consumers to re-trench further in their spending. In this regard, the significant inventory reductions in the first quarter are a good sign (though inventories in electronics and computers are still high), as production growth will resume sooner.

Third, on a local level (and on a national level), construction spending and employment growth remain strong. Aside from the Big Dig, there are several large commercial and office construction projects under way. The timing of this construction boom is fortunate. When it does abate, the business investment cycle may be back on the upswing, and Boston will be prepared for the increase in activity in terms of an increased capacity of office space and an improved transportation system.

Massachusetts has several long-term strengths that should ensure that the current slowdown does not turn into a repeat of the last recession. First, the downturn in computer and communications-related manufacturing is unlike that of the late 1980s in an important respect. Then, firms like Digital Equipment Corporation and Wang were rapidly losing market share, as personal computers replaced minicomputers. Today, the state's producers are not losing market share. The downturn in technology products is national and worldwide in scope, and Massachusetts producers will revive as business and household expenditures on these products resume.

Second, several other large sectors of the state's economy should provide a stable base of employment that will prevent a steep decline in employment and economic activity. These sectors are not immune from downturns, but they are not connected to the decline in business capital expenditures, which is responsible for the current economic problems. Moreover, their long-run prospects are for stable or growing output and employment trends. These sectors include medical services and related medical science production and research, higher education, and finance, particularly money management and mutual funds. Medical services are still feeling the effects of the Medicare cut-backs instituted in 1997 and the recent restructuring dislocations in managed care, but the long-term trend is driven by an aging baby boom that will spend increasing amounts on medical care.

Worldwide trends in aging and per capita income growth also bode well for health science industries, including medical devices, pharmaceuticals, and biotechnology. These industries export most of what they produce to other states and countries. Higher education is another important export industry for Massachusetts. This sector has provided stable growth throughout the expansion, and demographic trends—the rising college-age population—should support continued growth. Also, the continuing trend to-

ward “upskilling” is boosting community colleges. The finance industry has weathered the fall in the stock market without major job losses. In the mutual funds industry, funds under management receive a continual inflow of retirement-based savings. Prospects for the future are good. ▮

*Submitted June 8, 2001*

<sup>1</sup> This number differs from the value for Monthly Initial Unemployment Claims on page 10 due to different methods of calculation.

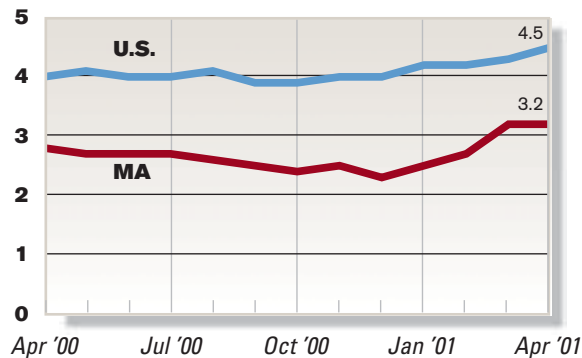
---

*ALAN CLAYTON-MATTHEWS* is an assistant professor and the director of quantitative methods in the Public Policy Program at the University of Massachusetts Boston. He is also president of the New England Economic Project.



# The Measure of Massachusetts

## Unemployment Rates



## State Labor Force, Employment, & Income

	Period	Value	Change from Year Earlier (%)
Labor Force ( <i>household-based</i> )	4/01	3,346,600	4.2
Employment ( <i>establishment-based</i> )	4/01	3,362,800	1.7
<i>Manufacturing</i>		430,500	-1.2
<i>Services</i>		1,237,900	3.2
Monthly Initial Unemployment Claims	4/01	33,153	41.9
Income	'00 Q4		
<i>Personal Income (\$M)</i>		246,912	8.7
<i>Real Personal Income (\$M 1982-84)</i>		142,312	5.2
Help Wanted Advertising Index, Boston (1987 = 100)	3/01	48	-2.0

## Regional Employment

	Employment		Unemployment Rate	
	4/01	Change from Year Earlier (%)	4/01	4/00
<b>Central</b>				
Fitchburg-Leominster PMSA	66,225	3.2	3.9	3.2
Worcester, MA-CT PMSA (MA only)	238,542	2.8	3.0	2.6
<b>Cape and Islands</b>				
Barnstable-Yarmouth MSA	71,151	3.2	3.4	3.1
<b>Boston Metro</b>				
Boston, MA-NH PMSA (MA only)	1,793,333	3.9	2.4	2.1
<b>Northeast</b>				
Lowell, MA-NH PMSA (MA only)	166,962	5.9	2.9	2.3
Lawrence, MA-NH PMSA (MA only)	128,073	5.5	3.7	3.0
<b>Southeast</b>				
Brockton PMSA	128,510	3.0	3.3	2.7
New Bedford PMSA	76,769	2.9	5.3	4.3
Providence-Fall River-Warwick, RI-MA MSA (MA only)	112,774	2.0	4.1	3.4
<b>Pioneer Valley</b>				
Greenfield LMA	32,499	3.4	3.0	2.2
Springfield MSA	274,069	2.9	3.4	2.8
<b>Berkshire</b>				
North Adams LMA	12,061	1.7	3.8	3.0
Pittsfield MSA	36,998	3.5	3.9	3.5

# The University of Massachusetts Economic Benchmarks

	Apr. '01	Apr. '00
Current Economic Index	129.5	127.6
Leading Economic Index	-0.2%	3.1%

The Massachusetts Current Economic Index for April was 129.5, down 1.3 percent from March (at an annual rate) and up 1.5 percent from April of last year. The current index is normalized to 100 in July 1987 and calibrated to grow at the same rate as the real gross state product over the 1978–1997 period.

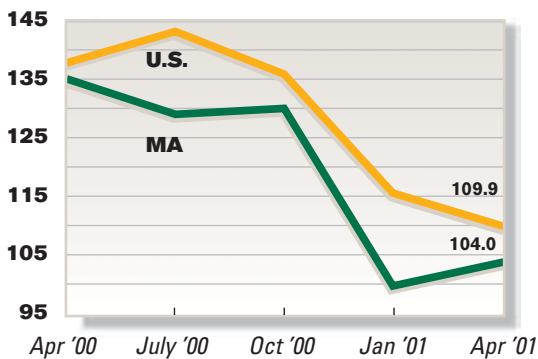
The Massachusetts Leading Economic Index for April was -0.2 percent, and the three-month average for February through April was -1.3 percent. The leading index is a forecast of the growth in the current index over the next six months, expressed at an annual rate.

Growth in the Massachusetts Economy has slowed to a stop.

## Consumer Confidence U.S. and Massachusetts

QUARTERLY DATA

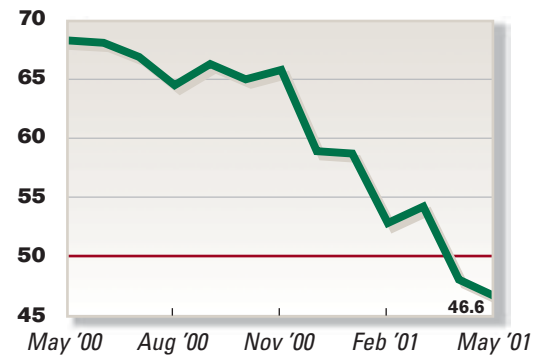
*The trends rather than the levels of these indices should be compared, due to different base points.*



## Business Confidence in Massachusetts

MONTHLY DATA

*Employers have generally positive views on current and prospective business conditions when the index is above 50.*



## Boston Consumer Price Index

(1982–84 = 100)

3/01	Change from Year Earlier (%)
190.9	4.4

## MA Home Price Index

(1987: Q1=100)

'00 Q4	Change from Year Earlier (%)
159.56	15.4

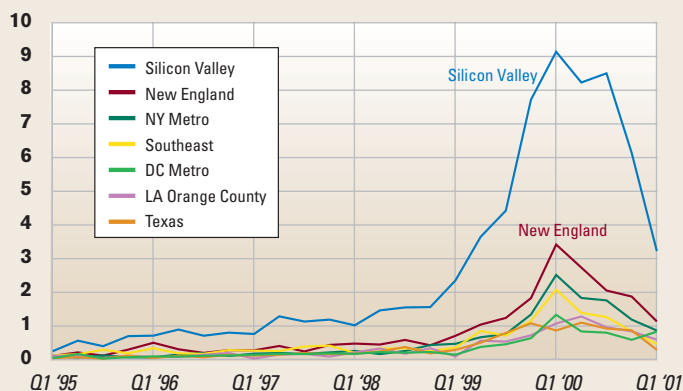
## MA New Housing Permits

(monthly average, 5/00–4/01)

Change from Year Earlier (%)
1,412
-8.6

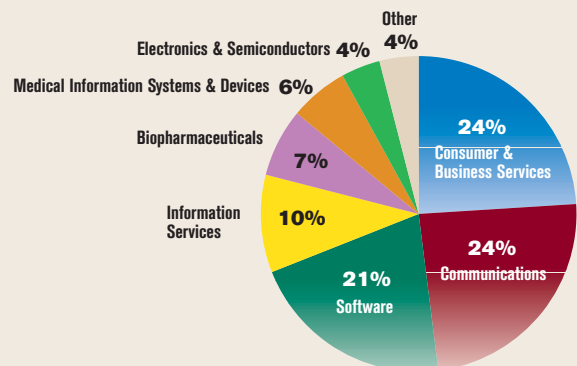
## Venture Capital Investment

\$ Billions, Top 7 Regions



*Typically MA represents 70 percent (1990) to 90 percent (Q1 2001) of New England Venture Capital Investment.*

## New England, 2000, by Sector



Sources: Associated Industries of Massachusetts; The Conference Board; Mass Insight/New England Economic Project; Fannie Mae and Freddie Mac; Massachusetts Division of Employment and Training; U.S. Department of Commerce; U.S. Bureau of Economic Analysis; U.S. Bureau of Labor Statistics; University of Massachusetts; The Alliance for the Commonwealth; PricewaterhouseCoopers Money Tree™ Survey



ILLUSTRATIONS: NAOMI SHEA

# Winners and Losers

## *High-Tech Employment Deals an Uneven Hand*

ROBERT FORRANT AND SHAWN BARRY

*By the rest of the world, Massachusetts has long been perceived as a stellar manufacturing center. In historical succession, its production of textiles and shoes, industrial machinery, aircraft engines and missiles, and computers has generated great wealth and contributed to global trade. But by town and by worker, not everyone is a winner. Even our strong economy has taken a toll on some.*

**T**he Bay State may lay legitimate claim to being the birthplace of American industry. In Lowell, Boston Associates built a canal and a water-power infrastructure for America's first textile district. The Springfield Armory, where the principle of interchangeability was first applied, fostered the development of the world's first machine tool industry. This, in turn, sparked the growth of a range of industrial districts: watches in Waltham, footwear in Haverhill, furniture in Gardner, jewelry making in Attleboro, cutting tools in Greenfield, and precision metalworking and specialty machine making in Worcester and Springfield. In the interplay between manufacturing sectors, the proliferation of these dynamic industries was fueled by—and supported—the growth of hundreds of small, highly specialized metalworking shops and foundries engaged in the production of fixtures, tooling, gauges, and made-to-order components for the state's and the nation's final goods producers.



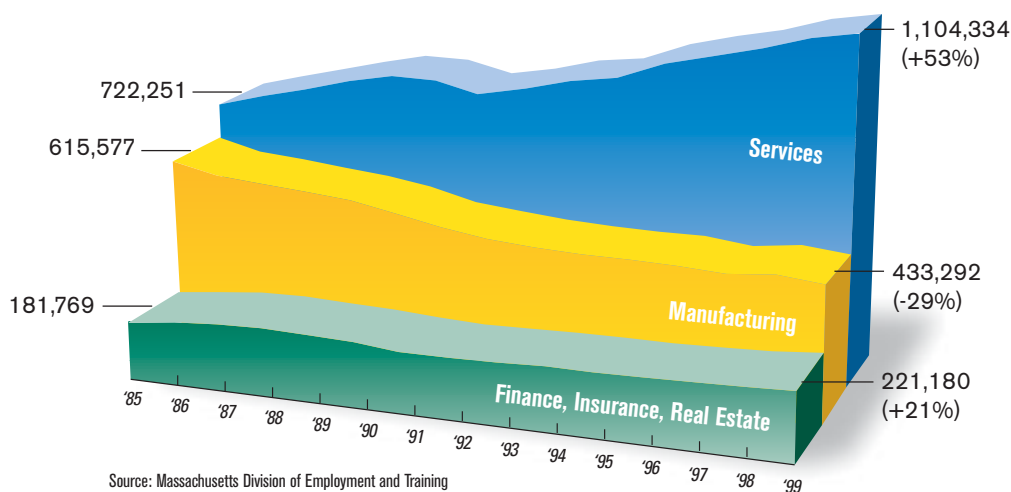
It is now the start of the twenty-first century. Our economy is no longer powered by manufacturing. Center stage is occupied by high-value added services, including services closely related to high-technology industries. The shift from manufacturing to services began early in the last century. It picked up steam over the past two decades, with sometimes wrenching implications for the Commonwealth's economic fortunes and the well-being of blue-collar workers. From the late 1960s to the early 1990s, close to a third of the jobs in several two-digit SICs disappeared, including apparel, electrical equipment, leather, industrial machinery, furniture, rubber, and textiles. From the late 1980s to 1997, total manufacturing establishments declined almost 14 percent, and employment fell nearly 25 percent.

Today's manufacturers are smaller, in terms of employees, than they were in the early 1980s. In 1982, 62 percent of Massachusetts manufacturing establishments employed fewer than 20 workers; the figure was almost 70 percent in 1997. Twelve percent of firms employed 100 or more workers in 1982, while in 1997, 9 percent did so.<sup>1</sup> Additional research is needed to determine how employment and wage growth, as well as expenditures on research and development, are affected by changes in the size of the state's firms.

### Employment Structure

An alternative way of tracking changes in state employment is to consider the total mix of jobs in the state economy. By so doing, the movement from blue-collar employment is obvious. Manufacturing and services occupied 20 percent and 25 percent of the state workforce, respectively, in 1985. Since that time, manufacturing has dropped to just 13 percent of the state's employment base, while finance, trade, and construction have maintained roughly fixed percentages of total employment.

**Employment Surges in Services and Declines in Manufacturing, 1985 to 1999**

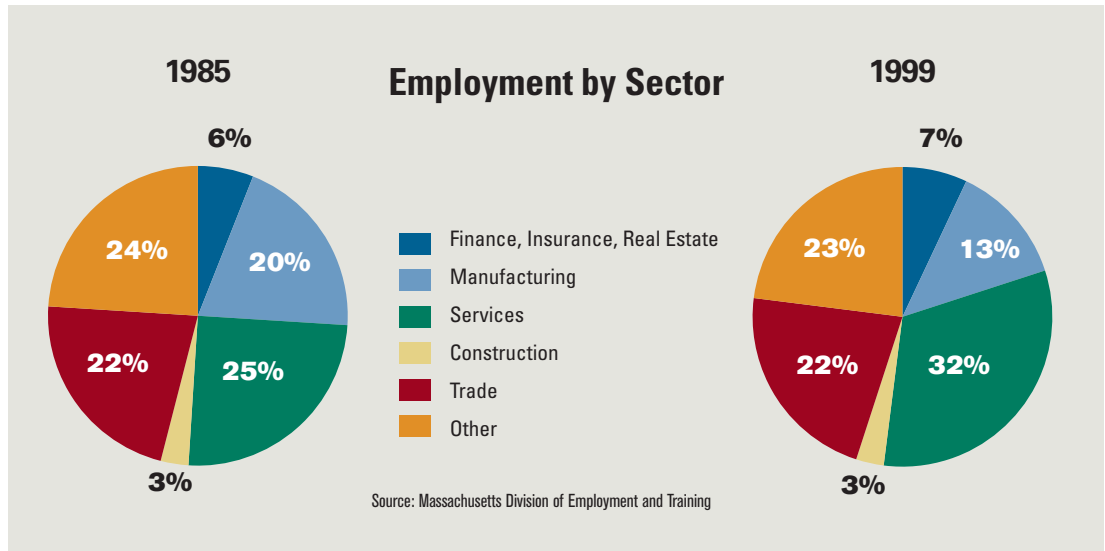


## What Is Left, and Where Is It?

Today in Massachusetts, manufacturers place great emphasis on capital-intensive activities, such as research and innovation. They rely on a series of costly new technologies, including biotechnology, life sciences technology, opto-electronics, telecommunications, computer-integrated manufacturing, software, wireless communications, and new materials. Manufacturers also utilize production technologies, such as cellular manufacturing and programmable equipment, to boost output per employee. Collectively, these shifts in manufacturing spell fewer jobs—particularly fewer production jobs.

The location of high-tech manufacturing in the state reveals an important shift in the geography of production in the Commonwealth. Utilizing 1997 federal manufacturing census and NAICS data, we have selected 12 industry categories to serve as proxies for high-technology and precision manufacturing. Selections were based on manufacturing processes utilized, end markets, and labor force requirements of industries in the sectors.

Between 1975 and 1980, more than 100,000 high-tech jobs were created in the state as Wang, Digital Equipment Corporation, Prime, Data General, and hundreds of small firms emerged to establish the minicomputer indus-



try. Thousands of metalworking, plastics, and electronics companies received lucrative subcontracts to supply firms with components, accessories, tooling, machines, and instrumentation. The locational impact of this initial increase in high-tech manufacturing helps explain today's geography of high-tech production. There is an obvious, uneven distribution of these firms, with the state's western counties dramatically under-represented, while counties along and inside Route 495 and Route 128 garner the greatest share of firms.

What can be measured at the community level? Studies through the 1940s and 1950s revealed several cities that dominated Massachusetts manufacturing: Lawrence, Lowell, Fall River, and New Bedford in textiles and apparel; Brockton, Haverhill, Lynn, and Peabody in footwear; and Springfield and Worcester for their rich mix of precision metalworking firms. None of these cities leads in today's high-tech manufacturing sector. In fact, many locations where today's leading-edge production takes place were farms and woodlands 30 to 40 years ago.

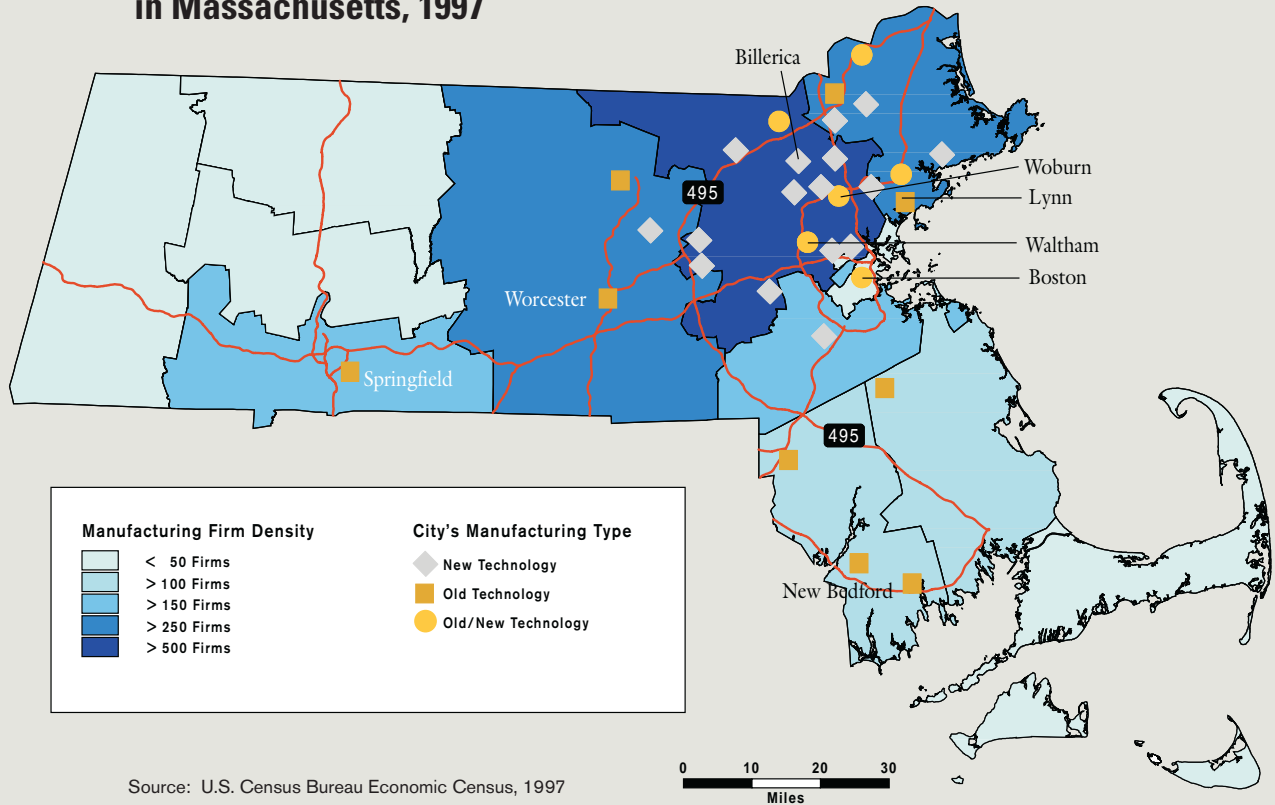
Along with location, the nature of work in high-tech manufacturing appears to be quite different from that in our more traditional manufacturing sectors. This change helps explain why in 2000 Raytheon's 2,400 blue-collar workers were on strike, concerned about job security, while the company's Web site listed close to 1,700 job openings for workers with technical skills such as software configuration analyst and physics engineer.<sup>2</sup> The 1997 federal manufacturing census reported that of the 417,135 Massachusetts manufacturing workers, 257,050 (62 percent) were classified as production workers.

## High-Tech and Precision Manufacturing in Massachusetts

NAICS Category	Total Employment	Production Workers	Percent Production Workers
Machine shops	8,992	6,583	73.2
Industrial machinery	12,750	6,296	49.4
Semiconductor machinery	5,357	2,560	47.8
Metalworking machinery	5,219	3,549	68.0
Computer/electronics production	105,506	47,868	45.4
Computers and peripherals	8,060	2,555	31.7
Communications equipment	22,734	12,141	53.4
Semiconductor/electronic components	29,274	17,156	58.6
Navigation, measuring, medical control instruments	43,143	14,437	33.5
Electrical equipment	4,733	2,379	50.3
Medical equipment and supplies	13,388	7,156	53.5
Surgical and medical instruments	7,486	3,911	52.2

Source: U.S. Census Bureau Economic Census, 1997

## High-Technology Manufacturing in Massachusetts, 1997



## Today's Top Manufacturing Cities

While for technical and confidentiality reasons some employment data are suppressed in the federal manufacturing census, we can still make several observations on firm location at the community level. Of the 10 cities with the highest number of manufacturing firms, just three—Boston, Waltham, and Woburn—are among the Commonwealth's top 10 high-tech manufacturing cities. Among the 22 Massachusetts cities with at least 10 high-tech manufacturing firms, only Clinton is located west of Route 495—and just barely.

Many older industrial cities (Attleboro, Fall River, Lawrence, Leominster, Lynn, Lowell, New Bedford, Springfield, and Worcester) have maintained a semblance of their historical manufacturing base, but cities newer to manufacturing are the most directly involved in high-tech manufacturing.

### Top 10 manufacturing cities by total number of firms

- Boston, 536
- Worcester, 278
- Fall River, 199
- Woburn, 195
- Springfield, 174
- Waltham, 161
- New Bedford, 151
- Attleboro, 143
- Leominster, 135
- Brockton, 131

### Top 5 high-tech manufacturing cities by total number of firms

- Billerica, 35
- Waltham, 31
- Woburn, 30
- Wilmington, 24
- Marlborough, 22

## Massachusetts Ranking in Selected High-Technology Industries

### Rank by Number of Establishments

Optical	Semiconductor	Computer
CA	CA	CA
<b>MA</b>	<b>MA</b>	TX
NY	TX	<b>MA</b>
CO	AZ	NY
FL	NY	FL
NJ	PA	PA

### Rank by Establishments/ Million Population

Optical	Semiconductor	Computer
NH	<b>MA</b>	NH
VT	CA	CA
<b>MA</b>	AZ	<b>MA</b>
CO	NH	CO
CT	VT	OR
CA	ID	MN

#### Notes:

Optical instrument and lens manufacturing – NAICS 333314

Semiconductor machinery manufacturing – NAICS 333295

Computer and peripheral equipment manufacturing – NAICS 33411

Sources: U.S. Census Bureau Economic Census, 1997; United States Census, 2000

Among older industries that dominated the state's manufacturing economy, the percentage of production workers to total employment remains high, with 78 percent in textiles, 83 percent in apparel, and 76 percent in plastics. Among our high-tech sectors, however, the numbers are markedly different, at 45 percent in computers and electronic products, 53 percent in communications equipment, 59 percent in semiconductors and electronic components, 48 percent in semiconductor machinery, and 33 percent in navigation, measuring, and medical instruments. Massachusetts high-technology workers are increasingly likely to be white-collar, knowledge workers, not blue-collar production workers.

### What Explains the Shrinking Manufacturing Base?

Manufacturing's falling share of employment reflects both a shift in output from goods to services and the reorganization of manufacturing production in ways that use fewer workers. The loss of manufacturing jobs is due in part to productivity increases that allow plants to produce more with fewer workers, but also includes genuine losses in manufacturing capacity and market share. And while some of the losses are low-tech, low-paying jobs that contributed little to the state's economy, other blue-collar losses came in the high-technology sectors, such as computer manufacturing.

Defense spending cuts have also caused losses in the state's manufacturing base. In 1974–75, Massachusetts suffered through its worst economic slump since the Depression, caused in part by the end of the Viet Nam War and the significant decline in defense contracts going to the state's manufacturers. The Massachusetts slump was part of a New England-wide contraction that resulted in the loss of 252,000 industry jobs between 1968 and 1975.

In a rapid turnaround, from the late 1970s to 1986, defense spending in the state climbed from \$3.7 billion an-

nually to \$10 billion. But even that was not to last. With the end of the 1980s came the end of the Cold War and decreases, again, in national defense spending. The state's share of prime contracts and research funds dropped significantly through the 1990s: in 1992 the Commonwealth's share of total defense spending was \$5.7 billion, and in 1998 it was \$4.2 billion. For 1999 the figure rose slightly to \$4.7 billion. Further research is needed to identify both the causes and the long-term consequences of this blue-collar job loss in high-tech firms.

### What of the Future?

Massachusetts Division of Employment and Training industry projections for the 1996–2006 period indicate that manufacturing employment will decline another 8.5 percent, whereas services are predicted to grow by 27.7 percent. Manufacturing's falling share of total state employment, therefore, reflects both a shift in output from goods to services and the reorganization of manufacturing production in ways that use fewer workers. The geographic redistribution of manufacturing within the state poses serious challenges for economic development policymakers, and while the clustering of high-tech manufacturing may come as no big surprise, it raises questions with regard to the long-term prosperity of blue-collar workers across the Commonwealth.

National and international competition in high-tech manufacturing is also a concern. Massachusetts is a distant second to California in the production of optical instruments manufacturing (116 firms to 48) and semiconductor machinery (121 firms to 23), and third in computer and peripheral equipment manufacturing (590 firms to 103). Massachusetts also ranks in the top three states in the nation in the number of firms in these sectors per million population, based on statistics from the United States Census 2000.

The iterative process in the nineteenth century among the state's first high-tech manufacturers—the machine tool builders—and its final goods producers was critical to the success of the state economy. Similarly, the links between twenty-first century high-tech manufacturing and high-tech services should be of great concern to those interested in the state's long-term economic performance. ▮

1 U.S. Census Bureau Economic Census, 1982 and 1997

2 *Boston Globe* (September 24, 2000), "Raytheon Struggles with New Economy Woes," Ross Kerber, G-6.

ROBERT FORRANT is an associate professor in the Department of Regional Economic and Social Development at the University of Massachusetts Lowell.

SHAWN BARRY is a master of arts candidate in the Department of Regional Economic and Social Development at the University of Massachusetts Lowell.



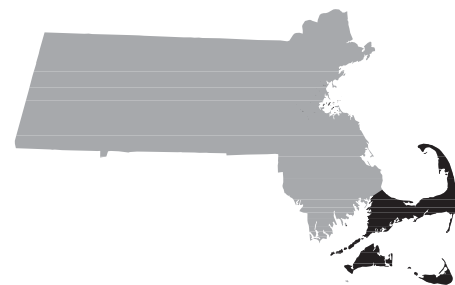
ILLUSTRATION: NAOMI SHEA

# Cape Cod & the Islands

## *More than a Resort Economy*

CLYDE W. BARROW

*For nearly a century, visitors have flocked to the Cape and Islands region from all points on the globe, some for summer wages, some for summer vacations. The resort industry has been a mainstay of the region's economy. But summers are short, and it is never long before vacationers head home and revenues drop precipitously. How does a region that is known for its beaches and bistros mitigate this seasonal volatility and build a strong year-round economy?*



The Cape Cod and Islands region occupies 551 square miles and has a population of 246,737. This represents a 20.8 percent population increase since 1990, compared to 5.5 percent for the state. A more detailed map of the region appears inside the back cover of this journal.

## The Region's Highly Seasonal Economy

Unlike the economic bases of the Commonwealth's other five regions, that of the Cape Cod and Islands region depends largely on the resort industry, retirees, second-home owners, and residents who work in other parts of the state.<sup>1</sup> While the region's year-round economy has grown significantly over the last decade, its resort industry remains highly seasonal; room demand on the Cape alone declines by 50,000 to 100,000 rooms per month from the summer's peak to the industry's winter trough. The Cape's resort industry, in particular, is highly sensitive to factors such as weather and the economic condition of other regions and states that fuel its tourist trade.<sup>2</sup> Two-thirds of the Cape's resort industry employers are finding it more difficult to recruit seasonal employees now than it was five years ago. A lack of housing, along with high housing costs, have been cited as important factors.

At the heart of the region's resort industry is its fragile ecosystem. To protect this key resource, economic development plans emphasize a balance of economic redevelopment, historical preservation, and environmental conservation.<sup>3</sup> Economic development officers are seeking to recruit and develop "light-clean" industries,

such as selected high-technology, professional services, and communications firms. Industries like these generally provide high-wage jobs while having less of an impact on the environment than traditional manufacturing.

A relatively high level of educational attainment provides the region with an opportunity to develop emerging industries in high-technology areas such as marine technology, software engineering, and environmental technology. Meanwhile, efforts to lengthen the resort season by attracting tourists during "shoulder" periods in the early spring and late fall have been moderately successful.

## Business Growth, Employment, and Income

The development of the Cape Cod and Islands economy is defined by three overlapping trends: long-term growth, seasonality, and the regular business cycle. The Cape Cod and

Islands region has been one of the fastest growing economic regions in Massachusetts since 1990, as measured by growth in its population, labor force, new business establishments, and total employment. The region's economy experienced its last recession in 1991 and has been participating in the state's economic recovery since 1993. Unlike many previous economic expansions, the current recovery has lasted long enough for the benefits of growth to spread outward to other areas, such as Barnstable County, that have often failed to participate fully in the state's economic prosperity.

Business vitality on the Cape and Islands was exceptionally robust during the 1990s. The region added 1,052 (11.5 percent) net new business establishments between 1990 and 1999, which was slightly higher than the statewide rate of establishment growth (8.3 percent). The area's economy has long been distinguished from other regions

of the state by its reliance on small businesses and proprietorships. More than 80 percent of the region's business establishments employ fewer than 10 people, compared to 73.5 percent statewide. In addition, approximately 12 percent of the region's residents are self-employed, which is twice the statewide average.<sup>4</sup>

The region's business vitality has been accompanied by equally strong employment growth. Total average employment increased from 102,405 in 1990 to 117,887 in 1999.<sup>5</sup> Thus, the region's total employment increased by 15 percent, three times the statewide increase. Like the rest of the state, Cape Cod and the Islands are achieving "full employment" on a year-round average basis. In 2000, the region's average annual unemployment rate was 3.5 percent, compared to a statewide average of 2.6 percent. The average annual unemployment rates in the region's economic areas ranged from a high of 3.6 percent in Barnstable County and 3.2 percent in Dukes County to a low of 1.3 percent in Nantucket County.<sup>6</sup>

However, the region's unemployment rate continues to fluctuate between seasonal extremes as a result of its resort-based industries. For example, the unemployment rate

### Cape and Islands Population Change, 1990–2000

*The region's striking population change over the past decade is largely due to an influx of retirees as well as commuters who work off-Cape.*

	1990	Increase	2000	Percent Increase
<b>Massachusetts</b>	<b>6,016,425</b>	<b>332,672</b>	<b>6,349,097</b>	<b>5.5</b>
<b>Cape Cod &amp; Islands</b>	<b>204,256</b>	<b>42,481</b>	<b>246,737</b>	<b>20.8</b>
Cape Cod	186,605	35,625	222,230	19.1
Town of Barnstable	40,949	6,872	47,821	16.8
Town of Falmouth	27,960	3,348	32,660	12.0
Town of Yarmouth	21,196	3,611	24,807	17.0
Martha's Vineyard	11,639	3,348	14,987	28.8
Nantucket	6,012	3,508	9,520	58.3

Source: U.S. Bureau of the Census

## Business Units, Labor Force, and Employment

	Business Units			Labor Force			Annual Average Employment		
	1990	1999	Percent Change	1990	1999	Percent Change	1990	1999	Percent Change
Massachusetts	174,110	188,552	8	3,227,600	3,284,100	2	3,032,900	3,179,100	5
Cape Cod & Islands	9,110	10,162	12	109,818	122,912	12	102,405	117,887	15
<i>Cape Cod</i>	7,690	8,351	9	97,508	107,105	10	90,607	102,545	13
<i>Martha's Vineyard</i>	823	1,043	27	7,541	9,336	24	7,175	8,981	25
<i>Nantucket</i>	597	768	29	4,769	6,471	36	4,623	6,361	38

Sources: Massachusetts Division of Employment and Training, Bureau of Labor Statistics

was 2.1 percent in July 2000 (below the statewide average of 2.8 percent) and 6.9 percent in January 2001 (more than twice the statewide average of 3.1 percent). The volatility in unemployment rates is greatest on Cape Cod and least pronounced on Nantucket.

The region's resort industry also has a significant impact on wage levels, which are substantially below statewide averages, due to seasonal unemployment and the large number of jobs in low-wage service occupations. Average annual earnings in the region are \$29,670, which is 26.5 percent below the statewide average of \$40,355 (1999). Average earnings range from a high of \$32,177 on Nantucket and \$29,713 on Cape Cod to a low of \$27,139 on Martha's Vineyard.<sup>7</sup>

However, wage data alone convey an overly pessimistic picture. Much of the seasonal volatility and low-wage jobs impact high school students, college students, and temporary foreign workers, who migrate to the Cape and Islands during the resort season specifically for temporary employment. It is estimated that Cape Cod's resort industry accounts for 15 percent of all temporary workers admitted to the United States on H2B Visas.<sup>8</sup> (See Endnotes, page 24, for a discussion of visas.) Many seasonal jobs are held by moonlighters, homemakers, and retirees, who supplement family income by working temporarily during the resort season.

Thus, when one examines data on total personal income (from all sources) for the region, income for year-round residents compares favorably to those in the state as a whole. Total personal income for the region increased from \$4.9 billion in 1990 to \$7.6 billion in 1998. The region's total personal income increased by 36.2 percent, compared to 35.5 percent for the state as a whole. Personal

income increased by 45.2 percent on Nantucket, 40.2 percent on Martha's Vineyard, and 32.1 percent on Cape Cod. Total personal income per capita was \$44,267 on Nantucket, \$33,599 on Martha's Vineyard, \$32,612 on Cape Cod, and \$33,496 for the entire state.<sup>9</sup>

### Business Clusters

Cape Cod and the Islands have several identifiable business clusters or industry groupings that are linked together through shared customer, supplier, or other relationships. The major business clusters on Cape Cod and the Islands are the resort industry, allied health services, business services, and high technology. The region continues to rely heavily on the resort industry, though efforts to diversify the Cape's economy, especially, have met with some success.

**Resort Industry.** The resort industry is the region's largest business cluster. It includes eight major groups: general merchandise stores, food stores, apparel and accessories, eating and drinking places, miscellaneous retail, hotels and other lodging places, amusement and recreation services, and museums.<sup>10</sup> The region is a leading tourist destination for Massachusetts, New England, and Mid-Atlantic residents.<sup>11</sup> It is estimated that nearly 6 million visitors come to the region and spend almost \$1 billion annually.

In 1999, the resort industry accounted for 25.5 percent of the region's peak total employment of roughly 100,000 jobs. This is an increase from 22.3 percent in 1997. When the effect of indirect and induced impacts is calculated, the resort industry generates approximately 41 percent of the region's total employment. The annual average earnings in the industry are \$17,888, ranging from a low of \$14,871 for eating and drinking places to a high of

\$20,007 for miscellaneous retail.<sup>12</sup> Annual average earnings in the regional resort industry range from \$16,983 on Cape Cod to \$20,600 on Martha's Vineyard and \$23,731 on Nantucket.

**Allied Health Services.** Allied health services include hospitals, nursing homes, home health care providers, health maintenance organizations, medical laboratories, rehabilitation facilities, group medical practices, and individual practitioners. In 1999, allied health services accounted for 10.5 percent of the region's total employment, or 10,240 jobs. This is a decline from 11.4 percent in 1997.

Average annual earnings in the cluster are above the region's average. Population growth, particularly among retirees, and the availability of Medicare and Medicaid reimbursements for services to the elderly supported growth in this cluster during much of the 1990s. Fee caps and government cutbacks in reimbursements, however, along with cost controls implemented by HMOs, hospitals, and nursing homes, are now constraining employment growth in this sector.

**Business Services.** The business services cluster consists of three major groups: business services, engineering and management services, and legal services. In 1999, business services accounted for 5.6 percent of the region's total employment, or 5,241 jobs. This is an increase from 5.2 percent in 1997. Average annual earnings in the cluster are above the region's average. Moreover, the strategy of using the region's high quality of life to recruit "high-end" business and professional services firms appears to be successful, as 71 percent of the employment in this cluster is concentrated in legal, engineering, accounting, research, and management services.

**High Technology.** The high-technology cluster consists of four major groups: industrial and commercial machinery (including computers); measuring and analyzing equipment; communications; and computer programming, data processing, and other computer-related services. High technology accounted for only 2.5 percent of the region's total employment, or 1,660 jobs, in 1999, with much of the employment concentrated in a few firms. Average annual earnings in the cluster are well above the regional and state averages, but the cluster is shedding employees much like similar firms throughout the country.

## The Seasonal Workforce: A Different Kind of Labor Shortage

A unique characteristic of the Cape Cod and Islands economy is the annual seasonal fluctuation that is overlaid on its long-term growth and the periodic fluctuations of the nation's business cycle. The resort industry is highly seasonal, with 65 percent of visitors arriving in the summer and early fall months. The region's seasonal employment shows a trough in February of each year and a peak in July or August. Conversely, the region's unemployment level reaches a high in February and declines to its lowest level in

### Significant Business Clusters

	Average Earnings (Dollars)		Percent of Area's Employment	
	1997	1999	1997	1999
<b>Cape Cod &amp; Islands</b>	<b>25,276</b>	<b>29,670</b>		
Allied Health Services	29,712	33,019	11.4	10.5
Business Services	34,114	37,511	5.2	5.6
High Technology	40,487	47,077	2.5	2.5
Resort Industry	16,467	17,627	22.3	25.5
<b>Cape Cod</b>	<b>25,135</b>	<b>29,713</b>		
Allied Health Services	29,553	33,014	12.1	11.1
Business Services	34,224	37,571	5.4	5.9
High Technology	40,432	47,105	2.8	2.8
Resort Industry	15,229	16,832	22.6	22.3
<b>Martha's Vineyard</b>	<b>24,610</b>	<b>27,139</b>		
Allied Health Services	29,887	31,791	7.8	7.4
Business Services	28,158	33,297	3.4	3.5
High Technology	42,826	43,519	0.8	0.8
Resort Industry	18,618	20,517	26.8	26.9
<b>Nantucket</b>	<b>28,362</b>	<b>32,177</b>		
Allied Health Services	32,839	36,236	4.2	3.8
Business Services	38,460	40,894	3.8	3.8
High Technology	N/A	N/A	N/A	N/A
Resort Industry	21,330	23,116	32.1	31.8

Sources: Massachusetts Division of Employment and Training, U.S. Bureau of the Census

July or August, though the range of fluctuation is more severe for the Cape than for Nantucket or Martha's Vineyard. On the Cape, for instance, total employment increases an average of 42.6 percent each year from February to the summer peak. The Cape's seasonal workforce increased from 21,109 in 1990 to 24,930 in 1999. Many employers report an unmet demand for additional seasonal workers, particularly during the shoulder seasons.

Discussions among academic economists, business leaders, and public officials about the state's labor shortage have focused mainly on highly skilled professional or technical employees, but on Cape Cod and the Islands there is an

acute shortage of unskilled and semi-skilled seasonal workers in the resort industry. The University of Massachusetts Dartmouth Center for Policy Analysis conducted a summer workforce analysis, including a mail survey of more than 1,700 Cape Cod employers, to determine the composition and needs of the summer workforce.<sup>13</sup> It was found that more than one-third of the Cape's resort industry employers are finding it somewhat difficult to recruit seasonal employees, while another third find it very difficult. More than 60 percent of resort industry employers report that it is more difficult to recruit seasonal employees now than it was five years ago. Roughly 40 percent of employers indicate that a general labor shortage and a seasonal housing shortage are the two biggest obstacles to recruiting employees in the resort industries. Housing costs and wage demands were also cited as important factors that make it difficult to recruit seasonal workers.

**Labor Shortage.**

There are three major reasons for the Cape's general labor shortage: (1) full employment at the state and national levels, (2) success in lengthening the tourist season, and (3) Ireland's improving economy. The general labor shortage is not peculiar to the Cape and Islands, but it is having a uniquely local impact, especially since factors peculiar to the region's labor force and seasonal economy exacerbate the labor shortage. First, as the Cape Cod and Massachusetts economies generate more full-time jobs, the resident seasonal workforce is shrinking. Only about 30 percent of the Cape's peak seasonal workforce consists of year-round Cape residents, and only about half of these workers are adults.

On Cape Cod in particular, rapid population growth does not automatically translate into growth in the resident labor force. It is estimated that 16 to 20 percent of the Cape's employed residents commute to off-Cape establishments for full-time, year-round employment. Communities such as Sandwich, Falmouth, and Mashpee are becoming Boston bedroom communities. Daily bridge crossings over the Sagamore and Bourne Bridges more

than doubled from 41,513 in 1972 to 93,648 in 1998.

The region's resort industry has long depended on college students, because academic calendars coincide with the region's tourist season. College students still constitute 50 to 80 percent of the seasonal workforce in many establishments during peak summer months. However, rising housing costs, the lack of available housing, and the livelier atmosphere of other resort areas (South Carolina, Florida, Southern California) are making it increasingly difficult to attract out-of-state college students for summer work.

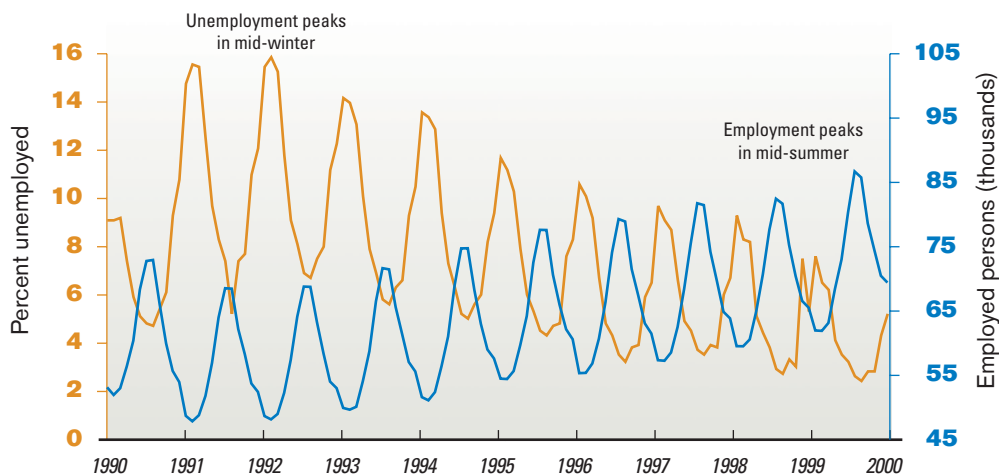
Furthermore, a major component of the regional economic development strategy is to mitigate seasonality by building the shoulder seasons in late spring (May) and early fall (September–October). This entails lengthening the tourist season from June through August (essentially Memorial Day to Labor Day) to May through October/November (essentially Mother's Day to Columbus Day

or even Easter to Thanksgiving). The growth of the shoulder seasons has not merely increased the demand for seasonal workers, it has generated demand for workers who are available for four- to eight-month periods instead of only during the peak season. The development of the shoulder seasons

is resulting in adjustment frictions, as employers seek new sources of available labor. The fastest growing sources of seasonal labor in the Cape's resort industry are foreign college students on J1 visas (5.2 percent of the Cape's seasonal workforce), foreign temporary workers on H2B visas (16.5 percent), and retirees (11.9 percent).<sup>14</sup>

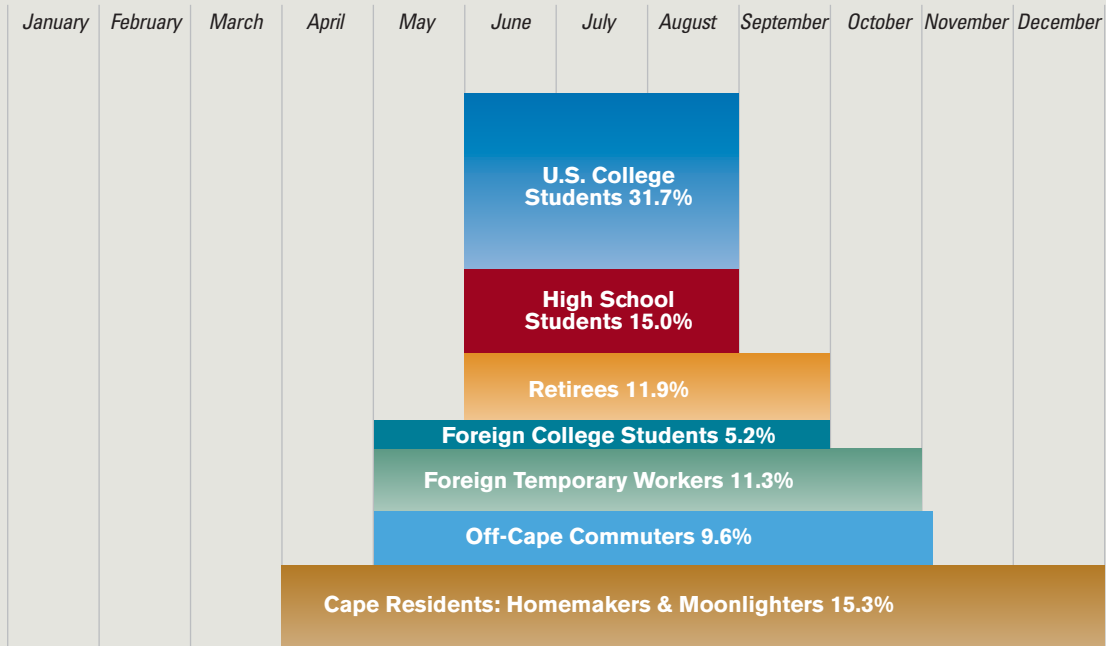
For at least the last 15 years, Ireland has been the Cape's main source of foreign temporary workers, including many college students. This supply has been drying up in the last few years, with Ireland's improving economy. The unemployment rate in Ireland fell from 12.0 percent in January 1996 to 4.5 percent in June 2000. Ireland collects a separate statistic on "long-term unemployment," which is currently at 2.1 percent.<sup>15</sup> The strong performance of the Irish economy is resulting in fewer workers seeking temporary overseas employment.

**Cape Cod Employment and Unemployment 1990–1999**



Sources: Massachusetts Division of Employment and Training

## Cape and Islands Seasonal Workforce



Source: University of Massachusetts Dartmouth, Center for Policy Analysis (see note 13)

The Cape's resort industry employers now hire foreign temporary workers from at least 30 countries on five continents. Russia and Eastern Europe are emerging sources of college student labor, due to economic distress in those countries. Increasing numbers of Western European students are also coming to Cape Cod and the Islands as a result of the European Union's promotion of international higher education.<sup>16</sup> Many universities in the European Union are requiring students to study and work abroad for a period of time to graduate. For these students, Cape Cod and the Islands offer an attractive opportunity to improve language skills and to learn about American business practices, markets, and culture. Finally, Jamaicans now account for 30 to 35 percent of the Cape's foreign temporary workers on H2B visas, and they fill an important role in the seasonal labor market as four- to eight-month employees.

**Housing.** The Cape's growing reliance on J1 (student) and H2B foreign temporary workers has made housing cost and availability more salient to employers, since the H2B program and many foreign university work-abroad programs require employers to arrange and guarantee housing for prospective employees and interns. Thus, seasonal employee housing is becoming a regular part of the resort industry's cost structure.

It is estimated that no fewer than 7,746 seasonal workers come to the Cape each year in search of housing, including U.S. college students (3,619), foreign college students (1,299), and H2B foreign temporary workers (2,828). The Center for Policy Analysis employer survey found that 27.2 percent of the Cape's resort industry employers currently provide housing or a housing subsidy for seasonal employees. Employer-provided housing is being called "the new reality" for the region's tourist industry, since the number of employers providing housing, and the number of units provided by employers, are increasing each year. Hotels (50.0 percent), eating and drinking places (32.6 percent), and food stores (30.8 percent) are the most likely establishments to offer housing or housing subsidies to their seasonal workers.

**Wages.** A secondary consideration in recruiting seasonal workers is wage demands, a product of the general labor shortage and escalating housing costs on Cape Cod. Only 24.9 percent of employers identified wage demands as a factor making it difficult to recruit seasonal workers. Most employers are simply meeting wage demands as a way of attracting and retaining good employees. A comparative analysis of industry and occupational wages indicates that resort industry wages are not out of line with the rest of the

state, but that the long-running economic recovery and attendant labor shortage are finally pulling Cape Cod's wage levels into line with state averages.

## Conclusion

Reducing seasonal volatility in the regional economy is a major goal of business leaders and government officials on Cape Cod and the Islands. Strategies include attracting affluent retirees and second homeowners, recruiting high-technology and professional service firms, and lengthening the resort industry's shoulder seasons. During the last decade, the region has made notable progress toward each of these goals, but its economic development is still tied to the fortunes and structure of the resort industry.

Cape Cod and the Islands have long been advertised as affordable family destinations, especially for short getaway vacations by New England and Middle Atlantic residents. However, the region's ability to maintain low prices has been closely related to year-round and seasonal labor costs that have been well below the state average, and to comparatively lower real estate prices. While there would seem to be some limit to the volume of tourist traffic that the Cape and Islands can sustain, visits continue to climb from year to year. Hotel and motel occupancy rates are reaching 90 to 100 percent during the high season, and occupancy rates continue to increase during the fall shoulder season. As rental rates escalate, more and more permanent residents are vacating their homes during the summer and renting them to tourists. With the Cape's population and housing stock increasing, the availability of space for tourists at the market's high end has increased; the supply of affordable housing for year-round residents and seasonal workers is shrinking.

The region's labor shortage, a seasonal housing shortage, and rising real estate prices are converging to drive up costs for the region's resort industry. Thus far, there does not appear to have been any difficulty in passing these costs off to tourists. However, a long-term continuation of this trend may force the region's resort industry to shift from a low-cost to a high-value model of tourism. The ideal situation may be to accommodate fewer tourists who spend more money, but this will substantially alter the region's character as a tourist destination. ▮

1 Commonwealth of Massachusetts, *Choosing to Compete: A Statewide Strategy for Job Creation and Economic Growth* (Boston: Executive Office of Administration and Finance, 1993), Chap. 15.

2 Hunter Interests, Inc., *Economic Analysis: Cape Cod Tourism Expansion Strategy* (Barnstable, Mass.: Cape Cod Economic Development Council, 1996).

3 Cape Cod Commission, *Cape Cod Regional Policy Plan* (Barnstable, Mass., 1996); Victor Gautam, "Cape Cod and the Islands: Working Toward a Sustainable Year-round Economy," *Massachusetts Benchmarks: The Quarterly Review of Economic News & Insight*, Vol. 2, No. 3 (Winter 1999): 19-23.

4 (US Census 1990)

5 (DET, ES-202 1990, 1999)

6 (BLS, LAUS 2000)

7 (ES-202 1999)

8 (Center for Policy Analysis 2000)

9 (BEA 1990, 1998)

10 In calculating the direct economic impacts of the resort industry, it is estimated that 35 percent of total annual average employment in General Merchandise, Apparel and Accessories, and Food Stores is tourist related, based on summer sales figures shared with the author by various establishments. It is estimated that 75 percent of total annual average employment in Miscellaneous Retail and Eating and Drinking establishments is tourist related. It is estimated that 100 percent of total annual average employment in Amusement and Recreation, Museums, and Lodging establishments is tourist related.

11 ArtsMarket Consulting, Inc., *Tourism Market Study Analysis: Visitors to Cape Cod* (Barnstable, Mass.: Cape Cod Chamber of Commerce and Cape Cod Times, 1995); Commonwealth of Massachusetts, *Convention & Public Assembly Facilities Market & Feasibility Study: Cape Cod Region* (Boston: Executive Office of Administration and Finance, 1998).

12 (ES-202 1999)

13 The Center for Policy Analysis conducted a four-month study of Cape Cod's seasonal workforce at the request of the Cape Cod Commission and the County of Barnstable. All statistics on foreign temporary workers, unless otherwise noted, were generated from the CFPA's employer survey. Although the study focused on Barnstable County, its findings are no doubt applicable to the resort-based economies of Nantucket and Dukes Counties. The report, *Help! Wanted: Cape Cod's Seasonal Workforce*, can be obtained at: <http://www.umassd.edu/cfpa/doeconomics.html>.

14 Andrew Sum and W. Neal Fogg, *The Changing Workforce: Immigrants and the New Economy in Massachusetts* (Boston: Citizens Bank and MassInc., 1999); K. C. Myers, "Foreign Exchange: Cape Businesses Happy to Have Workers from Abroad," *Cape Cod Times* (September 14, 1999), pp. A1, A10-A11; Jack Perry, "Help Wanted: Employers Scramble to Find Workers in Tight Market," *Cape Cod Times* (September 6, 1999), pp. C1, C3; "Foreign Workers Help Fill Cape Hospitality Jobs," *Cape Cod Times* (June 25, 2000).

15 Government of Ireland, *Department of Enterprise, Trade and Employment, Annual Report 1999* (Dublin: Central Statistics Office of Ireland, 2000). [www.cso.ie/principalstats/pristatlab.html](http://www.cso.ie/principalstats/pristatlab.html).

16 Richard D. Lambert, "Foreign Student Flows and the Internationalization of Higher Education," in Katherine H. Hanson and Joel W. Meyerson, eds., *International Challenges to American Colleges and Universities* (Phoenix: American Council on Education and Oryx Press, 1995) pp. 18-41; Organization for Economic Cooperation and Development, *Measuring What People Know: Human Capital Accounting for the Knowledge Economy* (Paris: Organization for Economic Cooperation and Development, 1996).

---

CLYDE BARROW is a professor of political science and the director of the University of Massachusetts Dartmouth Center for Policy Analysis.

## Foreign Workers Keep the Massachusetts Economy Rolling

DAVID BORGES

**D**uring the past decade, the average annual rate of growth in the Commonwealth's immigrant labor force was three times that for the entire labor force. An increasing number of foreign temporary workers are employed in the state's seasonal economy. Each is here on a visa, following an application and approval process that helps state and federal governments regulate the influx of foreign workers.

### *The H2B Visa: "Exceptional Services" and Non-agricultural Labor Unavailable in the United States*

Massachusetts' employers ("sponsors") petition the Massachusetts Division of Employment and Training for skilled or unskilled alien workers to meet non-agricultural, temporary, or seasonal needs. Temporary workers are admitted to the United States on H2B visas "to perform services of an exceptional nature" (e.g., artists, athletes, and entertainers) "or to perform temporary services or labor when persons capable of performing such services or labor cannot be found in this country."<sup>1</sup>

Federal law currently limits H2B visas to 66,000 per year. In 1998, 24,895 foreign temporary workers were admitted to the United States on H2B visas,<sup>2</sup> up from 15,706 in 1997.<sup>3</sup> The majority were Mexican (10,727), Canadian (4,293), and Jamaican (2,583).

Sponsors provide transportation and housing. Workers are allowed to stay in this country for a maximum of 364 days and may work only for their sponsor. The visa is issued in one-year increments, with up to three discretionary one-year extensions.

It is estimated that Cape Cod accounts for 15 percent of all H2B temporary workers. Their growing significance to the Massachusetts seasonal economy is indicated by the surge, from 3,476 in FY 1999 to 4,064 in FY 2000, in applications from Massachusetts and the number of applications is expected to rise again in 2001. Since some workers are employed at two or more jobs, however, they account for more seasonal employment than these numbers would otherwise indicate.

Applying for an H2B visa is a cumbersome and lengthy process, subject to delays from U.S. Embassies. Knowing that the H2B process can take up to seven or eight months to complete, experienced employers submit applications for

Temporary Labor Certification by October, the first month of the federal fiscal year. While most employers who use the program successfully are reconciled to its difficulties, they suggest streamlining the process and making visas good for three years.

### *The J1 Visa: Educational and Cultural Exchange*

This visa is designed to promote the interchange of persons, knowledge, and skills in the fields of education, arts, and sciences. Participants include students at all academic levels. Unlike the H2B program, those seeking admission on a J1 visa must have sufficient funds to cover all expenses, or funds must be provided by the sponsoring organization. Employers are not required to demonstrate a lack of qualified U.S. citizens or permanent resident alien workers.

Rather than being tied to an employer, the J1 is tied to its holder. Consequently, J1 study-abroad workers may hold more than one position with different employers. J1 exchange visitors must have sufficient scholastic preparation to participate in the designated program (e.g., employment), including knowledge of the English language, or the exchange program must accommodate non-English-speaking participants. In addition, the burden for arranging employment and processing the visa falls on the applicants, many of whom arrange their employment in the fall semester to begin work in April or May.

The United States admitted 250,959 persons under the J1 visa classification in 1998<sup>4</sup> (up from 215,475 in 1997)<sup>5</sup>. The majority came from Germany (31,492), England (24,006), France (16,533), former Soviet republics (15,927), and Ireland (11,612). Eastern Europe, including Poland, Latvia, Lithuania, the Czech Republic, Slovakia, and Bulgaria, is a growing source of college-student labor.

1 (U.S. Department of Justice 1999, 102) The H2B visa program is for foreign temporary non-agricultural workers. Agricultural workers are covered by the H1B visa program.

2 (U.S. Department of Justice 2001, 24)

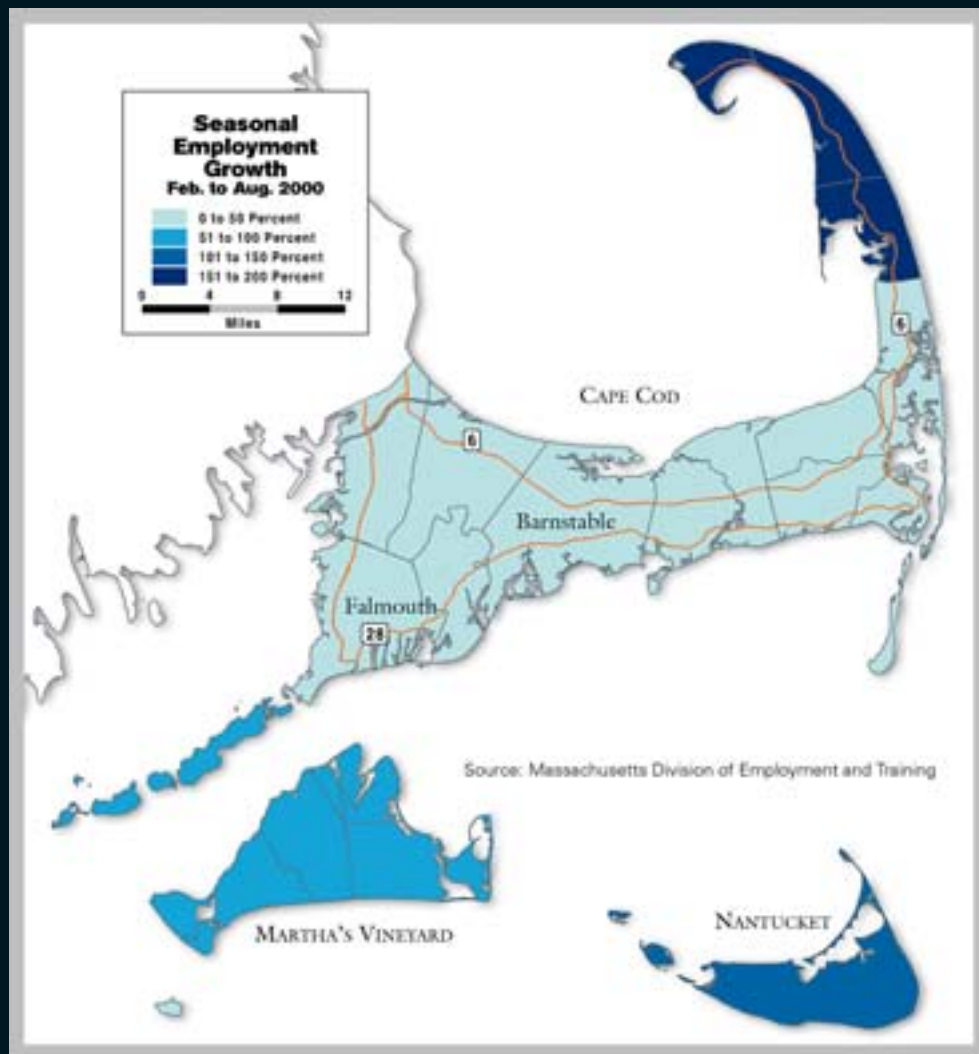
3 (U.S. Department of Justice 1999, 120)

4 (U.S. Department of Justice 2001, 24)

5 (U.S. Department of Justice 2001, 24)

DAVID BORGES is a senior research associate at the University of Massachusetts Dartmouth Center for Policy Analysis.

# Cape Cod and the Islands



THE MASSACHUSETTS  
BENCHMARKS PROJECT

*Project Manager*  
Steven Landau

*Managing Editor*  
Carolyn Dash Mailler

*Research Analysts*  
Rebecca Loveland  
Andrew Hall  
Jim Palma

*Administrative Assistant*  
Jacqueline Adams

is published by the University of Massachusetts

in cooperation with the Federal Reserve Bank of Boston.

Send inquiries to the Massachusetts Benchmarks Project,

University of Massachusetts, 220 Middlesex House,

Amherst, Massachusetts 01003-5520. The views expressed

in this publication are not necessarily those of the

University of Massachusetts, the Federal Reserve Bank

of Boston, or the Editorial Board. The contents of this

publication may be reproduced only if all sources are credited.

All rights reserved.

*Creative Services* Michael Connors, Northampton Design Co., Northampton, MA

**The Massachusetts Benchmarks Project**

Office of the President, Donahue Institute

University of Massachusetts

220 Middlesex House

Amherst, MA 01003-5520

Address Service Requested

